Climbing Cone M30/DW15

General Construction Supervisory Approval (called abZ) from the DIBt

Technical Information

Service in Formwork + Shoring

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Important information regarding the intended use and safe application of formwork and falsework
Version 08.2009

The contractor is responsible for drawing up a comprehensive risk assessment and a set of installation instructions. The latter is not usually identical to the assembly instructions.

• Risk Assessment
The contractor is responsible for the compilation, documentation, implementation and revision of a risk assessment for each construction site. His employees are obliged to implement the measures resulting from this in accordance with all legal requirements.

• Installation Instructions
The contractor is responsible for compiling a written set of installation instructions. The assembly instructions forms part of the basic for the compilation of a set of installation instructions.

• Assembly Instructions
Formwork is technical work equipment which is intended for commercial use only. The intended use must take place exclusively through properly trained personnel and appropriately qualified supervising personnel.
The assembly instructions are an integral component of the formwork construction. They comprise at least safety guidelines, details on the standard configuration and intended use, as well as the system description. The functional instructions (standard configuration) contained in the assembly instructions are to be complied with as stated. Enhancements, deviations or changes represent a potential risk and therefore require separate verification (with the help of a risk assessment) or a set of installation instructions which comply with the relevant laws, standards and safety regulations. The same applies in those cases where formwork and/or falsework components are provided by the contractor.

• Availability of the Assembly Instructions
The contractor has to ensure that the assembly instructions provided by the manufacturer or formwork supplier are available at the place of use. Site personnel are to be informed of this before assembly and use takes place, and that they are available at all times.

• Representations
The representations shown in the assembly instructions are, in part, situations of assembly and not always complete in terms of safety considerations. The safety installations which have possibly not been shown in these representations must nevertheless be available.

• Storage and Transportation
The special requirements of the respective formwork constructions regarding transportation procedures as well as storage must be complied with. By way of example, name the appropriate lifting gear to be used.

• Material Check
Formwork and falsework material deliveries are to be checked on arrival at the construction site/ place of destination as well as before each use to ensure that they are in perfect condition and function correctly. Changes to the formwork materials are not permitted.

• Spare Parts and Repairs
Only original components may be used as spare parts. Repairs are to be carried out by the manufacturer or authorized repair facilities only.

• Use of Other Products
Combining formwork components from different manufacturers carries certain risks. They are to be individually verified and can result in the compilation of a separate set of assembly instructions required for the installation of the equipment.

• Safety Symbols
Individual safety symbols are to be complied with.
Examples:


Safety information: non-compliance can lead to damage tomaterials or risk to the health of site personnel(alsolife)


Visual check: the intended operation is to be carried out through a visual check.


Note: supplementary information for safe, correct and professional execution of work activities.

• Miscellaneous
Technical improvements and modifications are subject to change without notice. For the safetyrelated application and use of the products, all current country-specific laws, standards as well as other safety regulations are to be complied with without exception. They form a part of the obligations of employers and employees regarding industrial safety. This results in, among other things, the responsibility of the contractor to ensure the stability of the formwork and falsework constructions as well as the structure during all stages of construction. This also includes the basic assembly, dismantling and the transport of the formwork and falsework constructions or their components. The complete construction is to be checked during and after assembly.

Table of content

10.2015

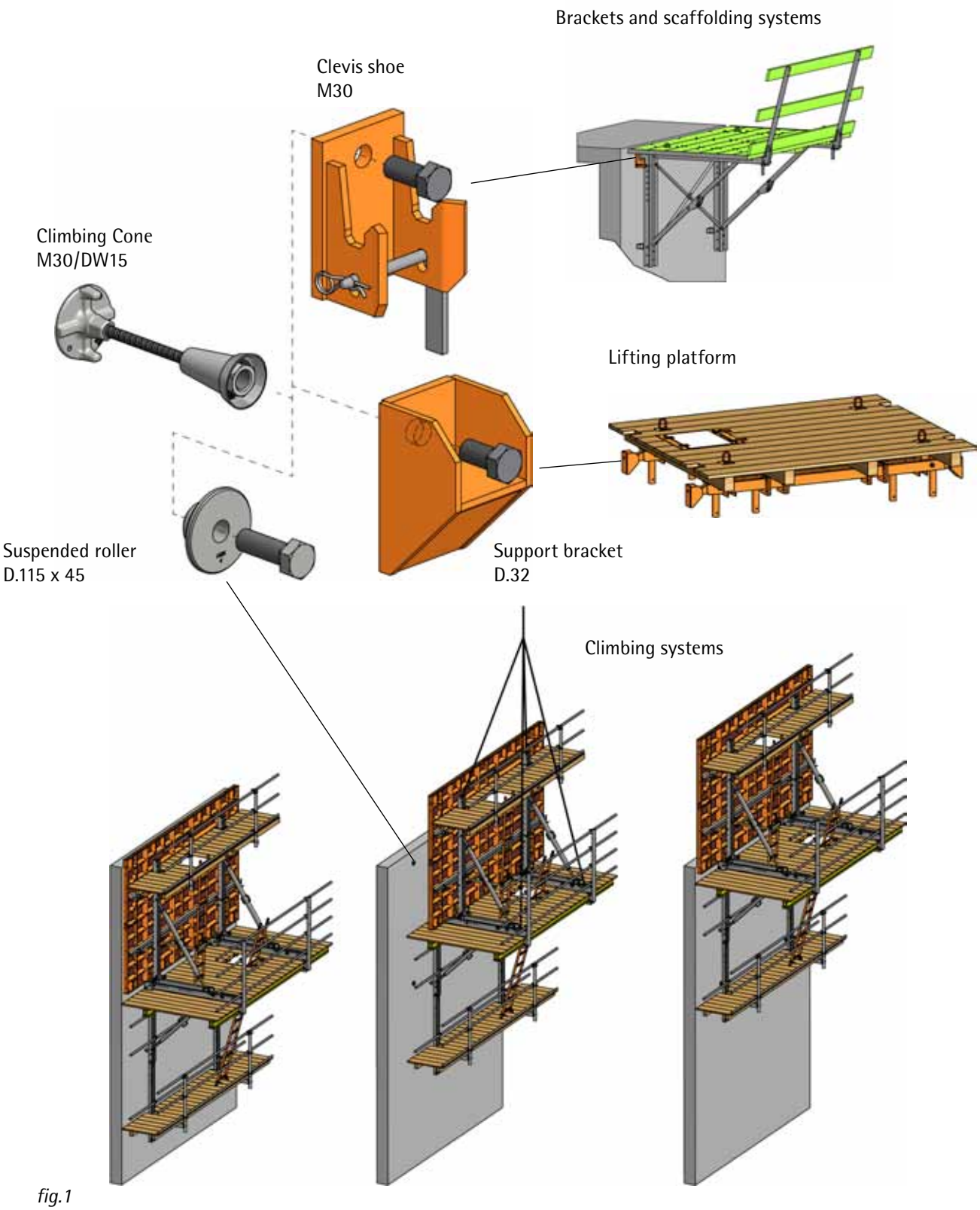


fig.1

4 Climbing Cone M30/DW15

In the case of multi-storey-structures in concrete construction or with reinforced concrete walls of considerable height, the required wall formwork is mounted vertically upwards over several concreting pours (phases).

