INSTALLATION INSTRUCTIONS
REBLOC® PRECAST CONCRETE BARRIER

for:

REBLOC 50 series:

REBLOC 50_12_T3/W2

REBLOC 50H_4_T3/W2

REBLOC 50H_12_T3/W1

REBLOC 60 series:

REBLOC 60_6_T3/W2

REBLOC 60_12_T3/W2

REBLOC 60H_12_N2W4

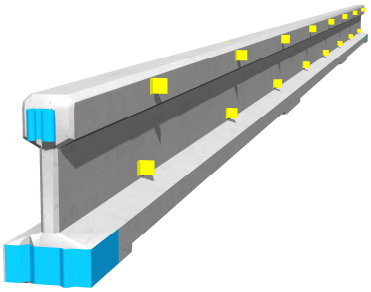
REBLOC 80S series:

REBLOC 80S_4_T3/W2 | 80SA_4_T3/W2 | N2/W4

REBLOC 80S_8_T3/W2 | 80SA_8_T3/W2

REBLOC 80S_12_T3/W2 | N2/W4 | H1/W4

REBLOC 80SA_12_N2/W3



1. Important remarks

The following installation instructions serve as a support for the self-erection of the REBLOC® restraint systems by the customer. Knowledge of and compliance with all relevant regulations and standards (motorway construction sites, installation, safety, etc.) as well as the work safety precautions must be assured before starting any installation work. The same applies for the professional installation and the use of any auxiliary equipment e. g. lifting clamps or cranes. Construction sites on busy motorways must conform to the minimum mandatory road security, and load carrying / transport securing system requirements must be ensured. When the elements cannot be placed for intermediate storage on a level or paved carriageway / surface for short or long time periods (e.g. for intermediate storage during system installation), appropriate measures must be taken in order to prevent toppling / overturn of the elements (e.g. use levelling shims / wedges to ensure a level foundation). Ensure that this installation instruction is the current valid edition (version number / date).

2. General

The connecting coupling of the REBLOC® Safety Barrier Systems is fully-integrated in the safety barrier. No auxiliary or additional parts are required. It must be ensured that only matching elements are connected with each other to secure a complete system efficiency in accordance with EN 1317. The combinable and matching elements are presented in the info sheets “Product Overview” and the respective data sheets. The system is fully functional when all elements are interconnected as described in this manual. In the case of exceptional local conditions it is important to refer to the national regulations and / or to consult the project contractor or the safety barrier manufacturer.

3. Choice of appropriate system

The selection of the appropriate REBLOC® system is undertaken by the contractor or road designer according to the national requirements, the local conditions and the tender requirements on the basis of the EN 1317. The principal criteria are the containment level, the working width and the impact severity level.

4. Minimum installation length

The minimum installation length is required to secure the efficiency of each single REBLOC® system according to EN 1317**.** The minimum installation length depends on the safety barrier system and the containment level, and is indicated in the data sheets.

5. Foundation and underlay

The system should be erected on a continuously level and structurally stabile surface (asphalt or concrete):

- The levelness of the underlay shall not exceed ± 1,5 cm per 8m measuring length (longitudinal)
- Maximum transverse tilt relative to the carriageway: 10 %
- Load carrying capacity: minimum 200kN/m^2
- The underlay should be level and frost resistant according to national regulations and standards.
- It should be ensured that there is no foreign particle under/close to the barriers which may cause uneven coupling meshing or unnecessary twisting of the barrier.

- The continuity of height and alignment of the barrier system is to be assured.

6. System beginning / end construction

The REBLOC® Systems consist of free-standing elements which are placed directly on the road surface, and are not connected to the subsoil. The restraining function is achieved through the coupling connection between each element in combination with the tension bar in each element.

The terminal elements of the following systems are anchored in the carriageway (asphalt): 50H_4, 50H_8, 60H_4, 60H_8, 60H_12, 80S_4, 80S_8 and 80S_12.
For the anchorage details see datasheets 50H_2T, 60_3T and 80S_4T.

The 50_12, 60_12 and 60_6 systems are crash tested without anchored beginning / end elements; the functionality of the system in respect to the minimum installation length criteria is achieved without the use of beginning / end elements.

