DYWIDAG Threadbar Anchors

Basic Concept

DYWIDAG Threadbar Anchors are an actively tensioned ground anchor system and correspond to DIN 4125 and EN 1537 regulations. Due to the active tensioning, anticipated deformations of the system and deformations at the civil engineering measure are minimized or entirely eliminated. This applies both to temporary structures (e.g. temporary pit support systems) and permanent tie backs.

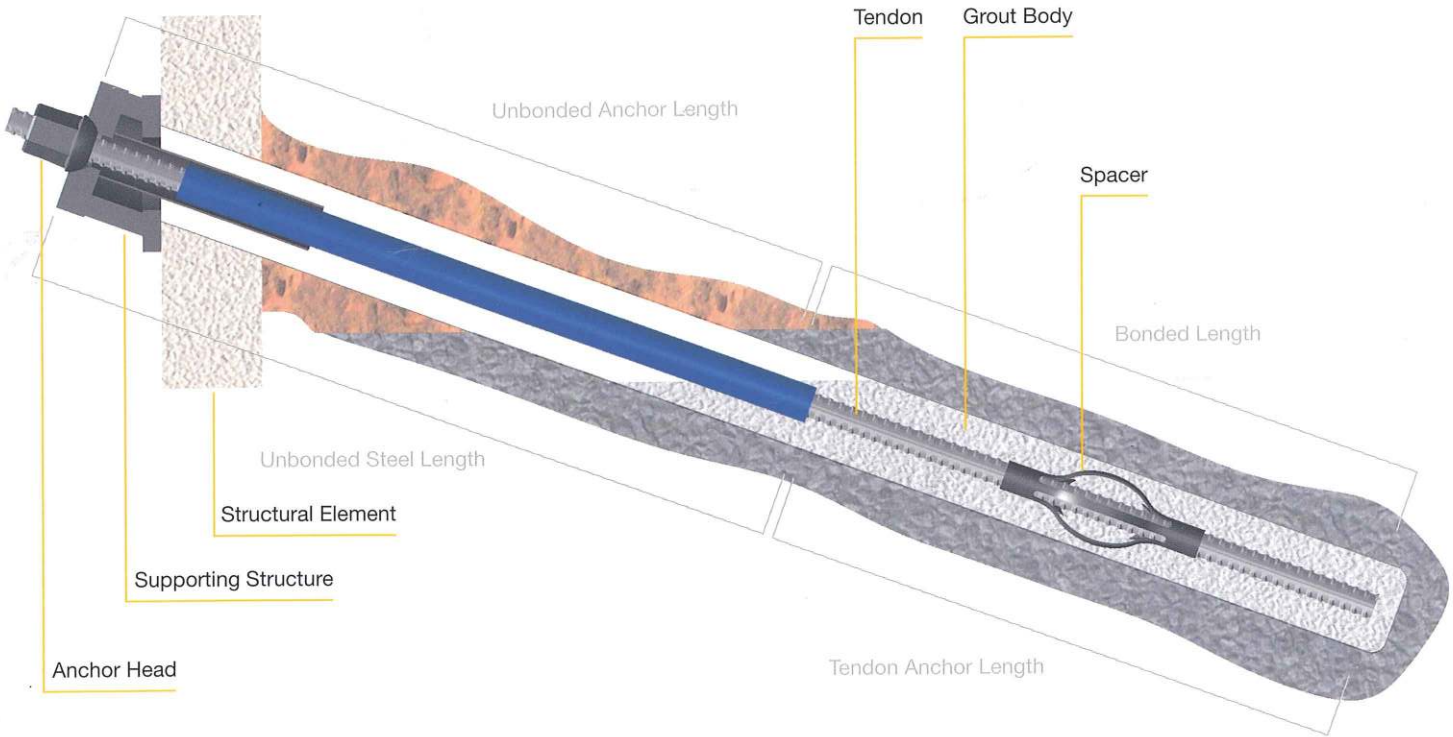
By definition, an anchor consists of three main components:

- Bonded length: The anchor is fixed in the borehole using grout (cement mortar) and can transfer the forces to the load-bearing soil via bond and skin friction
- Unbonded length: The bar is uncoupled from the borehole using a plain tube (sheathing) so that it can freely extend in the unbonded length. This way, tension can be applied to the anchor system
- Anchor head: The anchor head transfers the anchor force to the substructure and thus to the structure that needs to be anchored

Once the grout has sufficiently hardened, the load bearing capacity of each anchor is tested during an approval test.