Normally, platforms in the form of folding brackets and scaffolding systems or climbing formwork are necessary for erecting the formwork and for handling the accessories.

In order to transfer all the loads resulting from deadweight of the formwork, wind, live loads etc., the platforms are held in place using special anchors which are normally fitted to the concrete section poured previously.

This technical information provides the necessary information for installing climbing cone M30/DW15, for dismantling the recoverable parts and, from a static point of view, minimum wall thicknesses or minimum distances between the anchor and concrete edges.

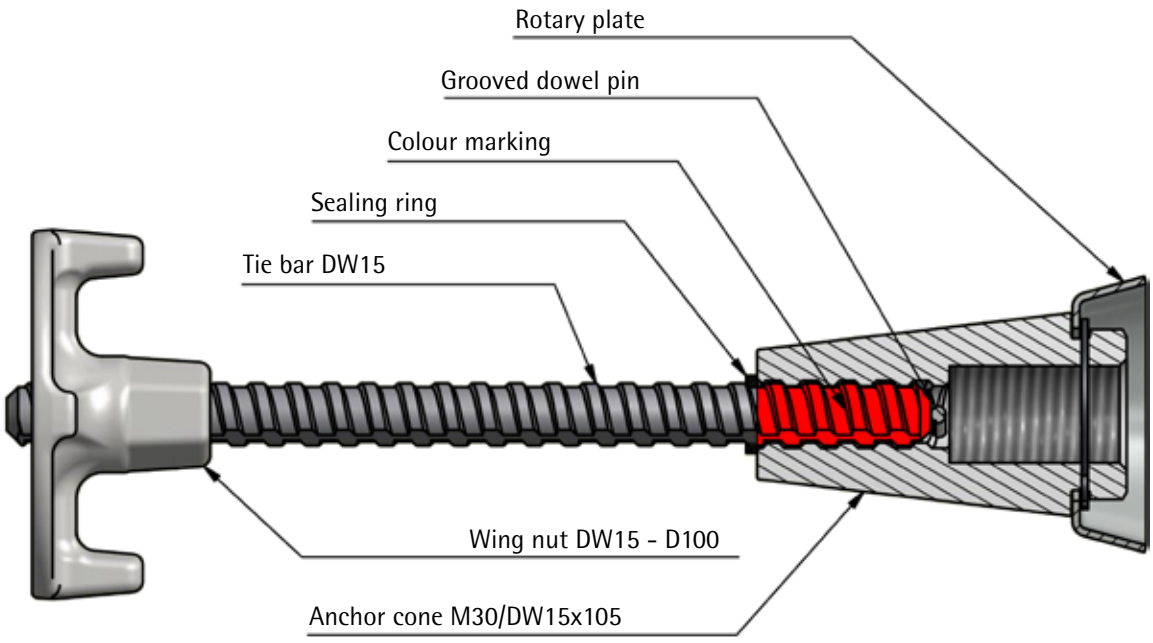
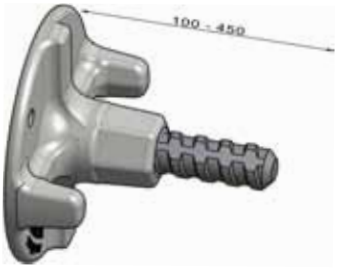
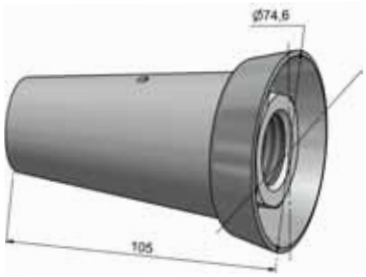
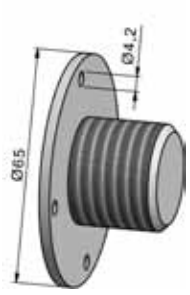
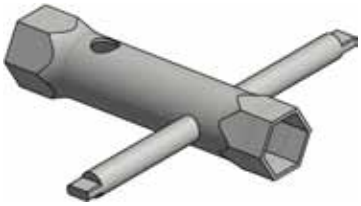
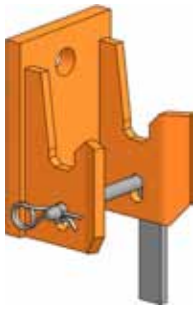


fig.2

	Art.-N°	Item	Weight [kg]
	186.000.0059	**Anchor plate D=100-100**	0,79
	186.000.0060	**Anchor plate D=100-150**	0,86
	186.000.0061	**Anchor plate D=100-200**	0,93
	186.000.0062	**Anchor plate D=100-250**	1,00
	186.000.0063	**Anchor plate D=100-300**	1,07
	186.000.0064	**Anchor plate D=100-350**	1,14
	186.000.0065	**Anchor plate D=100-400**	1,21
	186.000.0066	**Anchor plate D=100-450**	1,29
	186.000.0050	**Anchor cone** DW 15 x 105 cm	1,00
	930.007.0042	**Sealing ring D.21 x 14,5 x 3** EPDM	0,01
	186.000.0051	**Nail plate M 30** galvanized	0,20

Parts list

	Art.-N°	Item	Weight [kg]
	186.000.0052	**Special key** SW 41/46	1,50
	186.002.0007	**Suspended roller D.115 x 45** M 30 galvanized	1,50
	186.003.0006	**Clevis shoe M 30** cpl.	8,80
	930.933.1701	**Hexagon screw M30x60** DIN933 8.8	0,59
	930.933.1702	**Hexagon screw M30x70** DIN933 8.8	0,65
	900.933.1704	**Hexagon screw M30x90** DIN933 8.8	0,76

