PRODUCT TECHNICAL DATASHEET

HAP 1.15
Hoist Anchor Plate

Update: Jan-26

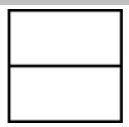
HAP 1.15 Hoist Anchor Plate

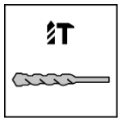
Hoist Anchor Plate with 1.15 t WLL capacity for elevator shaft operations

Anchor Version			Benefits
		HAP 1.15 + HST4 M12	- No limitation in load direction, hook (shackle) can rotate and swivel, symmetric design of base plate with 4 anchors - Design fits application requirements of vibratory dynamic loads from motorized hoisting with dynamic safety factor of 1.8 - Anchorage of hoist point can be designed with PROFIS Anchor software, cracked and uncracked concrete, ≥ C20/25 - Recommended anchors: HST4 M12 (h_{ef}=60 mm), HUS4-H 10 (h_{ef}=68 mm) - Delivered pre-assembled (one piece), no need for assembly - Compact design, only 155 x 155 x 52 mm (when shackle is folded to plate) - Global safety factor of 4 for all steel connections
		HAP 1.15 + HUS4-H 10	

Application

The HAP 1.15 is designed for temporary and permanent application under dry indoor conditions, 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 1.15 metric tons in variable directions.

Base material	Load conditions	Load conditions
 Concrete (uncracked)	 Concrete (cracked)	 Static/ quasi-static

Drilling, cleaning, setting	Other information	
 Hammer drilled holes	PROFIS Engineering Software	Steel to concrete handbook

Linked Approvals/Certificates and Instructions for use

The instructions for use can be viewed using the link in the instructions for use table or the QR code/link in the Hilti webpage table.

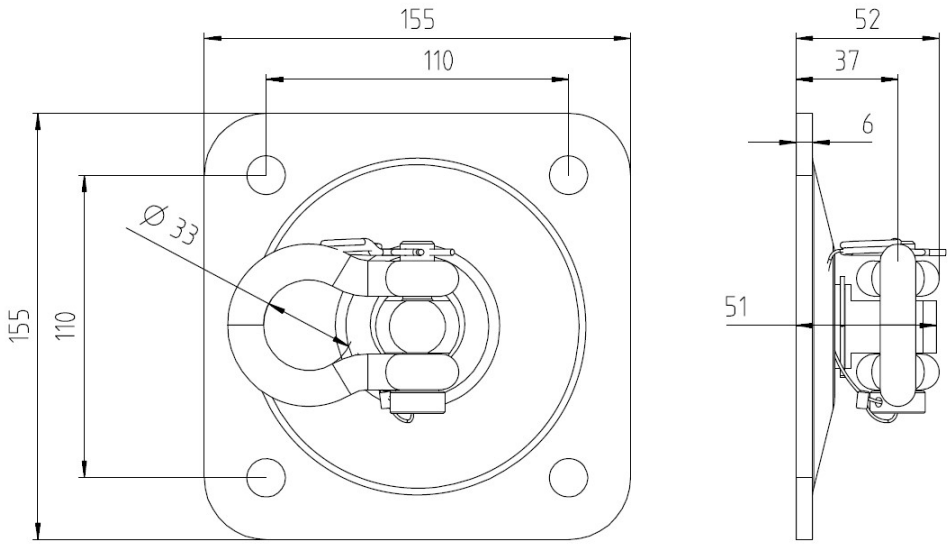
Instructions for use

Anchor size	Size
HAP	IFU HAP 1.15
HST4	IFU HST4-M12
HUS4	IFU HUS4 10

Link to Hilti Webpage

HST4	HUS4-H	HAP 1.15

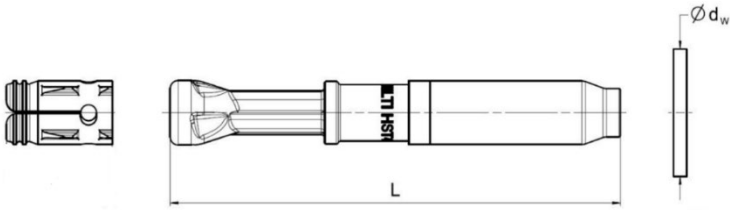
Fastener special dimensions



HST4

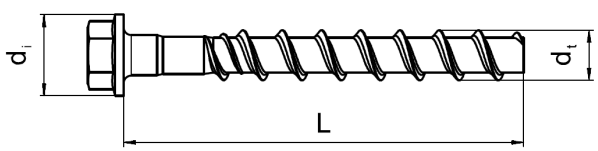
Anchor type			HST4 M12
Recommended anchor length	L	[mm]	105
Outer diameter of washer	$d_{w \geq}$	[mm]	24

