BT innovation

www.bt-innovation.de

# BT-Spannschloss®

## Productinformation

PATENT PENDING
PATENT PENDING
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## B.T. innovation GmbH

Originally founded in 1991 as a regional wholesaler for specialist building materials, in recent years B.T. innovation GmbH has developed into a competent partner on the international scene. Our partners include customers and dealers throughout the world. B.T.'s modern corporate philosophy means it has a proven track record of continuous development, coupled with constant expansion of the product range.

With our strong practical bias, we have discovered many workable, application-oriented solutions. Our enviable record of certifications, tests, approvals, utility models and patents under the auspices of building regulations speaks for itself.

B.T. innovation GmbH focuses equally on advice, development, production and supplies for construction companies and prefabricated concrete parts manufacturers. Direct performance of all the services and products we offer guarantees you competent advice and state-of-the-art products from a single source.

In the field of prefabricated concrete parts technology, we offer our customers a wide product spectrum, as well as advice, planning and implementation of new plants or changes to existing plants for manufacturing prefabricated concrete parts. This ranges from magnet technology through to a wide range of reasonably priced spacers, and includes complete shuttering systems, connection technology and seals.

Our products also offer the construction industry real solutions to problems, which ensure simple, reliable and cost-effective construction processes. Without constant development work and endless amounts of product information, it would be impossible to achieve the current capabilities of concrete construction. Increasing demands on the functionality, design and quality of building projects in concrete continually require new solutions, materials and techniques. Time and again new and further developments have meant we are able to provide impressive unique products for use on the building site.

We are pleased that you have looked at our catalogue and learned about our product innovations, and we hope that you will also soon join the ranks of our satisfied partners.

Our technicians provide on-site support at prefabricated parts plants, building companies and dealerships, and contribute to quick solutions to problems by giving competent advice. Technical and commercial staff ensure quick and reliable order processing.

B.T. innovation GmbH is certified to DIN ISO 9001.

**Felix von Limburg**
Chief Executive
B.T. innovation GmbH

# Contents

# BT-Spannschloss®

*The bonding system for prefabricated concrete parts*

## What is the BT-Spannschloss®?

The BT-Spannschloss® is a turnbuckle which is part of an innovative clamping system including screw connections and anchors embedded in prefabricated concrete parts.

With the BT-Spannschloss® it is possible to create efficient, precise assemblies and make durable construction connections of prefabricated concrete parts in the easiest possible way where there is predominantly static load in the direction of the tensile and shear forces.

The BT-Spannschloss® is suitable for bearing major loads due to its specific form and the heavy-duty cast material used for manufacture.

In April 2010, the BT-Spannschloss® was awarded the general building regulations authorisation (no. Z-14.4-599) by the German Institute for Building Technology [DiBt], which means the basis for static verification of the selected construction connection was also established.

The BT-Spannschloss® is available in two sizes (M20; M16) and can be purchased in uncoated or galvanised form.

Note: The load bearing capacity of the clamping system depends to a significant extent on the type of anchor used. Several types of authorised anchorage systems can be used according to the application requirements (you can find the data in the manufacturer's instructions).

In general, the load bearing capacity of the clamping system is many times higher than that of the anchorage system.

## Why the BT-Spannschloss®?

The BT-Spannschloss® means that prefabricated concrete parts can be connected without any additional materials or resources.

Without any need to comply with cure times, the connection can immediately bear a full load and thus generates significant time and cost savings in comparison to other established systems.

## Area of application

The BT clamping system can be used efficiently and universally in the widest possible range of applications. For instance, in the assembly and connection of angle brackets and shaft elements for road building and underground construction, in building operations in the field of coastal protection, in floor and wall connections for the residential and commercial construction field and many more construction connections for prefabricated concrete parts.

## Advantages

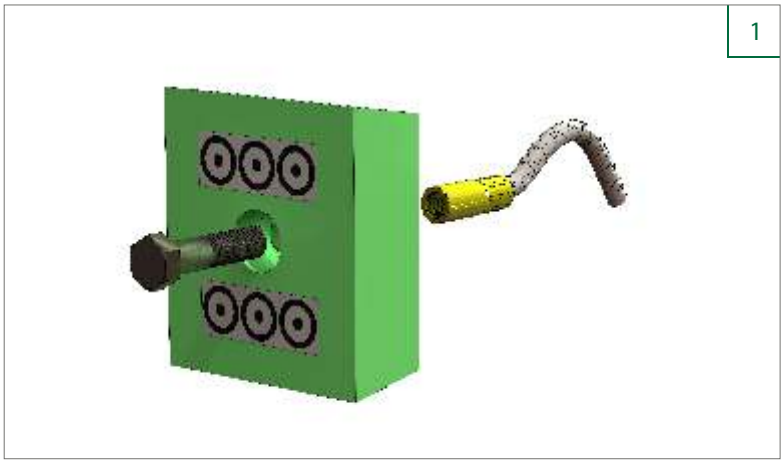
- Quick, effective connection of construction elements
- Building elements can be clamped without additional materials or special resources
- Can be combined with all authorised anchorage systems
- Low net weight
- Resistant to tensile and shear forces
- Cost and time savings through reduction of assembly times and elimination of cure times
- No need for time-consuming individual solutions
- Can be assembled whatever the weather
- Precise positioning of the anchor in the manufacturing process via BT magnet technology
- Approval from the DiBt (German Institute for Building Technology) Berlin
- Static verification of the chosen construction connection

**In combination with sealing products, the BT-Spannschloss® can also be used for hydraulic structures, watertight cellars and where there are other construction requirements in the area of watertight structures.**

# Installation instructions

*Forming the recess in prefabricated concrete parts plants*

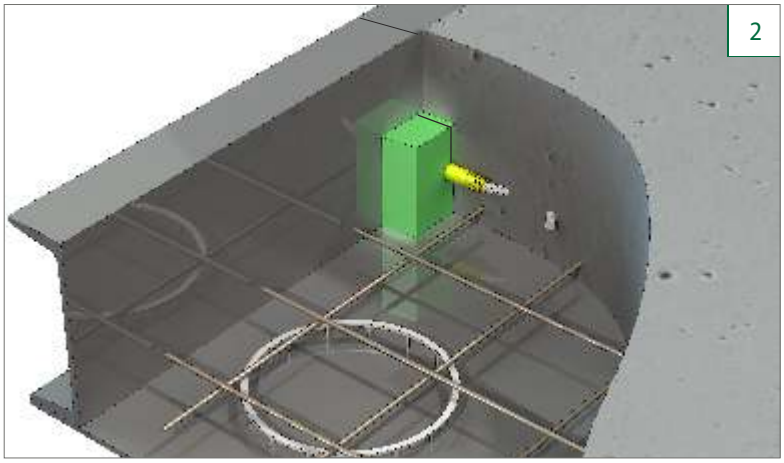
Join screws, recess unit and anchor together.



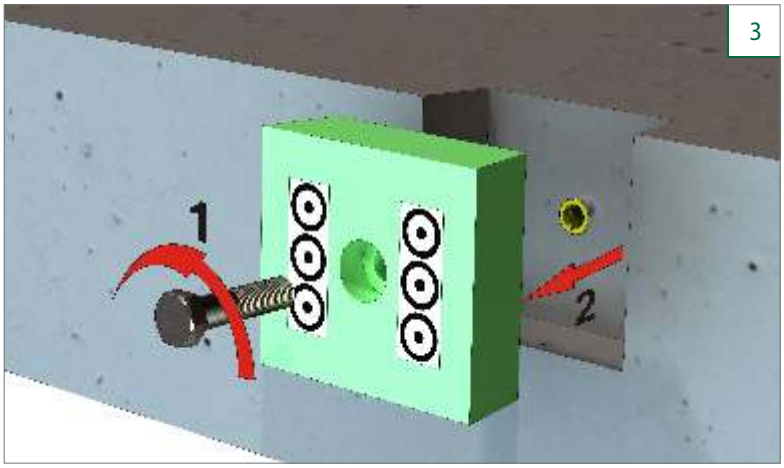

Place the recess unit in the appropriate position.

By marking the formwork and the recess units, the anchors can be fitted precisely and efficiently without the need for any effort in terms of measurement.

The built-in magnets simplify the placement of the recess unit on the steel formwork. Fit the associated reinforcement and pour in the cement.



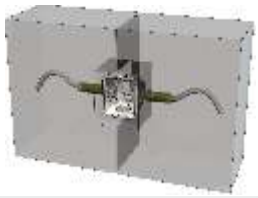
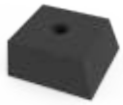
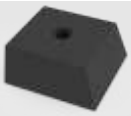
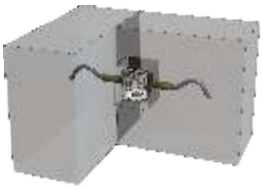
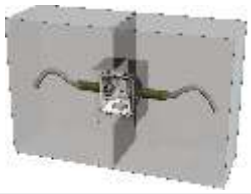
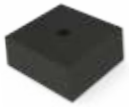
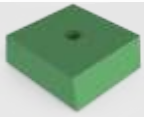

After the concrete element has cured, the recess units are removed. The recess which has formed is now used to fix the turnbuckle to the fitted anchor.




The pigtail anchor used here represents just one example of the types of anchor which can be used.

