



TOUGHEST DTH DRILLING TOOLS

- › DTH CASING RING BITS › HORIZONTAL DRILLING RING BITS
- › DTH HAMMERS › DTH BUTTON BITS & HOLE OPENERS
- › DTH DRILL PIPES › DTH CONSULTATION & EXPERTISE

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TOUGHEST DTH DRILLING TOOLS

TRI-MACH HAS MANUFACTURED DTH (DOWN-THE-HOLE) EQUIPMENT FOR OVER 30 YEARS. OUR GOAL HAS ALWAYS BEEN TO ENSURE THE BEST QUALITY OF OUR DRILLING TOOLS.

Since the very beginning, our passion has been to provide our clients with the best quality products on the drilling tool market. Tri-Mach drilling tools are developed and manufactured in Tampere, Finland, which is famous for its superb cluster of hard rock drilling companies. Our team consists of experienced drilling tool designers and former drilling contractors which gives us an advantage of knowing exactly how products work in different soil and rock conditions. Don't hesitate to ask for drilling tips as well! Our patented Radial Flush system is a perfect example of our technical competence. This system is designed to minimize environmental impact during drilling. This is the first system developed to reduce the impact of flushing air on the surrounding soil.

Successful application examples may include projects, for example, drilling near existing buildings or projects in ports where the violation of the seabed is not allowed. Our strength as a company lies in providing our customers with the best service we are capable of, regardless of whether it is about drilling parameters, ground conditions or productivity. We are proud to provide specialized solutions for complex operating conditions. Being an agile company, we can provide cost-effective and fast modification of our product lines.

No matter what complex drilling project you are working on, we are here to help you complete it successfully!

ARTO NIEMELÄINEN
CEO, FOUNDER

ABISKO, SWEDEN
813MM PILES



RADIAL FLUSH SYSTEM

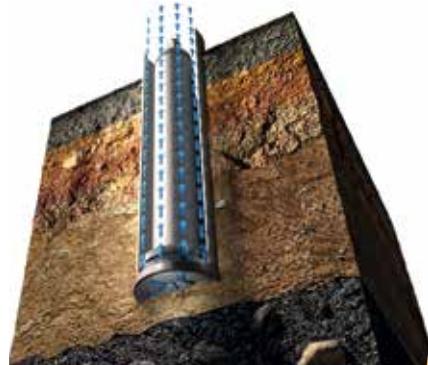
RADIAL FLUSH SYSTEM HAS BEEN TESTED AND APPROVED ALSO FOR THE AREAS WHERE CONVENTIONAL DTH DRILLING IS RESTRICTED.

In the patented Tri-Mach Radial Flush system, the flushing air turns 90 degrees inside the pilot bit. Air therefore blows radially in the bottom of the flushing grooves, transporting drilled soil towards the edges.

The radial flushing grooves are located few centimeters lower than the face of the ring bit, ensuring low air pressure and flow against the drilled material. Air channels are deep below the flushing grooves, which ensures that the soil grooves are virtually never blocked with drilled material and compressed air does not escape into the surrounding ground in an uncontrolled manner. Inside the casing tube, continuous and strong air flow ensures efficient flushing of drilled soil and cuttings. The number of grooves is increased along with the size of the casing tube. This guarantees excellent air flow and low pressure against the drilled material at every pile size. Radial Flush is the first & pioneering technique in controlling the DTH air flow.

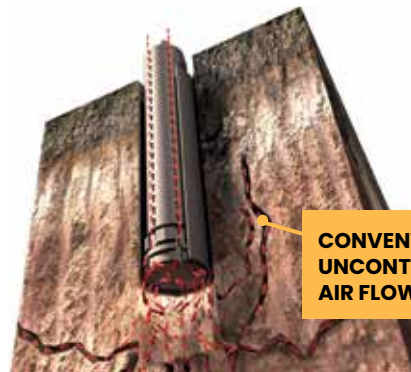
DTH DRILLING WITH RADIAL FLUSH SYSTEM AIR CONTROL

- + Improved casing flushing;
- + Reduced vibration; good penetration speed
- + No air loss, requires less air & fuel
- + Environmentally friendly and delicate for surrounding structures



CONVENTIONAL DTH DRILLING WITHOUT AIR CONTROL

- Not suitable in dense urban construction, when there is a risk of damage to nearby structures by high-pressure air.
- Increased air consumption due to its losses in the soil. More air & fuel needed in drilling.
- Certain soils present a high risk of jamming the pipe due to poor pipe flushing.
- Generates air pockets of compressed air in surrounding soil



**CONVENTIONAL,
UNCONTROLLED
AIR FLOW**

RADIAL FLUSH RING BITS

TECHNICAL DATA

TRI-MACH'S DTH (DOWN-THE-HOLE) DRILL BITS AND CASING SYSTEMS REPRESENT THE PINNACLE OF DRILLING TECHNOLOGY, ENGINEERED TO TACKLE THE MOST CHALLENGING CONDITIONS AND PENETRATE THROUGH EVEN THE HARDEST ROCK FORMATIONS WITH UNPARALLELED EFFICIENCY.

When it comes to achieving optimal drilling performance, the quality of the DTH drill bits becomes paramount. These drill bits are not just any tools; they are the heart of the drilling operation, designed to withstand the rigorous demands of drilling through tough, unyielding soil formations.

ADDITIONAL INFORMATION

- > Minimal soil disturbance and extreme pilot durability with Radial Flush-design
- > Casing shoes available for all pile thicknesses
- > Pilots available for all major shanks, special designs available on request
- > Special designs available for hard soil conditions and deep bedrock drilling
- > Non-standard sizes and designs available on request
- > Consultation and assistance on other drilling equipment available on request



SPECIFICATIONS

PILE SIZE (mm)	RING BIT OD (mm)	RING BIT ID (mm)	PILOT BIT OD (mm)	RING BIT OD, PW (mm)
219	230	150	191	274
273	288	181	245	328
324	339	245	295,5	379
406	420	315	375,5	461
508	523	410	476,5	563
610	630	475	573	665
711	728	565	675	766
813	835	672	777	868
914	935	777	877	969
1016	1036	880	983	1071
1219	1240	1080	1185	1275

- > **SAME PILOT BIT FOR SINGLE PILE & PILE WALL RING BITS**
- > **SAME PILOT BIT FOR SOLITARY, INTEGRATED AND HEAVY DUTY RING BIT TYPES**
- > **CUSTOM DIAMETERS AVAILABLE UP TO 1524 MM**

