General Building Supervisory Approval

Approval Authority for Building Products and Building Types

Constructional Audit Office
A public agency funded by the Federation and the Länder

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to: **24 February 2028**

Applicant: number
Jakob AG
3555 Trubschachen
Switzerland

Subject of approval:
Hitch Box for Load (HBL, HBLE) and Hitch Box for Safety (HBS) as anchoring in reinforced concrete ceilings

The aforementioned subject of approval is hereby granted general building supervisory approval.
This document consists of six pages and four appendices.
The item was first generally approved by the building authorities on February 22, 2013.

I GENERAL PROVISIONS

1 This notice constitutes evidence of the usability or applicability of the item subject to regulations under the regional building regulations.

2 This notice does not replace the legally prescribed approvals, permits and certifications required for the implementation of the building project.

3 This notice is issued without prejudice to the rights of third parties, in particular private property rights.

4 The user or end user of this item subject to regulations must be provided with copies of this notice, without prejudice to further provisions listed in the “Special provisions”. In addition, the user or end user of the item subject to regulation must be informed that this notice must be made available at the place of application or end use. The authorities involved must also be provided with copies of this notice on request.

5 This notice must only be copied in whole. The publication of extracts requires the approval of the Deutsches Institut für Bautechnik. Texts and drawings of advertising materials must not contradict this notice, translations must contain the note “Translation of the original German version not checked by the Deutsches Institut für Bautechnik”.

6 This notice may be withdrawn. The provisions may be added to and changed retrospectively, especially if required by new technical knowledge.

7 This notice relates to the details and documents provided by the applicant. A change of these fundamental aspects is not covered by this notice and must be notified without delay to the Deutsches Institut für Bautechnik.

II SPECIAL PROVISIONS

1 Item subject to regulations and area of application or use

1.1 Item subject to regulations

The rope hitch boxes HBL and HBLE (Hitch Box for Load) and HBS (Hitch Box for Safety) comprise a plastic housing and one or two rope hitches. The rope hitch boxes HBL, HBLE and HBS are installed within reinforced concrete ceilings, e.g. of elevator shafts.
The rope hitch boxes HBL, HBLE and HBS are shown in the installed condition in Appendix 1.

1.2 Area or use of application

The rope hitch boxes HBL, HBLE and HBS may be used for anchoring under static or quasi-static loading in reinforced normal concrete of strength class of at least C20/25 and maximum CS0/60 according to DIN EN 206-1:2001-07 “Concrete; Part 1: Specification, performance, production and conformity”, as long as no requirements are specified in terms of the fire resistance duration for the overall construction including rope hitch.
The rope hitch boxes HBLE28, HBLE44, HBLE46 and HBLE50 are intended for grouped attachment of two neighboring rope hitch boxes (double combination) with spacing $s < s_{cr}$ according to Appendix 3.
The rope hitch boxes HBL, HBLE and HBS may be anchored in cracked and uncracked concrete.
The rope hitch boxes HBL, HBLE and HBS serve as anchor points for temporary loads, e.g. for elevator cabins. Planned transverse loads are not permitted. Diagonal loading up to an angle of incidence of 15° to the vertical can be accommodated.
The rope hitch boxes HBL, HBLE and HBS may be used according to their corrosion resistance class CRC III per DIN EN 1993-1-4:2015-10 in conjunction with DIN EN 1993-1-4/NA:2017-01.

2 Provisions for the building product

2.1 Properties and composition

The rope hitch boxes HBL, HBLE and HBS (plastic housing and rope hitches) must conform to the drawings and details in the appendices.
The material characteristics, dimensions and tolerances of the rope hitch boxes not shown in this notice must correspond to the details held by the Deutsches Institut für Bautechnik, by the certification body and the external monitoring body.

2.2 Marking ropes

Packaging, instruction leaflet or delivery note of the rope hitch boxes must be marked by the manufacturer with the conformity symbol (Ü-symbol) according to the conformity symbol regulations of the countries. In addition, on the packaging, instruction leaflet or delivery note, the factory symbol, the approval number and the full description of the rope hitch boxes must be shown.
The marking must only be applied if all pre-requisites according to section 2.3 Declaration of conformity are fulfilled.
Every rope hitch box is marked with the aid of a sticker on the inside of the protective box according to Appendix 1. With the rope hitch boxes HBLE, the type designation must also be indicated, e.g. “HBLE50”.

