

APAGEO

EQUIPMENT & SERVICES
for soil investigation and drilling

CATALOGUE 2022

PREFACE



FACTORY IS BEAUTIFUL, INDUSTRY IS WONDERFUL !

At the time of writing, we are slowly emerging from an unprecedented health crisis. The most important is to find you healthy and now engaged in the post COVID era.

In 2022, we will have other challenges to face together! The course is set! We must maintain the industrial fabric in our territories, the backbone of our economy, and continue to invest in the French factory. At the national level, an ambitious recovery plan has been put in place to meet this objective. The economic independence of our country depends on it, as does the employment of our young people. Distinguished by the BPI in September 2021 for the excellence of its growth path, APAGEO keep on developing. The FRENCH FAB label, the standard of French industry finds its full meaning in the world of APAGEO.

Now everything is possible, after a continuous development both in France and abroad, the strengthening of exclusive partnerships with leading companies in the market, APAGEO mobilizes and intensifies its investments with a new building dedicated to the assembly of APAFOR® rigs, two new automated production lines and a new organization is launched.

As we have been working with you for almost 40 years, we collaborate and work to meet the needs of your sites in France and abroad. Innovative products or recognised standards, manufactured in compliance with international standards, Ménard know-how, traceable and certified products for their origin, guaranteeing our commitment to reduce our environmental impact. Always in our desire to provide you with more service and support wherever you are, our shop is expanding and this certainly means more stock, more solutions for more satisfaction.

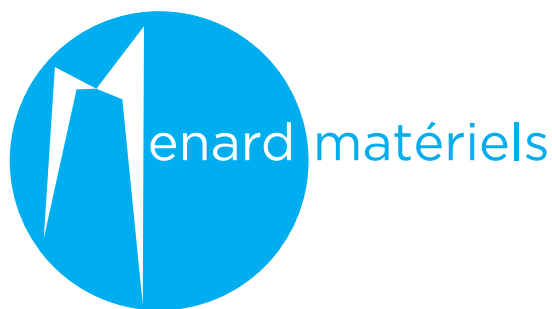
In the pages of this new catalogue, you will find the essentials of what is used on all drilling sites, boreholes and everywhere else where we strive to make life better.

Enjoy your reading.

In memory of Jean-Paul.

Jean-Pierre Arsonnet
Chief Executive Officer

APAGEO, EQUIPMENT AND SERVICES



As a French enterprise founded in 1984, APAGEO is based on solid human values that give pride of place to listening, sharing experiences, and the will to do quality work. Heir to the Louis Ménard expertise, Apageo has been working for more than 30 years with the aim of satisfying your expectations, understanding your needs and your work-sites' constraints...

AT YOUR PROJECTS' SERVICE

Qualified and serviceable teams for setting your equipment up – training and after sales service.

QUALITY AND INNOVATION

Modernised production tools, continuous investment in research and development and tested products that meet the industry standards.

REACTIVITY AND AVAILABILITY

The majority of your products in stock, and special contacts to answer your most technical questions.



OUR INDUSTRIAL ORGANISATION



DESIGN

R & D and methods department

PRODUCTION

General mechanics workshop,
round-the-clock machining chain:
lathing, drilling, fabricating, etc...

MACHINES

Manufacture, assembly, and maintenance
workshop

INSTRUMENTATION

Pressuremeter and electronic work-site
workshop with on-board intelligence



APAGEO PRODUCTS ARE MARKETING WORLD-WIDE

Find the list of our distributors on
www.apageo.com



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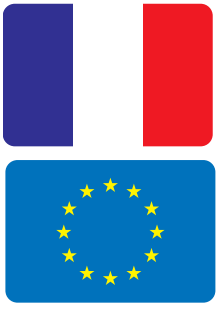
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APAFOR® DRILLING RIGS - FRENCH MADE AND MEETING EUROPEAN STANDARDS.

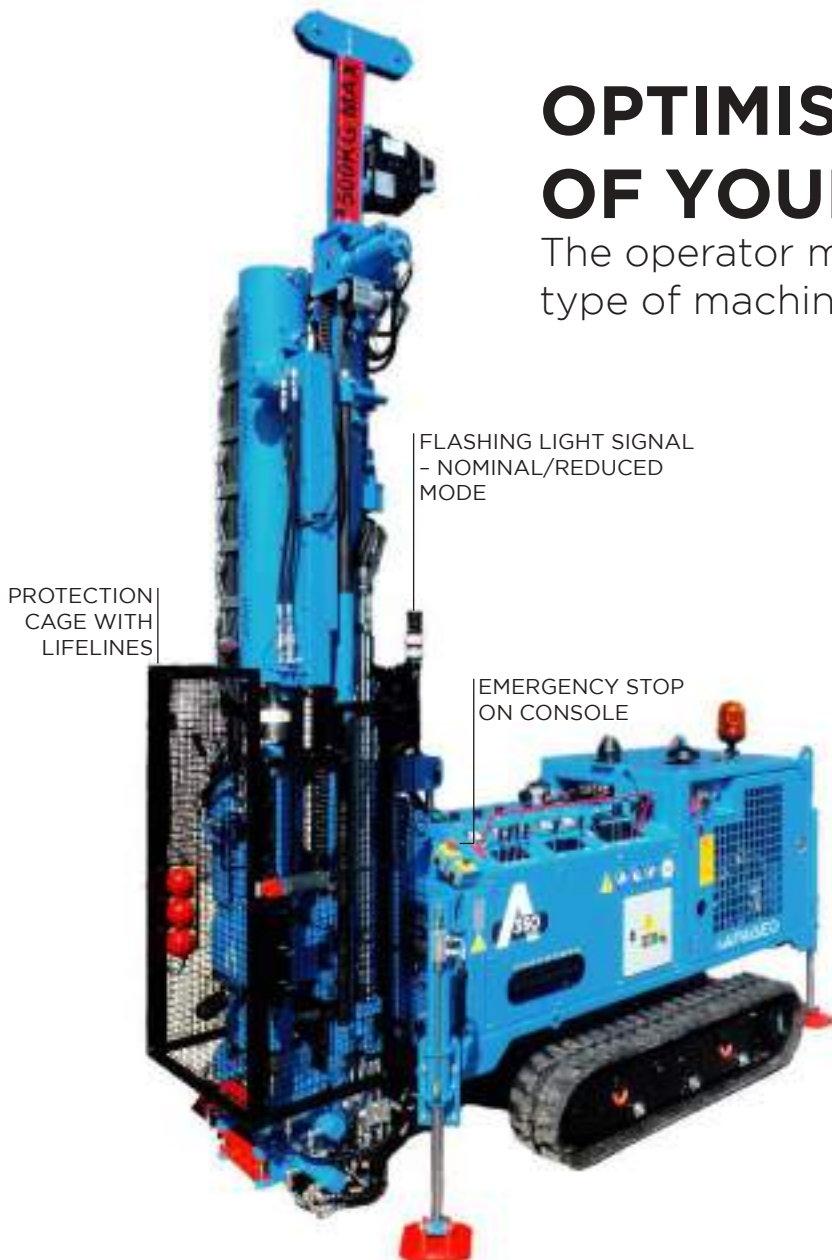


The French manufacturers federated in the UFCMF (Union Française des Constructeurs de Machines de Forage - French Union for drilling Machine Manufacturers) have pooled their resources to enhance the safety standards of their drilling machines.

APAGEO contributes to this French movement - which means already ready for the new EN 16228 standard.

OPTIMISE THE SAFETY OF YOUR MEN ON SITE.

The operator must be trained to operate this type of machine



DRILLING RIGS AND ACCESSORIES

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HEAVY DYNAMIC PENETROMETER AND DRILLING RIGS APAFOR®

APAFOR® 50

APAFOR® 100

APAFOR® 220 DMT PORTABLE

APAFOR® 220V

APAFOR® 230

APAFOR® 350

APAFOR® 450

APAFOR® 570

ROTOSTAF®

APAFOR® 700

APAFOR® 800-EXPLO

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INJECTION PUMPS AND MIXERS

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SONIC DRILLING

SONIC DRILLING RIGS

SONIC EQUIPMENTS



**OUR RANGE OF DRILLING
RIGS APAFOR[®], VERSATILE,
ADAPTED TO ALL YOUR
NEEDS FOR DRILLING, GEOTECHNICAL
OR MINING WORKS.**

Pressuremeter boring

Rotary Injection

Environment investigation

Mining exploration

Coring (conventional & wireline)

Destructive drilling

Auger

**Roto-percussion (Hydraulic Top Hammer,
Down The Hole)**

Water wells drilling

Overburden drilling:

**STAF[®], STAR et STAREX[®] Coring
(conventional & wireline)**

Penetration test and control of trench



HEAVY DYNAMIC PENETROMETERS

APAFOR® 50 // APAFOR® 100



LIGHT DRILLING RIGS

APAFOR® 220 DMT PORTABLE //
APAFOR® 220V



COMPACT DRILLING RIGS

APAFOR® 230 // APAFOR® 350 //
APAFOR® 450



POWERFULL DRILLING RIGS

APAFOR® 570 // ROTOSTAF®



DEEP-WORKS DRILLING RIGS

APAFOR® 700 // APAFOR® 800-EXPLO



APAFOR® 50

Ref: D50_800000

PERFORMANCES

Variable hammer weight 10, 30, 50 & 63,5 kg

Falling height 50 & 75 cm

THE +

- + Very compact, easily transportable with his foldable mast
- + Fully autonomous with thermal engine
- + Stable standing position ensured by rugged stabilization feet

APPLICATIONS

- Penetration tests
- Sampling by hammering



SKID AND EQUIPMENT

- Mechanically welded steel skid mounted on wheels
- Blow counter with display



MOTORIZATION

- HONDA engine type GX 100



DRILLING MAST

- 3 mechanic stabilization feet
- level indicator



WEIGHT

- 255 Kg

ECONOMIC
MODEL



SAFETY DEVICES

- steel frame aluminum cage



APAFOR® 100

Ref: U10_800001 (hydraulic UFCMF)

Ref: U10_800002 (hydraulic)

THE +

- + Compact, versatile and easily transportable
- + Certified Hammering system CER 100 100 GR0032
- + Standards NF EN ISO 22476-2, NF EN ISO 22476-3 and NF P 94-063
- + Rotation head and CE safety devices (in option)

APPLICATIONS

- Penetration tests (DPSH and SPT) and trench control
- Sampling by hammering
- Drilling with auger (with option rotation head)



SKID AND EQUIPMENT

- Welded-steel skid mounted on rubber track
- Integrated electrical blow counter on control panel
- Level indicator
- Hydraulic stabilization feet
- Boxes for rods, tools & cones



MOTORIZATION

- Gasoline engine 13HP VANGUARD



WEIGHT

- 980 Kg (without option)

TRENCH CONTROL



ROTATION HEAD

(in option)

- with or without safety cage according options

DATA ACQUISITION

(in option)

- ApaDYN® (see p.40)



SAFETY DEVICES

- 1 emergency stop button
- Protection cage (option rotation head)
- Working/safety mode



EN 16228

MANY OPTIONS AVAILABLE ON REQUEST, PLEASE CONTACT US
rotation head, extraction system...

APAFOR® 220 DMT PORTABLE

Ref: U20_800000

THE +

- +** Portable rig, ultra - light, easily transportable rapidly disassembled and reassembled for very difficult site access and confined space
- +** Very attractive power-weight ratio
- +** Vertical and tilted drilling to 45°

APPLICATIONS

- Rotary with auger, rotary bit and DTH drilling
- Coring in small diameter at shallow depths



SKID AND EQUIPMENT

- Aluminum frame with handles for transportation
- 4 adjustable stabilization feet in steel
- Steel adjustable arms for tilted drilling from 0 to 45°



MOTORIZATION

- VANGUARD engine 16 HP or HONDA engine 22 HP



DRILLING MAST

- Useful stroke: 2 m
- In aluminum
- Auger guide (rod clamp 4 tons in option)



ROTATION HEAD

- Standard and fast rotation head
- Rotary percussion head in option
- Roto-injection head in option



WEIGHT

- 362 Kg (without options) (without option)

DATA ACQUISITION

- (in option)
- ExploFOR® (see p.38)



- SAFETY DEVICES**
- 2 emergency stops
 - Protection cage

MANY OPTIONS AVAILABLE ON REQUEST, PLEASE CONTACT US
Hammering systems, winch....



APAFOR® 220V

Ref: U2_7100102

THE +

- +** Mobile, versatile and large applications
- +** Very good working comfort
- +** Work functions remote control

APPLICATIONS

- Drilling for Pressuremeter tests at lowest cost and soil investigation.
- Drilling with auger, rotary bit and Down The Hole Hammer
- Small diameter coring at shallow depth
- Penetration test DPSH/SPT (in option)



SKID AND EQUIPMENT

- Mechanically welded steel frame mounted on several carrier vehicles Pick UP 4x4 (Toyota Land Cruise, Isuzu D-Max et Ford Ranger)
- 2 hydraulic stabilization feet
- Rods racks and towing hook
- Work functions remote control
- Injection pump



MOTORIZATION

- Gasoline engine 20 HP HONDA or diesel engine 23 HP YANMAR (only on Toyota)



DRILLING MAST

- Useful stroke: 2 m
- Simple rod clamp 4 tons.



ROTATION HEAD

- Standard and fast rotation head
- Hydraulic hammer (option)
- Double displacement rotation head



WEIGHT

- 1 200 Kg (without option)

**RAPIDITY
OF
EXECUTION**

PERFORMANCES

TORQUE HEAD	SPEED HEAD	DOUBLE HEAD
Rotation speed		
71 rpm	467 rpm	250 rpm
Maximum torque		
190 DaN.m	27 DaN.m	230 DaN.m

Pull up force 1124 daN

OTHER PERFORMANCES AVAILABLE ON REQUEST



SAFETY DEVICES

- 3 emergency stops
- 2 safety lines
- Protection cage
- Working/safety mode
- 2 working lights
- Warning light / sound signals
- Extinguisher



EN 16228

DATA ACQUISITION

(in option)

- ExploFOR® (see p.38)
- ApaDYN® (see p.40)

MANY OPTIONS AVAILABLE ON REQUEST, PLEASE CONTACT US
Hammering systems, winch....

APAFOR® 230

Ref: U23_8100001

LIGHT
AND
COMPACT

THE +

- + Very compact and adapted to rough terrain thanks to its extendable undercarriage
- + Very good power-to-weight ratio
- + All drilling methods

APPLICATIONS

- » Drilling with auger, rotary bit and DTH Hammer
- » Drilling with hydraulic Top Hammer
- » Conventional coring
- » Penetration test DPSH/SPT/Compaction Control (in option)



SKID AND EQUIPMENT

- Variable width undercarriage
- 4 hydraulic stabilization feet
- Radio remote control for moving
- Injection pump
- Rods rack and towing hook



MOTORIZATION

- Diesel engine YANMAR 23 HP



DRILLING MAST

- Useful stroke: 1,65 m
- Simple removable rod clamps



ROTATION HEAD

- Standard and fast rotation head
- Rotary percussion head (in option)
- Roto-injection head (in option)



WEIGHT

- 1 400 Kg (without option)

DATA ACQUISITION

(in option)

- ExploFOR® (see p.38)
- ApaDYN® (see p.40)



SAFETY DEVICES

- 2 emergency stops
- 2 safety lines
- Protection cage
- Working/safety mode
- 1 working light
- Warning light / sound signal for movement
- Extinguisher



EN 16228

MANY OPTIONS AVAILABLE
Hammering systems, winch....
PLEASE CONSULT US

PERFORMANCES

TORQUE HEAD	FAST HEAD	DOUBLE HEAD
Rotation speed		
67 rpm	465 rpm	510 rpm
Maximum torque		
189 DaN.m	27 DaN.m	129 DaN.m

Pull up force 1469 DaN

OTHER PERFORMANCES AVAILABLE ON REQUEST

APAFOR® 350

Ref: U35_800001

THE +

- + Versatile : all drilling methods
- + Less than 2,7 tons (all options) for transport on standard trailer
- + Penetrometer option, usable with open cage

COMPACT
AND
VERSATILE

APPLICATIONS

- Conventional coring
- Drilling with auger
- Drilling with rotary bit and DTH Hammer
- Drilling with hydraulic Top Hammer
- Penetration test DPSH/SPT/Compaction Control (in option)

SKID AND EQUIPMENT

- Rigid mechanically welded steel frame with variable hydraulic width undercarriage (78 to 118 cm)
- 4 hydraulic stabilization feet
- Wireless remote moving control
- Rods rack and towing hook
- Radio remote control for moving
- Injection pump



MOTORIZATION

- Diesel engine YANMAR 36 HP (soundproofed Stage V for Europe, Stage IIIB for export) with combined air to oil cooler



DRILLING MAST

- Useful stroke: 2 m
- Single rod clamps 4 tons (double in option)
- Manipulation winch and hydraulic sliding of drilling head



ROTATION HEAD

- Performance rotation choices available
- Variable rotation displacement
- Flange with pin thread 2"3/8 IF/ R38 box (other threads available)



WEIGHT

- 1 600 Kg (without option)
- Drilling rig full options less than 2 700 kg for transport on standard trailer

PERFORMANCES

MOTOR 315	MOTOR 200	DOUBLE MOTOR
Rotation speed		
314 rpm	635 rpm	710 rpm
Maximum torque		
208 DaN.m	103 DaN.m	229 DaN.m

Hydraulic hammer

120 joules/blow - 1 600 bpm

Pull up force 2061 DaN

OTHER PERFORMANCES AVAILABLE
ON REQUEST



SAFETY DEVICES

- 5 emergency stops
- 2 safety lines
- Protection cage
- Working/safety mode
- 2 working lights
- Warning light / sound signal for movement
- Extinguisher

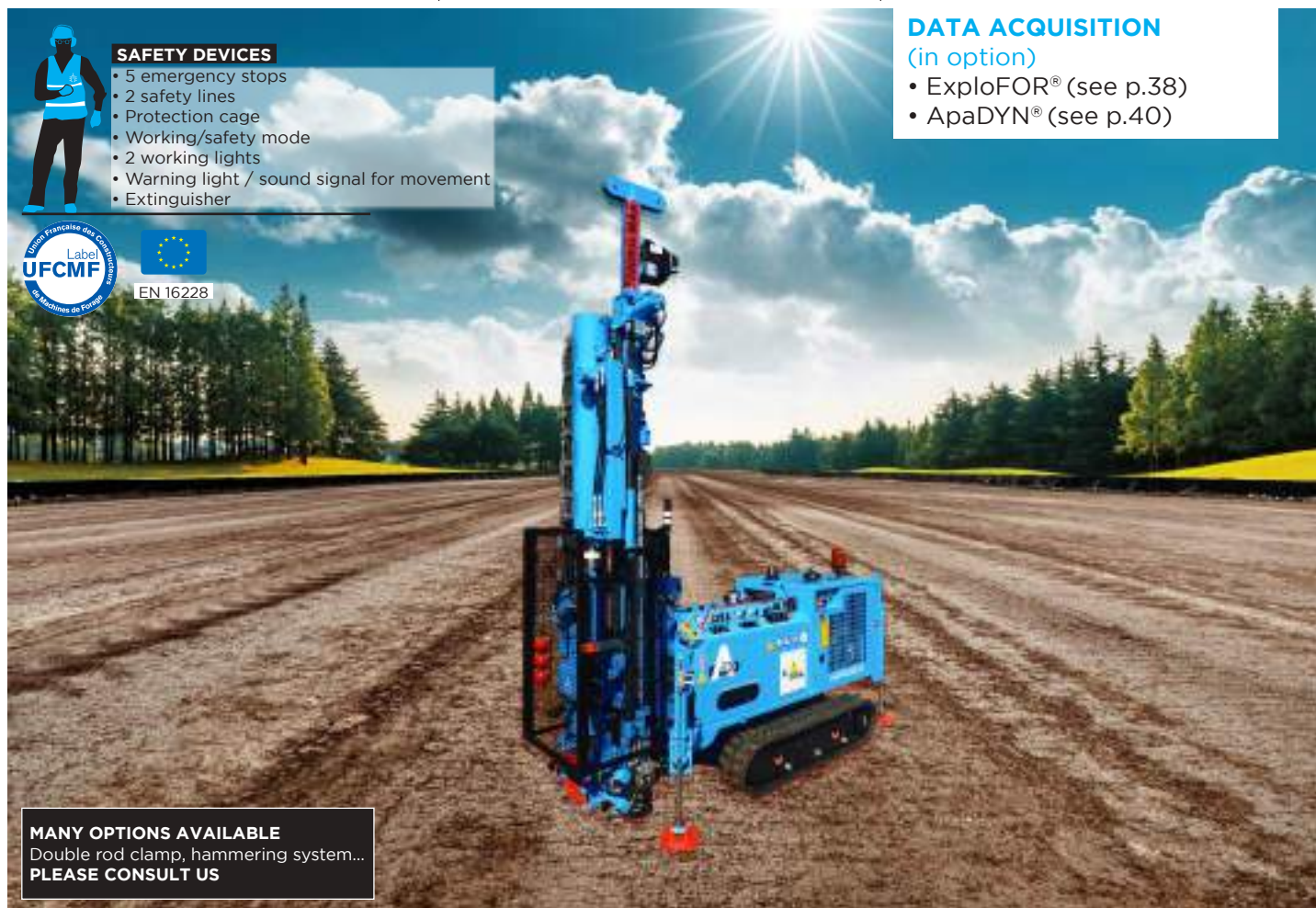


EN 16228

DATA ACQUISITION (in option)

- ExploFOR® (see p.38)
- ApaDYN® (see p.40)

MANY OPTIONS AVAILABLE
Double rod clamp, hammering system...
PLEASE CONSULT US



APAFOR® 450

Ref: U45_700002 (HATZ)

THE +

BEST-SELLER

- + Simple and robust versatile rig
- + Very attractive power weight ratio
- + Lowered center of gravity for better stability in rough sites

APPLICATIONS

- Conventional and wireline coring
- Drilling with auger
- Drilling with rotary bit and DTH Hammer
- Micropiling
- Drilling with hydraulic Top Hammer
- Penetration test DPSH/SPT/Compaction control (in option)



SKID AND EQUIPMENT

- Mechanically welded steel frame mounted on a fixed rubber track (width 140 cm)
- 4 hydraulic stabilization feet
- Rods rack and towing hook
- Remote moving control
- Injection pump (several options, please consult us)



MOTORIZATION

- HATZ diesel engine 48HP soundproofed



DRILLING MAST

- Useful stroke: 3,30 m
- Single or double rod clamps 8 tons
- Manipulation winch and hydraulic sliding of drilling head



ROTATION HEAD

- Swift injection swivel at the top of the rotation head
- Flange with pin thread 2"3/8 IF /R38 box (other threads available)



WEIGHT

- 2750 Kg (without option)

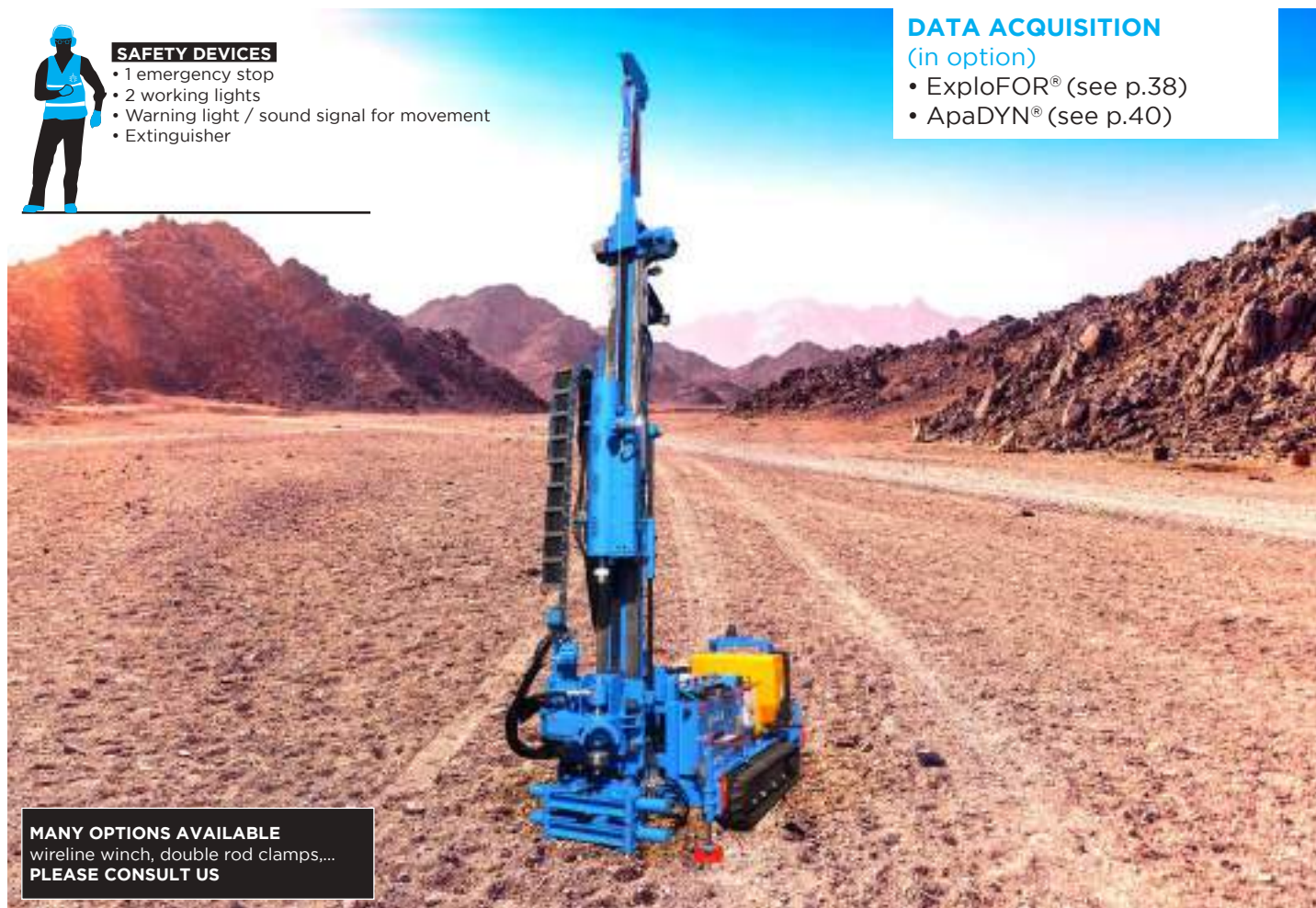
DATA ACQUISITION (in option)

- ExploFOR® (see p.38)
- ApaDYN® (see p.40)



SAFETY DEVICES

- 1 emergency stop
- 2 working lights
- Warning light / sound signal for movement
- Extinguisher



MANY OPTIONS AVAILABLE
wireline winch, double rod clamps,...
PLEASE CONSULT US

PERFORMANCES

STANDARD	HIGH SPEED
0 to 495 rpm	0 to 624 rpm
Maximum torque	
282 DaN.m	226 DaN.m

Hydraulic hammer (option) 205 joules/blow - 2 600 bpm

Pull-up force 2404 daN

OTHER PERFORMANCES AVAILABLE ON REQUEST

APAFOR® 570

Ref: U57_700001

THE +

- +** Simple, powerful and robust drilling rig
- +** Multiple configurations possible
- +** Design for the most difficult conditions

APPLICATIONS

- Conventional and wireline coring
- Drilling with auger
- Drilling with rotary bit and DTH Hammer
- Micropiling
- Drilling with hydraulic and Top Hammer
- Penetration test DPSH/SPT/Compaction control (in option)



SKID AND EQUIPMENT

- Mechanically welded steel frame mounted on a fixed rubber track (width 140 cm)
 - 4 hydraulic stabilization feet
 - Rods rack and towing hook
 - Remote moving control
 - Injection pump
- (several options, please consult us)



MOTORIZATION

- Deutz Diesel engine 75 HP



DRILLING MAST

- Useful stroke: 3,30 m
- Single or double rod clamps 8 tons
- Manipulation winch and hydraulic sliding of drilling head



ROTATION HEAD

- Swift injection swivel at the top of the rotation head
- Flange with pin thread 2"3/8 IF / R38 box (other threads available)
- Hydraulic top hammer in option



WEIGHT

- 3800 Kg (without option)

DATA ACQUISITION (in option)

- ExploFOR® (see p.38)
- ApaDYN® (see p.40)



SAFETY DEVICES

- 2 emergency stops
- 2 safety lines
- Protection cage
- Working/safety mode
- 2 working lights
- Warning light / sound signal for movement
- Extinguisher

MANY OPTIONS AVAILABLE

advance rock mast, hammering system...

PLEASE CONSULT US

PERFORMANCES

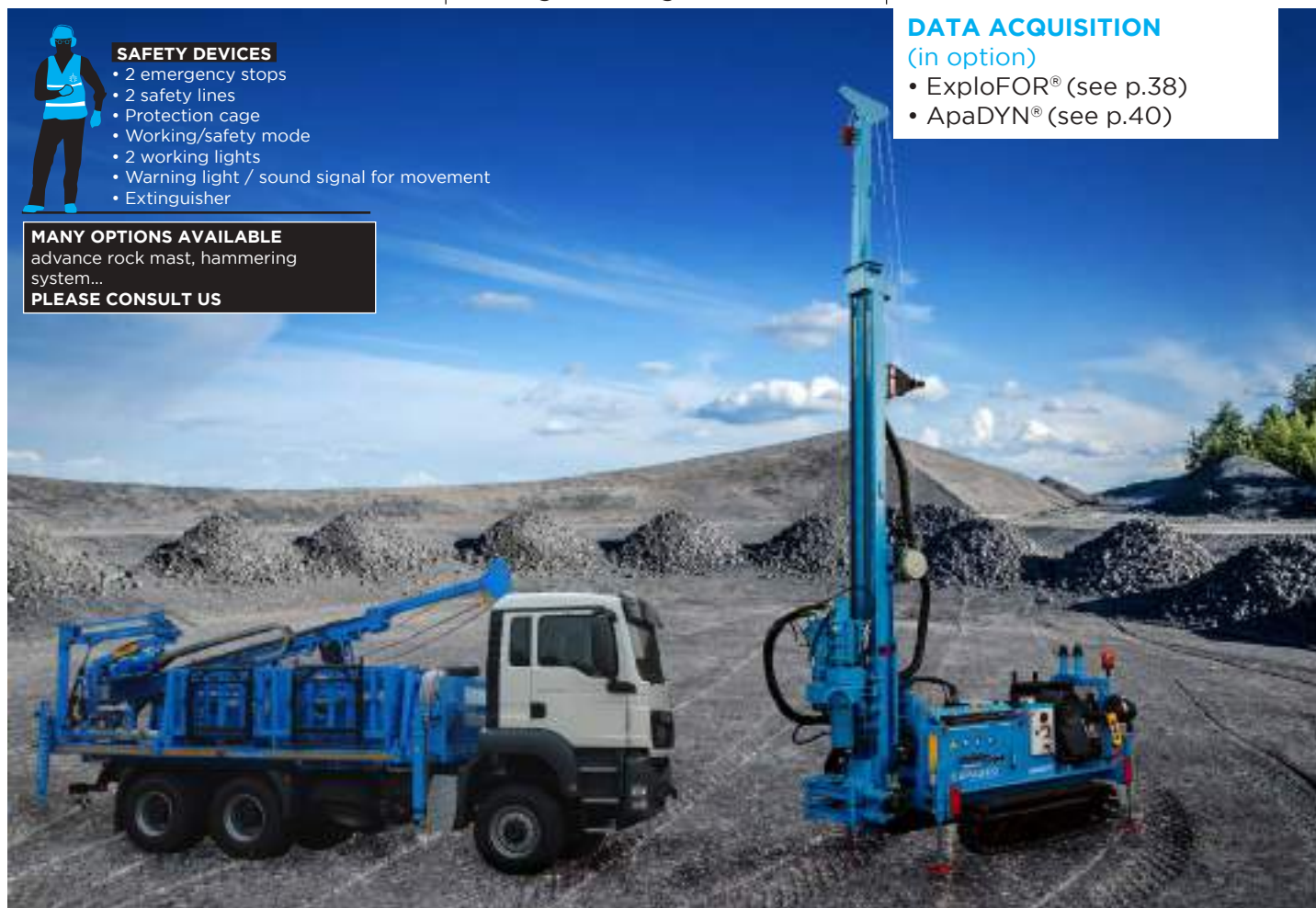
STANDARD	REINFORCED TORQUE	HIGH SPEED ROTATION HEAD
Rotation speed		
0 to 412 rpm	0 to 330 rpm	0 to 632 rpm
Maximum torque		
387 DaN.m	484 DaN.m	283 DaN.m

Hydraulic hammer 195 joules/blow - 1 355 bpm

Pull up force 5655 DaN

OTHER PERFORMANCES AVAILABLE ON REQUEST

POWERFUL AND 100% CONFIGURABLE



ROTOSTAF®

Ref : U45_820000

THE +

- + Simultaneous two-way rotation for fast drilling
- + In accordance with the new standard without protection cage
- + Limits the risk of deviation, jamming and breakage
- + Pressuremeter drilling perfectly calibrated and fast
- + Decanter tank for the recovery and the reuse of the drilling mud

APPLICATIONS

- Out-of-the-hole overburden drilling system (Starex 76 and 90; Star 67/74 - NW - 104/113)
- STAF® : self-bored tube system (the inner rods turn left, the tubes turn right)

SKID AND EQUIPEMENT

- Mechanically welded steel frame mounted on hydraulic track
- 4 hydraulic stabilization feet
- Rods rack and towing hook
- Radio remote control for moving
- Hydraulic unscrewing wrench
- Injection pump



MOTORIZATION

- HATZ diesel engine 48HP soundproofed



DRILLING MAST

- Useful stroke : 1,70 m
- Simple rod clamps 4 tons
- Manipulation winch and hydraulic sliding of drilling head



ROTATION HEAD

- ROTOSTAF® head simultaneous two-way rotation
- Variable displacement



WEIGHT

- 3 571 kg (without option)

DATA ACQUISITION

(in option)

- ExploFOR® (see p.38)

PERFORMANCES

ROTOSTAF® HEAD

OUTER

INNER

Rotation speed

0 to 30 rpm

0 to 96 rpm

Rotation torque

321 DaN.m

139 DaN.m

Hydraulic hammer : 205 joules/blow - 1355 bpm

Pull up force 0 à 5090 daN

OTHER PERFORMANCES AVAILABLE ON REQUEST

OPTIMAL
PRESSUREMETER
DRILLING

SAFETY DEVICES

- 1 emergency stop
- 2 safety lines
- 2 working lights
- Warning light / sound signal for movement
- Extinguisher



EN 16228





APAFOR® 700

Ref : U7_71000101

RANGE OF PERFORMANCES

Pull-up force 8 to 30 tons

Torque from 800 to 3000 daNm

Rotation speed from 150 to 1400 rpm

**OTHER PERFORMANCES AVAILABLE
ON REQUEST**

THE +

- +** Drilling in large diameter and deep depth until 500 meters and more (depending on diameter)
- +** Configuration on truck (any type, tropicalized on request...), crawler or skid
- +** Specific technical optimum characteristics according to customer's needs.
- +** Turnkey complete offer if wished (with equipments, air compressor, carriers, etc...)

**DEEP
DRILLINGS**

APPLICATIONS

- **Destructive drilling Rotary, Down The Hole Hammer and auger drilling**
- **RC drilling (reverse circulation)**
- **Conventional and wireline coring**
- **Optimum for deep water wells drilling, geothermal, foundations and mining**



SKID AND EQUIPMENT

- Mechanically welded steel frame integrated to carrier
- 4 hydraulic jacks for stabilization
- Control over operating panel or articulated arm
- Hydraulic injection pump (performances according to model, until 2200 l/min)



MOTORIZATION

- Engine from 90 to 300 HP (according to model)



ROTATION HEAD

- Rotation head with 2 hydraulic engines
- Injection swivel air/water with floating shaft and compensation spring
- Hydraulic sliding of rotation head (inclined head in option)



DRILLING MAST

- Minimum useful stroke of 3,8 m with extension for extraction of rods/casings of 6 meters (longer dimensions according to the model)
- Manipulation winch: force from 2.5 to 12 tons (according to models)
- Advance rock mast: stroke from 500 to 1000 mm
- Double rod clamps

DATA ACQUISITION

(in option)

- ExploFOR® (see p.38)



SAFETY DEVICES

- 3 emergency stops
- 3 working lights

MANY OPTIONS AVAILABLE
foam pump, wireline winch,...
PLEASE CONSULT US



APAFOR® 800-EXPLO MULTIPURPOSE MINE

Ref : U8_8100101

THE +

- + The most complete and powerful multifunctional drilling rig on the market
- + “2-in- 1” rig for RC and deep core drilling
- + A variety of integrated add-ons and options for a completely selfcontained unit for vertical and inclined drilling
- + Several handling systems offering high productivity, operator comfort and safety

MULTI
PURPOSE

APPLICATIONS

- RC (reverse circulation) drilling and core drilling on the same head carriage (multifunctional/multipurpose)
- Destructive drilling Rotary, Down The Hole Hammer and auger drilling
- Optimum for mineral drilling (core and RC) and deep water wells drilling



SKID AND EQUIPEMENT

- Mechanically welded steel frame integrated to carrier
- 4 hydraulic jacks for stabilization
- Control over operating panel or articulated arm or radio remote control in option
- Injection pump 70 bars-200l/min
- double rod clamps and hydraulic centring system (inclined drilling)



MOTORIZATION

- Powerful 304 CH (without on-board compressor) or 630 CH (with on-board compressor)



DRILLING MAST

- Useful stroke 7 m
- Manipulation winch and WL winch (240m./min)



ROTATION HEAD

- RC injection swivel and core drill head
- Hydraulically tiltable
- With hydraulic chuck for rod handling



WEIGHT

- 25 to 36 tons according options



SAFETY DEVICES

- Emergency stops
- Working lights
- Warning light / sound signal for movement
- Extinguisher
- Remote control systems

MANY OPTIONS AVAILABLE

on-board compressor, integrated cyclone, etc...

