

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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Date:

17.05.2019

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Z-21.8-1988

Applicant: number
Jakob AG
3555 Trubschachen
Switzerland

Validity period:

from: **17 May 2019**

to: **23 February 2023**

Subject of approval:

Hitch Box for Load (HBL, HBLE) and Hitch Box for Safety (HBS)

The aforementioned subject of approval is hereby granted general building supervisory approval. This General Building Supervisory Approval comprises six pages and four appendices. This General Building Supervisory Approval replaces the general building supervisory approval No. Z-21.4.-1998 dated 21 February 2018. The item was first granted approval on 22 February 2013.

Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung
Translation of the original German version not checked by the Deutsches Institut für Bautechnik

DIBt

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- 6 This notice may be withdrawn.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.
- 8 The general type approval covered by this notice also constitutes a general construction

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 design, sizing and execution

3.1 Design and sizing

3.1.1 General

The anchor points must be designed and sized based on engineering principles. Taking into account the loads to be anchored, auditable calculations and design drawings must be produced.

The design drawings must contain details regarding the position and length of the plastic housing as well as regarding the type of the rope hitch box to be installed (HBL, HBLE, HBS). The anchor points must be sized based on engineering principles. The evidence for the direct local force input into the concrete has been provided.

The transfer of the loads to be anchored within the component must be demonstrated.

The reduction of the concrete cross-section due to the installation of rope hitch boxes may need to be taken into account in the static structural proof.

The rope hitch boxes HBL, HBLE and HBS must only be used as anchor points for temporary loads. Planned transverse loads are not permitted. Diagonal loading up to an angle of incidence of 15° to the vertical can be accommodated.

It is not permitted to drop below the minimum spacings of the rope hitches (axis and edge spacings) and the component measurements (component thickness) according to Appendix 2 and 3.

3.1.2 Required evidence

Proof must be provided, that the rated value of the action (loading) N_{Ed} does not exceed the rated value of the resistance (loading capacity) N_{Rd} :

$$N_{Ed} \leq N_{Rd}$$

The rated values of the resistances N_{Rd} against steel and concrete failure for the rope hitch boxes HBL, HBLE56 and HBS are shown in Appendix 2, Table 1.

If two neighboring rope hitch boxes are provided with a spacing of $s < s_{cr}$, then this is termed a grouped fixing (double combination). In this case, rope hitch boxes of type HBLE28, HBLE44, HBLE46 or HBLE50 must be installed in the combinations according to Appendix 3, Table 3. The rated values of the resistances N_{Rd} for the rope hitch boxes HBLE of the double combinations are shown in Appendix 3, Table 2.

To accommodate the splitting forces, a minimum reinforcement according to Appendix 2, Table 1 or Appendix 3, Table 2 must be provided.

3.2 Execution

3.2.1 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 it 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.

3.2.2 Use as a load anchor point

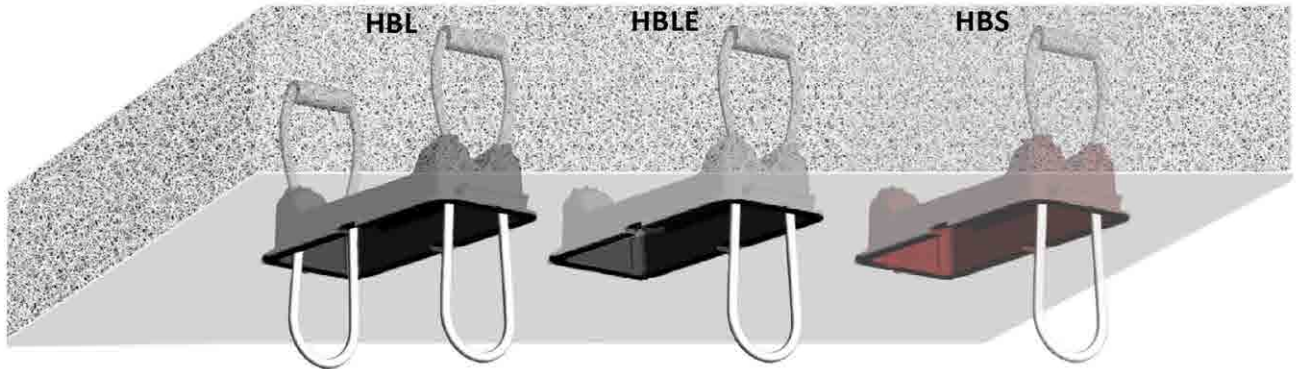
To use the rope hitch boxes HBL, HBLE and HBS as a load anchor point, the rope hitches are folded out at 90° to the plastic housing.

The concrete compressive strength of the concrete component must have reached at least 25 N/mm² by the time the temporary load is attached.