HST4 M12

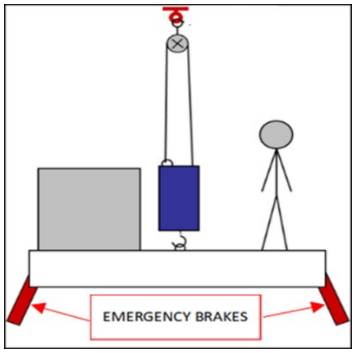


HUS4 H 10

Anchor size			10
Type		**HUS4**	**H**
Outer diameter of screw thread	d_t	[mm]	12,70
Diameter of integrated washer	d_i	[mm]	20,50
Recommended anchor length	L		100

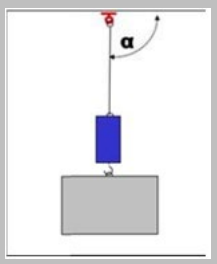
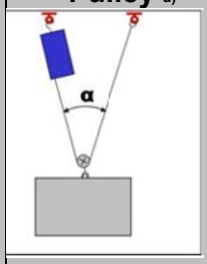
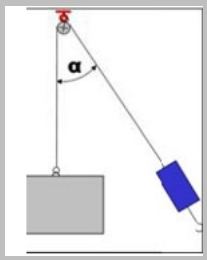


Warning



Men riding (Car-top Lift-installation Method) (worker and material on top of the cabin)
In case the main hoist point fails, the platform falls ~0.3m until the elevator safety-gears will automatically activate bringing the elevator cabin to a complete stop. Emergency brakes need to be activated.

HAP 1.15 Hoist Anchor Plate, single and multipoint loads

			Single Point	Single Pulley a)	Fixed motor hoist
					
Anchor system Working Load Limitation (WLL) a)					
α < 20°	WLL total	[metric ton]	1,15	2,25	0,55
20° < α < 45°	WLL total	[metric ton]	1,15	2,1	0,5
45° < α < 60°	WLL total	[metric ton]	1,15	2,0	0,45
60° < α < 90°	WLL total	[metric ton]	1,15	1,6	0,4
90° < α < 120°	WLL total	[metric ton]	1,15	1,15	Not applicable

a) In accordance with machinery safety directive 2006/42/EC the following working coefficients were implemented:
- Working coefficient of all metal components: γ = 4
- Working coefficient of the cables: γ = 5
Keep distance of min. 4 x h_{ef} between anchors of the two HAPs

Design of anchorage

HAP 1.15 is designed to be used as hoist point for lifting loads under variable directions in elevator installation or maintenance. The design of the anchor connection of the HAP 1.15 must be verified for varying load conditions (varying directions, dynamic effects, etc.). The below examples are of the anchor connection of the HAP 1.15 and have been designed according to ultimate load cases: a concrete anchor can only be considered as suitable for use with the HAP 1.15 hoist point if the approved anchor satisfies the following load scenarios (e.g. by PROFIS Engineering calculation) with EN1992-4 calculation method. It has to be done in accordance with the relevant codes/ETAs for each application case separately. In case of different design conditions, a new calculation should be performed.

