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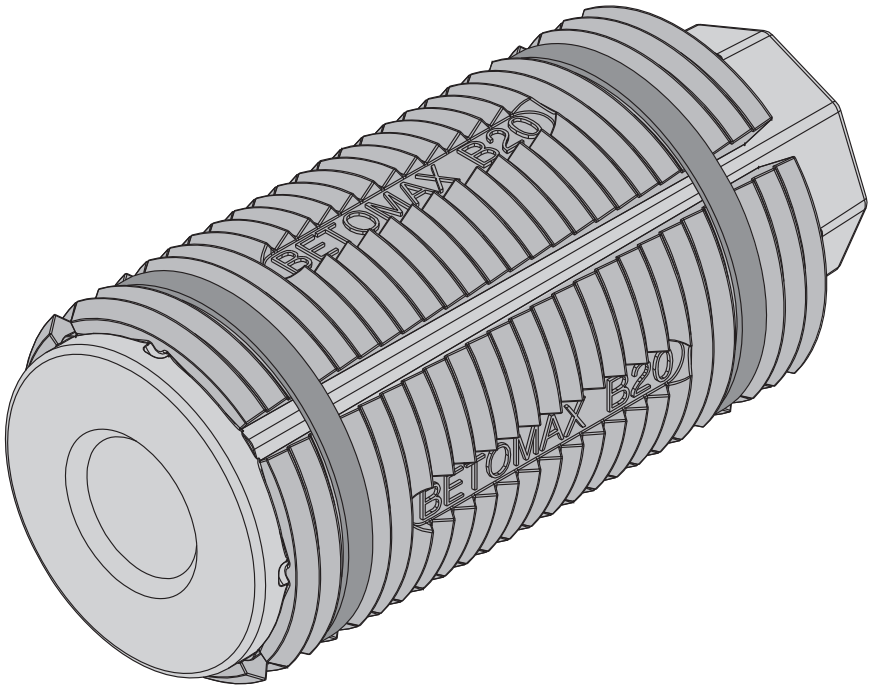
The Formwork Experts.

Rock anchor spreader unit 20.0

Art. n° 581468000

Fitting instructions



Product description

The Rock-anchor spreader unit is used to make single-sided formwork anchoring points in concrete.

WARNING

- ➤ It is strictly forbidden to use the spreader unit more than once, and to take the load off the anchoring points during use and then re-apply a load! (Except where using a "Suspension cone 15.0 with collar", and during the acceptance test.)
- ➤ When planning the anchoring point, remember that it is only permissible to subject it to tensile forces.
- ➤ The maximum period for which an anchoring point may in use is 6 months.

Items needed

Note:
Only use approved tie-rods!
After work is completed, the tie-rod can be re-used, while the "Rock anchor spreader unit" remains in the drilled hole.

To make an anchoring point, the following items are needed:

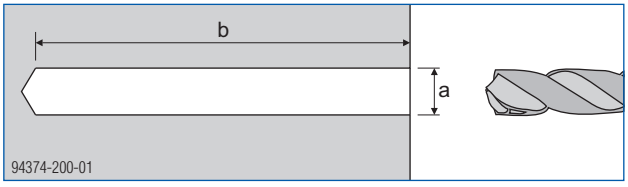
Item	Designation	Art.n°
(A)	**Tie-rod 20.0** (length as required)	
(B)	**Rock-anchor spreader unit 20.0**	581468000
(C)	**Scaffold tube 48.3mm .....m**	682001000
(D)	**Tensioning instrument 300kN**	581815000
(E)	**Super-plate 20.0 B**	581424000

Drilling the hole

WARNING

- ➤ **It is not permitted to use diamond tipped hollow core-drills (trepanning cutter).**

These cut through reinforcement steel in the concrete, leaving behind a smooth steel surface which causes slippage and deformation of the spreader segments.
This prevents the rock-anchor from functioning as it should.



a ... nominal diameter 50-52 mm
b ... depth of drilled hole min. 400 mm

CAUTION

- ➤ Check the diameter **a** of the drilled hole.
- ➤ Be sure to leave at least the minimum gap between the drilled hole and the edge of the structure, and between one drilled hole and the next (rupture cone).
- ➤ The depth of the hole **b** will depend upon the characteristics of the rock or concrete ($b_{min.}$ = 400 mm). To determine the actual load-bearing capacity of the join (depth of hole), loading tests are necessary.
- ➤ Carefully clean the drilled hole, and blow out all the drill cuttings.

