WINDOW TECHNOLOGY
DOOR TECHNOLOGY
AUTOMATIC ENTRANCE SYSTEMS
BUILDING MANAGEMENT SYSTEMS

4289

GRETSCH-UNITAS GROUP

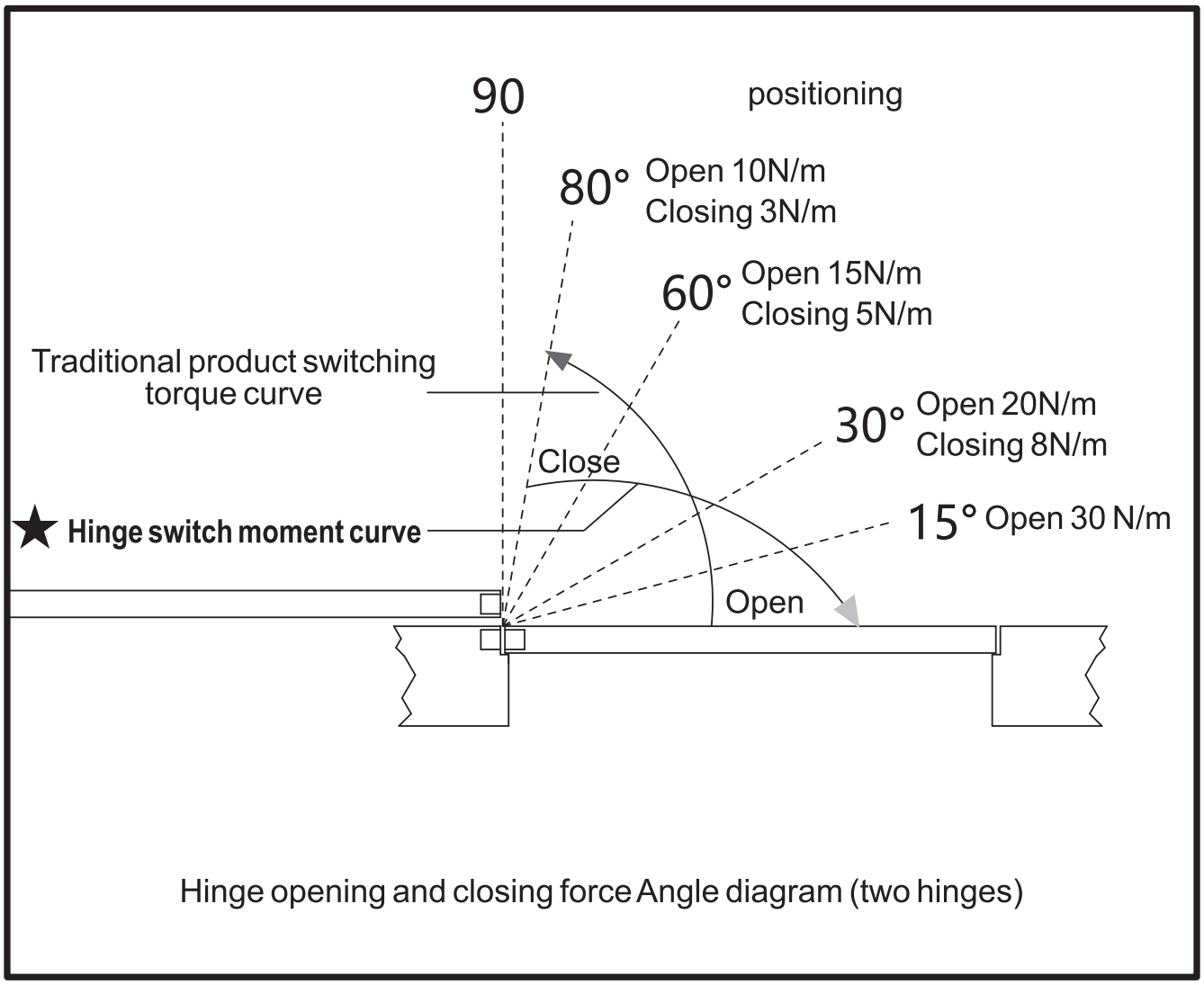
G-U HYDRAULIC CONCEAL HINGES FOR TIMBER DOOR
manuals

Contents

1.1 The design aligns with the standard concealed hinge installation methodology, ensuring consistency with conventional practices.

1.2 The hinge exhibits maximum closing force when in the fully closed position. As the opening angle increases, the applied force is progressively reduced, optimizing operational efficiency.

1.3 Traditional self-closing door mechanisms, such as door closers and hydraulic hinges, experience an increase in both opening and closing forces as the door angle expands. This results in minimal closing force at smaller angles, which is impractical for real-world application. Such design hinder ease of use, making door operation cumbersome and inefficient.

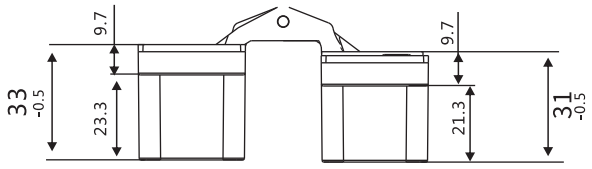


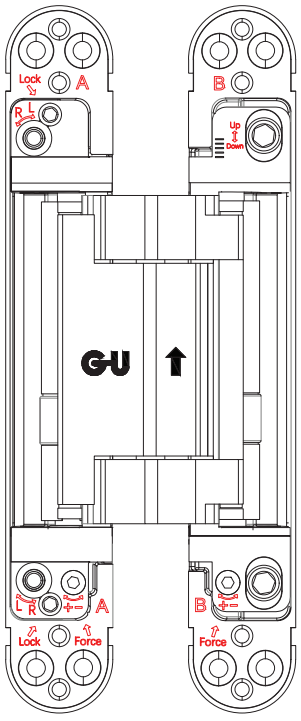
Hinge opening and closing force Angle diagram (two hinges)

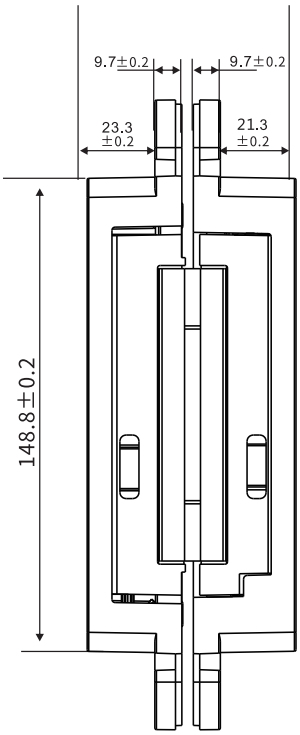
2.1 This product is designed for use in wooden doors with concealed door hinges. The number of hinges required is determined based on the door weight and size to ensure optimal performance and stability.

