

PRODUCT MANUAL



ABUS Suspended Rail System

Installing the cantilever support



AT A GLANCE:

The cantilever support: page 6

Installation overview: page 9

Overview of tightening torques: page 17

Dowel Protocol: Page 18

AN 120305EN000
2026-01-27

Original Operating Instructions

ABUS

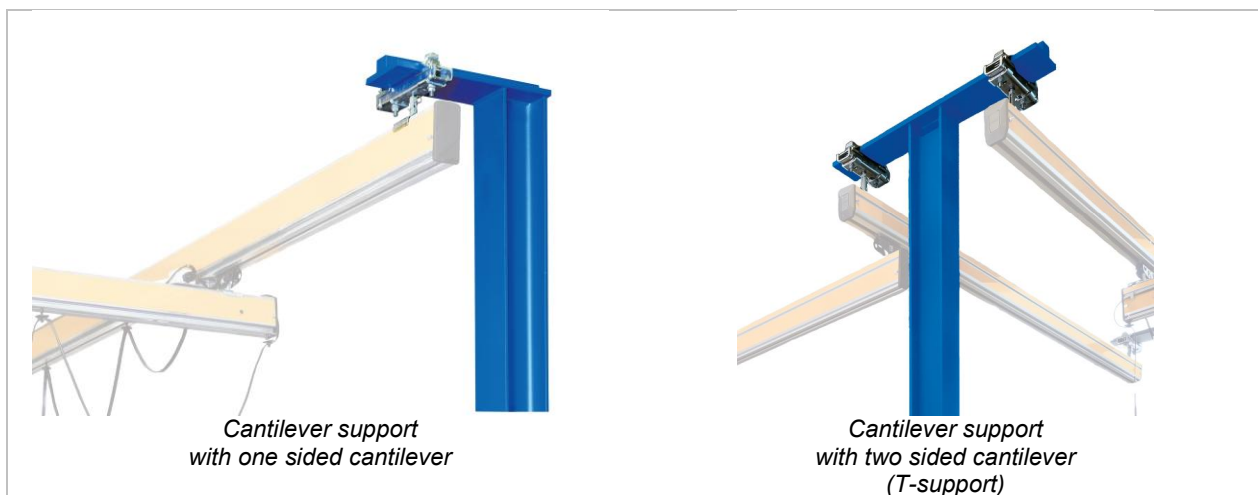
CANTILEVER SUPPORT: DIFFERENT DESIGNS

This product manual applies to the cantilever support in various types/designs. The work steps described and the technical data will vary according to the design or version of the cantilever support. The areas of this product manual which do not apply to all cantilever supports, but are applicable only under certain conditions, are enclosed in a dashed box. The design or version to which the section applies is specified at the start of the box.

If a work step is described in a dashed box:

- ➔ At the start of the dashed box text, read the design or version to which the box applies.
 - ➔ Note the page and turn to this first page.
 - ➔ Based on the images, determine which design or version applies.
 - ➔ Turn back to the page with the associated dashed box for the next work steps.
-
- ➔ The design or version that applies can also be determined by consulting the scope of delivery or the planning documents.

DESIGN (VERSION)



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GENERAL INFORMATION

THIS SECTION APPLIES TO ANYONE WHO LIFTS LOADS USING THE CRANE, PERFORMS WORK ON THE CRANE, OR WORKS NEARBY.

AT THE START

USING THIS PRODUCT MANUAL

The following symbols are used in this product manual:



DANGER TO PERSONS!

This warning notice indicates hazards for persons.



DANGER FROM ELECTRIC SHOCK!

This warning notice indicates hazards for persons due to incorrect handling of the electrical system and electricity.



DANGER DUE TO FALLING LOAD

This warning notice describes hazardous situations that can lead to a load drop.



NOTICE OF POSSIBLE DAMAGE!

This notice describes situations in which a component could be damaged.



This is an instruction regarding an action and prompts you to perform a work step.

- This is the result of an action and describes what happens on the device.
- This is a list.

ONLY WITH...

A section that appears in a box framed by a dashed line is only applicable for certain types, versions or options. The condition to which the section applies is specified at the beginning in the heading "Only with...".

INSTRUCTIONS FOR THE PRODUCT MANUAL

Read the product manual through carefully before starting work. Also be sure to observe additional product manuals for accessories and components.