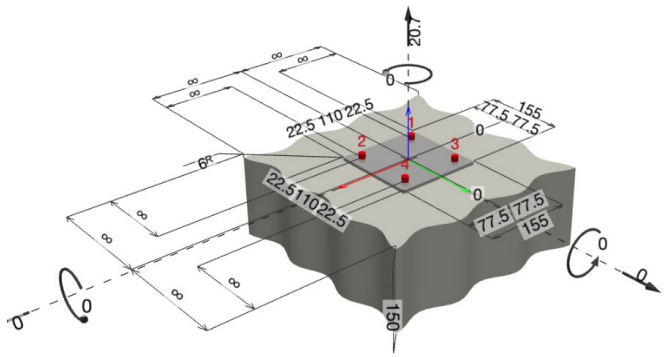
Static and quasi-static loading based on ETA-21/0878 and ETA-20/0867. Design according to EN 1992-4

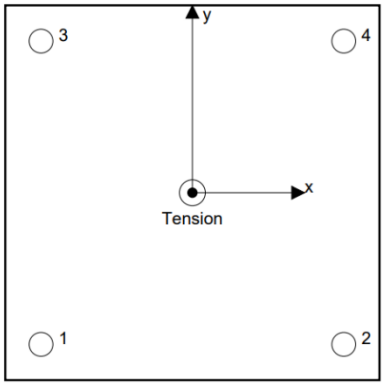
All data in this section applies to:

- Correct setting (See setting instruction)
- For a group anchor (see the anchor arrangement below)
- Concrete C20/25, Cracked concrete
- Hammer drilled holes
- No edge distance influence
- Embedment depth, as specified in the table of this section
- The anchor calculation is based on a rigid baseplate assumption
- No shock loading; vibratory dynamic safety factor γ_{dyn} up to 1.8 (EN 1991-1-1)

For specific design cases refer to PROFIS Engineering.

HAP 1.15 t + HST3 M12 – Pure tension 90º angle
Action N = 1,15t (WLL) x 1,8 (γ_{dyn}) = 20,7kN
Anchor arrangement





Design resistance - HST4 M12, HUS4 10

Anchor size				HST4 M12	HUS4 10
Effective anchorage depth			h_{ef}	60 mm	68 mm
Nominal embedment depth			h_{nom}	69 mm	94 mm
Load direction	**Anchor reactions**		**Group force**	**Max. Util. Anchor**	
Tension N_{Rd}	Anchor 1	5,175 kN	20,7 kN	65 % (concrete breakout)	68 % (concrete breakout)
	Anchor 2	5,175 kN			
	Anchor 3	5,175 kN			
	Anchor 4	5,175 kN			

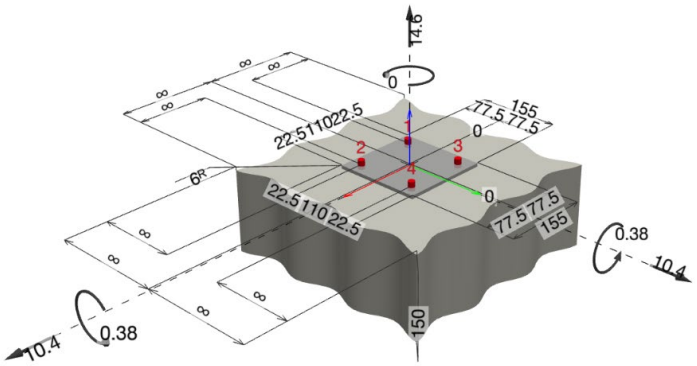
static and quasi-static loading based on ETA-21/0878 and ETA-20/0867 . Design according to EN 1992-4

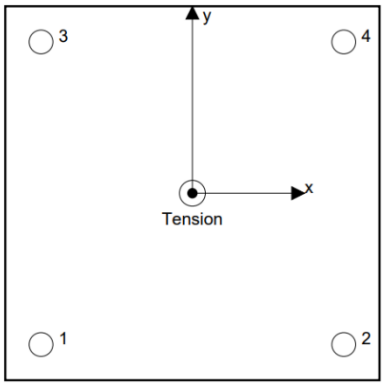
All data in this section applies to:

- Correct setting (See setting instruction)
- For a group anchor (see the anchor arrangement below)
- Concrete C20/25, Cracked concrete
- Hammer drilled holes
- No edge distance influence
- Embedment depth, as specified in the table of this section
- The anchor calculation is based on a rigid baseplate assumption
- No shock loading; vibratory dynamic safety factor γ_{dyn} up to 1.8 (EN 1991-1-1)

For specific design cases refer to PROFIS Engineering.