Door weight	Dimension Height x width	Number of hinges used
≤ 80 kg	≤ 2100 x ≤ 1000 mm	2 hydraulic
≤ 95 kg	≤ 2400 x ≤ 1000 mm	2 hydraulic + 1 dummy
≤ 120 kg	≤ 3000 x ≤ 1100 mm	3 hydraulic + 1 dummy

03 Product Specifications







4.1 The movement Angle of this product is segmented into two fuctional ranges: 0°-80° : Self-closing angle segment, ensuring automatic door closure within this rang. 80° to 180°: Free-stop segment, allowing the door to remain stationary at any position witin this range.

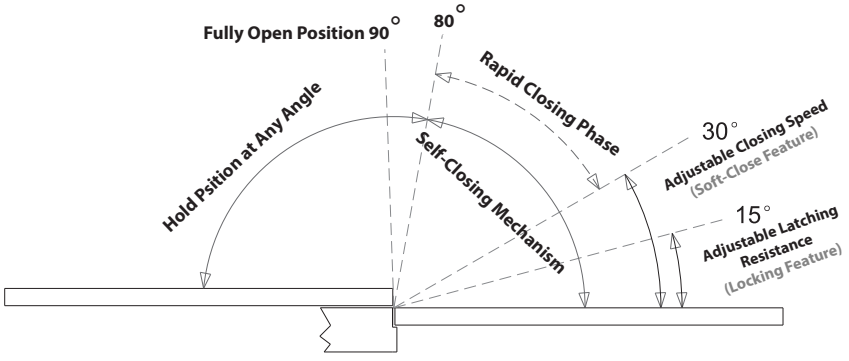
4.2 The door stop positioning feature is integrated at the 90° position, providing a soft and precise hold. This eliminates the need for addition door retention mechanisms, sush as door stoppers or magnets.

4.3 Within the 0° to 80° range, the hinge facilitates automatic closure. Specifically:
80° to 30°: Faster closing segment for effcient door movement.
30° to 15°: Slow closing segment to ensure controlled and quiet operation.
15° to 0°: Pressure release followed by rapid locking for secure closure.

Remark: The closing force is adjustable to accommodate varying user preferences and door weights.

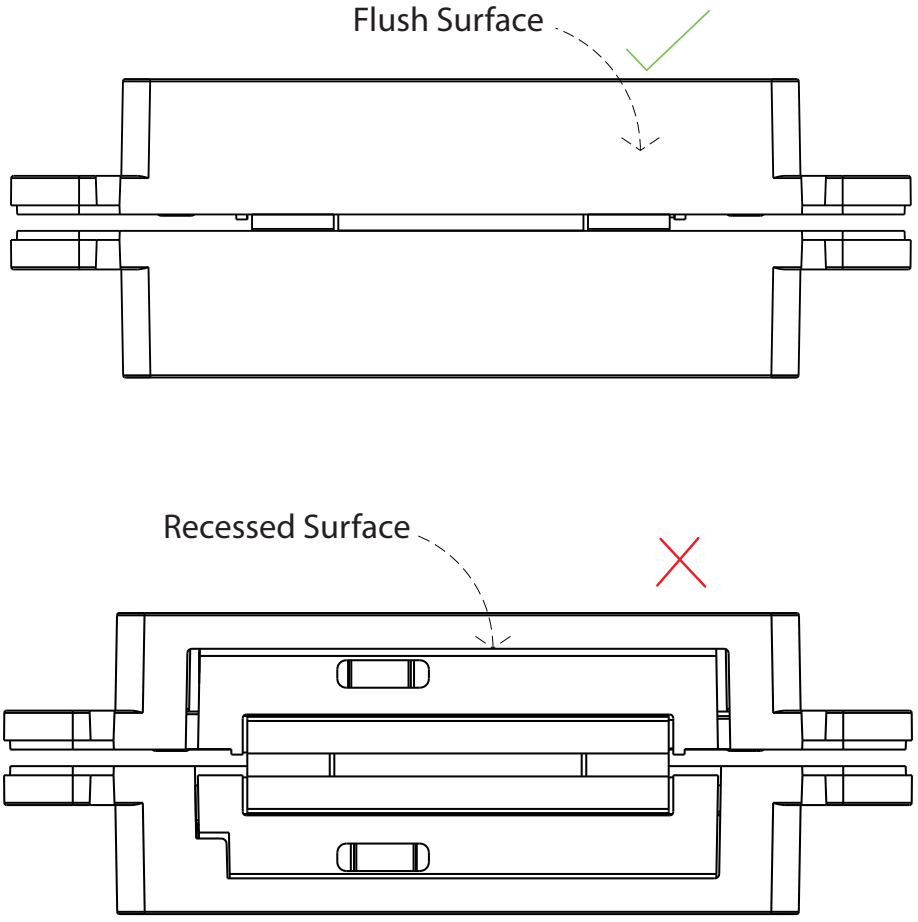
Important Note: Prior to installation, avoid manually closing the hinge to an angle less than the 90° door retention position. Since the hinge is designed to automatically close at angles below 80°, doing so may pose a risk of hand injury.
Exercise caution to ensure safe handing during setup.

Hinge fuction Angle diagram



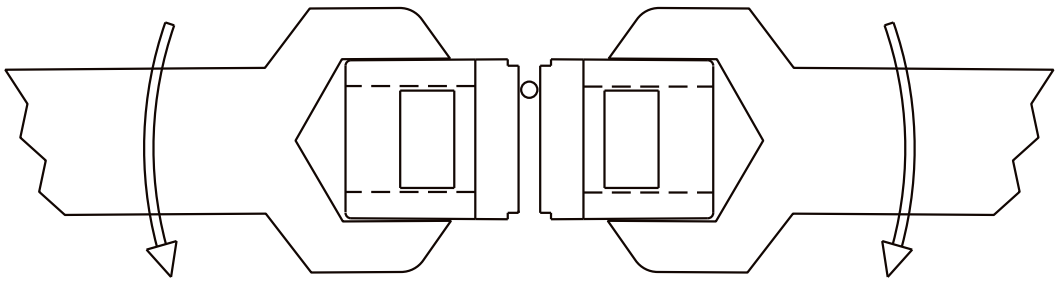
5.1 This product operates in a free-swing mode within the 90°-180° range, ensuring ease of installation, In the event of accidental closure to 0°, an external tool can be used to safely reopen the hinge.

