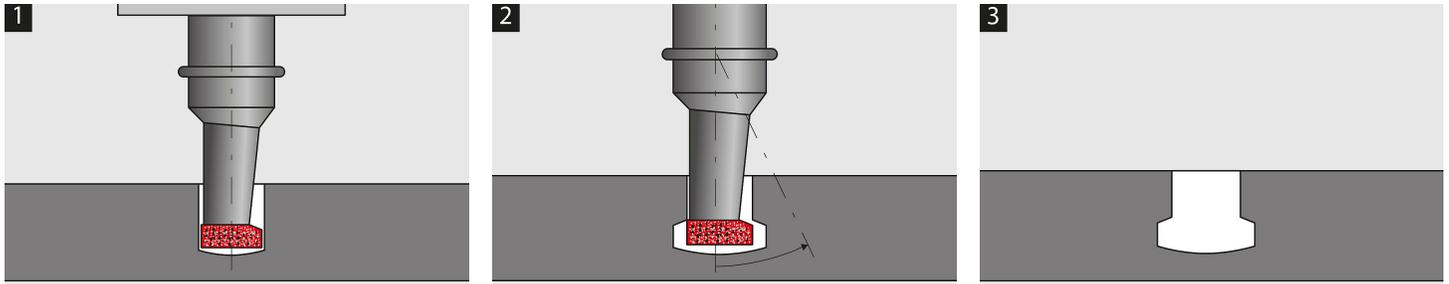


## Installation Instructions:

### Drilling and Undercutting



Façade panels must be provided with undercut drill holes on the back side. These holes must be drilled with KEIL system tools under workshop conditions.

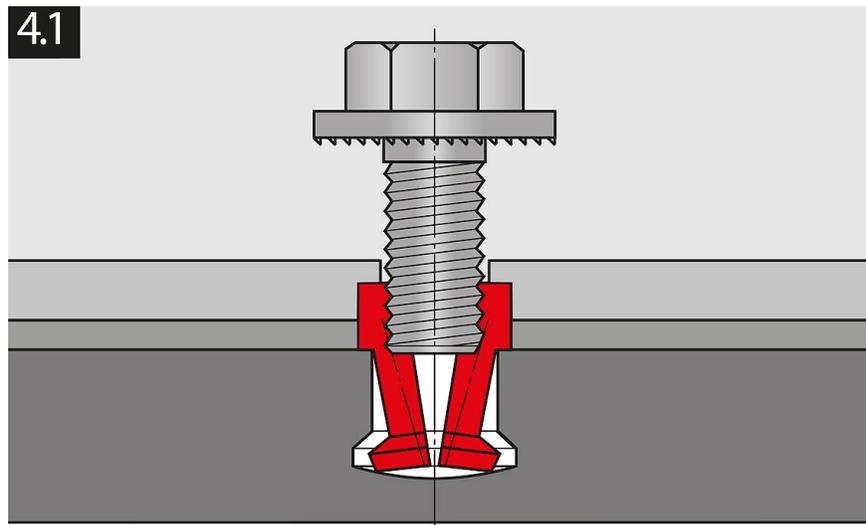
The KEIL system tool consists of the KEIL façade drill bit, the KEIL drill head and the undercut drilling machine (e.g. KEIL portable drilling machine, KEIL drilling table or automated drilling machine with KEIL chuck).

The undercut drilling is carried out in one single step (**Illustration 1. Cylindrical Drilling and Illustration 2. Undercut**).

