

ROCK REINFORCEMENT

Self – Drilling Anchors

Normet Self-Drilling Anchor (SDA) system features a bolting system that combines drilling, anchoring, and resin injection or grouting into one single anchor bolt system. It can perform installations at high rates in complex ground conditions, greatly improving operational efficiency while providing quality permanent ground reinforcement.

FUNCTIONALITY

Self-Drilling Anchors (SDA) are suitable for varied ground conditions:

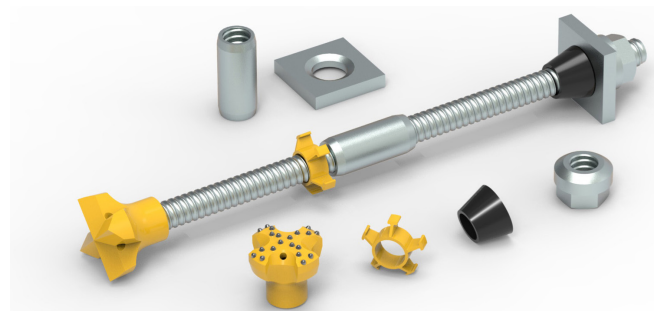
- > SDA's are ideal for poor ground conditions prone to collapse when the drill string is retracted. The installation hole drilling and bolt installation is combined into a single step by fitting a sacrificial bit to the hollow bar, allowing the bolt to perform its own drilling operation and allowing the SDAs to be installed in a single step.
- > In medium to competent ground conditions, SDAs are used in a two-step installation process where SDA hollow bars are installed into pre-drilled support holes drilled with conventional drill strings and are bonded into the rock by injected an encapsulating resin or ground through the bolt. The use of a conventional drill string to drill the installation hole allows for a much faster drilling rate than is possible with a self-drilling anchor.
- > In both conditions, the installation rates are optimal, and installation quality is easy to control and maintain in varied ground conditions.

SDA's can be installed as single length or multiple sections can be coupled together during installation to form a long anchor.

APPLICATIONS

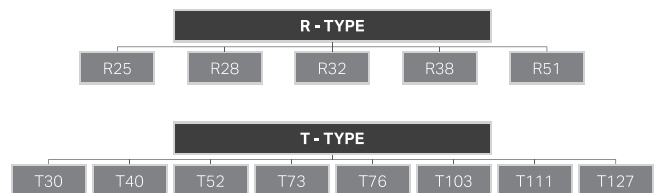
Tunnelling and Mining	Utilized for radial bolting, spiling and forepoling applications in unconsolidated ground and areas needing immediate support.
Slope Stabilization	Used in temporary and permanent slope stabilization or soil nailing in challenging soil conditions.
Civil structures	Uses as ground support on foundations, micropiles, retaining walls, bridge and abutments.
Hydroelectric Projects	Used in reinforcing dam structures and tunnels.

SDA's are available in Black, Hot-Dip Galvanized or Dual Coated (HDG+Epoxy Coat).



RANGE AND SPECIFICATIONS

Description	R-Type	T-Type	
Material	Steel	Steel	
Thread Type	ISO metric screw	Trapezoidal	> Steel type conforms with EN 10083-1
Thread Sizes	R25 – R51	T30 – T127	> All types of SDA (including SDDBs) are in accordance with European Standards for Soil Nailing and Rock Nailing (EN 14490) and Micropiles (EN 14199)
Outside Dia. (mm)	25 – 51	30 – 127	> Thread types are based on ISO 10208 (ISO metric screw) and ISO 2901 (trapezoidal threads)
Inside Dia. (mm)	12 – 36	16 – 51	
Ultimate Load (kN)	200 – 925	220 – 3,650	
Yield Load (kN)	150 – 740	180 – 2,750	

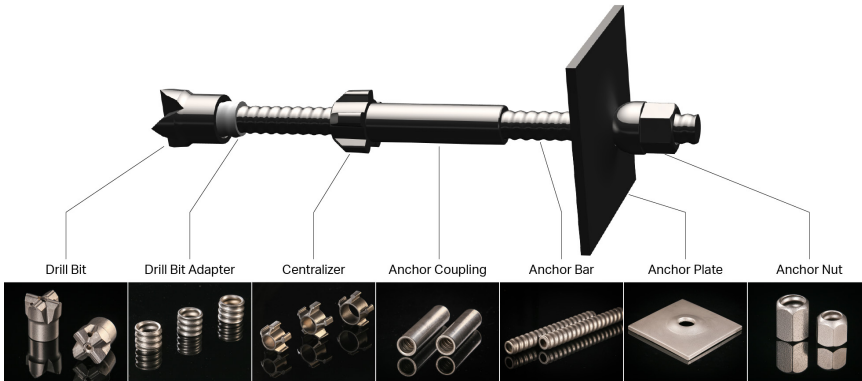


Normet also offers the following:

- > **FRP SDA's** - Made with fiber reinforced polymer for applications where steel elements are not well suited
- > **Yielding SDAs (SDDB)** - Yielding long anchors that can be combined with SDA's for dynamic applications
- > **Pumpable Resins and Grouts** - Cementitious / resin grouts which can be used for grouting and injection with SDA



ROCK REINFORCEMENT



COMPONENTS:

Drill String Elements	Hollow Bar Sacrificial Drill Bit
Surface Fixtures	Anchor Plate Anchor Nut
Accessories	Couplings Centralizers Adapters Fish Hooks

HOLLOW BAR

The main element of Normet's SDA anchor system is the hollow-core bar which is used as the drill rod during the installation and is bonded into the rock mass as the reinforcing element by either a resin or grout.



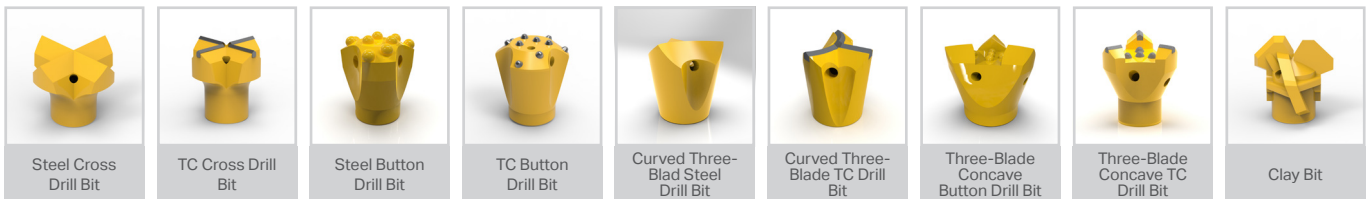
Product Range and Specifications:

Type	Thread Size	Outer Dia. (mm)	Ultimate Load (kN)	Yield Load (kN)	Weight (kg/m)
R - Type	R25	25	200	150	2.3
	R28	28	260	200	2.9
	R32	32	250 - 400	200 - 300	2.7 - 4.1
	R38	38	500 - 550	400 - 450	5.0 - 5.9
T - Type	R51	51	550 - 925	450 - 740	6.2 - 9.3
	T30	30	220 - 320	180 - 260	2.9 - 3.6
	T40	40	539 - 660	430 - 525	6.2 - 7.2
	T52	52	929	730	10.0
	T73	73	1160 - 1865	970 - 1430	13.2 - 21.2
	T76	76	1600 - 1900	1200 - 1500	16.5 - 19.0
	T103	103	2280 - 3460	1800 - 2730	25.3 - 44.6
	T111	111	2640 - 3650	2000 - 2750	25.0 - 34.5
T127	127	2400	1810	30.5	

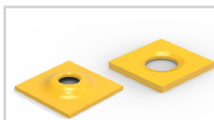
*Specifications are based on standard systems only. Customized bars that fall outside the given range of specifications should be discussed with your Normet representative to meet your requirements.

DRILL BITS

Single use, economical drill bits are used in the Self-Drilling Anchor System. The style of drill bit is selected based on the ground conditions and the diameter required for the bolt configuration. Coupled SDA's require a larger diameter drill bit to allow clearance for the coupler. Correct bit design is needed to attain optimal drilling performance in the given ground conditions while diameter will depend on the design requirements.



SURFACE FIXTURES : PLATES AND NUTS



Domed Plates / Flat Plates

Plates are used to secure the anchor at the surface of the face together with the nut. Domed steel plates (with a 28 mm dome height) or flat steel plates with various dimensions can be selected based on required capacity and application.



Hex Nuts / Domed Nuts

Normet nuts are machined with chamfered edges at one end enabling use of same nut for both domed and flat steel washer plates. Normet nuts guarantee to have at least the same ultimate breaking load as the Normet SDA.

ACCESSORIES



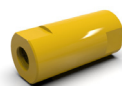
Extension Couplings

Used to extend hollow bars of the same system to specific design lengths.



Centralizer

Keeps the anchor bar centred within the borehole, ensuring alignment for extended lengths.



Adapter Couplings

Used to extend hollow bars of the different systems to specific design lengths.



Drill Bit Adapter

Typically used when attaching drill bits of higher/larger systems into smaller hollow bars.



Injection Adapter

Used for simultaneous drilling and grouting.



Fish Hooks

Helps maintain the anchor's position during the drilling and grouting process.