HAP 1.15 t + HST4- M12, HUS4 10 – diagonal 45º angle
N =14,6 KN
Vx=Vy = 10,4 kN
Mx=My= 0,38 kNm
Anchor arrangement





Design resistance - HST4 M12, HUS4 10

Anchor size					HST4 M12	HUS4 10
Effective anchorage depth			h_{ef}		60 mm	68 mm
Nominal embedment depth			h_{nom}		69 mm	94 mm
Load direction	**Anchor reactions**			**Group force**	**Max. Util. Anchor**	
Tension N_{Rd}	Anchor 1	3,73 kN	-	14,9 kN	Combination: Concrete 72% Steel 7%	Combination: Concrete 77% Steel 7%
	Anchor 2	0,47 kN				
	Anchor 3	6,98 kN				
	Anchor 4	3,73 kN				
Shear V_{Rd}	Anchor 1	-	3,68 kN	14,7 kN		
	Anchor 2		3,68 kN			
	Anchor 3		3,68 kN			
	Anchor 4		3,68 kN			

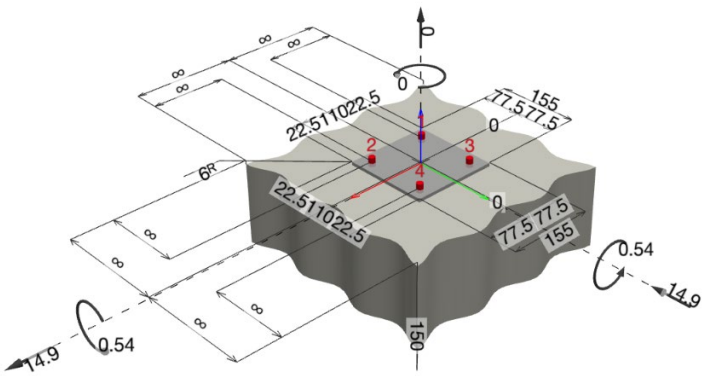
static and quasi-static loading based on ETA-21/0878 and ETA-20/0867. Design according to EN 1992-4

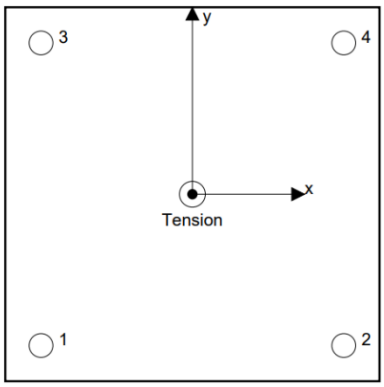
All data in this section applies to:

- Correct setting (See setting instruction)
- For a group anchor (see the anchor arrangement below)
- Concrete C20/25, Cracked concrete
- Hammer drilled holes
- No edge distance influence
- Embedment depth, as specified in the table of this section
- The anchor calculation is based on a rigid baseplate assumption
- No shock loading; vibratory dynamic safety factor γ_{dyn} up to 1.8 (EN 1991-1-1)

For specific design cases refer to PROFIS Engineering.

HAP 1.15 t + HST4- M12, HUS4 10– diagonal shear
Vx=Vy = 14,6 kN
Mx=My= 0,54 kNm
Anchor arrangement





