



# **GUARANTEED HIGH-PERFORMANCE PRODUCTS AND PARTS**



**2017 EDITION**

# WHO WE ARE

Geotech Metals, founded in 2006, is an international supplier of complete self-drilling geotechnical anchoring systems, also known as hollow bar systems.

Thanks to our in-house manufacturing, which is regularly tested by independent laboratories, we can always guarantee high-performance products and parts.

From our headquarters in the Netherlands we take care of the development, manufacture, storage and distribution of parts and materials for self-drilling anchoring systems. All systems are manufactured in-house, for which we have various thread-rolling and CNC machines available. By supplying parts and materials directly from stock, our clients can always benefit from our flexibility.

**Do you have a question or would you like more information about Geotech Metals or about the products we supply?**



We reserve the right to change or correct the data in this specification without prior notification.

## GEOTECH METALS

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## LET'S TALK.

You can call us on **+31 (0)183 820 040** or send an e-mail to **[info@geotechmetals.com](mailto:info@geotechmetals.com)**

Feel free to contact us without obligation.

Regards,  
Remco van der Voorden



# THE CONTENT

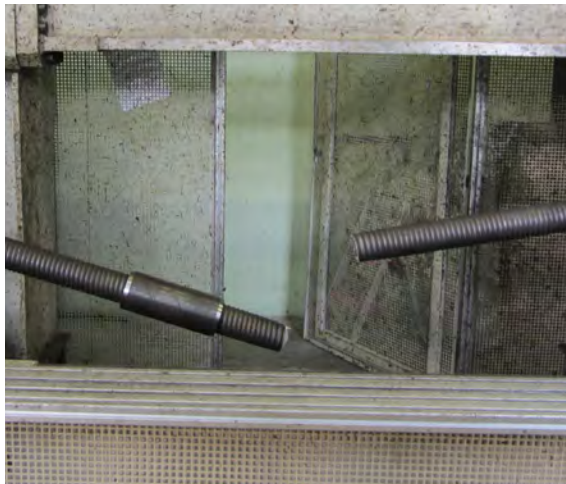
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# QUALITY ASSURANCE

The transformation from a design process into successful production must be based on a solid and structured working method. This working method allows us to control the process from A to Z, to create a high-quality product both for our customers and for ourselves. This structured approach is certified based on NEN-EN-ISO 9001:2008.

Our production process is controlled by means of a Factory Production Control System (FPC System) in accordance with EN 1090. This allows us to supply the main bearing elements of our hollow bar systems with a CE marking. As a result, we comply with the most recent laws and regulations of the European Union. TÜV-Netherlands is our partner as a Notified Body.



**OUR PRODUCTS ARE  
EXTERNALLY TESTED  
ON A REGULAR BASIS  
BY ACCREDITED  
AND INDEPENDENT  
LABORATORIES.**



## TESTRAPPORT MPA NRW

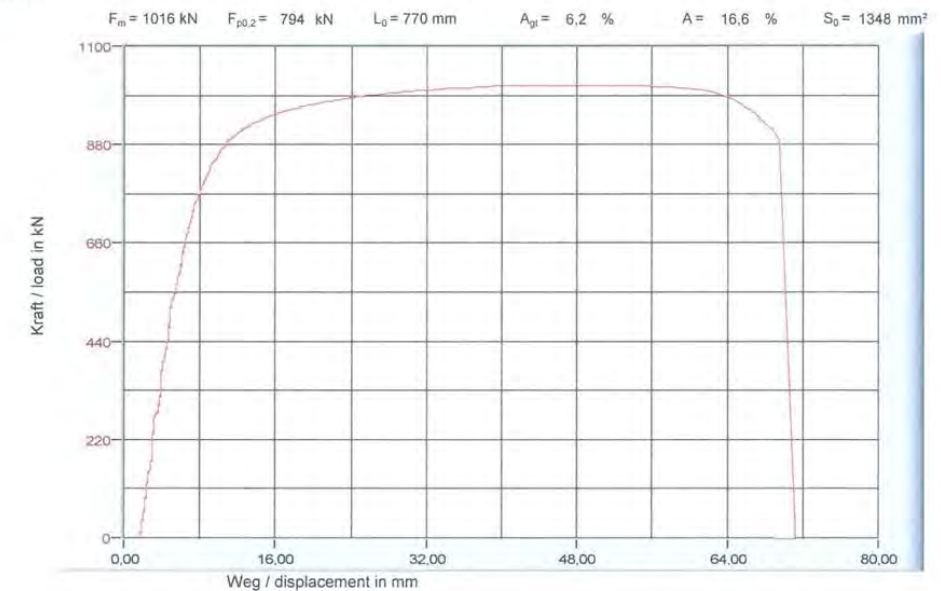
**MPA NRW.**  
Materialprüfungsamt Nordrhein-Westfalen  
PRÜFEN · ÜBERWACHEN · ZERTIFIZIEREN

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### Prüfprotokoll

Auftraggeber: Geotech Metals, NL  
Probeneingangs Nr.: 473/16  
Probeneingangs Datum: 03.08.2016  
Prüfmateri al: Stahltragglied 53/29  
Prüfungsart: Zugversuch in Anlehnung an DIN EN ISO 6892-1 B  
Charge: 360733  
Güte: EN10210 - S460NH

Pr.: 5



Bruchlage: 65 mm von der Einspannung.  
Prüfgeschwindigkeit: 10 kN / s  
Bemerkung: Agt und A wurde von Hand gemessen.

Datum: 17.08.2016  
Prüfer: Reich

Regierungsbeschäftigter  
*A. Reich*

# WHAT WE CAN DO

## 3.1 The principle

### 3.1.1 SYSTEM DESCRIPTION

The principle of the systems is characterised by a hollow bar with a coarse thread along its entire length. This bar acts as a drilling and injection bar during the installation and as a tendon, compression and reinforcement element in the final phase. The system is designed in a project-specific manner using a standard element length.

During installation a bond is created between the grout body and the surrounding soil layers. This creates a foundation element, which can provide bearing capacity against tensile, compression and cyclical loads.

Hollow bar systems have already been used successfully on an international scale for many decades.



### 3.1.2. ADVANTAGES

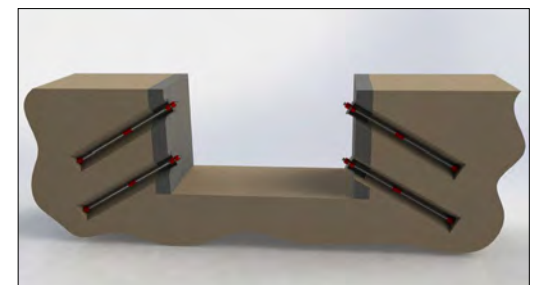
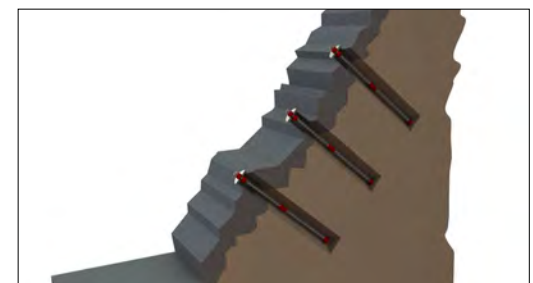
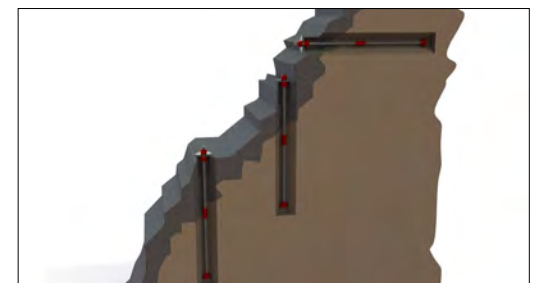
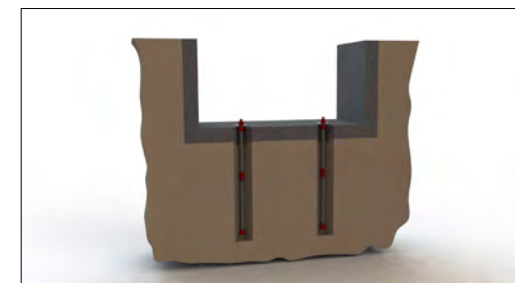
**The advantages of selfdrilling systems are:**