PLEASE CONSULT US

DATA ACQUISITION (in option)

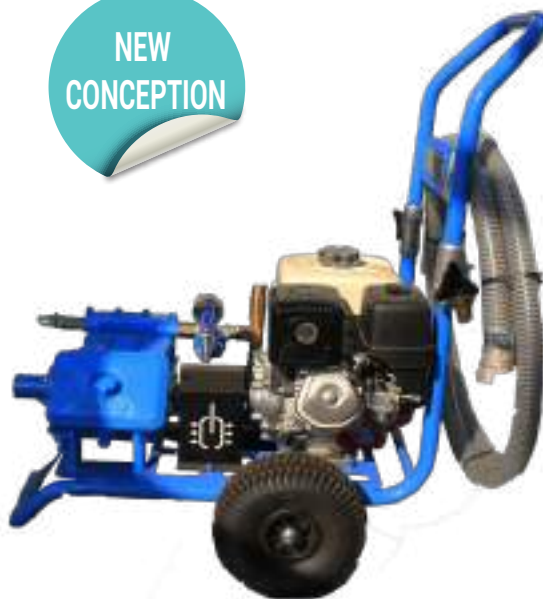
- ExploFOR® (see p.38)



INJECTION PUMPS AND MIXERS

Pumps are delivered with a 5 meters suction pipe and a strainer

NEW
CONCEPTION



Balls pump 9 HP engine Sigma 100

TRIPLEX INJECTION PUMPS FOR CLEAR WATER AND DRILLING MUD

TRIPLEX INJECTION PUMPS WITH THERMAL ENGINE

Description	Max Pressure	Max Flow	Reference
Balls pump 9 HP engine - Gama 80	40 bar	80 l/min	C3 0101601
Balls pump 9 HP engine - Sigma 100	40 bar	100 l/min	C3 0101607

TRIPLEX INJECTION PUMPS WITH HYDRAULIC ENGINE

Description	Max Pressure	Max Flow	Reference
Balls pump - HY - Gama 80	40 bar	80 l/min	C2 0101601
Balls pump - HY - Sigma 100	40 bar	100 l/min	C2 0101604



Balls pump HY Sigma 100



Balls pump HY Gama 80



PPN Pump



PHY Pump

PISTON PUMPS FOR CLEAR WATER, MUD AND CEMENT GROUT

PNEUMATIC VERSIONS

Description	Max Pressure	Max Flow	Reference
P-PN-25-2900	25 bar	49 l/min	C1 0101603
P-PN-40-2900	40 bar	49 l/min	C1 0101602
P-PN-15-4700	15 bar	79 l/min	C1 0101601

HYDRAULIC VERSIONS

Description	Max Pressure	Max Flow	Reference
P-HY-40-6500	40 bar	108 l/min	C2 0101602
P-HY 25	25 bar	60l/min	C2 0101600

MIXERS FOR DRILLING MUD AND CEMENT GROUT

Description	Speed	Reference
Hydraulic	0 - 1 200 rpm	C8 0101301
Pneumatic	0 - 3 000 rpm	C7 0101301



Mixers

ACCESSORIES

Description	Reference
Hand pump - injected volume = 600 ml / return	C6 0101601
Hand pump - injected volume = 3000 ml / return	C6 0101602
Oil feeder for pneumatic equipment	H3 09000703



Hand pump



P. 28 | **SONIC DRILLING RIGS**

P. 30 | **SONIC DESTRUCTIVE DRILLING EQUIPMENT**

P. 31 | **SONIC CORING EQUIPMENT**



The solution when conventional methods are ineffective

Increased productivity compared to traditional drilling : 3 to 6 times faster in destructive or core drilling

Core drilling with sample recovery of 100% (undisturbed or slightly disturbed, in any type of soil)

Destructive drilling in any terrain, even very hard without compressor

No or few drilling fluid required

Deviation **less than 2%**

Less noise and **no alteration** of the surrounding terrain (150 Hz)

Longer equipment lifespan than conventional equipment

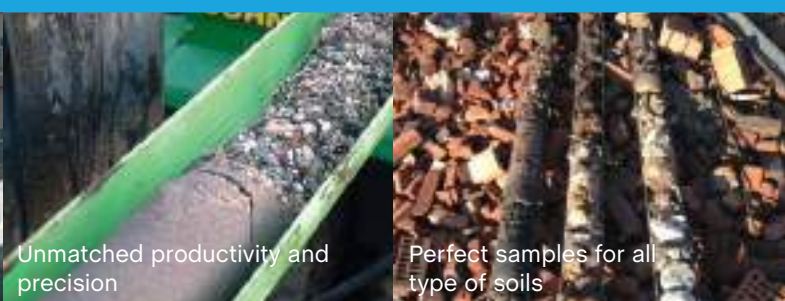
Quality and precision of drilling

SONIC DRILLING

THE SONIC DRILLING METHOD, DESTRUCTIVE OR CORE DRILLING, IS TODAY RECOGNISED AS THE MOST EFFECTIVE, PARTICULARLY FOR DIFFICULT TERRAIN, IN VARIOUS SECTORS (MINING, FOUNDATIONS, GEOTECHNICS, ENVIRONMENT, ETC...)

Sonic drilling uses the high frequency resonance energy generated by the sonic head, at over 150 vibrations/second (vertical oscillation of less than 10mm amplitude). The energy is thus diffused all along the drill string to the tool.

The friction effect is also considerably reduced, which increases the penetration speed and facilitates the extraction of the drilling equipment. The method also causes liquefaction (limited to 1-2mm around the borehole), inertia and increases soil density while temporarily decreasing porosity.



Unmatched productivity and precision

Perfect samples for all type of soils

DISCOVER THE SONIC RANGE :

Sonic rigs and various configurations such as crawler, truck or tractor, all with various options (double head for conventional drillings, automatic rods manipulator, etc...), Aqualock (specific piston sampler), sonic core barrels, tubing, lost cones system, destructive drilling equipment, etc...

SONIC DRILLING RIGS



THE SRS RANGE (SMALLROTOSONIC)

are the most compact and lightweight sonic rigs in the world. It is the successful integration of roto-sonic technology, very high frequency 150 Hz vibration combined with rotation, in a small and easily manoeuvrable machine.

It is the optimal solution for undisturbed sampling, much faster and of much better quality than the usual techniques such as standard core drilling or hammering.

2 versions : PL (the lightest) and ML (the most powerful)

THE + : easy to use, ideal for difficult to access sites, fast, clean and high quality drilling to a typical depth of 30 metres.

DIFFERENT MODELS ARE AVAILABLE TO MEET THE SPECIFIC HABITS AND NEEDS OF EACH CUSTOMER. EACH MODEL CAN BE SUPPLIED WITH DIFFERENT CONFIGURATIONS (ON CHASSIS, TRACTOR, TRUCK, ETC...) AND NUMEROUS OPTIONS.



THE CRS RANGE (COMPACTROTOSONIC)

are the optimal choice for mixed and/or overconsolidated ground, at a typical depth of 60-75 metres (or more depending on conditions), but also for drilling and coring in hard formations (boulders and rocks). It offers much higher yields than any other drill of the same size available on the market, and this for many applications!

Available in 4 versions including the CRS-Duo, with its 2nd conventional drill head (ideal for mining exploration), and the CRS-Mito for foundation drilling from all angles.

THE + : its versatility and numerous options make it a powerful drill suitable for both rapid destructive drilling and qualitative core drilling.



THE MRS RANGE (MIDROTOSONIC)

has been developed to integrate the very powerful LS 50k Sonic drill head into a more robust drill rig. The MRS are ideal for all types of foundation work (anchors, jetgrouting, micropiles, etc.) but also geo-technical and mining works, environmental drillings (including large diameter dry coring) or deep geo-technical surveys depending on the configuration. These drilling rigs offer superior performance for larger diameter drilling in all types of soils, or smaller diameter drilling to a typical depth of 150 metres (depending on diameter and method). Whether in mixed formations or in very hard ground, destructive drilling is even faster while retaining the main advantages of the Sonic method (extreme straightness, little or no injection, etc.) and avoiding the costly and noisy use of a compressor.

Available in several versions : including MRS-Mito (multi-angle mast articulation for drilling on all fronts) and MRS-Duo (2nd powerful conventional drill head mounted on the same head carriage).

THE + : Powerful and fast, far superior to conventional drilling rigs of the same size.



THE LRS RANGE (LARGEROTOSONIC)

offers a powerful LS 50k Sonic Drill Head and has a larger chassis and a more powerful engine to provide superior performance to the MRS range. In addition to the usual benefits of the Sonic method, productivity is further enhanced and simply outstanding. Just one example, soundings in Amsterdam harbour in 6"7/8 diameter: 55m/hour...

Several versions are available on traditional carriers (tracked trucks) but also on specific carriers such as the LRS-EC (on heavy excavators). Fully customised versions are also possible. The LRS-ARCTIC is the perfect example: a machine and sample handling workshop, fully integrated in a customised container on a tracked vehicle and configured for extreme climates (work in Siberia under -40°)

THE + : extremely fast drilling of large diameter and/or deeper, up to 250-300 metres depending on diameter and terrain.

SONIC DESTRUCTIVE DRILLING

THE SONIC METHOD INCLUDES A WIDE RANGE OF EQUIPMENT FOR DESTRUCTIVE DRILLING. THE DRILL PIPES AND CASINGS ARE VERY THICK, NECESSARILY LINKED TO THE POWER OF THE SONIC HEAD. THE DRILLING TOOLS ARE ADAPTED TO THE TYPE OF TERRAIN: TUNGSTEN CARBIDE CUTTERS, DESTRUCTIVE CROWNS, LOST TOOLS, ETC...

These tools are now regularly used by the largest foundation companies, particularly in their anchoring projects, micro-piles, grouting, etc., in all types of soil, from loose soil to rock or cement concrete, including gravel, pebbles, etc.

The straightness of the drillings also allows the control of piles or the installation of measuring instruments in dams.

MAIN BENEFITS OF SONIC DESTRUCTIVE DRILLING :

- **Unequaled speed in destructive** : 3 to 4 times faster than all conventional techniques (DTH, vibro head, etc.)
- Overburden drilling for **installation of anchors, micropiles, etc.**
- **Without compressor** for **low production costs** (air drilling also possible if required).
- **The same tool even in mixed formations**, from very soft to very hard.
- Borehole deviation of less than 2% on average and **strict respect of the depth**
- **Less noisy** than conventional methods, ideal for urban construction site
- **Without damaging the surrounding terrain** (150 Hz), an advantage for work on dams, historical buildings, etc...



SONIC CORE DRILLING

Sonic core barrels represent the best method for coring a wide range of formations, from soft to hard, with few or no injection (depending on geology and drill model). The speed of completion and recovery rates are unmatched by any other conventional method. This technique ensures minimum deviation. The crowns can be available with front face injection holes to cool the carbides, and side discharge holes to facilitate the rise of the cuttings.

MAIN APPLICATIONS

MINING EXPLORATION

Sampling without deviating from the borehole and exact location of the samples. Highly productive coring in all types of terrain, especially mixed terrain, with a 100% recovery rate to obtain precise layer thicknesses and sample compositions.

GEOTECHNICAL INVESTIGATION AND CONSTRUCTION

Precise high quality drilling, in any geology at several depth, to have cost efficient results for in and off-shore works. Also very adapted for construction works which require perfect straightness.

ENVIRONMENTAL SOUNDING

Drilling without water or air injection. Fast and accurate location of impermeable soil layers, representation of an intact soil profile and evaluation for physical and chemical analyses. Also perfectly suited for detection on polluted sites, nuclear sites etc...

REMEDIATION DRILLINGS, WELL INSTALLATIONS AND COLD-HEAT EXCHANGING SYSTEMS

In one run, fast sampling for profile description and well installation if required.

ARCHAEOLOGICAL SAMPLING

Fast investigation of a large area in a dense grid on archaeological remains.



ACQUALOCK SOIL SAMPLER

The patented Aqualock, can be described as a thin wall piston sampler adapted to sonic drilling with unique features:

- Fastest and most reliable sampling technique for alluvial formations
- High quality long core samples in a matter of minutes
- Continuous sampling or discrete sampling without casing
- Piston valve-operated
- Vacuum keeps core in place
- Piston also used to extrude samples



IN SITU MEASUREMENT EQUIPMENT

- P.33** **GEOBOX®**
CENTRAL UNIT FOR SOIL INVESTIGATION
- MANUAL INPUT**
- MISSION MODULE**
- P.36** **GEOVISION®**
SOFTWARE GEOTECHNICAL DATA PROCESSING SOFTWARE
- EXPLOFOR® 4**
DRILLING DATA LOGGER
- P.40** **APADYN®**
PENETROMETER DATA LOGGER
- LUGEOTEST®**
LUGEON PERMEABILITY TEST
- P.42** **GEOPAC®**
AUTO CONTROLLED PRESSUREMETER 5 OR 10 MPA
- P.43** **HYPERPAC®**
AUTO CONTROLLED HIGH PRESSURE PRESSUREMETER 25 OR 30 MPA
- P.44** **MÉNARD PRESSUREMETER**
AND **GEOSPAD®2** UNIT FOR DATA ACQUISITION
- P.47** **PRESSUREMETER BASIC PACKAGE**
- P.50** **PRESSUREMETER ACCESSORIES AND SPARE PARTS**
- P.66** **TOOLS PACKAGE**
- P.68** **THE STAF®**
SYSTEM A SELF-BORED TUBE SYSTEM FOR PRESSUREMETER TEST
- P.72** **OTHER IN SITU METHOD**
PHICOMETER, LIGHT DYNAMIC PENETROMETER, BENKELMAN BEAM
- P.78** **GEOMIL STATIC PENETROMETERS**


GEOBOX®

CENTRAL UNIT FOR SOIL INVESTIGATION

Ref: GeoBOX® Premium : N7_5900980
GeoBOX® Basic (without print) : N7_5900981

NEW
TABLET !



Delivered in a hardy case + VAC adaptor + thermal printer and accessories

THE +

- + Rugged tablet designed for the most demanding sites
- + IP 67: totally protected against dust and water
- + 9 hours autonomy
- + Larger screen, readable in sunlight

GeoBOX® is the central unit for monitoring and data acquisition of all your geotechnical works. The GeoBOX® is designed with a rugged tablet on which many applications and supervision software run. **Multifunctional**, the GeoBOX® allows you to conduct various geotechnical reconnaissance workshops by means of installable applications, presented in a user-friendly interface. Your data is thus centralised on a single medium allowing almost instantaneous exploitation of the results.

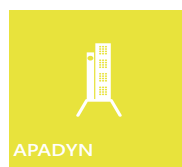
APPLICATIONS



Automatic Pressuremeter Control-Unit



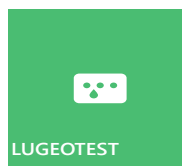
Recording of drilling parameters



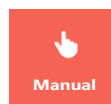
Recording of dynamic Pressuremeter tests



Recording of manual Pressuremeters tests



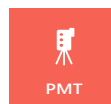
Piloting and recording of Lugeon tests



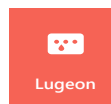
Data input



Penetrometer test input



Pressuremeter test input



Lugeon test input



Management of worksite missions



Data can be **directly processed** on our geotechnical software GeoVision®
through a USB key or 4G modem transfer
+ can be used with other software on the market

MANUAL INPUT

Réf :

- Data input : N7_5900763
- Pressuremeter tests input : N7_5900760
- Penetrometer tests input : N7_5900761
- Lugeon tests input : N7_5900762

THE +

NEW

- + Time saving
- + Simplified processing
- + Secure data



New functionalities on GeoBOX® are now available : **Manual Input.**

These allow you to **digitally collect the various geotechnical data directly on worksite**, thus saving time, simplifying processing and securing data.

4 Manual Data Input are available :



Manual

Data input :

Allows to enter the lithology for a borehole. Enabled by default with the Explofor® module. If coupled with the 4G modem option, allows to increase and customize the list of parameters (water level, equipment, tubing etc...) for manual input.



PMT

Pressuremeter tests input :

Used for data input (pressure, volume) of the Pressuremeter test, if sensorless Pressuremeter CU is used.



DPSH-SPT

Penetrometer tests input :

Used for Penetrometer test data input (nb of blow/20cm for ex). Possibility to enter a DPSH and/or SPT test.



Lugeon

Lugeon tests input :

Used for data input (pressure, volume) of the Lugeon test.



Just like data recorded directly with equipment, any manual entry becomes a computer file, analysed and processed by the GeoVision® software.

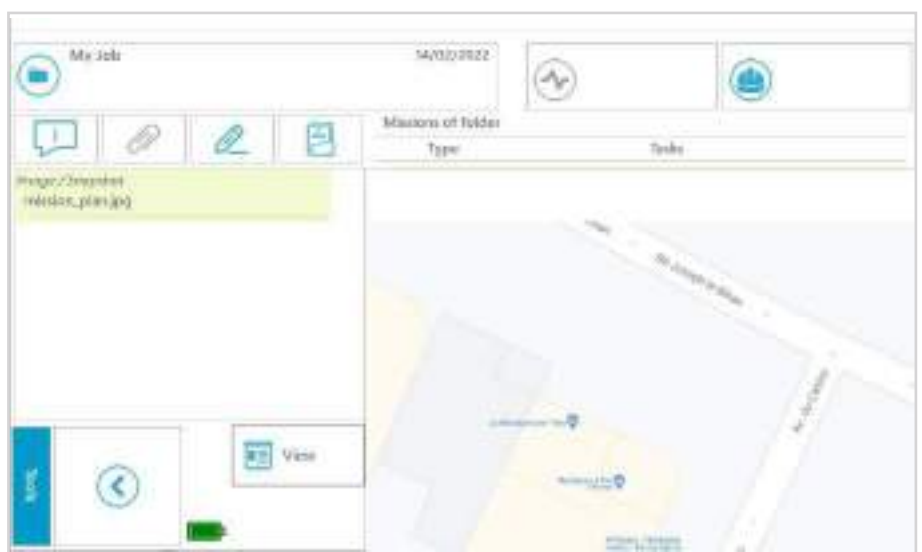
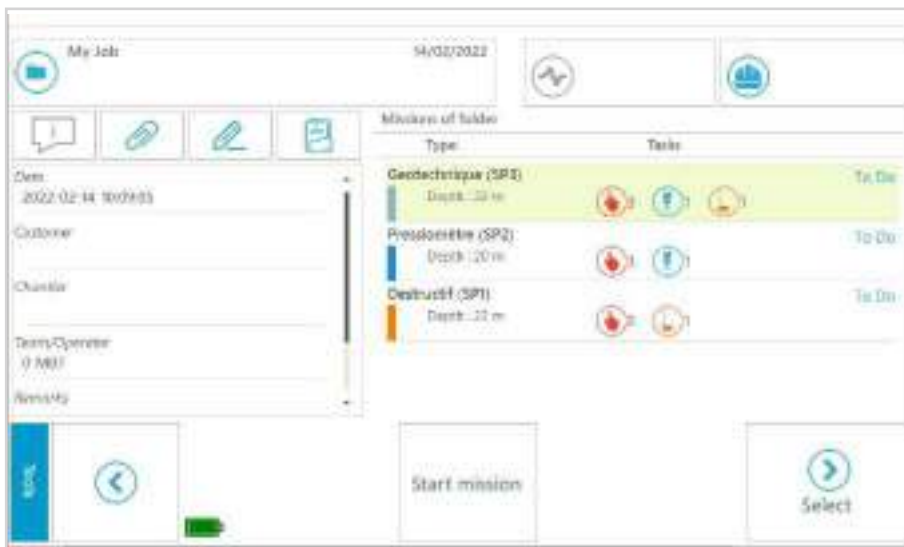
MISSION MODULE

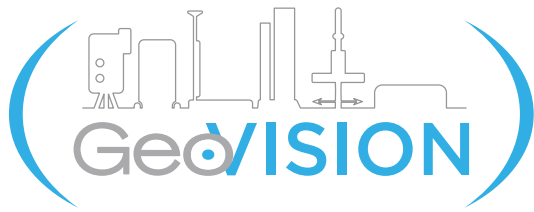
Réf : N7_5900527

Exclusively, the new Mission Module can be integrated into the GeoBOX®. It allows the engineer to create in advance on the GeoVision® software his missions (worksites) with a rich and customizable content (type of soundings, numbers, depth, location of the worksite, etc...) then to send this information in a mission sheet on the GeoBOX®. The sounder receives the mission at the start of his GeoBOX®, and thus visualises the work to be done. He can also launch applications (EXPLOFOR®, GeoPAC®, etc.) and tests directly configured according to the mission information. The results and data from the mission are then transferred back to GeoVision®.



NEW



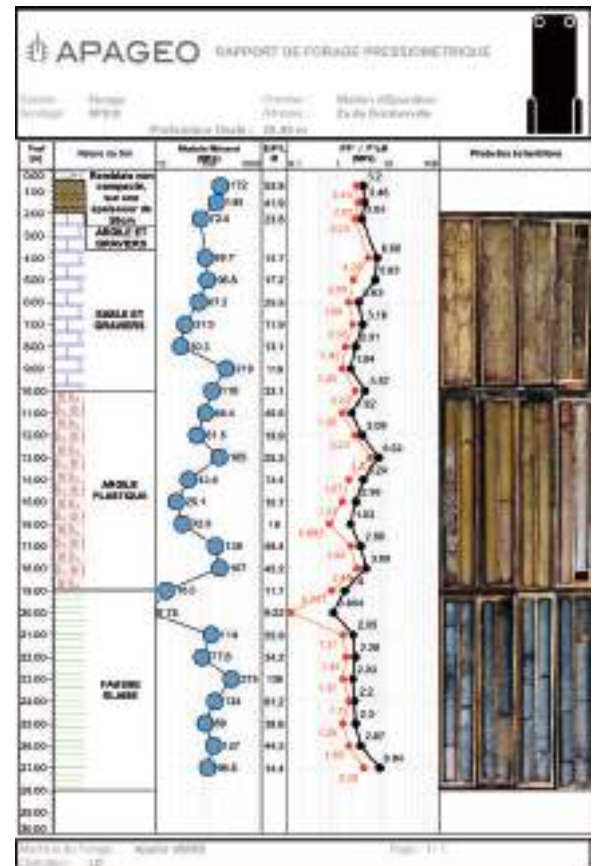


GEOVISION®

SOFTWARE
FOR GEOTECHNICAL DATA

THE +

- + More intuitive, user-friendly and collaborative interface
- + Simultaneous use of the software on several computers
- + Creation and distribution of geotechnical missions for GeoBOX®
- + Geolocalisation and access to GeoBOX® files



For each application, manual data input allows to complete data collected in soil.

GeoVISION® is a geotechnical data processing and visualization software. It allows the acquisition of data from APAGEO loggers or from recognised formats. GeoVision® has tools for geolocating GeoBOX®, retrieving their files, dialoguing and knowing their status. GeoVision® also offers the possibility of creating and distributing geotechnical missions on GeoBOX®.

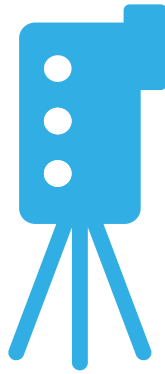
Manual input allows the integration of site notes, images and representative values of geotechnical measurements.





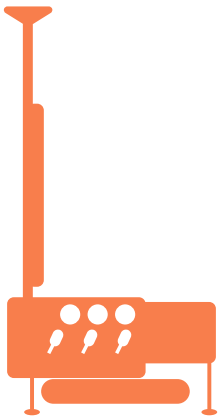
DRILLING APPLICATION

- Data importation and formatting
- Edition of drilling report



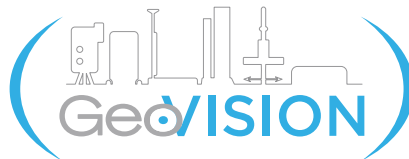
PRESSUREMETER APPLICATION

- Data importation and analysis
- Edition of pressuremeter results (including cyclic tests according to the ASTM D4719-07)
- Double hyperbolic method
- Adjustment of the pseudo-elastic phase



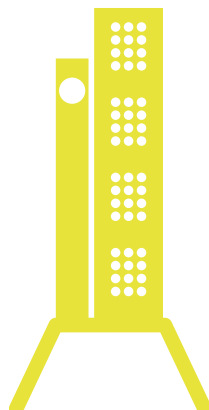
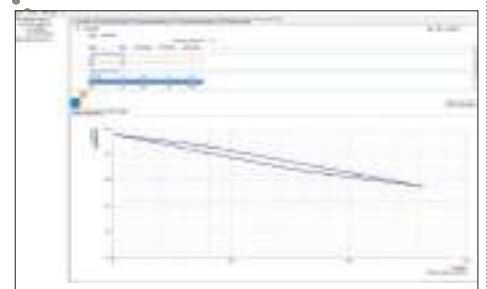
DYNAMIC PENETROMETER APPLICATION

- Importation and analysis
- Edition of dynamic penetration test results
- Highlighting of compaction default and conformity statement



LUGEON APPLICATION

- Importation and calculation
- Formatting and editing report for lugeon data





EXPLOFOR® 4

DRILLING DATA RECORDER

Ref : N7_5900600

GeoBOX® : N7_5900980

GeoVision®- F : N2_5910002



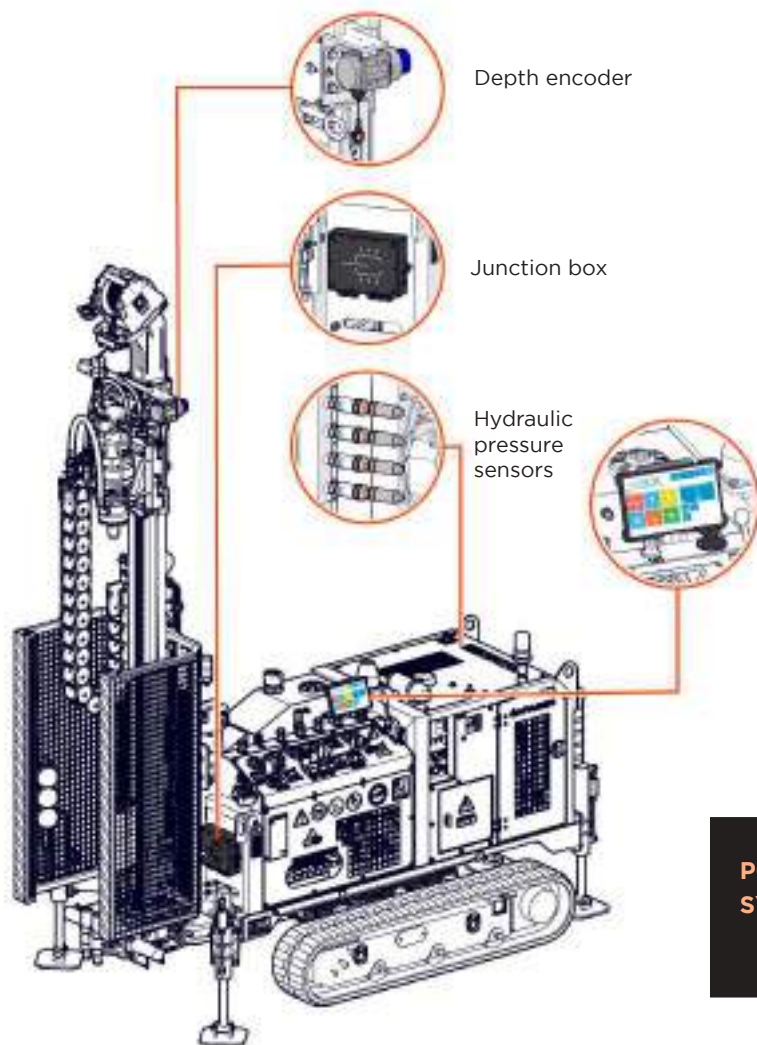
More info on GeoBox® page 33

THE +

- ✚ Recording of drilling activities
- ✚ Capture and record lithology during drilling
- ✚ Records calibrations (all along the borehole) during drilling
- ✚ Records the value of each sensor, with a predefined period in complement of the depth recording
- ✚ Synchronisation of activities, teams and workload with Geovision® (requires 4G option)
- ✚ Adapted for all types of hydraulics drilling rigs
- ✚ Instant profile acquisition & visualization on GeoBOX®.
- ✚ Recording of drilling activity times

EXPLOFOR® 4 enables the **recording of drilling parameters during the drilling process** in order to quickly visualize the profile of the soil being drilled and **to adjust and target the tests to be carried out** (Pressuremeter, SPT). EXPLOFOR® 4 has an activity manager, allowing the recording of different activities on the site, for analysis purposes, such as calibration all along the borehole, core recovery, cementing, various faults, etc...

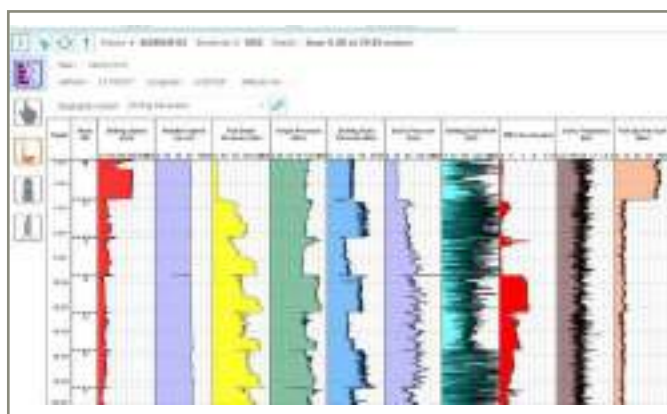
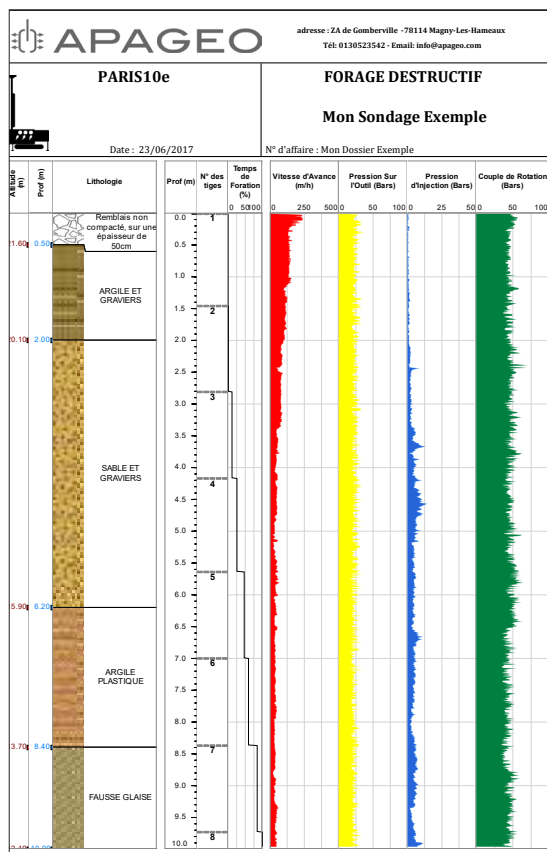




EXPLOFOR® 4 RECORDS THE FOLLOWING PARAMETERS :

- Depth of drilling
- Drilling speed
- Pull down pressure (trust) on drilling bits
- Rotating torque pressure of the rotation head
- Pump pressure of drilling fluid
- Optional :
Rotation speed, holding pressure, flow, GPS.
- Possibility to record lithology during borehole acquisition (manual parameter input included with the Explofor®).

POSSIBILITY TO USE THE SAME ACQUISITION SYSTEM FOR RECORDING DRILLING PARAMETERS AND DYNAMIC PENETROMETER!



Data can be **directly processed** on our geotechnical software GeoVision® through a **USB key or 4G modem transfer**



APADYN®

DATA ACQUISITION FOR
PENETROMETER AND CONTROL OF
TRENCH OR PLATFORM COMPACTION

Ref: N7_5900800
GeoBOX®: N7_5900900
GeoVision®-D: N2_5910007

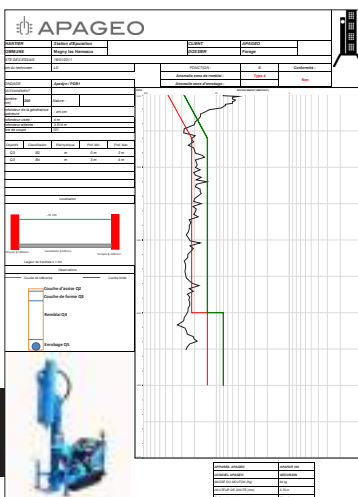
THE +

- + Acquisition and real time viewing of soil profile on GeoBOX®
- + Can be use on any heavy dynamic penetrometer
- + Compaction control mode approved by a certification CER 100 GR0032 for a GTR classification in accordance with COFRAC requirements
- + Curve displayed during test

APADYN® allows data acquisition for **dynamic penetrometer** (blow counting according to the **NF EN ISO 22476-2**) as well **as control of trench or platform compaction** (according to the NF P 94-063 standard) and **SPT (NF EN ISO 22476-3)**.

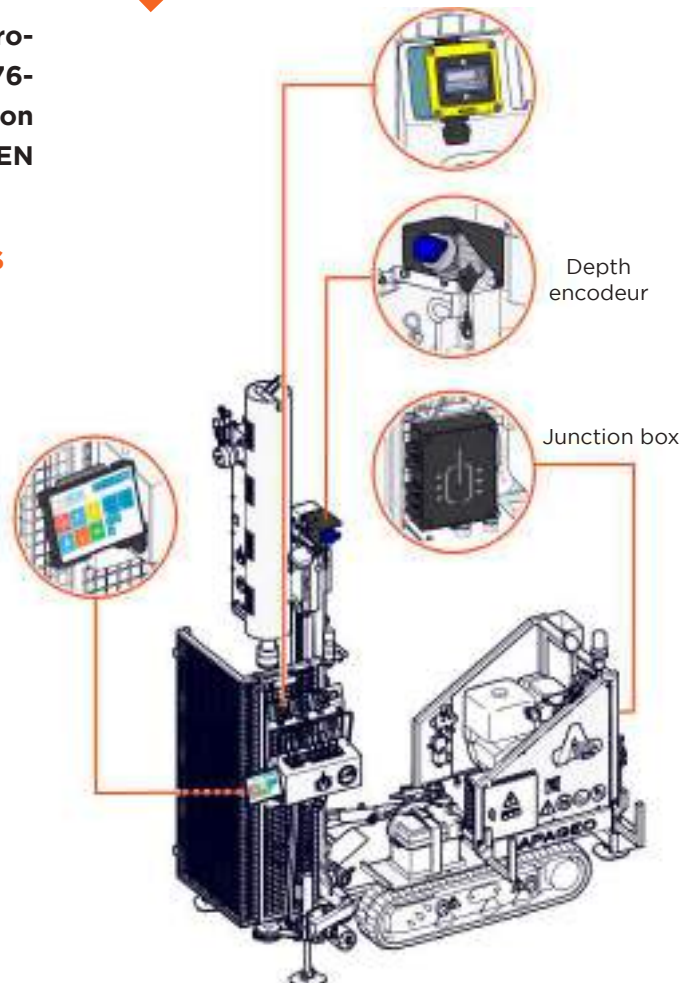
APADYN® RECORDS THE FOLLOWING PARAMETERS

- Blows number or depth per blow
- Depth required and reached
- Compaction envelope for compacted materials
- Manual measuring torque between each rod
- Cone resistance Qd
- Pipe position
- Sounding localization
- In option: GPS, mast inclination



More info on GeoBOX® page 33

Compaction control mode compatible with all our Apafor®, Socomafor and Geotool



Data can be **directly processed** on our geotechnical software GeoVision® through a USB key or 4G modem transfer

LUGEOTEST®

IN SITU SOIL PERMEABILITY TESTING

Ref: A6_9900501
GeoVision®-L: N2_5910008

THE +

- + Precise control of the water injection valve applying the pressure steps
- + Volume counter & pressure gauge for easy data acquisition
- + Data acquisition on GeoBOX® with the help of the manual input of Lugeon test



APPLICATIONS

☛ Assess water flow potential in the soil and then detecting anomalies and fissures.

The Lugeon water test is an in situ **test of formation permeability** applicable to fractured rock, masonry and cohesive soil with mechanical resistance corresponding to the water pressure applied during testing.

It can be used with the following equipment:

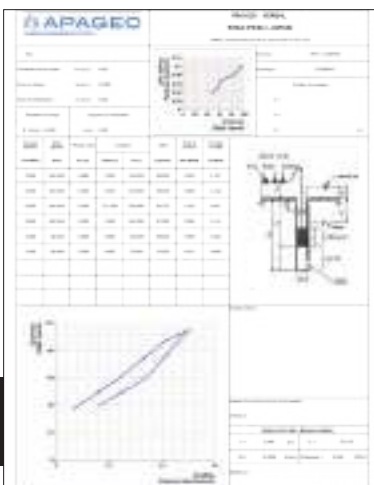
- Triplex pump, flow 100l/min, 11 bar [see p.24](#)
- Nitrogen bottle with regulator [see p.67](#)
- Packer and water level indicator [see p.96](#)
- Drilling rod for the packer manipulation [see p.133](#)

THE ELECTRONIC LUGEOTEST®

Ref : A6_9900511
GeoBOX® : N7_5900980
GeoVision®-L : N2_5910008

THE +

- + Automatic control and acquisition of the test on GeoBOX® with automatic LugeoTEST®
- + Automatic variation of the steps according to the reaction of the ground
- + Real time test visualization on GeoBOX®
- + 4G modem system (option)



POSSIBILITY TO USE A SENSOR INSTALLED IN THE CAVITY, VIA AN INSTRUMENTED COUPLING ABOVE THE PACKER! WORKS WITH THE LUGEOTEST (THE INSTRUMENTED COUPLING IS CONNECTED TO A STAND-ALONE DISPLAY) AND THE ELECTRONIC LUGEOTEST (THIS REPLACE THE SENSOR ON THE INJECTION LINE)



Data can be **directly processed** on our geotechnical software GeoVision® through a **USB key or 4G modem transfer**



Ref GeoPAC® 50 : N7_5900000
Ref GeoPAC® 100 : N7_5900050
GeoVision®-P: N2_5910001

GEOPAC®

AUTO CONTROLLED PRESSUREMETER

5
MPa

10
MPa

THE +

- + Piloting and data acquisition by WIFI with GeoBOX®
- + Automatic procedure from the expansion to the deflation of the probe
- + Automatic pressure lag settings
- + Perfect management of the pressure increments
- + Reliable results
- + Low consumption of gas

APPLICATIONS

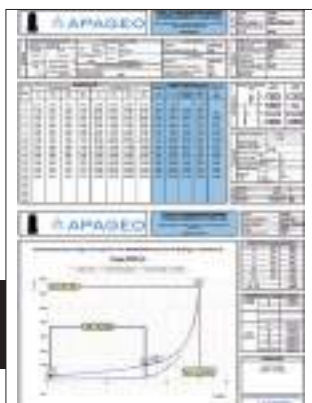
• In situ controlled loading test performed on the wall of a borehole using a cylindrical probe that expands radially

GeoPAC® manages all the different steps of a pressuremeter test according to the **ISO 22476-4** and **ASTM D4719-07** standards. From the test readings (volume variation based on controlled pressure), a stress-strain curve can be obtained for the soil in the case of plane deformation.

Testing enables definition of three parameters: Ménard pressuremeter modulus (E_M), Creep pressure (P_f), Limit pressure (P_l)

IMPLEMENTATION

The operator enters the different parameters of the test in GeoBOX® (borehole number, depth of the test, pressure of 1st pressure stage etc...). As soon as the probe is lowered into the borehole to the required test depth, GeoBOX® can launch the test execution. From now, GeoPAC® controls all the sequences of the whole process: standard test, pressure loss, volume loss, probes bleeding. Pressure increments and pressure lag settings are also automated. During the entire process, GeoBOX® offers a monitoring of the pending test on its screen (progression, real time view of the results, line graph etc...). At any time, the operator can decide to stop the test from GeoBOX®.



More info on GeoBOX® page 33

THE MOST
EFFICIENT ON
THE MARKET

Easy to use and unrivalled pressure regulation for perfectly performed tests



NEW !

- CYCLIC TEST ACCORDING TO THE ASTM D4719-07 STANDARD OR ACCORDING TO A PROPER PROGRAMMATION
- CONTROLLED VOLUME
- SINUSOIDAL MODE



Recordings can be directly edited on GeoBOX®'s portable printer



Data can be **directly processed** on our geotechnical software GeoVision® through a USB key or 4G modem transfer



Ref: N7_5900060
GeoBOX® : N7_5900980
GeoVision®-P: N2_5910001

HYPERPAC®

AUTO CONTROLLED PRESSUREMETER
FOR VERY HIGH PRESSURE TEST

25
MPa

30
MPa

THE +

- + Piloting and data acquisition by WIFI with GeoBOX®
- + Automatic procedure from the expansion to the deflation of the probe
- + Automatic adjustment of pressure increments
- + Perfect management of test pressure
- + Reliable results

APPLICATIONS

• In situ controlled loading test performed on the wall of a borehole in rock using a cylindrical probe that expands radially

HyperPAC® manages all the different steps of a pressuremeter test with very high pressure for very hard formations and rocks. From the test readings (volume variation based on controlled pressure), a stress-strain curve can be obtained for the soil in the case of plane deformation.

Testing enables definition of three parameters:

Ménard pressuremeter modulus (E_M), Creep pressure (P_f), Limit pressure (P_l)

IMPLEMENTATION

The borehole is drilled by coring or percussive method, so as to minimize wall disturbance. It has to keep a cavity diameter compatible with the probe size (46 mm or 74 mm).

The operator enters the different parameters of the test in GeoBOX® (borehole number, depth of the test, pressure of 1st pressure stage etc...). As soon as the probe is lowered into the borehole to the required test depth, GeoBOX® can launch the test execution. From now, HyperPAC® controls all the sequences of the whole process: standard test, pressure loss, volume loss, probes bleeding.