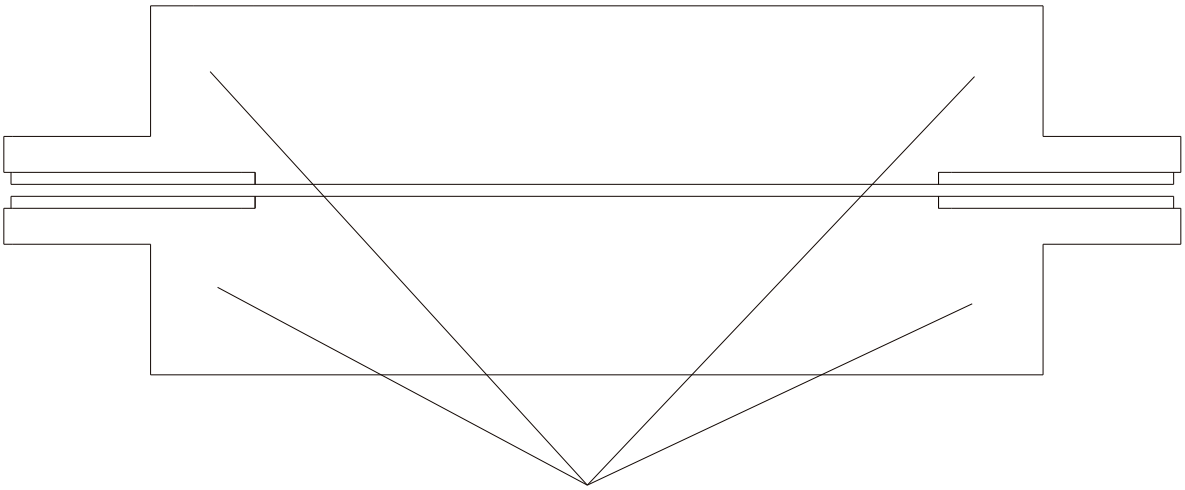
① Once the hinge is fully closed, the two sides of the casing exhibit different profile. One side features a recessed surface, while the oppasite side remains flush.



05 Hinge Opening Instructions

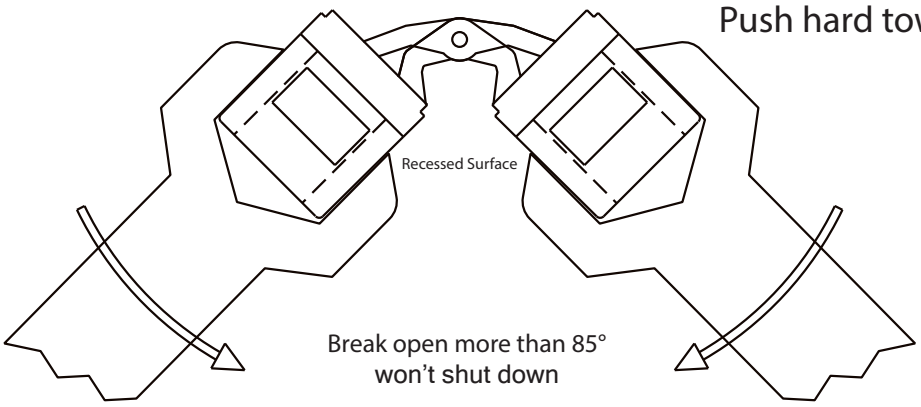
Flush Surface





Wrench clamping position

Push hard toward the notch

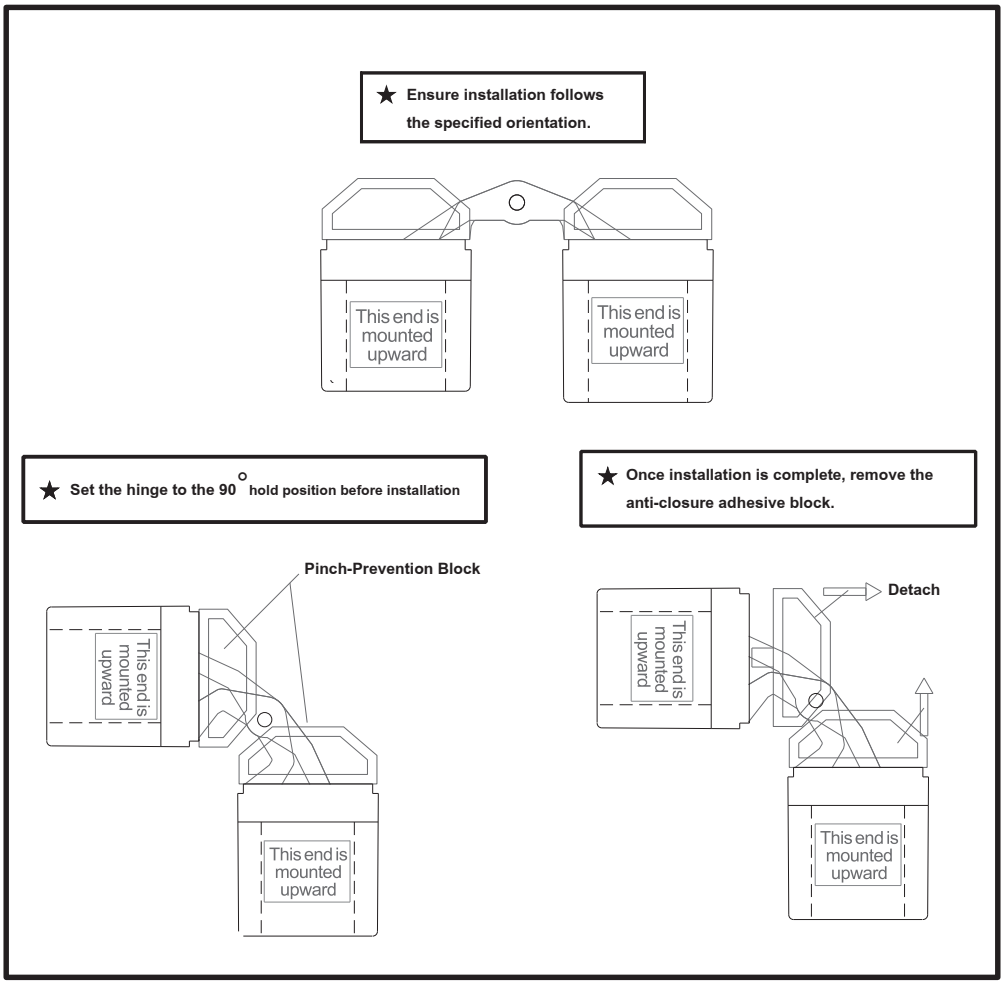


6.1 Install the hinge strictly according to the indicated direction. Incorrect installation may result in unstable hydraulic buffer performance and potential hydraulic oil leakage. To ensure proper functionality, double-check the hinge's orientation before proceeding.