2.3 Declaration of conformity

2.3.1 General

The declaration of conformity of the rope hitch box with the provisions of the general type approval covered in this notice must be provided for every manufacturing location, with a declaration of conformity of the manufacturer based on a factory-internal check and a conformity certificate from a suitably accredited certification body as well as regular external monitoring based on the following provisions:
For the issuance of the certificate of conformity and the external monitoring including the associated product tests to be carried out, the manufacturer of the rope hitch box must engage a suitably qualified certification body as well as an approved monitoring body.
The declaration of conformity must be issued by the manufacturer by marking the rope hitch box with the conformity symbol (C symbol) with a note regarding the purpose of use.
The certification body must provide a copy of the certificate of conformity they issue to the Deutsches Institut für Bautechnik for acknowledgment.

2.3.2 Factory internal production checks

A factory-internal production check must be set up and implemented in every factory. Factory-internal production checks are understood as the continuous monitoring of production to be undertaken by the manufacturer, through which they ensure that the building products manufactured meet the provisions of the general type approval covered by this notice.
The test plan submitted to the Deutsches Institut für Bautechnik and the external monitoring body is the key determinant of the scope, type and frequency of the factory-internal production checks.
The results of the factory-internal production checks must be recorded and evaluated. The records must contain at least the following details:
– Description of the building product or starting material and component parts
– Type of inspection or test
– Date of manufacture and testing of the building product or starting material and component parts
– Result of the inspections and tests and where applicable comparison with the requirements
– Signature of the person responsible for the factory-internal production check.

The records must be kept for at least five years and presented to the monitoring body engaged for the external monitoring. They must be provided to the Deutsches Institut für Bautechnik and the responsible superordinate construction authority on request.
In the event of an unsatisfactory check result, the manufacturer must immediately take suitable steps to correct the defects identified. Construction products which do not conform to the requirements must be handled in such a way that they cannot be mixed up with conforming goods. After addressing the defect - to the extent technically possible, and where required as evidence for the defect being addressed - the existing check must be repeated immediately.

2.3.3 External Monitoring

In every manufacturing location, the factory-internal production checks must be checked regularly by external monitoring, however at least once per year.
As part of the external monitoring, an initial inspection of the rope hitch box must be carried out, and samples must also be taken for random sampling. The sampling and inspections are the responsibility of the approved monitoring body.

The test plan submitted to the Deutsches Institut für Bautechnik and the external monitoring body is the key determinant of the scope, type and frequency of the external monitoring.
The results of the certification and external monitoring must be kept for a minimum of five years. They must be provided to the Deutsches Institut für Bautechnik and the responsible superordinate construction authority on request by the certification or monitoring body.

3 Provisions for planning, dimensioning and execution

3.1 Planning

The anchorings must be planned according to engineering principles.
Verifiable calculations and construction drawings must be prepared taking into account the loads to be anchored.
The construction drawings must contain information about the position and length of the plastic housing as well as the type of rope loop box to be installed (HBL, HBLE, HBS). The minimum distances between the rope loops (axis and edge distances) and the component dimensions (component thickness) in accordance with Annexes 2 and 3 must not be exceeded.

3.2 Dimensioning

3.2.1 General

The anchorings must be dimensioned according to engineering principles.
This dimensioning provides proof of the direct local introduction of force into the concrete.
The transfer of the loads to be anchored in the component must be proven.
The weakening of the concrete cross-section due to the installation of rope loop boxes may need to be taken into account in the static verification.
The rope loop boxes HBL, HBLE and HBS may only be used as an attachment point for temporary loads. Planned transverse loads are not permitted. Oblique tensile stresses up to a load application angle of 15° to the vertical can be accommodated.