Afterwards, keep the product manual available in the vicinity of the crane. It must be accessible to all who work with or on the crane.

If the crane is sold on or hired out, always provide the product manual together with the crane.

PROPER USE

The cantilever support serves as the superstructure for an ABUS suspended rail system and safely transfers the resulting loads from the operation of the crane installation into the structure or building. The cantilever support must only be operated with crane installations that are statically designed for the loads of the superstructure. Deviations from this or changes in use must be checked statically and require separate approval.

REGULATIONS

The installation has been built and tested according to European standards, rules and regulations applicable at the time of its manufacture. The conventions applied during design and construction are specified in the Declaration of Conformity or the Declaration of Incorporation. The conventions must also be observed for installation, operation, inspection and maintenance, as must the applicable occupational health and safety regulations.



DANGER TO PERSONS!

Non-observance of the regulations can result in the death of persons or serious accidents.

To ensure that the work can be performed safely, thorough instruction in regard to this product manual and the regulations is necessary.

Which provision applies in individual cases will greatly depend on the crane's use and the national regulations. Review and observe all applicable and current regulations, including the occupational health and safety regulations. Refer also to the Declaration of Conformity or Declaration of Incorporation.

WARRANTY

- ABUS assumes no liability for damages that were caused by improper use, inadequately trained personnel, incorrect performance of work, nor for any changes, reconstruction or other modification of the crane or crane components which were not approved by ABUS.
- Any warranty claim becomes invalid if components were modified without consent, the crane or crane components were installed, used or serviced in any way other than that described in this product manual, or if parts other than original ABUS replacement parts were used.
- Safe operation of the crane or crane components is only guaranteed if original ABUS replacement parts are used.

TRANSPORTING THE CANTILEVER SUPPORT ON A LORRY



DANGER FROM FALLING COMPONENTS!

The crane can fall from the lorry and kill or injure people if it is not correctly loaded and secured. Crane transportation and load securing should only be carried out by trained persons.

Observe the following points amongst others:

- ➔ Secure the load according to regional regulations.
- ➔ Cover unpainted surfaces and openings with film and secure with adhesive tape.

DISPOSING OF THE CANTILEVER SUPPORT

If the cantilever support must be disposed of:

- ➔ Dismantle the cantilever support as far as is possible.
- ➔ Observe local regulations concerning disposal and recycling.
- ➔ Dispose of the individual parts sorted by material in an environmentally sound manner.
- Parts of the cantilever support that have been repainted must be disposed of in accordance with the paint manufacturer's specifications.

THE CANTILEVER SUPPORT

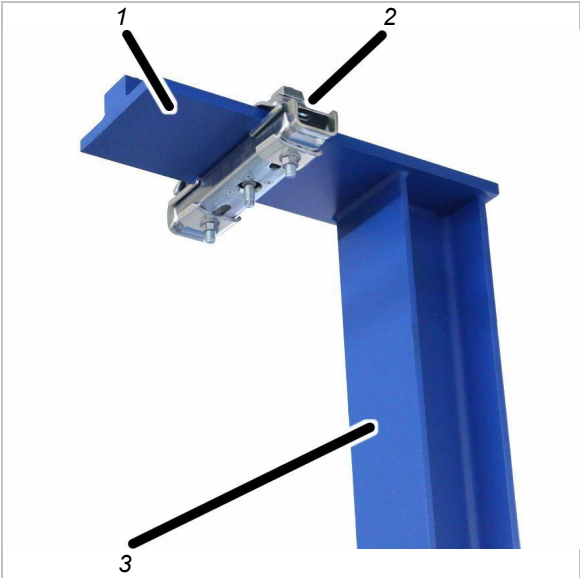
DESCRIPTION OF THE DEVICE

Cantilever support overall view:



- 1: Cantilever support

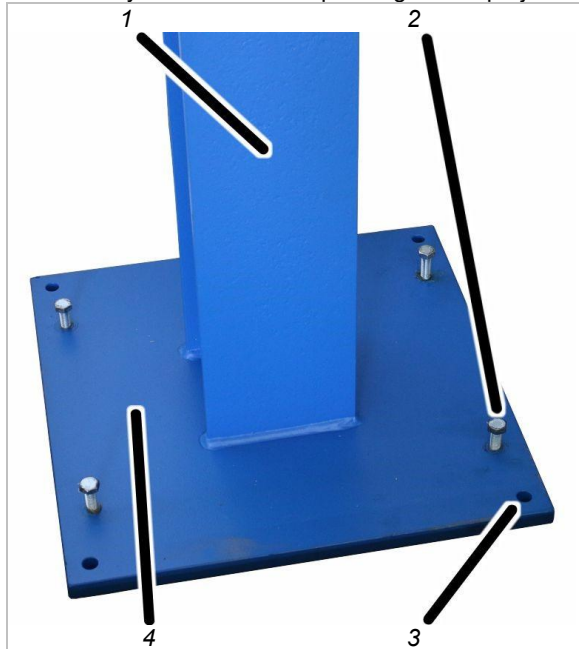
Detailed view of cantilever and cantilever support



- 1: Cantilever
- 2: Ceiling-mounted bracket with flange clamp
- 3: Support

Detailed view of dowel plate and cantilever support:

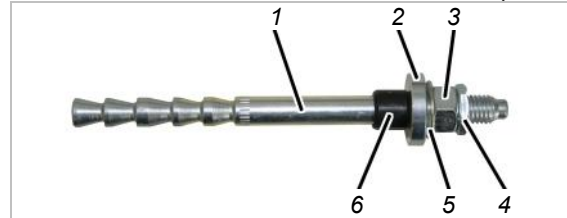
The dowel plate has either 8 or 10 holes and is anchored by 4 or 6 dowels depending on the project.



- 1: Support
- 2: Set-screw
- 3: Drilled hole for dowel
- 4: Dowel plate

Dowel:

Four or six of these dowels are combined in a packet.



- 1: Anchor rod
- 2: Ball socket
- 3: Hexagonal nut
- 4: Lock nut
- 5: Spherical washer
- 6: Clamping bush

PERFORMANCE FEATURES

The cantilever support:

- The cantilever support consists of the dowel plate and support with the cantilever.
- The support is an I-beam welded vertically onto the dowel plate.
- The dowel plate is anchored in the building floor with dowels.

The cantilever support with one sided cantilever (version):

- The cantilever support has a one sided cantilever on which a ceiling-mounted bracket is fitted using a flange clamp, allowing an HB crane runway to be attached to it.

The cantilever support with two sided cantilever (T-support) (version):

- The cantilever support has a two sided cantilever on which a flange clamp is fitted on each of the two sides, allowing an HB crane runway to be attached to each side.

TECHNICAL DATA

The technical data for this cantilever support is always project-specific and is included in the corresponding planning documents. The cantilever supports are manufactured in individual overall heights.

INSTALLING AND CONNECTING

THIS SECTION APPLIES TO ANYONE WHO WORKS ON THE CRANE PRIOR TO ITS USE

The end user of the crane is responsible for the proper qualifications of the commissioning personnel.



DANGER TO PERSONS!

Persons can be injured if the crane is incorrectly put into operation.

If personnel belonging to companies other than ABUS are employed to perform the crane commissioning, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed commissioning work done by unqualified personnel.

ABUS recommends having the commissioning work performed by the ABUS assembly team.

- Persons with basic knowledge of general dowel technology, their mode of operation and conditions of use.
- Persons with experience in anchoring and the assembly of dynamic loads in accordance with approvals.
- Persons with proof of training from dowel manufacturers of the corresponding dowels.

CHECKING THE REQUIREMENTS

The following requirements must be met in order for the cantilever support to be installed.

- The base plate must be from normal concrete with reinforcement. The quality should be at least B25 (C20/25) and a maximum of B55 (C50/60).
- The base plate must be adequate for the expected loads of the cantilever support. There must be a structural verification for this, which must be presented to the relevant specialist personnel during the acceptance phase, before initial commissioning.
- The base plate must be at least as thick as is specified in the table. The minimum clearance of the drilled holes to joints and edges must be observed.

Highbond dynamic anchors	Minimum thickness of base plate	Minimum clearance to joints and edges
M12	150 mm	150 mm
M16	180 mm	200 mm

- The base plate must be single-layered and is not permitted to have any other layers (screed, tiles, etc.).