During the entire process, GeoBOX® offers a monitoring of the pending test on its screen (progression, real time view of the results, line graph etc...). At any time, the operator can decide to stop the test from GeoBOX®.



More info on GeoBOX® page 33

THE MOST
POWERFUL
PRESSUREMETER

Easy to use and unrivalled pressure
regulation for perfectly performed
tests



PERFORMING CYCLIC TESTING ACCORDING
TO A USER-DEFINED PROGRAM



Recordings can be directly edited on
GeoBOX®'s portable printer



Data can be **directly processed** on our geotechnical
software GeoVision® through a **USB key or 4G modem transfer**

MÉNARD PRESSUREMETER

Ref: A1_8100302

THE WORLD'S
BEST SELLING

THE +

- + Conception following the original Ménard procedures
- + Clear and easy to use control panel
- + Easy to read measurements
- + Quality tripod: stable, sturdy and easy to install
- + Simple general maintenance with special package



APPLICATIONS

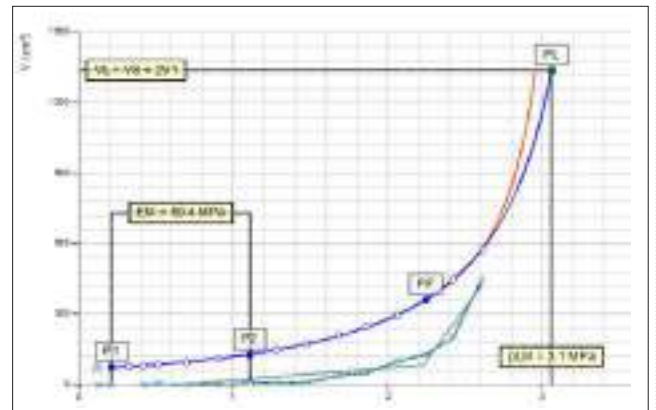
• In situ stress controlled loading test performed on the wall of a borehole using a cylindrical probe which can expand radially

The Ménard pressuremeter (Control Unit), plastic tubing and 3-cell probe allows to perform in situ Pressuremeter test in soils according to the **ISO 22476-4** standard. From the test readings (volume variation based on controlled pressure), a stress-strain curve can be obtained, in the case of plane deformation, which yields: the Ménard Pressuremeter modulus (E_M), the creep pressure (P_f), the Ménard limit pressure (P_l).

IMPLEMENTATION

The borehole is drilled so as to minimize wall disturbance and to keep a cavity diameter compatible with the probe size (63 mm or 76 mm).

As soon as the probe is lowered into the borehole to the required test depth, the operator can start the test execution by pressure increments with the control unit.



MÉNARD VHP PRESSUREMETER

Ref : A1_8100316

- ➔ Capacity **for up to 140 bars**, it includes a 800 cm³ volumeter with a sight tube that can be replaced by 2 plugs allowing to work only with the data logger (thus preventing accidental breakage at high pressure), a special High Pressure main regulator, a differential regulator, additional 0-25, 0-60 and 0-160 bar pressure gauges, measuring the supply pressure of the measuring cells and the guard pressure of the probe, all connected by internal copper pipes with a working pressure of over 200 bar.



Manual input of tests on GeoVision® or automatic via Geospad®2



Ref : N7_5900710
GeoBox® : N7_5900900
GeoVision®-P : N2_5910001

GEOSPAD®2

DATA ACQUISITION SYSTEM FOR PRESSUREMETER



More info on GeoBox® page 33

THE +

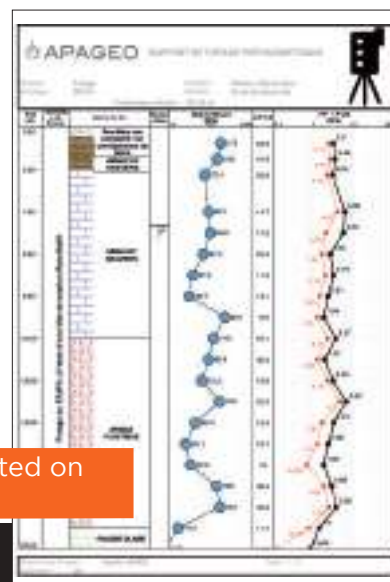
- ⊕ Suitable to all kind of Ménard standard pressuremeter
- ⊕ Wifi data acquisition on GeoBOX®
- ⊕ Real time test visualization on GeoBOX®

GeoSPAD®2 allows **pressuremeter data acquisition** through the central unit GeoBOX®. The system is entirely integrated in the pressuremeter.

Conformed to **procedure B of ISO 22476-4**, recordings are automatically carried out after 1, 15, 30 et 60 seconds, with optimized accuracy : 0.1 cm³ on the volume and 10kPa on the pressure.

NEW !

CYCLIC TESTS RECORDING ACCORDING TO THE ASTM 94 110-2

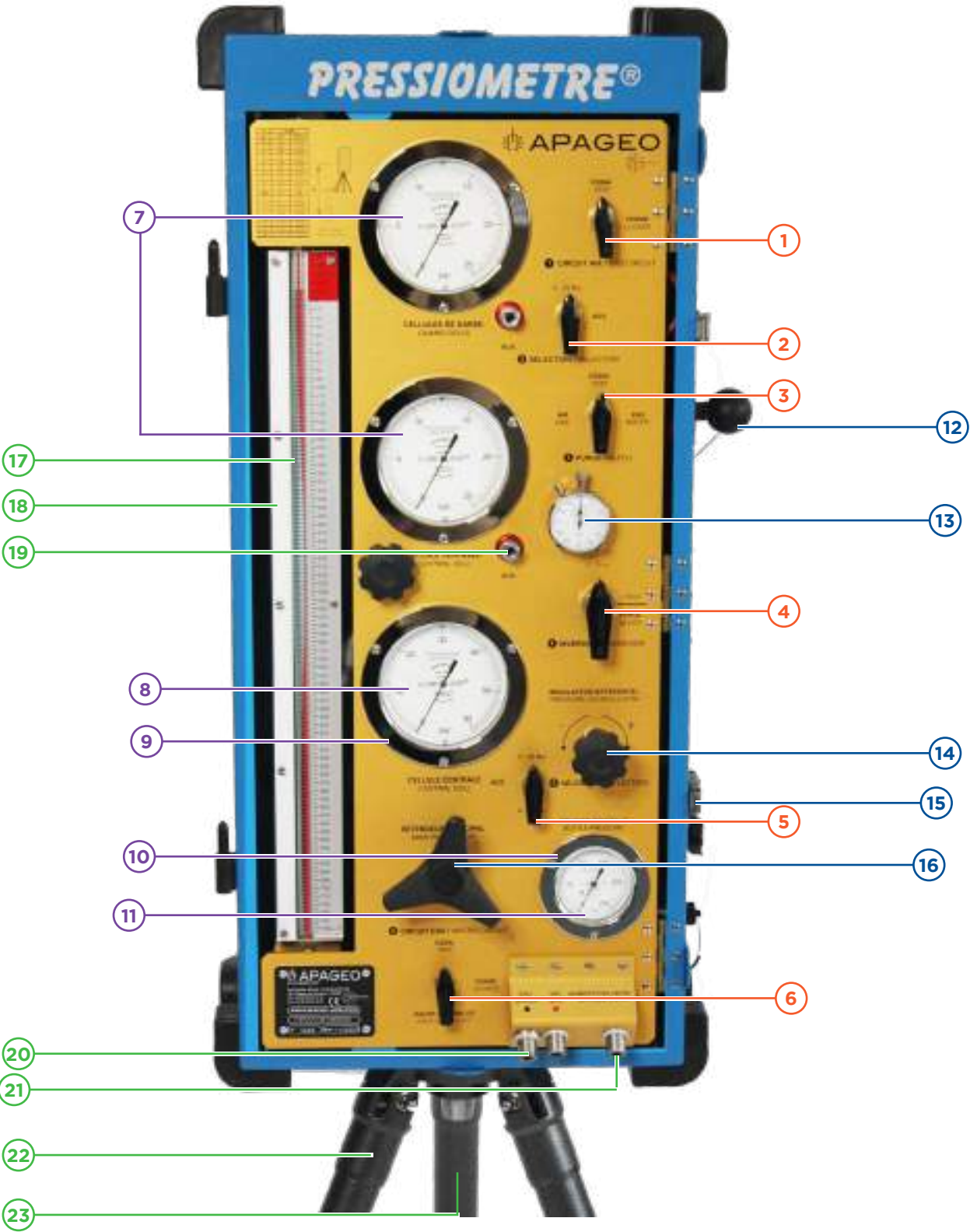


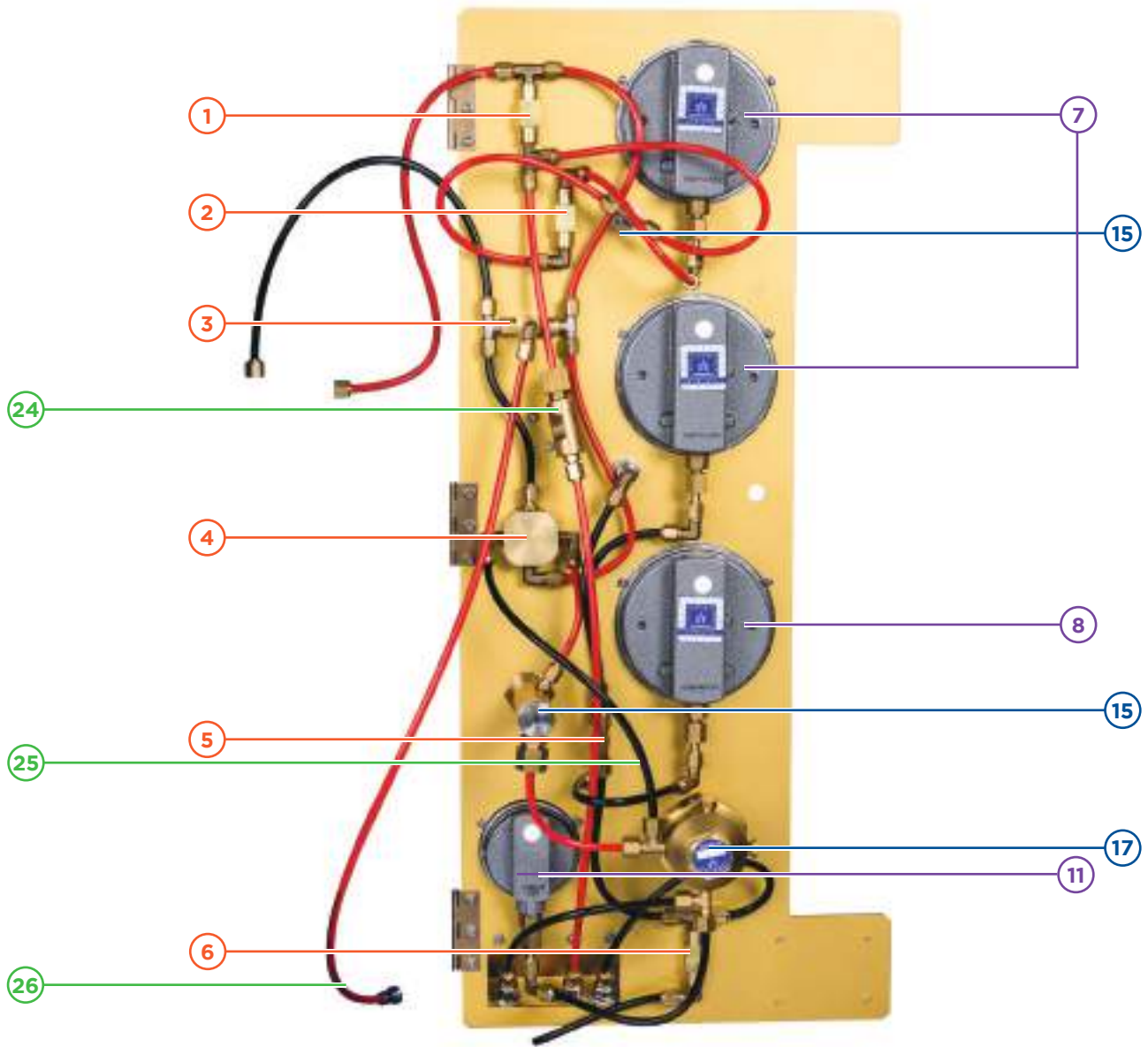
Recordings can be directly edited on **GeoBOX®'s portable printer**



Data can be **directly processed** on our geotechnical software GeoVision® **through a USB key or 44 modem transfer**

PRESSUREMETER
MÉNARD





INDICE	DESCRIPTION	REFERENCE	INDICE	DESCRIPTION	REFERENCE
1	Gas circuit stop valve (complete)	A1 1902206	14	Pressure lag regulator (complete)	A1 8320301
2	25/100 bar gas selection valve (complete)	A1 1902207	15	Fixation for lid type 3	A2 8200101
3	Bleed valve for both gas and water (complete)	A1 1902208	16	Main pressure regulator	A1 9310403
4	Inversion valve 0-10m	A1 1902209	17	Sight tube complete (new model)	A1 8902203
5	25/100/60 bar water selection valve (complete)	A1 1902210	18	Polycarbonate cover plate for sight tube	A1 9801603
6	Water circuit stop valve (complete)	A1 1902211	19	Quick female socket for extra gauge	A1 8701802
7	0-25 bar gauge (vertical outlet)	A1 8501310	20	Quick female socket for extra gauge	A1 8701802
8	0-60 bar gauge (vertical outlet)	A1 8501312	21	Quick female socket for Nitrogen bottle inlet	A1 8701801
9	Ø 100 gauge ring	A1 8500301	22	Tripod	A2 8202001
10	Ø 60 gauge ring	A1 8500302	23	Stainless steel tripod axis	A2 8202003
11	0-250 bar gauge (vertical outlet)	A1 8501324	24	Filter housing complete	A1 8901602
12	Ball Fixation for GeoBOX®	N7 5900222	25	Rilsan 3x6 Pressuremeter inner black lead	A1 8602011
13	Timer 1 minute	A1 8900301	26	Rilsan 3x6 Pressuremeter inner red lead	A1 8602018

GUIDELINES FOR PRESSUREMETER PROBE INSTALLATION TECHNIQUES

SOIL TYPE													
	CLAYEY SOILS				SILTY SOILS			SANDY SOIL			COARSE SOILS	ROCKS	
BORING TECHNIQUES	SLUDGE AND SOFT	SOFT TO MEDIUM STIFF	STIFF	ABOVE WATER TABLE	BELOW WATER TABLE	LOOSE ABOVE WATER TABLE	LOOSE BELOW WATER TABLE	MEDIUM DENSE AND DENSE	GRAVELS, COBBLES	WEATHERED ROCK, SOFT ROCK	HARD		
OPEN HOLE DRILLING	HA hand auger	***	***	*	***	***	*	***	-	-	-	-	
	HAM hand auger and mud	***	***	**	***	***	***	***	-	-	-	-	
	CFA Continuous flight auger	-	**	***	**	**	-	**	*	*	*	*	
	STDTM Slotted tube with inside rotary tool and mud circulation		***	***	**	**	*	***	***	***	***	***	
	CD Core drilling	-	**	***	**	*	-	*	-	**	**	***	
	RP Rotary percussion	-	*	**	*	*	*	**	***	**	**	***	
FULL DISPLACEMENT	PT Pushed tube	***	*	-	*	-	-	-	-	*	-	-	
	VDT Vibro driven tube	-	-	-	*	-	-	*	*	*	-	-	
	DST Driven slotted tube	-	*	*	*	*	*	**	***	-	-	-	
SELF BORING	VIBRO-STAF®	-	**	**	***	***	***	***	***	*	-	-	
	ROTO-STAF®	-	**	**	***	***	***	***	***	*	-	-	
	SAF® self-bored probe	***	-	-	***	***	***	-	-	-	-	-	

*** Recommended ** Suited * Acceptable - Not suited

PRESSUREMETER

PACKAGES



PRESSUREMETER PACKAGE

Based on 15 meters

Description	Reference	Quantity suggested
Pressure and volume Control Unit 0x25 - 0x60 - 0x100 bar	A1 8100302	1
ø60mm twin probe, complete with rubber cover*	A1 1406006	1
ø60mm twin probe, complete with High Pressure canvas cover	A1 1406010	1
ø60mm probe protection shoe	A1 1496008	1
ø60mm probe to ø22mm rod connection**	A1 1456002	1
ø22mm extension rod 1,00m length - hollow **	F5 02002202	15
Twin connecting tubings - 25m length***	A1 8602014	2
Quick connection for twin tubings	A1 8701811	4
Nitrogen cylinder	A1 1900202	1
Complete Regulator for cylinder (with connecting tubing to CU)	A1 8310400	1
Calibration steel cylinder ø66mm I.D. f or ø60 probe and ø63 slotted casing	J2 900006301	1
Metal carrying box	QO 005	1

* Coaxial probes available [see p.54](#), Probes Ø 74 available [see p.56](#)

** Precise if other rod diameter needed

*** Other lengths and coaxial tubing available [see p.57](#)

SPARE PARTS PACKAGE

Description	Reference	Quantity suggested
Rubber cover, ø60mm probe	A1 1416002	5
High Pressure canvas cover, ø60mm probe	A1 1416008	5
Metal cover, ø60mm probe (steel strips)	A1 1416006	5
HP+ canvas cover, ø60mm probe	A1 1416011	5
DN reinforced canvas cover, ø60mm probe	A1 1416012	2
Membrane, ø60mm probe	A1 1496006	20
O-ring, ø60mm probe	A1 1496004	2
Cover ring, ø60mm probe	A1 1426003	2
Membrane ring, ø60mm probe	A1 1426004	2
Polyurethane ring, ø60mm probe	A1 1426006	2
DN cover ring, ø60mm probe	A1 1426002	2
Setting up probe stand, ø60mm	A1 1496010	1
Probe thread grease	A1 1902001	1
Cover mounting grease	M2 0901618	1
19mm wide tape roll	A1 1901804	1
28mm wide tape roll	A1 1901805	1
Strap wrench	A1 1900302	1
ø60mm polyurethane ring extractor	A1 1496001	1
ø60mm standard ring extractor	A1 1496000	1
ø60mm DN ring extractor	A1 1496030	1
Band clip for ø60 metal cover (steel strip)	A1 1496002	2
Reparation kit for twin tubings	A1 1700618	2
Connection kit for twin tubings	A1 1700619	2
Probe drain tap	A1 1456012	2
ø6x1/8" brass nipple for twin probe	A1 1700605	4
Polycarbonate sight tube (complete) New model	A1 8902203	2
Tools box for pressuremeter maintenace	A1 1900300	1

PRESSUREMETER

TOOLS PACKAGES

Ø 63 MM MÉNARD SLOTTED TUBE WITH Ø 44 PROBE

Based on 20 meters

Description	Reference	Quantity suggested
1 Ø63mm Ménard slotted tube right thread*	J2 101006301	1
2 Cone for Ø63mm Ménard slotted tube	J4 060006301	2
3 Retaining plate for Ø63mm Ménard slotted tube	J4 0906309	1
4 Shock absorber for Ø55/63mm Ménard slotted tube	J4 0906305	2
5 Ø63mm Ménard slotted connection to drilling head	Depend on thread	1
6 Hollow washer for Ø63mm Ménard slotted tube	J4 0906306	1
7 Ø44mm coaxial probe, complete with High Pressure canvas cover**	A1 1404420	1
Ø44mm coaxial probe, complete with HP+ canvas cover	A1 1404418	1
Ø63mm Ménard extension tube, 1,5m length right thread*	J1 101006302	14
High Pressure canvas cover, Ø44mm probe	A1 1414412	5
HP+ canvas cover, Ø44mm probe	A1 1414414	5
DN reinforced canvas cover, Ø44mm probe	A1 1414415	2
Membrane (short), Ø44mm probe, 210mm central cell length	A1 1494405	5
membrane ring, Ø44mm probe	A1 1424404	2
O-ring, Ø44mm probe	A1 9901004	2
Cover ring, Ø44mm probe	A1 1424402	2
DN cover ring, Ø44mm probe	A1 1424403	2
Setting up probe stand, Ø44mm	A1 1494409	1
Ø44mm standard ring extractor	A1 1494422	1
Ø44mm DN ring extractor	A1 1494430	1

Used for sand, gravel, pebble. The implementation of the tubing required a hammering system or vibrofonçage and extraction system. Sometimes, a pilot drilling with a smaller diameter is necessary before the implementation of the tubing in very compact ground.

* variation: Ø55 and 75, see next page

** also exists in standard Ménard and coaxial [see p.52](#)



Ø 55 MM MÉNARD SLOTTED TUBE WITH Ø 44 PROBE

Based on 20 meters

Description	Reference	Quantity suggested
1 ø55mm Ménard slotted tube right thread*	J2 102005502	1
2 Cone for ø55mm Ménard slotted tube	J4 060005501	2
3 Retaining plate for ø55mm Ménard slotted tube	J4 0905504	1
4 Shock absorber, ø55/63mm Ménard slotted tube	J4 0906305	2
5 ø55mm Ménard slit connection to drilling head	Depending of the thread	1
6 Hollow washer for ø55mm Ménard slotted tube	J4 0905503	1
7 ø44mm twin probe, complete with High Pressure canvas cover**	A1 1404420	1
ø55mm Ménard extension tube, 1,0m length right thread	J1 101005501	15

*Also exists in left thread

**Also exists in standard Ménard and coaxial [see p.52](#)

Ø 75 MM MÉNARD SLOTTED TUBE WITH Ø 60 PROBE

Based on 20 meters

Description	Reference	Quantity suggested
ø75mm Ménard slotted tube right thread*	J2 101007501	1
Cone for ø75mm Ménard slotted tube	J4 060007501	2
Shock absorber for ø75mm Ménard slotted tube	J4 090007501	2
ø75mm Ménard slit connection to drilling head	Depend on thread	1
ø60mm twin probe, complete with High Pressure canvas cover**	A1 1406010	1
ø75mm Ménard extension tube, 1,5m length right thread	J1 101007501	15
ø75mm nipple	J4 070007501	15
High Pressure canvas cover, ø60mm probe	A1 1416008	5
HP+ canvas cover, ø60mm probe	A1 1416011	5
DN reinforced canvas cover, ø60mm probe	A1 1416012	5
Membrane, ø60mm probe	A1 1496006	5
Membrane ring, ø60mm probe	A1 1426004	2
O-ring, ø60mm probe	A1 1496004	2
Cover ring, ø60mm probe	A1 1426003	2
DN cover ring, ø60mm probe	A1 1426002	2
Setting up probe stand, ø60mm	A1 1496010	1
ø60mm standard ring extractor	A1 1496000	1
ø60mm DN ring extractor	A1 1496030	1

*Also exists in left thread

**Also exists in coaxial [see p.49](#)

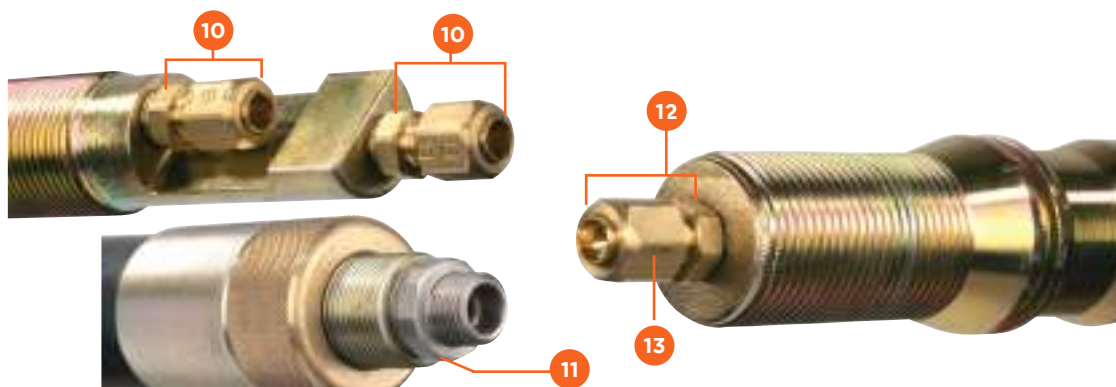
PRESSUREMETER

ACCESSORIES



Ø 44 PROBE « AX MÉNARD » TYPE

Mark	Description	Reference
1.A	Complete probe with short cell	-
	ø44mm short coaxial probe, complete with rubber cover	A1 1404416
	ø44mm short coaxial probe, complete with High Pressure canvas cover	A1 1404414
	ø44mm short twin probe, complete with rubber cover	A1 1404422
	ø44mm short twin probe, complete with High Pressure canvas cover	A1 1404420
1.B	Complete probe «Standard Ménard» with long cell	-
	ø44mm standard coaxial probe, complete with rubber cover	A1 1404404
	ø44mm standard coaxial probe, complete with High Pressure canvas cover	A1 1404429
	ø44mm standard twin probe, complete with rubber cover	A1 1404409
	ø44mm standard twin probe, complete with High Pressure canvas cover	A1 1404430
	ø44mm probe protection shoe	A1 1494408
2	ø44mm probe cover (several type available)	See next page
3	ø44mm probe nut	A1 1494402
4	Cover ring, ø44 mm probe	A1 1424402
5	O-ring, ø44mm probe	A1 9901004
6	Membrane ring, ø44mm probe	A1 1424404
7	Membrane short, for 210mm central cell length, ø44 mm probe	A1 1494405
8	Polyurethane cover ring for metal cover, ø44mm probe	A1 1424406
9	Membrane STD long, for 370mm central cell length, ø44 mm probe	A1 1494406
10	ø6x1/8" brass nipple for twin probes	A1 1700605
11	ø10x1/2" stainless steel nipple, ø44mm coaxial probe	A1 1700615
12	Probe drain tap	A1 1456012
13	Drain nut, alone	A1 1497005





SPARE PARTS Ø 44 PROBE

Description	Reference
Metal cover, ø44 mm probe	A1 1414407
ø3 mm rubber cover, ø44 mm probe	A1 1414405
ø4 mm rubber cover, ø44 mm probe	A1 1414406
High Pressure canvas cover, ø44 mm probe	A1 1414412
HP+ canvas cover, ø44 mm probe	A1 1414414
Steel canvas cover, ø44 mm probe	A1 1414415
Cover ring, ø44 mm probe	A1 1424402
DN cover ring, ø44mm probe	A1 1424403
Polyurethane ring, for metal cover, ø44 mm probe	A1 1424406
ø44mm probe nut	A1 1494403
O-ring, ø44mm probe	A1 9901004
Membrane short, for 210mm central cell length, ø44 mm probe	A1 1494405
Membrane STD long, for 370mm central cell length, ø44 mm Ménard standard probe	A1 1494406
Membrane ring, ø44mm probe	A1 1424404
ø44mm probe to ø22mm rod connection (see picture on the right)	A1 1454402
Setting up probe stand, ø44mm	A1 1494409
ø44mm standard ring extractor (see picture on the right)	A1 1494400
ø44mm DN ring extractor (see picture on the right)	A1 1494430
Polyurethane ring extractor, ø44mm probe	A1 1494401
Rondelle de centrage tube fendu 63	J4 0906308
ø63mm casing shoe, tungsten carbide	J4 080006301

ø 44, 60 et 74 mm
probe connection



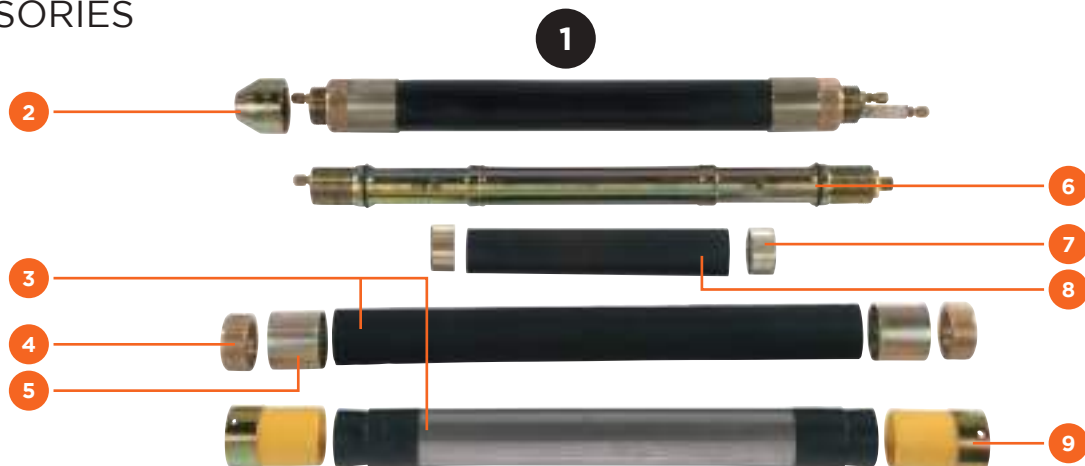
ø 44, 60 et 74 mm
setting up probe stand



Ring extractor

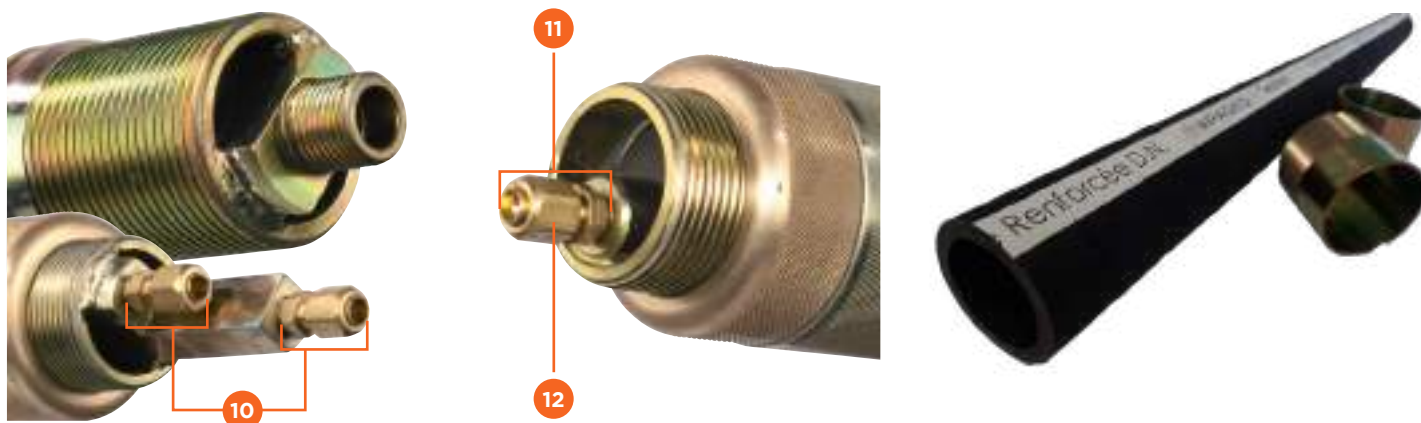
PRESSUREMETER

ACCESSORIES



Ø 60 MM PROBE « BX MÉNARD » TYPE

Mark	Description	Reference
1	Ø60mm twin probe, complete with High Pressure canvas cover	A1 1406010
	Ø60mm twin probe, complete with rubber cover	A1 1406006
	Ø60mm twin probe, complete with metal cover	A1 1406008
	Ø60mm twin probe, complete with HP+ canvas cover	A1 1406014
	Ø60mm twin probe, complete with DN reinforced cover	A1 1406007
	Ø60mm coaxial probe, complete with metal cover	A1 1406003
	Ø60mm coaxial probe, complete with rubber cover	A1 1406002
	Ø60mm coaxial probe, complete with High Pressure canvas cover	A1 1406011
	Ø60mm coaxial probe, complete with HP+ canvas cover	A1 1406015
	Ø60mm coaxial probe, complete with DN reinforced cover	A1 1406005
2	Ø60mm probe protection shoe	A1 1496008
3	Ø60mm probe cover (several types available)	See next page
4	Ø60mm probe nut	A1 1496003
5	Cover ring, Ø60 mm probe	A1 1426003
	DN cover ring, Ø60 mm probe	A1 1426002
6	O-ring, Ø60mm probe	A1 1496004
7	Membrane ring, Ø60mm probe	A1 1426004
8	Membrane, 210mm central cell length, Ø60 mm probe	A1 1496006
9	Polyurethane cover ring for metal cover, Ø60mm probe	A1 1426006
10	Ø6x1/8" brass nipple for twin probe	A1 1700605
11	Probe drain tap	A1 1456012
12	Drain nut alone	A1 1497005



Ø 60 MM PROBE, SPARE PARTS

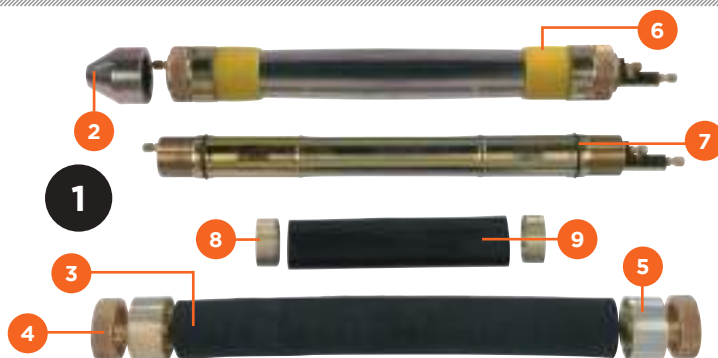
Description	Reference
Metal cover, ø60 mm probe	A1 1416006
ø3mm rubber cover, ø60 mm probe	A1 1416002
ø4mm rubber cover, ø60 mm probe	A1 1416005
High Pressure canvas cover, ø60 mm probe	A1 1416008
HP+ canvas cover, ø60mm probe	A1 1416011
DN reinforced canvas cover, ø60mm probe	A1 1416012
Cover ring, ø60 mm probe	A1 1426003
Polyurethane ring, for metal cover, ø60 mm probe	A1 1426006
DN cover ring, ø60mm probe	A1 1426002
ø60mm probe nut	A1 1496003
O-ring, ø60mm probe	A1 1496004
Membrane, 210mm central cell length, ø60 mm probe	A1 1496006
Membrane ring, ø60mm probe	A1 1426004
ø60 mm probe protection shoe	A1 1496008
ø60mm probe to ø22mm rod connection (see picture page 41)	A1 1456002
ø60mm probe to ø42mm rod connection	A1 1456005
ø60mm probe to ø50mm rod connection	A1 1456007
ø60mm probe to Arod (pin) connection	A1 1456008
ø60mm probe to R32 rod connection	A1 1456011
ø60mm probe to R38 rod connection	A1 1456013
Setting up probe stand, ø60mm probe (see picture page 41)	A1 1496010
Probe thread grease	A1 1902001
Cover mounting grease	M2 0901618
Strap wrench	A1 1900302
Spare strap	A1 1901901
19mm wide tape roll	A1 1901804
38mm wide tape roll	A1 1901805
Ring extractor device, ø60mm probe	A1 1496000
Polyurethane ring extractor, ø60mm probe	A1 1496001
Band clip for ø60 metal cover (steel strip)	A1 1496002
Probe drain tap	A1 1456012
Drain nut alone	A1 1497005
ø6x1/8" brass nipple for twin probe	A1 1700605

COVER CHOICE ADVICE

Cover type	Pressure Range	Soil type
Metal cover	Medium pressure	Gravel, Flinty clays, chalk Mud, soft clays, Silts, Loose sands, Pasty Chalk
3 mm rubber cover	Low pressure	Mud, soft clays, Silts, Loose sands, Pasty Chalk
4 mm rubber cover	Low pressure	Soft clays, Silts, Loose sands, Pasty Chalk + grain
High Pressure canvas cover	Medium to High Pressure	Clay, Silt, Sand + Marl, Coarse soils
DN reinforced canvas cover	High Pressure	Marl, Coarse soils, Weathered rocks, Fresh Rocks

PRESSUREMETER

ACCESSORIES



Ø 74 MM PROBE « NX MÉNARD » TYPE

Mark	Description	Reference
1	Ø74mm twin probe, complete with metal cover	A1 1407005
	Ø74mm twin probe, complete with rubber cover	A1 1407003
	Ø74mm twin probe, complete with HP+ canvas cover	A1 1407015
	Ø74mm twin probe, complete with DN reinforced canvas cover	A1 1407006
	Ø74mm coaxial probe, complete with metal cover	A1 1406999
	Ø74mm coaxial probe, complete with rubber cover	A1 1407401
	Ø74mm coaxial probe, complete with HP+ canvas cover	A1 1407014
	Ø74mm coaxial probe, complete with DN reinforced canvas cover	A1 1406998
2	Ø74mm probe protection shoe	A1 1497009
3	Ø74mm probe cover (several type available)	see below
4	Ø74mm probe nut	A1 1497006
5	STD cover ring, Ø74 mm probe	A1 1427001
	DN cover ring, Ø74 mm probe	A1 1427005
6	Polyurethane cover ring for metal cover, Ø74mm probe	A1 1427003
7	O-ring for polyurethane cover ring, Ø74mm probe	A1 1497007
7	O-ring for STD/DN cover ring, Ø74mm probe	A1 1497012
8	Membrane ring, Ø74mm probe	A1 1427002
9	Membrane, 210mm central cell length, Ø74mm probe	A1 1497008

Ø 74 MM PROBE, SPARE PARTS

Description	Reference
Metal cover, Ø74 mm probe	A1 1417002
Rubber cover, Ø74 mm probe	A1 1417001
HP+ canvas cover, Ø74mm probe	A1 1417003
DN reinforced canvas cover, Ø74mm probe	A1 1417005
STD cover ring, Ø74 mm probe	A1 1427001
DN cover ring, Ø74 mm probe	A1 1427005
Polyurethane ring, Ø74mm probe	A1 1427003
Ø74mm probe nut	A1 1497006
O-ring for polyurethane ring, Ø74mm probe	A1 1497007
O-ring for STD/DN cover ring, Ø74mm probe	A1 1497012
Membrane, 210mm central cell length, Ø74mm probe	A1 1497008
Membrane ring, Ø74mm probe	A1 1427002
Ø74mm probe protection shoe	A1 1497009
Ø74mm probe to Ø22mm rod connection (see picture page 41)	A1 1457001
Ø74mm probe to Ø42mm rod connection	A1 1457013
Ø74mm probe to Ø50mm rod connection	A1 1457015
Setting up stand, Ø74mm probe (see picture page 41)	A1 1497010
Polyurethane ring extractor, Ø74mm probe	A1 1497002

PRESSUREMETER

ACCESSORIES TWIN TUBING COUPLING



TUBING

Description	Reference
High Pressure Twin tubing - 25 m length	A1 8602014
High Pressure Twin tubing - 33 m length	A1 8602015
High Pressure Twin tubing - 50 m length	A1 8602016
High Pressure Twin tubing - 100 m length	A1 8602013

ACCESSORIES



Mark	Description	Reference
1	Male coupling for twin tubing	A1 8701811
2	ø6mm x 1/8" brass nipple	A1 1700605
3	Rubber protection cap for tubing coupler	A3 1901603
4	Repairing kit for twin tubing	A1 1700618
5	ø6mm nut with ferrule	A1 1700607
6	Straight insert 3mm diameter	A1 1900602
7	Connection kit for 2 twin tubings	A1 1700619
8	ø6 x 6mm brass nipple	A1 1700606

PRESSUREMETER

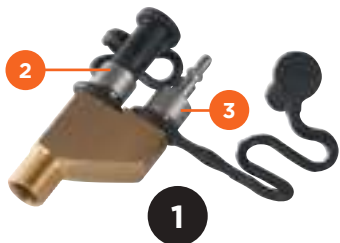
COAXIAL TUBING HIGHT PRESSURE ACCESSORIES

TUBING

Description	Reference
High Pressure coaxial tubing 100 bar TECALAN 25 m	A1 8602002
High Pressure coaxial tubing 100 bar TECALAN 33 m	A1 8602003
High Pressure coaxial tubing 100 bar TECALAN 50 m	A1 8602004
High Pressure coaxial tubing 100 bar TECALAN 100 m	A1 8602001

