





KELLY BARS BARS & ROTARY DRILLING DRILLING

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TABLE OF CONTENTS

Innovation, process efficiency, diversification, organizational development are our medium and long-term goals.

The heart of Sip&T are the people who have always been with us and saw the Company growing, going through hardship and overcoming crises, together with a new generation of people who head towards the new goals with passion and dedication today.

The management strongly believes in the team, is sensitive to proposals and ideas of each and everyone of them, and encourages synergy, collaboration and sharing.

We study and act on all aspects of our business to improve it, because it is our firm belief that only by carefully looking at every detail we can continue to ensure the highest standards of quality and, thus, be a point of reference in our sector, capable of creating value and long-term trusted relationships.

The Company looks at the future with passion and curiosity, as there are many ongoing plans of expansion, spanning from the enlargement of the production site to the organizational system, and the development of corporate organization culture.

Finally, together with its propensity for internationalization, Sip&T keeps a special consideration for the local territory, it is always attentive to the social, cultural and industrial dynamics, in which it has been building its reputation and relationships based on reciprocity and cooperation for almost three decades.

KELLY BARS	04
ROTARY TOOLS GENERAL INFORMATION	12
AUGERS	16
Soil Auger	18
Flat Rock Auger	19
Flat Rock Auger - without pilot bit	
Progressive Rock Auger	21
Flat Rock Auger with Exstension Arm	22
PRA-S LINE	24
PRA-S Line	25
DRILLING BUCKETS	
Soil Bucket	
Rock Bucket	29
Cleaning Bucket	30
Belling Bucket	31
Core Barrel	33
Core Barrel with Quick Change Bar	34
Core Barrel Cross Cutter	35
Core Barrel Roller Bits	36
Core Barrel Roller Bits-S Line	37
	38
	40
CASINGS	42
	58
CFA AUGERS AND EXTENSIONS	62
FDP TOOLS AND SMOOTH RODS	66
SOIL MIXING TIPS AND SMOOTH RODS	72
STOP END ELEMENTS	76
SPARES AND SERVICE	80





Sip&t is a highly specialized manufacturer of telescopic kelly bars which can be employed with any type of piling rig available in the market. Sip&t kelly bars are designed by technicians and engineers with over twenty years of experience. The construction and welding process involved in the manufacture of the SIP&T kelly bars is done using high- quality materials, including high mechanical features steel; the accurate engineering process is certified to ISO 9001 and ISO 14001 standards of origin and quality, to guarantee the long life and reliability of the product. The purpose of the kelly bars is to transfer both the torque and crowd force (produced by the base rig) to the drilling tools. Main components of a kelly bar are:

- ⊘ High-quality seamless mechanical pipes
- Orive rails made of special steel;
- Top flange for connecting the kelly bar to the kelly guide
- OUpper shock absorbing system
- Terminal joints on each telescopic pipe, provided to transfer torque and crowd force to the kelly bar
- Lower shock absorber (normally by heavy duty coil spring or discs)
- Drive stub (or kelly foot) to connect the drilling tool to the kelly bar.

LOCKING KELLY BARS

The locking kelly bar system is specially designed for drilling into hard materials, and when crowd force application is required. Locking kelly bars are provided with drive rails, which are designed with locking pockets along their length and with corresponding terminal joints locking guides. The purpose is to interlock each telescopic element to the inner following one in order to apply the maximum torque and crowd force developed by the base rig. Therefore, the rotary table's inner drive is also equipped with locking pockets. When extracting the locking bar from down the hole, the combination of lifting and counterclockwise rotation allows the telescopic element to unlock. Locking kelly bars are usually supplied with 3 or 4 telescopic elements, but alternatively they're available as non-lockable friction kellies.

NOISE DAMPING SYSTEM

All kelly bars can optionally be supplied with a sound damping system. This consists of sound absorbing pads which are glued into the recesses between the drive keys on the outer surface of the outer kelly section. The pads are protected against mechanical damage by metal sheeting. The system mainly reduces disturbing high frequency sound emissions that are generated primarily by the jerky. Kelly movements are amplified by the hollow kelly sections. The sound damping system can also be fitted retrospectively to existing kelly bars.





Our Sip&t Kelly bars are compatible with all common top drive rotary

- drilling rigs. We provide the perfect solution as:
- Special Kelly bars (Rock and Low-Headroom Kellys)
- Modular systems for multiple Kellys
- ⊘ All kelly bars spare parts
- Further product development









FEA Finite Element Analysis

Engineering capabilities based on state-of-the-art CAD and FEM software



SAW welding process An automatic submerged arch welding process is necessary when using thick sheets of steel and long welds



NDT

Non Destructive Test Nondestructive testing methods, listed below, are routinely applied to avoid significant hazard or economic loss. Visual Test (VT) Liquid Penetrate Test (LPI) Magnetic Particle Inspection (MPI) Ultrasonic Testing (UT)



KELLY HEAD

It can be short when the Kelly guide is not needed, or long when it's needed. No laborious and costly modifications or changes in measures of the Kelly guide are needed when using a long Kelly head. Moreover, the long Kelly head helps when working with uncased piles. A ring welded on the upper part of the outermost section keeps the Kelly centred inside the rotation head.



DRAINING HOLES

Draining holes above the drive shells of the Kelly bar enable working at maximum extraction speed in fluidsupported boreholes with no piston effect. The flow of the fluid rinses and cleans the Kelly bar concurrently.



SPLIT PRESSURE RING

Thanks to the split pressure ring, need for maintenance and wear parts are reduced, as replacing the whole stop ring would not be required.







STRENGTHENING RING

This ring increases the life span of all terminal joints since it can be simply substituted when damaged, without needing further complicated and expensive repairs or replacements that involves the whole terminal joint.



OPTIONAL SOUND ABSORPTION

All kelly bars are optionally available with a sound damping system, which can, where possible, be installed retrospectively to pre-existing kelly bars. This system can reduce sound emissions of up to 50%.



QUALITY OF MATERIALS

There's no room for compromise when it comes to the quality of the materials used to meet the special requirements in kelly drilling operations:

- Designed to achieve highest drilling performances
- ⊘ Durability & strength
- ⊗ Top-notch materials
- Highest manufacturing quality
- S Ideal wearing protection
- 😣 Guaranteed reliability





SERVICE, INSPECTION & MAINTANANCE

Each kelly bar getting serviced is logged and signed off as proof of maintenance; inspection and maintenance under construction site standard conditions are available on request worldwide.