6.2 Adjust the hinge to the 90° door retention position, then align and insert it into the slotted door. Secure the hinge using 5x30 wood thread screws.

6.3 Once the hinge is embedded into the slotted door frame, fasten the opposite side of the hinge body to the door frame using 5x30 wood thread screws, ensuring a secure connection between the door and the frame.

6.4 After completing the hinge installation, remove the anti-pinch block. (Note: Failure to remove the anti-pinch block will prevent the door's self-closing function from operating correctly.)



Hinge selection criteria and installation recommendations

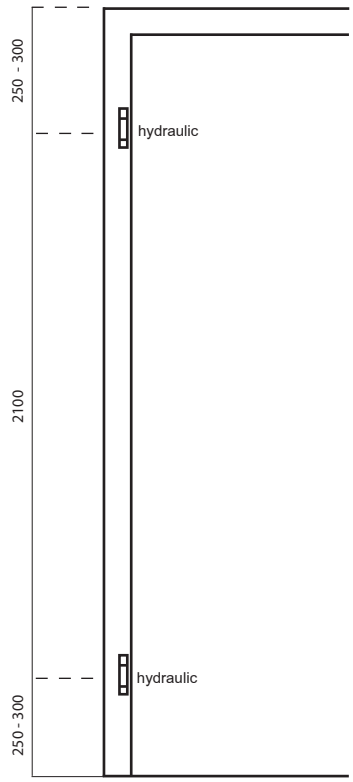
Hinge placement depending on the door size

The selection, quantity and determination of the installation position of the hinges results from the estimated load-bearing capacity of the doors. Due to different influencing factors, the load on the hinge can often be many times more than the door weight.
When selecting the hinge, the following factors must be considered in order to prevent consequential damage:

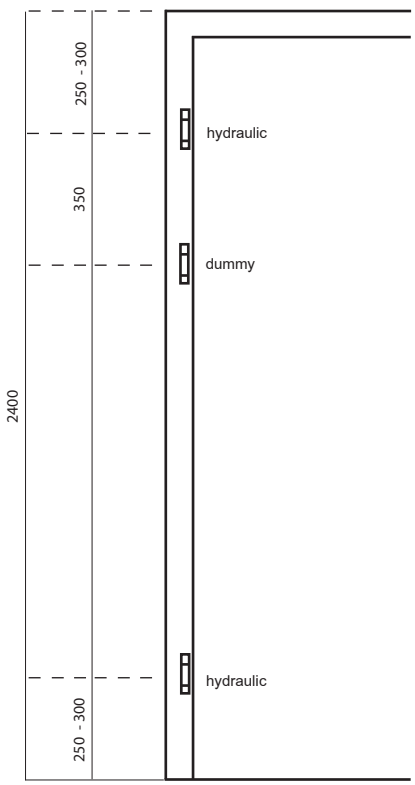
The load specifications of GU entrance door-hinges are based on a maximum door leaf weight, taking into account the mentioned influencing factors and the installation recommendation mentioned below.
Where high demands are made on the door and the hinge, we generally recommend the use of an additional hinge in the upper third, approx. 350 mm below the top hinge.

- Place of installation and associated loads e.g.:
  - Private use (residential building)
  - Public buildings with heavy use
  - Frequent mishandling of the door (school or kindergarten)
- Door leaf size: For door leaf widths > 1000 mm, we recommend the use of an additional hinge in the upper third of the element
- Door opening direction (wind load)
- Door closers or swing-door drives
- Unfavourable wall reveals or doorstops

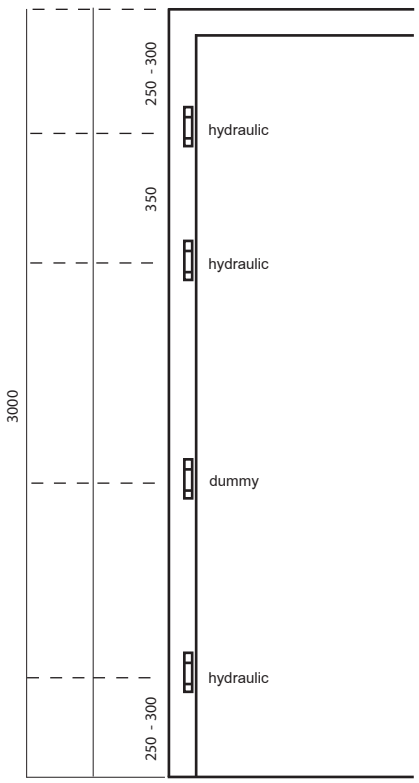
Door weight	Dimension Height x width	Number of hinges used
≤ 80 kg	≤ 2100 x ≤ 1000 mm	2 hydraulic
≤ 95 kg	≤ 2400 x ≤ 1000 mm	2 hydraulic + 1 dummy
≤ 120 kg	≤ 3000 x ≤ 1100 mm	3 hydraulic + 1 dummy



80 kg.



95 kg.

