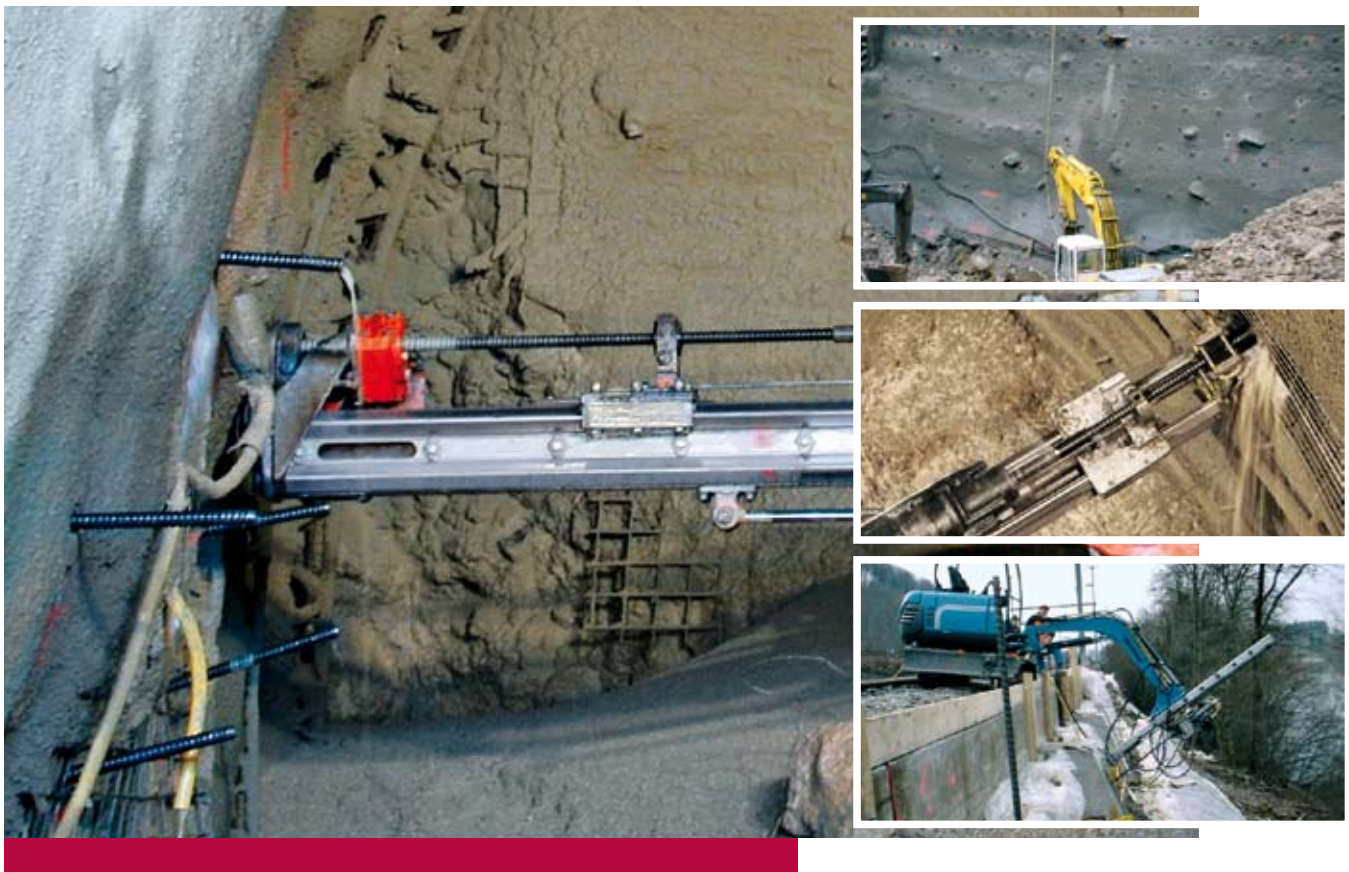
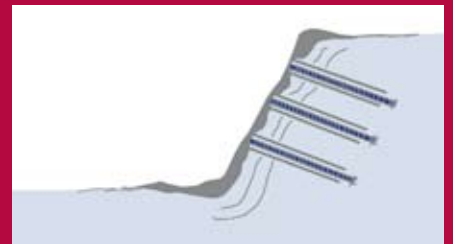