REFURBISHMENT & REPAIR

Refurbishment and repairs for all kelly bars under construction site conditions are available on request worldwide.



ORIGINAL SIP&T WEAR AND SPARE PARTS

We stock the most essential spare and wear parts, along with special repair kits suitable for all common kelly bars.





Since 1996 the main goal of SIP&T has been to manufacture a wide range of rotary tools with the highest level of reliability and performance when it comes to vertical foundations: the constant search to meet and exceed these high standards has always been the tangible philosophy that made SIP&T noticeable in construction sites around the world. Over the years, numerous efforts have been made by SIP&T staff and engineers to be able to offer clients the best power tools and kelly bars suitable for excavations. This concept, combined with competent feedback from customers and drill operators, and with the constant research and activity of our technicians on all kinds of construction sites works and soils around the world, has recently led to the creation of our new SHD range, as it can simply be described as SUPER HEAVY DUTY.

The tools in the SHD line have been launched to be a line of products that aims to exceed clients' expectations and satisfaction. More precisely, the line is manufactured according to different rigs' torque and soil-rock hardness. Such a line of drilling tools cannot be contemplated without prioritising basic attributes:

- Remarkable quality
- ⊘ Greatest reliability
- Highest safety levels
- ⊘ Lowest maintenance
- ⊘ Long lifetime
- ⊘ Customized design

Sip&t is fully committed to their industry and adding value for their customers. We're a fast growing company that believes in finding the best solutions for customers, and that is committed to consistently develop and deliver high-quality and advanced technology products. This approach implies prioritising customer relations and service. Counting several distributors all over the world, we are glad to be able to carry forward our mission worldwide. Short delivery times (even for special tools and components), highly flexible production line, experienced technicians always happy to assist clients on site, and extensive stocks are imperative: client satisfaction is the key criteria for all tools and components we make.





SOIL & ROCK HARDNESS

	Compr Strei (Mj	essive ngth pa)		9	Sof	t		ŀ	1ed	liur	n	ł	Har	d										V	ery	ha	rd									
SEDIMENTARY ROCKS	min.	max.	o	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
Gravel,Loam,Silica,Clay,Sand	<5	30																																		_
Breccia	10	45																								F	F		Π				Ì			_
Conglomerate	80	150																	Ē								F		Π				Ì			_
Sandstone	120	200																											Π							_
Argillite	10	100																								F	F		Π				Ì			_
Tuff	5	10																											Π							_
Limestone,Dolostone	55	220					ĺ																		Γ	ĺ	ĺ		Π	Ì			Ì		Ì	
Travetine	20	60																									Ĺ	Ĺ	Π				Ì			_
Gypsum,Halite	<5	30																															Ì			
Carbonate	10	25					Ĺ	Ē	Ĺ									Ē						Ē	Ē		Ĺ	Ĺ	Π				Ì			_
Flint (o Jasper)	-	190																															Ì		Ì	_
Phosphorite	<5	10					Ē	Ē	Ē									Ē						Γ	Γ		Ē	İ	Π				Ì			_
Alabaster	55	120					Ē											Γ						Γ	Γ	Ē	Ē		Π							_
Anhydrite	100	130		İ			F	Γ										Ē	İ							F	F		Π	T			Ì			_
Marl	<5	30					Ē	Γ	Ē			Γ						Γ	Ĺ				Γ	Γ	Γ	Ē	Ē	Ē	Π				Ì			_
Coal	5	500																								F	F		Π				Ì			_
Diatomite	10	100																Ē						Ē	Ē		Ĺ	Ĺ	Π				Ì			_
METAMORPHIC ROCKS	min.	max.	o	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
Marble	90	220									Γ																		\square				Ì			_
Gneiss	110	240																											\square				ĺ		Ì	_
Andresia	70	200																											\square	Ì			Ì			
Anphibolite	170	280					Γ	Γ																									ĺ			_
Schists	5	100																															Î		Î	_
Quarzite	150	300																															Ì			_
Phyllite, Mica Schist, Calcareous Schist	70	100					Γ	Γ										Γ								Γ	Γ						ĺ			_
Paragneiss, Ortogneiss	110	160																																		
Chlorite schist	10	50																																		
Serpentinite	-	>300																																		
IGNEOUS ROCKS	min.	max.	o	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
Basalt	120	300					Γ	Γ			Γ		Γ																							
Porphyry	180	>300																																		
Granite	130	250					Γ	Γ																												
Diorite, Labradorite	180	300																																		
Syenite	150	270																																		
Gabbro	160	300																															Î			_
Andesite	180	>300																																		
Trachyte	140	180																																		
Grandioroto, Tonalite, Grandiorite	150	300																																		
Rhyolite	160	190																																		
Leucititi	110	140																																		
Obsidian, Pomice	100	120																																		
Dacite	140	170																																		
Peridodite	-	>300																																		
Pegmatite, Aplite, Porphryte	100	250																											\square							



RECOMMENDED CHART

Rock Compressive Strength (MPa)



Rock Quality Designation RQD (%)



Augers

Sip&t production includes a wide range of augers for drilling layers of dry soil and rock in order to meet the requirements of different piles diameter.

Their shape can be straight or conical and they are designed in two different ways:

Single start cutting edge: suitable for drilling soils in presence of water and rock layers up to diameter 1000 mm. They are particularly indicated in case of casings application.

Double start cutting edge: suitable for rock layers and bored pile over diameter 1000 mm Conical auger is used for drilling very hard rock formations.

The diameter of its flights increases gradually, forming a spiral, and round shank chisels are placed along the borderline up to the cutting edge, so that rock formation can be ripped progressively with excellent results.

Diameter and thickness of the central pipe of all augers, as well as the thickness and the pitch of the flights, are designed according to the rotary torque and gravel compressive strength.

All flights thickness are provided with special wear protection HB 600/900.

They can be supplied with different type of Teeth and Round Shank Chisel based on soil and rock hardness. Also, their number and inclination are obtained through a special software capable of guaranteeing high productivity.

