

Innovative Solutions for Concrete Structures

DYWIDAG Concrete Technologies Overview 2023

Supporting infrastructure by making it safe and strong has been our story since 1865.

We've grown to 1,500+ employees and 25 licensees in 50+ countries.

From the steel in our first reinforced bridge in 1903, to remote robots scanning stay cable health - we help extend the lifespan of the world's new and aging infrastructure.

Private and public asset owners, engineers, and construction companies use our technology for projects across sectors like bridges, buildings, ground stabilization, wind towers, and tunnels. Projects include The Golden Gate Bridge, Panama Canal, Kap Shui Mun Bridge, and Freedom Tower.

The needs of infrastructure have changed - and so have we. Our roots? Bridges, one of the most complex civil structures, which require safety and strength in all kinds of demanding environments. Although we were founded as a concrete company, that changed in the early 20th century when we found our focus as a multi-sector civil construction project (and maintenance) sub-contractor.

For over 100 years, the main product the construction industry thinks of after hearing DYWIDAG, is our threadbar - likely found in a significant amount of the infrastructure in your city.

DYWIDAG is a well-known company for geotechnics and post tensioning. But there's more: DYWIDAG Form tie systems, sealing technologies CONTEC®, lost formwork and reinforcement technologies RECOSTAL® which are one business unit called DYWIDAG Concrete Technologies.

Our technologies are widely recognized for highly secure systems. Our main production is in Poland and Germany. Products carry approvals to international quality standards.

The coating of the metal waterstops consists of highly swelling bentonite.

Our timeline:

- 1865** Dyckerhoff & Widmann AG (DYWIDAG) founded a small concrete construction company.
- 1950** DYWIDAG starts license business for construction systems with bridge post-tensioning at its core.
- 1979** DYWIDAG SYSTEMS INTERNATIONAL (DSI) founded to expand international business. Invests in R&D and a second global segment: geotechnics.
- 2006** DSI enters the European concrete accessories market by making acquisitions in France and Germany: Arteon, Technique Beton, Mandelli-Setra, Contec®.
- 2011** Private equity investor Triton becomes the new shareholder of DSI.
- 2016** Development of construction activities in Middle East & Asia, including new joint ventures in Qatar and India.
- 2018** Alpin Technik and Datum Group acquired to empower DSI's robotics and monitoring.
- 2018** Concrete accessories created as a Business Unit within DYWIDAG.
- 2019** DSI acquires PARTEC.
- 2020** DSI rebrands as DYWIDAG.
- 2021** DY.CO launched as a new Pan-European Business Unit of DYWIDAG.
- 2023** DY.CO rebrands as DYWIDAG Concrete Technologies.

RECOSTAL® Foundation formwork

RECOSTAL® Foundation formwork is a complete assembly system with key profiled shuttering units. The accessories support the system and enable the unobstructed installation of the reinforcement.

The top S-hook is placed before concrete pour.

The formwork is self-supporting up to a height of H=1,0 m.

The distance of the accessories is always $\leq 1,0$ m. The tube diameter varies depend on the height of foundations.

Self-supporting foundation formwork type FS and ES as complete assembly system with trapezoidal profiled formwork units.

All parts are precision-made and pre-fabricated according to the layout plan. Due to the form ties and formbraces (accessories) provided with the formwork units, the system is self-supporting up to a formwork height of H=1,0 m.

The Benefits

- Fully self-supporting up to 100 cm
- Highly time-efficient
- No separate concrete pour
- Installation without crane
- No relocation of formwork

Type FS

Max. length of the formwork units [m]	Formwork height [m]	Formwork width [m]
L=3,1	H= 0,25 to 1,25 (greater heights on request)	B=0,2 to 1,2 (greater widths as type ES)

Type ES

Max. length of the formwork units [m]	Formwork height [m]	Formwork width [m]
L=3,1	H=0,25 to 1,25 (greater heights on request)	B > 1,20 m

Foundation formwork type ET as an assembly system with trapezoidal profiled formwork units. All parts are precision-made and pre-fabricated according to the layout plan. Overlaps are fixed with hexagon head screws, which are included in the delivery. In order to withstand concrete pressure, the units are supported on site by placing backfill material.

