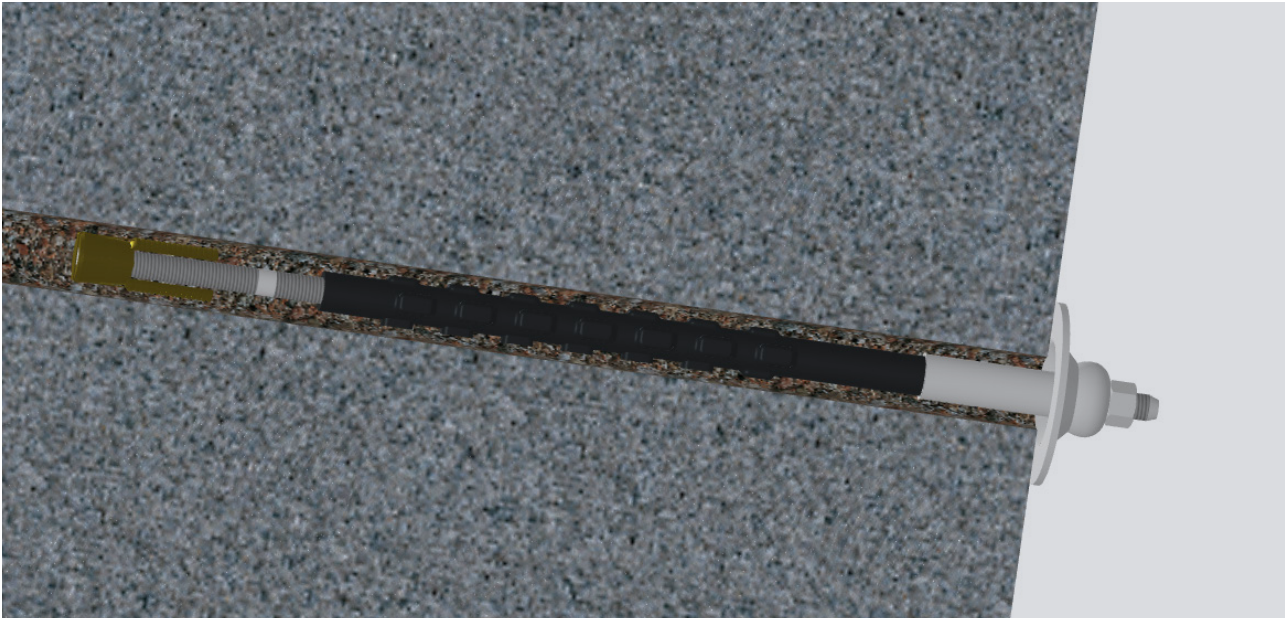


DYWIDAG Combo-Bolt



KEY FEATURES

- Durable lifetime - 120 years with qualified anti-corrosion protection level.
- Immediate ground support for anchorage - through direct load transfer from anchor head to expansion shell, then to rock mass.
- All exposed parts can be galvanized and epoxy coating.
- Beneficial for upward grouting with assembly bolt system.
- Available in differing material forms to suit design requirements.