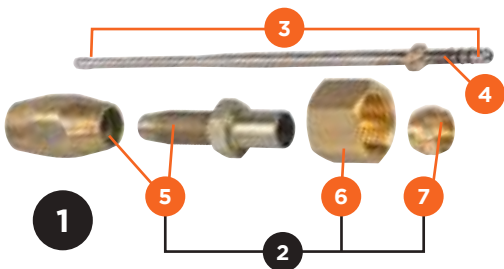


COAXIAL COUPLING



Mark	Description	Reference
1	Complete coaxial quick coupling - tubing to monitoring unit	A1 8701601

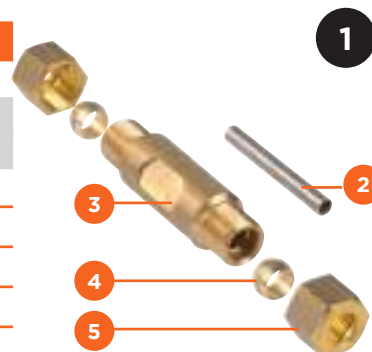
TECALAN REPAIRING KIT (COMPLETE)



Mark	Description	Reference
1	Repairing kit for coaxial tubing	A1 9901500
2	4 parts coupling for coaxial tubing (marks 5+6+7)	A1 9901499
3	Connector 4x3	A1 1601803
4	O-ring for insert coupling 4x3 / 4x4	A1 9901003
5	2 parts TECALAN coupling	A1 8601801
6	ø10 mm stainless steel nut	A1 9900501
7	ø10 mm ferrule High Pressure	A1 9901501

COUPLING KIT FOR 2 TECALANS

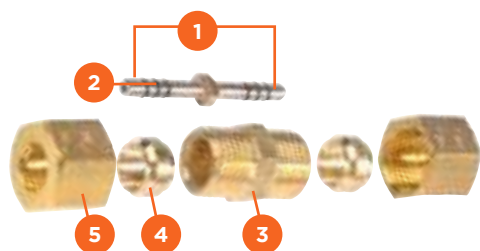
Mark	Description	Reference
1	Coupling kit	A1 1601807
2	Inox inner tube	A1 1602001
3	Coupling main part	A1 1601806
4	ø10 mm ferrule (x2) High Pressure	A1 9901501
5	ø10 mm stainless steel nut (x2)	A1 9900501



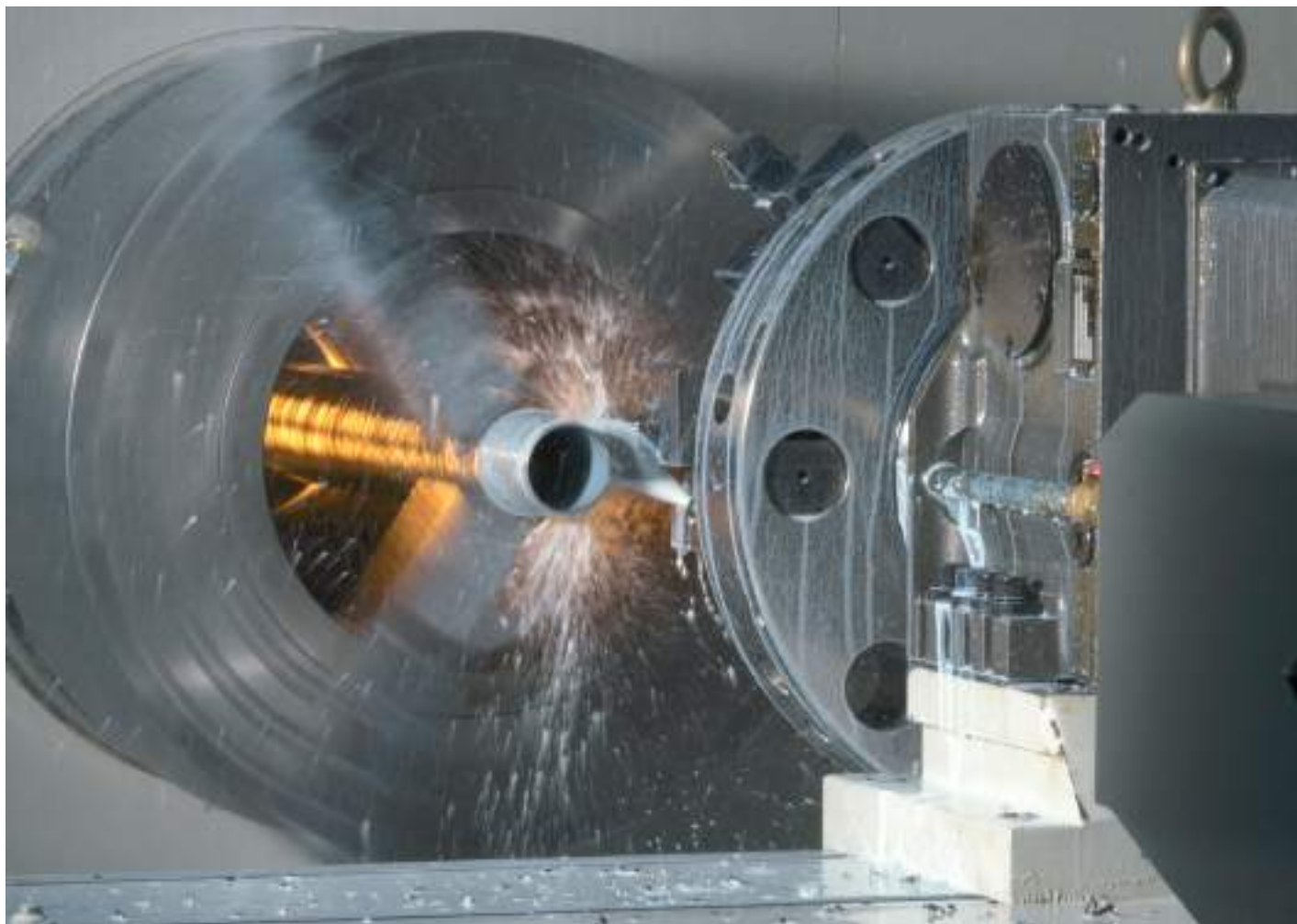
TUBING

Description	Reference
Coaxial tubing RILSAN 25 m	A1 8602006
Coaxial tubing RILSAN 33 m	A1 8602007
Coaxial tubing RILSAN 50 m	A1 8602008

COUPLING FOR 2 COAXIAL TUBINGS RILSAN



Mark	Description	Reference
1	Connector 4x4	A1 1601801
2	O-ring for insert coupling	A1 9901003
3	Straight connector 10 mm	A1 1601805
4	ø10 mm brass nut (x2)	A1 9901502
5	ø10 mm ferrule (x2) low pressure	A1 9900501
	Straight insert 7.5 mm	A1 1600601



PRESSUREMETER

MÉNARD SLOTTED CASINGS ACCESSORIES

SLOTTED CASINGS

Description	Reference
Slotted tube 46/60 right thread	J2 900466002
Slotted tube 46/60 left thread	J2 900466001
Slotted tube 46/60 half shell left thread	J2 900466003
Slotted casing 55 mm, right thread	J2 102005502
Slotted casing 55 mm, left thread	J2 102005504
Slotted tube 55 Ménard half shell right thread	J2 102005500
Slotted tube 55 Ménard half shell left thread	J2 102005499
Reinforced slotted casing 55 mm, right thread	J2 201005501
Reinforced slotted casing 55 mm, left thread	J2 212005501
Slotted casing 63 mm, right thread	J2 101006301
Slotted casing 63 mm, left thread	J2 102006301
Slotted tube 63 Ménard half shell right thread	J2 101006300
Slotted tube 63 Ménard half shell left thread	J2 102005505
Reinforced slotted casing 63 mm, right thread	J2 201006301
Reinforced slotted casing 63 mm, left thread	J2 202006302
Slotted casing 75 mm, right thread	J2 101007501
Slotted casing 75 mm, left thread	J2 102007501

All our slotted tubes have 3/10 slot. They respect the effective standards (NF P 94-110-1 and ISO 22476-4) and are conform to the developer's requirements (Louis Ménard).

SHORT CONES



Description	Reference
Cone for slotted casing 55, right thread	J4 060005501
Cone for slotted casing 55, left thread	J4 060005503
Cone for slotted casing 63, right thread	J4 060006301
Cone for slotted casing 63, left thread	J4 060006303
Cone for slotted casing 75, right thread	J4 060007501
Cone for slotted casing 75, left thread	J4 060007502

Also available for reinforced slotted casings.

SHOCK ABSORBER, RETAINING PLATE AND HOLLOW WASHER

Description	Reference
Shock absorber for 55 and 63 mm slotted casings (unit)	J4 0906305
Shock absorber for 75 mm slotted casing (unit)	J4 090007501
Retaining plate for 55 mm slotted casing	J4 0905504
Hollow washer for 55 mm slotted casing	J4 0905503
Retaining plate for 63 mm slotted casing	J4 0906309
Hollow washer for 63 mm slotted casing	J4 0906306

Also available for reinforced slotted casings.

SLIT COUPLINGS FOR HAMMERING CASING OR MÉNARD SLOTTED CASING

Description	Reference
Coupling for slotted casing 55 mm Right thread x F 42	J3 311005502
Coupling for slotted casing 55 mm Right thread x F 50	J3 111005512
Coupling for slotted casing 55 mm Left thread x F R32	J3 312005501
Coupling for slotted casing 55 mm Left thread x F R38	J3 312005503
Coupling for reinforced slotted casing 55 mm Right thread x F 42	J3 411005506
Coupling for reinforced slotted casing 55 mm Left thread x F R32	J3 412005501
Coupling for reinforced slotted casing 55 mm Left thread x F R38	J3 312005504
Coupling for slotted casing 63 mm Right thread x F 42	J3 311006304
Coupling for slotted casing 63 mm Right thread x F 50	J3 311006307
Coupling for slotted casing 63 mm Right thread x F 60	J3 311000308
Coupling for slotted casing 63 mm Left thread x F R32	J3 312006303
Coupling for slotted casing 63 mm Left thread x F R38	J3 312006305
Coupling for reinforced slotted casing 63 mm Right thread x F R38 left	J3 411006300
Coupling for reinforced slotted casing 63 mm Left thread x F R32	J3 412006301
Coupling for reinforced slotted casing 63 mm Left thread x F R38	J3 312007500
Coupling for slotted casing 75 mm Right thread x F BW	J3 311007500
Coupling for slotted casing 75 mm Right thread x F 50	J3 311007501
Coupling for slotted casing 75 mm Right thread x F T63 Ménard	J3 311007502
Coupling for slotted casing 75 mm Left thread x F R32	J3 312007501
Coupling for slotted casing 75 mm Left thread x F R38	J3 312007502

Other threads, please consult us.

PRESSUREMETER

MÉNARD HAMMERING CASINGS ACCESSORIES

44 MÉNARD CASINGS

Description	Longueur	Reference
T44 Ménard casing - right thread	1,00 m	K1 01004403
44 Ménard casing - right thread	1,20 m	*
44 Ménard casing - right thread	1,50 m	K1 010004404
44 reinforced Ménard casing - right thread	1,00 m	K1 010004401
44 reinforced Ménard casing - right thread	1,20 m	*
44 reinforced Ménard casing - right thread	1,50 m	K1 010004402
44 reinforced nipple - right thread		K1 020004401

55 MÉNARD CASINGS

Description	Longueur	Reference
55 Ménard casing - right thread	1,00 m	J1 101005501
55 Ménard casing - right thread	1,20 m	J1 201005501
55 Ménard casing - right thread	1,50 m	*
55 Ménard casing - left thread	1,00 m	*
55 Ménard casing - left thread	1,20 m	*
55 Ménard casing - left side	1,50 m	*
55 reinforced Ménard casing - right thread	1,00 m	J1 101005503
55 reinforced Ménard casing - right thread	1,20 m	*
55 reinforced Ménard casing - right thread	1,50 m	*
55 reinforced nipple - right thread		J4 070005502
55 reinforced Ménard casing - left thread	1,00 m	J1 102005501
55 reinforced Ménard casing - left thread	1,20 m	*
55 reinforced Ménard casing - left thread	1,50 m	J1 202005501
55 reinforced nipple - left thread		J4 070005501

63 MÉNARD CASINGS

Description	Longueur	Reference
63 Ménard casing - right thread	1,00 m	*
63 Ménard casing - right thread	1,20 m	J1 101006301
63 Ménard casing - right thread	1,50 m	J1 101006302
63 Ménard casing - left thread	1,00 m	J1 102006303
63 Ménard casing - left thread	1,20 m	J1 102006301
63 Ménard casing - left thread	1,50 m	J1 102006302
63 reinforced Ménard casing - right thread	1,00 m	*
63 reinforced Ménard casing - right thread	1,20 m	J1 201006301
63 reinforced Ménard casing - right thread	1,50 m	J1 201006302
63 reinforced Ménard casing - left thread	1,00 m	*
63 reinforced Ménard casing - left thread	1,20 m	*
63 reinforced Ménard casing - left thread	1,50 m	J2 202006301

*Please, consult us.



75 MÉNARD CASINGS

Description	Longueur	Reference
75 Ménard casing – right thread	1,50 m	J1 101007501
75 Ménard casing – left thread	1,50 m	J1 102007501
75 nipple – right thread		J4 070007501
75 nipple – left thread		J4 070007502

85 MÉNARD CASINGS

Description	Longueur	Reference
85 Ménard casing – right thread	1,00 m	J1 101008502
85 Ménard casing – right thread	1,20 m	J1 101008503
85 Ménard casing – right thread	1,50 m	J1 101008504
85 Ménard casing – left thread	1,00 m	*
85 Ménard casing – left thread	1,20 m	J1 102008502
85 Ménard casing – left thread	1,50 m	J1 102008503

CASING SHOES AND BITS

Description	Reference
55 casing shoe – right thread	J4 080005503
55 casing shoe – left thread	J4 080005504
63 casing shoe – right thread	J4 080006303
63 casing shoe – left thread	J4 080006307
63 Tungsten bit – right thread	J4 080006301
63 Tungsten bit –left thread	J4 080006302
85 casing shoe – right thread	J4 080008503
85 casing shoe – left thread	J4 080008505
85 Tungsten bit – right thread	J4 080008501
85 Tungsten bit – left thread	J4 080008502

*Please, consult us.

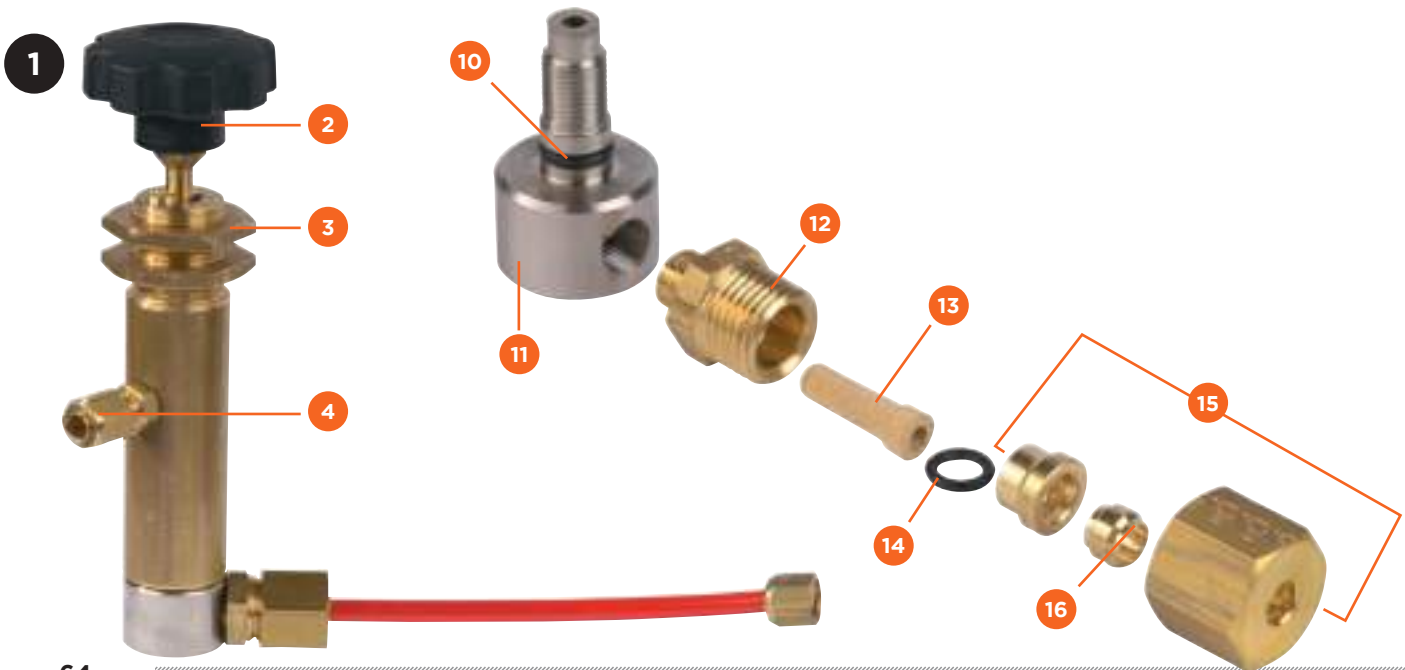
PRESSUREMETER

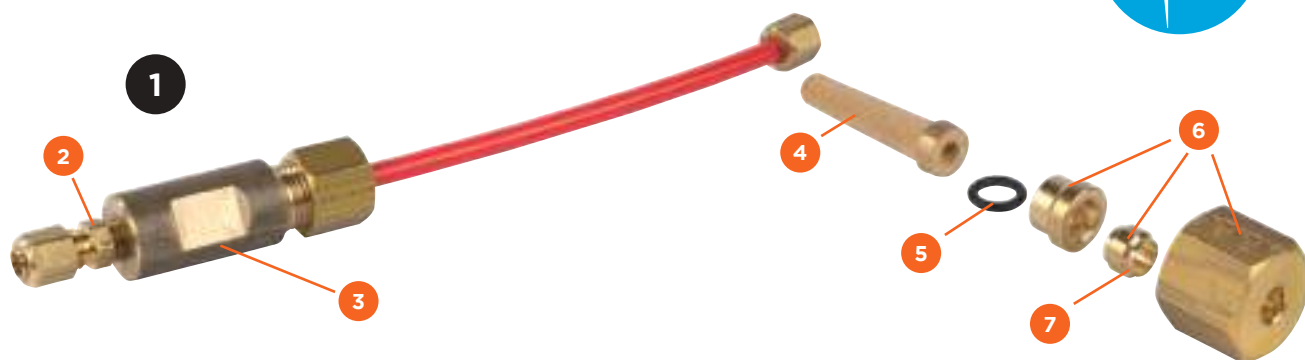
SPARE PARTS



PRESSURE LAG REGULATOR

Mark	Description	Reference
1	Pressure lag regulator with tubing	A1 8320301
2	Plastic handle for front panel	A1 9322202
3	Fixation Nut	A1 8320501
4	ø6x1/8" brass nipple	A1 1700605
5	O'ring for valve 2.6x1.9	A1 9321003
6	Shutter for pressure lag regulator	A1 8320302
7	4 bar pressure (0.4 MPa) spring for lag regulator - up to 50 meters test	A1 8321801
	7 bar pressure (0.7 MPa) spring for lag regulator - up to 80 meters test	A1 8321803
	10 bar pressure (1 MPa) spring for lag regulator - up to 110 meters test	A1 8321802
8	O'ring for pressure lag regulator screw	A1 9321001
9	Pressure lag regulator screw	A1 8322201
10	O'ring for stainless steel seat	A1 9321002
11	Stainless steel seat	A1 8321901
12	ø1/8"x10 coupling for pressure lag regulator	A1 8322220
13	Filter for pressure lag regulator	A1 8320601
14	O'ring for pressuremeter filter	A1 9901002
15	Reducer for filter cartridge	A1 8901610
16	ø6 mm brass Ferrule	A3 1901501





FILTER CARTRIDGE

Mark	Description	Reference
1	Complete filter cartridge for pressuremeter, with tubing	A1 8901602
2	ø6x1/8" brass nipple	A1 1700605
3	Filter cartridge	A1 8901601
4	Protective filter for control knobs	A1 9900601
5	O'ring for pressuremeter filter	A1 9901002
6	Reducer for filter cartridge	A1 8901610
7	ø6 mm brass Ferrule	A3 1901501

MAIN REGULATOR

Mark	Description	Reference
1	Main regulator 100 bar (complete)*	A1 9310403
2	Plastic handle for piston type regulator	A1 9322203
3	ø6x1/4" brass tee coupling	A1 1700609
4	Shutter for main regulator	A1 9320301
	Main regulator seal 15/100th 100 bar	A1 9321602
	Main regulator seal 10/100th 60 bar	A1 9321601
	100 bar type regulator piston alone*	A1 9310400
	100 bar spring for main regulator	A1 9321802
	25 bar spring for main regulator	A1 9321803
	40 bar spring for main regulator	A1 9321804
	80 bar spring for main regulator	A1 9321805

*Available in 80 bar for Pressure Control Unit 60 bar, please consult us.



PRESSUREMETER

SPARE PARTS

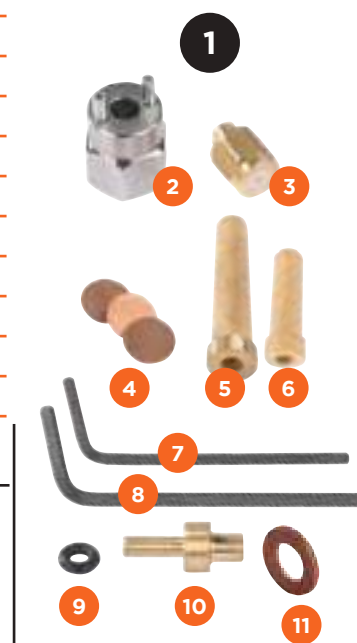
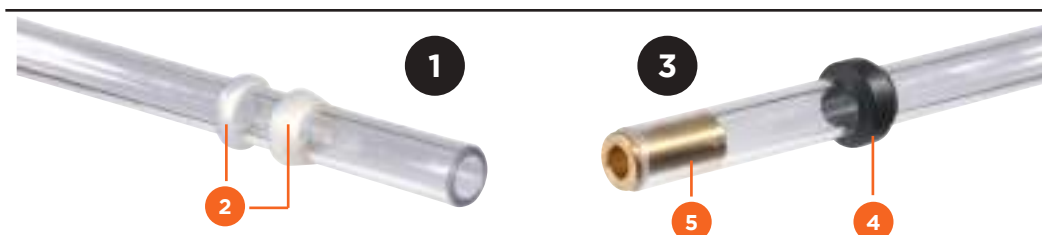


Mark	Description	Reference
1	Additional pressure gauge - 0 x 60 bar - ø100mm	A1 8501005
2	Additional pressure gauge - 0 x 100 bar - ø100mm	A1 8501002
3	Additional pressure gauge - 0 x 6 bar - ø100mm	A1 8501004
4	Additional pressure gauge - 0 x 100 bar - ø60mm	A1 8501003
5	Gasket for pressure gauge inlet 10 x 100	A1 8501001
6	Pressure gauge inlet connection with nut 10 x 100	A1 8500501
	Pressure gauge ø. 100 - vertical inlet 10 x 100 - 0 x 25 bar	A1 8501310
	Pressure gauge ø. 100 - vertical inlet 10 x 100 - 0 x 60 bar	A1 8501312
	Pressure gauge ø. 60 - vertical inlet 10 x 100 - 0 x 250 bar	A1 8501324



Mark	Description	Reference
1	Quick female socket for gas feeding	A1 8701801
2	Quick female socket (box) for rear inlet pressure gauge (red spot)	A1 8701802
3	Quick female socket (box) for gas and water outlet	A1 8701804
4	Stainless steel washer for water socket	A1 8201900
	Quick female socket for volumeter filling	A1 8701803
	Quick male plug for gas feeding or volumeter filling	A1 8701805
	Quick male plug for rear inlet pressure gauge (red spot)	A1 8701806
	Quick male plug for volumeter filling	A1 8701807
	Inner black tubing 3 x 6 (by meter)	A1 8602011
	Inner red tubing 3 x 6 (by meter)	A1 8602018
	ø6 mm nut with ferrule	A1 1700607
	ø3 Straight insert	A1 1900602

Mark	Description	Reference
1	Pressuremeter repairing kit (spanner+filter+seal)	A1 9901007
2	Adaptor spanner for big size knobs	A1 9901001
3	Shutter for main regulator	A1 9320301
4	Piston regulator seal 15/100	A1 9321602
5	Protective filter for control knobs	A1 9900601
6	Filter for pressure lag regulator	A1 8320601
7	Male spanner 6 sides 5/64" for small size knobs	A1 9901005
8	Male spanner 6 sides 3/32" for big size knobs	A1 9901006
9	O'ring for valve 2.6x1.	A1 9321003
10	Shutter for pressure lag regulator	A1 8320302
11	Gasket for pressure gauge inlet 10x100	A1 8501001



Mark	Description	Reference
1	Polycarbonate sight tube (complete) - new model	A1 8902203
2	Nylon ferrule for new type of sight tube	A1 8801500
3	Polycarbonate sight tube (complete) - former model	A1 8902201
4	Nylon ferrule for of sight tube (former type)	A1 8801501
5	Straight insert for sight tube (former type)	A1 8800601
6	Refilling bottle for Pressuremeter - 5 litres	A1 9900000
	Refilling funnel with quick coupling	A1 9900502
	Tools box for Pressuremeter maintenance	A1 1900300
	Elbow for polycarbonate sight tube new model	A1 9801800
	Bolt for sight tube new model	A1 9800501
	Elbow for polycarbonate sight tube former model	A1 9801801
	Bolt for sight tube former model	A1 9900501
	Polycarbonate protection plate for sight tube	A1 9801603



Mark	Description	Reference
1	Nitrogen cylinder 1m3	A1 1900203
2	High Pressure regulator for nitrogen cylinder with tubing	A1 8310400
3	High Pressure gauge 400 bar 1/4 G - new model*	A1 9311309
4	Low Pressure gauge 160 bar 1/4 G - new model*	A1 9311308
5	Protection for bottle regulator tubing	A1 9311800
6	Tubing from gas cylinder to monitoring box	A1 9311803
	Piston regulator seal for bottle regulator 20/100 130 bar	A1 9311601
	High Pressure gauge MAV 400 bar (old model)	A1 9311305
	Low Pressure gauge MAV 160 bar (old model)	A1 9311304



* to be mounted with aluminium gasket

PRESSUREMETER

TOOLS PACKAGES

PACKAGE FOR HAND DRILLING

Based on 10 meters

Description	Reference	Quantity suggested
ø63mm hand auger x ø22mm rods thread*	F5 01006302	1
ø22mm probe extension rod, hollow, 1 meter length**	F5 02002202	10
Hand auger handle, for ø22mm rods	F5 09002201	1
Handling wrench for ø 22mm rods	F5 09000302	2
OPTION		
Lifting device for 22mm rods	D4 1901201	1
INJECTION OPTION		
Hand injection pump see p.24	C6 0101601	1
Hand auger handle, ø22mm rods thread, with injection	F5 09002202	1

* [see p.84](#) Other diameters available.

** These rods can be used for probe implementation.

Other types available (23 square, 20x27 thread)



PACKAGE FOR DRILLING WITH CONTINUOUS FLIGHT AUGER Ø 63 MM

Based on 30 meters

Description	Reference	Quantity suggested
Continuous flight auger ø63x 1,50 meter length (hexagon 21mm)	F1 01006303	20
Pin for hexagon 21mm	F1 04002101	25
ø63 tungsten cutting bit	F1 02006301	5
ø63 auger security holder	F1 04006302	1
ø63 auger fishing device	F1 04006301	1
OPTION		
Cardan joint hex41 box x hex21 box	F1 06025003	1
Hex 21 pin x ø22 box connection (for ø22 probe extension rod)	F1 05002105	1

*Other diameter available [see p.85](#)



PACKAGE FOR DRILLING WITH ROTARY INJECTION BIT

Based on 30 meters

Description	Reference	Quantity suggested
ø42mm. drilling rod 1,50 meter length*	K1 010004203	20
ø42mm nipple	K1 020004201	22
Tricone bit 2"1/2 (63,5mm) x N ROD thread (pin)	I1 040025001	1
ø42mm rods x N ROD connection (box-box)	E3 031004202	1
3-way drag bit 2"1/2 (63,5mm) x A ROD thread (pin)	ID 01025001	2
ø42mm rods x A ROD connection (box-box)	E3 031004201	1
OPTION		
Injection head hex29 x ø42mm (box-box)		

* Other diameters available [see p.100](#)



PACKAGE FOR ROTARY PERCUSSION DRILLING

Based on 30 meters

Description	Reference	Quantity suggested
Drilling rod R32 - 1.22m long (ø32 mm - pin-pin)	H1 02003206	20
Nipple for R32 rod (box-box)	H1 02003211	22
Cross bit ø64mm x Fem R32	H1 01106404	2
Button bit ø64mm x Fem R32*	H1 01206401	2
Wrench for R32 rods	H1 09003201	2

* Exists in retric profile [see p.94](#)





THE PRINCIPLE

The drilling is realized by the eccentric tool followed by the tube column. The slotted tube is placed while drilling, avoiding borehole walls remolding.

THE STAF® SYSTEM

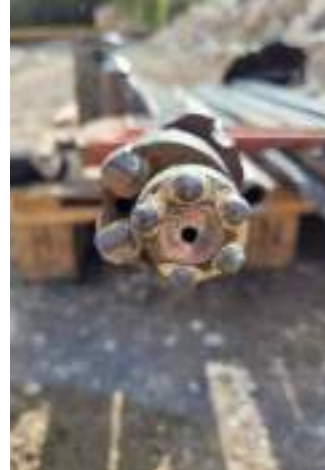
SELF-BORED TUBE SYSTEM FOR MÉNARD PRESSUREMETER TESTS

THE +

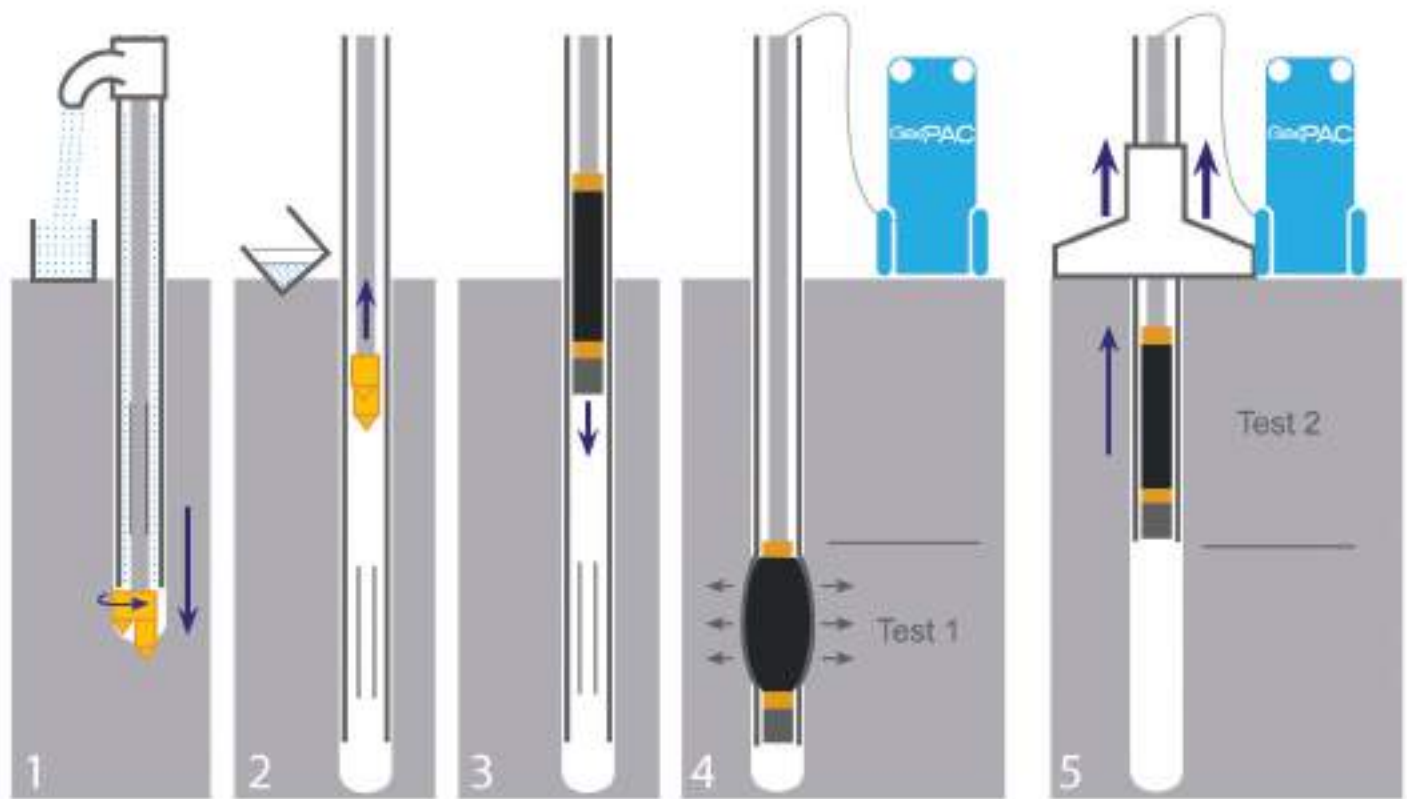
- ✚ The most qualitative drilling for pressuremeter tests
- ✚ Conformed to the STD TM specifications spelled out in the ISO 22476-4 standard

APPLICATIONS

- ✚ Slotted Tube technique with inside Disintegrating Tool and Mud circulation (STD TM)



THE STAF® METHOD CAN BE USED WITH ALL KIND OF GEOTECHNICAL DRILLING RIGS, EQUIPPED WITH ROTARY AND TOP HYDRAULIC HAMMER.



IMPLEMENTATION

1. Drilling with the slotted tube and the STAF® bit according to the STDFTM method

The eccentric tool drills at the bottom of the tube, followed in the meantime by the slotted tube by reducing any wall disturbance.

2. Tool retrieval

The STAF® bit is pulled up with the internal drill string inside the tube, without any remolding of the borehole walls.

3. Probe positioning

Thanks to the locking device, the probe is perfectly located at the central level of the steel strips forming the slotted tube. The coaxial or twin lines are protected by the string of STAF® tube from any squeezing and pinching.

4. Execution of the first pressuremeter tests

The pressuremeter test is realized according to the ISO 22476-4, at the final depth

5. Next test and tubes extraction

Tests start from the deepest level and then pulled up to the next level thanks to a special pulling device



Data can be **directly processed** on our geotechnical software GeoVision® through a **USB key or 4G modem transfer**

STAF®

SELF-BORED TUBE SYSTEM FOR PRESSUREMETER

STAF® CASING

Based on 20 meters

Description	Reference	Quantity
Guide for STAF® casing	H6 0010035	1
Anvil spacer for STAF®	H6 0010040	1
Slurry circulation discharge pipe	H6 0010030	1
Upsetting tubing	H6 0010031	2
Driving head	H6 0010020	1
Casing Lg 1,22 m	H6 0010010	17
Casing Lg 0.3 m	H6 0010005	1
Slotted tube	H6 0010000	1
Starting casing tube lg 0.3 m	H6 0010015	1
Coupling box R38 x pin STAF® slotted casing	H6 0010100	1
Coupling box R38 x pin STAF® casing	H6 0010110	1
Manipulation loop for STAF® casing	H6 0010170	1
STAF® casing spanner	H6 0010175	1
Coupling pin STAF® casing x box 2"3/8 with flats	H6 0010180	1



Probe centering coupling
for STAF®

STAF® BITS

Based on 20 meters

Description	Reference	Quantity
Coupling box R38 x R32box modified	H6 0010080	1
Rod R38 x lg 0.3 m	H1 02003802	1
Rod R32 x lg 1.5 m for STAF® (x1)	H6 0010073	1
Rod R32 x lg 1.22 m for STAF®	H6 0010075	17
R32 nipple for STAF®	H6 0010076	17
Pilot bit holder for STAF® equipment	H6 0010060	1
Pilot U-pin for STAF® equipment	H6 0010070	1
STAF® cross bit ø66mm	H6 0010050	1
STAF® button bit ø66mm	H6 0010055	1
R32 rod spanner	H1 09003201	1
R32 rod spanner long handle	H1 09003802	1
R38 rod spanner	H1 09003803	1
ø65 rod spanner for STAF® equipment	H6 0010140	1
R32 manipulation ring	M5 0900010	1



STAF® button bit

IMPLEMENTATION OF THE PRESSUREMETER PROBE

Based on 20 meters

Description	Reference	Quantity
Coupling pin 22 x box R38	H6 0010060	1
Rod $\varnothing 9$ x 22mm – length 1.22 m for STAF® equipment	H6 0010130	17
Coupling for 44mm probe x 22 mm rod box	A1 1454402	1
$\varnothing 44$ mm probe centering coupling for STAF®	H6 0010120	1
Wrench for $\varnothing 22$ mm rods	F5 09000302	2
$\varnothing 22$ rod manipulation ring	M5 0900011	1

EXTENSION KIT

Description	Reference	Quantity
Shoe casing lg 0,153 m STAF®	H6 0010016	1
Short casing lg 0,152 m STAF®	H6 0010018	1

EXTRACTION SYSTEM

Description	Reference	Quantity
Hydraulic Jack 15 T capacity for casing extraction	H6 0010160	1
Set of hose for hydraulic jack	H6 0010165	1
Foot clamp – big model	M3 0100000	1
Clamp for STAF® casing	M3 0200016	2
Pull up washer for STAF® system	H6 0010145	1
Base plate for the hydraulic jack	H6 0010150	1

STAF® is a patented technique and a registered trademark of Geomatech



PHICOMETER

IN SITU SHEARING TEST

Ref: A7_8101601

THE +

- + Optimal test on soil hard to sampled
- + Fitted also in altered rocks
- + Fast execution and low cost compared to laboratory tests

APPLICATIONS

• Measurement of the mechanical characteristics ϕ_i and C_i of soil, using a linear shearing test.

IMPLEMENTATION

The phicometer allows to perform in situ shearing test. The borehole is drilled so as to minimize wall disturbance and to keep a cavity diameter compatible with the equipment (63 mm).

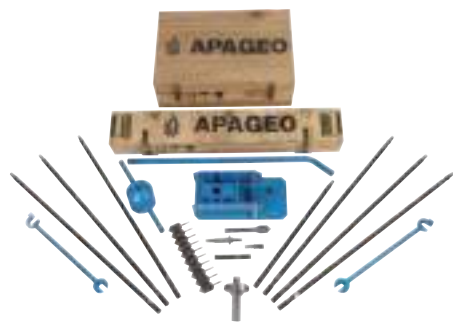
The probe is lowered into the borehole to the required test depth, thanks to rods for pulling effort.