Type ET

Max. length of the formwork units [m]	Formwork height [m]
L=3,1	H=0,25 to 1,6 (greater or smaller heights on request)



RECOSTAL[®] Speed Edge

RECOSTAL[®] Speed Edge Formwork is an innovative solution made of galvanised steel sheets used for base slabs and floor slabs. It is available in standard lengths of 2.25 m and in heights of 14 cm to 50 cm.

The Benefits

- Fully self-supporting up to 50 cm
- Cost saving due to less excavation and quick assembly
- Highly time-efficient approx 0.025 h/m compared to traditional 0.7 h/m
- Corners simply bent into shape
- Complex slabs easily formed
- No stripping needed
- Installation without crane



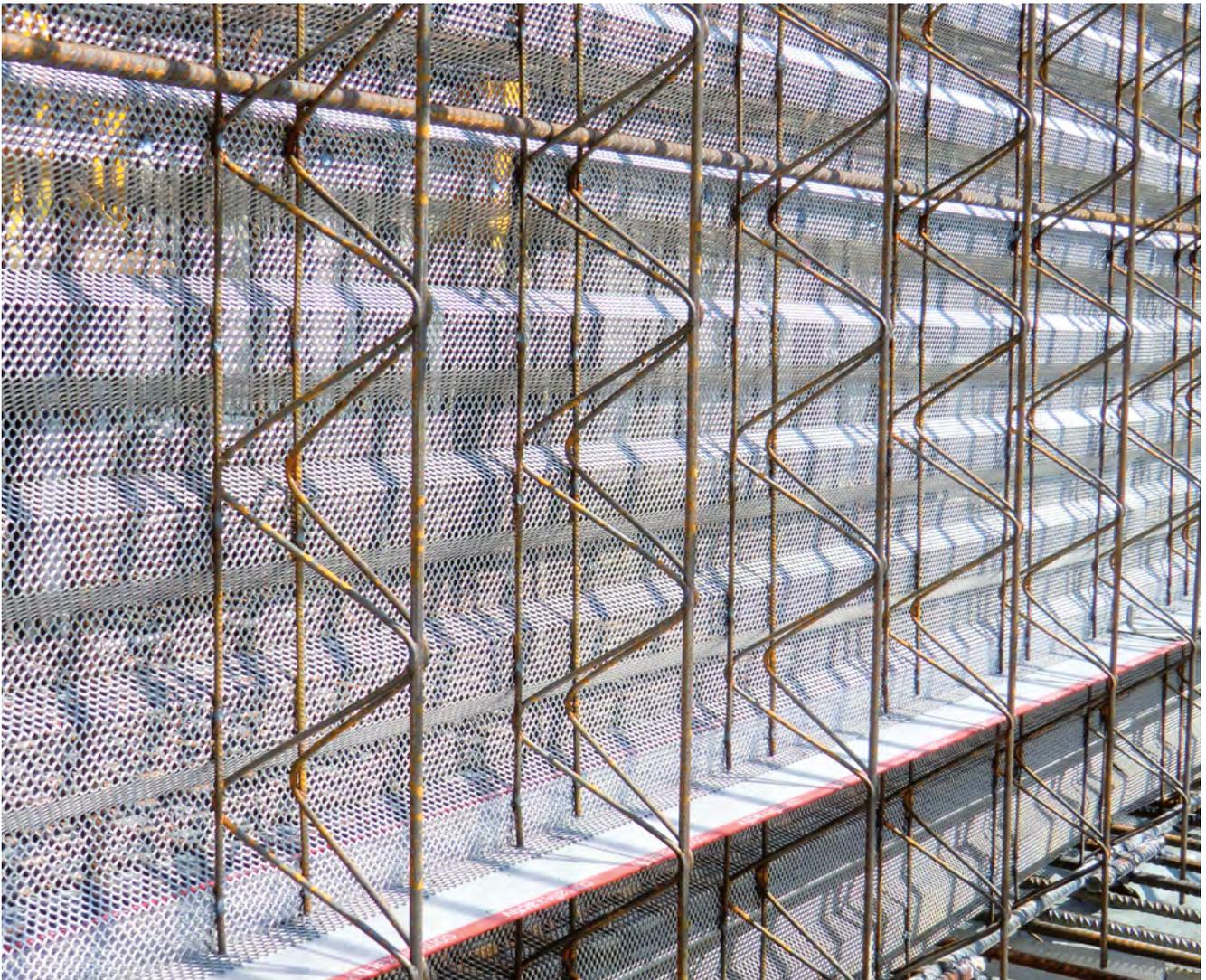
RECASTAL® 2000 GT/GTF

Self-supporting shuttering units with two-directional axial load bearing capacity for heights exceeding 40 cm