- fast and safe installation (single step casing)
- proven installation process under various and difficult ground and borehole conditions
- minimum disturbance of ground conditions
- low settlement characteristics
- suitable for tension, compression and cyclical loads
- broad range of load capacity classes available
- wide range of drill bits available to deal with various different ground conditions
- installation is done with universal standard drilling equipment
- suitable for difficult and restricted access situations
- robust system and suitable for use in civil-engineering applications and maritime conditions

## 3.2 Fields of application

**Hollow bar systems can be used as:**

- Soil nailing of grout blankets, wall stabilisations
- Wall and shaft stabilisation for mining and tunnelling
- Wall anchorage for construction pits, sheetpiling, retaining walls
- Anchoring against flotation in (submerged) concrete floors of construction pits / tunnel entrances
- Micropiles in pile and pad foundations or for building and foundation repairs
- For specific applications, such as geothermal energy, jet grouting and other injection techniques





### 3.3 System components

#### 3.3.1 HOLLOW BAR

Our systems are made of certified steel. By using the correct chemical composition and controlled manufacturing, the types of steel we use have targeted mechanical properties, the correct ductility and suitable elongation properties that match the area of application.

**We produce also a hollow bar system made of the structural fine grain steel S460NH according to EN10210. This system fulfils the demands of EN14199 Micropiles and:**

- has a suitable toughness for rotary percussive drilling
- owns sufficient elongation properties ( $A_{gt} \geq 5\%$ )
- is not sensitive to stress corrosion cracking
- because of the high class ductility ( $R_m/R_e \geq 1,1$ ) it makes sure there is no risk of sudden failure



#### 3.3.2 TRAPEZOIDAL THREAD GEOMETRY

The external coarse thread is our own design. This "Geotech thread" is characterised by its trapezoidal geometry, robustness and suitability for use in civil-engineering applications and maritime conditions.

To create an optimum bond between the hollow bar and the cement stone the geometry of the thread is very important to minimize the crack width under solicitation of the hollow bar.

**The T-shaped thread of Geotech Metals has:**

- a rib surface with  $45^\circ$  angled flanks to minimize the splitting forces
- a relative rib area factor  $\geq 0,056$  (by annex C, table C2N of Eurocode 2 (EN1992-1-1)), there is a optimum of avoiding the cement stone from cracking



General laboratory investigations has shown that, at these kinds of thread geometries, the crack width of the cement stone will be  $\leq 0,1$  mm. As crack width is below 0,1 mm a stipulation of permanent corrosion protection, without any additional measures, is verified.

#### 3.3.3 COUPLER AND CENTRALISER

The coupler has continuous inside thread with a middle stop which resists full load bearing capacity of the hollow bar. When the hollow bar is tightened (pre-tensioned) against the middle stop of the coupler an optimum transfer of percussive energy, of the hydraulic drifter, will be achieved. Additional application of lock nuts, as used in other systems, is not required.



The centraliser, fitted ahead of each coupler, will center the hollow bar into the drilling hole. It also guarantees a minimum consistent grout cover around the hollow bar of at least 20 mm. A durable product is guaranteed by the use of these centralisers.



#### 3.3.4. SACRIFICIAL DRILL BITS

**We offer various types of sacrificial drill bits such as:**

Cast clay drill bit – lose sand, clay, loam, soil without obstacles

Cast cross drill bit – densed sand, hard clay, gravel

Carbide cross drill bit – dense gravel, stoners

Carbide button drill bit – (reinforced) concrete, rock







3.3.5. NUTS AND END PLATES

A lot of different solutions of end plates can be applicable. To offer you flexibility we provide hexagonal and spherical nuts. Various end plates and wedge discs are available based on different applications.

**If local conditions dictate otherwise, we can provide the following additional protection to our hollow bar systems:**

- Hot dip galvanising in accordance with EN-ISO 1461
- Duplex coating in accordance with EN 15773
- Fusion bond in accordance with ASTM A934



3.4 Sustainability

Our hollow bar systems are suitable both for temporary and for permanent application. The trapezoidal geometry of the “Geotech thread” creates an optimum bond with the cement grout body. This results in a sustainable product protected against corrosion.

During design calculations sacrificial corrosion protection, as a design philosophy, can also be applied. This means consideration of loss in cross-section over the reference period of the structure.







### 3.5. Installation

#### 3.5.1 INSTALLATION TECHNIQUE

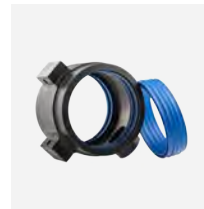
The Geotech hollow bar systems are installed in accordance with a clear repeating principle. The system is suitable for installation by means of a rotary percussive drill technique as well as a torque rotation drill technique without impact energy.

During installation a support liquid is used in the borehole, depending on the local soil conditions. No temporary casing bars are required as a result, making this installation process fast and easy. This offers security in your flexibility and building schedule. This installation method makes the system highly suitable for application in changing soil layers.

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**THE INSTALLATION IS  
OFTEN PERFORMED  
WITH UNIVERSAL/  
SPECIFIC ANCHOR  
DRILLINGS RIGS  
THAT ARE AVAILABLE  
WORLDWIDE.**

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#### 3.5.2 DRILLING TOOLS

We also offer a wide range of drilling tools, allowing you to start working with our systems right away.

The flushing rods are produced of hardened high worthy drill steel and contains a good wear resistance.

Our stock contains a wide range of models which will fit on shank adapters like T45, H55, H64, Rt70, C112, H112, Etc. We can also supply custom models at your request.

This equipment is easy to mount and often used on well known brands of hydraulic drifters like Eurodrill, Hütte, Morath, Krupp, Klemm, Tei Rock Drills, Wolf, Etc.





# DESIGN

## 4.1 Design standards

Design calculations need to be done by Eurocode Standards (EC 7). Verifications of the following subjects must be done no matter the application:

- Load carrying capacity of the steel tendon
- Bearing capacity by soil/grout friction
- Buckling (during pressure pile loads)
- Serviceability

## 4.2 Diameter of the cement grouted body

As by the orientation of the flushing holes a bigger diameter of the cement grouted body versus the diameter of the drill bit will be reached. The following formula applies:

$$D_{\text{cement grout}} = d_{\text{drillbit}} + a$$

By applicable standards an increasing of the drill bit diameter with  $a=20$  mm is allowed ( $a \geq 20$  mm).