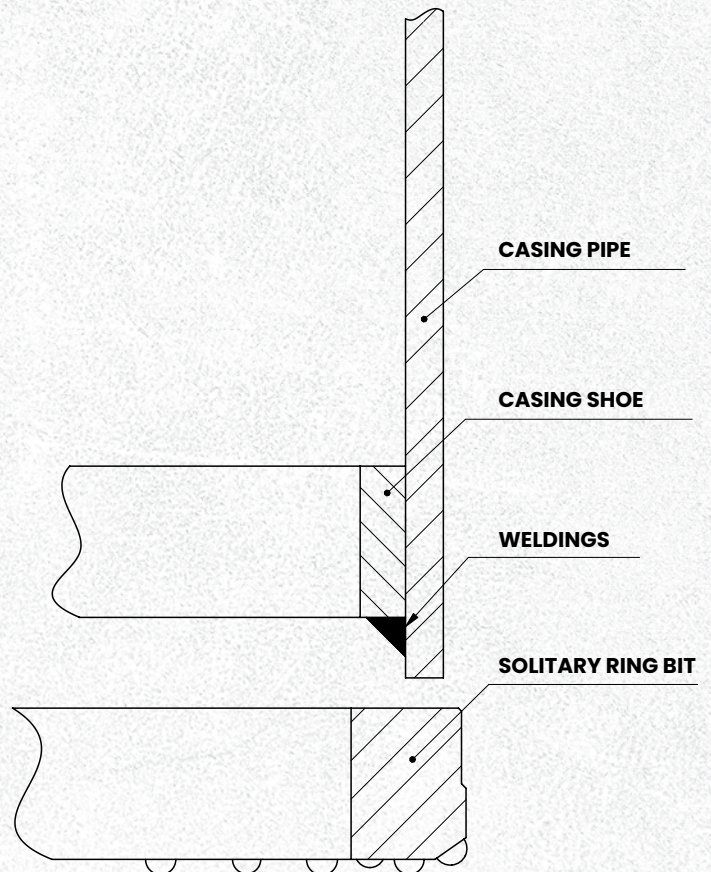
RADIAL FLUSH SOLITARY RING BIT SYSTEM (SR)

SOLITARY RING BIT SYSTEM IS ALSO KNOWN AS LOOSE RING BIT. IT MEANS IT IS NOT WELDED/ ATTACHED INTO THE DRILLED CASING. SO, IT IS LOOSE AND ONLY CONNECTED TO THE DTH PILOT BIT WITH A BAYONET CONNECTION. BIT DRILLS STRAIGHT HOLES, IN ANY TYPE OF GROUND CONDITIONS, AT ANY ANGLE AND TO ANY DEPTHS. SOLITARY SYSTEM IS THE MOST ECONOMIC SOLUTION FOR SHORTER, EASIER PILES.

- > COST-EFFECTIVE SOLUTION FOR SHORTER PILES
- > FAST PRODUCTION
- > LARGE STOCK AMOUNTS



SOLITARY SR RING BIT EXAMPLE (DOUBLE SHOULDER)



RADIAL FLUSH INTEGRATED RING BIT SYSTEM (INT)

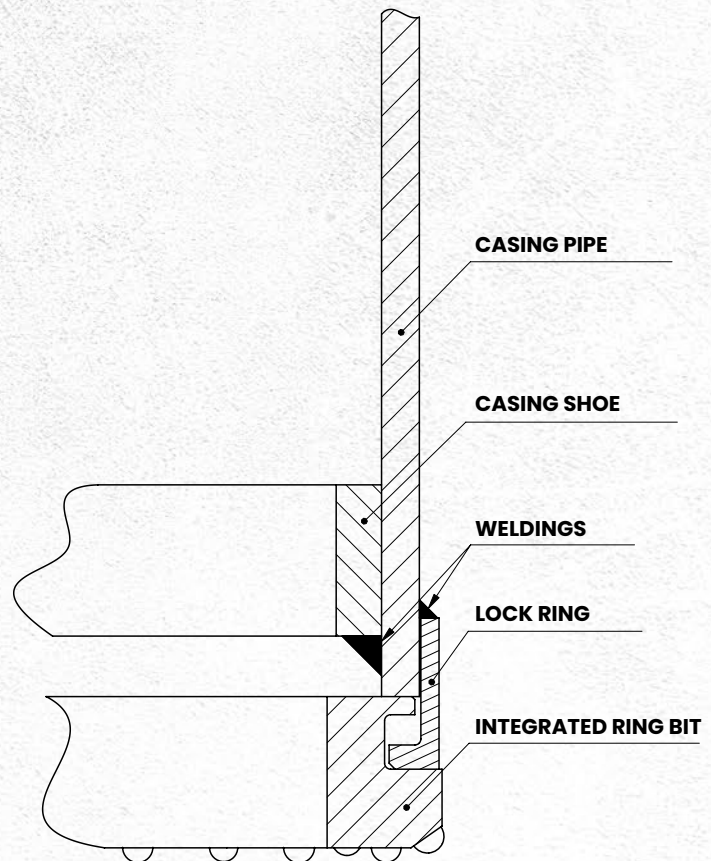
THE INTEGRATED DTH SYSTEM INCLUDES A LOCK RING THAT IS CONNECTED TO THE RING BIT. THE LOCK RING IS WELDED TO THE PILE CASING.



- › DESIGNED FOR LONGER, TOUGHER PILES
- › NORMALLY RECOMMENDED, IF THERE ARE WELDING EXTENSIONS BEFORE REACHING THE BEDROCK
- › POPULAR IN HARBOR/BARGE PROJECTS
- › POSSIBLE TO UPGRADE TO INTEGRATED HEAVY DUTY (more details in page 8)

CASING SHOE WELDING POSSIBLE AT PIPE PRODUCER FACTORY, FOR EXAMPLE SSAB / SCANDIA STEEL

INTEGRATED INT RING BIT EXAMPLE (DOUBLE SHOULDER)



RADIAL FLUSH INTEGRATED HEAVY DUTY SYSTEM (INT HD)

INTEGRATED HEAVY DUTY SYSTEM HAS BEEN DESIGNED FOR TOUGH CONDITIONS.

Conditions might include for example:

- > Long piles & inclined piles
- > Inclined bedrock surfaces
- > Long bedrock drilling

Integrated Heavy Duty is drilled with the same pilot as Solitary and regular Integrated systems.

- > **ALL SYSTEMS ARE DRILLED WITH SAME PILOT BIT**
- > **AVAILABLE IN ALL COMMON SHANKS**
- > **FOR SPECIAL PROJECTS WE PRODUCE ALL DIAMETERS AND CASING THICKNESSES POSSIBLE.**



INTEGRATED HEAVY SYSTEM IS ESPECIALLY SUITABLE FOR DEMANDING HARBOR CONDITIONS.