# Accessories

*for assembly in prefabricated concrete parts plants*

| Connection | Image | Art. no. | Description | Dimensions, mm L | B | H |
|---|---|---|---|---|---|---|
| Joint  |  | 8009100 | Recess unit, version: d (joint) for BT-Spannschloss® M16 | 110 | 110/90 | 50 |
| |  | 8009099 | Recess unit, version: c (joint) for BT-Spannschloss® M20 | 140 | 140/120 | 60 |
| Corner  |  | 8009074 | Recess unit, version: b (corner) for BT-Spannschloss® M16 | 110 | 110/100 | 75 |
| |  | 8009103 | Recess unit, version: e (corner) for BT-Spannschloss® M20 | 140 | 140/120 | 120 |
| Joint (angle bracket)  |  | 8009104 | Recess unit, version: f (joint) AB* for BT-Spannschloss® M16 | 110 | 120/110 | 50 |
| |  | 8009071 | Recess unit, version: a (joint) AB* for BT-Spannschloss® M20 | 180 | 160 | 60/63 |

* for angle brackets

Additional recess units for special applications can be tailored for the customer and manufactured after consultation with B.T. innovation.

| Cable tie mounts & screws | | | |
|---|---|---|---|
| Type of anchor | Screws | | |
| Rd16/M16 for M16 turnbuckle | M16x30 | M16x40 | M16x50 |
| Rd20/M20 for M20 turnbuckle | M20x30 | M20x40 | M20x50 |

Anchor bolt

Flat steel anchor

Pigtail anchor

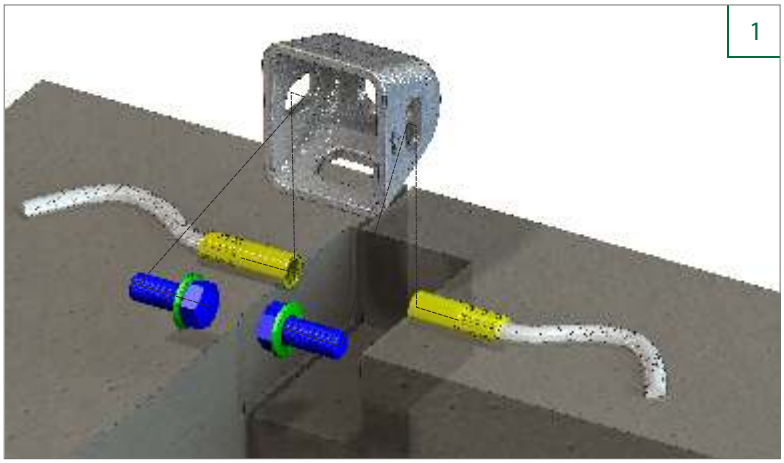
Threaded sleeve

The recess units can be supplied both with integrated magnets for easy fixing to the steel formwork and with drilled holes for screwing onto wooden shuttering.

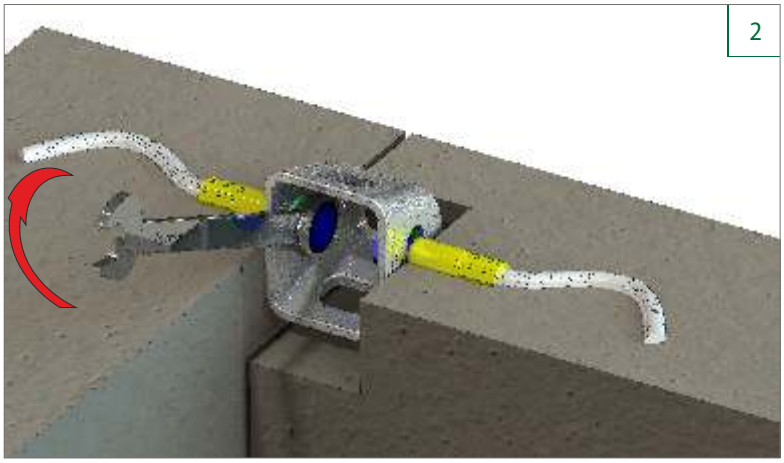
# Installation instructions

*Assembly of prefabricated concrete parts on building sites*

Place the prefabricated concrete parts next to one another with the hoist, so that the turnbuckles can be inserted, the screw connections properly aligned and loosely fixed by hand.

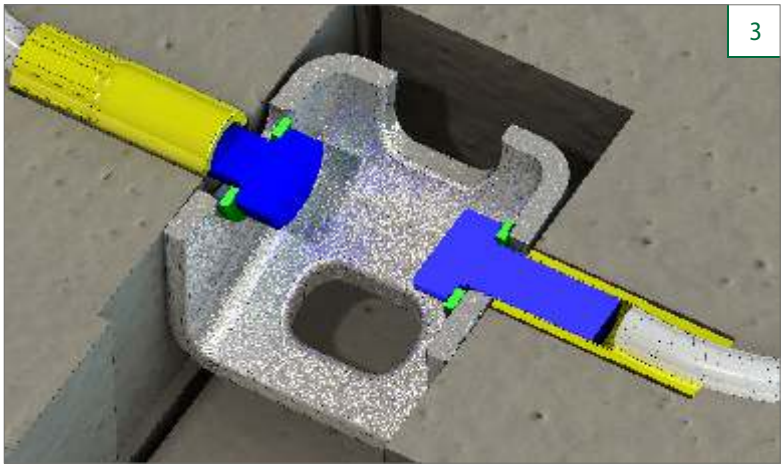



The clamping connections are to be drawn on in parallel and crosswise using a ring ratchet wrench, until the planned joint width is reached or the compression mountings (base plates, elastomer mountings) are firmly clamped.




When the prefabricated concrete parts are under tension, the recesses for the tie points can be sealed using grout.

The joint area can be sealed with appropriate sealing materials and the external filling of the prefabricated concrete parts can be carried out.




The pigtail anchor used here represents just one example of the types of anchor which can be used.

Note:
It is absolutely essential to ensure the turnbuckle connections are tightened in parallel and crosswise to avoid any canting. To reduce the effort in terms of the amount of load during clamping, the load of the prefabricated concrete part that is to be assembled can be relieved by using a crane during the clamping process.

If spacing or sealing materials are provided between the prefabricated concrete parts, these are to be fitted before the tensioning and to be activated when required. During the tightening of the screw connections, it makes sense to insert a wooden or plastic wedge between the recess and the turnbuckle in order to fix the turnbuckle.

# Accessories

*for assembling prefabricated concrete parts on building sites*

BT-Spannschloss® M20

BT-Spannschloss® M16

BT-Spannschloss® Set M16

BT-Spannschloss® Set M20

Ratchet wrench

RubberElast®

| Art. no. | | Description |
|---|---|---|
| 4009070 | 1 x | BT-Spannschloss® M16 (black)<br>Gen. building regs. authorisation Z-14.4-599 |
| 4009076 | 1 x | BT-Spannschloss® M16 (hot-dip) |
| 4009062 | 1 x . | BT-Spannschloss® M20 (black)<br>Gen. building regs. authorisation Z-14.4-599 |
| 4009075 | 1 x | BT-Spannschloss® M20 (hot-dip |
| 4009074 | 1 Set | BT-Spannschloss® M16 (hot-dip |
| | 1 x | BT-Spannschloss® M16 (hot-dip galvanised)) |
| | 1 x | SHR hex head bolt M16 x 40 FVZ; DIN 933 - 8.8 |
| | 1 x | SHR hex head bolt M16 x 50 FVZ; DIN 933 - 8.8 |
| | 2x | SHB washers hot-dip galv. - 17 x 30 x 3; DIN 125 |
| 4009073 | 1 Set | BT-Spannschloss® M16 (black)<br>Gen. building regs. authorisation Z-14.4-599 |
| | 1 x | BT-Spannschloss® M16 (black) |
| | 1 x | SHR hex head bolt M16 x 40 FVZ; DIN 933 - 8.8 |
| | 1 x | SHR hex head bolt M16 x 50 FVZ; DIN 933 - 8.8 |
| | 2 x | SHB washers hot-dip galv. - 17 x 30 x 3; DIN 125 |
| 4009072 | 1 Set | BT-Spannschloss® M20 (hot-dip |
| | 1 x | BT-Spannschloss M20 (hot-dip galvanised) |
| | 1 x | SHR hex head bolt M20 x 40 FVZ; DIN 933 - 8.8 |
| | 1 x | SHR hex head bolt M20 x 50 FVZ; DIN 933 - 8.8 |
| | 2 x | SHB washers hot-dip galv. - 21 x 37 x 3; DIN 125 |
| 4009067 | 1 Set | BT-Spannschloss® M20 (black)<br>Gen. building regs. authorisation Z-14.4-599 |
| | 1 x | BT-Spannschloss® M20 (black) |
| | 1 x | SHR hex head bolt M20 x 40 FVZ; DIN 933 - 8.8 |
| | 1 x | SHR hex head bolt M20 x 50 FVZ; DIN 933 - 8.8 |
| | 2 x | SHB washers hot-dip galv.- 21 x 37 x 3; DIN 125 |
| 7009102 | 1 x | patented ratchet wrench<br>24mm straight |
| 7009101 | 1 x | patented ratchet wrench<br>30mm straight |
| 5002054 | m | RubberElast® 32 x 25 mm<br>Roll @ 4,40 m; 17,6 m/ box |
| 5002055 | m | RubberElast® 38 x 32 mm<br>Roll @ 3,20 m; 12,8 m/ box |

RubberElast® is also available in other sizes.