In accordance with national and/or project specifications the REBLOC® barrier system can be connected to or overlap another barrier system. Projects may include the usage of tapered beginning / end elements, as also lane changes. When possible the safety barrier system should have a flared end according to national or project requirements.

7. Applicable documentation

Datasheet REBLOC 50_12_T3/W2
Datasheet REBLOC 50H_4_T3/W2
Datasheet REBLOC 50H_12_T3/W1
Datasheet REBLOC 60_6_T3/W2
Datasheet REBLOC 60_12_T3/W2
Datasheet REBLOC 60H_12_N2/W4
Datasheet REBLOC 80S_4_T3/W2
Datasheet REBLOC 80SA_4_T3/W2|N2/W4
Datasheet REBLOC 80S_8_T3/W2
Datasheet REBLOC 80SA_8_T3/W2
Datasheet REBLOC 80S_12_ T3/W2
Datasheet REBLOC 80S_12_N2/W4
Datasheet REBLOC 80S_12_H1/W4
Datasheet REBLOC 50H_2T
Datasheet REBLOC 60_3T
Datasheet REBLOC 80S_4T

8. Installation process

8.1. Delivery of the elements

The elements are delivered to the construction site on suitable vehicles, whereby all national road safety and road construction site requirements must be fulfilled. Site-access roads should be checked / inspected. Construction sites on busy motorways must conform to the minimum mandatory road security and load carrying / transport securing system requirements must be ensured. Installation work should be carried-out in the direction of the traffic flow.

Photo 1

8.2. Unloading and positioning of the elements

After the removal of the transport securing belts / devices, each element is unloaded and positioned separately from the truck. An appropriate crane (truck loading crane, mobile crane or excavator) lifts the elements at the lifting points by using a chain suspension or lifting beam.

Each element has two pre-defined hoisting points on top. The elements must only be lifted with the universal head lifting link (Halfen DEHA 6102-2,5) for spherical head anchors with sufficient lifting capacity (2,5 tons). It is essential to ensure that the tongue from the appropriate universal head lifting link points in the load direction (see photo 2).

The manufacturer's specifications for the appropriate universal head lifting link are obligatory and must be strictly adhered to; see enclosed instructions of the company Halfen (the current instruction is published on the website of the company Halfen www.halfen.com).

Internal threads (e.g. on the upper side of the element) are used for other purposes and must not be used.

Photo 2

Positioning by chain suspension:

Make sure the sling angle between upper edge of the barrier element and the chain is not less than 60° to minimize horizontal forces (see photo 3). The chain length has to be adapted corresponding to the element length.

Photo 3

Positioning by lifting beam:

The angle between upper edge of the barrier element and the chain must be 90 ° to minimize horizontal forces (see photo 4).

Photo 4

The elements are positioned and adjusted along the previously marked road surface. Construction sites on busy roads must ensure adequate safety for the erection team and the motorway / road users – no erection vehicle / crane / or part of the safety barrier is allowed to protrude into the flow of traffic / active traffic lanes. Overhead electric cables or other objects adjacent to the erection site must be inspected and preplanned to allow safe installation.

8.3. Connection of the elements

Check visually that there is no foreign particle under/close to the barriers which may cause uneven coupling meshing or unnecessary twisting of the barrier. The element, which is to be integrated in the continuous chain of the barrier system, should be slightly inclined at the end to be connected to provide an easier installation. It is positioned so that the lower edge of the coupling is above the upper edge of the coupling of the pre-positioned element. Now, the end-face of the element to be installed is manipulated to the edge-face of the already in-position element, to bring an overlapping of both couplings. It is important to avoid contact between the precast concrete elements during installation and manipulation, this avoids any concrete damage.

In a further step the element is lowered whereby the nose and recess of the steel shoes of adjoining barriers should be aligned and guided into each other simultaneously as the couplings are connected to each other.

The element to be installed should be manipulated horizontally and vertically, while avoiding any swinging of the element. The barriers are positioned and adjusted along the previously marked alignment, to achieve a continuous and attractive appearance.