**SKARBERGET 610MM
HARBOR PILES,
NORWAY**

DTH RINGSETS (VELO-SERIES)

EASY WAY FOR DTH CASING DRILLING

OUR TOUGH SMALL-DIAMETER DTH CASING RINGSETS ARE ENGINEERED FOR MAXIMUM DURABILITY AND PRECISION, ENSURING EFFICIENT DRILLING THROUGH THE TOUGHEST GROUND CONDITIONS. DESIGNED FOR OPTIMAL PERFORMANCE, THEY DELIVER THE RELIABILITY NEEDED TO FINISH YOUR PROJECT SUCCESSFULLY.

We use a high amount of carbide buttons in our ring bits. This makes our bits the toughest ones available.

Same ring bit for threaded casings and drill through - options!



RING BITS

PRODUCT CODE	CASING OD (MM)	RING BIT OD (MM)	RING BIT ID (MM)	WEIGHT (KG)	THREADED CASINGS	MAXIMUM CASING THICKNESS (MM)
RT-SET114-10	114,3	128	76	3,2	yes	10
RT-SET139-10	139,7	161	101	5,0	yes	10
RT-SET168-12.5	168,3	188	129	7,0	yes	12,5
RT-SET219-12.5	219,1	243	173	14,5	yes	12,5

PILOT BITS

PRODUCT CODE	CASING OD (MM)	PILOT BIT OD (MM)	WEIGHT (KG)	DRILL TROUGH OPTION	STANDARD STOCK SHANK	OPTIONAL SHANKS ON ORDER	MAXIMUM CASING THICKNESS (MM)
PT-SET-114-10-DHD3.5	114,3	88	7,0	-	DHD3.5	-	10
PT-SET139-10-DHD340	139,7	116,5	14,0	yes	DHD340	TD40	10
PT-SET168-12.5-DHD350	168,3	141	24,0	yes	DHD350	QL50	12,5
PT-SET219-12.5-DHD360	219,1	191	50,0	yes	DHD360	QL60	12,5

DTH RINGSETS (IDMAX – SERIES)

INSTALL ANCHOR CASINGS THROUGH ROCK AND BOULDERS

WHEN INSTALLING ANCHORS INTO BEDROCK, OR THROUGH TOUGH SOILS AND BOULDERS, DTH RINGSETS FOR ANCHORING ARE THE SOLUTION. NO MATTER HOW TOUGH THE CONDITIONS, THESE BITS WILL ACHIEVE DESIRED DRILLING LENGTHS.



RING BITS

PRODUCT CODE	CASING OD (MM)	RING BIT OD (MM)	RING BIT ID (MM)	WEIGHT (KG)	THREADED CASINGS	MAXIMUM CASING THICKNESS (MM)
RT-AN114-5	114,3	137	91	4,3	Yes	5,0
RT-AN139-5.5	139,7	161	117	5,0	yes	5,5
RT-AN168-6	168,3	192	142	7,0	yes	6
RT-AN193-6	193,7	222	168	10,2	yes	6,0
RT-AN219-6	219,1	246	192	12,0	Yes	6,0
RT-AN273-6,3	273,0	305	243	16,1	Yes	6,3
RT-AN324-8	323,9	350	282	28	yes	8

PILOT BITS

PRODUCT CODE	CASING OD (MM)	PILOT BIT OD (MM)	WEIGHT (KG)	DRILL TROUGH OPTION	STANDARD STOCK SHANK	OPTIONAL SHANKS ON ORDER	MAXIMUM CASING THICKNESS (MM)
PT-AN114-5-DHD3.5	114,3	102	8,5	Yes	DHD3.5	-	5,0
PT-AN139-5.5-DHD340	139,7	127	35,0	yes	DHD340	TD40	5,5
PT-AN168-6-DHD350	168,3	155	70,0	yes	DHD350	QL50	6,0
PT-AN193-6-DHD360	193,7	180	40,8	Yes	DHD360	QL60	6,0
PT-AN219-6-DHD360	219,1	202	49,6	Yes	DHD360	QL60	6,3
PT-AN273-6,3-DHD380	273,0	256	89,3	Yes	DHD380	SD8	6,3
PT-AN324-8-DHD380	323,9	302	120	Yes	DHD380	SD10	8

LARGEST POSSIBLE RING BIT INSIDE DIAMETER TO BETTER FACILITATE DRILLING PAST CASING

DTH MULTI-USE RING BIT SYSTEM

MAXIMIZE THE EFFICIENCY AND VERSATILITY OF YOUR DRILLING OPERATIONS WITH OUR CUTTING-EDGE MULTI-USE DTH CASING DRILLING SYSTEM. DESIGNED TO HANDLE A WIDE RANGE OF DRILLING CONDITIONS, THESE BITS DELIVER EXCEPTIONAL PERFORMANCE AND DURABILITY.

- > Multi-Use System Casing Dimension Range: 406mm – 1219mm
- > Radial Flush system for safe air flow
- > In some geotechnical conditions and project requirements, the Multi-Use casing advancement system becomes the most economical choice. Tri-Mach Multi-Use system is designed for projects, where casing is retracted after reaching the required drilling depth.



MOST COMMON USES FOR MULTI-USE / RETRACTABLE CASING ADVANCEMENT SYSTEM:

- > **Pre-drilling, for example to soften the soil for later sheet pile installation**
- > **Drilling, concreting and later retracting the steel casing**
- > **Installing certain elements, such as concrete elements with the help of a temporary drilled casing**

DIMENSION RANGE 406MM-1219MM

DTH BUTTON BITS

TRI-MACH DESIGNS AND MANUFACTURES ANY DIAMETERS, RANGING FROM 89MM TO 1524MM. THEY ARE PRODUCED WITH THE LATEST MATERIAL AND MANUFACTURING TECHNOLOGY TO KEEP TOP QUALITY BUTTON BITS TO DRILL IN HARD ROCK CONDITIONS, SUCH AS GRANITE.

World class quality carbide buttons are employed in our TRIMACH button bits to ensure good durability. TRI-MACH button bits can be made in various face profiles such as flat, concave or convex faces in accordance with customers' needs or actual ground formations. Just inform our TRI-MACH team what diameter you want and what kind of shank type you need, and your desired button bit can be made.

Top quality and efficient design will ensure the robustness and reliability of TRI-MACH button bits.



STRUCTURE AND APPLICATION FEATURES

The TRI-MACH DTH button bits are made of premium quality alloy steel and carbide buttons. All TRI-MACH DTH button bits are subject to strict quality inspection throughout their manufacture to ensure long lifetimes and reliable performance.



THERE ARE 3 TYPES OF BIT FACE AVAILABLE FOR SELECTION: FLAT, CONCAVE AND CONVEX, TO SUIT YOUR DRILLING AND ROCK CONDITIONS.