RECASTAL® 2000 GT shuttering unit consists of finely-meshed, trapezoidally profiled expanded metal with welded lattice supports. These units are normally used to install formwork for construction joints in base slabs. The bearing capacity is clearly separated into a vertical and a horizontal direction. The load per surface resulting from the pressure of fresh concrete is carried by the trapezoidal profile and transferred to the vertical lattice supports. These supports bear the load and transfer it to the top and bottom end points.

The Benefits

- Fully self-supporting in all heights and dimensions
- Key profile according to EC 2 for highest load-bearing capacity
- Extensive combinable with CONTEC® sealing systems
- Cost and time efficient due to prefabricated elements



RECOSTAL® Coupler

Threaded splice connection for reinforced concrete structures

With the new RECOSTAL® Coupler rebar connection, DYWIDAG Concrete Technologies is expanding its product portfolio in the field of RECOSTAL® reinforcement technology.

RECOSTAL® Coupler threaded connections offer an optimal and secure connection in reinforced concrete construction where reinforcement steel needs to be spliced.

RECOSTAL® Coupler connection is available in sizes: 14 mm-28 mm according to DIBt approval and 12 mm-25 mm according to CARES approval (other sizes on request).

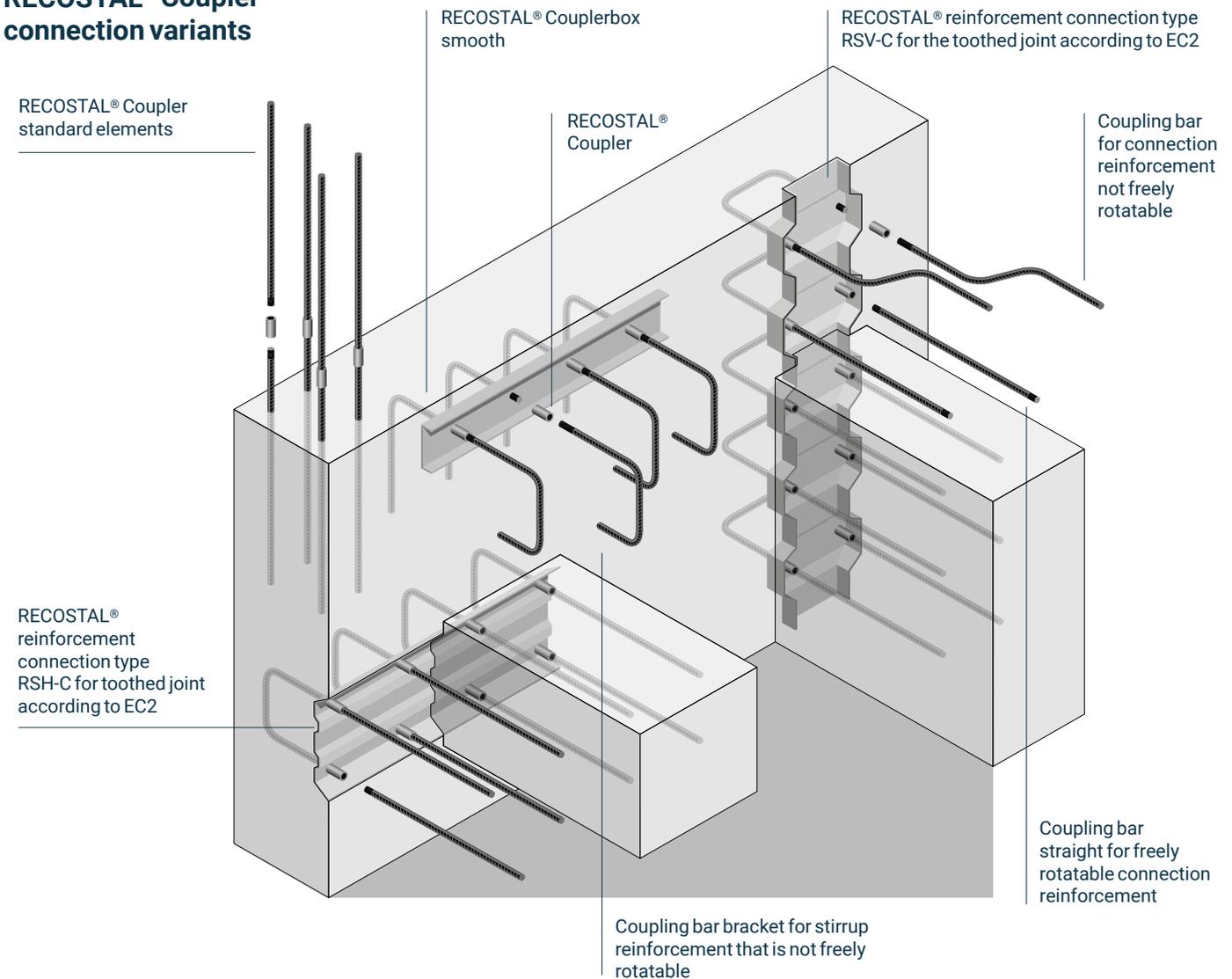
For this purpose, the reinforcing bars can be ordered bespoke to specification directly via our manufacturing facilities. RECOSTAL® Couplers can be used in combination with many products from the DYWIDAG Concrete Technologies portfolio, for example with the RECOSTAL® Coupler box giving maximum design flexibility for engineers and contractors.