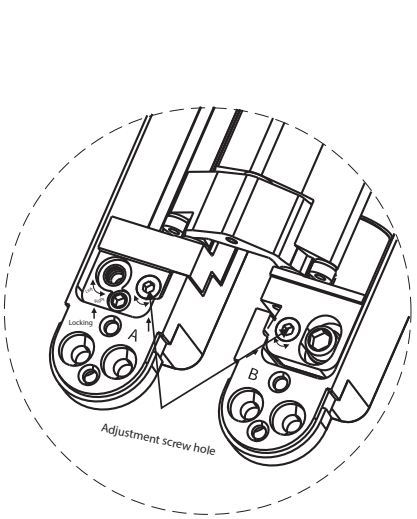


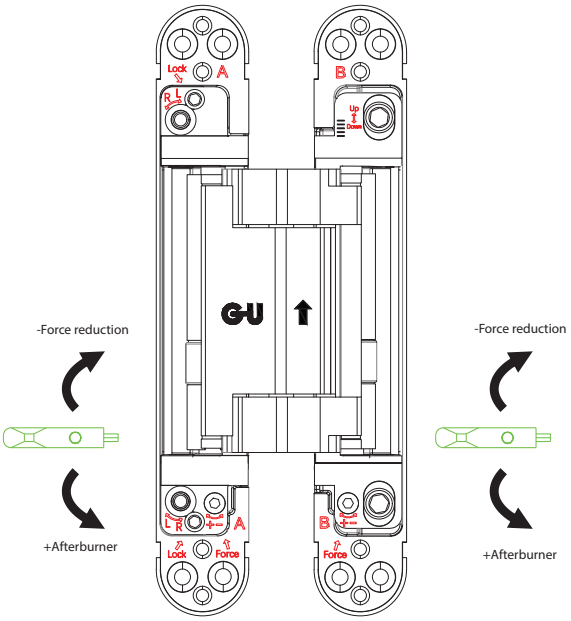
120 kg.

Detail Explanation of Speed Adjustment

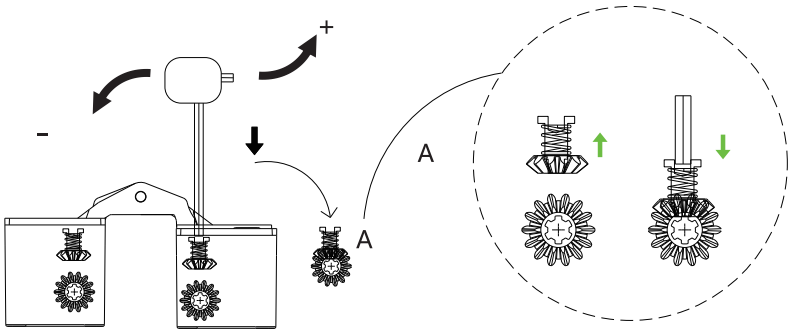
7.1 Insert the adjustment hex key into the designted adjustment hole. Gently push and rotage the speed control screw to fine-tune the closing force as needed.

7.2 The speed control mechanism features an automatic reset function. Once reset, reinsert the Allen key and repeat the adjustment process to achieve the desired force setting.





Important Note: During adjustment, if a significant change in torque is detected (e.g., abnormal gearing noises from the internal mechanism), immediately stop rotating the adjustment tool. This indicates that the adjustment limit of the product has been reached. Continuing to adjust beyond this point may result in damage to the mechanism.



08 Vertical Door Adjustment

① Up and down adjustment screw

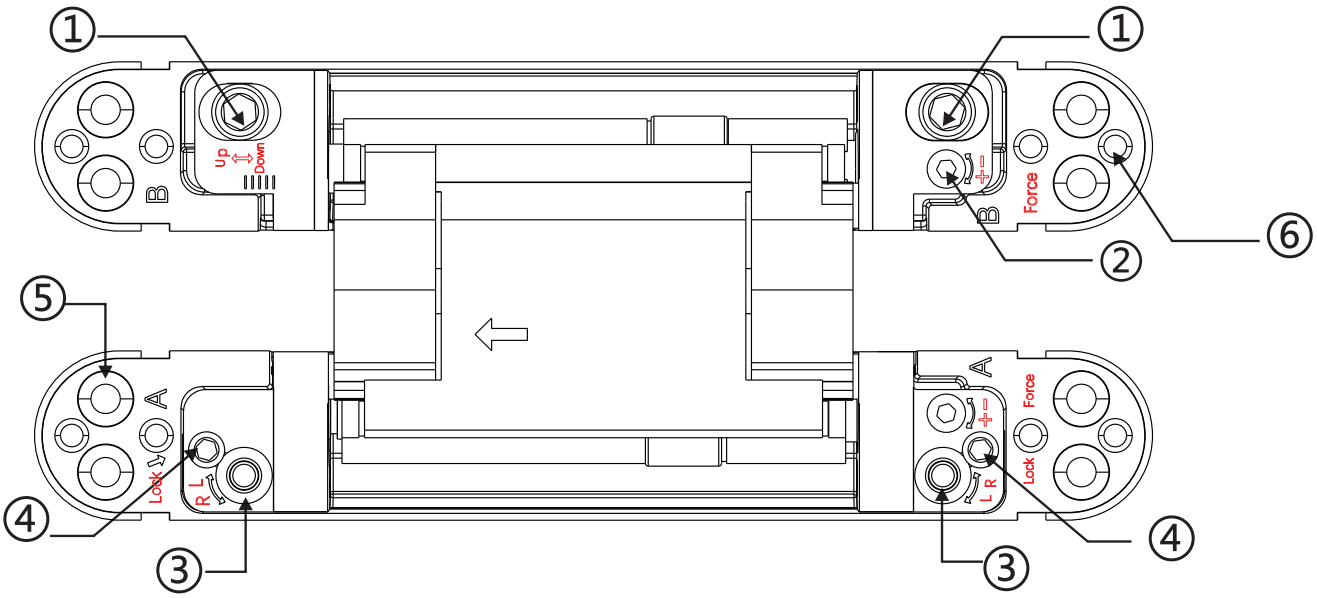
② Speed adjustment screw

③ Left and right adjustment screw

④ Left and right adjustment locking screw

⑤ Door leaf wood screw fixing hole

⑥ Decorative cover fixing hole



Adjustment Precautions:

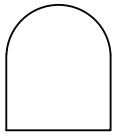
1. Adjusting the Vertical Gap Between the Door Frame and Door Leaf (±2.5mm):
- Loosen the vertical adjustment screw (1) and the adjustment locking screw (4).
- Move the door leaf upward or downward to the desired position.
- Once aligned, securely tighten the adjustment screws.

2. Adjusting the Horizontal Gap Between the Door Leaf and Door Frame (±2mm):
- Open the door and loosen the horizontal adjustment screw (3).
- Adjust the gap between the door leaf and the door frame. To ensure consistent alignment, alternate adjustments on both hinges.

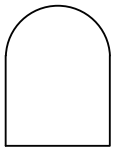
Note: If the door leaf is equipped with multiple hinges, ensure all hinges are adjusted uniformly. Inconsistent adjustments may compromise the door's sealing performance or lead to operational issues.

- After completing the adjustments, operate the door by opening and closing it several times to verify proper alignment and functionality.
- Install the decorative cover by pressing it firmly into place.