By our own experience, determined by measurements on retrieved cement grout bodies, the following values are determined:

- $a = 50$  mm medium gravel, pebble
- $a = 75$  mm (gravel) sand







# TECHNICAL DATA

- Hollow bar system according to EN10210 (structural steel S460NH)
- Hollow bar system according to EN10297



# SELFDRILLING HOLLOW BAR SYSTEM

Steel grade S460NH according to EN-10210

ITEM	UNIT	TYPE				
		32/20	32/16	40/20	40/16	53/29
Outer diameter	dout	mm	28,5	37,0	37,0	50,5
Inner diameter	dinn	mm	18,5	20,4	15,0	29,3
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	370	750	900	1.325
Weight	m	kg/m <sup>1</sup>	2,9	5,9	7,1	10,4
Load at 0,2% yield <sup>b)</sup>	Re	kN	205	425	525	730
Yield strength <sup>c)</sup>	f0,2	N/mm <sup>2</sup>	555	567	583	550
Ultimate load <sup>b)</sup>	Rm	kN	265	355	660	925
Tensile strength <sup>c)</sup>	fu;a	N/mm <sup>2</sup>	715	755	733	700
Axial stiffness	AE	MN	68	87	139	167
Bending stiffness	EI	kNm <sup>2</sup>	5	6	15	52
Thread direction	-	left	left	left	left	right

a) calculated from the weight (So = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>])  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

## General

Elongation	Agt	≥ 5%
Ductility (Rm/Re)	k	≥ 1,1

\*\* Other dimensions in consultation with you

# SELFDRILLING HOLLOW BAR SYSTEM

Steel grade S460NH according to EN-10210

ITEM	UNIT	TYPE					
		72/53	72/48	72/45	72/35	85/48	103/52
Outer diameter	dout	mm	69,5	69,5	69,5	81,5	101,4
Inner diameter	dinn	mm	52,7	48,1	44,6	34,6	52,9
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	1.610	1.975	2.230	2.850	5.875
Weight	m	kg/m <sup>1</sup>	12,6	15,5	17,5	22,4	46,1
Load at 0,2% yield <sup>b)</sup>	Re	kN	820	1.050	1.165	1.430	2.670
Yield strength <sup>c)</sup>	f0,2	N/mm <sup>2</sup>	509	532	522	502	454
Ultimate load <sup>b)</sup>	Rm	kN	1.160	1.430	1.575	1.870	3.660
Tensile strength <sup>c)</sup>	fu;a	N/mm <sup>2</sup>	720	724	706	656	623
Axial stiffness	AE	MN	298	365	413	527	1.087
Bending stiffness	EI	kNm <sup>2</sup>	142	163	176	199	357
Thread direction	-	right	right	right	right	right	right

a) calculated from the weight (So = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>])  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

## General

Elongation	Agt	≥ 5%
Ductility (Rm/Re)	k	≥ 1,1

\*\* Other dimensions in consultation with you



# SELFDRILLING HOLLOW BAR SYSTEM

Steel grade according to EN-10297

ITEM		UNIT	TYPE							
			40/20	40/16	53/31	53/26	63/35	63/28	72/35	72/30
Outer diameter	dout	mm	37,0	37,0	50,5	50,5	59,5	59,5	69,5	69,5
Inner diameter	dinn	mm	19,7	11,7	30,8	25,3	35,3	28,8	34,5	29,1
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	770	970	1.260	1.500	1.800	2.130	2.860	3.130
Weight	m	kg/m <sup>1</sup>	6,0	7,6	9,9	11,8	14,1	16,7	22,5	24,6
Load at 0,2% yield <sup>b)</sup>	Re	kN	425	515	700	800	1.025	1.200	1.500	1.650
Yield strength <sup>c)</sup>	f0,2	N/mm <sup>2</sup>	552	531	556	533	569	563	524	527
Ultimate load <sup>b)</sup>	Rm	kN	550	700	900	1.065	1.375	1.650	2.050	2.250
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	714	722	714	710	764	775	717	719
Axial stiffness	EA	MN	142	179	233	278	333	394	543	595
Bending stiffness	EI	kNm <sup>2</sup>	16	17	51	55	100	108	204	211
Thread direction		-	left	left	right	right	right	right	right	right

## General

Elongation	Agt	≥ 5%
Ductility (Rm/Re)	k	≥ 1,1

\*\* Other dimensions in consultation with you

a) calculated from the weight [So = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

# SELFDRILLING HOLLOW BAR SYSTEM

Steel grade according to EN-10297

ITEM		UNIT	TYPE							
			85/48	85/38	103/67	103/57	103/52	103/43	117/64	117/54
Outer diameter	dout	mm	81,5	81,5	101,4	101,4	101,4	101,4	114,0	114,0
Inner diameter	dinn	mm	46,2	36,1	66,7	57,2	51,4	41,4	64,1	54,0
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	3.540	4.195	4.580	5.510	6.000	6.730	6.980	7.920
Weight	m	kg/m <sup>1</sup>	27,8	32,9	36,0	43,3	47,1	52,8	54,8	62,2
Load at 0,2% yield <sup>b)</sup>	Re	kN	1.800	2.150	2.300	2.800	3.000	3.360	3.500	3.950
Yield strength <sup>c)</sup>	f0,2	N/mm <sup>2</sup>	508	513	502	508	500	499	501	499
Ultimate load <sup>b)</sup>	Rm	kN	2.500	3.000	3.250	3.900	4.250	4.700	4.900	5.500
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	706	715	710	708	708	698	702	694
Axial stiffness	EA	MN	673	797	870	1.047	1.140	1.279	1.326	1.505
Bending stiffness	EI	kNm <sup>2</sup>	369	396	801	886	921	959	1.418	1.496
Thread direction		-	right	right	right	right	right	right	right	right

## General

Elongation	Agt	≥ 5%
Ductility (Rm/Re)	k	≥ 1,1

\*\* Other dimensions in consultation with you

a) calculated from the weight [So = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area





# APPENDIX

## 1. Hollow bar system of structural steel S460NH according to EN-10210

- Type 32-S460NH
- Type 40-S460NH
- Type 53-S460NH
- Type 72-S460NH
- Type 85-S460NH
- Type 103-S460NH

## 2. Hollow bar system according to EN-10297

- Type 40
- Type 53
- Type 63
- Type 72
- Type 85
- Type 103
- Type 117

## 3. Drilling tools

- Drilling tools



## HOLLOW BAR TYPE 32 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



### Specifications

ITEM		UNIT	32/20	32/16
Outer diameter	d <sub>out</sub>	mm	28,5	28,5
Inner diameter	d <sub>inn</sub>	mm	18,5	14,7
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	370	470
Weight	m	kg/m <sup>3</sup>	2,9	3,7
Load at 0,2% yield <sup>b)</sup>	Re	kN	205	260
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	555	554
Ultimate load <sup>b)</sup>	Rm	kN	265	355
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	715	755
Thread direction		-	left	left
Standard stock length		m <sup>1</sup>	3-4	3-4

a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

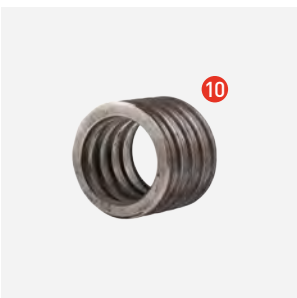
We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

### Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 32/20, structural steel S460NH acc to EN10210 Cross section (A) = 370 mm <sup>2</sup> / Load at yield (Re) = 205 kN / Ultimate load (Rm) = 265 kN Geotech trapezium shaped left-hand thread over the entire length, other lengths on request		
Hollow bar 32/20-S460NH, 3 m, black	09320130	8,7
Hollow bar 32/20-S460NH, 4 m, black	09320140	11,6
Hollow bar 32/16, structural steel S460NH acc to EN10210 Cross section (A) = 470 mm <sup>2</sup> / Load at yield (Re) = 260 kN / Ultimate load (Rm) = 355 kN Geotech trapezium shaped left-hand thread over the entire length, other lengths on request		
Hollow bar 32/16-S460NH, 3 m, black	09320230	11,1
Hollow bar 32/16-S460NH, 4 m, black	09320240	14,8

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø42 x 105 mm, with middle stop, black	09320500	0,5
2.	Centralizer Ø90 mm, steel, black	09320850	0,3
3.	Hexagonal nut, KW46x27 mm, black	09320600	0,3
4.	Spherical nut, KW46x40 mm, black	09320650	0,4
5.	Wedge disc 12°, max. 2x 12°	09320860	0,9
6.	Washer plate 150x150x25 mm, hole Ø37 mm, black	09320920	4,2
7.	Cast clay drill bit type 32 - Ø95 mm	09320700	0,7
8.	Carbide cross drill bit type 32 - Ø51 mm	09320710	0,4
9.	Carbide button drill bit type 32 - Ø51 mm	09320730	0,5
10.	Adapter for hollow bar type 32 into drill bit type 40	09320790	0,3





## HOLLOW BAR TYPE 40 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



### Specifications

ITEM		UNIT	40/20	40/16
Outer diameter	d <sub>out</sub>	mm	37,0	37,0
Inner diameter	d <sub>inn</sub>	mm	20,4	15,0
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	750	900
Weight	m	kg/m <sup>3</sup>	5,9	7,1
Load at 0,2% yield <sup>b)</sup>	Re	kN	425	525
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	567	583
Ultimate load <sup>b)</sup>	Rm	kN	540	660
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	720	733
Thread direction		-	left	left
Standard stock length		m <sup>1</sup>	3-4	3-4

a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

### Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
<b>Hollow bar 40/20, structural steel S460NH acc to EN10210</b> Cross section (A) = 750 mm <sup>2</sup> / Load at yield (Re) = 425 kN / Ultimate load (Rm) = 540 kN Geotech trapezium shaped left-hand thread over the entire length, other lengths on request		
Hollow bar 40/20-S460NH, 3 m, black	09400230	11,1
Hollow bar 40/20-S460NH, 4 m, black	09400240	14,8
<b>Hollow bar 40/16, structural steel S460NH acc to EN10210</b> Cross section (A) = 900 mm <sup>2</sup> / Load at yield (Re) = 525 kN / Ultimate load (Rm) = 660 kN Geotech trapezium shaped left-hand thread over the entire length, other lengths on request		
Hollow bar 40/16-S460NH, 3 m, black	09400330	21,2
Hollow bar 40/16-S460NH, 4 m, black	09400340	28,3

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø54 x 140 mm, with middle stop, black	09400500	1,1
2.	Centralizer Ø90 mm, steel, black	09400850	0,5
3.	Hexagonal nut, KW65x40 mm, black	09400600	0,7
4.	Spherical nut, KW65x55 mm, black	09400650	1,0
5.	Wedge disc 12°, max. 2x 12°, black	09400860	1,5
6.	Washer plate 200x200x30 mm, hole Ø45 mm, black	09400920	9,1
7.	Cast clay drill bit type 40 - Ø150 mm	09400700	1,7
8.	Cast cross drill bit type 40 - Ø115 mm	09400720	1,4
9.	Cast cross drill bit type 40 - Ø130 mm	09400721	2,5
10.	Carbide cross drill bit type 40 - Ø76 mm	09400710	1,4
11.	Carbide button drill bit type 40 - Ø76 mm	094000731	1,5





## HOLLOW BAR TYPE 53 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



### Specifications

ITEM		UNIT	53/29
Outer diameter	d <sub>out</sub>	mm	50,5
Inner diameter	d <sub>inn</sub>	mm	29,3
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	1.325
Weight	m	kg/m <sup>3</sup>	10,4
Load at 0,2% yield <sup>b)</sup>	Re	kN	730
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	550
Ultimate load <sup>b)</sup>	Rm	kN	925
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	700
Thread direction		-	right
Standard stock length		m <sup>1</sup>	3-4

a) calculated from the weight ( $A = 10^6 \times m / 7.850 \text{ [kg/m}^3\text{]}$ )

b) characteristic value according to EN 1990

c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

### Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 53/29, structural steel S460NH acc to EN10210 Cross section (A) = 1.325 mm <sup>2</sup> / Load at yield (Re) = 730 kN / Ultimate load (Rm) = 925 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 53/29-S460NH, 3 m, black	09530230	31,2
Hollow bar 53/29-S460NH, 4 m, black	09530240	41,6



ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø70 x 160 mm, with middle stop, black	09530500	2,1
2.	Centralizer Ø113 mm, steel, black	09530850	0,7
3.	Hexagonal nut, KW80x52 mm, black	09530600	1,3
4.	Spherical nut, KW80x70 mm, black	09530650	2,0
5.	Wedge disc 12°, max. 2x 12°	09530860	3,8
6.	Washer plate 145x145x30 mm, hole Ø58 mm, black	09530910	4,3
7.	Washer plate 220x220x35 mm, hole Ø58 mm, black	09530920	12,7
8.	Cast clay drill bit type 53 - Ø175 mm	09530700	2,5
9.	Cast cross drill bit type 53 - Ø130 mm	09530720	2,7
10.	Carbide cross drill bit type 53 - Ø115 mm	09530710	2,8
11.	Carbide button drill bit type 53 - Ø90 mm	09530731	1,9
12.	Adapter for hollow bar type 53 into drill bit type 72	09530790	0,9