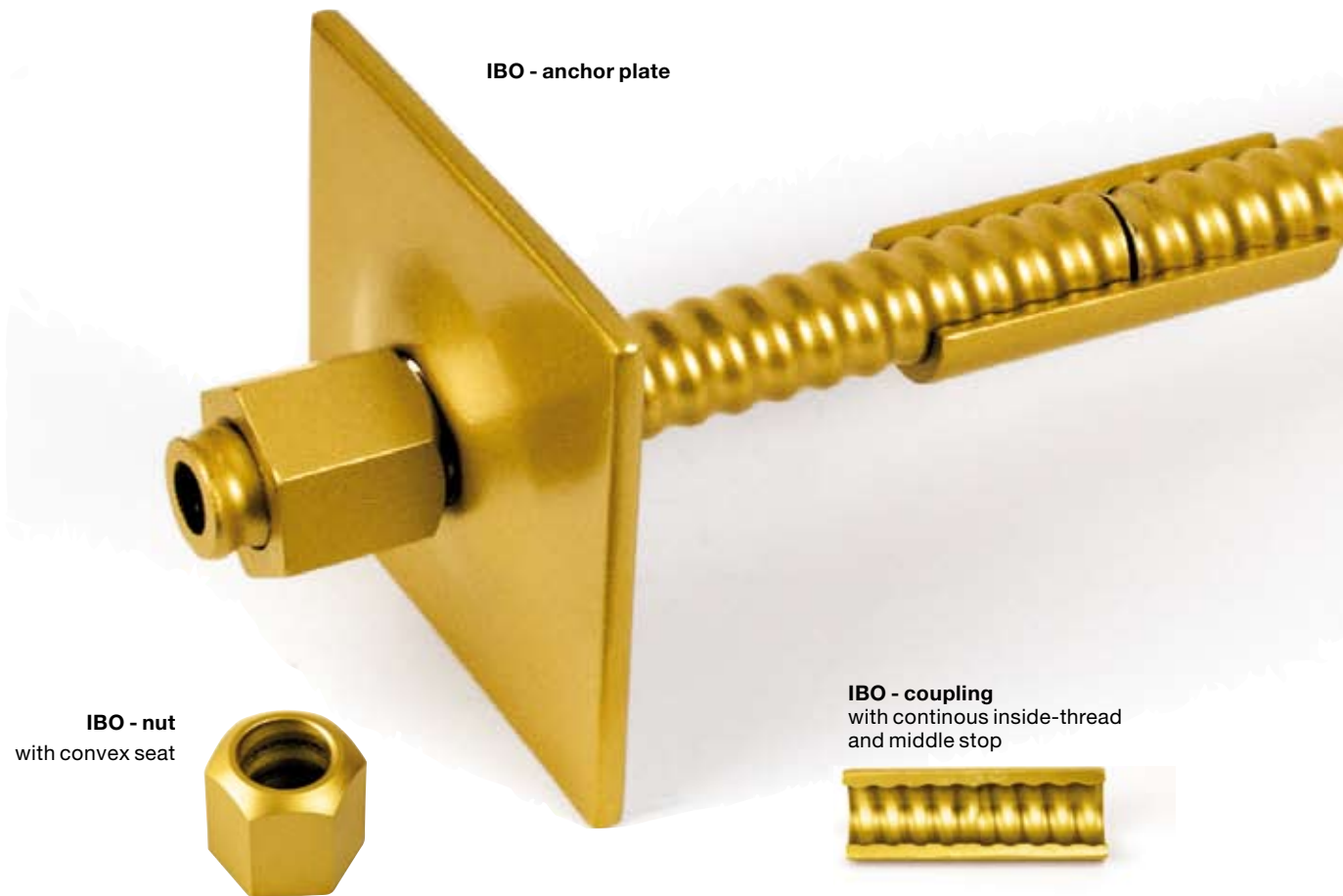