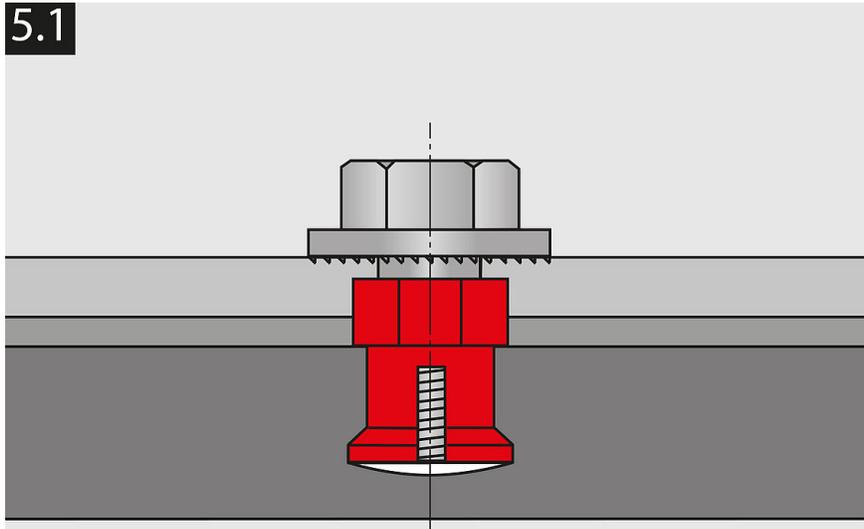
The undercut anchor can only be assembled correctly if there is a precise undercut drill hole (**Illustration 3**). The KEIL depth control guide, which matches the insertion depth of the anchor, will periodically monitor the geometry of the drill hole. The insertion depth HS is set by this depth control guide and all major measurements of the drill hole can be monitored efficiently.

Variant 1 (type AA):

Anchor sleeves and bolt with locking ratchets (screw) for defined clamping thicknesses, e.g. brackets.



5.1



The undercut anchor consists of an anchor sleeve with a matching hex screw.

The drill hole, the anchor sleeve and the thread length of the screw must be tailored to the desired insertion depth  $h_S$  of the undercut anchor and the bracket of choice. Only the use of matching parts will guarantee a quick, simple and safe assembly.

**Assembly process:**

1. Insert the bolt into the anchor sleeve, together with the required bracket, into the undercut hole (**Illustration 4.1**).
2. Screw the bolt in, exerting gentle pressure on the bracket, in order to fix the anchor in place (**Illustration 5.1**). The locking ratchets of the bolt will cut into the bracket, securing the bolt

For this type of installation, the bracket and the KEIL undercut anchor will form a solid unit.

The anchor sleeve is expanded to its original dimensions by inserting the bolt to a controlled depth, making it fit snugly against the undercut area of the drill hole. After the assembly, the anchor will expand in the undercut hole free of expansion pressure (i.e. the bracket can still be rotated with a certain amount of physical effort).

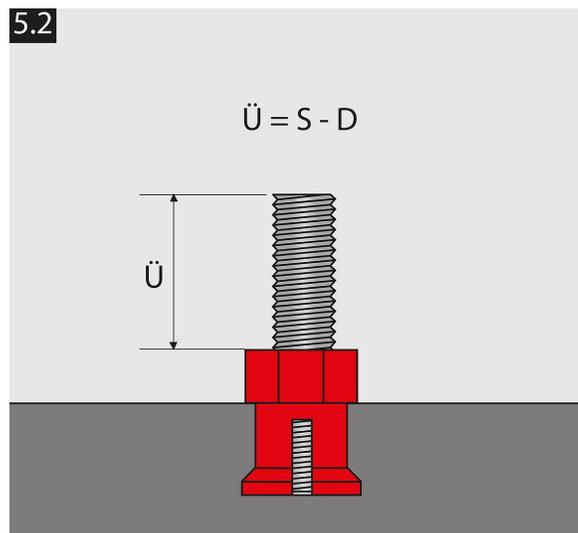
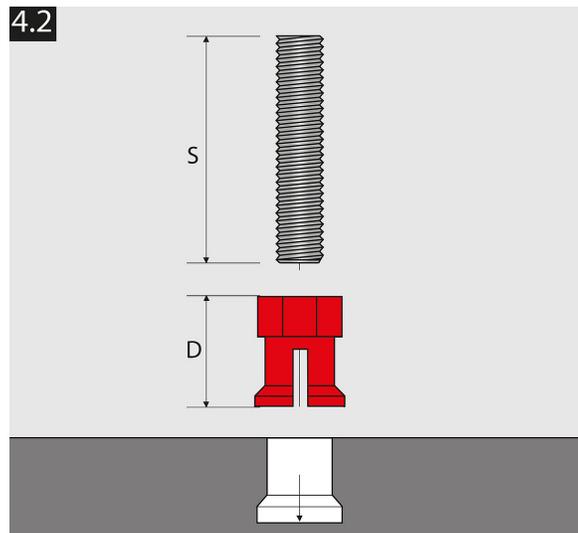
**Note:** If the matching bolt is used for a defined clamping thickness, the screw-in depth will always be correct. The assembly is quick, simple and safe. The exact screw-in depth is determined by the system of the KEIL plug-in bolts in the same way. The bolt must sit flush with the anchor, in the undercut hole.