If required, anchors can be supplied retensioned or detensionable. Permanent control of anchor forces can be realized by installing load cells. Alternatively, permanent controls can also be carried out at the anchor head or in the borehole using the contactless force measuring system DYNA Force® that has been specially developed together with DSI.

Bar Anchor Drawing



Fields of Application

- Intra-urban construction
- Excavations (deformation resistant)
- Tiebacks
- Rock and slope stabilization
- Uplift control
- Positional stability
- Dam construction
- Ascending anchors

Key Features

- Threadbars with proven coarse *GEWI*® Thread that is suitable for on-site use along the entire length; lengths can be adjusted on site without any problems using the appropriate accessories and equipment
- Various steel grades
  - High quality tensioning bars for a good force / borehole ratio
  - Robust, weldable *GEWI*® Bar
  - *GEWI*® *Plus* Bars for highest wear
- Variable anchor head and angle compensation designs
- Easy handling: tensioning, retensioning or detensioning thanks to screwable anchorage
- Easy overhead installation – for instance in cavern roofs – due to the high rigidity of the bar system

Additional Information

German Approval DIBt Z-20.1-17 / DIBt Z-34.11-225 / Austrian Approval BMVIT-327.120/0053-IV/ST2/2011 / BMVIT-327.120/0034-II/ST2/2005

DYWIDAG Threadbar Anchors

Technical Data

DYWIDAG Y1050H Prestressing Steel

Nominal diameter Ø [mm]	Yield strength / tensile strength $f_{p0.1k}/f_{pk}$ [N/mm²]	Cross-sectional area A [mm²]	Load at yield $F_{p0.1k}$ [kN]	Ultimate load F_{pk} [kN]	Weight [kg/m]	Weight DCP [kg/m]	Approval
26.5	950/1,050	552	525	580	4.48	7.4	○ ×
32	950/1,050	804	760	845	6.53	9.8	○ ×
36	950/1,050	1,018	960	1,070	8.27	12.3	○ ×
40	950/1,050	1,257	1,190	1,320	10.21	14.0	○ ×
47	950/1,050	1,735	1,650	1,820	14.10	20.0	×

GEWI® B500B Threadbar

Nominal diameter Ø [mm]	Yield strength / tensile strength $f_{p0,2k}/f_{tk}$ [N/mm²]	Cross-sectional area A [mm²]	Load at yield F_{yk} [kN]	Ultimate load F_{tk} [kN]	Weight [kg/m]	Weight DCP [kg/m]	Approval
32	500/550	804	402	442	6.31	9.5	
40	500/550	1,257	628	691	9.86	13.6	△
50	500/550	1,963	982	1,080	15.41	21.0	△
63.5	555/700	3,167	1,758	2,217	24.86	32.4	△

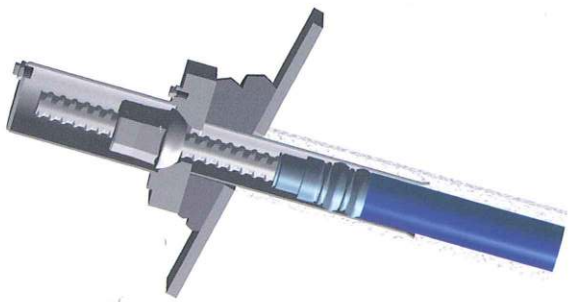
GEWI® *Plus* S670/800 Threadbar

Nominal diameter Ø [mm]	Yield strength/ tensile strength $f_{p0,2k}/f_{tk}$ [N/mm²]	Cross-sectional area A [mm²]	Load at yield F_{yk} [kN]	Ultimate load F_{tk} [kN]	Weight [kg/m]	Weight DCP [kg/m]	Approval
18	670/800	254	170	204	2.00	5.4	□
22	670/800	380	255	304	2.98	6.5	□
25	670/800	491	329	393	3.85	7.0	□
28	670/800	616	413	493	4.83	8.6	□
30	670/800	707	474	565	5.55	9.0	□
35	670/800	962	645	770	7.55	11.3	□
43	670/800	1,452	973	1,162	11.40	15.8	□
57.5	670/800	2,597	1,740	2,077	20.38	30.0	□
63.5	670/800	3,167	2,122	2,534	24.86	32.4	□
75	670/800	4,418	2,960	3,534	34.68	43.5	