RECOSTAL® Coupler connections can save time and costs, ensure a secure connection and help conserve resources by saving reinforcement steel.

The Benefits

- High fatigue strengths for use in bridges, among other applications
- 100% power transmission
- General technical approval: DIBt, CARES
- Extensive combination possibilities with RECOSTAL® formwork systems
- Efficient and economical
- Less planning effort
- Conservation of resources
- Design flexibility

RECOSTAL® Coupler connection variants



RECOSTAL® Starter packs

Highest bearing capacity due to key profiled boxes Highest joint category according to Eurocode 2

The main advantages of RECOSTAL® Starter Packs is the strong and robust box with high dimensional stability and a trapezoidal profile, which guarantees the highest bearing capacity according to Eurocode 2. Joint category "key profiled" according to DIN EN 1992-1-1/NA. RECOSTAL® Starter Packs meet the requirements of the DBV Bulletin.

RECOSTAL® Starter Packs ensure time-saving installation of secure connections between steel reinforced concrete construction parts that are created with different pour sequences. Therefore, floor slabs, walls or staircases can be installed subsequently with rigid connections corresponding to the highest joint category "key profiled".

The large variety of shapes offers the perfect connection for many different design situations. The standard range includes starter packs with 8, 10 and 12 mm diameter and 1.25 m unit lengths. Unit lengths exceeding 1.25 m, special types for specific solutions and the combination with waterproofing systems as well as solutions for entire projects are possible on request.

The Benefits

- Strong, robust galvanised sheet metal starter packs, dimensionally stable
- Cost and time effective installation, starter packs are simply nailed to the formwork
- Easy removal of the sheet metal covers due to their special design
- Trapezoidally profiled box for excellent bond
- Various possible combinations provide a solution for all common installation details



RECOSTAL® Keyboard

Isolation joint for concrete floor slabs

Keyboard XL Keyboard XLV Keyboard XLS

RECOSTAL® Keyboard units are designed as formwork for the installation of contraction joints in industrial ground floor slabs. Rather than subsequently saw cuttings joints, a controlled crack appears along the unit. The trapezoidal profile provides a keyed profile between the slabs. Deflection of the individual floor slabs can thus be avoided. In order to increase the capacity to withstand shear forces, the RECOSTAL® Keyboard units can be equipped with additional dowel bars. The height can be adjusted with set-screws incorporated in the formbraces. There is a wide variety of systems available for the top of the RECOSTAL® Keyboard units to allow for various applications.

