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SELF-DRILLING ANCHORS TECHNICAL DATA SHEET

GENERAL DESCRIPTION

The main feature of the Normet Self-Drilling Anchor (SDA) system is the application of a single-use drill bit in combination with the rock bolt being used as a drill steel. Thus, the rock bolt is connected to the hydraulic rock drill by an adapter device and installed in the way a conventional borehole is drilled. The Normet SDA program consists of the following:

- > Single-use drill bits, which are available either hardened or with carbide inserts
- > Hollow, steel bars, with a continuous outside thread
- > Steel couplings, with a continuous inside thread
- > Steel nuts
- > Steel face plates

The bolts in this TDS are classified according to thread type and material:

R-type has a rope thread, and is available in sizes from R25 to R51.

T-type is according to international standard, and is available in sizes from T30 to T103.

FRP bolts are made out of fiberglass and are available from S15 to SXX in both solid and hollow versions.

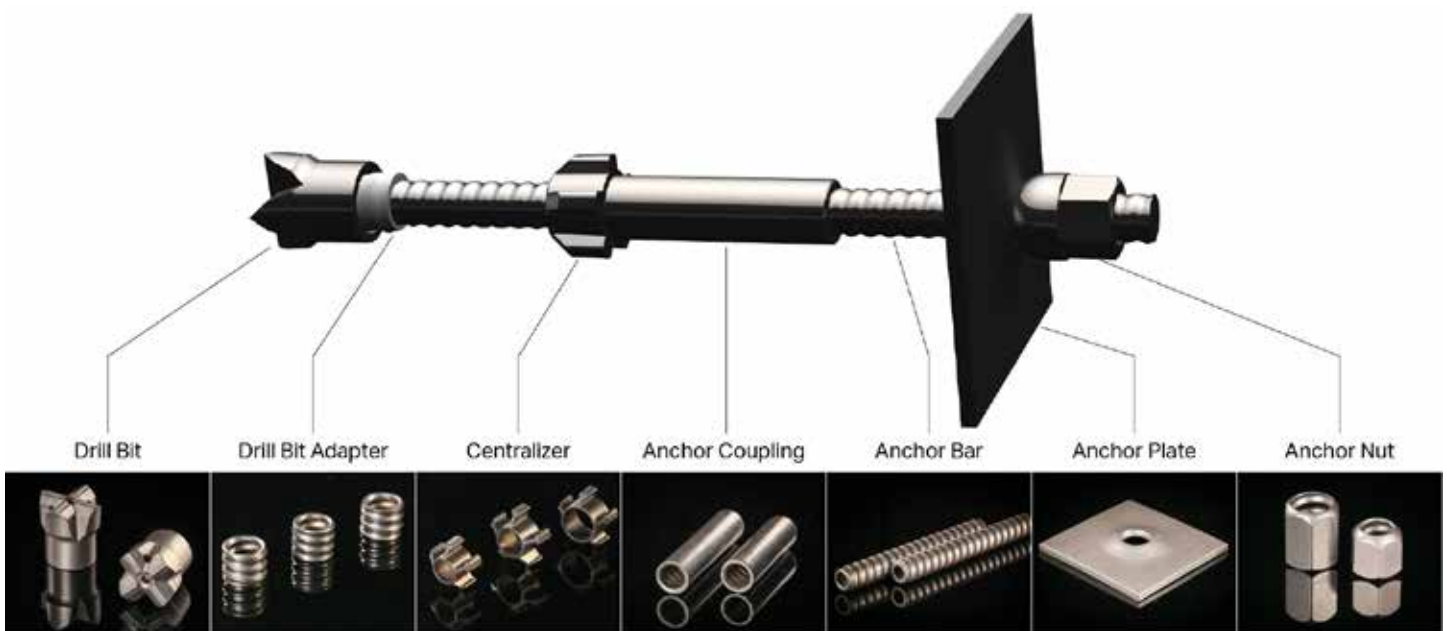
Applications

The Normet SDA system is suitable for simultaneous drilling and grouting in different applications:

Tunnelling and mining:	Ground Engineering:
Radial bolting	Ground consolidation and injection
Spiling	Soil nailing
Face stabilisation	Slope stabilisation
Portal preparation	Microinjection pile
	Temporary support anchoring

The Normet SDA system may be used for different rock conditions, and drill bits are available in different designs and diameters. The thread types are compatible to international standards and can easily be adapted to standard rock drilling equipment. The SDA range is available in different load capacity classes, depending on the outer and inner diameter of the bar.

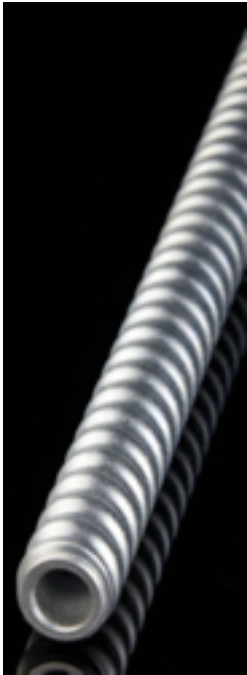
The self-drilling installation of the bolts is similar to the drilling of a conventional borehole: The hollow bar is connected to the shank adapter via a coupling and is being utilized as drill steel; the single-use drill bit is put at the top of the hollow bar. In case where larger bolt lengths are required, the bars can easily be extended by couplings.



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R25 SYSTEM

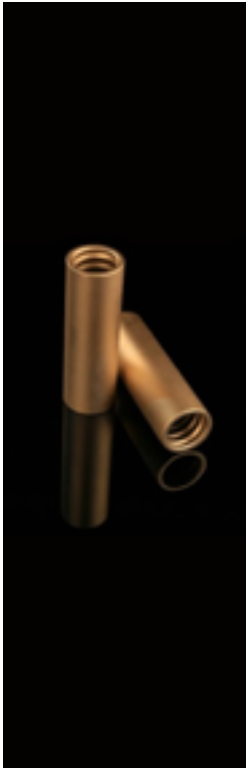


Bar	R25N
Outside Diameter (mm)	25
Internal Diameter (mm)	12
Cross Sectional Area (mm ²)	292
Ultimate Load (kN)	200
Yield Load (kN)	150
Weight (kg/m)	2.3
Thread Type	ISO10208
Type of Steel	EN10083-1
Thread (Left / Right hand)	Left or Right
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating: Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007



Nut	R25N
Key Size (mm)	41
Length (mm)	35
Hardness (HRC)	25 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.
Thread Type	ISO10208
Type of Steel	CK45
Unit Weight (kg)	0.25
Thread (Left / Right hand)	Left or Right
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007

R25 SYSTEM



Coupling	R25N
Outside Diameter (mm)	42
Length (mm)	150
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.
Thread Type	ISO10208
Type of Steel	EN10083-1
Unit Weight (kg)	0.60
Thread (Left / Right hand)	Left or Right
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007

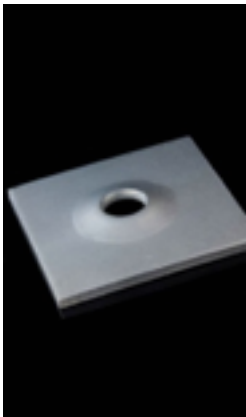
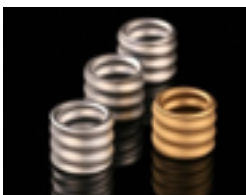