It can be used with the following equipment:

- Ménard pressuremeter [see p.44](#)
- Nitrogen bottle with regulator [see p.67](#)
- Drilling rods [see p.96](#)



DATA CAN BE PROCESSED
AFTER MANUAL INPUT, BY
OUR SOFTWARE GEOVISION®



LIGHT DYNAMIC PENETROMETER

DYNAMIC PENETRATION TEST

Ref: D4 8101601

THE +

- + Light, compact and handy
- + Provided with transport case

DESCRIPTION

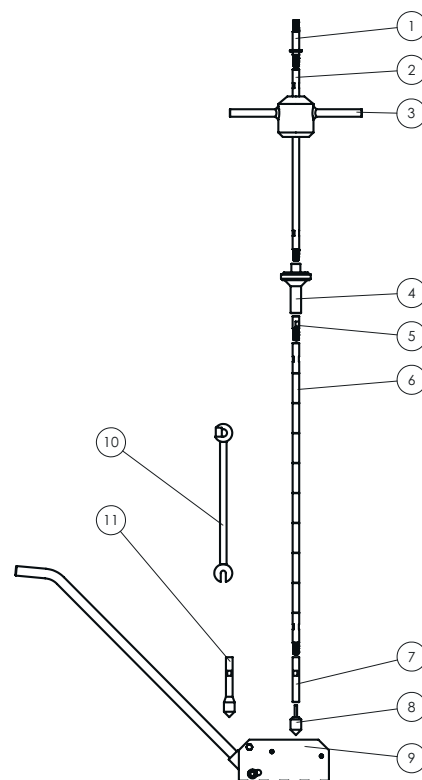
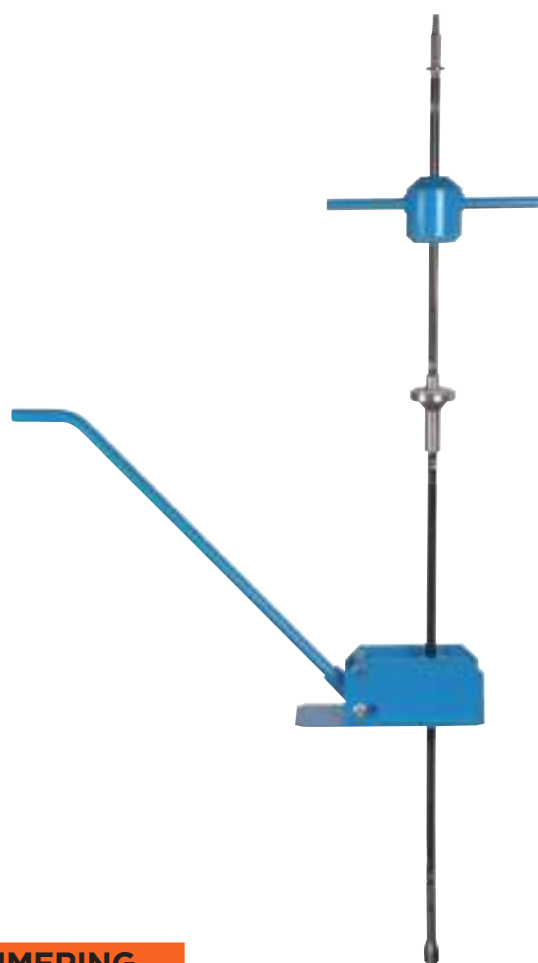
Hammering system for the control of trench or platform compaction (lost cone 10cm²) or implementation of ø32 mm probe for mini pressuremeter

LIGHT DYNAMIC PENETROMETER, MANUAL HAMMERING

Description	Reference	Qty
1 Non slotted pulling connector for ø22 rod	D4 1902004	1
2 Guide rod ø22 - lg 0,6 m	D4 1902005	1
3 Hammer 10 kg	D4 1901301	1
4 Non slotted anvil for ø 22 rod	D4 1900503	1
5 Non slotted hammering head for ø 22 rod	D4 1902002	1
6 Hammering rod ø22 x lg 1,0 m - marked every 10 cm	F5 02002201	6
7 Lost cone holder 10 cm ²	D4 1901801	1
8 Lost cone 10 cm ² with pin	D4 1901603	10
8 Or hollow lost cone 10 cm ²	D4 1901604	10
9 Complete lever device for ø22 rods extraction	D4 1901201	1
10 Screwing and hoisting wrench for ø22 rod	F5 09000302	2
11 Fixed cone 10 cm ² - ø22 rod thread	D4 1901602	1
Storage box for rods	D4 1903000	1
Storage box for hammering system	D4 1903001	1

VARIANT FOR MINI PRESSUREMETER USE

1 Slotted pulling connector for ø22 rod	D4 1902003	1
4 Slotted anvil for ø22 rod	D4 1900502	1
5 Slotted hammering head for ø22 rod	D4 1902001	1
6 ø22 hollow rod x lg 1,0 m	F5 02002202	6



BENKELMAN BEAM

1. PLATE LOADING TEST ACCORDING TO THE ASTM D1195 AND ASTM D1196M STANDARDS
2. FLEXIBLE PAVEMENT DEFLECTION TESTING ACCORDING TO THE ASTM D4695 STANDARD

The Benkelman Beam measures the deformation of a material under stress. This equipment is used for the two following tests :

- The plate test measures the static deformation EV1/EV2 (roads) and Westergard deformation (platforms). The Benkelman beam measure the formation level bearing capacity by applying a load on the plate to the material with the loading device.
- Standard Benkelman Beam tests measures pavement deflection in response to a static load. Measurement is made by placing the tip of the beam between the dual tires of a loaded truck and measuring the pavement surface rebound as the truck is moved away.

MATERIAL

For the deflection test, the beam is used alone.
For the plate test, a loading device and aluminum plate are necessary.

BENKELMAN BEAM

High-end model

The Benkelman beam consists of a balance arm (in two parts) mounted on ball-bearing axis, a frame supported on the ground by three feet on height-adjustable ball-joints, with a digital dial indicator 10 mm to 0.01. The whole equipment is protected by a high resistance epoxy paint and delivered in a flight case.

- Beam weight: 11.5kg
- Overall length: 3m60
- Beam in storage: 29kg
- L x W x H: 200 x 300 x 300 mm

Eco model

- Beam weight: 8.5kg

ALUMINUM PLATE Ø 600 mm

With reinforced ribbed, side slit and handles for transportation.

MANUAL LOADING DEVICES

Hydraulic model

(Exists also with electrical pumps, see beside)

- Hydraulic jack, force 100 kN
- 203 mm Stroke with centering plate and pivot joint
- Hand pump with analogue manometer 90 kN and 3.0 m flexible hose
- Wooden transport carrying case
- Aluminum wedge

Mechanical model

- Reinforced mechanical jack, force 200 kN
- Dynamometer for control, graduation from 0 to 100 kN with loading stage
- Pivot joint
- Wooden transport carrying case



ALUMINUM PLATE Ø 600 mm



Benkelman beam



High-end model



Hydraulic loading device



Mechanical loading device

Description	Reference
High-end Benkelman beam in flight case	O2 203121720
Eco Benkelman beam in box	O2 203121702
Aluminum plate, diameter 600 mm	O2 203121707
Manual hydraulic loading device	O2 203121760
Electrical hydraulic loading device	O2 203121770
Manual mechanical loading device	O2 203121710
OPTION	
Adjustable wedge	O2 203121715

NON DESTRUCTIVE TESTINGS

- Sonic pulse velocity system
- Ultra sonic pile testing system
- Concrete reinforcement detector
- Vibration reinforcement detector
- Dilatometer
- Crackmeter
- Retractometer
- Pile integrity tester
- Resistivimeter
- Sclerometer
- Inclinator



PET : PILE INTEGRITY TESTER

Controls the integrity of piles by the input force thanks to a dedicated hammer and geophone. The software is used to transfer data, carry out basic analysis of result and produce report **(NF P 94 160-2)**.

For impedance method **(NF P 94 160-4)** : please contact us.



CHUM : CROSS HOLE ULTRASONIC MONITOR

uses the Crosshole Sonic Logging (CSL) method **(ATSM D6760-16)** to perform high-resolution quality control on deep foundations. The system uses an ultrasonic wave sent from an emitter to a receiver while both are pulled through water-filled access tubes embedded in the concrete. The measured arrival time and energy are directly related to concrete quality.



BIT : BOREHOLE INCLINATION TESTER

Determines the verticality of a pile and a borehole to ensure that the pile remains within the deviation tolerance, or knows the angle of inclination of a borehole etc...



DRILLING AND CORING TOOLS, ACCESSORIES

P.78

DRILLING EQUIPMENT

AUGERS AND BITS

P 80

- HAND AUGERS
- CONTINUOUS FLIGHT AUGERS
- AUGER BITS
- HOLLOW STEM AUGERS
- INJECTION AUGERS «JET AUGER» TYPE

ROTARY-PERCUSSION DRILLING

P 88

- RODS AND BITS FOR TOP HAMMER ROTARY-PERCUSSION [R32 – R38]
- DOWN-THE-HOLE HAMMERS AND BITS
- OVERBURDEN DRILLING – **STAREX®** EQUIPMENT
- OVERBURDEN DRILLING – **S.T.A.R** EQUIPMENT

ROTATION DRILLING

P 96

- DRILLING RODS – PENETROMETER RODS - COUPLINGS
- TRICONES
- DRAG BITS
- PDC BITS

P.104

CORING AND TUBING EQUIPMENT

- SINGLE CORE BARRELS B – T
- DOUBLE CORE BARRELS T2 - T6 - T6S AND K2
- TRIPLE CORE BARRELS T6 TRIPLEX
- WIRELINE CORE BARRELS AND RODS (AQ, BQ, NQ, HQ, PQ, SQ°)
- TUNGSTEN CARBIDE BITS AND REAMING SHELLS
- DIAMOND BITS AND REAMING SHELLS
- HAMMERING SAMPLERS – THIN WALL SAMPLERS – SPT -WINDOW SAMPLER
- CASINGS (W, METRIC, LS)

P 106

P 110

P 114

P 116

P 118

P 120

P 126

P 129



INSTRUCTIONS FOR USING THE AUGERS



**CONCERNED TO
IMPROVE OUR
PRODUCTS AND THE
SAFETY OF PEOPLE,
WE GIVE YOU
SOME ADVICE AND
RECOMMENDATIONS
ON HOW TO USE THE
AUGER.**

Using the auger, continuous screw auger, hollow stem auger, or injection auger under unsuitable conditions may cause serious or even fatal accidents.

All our augers are manufactured in France in our factories according to current manufacturing standards and best practices. They guarantee you the highest productivity for your work-sites with perfect safety. Consult us if you have a question on this tool's use.

YOU MUST

- Make sure each auger is in perfect condition before use
- Use an auger guide on your drilling rig
- Use suitable boring parameters: rotation torques, rotation speed, and pressure on bit depending on the auger diameter
- Your auger drive shafts have to have bellows

YOU MUST NOT IN ANY CASE

- Approach this tool while boring (danger of entanglement)
- Clean the tools by hand (danger of entanglement)
- Use the tool in case of excessive or irregular wear, twisted bore, or damaged or interrupted thread etc...

HAND AUGER

Ø 35 TO 150 MM

FRENCH MANUFACTURING

HAND AUGER

Ø (mm) auger	Length	22 conical	Thread - Reference		
			20/27	Square rod 23	Square rod 32
35	19,5	F5 01003501	-	-	-
46	24	F5 01004602	F5 01004603	F5 01004601	-
63	23,5	F5 01006302	F5 01006303	F5 01006301	-
80	24,5	F5 01008002	F5 01008003	F5 01008001	-
100	32	F5 01010002	F5 01010003	F5 01010001	-
125	37	-	-	F5 01012501	F5 01012502
150	39,5	-	F5 01015002	-	F5 01015001



HANDLE FOR HAND AUGER

Rod type	Reference
22 Rod	F5 09002201
22 injection Rod	F5 09002202
20/27 Rod	F5 09002001
23 Square rod	F5 09002301
32 Square rod	F5 09003201



EXTENSION ROD FOR HAND AUGER

Can be used for the implementation of pressumeter probe

1 m extension rod	Reference
Ø22 conical M/F (marked every 10 cm)*	F5 02002201
Ø22 conical M/F (marked every 10 cm)* hollow	F5 02002202
20/27 with nipple	F5 02002001
30 x 23 square rod	F5 02002301
40 x 33 square rod	F5 02003201
Screwing and hoisting wrench for 22mm rods	F5 09000302



CONTINUOUS FLIGHT AUGERS



See instructions for using the augers, p 79

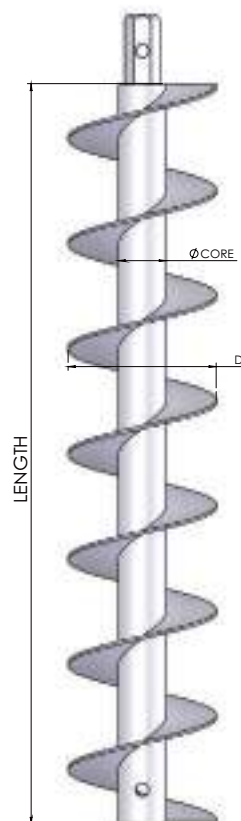
AUGER FOR PRESSUREMETER DRILLINGS

Right rotation

Ø 63 mm Auger	Hex (mm)	Core (mm)	Reference
1,00 m length	21	25	F1 01006304
1,50 m length	21	25	F1 01006303

Left rotation

Ø 63 mm Auger	Hex (mm)	Core (mm)	Reference
1,00 m length	21	25	F1 01006305
1,50 m length	21	25	F1 01006306



CONTINUOUS FLIGHT AUGER Ø 63 MM TO Ø 254 MM

Ø auger (mm)	Ø bit and hole	Core (mm)	Hex (mm)	Reference 1,00 m length	Reference 1,50 m length
63	63	25	21	F1 01006307	F1 01006303
75	76	32	21	F1 01007500	F1 01007501
80	89	43	29	F1 01008001	F1 01008003
100	114	43	29	F1 01010003	F1 01010004
114	127	43	29	F1 01011401	F1 01011402
114	127	60	41	F1 01011404	F1 01011403
140	152	43	29	F1 01014001	F1 01014002
140	152	60	41	F1 01014006	F1 01014007
152	178	60	41	F1 01015202	F1 01015203
178	203	60	41	F1 01017811	F1 01017808
178	203	76	51	F1 01017812	F1 01017809
225	254	76	51	F1 01022505	F1 01022502
254	305	76	51	F1 01025404	F1 01025402

Other lengths available, please consult us.

Our augers are steel hardened with hexagonal core body

U-PIN

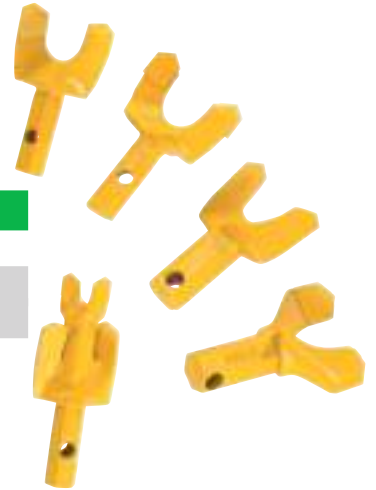
Hex	Reference
Hex 21	F1 04002101
Hex 29	F1 04002901
Hex 41	F1 04004101
Hex 51	F1 04005101

BITS

AND ACCESSORIES

2 PRONG BITS (WITH BRAZER TUNGSTENE CARBIDE PLATES)

Ø (mm)	Hex (mm)	Right rotation references	Left rotation references
63	21	F1 02006301	F1 02006302
63	21	F1 02006310 (with pilot bit)	> (Ref. Pilot bit = IB 0100015)
76	21	F1 02007601	
89	29	F1 02008901	



FINGER HEAD BIT

Ø (mm)	29 Hex	41 Hex	51 Hex
114	F1 02012700	*	*
127	F1 02012701	F1 02012702	*
152	F1 02015203	F1 02015204	*
178	*	F1 02017801	*
203	*	F1 02020301	F1 02020302
254	*	F1 02025401	F1 02025402
305	*	F1 02030501	F1 02030502
Tungstene carbide insert			F1 02090002
Single wedge		Small size	F1 02090005
Double wedge		Small size	F1 02090006
Double wedge		Large size	F1 02090011

*Please, consult us



DP ROCK HEAD BIT

Ø (mm)	Hex (mm)	Reference
114	29	F1 02090018
152	29	F1 02090014
152	41	F1 02090016
203	41	F1 02090021
203	51	F1 02090022
Small size inserts		F1 02090019
Large size inserts		F1 02090017





BULLDOG HEAD BIT

Ø (mm)	Hex (mm)	Reference
114	29	F1 02111401
114	41	F1 02111402
152	29	F1 02115200
152	41	F1 02115201
TC inserts		F1 02190001

BULLET HEAD BIT

Ø (mm)	Hex (mm)	Reference
152	41	F1 02090207
203	41	F1 02090208
254	41	F1 02090209
254	51	F1 02090210
305	41	F1 02090211
305	51	F1 02090212
152	2"3/8 ^R	F1 02090213
203	2"3/8 ^R	F1 02090214



BITS

AND ACCESSORIES

FISHTAIL BIT



Ø (mm)	Reference	Ø (mm)	Reference
64	F1 03006401	152	F1 03015201
76	F1 03007601	178	F1 03017801
89	F1 03008901	203	F1 03020301
114	F1 03011401	254	F1 03025401
127	F1 03012701	305	F1 03030501

SHANK FOR FISHTAIL BIT



Fishtail Ø (mm)	Hex (mm)	Reference
51 - 64 - 76	21	F1 03002101
51 - 64 - 76	29	F1 03002901
89 - 114	29	F1 03002902
89 - 114	41	F1 03004101
127 to 152	29	F1 03002903
127 to 305	41	F1 03004102
127 to 305	51	F1 03004103

AUGER FISHING TOOL



Auger Ø (mm)	Right rotation reference	Auger Ø (mm)	Left rotation reference
63/76	F1 04006301	178 (Hex41)	F1 04017802
80/100/114	F1 04008001	225/254 (Hex41)	F1 04022501
140/152/178 (Hex41)	F1 04014001	225/254 (Hex41)	F1 04022502

* Please, contact us



AUGER HOLDER

Auger Ø (mm)	Reference	Auger Ø (mm)	Reference
63/76	F1 04006302	178	F1 04017803
80 to 140 (core 43)	F1 04008002	225	F1 04017803
114 to 178 (core 60)	F1 04014002	254	F1 04017803

U-PIN

Hex (mm)	Reference
Hex 21	F1 09002102
Hex 29	F1 09002902
Hex 41	F1 09004102
Hex 51	F1 09005101

GIMBAL 400 DAN.M WITH BELLOWS

F X F	Reference Hex 41
2" 3/8 R	F1 0604005
2" 3/8 IF	F1 06040010
Hex 41	F1 06040004
Hex 29	F1 06040003
Hex 21	F1 06040002
Other couplings (R51, R66), please contact us	
Pointed hammer for U Pins	F1 09006301



PRINCIPLE

The hollow-stem auger (HSA) system is used to drill and case a borehole simultaneously in gravelly or heterogeneous soil such as sand or gravel.

The principle of this method is to use a string of rods with a pilot bit inside the auger string. The hollow-stem auger can also be positioned using lost tools instead of internal rods. Soil should not enter the auger regardless of the method used. This is an ideal method for piezometer installation, well monitoring, geotechnics, micro-piles, tubing for SPT tests and pressuremeter tests.

In a standard configuration (auger+rod), when the desired depth is reached, the inner rods are removed to free the inside of the auger. Coring or sampling is subsequently possible beyond this depth.

We offer a range of four standard dimensions identified by their inside and outside diameters:

($\varnothing$ inside x $\varnothing$ outside)

- 66 x 140 mm ($\varnothing$ int x $\varnothing$ ext)
- 82 x 175 mm ($\varnothing$ int x $\varnothing$ ext)
- 111 x 194 mm ($\varnothing$ int x $\varnothing$ ext)
- 159 x 254 mm ($\varnothing$ int x $\varnothing$ ext)

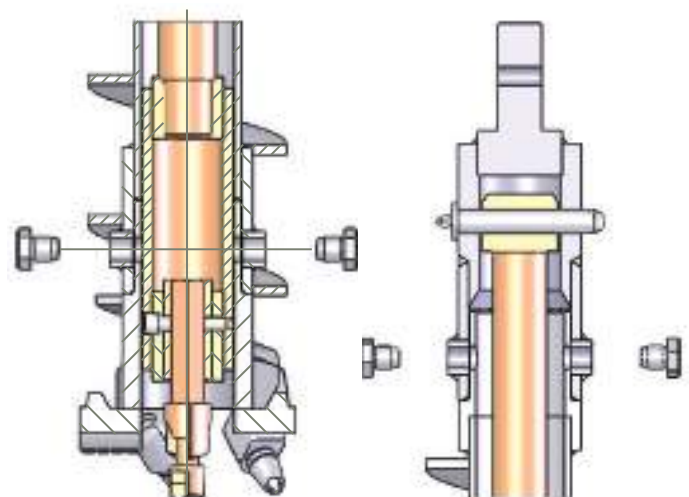
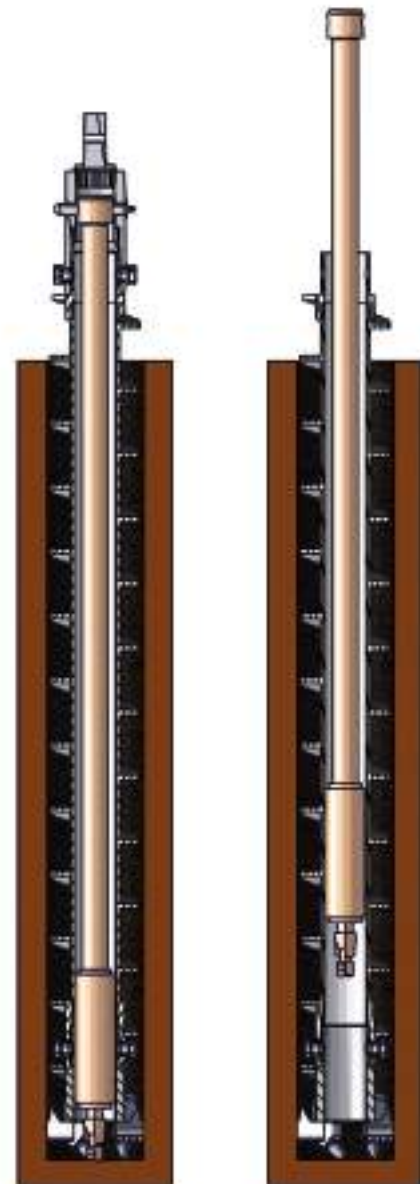
DESCRIPTION

The top of the equipment consists of a dual head leading both the auger string and the inner rod string. The augers are fixed to the driving head with nuts and bolts, whilst the top rod is fixed to the head using an adapter secured with a locking pin.

The augers and inner rods are added in 1.5 m lengths (or others lengths on request) until the target drilling depth is reached. The rods are threaded and screwed, whilst the augers are secured using nuts and bolts.

The first (bottom) rod is equipped with a plug adapter connecting the rod to the pilot bit. The bottom auger is fitted with a tungsten carbide cutter head bit including both self-sharpening bullets for chipping action and blades for cleaning.

When the inner rods are removed, the stem of the auger is completely emptied to its full inner diameter.

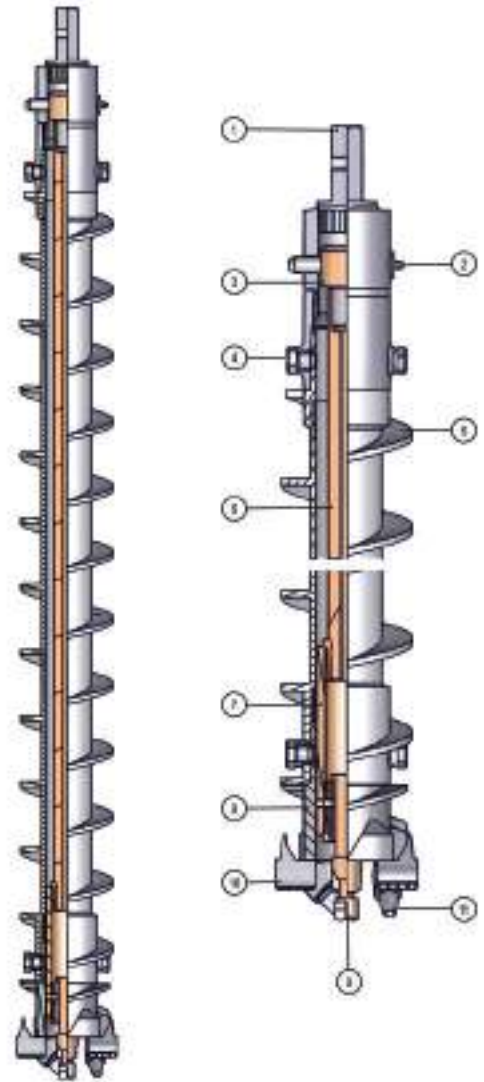
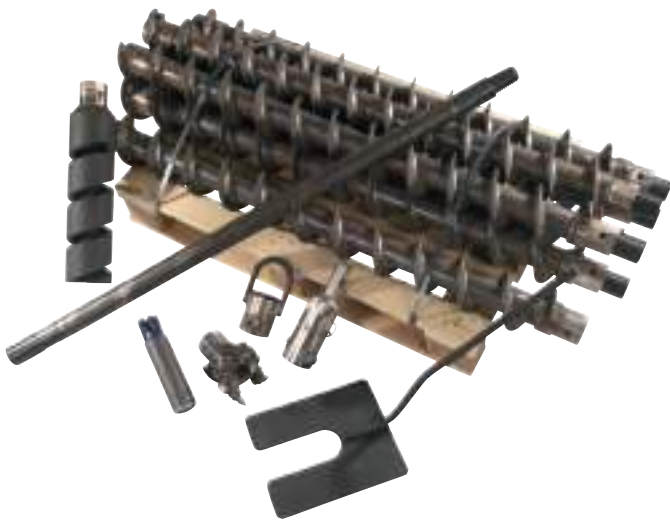




See instructions for
using the augers, p 83

OCTAGONAL CONNECTION

BEST REPARTITION OF DRILLING TORQUE AND
REDUCTION OF THE RISKS OF DAMAGE



COMPOSITION OF THE SYSTEM

Description	Dimensions in mm (Ø inside x Ø outside)			
	Ø 66 x 140	Ø 82 x 175	Ø 111 x 194	Ø 159 x 254
1 Driving head	F6 06614001	F6 08217501	F6 11119401	F6 15925401
2 Rod bolt	*	*	*	*
3 Rod x head adapter	F6 06614004	F6 08217504	F6 11119404	F6 15925404
4 Auger locking bolt	F6 06614010	F6 08217510	F6 11119410	F6 15925410
5 Hollow auger 1,5 m long	F6 06614002	F6 08217502	F6 11119402	F6 15925402
6 Rod Ø60 x 1.5m	K2 010006005	K2 010006005	K2 010006005	
6 Rod Ø76 x 2"3/8 Reg x 1.5m				K2 010237505
7 Plug adapter for pilot bit	F6 06614005	F6 08217505	F6 11119405	F6 15925405
8 Heavy duty cutter head bit	F6 06614003	F6 08217503	F6 11119403	F6 15925403
9 Pilot bit	Drag bit ø63,5 mm ID 01025001	Drag bit ø76 mm IS 010030001	Drag bit ø108 mm IS 010042501	Drag bit ø156 mm IS 010061251
10 Plug adapter for pilot bit	*	*	*	*
11 Finger bit	*	*	*	*
Left in hole bit (Option)	F6 06614007	F6 08217507	F6 11119407	F6 15925407

ACCESSORIES

Hoisting plug	F6 06614009	F6 08217509	F6 11119409	F6 15925409
Auger holder	F6 06614008	F6 08217508	F6 11119408	F6 15925408
Auger retriever	F6 06614011	F6 08217511	F6 11119411	F6 15925412

*Please, consult us.

INJECTION AUGERS

« JET AUGER » TYPE

FRENCH MANUFACTURING



See instructions for using the augers, p 79

INJECTION AUGER

Ø (mm)	Length 1.5 m Thread type	Reference
63	E	F2 01006302
102	AWJ	F2 01010003
114	60	F2 01011401
140	2"3/8 Reg	F2 01014001
178	2"3/8 Reg	F2 01017802
225	2"3/8 Reg	F2 01022504

Other diameters and lengths: please, consult us

2 PRONG BIT FOR INJECTION AUGER

Ø auger (mm)	Ø bit (mm)	Thread	Reference
63	63	E	F2 02006302

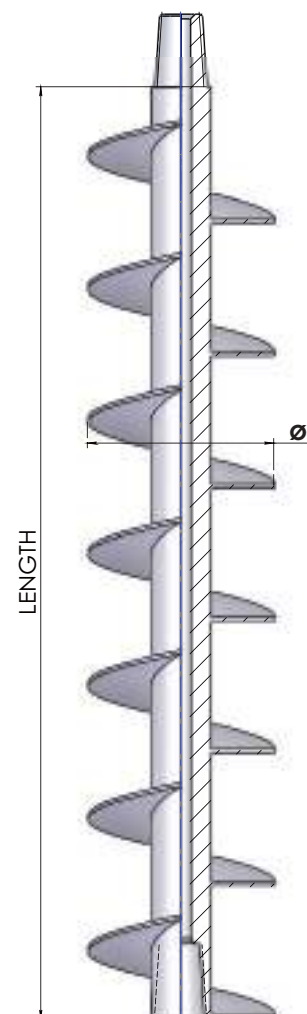
Other diameters: please, consult us

DP ROCK HEAD BIT

Ø auger (mm)	Ø bit (mm)	Thread	Reference
102	114	AWJ	F1 02090100
114	127	60	F1 02090103
140	152	2"3/8 Reg	F1 02090105
178	203	2"3/8 Reg	F1 02090110
Small size inserts			F1 02090019
Large size inserts			F1 02090017

Other bits for injection augers: please, consult us

For cement grout injection, please consult our piston pumps.



RODS AND NIPPLES

FOR TOP HAMMER ROTARY-PERCUSSION

APAGEO offers a full range of rods, bits, shanks, adaptors and couplings for top hammer rotary percussion. We have a large storage of material to meet your needs.

Other threads can be manufactured: ask us for rods and bits in R22, R25, T38, T45 and T51.



RODS

Rod length	Thread	Reference R 32 rod	Reference R 38 rod
0.60 m	MxM	H1 02003204	H1 02003810
0.91 m	MxM	H1 02003205	H1 02003803
1,00 m	MxF	H1 02003215	-
1.22 m	MxM	H1 02003206	H1 02003804
1.52 m	MxM	H1 02003207	H1 02003801
1,52 m	MxF	H1 02003213	-
1.83 m	MxM	H1 02003208	H1 02003805
1,83 m	MxF	H1 02003214	-
2,00 m	MxF	H1 02003216	-
2.43 m	MxM	H1 02003209	H1 02003806
3.05 m	MxM	H1 02003210	H1 02003807
Nipple	MxM	H1 02003211	H1 02003808
Wrench	MxM	H1 09003201	H1 09003803
Fishing tool bell type	MxM	M7 0100020	M7 01000032

ADAPTOR AND COUPLING

	R38 Fem	R38 Male
R32 Fem	H1 05003203	H1 05003803
R32 Male	H1 05003207	H1 05003807

SPECIAL RODS AND SHANK

Description	Reference
R38 M x M Rod guide- ø60 mm - lg 910 mm (Stabilisor for pressuremeter tests)	H1 02004001
R38 F x F wing guide sleeve ø60 mm - lg 190 mm	H4 01000770
Shank for APAFOR 48 / 51 - R38	U4 7400503
Shank BBC 100 - R32 - side inj.	H1 03003213
Shank BBC 120 - R32 - central inj.	H1 03003810
Shank for Sed 350	U0 1900502
Shank GEO 205	H1 03003215
Shank GEO 305	H1 03003217





ROTARY-PERCUSSION BITS



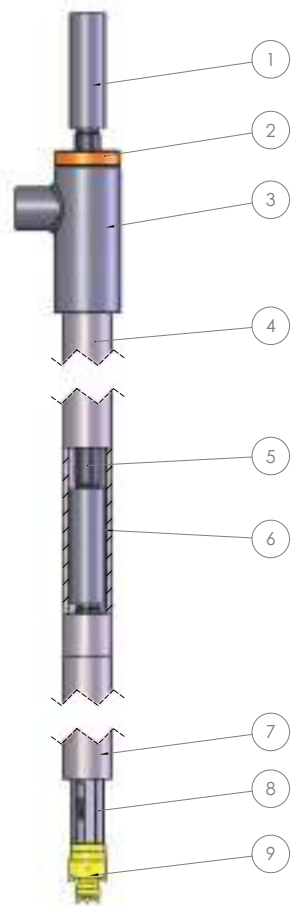
Filetage	Ø (mm)	Cross bits	Retrac cross bits	Button bits	Retrac button bits	Rotary 2 wings bits
R 32	43	-	-	H1 01204401	-	-
oR	45	H1 01104501		H1 01204501	-	-
1"1/4	48	H1 01104801	-	H1 01204801	-	-
	51	H1 01105100	H1 01105101	H1 01205101	H1 01205102	-
	57	H1 01105701	-	H1 01205701	H1 01205704	-
	60	H1 01106002	H1 01106001	H1 01206001	H1 01206002	-
	64	H1 01106404	H1 01106402	H1 01206401	H1 01206404	H1 01006301
	66	H1 01106601	H1 01106602	H1 01206601	H1 01206604	H1 01006601
	68	H1 01106801	H1 0116805	H1 01206803	H1 01206802	-
	70	H1 01107101	H1 0117104	H1 01207001	H1 01207005	-
	76	H1 01107601	H1 01107602	H1 01207601	H1 01207602	-
	89	H1 01108901	H1 01108902	H1 01208901	H1 01208902	-
	102	H1 01110203	H1 01110200	H1 01210201	H1 01210204	-
	115	H1 01111500	-	-	-	-
	127	-	-	H1 01212703	H1 01212704	-
R 38	57	H1 01105702	-	H1 01205703	-	-
oR	64	H1 01106403	H1 01106405	H1 01206402	H1 01206403	H1 01006303
1"1/2	66	H1 01106603	H1 01106604	H1 01206602	H1 01206603	H1 01006602
	68	H1 01106802	H1 01106804	H1 01206800	H1 01206801	-
	70	H1 01107102	H1 01107103	H1 01207002	H1 01207003	-
	76	H1 01107603	H1 01107604	H1 01207603	H1 01207604	H1 01007601
	89	H1 01108903	H1 01108904	H1 01208903	H1 01208904	-
	102	H1 01110201	H1 01110202	H1 01210202	H1 01210203	-
	115	H1 01111501	H1 01111502	H1 01211501	H1 01211502	-
	127	H1 01112701	-	H1 01212701	H1 01212702	-
	152	-	-	H1 01215201	-	-

Please contact us for bits in R22, R25, BT 38 (1"1/2), BT 45 (1"3/4), BT 51 (2").



S.T.A.R.

OVERBURDEN DRILLING TOP HAMMER ROTARY-PERCUSSION



Description	Casing diameter: Ø in x Ø out (boring Ø) in mm		
	Ø 67 x 74 (86)	Ø 76.2 x 88.9 (101)	Ø 104 x 113 (125)
1 Driving nipple	H5 0067109	H5 0076109	H5 0100109
2 Driving ring	H5 0067101	H5 0076101	H5 0100101
3 Casing driving head	H5 0067102	H5 0076102	H5 0100102
4 Casing lg 1.22m	H5 0067105	H5 0076105	H5 0100105
5 R32 rod lg 1.22m	H1 02003206	-	-
5 R38 rod lg 1.22m	-	H1 02003804	H1 02003804
6 R32 nipple	H1 02003211	-	-
6 R38 nipple	-	H1 02003808	H1 02003808
7 Starting casing	H5 0067104	H5 0076104	H5 0100104
8 Bit adaptor	H5 0067106	H5 0076106	H5 0100106
9 STAR eccentric cross bit	H5 0067107	H5 0076107	H5 0100107
9 STAR eccentric button bit	H5 0068107	H5 0077107	H5 0101107
Driving head	H5 0067103	H5 0076103	H5 0100103
Lifting head	H5 0067108	H5 0076108	H5 0100108
R32 rod spanner	H1 09003201	-	-
R38 rod spanner	-	H1 09003803	H1 09003803



DOWN THE HOLE HAMMERS

OPERATING PRESSURE AND FLOW

Hammer	Shank type	Pressure (Bar)	Flow (m3/min)	ø (mm)	Weight (Kg)	useful length (mm)	Thread
1"	BR1	7-17,5	1,5-3	50	8	724	RD 40 Fem
2"	BR2	7-17	2-7	62	13	810	RD 50 Fem
3"	DHD 3.5	7-25	4-10	85	22	805	2" 3/8 Reg
4"	DHD 340	7-25	5-16,7	98	38	1030	2" 3/8 Reg
Mini 4"	COP 44	6 - 15	2,8 - 6,5	97	20	550	2" 3/8 Reg
4"	TD40/QLX40	8-35	5-23	100	55	986	2" 3/8 Reg
5"	DHD 350	9-30	8-30	124	75	1014	3" 1/2 Reg
	QL50	9-30	8-30	124/121/115	70	1000	3" 1/2 Reg
6"	DHD 360	10-28	12-34	144	100	1089	3" 1/2 Reg
	SD6	10-28	12-34	144	95	1105	3" 1/2 Reg
	QL60	10-28	12-34	144	100	1035	3" 1/2 Reg
8"	DHD 380	14-28	15-42	182	190	1351	4" 1/2 Reg
	SD8	14-28	15-42	182	180	1322	4" 1/2 Reg
	QL80	14-28	15-42	182	190	1334	4" 1/2 Reg
10"	SD10	15-27	20-55	225	355	1490	6" 5/8 Reg

CHOICE OF DRILL BITS (DIAMETER / SHANK)

		BR1	BR2	DHD3.5	DHD340, TD40, QLX40	DHD350, QL50	DHD360, QL60, SD6	DHD380, QL80, SD8	SD10
64	2 1/2	X							
66	2 5/8	X							
70	2 3/4		X						
76	3		X						
80	3 9/64		X						
89	3 1/2		X	X					
95	3 3/4		X	X					
100	3 15/16			X					
102	4			X					
105	4 1/8			X	X				
108	4 1/4			X	X				
110	4 5/16			X	X				
115	4 1/2				X				
121	4 3/4				X				
127	5				X	X			
140	5 1/2				X	X			
152	6				X	X	X		
165	6 1/2					X	X		
172	6 3/4					X	X		
178	7					X	X		
190	7 1/2					X	X		
200	7 7/8					X	X	X	
203	8						X	X	
216	8 1/2						X	X	
219	8 5/8						X	X	
222	8 3/4						X	X	
241	9 1/2						X	X	
254	10						X	X	X
292	11 1/2							X	X
311	12 1/4							X	X
330	13								X
350	13 3/4								X

SHANK TYPE

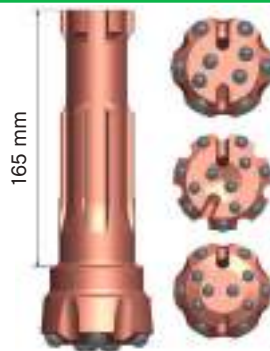
BR1

6 splines



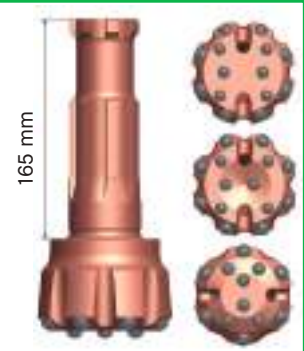
BR2

6 splines



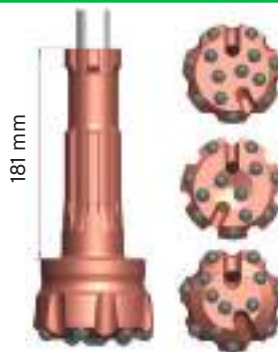
BR33

7 splines



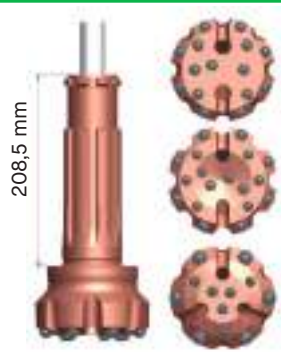
DHD3.5

8 splines



DHD340

8 splines



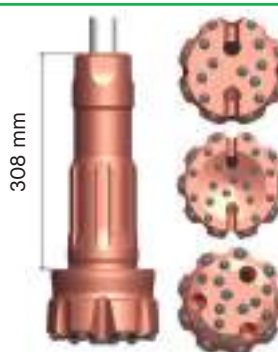
DHD350

8 splines



DHD360

8 splines



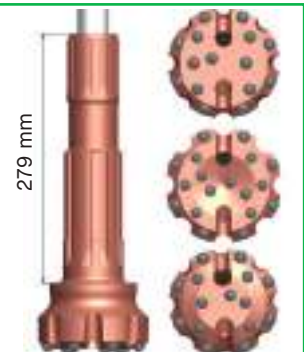
DHD380

10 splines



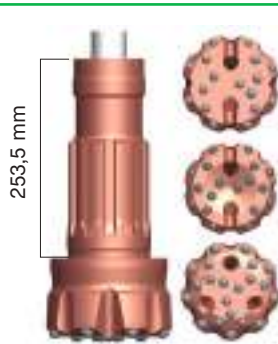
QL40

10 splines



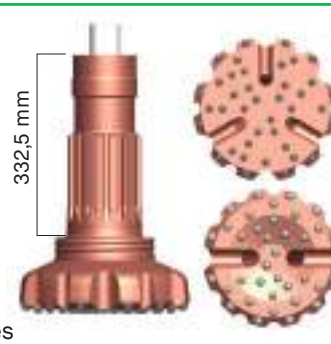
QL60

12 splines



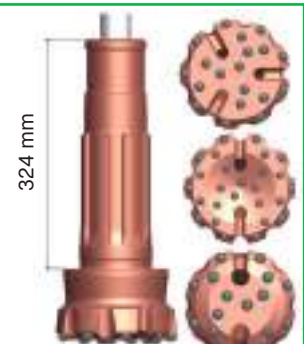
QL80

16 splines



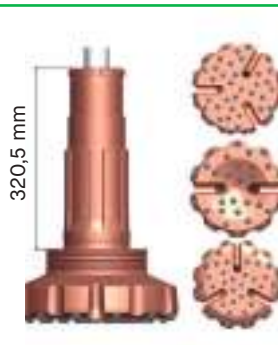
SD6

8 splines



SD8

8 splines



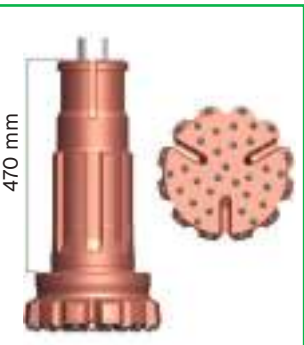
SD10

8 splines



SD12

8 splines



STAREX®

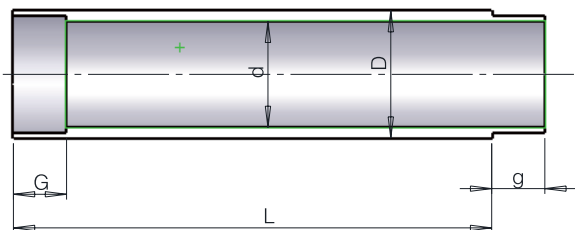
OVERBURDEN DRILLING

The STAREX® is an overburden drilling system enabling simultaneous drilling and casing in different types of formations.