Augers diameters match perfectly all common casings screw type.

Their dimensions can be changed on Client needs and they are available on request.

The weights are approximate values.

Complete design is always customized according to rig's torque, crowd and extraction force.





SOIL AUGER TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Flights thickness of 30 mm
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along flights thickness
- Single cut up to a diameter of 1200 mm
- > Fitted with Betek teeth and interchangeable bit
- > Collar plates for calibrating the cutting diameter

APPLICATION

Stiff to hard silt and clay, medium dense to dense sand, gravel (< 12.5 Mpa)

Double cut is recommended in uncased bores or for bigger diameters and for secant pile walls

D	Φοd	WEIGHT
mm	mm	kg
520	620/540	545
650	750/670	618
780	880/800	738
900	1000/920	885
980	1080/1000	957
1060	1180/1100	1060
1180	1300/1220	1200
1350	1500/1400	1423
1650	1800/1700	1973
1830	2000/1880	2795

Other diameters and lengths on request All weights are approximate values





FLAT ROCK AUGER TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Flights thickness of 30 mm
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along flights thickness
- Single cut up to a diameter of 1200 mm
- > Fitted with Betek chisels and interchangeable bit
- > Collar plates for calibrating the cutting diameter
- > Blades in Hardox HB 500 with holes for mounting
- > Betek chisels

APPLICATION

Very dense sand and gravel, weak rock (< 12.5 Mpa) Double cut is recommended in uncased bores or for bigger diameters and secant pile walls

D	Φod	WEIGHT
mm	mm	kg
520	620/540	500
650	750/670	595
780	880/800	705
900	1000/920	890
980	1080/1000	965
1060	1180/1100	1116
1180	1300/1220	1270
1350	1500/1400	1483
1650	1800/1700	2222
1830	2000/1880	2905

Other diameters and lengths on request All weights are approximate values





FLAT ROCK AUGER without pilot bit TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Flights thickness of 30 mm
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along flights thickness
- Single cut up to a diameter of 1200 mm
- > Fitted with Betek chisels and interchangeable bit
- S Collar plates for calibrating the cutting diameter
- > Blades in Hardox HB 500 with holes for mounting
- S Betek chisels

APPLICATION

Moderately weak to moderately strong rock (< 12.5 Mpa) Very suitable in fractured rock

D	Φ od	WEIGHT
mm	mm	kg
520	620/540	500
650	750/670	595
780	880/800	705
900	1000/920	890
980	1080/1000	965
1060	1180/1100	1116
1180	1300/1220	1270
1350	1500/1400	1483
1650	1800/1700	2222
1830	2000/1880	2905

Other diameters and lengths on request All weights are approximate values





PROGRESSIVE ROCK AUGER TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Flights thickness of 30 mm
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along flights thickness
- Single cut up to a diameter of 1200 mm
- > Fitted with Betek chisels and interchangeable bit

APPLICATION

Single pitch: moderately weak to moderately strong rock (12.5 - 50 Mpa) Double pitch: strong rock (50 - 100 Mpa)

D	Φ od	WEIGHT
mm	mm	kg
520	620/540	500
650	750/670	595
780	880/800	705
900	1000/920	890
980	1080/1000	965
1060	1180/1100	1116
1180	1300/1220	1270
1350	1500/1400	1483
1650	1800/1700	2222
1830	2000/1880	2905

Other diameters and lengths on request All weights are approximate values







FLAT ROCK AUGER with Extension Arm

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Flights thickness of 30 mm
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along flights thickness
- > Single cut
- > Fitted with Betek chisels and interchangeable bit
- S Collar plate for calibrating the cutting diameter
- > Blades in Hardox HB 500 with holes for mounting
- S Betek chisels

APPLICATION

Auger fitted with extension arm to install the casing with grater ease.

D	REAMERED D	Φοd	WEIGHT
mm	mm	mm	kg
650	750	750/670	595
780	880	880/800	705
900	1000	1000/920	890
980	1080	1080/1000	965
1060	1180	1180/1100	1116
1180	1300	1300/1220	1270
1350	1500	1500/1400	1483
1650	1800	1800/1700	2222
1830	2000	2000/1880	2905
1650 1830	1800 2000	1800/1700 2000/1880	2222 2905

Other diameters and lengths on request All weights are approximate values









Designed to handle the most difficult drilling conditions, this auger is the evolution of years of drilling experience; it has been studied to work in very hard rock strata having a Compressive Strength more than 100 MPa. The geometry of the chisels arrangement is optimized to reach excellent cutting performance, the flights pitch has been specifically designed to get better output characteristics for the high torque drilling rigs in order to improve material handling.

Auger main features are:

- High and fast drilling capacity optimized cutting geometry yields fast drilling rates, due to its flight which increases in diameters progressively and its special chisels and holders, this auger displays excellent ripping characteristics
- Low and easy maintenance replaceable strips in Hardox HB 600 are highly wear resistant while the special setting angle allows the Betek round shank chisels to sharpen themselves as they turn
- High operational reliability quality and design that come with 25 years of experience in the design and production of rotary drilling tools
- Complete design is always customized according to rig's torque, crowd and extraction force

PRA-S Line

FEATURES

- > 200 kelly box made of heat-treated cast steel with two locking pins
- > Auger flight thickness of 50 mm
- > Wear strips as wear protection along flights thickness
- Single pitch for all length
- > Fitted with Betek chisels and interchangeable bit

APPLICATION

Strong rock (50 - 100 Mpa)

D	Φod	WEIGHT
mm	mm	kg
520	620/540	
650	750/670	
780	880/800	790
900	1000/920	896
980	1080/1000	950
1060	1180/1100	1043
1180	1300/1220	1097
1350	1500/1400	1126
1650	1800/1700	1600
1830	2000/1880	1968

Other diameters and lengths on request All weights are approximate values



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Buckets

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Buckets are recommended for drilling layers of soil and rock in presence of water and when the drilling technology uses bentonite.

As result of different job site reports, buckets are designed in two different ways:

- Single opening: suitable for fine grained soils and bored pile up to diameter 1000 mm. They are particularly indicated in case of casings application and coarse gravel.
- Double opening: suitable for fine grained soils and bored pile over diameter 1000 mm. They are particularly indicated for secant pile walls.