## HOLLOW BAR TYPE 72 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

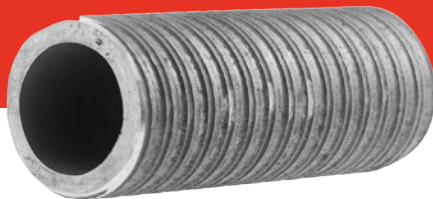
This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	72/53	72/48	72/45	72/35
Outer diameter	d <sub>out</sub>	mm	69,5	69,5	69,5	69,5
Inner diameter	d <sub>inn</sub>	mm	52,7	48,1	44,6	34,6
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	1.610	1.975	2.230	2.850
Weight	m	kg/m <sup>3</sup>	12,6	15,5	17,5	22,4
Load at 0,2% yield <sup>b)</sup>	Re	kN	820	1.050	1,165	1.430
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	509	532	522	502
Ultimate load <sup>b)</sup>	Rm	kN	1.160	1.430	1.575	1.870
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	720	724	706	656
Thread direction		-	right	right	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4	3-4	3-4

a) calculated from the weight [A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]

b) characteristic value according to EN 1990

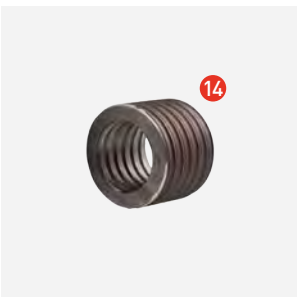
c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
<b>Hollow bar 72/53, structural steel S460NH acc to EN10210</b> Cross section (A) = 1.610 mm <sup>2</sup> / Load at yield (Re) = 820 kN / Ultimate load (Rm) = 1.160 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/53-S460NH, 3 m, black	09720130	37,9
Hollow bar 72/53-S460NH, 4 m, black	09720140	50,6
<b>Hollow bar 72/48, structural steel S460NH acc to EN10210</b> Cross section (A) = 1.975 mm <sup>2</sup> / Load at yield (Re) = 1.050 kN / Ultimate load (Rm) = 1.430 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/48-S460NH, 3 m, black	09720230	46,5
Hollow bar 72/48-S460NH, 4 m, black	09720240	62,0
<b>Hollow bar 72/45, structural steel S460NH acc to EN10210</b> Cross section (A) = 2.230 mm <sup>2</sup> / Load at yield (Re) = 1.165 kN / Ultimate load (Rm) = 1.575 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/45-S460NH, 3 m, black	09720330	52,5
Hollow bar 72/45-S460NH, 4 m, black	09720340	70,0
<b>Hollow bar 72/35, structural steel S460NH acc to EN10210</b> Cross section (A) = 2.850 mm <sup>2</sup> / Load at yield (Re) = 1.430 kN / Ultimate load (Rm) = 1.870 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/35-S460NH, 3 m, black	09720430	67,1
Hollow bar 72/35-S460NH, 4 m, black	09720440	89,5



ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø95 x 250 mm, with middle stop, black, for 72/53 & 72/48	09720500	5,8
2.	Coupler Ø102 x 250 mm, with middle stop, black, for 72/45 & 72/35	08720500	7,6
3.	Centralizer Ø132 mm, steel, black	09720850	1,5
4.	Hexagonal nut, KW105x70 mm, black	09720600	2,9
5.	Spherical nut, KW105x90 mm, black	09720650	4,1
6.	Wedge disc 12°, max. 2x 12°	09720860	7,8
7.	Washer plate 250x250x40 mm, hole Ø80 mm, black	09720920	17,7
8.	Cast clay drill bit type 72 - Ø200 mm	09720700	6,1
9.	Cast clay drill bit type 72 - Ø280 mm	09720701	6,8
10.	Cast cross drill bit type 72 - Ø175 mm	09720720	5,0
11.	Carbide cross drill bit type 72 - Ø130 mm	09720710	4,3
12.	Carbide button drill bit type 72 - Ø115 mm	09720730	3,8
13.	Carbide button drill bit type 72 - Ø130 mm	09720731	4,9
14.	Adapter for hollow bar type 72 into drill bit type 103	09720790	2,6



## HOLLOW BAR TYPE 85 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



### Specifications

ITEM		UNIT	85/48
Outer diameter	d <sub>out</sub>	mm	81,5
Inner diameter	d <sub>inn</sub>	mm	46,8
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	3.500
Weight	m	kg/m <sup>3</sup>	27,5
Load at 0,2% yield <sup>b)</sup>	Re	kN	1.800
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	514
Ultimate load <sup>b)</sup>	Rm	kN	2.240
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	640
Thread direction		-	right
Standard stock length		m <sup>1</sup>	3-4

a) calculated from the weight (A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>])

b) characteristic value according to EN 1990

c) calculated from the characteristic load and cross-sectional area

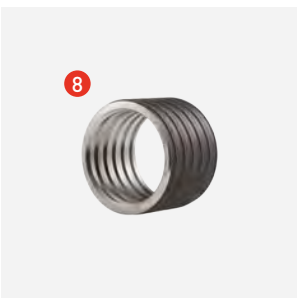
We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

### Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 85/48, structural steel S460NH acc to EN10210 Cross section (A) = 3.500 mm <sup>2</sup> / Load at yield (Re) = 1.800 kN / Ultimate load (Rm) = 2.240 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 85/48-S460NH, 3 m, black	09850130	82,4
Hollow bar 85/48-S460NH, 4 m, black	09850140	109,9

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø114 x 280 mm, with middle stop, black	08850500	9,8
2.	Centralizer Ø145 mm, steel, black	08850850	2,0
3.	Hexagonal nut, KW125x80 mm, black	08850600	4,7
4.	Spherical nut, KW125x100 mm, black	08850650	6,5
5.	Washer plate 240x240x50 mm, hole Ø95 mm, black	08850920	20,1
6.	Cast clay drill bit type 85 - Ø220 mm	08850700	7,9
7.	Cast clay drill bit type 85 - Ø280 mm	08850701	8,5
8.	Adapter for hollow bar type 85 into drill bit type 103	08850790	1,5
9.	Adapter for hollow bar type 85 into drill bit type 72	08850791	6,8





## HOLLOW BAR TYPE 103 | STEEL GRADE S460NH

Hollow bars from Geotech Metals are produced using high-strength structural steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



### Specifications

ITEM		UNIT	103/52
Outer diameter	d <sub>out</sub>	mm	101,4
Inner diameter	d <sub>inn</sub>	mm	52,9
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	5.875
Weight	m	kg/m <sup>3</sup>	46,1
Load at 0,2% yield <sup>b)</sup>	Re	kN	2.670
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	454
Ultimate load <sup>b)</sup>	Rm	kN	3.660
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	623
Thread direction		-	right
Standard stock length		m <sup>1</sup>	3-4

a) calculated from the weight (A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>])

b) characteristic value according to EN 1990

c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

### Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 103/52, structural steel S460NH acc to EN10210 Cross section (A) = 5.875 mm <sup>2</sup> / Load at yield (Re) = 2.670 kN / Ultimate load (Rm) = 3.660 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 103/52-S460NH, 3 m, black	09103330	138,4
Hollow bar 103/52-S460NH, 4 m, black	09103340	184,5

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø140 x 300 mm, with middle stop, black	08103500	15,4
2.	Centralizer Ø170 mm, steel, black	08103850	2,6
3.	Hexagonal nut, KW155x101 mm, black	08103600	9,2
4.	Spherical nut, KW155x120 mm, black	08103650	13,3
5.	Washer plate 285x285x70 mm, hole Ø110 mm, black	08103920	39,4
6.	Cast clay drill bit type 103 - Ø300 mm	08103700	8,9
7.	Cast clay drill bit type 103 - Ø350 mm	08103701	10,1
8.	Carbide cross drill bit type 103 - Ø175 mm	08103710	7,7
9.	Carbide button drill bit type 103 - Ø175 mm	08103730	8,4