○ Germany: Z-20.1-17 DYWIDAG Threadbar Anchor Y1050H Prestressing Steel
× Austria: BMVIT-327.120/0053-IV/ST2/2011 DYWIDAG Threadbar Anchor Y1050H Prestressing Steel
△ Germany: Z-34.11-225 DYWIDAG *GEWI*® Bar
□ Austria: BMVIT-327.120/0034-II/ST2/2005 DYWIDAG *GEWI*® *Plus* Threadbar

Anchor Head for Permanent Anchors

Anchor Head with Angle Compensation



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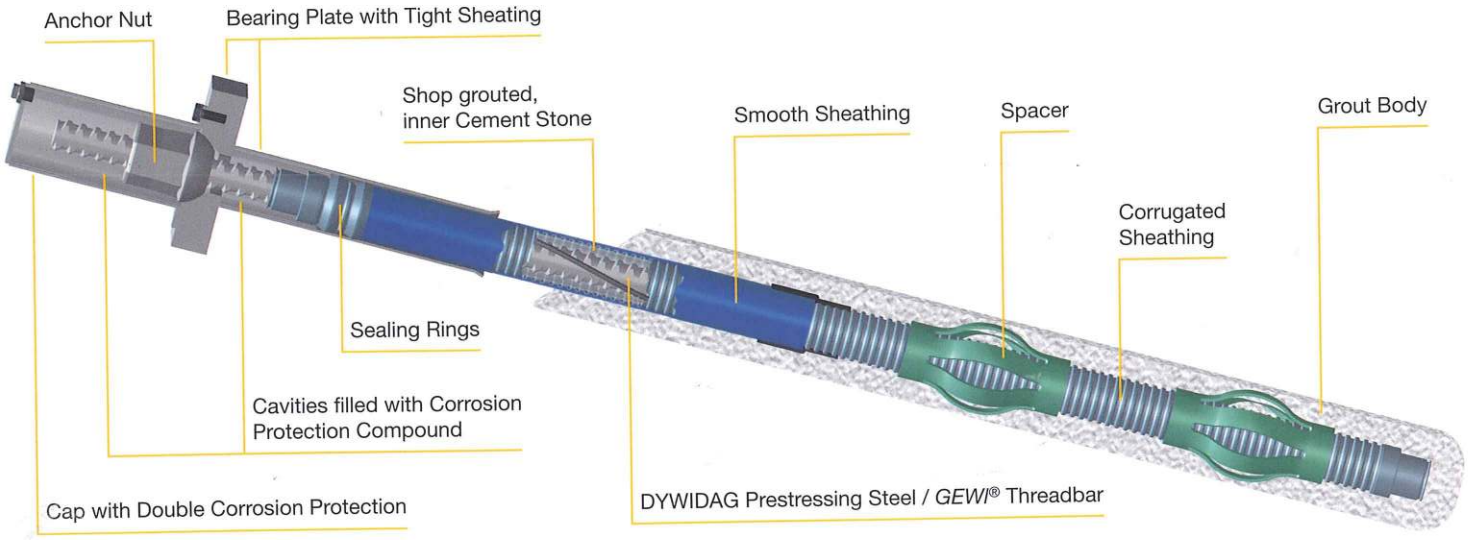
DYWIDAG Threadbar Anchors

Permanent Anchors

- Long-lasting system for permanent use (more than 100 years)
- Approved, Double Corrosion Protection (DCP) achieved by grouted corrugated sheathing with controlled crack width
- Anchor components in accordance with ETA 05/0123 (bar post-tensioning system)
- Approved, permanently sealed anchor head design with robust gaskets and caps
- Various corrosion protection coatings for head components depending on intended use

Fields of Application

- Permanent tiebacks
- Uplift control
- Positional stability
- Dam construction
- Rock and slope stabilization