Designed with a rotating bottom to load drilled material; a vent pipe making the water or bentonite pass through reduces the pressure on the tool so that it can be lifted up easily.

Provided with mechanical opening system to unlock bottom parts and release fastly drilled material they can be supplied with different types of Teeth and Round Shank Chisel accordingly to the soil and rock hardness.

Buckets diameters match perfectly all common casings screw type.

Their dimensions can be changed on client needs and are available on request.

The weights are approximate values.

Complete design is always customized according to rig's torque, crowd and extraction force.



SOIL BUCKET

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along body and bottoms
- Single cut up to a diameter of 1200 mm
- > Fitted with Betek teeth and interchangeable bit
- ➢ Rotating bottom in Hardox HB 500
- S The bottom gate can be opened manually or mechanically via a spring loaded pin
- S A ventilation pipe prevents the development of a vacuum during extraction

APPLICATION

Soft to hard silt and clay, loose to dense sand and gravel (0 - 12.5 MPa)

Single cut up to coarse gravel

Double cut is recommended in uncased bores or for bigger diameters and for secant pile walls

D	Φοd	WEIGHT
mm	mm	kg
520	620/540	623
650	750/670	866
780	880/800	1106
900	1000/920	1368
980	1080/1000	1461
1060	1180/1100	1670
1180	1300/1220	1880
1350	1500/1400	2305
1650	1800/1700	2915
1830	2000/1880	3850

Other diameters and lengths on request All weights are approximate values



on request



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ROCK BUCKET TECHNICAL DATA

FEATURES

- > 200 kelly box made of heat-treated cast steel with two locking pins
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along body and bottoms
- Single cut up to a diameter of 1200 mm
- \bigotimes Fitted with Betek chisels and interchangeable bit
- Rotating bottom in Hardox HB 500
- > The bottom gate can be opened manually or mechanically via a spring loaded pin
- A ventilation pipe prevents the development of a vacuum during extraction

APPLICATION

Very dense sand and gravel, weak rock (12.5 - 50 MPa)

Single cut up to coarse gravel

Double cut is recommended in uncased bores or for bigger diameters and for secant pile walls

D	Фор	WEIGHT
mm	mm	kg
520	620/540	638
650	750/670	900
780	880/800	1100
900	1000/920	1304
980	1080/1000	1460
1060	1180/1100	1666
1180	1300/1220	1838
1350	1500/1400	2447
1650	1800/1700	3440
1830	2000/1880	3860

Other diameters and lengths on request All weights are approximate values





CLEANING BUCKET TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- Betek Tungstuds (uncased) or wear strips (cased) as wear protection along body and bottoms
- Single cut up to a diameter of 1200 mm
- > Blades in Hardox HB 500
- > The bottom gate can be opened manually or mechanically via a spring loaded pin
- A ventilation pipe prevents the development of a vacuum during extraction

APPLICATION

Cleaning the bottom of the borehole

D	Фор	WEIGHT
mm	mm	kg
520	620/540	567
650	750/670	811
780	880/800	987
900	1000/920	1183
980	1080/1000	1325
1060	1180/1100	1513
1180	1300/1220	1676
1350	1500/1400	2202
1650	1800/1700	2430
1830	2000/1880	2670

Other diameters and lengths on request All weights are approximate values





BELLING BUCKET TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- Betek TungStuds wear protection along bottoms thickness (uncased)
- Wear strips as wear protection along bottoms thickness (cased
- Single cut up to a diameter of 1200 mm Blades in Hardox HB 500
- > The bottom gate can be opened manually or
- > mechanically via a spring loaded pin
- > Mobile carriage in Hardox HB 500
- > Fitted with Betek teeth or chisels

APPLICATION

A belling bucket is used for enlarging the pile base in stable (mainly cohesive) soil conditions. The cutting arms are gradually opened by applying vertical crowd force on a push rod and a leverage system.

The spoil falls into the open shell of the bucket. When extracting the tool from the borehole, the upward movement of the kelly bar transmits the pull onto the push rod and the cutting arms are closed. The maximum opening angle of the bell is about 60° and the standard increase of diameter is about 2 - 3 times the shaft diameter

A Closed Reamer	B Open Reamer	H Tool Height	Weight
mm	mm	mm	kg
500	1000	1800	952
600	1200	2000	1374
700	1400	2200	1460
800	1600	2400	1535
900	1800	2600	1680
1000	2000	2800	1810
1100	2200	3000	1930
1200	2400	3200	2140
1300	2600	3400	2350
1400	2800	3600	2500
1500	3000	3800	2680
	A Closed Reamer Closed Reamer 500 600 700 800 900 1000 1100 1300 1400 1500	A B Closed Reamer Open Reamer Mm mm 500 1000 600 1200 600 1400 700 1400 900 1600 1000 2200 1100 2200 1300 2600 1400 2800	A Closed Reamer B Open Reamer H Tool Height mm mm 500 1000 500 1000 600 1200 700 1400 700 1400 900 1600 900 1800 1000 2400 1100 2000 1100 2200 1100 2200 1300 2400 1400 3400 1400 3800

Other diameters and lengths on request All weights are approximate values





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Core Barrel is used for cutting annular ring in rock, concrete and in steel-reinforced concrete; consequentely the centre core can be broken using chisel, rock auger or Cross Core Barrel.

When using core barrels, it is possible to considerably increase pressure and torque on the cutting ring, which can be equipped with different types of round shank chisel, quick change bars and roller bits.

Core Barrel diameters match perfectly all common casings screw type.

Their dimensions can be changed on client needs and they are available on request. The weights are approximate values.

Complete design is always customized according to rig's torque, crowd and extraction force.