	Art.-N°	Item	Weight [kg]
	186.001.0031	**Support bracket** **D.32 for klik-klak beam**	8,70
	186.001.0032	**Support bracket** **D.32 /45° for klik-klak beam** right	11,50
	186.001.0033	**Support bracket** **D.32 /45° for klik-klak beam** left	11,50
	186.002.0037	**Fixation tension belt**	1,80

Installation of climbing cone

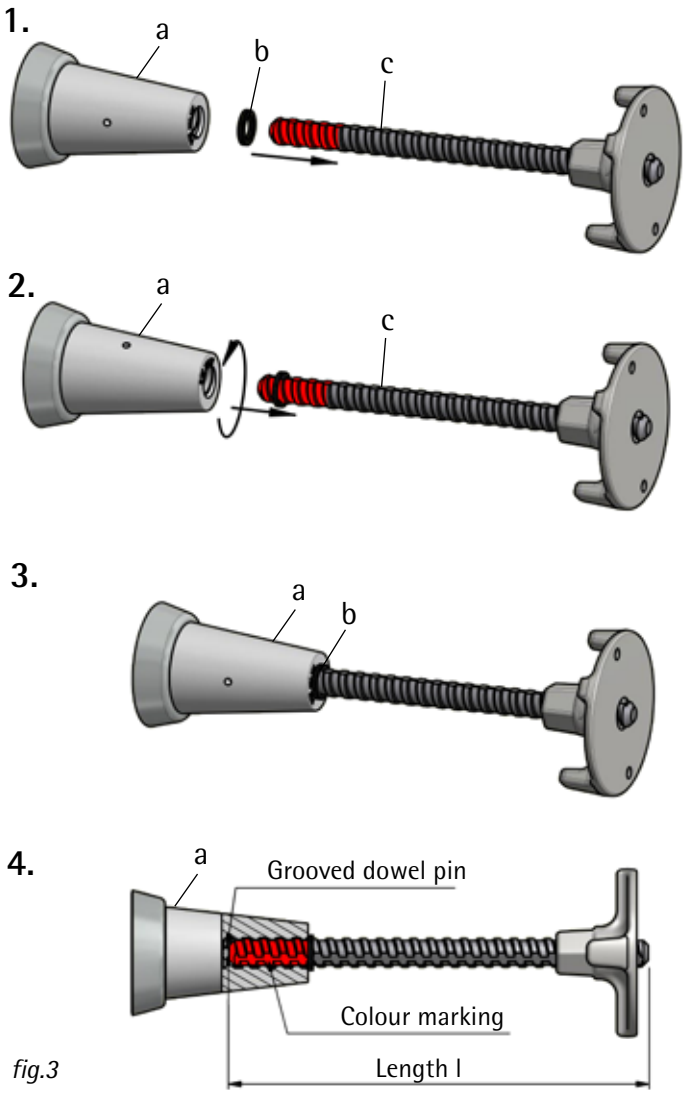


fig.3

In addition to the grooved dowel pin, you can use the colour marking on the tie bar to see whether this has been correctly screwed in.
The colour marking is no longer visible when the screw-in depth is correct!
You can allocate the length of the tie bar by using the colour.

Art.-N°	Length l [mm]	Colour
186.000.0059	100	
186.000.0060	150	white
186.000.0061	200	lime green
186.000.0062	250	blue
186.000.0063	300	yellow
186.000.0064	350	orange
186.000.0065	400	silver
186.000.0066	450	gold

The parts must be checked for faultless condition before installing. Damaged or rusted parts (with the exception of rust film) may not be used.

Examples of damage:
- stiff threads
- deformed heads

Please follow the following operations to assemble the climbing cone:

1. Push the sealing ring (b) about 1 cm onto the tie bar (c) of the anchor plate.
2. Screw the anchor cone (a) onto the tie bar (c).
3. Please ensure that the sealing ring (b) is in flush contact with the anchor cone (a).
4. The anchor cone (a) must be screwed on up to the stop. A grooved dowel pin has been inserted in the anchor cone to act as a stop. The colour marking may no longer be visible!

(a)

Anchor cone DW15 x 105
Art.-N°: 186.000.0050

(b)

Sealing ring D.21 x 14,5 x 3
Art.-N°: 930.007.0042

(c)

Anchor plate D100 - 100-450
Art.-N°: 186.000.0059-66

Assembly of climbing cone with bolt / nail plate

A drillhole Ø 31mm is drilled through the plywood in order to fix the climbing cone to the formwork. (position according to formwork drawing)

Push the M30x60 bolt (a) with washer (b) through the hole and bolt the climbing cone firmly to the plywood from the opposite side up to the stop.

(a)

Hexagon screw M30x60
Art.-N°: 900.933.1701

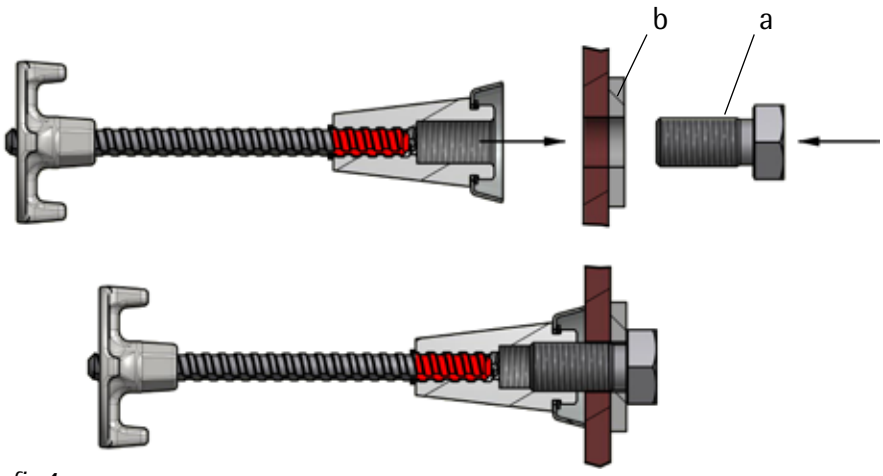


fig.4

The nail plate can also be fixed to the plywood as an alternative.

Place the nail plate (c) at the required position and secure it with 4 nails. The nailhead diameter should be greater than 4.2 mm, which is equivalent to the diameter of the drill holes in the nail plate.