# Application examples

*BT-Spannschloss®*

1

Precise positioning in PCP manufacture

2

The finished recess

3

Fixing with the ratchet wrench

4

Connecting shafts

5

Use in house building

6

Connecting floor slabs

7

Use in coastal protection

8

Connecting angle brackets

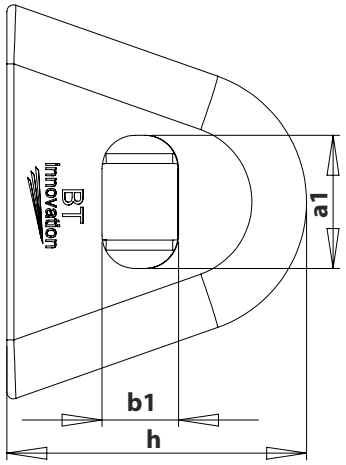
9

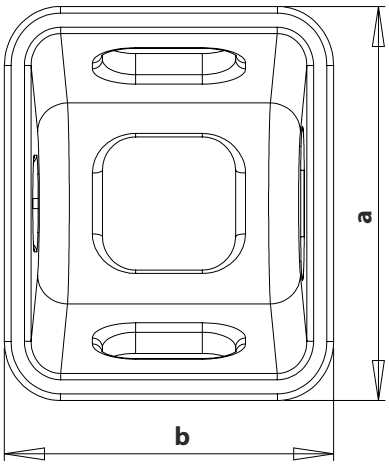
Wall and floor slab connection

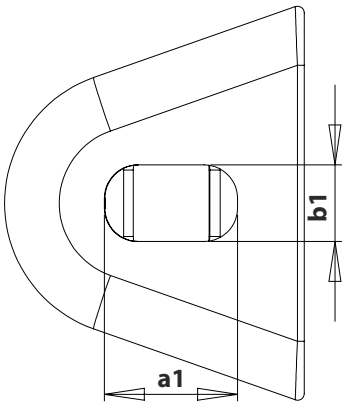
10

Connecting walls

# Technical datasheet




| | Dimensions, mm | | | | |
|---|---|---|---|---|---|
| | a | b | h | a1 | b1 |
| BT-Spannschloss® M16 | 90 | 90 | 65 | 30 | 18 |
| BT-Spannschloss® M20 | 120 | 100 | 90 | 40 | 22 |

| | Tensile force N [kN] | Shear force V [kN] |
|---|---|---|
| BT-Spannschloss® M16 | 43,5 | 26,2 |
| BT-Spannschloss® M20 | 52,2 | 24,8 |

## Material

**Turnbuckles**

The BT turnbuckles are made according to a special casting process and later refined. This process means high levels are achieved in terms of stability and toughness properties. This material means that shaping components which are difficult to make can be manufactured for the highest possible mechanical loads, including chassis parts and drives. Its favourable performance in terms of toughness at low temperatures is another aspect which makes it stand out from the rest and fulfils the requirements of a basic material for turnbuckles which are to ensure the durable construction connection of prefabricated concrete parts.

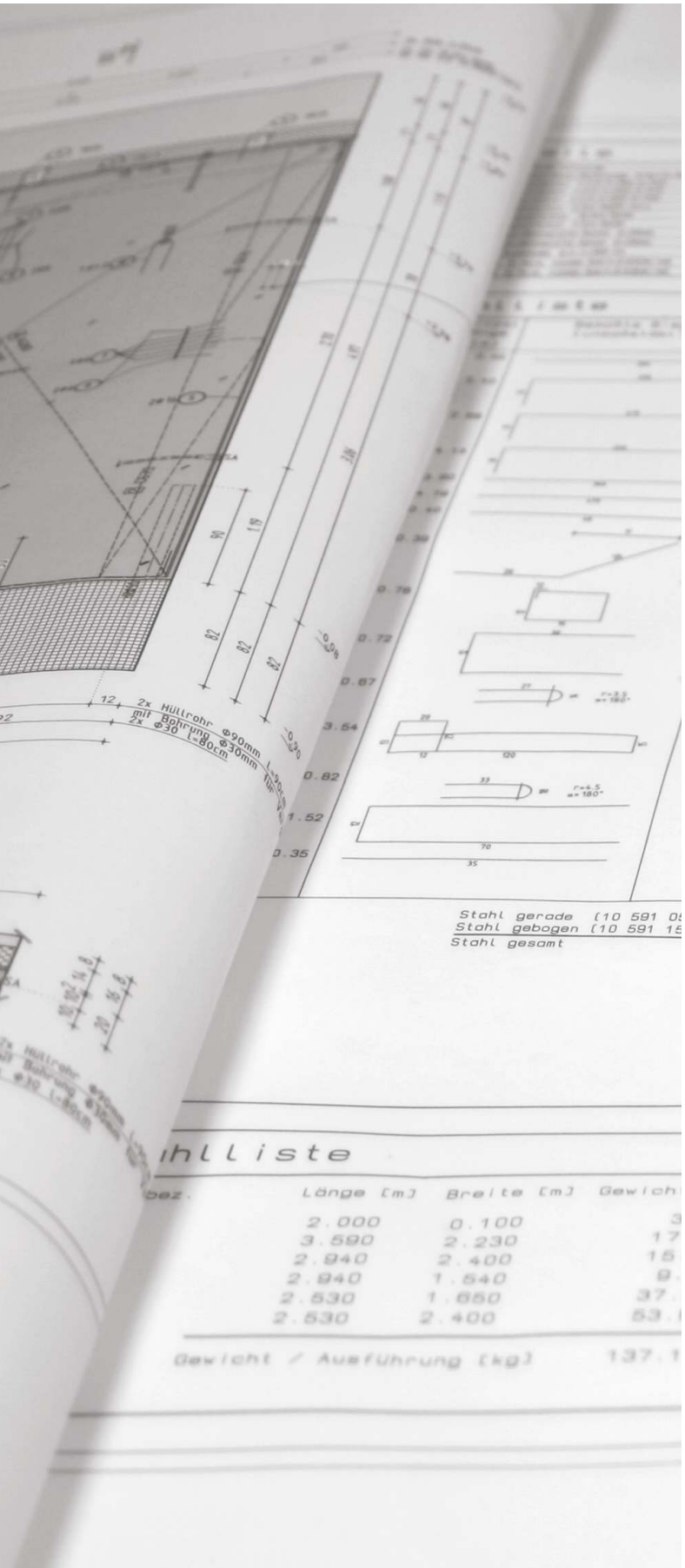
**Bolts, threaded bolts, nuts and washers**

Only the following are to be used: hexagon bolts of strength grade 8.8 as per DIN EN ISO 4014:2001-03, threaded bolts of strength grade 8.8 as per DIN 976-1:2002-12, nuts of strength grade 8 as per DIN EN ISO 4032:2001-03 and round washers (wide range) as per DIN EN ISO 7093-1:2000-11.

## Corrosion protection

The corrosion protection of turnbuckles is maintained where there is full mortaring with the use of cement mortar as per DIN 1045-2:2008-08, Section 5.3.8 or as per the DafStb [German Reinforced Concrete Commission] directive, grouting mortar with evidence of exposure classes and in compliance with the minimum concrete cover as per DIN 1045-1:2008-08.
DIN 18800-7:2008-11 applies for the corrosion protection of turnbuckles that have not been fully mortared and the connection elements.

# Offer text




**BT-Spannschloss® M16**

Turnbuckle for the force-transmitting connection of prefabricated concrete parts for predominantly static loading.

The turnbuckle is fixed onto the prefabricated concrete parts with connection elements (bolt or threaded bolt with washer), which are screwed into the anchorages of the prefabricated concrete parts.

Depending on the type of turnbuckle, connection elements with an M16 or M20 thread and the associated washers are to be used.

- Tensile force:

in the direction of the axis of the connection element 43.5 kN

- Shear force:at right angles to the axis of the connection element 26.2 kN

When the turnbuckles are used, adherence to the conditions listed in the general building regulations authorisation from the DiBt [German Institute for Building Technology] must be ensured.

Absolute compliance with the manufacturer's installation instructions must be ensured for the anchoring of connection elements in the prefabricated concrete part (e.g. anchor sleeve, pigtail anchor).

**BT-Spannschloss® M20**

Turnbuckle for the force-transmitting connection of prefabricated concrete parts for predominantly static loading.

The turnbuckle is fixed onto the prefabricated concrete parts with connection elements (bolt or threaded bolt with washer), which are screwed into the anchorages of the prefabricated concrete parts.Depending on the type of turnbuckle, connection elements with an M16 or M20 thread and the associated washers are to be used.

