




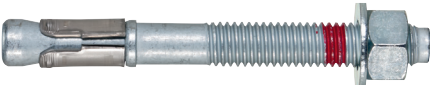
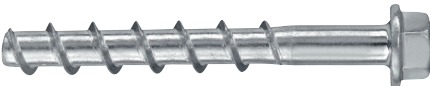
# COMPACT AND LIGHT-WEIGHT HOIST POINT FOR 2.5 TONS WORKING LOAD

HAP 2.5 Hoist Anchor  
Plate Technical  
Supplement



# PRODUCT DESCRIPTION

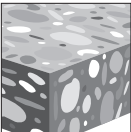
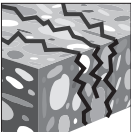

Hoist Anchor Plate with 2.5 t WLL<sup>1)</sup> capacity for elevator shaft operations

Anchor version	Benefits
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>HAP 2.5</b></p> </div> <div style="text-align: center;">  <p><b>KB-TZ</b> KWIK Bolt TZ (not included)</p> </div> <div style="text-align: center;">  <p><b>KH-EZ</b> KWIK HUS-EZ (not included)</p> </div> </div>	<ul style="list-style-type: none"> <li>• 2.5 t WLL capacity according to Machinery Directive 2006/42/EC.</li> <li>• Anchorage of hoist point can be designed with PROFIS Engineering software for cracked and uncracked concrete.</li> <li>• Recommended <sup>2)</sup> and designed for anchorage with anchors <sup>3)</sup> :             <ul style="list-style-type: none"> <li>- KWIK Bolt TZ (KB-TZ) 1/2" h<sub>nom</sub> = 3-5/8-in. (91 mm)</li> <li>- Kwik HUS-EZ (KH-EZ) 3/8" h<sub>nom</sub> = 3-1/4-in. (83 mm)</li> </ul> </li> <li>• Lightweight: One person installation possible at overhead position, total weight &lt; 6.61lb.</li> <li>• No rotation of hook point allowed preventing swiveling.</li> <li>• Large hooking area for easy engagement. Hook point: ø &gt; 3.54-in.</li> <li>• Compact design for narrow spaces: rigid height &lt; 2.20-in. (56mm).</li> <li>• Printed Instructions For Use (IFU) on the product for immediate clarification.</li> <li>• &lt; 45° loading allowed in all directions.</li> </ul>

1 WLL = Working Load Limit

2 See Design of Anchorage section of this document for information on post-installed anchor design

3 System Load Capability is dependent upon anchorage and base-material, verify with Engineer of Record

Base material	Other information
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Uncracked concrete</p> </div> <div style="text-align: center;">  <p>Cracked concrete</p> </div> </div>	<div style="text-align: center;">  <p><b>PROFIS</b> Engineering design Software (for KB-TZ and KH-EZ)</p> </div>

## Applications

HAP 2.5 is designed to be used as post-installed “master hoist point” for installation and/or maintenance in elevator shafts. It can be used with manual or motor hoists and bears a working load up to 2.5 metric tons in variable directions.

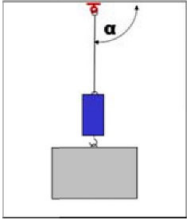
HAP 2.5 is designed for temporary and permanent application under dry indoor conditions.

**Basic loading data**

Data for max 2.5 t WLL capacity applies to HAP 2.5 only when:

- Correct design of anchorage (see Design of Anchorage section)
- Installation and anchor setting according to IFU from HAP 2.5 and corresponding anchor (KH-EZ or KB-TZ)
- No shock loading; vibratory dynamic safety factor  $\gamma_{dyn}$  up to 1.8

**HAP Working Load Limitation (WLL)<sup>1)</sup>**

	Load Type
	Single Point
	
$45^\circ < \alpha < 135^\circ$ WLL <sub>total</sub> [metric ton]	2.5

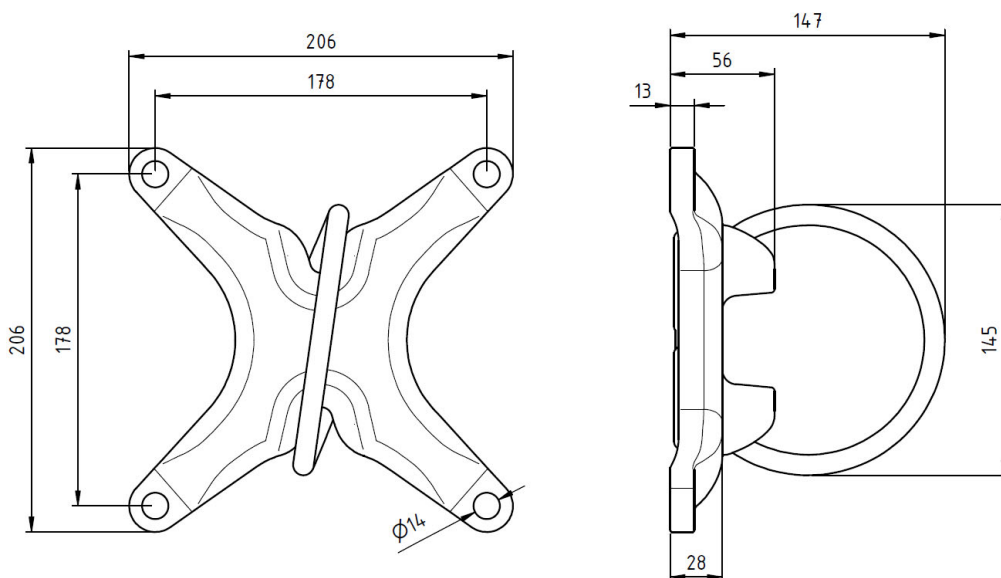
<sup>1</sup> In accordance with machinery safety directive 2006/42/EC tabulated allowable loads have been calculated based on the following safety factors:  
 - Safety factor of all metal components:  $\gamma = 4$   
 - Safety factor of the cables:  $\gamma = 5$