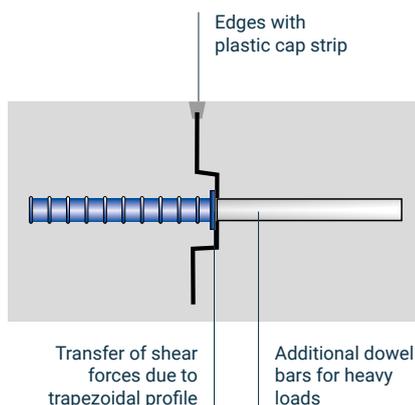
The Benefits

- Causes planned, controlled cracking
- Trapezoidal profile provides safe load transfer
- Formbraces provides easy exact height adjustment
- Stable against concrete pressure
- Various application possible

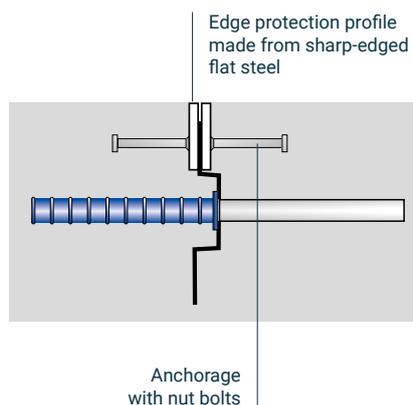


Isolation joint units for industrial floor slabs

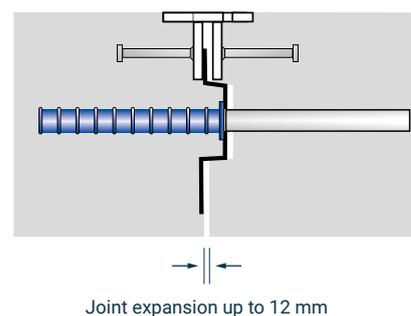
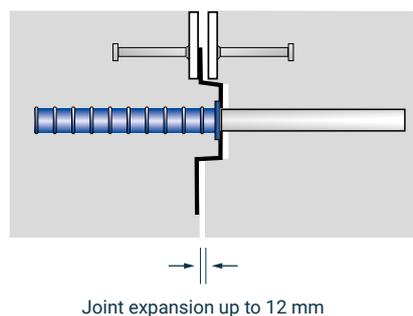
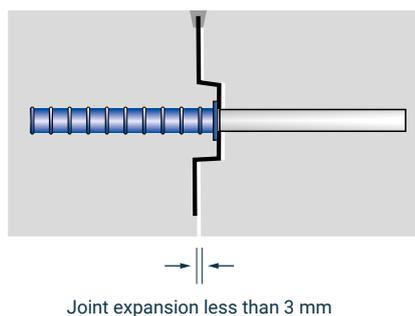
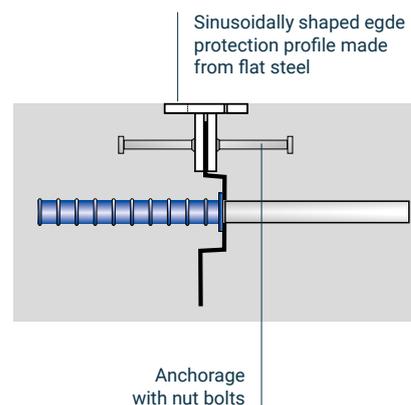
RECOSTAL® Keyboard XL for small joint expansions



RECOSTAL® Keyboard XLV/XLV for larger joint expansions



RECOSTAL® Keyboard XLS to reduce vibration



contecSEAL 150

contecSEAL 150 NEW GENERATION METAL WATERSTOP.
All the advantages of the traditional systems have been
technologically combined into one single product.

contecSEAL 150 is a metal waterstop made of galvanized sheet steel with a special elastic coating on both sides.

contecSEAL 150 is intended for the use as a permanent internal seal against pressurised water for construction and control joints in walls and floors and base slabs in impermeable to water concrete constructions ("White tanking") without additional concrete upturn.

The product is mainly installed in the middle of the construction or control joint (base slab to wall, wall to wall, base slab to base slab, wall to floor slab) in the construction part to be waterproofed. Suitable for horizontal and vertical applications.



The Benefits

- Extremely strong adhesive bond to concrete
- Increased leak path
- Safe application due to a special doublesided elastic coating
- Fast, effective installation (no protective film required, no additional concrete upstand in base slab to wall joint required)
- Strongly bonded for the fresh concrete and labyrinth seals
- Elastic, non-rigid mineral coating
- Water pressure resistance up to 5 bar
- Tested for joint expansion of up to 1.0 mm at 2 bar water pressure
- Suitable for the use in changing water levels
- General building authority (abP).
- Non-stick surface
- Pressure sensitive adhesive bond
- Without laborious protective film
- Embedment depth in concrete at least 3 cm



CONTEC® Joint system for precast walls

Watertight joint sealing with suitable profiled sections are an important topic in concrete construction when precast double walls are used and at interfaces between precast double walls and in-situ concrete components. The safety requirements that must be met for sealing the joints of precast double walls cannot be high enough. We offer three different sealing technologies for meeting the safety requirements, while taking into consideration the working methods of conventional construction companies.



