

QRS blue - Oblique Repair Shell

Which application?

The QRS (Oblique-Repair-Shell) offers an innovative solution for the repair of wells. The QRS is a combination of a simple, self-activated and self-repairing system, based on advanced compound technology. The QRS systems are suitable for Water wells, Energy (Cold-Heat) Storage wells and Chemical Disposal wells up to 500m deep. Common problems/applications which can be foreseen;

- Damaged or torn well filters and risers.
- External well leaks that cause pollution problems (redox).
- Damaged and unreliable wells that malfunctions due to sand deliveries.
- Preventive use by targeted critical pressure tests and service / maintenance activities.
- Protecting or sealing (critical) connections (glued and screwed).

What are the characteristics?

The QRS is able to repair wells permanent by it's simple, durable and controlled characteristics. This tool is applicable to tube transitions and filter cracks in wells and will seal the damage or leakage. With the QRS it is possible to repair various wells types through an accurate composed recipe. This recipe offers a swelling and sealing elastomer that is constructed on an inner core of Stainless Steel. The specific applied elastomeric compound is chemical engineered for bonding and activation requirements at low temperature applications (7°C — 24°C). This is done by many decades of experience with comparable compound technologies for high pressure and temperature applications in wells.

Why has this been developed?

- The current range of comparable well repair systems are mechanical complex, expensive and offers a limited application.
- Most current damages / leaks are not repaired with qualified solutions. The QRS has Lloyd's certificates (see footnote below).
- Many wells have become unusable for intended purpose in case of leaks and or damages.
- Available existing (mechanical) repair systems offer restrictions on capacity, internal diameters and are unreliable.
- Many wells have to sacrifice efficiency or become unusable when leaking events occur and pollution starts.
- Within densely built-up environments the replacement or services of Energy Storage wells is costly and not always possible.

To install?

As soon as the QRS comes into contact with the fluid (water) it will swell, which will result in a swelling seal on the intended position. Of course you have enough time to install the QRS system, the average required swelling time (depending on the bridge or forming a bridge to bridge out connection) is 1 to 4 days. The standard QRS is suitable for applications in Sweet, Brackish and Salt water varying in quality from 150 mg CL-/l tot 20000 mg CL-/l and a temperature of 7°C — 24°C to a depth of 500m. The standard QRS is available for the most common well diameters 6,5" to 24" and is offered in a standard of 3 lengths of 1, 2, 3 meters. The QRS has a long lifespan and offers a suitable solution. Non-standard compositions and dimensions are available on request. For further details about the standard dimensions, please refer to our price overview.

Delivery?

You receive a specified, lab tested and certified QRS. The QRS is easy to install and is supported with a work instruction. The operation and working is guaranteed (within the above indicated compositions)! Once the QRS is placed at the intended position, the system gives a carefree solution for the presented damages and leakages. The QRS is protected with an UV-resistant film and is delivered in a wooden crate. Please, contact Boode B.V. for further details, delivery times and price overviews.