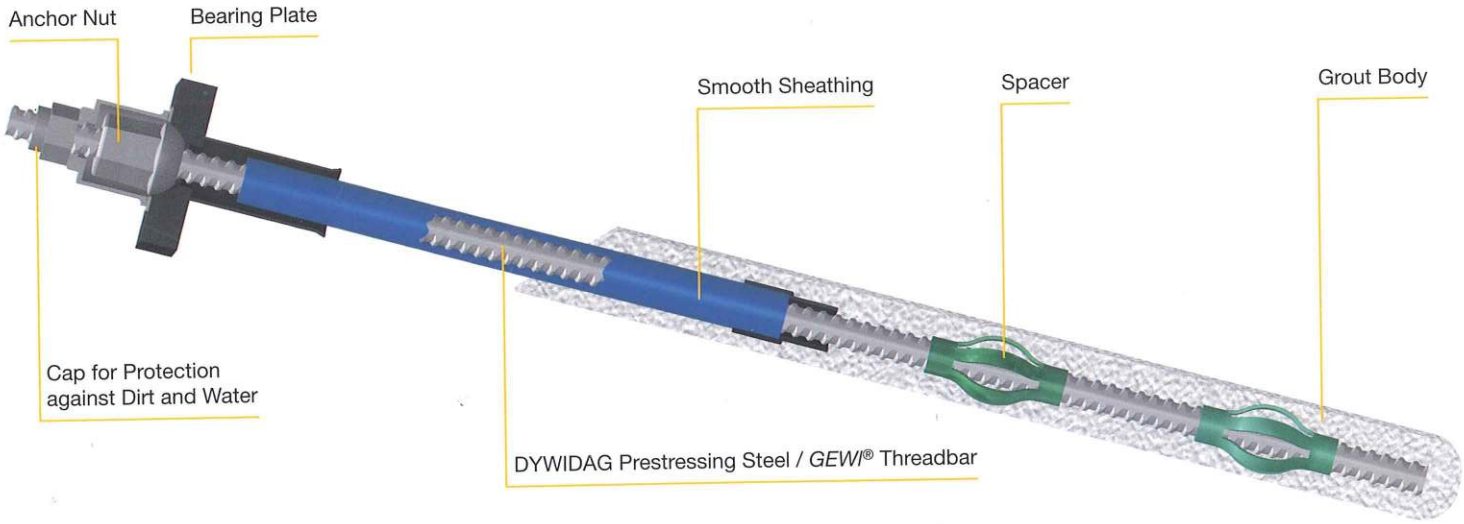


Temporary Anchors

- Temporary system for preliminary use of up to two years
- Extended use after prior agreement of involved experts
- Approved anchor components in accordance with ETA 05/0123 (Bar Post-Tensioning System)

Fields of Application

- Excavations
- Temporary tiebacks
- Stabilization of states of construction



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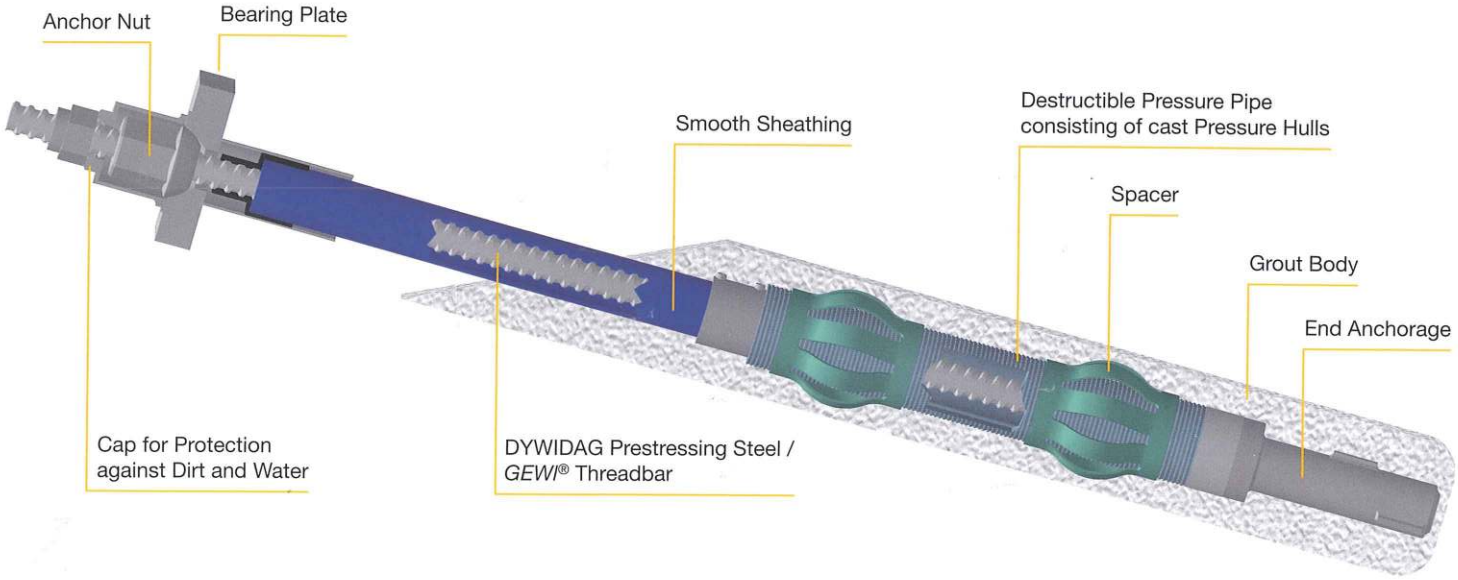
Temporary Bar Anchor with Completely Removable Tendon