Beatrix Wittstock,
Divisional Head

Certified [Stamp Deutsches Institut für Bautechnik]

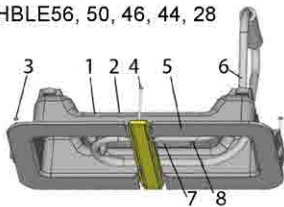
Figure 1 HBL/HBLE.. and HBS in the installed condition



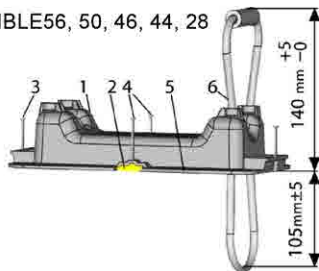
HBL/HBLE.. – Hitch Box for Load

Rope hitches: 1

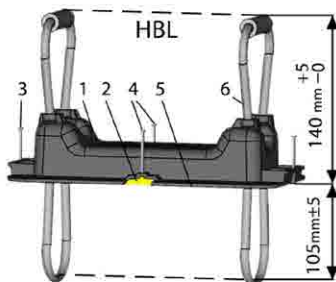
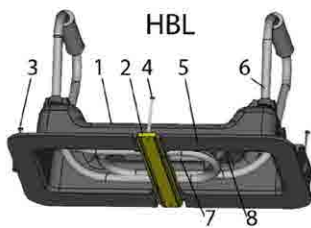
HBLE56, 50, 46, 44, 28



HBLE56, 50, 46, 44, 28



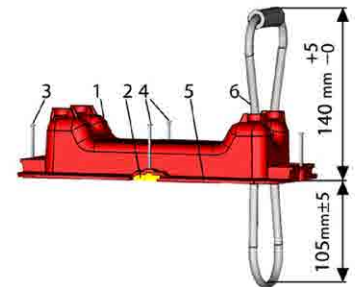
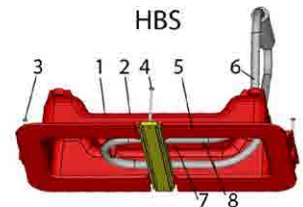
Rope hitches: 2



HBS – Hitch Box for Safety

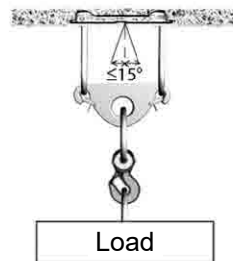
Rope hitches: 1

HBS



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

HBL with 2 rope hitches:



Both rope hitches may be loaded concurrently using a beam as long as the angle of $\leq 15^\circ$ is complied with.

HBL/HBLE – Hitch Box for Load / HBS – Hitch Box for Safety

Item for approval

Appendix 1

Figure 2

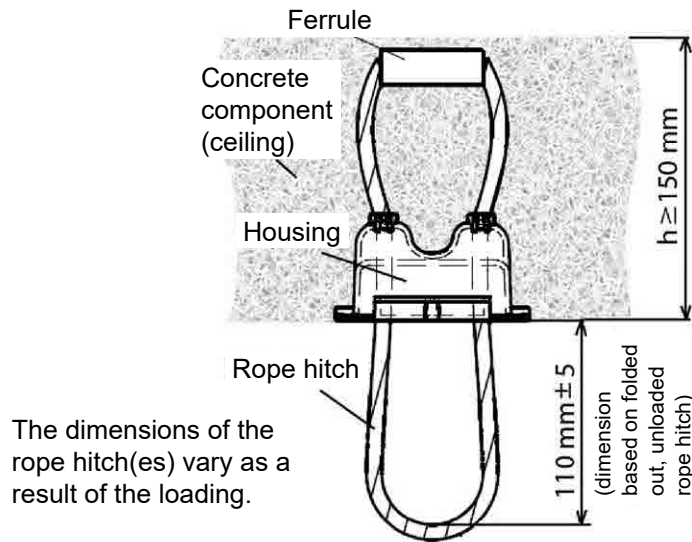


Table 1: Rope hitch box HBL, HBLE56 and HBS with a spacing $S \geq Scr$

	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, $f_{yd} = 43.5 \text{ kN/cm}^2$)	1,28 cm ²	0,64 cm ²	
Splitting reinforcement per direction, L = 1.4 m	z.B. 2 Ø10	z.B. 1 Ø10	

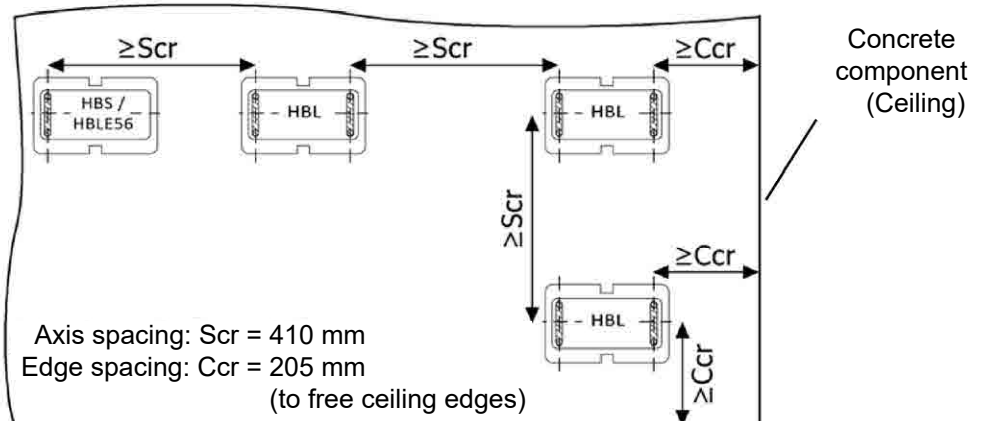
¹⁾ The resistance is also valid for a load incident angle to the vertical of $\pm 15^\circ$ in each direction.