Note: When attaching the decorative cover to Part A of the door frame, ensure the protruding sections are properly aligned with the corresponding notches for a secure fit.

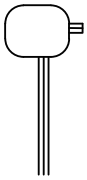


A. Decorative cover X2



B. Decorative cover X2

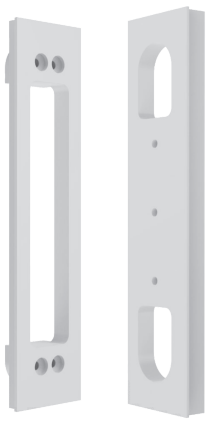
4mm Allen key X1

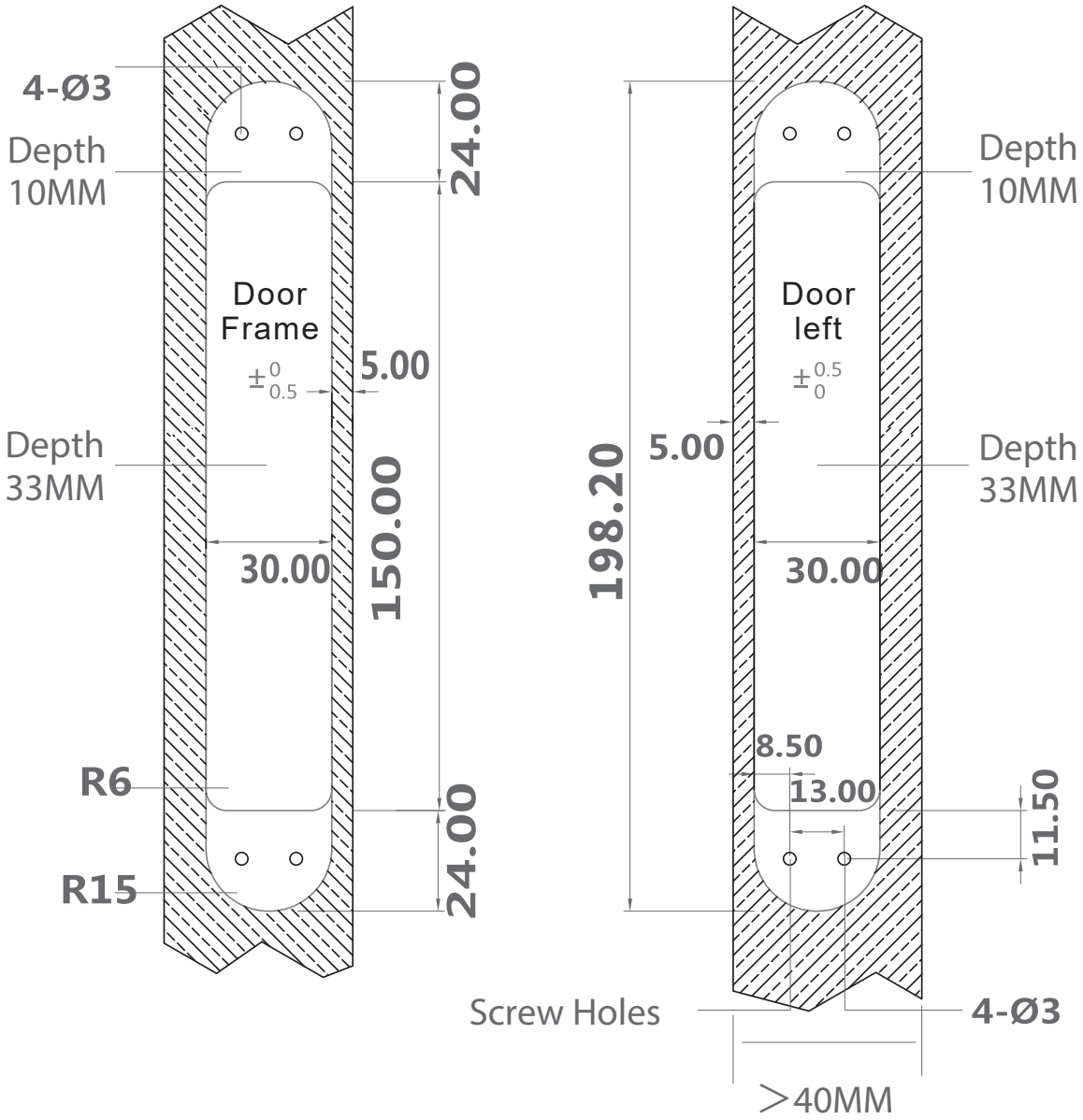


3mm Allen key X1

5X30 self-tapping screws X8

Slot Opening Dimension





Cutting Jig Guidelines for Door Panel Preparation for hinge Installation:

1.Identify Hinge Placement:

Start by accurately measuring and marking the exact location for hinge installation. Proper measurement ensures correct alignment and seamless operation of the panel.

2.Secure the Panel Limit Plate:

Fasten the limit plate by driving a wood screw through the pre-drilled screw hole. Note: Position the limit plate as close as possible to the board to maintain stability and precision during the excavation process.

3.Create Pilot Holes:

Drill pilot holes with a diameter of Ø14±1mm and a depth of 33±1mm near the corner of the straight edge. These holes will act as guides for the milling cutter.

4.Mill the Panel Mounting Slot:

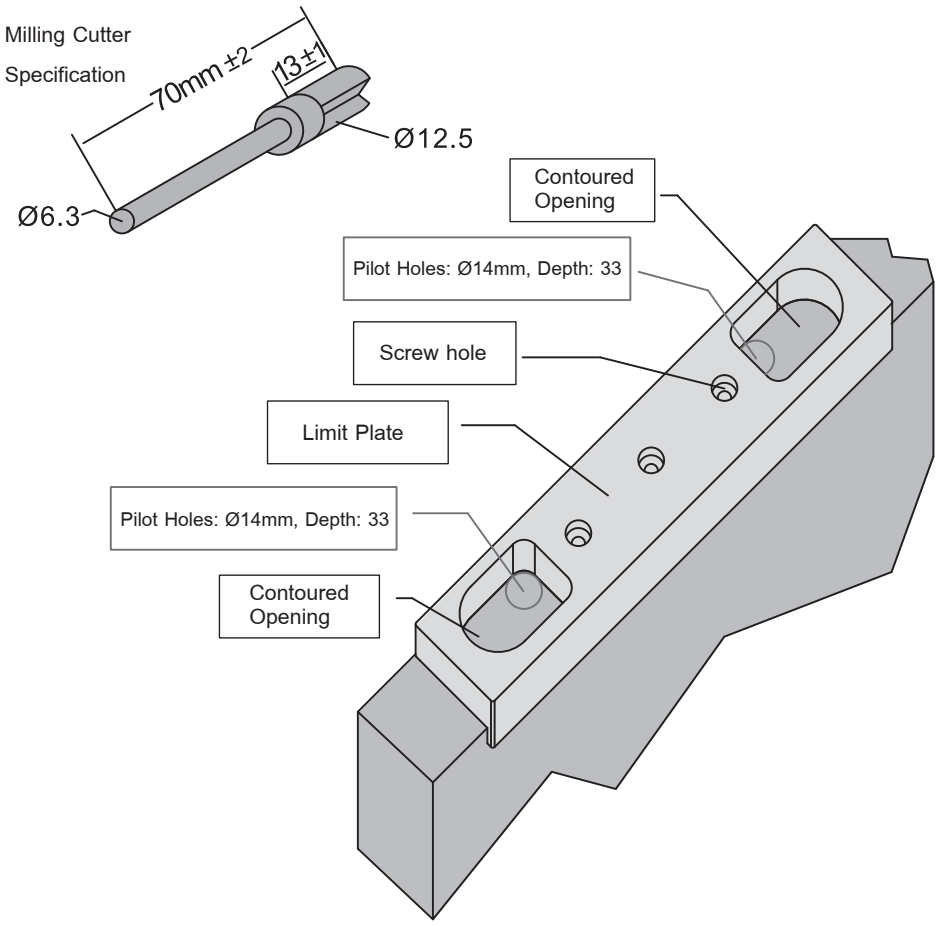
Using a 12.5mm milling cutter with a bearing, carefully guide the tool along the inner wall of the pre-drilled hole to create the panel mounting Slot.

Note: To ensure accuracy and prevent overcutting, limit each excavation pass to a maximum depth of 5mm. For a total depth of 10mm, complete the process in two sequential passes.

Critical Operational Notes:

- Tool Setup: Always insert the milling cutter into the pre-drilled hole (Ø14±1mm) before activating the machine. Ensure the milling machine is held firmly and steadily to avoid misalignment.
- Controlled Operation: Move the milling machine at a slow, consistent speed along the hole wall to achieve a clean and precise cut.
- Safety Protocol: After completing each milling pass, power off the milling machine before making any adjustments. This precaution minimizes the risk of damage to the workpiece or tool and ensures the safety of the operator.

11 Jig Limit Plate Guidelines

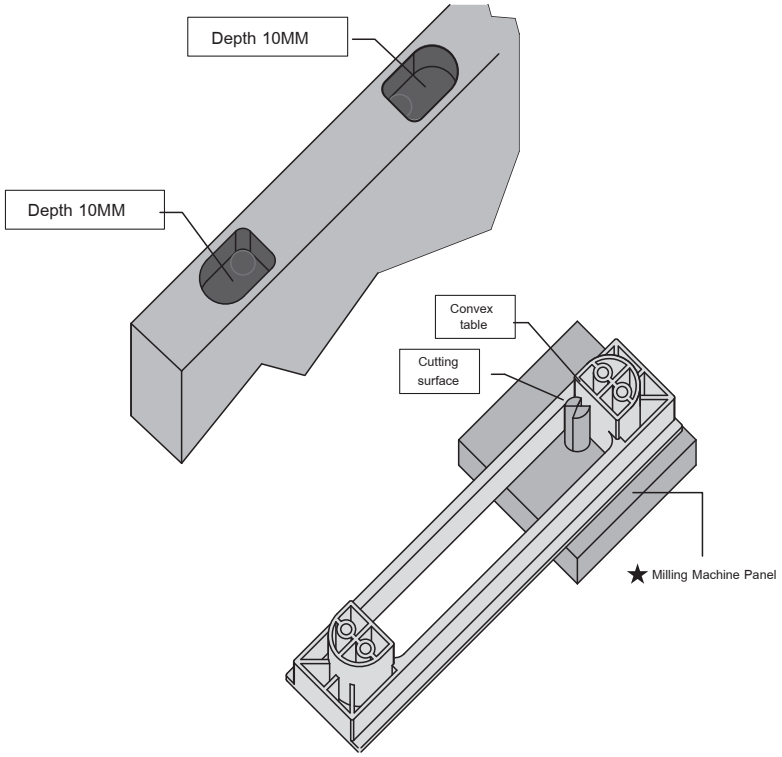


Milling Cutter Protrusion Height Adjustment:

The first cutting pass requires the milling cutter to extend 19mm out of the machine panel, corresponding to a digging depth of 5mm. For the second cutting pass, the milling cutter should extend 24mm out of the machine panel, achieving a digging depth of 10mm.

Operational Guidelines:

When performing the cutting process, the milling cutter must be inserted into the pre-drilled hole (Ø14±1mm) before starting the machine. Ensure the milling machine is held steady during operation and moved at a slow, controlled speed along the hole wall to maintain precision. After each cutting pass, the milling machine must be turned off before it is removed for adjustments to ensure safety and prevent damage.



