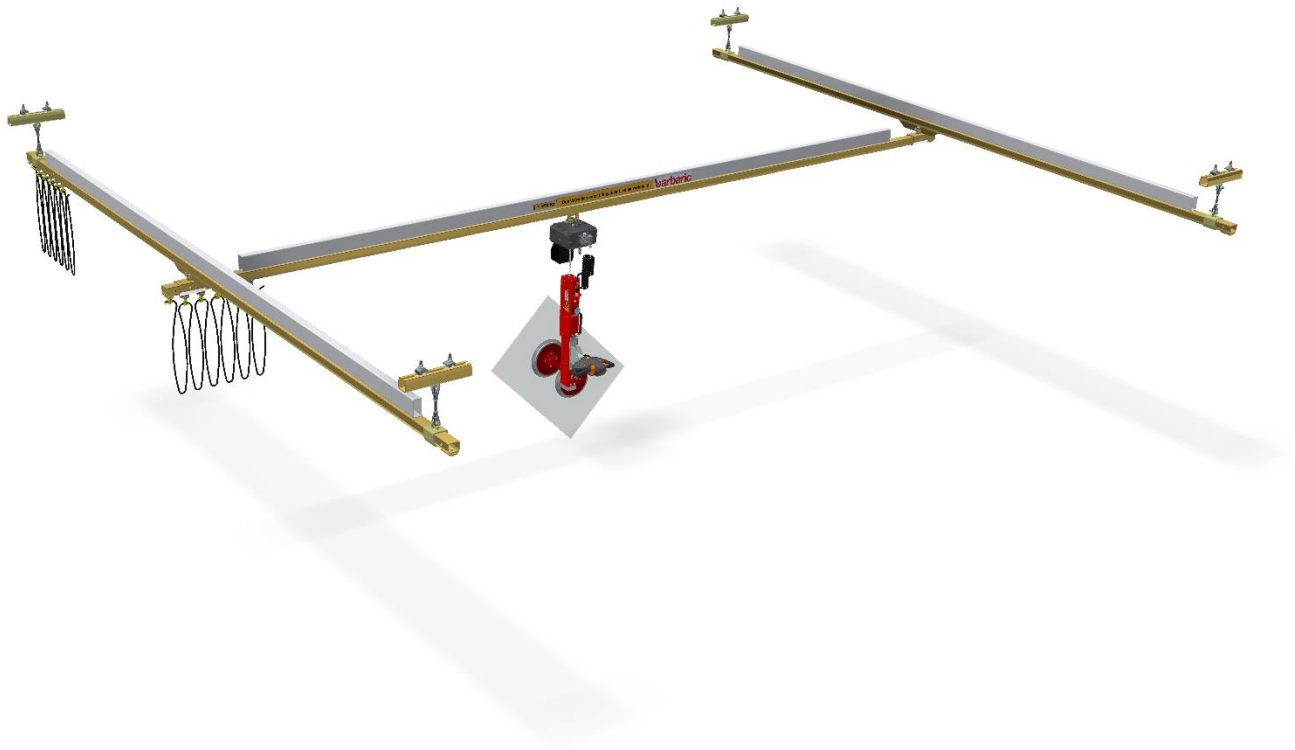
# Assembly instruction
# Crane system
# with columns (I-Beam)



1. Measure the position of the rail system and the column:
   Be sure that the rail system covers all the required working area and that no collision edges are present.

2. Furthermore, ensure that there are no expansion joints in the area of the boreholes and there is no floor heating (distance according to data sheet adhesive anchor - see attachment). Attention the Columns have to be in balance and to each other.

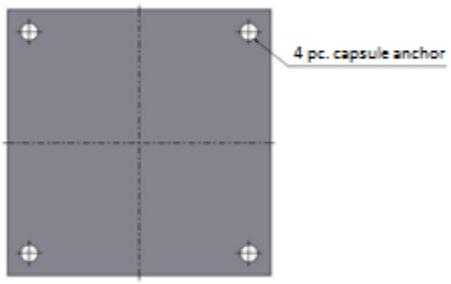



Fig. 1

3. Assembly suspension:

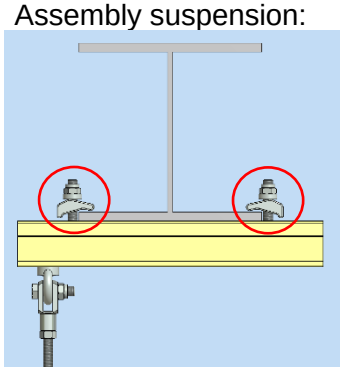


Fig. 2.1

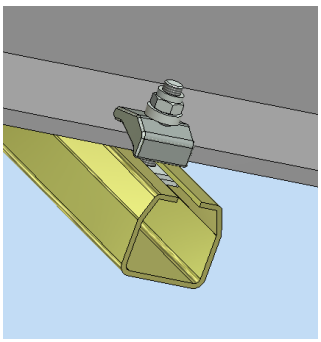


Fig. 2.2

Assembly suspension clamped on the I-Beam.