This system is made up of a guide, a reamer and a pilot bit. It is used to drill a hole slightly larger than the external diameter of the casing. This enables the casing tube to follow the pilot bit down the hole without rotation.

The STAREX® series 76 and 90 casings are designed for simultaneous drilling and casing operated with top hammer. In the case of a DTH hammer-operated drilling, series 90 to 240 are to be used. On reaching the target depth, reverse rotation is applied which allows the eccentric reamer to turn in, thus reduced to its smallest diameter. It is then possible to pull up the drill string and leave the casing in place in the soil. Drilling can also continue in the available diameter at the foot of the casing.

STAREX® CASINGS DIMENSIONS



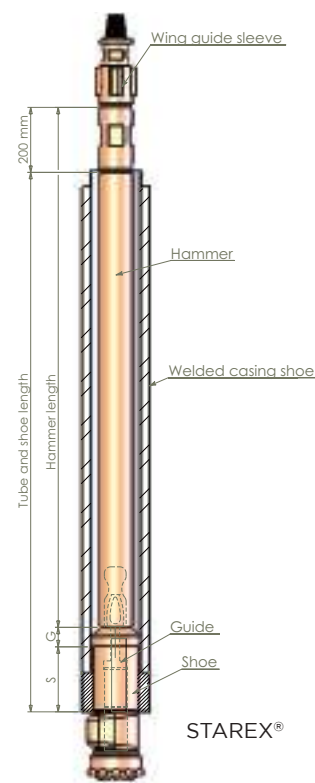
Starex® casing types	D (mm)	Wall Thickness (mm)	ID (mm)	Thread	g
TH 76	88,9	5,5	77,8	Right	60 / 70
TH/TDH 90	114,3	6,35	101,5	TH Right / DTH Left	60 / 70
DTH 115	139,7	6,35	127,0	Left	60 / 70
DTH 140	173,0	8,0	157,0	Left	60 / 70
DTH 165	193,7	6,6	180,5	Left	60 / 70
DTH 190	219,0	7,0	205,0	Left	70
DTH 240	285,0	12,0	261,0	Left	120

STAREX® TECHNICAL SPECIFICATIONS

Starex® types	Ø pilot (mm)	Ø reamer (mm)	Connection thread	DTH hammer*	Suitable drill rods
TH 76	70	96	R 38 female	-	Rod R38
TH 90	90	123	R 38 female	-	Rod R38
DTH 90	90	123	DHD 3.5	3" - DHD 3.5	76 / 89
DTH 115	115	152	COP 44/ DHD 340	4" - COP 44 / DHD 340	89
DTH 140	140	181	DHD 350	5" - DHD 350	114
DTH 165	165	209	SD6	6" - SD6	114
DTH 190	190	237	SD6	6" - SD6	114
DTH 240	240	306,5	SD8	8" - SD8	114

*Adaptable on all our STAREX® tools

FRENCH MANUFACTURING



SHOE WELDED CASING LENGTH DEFINITION:
LENGTH (LTS) = S + G + LM - 200 MM

S = Shoe total length (depending on model used)
G = Guide skirt length (manufacturer specifications)
LM = Hammer length (manufacturer specifications)

A COMPLETE STAREX® EQUIPMENT IS COMPOSED OF:

- A discharge head allowing cuttings to flush out (Except TH Starex® 90)
- A welded casing shoe at the beginning. (available in length 1m, 2m or 3 meters, depending of the model)
- Casings with right hand thread for the TH method in ø76 and 90 mm and left hand thread for the DTH method generally, ø90 to 240 mm (available in 1m, 1,5m, 2m et 3m)
- A wing guide sleeve (option) stabilizing the drill string.
- A STAREX® composed of a guide, a reamer and a pilot bit.
- A suitable DTH (for the DTH method)
- A drill string with suitable type and diameter (depending on the method chosen)
- An uncasing head to retrieve
- Eventually a coupling adaptor



STAREX® 76 AND 90 TOP HAMMER

Casing and bit	Starex® 76 OD 88,9 / ID 77,8	Starex® 90 OD 114,3 / ID 101,5
Casing 1,22 m length	H4 010007610	H4 0100905
Welded casing shoe	H4 01000767	H4 0100906
Spare shoe		H4 0100907
Driving head FxF R38	H4 01000769	-
Discharge head	H4 01000765	-
Adaptation sleeve head	H4 010007611	-
Wing guide sleeve	H4 01000770	H4 01000771
Brace	H4 01000764	-
Set of 3 washers	H4 01000768	-
Uncasing head	H4 01000766	H4 0100904
Compleat bit (guide, reamer, pilot bit)	H4 0100076	H4 010090
Guide	H4 01000761	H4 0100901
Reamer	H4 01000762	H4 0100902
Pilot bit	H4 01000763	H4 0100903

Other casing lengths, please consult us

see p.89 For drillpipes, please see rotary percussion drillpipes R38.



STAREX® 90 TO 240 DOWN THE HOLE HAMMER

Casing and bit	Starex® 90 OD 114,3 ID 101,5	Starex® 115 OD 139,7 ID 127,0	Starex® 140 OD 173,0 ID 157,0	Starex® 165 OD 193,7 ID 180,5	Starex® 190 OD 219,0 ID 205,0	Starex® 240 OD 285,0 ID 261,0
Casing 1m length	H4 01009008	H4 01001156	H4 01001406	H4 01001656	H4 01001906	H4 01002406
Welded casing shoe	H4 01000905	H4 01001155	H4 01001405	H4 01001655	H4 01001905	H4 01002405
1 m length						
Spare shoe	H4 01000904	H4 0100154	H4 01001404	H4 010016514	H4 01001904	H4 01002404
Discharge head	H4 010009010	H4 01001157	H4 010014012	H4 010016512	H4 010019012	H4 010024012
Uncasing head	H4 010009011	H4 01001158	H4 010014013	H4 010016513	H4 010019013	H4 010024013
Complete bit (guide, reamer, pilot bit)	H4 0100090	H4 0100115	H4 0100140	H4 0100165	H4 0100190	H4 0100240
Guide	H4 01000901	H4 01001151	H4 01001401	H4 01001651	H4 01001901	H4 01002402
Reamer	H4 01000903	H4 01001152	H4 01001402	H4 01001652	H4 01001902	H4 01002401
Pilot bit	H4 01000902	H4 01001153	H4 01001403	H4 01001653	H4 01001903	H4 01002403
Kit with balls and pins	H4 0100908	H4 0100909	H4 0100910	H4 0100911	H4 0100912	H4 0100913

Other tube lengths, please consult us

see p.96 For drillpipes, please see friction welded drillpipes

DRILLING RODS AND ACCESSORIES

FRENCH MANUFACTURING

DRILL RODS WITH NIPPLES

Ø (mm)	Nipple Ø (mm)	Lenght (mm)
E* (ø32 x 16)	32 x 9	500-3000
42* (ø42 x 32)	42 x 22	500-3000
44 M (ø44 x 34)	-	500-3000
44 Renf (ø44,5 x 34)	44 x 25	500-3000
50* (ø50 x 37)	50 x 22	500-3000

*with unscrewing flats.

Other metric drilling rods (W, WJ etc...), please consult us



STANDARD DRILLING RODS

øext (mm)	Wall thickness (mm)	Lenght (mm)	Thread	Flats (mm)
42-44	5 / 7	500-6000	AWJ	36
54-57	5 / 8	500-6000	BWJ	42
60	6,3	500-6000	60CR	50
76	4 / 6,3 / 8,8	500-6000	2 3/8" API REG	65
89	4 / 6,3 / 8,8	500-6000	2 3/8" API IF , 2 3/8" API REG , 2 7/8" API REG	65
102	6,3 / 8,8	500-6000	2 7/8" API REG	75
114	6,3 / 8,8	500-6000	2 7/8" API IF, 3 1/2" API IF, 3 1/2" API FH , 3 1/2" API REG, BECO 3"	95
127	6,3 / 8,8	500-6000	3 1/2" API IF , 3 1/2" API FH , 3 1/2" API REG, BECO 3 1/2"	95
140	8,8	500-6000	4 1/2" API REG , 4" API FH, BECO 3 1/2"	120
152	10 / 25	500-12000	4" API IF , 4 1/2" API FH , 4 1/2" API REG, BECO 4"	-
159	10 / 25	500-12000	4 1/2" API IF, BECO 4"	-
168	10 / 25	500-12000	4 1/2" API IF , 5 1/2" API REG , BECO 4"	-

HAUSHERR TYPE DRILL RODS

øext (mm)	Wall thickness (mm)	Lenght (mm)	Thread	Flats (mm)
76	6,3 / 8,8	1500-6000	2 3/8" API REG, GG2", 2 3/8" RS	HAUSHERR
89	6,3	1500-6000	2 3/8" API REG	HAUSHERR
95	6 / 19	"	2 7/8" API REG	HAUSHERR
102	6 / 19	"	2 7/8" API REG	HAUSHERR
114	6 / 19	"	3 1/2" API REG	HAUSHERR
127	8 / 19	"	3 1/2" API REG	HAUSHERR

EX-FLOW® DRILLING ROD

Constant flush inner diameter for free air circulation flushing.

The plastic tube fills the inside of the pipe and reduces the volume of air and eliminates pressure drop.

This technology brings many benefits:

- 15% reduction in drilling time
- 20% less diesel consumption
- 60% less noise

The EX-Flow® drilling rod is safe when unscrewing rods and is ideal for high pressure down the hole drilling. It fills the drill string faster and provides maximum air pressure at the bottom of the hole, resulting in optimum efficiency and significant savings in compressor fuel consumption.



RODS AND CONES FOR DYNAMIC PENETROMETER

APAGEO offers a wide range of rods and cones (fixed or lost cones) for dynamic penetrometer tests, as well as hammering of samplers.

Rod Ø (mm)	Lg 0,5 m	Lg 1,0 m	Nipple	Driving head
22 - full and treated rod	-	F5 02002201	-	D4 1902002
32 - DPSH (without nipple)	-	D3 1902002	D3 1900701	D3 1902001
32 - DPSH (with nipple)	-	D3 1902010	-	D3 1902001
42 - PDA	D2 1902000	D2 1902001	-	A9 0900027

Our penetrometer rods are marked every 10 or 20 cm. Rods are also available in BW, BSW, SPT, CPT type ø36, as well as in other lengths. Please consult us.

Cones	Threads	Fixed cone	Lost cone	Lost cone holder
5 cm ²	Rod Ø 22	D4 19016040	-	-
10 cm ²	Rod Ø 22	D4 1901602	D4 1901604*	D4 1901801
20 cm ²	DPSH rod - Ø 32	D3 1901605	D4 1901606	D3 1902000
30 cm ²	PDA rod - Ø 42	D2 1901601	D2 1901602	D2 1901604

*Also available with a tail ref D4 1901603

see p.75 Light dynamic penetrometer

see p.12-13 Heavy dynamic penetrometer (Apafor® 50 and 100)

see p.127 Semi-automatic hammering system for SPT/PDB

see p.126 Hammering samplers



INJECTION SWIVEL

Upper connection	Lower thread			
	42	50	60	2"3/8 Reg
Hex 29	U0 7702002	U0 7702008	-	-
Hex 41	U0 7702007	U0 7702003	U0 7702004	U0 7702001
2"3/8 Reg	U0 7702010	U0 7702011	U0 7702012	U0 7702013



HOISTING PLUG - FISHING TAP AND BELL

Rods	Hoisting plug	Fishing tool	Fishing bell
E	M5 0100001	M6 0100001	M7 0100001
42	M5 0100011	M6 0100019	M7 0100002
44 Ménard	M5 0100011	M6 0100003	M7 0100002
44 Reinforced 44,5	M5 0100011	M6 0100003	M7 0100002
50	M5 0100012	M6 0100004	M7 0100003
60	M5 0100013	M6 0100205	M7 0100004
76 - 2"3/8 Reg	M5 0100045	M6 0100198	M7 0100021
89 - 2"3/8 Reg	M5 0100045	M6 0100200	M7 0100023

COUPLINGS AND ADAPTORS

FRENCH MANUFACTURING

COUPLINGS AND ADAPTORS ARE MANUFACTURED IN HARDENED STEEL, STABILIZED AT 85 TO 100 KG/MM². WE HAVE AN IMPORTANT STORAGE OF COUPLINGS AND SHANK ADAPTORS.

Couplings listed hereafter are some of the most common ones. We manufacture all couplings according to your specific needs (with flats, special lengths, special thread, ball valves, etc...).



DRILLING COUPLING BASIC

Threads	60 Fem	2"3/8 Reg Fem	2"3/8 IF Fem	2"7/8 Reg Fem	3"1/2 Reg Fem	4"1/2 Reg Fem	6"5/8 Reg Fem
N Rod Fem	E2 031006002	E2 041237501	E2 044237518	E2 045287503	E2 043330022	E2 044450013	E2 044662509
50 Fem	E2 033006003	E2 043237502	E2 044237517	E2 045217503	E2 043350009	E2 044450012	E2 044662508
60 Fem	E2 033006001	E2 034006001	E2 044237515	E2 034006002	E2 034006003	E2 034006004	E2 044662507
2"3/8 Reg Fem	E2 034006001	E2 044237503	E2 044237506	E2 044287501	E2 044350001	E2 044450001	E2 044662501
2"3/8 Reg Mâle	E4 034006001	E3 044237506	E3 044237508	E3 044237503	E3 044237509	E4 054122380	E4 054122379
2"7/8 Reg Fem	E2 034006002	E2 044287501	E2 044287502	E2 044287505	E2 044350004	E2 044450004	E2 044662502
3"1/2 Reg Fem	E2 034006003	E2 044350001	E2 044350003	E2 044350004	E2 044350006	E2 044450005	E2 044662503
4"1/2 Reg Fem	E2 034006004	E2 044450001	E2 044450003	E2 044450004	E2 044450005	E2 044450007	E2 044662505
6"5/8 Reg Fem	E2 044662507	E2 044662501	E2 044662500	E2 044662502	E2 044662503	E2 044662505	E2 044662506
Ball valve							
N Rod Fem	E2 031006003	E2 041237502	-	-	-	-	-
2"3/8 Reg Fem	E2 034006007	E2 044237505	E2 044237508	E2 044287503	E2 044350002	E2 044450002	E2 044662521

GEOTECHNICAL COUPLING

Threads	2"3/8 Reg M	60 Mâle	50 Mâle	42 Mâle	N Rod Fem	A Rod Fem	E Fem
2"3/8 Reg Mâle	E1 044237510	E1 034006001	E1 034006006	E1 034006004	E3 041237500	E3 041237499	E3 041237498
60 Mâle	E1 034006001	E1 033006001	E1 033006002	E3 055004205	E3 030006001	E3 031005999	E3 031005998
60 Fem	E4 034006001	E3 033006003	E4 033006002	E4 033006004	E2 031006002	E2 031006004	E2 031005997
50 Fem	E3 043237500	E3 033006007	E3 033005001	E3 033004201	E2 013000801	E2 013000401	E2 031005001
42 Fem	E3 043237502	E3 033006006	E4 033004201	E3 033004242	E2 031004202	E2 031004201	E2 031004203

RIGS COUPLING (WITH FLATS)

Threads	42 Mâle	50 Mâle	60 Mâle	Hex 21 Fem	Hex 29 Fem	Hex 41 Fem	2"3/8 Reg M
2"3/8 Reg Fem	E3 033004200	E4 043237500	E3 034006009	E2 080237503	E2 080237502	E2 080237501	E3 044237516
2"3/8 IF Fem	E3 033004199	E4 043237499	E3 034006006	E2 044237515	E2 044237517	E2 044237516	E3 044237517
2"3/8 Reg Mâle	E1 034006000	E1 034005999	E1 034005998	E3 080237501	E3 080237503	E3 080237502	E1 044237505
R66 Fem	E3 033004198	E1 033004197	E3 035006004	H1 05006599	H1 05006600	H1 05006601	E1 012006008
Sed 350 (38) F	E4 033006005	U01901802	E3 035006003	-	-	-	E1 045237506
R51 Fem	E4 033006006	E3 033004196	E3 035006005	-	-	-	E1 045237507
H55 Fem	Left thread x R38 Fem = H1 05003220			Right thread x 2"3/8 Reg M = E3 080237504			

TRICONE BITS

APAGEO OFFERS A WIDE RANGE OF TRICONE BITS, ADAPTED TO YOUR NEEDS ACCORDING TO THE TYPE OF WORK TO BE DONE AND THE DESIRED DIAMETER.

MORE THAN
13 000 UNITS
IN STOCK,
ALL DIAMETERS

Ø	mm	Thread
2"3/8	60,3	N"ROD
2"1/2	63,5	
2"5/8	66,7	
2"15/16	74,6	
3"	76,2	
3"1/8	79,4	
3"1/4	82,5	N"ROD or 2"3/8
3"1/2	88,9	
3"3/4	95,2	2"3/8 R
3"7/8	98,4	
4"	101,6	
4"1/8	104,8	
4"1/4	107,9	
4"1/2	114,3	
4"3/4	120,6	2"7/8 R
4"5/8	117,5	
4"7/8	123,8	
5	127,0	
5"1/8	130,2	
5"1/4	133,3	
5"1/2	139,7	3"1/2 R
5"3/4	146,0	
5"5/8	142,9	
5"7/8	149,2	
6	152,4	
6 1/8	155,6	
6 1/4	158,7	
6 1/2	165,1	
6 3/8	171,4	
6 3/4	171,4	
6"7/8	174,6	
7"	177,8	
7"1/8	181,0	
7"1/2	190,5	



Ø	mm	Thread
7"5/8	193,7	4"1/2
7"7/8	200,0	
8"1/4	209,5	
8"1/2	215,9	
8"3/4	222,2	
9"	228,6	
9"1/2	241,3	6"5/8
9"5/8	244,5	
9"7/8	250,8	
10"5/8	269,9	
11	279,4	
11"5/8	295,3	6"5/8 or 7"5/8
12"1/4	311,1	
13"3/4	349,2	
14"	355,6	
14"3/4	374,6	
15	381,0	
15"1/2	393,7	
16"	406,4	
16"1/2	419,1	
17"	431,8	
17"1/2	444,5	
18"1/2	469,9	
20	508,0	
22"	558,8	
24"	609,6	
26"	660,4	
30"	762,0	
34"	863,6	



TRICONE BITS

WE SELECTED FOR YOU TRICONE BITS FOR THE MOST DEMANDING APPLICATIONS IN THE DRILLING WORLD: FOUNDATIONS, OIL INDUSTRY, MINING, WATER WELL DRILLING, AND GEOTECHNICAL INDUSTRY

THESE PRODUCTS COME FROM THE BEST MANUFACTURERS AND ARE OF THE HIGHEST QUALITY.

IADC CLASSIFICATION OF TRICONE BITS

FIRST NUMBER

1, 2 and 3 designate steel tooth bits with 1 for soft, 2 for medium and 3 for hard formations.

4, 5, 6, 7 and 8 designate Tungsten carbide insert bits for varying formation hardness with 4 being the softest and 8 the hardest.

SECOND NUMBER

1, 2, 3 and 4 are further breakdown of formation with 1 being the softest and 4 the hardest.

THIRD NUMBER

This digit will classify the bit according to bearing/seal type - see information on different bearing types - and special gauge wear protection as follows:

1. Standard open bearing roller bit
2. Standard open bearing roller bit, air-cooled
3. Standard open bearing roller bit with gauge protection which is defined as carbide inserts in the heel of the cone
4. Sealed roller bearing bit
5. Sealed roller bearing bit with gauge protection
6. Journal sealed bearing bit
7. Journal sealed bearing bit with gauge protection

SOME TRICONES BITS PROFILES TO GUIDE YOU IN YOUR CHOICES :

STEEL TOOTH TRICONES BITS PROFILE IADC

For: medium to medium hard soils

The ergonomic design of this tricone allows for combined shredding, mulching and scraping. The teeth are shorter and less spaced than those designed for softer soils. The higher outer row of tooth allows maximum soil penetration and ensures a longer tool life.

- Optimum rotation speed : 150 to 50 rpm (speed should be decreased as weight is increased)

TCI TRICONES BITS PROFILE 531 AND 621

IADC 531 with tungsten carbide TCI tricones bits for medium to hard soils

IADC 621 for hard grounds

These tricones are designed for medium-hard, semi-abrasive terrain such as limestone, shale, dolomite and siliceous limestone. The design of these tools offers maximum protection against abrasion and ensures the longest possible service life. The conical TCI configuration is designed for more versatile use with added gauge protections for longer life in abrasive soils.

- Optimum rotation speed : 140 to 55 rpm

NEW TRICONE BITS

Apageo offers you a range of new tricone bits of exceptional quality. These tricones bits are tested and approved by drillers worldwide. They are available in quantity in all diameters and in different IADC codes.



LEFT IN THE HOLE TRICONE BITS

New tricones bits without thread

These tricone bits Predator offer a unique quality on the market due to their structure: the body is composed of 3 welded parts, as for the design of an original tricone, which gives them an optimal performance.

- New tricone bit tooth specially manufactured to be welded onto a sleeve
- Ideal product to guarantee the required length.

Left in the hole used tricones bits

- With tooth or TCI depending on availability
- Tricone bit checked in our factories



THE «GREEN» TRICONE BIT : OPEN BEARING



THE «BLUE» TRICONE BIT : SEALED BEARING

RERUN TRICONE BITS

The « rerun » is a very high quality tricone bit with a sealed bearing or journal sealed bearing, with TCI or tooth, used once by an oil & gas company and still in very good condition. Depending on the previous use, the rerun tricone bit can be of standard quality or premium quality for the most qualitative.



THE «PREDATOR» TRICONE BIT



THE LEFT IN THE HOLE USED TRICONE BITS

DRAG BITS

APAGEO OFFERS AMERICAN DRAG BITS, CHEVRON TYPE FOR MEDIUM SOFT FORMATIONS, OR STEP TYPE FOR SOFTER FORMATIONS. THESE TOOLS OFFER OPTIMAL QUALITY.



Diameter		THREAD
Ø Inch	Ø mm	
2"3/8	60.32	A Rod or N Rod
2"1/2	63.50	
2"5/8	66.67	
3"	76.20	
3"1/4	82.55	
3"1/2	88.90	
3"1/2	88.90	
3"3/4	95.20	
3"7/8	98.43	
4"	101.6	
4"1/4	107.95	2"3/8
4"3/8	111.13	
4"1/2	114.30	
4"3/4	120.65	
4"7/8	123.83	
5"	127.00	
5"1/8	130.18	
5"1/4	133.35	
5"3/8	136.53	
5"1/2	139.70	

Available in hexagonal connection for auger drilling

Diameter		THREAD
Ø Inch	Ø mm	
5"5/8	142.88	2"3/8 or 3"1/2
5"3/4	146.05	
5"7/8	149.23	
6"	152.40	
6"1/8	155.58	
6"1/4	158.75	
6"1/2	165.10	
6"3/4	171.45	
7"	177.80	
7"1/8	180.97	
7"3/8	187.33	3"1/2
7"1/2	190.5	
7"5/8	193.68	
7"7/8	200.03	
8"	203.20	
8"1/8	206.38	
8"1/2	215.90	
8"3/4	222.25	
10"	254	
10"5/8	269.9	
12"1/4	311.1	3"1/2 or 4"1/2
13"3/4	349.2	
14"	355.6	
14"3/4	374.6	
17"1/2	444.5	
20"	508	
24"	603.6	

6"5/8

PDC BITS

WE OFFER A LARGE RANGE OF PDC BITS FOR ALL DIAMETERS, WITH DESIGNS TO SUIT YOUR NEEDS. PDC BITS CAN OFFER HIGHER PRODUCTIVITY THAN TRADITIONAL TOOLS. OUR RANGE INCLUDES MATRIX AND STEEL BODY PDC TOOLS IN A VARIETY OF DESIGNS, BOTH NEW AND RERUN (FROM THE OIL & GAS INDUSTRY).

Diameter	
Ø Inch	Ø mm
2"1/2	63.50
2"5/8	66.67
3"	76.20
3"1/4	82.55
3"1/2	88.90
3"3/4	95.20
3"7/8	98.43
4"	101.6
4"1/4	107.95
4"3/8	111.13
4"1/2	114.30
4"3/4	120.65
4"7/8	123.83
5"	127.00
5"1/8	130.18
5"1/4	133.35
5"3/8	136.53
5"1/2	139.70
5"5/8	142.88
5"3/4	146.05
5"7/8	149.23
6"	152.40
6"1/8	155.58
6"1/4	158.75
6"1/2	165.10
6"3/4	171.45
7"	177.80
7"1/8	180.97
7"3/8	187.33
7"1/2	190.5
7"5/8	193.68
7"7/8	200.03
8"	203.20
8"1/8	206.38
8"1/2	215.90
8"3/4	222.25
10"	254
10"5/8	269.9
12"1/4	311.1
14"	355.6
14"3/4	374.6
17"1/2	444.5

Initially developed for the oil & gas industry, PDC bits are increasingly required for water well drilling, geothermal, geotechnical, mining etc. Depending on the geology and/or drilling conditions, they can offer a higher penetration speed and a better calibrated drilling diameter than Tricones bits or Drag bits. Also their life expectancy can be much higher.

These tools can be manufactured in matrix body (higher strength) or steel (lower cost) according to different designs, notably defined by the number of blades, the diameter of the cutters (cutting inserts) etc...

Our range also includes Rerun PCD bits from oil & gas companies that have been completely refurbished in particular by replacing broken or worn-out cutters, refilling the blades and then sandblasting, in order to obtain a tool that is close to new and thus an optimal quality/price ratio.



Available on left thread R32

CORING

FROM 1984 ...

Well-known for its expertise in Menard material and pressuremeter, for more than 30 years Apageo also manufactures coring and drilling tools.

... TO NOWADAYS

In the suburb of Paris, on its plants, Apageo manufactures core barrels as well as all the tungsten bits presented in this catalogue. With modern means of production, flexible and autonomous, Apageo offers qualitative products, available and made in France!

SINGLE TUBE CORE BARREL

FRENCH MANUFACTURING

B - TYPE

MARK

- 1 Head coupling
- 2 Core tube
- 3 TC reaming shell
- 4 Core lifter
- 5 Coring bit



DIMENSIONS AND WEIGHT

B Type	Lg 0.75 m		Lg 1.50 m		Lg 3.00 m		Core bit (mm)		Head thread
	Length (m)	weight (kg)	Length (m)	weight (kg)	Length (m)	weight (kg)	inner Ø	outer Ø	
46	0.91	4.0	1.66	6.7	3.16	12.0	32	46	42
56	0.94	5.3	1.69	8.6	3.19	15.2	42	56	42
66	0.95	6.7	1.70	10.6	3.20	18.4	52	66	50
76	0.97	8.8	1.72	13.6	3.22	23.0	62	76	50 / 60
86	0.98	10.5	1.74	15.9	3.23	26.7	72	86	60
101	0.99	15.0	1.74	23.0	3.24	38.9	87	101	60 / 2"3/8 Reg
116	0.99	19.0	1.74	28.3	3.24	47.0	102	116	60 / 2"3/8 Reg
131	0.99	22.5	1.74	32.9	3.24	53.6	117	131	2"3/8 Reg
146	0.99	26.8	1.74	38.4	3.24	61.5	132	146	2"3/8 Reg

CORE BARREL

B Type	Lg 0.75 m	Lg 1.50 m	Lg 3.00 m
46	WA 0100136	WA 0100147	WA 0100158
56	WA 0100137	WA 0100148	WA 0100159
66	WA 0100138	WA 0100149	WA 0100160
76	WA 0100139	WA 0100150	WA 0100161
86	WA 0100140	WA 0100151	WA 0100162
101	WA 0100141	WA 0100152	WA 0100163
116	WA 0100142	WA 0100153	WA 0100164
131	WA 0100143	WA 0100154	WA 0100165
146	WA 0100144	WA 0100155	WA 0100166

Useful length of the core – please precise the head thread wished

SPARE PARTS

B Type	Head	Tube Lg 0.75 m	Tube Lg 1.50 m	Tube Lg 3.00 m	Reaming shell
46	WA 0200062	WA 0300103	WA 0300114	WA 0300125	WA 0400014
56	WA 0200063	WA 0300104	WA 0300115	WA 0300126	WA 0400015
66	WA 0200064	WA 0300105	WA 0300116	WA 0300127	WA 0400016
76	WA 0200065	WA 0300106	WA 0300117	WA 0300128	WA 0400017
86	WA 0200066	WA 0300107	WA 0300118	WA 0300129	WA 0400018
101	WA 0200067	WA 0300108	WA 0300119	WA 0300130	WA 0400019
116	WA 0200068	WA 0300109	WA 0300120	WA 0300131	WA 0400020
131	WA 0200069	WA 0300110	WA 0300121	WA 0300132	WA 0400021
146	WA 0200070	WA 0300111	WA 0300122	WA 0300133	WA 0400022

B Type	Core lifter	Basket core lifter	Thread protector
46	WA 0500026	WA 0500035	WA 0600091
56	WA 0500027	WA 0500036	WA 0600092
66	WA 0500028	WA 0500037	WA 0600093
76	WA 0500029	WA 0500038	WA 0600094
86	WA 0500030	WA 0500039	WA 0600095
101	WA 0500031	WA 0500040	WA 0600096
116	WA 0500032	WA 0500041	WA 0600097
131	WA 0500033	WA 0500042	WA 0600098
146	WA 0500034	WA 0500043	WA 0600099

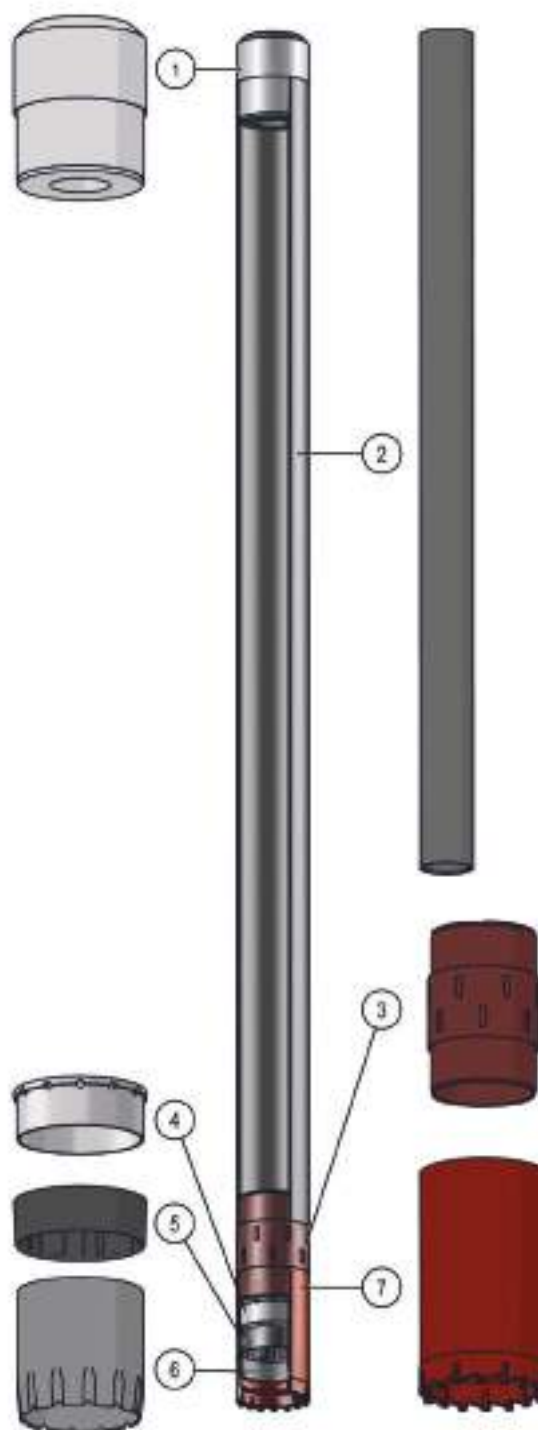
SINGLE TUBE CORE BARREL

FRENCH MANUFACTURING

T - TYPE

MARK

- 1 Head coupling
- 2 Core tube
- 3 TC reaming shell
- 4 Spacer
- 5 Core lifter
- 6 Core lifter case
- 7 Coring bit



DIMENSIONS AND WEIGHT

T Type	Lg 0.75 m		Lg 1.50 m		Lg 3.00 m		Core bit(mm)		Head thread
	Length (m)	weight (kg)	Length(m)	weight (kg)	Length (m)	weight (kg)	inner Ø	outer Ø	
46	0.99	4.1	1.74	6.1	3.24	9.6	32	46	42
56	0.99	5.8	1.74	8.5	2.24	14.0	42	56	42
66	1.02	7.0	1.76	10.2	3.26	16.7	52	66	50
76	1.02	8.6	1.77	12.1	3.27	19.1	62	76	50 / 60
86	1.02	10.2	1.77	14.2	3.27	22.7	72	86	60
101	1.16	15.3	1.91	21.3	3.41	32.3	84	101	60 / 2"3/8

CORE BARREL

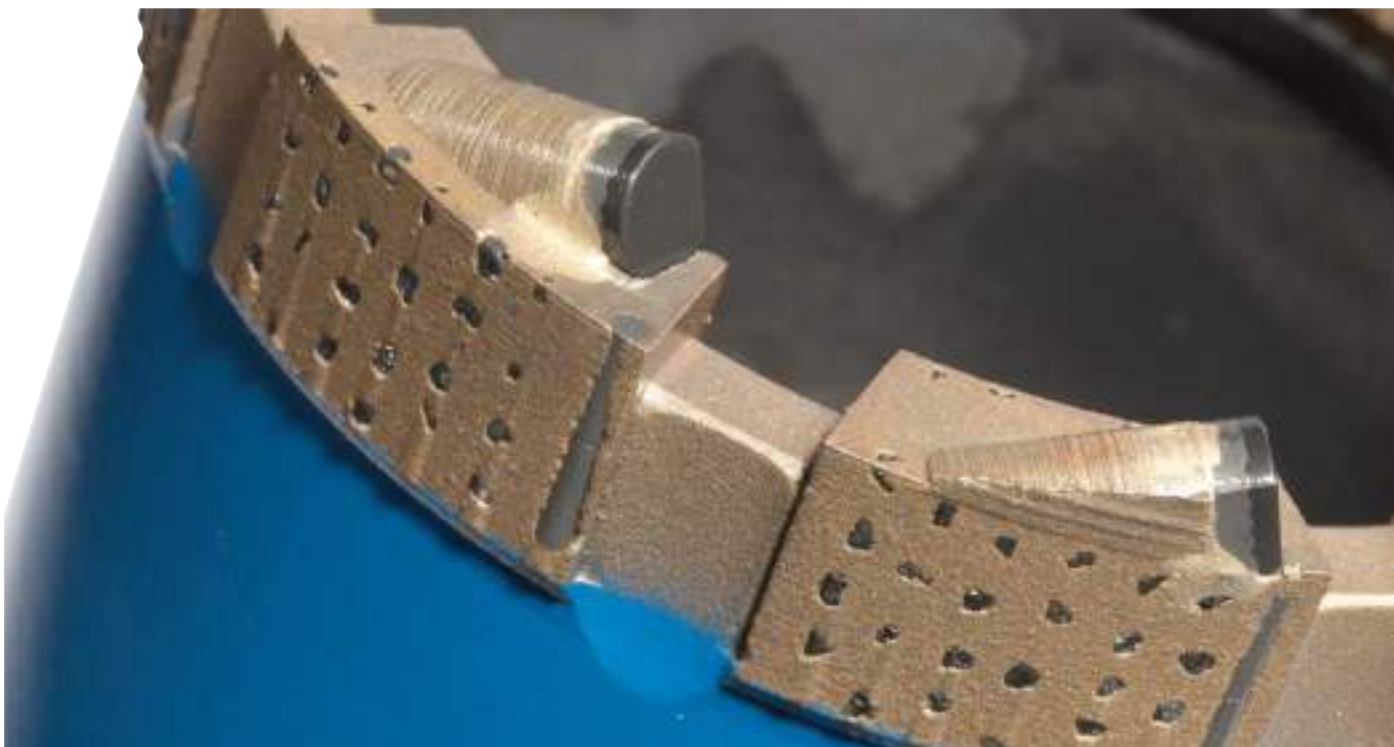
T Type	Lg 0.75 m	Lg 1.50 m	Lg 3.00 m
46	WE 0110104	WE 0110112	WE 0110120
56	WE 0110105	WE 0110113	WE 0110121
66	WE 0110106	WE 0110114	WE 0110122
76	WE 0110107	WE 0110115	WE 0110123
86	WE 0110108	WE 0110116	WE 0110124
101	WE 0110109	WE 0110117	WE 0110125