CONCAVE TYPE



FLAT TYPE



CONVEX TYPE

SPECIFICATIONS

OUTER DIAMETER (MM)	SHANK TYPE	OPTIONAL SHANKS	STANDARD BUTTON TYPE	STANDARD FACE TYPE
90	DHD3.5		Spherical buttons	FLAT FACE
115	TD40 / DHD340	QLX40	Spherical buttons	FLAT FACE
140	DHD350	QL50	Spherical buttons	FLAT FACE
165	DHD360	QL60	Spherical buttons	FLAT FACE
190	DHD360	QL60	Spherical buttons	FLAT FACE
203	DHD380/DHD360	QL80/SD8/QL60	Spherical buttons	FLAT FACE
240	DHD380	QL80/SD8	Spherical buttons	FLAT FACE
280	DHD380/SD10	QL80/SD8	Spherical buttons	FLAT FACE
280-330	SD10	N100	Spherical buttons	FLAT FACE
330-480	DHD112 / SD12	N120	Spherical buttons	FLAT FACE
380-550	N125		Spherical buttons	FLAT FACE
460-660	N180	SD18/QL200	Spherical buttons	FLAT FACE
610-914	N180/N240		Spherical buttons	FLAT FACE
914-1219	N240/MK360	MK360-S	Spherical buttons	FLAT FACE
1016-1524	MK480	MK480-S	Spherical	FLAT FACE



FULL CUSTOMIZATION POSSIBILITY - ALL COMMON SHANKS AVAILABLE



ENGELØYA-PROJECT : 1016MM CASINGS + 850MM ROCK SOCKETS

DTH HOLE OPENERS

DTH HOLE OPENERS ARE MADE TO CUSTOMER ORDER TO MEET WITH PILOT DIAMETER AND REAMER DIAMETER NEEDED. TOP QUALITY AND STRINGENT DESIGN WILL ENSURE THE ROBUSTNESS AND RELIABILITY OF OUR DTH HOLE OPENERS.

- > Full customizable dimensions and shanks
- > Superb endurance and reliability
- > Excellent Drilling Speed

REAMER

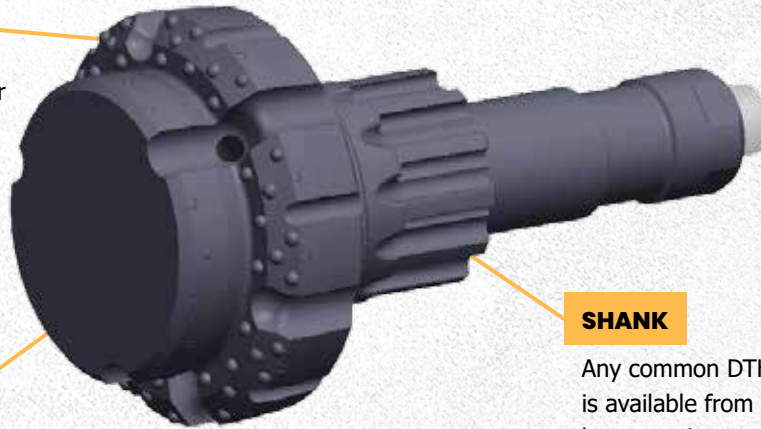
That reams the guide hole to the diameter needed, and the reamer bit is attached to any common shank DTH hammer shank.

PILOT

That follows the guide hole to guide the reamer to ream the hole to the desired diameter, and the pilot bit is located in front of the reamer bit.

SHANK

Any common DTH hammer shank is available from 3" to 24" DTH hammer size.



BELOW ARE SOME TYPICAL EXAMPLES OF DTH HOLE OPENERS AVAILABLE

PILOT OF BIT OPENER OUTER DIA. (MM)	REAMER OF BIT OPENER OUTER DIA. (MM)
152	254
165	254
254	381
381	508

YOU ARE WELCOME TO DISCUSS YOUR PROJECT REQUIREMENTS WITH THE TRI-MACH TEAM, AND TAILOR-MADE BIT OPENERS CAN BE PROVIDED IN ACCORDANCE WITH YOUR NEEDS.