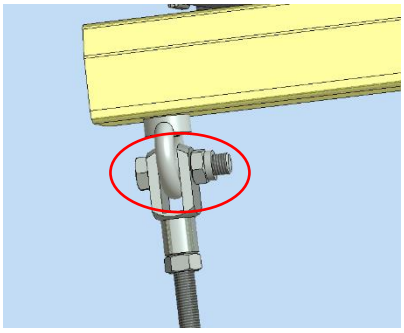


Fig. 2.3

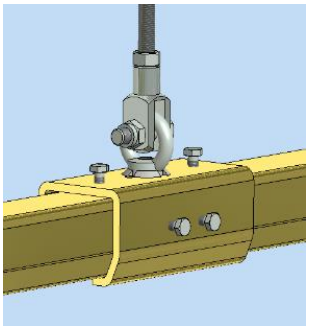


Fig. 2.4

Mount the thread rod (Fig. 2.3) and add the fork head and the socket. As shown on Fig. 2.2, the U-head is secured with a nut. The fastening screw, where the socket is mounted, is fixed with a safety nut.

4. Mounting of the crane runway rails in sockets:

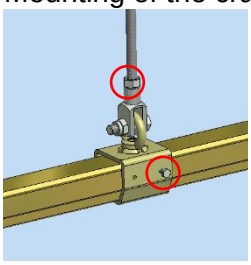


Fig. 3.1

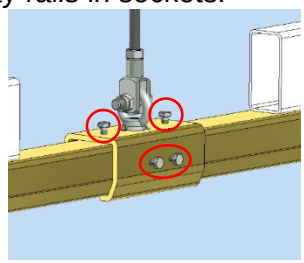


Fig. 3.2

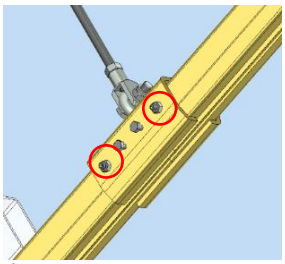


Fig. 3.3

After the mounting of the crane runway rails, the whole system has to be put in balance. After that, fix the adjusting screws at the socket (Fig. 3.1) and at the connection sleeves (Fig. 3.2 and 3.3). Take care of the connection sockets, that the transport trolley can run across the rail bond without jerk (Fig. 3.2 – no distance or offset above the rails). To prevent the rails from slipping out of the connecting sockets, they have to be secured with threaded bolt with pin (Fig. 3.3).

5. Fix the label:

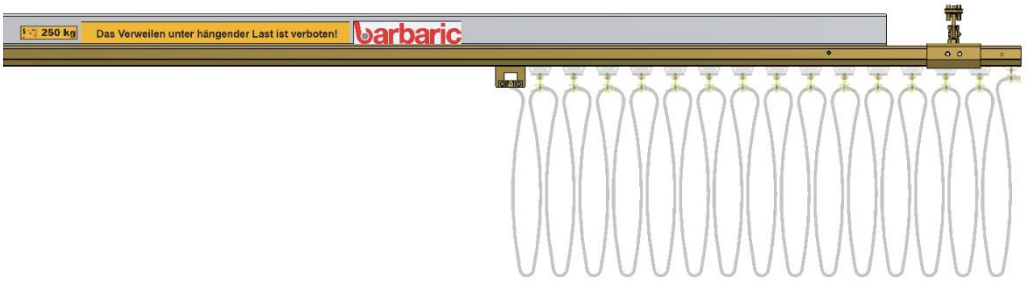


Fig. 4

Fix the labels which are included in the barbaric scope of delivery.

6. Mounting of the transfer table role device with bridge:

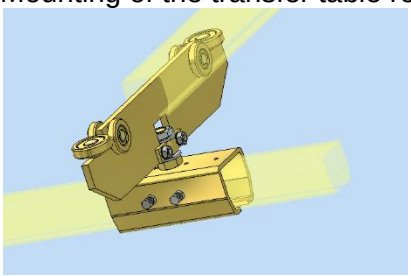


Fig. 5

Clamp the transfer table role device on the bridge (Fig. 5), adjust the track wide of the crane runway, and secure them against slipping. Care should be taken about the right overhang.