If there is an additional layer:



Remove the coating in dowel plate area and 100 mm around the dowel plate.

CHECK TECHNICAL APPROVAL FOR PROJECT PROCESSING

Technical approval for project processing must be granted on-site. The following points must be observed for approval:

- It must be ensured that the on-site supporting structure is able to withstand the forces from crane operation. See building statistics on the transmission of forces.
The load effects and relevant loads for the crane installation are provided by ABUS.
- The position of the drilled holes must be checked and approved on-site.
- The dowel fixing must be approved on-site.

INSTALLATION OVERVIEW

The following sections describe the installation of the cantilever support.

- First, the preparations for installation are made. See page 10.
- Then the holes are drilled. See page 11.
- Then the dowels are fitted using injection mortar. See page 12.
- After that the dowel plate is grouted. See page 14.
- The dowel plate is then screwed into place permanently. See page 16.
- Then the hexagonal nuts are secured and sealed. See page 16.
- Finally, one ceiling-mounted bracket is fitted on a cantilever support with a one sided cantilever and two ceiling-mounted brackets are fitted on a cantilever support with a two sided cantilever. See page 17.

PREPARING FOR THE INSTALLATION

- ➔ Determine the location to secure the cantilever support and thoroughly clean the concrete surface of the floor of the building in this area of dirt, dust etc.

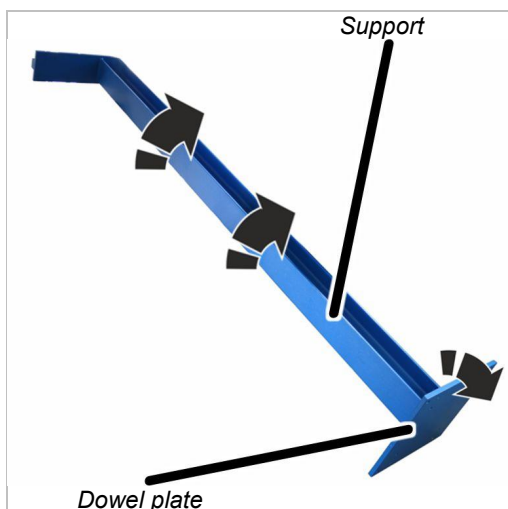
ERECTING THE CANTILEVER SUPPORT



DANGER TO PERSONS IF THE CANTILEVER SUPPORT FALLS OVER!

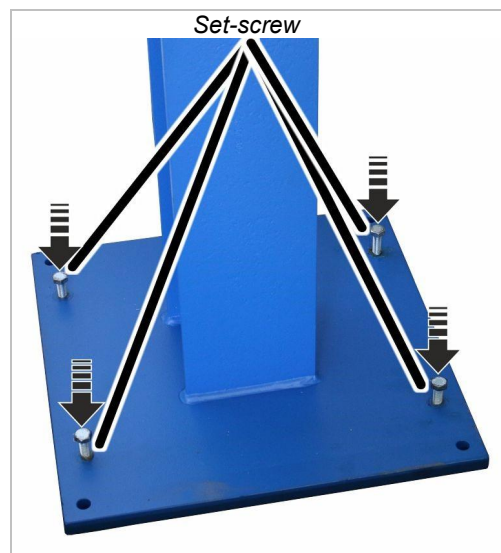
If the cantilever support is not adequately secured, it can fall over and kill or injure people. In particular, further assembly could cause the cantilever support to fall over.

After erecting, secure the cantilever support to prevent it from falling over!

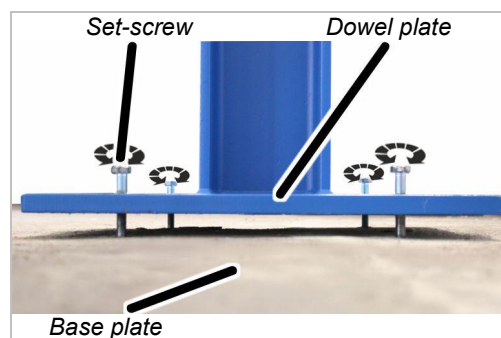


- ➔ Erect the cantilever support and secure against falling over.

ALIGNING THE CANTILEVER SUPPORT



- ➔ Screw the set-screws M12x70 (4x or 6x) hand-tight into the dowel plate.