CORE BARREL TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Wear strips or Tungstuds wear protection on the barrel body
- > Fitted with Betek chisels
- ➢ Bottom ring in Hardox HB 500

APPLICATION

Up to strong rock (50 - 100 Mpa) Suitable for cutting through fissured rock

Φod	WEIGHT
mm	kg
620/540	468
750/670	698
880/800	756
1000/920	895
1080/1000	986
1180/1100	1421
1300/1220	1200
1500/1400	1350
1800/1700	1880
2000/1880	2060
	D mm 620/540 750/670 880/800 1000/920 1080/1000 1180/1100 1300/1220 1500/1400 1800/1700 2000/1880

Other diameters and lengths on request All weights are approximate values





CORE BARREL WITH QUICK CHANGE BARS TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- > Wear strips or Tungstuds wear protection on the barrel body
- > Fitted with Betek quick change bars
- > Bottom ring in Hardox HB 500

APPLICATION

Up to strong rock (50 - 100 Mpa) Suitable for cutting through fissured rock

D	Φοd	WEIGHT
mm	mm	kg
520	620/540	468
650	750/670	698
780	880/800	756
900	1000/920	895
980	1080/1000	986
1060	1180/1100	1421
1180	1300/1220	1200
1350	1500/1400	1350
1650	1800/1700	1880
1830	2000/1880	2060



(OD)

Other diameters and lengths on request All weights are approximate values




CORE BARREL CROSS CUTTER TECHNICAL DATA

FEATURES

- > 200 kelly box made of heat-treated cast steel with two locking pins
- S Wear strips or Tungstuds wear protection on the barrel body
- > Fitted with Betek quick change bars
- > Bottom ring in Hardox HB 500
- > Blades in Hardox HB 500

APPLICATION

A Cross-Cutter is used to break rock cores (50 – 100 MPa) which remain in the borehole after using a core barrel.

The core is broken with round shank chisels. The cuttings are then removed with buckets



D	Φ od	WEIGHT
mm	mm	kg
520	620/540	640
650	750/670	900
780	880/800	1070
900	1000/920	1230
980	1080/1000	1300
1060	1180/1100	1440
1180	1300/1220	1530
1350	1500/1400	1875
1650	1800/1700	2250
1830	2000/1880	2750

Other diameters and lengths on request All weights are approximate values





CORE BARREL ROLLER BITS TECHNICAL DATA

FEATURES

- 200 kelly box made of heat-treated cast steel with two locking pins
- S Wear strips or Tungstuds wear protection on the barrel body
- > Fitted with brand new welded roller bits
- > Bottom ring in Hardox HB 500

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APPLICATION

Roller bit core barrel is used in very strong rock formations (compressive strength > 100 MPa) It uses welded roller bits for cutting the annular groove with a width of 220 or 320 mm The core barrel is extracted from the bore after coring a length of about 1 m

D	Φod	WEIGHT
mm	mm	kg
520	620/540	
650	750/670	
780	880/800	940
900	1000/920	1075
980	1080/1000	1180
1060	1180/1100	1210
1180	1300/1220	1320
1350	1500/1400	1620
1650	1800/1700	2190
1830	2000/1880	2245

Other diameters and lengths on request All weights are approximate values





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on request

CORE BARREL ROLLER BITS-S Line TECHNICAL DATA

FEATURES

- > 200 kelly box made of heat-treated cast steel with two locking pins
- S Wear strips or Tungstuds wear protection on the barrel body
- > Fitted with quick change roller bits
- > Bottom rings in Hardox HB 500

APPLICATION

Roller bit core barrel-S *Line* is used in compact strong rock formations (compressive strength > 100 MPa)

Cutting ring with quick change roller bits

Spiral round the cylinder, reamers and depth limiters to optimize drilling performance

D	Φod	WEIGHT
mm	mm	kg
780	880/800	1050
900	1000/920	1080
980	1080/1000	1300
1060	1180/1100	1450
1180	1300/1220	1600
1350	1500/1400	1800
1650	1800/1700	2250
1830	2000/1880	2550

Other diameters and lengths on request All weights are approximate values



Standard Line Tooling

Our STANDARD Line is custom-built design too with a robust welded configuration achieved through high-tensile materials, interchangeable drilling teeth or chisels and main parts armored against wear. It is a low-cost drilling tools series for a wide range of applications.

38





Baby ine ine ine ine

The Baby line is the new range of Kelly bars and rotary tools for compact drilling rigs designed by Sip&T. Their technical characteristics are ideal to emphasize rigs performance working in narrow and low headroom spaces. The new generation of baby tools and Kelly bars goes and works where others cannot.





Casings

Sip&t rotary drilling tools range includes casing joints and pipes for piling protection of collapsing. Casing joints are composed of one male half joint ad one female half joint applied at each end of casing pipe for easy pipe connection operations. Joints range includes two main coupling systems:

- S Conical screw type joints for single wall casings
- > Conical screw type joints for double wall casings

Screw joints are made of high quality special steel and as have been designed for heavy duty double and single wall casing coupling. Screw type casings joints are available for columns having an outer diameters from 600 mm to 2500 mm and on request. Joints thickness may vary from 40 to 70 mm, according to reguired casing diameters and to the soil features.

Screw joints are specifically designed to be used with casing oscillators and rotary systems. Casing joints coupling operations is by means of conical thread screws and centring keys applied for a quick coupling of the two half joints.

Casing pipe columns have terminal sections that are cutting rings equipped with widia inserts or other types of cutting materials. Especially for the construction of bored piles by rotary drilling tools, the casing joints guarantee fast and accurate placement of casings elements as well as the best force of transmission. Complete design is always customized according to rig's torque, crowd and extraction force.





AUTO CDA Automatic Casing Drive Adapter with emergency pins TECHNICAL DATA

FEATURES

- > The casing adapters consist of an adapter plate and the extension pipe with inspection part
- > Adapter plate for rotary drive with cardan joint
- The automatic mechanical casing drive is a new development of SIP&T
- > This system replaces the manual coupling of the casing tubes.
- > It is a brilliant system, easy to operate.
- > Highest safety and productivity are guaranteed

APPLICATION

The automatic mechanical casing adapter serves to connect/ disconnect casings directly from the operator into rig cabin.

It increases safety and productivity in the execution of lining piles, eliminating danger and waste of time due to the manual phase of coupling the casings.

The adapter plate constitutes the connecting part between rotary drive and casing.