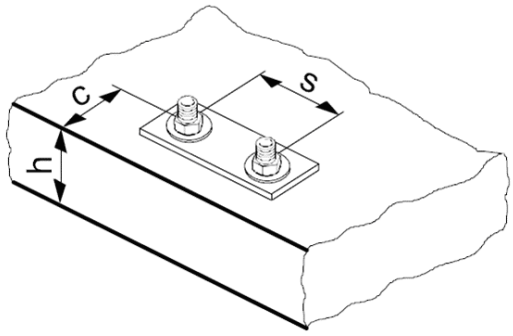
Design resistance - HST4 M12, HUS4 10

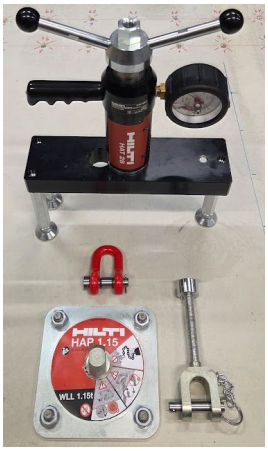
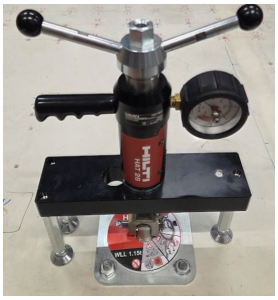
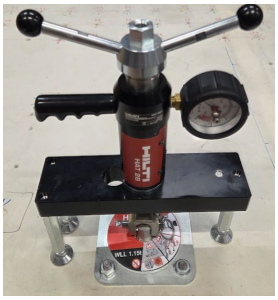
Anchor size					HST4 M12	HUS4 10
Effective anchorage depth				h_{ef}	60 mm	68 mm
Nominal embedment depth				h_{nom}	69 mm	94 mm
Load direction	**Anchor reactions**			**Group force**	**Max. Util. Anchor**	
Tension N_{Rd}	Anchor 1	1,33 kN	-	14,9 kN	Combination: Concrete 28% Steel 5%	Combination: Concrete 38% Steel 5%
	Anchor 2	0 kN				
	Anchor 3	3,57kN				
	Anchor 4	1.33kN				
Shear V_{Rd}	Anchor 1	-	5,16 kN	14,7 kN		
	Anchor 2		5,16 kN			
	Anchor 3		5,16 kN			
	Anchor 4		5,16 kN			

Setting information

HAP 1.15			
Minimum base material thickness	h_{min}	[mm]	According to technical data of applied anchors
Spacing (Hoist Anchor Plate)	s	[mm]	110
Edge distance	c	[mm]	According to technical data of applied anchors [a)]

[a)] For smaller edge distances the designs should be verified with appropriate modelling and calculations. Please see Profis Engineering



Onsite Qualification	
HAP 1.15 is designed for temporary & permanent application under dry indoor conditions. Recommended tools to do onsite qualification: Anchor Tester HAT 28-E (386372).	
Test procedure (shown with Hilti Anchor Tester HAT 28-E	
This procedure will verify the fastening capacity of the anchorage and the base material for HAP 1.15 use.	
1) Install the anchors according to the Hilti Instruction for use. The HST4 M12 with h_{nom} = 69 mm and HUS4 H with h_{nom} = 94 mm are recommended as per this document. Ensure HAP 1.15 is correctly installed, according to the Instruction for use of the HAP 1.15. Set up the HAT 28-E according to the manual provided with the anchors tester (see the Instructions for Use). Remove the shackle from the HAP 1.15 and locate the ring bolt adapter from HAT 28-E kit.	
2) Attached ring bolt adapter to center of HAP 1.15 and connect HAT 28-E. Make sure the bridge of the tester is parallel to the concrete surface as well as to the HAP 1.15 base. Check if the baseplate can be moved relative to the concrete. The HAP 1.15 baseplate needs to be firmly in contact with the concrete. Turn crank clockwise until the legs are in contact with base material, bringing the system to firm starting position (avoid commencing the proof loading stage). Ensure testing forces act parallel to axis of anchors and to the legs of tester. HAP 1.15 must remain plumb in both parallel and perpendicular direction of the tester.	
3) Set the red handle of the analogue gauge to zero to be able to start the measurement.	
4) Hold the HAT 28-E by the grip while increasing the load of the HAP 1.15 by turning the crank (or with spanner wrench on hexagon nut on top of tester) in a clockwise direction. Increase the load until desired proof load is attained. Do not exceed the maximum allowable load of the tester of 30kN!	

5) Keep the proof load applied to HAP 1.15 for the required time. Do not keep retightening if the loading relaxes during this time. The displacement is not allowed to increase in this time.	
6) Release the load by turning the crank counterclockwise.	
7) Remove HAT 28-E and ring bolt adapter.	
8) Perform visual check on HAP 1.15 and base material. Check if the baseplate is still firmly pressed to the concrete. If baseplate is loose, re-tight anchors and repeat procedure from the beginning. We recommend **NOT TO USE** the tested HAP 1.15 when: • The baseplate is loose even after repeated test procedure. • If the base material shows cracks during and or after the test around the HAP 1.15 (this could be a sign of an overload of the capacity of the concrete) • If the HAP 1.15 is damaged or deformed. In these cases, set a new point in a different position and repeat procedure from the beginning. Reattach the shackle and safety pin for use.	
9) If the testing was successful mark or label the HAP 1.15 according to your requirements