- Completely removable anchor – the cast compression bodies with predetermined breaking points are the only thing that remains in the soil. They do not obstruct civil engineering work carried out at a later stage (pile driving, excavation, TBM etc.)
- Easy and safe anchor removal: The steel tendon is unscrewed from the end anchorage
- Pressure pipe consisting of patented cast hulls ensures transfer of forces from the tendon to the borehole grout
- Pressure pipe lengths can be adapted to soil conditions on site

Fields of Application

- Excavations
- Temporary tiebacks
- Stabilization of states of construction

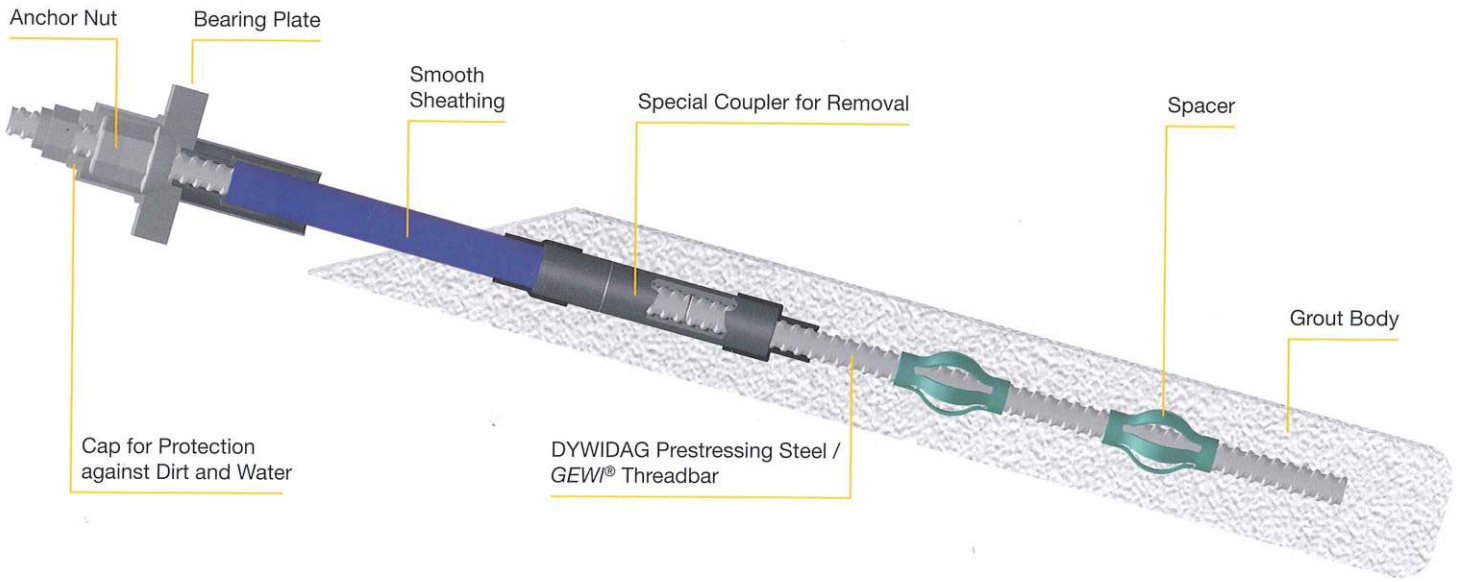


Temporary Anchor with Removable Free Length

- Partly removable anchor – free length can be removed
- Easy and safe anchor removal: The steel tendon can be unscrewed from the special coupler in the transition from bonded length to unbonded length
- Slender system – small boreholes can be realized

Fields of Application

- Excavations
- Temporary tiebacks
- Stabilization of states of construction



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