CFS/CFE joint profile Internal waterproofing of precast walls

The CFS/CFE joint sealing profiles are specially designed for the application in precast walls with a core thickness of ≥ 12 cm and meet the high demands for effective waterproofing against hydrostatic pressure. The system consists of galvanized folded profiles coated with bentonite, with excellent active sealing effect and ease of handling during installation and in providing the butt joints. The water that penetrates along the profile contacts the contaflexactiv coating and activates the swellable bentonite to form a highly impervious barrier. The joint profiles are here also continuously installed during erection of the precast double walls. The butt joints of the joint metal profile sheets are available in 1.5 m and 1.25 m length. As active butt joints, they have overlaps of 10 cm and are fixed in place with knock-in clamps.

Swelltite 3000 system External waterproofing of precast walls

Swelltite 3000 is a system for sealing horizontal and vertical construction and butt joints in waterproof concrete structures against hydrostatic pressure, as encountered in precast and double-wall constructions. Swelltite 3000 is attached to the outer side of double walls, where it develops its sealing effect. The bentonite, used as sealing material, here provides the system with a permanently active swelling joint seal. The ready-to-install bentonite film strips (delivered as roll material) are especially flexible to use. Other system components are Bentoseal C60 sealing compound and profiled cover sections made of stainless steel or PVC with stainless steel knock-in anchors.

FTS/FTE joint profile

The FTS/FTE units, as vertical butt joint profile, are a galvanized, folded-steel sheet, both sides of which are coated with polymer bitumen over their entire surface. The butt joint profiles are continuously installed during erection of the precast double walls. The sealing profiles, attached to the wall joint of the elements and fixed in place with knock-in anchors, will then be located in the core of the double wall. A borehole grid in the joint profile facilitates installation and helps prevent errors in execution. contaflex CF or CFR metal waterstop is used in the connecting joints between floor and wall. Special profiled sections for butt joints and corner joints, as well as suitable knock-in anchors and drive clamps complete the system that is optimally suited for double walls of 25 or 30 cm. FTS/FTE units for double wall thickness > 30 cm available on request.

Where joint profiles of standard dimensions cannot be applied due to a special construction measure, we offer, in addition, project-related dimensions for such construction.

The Benefits

- Activ bentonite sealing system
- Safe active overlaps
- Easy and fast installation
- Water pressure resistance up to 5 bar
- Tested for joint expansion of up to 0.5 mm
- General building authority test certificate (abP)

The Benefits

- Sealing level exterior to the wall (no water penetration into construction)
- Activ bentonite sealing system
- Easy and fast installation
- Water pressure resistance up to 2 bar
- Tested for joint expansion of up to 0.5 mm
- General building authority test certificate (abP)

The Benefits

- Robust water barrier
- Strong adhesive bond through bitumen coating
- Easy and fast installation
- Water pressure resistance up to 5 bar
- Tested for joint expansion of up to 2.0 mm
- General building authority test certificate (abP)

