Soil Sampling Tools

4

Shelby Tube (UD) Tube Samples & Sand Sampler

Standard Penetration Test (SPT) Automatic Drop Hammer

Standard Penetration Test (SPT) Split Sampler

Hydraulic Stationary Piston Sampler

Mazier Triple Tube Retractable Core Barrel

Triefus Triple Tube Core Barrel

T2 Double & Triple Core Barrel

T6 Double & Triple Core Barrel

NX Double Tube Core Barrel

W-Series Drill Rod c/w Coupling

Wireline Drill Rod & Core Barrel

W-Series Flush Joint Casing

PVC Well Casing & Screen

Lifting & Lowering Tool

Recovery Fishing Tool

Rebuilt Tooling & Working Handling Tool

Hand Auger Tool

Core Box – Wooden & Aluminum Type

优钻地质材料供应有限公司
PRE-MAT DRILLING SUPPLIES PTE LTD
Co Reg. No. 199900213-K GST Reg. No. 19-9900213-K
No. 48 Toh Guan Road East #06-107 Enterprise Hub, Singapore 608586
Tel: (65) 6861 5323 Fax: (65) 6861 0882 Mobile: (65) 9633 1617 / (65) 9665 2712
Email: enquiry@premat.com.sg Website: http://www.premat.com.sg

SHELBY TUBE SOIL SAMPLERS

(UD TUBES)

We have stock for UD-3 (3″ OD x 1.5 mm Thick x 1.0 m Long) Stainless Steel 304 Tube with lower end being chamfered to form a cutting edge and upper end includes 4-holes for a couple to a drive head of either an AW or BW Rod Box Connection. Rubber Caps (short for bottom, long enough for top to cover 4 holes) to protect sample during transportation.

SD-76 SAMPLING TUBE (SCREW ON TYPE) WITH SANDTRAP

LEGEND	
1. SD-76 Head (AW/BW Box)	2.9 kg
2. SD-76 Tube 18" Length	3.5 kg
3. SD-76 Sandtrap	0.1 kg
4. SD-76 Cutter Shoe	0.85 kg
5. SD-76 Coupler	0.4 kg

Sand Sampler OD	83.3 mm
Plastic Liner ID	76.0 mm
Plastic Sampling Length	460 mm (18")
SD Head OD	91.6 mm

SD-52 SAND SAMPLER (WITH PLASTIC LINER & SANDTRAP)

LEGEND
1. SD-52 Head (AW Box Connection)
2. SD-52 Outer Tube
3. SD-52 Transparent Plastic Liner 1.0m
4. SD-52 Metal Sandtrap
5. SD-52 Cutter Shoe
6. SD-52 Caps for Plastic Liner (Pair)

Sand Sampler OD	74.0mm
Plastic Liner ID	52.00mm
Plastic Sampling Length	1.0m
SD Head OD	74.0mm

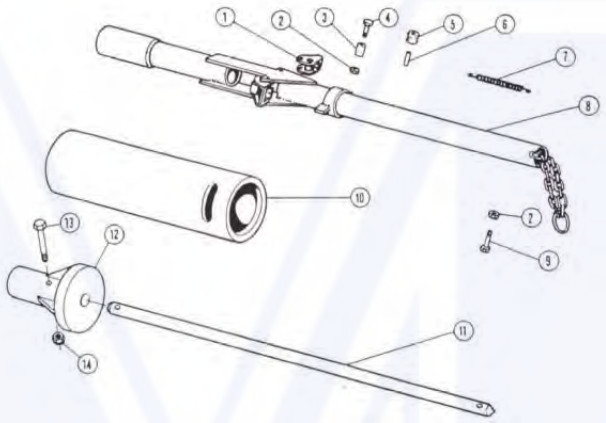
STANDARD PENETRATION TEST
(AUTOMATIC DROP HAMMER)

The simplest method of obtaining some information on concerning the degree of compactness of the soil , consists of counting the number of blows required by a drop weight of 140 lbs. (63.5 kg) falling through a distance of 30″ (762 mm) driving a standard sampling tool into the soil.

The drive weight assembly illustrated consists of a 140 lbs. barrel sliding over the lifting tube. The lifting incorporates an auto trip mechanism, consisting of a finger and springs arrangement that releases the weight at a given point.

ITEM DESCRIPTION

ITEM NO.	DESCRIPTION
1 to 8	Lifting Table
1	Ear Holder
5	Roller
6	Pin
7	Spring
10	Weight (140 lbs.)
11 to 14	Anvil Shaft



STANDARD SPLIT TUBE SAMPLER

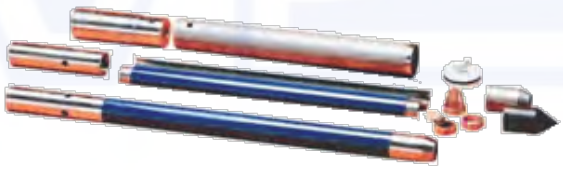
This split tube sampler is designed for taking soil samples at the bottom of a cleaned bore hole by the drive weight method. The split section is held together with a ball check head and a hardened steel drive shoe. The ball check feature in the head prevents samples from being washed out of sampler upon withdrawal from the hole. The sampler is designed to accommodate a brass, plastic or paper tube liner for collecting and carrying samples to the field office. Sample lengths 19″ (457.2 mm) and 24inch (609.6 mm) are available.

****NOTE****

1. Step in tube design prevents bowing when driven
2. Heat Treated Drive Shoe is recessed to accommodate various accessories

Stainless steel sampler assemblies and tubes are available to meet environmental sampling requirements

Solid 6” (152.4 mm) extension available to accommodate “California Type” requirements



Standard Split Tube Sampler
With Heat Treated Shoes

Size	Shoe I.D.	Conn.	Sample Length		Part Number	Weight	
			inch	mm		lbs.	kg
2" O.D. x 1½" I.D.	1⅜"	AW	18	457.2	22017-2	10.5	4.8
(50.8 mm. x 38.1 mm.)	(34.9 mm.)		24	609	22017-9	12.5	5.6
2½" O.D. x 2" I.D.	1⅞"	AW	18	457.2	22018-2	15	6.7
(63.5 mm. x 50.8 mm.)	(47.6 mm.)		24	609	22018-4	17.5	7.9
3" O.D. x 2½" I.D.	2⅜"	NW	18	457.2	22019-3	19.5	8.8
(76.2 mm. x 63.5 mm.)	(60.3 mm.)		24	609	22019-4	23	10.4
3½" O.D. x 3" I.D.	2⅞"	NW	18	457.2	22022-2	22	9.9
(88.9 mm. x 76.2 mm.)	(73.0 mm.)		24	609	22022-6	25	11.3
4½" O.D. x 4" I.D.	3⅞"	NW	18	457.2	22020-3	33.5	15.1
(113.7 mm. x 101.0 mm.)	(98.4 mm.)		24	609	22020-4	41.5	18.7

Standard Split Tube Sampler

	2" O.D.			2½" O.D.			3" O.D.		
	Part	Weight		Part	Weight		Part	Weight	
Description	Number	lbs.	kg	Number	lbs.	kg	Number	lbs.	kg
Head Assembly "AW"	22036-7	3	1.4	22036-4	6	2.7	22036-10	8	3.6
Tube - 18"	22016-6	10	4.5	22016-2	12	5.5	22016-8	11	5
Tube - 24"	22016-7	11	5	22016-12	15	6.8	22016-9	12	5.5
Open Shoe - Blunt $^{1}/_{16}$"	120062-4	1	0.45	120062-2	1	0.45	120062-7	2	0.9
Open Shoe - ASTM $^{1}/_{16}$"	120062-5	1	0.45	---	---	---	---	---	---
Spacer **	150035-272	*	*	150035-273	*	*	150035-274	*	*
Brass Liner - 18"	120060-7	2	0.9	120060-2	2	0.9	120060-10	3	1.4
Brass Liner - 24"	120060-16	2	0.9	120060-18	2.5	1.3	120060-19	3	1.4
Teflon Liner - 18"	120966-1	*	*	N/A	---	---	N/A	---	---
Teflon Liner - 24"	120966-2	*	*	N/A	---	---	N/A	---	---
Clear Plastic Liner - 18"	120878-1	*	*	120878-7	*	*	120878-9	*	*
Clear Plastic Liner - 24"	120878-2	*	*	120878-8	*	*	120878-3	*	*
Plastic Cap	90367-35	*	*	90367-43	*	*	90367-49	*	*
Special Coupling	120161-1	1	0.45	120161-2	1	0.45	120161-3	1	0.45