**Materials**

**Material quality**

Part	Material / Mechanical properties or standard
Carrier plate	Rm 700-900 MPa – 5 $\mu$ m Geomet 321A
Wire rope $\phi 11 \times 150$ – 6x36WS IWRC	Rope: steel 1960 MPa, zinc plated / ferrule: Alu
Holder	Low carbon steel – 5 $\mu$ m Geomet 321A
Blind rivet DIN EN ISO 15977 – 6.4x18	Stainless steel

**Dimensions (mm)**



## Inspection criteria

### Important notes:

- The attachment point must be in a good operating condition and undamaged. Broken wires, signs of corrosion, visible distortions or deformations are unacceptable.
- The shaft ceiling, particularly the concrete, must be in sound condition. Any visible cracking, blow out or signs of corrosion are unacceptable.
- Do not use an attachment point which has an unreadable or missing identification label.

## Design of anchorage

HAP 2.5 is designed to be used as a hoist point for lifting loads under variable directions in elevator installation or maintenance. The design of the anchorage for the HAP 2.5 must be ensured for varying load conditions (i.e. varying directions, dynamic effects, etc.). The anchorage for the HAP 2.5 has to be designed according to extreme load cases: a concrete anchor can only be considered as suitable for use with the HAP 2.5 hoist point if the approved anchor satisfies the following load scenarios (e.g. by PROFIS calculation) based on post-installed anchor design provisions per ACI 318-14 Chapter 17 or CSA A23.3-14 Annex D.

The use of the recommended KB-TZ and KH-EZ anchors are based on the design assumptions noted below. In case of different design parameters, a new calculation should be performed.

### Load conditions:

- Working Load Limit (WLL) = 2.5 metric tons = 5,620 lb. (25 kN).
- Vibratory dynamic safety factor  $\gamma_{dyn} = 1.8$ .
- Total static load for PROFIS input = 10,116 lb. (45 kN).
- Load is applied for the worst-case conditions:
  - Direct tension with load applied perpendicular to concrete surface.
  - Load applied at 45° from perpendicular to concrete surface.

### Recommended Hilti anchors (not provided with HAP 2.5):

- Hilti carbon steel expansion anchor KB-TZ 1/2" diameter with 3-5/8" (91 mm) nominal embedment.
  - With minimum 3,000 psi (20 MPa) normal weight concrete strength.
  - Design parameters from ICC-ES ESR-1917, dated January 2020.
  - Minimum concrete thickness,  $h_{min} = 6"$  (152 mm).
- Hilti carbon steel screw anchor KH-EZ 3/8" diameter with 3-1/4" (83 mm) nominal embedment.
  - With minimum 4,000 psi (30 MPa) normal weight concrete strength.
  - Design parameters from ICC-ES ESR-3027, dated July 2020.
  - Minimum concrete thickness,  $h_{min} = 4-3/4"$  (121 mm).
- Use of smaller anchor diameter, or anchor embedment, or with concrete compressive strengths lower than listed above is not recommended.

### Design parameters per ACI 318-14 Chapter 17 or CSA A23.3-14 Annex D:

- Cracked concrete.
- HAP 2.5 is flush with concrete surface (no stand-off).
- No supplemental reinforcement present (Condition B).
- Non-seismic.
- HAP 2.5 is considered rigid for anchor design purposes.