Plate	R25N
Size (mm)	150 x 150
Thickness (mm)	8
Hole Diameter (mm)	30
Unit Weight (kg)	1.4
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating: Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007



Drill bit adapter	R25N
Anchor Bar Thread	R25
Drill Bit Thread	R32 / R38 / T40
Length (mm)	50
Unit Weight (kg)	0.1

R25 SYSTEM

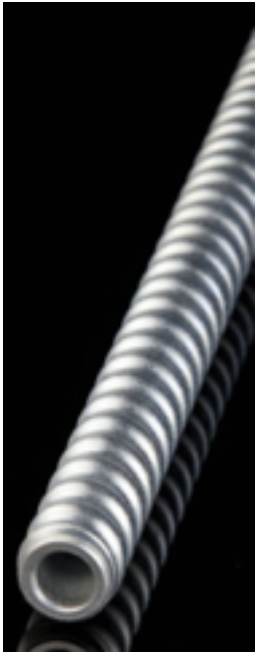
SDA System
Technical Data Sheet

Drill bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D42 / 0.30 D51 / 0.40	D42 / 0.30 D51 / 0.40	D42 / 0.30 D51 / 0.40	D42 / 0.30 D51 / 0.40
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

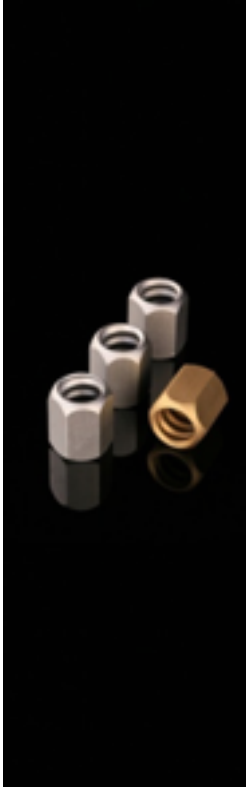
Item number	Item Description	Unit of Measure
100100693	Bar, R25N	m
100100694	Bar, R25N Hot-dipped Galvanization	m
100100695	Bar, R25N Double Coated	m
100087091	Nut, R25N	pcs
100100696	Nut, R25N Hot-dipped Galvanization	pcs
100100697	Nut, R25N Double Coated	pcs
100100698	Coupling, R25N	pcs
100100699	Coupling, R25N Hot-dipped Galvanization	pcs
100100700	Coupling, R25N Double Coated	pcs
100087090	Plate, R25N	pcs
100100701	Plate, R25N Hot-dipped Galvanization	pcs
100100702	Plate, R25N Double Coated	pcs
100099074	Adapter, Drill Bit Adapter R25 – R32	pcs
100100703	Adapter, Drill Bit Adapter R25 – R38	pcs
100100704	Adapter, Drill Bit Adapter R25 – T40	pcs
100100705	Drill Bit, R25N EX D42	pcs
100100706	Drill Bit, R25N EX D51	pcs
100087034	Drill Bit, R25N EXX D42	pcs
100100707	Drill Bit, R25N EXX D51	pcs
100100708	Drill Bit, R25N ESF D42	pcs
100100709	Drill Bit, R25N ESF D51	pcs
100087641	Drill Bit, R25N ESSF D42	pcs
100100710	Drill Bit, R25N ESSF D51	pcs

R32 SYSTEM

SDA System
Technical Data Sheet



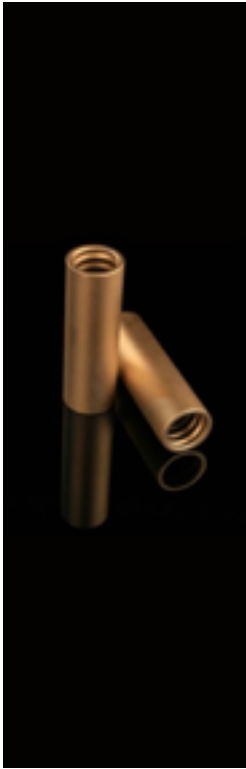
Bar	R32L	R32N/20	R32N/18.5	R32S	R32SS
Outside Diameter (mm)	32				
Internal Diameter (mm)	22	21	18.5	17	14
Cross Sectional Area (mm ²)	356	363	433	440	522
Ultimate Load (kN)	260	280	280	360	405
Yield Load (kN)	200	230	230	280	300
Weight (kg/m)	2.8	2.85	3.4	3.45	4.1
Thread Type	ISO10208				
Type of Steel	EN10083-1				
Thread (Left / Right hand)	Left or Right				
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9				
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007				



Nut	R32L	R32N/20	R32N/18.5	R32S	R32SS
Key Size (mm)	46				
Length (mm)	45			65	
Hardness (HRC)	25 - 30 (*)				
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.				
Thread Type	ISO10208				
Type of Steel	CK45				
Unit Weight (kg)	0.35			0.53	
Thread (Left / Right hand)	Left or Right				
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007				

R32 SYSTEM

SDA System
Technical Data Sheet



Coupling	R32L	R32N/20	R32N/18.5	R32S	R32SS
Outside Diameter (mm)	42				
Length (mm)	145	160		190	
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.				
Thread Type	ISO10208				
Type of Steel	EN10083-1				
Unit Weight (kg)	0.72	0.8		0.96	
Thread (Left / Right hand)	Left or Right				
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007				

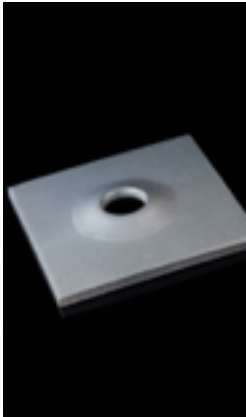
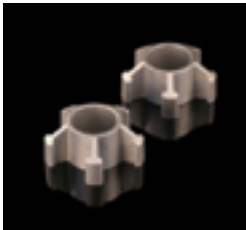
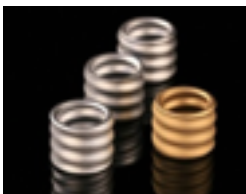


Plate	R32L	R32N/20	R32N/18.5	R32S	R32SS
Size (mm)	200 x 200				
Thickness (mm)	10			12	
Hole Diameter (mm)	35				
Unit Weight (kg)	3			3.3	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007				



Centralizer	R32L	R32N/20	R32N/18.5	R32S	R32SS
Outside Diameter (mm)	72				
Length (mm)	30				
Hole Diameter (mm)	41				
Type of Steel	CK45				
Unit Weight (kg)	0.3				



Drill Bit Adapter	R32
Anchor Bar Thread	R32
Drill Bit Thread	R38 / R51 / T40 / T52
Length (mm)	50
Unit Weight (kg)	0.1

R32 SYSTEM

SDA System
Technical Data Sheet

Drill Bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D51 / 0.35 D76 / 0.40 D90 / 1.60	D51 / 0.40 D76 / 1.20 D90 / 2.30	D51 / 0.42 D76 / 1.25	D51 / 0.47 D76 / 1.60 D90 / 1.90
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