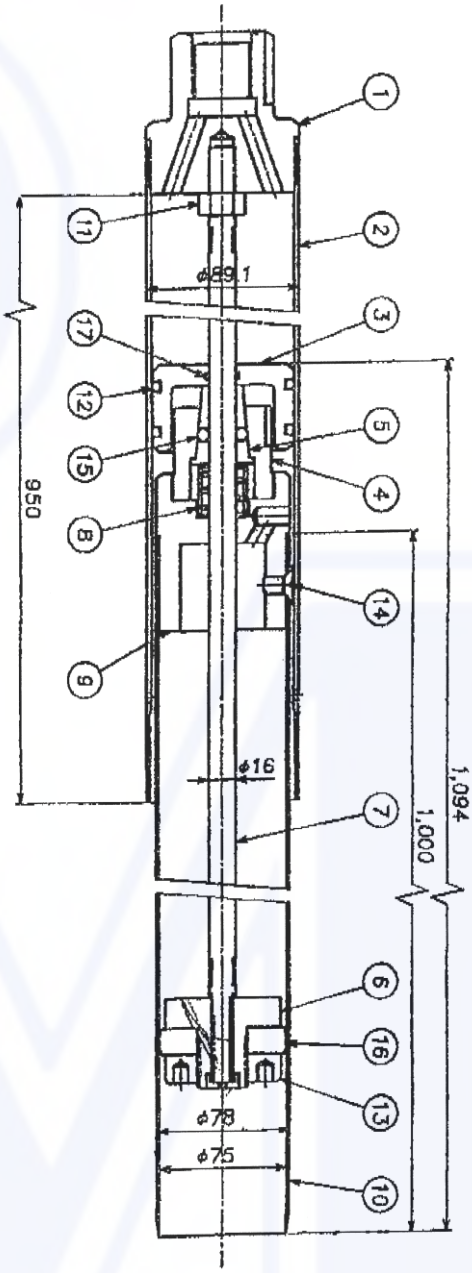
* Less than 1 lbs. (0.45
** Limited sizes available

Options and Spare Parts
Standard Split Tube Sampler

	3½" O.D.			4½" O.D.		
		Weight			Weight	
Description	Part Number	lbs.	kg	Part Number	lbs.	kg
Head Assembly "NW"	22036-2	9	4.1	22036-12	11	5
Tube - 18"	22016-1	14	6.4	22016-10	15	6.8
Tube - 24"	22016-24	15	6.8	22016-11	16	7.3
Open Shoe - Blunt	120062-1	2	0.9	120062-8	3	1.4
Open Shoe - ASTM	---	---	---	---	---	---
Spacer **	150035-275	*	*	150035-276	*	*
Brass Liner - 18"	N/A	---	---	N/A	---	---
Brass Liner - 24"	N/A	---	---	N/A	---	---
Teflon Liner - 18"	N/A	---	---	N/A	---	---
Teflon Liner - 24"	N/A	---	---	N/A	---	---
Clear Plastic Liner - 18"	120878-10	*	*	N/A	---	---
Clear Plastic Liner - 24"	120878-11	*	*	N/A	---	---
Plastic Cap	90367-55	*	*	N/A	---	---
Special Coupling	120161-4	1	0.45	120161-5	1	0.45

* Less than 1 lbs. (0.45
** Limited sizes available
N/A - not available

HYDRAULICALLY OPERATED STATIONARY PISTON SAMPLER



1	Outer Tube Coupling	1 Pce
2	Outer Tube	1 Pce
3	Piston Holder	1 Pce
4	Stopper Cover	1 Pce
5	Stopper	1 Pce
6	Piston Body	1 Pce
7	Piston Rod	1 Pce
8	Spring	1 Pce
9	Liner Coupling	1 Pce
10	Thin Wall Tube (Seamless)	1 Pce
11	Hex Nut M-16	1 Pce
12	O-Ring AN6227 No.39	2 Pce
13	Cap Nut	1 Pce
14	Mach Screw W3/8" x 15L	4 Pce
15	Steel Ball 7mmø	6 Pce
16	Piston Rubber	1 Pce
17	O-Ring P-16	1 Pce
18	Servicing Kit (consists of item 12,16,17)	1 Set

APPLICATION

The Hydraulic Piston Sampler is used to take intact samples in soft and consistent ground. The unique, air or hydraulic piston sampler was designed and test proven in the drilling field for many years. This design allows the sampler to be classified as a truly undisturbed piston sampler producing high production cores.

This sampler is assembled on a drill rod* and lowered to the bottom of a cleaned borehole. The bottom piston prevents the penetration of a foreign material during this operation. As soon as the bottom of the hole is reached, air or water is applied to the drill rod between 6 to 20 kg/cm^2. The piston in the head of the assembly forces the Thin Wall Sample Tube into the soft underlying soil or clay material to take the sample. *(*Available in AW/BW Rod or other back end connection please advise)*

After extracting, remove the 4 set screws from the Inner Tube. Protective Rubber Caps are available on request upon ordering with Inner Tubes to keep the sample intact before transportation the collected sample to the Laboratory.

MAZIER RETRACTABLE CORE BARRELS

The MAZIER Retractable Core Barrel allows taking an undisturbed sample of soil by applying pressure. The rotation includes a frictionless design to have well coefficient close to zero.
The axial movement of the shoe from the bit allows an adaptation to the encountered formation which might be of different hardness and this avoids affecting the quality of sampling. The shoe being ahead of the bit stops water from eroding and disturbing the core.

CHARACTERISTICS:

1. NIL Wall Coefficient
2. Entry Coefficient 3.5%
3. Grey/Clear Polyethylene Tube
4. Length of Sample: 1,000mm (1m)
5. Sealed Head Dampened with Oil
6. Moving Head in Hard Chromed Steel Placed in Bronze Bearing