(c)

Nail plate M 30
Art.-N°: 186.000.0051

fig.5

Once the nail plate has been fixed, it can be used to attach the climbing cone to the formwork. To do this, the climbing cone is screwed onto the M30 thread on the nail plate. Tighten the climbing cone until the anchor cone rotary plate is contacting the plywood tightly.

Note:
Coat the anchor cone with parting compound in order to make removal easier when unscrewing it from the concrete.

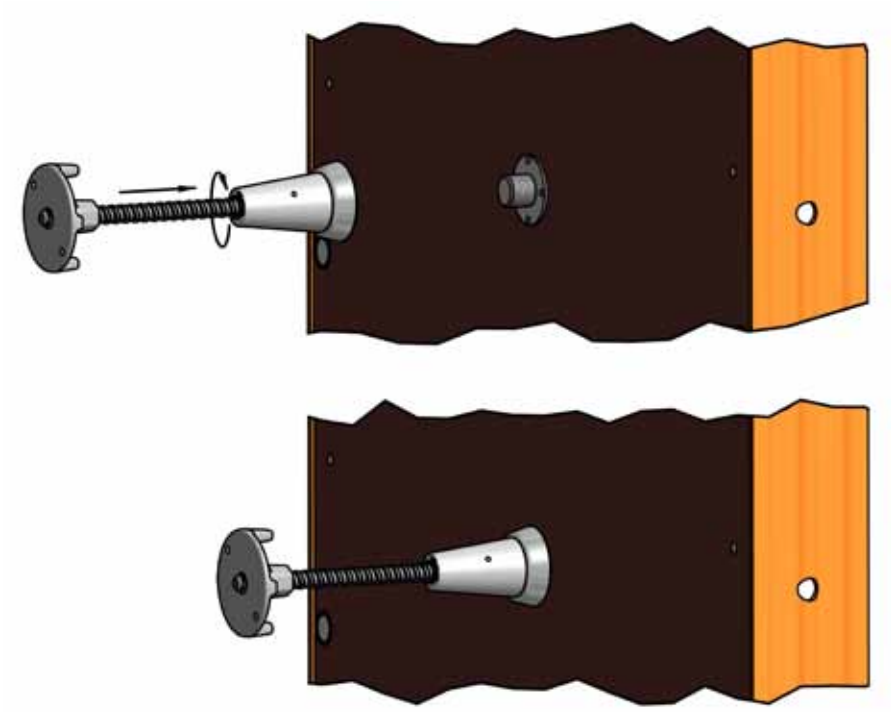


fig.6

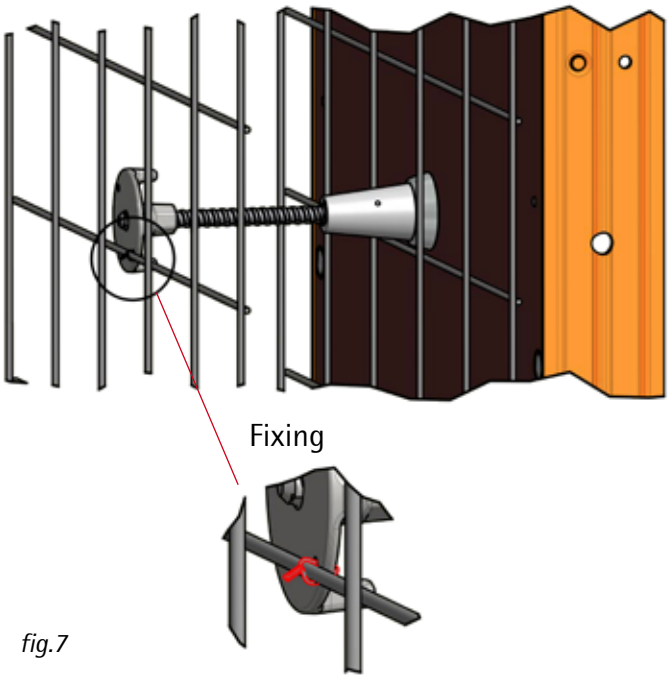


fig.7

If possible, the climbing cone should be fixed to the reinforcement using tie wire in the area around the anchor plate to ensure that the anchor cone remains in position during concreting and concrete compaction operations.

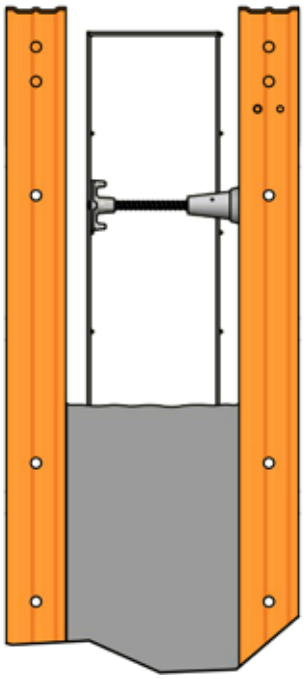


fig.8

When concreting, ensure that concrete is not dropped directly onto the climbing cone.

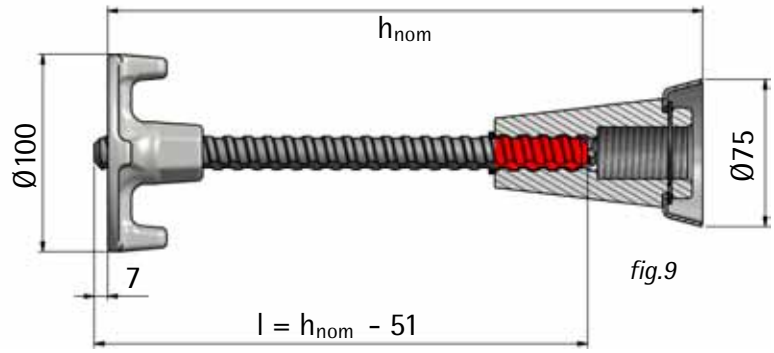


fig.9

Minimum values for section thickness, axial and edge distances

Installation length	h_{nom} [mm]	153	180	200	300	400	500
Tie bar length	l [mm]	102	129	149	249	349	449
Minimum section thickness	h_{min} [mm]	h_{nom} + 7 mm + c_{nom} [1)]					
		180	207	227	327	427	527
Minimum distances under tensile load (Fig. 10)							
Characteristic edge distance	$c_{cr,N}$ [mm]	1,5 x h_{nom} + 50 mm					
		280	320	350	500	650	800
Minimum axial distance	s_{min} [mm]	2 x $c_{cr,N}$					
		560	640	700	1000	1300	1600
Minimum distances under shear load (Fig. 11)							
Minimum edge distance in loading direction	$c_{1,1,min}$ [mm]	1000					
Minimum edge distance opposing loading direction	$c_{1,2,min}$ [mm]	400					
Minimum edge distance perpendicular to loading direction	$c_{2,min}$ [mm]	350					
Minimum axial distance	s_{min} [mm]	700					