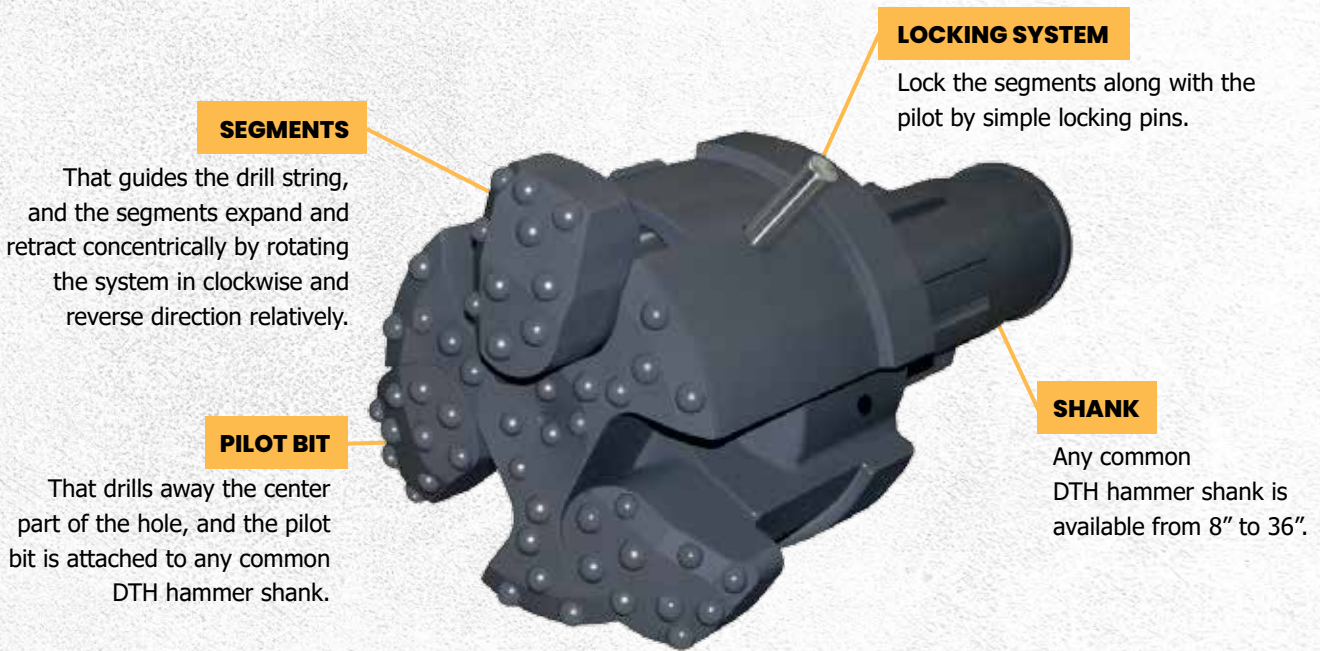
DTH WING BITS

CASING SYSTEMS

When drilling in soft and loose ground with scattered boulders, the soil and clay are caved in. This creates drilling difficulty to withdraw the DTH drilling equipment and lowers the drilling speed. To overcome this problem and minimize disturbance to the surroundings, MAXA manufactures the PiloTec Air-lift type stable concentric casing system to enable drilling and lowering the casing simultaneously. It prevents the soil from collapsing into the drilled hole. The system is designed to drill the hole diameters slightly larger than the casing diameter. When reaching the required drill depth, the DTH hammer and the PiloTec casing system can be withdrawn from the hole.

THE PRINCIPLE OF OPERATION

The PiloTec AIR-LIFT type Stable Concentric Casing System consists of a pilot bit, segments and locking system. The segments expand and retract concentrically and so a straighter hole can be drilled. The segments are closed by rotating the system in reverse direction to allow withdrawal of the PiloTec casing system and dth drill string after reaching the required depth. The segments can be replaced separately and economically when they are worn out.



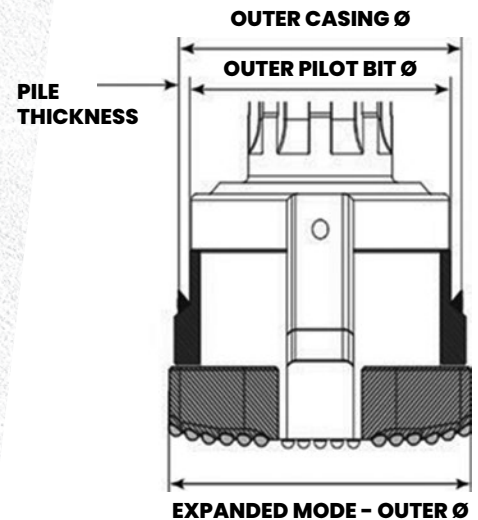
STRUCTURE AND APPLICATION FEATURES

- > foundation and piling
- > water well drilling
- > pipe roofs
- > ground stabilization
- > anchoring
- > grouting holes

WING BITS BT TYPE

THE PILOTEC AIR-LIFT TYPE STABLE CONCENTRIC CASING SYSTEM CONSISTS OF A PILOT BIT, SEGMENTS AND LOCKING SYSTEM. THE SEGMENTS EXPAND AND RETRACT CONCENTRICALLY SO A STRAIGHTER HOLE CAN BE DRILLED.

The segments are closed by rotating the system in reverse direction to allow with-drawal of the PiloTec system and DTH drill string after reaching the required depth.



SPECIFICATIONS

PRODUCT CODE	RETRACTED MODE	EXPANDED MODE	APPLIED CASING		SEGMENTS TYPE
	Outer Ø mm	Outer Ø mm	Outer Ø mm	Max. pile thickness mm	
219,1 mm pile					
BT219/6,3t	204	237	219,1	6,3	2
BT219/10,0t	196	237	219,1	10	2
BT219/12,7t	191	237	219,1	12,7	2
BT219/12,7t/XL	191	274	219,1	12,7	2
244,5 mm pile					
BT245/6,3t	229	266	244,5	6,3	2
BT245/10,0t	222	266	244,5	10	2
BT245/12,7t	216	266	244,5	12,7	2
273,0 mm pile					
BT273/8,0t	255	299	273	8	2
BT273/10,0t	250	299	273	10	2
BT273/12,7t	245	293	273	12,7	2
BT273/12,7t/XL	245	328	273	12,7	2
BT273/16,0t	238	293	273	16	2
323,9 mm pile					
BT324/10,0t	300	345	323,9	10	3
BT324/12,7t	295	345	323,9	12,7	3
BT324/12,7t/XL	295	378	323,9	12,7	3
BT324/16,0t	289	345	323,9	16	3
355,6 mm pile					
BT356/10,0t	332	381	355,6	10	3
BT356/12,7t	327	381	355,6	12,7	3
BT356/16,0t	321	381	355,6	16	3
406,4 mm pile					
BT406/12,7t	378	432	406,4	12,7	3
BT406/12,7t/XL	378	461	406,4	12,7	3
BT406/16,0t	371	432	406,4	16	3

SPECIFICATIONS

PRODUCT CODE	RETRACTED MODE	EXPANDED MODE	APPLIED CASING		SEGMENTS TYPE
	Outer Ø mm	Outer Ø mm	Outer Ø mm	Max. pile thickness mm	
457,2 mm pile					
BT457/10,0t	434	482	457,2	10	3
BT457/12,7t	429	482	457,2	12,7	3
BT457/16,0t	422	482	457,2	16	3
508,0 mm pile					
BT508/10,0t	485	535	508	10	3
BT508/12,7t	479	535	508	12,7	3
BT508/16,0t	473	535	508	16	3
558,8 mm pile					
BT559/10,0t	536	589	558,8	10	3
BT559/12,7t	530	589	558,8	12,7	3
BT559/16,0t	523	589	558,8	16	3
609,6 mm pile					
BT610/12,7t	581	640	609,6	12,7	3
BT610/16,0t	574	640	609,6	16	3
BT610/16,0t/XL	574	664	609,6	16	3
660,4 mm pile					
BT660/12,7t	632	693	660,4	12,7	3
BT660/10,0t	625	693	660,4	16	3
711,2 mm pile					
BT711/16,0t	675	743	711,2	16	3
BT711/16,0t/XL	675	766	711,2	16	3
762,0 mm pile					
BT762/16,0t	726	794	762	16	3
812,8 mm					
BT813/16,0t	776	845	812,8	16	4
BT813/16,0t/XL	776	867	812,8	16	4
914,4 mm pile					
BT914/16,0t	876	955	914,4	16	4
1016 mm pile					
BT1016/18,0t	972	1056	1016	18	4
BT1016/18,0t/XL	972	1071	1016	18	4
1219 mm pile					
BT1219/20,0t	1170	1259	1219	20	4
BT1219/20,0t/XL	1170	1274	1219	20	4

8"-48" DTH HAMMERS (MK SERIES)

ENDURANCE, DRILLING SPEED AND AIR CONSUMPTION ARE CRITICAL PARAMETERS FOR DTH HAMMERS. IN CO-OPERATION WITH MAXA ROCKDRILLS LTD., TRI-MACH PROVIDES CLIENTS AN EXCELLENT DTH HAMMER THAT HAS A HEAVY PISTON, LOW AIR CONSUMPTION AND HAS A LONG LIFETIME.