## HOLLOW BAR TYPE 40

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	40/20	40/16
Outer diameter	d <sub>out</sub>	mm	37,0	37,0
Inner diameter	d <sub>inn</sub>	mm	19,7	11,7
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	770	970
Weight	m	kg/m <sup>3</sup>	6,0	7,6
Load at 0,2% yield <sup>b)</sup>	Re	kN	425	515
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	552	531
Ultimate load <sup>b)</sup>	Rm	kN	550	700
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	714	722
Thread direction		-	left	left
Standard stock length		m <sup>1</sup>	3-4	3-4

a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTIKEL NO.	WEIGHT [kg/pc]
<b>Hollow bar 40/20, steel grade acc to EN10297</b> <b>Cross section (A) = 770 mm<sup>2</sup> / Load at yield (Re) = 425 kN / Ultimate load (Rm) = 550 kN</b> <b>Geotech trapezium shaped left-hand thread over the entire length, other lengths on request</b>		
Hollow bar 40/20, 3 m, black	07400130	18,1
Hollow bar 40/20, 4 m, black	07400140	24,2
<b>Hollow bar 40/16, steel grade acc to EN10297</b> <b>Cross section (A) = 970 mm<sup>2</sup> / Load at yield (Re) = 515 kN / Ultimate load (Rm) = 700 kN</b> <b>Geotech trapezium shaped left-hand thread over the entire length, other lengths on request</b>		
Hollow bar 40/16, 3 m, black	07400230	22,8
Hollow bar 40/16, 4 m, black	07400240	30,5

ID	ACCESORIES	ARTIKEL NO.	WEIGHT [kg/pc]
1.	Coupler Ø54 x 140 mm, with middle stop, black	09400500	1,1
2.	Centralizer Ø90 mm, steel, black	09400850	0,5
3.	Hexagonal nut, KW65x40 mm, black	09400600	0,7
4.	Spherical nut, KW65x55 mm, black	09400650	1,0
5.	Wedge disc 12°, max. 2x 12°, black	09400860	1,5
6.	Washer plate 200x200x30 mm, hole Ø45 mm, black	09400920	9,1
7.	Cast clay drill bit type 40 - Ø150 mm	09400700	1,7
8.	Cast cross drill bit type 40 - Ø115 mm	09400720	1,4
9.	Cast cross drill bit type 40 - Ø130 mm	09400721	2,5
10.	Carbide cross drill bit type 40 - Ø76 mm	09400710	1,4
11.	Carbide button drill bit type 40 - Ø76 mm	094000731	1,5





## HOLLOW BAR TYPE 53

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	53/31	53/26
Outer diameter	d <sub>out</sub>	mm	50,5	50,5
Inner diameter	d <sub>inn</sub>	mm	30,8	25,3
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	1.260	1.500
Weight	m	kg/m <sup>3</sup>	9,9	11,8
Load at 0,2% yield <sup>b)</sup>	Re	kN	700	800
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	556	533
Ultimate load <sup>b)</sup>	Rm	kN	900	1.065
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	714	710
Thread direction		-	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4

- a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]
- b) characteristic value according to EN 1990
- c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
<b>Hollow bar 53/31, steel grade acc to EN10297</b> Cross section (A) = 1.260 mm <sup>2</sup> / Load at yield (Re) = 700 kN / Ultimate load (Rm) = 900 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 53/31, 3 m, black	07530130	29,7
Hollow bar 53/31, 4 m, black	07530140	39,6
<b>Hollow bar 53/26, steel grade acc to EN10297</b> Cross section (A) = 1.500 mm <sup>2</sup> / Load at yield (Re) = 800 kN / Ultimate load (Rm) = 1.065 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 53/26, 3 m, black	07530230	29,7
Hollow bar 53/26, 4 m, black	07530240	39,6

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø70 x 160 mm, with middle stop, black	09530500	2,1
2.	Centralizer Ø113 mm, steel, black	09530850	0,7
3.	Hexagonal nut, KW80x52 mm, black	09530600	1,3
4.	Spherical nut, KW80x70 mm, black	09530650	2,0
5.	Wedge disc 12°, max. 2x 12°	09530860	3,8
6.	Washer plate 145x145x30 mm, hole Ø58 mm, black	09530910	4,3
7.	Washer plate 220x220x35 mm, hole Ø58 mm, black	09530920	12,7
8.	Cast clay drill bit type 53 - Ø175 mm	09530700	2,5
9.	Cast cross drill bit type 53 - Ø130 mm	09530720	2,7
10.	Carbide cross drill bit type 53 - Ø115 mm	09530710	2,8
11.	Carbide button drill bit type 53 - Ø90 mm	09530731	1,9
12.	Adapter for hollow bar type 53 into drill bit type 72	09530790	0,9





## HOLLOW BAR TYPE 63

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	63/35	63/28
Outer diameter	d <sub>out</sub>	mm	59,5	59,5
Inner diameter	d <sub>inn</sub>	mm	35,3	28,8
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	1.800	2.130
Weight	m	kg/m <sup>3</sup>	14,1	16,7
Load at 0,2% yield <sup>b)</sup>	Re	kN	1.025	1.200
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	569	563
Ultimate load <sup>b)</sup>	Rm	kN	1.375	1.650
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	764	775
Thread direction		-	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4

- a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]
- b) characteristic value according to EN 1990
- c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 63/35, steel grade acc to EN10297 Cross section (A) = 1.800 mm <sup>2</sup> / Load at yield (Re) = 1.025 kN / Ultimate load (Rm) = 1.375 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 63/35, 3 m, black	07630130	42,4
Hollow bar 63/35, 4 m, black	07630140	56,6
Hollow bar 63/28, steel grade acc to EN10297 Cross section (A) = 2.130 mm <sup>2</sup> / Load at yield (Re) = 1.200 kN / Ultimate load (Rm) =1.650 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 63/28, 3 m, black	07630230	50,2
Hollow bar 63/28, 4 m, black	07630240	66,9

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø89 x 240 mm, with middle stop, black	08630500	5,7
2.	Centralizer Ø125 mm, steel, black	08630850	0,9
3.	Hexagonal nut, KW90x60 mm, black	08630600	1,7
4.	Spherical nut, KW90x80 mm, black	08630650	2,7
5.	Washer plate 230x230x55 mm, hole Ø70 mm, black	08630920	21,1
6.	Cast clay drill bit type 63 - Ø200 mm	08630700	6,0
7.	Cast clay drill bit type 63 - Ø250 mm	08630701	6,2
8.	Adapter for hollow bar type 63 into drill bit type 72	08630790	0,5
9.	Adapter for hollow bar type 63 into drill bit type 103	08630791	2,2





## HOLLOW BAR TYPE 72

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

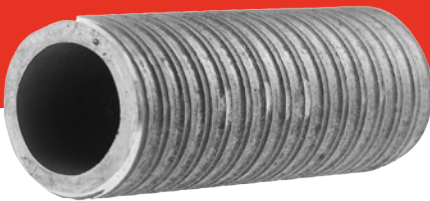
This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	72/35	72/30
Outer diameter	d <sub>out</sub>	mm	69,5	69,5
Inner diameter	d <sub>inn</sub>	mm	34,5	29,1
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	2.860	3.130
Weight	m	kg/m <sup>3</sup>	22,5	24,6
Load at 0,2% yield <sup>b)</sup>	Re	kN	1.500	1.650
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	524	527
Ultimate load <sup>b)</sup>	Rm	kN	2.050	2.250
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	717	719
Thread direction		-	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4

- a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]
- b) characteristic value according to EN 1990
- c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.



## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 72/35, steel grade acc to EN10297 Cross section (A) = 2.860 mm <sup>2</sup> / Load at yield (Re) = 1.500 kN / Ultimate load (Rm) = 2.050 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/35, 3 m, black	07720430	67,4
Hollow bar 72/35, 4 m, black	07720440	89,8
Hollow bar 72/30, steel grade acc to EN10297 Cross section (A) = 3.130 mm <sup>2</sup> / Load at yield (Re) = 1.650 kN / Ultimate load (Rm) = 2.250 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 72/30, 3 m, black	07720530	73,7
Hollow bar 72/30, 4 m, black	07720540	98,3

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø102 x 250 mm, with middle stop, black	08720500	7,6
2.	Centralizer Ø132 mm, steel, black	09720850	1,5
3.	Hexagonal nut, KW105x70 mm, black	09720600	2,9
4.	Spherical nut, KW105x90 mm, black	09720650	4,1
5.	Wedge disc 12°, max. 2x 12°	09720860	7,8
6.	Washer plate 250x250x40 mm, hole Ø80 mm, black	09720920	17,7
7.	Cast clay drill bit type 72 - Ø200 mm	09720700	6,1
8.	Cast clay drill bit type 72 - Ø280 mm	09720701	6,8
9.	Cast cross drill bit type 72 - Ø175 mm	09720720	5,0
10.	Carbide cross drill bit type 72 - Ø130 mm	09720710	4,3
11.	Carbide button drill bit type 72 - Ø115 mm	09720730	3,8
12.	Carbide button drill bit type 72 - Ø130 mm	09720731	4,9
13.	Adapter for hollow bar type 72 into drill bit type 103	09720790	2,6



## HOLLOW BAR TYPE 85

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	85/48	85/48
Outer diameter	d <sub>out</sub>	mm	81,5	81,5
Inner diameter	d <sub>inn</sub>	mm	46,2	36,1
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	3.540	4.195
Weight	m	kg/m <sup>3</sup>	27,8	32,9
Load at 0,2% yield <sup>b)</sup>	Re	kN	1.800	2.150
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	508	513
Ultimate load <sup>b)</sup>	Rm	kN	2.500	3.000
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	706	715
Thread direction		-	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4

- a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]
- b) characteristic value according to EN 1990
- c) calculated from the characteristic load and cross-sectional area

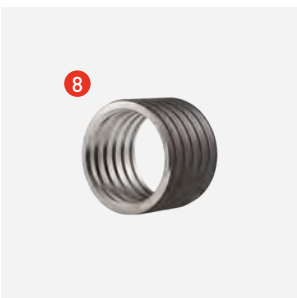
We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 85/48, steel grade acc to EN10297 Cross section (A) = 3.540 mm <sup>2</sup> / Load at yield (Re) = 1.800 kN / Ultimate load (Rm) = 2.500 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 85/48, 3 m, black	07850130	83,4
Hollow bar 85/48, 4 m, black	07850140	111,2
Hollow bar 85/38, steel grade acc to EN10297 Cross section (A) = 3.500 mm <sup>2</sup> / Load at yield (Re) = 1.800 kN / Ultimate load (Rm) = 2.240 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 85/38, 3 m, black	07850230	98,8
Hollow bar 85/38, 4 m, black	07850240	131,7

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø114 x 280 mm, with middle stop, black	08850500	9,8
2.	Centralizer Ø145 mm, steel, black	08850850	2,0
3.	Hexagonal nut, KW125x80 mm, black	08850600	4,7
4.	Spherical nut, KW125x100 mm, black	08850650	6,5
5.	Washer plate 240x240x50 mm, hole Ø95 mm, black	08850920	20,1
6.	Cast clay drill bit type 85 - Ø220 mm	08850700	7,9
7.	Cast clay drill bit type 85 - Ø280 mm	08850701	8,5
8.	Adapter for hollow bar type 85 into drill bit type 103	08850790	1,5
9.	Adapter for hollow bar type 85 into drill bit type 72	08850791	6,8



## HOLLOW BAR TYPE 103

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	103/67	103/57	103/52	103/43
Outer diameter	d <sub>out</sub>	mm	101,4	101,4	101,4	101,4
Inner diameter	d <sub>inn</sub>	mm	66,7	57,2	51,4	41,4
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	4.580	5.510	6.000	6.730
Weight	m	kg/m <sup>3</sup>	36,0	43,3	47,1	52,8
Load at 0,2% yield <sup>b)</sup>	Re	kN	2.300	2.800	3.000	3.360
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	502	508	500	499
Ultimate load <sup>b)</sup>	Rm	kN	3.250	3.900	4.250	4.700
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	710	708	708	698
Thread direction		-	right	right	right	right
Standard stock length		m <sup>1</sup>	3-4	3-4	3-4	4

a) calculated from the weight [A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]  
b) characteristic value according to EN 1990  
c) calculated from the characteristic load and cross-sectional area

We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
<b>Hollow bar 103/67, steel grade acc to EN10297</b> Cross section (A) = 4.580 mm <sup>2</sup> / Load at yield (Re) = 2.300 kN / Ultimate load (Rm) = 3.250 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 103/67, 3 m, black	07103130	107,9
Hollow bar 103/67, 4 m, black	07103140	143,8
<b>Hollow bar 103/57, steel grade acc to EN10297</b> Cross section (A) = 5.510 mm <sup>2</sup> / Load at yield (Re) = 2.800 kN / Ultimate load (Rm) = 3.900 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 103/57, 3 m, black	07103230	129,8
Hollow bar 103/57, 4 m, black	07103240	173,0
<b>Hollow bar 103/52, steel grade acc to EN10297</b> Cross section (A) = 6.000 mm <sup>2</sup> / Load at yield (Re) = 3.000 kN / Ultimate load (Rm) = 4.250 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 103/52, 3 m, black	07103330	141,3
Hollow bar 103/52, 4 m, black	07103340	188,4
<b>Hollow bar 103/43, steel grade acc to EN10297</b> Cross section (A) = 6.730 mm <sup>2</sup> / Load at yield (Re) = 3.360 kN / Ultimate load (Rm) = 4.700 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 103/43, 4 m, black	07103440	211,3



ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø140 x 300 mm, with middle stop, black	08103500	15,4
2.	Centralizer Ø170 mm, steel, black	08103850	2,6
3.	Hexagonal nut, KW155x101 mm, black	08103600	9,2
4.	Spherical nut, KW155x120 mm, black	08103650	13,3
5.	Washer plate 285x285x70 mm, hole Ø110 mm, black	08103920	39,4
6.	Cast clay drill bit type 103 - Ø300 mm	08103700	8,9
7.	Cast clay drill bit type 103 - Ø350 mm	08103701	10,1
8.	Carbide cross drill bit type 103 - Ø175 mm	08103710	7,7
9.	Carbide button drill bit type 103 - Ø175 mm	08103730	8,4



## HOLLOW BAR TYPE 117

Hollow bars from Geotech Metals are produced using high-strength steel. Due to their composition and controlled fabrication, these steels have high yield strength, good impact strength, and excellent weldability. The system is self-drilling, ideal for drilling with percussion or high torque drilling without percussion, and fast to install.