MAIN BENEFITS

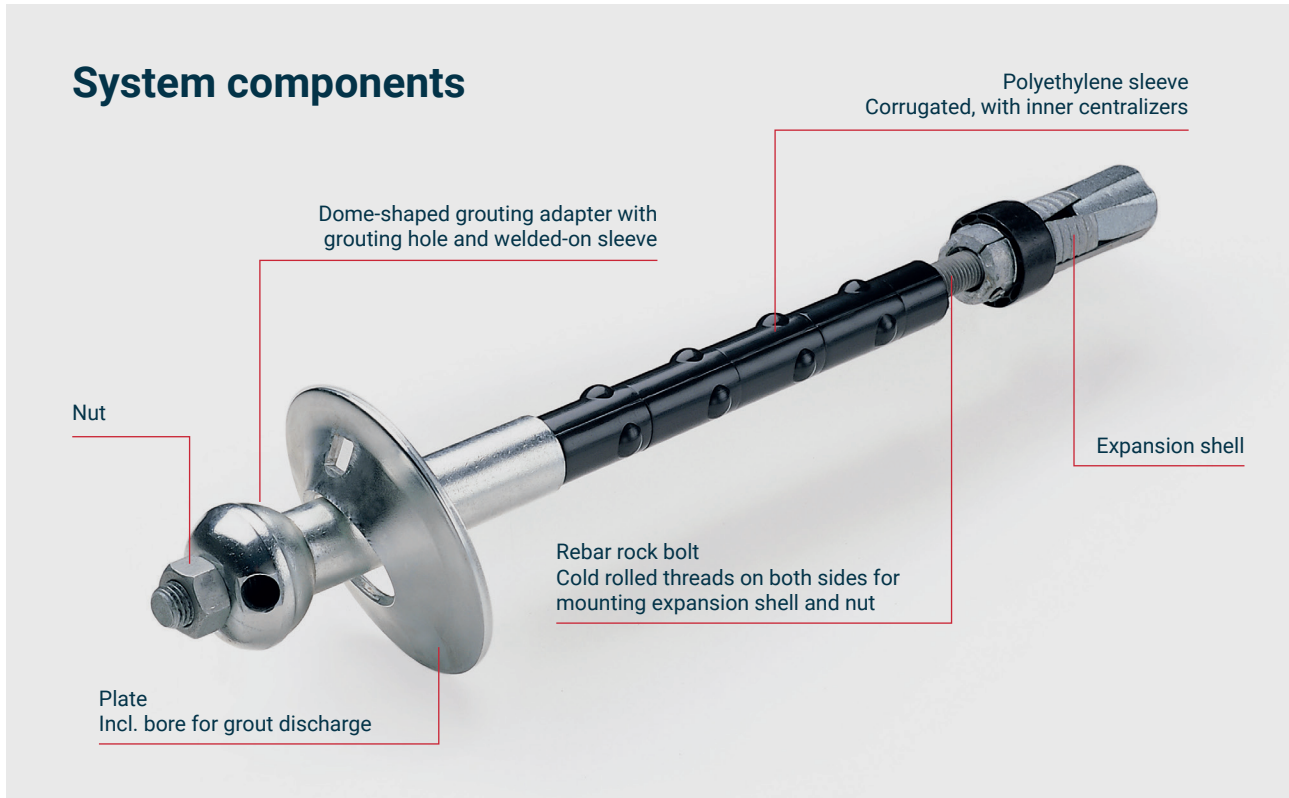
- Easy and quick installation.
- Save the construction cost and time with optimization of drillhole
- Angle compensation at anchor head.
- Safe and reliable system with more ductile rebar.
- Favourable for upward installation and grouting.
- High Shear performance.

DYWIDAG Combo-Bolt is a reliable system for permanent stabilization of rock mass during the excavation of tunnels and caverns as well as slope reinforcement.

The assembly bolting system adopts combination technology which offers the superior advantages of immediate mechanical support for unstable rock mass and optimization of borehole size. The prefabricated polyethylene sheathing and grouting bell can allow the pressured grout pumping from the inner sheathing to the end of bolt and fully grout the borehole efficiently.

Fields of application

- Systematic permanent reinforcement of underground excavations (e.g. tunnels and caverns).
- Ground stabilization in slopes.
- Permanent rockbolt, soilnail and ground anchor.



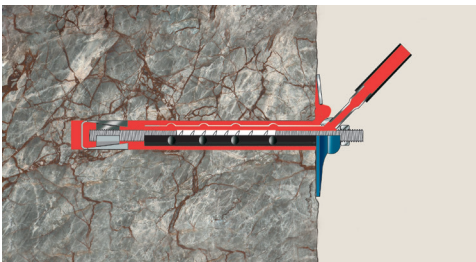
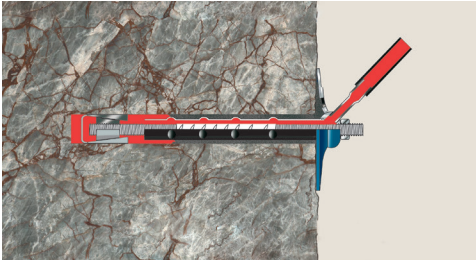
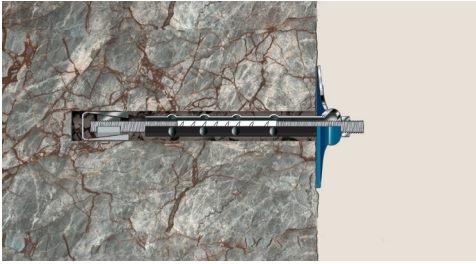
TECHNICAL DATA		
Nom. diameter of Bar (Thread)	22 (M22)	32 (M33)
Yield strength	600Mpa	500Mpa
Ultimate strength	800Mpa	550Mpa
Minimum Elongation at Agt.	5%	5%
Minimum elongation at rapture	13%	13%
E-modulus	205 GPa	205 GPa
Ultimate breaking Load	242kN	426 KN
Diameter of plate	150mm dia.(dome)	250x250mm (square dome)
Drillhole	45-48mm	64-68mm
Torque	150Nm-250Nm	200Nm-300Nm

Note

1. Available in S316 stainless dome plates and grouting bell
2. Customization, system upgrade and modification of rockbolt system can be possible.