The automatic casing drive adapter can be also used manually thanks to the recovery locking pins

Фор	WEIGHT
mm	kg
620/540	1710
750/670	1805
880/800	2270
1000/920	2430
1080/1000	2600
1180/1100	2830
1300/1220	3880
1500/1400	4240
1800/1700	4826
2000/1880	5070

Other cutting diameters and effective lengths available on request All weights are approximate values









AUTO CDA Automatic Casing Drive Adapter TECHNICAL DATA

FEATURES

- > The casing adapters consist of an adapter plate and the extension pipe with inspection part
- > Adapter plate for rotary drive with cardan joint
- The automatic mechanical casing drive is a new development of SIP&T
- > This system replaces the manual coupling of the casing tubes.
- > It is a brilliant system, easy to operate.
- > Highest safety and productivity are guaranteed

APPLICATION

The automatic mechanical casing adapter serves to connect/ disconnect casings directly from the operator into rig cabin.

It increases safety and productivity in the execution of lining piles, eliminating danger and waste of time due to the manual phase of coupling the casings.

The adapter plate constitutes the connecting part between rotary drive and casing.

Фор	WEIGHT
mm	kg
620/540	1080
750/670	1500
880/800	1680
1000/920	1720
1080/1000	1900
1180/1100	2190
1300/1220	2130
1500/1400	3460
1800/1700	3620
2000/1880	3810

Other cutting diameters and effective lengths available on request All weights are approximate values













CASING DRIVERS (manual) TECHNICAL DATA

FEATURES

- > The casing adapters consist of an adapter plate and the extension pipe with inspection part
- > Adapter late for rotary drive with cardan joint
- > Reinforced female part with manual locking pins

APPLICATION

The powerful rotary drives are able to drill casings into the ground completely or partially and extract them again without casing oscillator.

The adapter plate constitutes the connecting part between rotary drive and casing

Фор	WEIGHT
mm	kg
620/540	645
750/670	750
880/800	800
1000/920	870
1080/1000	1055
1180/1100	1270
1300/1220	1495
1500/1400	2180
1800/1700	2270
2000/1880	2540

Other cutting diameters and effective lengths available on request All weighs are approximate values







Superior Version

The casings are designed to perform cased holes down to a depth of 35 m. A further option for casing operations is the application of casing driver equipped with a half joint which is directly attached to the rotary table of the base rig, or in alternative a casing twister to help the coupling operations of the casing pipes when the oscillator is operated.

The amount of torque to be transmitted as well as the required casing depths continue to increase further and further, accompanied by increased wear. In order to meet the greater demands of casing columns operating into depths up to 100 m, the «SUPERIOR type» casings have been developed.

50

This version is an alternative to standard casings, it differs by the following main features

- > A stronger inner tube
- Oupling material 25CrMo4
- > The threaded and conical rings are exchangeable and can be replaced when worn
- > High circumferential, pulling and bending forces are transmitted absolutely gap free via the conical surfaces of the bolting system
- Secause of the gapfree joints, wear and tear on the connecting elements is extremely low
- $\ensuremath{\bigotimes}$ The casing joint is watertight and can be used for single-walled and dou-

standard casings.



CASING Single Wall TECHNICAL DATA

DI/D2	1m	2m	3m	4m	5m	6m	S1	E	Bolt
mm	kg	kg	kg	kg	kg	kg	mm	mm	Num.
620/540	360	510	660	810	960	1110	12/15	40	8
750/670	435	615	795	975	1155	1335	12/15	40	10
880/800	500	710	930	1250	1570	1890	15	40	10
1000/920	570	935	1300	1685	2030	2380	15	40	10
1180/1100	735	1320	1900	2490	3075	3660	15/20	40	12
1200/1120	780	1387	1992	2600	3200	3818	15/20	40	12
1300/1220	845	1475	2105	2735	3365	3995	15/20	40	12
1500/1400	1310	2220	3130	4040	4950	5860	15/25	50	12
1800/1700	1580	2675	3770	4865	5960	7055	20/25	50	16
2000/1880	2140	3355	4570	5785	7000	8515	25	60	12
2200/2080	2350	3690	5030	6370	7710	9050	25	60	12
2500/2380	2575	4100	5625	7150	9675	10200	25	60	16

FEATURES

- > The casing are made of single-wall pipes
- S Casing connections on both sides with female and/or male part and conical and/or threaded rings with O-ring

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APPLICATION

Single-walled casings can be used for applications where weight reduction is important

Other cutting diameters and effective lengths available on request All weights are approximate values

> Betek screw connections





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52

CASING Double Wall TECHNICAL DATA

DI/D2	1m	2m	3m	4m	5m	6m	C1	C2	E	Bolt
mm	kg	kg	kg	kg	kg	kg	mm	mm	mm	Num.
620/540	403	739	1074	1411	1747	2081	12	8	40	8
750/670	492	902	1311	1722	2131	2540	12	8	40	10
880/800	585	1069	1552	2036	2520	3005	12	8	40	10
1000/920	669	1221	1773	2326	2877	3429	12	8	40	10
1180/1100	844	1580	2316	3052	3787	4522	16	8	40	12
1200/1120	872	1620	2370	3120	3870	4620	16	8	40	12
1300/1220	933	1746	2558	3372	4184	4995	16	8	40	12
1500/1400	1433	2625	3817	5009	6201	7393	20	10	50	12
1800/1700	1730	3166	4602	6038	7474	8910	20	10	50	16
2000/1880	2450	4280	6110	7940	9770	11600	20	15	60	12
2200/2080	2700	4720	6740	8760	10780	12800	20	15	60	12
2500/2380	2960	5240	7520	9800	12080	14360	20	15	60	16

FEATURES

- > The casing are made of double-wall pipes
- S Casing connections on both sides with female and/or male part and conical and/or threaded rings with O-ring
- > Betek screw connections



APPLICATION Double-walled casing

Double-walled casings can be used universally, as they are designed especially for transmitting high rotational and vertical forces as created by the rotary drives and oscillators

The use of double-walled casings ensures a flush drill string

Other cutting diameters and effective lengths available on request All weights are approximate values