- ➔ Fit the spirit level on the support.
- ➔ Align the cantilever support perpendicularly using the set-screws (4x or 6x).
The gap between the dowel plate and base plate must conform to the specifications in the planning documents.

DRILLING THE HOLES

DRILLING THE HOLES IN THE BASE PLATE

The aligned dowel plate is used as a template for the drilled holes.

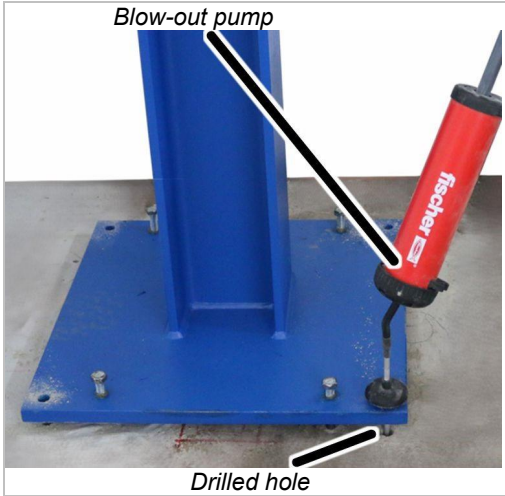


- Clamp the hard metal wall drill with the correct bore in the hammer drill.

Dowel	Drilled hole diameter d
M12	14 mm
M16	18 mm

- Observe the depth of the drilled hole and hold the hammer drill so that it is exactly vertical, see planning documents.

CLEANING THE DRILLED HOLES



- Blow out all drilled holes twice, working from the drilled hole base using a blow-out pump or oil-free compressed air, and vacuum up the drill dust produced.



- Brush out all drilled holes twice with the drilled hole brush.

- Blow out the drilled holes and suction out the drill dust twice more.
- Suction out the gap between dowel plate and base plate. No drill dust may get into the drilled holes.

CHECKING THE DRILLED HOLE DEPTH

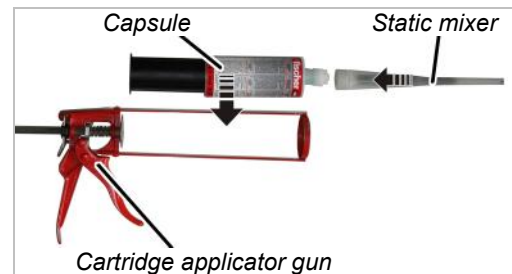
- ➔ To test the holes, insert the dowels completely into the drilled holes. The lower edge of the ball socket must rest on the dowel plate.

If a drilled hole is not deep enough:

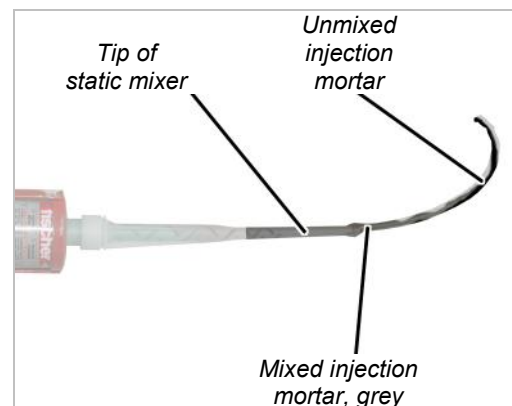
- ➔ Re-drill and clean the hole as previously described.

FITTING THE DOWEL USING INJECTION MORTAR

PREPARING THE CAPSULE



- ➔ Unscrew the capsule seal.
- ➔ Screw on the static mixer.
- ➔ Place the capsule in the pressure gun.



- ➔ Press injection mortar out of the capsule until the injection mortar emerging has been uniformly mixed and is clearly grey in colour. Do not use injection mortar that is not grey in colour.