ENDURANCE / LONG LIFETIME

HEAVY PISTON
> GREAT DRILLING SPEED

LOW AIR CONSUMPTION
> LOWER CO₂- EMISSIONS
AND LOWER FUEL COSTS

LOW TOTAL WEIGHT
> EASY TO USE ON SITE

SPECIFICATIONS, DTH HAMMERS 8-48"

PRODUCT CODE	BIT RANGE		AIR PRESSURE (at compressor)		HAMMER DIMENSIONS			TOP SUB
	Outer Ø (mm)	Shank	Pressure (bar)	Air volume (m ³ /min)	Outer Ø (mm)	Length (mm)	Weight (kg)	
MK-480 (48")	1219,2-1524	MK 480	13,8	127,4	906	2413	6740	HEX PIN
			17,2	158,6				
			20,6	184,1				
MK-360 (36")	914,4-1244,6	MK360	13,8	115,8	758	2232	5011	HEX PIN
			17,2	148,1				
			20,6	169,9				
MK-240 (24")	609,6-1016	N240	13,8	86,7	533	2394	2936	8-5/8" API REG BOX / Beco 10" Box / HEX PIN
			17,2	99,1				
			20,6	114,1				
MK-180 (18")	457,2-813	N180 / SD18	13,8	59,1	412	2175	1663	8-5/8" API REG PIN / HEX PIN
			17,2	73,7				
			20,6	88,0				
MK-140 (14")	355,6-508	N125	13,8	39,7	320	1928	924	6-5/8" API REG PIN / HEX PIN
			17,2	52,1				
			20,6	65,7				
MK-120 (12")	301,6-482,6	N120 / DHD112 / SD12	13,8	36,3	272	1957	655	6-5/8" API REG PIN
			17,2	49,0				
			20,6	60,9				
Hi-MK-100 (10")	254 - 406	SD10 / N100	13,8	33,4	225	1273	292	6-5/ 8" API REG PIN
			17,2	52,1				
			20,6	65,7				
Hi-MK-080 (8")	180-324	DHD380 / SD8	13,8	24,1	185	1167	201	4-1/2" API REG PIN
			17,2	31,4				
			20,6	37,1				

3,5" – 6" DTH HAMMERS (TM SERIES)

- > SUPERB DRILLING WITH NEW TM-SERIES HAMMERS
- > INCREASED FREQUENCY – EFFICIENT DESIGN
- > STURDY AND LONG LASTING HAMMER FOR INCREASED DRILLING SPEEDS AND HIGH AIR PRESSURE

FOR EXAMPLE:

- > foundation drilling & pile drilling
- > anchor casing drilling
- > rock socket drilling
- > geothermal wells
- > mining

PART LIST

	ITEM DESCRIPTION	WEIGHT (kg)	PART NUMBER
1	Top Sub	23.4	TM60-DHD360-FV-01
2	"O" Ring of Top Sub	0.01	TM60-DHD360-FV-02
3	Breakout Ring of Top Sub	0.20	TM60-DHD360-FV-03
4	Check Valve	0.65	TM60-DHD360-FV-04
5	Spring	0.20	TM60-DHD360-FV-05
6	Air Distributor	4.40	TM60-DHD360-FV-06
7	Internal Cylinder	3.60	TM60-DHD360-FV-07
8	Piston	23.5	TM60-DHD360-FV-08
9	External Cylinder	39.1	TM60-DHD360-FV-09
10	Guide Sleeve	6.70	TM60-DHD360-FV-10
11	"O"Ring of Stop Ring	0.05	TM60-DHD360-FV-11
12	Stop Ring	1.30	TM60-DHD360-FV-12
13	Drive Chuck	7.90	TM60-DHD360-FV-13
	Drill Bit		



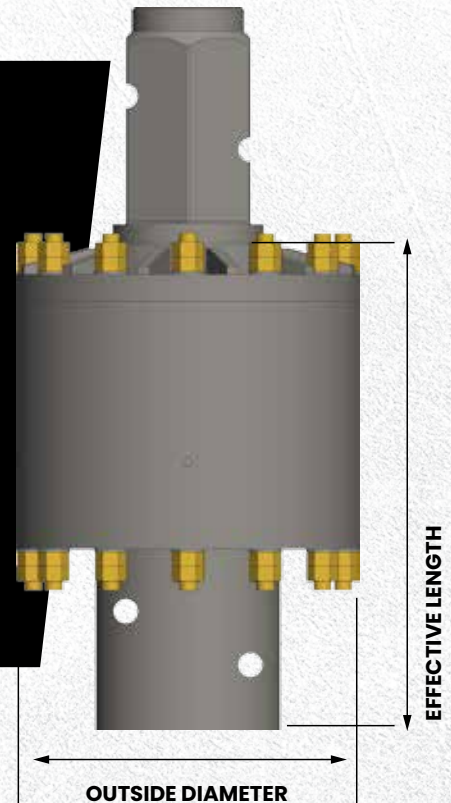
PRODUCT CODE	BIT RANGE			AIR PRESSURE (at compressor)		HAMMER DIMENSIONS			TOP SUB
	Outer Ø (mm)	Shank	Option Shank	Pressure (bar)	Air volume (m3/min)	Outer Ø (mm)	Length (mm)	Weight (kg)	
TM-60 (6")	165-190	DHD360	QL60	13,8	12,64	149	1210	110	3-1/2" API REG PIN
				17,2	15,68				
				20,6	18,8				
TM-50 (5")	135-152	DHD350	QL50	13,8	12	125	990	62	3-1/2" API REG PIN
				17,2	15,4				
				20,6	18,7				
TM-40 (4")	115-135	DHD340	TD40	13,8	6,5	102,5	853	36	2-3/8" API REG PIN
				17,2	8,8				
				20,6	11				
TM-35 (3,5")	90-115	DHD3,5		13,8	6,5	82	817	21	2-3/8" API REG PIN
				17,2	8,8				
				20,6	11				

**ALL HAMMERS 3,5" – 6" AVAILABLE WITH OR WITHOUT FOOT VALVE
RECOMMENDED HAMMER OIL: TM-NATUREMATE DTH HAMMER OIL**

DTH SHOCK ABSORBERS

DTH SHOCK ABSORBERS SIGNIFICANTLY REDUCE HARMFUL IMPACT LOADS GENERATED DURING DOWN-THE-HOLE DRILLING OPERATIONS. BY SOFTENING AND ABSORBING THE RETURN PULSE CREATED BY EACH HAMMER BLOW, THE SHOCK ABSORBER PROTECTS CRITICAL DRILLING COMPONENTS FROM EXCESSIVE STRESS AND VIBRATION. DTH SHOCK ABSORBERS HAVE THE GREATEST BENEFIT IN HARD ROCK AND BROKEN FORMATIONS.