[1)] Observe minimum concrete cover c_{nom} in acc. w. DIN EN 1992-1-1:2011-01 and DIN EN 1992-1-1/NA:2013-04

Here c_{nom} = 20 mm for e.g. XC1

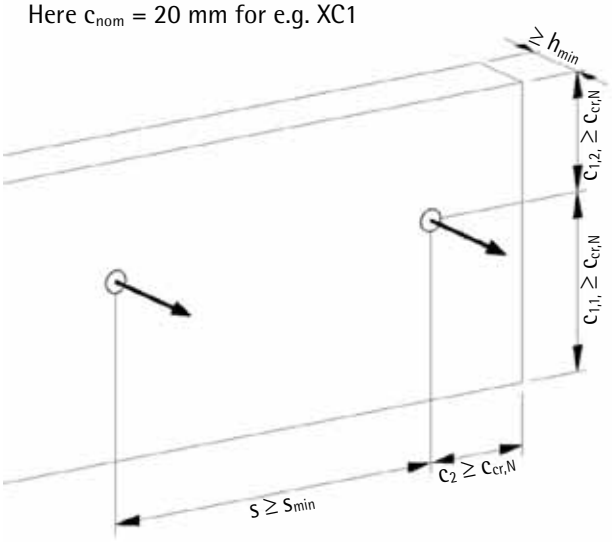


fig. 10: Installation situation wall surface - tensile load

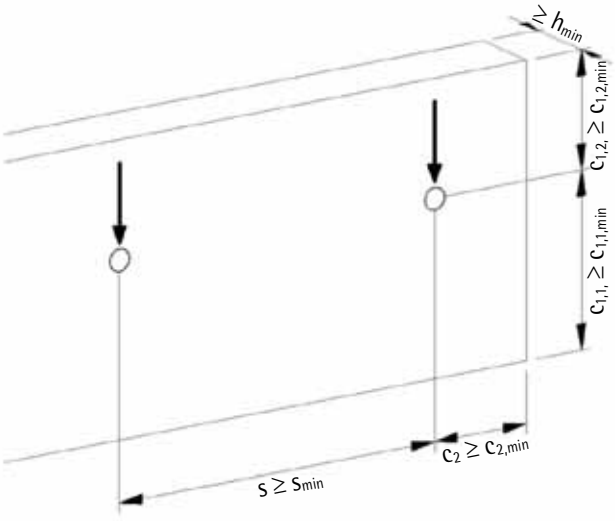


fig. 11: Installation situation wall surface - shear load

Load capacity (working loads) PASCHAL climbing cone M30 DW15

Tie rod: Tie bar steel St900/1100 with thread grooves

/ Minimum reinforcement:
meshed reinforcement on both sides corresponds to:
Q 257A (Ø7/15cm), B500A/B or equivalent

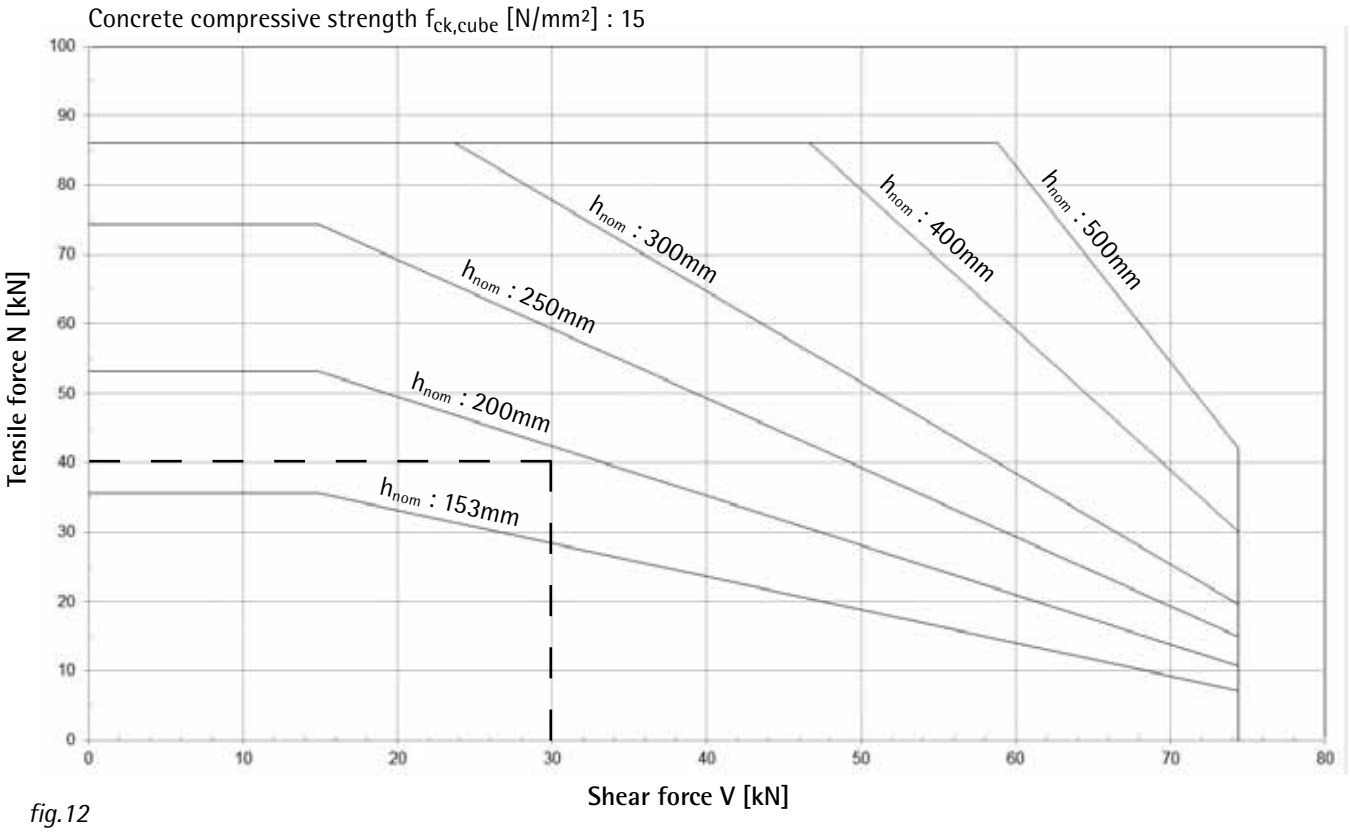


fig.12

The loading capacity of the M30/DW15 climbing cone can be converted for other concrete compressive strengths