Item number	Item Description	Unit of Measure
100100711	Bar, R32L	m
100100712	Bar, R32L Hot-dipped Galvanization	m
100100713	Bar, R32L Double Coated	m
100100714	Bar, R32N/21	m
100100715	Bar, R32N/21 Hot-dipped Galvanization	m
100100716	Bar, R32N/21 Double Coated	m
100099097	Bar, R32N / 18.5	m
100100717	Bar, R32N / 18.5 Hot-dipped Galvanization	m
100100718	Bar, R32N / 18.5, Double Coated	m
100099098	Bar, R32S	m
100100719	Bar, R32S Hot-dipped Galvanization	m
100100720	Bar, R32S Double Coated	m
100100721	Bar, R32SS	m
100100722	Bar, R32SS Hot-dipped Galvanization	m
100100458	Bar, R32SS Double Coated	m
100099105	Nut, R32L / R32N21 / R32N18.5	pcs
100100723	Nut, R32L / R32N21 / R32N18.5 Hot-dipped Galvanization	pcs
100100724	Nut, R32L / R32N21 / R32N18.5 Double Coated	pcs
100087082	Nut, R32S / R32SS	pcs
100100725	Nut, R32S / R32SS Hot-dipped Galvanization	pcs
100100461	Nut, R32S / R32SS Double Coated	pcs
100100726	Coupler, R32L	pcs
100100727	Coupler, R32L Hot-dipped Galvanization	pcs
100100728	Coupler, R32L Double Coated	pcs
100100729	Coupler, R32N21 / R32N18.5	pcs
100100730	Coupler, R32N21 / R32N18.5 Hot-dipped Galvanization	pcs

Item number	Item Description	Unit of Measure
100100731	Coupler, R32N21 / R32N18.5 Double Coated	pcs
100087080	Coupler, R32S / R32SS	pcs
100100732	Coupler, R32S / R32SS Hot-dipped Galvanization	pcs
100100462	Coupler, R32S / R32SS Double Coated	pcs
100100733	Plate, R32L / R32N21 / R32N18.5	pcs
100100734	Plate, R32L / R32N21 / R32N18.5 Hot-dipped Galvanization	pcs
100100735	Plate, R32L / R32N21 / R32N18.5 Double Coated	pcs
100087081	Plate, R32S / R32SS	pcs
100100736	Plate, R32S / R32SS Hot-dipped Galvanization	pcs
100100464	Plate, R32S / R32SS Double Coated	pcs
100099081	Guide, R32	pcs
100099075	Adapter, Drill Bit Adapter R32-R38	pcs
100100737	Adapter, Drill Bit Adapter R32-R51	pcs
100100738	Adapter, Drill Bit Adapter R32-T40	pcs
100100739	Adapter, Drill Bit Adapter R32-T52	pcs
100100740	Drill Bit, R32 EX D51	pcs
100100741	Drill Bit, R32 EX D90	pcs
100100742	Drill Bit, R32 EX D76	pcs
100087030	Drill Bit, R32 EXX D51	pcs
100100743	Drill Bit, R32 EXX D76	pcs
100100744	Drill Bit, R32 EXX D90	pcs
100100745	Drill Bit, R32 ESF D51	pcs
100100746	Drill Bit, R32 ESF D76	pcs
100087031	Drill Bit, R32 ESSF D51	pcs
100100747	Drill Bit, R32 ESSF D76	pcs
100100748	Drill Bit, R32 ESSF D90	pcs

R38 SYSTEM

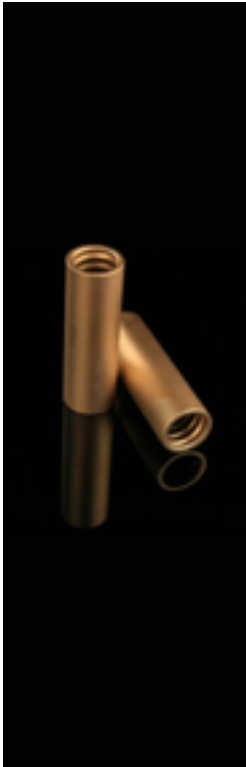


Bar	R38N/21	R38N/19
Outside Diameter (mm)	38	
Internal Diameter (mm)	21	19
Cross Sectional Area (mm ²)	611	700
Ultimate Load (kN)	500	500
Yield Load (kN)	400	400
Weight (kg/m)	4.8	5.5
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Nut	R38N/21	R38N/19
Key Size (mm)	50	
Length (mm)	60	
Hardness (HRC)	25 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	CK45	
Unit Weight (kg)	0.25	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

R38 SYSTEM



Coupling	R38N/21	R38N/19
Outside Diameter (mm)	52	
Length (mm)	220	
Hardness (HRC)	23- 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Unit Weight (kg)	1.8	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

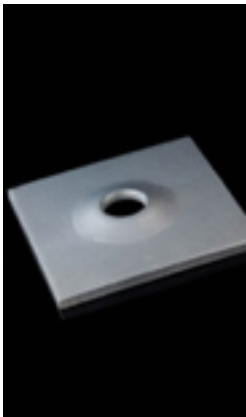
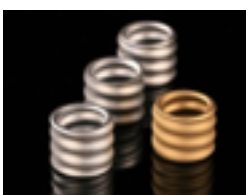


Plate	R38N/21	R38N/19
Size (mm)	200 x 200	
Thickness (mm)	12	
Hole Diameter (mm)	41	
Unit Weight (kg)	3.6	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Centralizer	R38N/21	R38N/19
Outside Diameter (mm)	72	
Length (mm)	41	
Hole Diameter (mm)	50	
Type of Steel	CK45	
Unit Weight (kg)	0.3	



Drill Bit Adapter	R38
Anchor Bar Thread	R38
Drill Bit Thread	R51 / T52 / T73 / T76
Length (mm)	50
Unit Weight (kg)	0.1

R38 SYSTEM

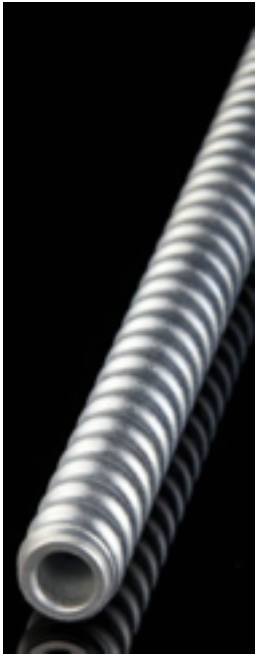
SDA System
Technical Data Sheet

Drill Bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D76 / 0.75	D76 / 1.06	D76 / 1.15	D76 / 1.40
	D90 / 1.55	D90 / 1.80	D90 / 1.54	D90 / 1.85
	D100 / 1.80	D100 / 1.90	D100 / 2.00	D100 / 2.70
				D115 / 3.60
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

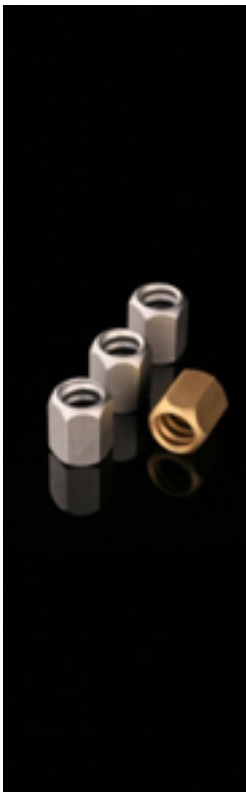
Item number	Item Description	Unit of Measure
100100749	Bar, R38N/21	m
100100750	Bar, R38N/21 Hot-dipped Galvanization	m
100100751	Bar, R38N/21 Double Coated	m
100100752	Bar, R38N/19	m
100100753	Bar, R38N/19 Hot-dipped Galvanization	m
100100754	Bar, R38N/19 Double Coated	m
100100755	Nut, R38N/21	pcs
100100756	Nut, R38N/21 Hot-dipped Galvanization	pcs
100100757	Nut, R38N/21 Double Coated	pcs
100100758	Nut, R38N/19	pcs
100100759	Nut, R38N/19 Hot-dipped Galvanization	pcs
100100760	Nut, R38N/19 Double Coated	pcs
100100761	Coupler, R38N21 / R38N19	pcs
100100762	Coupler, R38N21 / R38N19 Hot-dipped Galvanization	pcs
100100763	Coupler, R38N21 / R38N19 Double Coated	pcs
100100764	Plate, R38N21 / R38N19	pcs
100100765	Plate, R38N21 / R38N19 Hot-dipped Galvanization	pcs