- > Protect Your Equipment
- > Extend Service Life
- > Improve Drilling Reliability



SPECIFICATIONS

SHOCK ABSORBER	EFFECTIVE LENGTH (MM)	OUTSIDE DIAMETER (MM)	WEIGHT (KG)	STANDARD JOINTS	OPTIONAL JOINTS
SA-TM50-API312	514	115	33	API REG 3-1/2"	
SA-TM60-API312	585	140	53	API REG 3-1/2"	
SA-TM80-API412	591	178	99	API REG 4-1/2"	
SA-TM100-API658	724	216	164	API REG 6-5/8"	
SA-TM120-API658	826	265	310	API REG 6-5/8"	
SA-MK180-HEX210	820	440	750	HEX210	API REG 8-5/8"
SA-MK240-HEX210	866	577	1180	HEX210	API REG 8-5/8"
SA-MK360-HEX350	880	682	1650	HEX350	

FLEXIBLE INSTALLATION OPTIONS

The shock absorber can be installed according to application requirements:

- > Directly above the DTH hammer for maximum drill string protection
- > Below the rotary head to protect the drilling rig and drive components

This flexibility allows optimal protection across a wide range of drilling setups and ground conditions.

BUILT FOR DEMANDING CONDITIONS

Designed for heavy-duty drilling environments, the shock absorber features a simple and robust mechanical structure that ensures reliable performance even under continuous high-impact operation.

- > Simple, strong construction
- > Low maintenance requirements
- > Reliable operation in harsh drilling conditions

WIDE COMPATIBILITY

Available with multiple connection options to match existing drilling equipment:

- > HEX joints
- > API threaded connections

Sizes available from **5" to 48"**, covering applications from standard foundation drilling to large-diameter casing and piling operations.

DTH SHOCK ABSORBERS — RELIABLE PROTECTION FOR YOUR DRILLING SYSTEM, DELIVERING LONGER EQUIPMENT LIFE AND MORE EFFICIENT OPERATIONS.

HEX DRILL PIPES

ENDURANCE, RELIABILITY AND TOUGHNESS. THAT IS WHAT TRI-MACH DTH DRILL PIPES ARE MADE OF. LONGEST POSSIBLE LIFETIME AND STURDIEST FRAME TO COVER EVEN THE MOST DIFFICULT GEOTECHNICAL CONDITIONS.



VARIOUS LENGTH OPTIONS

EFFICIENT ROD SEAL
PREVENTING AIR LEAKAGE

HEXAGONAL CONNECTION PROFILE

RELIABLE LOCKING SYSTEM

DOUBLE-PIPE DESIGN

EASY HANDLING ON SITE



KEY FEATURES

- > Manufactured according to the latest technologies from high-quality materials under strict quality control
- > Available in different HEX connections
- > Custom modifications possible
- > Strong, durable design

DETAIL

Lengths	1 – 12m
Diameter	219mm – 1220mm
Wall thicknesses	10-20 mm
Connection type	HEX140, HEX190, HEX210, HEX250

DRILL RODS ARE FULLY MANUFACTURED ACCORDING TO THE CUSTOMER'S PREFERENCES. CUSTOM MODIFICATIONS AVAILABLE.

DRILL PIPES, HEX, FULL CUSTOM

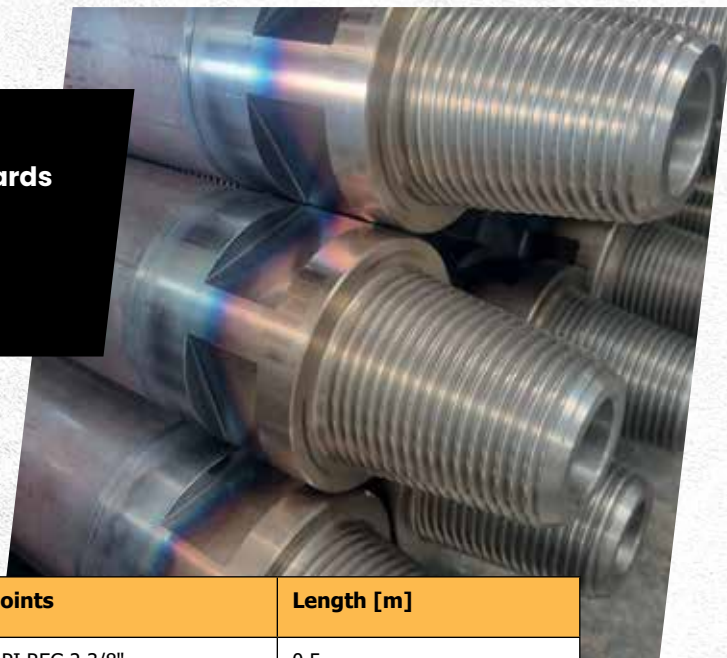
CUSTOMIZABLE PROPERTIES FOR EXAMPLE:

- > **HEX joint properties and dimensions**
- > **Wall thicknesses**
- > **Materials**
- > **Welding procedure and additional reinforcements**
- > **Rod Pin locations, installation procedure**



API REG DRILL RODS

- Top-tier materials, high welding standards
- Available in all API REG JOINTS
- Thicknesses, API JOINTS customizable



STANDARD DIMENSIONS

PIPE OD	Thickness [mm]	Joints	Length [m]
76 mm	6,3	API REG 2 3/8"	0,5
76 mm	6,3	API REG 2 3/8"	1
76 mm	6,3	API REG 2 3/8"	3
76 mm	6,3	API REG 2 3/8"	6
89 mm	6,3	API REG 2 3/8"	0,5
89 mm	6,3	API REG 2 3/8"	1
89 mm	6,3	API REG 2 3/8"	3
89 mm	6,3	API REG 2 3/8"	6
114 mm	8	API REG 3 1/2"	0,5
114 mm	8	API REG 3 1/2"	1
114 mm	8	API REG 3 1/2"	3
114 mm	8	API REG 3 1/2"	3
139 mm	10	API REG 4 1/2"	0,5
139 mm	10	API REG 4 1/2"	1
139 mm	10	API REG 4 1/2"	3
139 mm	10	API REG 4 1/2"	6
168 mm	10	API REG 4 1/2"	0,5
168 mm	10	API REG 4 1/2"	1
168 mm	10	API REG 4 1/2"	3
168 mm	10	API REG 4 1/2"	6
219 mm	12,5	API REG 6 5/8"	0,5
219 mm	12,5	API REG 6 5/8"	1
219 mm	12,5	API REG 6 5/8"	3
219 mm	12,5	API REG 6 5/8"	6
273 mm	12,5 / 16	API REG 8 5/8"	0,5
273 mm	12,5 / 16	API REG 8 5/8"	1
273 mm	12,5 / 16	API REG 8 5/8"	3
273 mm	12,5 / 16	API REG 8 5/8"	6