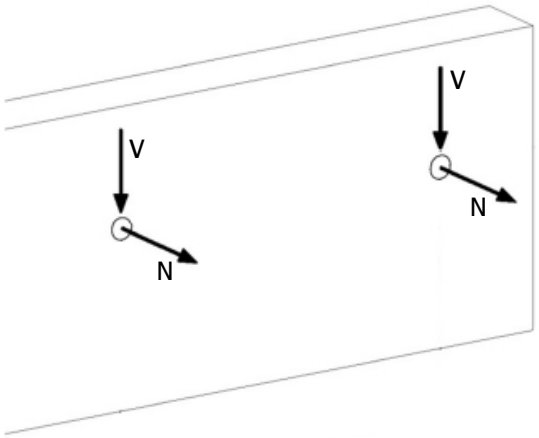


fig.13

Read-out example:

Specifications:

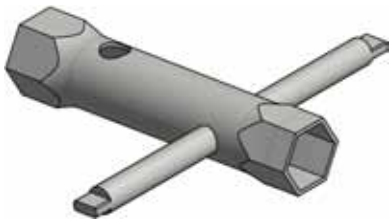
- Concrete compressive strength $f_{ck,cube}$ =15N/mm²
- Shear force V = 30kN
- Tensile force N = 40kN

-> h_{nom} = 200mm

The nail plate has to be removed before suspension systems for climbing equipment can be bolted to the climbing cone.

A special spanner SW41/46 (a) is required to remove the nail plate. It is inserted in the nail plate slot (fig. 14) which can then be pulled off by rotating anti-clockwise.

(a)



Special key SW 41/46
Art.-N°: 186.000.0052

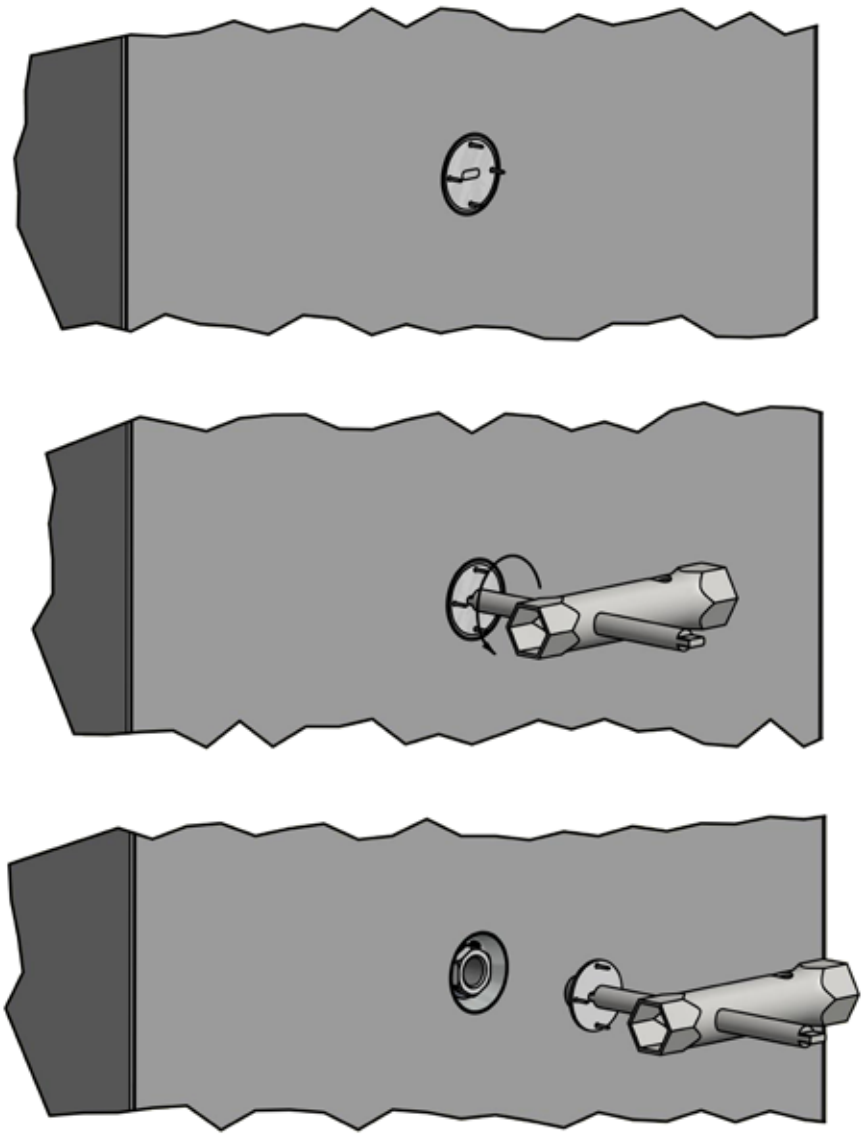


fig.14

Climbing cone fixing facilities

fig.15

There are four options for bolting on to the climbing cone:

1. Suspended roller (fig. 15)

2. Clevis shoe (fig. 16)

3. Support bracket (fig. 17)

4. Fixation tension belt (fig. 18)

(a)

Einhängerolle D.115 x 45
Art.-N°: 186.000.0007

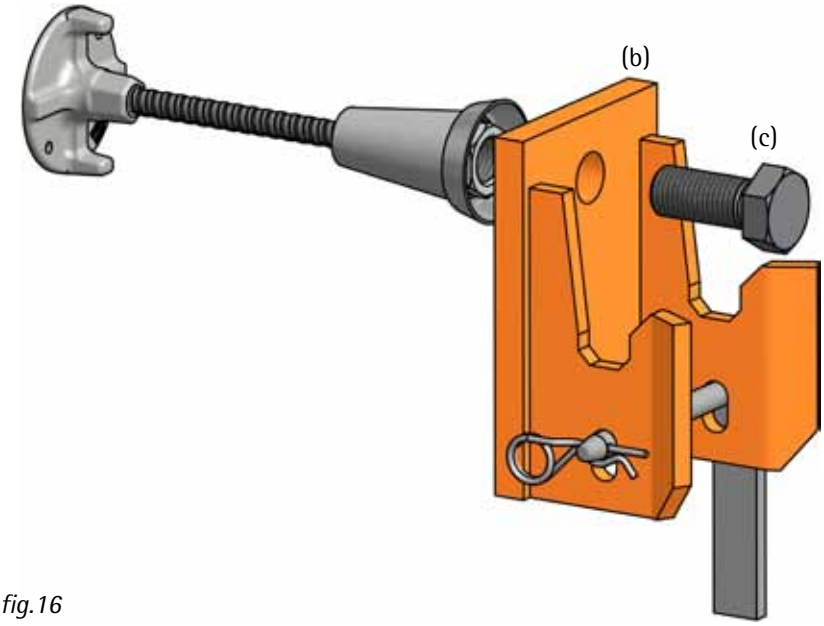


fig.16

(b)