3.2.2 Required evidence

It must be proven that the design value of the action (loading) NEd does not exceed the design value of the resistance (loading capacity) N_{Rd}:

$$N_{ed} \leq N_{Rd}$$

The rated values of the resistances NRd against steel and concrete failure for the rope loop boxes HBL, HBLE56 and HBS are given in Appendix 2, Table 1.
If two adjacent rope loop boxes are provided with a distance s < scr, this is a group fastening (combination of two). Rope loop boxes of type HBLE28, HBLE44, HBLE46 or HBLE50 must then be installed in the combinations according to Appendix 3, Table 3. The rated values of the resistances NRd for the HBLE rope loop boxes of the two combinations are given in Appendix 3, Table 2.
To absorb the splitting forces, a minimum reinforcement must be provided in accordance with Appendix 2, Table 1 or Appendix 3, Table 2

3.3 Execution

3.3.1 General

The user of the design or the company carrying out the construction must submit a declaration of conformity in accordance with Sections 16a Paragraph 5 and 21 Paragraph 2 MBO to confirm the conformity of the design with this general type approval.

3.3.2 Installation of the rope hitch boxes HBL, HBLE and HBS

No rope hitches must be fixed retrospectively or other changes made to the rope hitch boxes HBL, HBLE and HBS.
The installation of the rope hitch boxes HBL, HBLE and HBS must be carried out in accordance with the design drawings prepared according to section 3.1. The plastic housing must be fixed to the shuttering in such a way that is does not move when the reinforcement is installed as well as when the concrete is compacted. The rope hitch ends with ferrules must be concreted in at an angle of 90° to the concrete surface. In the area of the plastic housing and the rope hitch ends, the concrete must be in perfect condition all round.
The rope hitches on the load side are folded into the plastic housing for the concreting process.
The installation instructions from the manufacturer and the installation notes in Appendix 4 must be complied with.

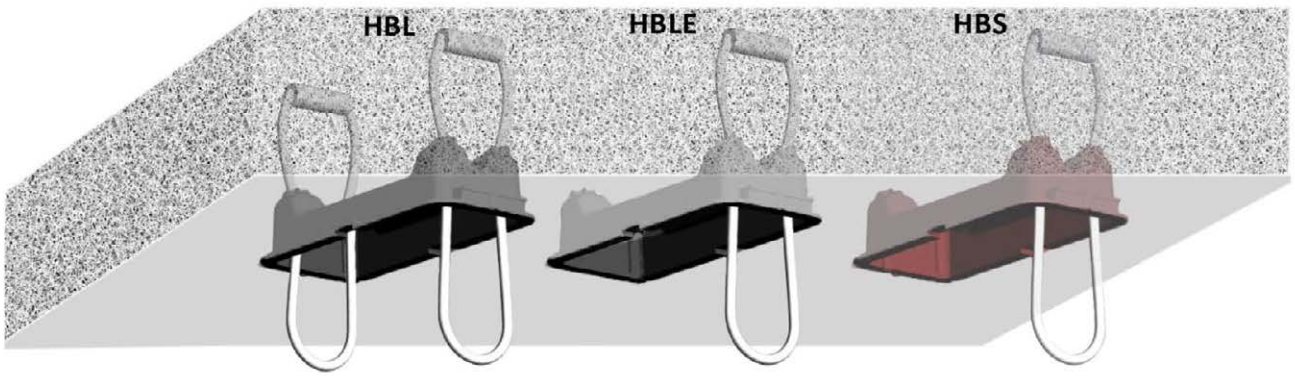
3.3.3 Use as a load anchor point

To use the rope hitch boxes HBL, HBLE and HBS as a load anchor point, the rope hitches are folded out at 90° to the plastic housing.
The concrete compressive strength of the concrete component must have reached at least 25 N/mm^2 by the time the temporary load is attached.

Beatrix Wittstock,
Divisional Head

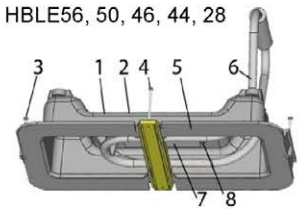
Certified [Stamp Deutsches Institut für Bautechnik]

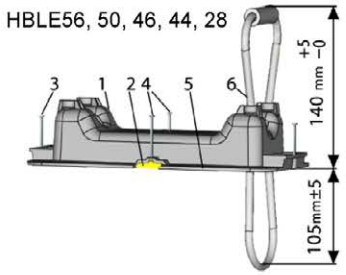
Figure 1 **HBL/HBLE.. and HBS in the installed condition**