Useful length of the core – please precise the head thread wished

SPARE PARTS

T Type	Head	Lg 0.75 m	Outer tube Lg 1.50 m	Lg 3.00 m	Reaming shell
46	WE 0210064	WE 0310080	WE 0300243	WE 0300251	WE 0400011
56	WE 0210065	WE 0310081	WE 0300244	WE 0300252	WE 0400012
66	WE 0210066	WE 0310082	WE 0300245	WE 0300253	WE 0400013
76	WE 0210067	WE 0310083	WE 0300246	WE 0300254	WE 0400014
86	WE 0210068	WE 0310084	WE 0300247	WE 0300255	WE 0400015
101	WE 0210069	WE 0310085	WE 0300248	WE 0300256	WE 0400016

T Type	Spacer	Core lifter	Basket core lifter	Core lifter case	Thread protector
46	WE 0510072	WE 0500029	WE 0500036	WE 0500038	WE 0600291
56	WE 0510073	WE 0500030	WE 0500044	WE 0500039	WE 0600292
66	WE 0510074	WE 0500031	WE 0500045	WE 0500040	WE 0600293
76	WE 0510075	WE 0500032	WE 0500046	WE 0500041	WE 0600294
86	WE 0510076	WE 0500033	WE 0500047	WE 0500042	WE 0600295
101	WE 0510077	WE 0500034	WE 0500048	WE 0500043	WE 0600296



DOUBLE TUBE CORE BARREL

FRENCH MANUFACTURING

T2 - TYPE

MARK

- 1

Head assembly
- 2

Inner tube
- 3

Outer tube
- 4

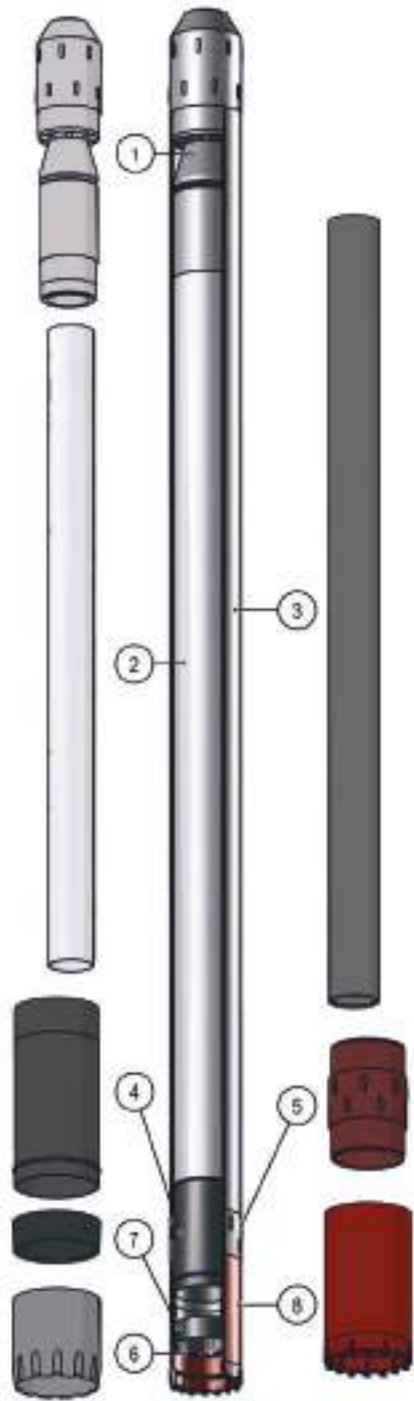
Extension tube
- 5

TC reaming shell
- 6

Core lifter case
- 7

Core lifter
- 8

Coring bit



DIMENSIONS AND WEIGHT

T2 Type	Lg 1.50 m		Lg 3.00 m		Core bit (mm)		Head Thread
	Length (m)	weight (kg)	Length (m)	weight (kg)	inner Ø	outer Ø	
46	1.77	10.5	3.27	17.0	32	46	42
56	1.77	13.7	3.27	22.2	42	56	42
66	1.85	17.1	3.35	27.6	52	66	50
76	1.89	21.2	3.39	33.2	62	76	50 / 60
86	1.93	24.4	3.43	37.9	72	86	60
101	2.05	49.0	3.55	68.0	84	101	60 / 2"3/8

CORE BARREL

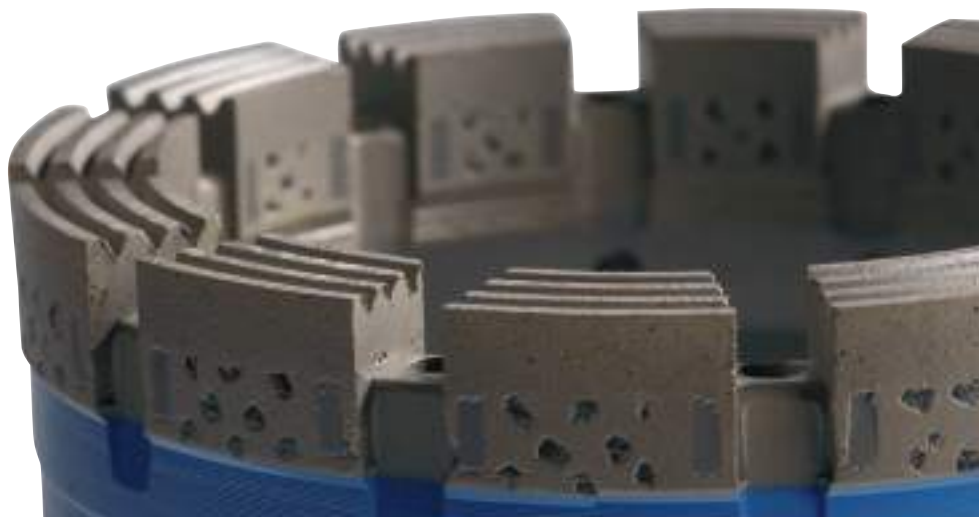
T2 Type	Lg 1.50 m	Lg 3 m	Core extractor
46	WE 0120275	WE 0120283	WE 0900235
56	WE 0120276	WE 0120284	WE 0900236
66	WE 0120277	WE 0120285	WE 0900237
76	WE 0120278	WE 0120286	WE 0900238
86	WE 0120279	WE 0120287	WE 0900239
101	WE 0120280	WE 0120288	WE 0900240

Useful length of the core – please precise the head thread wished

SPARE PARTS

T2 Type	Head	Outer tube		Inner tube		Extension tube
		Lg 1.50 m	Lg 3.00 m	Lg 1.50 m	Lg 3.00 m	
46	WE 0220136	WE 0300243	WE 0300251	WE 0320259	WE 0320267	WE 0320047
56	WE 0220137	WE 0300244	WE 0300252	WE 0320260	WE 0320268	WE 0320048
66	WE 0220138	WE 0300245	WE 0300253	WE 0320261	WE 0320269	WE 0320049
76	WE 0220139	WE 0300246	WE 0300254	WE 0320262	WE 0320270	WE 0320050
86	WE 0220140	WE 0300247	WE 0300255	WE 0320263	WE 0320271	WE 0320051
101	WE 0220141	WE 0300248	WE 0300256	WE 0320264	WE 0320272	WE 0320052

T2 Type	Core lifter case	Core lifter	Basket core lifter	TC reaming shell	Thread protector
46	WE 0500038	WE 0500029	WE 0500036	WE 0400011	WE 0600291
56	WE 0500039	WE 0500030	WE 0500044	WE 0400012	WE 0600292
66	WE 0500040	WE 0500031	WE 0500045	WE 0400013	WE 0600293
76	WE 0500041	WE 0500032	WE 0500046	WE 0400014	WE 0600294
86	WE 0500042	WE 0500033	WE 0500047	WE 0400015	WE 0600295
101	WE 0500043	WE 0500034	WE 0500048	WE 0400016	WE 0600296



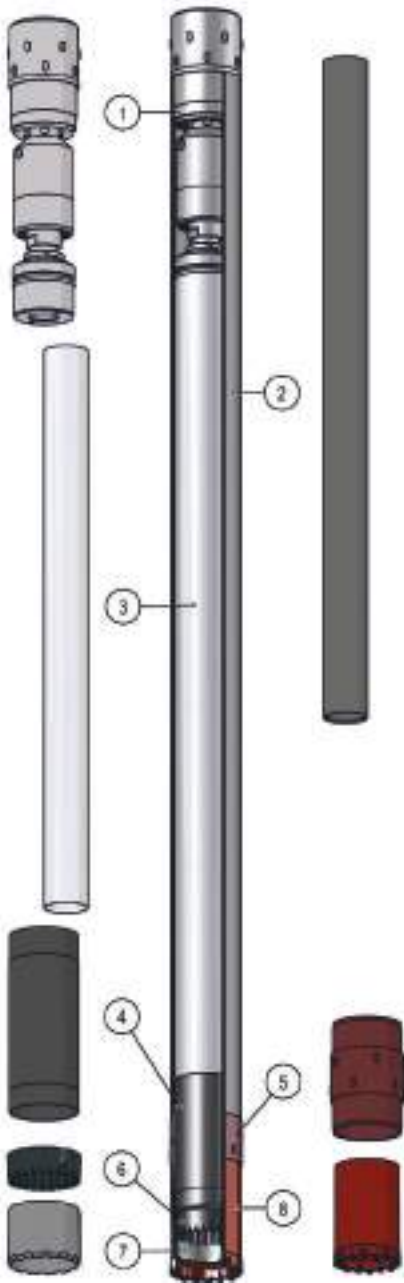
DOUBLE TUBE CORE BARREL

FRENCH MANUFACTURING

T6 - TYPE

MARK

- 1 Head assembly
- 2 Outer tube
- 3 Inner tube
- 4 Extension tube
- 5 TC reaming shell
- 6 Core lifter
- 7 Core lifter case
- 8 Coring bit



DIMENSIONS AND WEIGHT

T6 Type	Lg 1.50 m		Lg 3.00 m		Core bit (mm)		Head thread
	Length (m)	weight (kg)	Length (m)	weight (kg)	inner Ø	outer Ø	
76	2,03	28.0	3,53	47.0	57	76	50 / 60
86	2,04	33.0	3,54	53.0	67	86	60
101	2,14	46.0	3,64	69.0	79	101	60 / 2"3/8
116	2,09	60.0	3,59	85.0	94	116	60 / 2"3/8
131	2,09	70.0	3,59	105.0	108	131	2"3/8 Reg
146	2,09	93.0	3,59	128.0	123	146	2"3/8 Reg



CORE BARREL

T6 Type	Lg 1.00 m	Lg 1.50 m	Lg 3.00 m
76	WF 0100125	WF 0100125	WF 0100133
86	WF 0100126	WF 0100126	WF 0100134
101	WF 0100123	WF 0100127	WF 0100135
116	WF 0100124	WF 0100128	WF 0100136
131	WF 0100129	WF 0100129	WF 0100137
146	WF 0100130	WF 0100130	WF 0100138

Useful length of the core

SPARE PARTS

T6 Type	Head	Outer tube		Inner tube		Extension tube
		Lg 1.50 m	Lg 3.00 m	Lg 1.50 m	Lg 3.00 m	
76	WF 0200068	WF 0300093	WF 0300101	WF 0300109	WF 0300117	WITHOUT
86	WF 0200069	WF 0300094	WF 0300102	WF 0300110	WF 0300118	WITHOUT
101	WF 0200070	WF 0300095	WF 0300103	WF 0300111	WF 0300119	WITHOUT
116	WF 0200071	WF 0300096	WF 0300104	WF 0300112	WF 0300120	WF 0300088
131	WF 0200072	WF 0300097	WF 0300105	WF 0300113	WF 0300121	WF 0300089
146	WF 0200073	WF 0300098	WF 0300106	WF 0300114	WF 0300122	WF 0300090

T6 Type	TC reaming shell	Core lifter case	Core lifter	Basket core lifter	Thread protector
76	WF 0400011	WF 0500036	WF 0500020	WF 0500042	WF 0600052
86	WF 0400012	WF 0500037	WF 0500021	WF 0500043	WF 0600053
101	WF 0400013	WF 0500038	WF 0500022	WF 0500044	WF 0600054
116	WF 0400014	WF 0500039	WF 0500023	WF 0500045	WF 0600055
131	WF 0400015	WF 0500040	WF 0500024	WF 0500046	WF 0600056
146	WF 0400016	WF 0500041	WF 0500025	WF 0500047	WF 0600057

TRIPLEX CORE BARREL

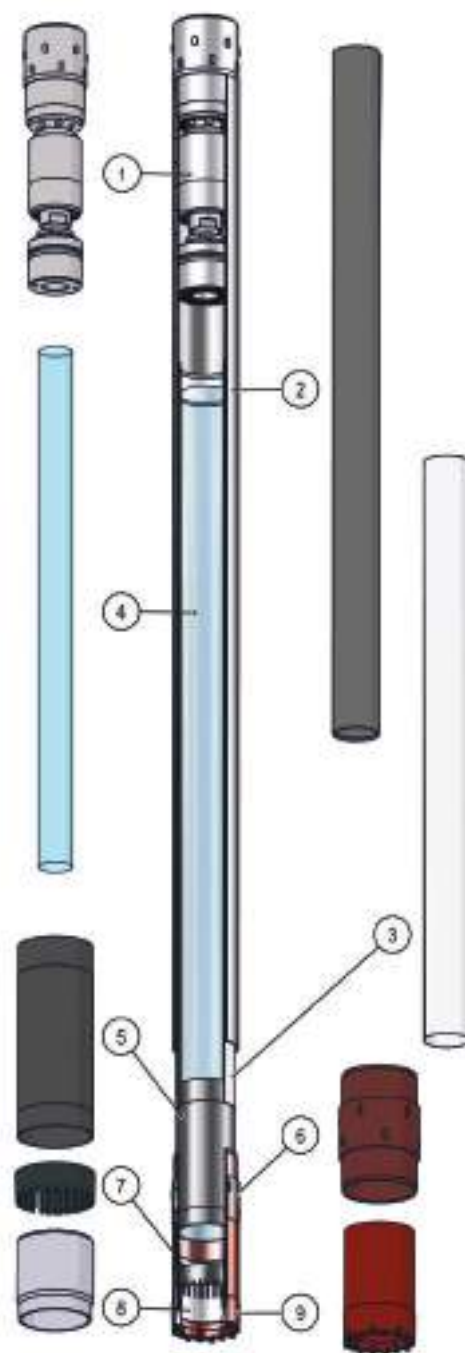
FRENCH MANUFACTURING

Using a plastic liner within the T6 double core barrel makes easier the extraction of perfect core.

A standard T6 core barrel can easily be changed into a triplex core barrel by switching the core lifter, the core lifter case and the core bit.

MARK

- 1 Head assembly
- 2 Outer tube
- 3 Inner tube
- 4 Plastic liner
- 5 Extension tube
- 6 TC reaming shell
- 7 Triplex Core lifter
- 8 Triplex Core lifter case
- 9 Triplex Core bit

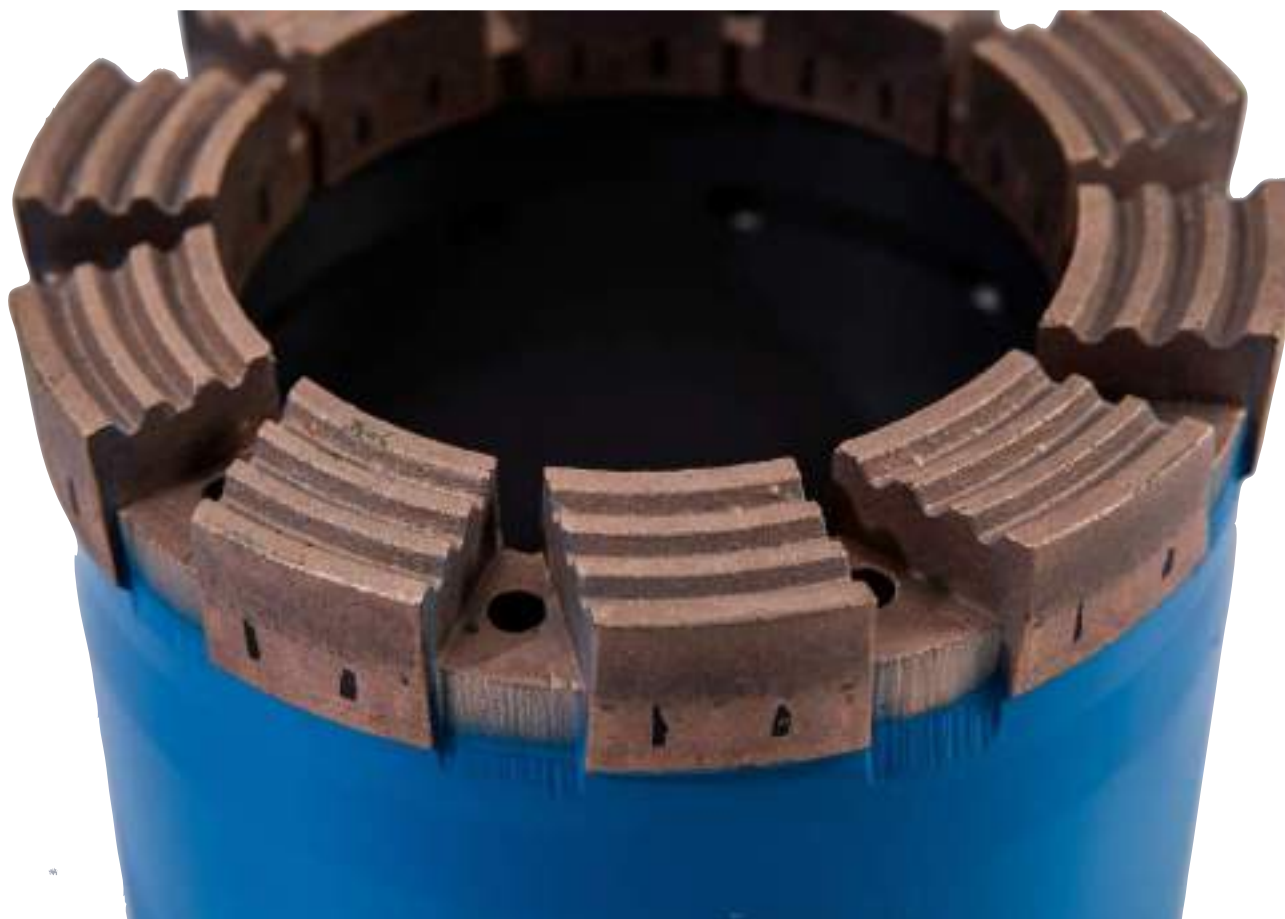


TRIPLEX T6

Triplex T6	Core barrel		Core lifter case	Core lifter	Core bit (mm)	
	1.50 m	3.00 m			inner Ø	outer Ø
101	WF 0100139	WF 0100145	WF 0500202	WF 0500204	76	101
116	WF 0100140	WF 0100143	WF 0500212	WF 0500225	90	116
131	WF 0100141	WF 0100144	WF 0500222	WF 0500223	104	131
146	WF 0100146	WF 0100142	WF 0503041	WF 0503025	120	146

Ø	Basket core lifter	Plastic cap	Plastic liner		Plastic liner dimension (mm)	
			1.50 m	3.00 m	inner Ø	outer Ø
101	WF 0500206	WF 0300205	WF 0300240	WF 0300203	77	80
116	WF 0500207	WF 0300215	WF 0300230	WF 0300216	91	94
131	WF 0500208	WF 0300225	WF 0300242	WF 0300246	106	109
146	WF 0500209	WF 0300235	WF 0300243	WF 0300247	121	124

Other Triplex core barrel, please consult us.



OTHER CORE BARREL

DOUBLE TUBE CORE BARREL - T6S TYPE

T6S Type	Lg 1.50 m		Core bit (mm)		Reference
	Length(m)	weight (kg)	inner Ø	outer Ø	
76	2.11	28.0	48	76	WG 0100010
86	2.12	33.0	58	86	WG 0100011
101	2.22	46.0	72	101	WG 0100012
116	2.20	60.0	86	116	WG 0100013
131	2.20	70.0	101	131	WG 0100014
146	2.20	93.0	116	146	WG 0100015

Please, contact us for spare parts.

DOUBLE TUBE CORE BARREL - K2 TYPE

K2 Type	Lg 1.50 m		Lg 3.00 m		Core bit (mm)		Reference	
	Length (m)	weight (kg)	Length (m)	weight (kg)	inner Ø	outer Ø	1.50 m	3.00 m
76	2.16	32.0	3.66	49.0	48	76	WC 0100261	WC 0100270
86	2.16	40.0	3.66	60.0	58	86	WC 0100262	WC 0100271
96	2.14	50.0	3.64	75.0	67	96	WC 0100263	WC 0100272
101	2.15	55.0	3.65	82.0	72	101	WC 0100264	WC 0100273
116	2.18	69.0	3.68	104.0	86	116	WC 0100265	WC 0100274
131	2.13	87.0	3.63	126.0	98	131	WC 0100266	WC 0100275
146	2.21	104.0	3.71	148.0	115	146	WC 0100267	WC 0100276

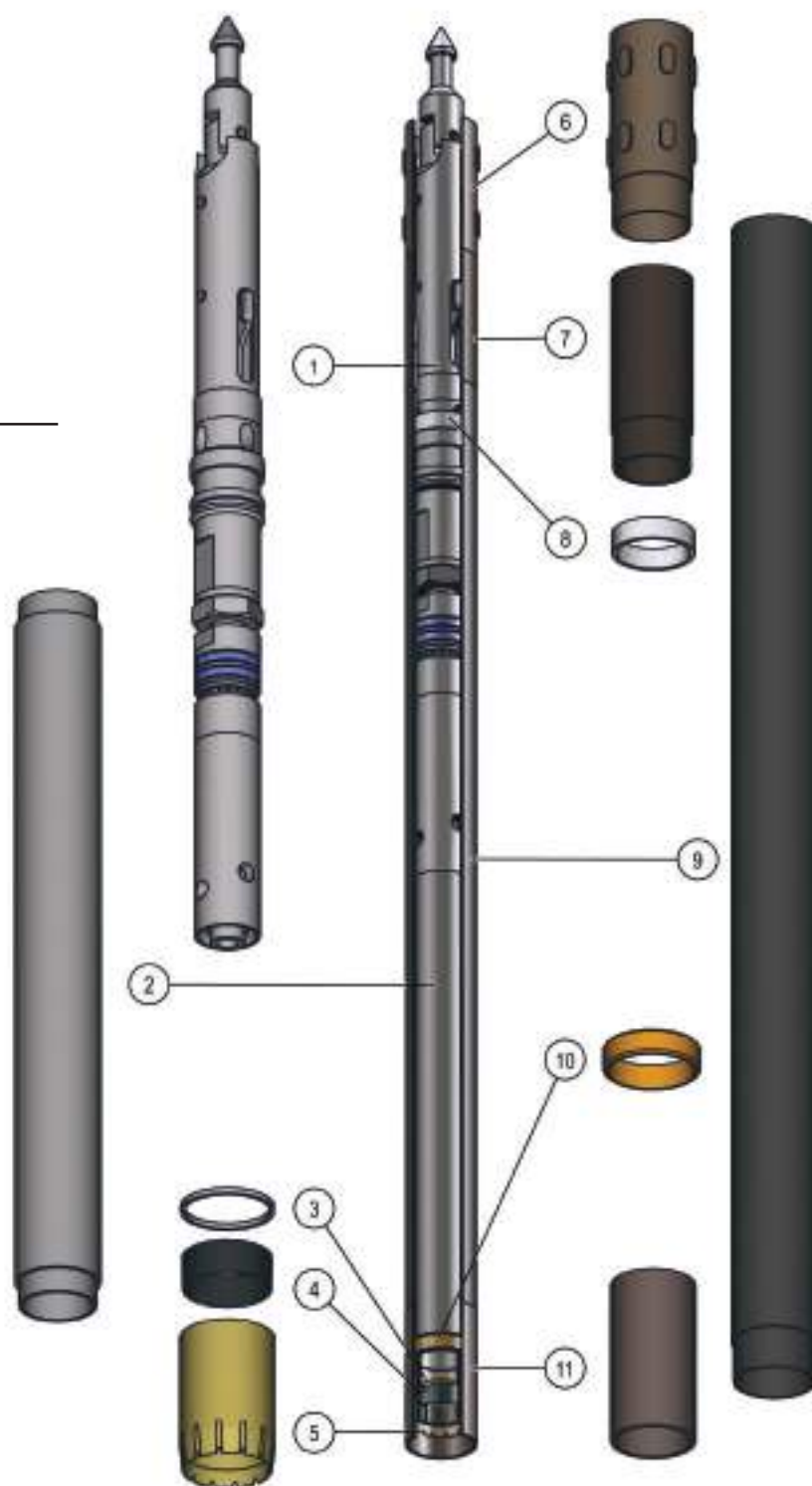
Please, contact us for spare parts.

WIRELINE CORE BARREL

FRENCH MANUFACTURING

MARK

- 1-11** Complete core barrel assembly
- 1-5** Complete inner tube assembly
- 1** Head assembly
- 2** Inner tube
- 3** Stop ring
- 4** Core lifter
- 5** Core lifter case
- 6** Locking coupling
- 7** Adaptor coupling
- 8** Landing ring
- 9** Outer tube
- 10** Stabilizer
- 11** Thread protector



DIMENSIONS AND WEIGHT

Lg 1.50 m			Lg 3.00 m		Core bit (mm)		Overshot
Ref.	weight (kg)		Ref.	weight (kg)	inner Ø	Outer Ø	
A W/L WK 0100010	15,8		WK 0100000	26,3	27	47,6	WK 0100202
B W/L WK 0100050	24,5		WK 0100199	40,8	36,5	59,5	WK 0700198
N W/L WK 0100111	40,7		WK 0100001	62,4	47,6	74,6	WK 0700002
H W/L WK 0100200	65,9		WK 0100201	97,2	63,5	95,6	WK 0700200
P W/L WK 0300111	104,8		WK 0300110	147,2	85	122	WK 0700100
S W/L WK0400111	104.8		WK 0400110	147.2	102	146	WK 0700400

WIRELINE RODS AND ACCESSORIES



SPARE PARTS

Head	Core barrel 1,50 m			Core barrel 3,00 m		
	Inner tube	Inner tube assembly	Outer tube	Inner tube	Inner tube assembly	Outer tube
AW/L WK 0100011	WK 0100012	WK 0100013	WK 0100020	WK 0100030	WK 0100031	WK 0100040
BW/L WK 0100051	WK 0100052	WK 0100053	WK 0100060	WK 0100070	WK 0100071	WK 0100080
NW/L WK 0100112	WK 0100113	WK 0100114	WK 0100120	WK 0100003	WK 0300017	WK 0100002
HW/L WK 0100211	WK 0100300	WK 0100213	WK 0100310	WK 0100301	WK 0100220	WK 0100006
PW/L WK 0300112	WK 0300132	WK 0300130	WK 0300131	WK 0300140	WK 0300141	WK 0300150

Ø	Stop ring	core lifter	core lifter case	Locking coupling	Adaptor coupling	Landing ring	Stabilizer
AW/L	-	WK 0501004	WK 0501000	WK 0100021	WK 0100022	-	-
BW/L	WK 0100011	WK 0501005	WK 0501010	WK 0100061	WK 0100062	WK 0100012	WK 0100013
NW/L	WK 0300122	WK 0501002	WK 0501003	WK 0400180	WK 0400181	WK 0400182	WK 0700303
HW/L	WK 0700300	WK 0501006	WK 0501009	WK 0100304	WK 0100303	WK 0700301	WK 0700302
PW/L	WK 0300121	WK 0501008	WK 0501011	WK 0300120	WK 0300123	WK 0300124	WK 0501012

RODS FOR WIRELINE CORE BARREL

SPECIFICATIONS					USUAL PACKAGING				
Denomination	Lenght	ø inner	ø outer	Weight	Number of rods	Lenght	Width	Height	Weight
Tige B W/L	1.5 m	46.1 mm	55.6 mm	9.42 kg	19	1.57 m	290 mm	254 mm	181 kg
Tige B W/L	3.0 m	46.1 mm	55.6 mm	18.58 kg	19	3.07 m	290 mm	254 mm	355 kg
Tige N W/L	1.5 m	60.3 mm	69.9 mm	11.95 kg	19 ou 36	1.58 m	356 mm	320 mm	229 kg
Tige N W/L	3.0 m	60.3 mm	69.9 mm	23.56 kg	19 ou 36	3.08 m	356 mm	320 mm	450 kg
Tige H W/L	1.5 m	77.8 mm	88.9 mm	17.93 kg	19 ou 36	1.57 m	470 mm	410 mm	343 kg
Tige H W/L	3.0 m	77.8 mm	88.9 mm	35.84 kg	19 ou 36	3.07 m	470 mm	410 mm	674 kg
Tige P W/L (HWT)	1.5 m	101.6 mm	114.3 mm	26.79 kg	14	1.59 m	356 mm	320 mm	190 kg
Tige P W/L (HWT)	3.0 m	101.6 mm	114.3 mm	52.56 kg	14	3.09 m	356 mm	320 mm	370 kg
Tige S W/L (PWT)	1.5 m	126.6 mm	139.7 mm	32.15 kg	7	1.59 m	432 mm	391 mm	227 kg
Tige S W/L (PWT)	3.0 m	126.6 mm	139.7 mm	64.30 kg	7	3.09 m	432 mm	391 mm	452 kg

NOTE : Special lenghts rods are also available. Please consult us.



CORE BITS AND REAMING SHELLS

Type and diameter	TC core bit	Carbotec core bit	TC reaming	Laz'R reaming
B 46	WA 0600002	WA 0600169	WA 0400014	-
B 56	WA 0600003	WA 0600170	WA 0400015	-
B 66	WA 0600004	WA 0600171	WA 0400016	-
B 76	WA 0600005	WA 0600172	WA 0400017	-
B 86	WA 0600006	WA 0600173	WA 0400018	-
B 101	WA 0600007	WA 0600174	WA 0400019	-
B 116	WA 0600008	WA 0600175	WA 0400020	-
B 131	WA 0600009	WA 0600176	WA 0400021	-
B 146	WA 0600010	WA 0600177	WA 0400022	-
TT 46				
TT 56	Nous consulter			
T2 46	WE 0600002	WE 0600056	WE 0400011	-
T2 56	WE 0600003	WE 0600057	WE 0400012	WF 0400025
T2 66	WE 0600004	WE 0600058	WE 0400013	WF 0400026
T2 76	WE 0600005	WE 0600059	WE 0400014	WF 0400027
T2 86	WE 0600006	WE 0600060	WE 0400015	WF 0400028
T2 101	WE 0600007	WE 0600061	WE 0400016	WF 0400029
T6 76	WF 0600002	WF 0600028	WF 0400011	WF 0400031
T6 86	WF 0600003	WF 0600029	WF 0400012	WF 0400032
T6 101	WF 0600004	WF 0600030	WF 0400013	WF 0400023
T6 116	WF 0600005	WF 0600031	WF 0400014	WF 0400024
T6 131	WF 0600006	WF 0600032	WF 0400015	WF 0400033
T6 146	WF 0600007	WF 0600033	WF 0400016	WF 0400034
T6S 76	WG 0600002	WG 0600028	-	-
T6S 86	WG 0600003	WG 0600029	-	-
T6S 101	WG 0600004	WG 0600030	-	-
T6S 116	WG 0600005	WG 0600031	-	-
T6S 131	WG 0600006	WG 0600032	-	-
T6S 146	WG 0600007	WG 0600033	-	-
TRI 101	WF 0600201	WF 0600205	WF 0400013	WF 0400023
TRI 116	WF 0600211	WF 0600215	WF 0400014	WF 0400024
TRI 131	WF 0603006	WF 0600220	WF 0400015	WF 0400033
TRI 146	WF 0603007	WF 0603010	WF 0400016	WF 0400034



CORE BITS AND REAMING SHELLS

Type and diameter	TC core bit	Carbotec core bit	TC reaming
K2 76	WC 0600002	-	WC 0400022
K2 86	WC 0600003	-	WF 0400023
K2 96	WC 0600004	-	WF 0400024
K2 101	WC 0600005	-	WF 0400025
K2 116	WC 0600006	-	WF 0400026
K2 131	WC 0600007	-	WF 0400027
K2 146	WC 0600008	-	WF 0400028

Reference without bottom discharge			
A W/L	WK 0600015	WK 0600001	WK 0400067
B W/L	WK 0600016	WK 0600002	WK 0400068
N W/L	WK 0600017	WK 0600003	WK 0400069
H W/L	WK 0600018	WK 0600004	WK 0400070
P W/L	WK 0600019	WK 0600005	WK 0400071
S W/L	WK0600020	WK 0600141	WK 0400256

Other kinds of TC bits are available on demand, please consult us. (BS, DCDMA, BE, etc...)

See casing shoes and casings [see p.129 to 131](#)

DIAMOND CORE BITS

RANGE OF DIAMOND CORE BITS

APAGEO OFFER A WIDE RANGE OF QUALITY DIAMOND CORE BITS: HEXADIAM.

As a result of a massive investment in powder technology and a partnership with a metallurgical laboratory and mineral exploration drilling companies, APAGEO has developed its new range of diamond core bits HEXADIAM.

Our core bits are manufactured with high quality raw materials and advanced equipment, thus offering the best penetration speed/life ratio. HEXADIAM core bits can be used in all conditions, regardless of the level of abrasion or the type of rock.

Thanks to a permanent stock in our warehouse, we can respond immediately to your needs. If necessary, our production unit based in France will allow us to manufacture these tools in a very short time.

Finally, more specific tools can be supplied on request (particular profile, specific diamond height, made to measure, etc.).



TOOLS TYPE GROUNDS

IMPREGNATED	Soft to extremely hard rocks Rocks fine to coarse grains Abrasive to non-abrasive Fractured to compact
SURFACE SET	Soft rocks to hard Rocks fine to coarse grains Abrasive to non-abrasive Fractured to compact
PCD (POLY-CRYSTALLINE DIAMOND)	Soft soil to hard soils Coarse grains Abrasives Fractured
TSD (THERMALLY STABLE DIAMOND)	Softs Abrasives Fractured
TUNGSTEN CARBIDE INSERTS AND CRUSHED CARBIDE	Soft and very soft soils



CHARTER SELECTION OF MATRICES



SOFT
Calcite
Limestone
Sandstone
Talc

MEDIUM
Dolomite
Greestone
Serpentine
Shale

HARD
Granite
Basalt
Hard limestone
Hard shale

VERY HARD
Gneiss
Pegmatite
Quartz
Silicified

EXTREMELY HARD
Ironstone
Jasperite
Quartzite
Rhyolite

IMPREGNATED DIAMOND
CORE BITS

hexadram S2

hexadram S6

hexadram S9

hexadram S10

hexadram S12

PDC / TSD/
CUBIPAX

CUBIPAX ●

PDC ●

TSD ●

SURFACE SET DIAMOND
CORE BITS

16/25

25/40

40/60

AVAILABLE PROFILES



Standard spacing 3 or 5 mm
Most used in industry
Excellent fluid flow



Turbo
Used with less pressure on the tool
Better evacuation of cuttings
Used with high rotation speed



DD (Deep Discharge)
Excellent in fractured formations
A best seller for ironstone
Reduces the risk of core leaching when passing through sandy and clayey layers



Twist
The standard for triple core barrels
Excellent design for fluid and cuttings evacuation
Allows for reduced grouting pressure
Excellent performance in fractured formations

DIAMOND CORE BITS

CORE BIT OPERATING PARAMETERS

1. CHOICE OF ROTATION SPEEDS DEPENDING ON

- penetration rate;
- core bit diameter;
- drilling depth;
- vibration.

In estimating the appropriate rotation speed it is recommended to follow the concept of peripheral rotation speed: the smaller the core bit diameter, the weaker its circumference, requiring a higher rotation speed in order to maintain adequate peripheral velocity. For reference, the required peripheral velocity is typically 2 to 5 m/s for impregnated core bits and 1 to 3 m/s for surface-set core bits.

Figure 1 illustrates target ranges for rotation speed based on tool diameter..

2. CHOICE OF WATER FLOW RATE

Flow rate should generally be as high as possible but also depends on the core bit diameter and rock type.

For example, soft or fractured rock requires a higher flow rate. On the other hand, very hard, resistant rock associated with a low penetration rate calls for a lower flow rate to improve rock cutting and reduce polishing risk for the diamonds

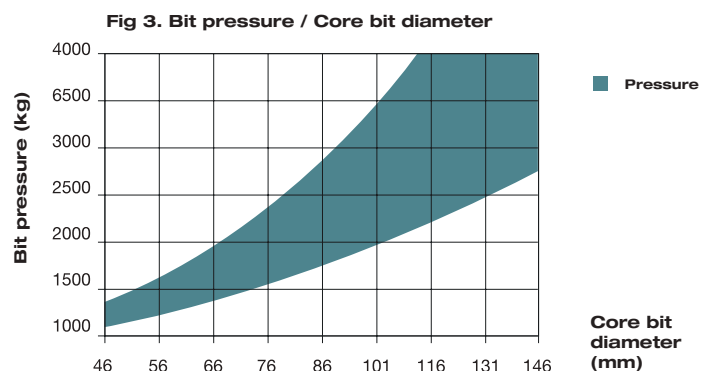
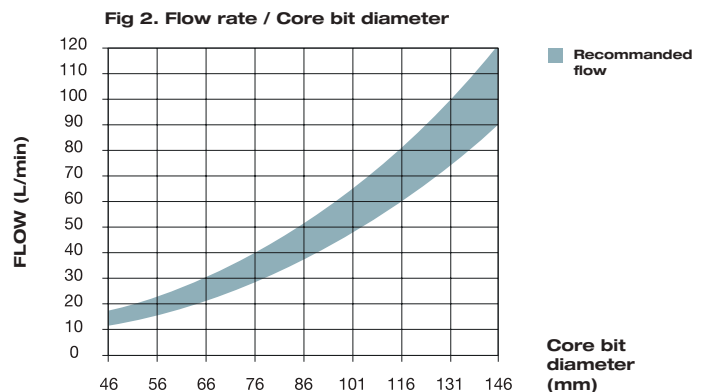
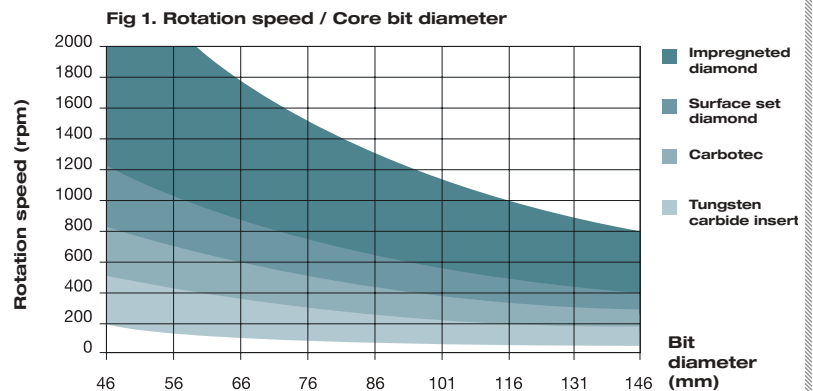
Figure 2 shows suggested water flow rates for various core bit diameters.

3. BIT PRESSURE

During drilling, the force applied by the rig and the weight of the rods must also be as weak as possible whilst maintaining a sufficient penetration rate to prevent polishing of the diamonds.

The consequences of excessive pressure include:

- **wearing** of mechanical components of the rig, rods and core barrel;
- **premature** wearing of the core bit;
- **increased** deviation likelihood.



DIAMOND CORE BITS

ANALYSIS OF WEAR



NEW IMPREGNATED BIT



IDEAL WEAR

Even wear, complete up to the carbide with the diamonds evenly worn.



CONSUMED BIT

Impregnated bit consumed perfectly.



DIAMOND OVER EXPOSED

The matrix wears too fast before the diamonds have worn out.

The diamonds pop-out prematurely thus reducing the life of the bit.

Caused by: Drilling pressure too high for speed of rotation, water flow too low, matrix too soft.



CORE BIT POLISHED OR GLAZED

The bit doesn't cut anymore, diamonds are polished.

Caused by: Drilling pressure too low for the speed of rotation, water flow too high, matrix too hard.

