



Easy, rapid precast concrete component connections unaffected by weather conditions

Within the construction industry, the search for new solutions for the rapid, safe and watertight joining of precast elements is always an important topic. The system of B.T. innovation GmbH, consisting of a dry fastener for precast elements, the BT-Spannschloss® (turnbuckle) and the RubberElast® joint tape, a squeeze seal, is suitable for quick and reliable connection of precast concrete elements and sealing of the resulting joints.

The system of BT-Spannschloss (turnbuckle) and RubberElast is used in many different industrial sectors and applications. The easy-to-use connection system is used for robust and precise assembly work and for permanent connections of precast concrete elements. With the innovative turnbuckle and the matching sealing tape, precast elements can be connected to each other without mineral grouting. Installation is not dependent on weather conditions and can be done effortlessly even in sub-zero temperatures or precipitation. There are no costly curing times or downtimes on the construction sites, such as those caused by low temperatures. Customers can benefit from time and financial savings. Furthermore, BT-Spannschloss (turnbuckle) & RubberElast connections can be subjected to full load immediately.

The BT-Spannschloss (turnbuckle) - a durable and universal connection

Customers can get the BT-Spannschloss in three sizes - M12, M16 and M20 - each in a galvanised and a stainless steel version. A matching recess body is available for each of the three sizes. The standard version of this component is made of polyethylene and has slanted sides for better deshuttering. The recess bodies are particularly robust and can be reused many times.

For even faster and more reliable application, the recess bodies can be equipped with magnets. When using wooden formwork, the recess bodies can be screwed or drilled into the formwork. On request, the bodies can also be customised in dimensions or shape, thereby offering a tailored solution for every connection.

The BT-Spannschloss can be removed, enabling the dismantling of structures that have already been erected. Such a versatile and innovative solution has also convinced the supervisory authorities. The approvals of the building authori-



The BT-Spannschloss (turnbuckle) is a fastener for the dry assembly of precast concrete elements.

ties (Z-14.4-599 and ETA-19/0013) certify the reliability of this product.

Easy application of the compressible RubberElast sealing tape

However, a structural precast connection alone does not create a finished building. With the compressible sealing tape RubberElast, this task is no hurdle on the construction site. The self-adhesive sealing tape, which has been tested by the building authorities, is attached to the first component on site by simply pressing it on. When the precast elements are assembled with the turnbuckles, the RubberElast is broadly squeezed in the narrowing precast element joint and eventually fills the joint to a large extent. This makes the joint watertight and impermeable to gas. The mounting properties of the RubberElast harmonise particularly well with the BT-Spannschloss.

This means that RubberElast can be processed almost regardless of the temperature and is already impermeable to water at the joint up to 5 m after installation. For waterproofing up to 10 m of water, MultiElast is also available as a joint tape. The long-term sealing effect of the waterproofing solution is of great importance. Both sealing tapes are resistant to both weather-related and mechanical wear.

For faster
construction

B.T. INNOVATION GMBH

SIMPLE, FAST AND ALL-WEATHER PRECAST CONCRETE CONNECTION

- ✓ DURABLE CONNECTION OF PRECAST CONCRETE ELEMENTS
- ✓ CONNECTION WITHOUT ANY MINERAL GROUTING
- ✓ INSTALLATION INDEPENDENT OF WEATHER CONDITIONS
- ✓ NO CURING OR DOWNTIME
- ✓ IMMEDIATE, COMPLETE LOAD-BEARING
- ✓ IMMEDIATELY WATERPROOF IN COMBINATION WITH RUBBERELAST®