Item number	Item Description	Unit of Measure
100100766	Plate, R38N21 / R38N19 Double Coated	pcs
100099082	Guide, R38	pcs
100099076	Adapter, Drill Bit Adapter R38 – R51	pcs
100100767	Adapter, Drill Bit Adapter R38 – T52	pcs
100100768	Adapter, Drill Bit Adapter R38 – T73	pcs
100100769	Adapter, Drill Bit Adapter R38 – T76	pcs
100100770	Drill Bit, R38 EX D76	pcs
100100771	Drill Bit, R38 EX D90	pcs
100100772	Drill Bit, R38 EX D100	pcs
100100773	Drill Bit, R38 EXX D76	pcs
100100774	Drill Bit, R38 EXX D90	pcs
100100775	Drill Bit, R38 EXX D100	pcs
100100776	Drill Bit, R38 ESF D76	pcs
100100777	Drill Bit, R38 ESF D90	pcs
100100778	Drill Bit, R38 ESF D100	pcs
100100779	Drill Bit, R38 ESSF D76	pcs
100100780	Drill Bit, R38 ESSF D90	pcs
100100781	Drill Bit, R38 ESSF D100	pcs
100100782	Drill Bit, R38 ESSF D115	Pcs

R51 SYSTEM

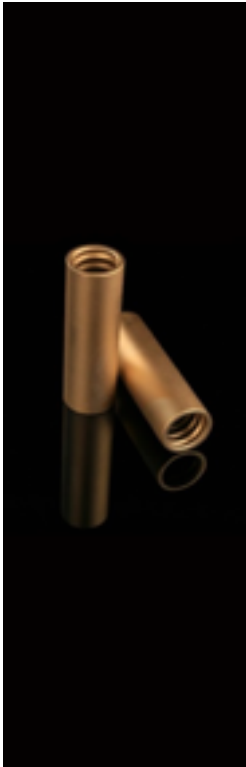


Bar	R51L	R51N
Outside Diameter (mm)	51	
Internal Diameter (mm)	36	33
Cross Sectional Area (mm ²)	713	993
Ultimate Load (kN)	550	800
Yield Load (kN)	450	630
Weight (kg/m)	6.3	7.8
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Nut	R51L	R51N
Key Size (mm)	75	
Length (mm)	70	
Hardness (HRC)	25 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	CK45	
Unit Weight (kg)	1.5	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

R51 SYSTEM



Coupling	R51L	R51N
Outside Diameter (mm)	63	
Length (mm)	140	200
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Unit Weight (kg)	1.26	1.9
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

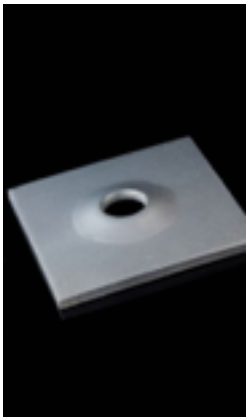
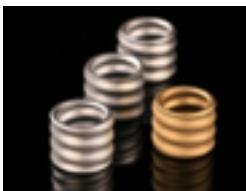


Plate	R51L	R51N
Size (mm)	200 x 200	250 x 250
Thickness (mm)	30	40
Hole Diameter (mm)	60	
Unit Weight (kg)	8.8 kg	18.5 kg
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Centralizer	R51L	R51N
Outside Diameter (mm)	90	
Length (mm)	54	
Hole Diameter (mm)	60	
Type of Steel	CK45	
Unit Weight (kg)	0.36	



Drill Bit Adapter	R51
Anchor Bar Thread	R51
Drill Bit Thread	T73 / T76
Length (mm)	50
Unit Weight (kg)	0.2

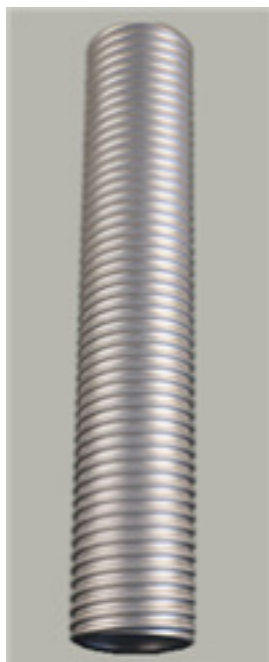
R51 SYSTEM

Drill Bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D90 / 1.60	D90 / 1.75	D90 / 1.35 (ESF)	D90 / 1.90
	D115 / 2.50	D100 / 2.50	D100 / 1.50 (ESF)	D100 / 2.40
		D115 / 2.80	D115 / 2.10 (ESD)	D115 / 3.50
		D130 / 4.00		D130 / 5.00
		D150 / 5.50		D150 / 6.20
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

Item Number	Item Description	Unit of Measure
100100783	Bar, R51L	m
100100784	Bar, R51L Hot-dipped Galvanization	m
100100785	Bar, R51L Double Coated	m
100100786	Bar, R51N	m
100100787	Bar, R51N Hot-dipped Galvanization	m
100100788	Bar, R51N Double Coated	m
100100789	Nut, R51L / R51N	pcs
100100790	Nut, R51L / R51N Hot-dipped Galvanization	pcs
100100791	Nut, R51L / R51N Double Coated	pcs
100100792	Coupler, R51L	pcs
100100793	Coupler, R51L Hot-dipped Galvanization	pcs
100100794	Coupler, R51L Double Coated	pcs
100100795	Coupler, R51N	pcs
100100796	Coupler, R51N Hot-dipped Galvanization	pcs
100100797	Coupler, R51N Double Coated	pcs
100100798	Plate, R51L / R51N	pcs
100100799	Plate, R51L / R51N Hot-dipped Galvanization	pcs

Item Number	Item Description	Unit of Measure
100100800	Plate, R51L / R51N Double Coated	pcs
100100801	Guide, R51	pcs
100100802	Adapter, Drill Bit Adapter R51-T73	pcs
100100803	Adapter, Drill Bit Adapter R51-T76	pcs
100100804	Drill Bit, R51 EX D90	pcs
100100805	Drill Bit, R51 EX D115	pcs
100100806	Drill Bit, R51 EXX D90	pcs
100100807	Drill Bit, R51 EXX D100	pcs
100100808	Drill Bit, R51 EXX D115	pcs
100100809	Drill Bit, R51 EXX D130	pcs
100100810	Drill Bit, R51 EXX D150	pcs
100100811	Drill Bit, R51 ESF D90	pcs
100100812	Drill Bit, R51 ESF D100	pcs
100100813	Drill Bit, R51 ESF D115	pcs
100100814	Drill Bit, R51 ESSF D90	pcs
100100815	Drill Bit, R51 ESSF D100	pcs
100100816	Drill Bit, R51 ESSF D115	pcs
100100817	Drill Bit, R51 ESSF D130	pcs
100100818	Drill Bit, R51 ESSF D150	pcs