- Tensile force:in the direction of the axis of the connection element 52.2 kN

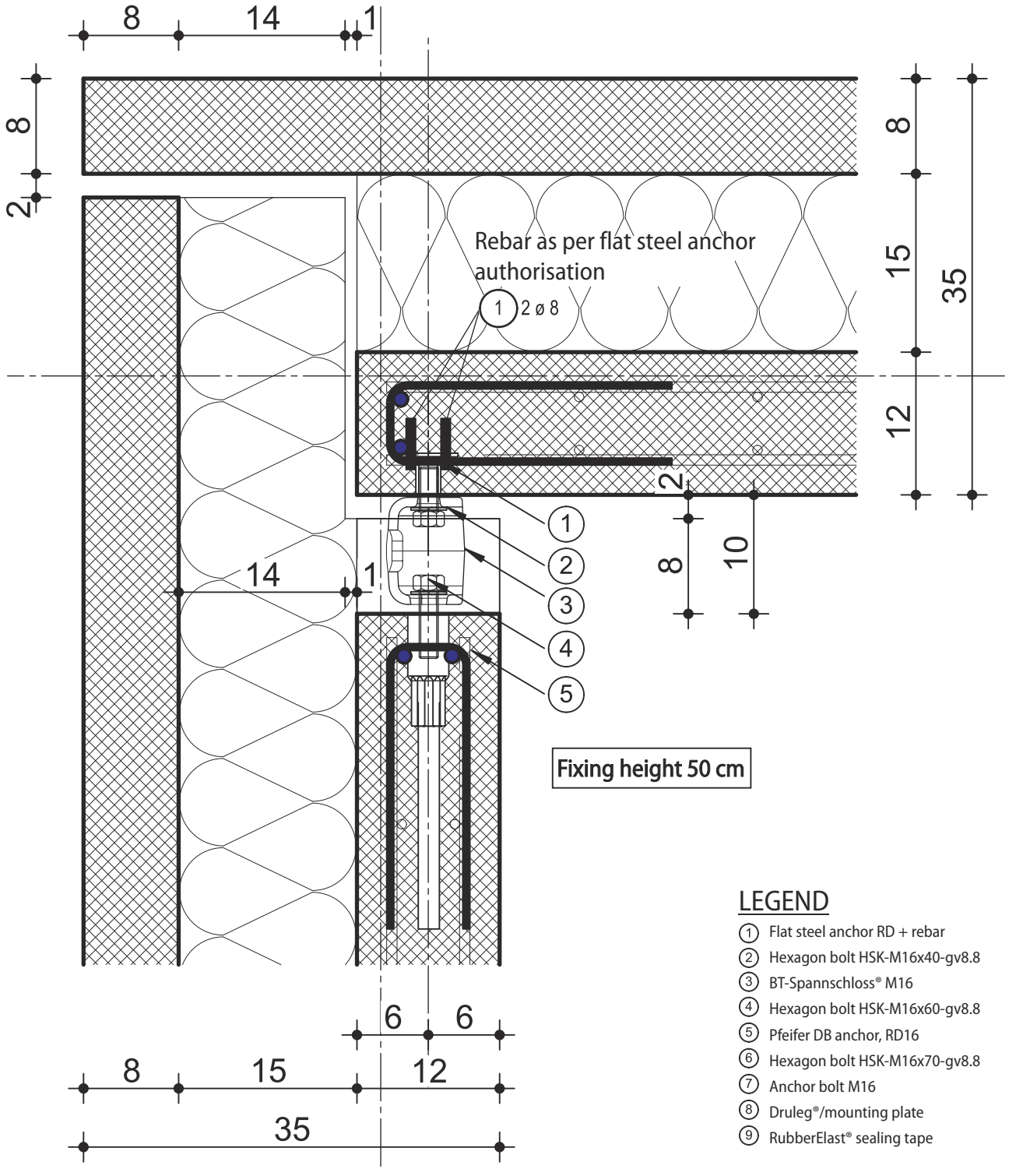
- Shear force:at right angles to the axis of the connection element 24.8 kN

When the turnbuckles are used, adherence to the conditions listed in the general building regulations authorisation from the DiBt [German Institute for Building Technology] must be ensured.

Absolute compliance with the manufacturer's installation instructions must be ensured for the anchoring of connection elements in the prefabricated concrete part (e.g. anchor sleeve, pigtail anchor).

# Detailed planning extract

*Corner formation – external wall / external wall*

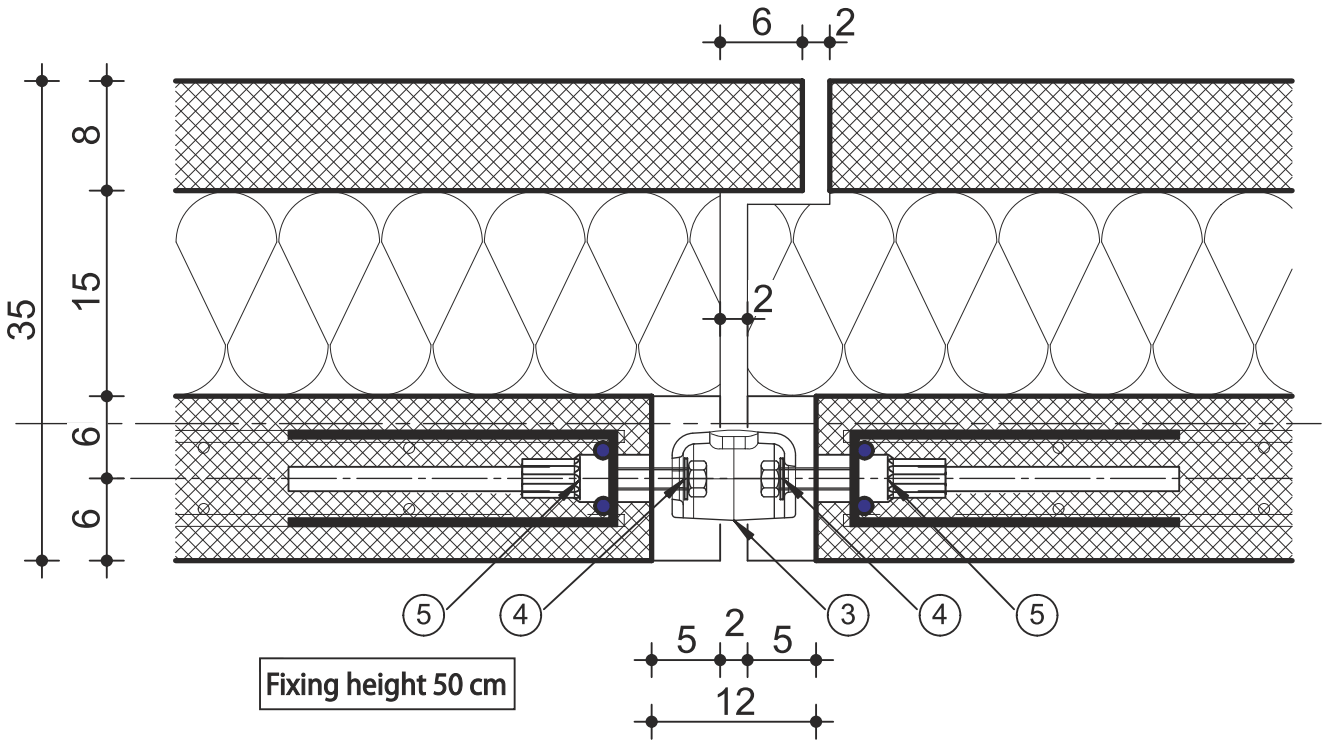


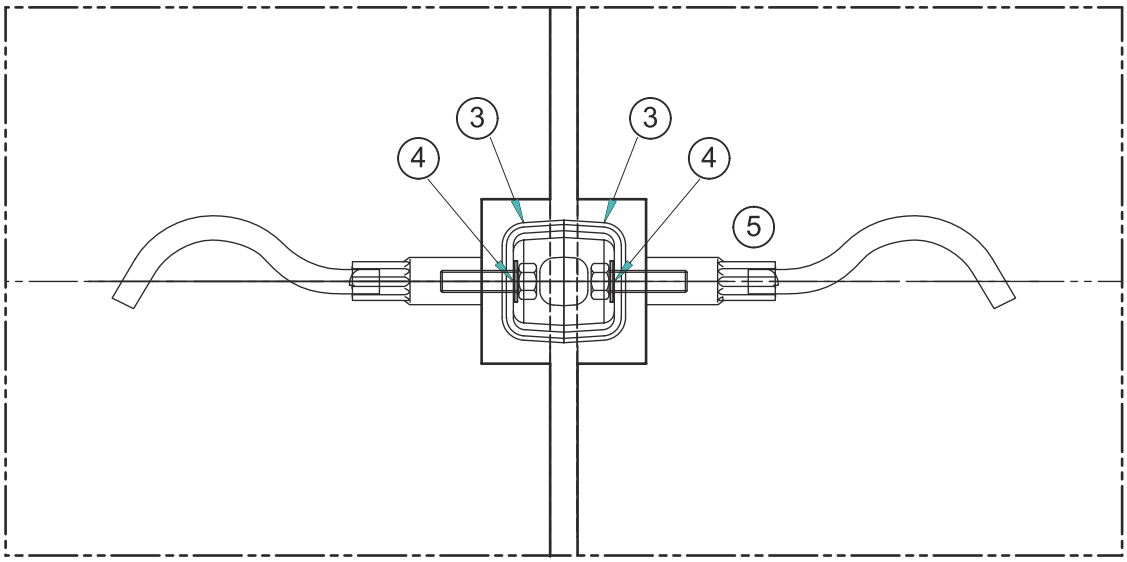

## LEGEND

1. Flat steel anchor RD + rebar
2. Hexagon bolt HSK-M16x40-gv8.8
3. BT-Spannschloss® M16
4. Hexagon bolt HSK-M16x60-gv8.8
5. Pfeifer DB anchor, RD16
6. Hexagon bolt HSK-M16x70-gv8.8
7. Anchor bolt M16
8. Druleg®/mounting plate
9. RubberElast® sealing tape