Contact

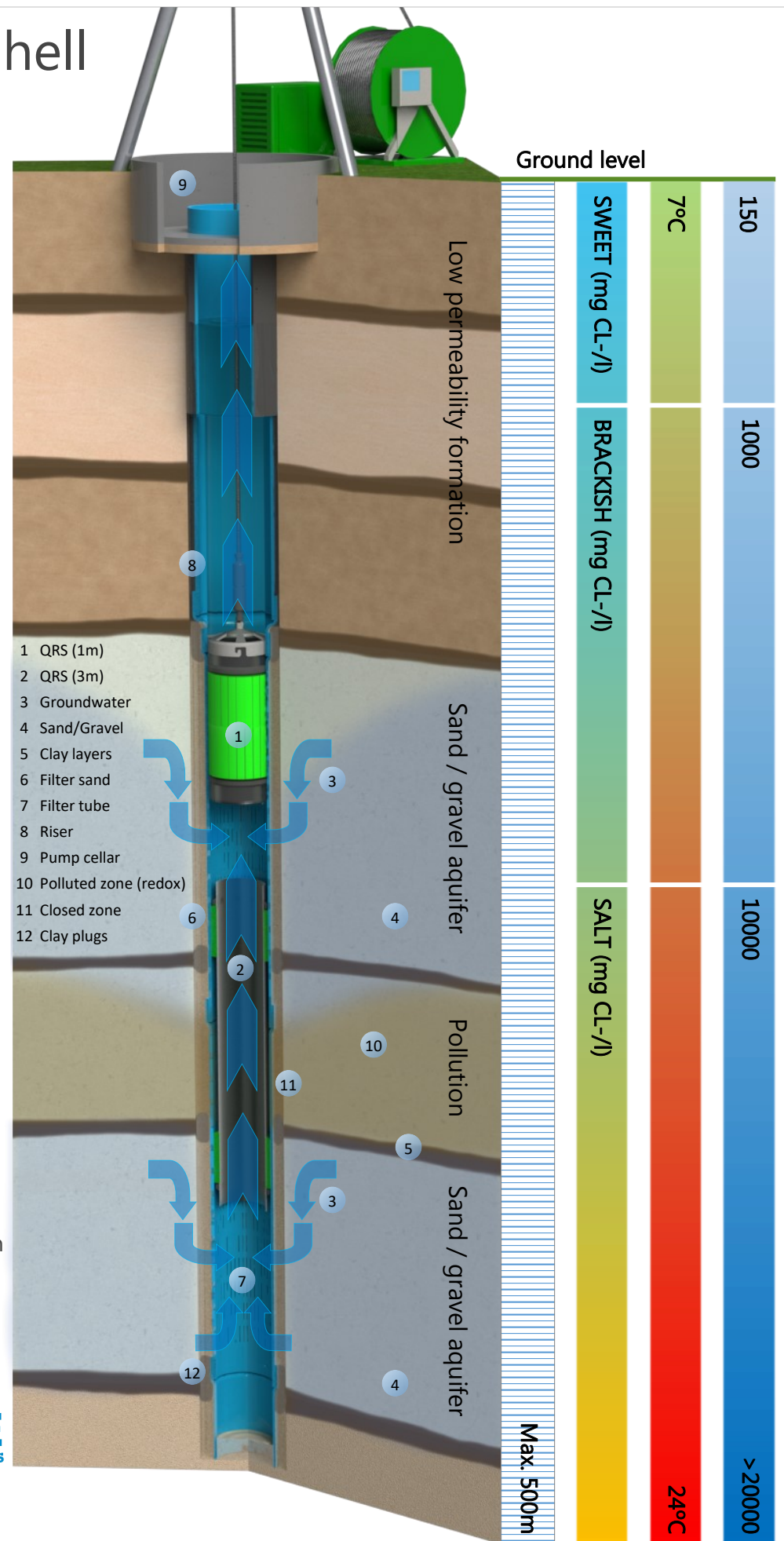
Sales & Distribution: Boode Waterwell Systems UK | info@boodeuk.com | +44 (0)1455-611317 | www.boode.com

Development: Oblique & Scheper.Co | www.oblique.eu | www.scheper.co

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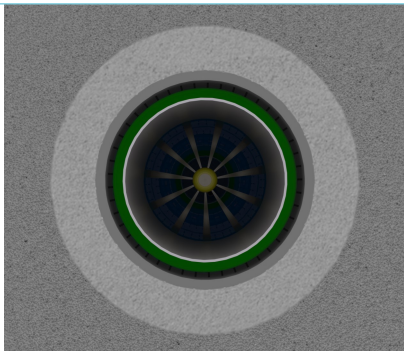
Scheper.Co
Engineering & Consulting

BOODE
waterwell systems



INSTALLATION

Installation of QRS in the well. There is enough space between the QRS and the well. State-of-rest offers easy installation. The space between the tool and well is approximately 1 cm.



LENGTHS

By default the QRS is delivered in the lengths of 1, 2, 3 meters. On request longer lengths are possible. Furthermore, it is possible to use 2 connected QRS systems, so longer lengths can be bridged.

OUTSIDE DIAMETER (OD)

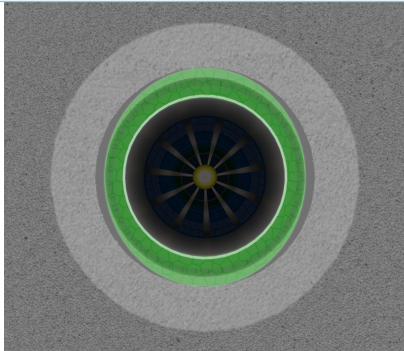
The QRS measures by default the outside diameter (OD) in mm at started installation position (state-of-rest). The inner diameter (ID) of the well is used as reference. The standards are suitable for 6" - 24" wells.