IBO - Self-drilling Anchor



System Components IBO - Self-drilling Anchor



Field of application

IBO Self-drilling Anchors are successfully used for anchoring in poor ground, cohesive and non-cohesive soils, and in case of unstable boreholes. Main applications are:

■ Tunneling and Mining

- Rock bolting
- Face anchoring
- Reinforcement ahead of the tunnel face – spiles
- Foot piles
- Tunnel portals, trenches, and cut and cover areas

■ Special Foundations

- Reinforcement of excavation pits, dams, and slopes – grouted anchors
- Anchorage of retaining walls and noise barriers
- Pile foundation and buoyancy control – grouted piles

■ Avalanche protection structures

- Anchorage of avalanche barriers

System Components IBO - Self-drilling Anchor



IBO - drill bits

IBO - drill bits are available both hardened and with carbide inserts. Drill bits in different designs and diameters are available on request.



Cross or button bit
R32, Ø 51 mm



Arc-shaped drill bit
R32, Ø 51 mm



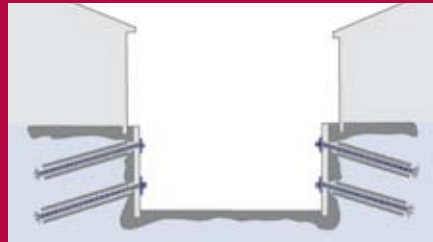
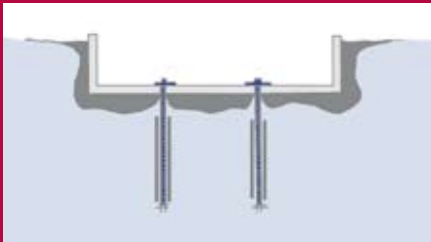
**Arc-shaped drill bit
with 3 buttons**
R32/R38, Ø 76 mm
R38, Ø 90 mm



Button bit
R32/R38, Ø 76 mm



Button bit
R51, Ø 100/115 mm



System Description IBO - Self-drilling Anchor

- Hollow bar anchor with continuous cold-rolled outside-thread
- Application as injection anchor without casing, especially for non-stable boreholes
- Self-drilling installation, utilization of the anchor bar as drill rod with a single-use drill bit
- Easy extension of the anchor bars by couplings
- Grouting or development of the grout body either simultaneously with drilling using a rotary injection adapter or afterwards
- Assembly of the anchor head with the anchor plate and the nut; stressing and locking of the anchor bar with a torque wrench or hydraulic jack after the grout has cured



Prime advantages of the IBO - Self-drilling Anchor

- Easy and similar operating principle for different rock mass and soil conditions
- Drilling, installation, and injection of the IBO anchor in one single operational step
- No pre-drilling of a borehole by using a casing tube and extension rods with subsequent anchor installation necessary
- Minor space requirement for the accomplishment of anchoring
- Optimized machinery and manpower requirements
- Basic dimensioning of the required anchoring forces by choosing the appropriate anchor type
- Functional adjustment of the required anchor lengths using couplings
- Optimum bonding of the profiled anchor rod and the grout
- Adjustment of the IBO - drill bit design and diameter to different rock mass and ground conditions
- Bare or corrosion-protected version available
- Appropriate for temporary or permanent applications ^{2), 3)}

Specifications

Anchor type ¹⁾	Unit	R32L ²⁾	R32N ²⁾	R32S ²⁾	R38N ^{2), 3)}	R51L ³⁾	R51N ³⁾	T76N ³⁾	T76S ³⁾
Outer diameter	[mm]	32	32	32	38	51	51	76	76
Max. tensile load	[kN]	200	280	360	500	500	800	1600	1900
Yield load	[kN]	160	230	280	400	450	630	1200	1500
Weight	[kg/m]	2,7	3,4	4,1	6,0	7,0	8,4	15,0	19,7
Standard lengths IBO – anchor bar ⁴⁾		[mm]	2000	3000	4000				
Standard dimensions IBO - anchor plate ⁴⁾		[mm]	150 x 150 x 8	180 x 180 x 8	200 x 200 x 10	200 x 200 x 12	200 x 200 x 30		

1) IBO - anchor bars, couplings, nuts, and anchor plates are available bare or galvanized

2) Accreditation as soil nail for permanent applications by the Austrian Federal Ministry of Transport, Innovation and Technology, Vienna, file no.: BMVIT-327.120/0003-II/ST2/2004

3) Accreditation as micro pile for permanent applications by the Austrian Federal Ministry of Transport, Innovation and Technology, Vienna, file no.: BMVIT-327.120/0032-II/ST2/2006