# Detailed planning extract

*External wall / external wall connection*

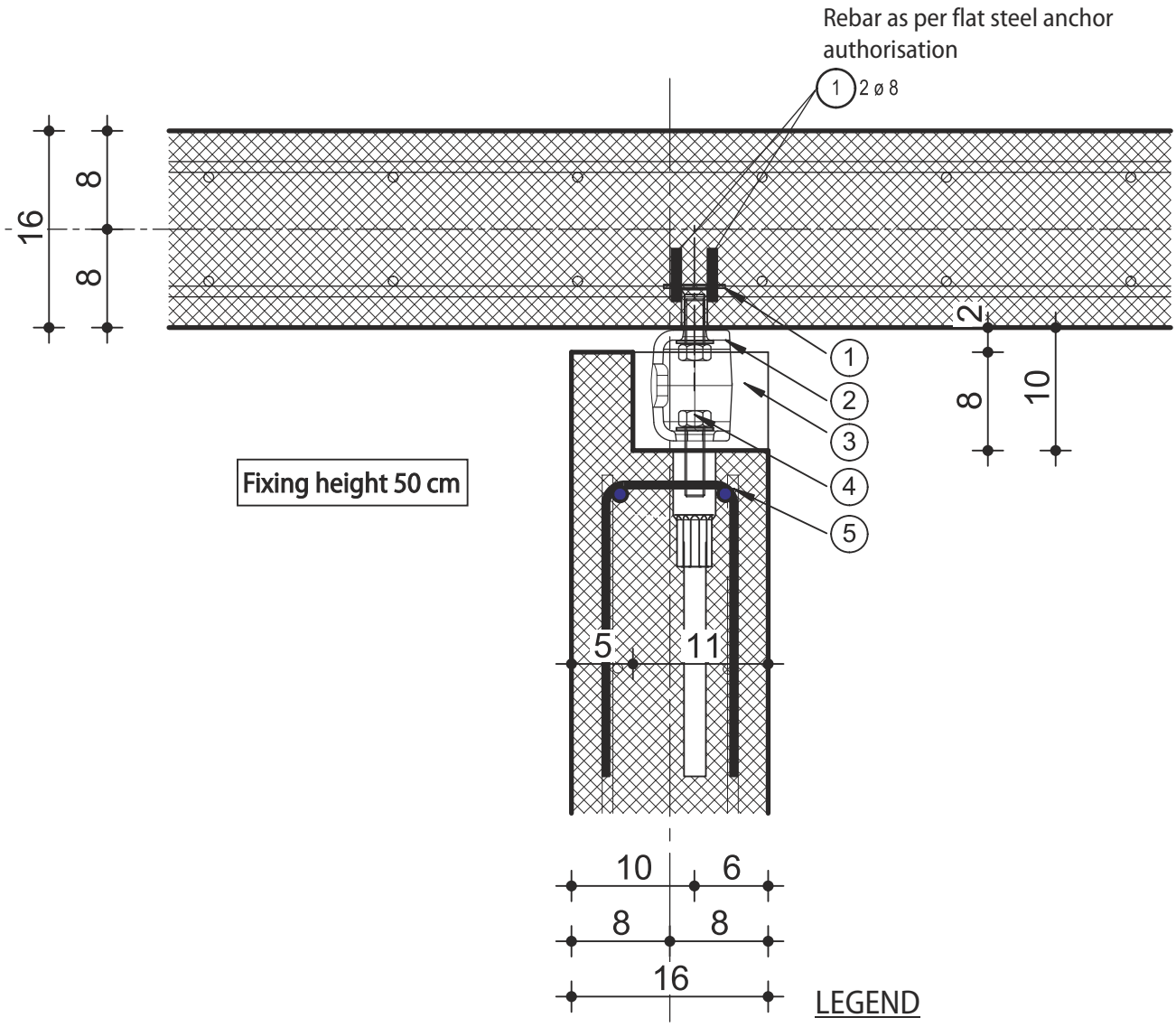



The full set of drawings is available for downloading on www.bt-innovation.de/de/bt-spannschloss/

# Detailed planning extract

*External wall / internal wall connection*

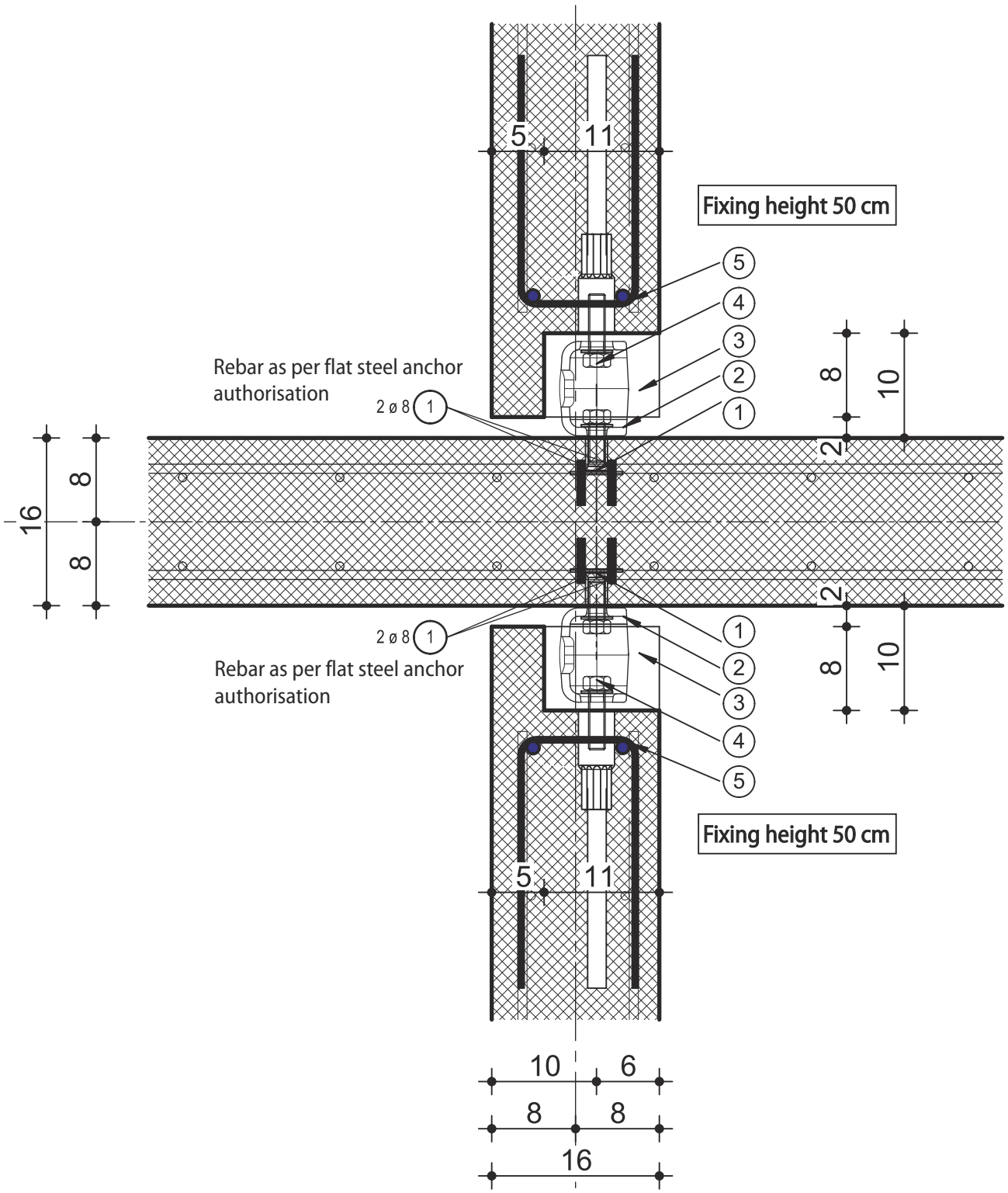



## LEGEND

1. Flat steel anchor RD + rebar
2. Hexagon bolt HSK-M16x40-gv8.8
3. BT-Spannschloss® M16
4. Hexagon bolt HSK-M16x60-gv8.8
5. Pfeifer DB anchor, RD16
6. Hexagon bolt HSK-M16x70-gv8.8
7. Anchor bolt M16
8. Druleg®/mounting plate
9. RubberElast® sealing tape

# Detailed planning extract

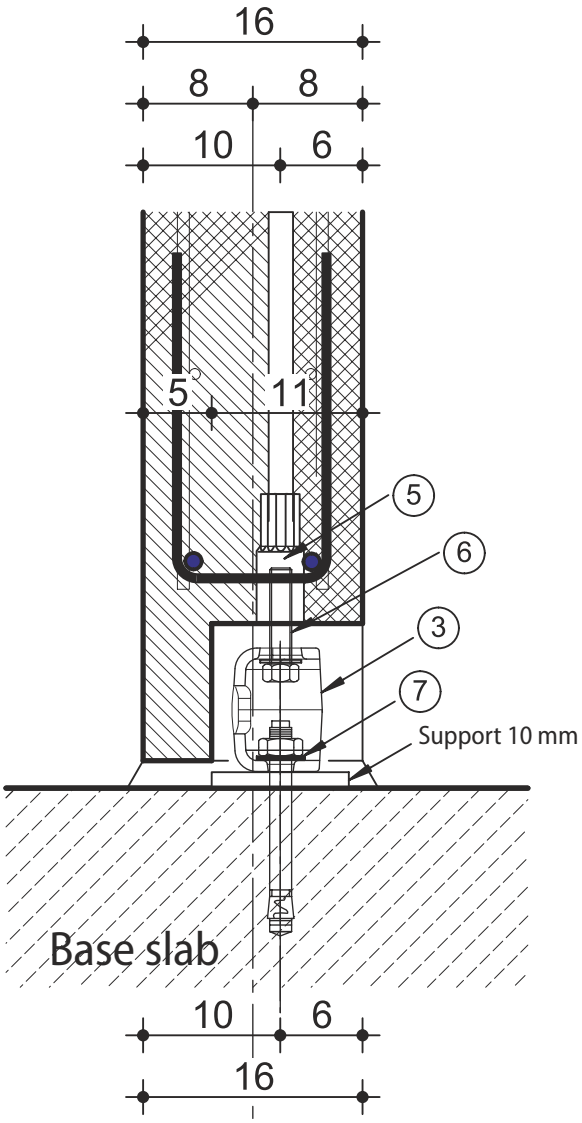
*Internal wall / internal wall / internal wall connection*