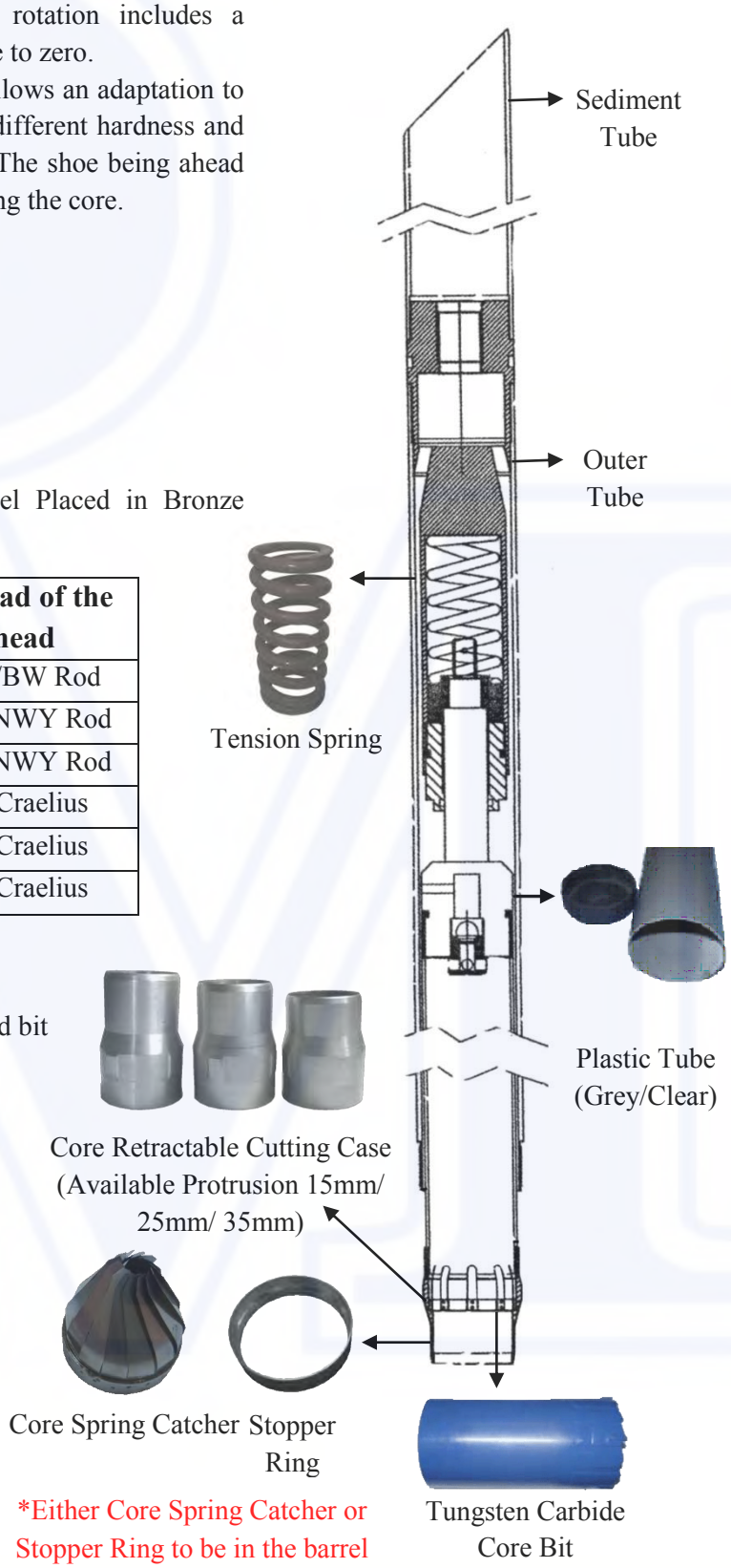
Outer diameter	Core diameter	Thread of the head
✳74 mm	52.00 mm	AW/BW Rod
86 mm	61.00 mm	NW/NWY Rod
✳101 mm	74.00 mm	NW/NWY Rod
116 mm	86.00 mm	50 Craelius
131 mm	100.40 mm	50 Craelius
146 mm	108.50 mm	50 Craelius

✳Stock size available in Singapore

This core barrel can be equipped with a diamond bit and a conical core lifter to sample rock.

Sampled Rock:

- Soft Formation 0.1MPa to Hard Rock 5MPa



*Either Core Spring Catcher or Stopper Ring to be in the barrel

TRIEFUS TRIPLE TUBE CORE BARRELS

Introduction

The Triefus Triple Tube Core Barrel is a precision instrument designed to maximise core recovery in site investigation and exploratory drilling programmes. With this cafe barrel it is possible to obtain as near to 100% volumetric core recovery in as undisturbed condition as it is possible to achieve with rotary core drilling equipment. It is not uncommon for drillers to report 98%+ core recovery in the most difficult formations.

The results obtained from the use of Triefus Triple Tube Core Barrels can be a deciding factor in the investment of large sums of money in areas such as foundation design for dam sites, bridges and buildings, as well as the development of mineral resources. These results must be as accurate as it is possible to obtain. Triefus Triple Tube Core Barrels are capable of giving these results even under the most adverse circumstances provided they are used with the care that their function demands.

When used in conjunction with the Triefus Borehole Impression Device, it is possible to orient the core, differentiate drilling fractures from natural bedding planes and precisely locate the position of any core loss. An easily transportable permanent record of cored borings is also available for laboratory use.

In addition to the standard Triefus Triple Tube Core Barrel a retractor model is available in most sizes for coring very soft formations where the core may be washed away by any excess jetting action while circulating. Many parts are interchangeable between both types of barrels and the retractor barrel can be converted to a standard barrel on site.

Triple Tube Core Barrels (Standard)

The Triefus Triple Tube Core Barrel, as described in Figure 1, was developed nearly 30 years ago in conjunction with the Snowy Mountains Hydro Electric Authority and the Joint Coal Board of Australia for coring the badly weathered and decomposed granite in South Eastern New South Wales "from the grass roots down".

DIMENSIONS			
SIZE:	SET 0.0. OF BIT	SET CORE DIAMETER	SET REAMER DIAMETER
AMLC	47.37 mm	26.97 mm	48.00 mm
BMLC	59.18 mm	35.20 mm	59.94 mm
NMLC	74.80 mm	51.94 mm	75.69 mm
HMLC	98.42 mm	63.50 mm	99.21 mm
3 5/8 x 2C	91.31 mm	63.50 mm	92.07 mm
4 3/8 x 3C	110.31 mm	76.20 mm	111.12 mm
5 x 4C	138.89 mm	101.60 mm	139.70 mm
7 x 5C	196.04 mm	146.05 mm	196.85 mm
1O x 8C	259.10 mm	202.70 mm	260.35 mm

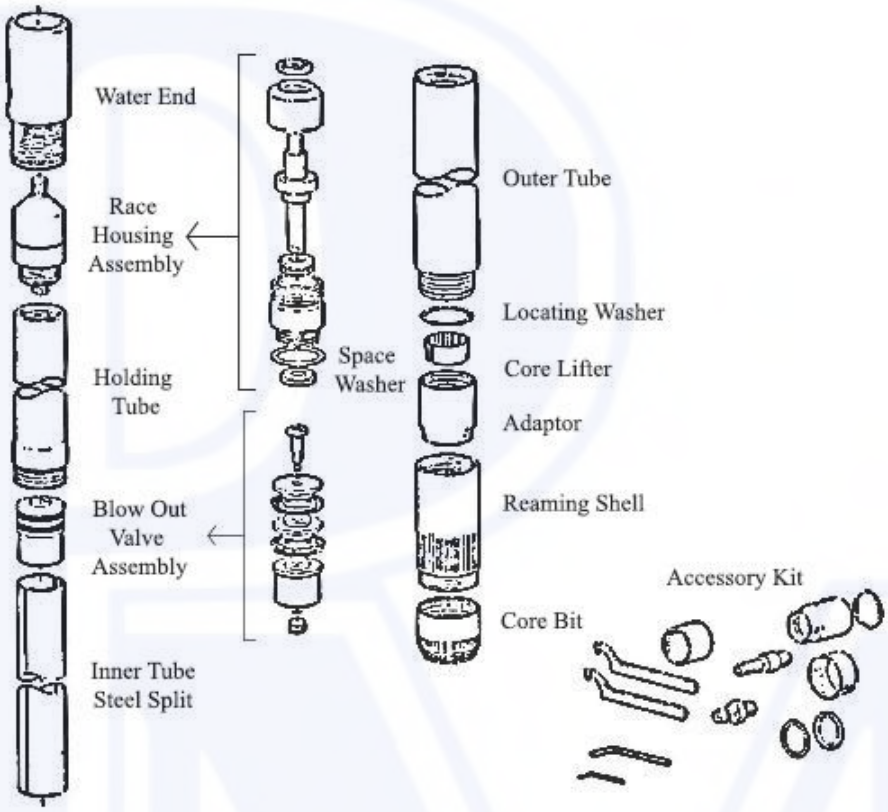
The cutting sizes AMLC. BMLC. NMLC and HMLC are to international standards and are used with standard W series casing. Water Ends are threaded to accept W series drill rods. From 2~C to 8C the barrels are supplied with rod connections specified by the client.