BRIDGING COMPOUND

If the QRS comes into contact with the environmental fluid, the compound activation will start. The swelling compound bridges the space between the well and tool, with an increased volume of ± 1cm.

OVALITY OF WELLS

Ovality or Skew? The compound will rotate into a sitting position at different places. The system can be used at wells with some ovality or some skew tubes. (compound remains active).



GUIDE RING

The QRS is equipped with 2 plastics Guide rings, which serve for centering and protecting the compound. The Guide rings have a smooth surface, so the tool has less resistance during installation.

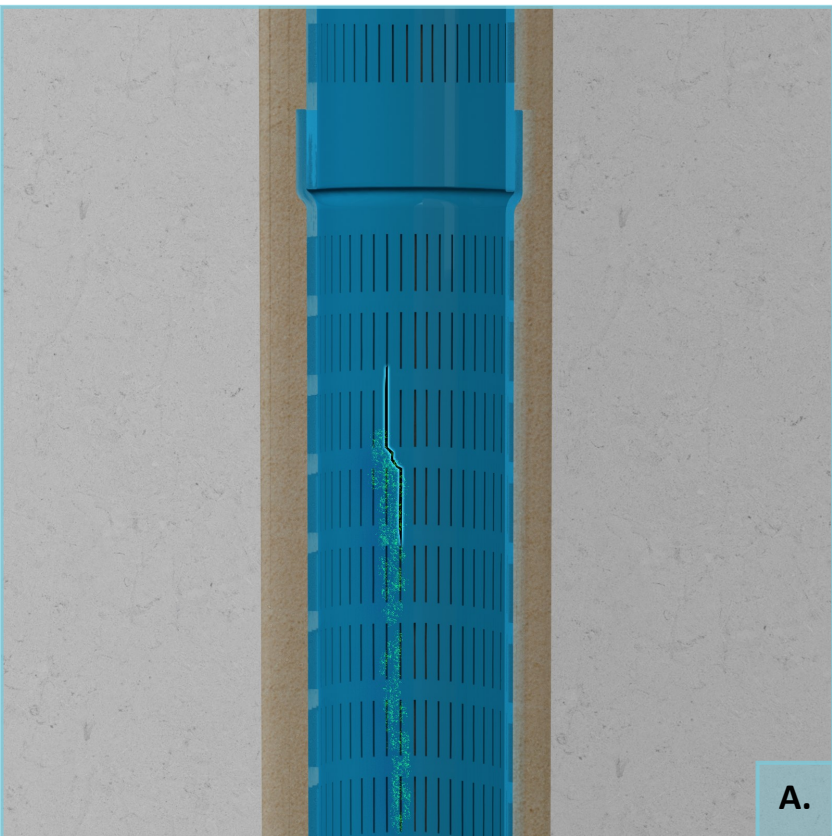
INSIDE

The QRS can be compared with a kind of tube-sock, that still maintains a lot of space for transit inside, after installation. The internals are clean and have no further obstacles such as constrictions, grooves, etc.