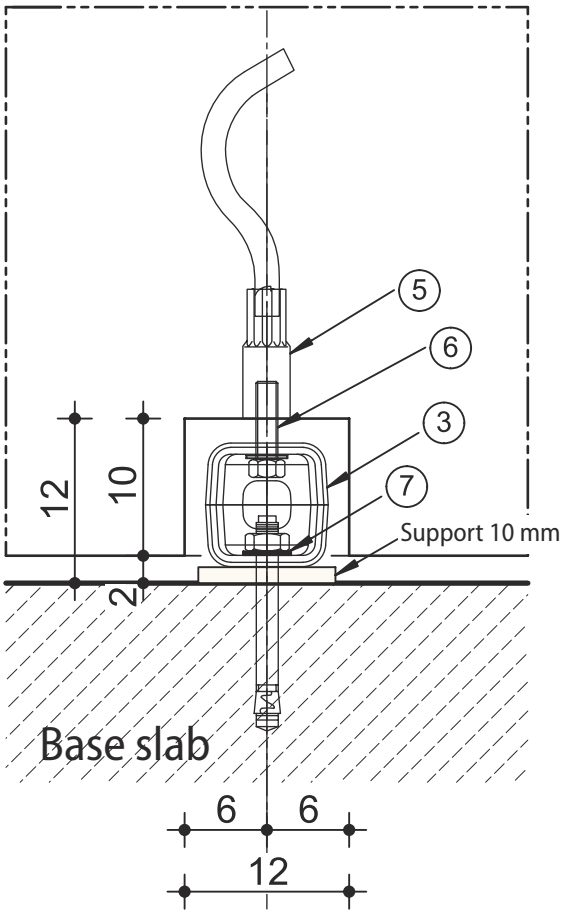



The full set of drawings is available for downloading on www.bt-innovation.de/de/bt-spannschloss/

# Detailed planning extract

*Base internal wall*



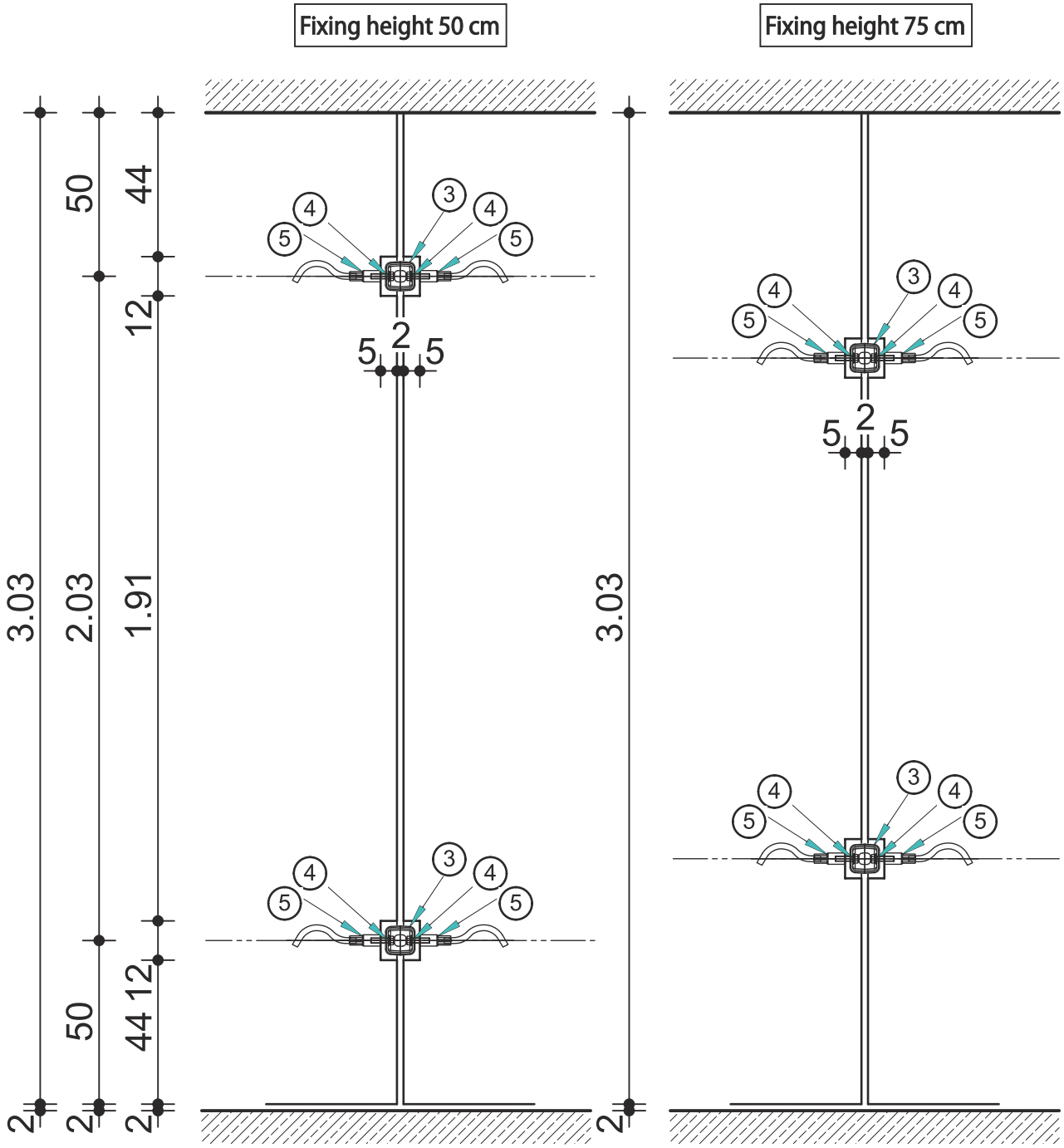




## LEGEND

1. Flat steel anchor RD + rebar
2. Hexagon bolt HSK-M16x40-gv8.8
3. BT-Spannschloss® M16
4. Hexagon bolt HSK-M16x60-gv8.8
5. Pfeifer DB anchor, RD16
6. Hexagon bolt HSK-M16x70-gv8.8
7. Anchor bolt M16
8. Druleg®/mounting plate
9. RubberElast® sealing tape

# Detailed planning extract

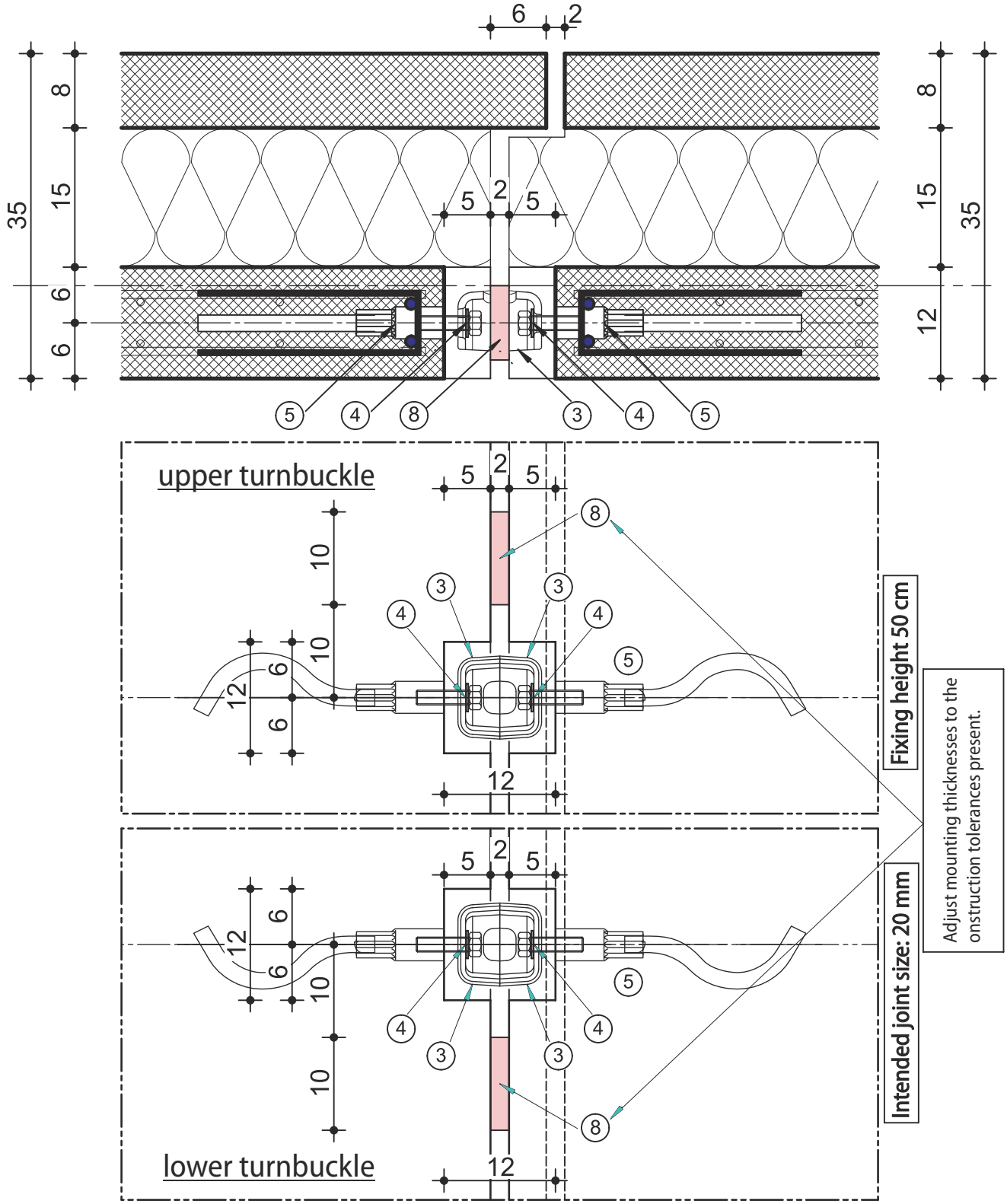
*System sections*




The full set of drawings is available for downloading on www.bt-innovation.de/de/bt-spannschloss/

