

MAINTENANCE MANUAL

REBLOC[®] ROAD RESTRAINT SYSTEMS

for:

REBLOC RB80A_8_H2/W1

1. General

The connecting coupling of the REBLOC safety barrier system RB80A_8 is integrated into the element, and for this reason the REBLOC[®] system provides maximum protection against vandalism. In general no regular maintenance work is required.

However, maintenance work may be required following a vehicle(s) collision / impact into the safety barrier system. Depending on the severity of the collision / impact between the vehicle(s) and the REBLOC[®] safety barrier there are various scenarios:

2. Precast Concrete Elements

- 1) If there are just scratches and / or abrasion marks visible but no cracks and no deflection of the system; no maintenance / repair works is necessary.
- 2) If there is no damage / crack formation visible, nevertheless the system has been displaced, disconnect the anchor bolt nuts of the effected elements and realign the safety barrier system.
Check that the anchoring system is not deformed or broken and tighten the anchor bolts to the specified torque. Where the elements must be replaced, because the anchoring system is dysfunctional (U profile and area near the anchoring), replace the elements and tighten the anchoring bolts to the specified torque.
- 3) If there are cracks with a width > 0,2 mm or parts of the reinforcement exposed because because of concrete spalling the functionality of the barrier could be still ensured. Nevertheless, to ensure long term performance the affected barriers must be replaced or refurbished.
- 4) When there are severe cracks and / or severe concrete spalling and / or damage / deformations are visible to the connection coupling, so that the barrier system functionality can no longer be guaranteed, the effected safety barrier elements must immediately be replaced.

The above also applies to the safety barrier system terminal elements and their anchoring system. It is extremely important in cases of potential damage to the anchoring foundation to inspect the anchoring bolts and the anchoring plate.

3. Anchoring System

Following point 2.2, 2.3 and 2.4 after the defected elements have been examined realigned or removed (if necessary) the anchor bolts (including anchor bolt threads) must be examined. If there is any damage remove and replace the damaged anchor bolts using a diamond core bit machine (photo 1).

Anchor the elements with new anchoring bolts as described below.

4. Anchoring of the elements

Required accessories / tooling:

- Threaded bolt DIN 976-M20x240-8.8 hot-dipped galvanised
- Hexagonal nut DIN 934-M20-8 hot-dipped galvanised
- Round washer DIN 125-A21-140HV hot-dipped galvanised
- Rectangle washer RW50_65 hot-dipped galvanised
- Injection adhesive (HILTI HIT-HY 200-A or technical equivalent)
- Drill hammer
- ø22 concrete hammer-drill bit
- Compressed air
- Steel brush
- Torque wrench

Important: The technical specifications and terms of usage of the injection adhesive manufacturer, described in the user`s manual of the accompanying adhesive cartridge, are to be imperatively followed.



(Photo 1)

Following positioning and inspection of the alignment, the anchoring bore holes are drilled in the foundation to a depth of 120mm.using a concrete drill hammer with a \varnothing 22mm concrete hammer-drill bit

The bore hole should be cleaned and prepared according to the injection adhesive manufacturer directions. Attention should be taken that the bore hole is free from all dust, dirt particles and water.



(Photo 4)



(Photo 5)

The injection adhesive paste is injected into the prepared bore hole following the adhesive paste manufacturer's directions. The M20 threaded steel bar is fitted with rectangular (RW50_65) and round washers and nut and is inserted as group into the adhesive-filled bore hole. The already affixed M20 nut can be used as an end-point contact indicator for the correct steel bar insertion depth.



(Photo 6)



(Photo 7)



(Photo 8)

Only after expiration of the required curing time (see instructions of adhesive manufacturer) the nut is tightened to a torque of 100Nm using a torque-wrench.



(Photo 9)



(Photo 10)

5. Dilatation System

In system application on a bridge the dilatation system must be checked after a collision. Remove the dilatation steel cover plate, measure the gap length between the two RB80_2EXM dilatation elements and compare the after crash length with the pre-set gap length. In the case of a change in the gap length, the system must be removed and re-installed to achieve the pre-set gap length.

The precast dilatation elements must be checked for cracks and damage, and replaced when faulty. Replace / exchange the dilation precast elements ensuring that the precise pre-set gap length X between the expansion joint elements exists – this was / should be provided by the original project contractor.

The functionality of the expansion-joint coupling must also be checked and inspected after a collision. In cases where the expansion-joint coupling does not expand / contract to the pre-defined parameters (temperature change elongation / contraction) the expansion-joint coupling must be repaired / replaced to achieve correct functionality.

6. Bridge Parapet / Bridge Structure

Depending on the severity of the collision of a heavy vehicle into the bridge safety barrier system the bridge parapet / bridge structure must be inspected by the appropriate contractor/ bridge design engineer.

7. Durability

Concrete C30/37 is used in the REBLOC[®] Safety Barrier Systems, the concrete cover is as indicated by EN 13369 / EN 1992-1-1. The concrete exposure class is dictated by the climate and local environmental conditions.

In north and central Europe where the application of thawing salt occurs in the winter season the concrete class XF4 according to EN 206 is applied.

All exposed steel parts, in particular the connection coupling are hot-dipped galvanized in accordance with EN ISO 1461.

In accordance with the evaluation methods EN ISO 1461 and EN 206-1 REBLOC[®] Safety Barriers can be considered to have a life cycle of twenty-five to thirty years depending on the weather and environmental conditions.

8. Environmental Recycling

The disposal of a REBLOC[®] Safety Barrier unit should incorporate all appropriate recycling principles. The steel parts (reinforcement mesh and bars, and the connection-coupling) of the barrier should be mechanically separated from the concrete. Each material type being environmentally recycled through approved recycling companies.

There are no regulated substances within the REBLOC[®] road restraint system.

9. Applicable Documents

Data sheet REBLOC RB80A_8_H2/W1

Data sheet REBLOC RB80A_2EXM