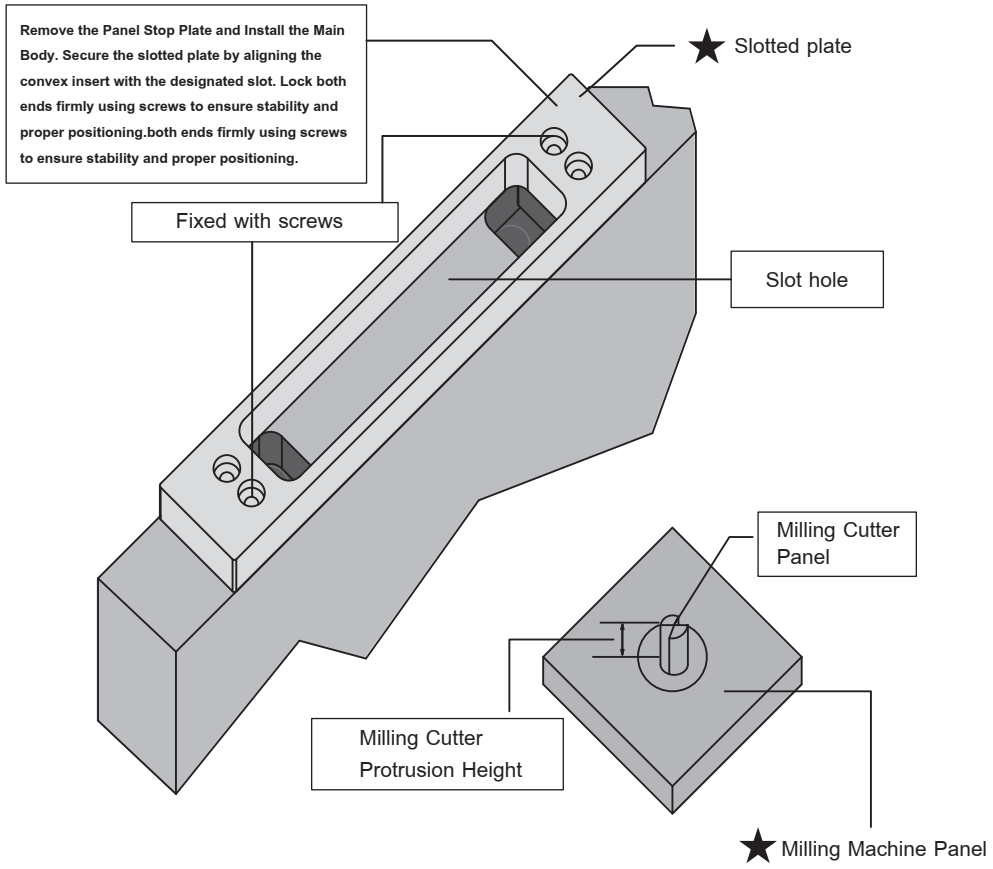
The main body limit plate can be utilized as a measuring guide during setup.
Adjust the first cutter face to a height that is roughly half the elevation of the convex table. For the second cutter face, set it to align perfectly level with the convex table surface, ensuring accurate and uniform cutting performance.

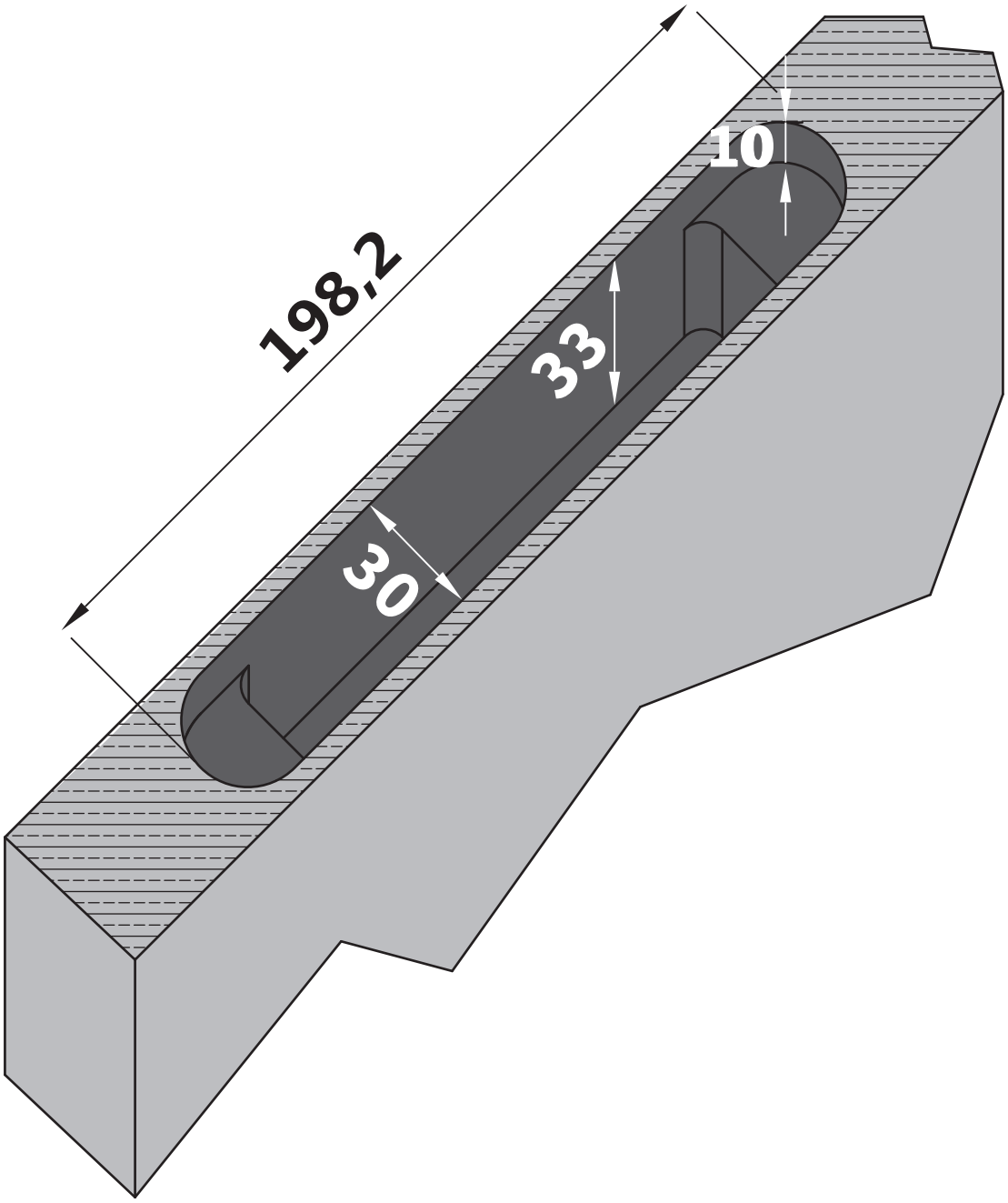
Hinge Installation Slot Preparation

The milling cutter is extended incrementally across seven passes to achieve the desired cutting depths. In the first pass, the cutter extends 19mm for a 5mm depth. The second pass extends 24mm for a 10mm depth, followed by the third pass at 29mm for a 15mm depth. The fourth pass extends 34mm for a 20mm depth, and the fifth pass extends 39mm for a 25mm depth. The sixth pass extends 44mm to a 30mm depth, and the seventh pass extends 47mm for a 33mm depth.

Guidelines:

- Insert the cutter into the pre-drilled hole (Ø14±1mm) before starting.
- Hold the machine steady and move slowly along the hole wall.
- Turn off the machine after each pass before adjusting.

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