T30 SYSTEM



Bar	T30/16	T30/14	T30/11
Outside Diameter (mm)	30		
Internal Diameter (mm)	16	14	11
Cross Sectional Area (mm ²)	343	356	406
Ultimate Load (kN)	220	260	320
Yield Load (kN)	180	220	260
Weight (kg/m)	2.7	2.8	3.25
Thread Type	ISO10208		
Type of Steel	EN10083-1		
Thread (Left / Right hand)	Left or Right		
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9		
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007		



Nut	T30/16	T30/14	T30/11
Key Size (mm)	46		
Length (mm)	35		
Hardness (HRC)	25 - 30 (*)		
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.		
Thread Type	ISO10208		
Type of Steel	CK45		
Unit Weight (kg)	0.36		
Thread (Left / Right hand)	Left or Right		
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007		

T30 SYSTEM



Coupling	T30/16	T30/14	T30/11
Outside Diameter (mm)	38		
Length (mm)	105		
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.		
Thread Type	ISO10208		
Type of Steel	EN10083-1		
Unit Weight (kg)	0.42		
Thread (Left / Right hand)	Left or Right		
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007		

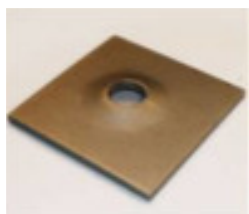


Plate	T30/16	T30/14	T30/11
Size (mm)	200 x 200		
Thickness (mm)	8		
Hole Diameter (mm)	36		
Unit Weight (kg)	2.46		
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007		



Centralizer	T30
Outside Diameter (mm)	88
Length (mm)	37
Hole Diameter (mm)	36
Type of Steel	CK45
Unit Weight (kg)	0.27



Drill Bit Adapter	T30
Anchor Bar Thread	T30
Drill Bit Thread	R38 / T40
Length (mm)	50
Unit Weight (kg)	0.1

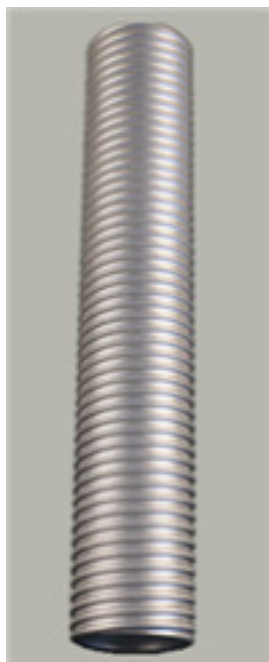
T30 SYSTEM

Drill Bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D42 / 0.30	D42 / 0.30	D42 / 0.30	
	D46 / 0.32	D46 / 0.32	D46 / 0.32	D46 / 0.45
	D51 / 0.40	D51 / 0.40	D51 / 0.69	D51 / 0.69
	D76 / 0.56			
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

Item Number	Item Description	Unit of Measure
100100819	Bar, T30/16	m
100100820	Bar, T30/16 Hot-dipper Galvanization	m
100100821	Bar, T30/16 Double Coated	m
100100822	Bar, T30/14	m
100100823	Bar, T30/14 Hot-dipped Galvanization	m
100100824	Bar, T30/14 Double Coated	m
100100825	Bar, T30/11	m
100100826	Bar, T30/11 Hot-dipped Galvanization	m
100100827	Bar, T30/11 Double Coated	m
100100828	Nut, T30/16/14/11	pcs
100100829	Nut, T30/16/14/11 Hot-dipped Galvanization	pcs
100100830	Nut, T30/16/14/11 Double Coated	pcs
100100831	Coupler, T30	pcs
100100832	Coupler, T30 Hot-dipped Galvanization	pcs
100100833	Coupler, T30 Double Coated	pcs

Item Number	Item Description	Unit of Measure
100100834	Plate, T30	pcs
100100835	Plate, T30 Hot-dipped Galvanization	pcs
100100836	Plate, T30 Double Coated	pcs
100100837	Guide, T30	pcs
100100838	Adapter, Drill Bit Adapter T30-R38	pcs
100099077	Adapter, Drill Bit Adapter T30-T40	pcs
100100839	Drill Bit, T30 EX D42	pcs
100100840	Drill Bit, T30 EX D46	pcs
100100841	Drill Bit, T30 EX D51	pcs
100100842	Drill Bit, T30 EX D76	pcs
100100843	Drill Bit, T30 EXX D42	pcs
100100844	Drill Bit, T30 EXX D46	pcs
100100845	Drill Bit, T30 EXX D51	pcs
100100846	Drill Bit, T30 ESF D42	pcs
100100847	Drill Bit, T30 ESF D46	pcs
100100848	Drill Bit, T30 ESF D51	pcs
100100849	Drill Bit, T30 ESSF D46	pcs
100100850	Drill Bit, T30 ESSF D51	pcs

T40 SYSTEM



Bar	T40/20	T40/16
Outside Diameter (mm)	40	
Internal Diameter (mm)	20	16
Cross Sectional Area (mm ²)	713	910
Ultimate Load (kN)	540	660
Yield Load (kN)	430	520
Weight (kg/m)	5.6	7.15
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Nut	T40/20	T40/16
Key Size (mm)	65	
Length (mm)	50	
Hardness (HRC)	25 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	CK45	
Unit Weight (kg)	0.85	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

T40 SYSTEM



Coupling	T40/20	T40/16
Outside Diameter (mm)	54	57
Length (mm)	140	
Hardness (HRC)	23 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Unit Weight (kg)	1.15	1.54
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

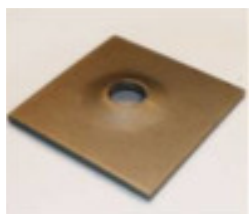


Plate	T40/20	T40/16
Size (mm)	200 x 200	
Thickness (mm)	12	15
Hole Diameter (mm)	54	
Unit Weight (kg)	3.5	4.58
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Centralizer	T40
Outside Diameter (mm)	88
Length (mm)	40
Hole Diameter (mm)	52
Type of Steel	CK45
Unit Weight (kg)	0.4



Drill Bit Adapter	T40
Anchor Bar Thread	T40
Drill Bit Thread	R51 / T52 / T73 / T76
Length (mm)	50
Unit Weight (kg)	0.2

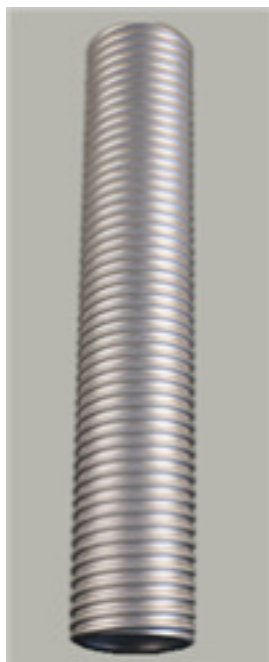
T40 SYSTEM

Drill Bit	EX	EXX	ESF	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	Hardened button bit for unconsolidated rock with boulders	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D76 / 0.90	D76 / 1.20	D42 / 0.30	D76 / 1.78
	D90 / 1.50	D90 / 1.75	D46 / 0.32	D90 / 1.40
	D100 / 1.65	D100 / 2.00	D51 / 0.69	D100 / 1.85
	D115 / 2.60	D115 / 2.80		D115 / 2.00
		D130 / 3.10		D130 / 2.80
		D150 / 5.00		D150 / 3.10
Hardness (HRC/HRA)	50 - 55	87 - 89	50 - 55	87 - 89
Thread Type	ISO 10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			