HBL/HBLE.. – Hitch Box for Load

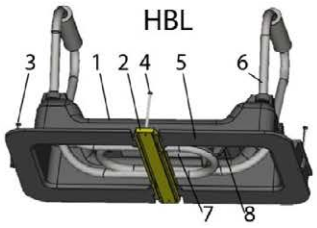
Rope hitches: 1

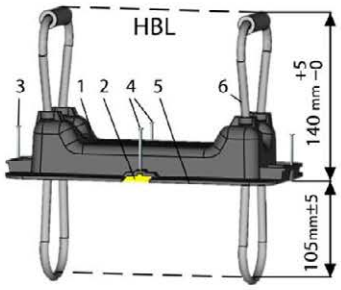




1 Housing
2 Slider
3 Housing stud
4 Slider stud
5 Edge
6 Rope hitch
7 Sticker with product marking
8 Date stamp

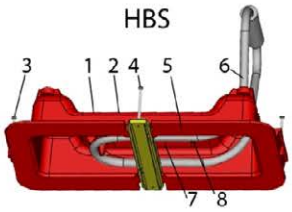
Rope hitches: 2

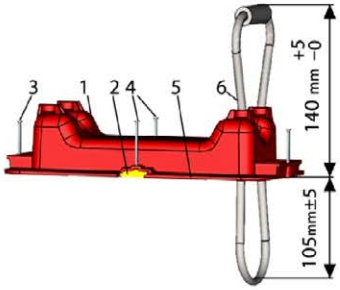




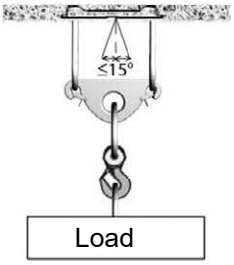
HBS – Hitch Box for Safety

Rope hitches: 1





HBL with 2 rope hitches:



Both rope hitches may be loaded concurrently using a beam as long as the angle of ≤ 15° is complied with.

HBL/HBLE – Hitch Box for Load / HBS – Hitch Box for Safety as anchoring in reinforced concrete ceilings