The letters "LC" used in the reference nomenclature refer to "Iarge core" to differentiate between the original double tube core barrels (NM etc.) in which the core diameter was much smaller than that obtainable with these barrels.

All Triefus Triple Core Barrels are normally supplied with steel split inner tubes; however plastic (non-split) inner tube is available in NMLC size and stainless *and* hard chromed split tubes can be supplied for most other sizes. The plastic inner tube is used in NMLC triple tube core barrels where it is desired to retain the core exactly as it is recovered from the hole. The core is not removed from the plastic inner tube which is sealed at each end and despatched undisturbed to the laboratory. Because the plastic is clear and only 1 mm thick, visual examination of the core is possible at the drill site.

The outer tubes of all Trtefus Triple Tube Core Barrels are hard faced at each end. Staggered hard facing over the full length of the outer tube can be supplied if required.

TRIEFUS TRIBLE TUBE STANDARD CORE BARREL



Operating Instructions

Triple Tube Core Barrels (Standard)

Before attempting to use the barrel, it is important to ensure that all threads are tight. The barrel is delivered assembled but the threaded components are not tightened, to minimise risk of damage during transit.

The barrel should be completely dismantled and all threads firmly tightened. Failure to do this could result in water leaking through the inner tube and washing the core. It is generally not necessary to dismantle the bearing housing except where the barrel has been stored for any length of time, in which case the bearings should be checked in order to ensure they are fully greased.

In addition to the assembled barrel, the following accessories will be supplied as a separate kit.

Spacer Washer 1.5 mm	1 piece
Spacer Washer 3 mm	1 piece
Locating Washer	1 piece
Core Lifter	1 piece
Adaptor	1 piece
Pump Coupling	1 piece
Allen Key	1 piece
Blow-out Valve Loader	1 piece
"C" Spanner	2 pieces

The water end should be unscrewed and the water end and holding tube assemblies withdrawn from the outer tube. The set screws should be removed from the bearing housing and the grease nipple Inserted. Grease should then be applied. Remove the grease nipple, replace the set screw and re-assemble the barrel ensuring all threads are firmly tightened.

Check the distance between the end of the core lifter adaptor and the inner shoulder of the core bit. For medium or hard formations, this clearance should be about 1.5 mm. For soft or friable formations, this distance should be reduced to about 1 mm to prevent water from washing the core away. A small clearance must be maintained to prevent the adaptor from rubbing on the shoulder of the bit and also to allow the cuttings to be washed from the Inner diameter of face (bottom) discharge bits. To adjust this distance sees servicing note 6.

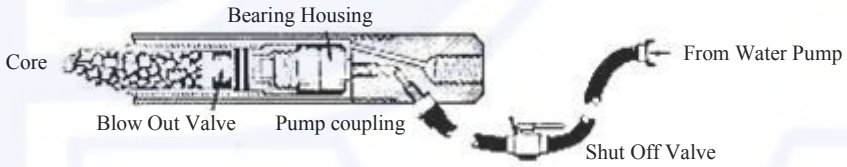
Clearance to be about
1.5 mm for normal conditions

Removal of Core

At the completion of a drilling run, the reamer shell/outer tube thread should be broken and the adaptor, core lifter and locating washer removed. The plug should then be removed from the water end body and the pump coupling inserted. Connect the pump coupling to the shut off valve of the water pump and, starting with the shut off valve in the closed position, slowly open the valve.

Pressure will be applied to the top of the blowout valve causing the valve and split inner tubes to move freely out of the holding tube.

The barrel should be slightly tilted with the bit end at the lowest point to allow water to wash through the barrel and at the same time rotate the holding tube. This will wash any particles of dirt out of the barrel facilitating the easy replacement of the inner tubes.

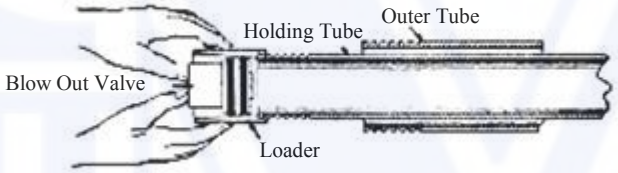


It is important that, where possible, only clean water is used to hydraulically expel the core and it is preferable to maintain a separate supply for this purpose if possible.

Replacing the Inner Tubes

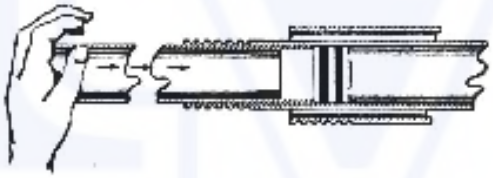
Disconnect the pump coupling from the water end body and replace the plug. Place the end of the loader with the machined lip over the end of the holding tube and insert the blowout valve as shown below.

Use both thumbs to push the valve through the loader and into the end of the holding tube. Remove the loader and place the split inner tubes over the protruding portion of the valve and firmly push the whole assembly into the holding tube until the valve stops on its seating in the holding tube assembly. At this point the split inner tubes should be flush with the end of the holding tube.



It should be noted that split inner tubes are supplied in pairs and they should not be interchanged with any other pair. Each half is marked at one end only with small indentations or numbers and these ends should always be placed together and inserted on the blowout assembly valve.

When the inner tubes are seated correctly in the holding tube, replace the locating washer, core 1ifter adaptor etc. and the core barrel is ready for another run.



Notes

It is important that the hole in the water end plug is not blocked for any reason. In the past some drillers have imagined that they would lose water through this hole while drilling. This is not possible if the seals are in good condition and all threads are firmly tightened.

If the hole is blocked there is no way for the air to escape from the holding tube as the core enters the barrel. The result is that a core blockage is indicated after only one or two feet and if drilling continues the pressure will stop the core from entering the barrel. In softer formations the core may be washed away due to the grinding action and there will be no apparent reason for the lost core.

Servicing the Triefus Triple Tube Core Barrel

Basic servicing can be undertaken on the drill site, by visual inspection of components and their renewal if necessary. This should be done as often as possible and in any case not less than every 100 metres or every week, whichever is the lesser. As often as possible, the barrel should be removed to the workshop for a full check and service. The following is a suggested sequence for servicing the barrel in the workshop. Some parts can, and should, be serviced more often in the field.

1. Inspect all hard facings and tube walls for signs of excessive wear. Dismantle the barrel completely, referring to the assembly diagram, Figure 2. Clean all parts (except seals) with diesoline or other non-acidic cleaning fluid.
2. Water End Body.
   Clean all the waterways in the water and body ensuring that no dirt or pieces of cleaning rag etc. are left inside to block the waterways when the barrel is reassembled.

   Check the water end plug and if the Allen keyway (or screwdriver slot) and threads are in good condition and the hole is clear, screw back into the body.
3. Bearing Housing Assembly.
   Inspect the race housing body and bearing clamp for damage. Inspect the spindle and make sure the centre hole is not blocked. Check the radial and thrust bearings for wear and the oil seals.

   Replace any item which shows signs of wear or .damage and reassemble as shown in the assembly diagram, Figure 2. Tighten all threads firmly, taking care to apply tools over the thick shoulder of the race clamp and the main part of the body. Make sure the grease nipple is clean and the passage is free, and grease the bearing assembly. Remove the grease nipple and insert the setscrew.
4. Blow Out Valve Assembly.
   Inspect the assembly screw, top valve body, centre valve body, bottom valve body and plug for damage. Check the 'U' packing, tension spring, rubber ball valve and sieve for wear.