CASING Cutting Shoe

DI/D2	H1	S	Weight	Teeth	H2	Weight
mm	mm	mm	kg	Nos.	mm	kg
620/540	2232	40	1300	16	1232	716
750/670	2232	40	1594	16	1232	880
880/800	2232	40	1882	18	1232	1037
1000/920	2232	40	2150	18	1232	1184
1180/1100	2232	40	2550	20	1232	1405
1200/1120	2232	40	2596	20	1232	1430
1300/1220	2232	40	2820	24	1232	1552
1500/1400	2352	505	4312	30	1352	2490
1800/1700	2352	50	5203	36	1352	3005
2000/1880	2400	60	7024	36	1400	4100
2200/2080	2400	60	7736	40	1400	4510
2500/2380	2400	60	8728	46	1400	5050

Other cutting diameters and effective lengths available on request - All weights are approximate values

FEATURES

- Optimum shape for milling of soil, for cutting and reaming
- Round milling front with hard metal inserts allows variable tooth inclination
- > Hard metal tips on the outside of the inclined shoulder
- > Eases extraction of casing
- > Aggressive cutting behaviour

APPLICATION

Cutting shoe can be fitted with different Betek/Kennametal bars

Welded bars suitable for heavy oscillator work in hard soil, gravel, rock, concrete in secant pile wall

Quick change bars suitable for rotary drilling in sand, cohesive soil, marl, soft rock like, claystone and formation of rock sockets and the construction of bored pile walls









54







CASING CLAMPS

Hydraulic Casing Clamp

Available diameter range 880 to 2,500 mm.

The hydraulic casing clamp can be operated via the hydraulic system of the drilling rig or a separate hydraulic power pack.

Hydraulic casing clamps and various inserts are available for other diameters on request.





Mechanic Casing Clamp

Available diameter range 1,000 to 2,000 mm.

Mechanic casing clamps for other diameters are available on request.











Tremie pipes are normally used to pour concrete into a pile, after the steel cage reinforcement is placed in operation, to avoid concrete pile breakage or gaps.

During the operations they are lowered inside and through the steel cage reinforcement to protect concrete from soil contamination water filtering and to avoid any possible concrete quality corruption.

Sip&t tremie pipes are made of quality drawn steel plates in order to guarantee high resistance elements.

Pipes sections can be connected by two kinds of coupling systems: threaded joints and wire cable joints.

While threaded tremie pipe are equipped with male/female joints with thread, the wire cable system is designed for quick assembly /dismounting of the various pipe sections during the concreting operations. By using wire cables joints water and mud penetration is prevented by OR ring seals applied in between male and female joints. Tremie pipes assembly is provided with set of accessories such as:

- > Funnel: to pour concrete through the tremie pipe;
- Lifting swivel: to help the lifting and lowering operations;
- Chain spanner: for tightening and unscrewing of threaded joints;
- > Fork spanner for wire release system;
- Anti-slippery platform equipped with a pipe clamping system to prevent pipes from falling into the holes;
- Container rack: to stock pipes and to make the moving from one jobsite to another easy

Complete design is always customized according to rig's torque, crowd and extraction force.



TREMIE PIPES and Accessories



TREMIE PIPES and Accessories

WITH WIRE CABLES



ФА Tremie Joint	ФС Central Pipe	⊕ B Concrete Outlet
mm	mm	mm
254	219	204
298.5	250	242.5
310	273	260

ΦΑ	Weight for L=1m	Weight for additional meter
mm	kg	kg
254	50	25
298.5	61	34
310	68	28

All indicated weights are approximate values



Other couplings and thus effective lengths, measures and weights are available on request



ФА Tremie Joint	ФС Central Pipe	ФВ Concrete Outlet
mm	mm	mm
219	193.7	187
244.5	219	212.5
273	250	244.6

ΦΑ	Weight for L=1m	Weight for additional meter
mm	kg	kg
219	28	19
244.5	32	21
273	34	24





Continuous flight augers

CFA piles are a type of drilled foundation in which the pile is drilled to the final depth in one continuous process using a continuous flight auger.

Concrete is then pumped under pressure down the hollow stem of the auger to the bottom of the bore.

Once pumping starts, the auger is progressively withdrawn bringing soils with it to the surface.

When the auger and its load of soil are finally removed, reinforcement to meet the design requirement is placed in the concrete pile.

Continuous Flight Auger CFA piles are installed without significant vibration or excessive noise being produced. Sip&t can supply different types of CFA couplings, designed according to the rotary torque, the soil conditions and the designed drilling depth.

CFA strings are provided with concrete inner tube diameter on request to fit concrete piping already installed on the base rigs.

The joint connection of CFA sections is characterized by a high resistance design. Male and female joints are fully machined, made of special case-hardened steel. made of special case-hardened steel.

CFA column can be equipped with double start digging head for rock or for soil, supplied with interchangeable round shank chisels or teeth.

Flights hedges are Tungstuds HB 900 or HB 600 hard face welded.

Bottom concrete exit is with steel plug and recovery chain. Side exit can be supplied on request.

Complete design is always customized according to rig's torque, crowd and extraction force.



63



CFA Continuous Flight Auger





Soil Tip



Flat Rock Tip

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Tapered Rock Tip

Couplings design, steel grade and effective lengths can be customized according to the max torque, max extraction and crowd force



CFA Extensions





Full Displacement Piles

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Soil Displacement piles are bored cast in situ concrete piles constructed by advancing a displacement boring tool into the ground with a rotary drilling rig using both torque and crowed force.

The technique is ideally suited for a wide spectrum of soil conditions ranging from sandy gravel, sand, silt and clay to soft organic soils, as long as the soil is displaceable. The particular advantage of Full Displacement Pile is the relatively simple technology where no temporary casings are used.

While the full displacement tool is screwed into the ground with the lower opening plugged by a bottom plate the soil gets completely displaced and thus compacted. The boreholes stays dry with no need for any excavation. This silent and vibration-free drilling method is highly suitable for jobs where the existing ground water table cannot be disturbed or if the soil is contaminated and an exchange of the contaminated soil is excluded, as well as on jobs, where adjacent buildings need to be protected.

The borehole wall is supported at all times and the risk of collapsing does not exist. During the concreting process the full displacement auger continues to turn clockwise while being extracted, so that the tangential reamers create spiral-like grooves in the borehole wall.

These grooves are filled by the static pressurized concrete and thus the load-carrying capacity of the pile increases considerably. With FDP technique is possible to have piles in diameters between 250 and 1000 mm.