- In the event of interruptions (e.g. between two dowel fittings), do not unscrew the static mixer from the capsule.
- After each interruption, squeeze out two gun strokes of unused injection mortar and do not use.
- After longer breaks, screw on a new static mixer and again squeeze out the injection mortar for as long as is needed until the discharged injection mortar is clearly grey in colour.
- Injection mortar which is not grey is not mixed correctly and will not set. Do not use any injection mortar which is not grey coloured!
- Setting time of the injection mortar:

Temperature of the capsule	Setting time [min]
+ 5°C	15 min
+ 20°C	6 min
+ 30°C	4 min

FILLING THE DRILLED HOLE WITH INJECTION MORTAR

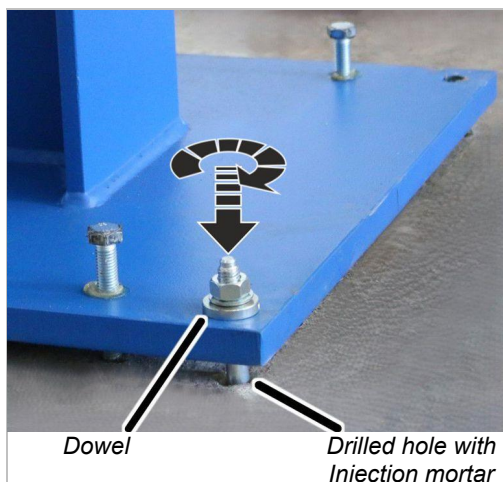


- Read off the necessary quantity of injection mortar from the table. From the base of the drilled hole (through the dowel plate), fill the drilled hole with injection mortar without any bubbles. Read off the quantity used to fill the hole from the scale on the capsule.

Drilled hole	Quantity of injection mortar required
M12	At least 8 scale units
M16	At least 10 scale units

- Continue immediately with the next work step (see "Pressing the dowel in"). Otherwise the injection mortar will harden and become unusable.

PRESSING THE DOWEL IN



- ➔ Rotate the dowel slightly and while doing so, press it through the dowel plate into the drilled hole. Press the anchor rod so far in that the lower edge of the ball socket touches the dowel plate.
- In the process, some injection mortar will emerge from the drilled hole.

If no injection mortar comes out of the drilled hole:

- ➔ Pull the anchor rod immediately out of the drilled hole.
- ➔ Fill up the drilled hole with additional injection mortar.
- ➔ Insert the anchor rod again as described.

FITTING ALL THE OTHER DOWELS

- ➔ Use the same procedure to fill all the other drilled holes and install the dowels.
- ➔ Allow the injection mortar to harden.

Temperature in base plate	Hardening time [min]
- 5°C to 0 °C	360 min
0°C to + 5 °C	180 min
+ 5°C to + 10°C	90 min
+ 10°C to + 20°C	35 min
+ 20°C to + 30°C	20 min
+ 30°C to + 40°C	12 min

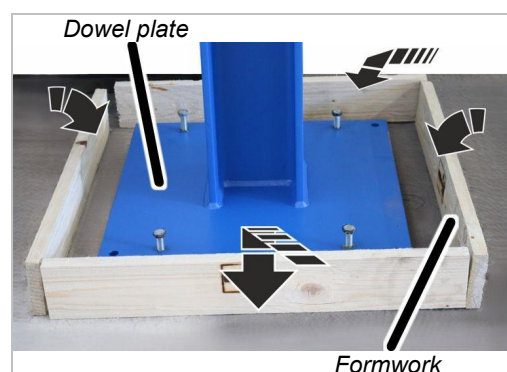
*Table: hardening times for a dry base plate.
Double the times for damp or wet concrete.*

GROUTING THE DOWEL PLATE

PREPARING THE FORMWORK

Tip:

To fully distribute the quick-drying mortar under the dowel plate, a chain can be placed over the entire width under the dowel plate, for example, and be used to move the quick-drying mortar under the dowel plate. Pull the chain out of the quick-drying mortar before it begins to set.



- ➔ Lay the supplied formwork around the dowel plate spaced about 2 cm apart and screw the formwork boards together.
- ➔ Carefully fix the formwork to the floor of building using fabric adhesive tape.

MIXING THE QUICK-DRYING MORTAR

- ➔ Only use Pagel quick-drying mortar V2/20.
- ➔ Read off the quantity of quick-drying mortar from the table and mix this amount.