Item Number	Item Description	Unit of Measure
100100851	Bar, T40/20	m
100100852	Bar, T40/20 Hot-dipped Galvanization	m
100100853	Bar, T40/20 Double Coated	m
100100854	Bar, T40/16	m
100100855	Bar, T40/16 Hot-dipped Galvanization	m
100100856	Bar, T40/16 Double Coated	m
100100857	Nut, T40	pcs
100100858	Nut, T40 Hot-dipped Galvanization	pcs
100100859	Nut, T40 Double Coated	pcs
100100860	Coupler, T40/20	pcs
100100919	Coupler T40/20 Hot Dipped Galvanization	pcs
100100862	Coupler T40/20 Double Coated	pcs
100100863	Coupler T40/16	pcs
100100864	Coupler T40/16 Hot-dipped Galvanization	pcs
100100865	Coupler T40/16 Double Coated	pcs
100100866	Plate, T40/20	pcs
100100867	Plate, T40/20 Hot-dipped Galvanization	pcs
100100868	Plate, T40/20 Double Coated	pcs
100100869	Plate, T40/16	pcs
100100870	Plate, T40/16 Hot-dipped Galvanization	pcs

100100871	Plate, T40/16 Double Coated	pcs
100099083	Guide, T40	pcs
100100872	Adapter, Drill Bit Adapter T40-R51	pcs
100099078	Adapter, Drill Bit Adapter T40-T52	pcs
100099079	Adapter, Drill Bit Adapter T40-T73	pcs
100100874	Drill Bit, T40 EX D76	pcs
100100875	Drill Bit, T40 EX D90	pcs
100100876	Drill Bit, T40 EX D100	pcs
100100877	Drill Bit, T40 EX D115	pcs
100100878	Drill Bit, T40 EXX D76	pcs
100100879	Drill Bit, T40 EXX D90	pcs
100100880	Drill Bit, T40 EXX D100	pcs
100100881	Drill Bit, T40 EXX D115	pcs
100100882	Drill Bit, T40 EXX D130	pcs
100100883	Drill Bit, T40 EXX D150	pcs
100100884	Drill Bit, T40 ESF D42	pcs
100100885	Drill Bit, T40 ESF D46	pcs
100100886	Drill Bit, T40 ESF D51	pcs
100100887	Drill Bit, T40 ESSF D70	pcs
100100888	Drill Bit, T40 ESSF D76	pcs
100100889	Drill Bit, T40 ESSF D90	pcs
100100890	Drill Bit, T40 ESSF D100	pcs
100100891	Drill Bit, T40 ESSF D115	pcs
100100892	Drill Bit, T40 ESSF D130	pcs

T52 SYSTEM



Bar	T52/26
Outside Diameter (mm)	52
Internal Diameter (mm)	26
Cross Sectional Area (mm ²)	1250
Ultimate Load (kN)	929
Yield Load (kN)	730
Weight (kg/m)	9.9
Thread Type	ISO10208
Type of Steel	EN10083-1
Thread (Left / Right hand)	Left or Right
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007



Nut	T52/26
Key Size (mm)	80
Length (mm)	70
Hardness (HRC)	25 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.
Thread Type	ISO10208
Type of Steel	CK45
Unit Weight (kg)	2.35
Thread (Left / Right hand)	Left or Right
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007

T52 SYSTEM



Coupling	T52/26
Outside Diameter (mm)	70
Length (mm)	160
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.
Thread Type	ISO10208
Type of Steel	EN10083-1
Unit Weight (kg)	2.3
Thread (Left / Right hand)	Left or Right
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007

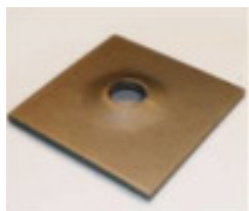


Plate	T52/26
Size (mm)	220 x 220
Thickness (mm)	35
Hole Diameter (mm)	65
Unit Weight (kg)	12.1



Centralizer	T52
Outside Diameter (mm)	112
Length (mm)	70
Hole Diameter (mm)	68
Type of Steel	CK45
Unit Weight (kg)	1.2



Drill Bit Adapter	T52
Anchor Bar Thread	T52
Drill Bit Thread	T73 / T76
Length (mm)	50
Unit Weight (kg)	0.6

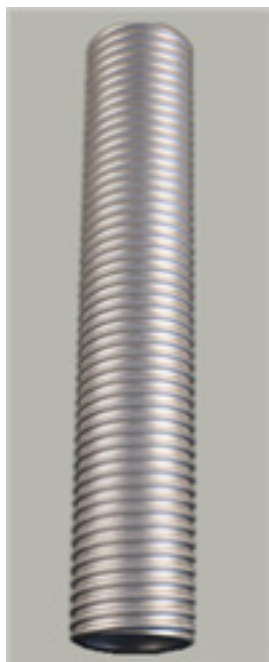
T52 SYSTEM

SDA System
Technical Data Sheet

Drill Bit	EX	EXX	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D115 / 2.60	D115 / 2.60	D100 / 2.00
		D130 / 2.80	D115 / 2.80
		D150 / 4.50	
Hardness (HRC/HRA)	50 - 55	87 - 89	87 - 89
Thread Type	ISO 10208		
Type of Steel	EN10083-1		
Thread (Left / Right hand)	Left or Right		

Item Number	Item Description	Unit of measure
100099101	Bar, T52/26	m
100100893	Bar, T52/26 Hot-dipped Galvanization	m
100100198	Bar, T52/26 Double Coated	m
100099106	Nut, T52/26	pcs
100100894	Nut, T52/26 Hot-dipped Galvanization	pcs
100100200	Nut, T52/26 Double Coated	pcs
100099104	Coupler, T52/26	pcs
100100895	Coupler, T52/26 Hot-dipped Galvanization	pcs
100100192	Coupler, T52/26 Double Coated	pcs
100087088	Plate, T52/26	pcs
100100896	Plate, T52/26 Hot-dipped Galvanization	pcs
100100203	Plate, T52/26 Double Coated	pcs
100099085	Guide, T52/26	pcs
100099080	Adapter, Drill Bit Adapter T52/26-T73	pcs
100100897	Adapter, Drill Bit Adapter T52/26-T76	pcs
100087033	Drill Bit, T52 EX D100	pcs
100100898	Drill Bit, T52 EX D115	pcs
100100899	Drill Bit, T52 EXX D115	pcs
100100900	Drill Bit, T52 EXX D130	pcs
100100901	Drill Bit, T52 EXX D150	pcs
100100190	Drill Bit, T52 ESSF D90	pcs
100100902	Drill Bit, T52 ESSF D100	pcs
100100903	Drill Bit, T52 ESSF D115	pcs

T73 SYSTEM



Bar	T73/53	T73/56	T73/45	T73/35
Outside Diameter (mm)	73			
Internal Diameter (mm)	53	56	45	35
Cross Sectional Area (mm ²)	1680	1369	2267	2700
Ultimate Load (kN)	1160	1035	1575	1865
Yield Load (kN)	970	830	1270	1430
Weight (kg/m)	13.2	10.75	17.8	21.2
Thread Type	ISO10208			
Type of Steel	EN10083-1			
Thread (Left / Right hand)	Left or Right			
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9			
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007			