Clevis shoe M 30
Art.-N°: 186.003.0006

(c)

Hexagon screw M30x70
Art.-N°: 900.933.1702

(d)

Hexagon screw M30x90
Art.-N°: 900.933.1704

(a)

Support bracket D.32
Art.-N°: 186.001.0031

(b)

Hexagon screw M30x60
Art.-N°: 900.933.1701

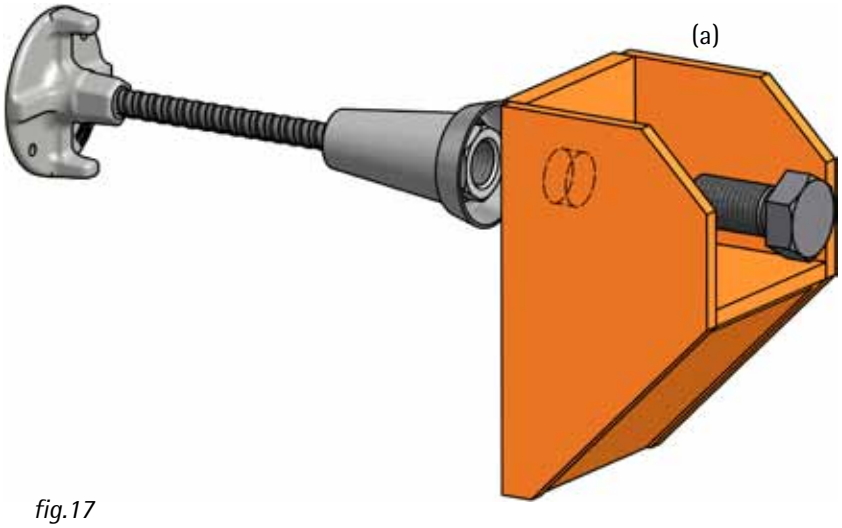


fig.17

(c)

Fixation tension belt
Art.-N°: 186.002.0037

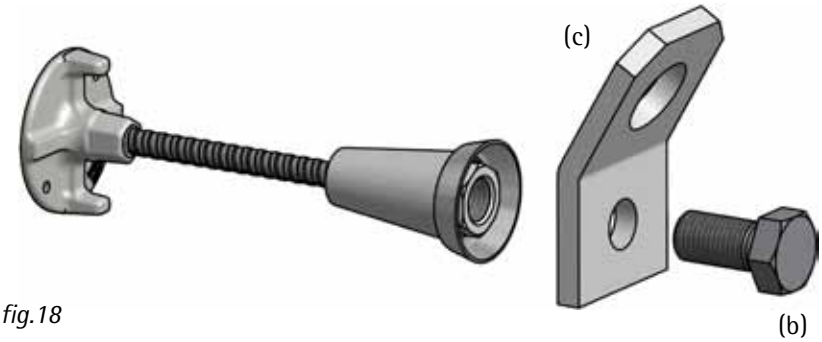


fig.18

e.g. for wind bracing

Removing the anchor cone from the concrete

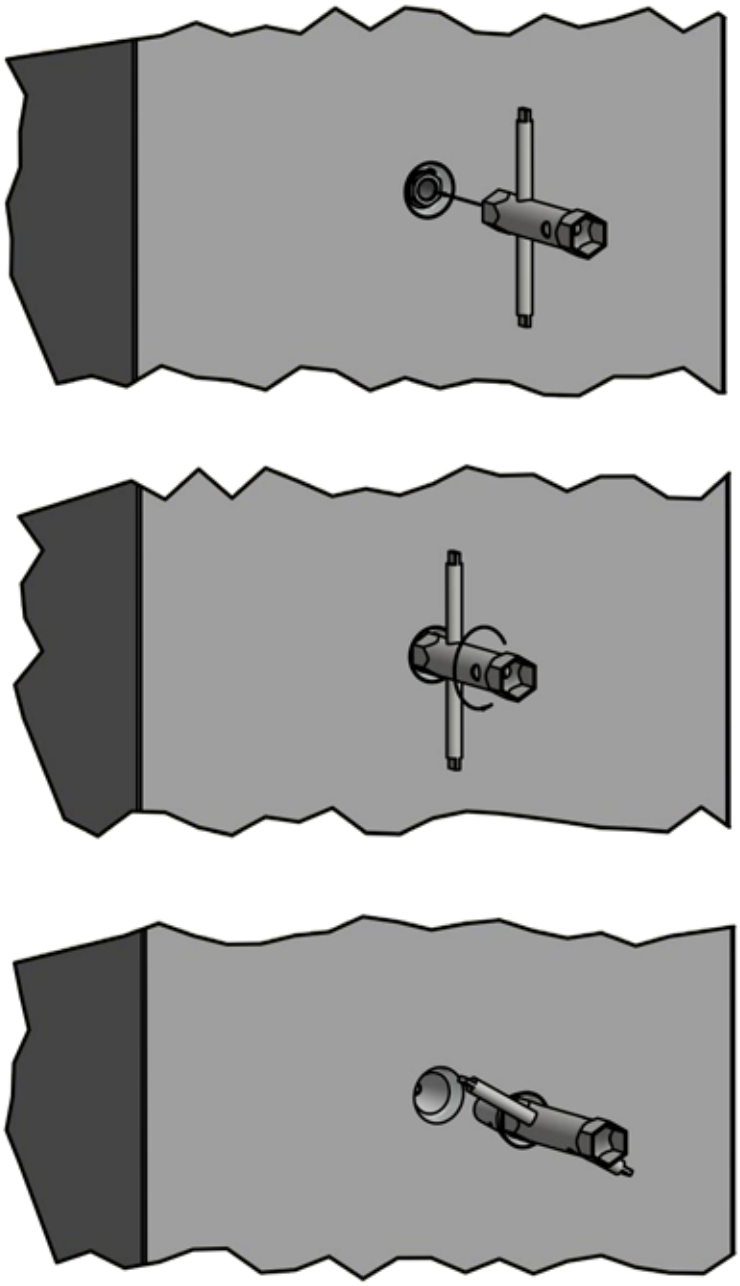
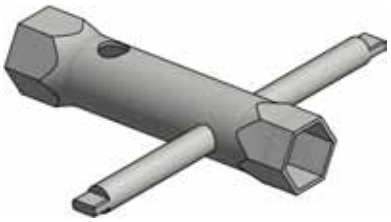


