

Delivery and horizontal installation of reusable expansion-joint sealing

Special requirement for routine bridge inspections

- No matter what the position of the joint, it must be possible to non-destructively remove and reinstall the **expansion-joint sealing system (valve) by deflation** from below.

The delivery and installation of the sealing system (valve) that is resistant against non-pressing chemical mixtures with values of pH₂ (HCl), pH₁₂ (NaOH) and/or 80 % mixtures of water, petrol, diesel, kerosene, paraffin oil, for an expansion and settlement value of ± 15 mm, while at the same time permitting a movement of ± 15 mm parallel to the joint, for offsets measuring 20 mm to 80 mm, with variations in offset values of 60 mm over a length of 1 m, at temperatures of -15°C to +30°C).

The expansion-joint seal must be made of a laminate resistant to chemicals, ageing and diffusion, have a total leak rate of 5.6×10^{-8} mbarl/s = 2.7 mbarl/year, and be completely coated on both sides with swelling sealing tape, 450 g/m².

Horizontal installation:

The edges of the joint must be free to a depth of at least $t_F = 20$ cm, with no chips in the concrete deeper than > 1 cm and no concrete rubble > 1.5 cm.

The installation of the seal must be carried out in such a way that it forms a sloping drainage channel. For joint length l_F at least two cushions (valve) must be used, overlapping completely for min. 20 cm/max. 1m, and with the valve ends in an area that is easily accessible (near a footpath or similar place).

For drainage, an air cushion must be attached to at least one of the bridge supports with a drip edge facing the drainage chamber of the bridge or a drainpipe.

Vertical installation (example joint length 5.5 m):

Vertical installation is carried out in such a way that a sealing cushion of type 21.5 QV-EADK/V L 1.5 m can be inserted in the area where the wall meets the ceiling, in such a way that it completely covers the area between the pre-installed horizontal and vertical cushions.

The pressure filling of the sealing cushion (valve) is then carried out according to the manufacturer's instructions, to an overpressure of 0.5 ± 0.1 bar, whereby the longer cushion is inflated before the shorter one.

Verification of tightness (with testing protocol) must accompany the construction protocol. Planning and project management must be carried out by a building supervisor or foreman, who is qualified in the theory and practice (certificate) of joint-sealing installation.

Protection against vandalism:

In the area near the road, the horizontal expansion-joint sealing must be secured in position using transverse retaining elements (rope \varnothing 6-8 mm) to prevent it from falling out. The transverse straps are positioned 1m from each cushion end and then at intervals of at least 3 m. The valve extension is bent at an angle of 45° and/or covered with a tin plate, as protection against vandalism or damage in the course of cleaning.

Manufactured by: Wolf Kabeltechnik Stuttgart

Example 1	Horizontal installation	Vertical installation
Expansion joint length 11m	Art. No. 21.1 QADK/V L 10 m Art. No. 21.1 QADK/V L > 1 m ≤ 2 m	Art. No. 21.1 QADK/V L 5 m Art. No. 21.5 QV-EADK/V L 1.5m
Example 2	Horizontal installation	
Expansion joint length 27 m	Art. No. 21.1 QADK/V L 23 m Art. No. 21.1 QADK/V L > 5 m - 7 m	

Fitting must be carried out in a professional way, according to the manufacturer's instructions.
Installation accessories must be provided at the location of each installation.

Recommended installation accessories, so that problems can be dealt with on-site during installation:

- Art. No. 21.5 RH360
Unwinder for installation of horizontal sealing elements/ valve up to 23 m
- Art. No. 22.1 QV-DB 4.2 x 110/10 m
Swelling sealing tape to pad out gaps, compensate unevenness and/or protect against concrete rubble etc.
- Art. No. 30.1 2K AM 280
Quick-curing 2-component mortar for repairing chipped joint edges and smoothing out uneven surfaces
- Art. No. 21.5 PER xx or PE-REP
PE round cord, with a Ø 10 mm bigger than joint width b_F or PE rectangular profile
- Art. No. 21.5 QVH-SAM 400
A reusable sealing cushion with valve and swelling material for use as a holder mounting device in the course of vertical installation
- Art. No. 33 CPN 170-86-WOF
Portable compressor with 0 - 4 bar pressure gauge