4) Special lengths and dimensions available on request



AT - RIA Rotary-Injection-Adapter

Optimum grouting body warranted

- Simultaneous drilling and grouting

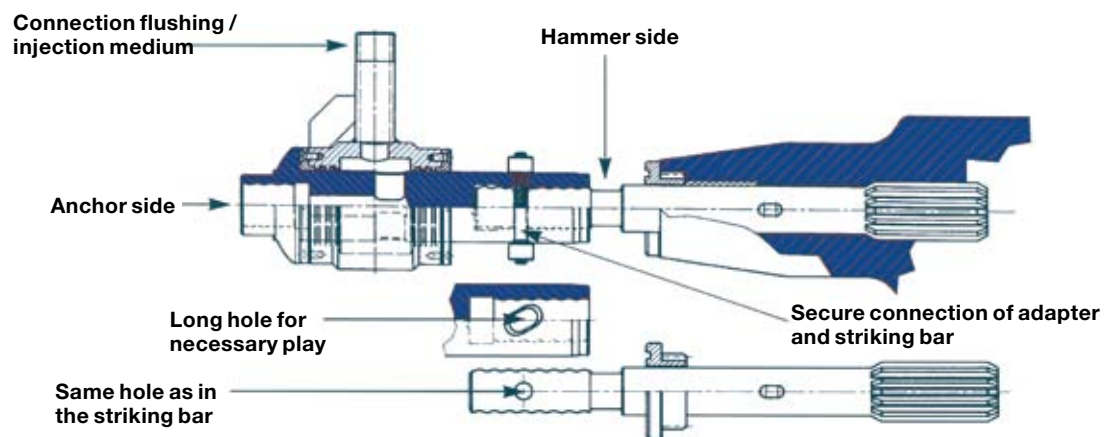


Advantages

AT - RIA Rotary-Injection-Adapter

- Anchor installation and injection in one operation
- Stabilization of the borehole during anchor installation
- Complete and uniform covering of the anchor rod with grout over the whole length
- Simple switch over from flushing to injection medium at the end of anchor installation without uncoupling

Grouting body built by using the AT - RIA Rotary-Injection-Adapter



AT - Mortar-Mixing Pumps

For injection and infilling works, ALWAG recommends mortar-mixing pumps of the type M400 NT and M400 EASY. Accessories and other types of mortar-mixing pumps are available on request.

Characteristics of AT - Mortar-Mixing Pumps

- Tough design and galvanized pump-casing
- Low empty weight
- Simple operation and maintenance due to modular design
- Low start-up and cleaning times
- Minor breakdown susceptibility
- Low filling and overall height
- High delivery rate at continuous pressure
- Variable discharge
- All-purpose equipment



Specifications

Parameter	Unit	M400 NT	M400 EASY
Nominal power	[kW]	6,2	4,5
Power supply	[V / Hz]	400 / 50	400 / 50
Min. requirement power set	[kVA]	16	16
Electrical connection	[A]	3 x 12,1 (5-pole)	3 x 9,5 (5-pole)
Min. fuse protection	[A]	3 x 32	3 x 16
Flow rate ¹⁾	[l/h]	400-2000	400-2000
Max. delivery range	[m]	60	40
Max. operating pressure	[bar]	40	40
Length x width x height	[mm]	1730 x 570 x 960	1520 x 585 x 900
Total weight	[kg]	217	136

1) Depending on the W/C ratio, consistency, and grain size distribution of the material as well as the delivery range



M400 EASY



M400 NT

Austria

DYWIDAG-SYSTEMS
INTERNATIONAL GMBH
Wagram 49
4061 Pasching/Linz, Austria
Phone +43-7229-61 04 90
Fax +43-7229-61 04 980
E-mail: alwag@dywidag-systems.com
www.alwag.com

Belgium and Luxembourg

DYWIDAG-SYSTEMS
INTERNATIONAL N.V.
Industrieweg 25
3190 Boortmeerbeek, Belgium
Phone +32-16-60 77 60
Fax +32-16-60 77 66
E-mail: info@dywidag.be

France

DSI-Artéon
Avenue du Bicentenaire
ZI Dagneux-BP 50053
01122 Montluel Cedex, France
Phone +33-4-78 79 27 82
Fax +33-4-78 79 01 56
E-mail: dsi.france@dywidag.fr
www.dywidag-systems.fr