   Replace items which show signs of damage or excessive wear and reassemble as shown in Figure 2, taking care not to damage the packing. Ensure the ball valve seat is clean and none of the holes are blocked. Tighten all threads very firmly.
5. Tubes.
   Inspect the outer tube, holding tube and split inner tube for wear or damage. If the holding tube or inner tube is dented, they will be difficult to assemble and move when in use causing damage to the inner tube which may result in jamming the core before the barrel is full. Check that the split inner tubes are properly circular when held together and that they fit snugly over the bottom valve body. Make sure that the blowout valve assembly and the inner tubes, when fitted together, will pass easily through the holding tube. There will be some resistance if the packing are fitted to the blowout valve assembly but there should be no "solid" resistance at any point. If the packing are not fitted, or they are very worn, the whole assembly will slide freely through the holding tube.
6. Assembly.
   The holding tube assembly should be fitted to the bearing housing as shown in Figure 2. Fit the two spacer washers (if necessary) between the holding tube and the bearing housing. Fit the spindle thread of the bearing assembly into the water end body. Tighten all threads firmly. A light application of grease on all threads when assembling the barrel will ease the dismantling procedure when this is required again.

   Place the assembly onto a bench or trestles at about waist height. Place the blowout valve in the loader and insert the valve and split inner tubes as directed in "Replacing the Inner Tubes".

   The blowout valve and bearing seals can then be tested by removing the plug in the water end head and coupling to a pump or compressor and blowing out the inner tube as shown in the operating instructions, page 2. The inner tube and valve assembly should slide slowly, but freely, out of the holding tube. If water (or air) blows past the inner tube and out of the end of the holding tube then the 'u' packing are worn or incorrectly fitted. If water (or air) is forced up through the bearing assembly then the oil seals must be replaced.

   If this test is satisfactory then the inner tube and blowout valve should be reloaded. Place the outer tube onto the bench and slide the holding tube/water end assembly into the female thread end until the water end body can be screwed into the outer tube. Screw in by hand, and tighten firmly using a pair of Stilson, placing one on the water end body and the other so that it is just over the bottom section of the female thread in the outer tube. This will avoid pinching the thread or damaging the barrel by applying force on an unsupported section

   Take the adaptor and insert the core lifter and the locating washer. Screw the adaptor onto the holding tube. Fit a new reamer shell and core bit, then measure the clearance between the bottom of the core lifter adaptor and the internal shoulder of the core bit. This should be approximately 1.5 mm.

   If this clearance is not correct, unscrew the bit and reamer shell, undo the water end body and remove assembly from the outer tube. Unscrew the bearing housing from the holding tube assembly and remove or insert spacer washers as required to increase or decrease the clearance.

   Reassemble the barrel, as described above, taking care to tighten all threads firmly and check the clearance again. This should now be correct and the barrel ready for further use.

OUR EQUIPMENT IS CONSTANTLY LIABLE TO REVIEW AND IMPROVEMENT AND NO RESPONSIBILITY CAN BE ACCEPTED FOR SUBSEQUENT MODIFICATION MAKING ALL OR PART OF THESE NOTES OBSOLETE.

DOUBLE / TRIPLE TUBE CORE BARREL
(T2 SERIES)

	Double Tube T2-101	Triple Tube T2-101(TT)
Hole Diameter	101.5 mm	101.5 mm
Core Diameter	83.6 mm	79.0 mm
OD Outer Tube	101.0 mm	101.0 mm
Bit Kerf	8.7 mm	11.0 mm
Standard Connection	NW	NW
Recommended Drill Rods	NW / NWY	NW / NWY
Impregnated Core Bit (rpm)	550 - 950	550 - 950
Weight On Bit	26 - 28 kN	26 - 28 kN
Flow Rate	93 - 147 l/min	93 - 147 l/min

	Parts List
1	Core Barrel Head
2	Outer Tube
3	Race Housing Assembly
4	Blow-out Valve Assembly (Applicable for Triple Tube)
5	Holding Tube
6	Split Tube (Applicable for Triple Tube)
7	Extension Tube
8	Core Lifter Case
9	Core Lifter Spring
10	Reamer
11	Core Bit
12	Thread Protector

DOUBLE / TRIPLE TUBE CORE BARRELS
(T6 SERIES)

The T6 is a core barrel of sturdy design suitable for coring in all formations. The barrel is used with core bits with a relatively thin kerf to maximize the rate of penetration. T6 barrels can be used with water, mud or air flush, but when using air flush, oversize bits and core barrel couplings are commended (available on request). The barrel is available in four nominal millimeter sizes, 101, 116, 131 and 146, as well as the DCDMA hole size H.

Core Barrel	Hole Diameter (mm)	Core Diameter (mm)	Head Connection
T6-H	99.2	79.0	NW/NWY Rod
T6-101	101.3	79.0	NW/NWY Rod
T6-116	116.3	93.0	NW/NWY Rod
T6-131	131.3	108.0	NW/NWY Rod
T6-131 TT **	131.3	103.0	NW/NWY Rod
T6-146	146.3	123.0	NW/NWY Rod

Core bit not supplied with barrel. T6 Barrels are designed to nest inside metric casing. T6-H barrel can also be used inside HW casing. Standard core lengths is 1.5 meters, other lengths are available on request.

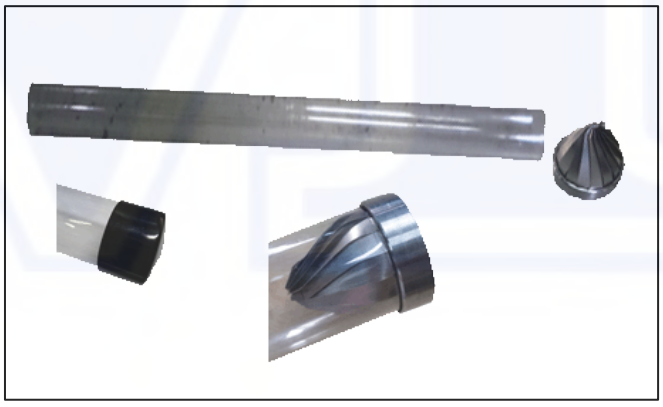
** T6-131 Triple Tubes are formed by inserting either Stainless Steel Split Tube (standard) or Plastic Transparent Liner (on request)

DOUBLE TUBE NX CORE BARREL

	Double Tube
Hole Diameter	76.0 – 77.0 mm (3”)
Core Diameter	53.0 – 54.0 mm (2”)
Outer Tube	74.00 mm (OD) 67.00 mm (ID)
Inner Tube	63.50 mm (OD) 57.15 mm (ID)
Core Length	Available in 1.5 m or 3 m

	Parts List
1	Outer Tube
2	Reamer Shell
3	Impregnated Core Bit
4	Head Assembly
5	Inner Tube
6	Core Lifter
7	Core Lifter Case

Can insert Transparent PVC Liner 52mm Core Sample



DRILLING ROD (CONVENTIONAL W-SERIES)

Drill Rods & Couplings

Drill rods are manufactured to two standards, the 'W' Series (EW, AW, BW, NW, HW) and the 'Old' Series (E, A, B, N). The 'W' Series rods have a larger outside diameter, an increased inside diameter and are more rigid than the 'Old' Series. These features help to eliminate drill rod vibration and allow faster removal of cuttings. The larger inside diameter allows a greater volume of water to be pumped to the face of the bit significantly reducing the possibility of burned bits.