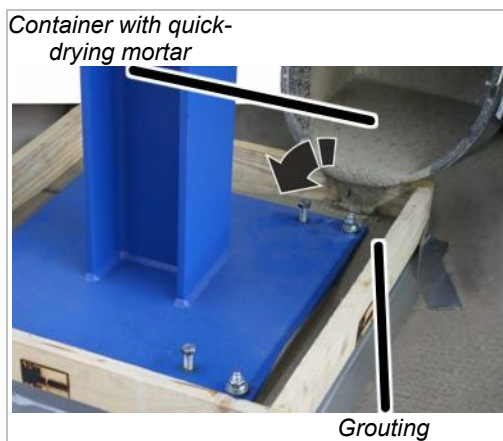
See details on the packaging of the quick-drying mortar.

Ø Dowel plate [mm]	Gap between dowel plate and base plate [mm]	Grout volume [litres]	Dry mortar mass [kg]
500 x 500	20	4.6	9.2
550 x 550	20	5.5	11
650 x 650	20	7.5	15
700 x 700	20	8.7	17.4

POURING OUT QUICK-DRYING MORTAR

Tip:

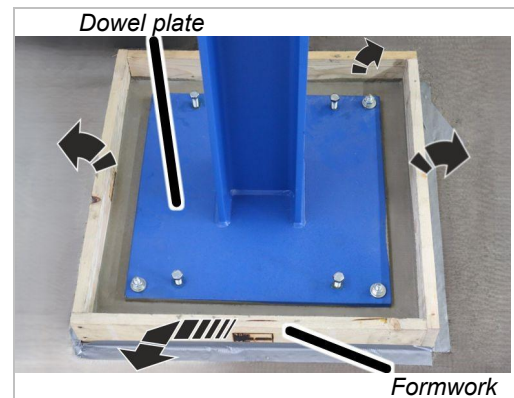
To pour out the quick-drying mortar as precisely as possible, a piece of cardboard, for example, can be used as a guiding aid. Using adhesive tape, secure one side of the cardboard on the edge of the base plate and the other side on the support. Pour the quick-drying mortar against the cardboard such that it runs down the sloping surface.



- ➔ Pour the quick-drying mortar into the formwork from all sides. The dowel plate must be completely grouted. Fill in as much quick-drying mortar as required for the dowel plate to be about 1 cm deep in the mortar.
- ➔ Remove any residue of the quick-drying mortar from the dowel plate and clean spots with water.

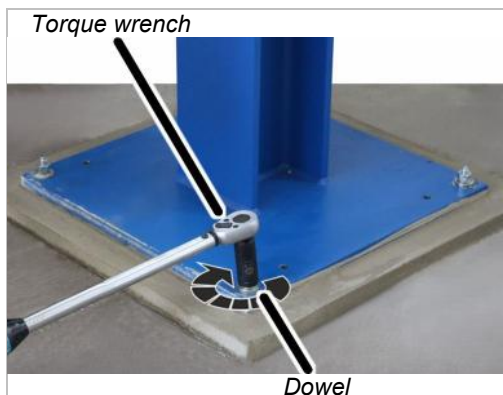
REMOVE THE FORMWORK AND SET-SCREWS.

Once the quick-drying mortar has hardened sufficiently (after around 2 hours):



- ➔ Remove the formwork and fabric adhesive tape.
- ➔ Unscrew all four or six set-screws from the dowel plate.
- ➔ Press the thread protection caps into the threaded holes of the set-screws (4x or 6x).

FASTENING THE DOWEL PLATE



- ➔ Tighten all hexagonal nuts with the correct torque.

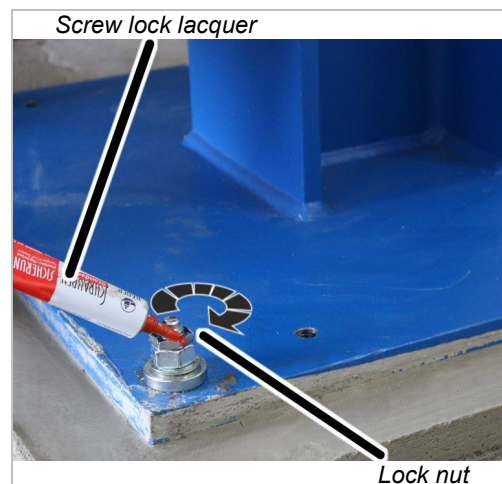
Type and size	Tightening torque
Anchor rod M12	40 Nm
Anchor rod M16	60 Nm

If the hexagonal nuts cannot be tightened with the necessary tightening torque (e.g. because the anchor rod turns with them), the anchor rod is not fitted correctly.