Germany

DYWIDAG-SYSTEMS
INTERNATIONAL GMBH
Schuetzenstrasse 20
14641 Nauen, Germany
Phone +49-3321-44 18 32
Fax +49-3321-44 18 18
E-mail: suspa@dywidag-systems.com

DYWIDAG-SYSTEMS
INTERNATIONAL GMBH
Max-Planck-Ring 1
40764 Langenfeld, Germany
Phone +49-2173-79 02 0
Fax +49-2173-79 02 20
E-mail: suspa@dywidag-systems.com
www.suspa-dsi.de

DYWIDAG-SYSTEMS
INTERNATIONAL GMBH
Germanenstrasse 8
86343 Koenigsbrunn, Germany
Phone +49-8231-96 07 0
Fax +49-8231-96 07 40
E-mail: suspa@dywidag-systems.com

DYWIDAG-SYSTEMS
INTERNATIONAL GMBH
Siemensstrasse 8
85716 Unterschleissheim, Germany
Phone +49-89-30 90 50-100
Fax +49-89-30 90 50-120
E-mail: dsihv@dywidag-systems.com
www.dywidag-systems.com

Please note:

This brochure serves basic information purposes only. Technical data and information provided herein shall be considered non-binding and may be subject to change without notice. We do not assume any liability for losses or damages attributed to the use of this technical data and any improper use of our products. Should you require further information on particular products, please do not hesitate to contact us.

Italy

DYWIT S.P.A.
Via Grandi, 68
20017 Mazzo di Rho (Milano), Italy
Phone +39-02-93 46 87 1
Fax +39-02-93 46 87 301
E-mail: info@dywit.it

Netherlands

DYWIDAG-SYSTEMS
INTERNATIONAL B.V.
Veilingweg 2
5301 KM Zaltbommel, Netherlands
Phone +31-418-57 89 22
Fax +31-418-51 30 12
E-mail: email@dsi-nl.nl
www.dsi-nl.nl

Norway

DYWIDAG-SYSTEMS
INTERNATIONAL A/S
Industrieveien 7A
1483 Skytta, Norway
Phone +47-67-06 15 60
Fax +47-67-06 15 59
E-mail: manager@dsi-dywidag.no

Portugal

DYWIDAG-SYSTEMS
INTERNATIONAL LDA
Rua do Polo Sul
Lote 1.01.1.1 - 2B
1990-273 Lisbon, Portugal
Phone +351-21-89 22 890
Fax +351-21-89 22 899
E-mail: dsi.lisboa@dywidag.pt

Spain

DYWIDAG SISTEMAS
CONSTRUCTIVOS, S.A.
Avenida de la Industria, 4
Pol. Ind. La Cantuena
28947 Fuenlabrada (MADRID), Spain
Phone +34-91-642 20 72
Fax +34-91-642 27 10
E-mail: dywidag@dywidag-sistemas.com
www.dywidag-sistemas.com

United Kingdom

DYWIDAG-SYSTEMS
INTERNATIONAL LTD.
Northfield Road
Southam, Warwickshire
CV47 0FG, Great Britain
Phone +44-1926-81 39 80
Fax +44-1926-81 38 17
E-mail: sales@dywidag.co.uk
www.dywidag-systems.com/uk

AUSTRIA
ARGENTINA
AUSTRALIA
BELGIUM
BOSNIA AND HERZEGOVINA
BRAZIL
CANADA
CHILE
COLOMBIA
COSTA RICA
CROATIA
CZECH REPUBLIC
DENMARK
EGYPT
ESTONIA
FINLAND
FRANCE
GERMANY
GREECE
GUATEMALA
HONDURAS
HONG KONG
INDONESIA
ITALY
JAPAN
KOREA
LEBANON
LUXEMBOURG
MALAYSIA
MEXICO
NETHERLANDS
NORWAY
OMAN
PANAMA
PARAGUAY
PERU
POLAND
PORTUGAL
QATAR
SAUDI ARABIA
SINGAPORE
SOUTH AFRICA
SPAIN
SWEDEN
SWITZERLAND
TAIWAN
THAILAND
TURKEY
UNITED ARAB EMIRATES
UNITED KINGDOM
URUGUAY
USA
VENEZUELA



www.dsi-tunneling.com
www.alwag.com