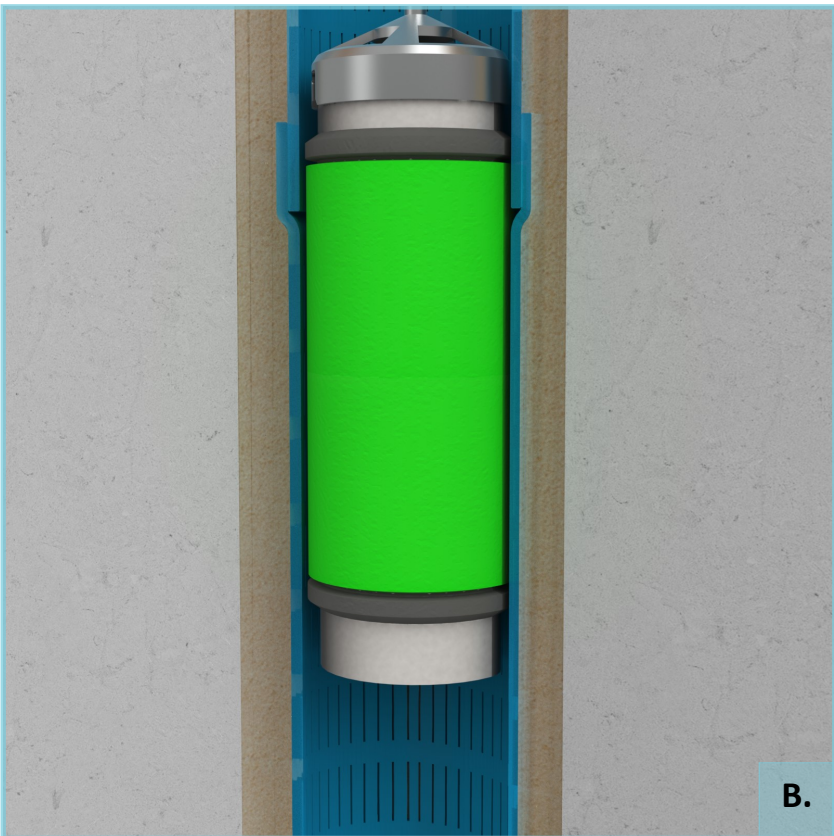
STAINLESS STEEL BASE + COMPOUND

The compound is constructed on a standard Stainless Steel tube [EN 10217-7 TC1 - 1.4301] with a wall thickness of 3mm. The swelling/sealing compound knows a Hardness about (Shore A) of 75-85.

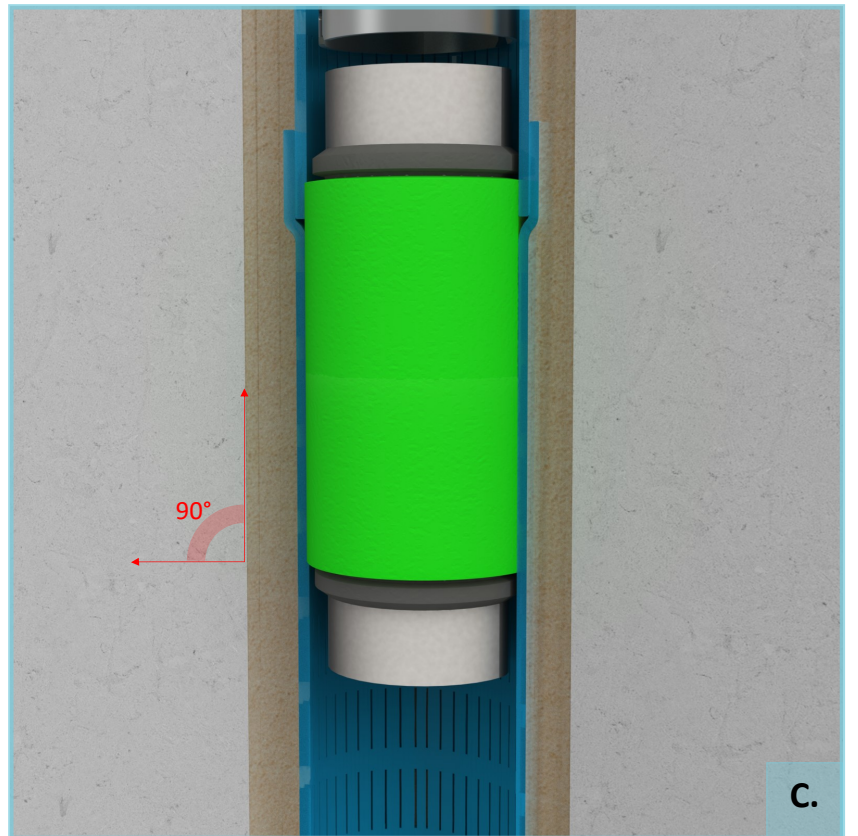
Installation and Application QRS [A. B. C.]



A. A visible crack in the well filter causes unwanted sand delivery and contamination. This well has become unusable and unreliable. Before the QRS can be inserted, the repair position should be determined with the necessary tool length. It is also useful to have a caliber measurement for the ovality of the well (see above tolerances).



B. Insert the QRS at the intended position with universal down-hole tools, supported by a winch or drilling-rig. The activation of the QRS starts when it comes into contact with the fluid. When the tool is at the damaged position, only some waiting time is required. The QRS will seal the position permanent, by the diffusion gradient between the QRS and motive fluid/water.



C. The QRS is placed over the crack and well (glue) connection. Unwanted sand deliveries and contaminations have now been remedied and the downhole tools can be retrieved. The installed QRS is aligned and placed at his right position. The system is repaired and ready for reliable use. The QRS is suitable for load forces about <50.000 kg.