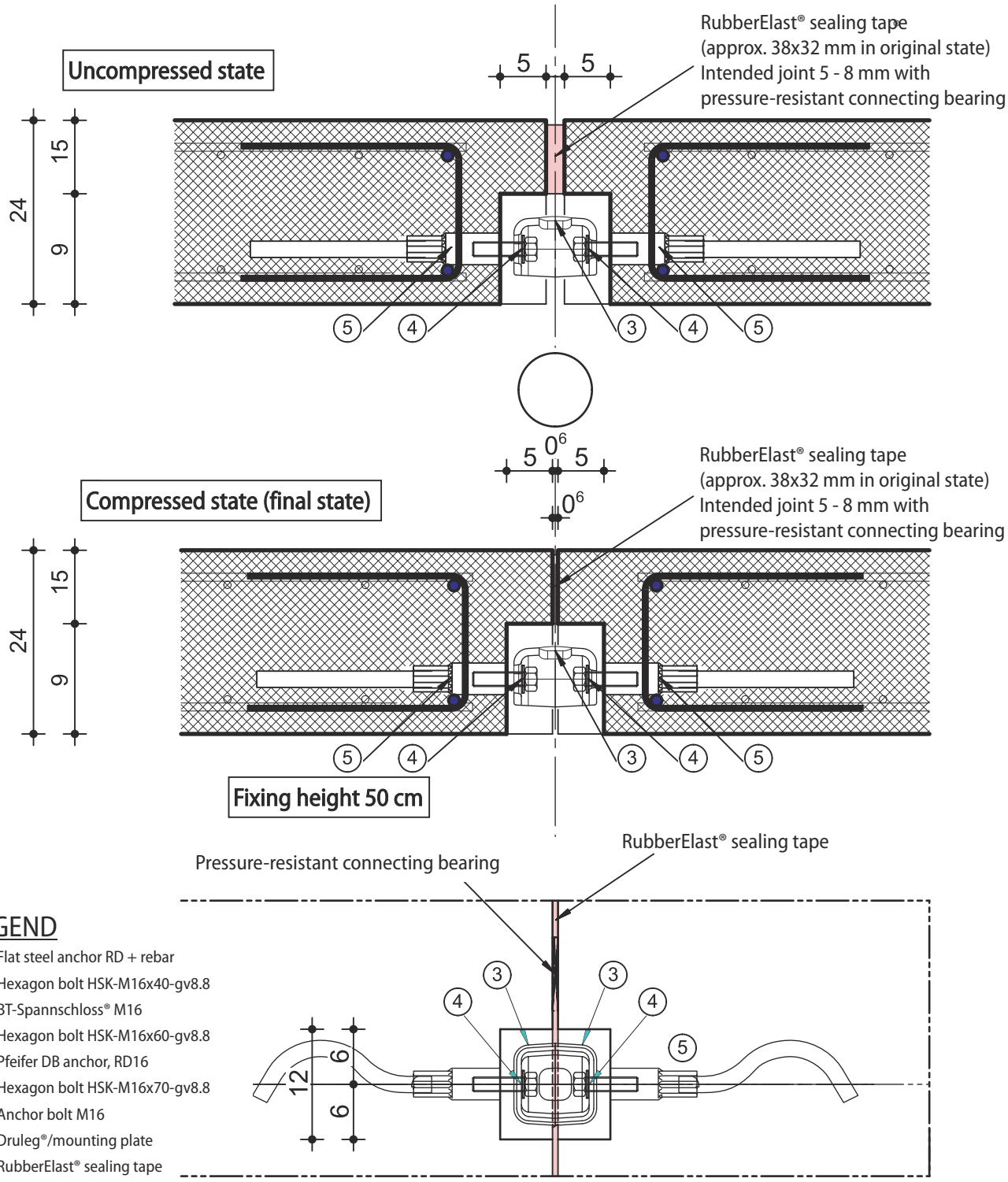
# Detailed planning extract

*Formation of joints with pressure-resistant connection mounting*



# Detailed planning extract

*Formation of watertight joints with RubberElast®*




## LEGEND

1. Flat steel anchor RD + rebar
2. Hexagon bolt HSK-M16x40-gv8.8
3. BT-Spannschloss® M16
4. Hexagon bolt HSK-M16x60-gv8.8
5. Pfeifer DB anchor, RD16
6. Hexagon bolt HSK-M16x70-gv8.8
7. Anchor bolt M16
8. Druleg®/mounting plate
9. RubberElast® sealing tape

The full set of drawings is available for downloading on www.bt-innovation.de/de/bt-spannschloss/

DIBt

# Allgemeine bauaufsichtliche Zulassung

**Deutsches Institut für Bautechnik**
ANSTALT DES ÖFFENTLICHEN RECHTS

**Zulassungsstelle für Bauprodukte und Bauarten**
**Bautechnisches Prüfamt**
Mitglied der Europäischen Organisation für Technische Zulassungen EOTA und der Europäischen Union für das Agrément im Bauwesen UEAtc

Tel.: +49 30 78730-0
Fax: +49 30 78730-320
E-Mail: dibt@dibt.de

Datum: 29. April 2010

Geschäftszeichen: I 31-1.14.4-51/09

Zulassungsnummer: **Z-14.4-599**

Geltungsdauer bis: **30. April 2015**

Antragsteller:
**B.T. innovation GmbH**
Ebendorfer Straße 19/20, 39108 Magdeburg

Zulassungsgegenstand:
**BT-Spannschlösser M16 / M20**

Deutsches Institut für Bautechnik

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.
Diese allgemeine bauaufsichtliche Zulassung umfasst sechs Seiten und drei Anlagen.

# RubberElast®

*The seal for prefabricated parts that will really amaze you*

## What is RubberElast®

In combination with RubberElast®, the BT-Spannschloss® can also be used for hydraulic structures, watertight cellars and where there are other construction requirements in the area of watertight structures.

RubberElast® is a sealant tape for joints between prefabricated concrete parts which is successful internationally. It is fitted by the customer simply by pressing onto the bed joint of a concrete section and makes a seal on the joint which is watertight against pressurised water through the contact pressure of the concrete parts. RubberElast® stands out due to it being extremely watertight and gastight, as well as to it having outstanding resistance to weather-related and mechanical wear. RubberElast® maintains its elasticity even at low temperatures. In addition to excellent adhesion to concrete, the sealing tape also shows outstanding adhesive properties to metals, glass and other materials.

## Why RubberElast®

RubberElast®, our innovative sealing tape for prefabricated concrete part joints, gives you a solution which enables you to make quick progress on your building work due to really easy handling and extremely flexible use.

The test certificate from the Brunswick Materials Testing Institute is a guarantee of its safety.


Request detailed documentation or visit out website at: www.rubberelast.de

## Advantages

- General building regulations test certificate
- Extremely high watertightness and gastightness
- Excellent bonding through adhesion
- Quick processing, no tools needed
- Watertight immediately after fitting
- Still flexible at low temperatures
- Acid, alkali, salt and slurry resistant
- Weather resistant

# DowaTherm®

*Double wall spacer*

The DowaTherm® double wall spacer comprises a special plastic base and a fibreglass rod made of a high-performance composite.

Its geometrical design means the spacer can be easily pushed under the first reinforcement layer, in accordance with the required concrete coverage. It stands vertically on the pallet and, without any additional fixing materials or auxiliary systems, ensures stability during the concreting process, as well as maintenance of the selected installation position.

The new retention system, a new design of the base with a two-hole mounting, enables the user to use GFRP rods with diameters of 8 – 10 mm in one base design.

The "DowaTherm Terminal" comprises the complex processing and storage system for the double wall spacers needed for double and thermal wall production.

The capacity of the whole storage unit enables simultaneous storage of up to 15,000 double wall spacers within a space requirement of just 1.5 $m^3$.

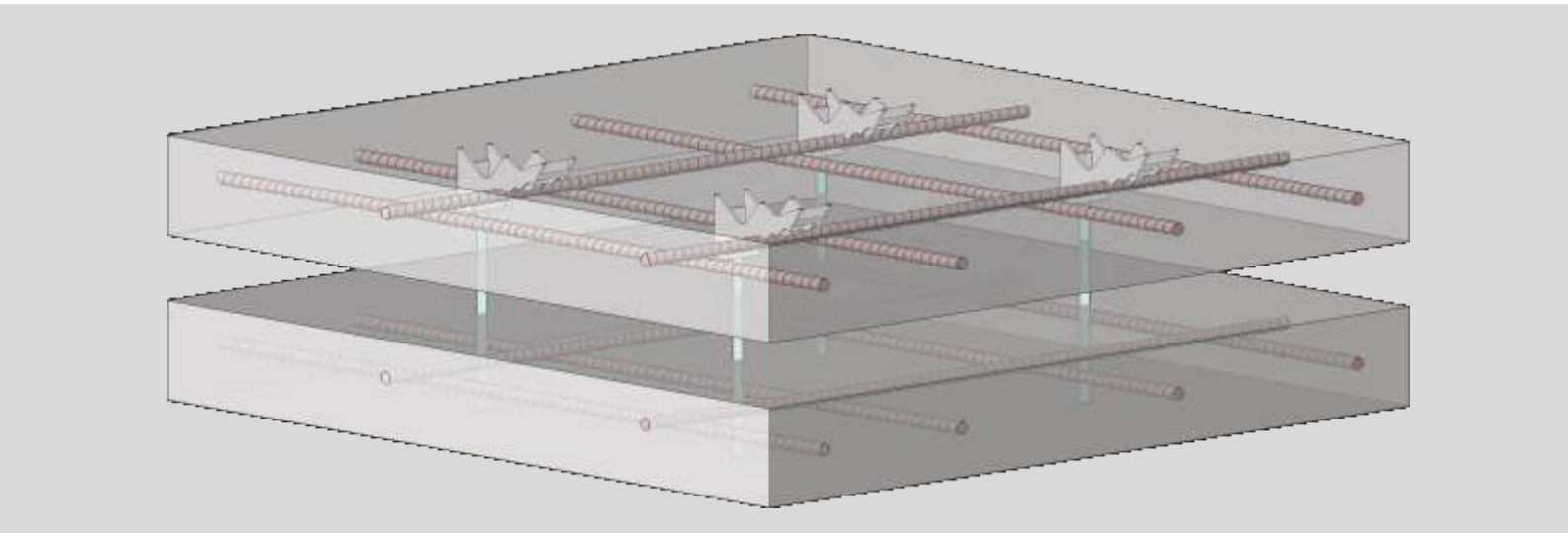
In the terminal, as part of the system, there is a pendulum saw which enables immediate, operational and dust-free creation of required special sizes with the least possible effort.