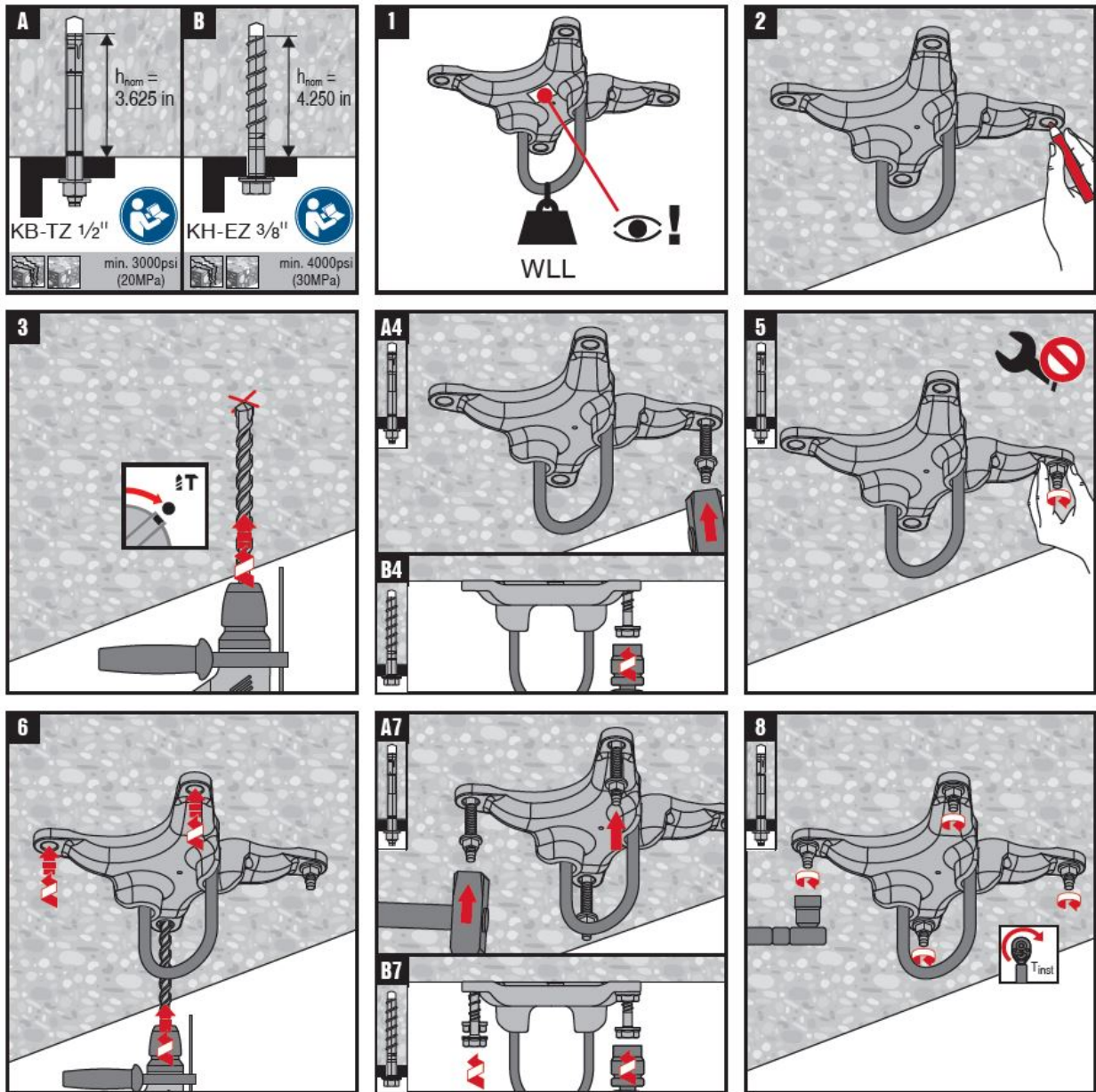
No influence from nearby edge.

Contact Hilti for PROFIS Engineering calculations for KB-TZ or KH-EZ anchors with the above parameters.

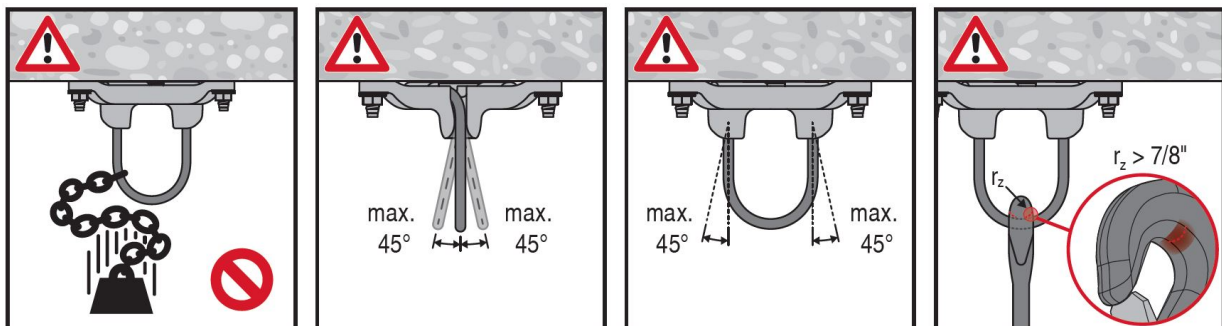
Setting instructions

\*For detailed information on Hilti KB-TZ or KH-EZ installations see instruction for use included with the package of the product.

Setting instruction for HAP 2.5



Caution





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