7. Mount the energy supply and secure them via safety screw:


Fig. 6.1

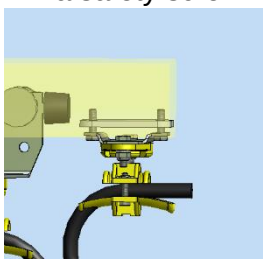


Fig. 6.2

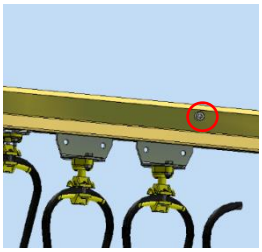


Fig. 6.3

Mount the energy supply (Fig. 6.1) and fix them via clamping plates at the end of the rail (Fig. 6.2). Afterwards a safety screw has to be assembled in front of the energy supply (Fig. 6.3). This prevents the power supply from being damaged by the transport trolley.

8. Mount the transport trolley and the vacuum lifter on the bridge:

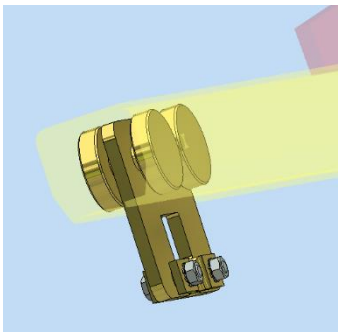


Fig. 7.1

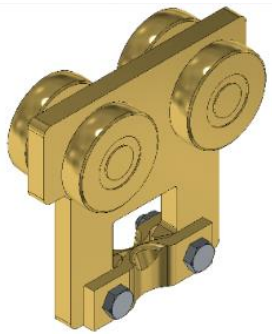


Fig. 7.2

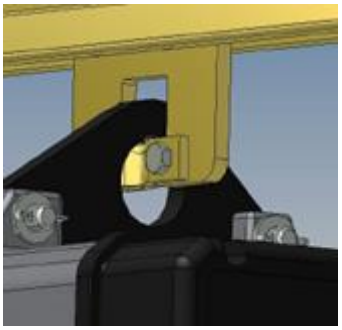


Fig. 7.3

Open the two screws on the transport trolley and hang up the chain hoist.
Before attaching the chain hoist, make sure that the mounting eyes are mounted as shown in Fig. 7.3.

9. Mount the stopper of the rail, fix and secure it:

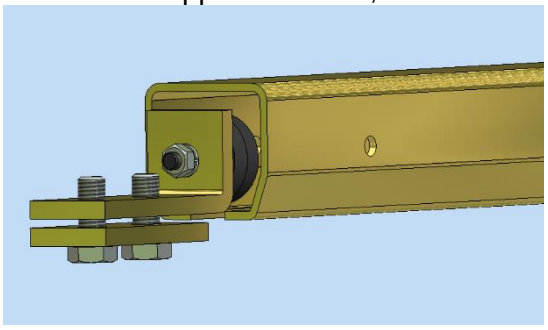


Fig. 8.1

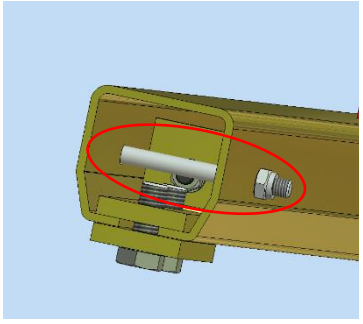


Fig 8.2

Assemble the stopper at the End of the rails (clamp) (Fig. 8.1) and afterwards secure the rail behind the stopper with a screw (Fig. 8.2). Limited the possible crane runway of the chain hoist, therefore a crash is not possible.

10. Connect vacuum lifter electrically and pneumatically:

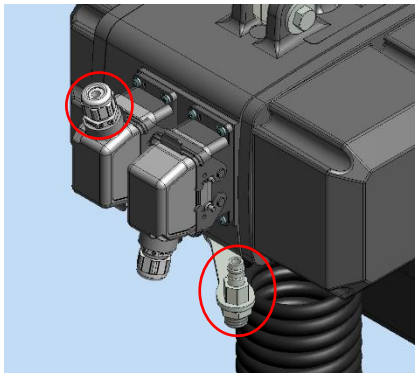


Fig. 9

Connect electrical according to circuit diagram (see documentation) and pneumatically by clutch on the power supply.