'W' Series Drill Rod

Drill rods are manufactured from cold drawn seamless steel tube. Couplings are machined from heat treated alloy steel to withstand wear and stress to which they are especially prone. Standard 'W' Series rods are flush-coupled and a coupling is supplied with each rod length. Unless otherwise shown on the following specification table all drill rods are manufactured with a parallel wall. Old Series drill rods E, A, B, N, are available on request. Left hand threaded rods are available to special order.

Dimensions

	EW		AW		BW		NW		HW	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Rod O.D.	1.37	34.9	1.72	43.7	2.12	54.0	2.62	66.7	3.50	88.9
Rod I.D.	1.00	25.4	1.39	34.1	1.75	44.4	2.25	57.1	3.06	77.8
Coupling I.D.	0.43	11.1	0.62	15.9	0.75	19.0	1.37	34.9	2.37	60.3
Threads per inch	3		3		3		3		3	

Weights

Length		EW	AW	BW	NW	HW
ft	mm	kg	kg	kg	kg	kg
1	0.30	1.42	2.10	3.38	4.31	6.52
2	0.61	2.70	3.86	6.20	7.91	10.86
2'6"	0.76	3.60	4.74	7.60	9.70	14.66
5	1.52	7.00	9.13	14.65	18.70	28.23
10	3.05	13.60	17.91	28.74	36.67	55.39
Coupling		0.50	0.70	1.50	2.40	3.40

Metric length can be supplied on request

WIRELINE DRILL RODS

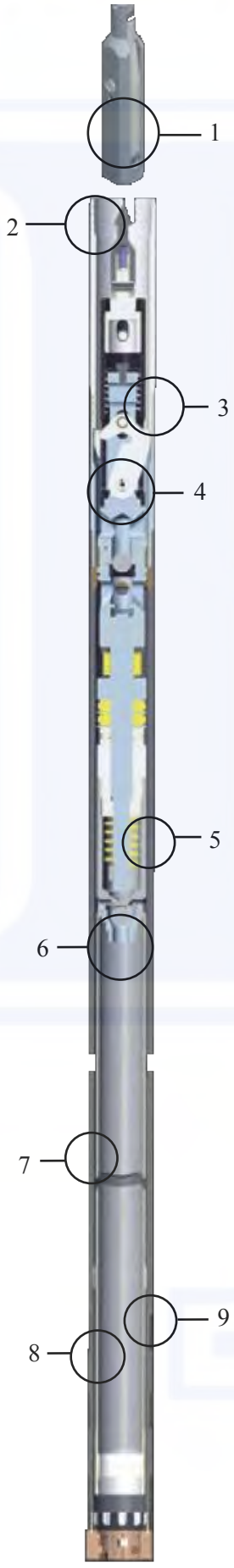
Drilmax tubes are available in 2 standard materials, which conform to major core drilling standards and industry practices. This offers the benefit of FIELD PROVEN products currently in use throughout the world for both wireline and conventional drilling. Standard materials also provide flexibility to supply varying requirements including small minimum quantities.

Mechanical Properties					Material analysis		
Material	Yield Strength min. MPa	Ultimate Tensile Strength min. MPa	Elongation min. (Gauge length 51 mm or 2 inches)	Brinell Hardness Number	Typical Chemical Composition %		
					Carbon	Silicon	Manganese
DRILMAX 550	550	620	15 %	200-250	0.33	0.25	0.7
DRILMAX 620	620	725	15 %	230-280	0.42	0.25	1.5

WIRELINE DRILL ROD TUBES

Designation	mm				inches			
	Outside Diameter		Inside Diameter		Outside Diameter		Inside Diameter	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
A Wireline	44.45	44.70	35.07	34.82	1.750	1.760	1.381	1.371
B Wireline	55.55	55.80	46.20	45.95	2.187	2.197	1.819	1.809
N Wireline	69.85	70.10	60.32	60.07	2.750	2.760	2.375	2.365
H Wireline	88.90	89.28	78.00	77.62	3.500	3.515	3.071	3.056
P Wireline	114.30	114.68	103.17	102.79	4.500	4.515	4.062	4.047
S Wireline	139.70	140.08	125.50	125.12	5.500	5.515	4.941	4.926

WIRELINE CORE BARREL



DIMENSIONS

Size	Core Ø		Hole Ø	
	mm	inch	mm	inch
AQTK	35.3	1⅜	48.0	1⅞
BQ	36.4	1 7/16	60.0	2⅜
BQTK	40.7	1⅝	60.0	2⅜
NQ	47.6	1⅞	75.7	3
NQTK (NQ2″)	50.6	2	75.7	3
NQ3	45 .0	1⅜	75.7	3
HQ	63.5	2½	96.0	3⅜
HQ3	61.1	2⅜	96.0	3⅜
PQ	85 .0	3⅜	122.6	4⅞
PQ3	83.0	3¼	122.6	4⅞

(1) Overshot Assembly
The overshot is dropped or pumped into the drill string to retrieve the inner-tube assembly via wireline cable and hoist.

(2) Locking Coupling
The 'locking coupling' threat to the drill rods string and provides a hardened mating surface which the core barrel inner-tube assembly latches ride against while drilling.

(3) Adapter Coupling
The adaptor coupling mates between the locking coupling and core barrel outer tube, providing the pocket which the head assembly latches deploy.

(4) Head Assembly
The head assembly provides: latching and pivoting spearpoint mechanisms to allow insertion and retrieval of the inner-tube assembly, a bearing assembly to allow the inner tube to remain stationary and avoid sample damage while drilling, fluid pressure operating indications and fluid control valves.

(5) Outer Tube
The outer tube houses the inner tube assembly and connects to the diamond products cutting the hole. The increased wall thickness of the outer tube provides additional stiffness for directional control and a tighter hole annulus for increased fluid velocity and rapid cuttings evacuation for bit performance. Multiple out tubes can be assembled to extend the possible core sample length.

(6) Inner Tube
The inner tube captures the core samples as drilling progresses. Multiple inner tubes can be assembled with couplers or extensions to accept longer core samples.

(7) Inner Tube Stabilizer
Seated in the reaming shell or in mated outer tube extensions the replaceable and reversible inner tube Stabilizer provides centralizing for improved sample recovery and a bearing between the stationary inner tube and the rotating outer tube

(8) Core Lifter
The core lifter is a hardened steel split collar with a tapered body that mated to a tapered socket in the core lifter case.
In a core breaking operation, the drilling string is lifted of bottom and the core sample begins to slide out of the inner tube. Grip features on the inner surface of the core lifter catch the moving core sample and pull the core lifter towards the smaller end of the tapered socket in the core lifter case. The core lifter is constricted against the core sample and retains it after it has broken, allowing retrieval to surface.

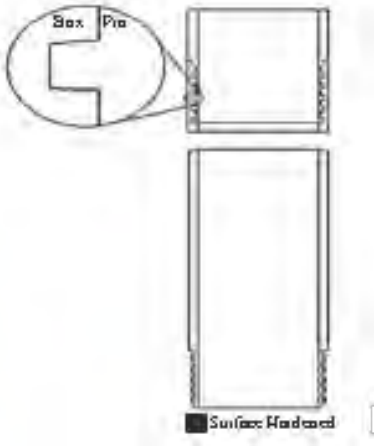
Core Lifter Case
The core lifter case mates to the inner tube and house the core lifter in a tapered socket which controls the movement of the core lifter.
As the drill string is lifted during a core breaking operation, the core lifter case bottoms out on the inside of the drill bit, transferring the pullback load from the drill string to the core lifter until the core sample breaks

(9) Stop Ring
The stop ring is a hardened steel snap ring designed to seat into a mating groove and retain the core lifter in the core lifter case.