In this case:

- Do not continue installing the cantilever support.
- Call ABUS for further instructions.

SECURING AND SEALING THE HEXAGONAL NUTS



- ➔ Screw the lock nuts to the anchor rods. Screw until hand-tight.
- ➔ Seal the hexagonal nuts, lock nuts and anchor rods with screw lock lacquer.

RECORDING THE INSTALLATION

- ➔ Glue or attach the labels with approval number, conformity symbol, batch number and EAN code of the anchor rods in the dowel protocol (see page 18).
- ➔ Complete the dowel protocol and staple this product manual with the dowel protocol to the crane test log book.

INSTALLING THE CEILING-MOUNTED BRACKET

ONLY FOR A CANTILEVER SUPPORT WITH ONE SIDED CANTILEVER

On cantilever supports with one sided cantilever one ceiling-mounted bracket is secured in each case on the lower flange of the cantilever with flange clamps. An HB crane runway can be suspended from the ceiling-mounted brackets.

-  The installation of the ceiling-mounted bracket 2LP/M16 on an I-beam is described in the product manual "Installing the HB crane runway".
-  The installation of the ceiling-mounted bracket 4LP/M20 on an I-beam is described in the product manual "Installing the ceiling-mounted bracket 4LP/M20 and craneway suspension M20".

ONLY ON CANTILEVER SUPPORT WITH TWO-SIDED CANTILEVER (T SUPPORT)

On cantilever supports with two sided cantilever two ceiling-mounted brackets are secured in each case on the lower flange of the cantilever with flange clamps. Two HB crane runways can be suspended from the ceiling-mounted brackets.

-  The installation of the ceiling-mounted bracket 2LP/M16 on an I-beam is described in the product manual "Installing the HB crane runway".
-  The installation of the ceiling-mounted bracket 4LP/M20 on an I-beam is described in the product manual "Installing the ceiling-mounted bracket 4LP/M20 and craneway suspension M20".

OVERVIEW OF TIGHTENING TORQUES

DOWEL



Hexagonal nut	Tightening torque
M12	40 Nm
M16	60 Nm

Table: If the hexagonal nuts cannot be tightened with the necessary tightening torque (e.g. because the anchor rod turns with them), the anchor rod is not fitted correctly.

DOWEL PROTOCOL

Order number

Building project

Installation company

	Target specifications Fischer anchor rod M12	Target specifications Fischer anchor rod M16	
Dowels used	FHB dyn M12x100/50	FHB dyn M16x125/50	☐ Description agrees
Injection mortar used	FIS HB 150 C	FIS HB 150 C	☐ Description agrees
Number of mounted dowels	4 or 6	4 or 6	_____ pieces
Concrete strength according to DIN 1045 / DIN 1045-1 / EC2	≥ B25 ≥ C20/25	≥ B25 ≥ C20/25	According to customer specifications B _____ C _____
Load-bearing thickness of the base plate	150 mm	180 mm	According to customer specifications _____ mm
Drilled hole depth h	Refer to the planning documents	Refer to the planning documents	_____ mm
Drilled hole nominal diameter d	14 mm	18 mm	_____ mm
Drill cutting diameter	14 mm	18 mm	_____ mm
The hammer drill used bears the test symbol issued by the German test association for masonry drills (e.V. Remscheid)			☐ yes
Cleaning the drilled holes	Blow out x Brush out x Blow out x	Blow out x Brush out x Blow out x	____ blown out ____ brushed out ____ blown out
Temperature in the anchor base	-5 °C to 40 °C	-5 °C to 40 °C	_____ °C
Distance from drilled holes to edge or joints of concrete component	150 mm	200 mm	_____ mm
Tightening torque	40 Nm	60 Nm	_____ mm
Were the hexagonal nuts tightened with a tested and calibrated torque wrench?			☐ yes
Are all the hexagonal nuts secured with lock nuts?			☐ yes
Are all the dowels sealed with screw lock lacquer?			☐ yes
Was the dowel installation carried out properly according to this product manual and this protocol completed in full?			☐ yes

Place

Date

Name in block letters

Signature

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