Solution: Sharpen the bit, reduce the rotation speed and increase drilling pressure, reduce water flow, select a softer matrix.



BURNT CORE BIT

Bit is completely melted and destroyed.

Caused by: Lack of water

Solution: Increase the water flow, check the pump is working well, check the rods for leaks in the joints, check the inner tube is not too long.



CRACKS IN THE WATER WAYS

Caused by: Too much weight on the bit, Dropped the rods, bit crushed by the foot clamp or rod holder.

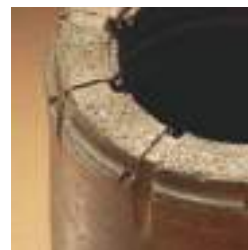
Solution: Take some weight off the bit.



LOSS OF INSIDE DIAMETER

Wear of inside diameter and ringing.

Caused by: Drilling pressure too high, very broken ground, core left in the hole, water flow too low, matrix too soft.



LOSS OF OUTSIDE DIAMETER

Cause: vibration, rotation speed too high, water flow too low, fragmented rock present in the borehole.

Solution: increase water flow, reduce rotation speed, check the diameter of reaming shell, add drilling fluid (to reduce vibration)



INSIDE WEAR PATTERN

Caused by: drilling pressure too high for rotation speed, Core left in the hole had to be drilled, very broken ground.

Solution: decrease drilling pressure, increase rotation speed, check the core barrel, add drilling fluids.



OUTSIDE WEAR PATTERN

Caused by: water flow too low, loss of water by the rods, hole "reamed"

Solution: increase the water flow, check for leaks, check the diameter of shell.

DIAMOND CORE BIT AND REAMING SHELL

Type and diameter	Impregnated core bits	Impregnated reaming shells
B 46	RH 0046552	RL 0046900
B 56	RL 0056452	RL 0056900
B 66	RH 0066552	RL 0066900
B 76	RH 0076652	RL 0076900
B 86	RH 0086652	RL 0086900
B 101	RH 0101652	RL 0101900
B 116	RH 0116652	RL 0116900
B 131	RH 0131652	RL 0131900
B 146	RH 0146652	RL 0146900
TT 46	WE 1600101	RU 0046900
TT 56	RU 0056210	RU 0056900
T2 46	RH 0046452	RI 0 46900
T2 56	RH 0056452	RI 0056900
T2 66	RH 0066452	RI 0066900
T2 76	RH 0076452	RI 0076900
T2 86	RH 0086452	RI 0086900
T2 101	RH 0101555	RI 0101900
T6 76	RJ 0076452	RJ 0076900
T6 86	RH 0086452	RJ 0086900
T6 101	RH 0101552	RJ 0101900
T6 116	RH 0116552	RJ 0116900
T6 131	RH 0131552	RJ 0131900
T6 146	RH 0146552	RJ 0146900
T6S 86	RH 0086752	
T6S 101	RH 0101752	
T6S 116	RH 0116752	
T6S 131	RV 0131452	
T6S 146	RH 0146752	
TRI 101	RH 0101452	RJ 0101900
TRI 116	RH 0116452	RJ 0116900
TRI 131	RH 0131452	RJ 0131900
TRI 146	RH 0146452	RJ 0146900
K2 96	RW 0096452	RW 0096900
K2 101	RW 0101452	RW 0101900
K2 116	RW 0116452	RW 0116900
K2 131	RW 0131452	RW 0131900
K2 146	RW 0146652	RW 0146900



WIRELINE DIAMOND CORE BIT AND REAMING SHELL

Type and diameter	Impregnated core bits	Impregnated reaming shells
B W/L	RH 0004652	RT 0002900
N W/L	RH 0001652	RT 0003900
H W/L	RH 0002652	RT 0004900
P W/L	RH 0003652	RT 0005900
S /WL	RH 0006452	RT 0006320

Diamond casing shoes for each type of casing are available.

Please consult us for any other kind of diamond core bits (BS, DCDMA, BE, etc ...)

(PCD and TSD surface set core bits availables, please consult us).



HAMMERING SAMPLER

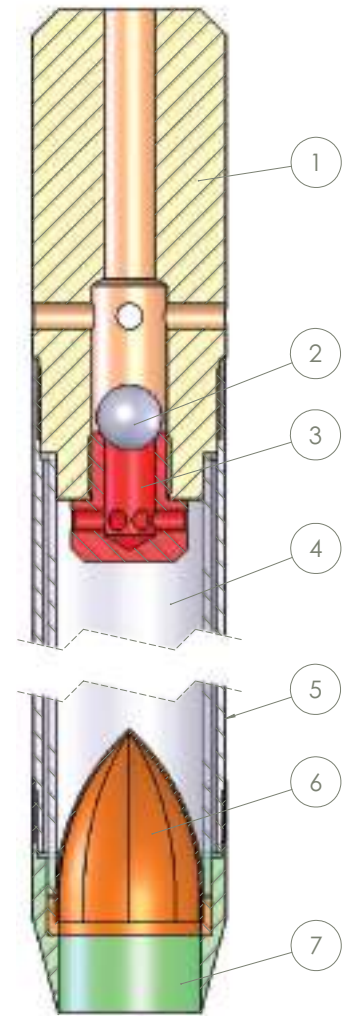
HAMMERED TUBE, STANDARD OR
THIN WALL THICKNESS

FRENCH MANUFACTURING

MARK

- 1 Head
- 2 Ball
- 3 Ball place
- 4 Plastic liner
- 5 Tube
- 6 Basket core lifter
- 7 Casing shoe

Please, indicate the type of rods used



Ø LINER - TUBE - CASING

Type and diameter	Liner Dim. (mm)	Tube Dim. (mm)	Casing shoe Dim. (mm)
42 x 56	45 x 42	55,6 x 46	56 x 42
56 x 76	63 x 57	74 x 67	74,5 x 55
76 x 91	80 x 77	86 x 81	88,8 x 75,3
Transparent			
Long casing shoe :			84,2 x 75,3
83 x 105	90 x 86,4	99 x 92,5	102 x 85
92 x 111	100 x 94	110 x 101,6	111 x 92
96 x 114	100 x 97,4	102 x 114	96 x 116
102 x 127	110 x 103,6	125 x 113	127 x 102
APM 86	80 x 77	86 x 81	86 x 75,3
APM 101	92 x 94	100 x 95	100 x 92
Transparent			

Diameters in mm: Ø outer x Ø inner

CORE BARREL REFERENCE - RIGHT THREAD

Type	Lg 0.5 m	Core barrel Lg 0.75 m	Lg 1 m	Basket core lifter	Casing shoe	Head
42 x 56 without basket	WN 0100013	-	-	-	WN 0600006	WN 0200001
42 x 56 with basket	WN 0100017	-	-	WN 0600009	WN 0600007	WN 0200001
56 x 76	WN 0100115	WN 0100116	WN 0100117	WN 0600110	WN 0600109	WN 0200101
76 x 91	WN 0101014	WN 0101015	WN 0101016	WN 0601011	WN 0601009	WN 0201001
83 x 105	WN 0100215	WN 0100216	WN 0100217	WN 0600210	WN 0600209	WN 0200201
92 x 111	WN 0102115	WN 0102116	WN 0102117	WN 0602109	WN 0602108	WN 0202101
102 x 127	WN 0102011	WN 0102012	WN 0102013	WN 0600211	WN 0602008	WN 0202001
APM 86	WAPM 086050	WAPM 086075	WAPM 086100	WN 0601011	WAPM 086400	WAPM 086200
APM 101	WAPM 101050	WAPM 101075	WAPM 101100	WAPM 101600	WAPM 101400	WAPM 101200

For left thread core barrel and other lengths and diameters, please consult us.

SPT HAMMERING SYSTEM AND EQUIPMENT

FRENCH MANUFACTURING

MARK

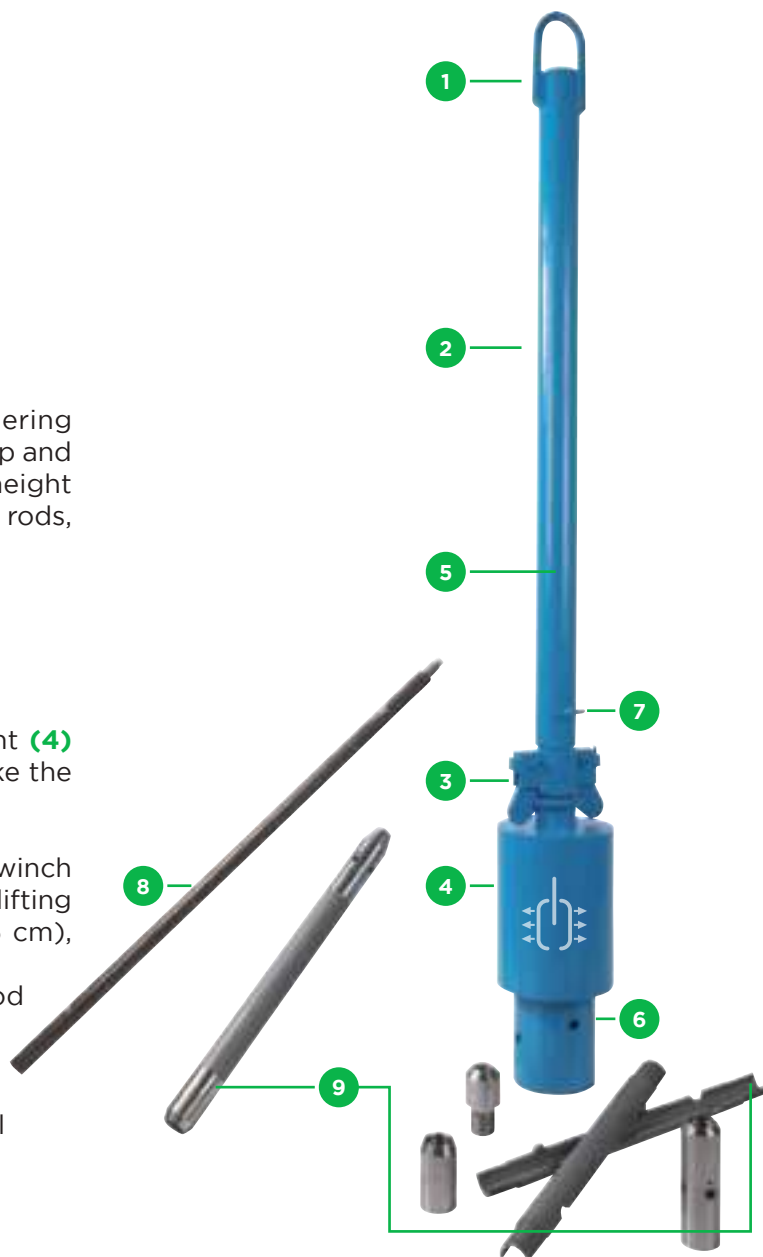
- 1 Lifting hook
- 2 Outer tube
- 3 Lifting pawls with springs
- 4 Drive weight
- 5 Inner guide rod
- 6 Anvil
- 7 Safety bolt
- 8 PDB rod
- 9 SPT hammering system and accessories

PRINCIPLE

The SPT (Standard Penetration Test) hammering system consists of a weight of 64kg and a pick up and self tripping mechanism that ensure a falling height of 75 cm. The energy is given by the anvil to the rods, and then to the SPT core barrel.

IMPLEMENTATION

- The inner guide rod (5) enables the weight (4) to drop with minimal resistance and to strike the anvil (6) squarely. It is fixed to the anvil.
- The outer tube (2) is left by the wire of a winch or capstan thanks to the hook (1), until the lifting pawls (3) are opened (at the height of 75 cm), thus releasing the weight.
- The weight can be fixed to the guide rod thanks to the safety bolt (7), especially during transportation or while not testing.
- The total length of the system is 1.6 m unextended and 2.35 m extended. The total weight of the complete system is 105kg.



SPECIAL RODS AND CONNECTION THREADS

Description	Reference
Hammering system	A9 09000028
SPT Core barrel EN ISO - Ball head - Split tube	A9 0100014
SPT Core barrel ball head - Right thread	A9 0200017
SPT Split tube - Right thread	A9 0300020
SPT Shoe	A9 0900018
SPT Cone on rod or core barrel	A9 0900022
SPT Basket core lifter	A9 0900020
SPT Core barrel ø600mm (old english standard)	A9 09000029

WINDOW SAMPLER

LENGTH 1 METER*

FRENCH MANUFACTURING

APAGEO
EXCLUSIVITY !

PERCUSSION SAMPLING IS MAINLY USED FOR SOFT SOIL. IT ALLOWS TO SEE DIRECTLY THE SAMPLE, IN GENERAL FOR ENVIRONMENTAL INVESTIGATION.

The window samplers are used to get undisturbed samples, without need of any lubricants, thereby allowing chemical analysis on sample.

Manufactured in our own plant, our window samplers are very robust. Extension rods can be connected to the sampler according to the depth sampling.

OUR EQUIPMENT CAN BE ADAPTED TO ANY HAMMERING SYSTEM

Depending on type of soil, depth and size of core wanted, we offer different range of diameters



Thread / Ø outer	7/8 (E)	42 CR	50 CR	60 CR	2"3 / 8R	R32	R38
---------------------	---------	-------	-------	-------	----------	-----	-----

Ø 32mm

Ø 42mm

Ø 50mm

Ø 60mm

Ø 63mm

Ø 85mm

Other threads and/or length possible (standard : 1m) on request.

CASING TUBES D.C.D.M.A

“W” SERIE - MALE X FEMALE



WEIGHTS AND DIMENSIONS OF CASING

Casing	Dimensions (mm)		Length and weight (kg)		
	inner Ø	outer Ø	0.5 m	1.5 m	3.0 m
AW	48.4	57.1	3.40	8.60	17.20
BW	60.3	73.0	5.30	15.80	31.80
NW	76.2	88.9	6.50	19.50	39.00
HW	101.6	114.3	8.50	25.40	51.30
PW	127.0	139.7	11.00	30.00	58.00
SW	152.4	168.2	18.00	48.00	93.00
UW	177.8	193.6	25.00	67.00	130.00
ZW	203.2	219.0	30.00	80.00	154.00

Other length, please contact us.

CASING AND CASING SHOES REFERENCES

Casing	Length and weight (kg)			TC casing shoe	Crushed carbide casing shoe	Impregnated casing shoe
	0.5 m	1.5 m	3.0 m			
AW	V2 0300320	V2 0300321	V2 0300322	V2 0800193	V2 0800228	V2 0800175
BW	V2 0300325	V2 0300326	V2 0300327	V2 0800194	V2 0800229	V2 0800176
NW	V2 0300330	V2 0300331	V2 0300332	V2 0800195	V2 0800230	V2 0800177
HW	V2 0300335	V2 0300336	V2 0300337	V2 0800196	V2 0800231	V2 0800178
PW	V2 0300340	V2 0300341	V2 0300342	V2 0800197	V2 0800232	V2 0800174
SW	V2 0300345	V2 0300346	V2 0300347	V2 0800198	V2 0800233	V2 0800173
UW	V2 0300350	V2 0300351	V2 0300352	V2 0800199	V2 0800234	V2 0800172
ZW	V2 0300355	V2 0300356	V2 0300357	V2 0800200	V2 0800235	V2 0800171

ACCESSORIES REFERENCES

Casing	Driving (head right thread)*	Casing clamp	Fishing tool	Hoisting plug
AW	V2 0200260	V2 0300361	M6 0100004	M5 0100035
BW	V2 0200261	V2 0300362	M6 0100006	M5 0100036
NW	V2 0200262	V2 0300364	M6 0100007	M5 0100037
HW	V2 0200263	V2 0300365	M6 0100009	M5 0100038
PW	V2 0200264	V2 0300366	M6 0100010	M5 0100039
SW	V2 0200265	V2 0300367	M6 0100042	M5 0100040
UW	V2 0200266	V2 0300368	M6 0100043	M5 0100046
ZW	V2 0200267	V2 0300369	M6 0100044	M5 0100047

*Please indicate the thread required

CASING TUBES

METRIC SERIE – MALE X FEMALE



WEIGHTS AND DIMENSIONS OF CASING

Casing	Dimensions		Length and weight (kg)			
	inner Ø	outer Ø	0.5 m	1.0 m	1.5 m	3.0 m
46	37	44	1.94	3.70	5.46	10.74
56	47	54	2.40	4.60	6.79	13.36
66	57	64	2.88	5.53	8.12	15.98
76	67	74	3.36	6.41	9.47	18.63
86	77	84	3.83	7.32	10.80	21.25
101	89	98	5.70	10.88	16.00	31.62
116	104	113	6.95	13.28	19.60	38.53
131	119	128	7.92	15.12	22.32	43.92
146	134	143	8.88	16.95	25.00	49.25

CASING AND CASING SHOES REFERENCES

Casing	Length and weight (kg)				TC casing shoe	Crushed carbide casing shoe	Impregnated casing shoe
	0.5 m	1.0 m	1.5 m	3.0 m			
46	V5 0310067	V5 0310068	V5 0310069	V5 0310071	V5 0810012	V5 0810001	V5 0810265
56	V5 0310073	V5 0310074	V5 0310075	V5 0310077	V5 0810013	V5 0810002	V5 0810266
66	V5 0310079	V5 0310080	V5 0310081	V5 0310083	V5 0810014	V5 0810003	V5 0810267
76	V5 0310085	V5 0310086	V5 0310087	V5 0310089	V5 0810015	V5 0810004	V5 0810268
86	V5 0310091	V5 0310092	V5 0310093	V5 0310095	V5 0810016	V5 0810005	V5 0810269
101	V5 0310097	V5 0310098	V5 0310099	V5 0310101	V5 0810017	V5 0810006	V5 0810270
116	V5 0310103	V5 0310104	V5 0310105	V5 0310107	V5 0810018	V5 0810007	V5 0810271
131	V5 0310109	V5 0310110	V5 0310111	V5 0310113	V5 0810019	V5 0810008	V5 0810272
146	V5 0310115	V5 0310116	V5 0310117	V5 0310119	V5 0810020	V5 0810009	V5 0810273

Other lengths, please consult us

ACCESSORIES REFERENCES

Casing Ø	Driving head*	Casing clamp	Fishing tool	Hoisting plug
46	V5 0210045	V5 0300241	M6 0100003	M5 0100021
56	V5 0210046	V5 0300242	M6 0100004	M5 0100022
66	V5 0210047	V5 0300243	M6 0100005	M5 0100023
76	V5 0210048	V5 0300244	M6 0100006	M5 0100024
86	V5 0210049	V5 0300245	M6 0100007	M5 0100025
101	V5 0210050	V5 0300246	M6 0100008	M5 0100026
116	V5 0210051	V5 0300247	M6 0100009	M5 0100027
131	V5 0210052	V5 0300248	M6 0100010	M5 0100028
146	V5 0210053	V5 0300249	M6 0100011	M5 0100029

*Please indicate the threads required, left and right thread available

CASING TUBES

LS SERIE - FEMALE X FEMALE
SLEEVE MALE X MALE



WEIGHTS AND DIMENSIONS OF CASINGS AND SLEEVES

Casing	Dimensions (mm)		Length and weight (kg)				Sleeve Inner Ø
	Inner Ø	Outer Ø	0.5 m	1.0 m	1.5 m	3.0 m	
95	81.0	95.0	5.80	13.50	22.20	44.30	77.0
114	101.6	114.3	6.40	14.80	23.00	48.40	98.0
140	125.7	139.7	8.80	20.50	32.10	67.10	120.5
168	153.6	168.3	10.70	24.90	39.00	81.50	149.0
194	178.4	193.7	13.30	30.80	48.30	100.80	174.4
220	203.6	219.1	16.10	37.30	58.60	122.30	200.0

Other lengths, please contact us

CASING AND CASING SHOES REFERENCES

Casing	Length and weight (kg)				Sleeve
	0.5 m	1.0 m	1.5 m	3.0 m	
95	V6 0300025	V6 0300033	V6 0300041	V6 0300057	V6 0400001
114	V6 0300026	V6 0300034	V6 0300042	V6 0300058	V6 0400002
140	V6 0300027	V6 0300035	V6 0300043	V6 0300059	V6 0400003
168	V6 0300028	V6 0300036	V6 0300044	V6 0300060	V6 0400004
194	V6 0300029	V6 0300037	V6 0300045	V6 0300061	V6 0400005
220	V6 0300030	V6 0300038	V6 0300046	V6 0300062	V6 0400006

ACCESSORIES REFERENCES

Casing	T C casing shoe	Crushed carbide casing shoe	Impregnated casing shoe	Casing clamp	Driving head*
95	V6 0800017	V6 0800065	V6 0800073	V2 0300370	V6 0200009
114	V6 0800018	V6 0800066	V6 0800074	V2 0300365	V6 0200010
140	V6 0800019	V6 0800067	V6 0800075	V2 0300366	V6 0200011
168	V6 0800020	V6 0800068	V6 0800076	V2 0300367	V6 0200012
194	V6 0800021	V6 0800069	V6 0800077	V2 0300368	V6 0200013
220	V6 0800022	V6 0800070	V6 0800078	V2 0300369	V6 0200014

*Please indicate the thread required

ACCESSORIES AND LABORATORY EQUIPMENT

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ACCESSORIES AND DRILLING PRODUCTS

WATER LEVELS - PACKERS
STRAIGHT PIPE AND CHAIN WRENCHES
DRILLING MUD AND GREASE

P.137

RENTING

P.138

LABORATORY EQUIPMENT

GRANULAR, SOIL, CEMENT, CONCRETE AND BITUMUS TESTINGS
DRILLING MUD EQUIPMENT

WATER LEVELS PACKERS



WATER LEVELS

APAGEO proposes water level with acoustic signal and led, flat or round cable.

Length	30 m	50 m	100 m	150 m	200 m
Round cable	M4 04003001	M4 04005001	M4 04010001	M4 04015001	M4 04020001
Flat cable	M4 04003002	M4 04005002	M4 04010002	M4 04015002	M4 04020002

BOREHOLES AND WELLS CAMERA

APAGEO proposes boreholes and wells camera with a maximum length of 500 meters. The complete system consist of: reel and camera head, display unit with integrated LCD, USB2 grabber board and microphone, battery charger. Pictures, movies and comments can be saved to any external laptop. The equipment is easy to use, reliable, a compact and light weight instrument for field operations.



PACKERS

Low pressure packer, single or double, for injection with piston pump ¹ or permeability test (Lugeon test ²). Diameters 42 to 72 mm. Max. inflation pressure = 40 bar. Diameter 85 to 170 mm also available, please contact us.

¹ see p.25 ² see p.41

Ø (mm)	Ø Max (mm)	NPT	Single packer sleeve length		Double packer sleeve length	
			0,5 m	1,0 m	0,5 m	1,0 m
42	80	1/2"	B1 9105314	B1 9105315	B1 9105318	B1 9105319
54	130	1"	B1 9105308	B1 9105309	B1 9105300	B1 9105301
72	160	1 1/4"	B1 9105310	B1 9105311	B1 9105304	B1 9105305

HIGH PRESSURE SINGLE PACKER

Diameters 30 and 42 mm. Max. inflation pressure = 100 bar

Ø (mm)	Ø Max (mm)	NPT	Sleeve length	
			0,3 m	0,4 m
30	55	3/8 G	B2 0000200	-
42	85	3/4 G	-	B2 0000001

ACCESSORIES FOR PACKER

Reference

Hand pump for water inflation

- Capacity 60 bar
- With manometer + tank

B1 9400001



Pilot valve nitrogen inflation

- To be used with the Pressuremeter regulator [see p.67](#)

A1 1902215



CHAIN WRENCHES



RIDGID CHAIN WRENCHES

Type	Reference	Length (mm)	Pipe capacity (mm)	Weight (kg)	Chain	Jaw
12"	M1 0101202	300	100	0,8	M1 0101201	M1 0201202
14"	M1 0101402	320	125	1,2	M1 0101401	M1 0201402
18"	M1 0101802	435	125	2,7	M1 0101801	M1 0201802
24"	M1 0102401	580	125	3,7	M1 0101801	M1 0202402
36"	M1 0103602	700	185	7,1	M1 0103601	M1 0203602

RIDGID CHAIN WRENCHES - DOUBLE JAW

Type	Reference	Chain length (mm)	Pipe capacity (mm)	Weight (kg)
3229	M1 0003229	445	14 / 89	5,0
3231	M1 0003231	570	27 / 114	8,0
3233	M1 0003233	815	34 / 168	11,0
3235	M1 0003235	1030	48 / 219	15,0
3237	M1 0003237	1410	60 / 324	25,0

VIRAX CHAIN WRENCHES

Type	Reference	Chain length (mm)	Pipe capacity (mm)	Weight (kg)	Spare parts Chain
1" - 10610	M1 0100102	275	10 / 34	1,2	M1 0100101
3" - 10611	M1 0100302	470	10 / 90	4,1	M1 0100301
6" - 10613	M1 0100602	690	13 / 165	7,6	M1 0100601

STRAIGHT PIPE WRENCHES



STRAIGHT PIPE WRENCHES

Type	Length (mm)	Pipe capacity (mm)	Ridgid iron handle		Ridgid aluminium handle	
			Ref	Weight (kg)	Ref	Weight (kg)
6"	150	27	M1 0100603	0,2		
8"	200	34	M1 0100801	0,3		
10"	250	48	M1 0101001	0,8	M1 0101002	0,4
12"	330	60	M1 0101203	1,2	M1 0101204	0,7
14"	350	60	M1 0101403	1,6	M1 0101404	1,1
18"	450	76	M1 0101803	2,6	M1 0101804	1,7
24"	600	89	M1 0102402	4,4	M1 0102403	2,7
36"	900	141	M1 0103603	8,7	M1 0103604	5,0
48"	1200	168	M1 0104801	15,6	M1 0104802	8,4
60"	1500	219	M1 0106001	23,3		

STRAIGHT PIPE WRENCHES - SPARE PARTS

	Hook jaw	Handle	Nut	Spring
6"	M1 0200603	M1 0200601	M1 0300601	M1 0300602
8"	M1 0200802	M1 0200801	M1 0300801	M1 0300802
10"	M1 0201002	M1 0201001	M1 0301001	M1 0301002
12"	M1 0201203	M1 0201201	M1 0301201	M1 0301202
14"	M1 0201403	M1 0201401	M1 0301401	M1 0301402
18"	M1 0201803	M1 0201801	M1 0301801	M1 0301802
24"	M1 0202403	M1 0202401	M1 0302401	M1 0302402
36"	M1 0203603	M1 0203601	M1 0303601	M1 0303602
48"	M1 0204802	M1 0204801	M1 0304801	M1 0304802
60"	M1 0206002	M1 0206001	M1 0306001	M1 0306002

DRILLING MUD, POLYMERS, GREASE AND ACCESSORIES

BENTONITE - DRILLING MUDS

Description	Standard conditioning*	Reference
Natural bentonite	Bag of 25 kg (powder)	M2 0901530
Bentonite high end E32	Bag of 25 kg (powder)	M2 0901529
Bentonite cement/mortar	Bag of 25 kg (powder)	M2 0901617
Bentonite Pellet 8 mm	Bag of 20 kg (pellet)	M2 0901605
Expangel bentonite	Bucket of 25 kg (tablets)	M2 0901607
Mud mixer	-	CO 0911301

*Other conditioning possible : "Big Bag" 1T, bulk, etc... : please consult us.



POLYMERS - VISCOSANTS - FOAM

Description	Standard conditioning*	Reference
Polymer Poly (L)	Barrel of 25 L (liquid)	M2 0901627
Polymer Poly (P)	Bag of 25 kg (powder)	M2 0901619
Polymer P 1kg	Packet of 1 kg (powder)	M2 0901501
Polymer Poly (B)	Barrel of 25 L (liquid)	M2 0901628
Polymer Poly NAT (bio)	Bag of 25 kg (powder)	M2 0901629
Polymer Poly CMC	Barrel of 25 kg (liquid or powder)	M2 0901504
Polymer Poly Stop	Barrel of 25 kg (liquid or powder)	M2 0901631
Foam DP	Barrel 20 L (liquid)	M2 0901510
Lubricant DP	Barrel of 25 kg	M2 0901520
DTH Hammer Oil	Barrel of 20 or 25 L	H3 09000800



Mixer mud

GREASE

Descripton	Conditionning	Reference
Copper grease	Pot of 5 kg	M2 0901611
Graphite grease	Pot of 1 kg	M2 0901612
Graphite grease	Pot of 5 kg	M2 0901613
Bio grease	Pot of 5 kg	M2 0901620

VARIOUS PRODUCTS

Description	Reference
Box for coring sampler	M8 0100003
Piezometer bonnet Ø 76 Lg 750 mm	M4 04050010
Hydrant	MK 04050010
Locker for piezometer	A4 9901921
Stabilization plate (400 x 400 x 30 mm) for rigs	U0 7700107
Foot clamp small model (until 63 mm)	M3 0100001
Foot clamp big model (until 90 mm)	M3 0100000



RENTING

APAGEO RENTS FOR ALL DURATIONS,
ON THE FRENCH TERRITORY

CONSULT US !



HEAVY DYNAMIC PENETROMETERS

APAFOR® 50
APAFOR® 100
Data acquisition
APADYN® on GeoBOX®

DRILLING RIGS

APAFOR® 120
APAFOR® 220 DMT
APAFOR® 230
APAFOR® 350
APAFOR® 430
APAFOR® 570
ROTOSTAF®



PUMPS AND MIXERS

DRILLING DATA LOGGER

EXPLOFOR® 4
on GeoBOX®



WORKSHOP PRESSUREMETER

GeoPAC®, HyperPAC®
and GeoBOX®
Pressuremeter Ménard
Pressuremeter Ménard THP
140 bars with geoBOX®
GeoSPAD®2 on GeoBOX®
Mini-Pressuremeter

WORKSHOP PHICOMETER COMPLETE



LUGEOTEST® FOR PERMEABILITY TEST

with GeoBOX® or
manual

LIGHT DYNAMIC PENETROMETER



STATIC PENETROMETER 100 kN

with CPTu equipment

LABORATORY

APAGEO offers a complete range of equipment for soil and civil engineering laboratories (construction, roads, etc.), as well as non-destructive testing equipment for materials and piles, and vibration measurements. Do not hesitate to contact us.

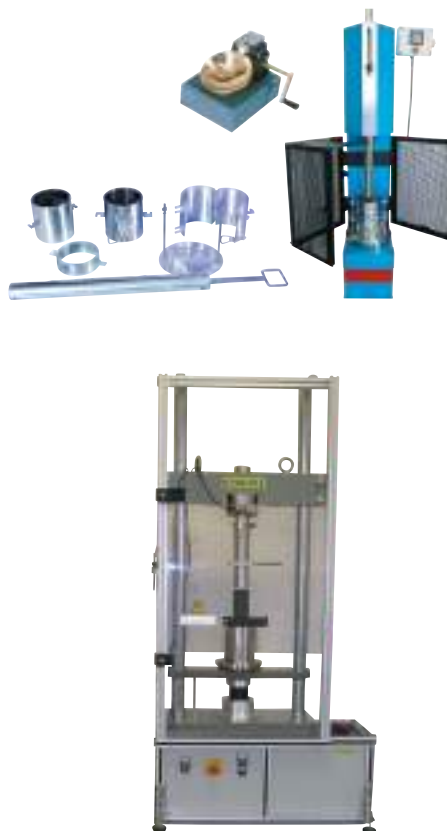
GRANULAR

- Shaker for test tubes
- Laboratory grinder
- Absorption cone
- Sample dividers
- Sand equivalent
- Slotted grids
- Los Angeles machine
- Accelerated polishing machine
- Deval Machine
- Micro Deval Machine
- Hydrostatic weighing
- Concentrated solution
- Sieves
- Sieving machines
- Impact test
- Blue value



SOILS

- Proctor
- Automatic compactor
- Clegg compactor
- Simple compression
- Sand densitometer
- Membrane densitometer
- Sampler
- CBR test
- Proctor test
- Triaxial test
- Atterberg
- Shearing machine
- Shear mixer
- Hand augers
- Oedometer
- Cone penetrometer
- Hand penetrometer
- Permeameter
- CBR press
- Shear vane testers
- Sedimentometry



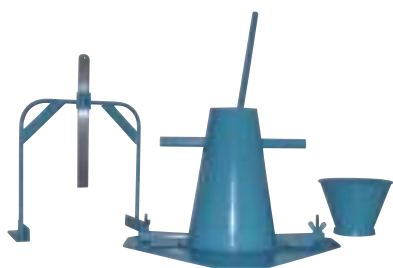
CEMENTS AND MORTARS

- Mortar aerometer
- Schock equipment
- Vicat apparatus
- Autoclave
- Thermostatic baths
- Mud balance
- Mortar box
- Calorimeter
- Elutriometer
- Chatelier equipment
- Filter press
- Mixer
- Prismatic moulds
- Blaine permeability
- Compression-flexion press
- Automatic Prisometer
- Marsh Viscosimeter



CONCRET APPARATUS

- Concret aerometer
- Vibrating needles
- Adhesion tester
- Joisel equipment
- VÉBé equipment
- Surfacing equipment
- Thermostatic tank for storage of specimens
- Electric or thermal core drills
- Abrams cone
- Flow cone
- Concrete cores
- Ultrasonic detector
- Bending machine
- Mixers
- Maniabilimeter
- Steel and plastic moulds
- Pachometer
- Permeameter
- Plasticimeter
- Compression press
- Laboratory saw
- Sclerometer
- Slump test table
- Vibration table



BITUMOUS

- Ball and ring equipment
- Automatic extraction equipment
- Kumagawa equipment
- Sand height equipment
- Electric or thermal core drills
- Centrifuges
- Bitumen distillation
- Ductilometer
- Plate loading test
- Duriez test
- Hubbard-Field test
- Marshall test
- Four asphalte (RTFO)
- Mixer
- Needle penetrometer
- Benkelman beam
- Universal penetrometer compression-traction
- M.O.T.
- Water content
- Engler viscosimeter
- Redwood/BRTA viscosimeter



GENERAL EQUIPMENT

- Shakers
- Meteorological equipment
- Vats and containers
- Thermostatic baths
- Electronic balances
- Mechanical balances
- Mechanical or digital comparators
- Distillers
- Microwaves
- Weights set
- Mixers
- Metrology
- Pesons
- Ph-meter
- Humidity testers
- Thermo-hygrometers
- Thermometers
- Glass, plastic and porcelain laboratory

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GENERAL SALES CONDITIONS

I. GENERAL POINTS

The Client acknowledges that these conditions constitute the entire agreement between the parties and cancels and supersedes all previous offers or agreements, whether oral or written, and other communications between the parties with respect to the subject of the contract at hand unless otherwise agreed and signed in writing by authorised representative of both parties.

Acceptance of any order deemed firm by our company implies that the purchaser agrees to these general conditions of sale which shall be binding to both parties. Any contract of the Client deviating from our conditions shall be valid only upon written acceptance from an authorised representative of our company.

APAGEO reserves the right to reject any amendment or termination of the agreement after launch of the project. In the event of acceptance and subsequent termination involving equipment or materials already made available to the Client, the termination shall not be deemed effective until said equipment or materials have been returned in their original state without being unpacked, installed, started up or otherwise used. The Client shall be responsible for return shipping or delivery fees and for a restocking fee corresponding to 15% of the invoice amount.

II. PRICING AND PAYMENT TERMS

Our prices are quoted excluding VAT and are firm for execution under the conditions specified in the offer and confirmed in the order acknowledgment. Conditions for packing and delivery are set out in the special conditions. Unless specified otherwise, prices are applicable to unpacked goods ex works. The Client agrees to comply with the terms of payment indicated in our offer.

In the event that an invoice remains unpaid according to the term of payment, the balance due shall be deemed immediately payable regardless of any terms agreed previously including terms involving the issue of drafts. Moreover, the purchaser shall, by right, be liable for a penalty amount, plus VAT, for any late payment. We reserve the right to demand, at our entire discretion and according to the above mentioned terms:

- payment in cash at time of order;
- in the event of late payment, immediate payment of all invoices not yet past due and advance payment of all orders currently being processed; alternatively, APAGEO may cancel said orders by simple registered letter without claim of compensation against us under the above mentioned conditions.

III. TIME FRAMES

Delivery time frames are counted from the date on which the details of an order are confirmed in writing.

These time frames are provided for information purposes only at the time of offer and are to be confirmed by APAGEO in the order acknowledgment. Any delays shall not give the purchaser right to cancel the sale, refuse the merchandise or service or claim any form of damages, penalty or holdback.

IV. DELIVERY AND SHIPPING

All costs and risks of transactions relating to insurance, packing, shipping, customs, unloading and unpacking shall be the responsibility of the Client unless agreed and specified otherwise in our offer.

On delivery, the Client is responsible before taking delivery to note any irregularities on the delivery slip acknowledgment and to take all appropriate recourse against the shipper which shall be solely responsible in this regard.

V. RETENTION OF OWNERSHIP

APAGEO retains ownership of all goods sold until receipt of full payment of principal, interest and any other amounts in arrears concerning said goods. These provisions shall not prevent the transfer to the Client, on delivery, of risks relating to the loss or degradation of the goods sold or any damage they may cause. The Client is to arrange for insurance covering the risks arising at delivery and to notify the insurer of our right of ownership so that we might benefit from any compensation resulting from the loss or degradation of the goods sold. The Client may resell the goods only if all prices have been decided in advance in consultation with us unless agreed otherwise by our authorised representative.

VI. LIMITED LIABILITY

The liability of APAGEO shall be limited strictly to the obligation to repair or replace at no charge any parts or components we have acknowledged as defective to the exclusion of any other compensation on any grounds whatsoever.

The liability of APAGEO is, regardless of the nature of any claim made, whether legal or contractual, limited strictly to the abovementioned obligation, and APAGEO shall not be bound to compensate the Client or any third party (including but not limited to employees and clients) for any direct or indirect damages such as loss of productivity or for costs or other damages resulting from improper use or malfunction of the equipment.

VII. GUARANTEE

Our equipment, with the exception of consumables and replacement parts and subject to use in accordance with normal operating conditions, is guaranteed for a period of 12 months from delivery ex works against defects due to manufacture or design errors recognised by us. Parts replaced or reworked under the terms of this guarantee shall be guaranteed from the date of the replacement. This guarantee is not applicable:

- if the defective material or design originated with the purchaser or a third party imposed by the Client;
- if the faulty operation resulted from intervention or modifications to the good performed by the Client without our prior written authorisation;
- if the faulty operation resulted from normal wear of the good or from negligence or improper maintenance by the Client, from abnormal use or from failure to follow our operation, maintenance or storage instructions;
- if the faulty operation resulted from force majeure, prohibitions or embargoes affecting import or export and foreign exchange control measures being classified as cases of force majeure for the purposes of execution of the contract;
- if the Client fails to follow any instructions provided by APAGEO concerning the installation and start-up of the equipment.

The liability of APAGEO is limited expressly to the abovementioned conditions to the exclusion of any other recourse including guarantee claims signifying additional liability.

VIII. CONFIDENTIALITY

All estimates, studies, drawings, calculations and documents delivered or otherwise made available to the Client remain the property of APAGEO and consequently may not be used or conveyed to a third party for any purpose whatsoever without our authorisation.

IX. APPLICABLE LAW - COURT OF COMPETENT JURISDICTION

Our sales are governed by French law. Any dispute concerning our sales or services, including those with multiple respondents, that cannot be resolved amicably shall fall under the exclusive jurisdiction of the Versailles (78) Commercial Court. Any special conditions with respect to bank domiciliation or other conditions shall have no effect, whether overriding, novatory or other. Any dispute arising in relation to an international contract shall be settled according to the guidelines for conciliation and arbitration of the International Chamber of Commerce by one or more arbitrators designated by the parties, the place of arbitration being Paris, France

APAGEO, A NETWORK OF INFLUENCE

APAGEO works with solid partners on a daily basis to develop the profession on a regional, national and international scale.

The highest skills are thus brought together to guarantee you the best solutions of tomorrow, always better adapted to your expectations.



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