Item for approval

Appendix 1

Figure 2

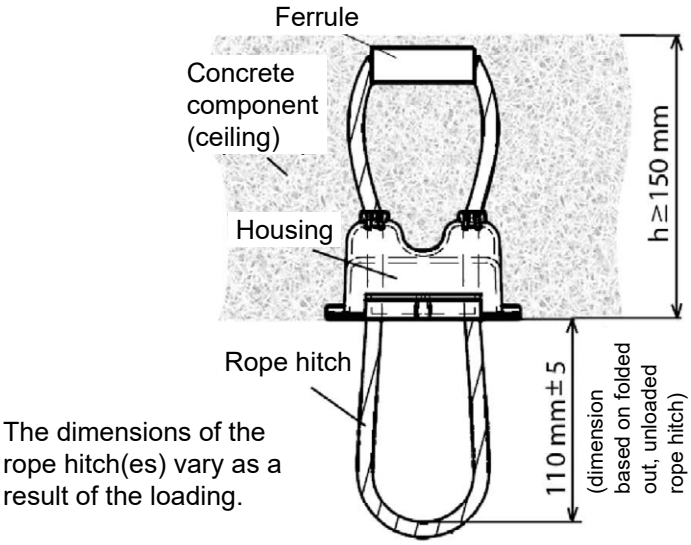


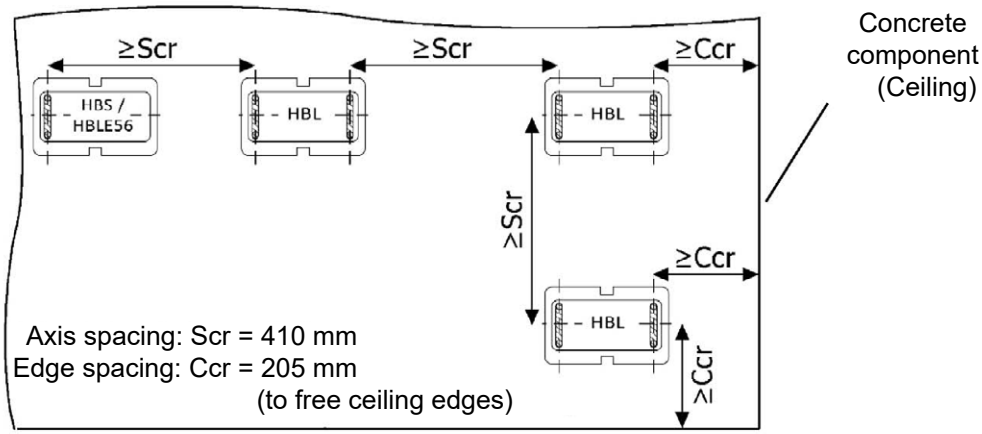
Table 1: Rope hitch box HBL, HBLE56 and HBS with a spacing S ≥ Scr

	HBL	HBLE56	HBS
Concrete component:			
Component thickness h	≥ 150 mm		
System resistance:			
Characteristic resistance N_{Rk} / rope hitch [1]	56 kN		
Rated resistance N_{Rd} / rope hitch [1]	14 kN		
Splitting reinforcement:[2]			
Required reinforcement cross-section (B500A/B, f_{yd} = 43.5 kN/cm²)	1,28 cm²	0,64 cm²	
Splitting reinforcement per direction, L = 1.4 m	z.B. 2 Ø10	z.B. 1 Ø10	

[1] The resistance is also valid for a load incident angle to the vertical of ±15° in each direction.
[2] A splitting reinforcement is required to accommodate the splitting tensile forces which result from the load spreading.
The required reinforcement cross-section must be arranged in both longitudinal and transverse direction.

Figure 3a

Positioning HBL, HBLE56 and HBS



HBL/HBLE – Hitch Box for Load / HBS – Hitch Box for Safety as anchoring in reinforced concrete ceilings

Dimensions, materials, system resistance, installation spacings

Appendix 2

Table 2: Rope hitch boxes HBLE in double combination with a spacing S:
S < Scr and S ≥ Smin

HBLE		50	46	44	28
Concrete component:					
Component thickness h		≥ 150 mm			
System resistance:					
characteristic resistance N_{Rk} / rope hitch [1]	[kN]	50	46	44	28
rated resistance N_{Rd} / rope hitch [1]	[kN]	12,5	11,5	11,0	7,0
Splitting reinforcement:[2]					
required reinforcement cross-section (B500A/B, f_{yd} = 43.5 kN/cm²)		0,64 cm²			
Splitting reinforcement per direction, L = 1.4 m		z.B. 1 Ø10			

[1] The resistance is also valid for a load incident angle to the vertical of ±15° in each direction.
[2] A splitting reinforcement is required to accommodate the splitting tensile forces which result from the load spreading.
The required reinforcement cross-section must be arranged in both longitudinal and transverse direction.