FLUSH JOINT CASING W-SERIES

'W' Series Casing

Flush-joint casing has a heavier wall section than the coupled casing and an integral pin and box section. Joint casing makes up flush on both inside and outside diameters. The heavier wall section provides internal and external mating shoulders for the threaded portion to butt against, providing twice the contact area of flush coupled casing and helping to prevent the threads from climbing under heavy torque loads. Standard casing drive shoes and also tungsten carbide insert shoes are generally available ex-stock. Casing clamps for all sizes are readily available. Casing plugs are available for all drill rod connections.



SPECIFICATIONS (DIMENSIONS)

	BW		NW		HW		PW		SW		UW		ZW	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
Casing O.D.	288	73.1	3.5	89.1	4.5	114.5	5.5	140	6.63	168.3	7.63	194.0	8.63	219.0
Casing I.D.	238	60.4	3	76.4	4	101.4	4.88	125.5	5.94	152.3	7.01	178.0	8.00	203.0
Wall Thickness	0.25	6.4	0.25	6.4	0.25	6.4	0.31	79	0.34	8.0	0.31	8.0	0.31	8.0
Threads Per Inch	4		4		4		3		3		3		3	

WEIGHT

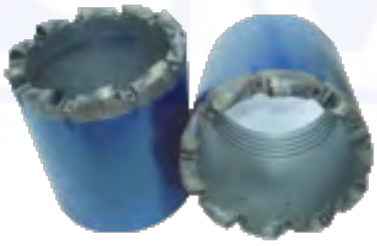
Casing Length		BW	NW	HW	PW	SW	UW	ZW
m	ft	kg	kg	Kg	kg	kg	kg	kg
0.5	1.64	495	6.10	8.50	13.50	15.70	18.25	20.65
1.0	3.28	990	12.20	17.00	27.00	31.40	36.50	41.30
1.5	5.00	14.85	18.30	25.50	40.50	47.10	-	-
3.0	10.0	29.70	36.60	51.00	81.00	-	-	-

CASING SHOES

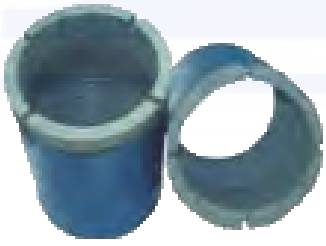
This Casing Shoe is used to drill in flush joint casing. Available in

SOFT → MEDIUM → HARD Ground Formation

Tungsten Carbide (TC)

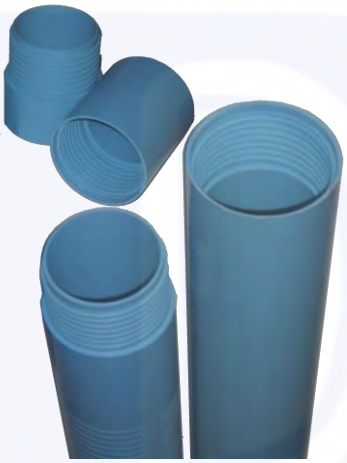


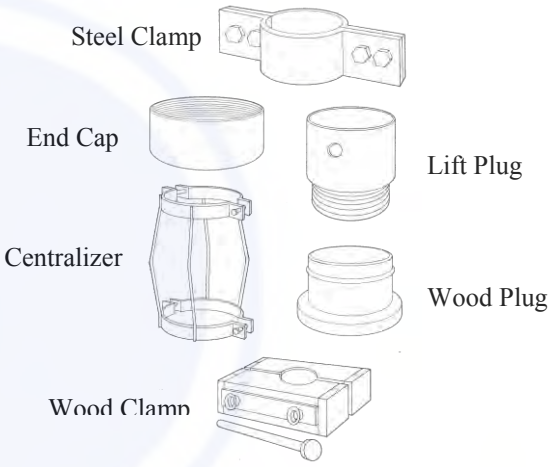
Polycrystalline Compact Diamond (PCD)



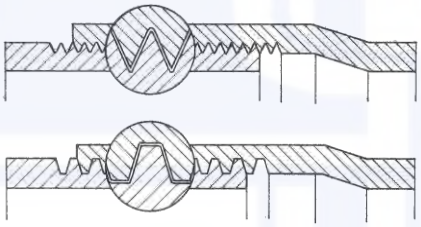
Diamond Impregnated

PVC WELL CASING AND SCREEN



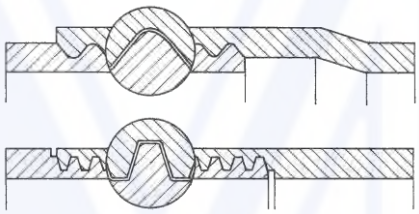


Mechanical Data (General)	
Female Ends	All standard lengths have a socket type female threaded end. However, if outside diameter is restricted please contact us for flush type threaded ends. Solvent cement type ends are also available upon request.
Thread Types	Standard threads are shown below. Other types of threads, for example API and BS 879 are available upon request. Coarse threads are also available if required for quicker joint make-up, and in some cases special threads can be provided when extra tensile strength is needed. Please note that 100/4" nominal diameter is also available with 'GAS' type thread. All threads are cleaned, inspected and gauge tested before dispatch and male ends are fitted with a thread cap.



Whitworth "GAS" (DIN 2999) **Socket**

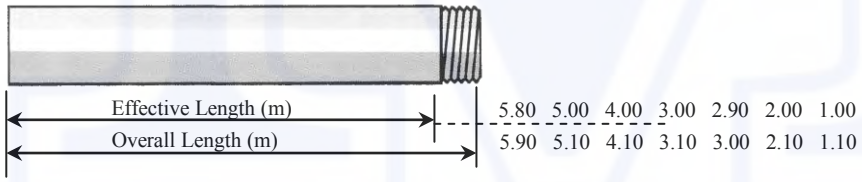
Trapezoidal "Din" (DIN 4925) **Socket**



"ROUND" **Socket**

Trapezoidal "DIN" **Flush**

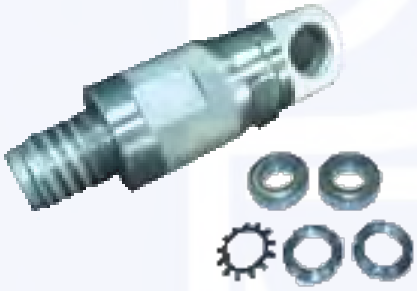
Joint Lengths	Quotations are always submitted on price per meter or per length and are based on effective length. 5.80m and 2.90m lengths are standard lengths for container shipment.



Tolerances	Where applicable, all dimensions comply with DIN 4925.
Special Sizes	Standard sizes are shown in the tables. Non-standard sizes can be manufactured upon request.

LIFTING & LOWERING TOOLS

HOISTING WATER SWIVEL
This hoisting water swivel is so designed as to send water into the rotating drill rod during lifting and lowering.



HOISTING PLUG (HOISTING SWIVEL)
This is connected to a rope socket and is used when lifting and lowering the drill rods.

ROD HOLDER
This is a tool used for holding the drill rods while they are being hoisted or lowered.

Jaws are interchangeable among rod holders of the same model

FOOT CLAMP
This foot clamp allows you to change the jaws to suit various diameters of drill rod and casing.

Jaws available in NQ, HQ, BW, NW Drill Rod; NW, HW, PW Casing

CASING BAND/CLAMP
This tool is used to hold a rod retained in a hole, when pulling it up by means of jacks.

DRIVE HAMMER WITH CHAIN
This tool is used for hammering up and recovering drill strings which are jammed in a hole. In addition, the drive hammer is also used to strike in/up drive pipes for S.P.T.

Nominal Weight, kg	40	63.5	100	150
Applied Rod Diameter, mm	Up to 40.5	Up to 50	Up to 73	Up to 127

KNOCKING BLOCK
This is a collar fixed at the upper end or joint of rods and is used to receive the impact when hammering up or down.

FISHING TOOLS

ROD COUPLING TAP

This tool, by positively tapping the coupling of rod, is used to take out rods which are broken and left in the bored hole for one reason or another.