Under normal working condition Full Displacement Pile can be produced to an inclination ratio of up to 4:1. The use of Sip&t joints allows to transfer torque moments up to 600 kNm.

The Sip&t Full Displacement Tools guarantee a cost efficient, environment friendly and safe production of cast-in-situ concrete piles with a vibration-free drilling method.

Complete design as coupling type, equipment, concrete outlet and other is always customized according to rig's torque, crowd and extraction force.

FDP / STANDARD METHOD

A hollow stem auger displaces the material of the pile diameter laterally into the adjacent ground, after reaching final depth, the auger is retracted (it is rotated in drilling direction) whilst simultaneously concreting through the hollow stem and subsequently the reinforcement cage is installed using a vibrodriver.

Main technical details are indicated below

- > Hollow Stem with single or double wall
- > Pipe steel quality ASTM 516/70
- Stem outer diameter and its thickness on request
- Stem inner diameter and its thickness on request
- > Couplings size on request
- FDP with Male or Female coupling on request
- > One auger flight 360° anticlockwise
- Displacement body length on request
- > Displacement diameter on request
- > Flights thickness and pitch on request
- > Tung Studs HB 900 on the flights
- > Antiwer bars in Ni-Cr-Mo
- > Blades in special steel
- > Double cutting head
- > Teeth or Round Shank Chisel on request
- > Pilot bit on request
- Concrete opening system with chain, mechanical system or lost plate
- Different usable lengths are available on request



Couplings design, steel grade, cutting diameters and effective lengths can be customized according to the max torque, max extraction and crowd force





FDP / MULTI-PIECE STARTER

It is composed by the displacement body, auger lead section and starter auger. Its main application is in the layers of degraded or fractured rock where the excess material cannot be compacted laterally. The auger lead section is used for loosing hard soil and it is available in different length as well as the starter auger.



Couplings design, steel grade, cutting diameters and effective lengths can be

customized according to the max torque, max extraction and crowd force





FDP / RAPID BULB TYPE

It secures a better and faster soil penetration in consolidated soils, as well as flight pitches have to be adapted to soil nature in order to lift up the materials and compact them against the bore walls, especially when uncompressive layers have to be overpassed.

A medium flight and a long pitch eases the spoils transport and a progressive compaction of stiff clay and medium dense compactness soils.

Short pitch is preferable for organic and very loose and fine sands.

Medium pitch is suitable for medium sands and clays.

The displacement area is protected with antiwear bars and Tungstuds carbides to ensure a long worklife.



Couplings design, steel grade, cutting diameters and effective lengths can be customized according to the max torque, max extraction and crowd force





FDP / LOST BIT

It differs from the standard technique by a detachable (sacrificial) bottom drill bit, a hollow drill stem with a larger internal diameter and a concrete hopper that is mounted at the top of the hollow stem.

Drilling of the displacement tool into the ground by rotating and pushing of the tool.

The soil is loosened by the starter auger and then pushed laterally into the surrounding soil by the displacement body.

On reaching the final depth the reinforcement cage is inserted into the hollow drill stem so the bottom drill bit is lost.

During extraction of the displacement tool, concrete is simultaneously discharged by the concrete hopper and placed unpressurised in the pile trough the hollow drill stem.



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Couplings design, steel grade, cutting diameters and effective lengths can be customized according to the max torque, max extraction and crowd force
FDP Smooth Rods



Couplings design, steel grade, cutting diameters and effective lengths can be customized according to the max torque, max extraction and crowd force



Soil Mixing consists in the mechanical blending of the in-situ soils with a cementitious material using an auger or specially designed mixing tools. The system involves the simultaneous displacement of the soil without extraction, the low pressure injection of a binding agent and the blending with the soil using the mixing tool.

The process can be used for a wide variety of applications: reduction of the compressibility of the soil mass under sensitive structures, increase of the bearing capacity of weak soils, mechanical stabilization (including liquefaction mitigation), reduction of the active earth pressure behind vertical retaining structures, cut-off walls and impervious plugs, shear strength increase around pile.

Complete design as number of wings, coupling type, pipe diameter, equipment, nozzles, is always customized according to rig's torque, crowd and extraction force.



SOIL MIXING TIP



Couplings design, steel grade and effective lengths can be customized according to the pressure work, max torque, max extraction and crowd force



SOIL MIXING Smooth Rods



Couplings design, steel grade and effective lengths can be customized according to the pressure work, max torque, max extraction and crowd force



StopEnd Elements



During production of cast in situ concrete diaphragm walls, the most important factor, especially to achieve a watertight joint, will be the use of the right stop end elements.

The stop end elements contain the concrete on the lateral side meanwhile they create a particular casting profile that offers a high seal against water infiltration.

Stop End Elements are coupled together through special steel shafts even better special o-ring ensure a perfect seal between the areas of the diaphragm.

Stop End Element is made of sheet metal welded and its special profile is achieved by a process of press bending and finally an internal reinforcing structure increases its strength and avoids the risk of deformation.





STOP END ELEMENTS TECHNICAL DATA





on request



STOP END ELEMENTS TECHNICAL DATA





Groove for the seal



Head - and set up piece





Starter

Chisel with

Hvdraulic extractor and Power pack



WEIGHT А mm В mm С mm WEIGHT L=3000 mm kg L=6000 mm kg L=9000 mm kg L=11500 mm kg Head-and kg setup piece Starter kg Chisel kg

Other widths, profiles and effective lengths available on request All weights are approximate values





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SIP .T

A well-organized Service Team of high qualified, experienced engineers and technical advisers, all trained by Sip&t, is available for our customer, in order to ensure shortest response times and highest productivity.

Kelly Bar & Drilling Tools

The continuous improvement and expansion of the Service is part of SIP&T commitment to offer the best possible support to customers worldwide.

The availability of cost-effective new parts, together with repairs and modifications, can be carried out on site and ensure the safe and long service life of your Kelly and rotary tools.

Our Service includes comprehensive technical support to determine the most suitable and economical spare parts solution. It means:

- S Large stocks
- Sast distribution
- S Long availability of parts
- S Exchange of all worn parts with original parts
- > Fixed prices regardless of extent of work required
- S Warranty





All data contained in this brochure are indicative and does not take power losses into account. All data can be changed without notice.