11. Connect Main lead by the electrician:

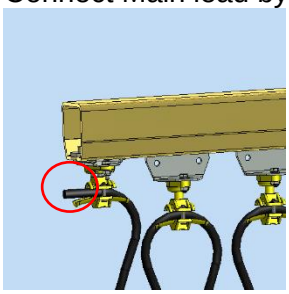


Fig. 10

The power supply can be mounted in such a way that the cable and the hose cannot be damaged when the boom is pivoted.

12. Fix the main switch unit on the column:

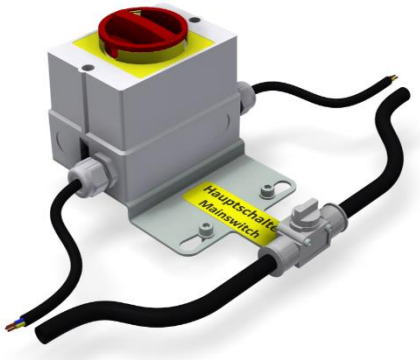



Fig. 11

The main switch unit is scope of delivery. This main switch unit enable the user to cut the energy – and compressed air of locally. Connect the main supply line by the electrician. Do not turn off the energy – and compressed air during lifting, risk of injury!

13. Start the performance check and keep the documentation in mind

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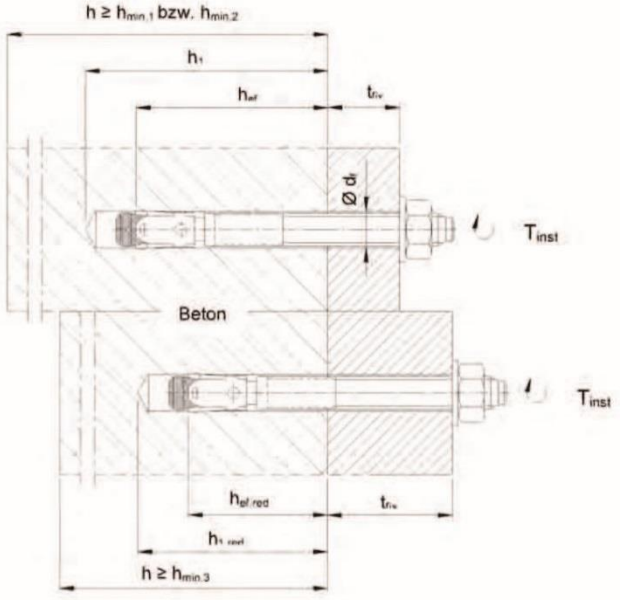
**ETA-99/0010 vom 6. April 2016**

Deutsches Institut für Bautechnik DIBt

## Tabelle B1: Montage- und Dübelkennwerte, BZ plus

| Dübelgröße | | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bohrernenndurchmesser | | $d_0$ | [mm] | 8 | 10 | 12 | 16 | 20 | 24 | 28 |
| Bohrerschneidendurchmesser | | $d_{cut} \leq$ | [mm] | 8,45 | 10,45 | 12,5 | 16,5 | 20,55 | 24,55 | 28,55 |
| Drehmoment beim Verankern | Stahl galvanisch verzinkt | $T_{inst}$ | [Nm] | 20 | 25 | 45 | 90 | 160 | 200 | 300 |
| | Stahl diffusionsverzinkt | $T_{inst}$ | [Nm] | - | 22 | 40 | 90 | 160 | - | - |
| | nichtrostender Stahl A4, HCR | $T_{inst}$ | [Nm] | 20 | 35 | 50 | 110 | 200 | 290 | - |
| Durchgangsloch im anzuschließenden Bauteil | | $d_f \leq$ | [mm] | 9 | 12 | 14 | 18 | 22 | 26 | 30 |
| **Standardverankerungstiefe** | | | | | | | | | | |
| Bohrlochtiefe | Stahl verzinkt | $h_1 \geq$ | [mm] | 60 | 75 | 90 | 110 | 125 | 145 | 160 |
| | nichtrostender Stahl A4, HCR | $h_1 \geq$ | [mm] | 60 | 75 | 90 | 110 | 125 | 155 | - |
| Eff. Verankerungstiefe | Stahl verzinkt | $h_{ef}$ | [mm] | 46 | 60 | 70 | 85 | 100 | 115 | 125 |
| | nichtrostender Stahl A4, HCR | $h_{ef}$ | [mm] | 46 | 60 | 70 | 85 | 100 | 125 | - |
| **Reduzierte Verankerungstiefe** | | | | | | | | | | |
| Bohrlochtiefe | | $h_{1,red} \geq$ | [mm] | 49 | 55 | 70 | 90 | - | - | - |
| Reduzierte, effektive Verankerungstiefe | | $h_{ef,red}$ | [mm] | 35 | 40 | 50 | 65 | | | |