fig.19

Once the climbing cone is no longer required for anchoring, the anchor cone can be screwed out of the concrete as a recoverable part using special spanner SW41/46 (a). (fig. 19)

(a)



Special key SW 41/46
Art.-N°: 186.000.0052

Once the anchor cone has been removed, the remaining opening must be filled with mortar. The anchor plate and tie bar remain as lost parts in the wall.

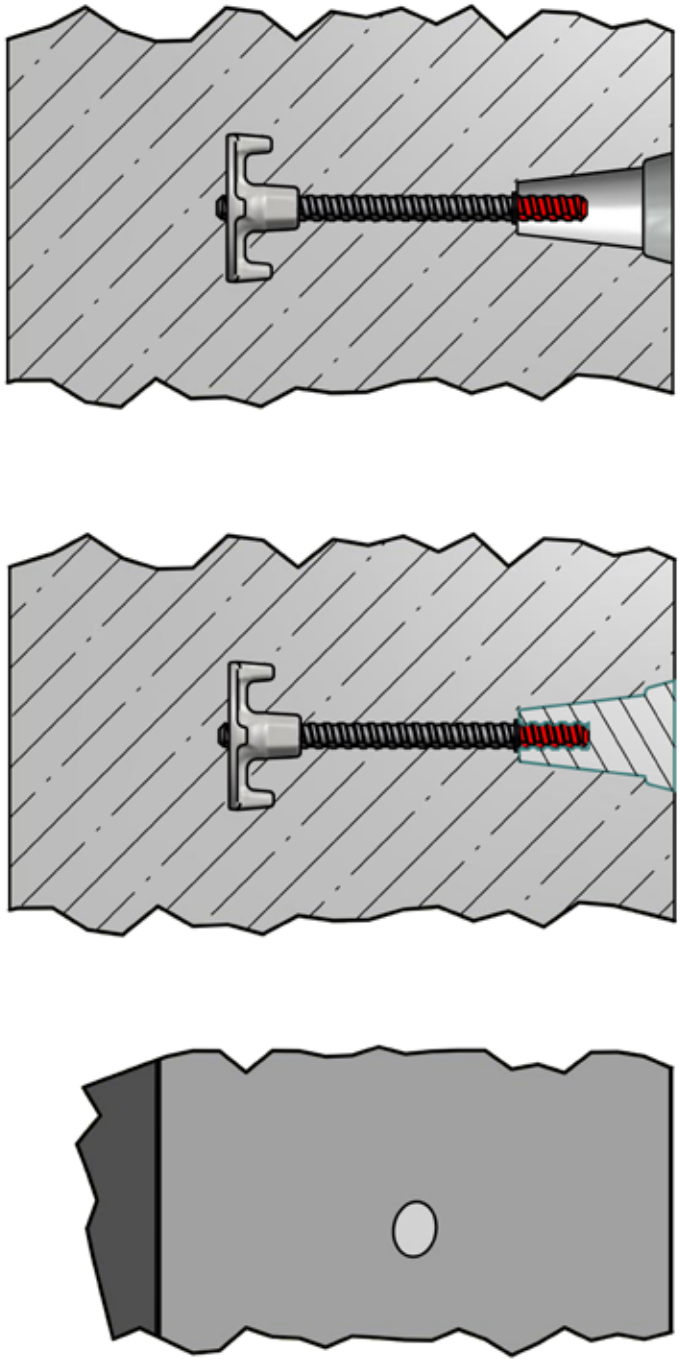


fig.20

Construction site:	Date:
Project no.:	Protocol no.:

Structural component/ construction phase/level/floor

Protocol for checking (climbing) cones for anchoring brackets
Inspection of installation in formwork / approval of associated concreting work

Inspection of cones

- Every fixing position with a (climbing) cone for anchoring brackets (hereinafter referred to only as ‚cone') is to be inspected with regard to the **type, completeness, insertion length, screw-in-depth** and correct location and alignment. Inspection of the screw-in-depth can take place, for example, by counter-checking the tensile- or tie bar steel length against the installation length.
- Any possibly necessary additional reinforcement for the cones or securing the threaded plate location should also be checked.
- Different installation lengths of the cones must also be recorded and added as an **APPENDIX**.
- All individual parts of the cone must be checked for faultless condition. For example, parts with stiff threads or mis-shapen caps must be sorted out. All tie rod steel bars in use must be straight and free of welding spatter. Parts with stiff threads or welded tie rods are not acceptable. Damaged anchor cone components may only be replaced with original parts.
- Any necessary corrections or replacement measures and approved deviations from the drawing of individual fixing locations must be recorded and added as an **APPENDIX**.

Associated formwork and reinforcement drawings, in addition to other construction drawings (e.g. structural details of cones) and execution documents:

.....

.....

.....

Confirmation
The inspected cones comply with the complete approved execution documents. Installation in the formwork was carried out properly in accordance with the manufacturer's assembly instructions (for bracket scaffold and scaffold anchoring).

please also refer to APPROVAL APPENDIX no.:
The cones may be charged with the loads stated in the execution documents once the necessary concrete compressive strength has been achieved.

Required concrete compressive strength for charging scaffold anchors:
$f_{ck,cube200} = \beta_{W200}$ = ... N/mm² > 10 N/mm² (concrete: compressive strength > C20/25 or B 25)

The above structural elements are hereby released for concreting!

....
Place, date Signature of contractor, his site manager or site manager's representative

This protocol must be available on the construction site for possible viewing together with the APPROVAL and all execution documentation during the construction period.

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PASCHAL Climbing Cone M30/DW15

Protocol:
Inspection of cones,
release of concreting work

Service in Formwork + Shoring

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