Nut	T73/53	T73/56	T73/45	T73/35
Key Size (mm)	95			
Length (mm)	70			
Hardness (HRC)	25 - 30 (*)			
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.			
Thread Type	ISO10208			
Type of Steel	CK45			
Unit Weight (kg)	2.2			
Thread (Left / Right hand)	Left or Right			
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007			

T73 SYSTEM



Coupling	T73/53	T73/56	T73/45	T73/35
Outside Diameter (mm)	95			
Length (mm)	235			
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.			
Thread Type	ISO10208			
Type of Steel	EN10083-1			
Unit Weight (kg)	4.3			
Thread (Left / Right hand)	Left or Right			
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007			

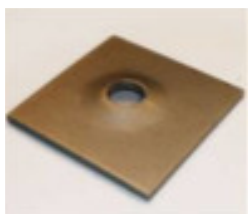


Plate	T73/53	T73/56	T73/45	T73/35
Size (mm)	250 x 250			
Thickness (mm)	40			
Hole Diameter (mm)	80			
Unit Weight (kg)	18			
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007			



Centralizer	T73
Outside Diameter (mm)	130
Length (mm)	80
Hole Diameter (mm)	87
Type of Steel	CK45
Unit Weight (kg)	1.2



Drill Bit Adapter	T73
Anchor Bar Thread	T73
Drill Bit Thread	T103
Length (mm)	50
Unit Weight (kg)	1.3

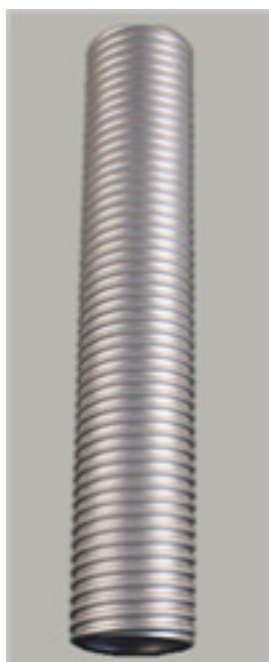
T73 SYSTEM

Drill Bit	EX	EXX	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D130 / 2.60	D130 / 4.20	D100 / 3.85
	D170 / 5.50	D150 / 5.70	D130 / 6.90
		D200 / 10.00	
Hardness (HRC/HRA)	50 - 55	87 - 89	87 - 89
Thread Type	ISO 10208		
Type of Steel	EN10083-1		
Thread (Left / Right hand)	Left or Right		

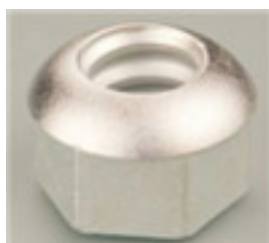
Item Number	Item Description	Unit of Measure
100100904	Bar, T73/53	m
100100905	Bar, T73/53 Hot-dipped Galvanization	m
100100906	Bar, T73/53 Double Coated	m
100100907	Bar, T73/56	m
100100908	Bar, T73/56 Hot-dipped Galvanization	m
100100909	Bar, T73/56 Double Coated	m
100100910	Bar, T73/45	m
100100911	Bar, T73/45 Hot-dipped Galvanization	m
100100912	Bar, T73/45 Double Coated	m
100100913	Bar, T73/35	m
100100914	Bar, T73/35 Hot-dipped Galvanization	m
100100915	Bar, T73/35 Double Coated	m
100100916	Nut, T73	pcs
100100917	Nut, T73 Hot-dipped Galvanization	pcs
100100475	Nut, T73 Double Coated	pcs

Item Number	Item Description	Unit of Measure
100100918	Coupler, T73	pcs
100100919	Coupler, T40/20 Hot-dipped Galvanization	pcs
100100476	Coupler, T40/20 Double Coated	pcs
100100920	Plate, T73	pcs
100100921	Plate, T73 Hot-dipped Galvanization	pcs
100100477	Plate, T73 Double Coated	pcs
100099086	Guide, T73	pcs
100100922	Adapter, Drill Bit Adapter T73-T103	pcs
100100923	Drill Bit, T73 EX D130	pcs
100100924	Drill Bit, T73 EX D170	pcs
100100925	Drill Bit, T73 EXX D130	pcs
100100926	Drill Bit, T73 EXX D150	pcs
100100927	Drill Bit, T73 EXX D200	pcs
100100928	Drill Bit, T73 ESSF D100	pcs
100100929	Drill Bit, T73 ESSF D130	pcs

T76 SYSTEM



Bar	T76N	T76S
Outside Diameter (mm)	76	
Internal Diameter (mm)	51	47
Cross Sectional Area (mm ²)	2000	2400
Ultimate Load (kN)	1600	1900
Yield Load (kN)	1200	1500
Weight (kg/m)	16.5	19
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Nut	T76N	T76S
Key size (mm)	100	
Length (mm)	80	
Hardness (HRC)	25 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	CK45	
Unit Weight (kg)	2.66	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

T76 SYSTEM



Coupling	T76N	T76S
Outside Diameter (mm)	95	97
Length (mm)	200	220
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Unit Weight (kg)	4.3	5.35
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

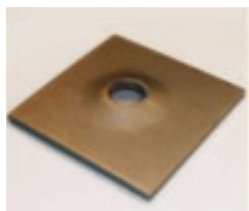


Plate	T76N	T76S
Size (mm)	250 x 250	
Thickness (mm)	40	
Hole Diameter (mm)	80	
Unit Weight (kg)	19.1	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

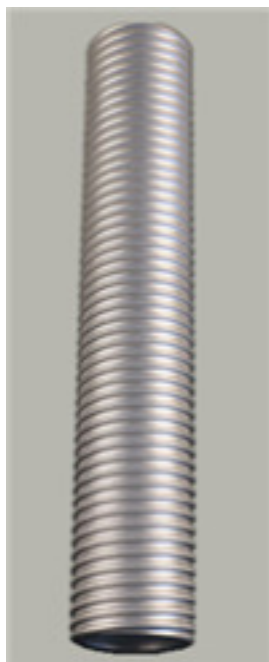
T76 SYSTEM

SDA System
Technical Data Sheet

Drill Bit	EX	EXX	ESSF
	Hardened cross bit for loose to medium dense ground conditions	TC cross bit for soft to medium rock formations	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D130 / 3.30	D130 / 4.60	D120 / 3.65
	D170 / 5.50	D150 / 5.70	D130 / 6.30
		D200 / 10.00	D150 / 6.60
Hardness (HRC/HRA)	50 - 55	87 - 89	87 - 89
Thread Type	ISO 10208		
Type of Steel	EN10083-1		
Thread (Left / Right hand)	Left or Right		