This system fulfills the design requirements specified by the following European Standards:

- EN 1537 Execution of special geotechnical works - Ground Anchors
- EN 14199 Execution of special geotechnical works - Micropiles
- EN 14490 Execution of special geotechnical works - Soil nailing

It is suitable for temporary and permanent applications. Embedding the hollow bar in a cement stone body creates a durable product that is protected against corrosion.

If required due to local conditions, additional corrosion protection can be realized by:

- sacrificial corrosion (design principle)
- galvanizing according to EN-ISO 1461
- duplex coating according to EN 15773



## Specifications

ITEM		UNIT	117/64	117/54
Outer diameter	d <sub>out</sub>	mm	114,0	114,0
Inner diameter	d <sub>inn</sub>	mm	64,1	54,0
Cross-sectional area <sup>a)</sup>	A	mm <sup>2</sup>	6.980	7.920
Weight	m	kg/m <sup>3</sup>	54,8	62,2
Load at 0,2% yield <sup>b)</sup>	Re	kN	3.500	3.950
Yield strength <sup>c)</sup>	f <sub>0,2</sub>	N/mm <sup>3</sup>	501	499
Ultimate load <sup>b)</sup>	Rm	kN	4.900	5.500
Tensile strength <sup>c)</sup>	f <sub>u,a</sub>	N/mm <sup>2</sup>	702	694
Thread direction		-	right	right
Standard stock length		m <sup>1</sup>	4	4

- a) calculated from the weight  
[A = 10<sup>6</sup> x m /7.850 [kg/m<sup>3</sup>]]
- b) characteristic value according to EN 1990
- c) calculated from the characteristic load and cross-sectional area

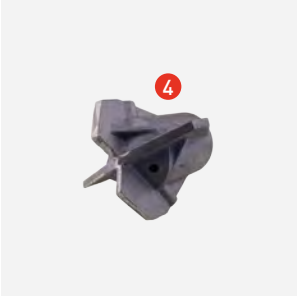
We offer a complete stock of all necessary components, such as couplers, nuts, drill bits (for various soil conditions), centralizers and washer plates. Flushing rods, flushing rings and other drill rig components are also available.

We reserve the right to change or correct the data in this specification without prior notification.

## Product specifications

ITEM	ARTICLE NO.	WEIGHT [kg/pc]
Hollow bar 117/64, steel grade acc to EN10297 Cross section (A) = 6.980 mm <sup>2</sup> / Load at yield (Re) = 3.500 kN / Ultimate load (Rm) = 4.900 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 117/64, 4 m, black	07117140	219,2
Hollow bar 117/54, steel grade acc to EN10297 Cross section (A) = 7.920 mm <sup>2</sup> / Load at yield (Re) = 3.950 kN / Ultimate load (Rm) = 5.500 kN Geotech trapezium shaped right-hand thread over the entire length, other lengths on request		
Hollow bar 117/54, 4 m, black	07117240	248,7

ID	ACCESORIES	ARTICLE NO.	WEIGHT [kg/pc]
1.	Coupler Ø159 x 320 mm, with middle stop, black	08117500	22,9
2.	Hexagonal nut, KW90x60 mm, black	08117600	12,2
3.	Washer plate 300x300x70 mm, hole Ø125 mm, black	08117920	42,7
4.	Steel clay drill bit type 117 - Ø300 mm	08117700	24,0





## DRILLING TOOLS

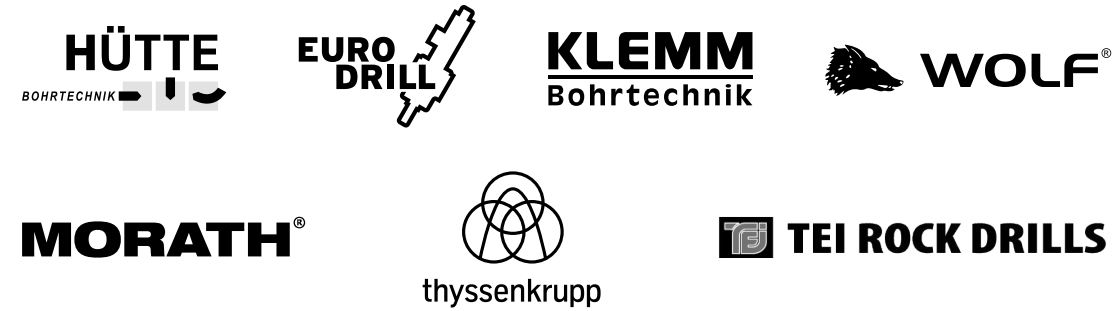
For the installation of our hollow bar systems we provide a wide range of flushing rods and flushing rings.

The flushing rods are produced of hardened high worthy drill steel and contain a good wear resistance. Beside that they have a practical geometry.

Our stock contains flushing rods for the following shank adapters:

- T45
- H55
- H64
- Rt70
- C112

This equipment is easy to mount and we offer on a wide range of models for common used hydraulic drifters by the following brands:



## Specifications

FLUSHING ROD Ø100 MM		
SHANK	ITEM	ARTICLE NO.
T45	T45/Geotech 32 - LHT	BAT45032
	T45/Geotech 40 - LHT	BAT45040
	T45/Geotech 53 - RHT	BAT45053
	T45/Geotech 63 - RHT	BAT45063
H55	T55/Geotech 32 - LHT	BAH55032
	T55/Geotech 40 - LHT	BAH55040
	T55/Geotech 53 - RHT	BAH55053
	T55/Geotech 63 - RHT	BAH55063
	T55/Geotech 72 - RHT	BAH55072
H64	T64/Geotech 40 - LHT	BAH64040
	T64/Geotech 53 - RHT	BAH64053
	T64/Geotech 63 - RHT	BAH64063
	T64/Geotech 72 - RHT	BAH64072
Rt70	Rt70/Geotech 53 - RHT	BART7053
	Rt70/Geotech 63 - RHT	BART7063
	Rt70/Geotech 72 - RHT	BART7072
FLUSHING RING Ø100 MM		
	Flushing ring Ø100 mm, 2" connection (incl 4 seals)	BA100001
	Set of seal rings 120/100x12 (4 pieces)	BA100002



Flushing rod  
Ø 100 mm



Flushing ring  
incl set of seals



Specifications



FLUSHING ROD Ø140 MM		
SHANK	ITEM	ARTICLE NO.
H64	H64/H100 - RHT	BAH64100
FLUSHING RING Ø140 MM		
	Flushing ring Ø140 mm, 2" connection (incl 4 seals)	BA140001
	Set of seal rings 160/140x15 (4 pieces)	BA140002

FLUSHING ROD Ø170 MM		
SHANK	ITEM	ARTICLE NO.
C112	C112/H145-H100 - RHT	BA112100
FLUSHING RING Ø170 MM		
	Flushing ring Ø170 mm, 2" connection (incl 4 seals)	BA170001
	Set of seal rings 190/170x15 (4 pieces)	BA170002

PERCUSSION ADAPTER		
H100	H100/Geotech 53 - RHT	BA100053
	H100/Geotech 63 - RHT	BA100063
	H100/Geotech 72 - RHT	BA100072
	H100/Geotech 85 - RHT	BA100085
H145	H145/Geotech 103 - RHT	BA145103
	H145/Geotech 117 - RHT	BA145117

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