## Advantages of DowaTherm®

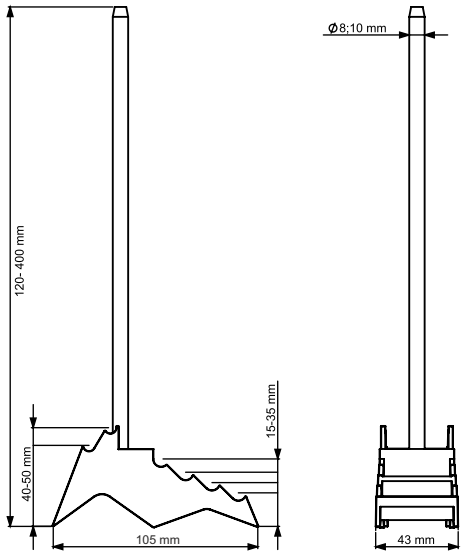
- No cold bridges
- Specially suited to thermal wall production
- Concrete cover depths of 15; 20; 25; 30; 40; 50 mm
- Higher concrete bonding and better structural stability
- Two-hole design (just one base for either 8 or 10 mm rods)
- Hole design with longitudinal ribs ensures manual insertion of the rod without any additional resources with secure seating of the rod

## Advantages of DowaTherm®-Terminal

- Processing and stocking of the spacers with the smallest possible space requirement (1.5 $m^3$ for approx. 15,000 spacers)
- Controllable and well-arranged storage
- Possibility for the immediate operational creation of the special sizes required with the least possible effort
- Easy and well-arranged loading of the storage unit



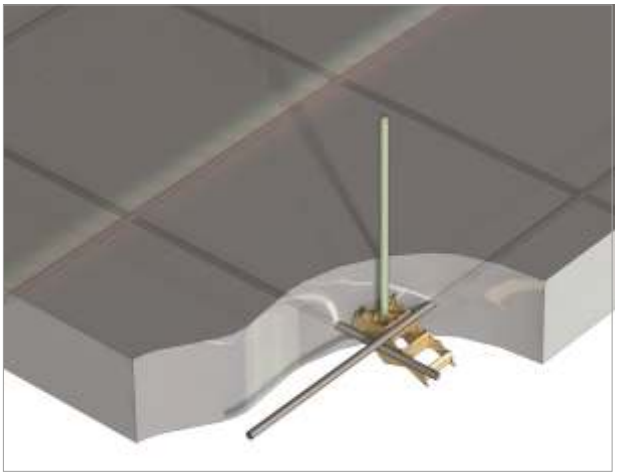
# Technical data




| Technical data | | |
|---|---|---|
| **Rod diameter** | **8 mm** | **10 mm** |
| Tolerance + mm | 0,2 | 0,2 |
| Weight + 4 % gr/mm | 106,5 | 162,0 |
| **Wall thickness** | **Pressure resistance** | |
| 180 mm | 10 kN | - |
| 200 mm | 9 kN | - |
| 240 mm | 7 kN | - |
| 250 mm | 6 kN | - |
| 300 mm | - | 8 kN |
| 360 mm | - | 6 kN |
| 400 mm | - | 5 kN |

| Material-specific technical data | | |
|---|---|---|
| Glass content | 80 % + 2,5 % | DIN EN ISO 1172 |
| Density | approx. 2,1 gr/m$^3$ | DIN 53479 |
| Elongation at rupture | > 2,5 % | DIN EN ISO 527-4 |
| Modulus of elasticity | > 50 Gpa | DIN EN ISO 527-4 |
| Ultimate tensile strength | 1500 + 5 % | DIN EN ISO 527-4 |
| Thermal expansion coefficient | 6,6 x 10 $^{-6}$ 1/ °C | DIN EN ISO 7991 |
| Water absorption 24 h/ 20 °C | <= 0,1 | DIN EN ISO 62 |

# Application examples



With the DowaTherm® Terminal you can store 15,000 double wall spacers in no more than 1.5m$^3$

# ThermoPin®

The ThermoPin® system is the first glass fibre reinforced plastic securing anchor system which enables the production of walls with suspended facing panels!

The ThermoPin® system acts as a bonding system between the two concrete layers for internally insulated double walls, sandwich panel walls and monolithic 3-layer walls.

The GFRP securing anchor comprises a glass fibre reinforced plastic rod and a plastic ring, which acts as a spacer and water barrier. Both ends of the GFRP securing anchor are given a cone shape by a special process to counteract them being pulled out of the concrete.

Efficient building with innovative technology:

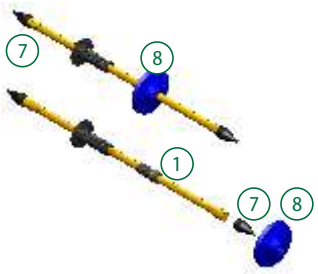
The system enables the efficient production of three-layer reinforced concrete walls, which stand out from the rest due to their high heat transfer resistance with a low wall thickness. With system components which are tailored to fit together, the ThermoPin® system is quick and easy to install with all types of production technologies, both in prefabricated concrete plants (sandwich panel walls, thermal double walls) and on building sites (monolithic 3-layer walls).

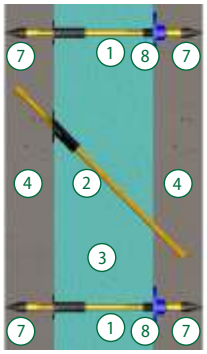
## Advantages

- No thermal bridges
- Significant energy savings, low heating costs
- Better heat storage performance of the construction elements
- Leaner building method due to lower concrete coverage
- Efficient production of construction components - easier installation
- No need to use stainless steel
- Savings on production time and assembly costs
- Corrosion-resistant, alkali-resistant, durable
- Not affected by electrical or magnetic fields
- Price stability as not dependent on fluctuations in steel prices
- Weather resistant

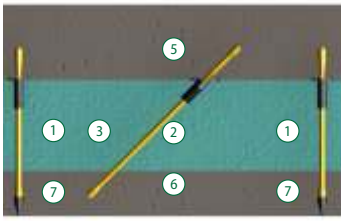
# Technical data

## Monolithic building techniques




## Production of construction elements



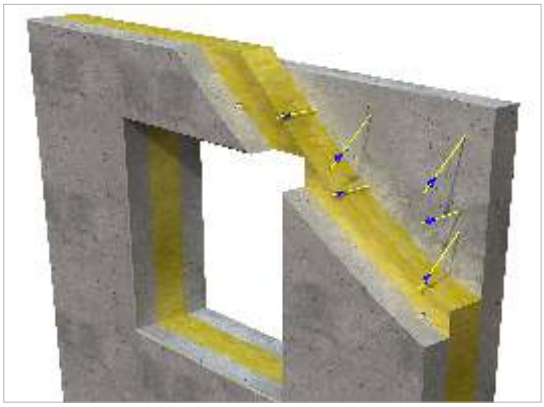


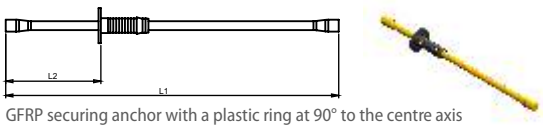
Legend
1 - Straight rod
2 - Diagonal rod
3 - Thermal insulation layer
4 - Concrete layer
5 - Concrete base layer *
6 - Concrete facing layer *
7 - 7.5 cap - to ensure concrete coverage
8 - Fixing washer

* both "negative" and "positive" production possible

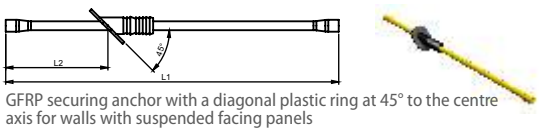
| Technical data | |
|---|---|
| Length of the ThermoPin® (L1) | from 120 mm |
| Minimum depth of the anchorage (L2, L3) | 40 mm |
| Normal concrete coverage | from 20 mm |
| Minimum concrete coverage | 10 mm |
| Thermal conductivity | 0,48 W/mK |
| Service life | 100 Years |

# Application examples

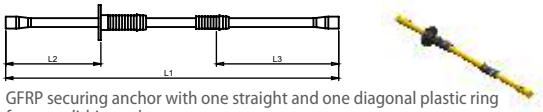





GFRP securing anchor with a plastic ring at 90° to the centre axis




GFRP securing anchor with a diagonal plastic ring at 45° to the centre axis for walls with suspended facing panels




GFRP securing anchor with one straight and one diagonal plastic ring for monolithic work

B.T. innovation GmbH . Sudenburger Wuhne 60 . D-39116 Magdeburg

Email: info@bt-innovation.de . Website: www.bt-innovation.de

Tel.: +49 391 7352 0 . Fax: +49 391 7352 52

Main cataloge

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Magnet / Shuttering

Sealing system