Installation

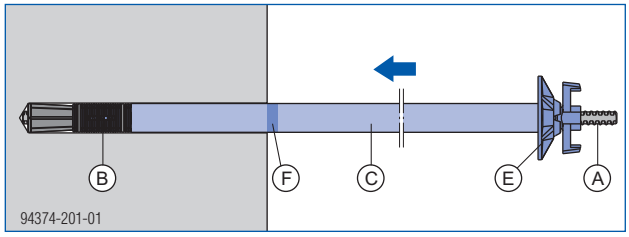
NOTICE

Make sure that you fit the Rock anchor spreader in the correct mounting position, as shown here.

1) Screw the tie-rod (length e.g. 750 mm) flush into the spreader cone of the Rock anchor spreader unit.
2) Push the Scaffold tube 48.3mm over the tie-rod and fix it with a Super-plate.

Make a chalk mark on the Scaffold tube 48.3mm to give you an easy-to-see check of the placement depth.

3) Push the assembled anchoring point all the way into the cleaned drilled hole, i.e. until it reaches the bottom of the hole.



A Tie-rod 20.0
B Rock-anchor spreader unit 20.0
C Scaffold tube 48.3mm .....m (site-provided)
E Super-plate 20.0 B
F Depth mark made with e.g. chalk

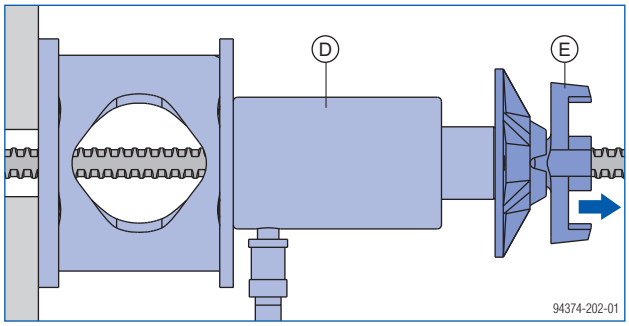
4) Firmly tighten the Super-plate. This forces the segments to spread so that they bite into the walls of the drilled hole.
5) Remove the Super-plate and the Scaffold tube 48.3mm.
6) Tighten the anchorage point with the Tensioning instrument (see "Carrying out the acceptance test").

Carrying out the acceptance test

WARNING

- The load-bearing capacity of the anchoring point will depend upon how well the rock-anchor was fitted.
- The test-loading tests the load-bearing capacity of the anchoring point.
- If the material into which the rock-anchor has been fitted does not have sufficient bearing capacity, the tensioning instrument may suddenly loosen during the suitability test and/or acceptance test.
- For this reason, it is forbidden to stand beneath or behind the testing equipment.
- Secure the tensioning instrument so that it cannot drop.

- For the acceptance test, push the "Hollow-piston cylinder with pressure support" onto the tie-rod and mount the Super-plate 20.0 B.
- Apply the test force by operating the hand pump.



D Hollow-piston cylinder with pressure support
E Super-plate 20.0 B

Acceptance test

- Every anchoring point must undergo acceptance testing.
- The test load is 1.25 times the anchor force actually encountered.

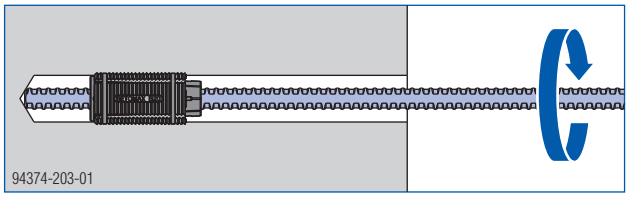
Specimen calculation:
- **Test load:** 100 kN x 1.25 = 125 kN

Re-tightening the tie-rod

CAUTION

- In this situation, the rock anchor is very sensitive to knocks.

- Detach the tensioning instrument.
- Re-tighten the tie-rod all the way in to the bottom of the drilled hole.



The anchoring point is now ready for use.

After use

- Unscrew the tie-rod and close off the anchoring point so that it cannot be re-used.

Trial test to determine the permissible load, based on DIN 4125

Suitability test

- On every building site, test at least 3 anchors at a location where unfavourable results may be expected.
- Load these test anchor-points until they fail, but not to more than **max. 220 kN**.
- The permitted anchor force is determined from the load at failure with a **safety factor of 1.5**.

Permitted capacity of the tie-rod to DIN 18216:
160 kN

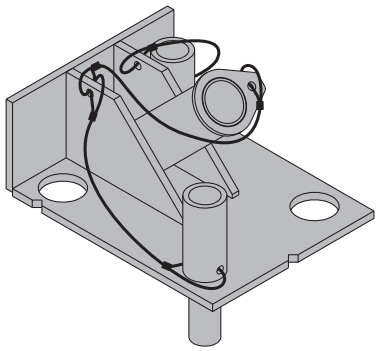
Specimen calculation:
- Failure load: 160 kN
- Permitted anchor force: 160 kN/1.5 = 106.7 kN

- With reference to the permitted anchor force, space out the anchors and determine the anchor force actually encountered (e.g. 100 kN).