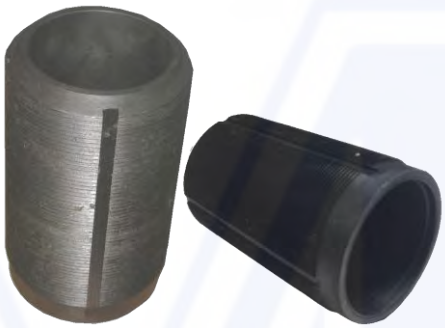
ROD INSIDE TAP · ROD OUTSIDE TAP

The tool works for the same purpose mentioned above. The tool is positively tapped inside (INSIDE TAP), or outside (OUTSIDE TAP) of the rod.

CASING TAP · CORE BARREL TAP

Casing taps/core barrel taps are used to recover casing tubes/ core barrels which have been left in the bored hole. The tap is screwed into the tube/core barrel and then pulled up. The thread screw is a right screw.

Recovery Tap Male NW Casing / HW Casing

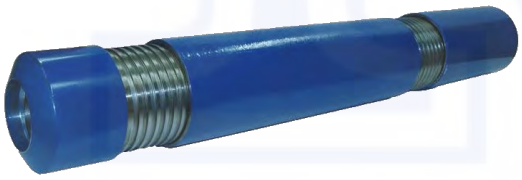


Recovery PW Casing Tap Male

Recovery Tap Male
API Rod Tool Joint

Recovery Tap Male
API Rod Body

Recovery Tap Male

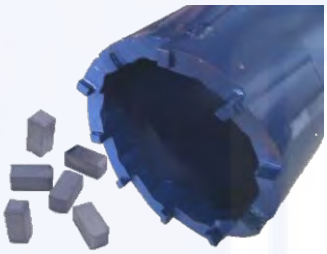


Recovery Tap Female Fishing Barrel – AW/BW Rod

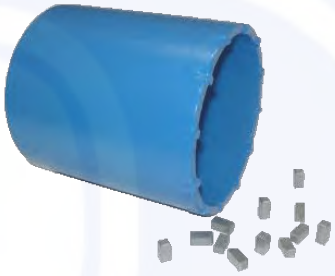
Recovery Tap Female – AW/BW Rod

REBUILT TOOLING

TUNGSTEN CARBIDE INSERT

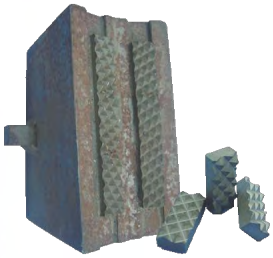


Single Tube Core Bit



Tungsten Carbide Casing Shoe

TUNGSTEN CARBIDE GRIPPER



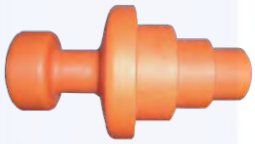
Chuck Jaws with Tungsten Carbide Grippers

OTHER WORKING TOOLS

In addition, many tools including wire ropes, etc. are available

SAFETY WORKING TOOLS

Split Tube Loader



Rod Lifter

API ROD FIAT WRENCHES

For API Drill Rod Flat Wrenches, available for 2⅜″, 3½″, 4½″ API REG Connection

FULL GRIP/PAMALEE/HANDCUFF WRENCHES

Available for Conventional and Wireline core barrel (both Outer & Inner Tubes)

BROWN TONG

This tool is used for manually drawing out and lowering drill rod and is mainly for shallow holes.
Available size: AW & BW Rod

CHAIN WRENCH

Available in 8″, 10″ & 12″	
Size	Weight
8″	24.0 kg
10″	27.0 kg
12″	30.0 kg
Available in Japan Model	
Size	Weight
14~89mm	1.0 kg
17~120mm	1.5 kg
25~170mm	2.7 kg

PIPE WRENCH

Available in 18″, 24″, 36″ & 48″		
Size	Weight	Work Area
18″	3.0 kg	½″ to 2″
24″	5.0 kg	½″ to 3″
36″	9.0 kg	½″ to 5″
48″	14.5 kg	½″ to 6″

AUGER HANDSET

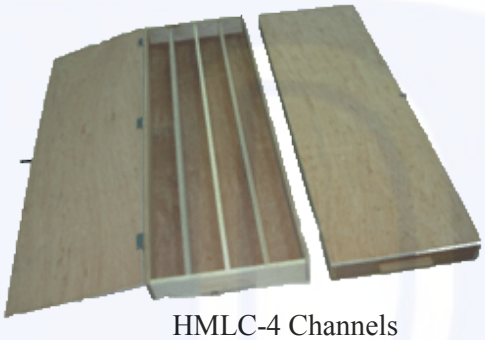
6pcs 1m
Extension Rod

1pcs Auger Head

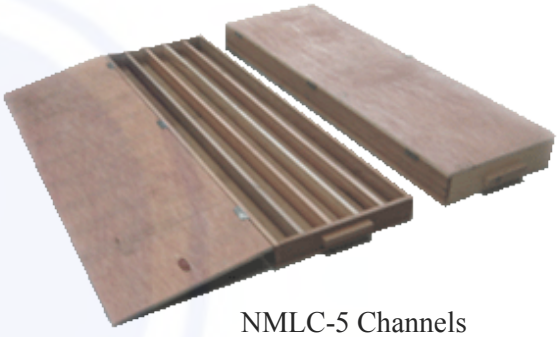
1pcs Auger Handle with
Handle Rod

***Auger Head Size are available in 4" and 5"**

CORE BOX / CORE TRAY



HMLC-4 Channels
1220 x 380 x 100 mm (9 kg)



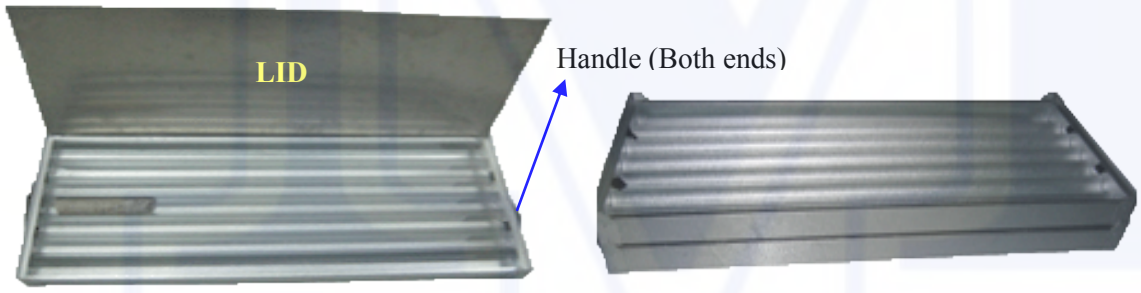
NMLC-5 Channels
1220 x 370 x 85 mm (10 kg)

CORE TRAY 1220-355-55 / 1200-360-65

Made of a corrosion resistant galvanized

Core Tray	HMLC 1240-300-66	NMLC 1220-355-55 v.3
Number of Channel	4	5
Net Weight with Lid	4.0 kg	4.4 kg
Tray Dimension	1200 x 300 x 65mm	1200 x 320 x 55 mm
Overall Dimension	1240 x 300 x 65mm	1220 x 360 x 55 mm
Country Origin	Australia	Australia

CORE TRAY 1000 - 420 – 70



Net Weight with Lid – 5 kg
Dimension – 1000 x 420 x 70 mm
NMLC - 7 channels x 1000 mm (1 m)
HMLC - 5 channels x 1000 mm (1 m)
P-Size - 4 channels x 1000 mm (1 m)
Made of a corrosion resistant Zincalume Steel
Interlocking nature of the trays, the tray above in the stack forms.