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

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, $f_{yd} = 43.5 \text{ kN/cm}^2$)		0,64 cm ²			
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 $\pm 15^\circ$ 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

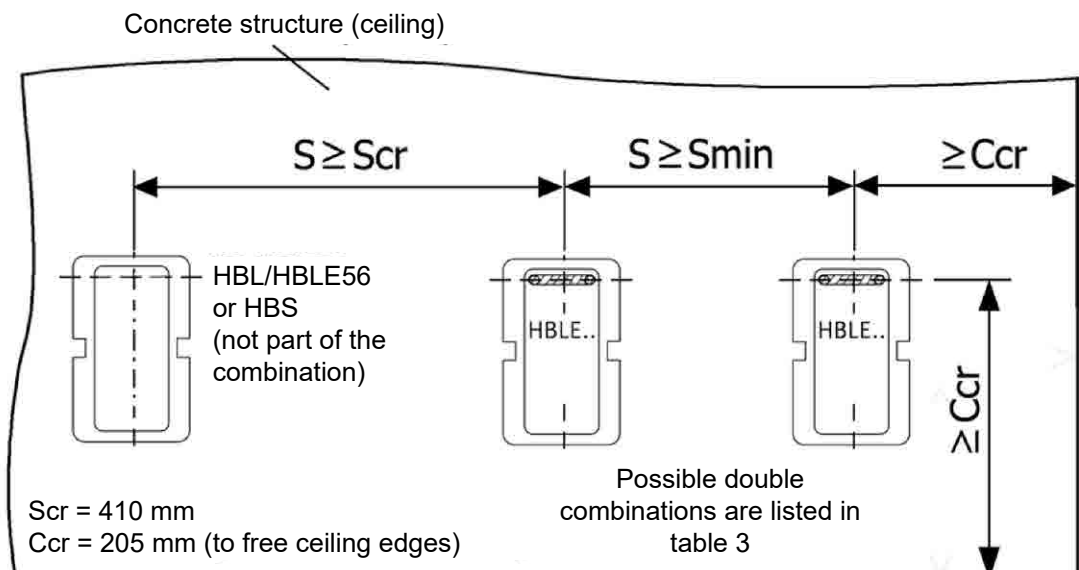


Table 3: Double combination of HBLE.. with reduced spacing S:
S < Scr and S ≥ Smin = 250 mm

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

HBL/HBLE – Hitch Box for Load / HBS – Hitch Box for Safety

Dimensions, materials, system resistance, installation spacings

Appendix 3

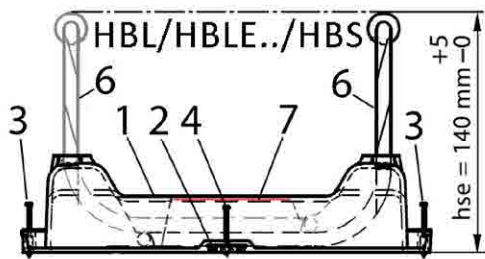


Figure 4

- 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.

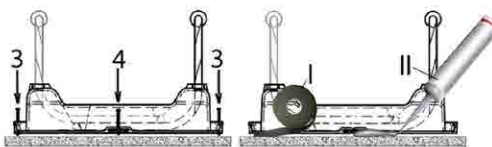


Figure 5 a) b)

- 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

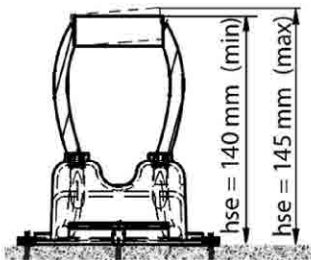


Figure 6

Check:

- HBL/HBLE../HBS flat and firmly on the concrete shuttering
- Rope hitch spacing h in range $h = 140 \text{ mm} - 145 \text{ mm}$
- No open gaps between concrete shuttering and lower HBL/HBS edge

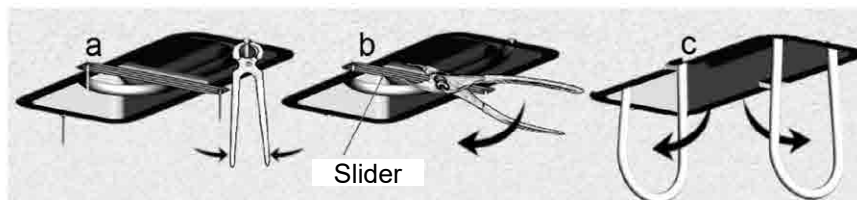
Concreting in HBL/HBLE../HBS

- 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

Assembly instruction HBL/HBLE../HBS

Appendix 4