Item Number	Item Description	Unit of Measure
100100930	Bar, T76N	m
100100931	Bar, T76N Hot-dipped Galvanization	m
100100932	Bar, T76N Double Coated	m
100100933	Bar, T76S	m
100100934	Bar, T76S Hot-dipped Galvanization	m
100100935	Bar, T76S Double Coated	m
100100936	Nut, T76	pcs
100100937	Nut, T76 Hot-dipped Galvanization	pcs
100100938	Nut, T76 Double Coated	pcs
100100939	Coupler, T76N	pcs
100100940	Coupler, T76N Hot-dipped Galvanization	pcs
100100941	Coupler, T76N Double Coated	pcs
100100942	Coupler T76S	pcs
100100943	Coupler, T76S Hot-dipped Galvanization	pcs
100100944	Coupler, T76S Double Coated	pcs
100100945	Plate, T76	pcs
100100946	Plate, T76 Hot-dipped Galvanization	pcs
100100947	Plate, T76 Double Coated	pcs
100100948	Drill Bit, T76 EX D130	pcs
100100949	Drill Bit, T76 EX D170	pcs
100100950	Drill Bit, T76 EXX D130	pcs
100100951	Drill Bit, T76 EXX D150	pcs
100100952	Drill Bit, T76 EXX D200	pcs
100100953	Drill Bit, T76 ESSF D120	pcs
100100954	Drill Bit, T76 ESSF D130	pcs
100100955	Drill Bit, T76 ESSF D150	pcs

T103 SYSTEM



Bar	T103/78	T103/51
Outside Diameter (mm)	103	
Internal Diameter (mm)	78	51
Cross Sectional Area (mm ²)	3220	5680
Ultimate Load (kN)	2280	3460
Yield Load (kN)	1800	2730
Weight (kg/m)	25.3	44.6
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	
Length (m)	(1) x 2, x3, x4, x5, x6, x7, x8, x9	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Nut	T103/78	T103/51
Key size (mm)	125	
Length (mm)	80	
Hardness (HRC)	25 - 30 (*)	
	*In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	CK45	
Unit Weight (kg)	3.42	
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

T103 SYSTEM



Coupling	T103/78	T103/51
Outside Diameter (mm)	123	132
Length (mm)	255	290
Hardness (HRC)	23 - 30 (*) *In a certain range, tensile strength increase in proportion to hardness. For couplers and nuts, it's important to make sure the fitting capacity reaches bar's capacity. Through hundreds of rounds of testing, a lab standard is set up which is HRC 23 - 30 for couplers and HRC 25 - 30 for nuts.	
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Unit Weight (kg)	7.4	12.5
Thread (Left / Right hand)	Left or Right	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	

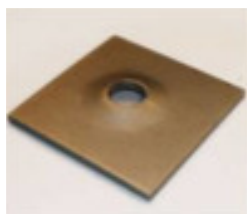


Plate	T103/78	T103/51
Size (mm)	300 x 300	
Thickness (mm)	50	
Hole Diameter (mm)	110	
Unit Weight (kg)	32.6	
Optional of Anti-corrosion	Hot-dipped Galvanization: ISO 1461 Epoxy Coating Bending properties up to standard ISO 1519 Impact properties up to standard ASTM D 2794 Adhesion up to standard ISO 2409:2007	



Centralizer	T103
Outside Diameter (mm)	165
Length (mm)	80
Hole Diameter (mm)	110
Type of Steel	CK45
Unit Weight (kg)	2.93

T103 SYSTEM

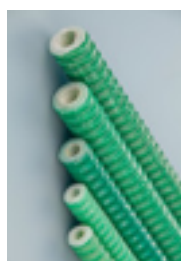
Drill bit	EXX	ESSF
	TC cross bit for soft to medium rock formations	TC button bit for medium rock formations
Outside Diameter (mm) / Unit Weight (kg)	D130 / 4.60	D120 / 3.65
	D150 / 5.70	D130 / 6.30
	D200 / 10.00	D150 / 6.60
Hardness (HRC/HRA)	87 - 89	87 - 89
Thread Type	ISO10208	
Type of Steel	EN10083-1	
Thread (Left / Right hand)	Left or Right	

Item Number	Item Description	Unit of Measure
100100956	Bar, T103/78	m
100100957	Bar, T103/78 Hot-dipped Galvanization	m
100100958	Bar, T103/78 Double Coated	m
100100959	Bar, T103/51	m
100100960	Bar, T103/51 Hot-dipped Galvanization	m
100100961	Bar, T103/51 Double Coated	m
100100962	Nut, T103	pcs
100100963	Nut, T103 Hot-dipped Galvanization	pcs
100100964	Nut, T103 Double Coated	pcs
100100965	Coupler, T103/78	pcs
100100966	Coupler, T103/78 Hot-dipped Galvanization	pcs
100100967	Coupler, T103/78 Double Coated	pcs
100100968	Coupler, T103/51	pcs
100100969	Coupler, T103/51 Hot-dipped Galvanization	pcs
100100970	Coupler, T103/51 Double Coated	pcs
100100971	Plate, T103	pcs
100100972	Plate, T103 Hot-dipped Galvanization	pcs
100100973	Plate T103 Double Coated	pcs
100099088	Guide, T103	pcs
100100974	Drill Bit, T103 EXX D120	pcs
100100975	Drill Bit, T103 EXX D130	pcs
100100976	Drill Bit, T103 EXX D150	pcs
100100977	Drill Bit, T103 ESSF D130	pcs
100100978	Drill Bit, T103 ESSF D150	pcs
100100979	Drill Bit, T103 ESSF D200	pcs

SDA FRP SYSTEM

SDA System
Technical Data Sheet

SDA FRP		H25S	H28S	H32S	H38S
Outside Diameter (mm)		25	28	32	38
Internal Diameter (mm)		12	14	15	20
Cross Sectional Area (mm ²)		295	369	521	692
Ultimate Load (kN) 220280365550		220	280	365	550
Breaking Load	Steel Nut L=70mm	140	150	230	280
	FRP Nut L=70mm	70	70	80	80
Torsion Strength (Nm)		180	250	400	450
Ultimate Strain		2.50%			
Bending E-Modulus (GPa)		45			
45 Weight (kg/m)		0.63	0.86	0.99	1.33
Thread Type		R25	R28	R32	R38
E-Glass		75%			
Thread (Left / Right Hand)		Left or Right			
Length (m)		(1) x2, x3, x4, x5, x6, x7, x8, x9, x10, x11, x12			



Item Number	Item Description	Unit of Measure
100100980	Bar, H25S	m
100100981	Bar, H28S	m
100100982	Bar, H32S	m
100100983	Bar, H38S	m

FRP SOLID BOLT SYSTEM

Solid Bolt		S18/150	S19/165	S20/200	S22/250	S24/300	S25/350	S27/400	S30/490	S32/560
Outside Diameter (mm)		18	19	20	22	24	25	27	30	32
Cross Sectional Area (mm ²)		196	227	249	308	373	408	483	607	697
Ultimate Load (kN)		150	165	200	250	300	350	400	490	560
Breaking Load	Steel Nut L=100mm	70	80	80	80	100	180	200	200	320
	FRP Nut L=70mm	60	60	60	70	80	80	80	80	90
Torsion Strength (Nm)		60	70	70	70	100	120	130	180	230
Ultimate Strain		2.50%								
Bending E-Modulus (GPa)		40								
Weight (kg/m)		0.42	0.45	0.56	0.69	0.76	0.9	1.04	1.3	1.45
Length (m)		(1) x2, x3, x4, x5, x6, x7, x8, x9, x10, x11, x12								

Item Number	Item Description	Unit of Measure
100100984	Bar, S18/150	m
100100985	Bar, S19/165	m
100100986	Bar, S20/200	m
100100987	Bar, S22/250	m
100100988	Bar, S24/300	m
100100989	Bar, S25/350	m
100100990	Bar, S27/400	m
100100991	Bar, S30/490	m
100100992	Bar, S32/560	m

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