Easy installation of the RubberElast

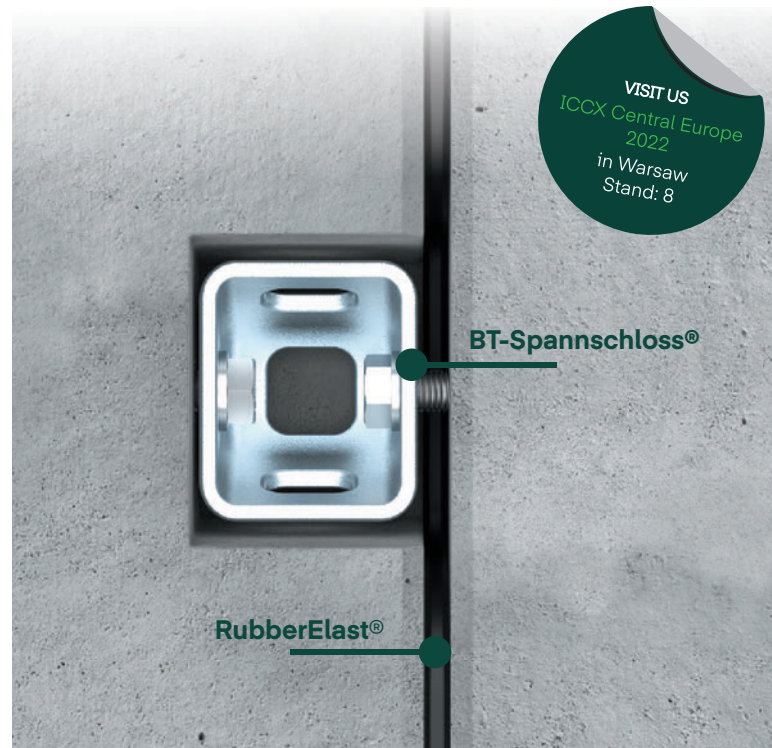
Use in many industrial sectors

The BT-Spannschloss (turnbuckle) & RubberElast system can be used universally and reliably in a wide range of applications. This includes the assembly of L-shaped retaining walls and manhole components in road and underground construction, structures in the maritime and coastal protection, ceiling and wall connections in residential construction and the extensive range of connections for precast concrete elements.

Rapid construction of a hotel with convenient turnbuckle solutions

The BT-Spannschloss has already been successfully used in numerous exposed construction projects. A showcase project is the new Hilton Garden Inn hotel in London, directly at Terminal 2 of Heathrow Airport. The building consists of 15 levels with a total height of 47.60 m.

The high demands on this project were mainly due to the precarious location in the protected security area of the airport as well as a very short construction time of just 30 weeks for the assembly of the precast concrete elements. When it came to the implementation of the fast and reliable assembly of the construction elements, the contracted construction company opted for the BT-Spannschloss.





Construction work on the Hilton Garden Inn in London



The Hilton Garden Inn Hotel in full size

Four BT-Spannschloss M20 were used on each outer wall element. This meant that it was no longer necessary to shore up the outer walls and they were secured immediately after positioning. The advantages of the BT-Spannschloss were obvious - the assembly time was considerably reduced.

Connection solutions in underground construction and energy production

The BT-Spannschloss also comes into its own in flood protection. Following the flood disasters of the last 20 years the necessity of appropriate protective measures has taken on a new significance. This usually involves a lot of planning and construction time, resources and costs. A simple and extremely effective method for erecting protective walls is provided by L-shaped retaining walls made of reinforced concrete, connected by the BT-Spannschloss.

The principle is simple - the L-shaped retaining walls are placed on a suitable and prepared substrate. An additional, deeper anchoring can be the solution in unfavourable soil conditions. The RubberElast sealing tape is applied to the side edges of the concrete elements. It is easy to apply and

seals the joint watertight due to the contact pressure. To do this, tighten the BT-Spannschloss turnbuckles and squeeze the sealing tape until the necessary joint width is achieved. From this moment on, the joint is watertight and the system can be loaded immediately. Especially when flood protection walls have to be erected at short notice, the turnbuckle is suitable for prompt, simple and reliable implementation.

Specifically, this solution was implemented in 2014 on two projects in the popular seaside resort of Heiligenhafen in Schleswig-Holstein. To meet the visual requirements of the idyllic surroundings of this tourist stronghold, colour pigments were added to the concrete in one project and it was thus coloured to match the surroundings. The result is a technically reliable and at the same time visually appealing solution.

The BT-Spannschloss has also found its place in the agricultural sector. In Jemgum (East Frisia), a 75 kW anaerobic digester was commissioned. In this project, the BT-Spannschloss was used to connect the precast elements. This allowed for quick assembly with a short installation time of only 20 minutes per element. The installation time was reduced from the



Flood protection in Heiligenhafen



The rapid construction of the anaerobic digester in Jemgum



New construction of a pipe shaft in Zielitz

planned three days to just one. The turnbuckle met the high static requirements without any problems, which meant that the entire installation could be put into operation just two months later.

Another example of the use of the BT-Spannschloss & RubberElast system is the new construction of a pipe shaft in Zielitz, Saxony-Anhalt. Here, the system was used in the construction of a new pipe shaft for the planned expansion of the spoil heap in Zielitz.

Regardless of the weather situation, precast concrete elements can be joined in seconds using the BT-Spannschloss and immediately sealed with RubberElast during the process, as was the case with this project. Thanks to the professional connection solutions from B.T. innovation GmbH, it was possible to simplify many work steps and save an immense amount of time. ■

FURTHER INFORMATION



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