**Caution:** Before any assembly, please check if the bolt sits flush with the anchor by way of a test assembly.

Variant 2 (type BH/CA):

Anchor sleeves and threaded pins for variable clamping thicknesses





The undercut anchor consists of an anchor sleeve with matching threaded pin.

The drill hole, the anchor sleeve and the threaded pin must be tailored to the desired insertion depth  $h_S$  of the undercut anchor and the bracket of choice. Only the use of matching parts will guarantee a quick, simple and safe assembly.

#### Assembly process:

1. Insert the at the base compressed anchor sleeve into the undercut hole (**Illustration 4.2**).
2. Insert the threaded pin into the screw-in-tool.
3. Hold the anchor sleeve with an open-ended spanner and screw in the threaded pin with the screw-in tool up to the stop – undo the screw-in tool.
4. Control measurement (**Illustration 5.2**).
5. Screw on the bracket with the nut.

The anchor sleeve is expanded to its original dimensions by screwing in the threaded pin to a controlled depth, making it sit snugly against the façade panel in the undercut area of the drill hole. After the assembly, the anchor will sit in the undercut hole free of expansion pressure

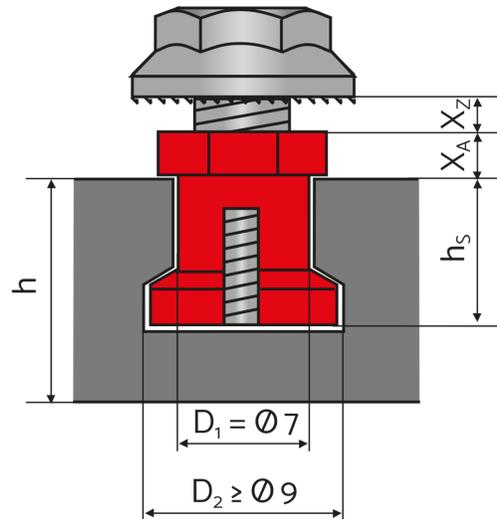
**Note:** The use of the matching assembly tool, the KEIL screw-in tool and attention to the assembly process will guarantee the correct screw-in depth. The correct projection  $\ddot{U}$  will automatically be adhered to.

**Caution:** Before any assembly, please check, if the screwed in part fits flush with the tip of the anchor sleeve and if the matching tool has been inserted by way of a test assembly.

The correct screw-in depth is also determined by the system for KEIL plug-in bolts (anchor type CA).



## Geometry of the drill hole – image



## Legend

- $D_1$  = diameter of drill hole ( $\text{Ø } 7$  mm)
- $D_2$  = diameter of undercut ( $\geq \text{Ø } 9$  mm)
- $h$  = panel thickness (from 6 mm)
- $h_s$  = insertion depth of undercut anchor
- $x_A$  = anchor hex (3 mm)
- $x_Z$  = thickness of bracket (clamping thickness)

## Safety instructions (general)

Faultless performance can only be guaranteed, if all parts of the KEIL undercut system are being used. The controlled expansion of the anchor sleeve necessitates the exact attunement of the length of the screw to the anchor and the bracket by KEIL. The drilling of the undercut holes and the assembly should be carried out under workshop conditions. These can also be created on site. The dimensions of the undercut holes must be monitored according to the applicable regulations. Approvals, norms, regulations and relevant provisions applying for the construction and use must be adhered to. According to the EU construction products regulation declarations of performance for the CE label will be necessary. New ETAs will not contain any information about the use of the approved product any longer. Relevant regulations of use and approvals can be found in our download area (</en/service/download/download/approvals/>)