**Bolzenanker BZ plus**

**Verwendungszweck**
Montagekennwerte

**Anhang B3**

**Seite 15 der Europäischen Technischen Bewertung**
**ETA-99/0010 vom 6. April 2016**

Deutsches Institut für Bautechnik DIBt

**Tabelle B2:** Minimale **Achs-** und **Randabstände, Standardverankerungstiefe**, BZ plus

| Dübelgröße | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 |
|---|---|---|---|---|---|---|---|---|---|
| **Standardbauteildicke** | | | | | | | | | |
| **Stahl verzinkt** | | | | | | | | | |
| Standardbauteildicke | $h_{min,1}$ | [mm] | 100 | 120 | 140 | 170 | 200 | 230 | 250 |
| **Gerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 45 | 60 | 60 | 95 | 100 | 125 |
| | für c ≥ | [mm] | 70 | 70 | 100 | 100 | 150 | 180 | 300 |
| Minimaler Randabstand | $c_{min}$ | [mm] | 40 | 45 | 60 | 60 | 95 | 100 | 180 |
| | für s ≥ | [mm] | 80 | 90 | 140 | 180 | 200 | 220 | 540 |
| **Ungerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 45 | 60 | 65 | 90 | 100 | 125 |
| | für c ≥ | [mm] | 80 | 70 | 120 | 120 | 180 | 180 | 300 |
| Minimaler Randabstand | $c_{min}$ | [mm] | 50 | 50 | 75 | 80 | 130 | 100 | 180 |
| | für s ≥ | [mm] | 100 | 100 | 150 | 150 | 240 | 220 | 540 |
| **Nichtrostender Stahl A4, HCR** | | | | | | | | | |
| Standardbauteildicke | $h_{min,1}$ | [mm] | 100 | 120 | 140 | 160 | 200 | 250 | - |
| **Gerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 50 | 60 | 60 | 95 | 125 | - |
| | für c ≥ | [mm] | 70 | 75 | 100 | 100 | 150 | 125 | |
| Minimaler Randabstand | $c_{min}$ | [mm] | 40 | 55 | 60 | 60 | 95 | 125 | |
| | für s ≥ | [mm] | 80 | 90 | 140 | 180 | 200 | 125 | |
| **Ungerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 50 | 60 | 65 | 90 | 125 | - |
| | für c ≥ | [mm] | 80 | 75 | 120 | 120 | 180 | 125 | |
| Minimaler Randabstand | $c_{min}$ | [mm] | 50 | 60 | 75 | 80 | 130 | 125 | |
| | für s ≥ | [mm] | 100 | 120 | 150 | 150 | 240 | 125 | |
| **Mindestbauteildicke** | | | | | | | | | |
| **Stahl verzinkt, nichtrostender Stahl A4, HCR** | | | | | | | | | |
| Mindestbauteildicke | $h_{min,2}$ | [mm] | 80 | 100 | 120 | 140 | - | - | - |
| **Gerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 45 | 60 | 70 | - | - | - |
| | für c ≥ | [mm] | 70 | 90 | 100 | 160 | | | |
| Minimaler Randabstand | $c_{min}$ | [mm] | 40 | 50 | 60 | 80 | | | |
| | für s ≥ | [mm] | 80 | 115 | 140 | 180 | | | |
| **Ungerissener Beton** | | | | | | | | | |
| Minimaler Achsabstand | $s_{min}$ | [mm] | 40 | 60 | 60 | 80 | - | - | - |
| | für c ≥ | [mm] | 80 | 140 | 120 | 180 | | | |
| Minimaler Randabstand | $c_{min}$ | [mm] | 50 | 90 | 75 | 90 | | | |
| | für s ≥ | [mm] | 100 | 140 | 150 | 200 | | | |

| | | | |
|---|---|---|---|
| **Brandbeanspruchung von einer Seite** | | | |
| Minimaler Achsabstand | $s_{min,fi}$ | [mm] | Siehe Normaltemperatur |
| Minimaler Randabstand | $c_{min,fi}$ | [mm] | Siehe Normaltemperatur |
| **Brandbeanspruchung von mehr als einer Seite** | | | |
| Minimaler Achsabstand | $s_{min,fi}$ | [mm] | Siehe Normaltemperatur |
| Minimaler Randabstand | $c_{min,fi}$ | [mm] | ≥ 300 mm |

Zwischenwerte dürfen interpoliert werden.

**Bolzenanker BZ plus**

**Verwendungszweck**
Minimale **Achs-** und **Randabstände** für **Standardverankerungstiefe**

**Anhang B4**