Testing truss for diagonal anchors 15.0/20.0

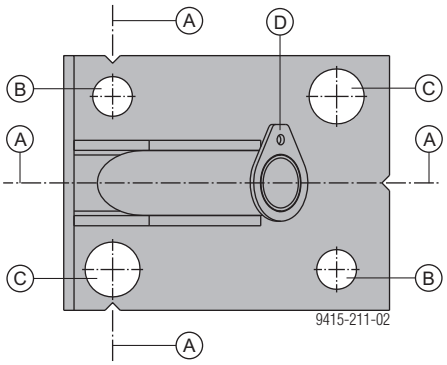
Is used for preparing an anchoring point at a 45° angle.

Art.n° 580514000



Positioning

➤ Align the notches of the testing truss to the guide-lines **(A)** .

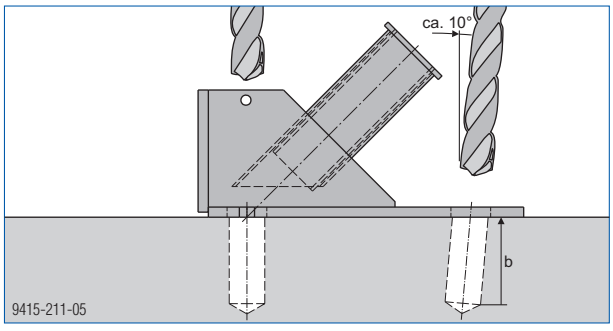


A	Guide-lines for the desired anchor position
B	Holes drilled for the pegging-tubes, when a Rock anchor 15.0 is to be used (drill bit diam. 37 mm)
C	Holes drilled for the pegging-tubes, when a Rock anchor 20.0 is to be used (drill-bit diameter as specified by the manufacturers, DSI or SAH)
D	Adapter tube for Rock anchor 15.0

Fixing the testing truss

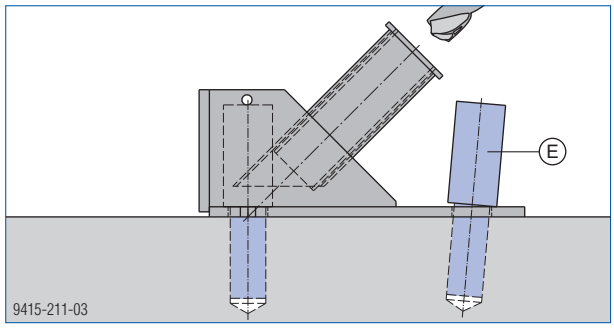
Variant 1: using pegging-tubes

➤ Drill 2 holes, diagonally opposite one another, for the dimension of rock-anchor that is going to be used.



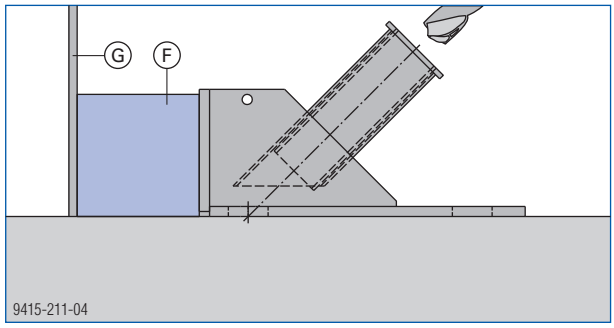
b ... Depth of drilled hole min. 5 cm

➤ Push in the pegging-tubes **(E)** and drill the hole in the diagonal.

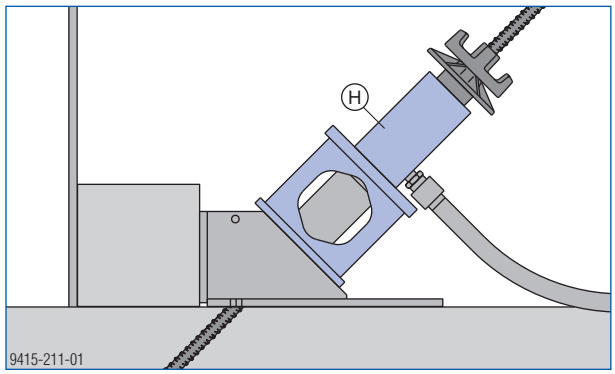


Variant 2: using a squared timber spacer

➤ Use a site-provided squared timber **(F)** as a spacer between the reinforcement **(G)** and the testing truss. Then drill the hole in the diagonal.



➤ The testing truss is now finally positioned. The procedure from now on is the same as for installing the Rock anchor spreader unit 20.0.



H	Hollow-piston cylinder with pressure support