Figure 3b

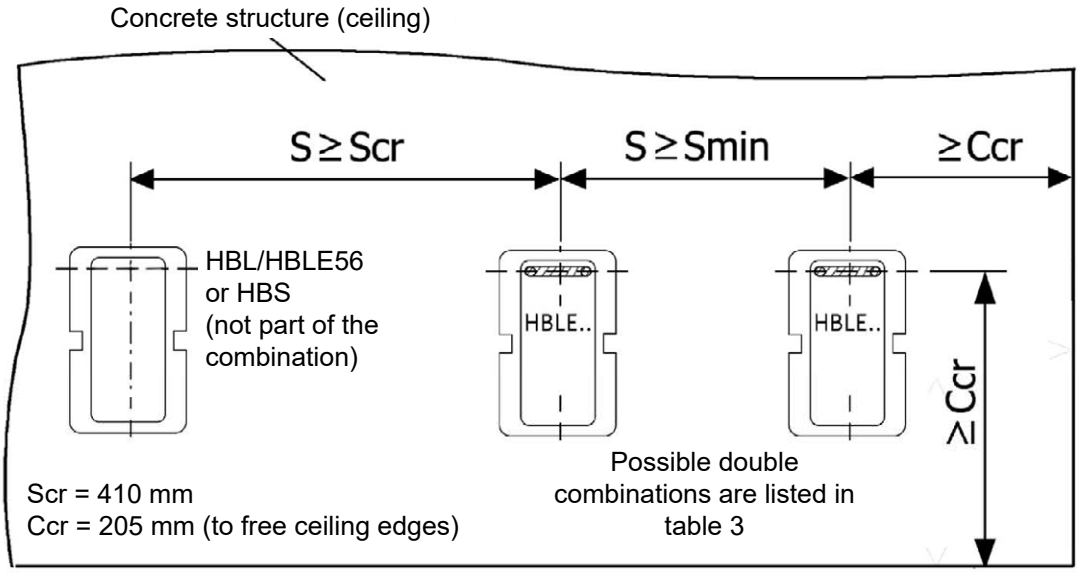


Table 3: Double combination of HBLE.. with reduced spacing S:
S < Scr and S ≥ Smin = 250 mm

Double combination	Spacing S:
HBLE44 + HBLE44	260 mm > S ≥ 250 mm
HBLE46 + HBLE46	290 mm > S ≥ 260 mm
HBLE50 + HBLE50	350 mm > S ≥ 320 mm
HBLE50 + HBLE28	300 mm > S ≥ 255 mm

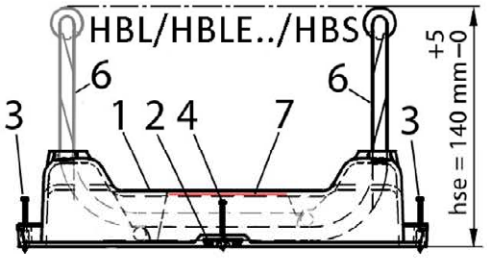


Figure 4

1 Housing
2 Slider
3 Housing stud
4 Slider stud
5 Edge for bonding
6 Rope hitch
7 Sticker with product marking

HBL/HBLE../HBS attachment

– Position HBL/HBLE../HBS (arrangement drawing)
With multiple HBUHBLE../HBS check spacings between neighboring HBL/HBLE../HBS (measured at housing exit) according to Appendix 2.

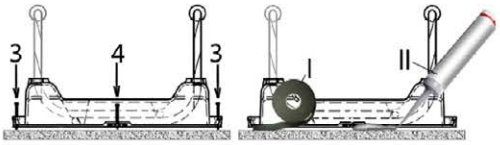


Figure 5 a) b)

a. Wood shuttering:
Knock in housing stud Pos. 3 before sliding studs Pos. 4

b. Metal shuttering:
HBL/HBLE../HBS e.g. bond on with adhesive or adhesive tape

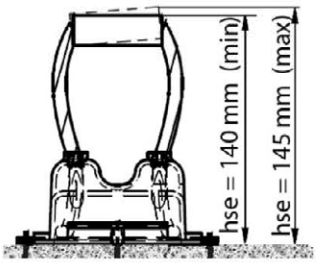


Figure 6

Check:
– HBL/HBLE../HBS flat and firmly on the concrete shuttering
– Rope hitch spacing h in range h = 140 mm - 145 mm
– No open gaps between concrete shuttering and lower HBL/HBS edge

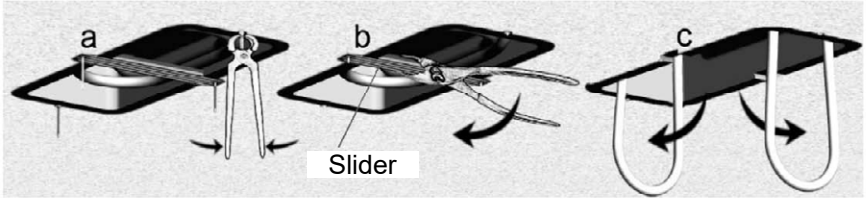
Concreting in HBL/HBLE../HBS

– If a vibrator is used, avoid direct contact with the HBUHBLE/ HBS.

Removing concrete shuttering from ceiling

– After shuttering removal, remove projecting box- and slider studs.
– Break out sliders and press rope hitches into the vertical position.

Figure 7



HBL/HBLE – Hitch Box for Load / HBS – Hitch Box for Safety as anchoring in reinforced concrete ceilings

Assembly instruction HBL/HBLE../HBS

Appendix 4