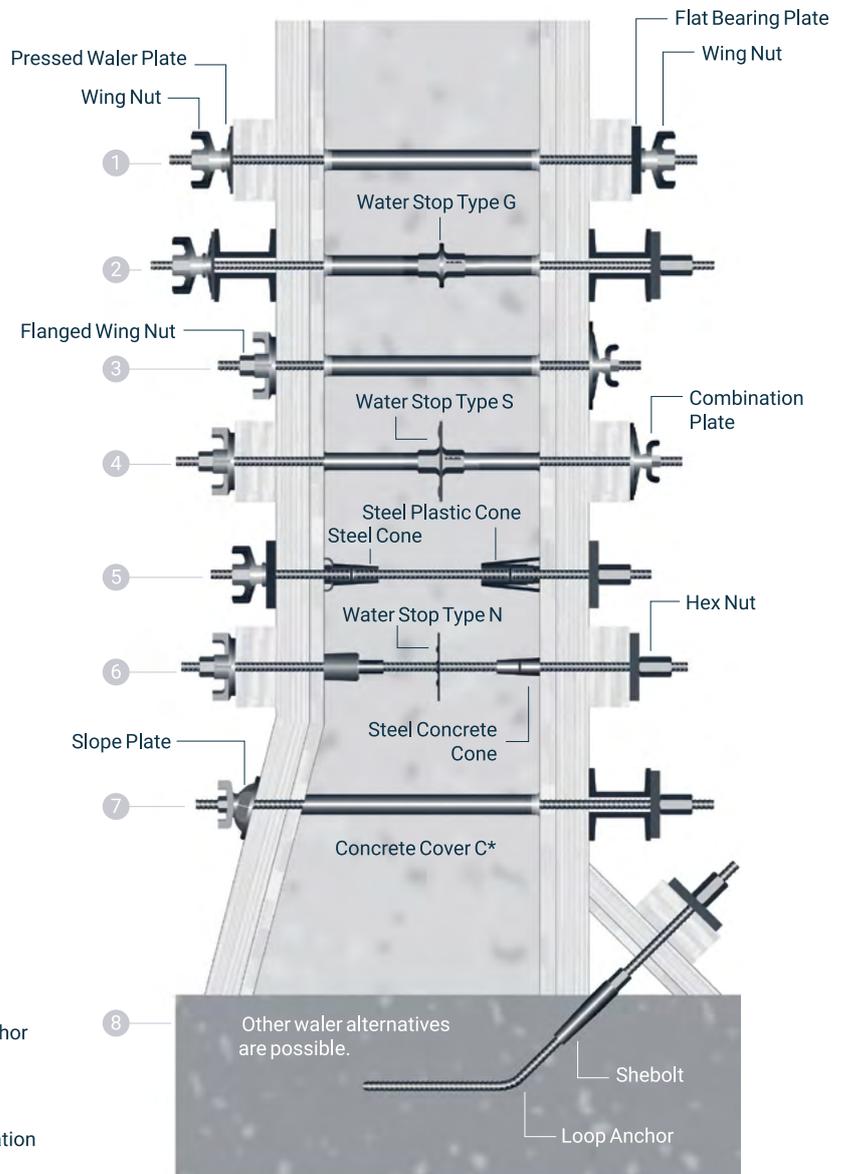
DYWIDAG Form Tie

The DYWIDAG Form Tie is based on the original DYWIDAG Threadbar with hot-rolled, continuous thread on both sides. Together with matching accessories, it is used by formwork manufacturers around the world and has proven itself countless times on jobsites.

A decisive advantage of the DYWIDAG Threadbar is its coarse thread that does not run around the complete circumference of the bar. Consequently, the bar is not only insensitive against damages and dirt, but also self-cleaning. Furthermore, it can be cut at any point and

used continuously with couplers or nuts. The high thread pitch allows a quick assembly and disassembly of the connecting and anchoring parts. The high strength of $f_{tk} = 1,100 \text{ N/mm}^2$ permits a high load capacity in relation to its low weight per meter.

We offer a large range of accessories in diameters 12.5; 15; 20 and 26.5mm for all kinds of applications.



- ① — ④ Recoverable Anchor
- ⑤ — ⑥ Lost Anchor
- ⑦ — ⑧ Angle Compensation

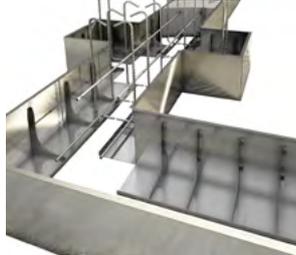
* Length of Lost Anchor = Wall Thickness - 2 x Concrete Cover C



1 RECOSTAL® Permanent Formwork

2 RECOSTAL® Speed Edge

3 RECOSTAL® Shuttering Unit



4 RECOSTAL® Dilatation Joint Units

5 RECOSTAL® Starter Pack

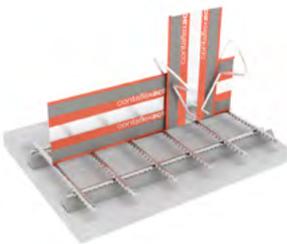
6 RECOSTAL® Keyboard



7 CONTEC® Metal Waterstop

8 CONTEC® Waterproofing membrane

9 DYWIDAG Form Ties



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CONCRETE TECHNOLOGIES

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