Photo 5

Photo 6

Photo 7

8.4. Installation of an expansion joint (if required)

Depending on the local site conditions REBLOC® recommends to install an expansion joint element approximately every 400 m for REBLOC 50 series / REBLOC 60 series resp. every 1000 m for REBLOC 80S series (see datasheets for temporary dilatation). These elements take up movements of the bridge caused by temperature fluctuations.

Required accessories / tooling:

- Universal head lifting link: DEHA 6102-2,5
- Expansion-joint systems: supplied by REBLOC; including REBLOC® special coupling, 1 steel chain for REBLOC 50 series and 60 series and 2 steel chains for REBLOC 80S series, safety hooks and connection links (as required). The chain length is determined by the expansion gap size (which is provided by the construction site engineer):
- Steel cover and bolting: supplied by REBLOC; the cover dimensions are dependent on the expansion gap sizes. Advance order time is required for a good scheduled delivery.
- Open-ended spanner S10
- Open-ended spanner S19

The expansion-joint precast concrete elements are delivered and installed as described in sections 8.1 – 8.3. After positioning the first precast element slide the steel cover flush over one the precast element side walls (do not bolt or fix the steel cover at the moment). Position the second expansion-joint element and allow a gap x between the two expansion-joint elements. Ensure that between the two expansion joint elements there is a gap of x, to allow for the thermal expansion (see photo 8). The gap x is determined by the local specifications and requirements (gap of the bridge expansion joint), and by the ambient installation temperature.

Photo 8

The exact gap length x, between the expansion joint elements must be provided by the contractor / site engineer and must be in accordance with a characteristic temperature table. Install and position the expansion-joint precast concrete elements. Attach the special REBLOC® coupling, and fix the chain and safety hooks etc.; Attach and fix fasteners on the underside of the special REBLOC® coupling - 2x M6/70mm incl. nuts and washers; this is very important. The steel cover is adjusted to be centrally located over the expansion-gap, ensure the correct location of the three steel fastening brackets – the outer brackets are located over the precast element water openings, while the middle bracket is central over the expansion-gap. Now secure the steel cover using the fasteners (3 sets of hot-dipped galvanised threaded rod Dm.12 mm, Length 300 mm for REBLOC 50 series / Length 320 mm for REBLOC 60 series / Length 360 mm for REBLOC 80S series), use an open-ended spanner (see photo 9).

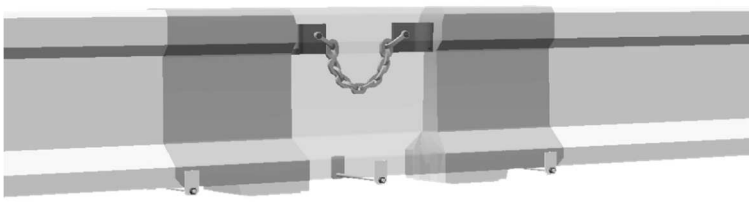


Photo 9

9. Further information

9.1. Before lifting it is essential to check the safety element barriers lifting anchors and all lifting equipment for wear or reduced lifting capacity.
9.2. Only experienced and suitably trained operators should carry-out this installation work.
9.3. A minimum working area width of 6 m for cranes and installation work is recommended. 5m on the crane side/installation side of the safety barriers and 1m clear zone on the other side.
9.4. The location and the lengthwise alignment for the placing of the safety barriers should be identified by the roads/highways construction company.
9.5. The underlay must be level and free from foreign particle, ice and snow.
9.6. Barriers should be placed level with the traffic lane and there should be no obstacle within the working width.
9.7. Lift and manipulate only one barrier at a time, in no circumstance should two or more barriers be simultaneously manipulated.
9.8. Barriers should remain horizontal when lifted, and it must be ensured that no part of the barrier or the lifting system/crane projects into the traffic-flow.
9.9. Barriers should be lifted and positioned avoiding any barrier damage.
9.10. Barriers should be installed according to the system plan (when provided).
9.11. Work from the traffic-free side of the barrier and at a safe distance from the traffic flow.
9.12. Technical drawings (including tolerances) for the installation of elements are available upon customer request.

Attachment: Assembly Instruction DEHA Lifting Anchor, Universal Head Lifting Link

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