Standard Compliance:

DIN EN ISO 1461/ BS EN13438/ BS EN ISO 2049 / AS/NZS1554.1/ DIN EN 10204



Installation Procedure

▶ Borehole drilling

- Drilling of a borehole as per DYWIDAG's recommendation.
- Recommended borehole length: about 50 mm longer than the bolt length.

▶ Bolt installation

- Insertion of the assembled Combo-bolt into the pre-drilled borehole.
- Activation of the expansion anchor by screwing anchor nut provides immediate point anchorage.
- The required torque as shown in technical data sheet.

▶ Bolt grouting

- Use thixotropic Cementous grout with W/C ratio approx. 0.35.
- Connection of an injection adapter to grouting bell of Combo-Bolt Assembly.
- Pump grout through the inlet of grouting bell until the grout flushing out from the circumference of plate and bleeding hole.



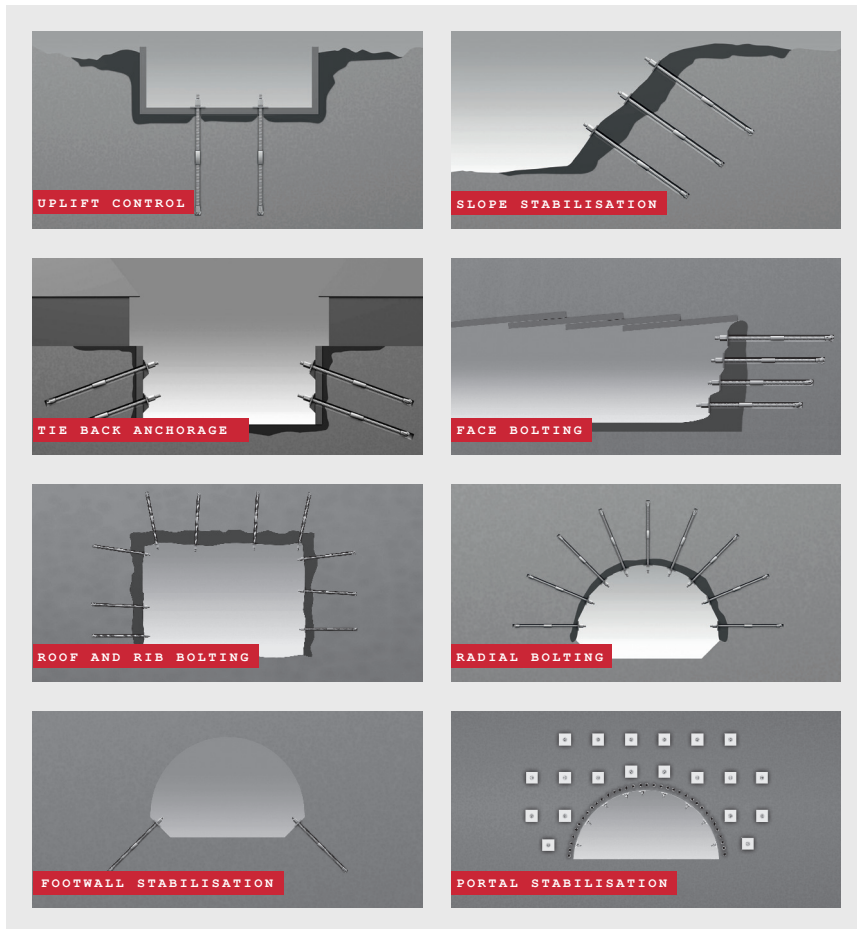
Unique choice of the corrosion protection level

- Plastic sheathing & hot-dip galvanized (HDG) rebar.
- Plastic sheathing & epoxy powder coating of rebar.
- Plastic sheathing, hot-dip galvanizing, zinc phosphating & epoxy powder coating of rebar.

Availability

- Customization of system with quality assurance.
- System upgrade and modification.
- Local presence in technical support.
- Local workshop and warehouse.
- Provision of test kits for pull out test.
- Site support for pull out test including provision of hydraulic jack if required.

Other fields of Application



Other products from the DYWIDAG global portfolio

- Canopy System
- GFRP Bolts
- Combo-Bolt
- Expandable Friction Bolt
- Lattice Girders
- Smart Anchor
- Robotic Inspection
- Resin Cartridges
- Injectable Resins
- Mesh
- Geofabrics
- Waterproofing
- Spiling Bar
- Strand or Cable Bolt
- Steel Sets
- Rock and Soil Nails



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