HEAVY DUTY OPTIONS AND CUSTOMIZATION AVAILABLE ON REQUEST

DTH ADAPTERS

- › Full custom adapters
- › Available in all API REG, HEX & BECO JOINTS
- › Fast, effective customization process
- › Sturdy materials, designed to endure tough conditions

AVAILABLE ADAPTER TYPES:

API REG 2-3/8" BOX + PIN	API REG 6-5/8" BOX + PIN	HEX140 (HEX80) BOX + PIN	HEX210 BOX + PIN
API REG 3-1/2" BOX + PIN	API REG 8-5/8" BOX + PIN	HEX190 BOX + PIN	HEX250 BOX+PIN
API REG 4-1/2" BOX + PIN	BECO10 BOX + PIN		

EXAMPLES, API REG ADAPTERS

JOINT 1	JOINT 2
API REG 2-3/8" BOX	API REG 3-1/2" PIN
API REG 3-1/2" BOX	API REG 4-1/2" PIN
API REG 4-1/2" BOX	API REG 6-5/8" PIN
API REG 6-5/8" BOX	API REG 8-5/8" PIN
API REG 3-1/2" BOX	API REG 2-3/8" PIN
API REG 4-1/2" BOX	API REG 3-1/2" PIN
API REG 6-5/8" BOX	API REG 4-1/2" PIN
API REG 8-5/8" BOX	API REG 6-5/8" PIN

EXAMPLES, HEX ADAPTERS

JOINT 1	JOINT 2
HEX210 BOX	HEX190 PIN
HEX250 BOX	HEX210 PIN

EXAMPLES, CUSTOM ADAPTERS

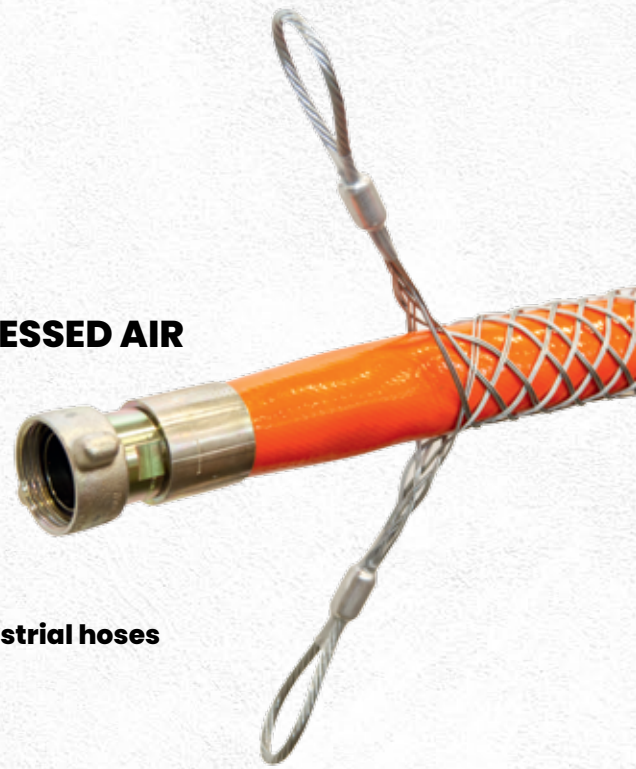
JOINT 1	JOINT 2
BECO10 BOX	HEX250 PIN
BECO10 BOX	API REG 8-5/8" PIN
API REG 8-5/8" BOX	BECO 10 PIN
HEX210 BOX	API REG 8-5/8" PIN
API REG 6-5/8" BOX	HEX140 PIN

DTH ACCESSORIES

BARMATE – DTH AIR HOSE

STURDY DOUBLE JACKET HOSE FOR COMPRESSED AIR

- > Outstanding resistance to abrasion
- > Better heat resistance than NBR/PVC hoses
- > Extremely tough, hard-wearing and durable
- > Resistant to oil, gasoline and chemicals
- > Resistant to aging and ozone
- > More lightweight and flexible than mandrel-wound industrial hoses
- > Stays flexible at cold temperatures



CONNECTION

65x1/6 Standard Joints

LENGTHS

20 M & 40 M
(Other lengths available on request
(possibly with cutting fee))

TEMPERATURE RANGE

-40 °C TO +80 °C

STANDARD COLOR

Signal Orange

AREAS OF APPLICATION

- > Well drilling & tunnel construction
- > Industry and mining
- > Liquids and compressed air,
high pressure
- > For especially heavy-duty work

IMPROVED SITE SAFETY

- Included:
- > safety mesh
 - > fastening wires

INNER HOSE

Excellent adhesion between
TPU and jacket

Extruded inner hose of
high-grade, heat-resistant TPU

OUTER HOSE

Extremely abrasion-resistant
polyurethane in signal color

Jacket protected against
mechanical damage, dirt- and
moisture-repellent

PRESSURES

Working pressure: Specifications apply only to the hose.
The potential working pressure may be lower than specified
above for hose lines with couplings due to the nominal pres-
sure of the couplings or the type of assembly.

Maximum working pressure: Approval can only be given
by the manufacturer upon clarification of the exact area of
application.



TECHNICAL DATA

INSIDE DIAMETER (MM)	Weight (g/m)	Wall thickness (mm)	Working pressure (bar)	Max. working pressure (bar)	Burst pressure (bar)	Tensile strength (kg)
51	800	4.5	35	40	180	13,200

Specifications apply only to the hose. The potential working pressure may be lower than specified above for hose lines with couplings due to the nominal pressure of the couplings or the type of assembly.

DTH ACCESSORIES

NATUREMATE DTH HAMMER OILS

ENHANCE PERFORMANCE WITH ECO-FRIENDLY DTH HAMMER OIL

ELEVATE YOUR DRILLING EFFICIENCY WITH ENVIRONMENTALLY SAFE, PREMIUM DTH HAMMER OIL. SPECIALLY FORMULATED FOR SUPERIOR PERFORMANCE AND REDUCED ENVIRONMENTAL IMPACT, OUR OIL IS THE PERFECT CHOICE FOR ECO-CONSCIOUS DRILLING PROFESSIONALS.

KEY BENEFITS

SUPERIOR LUBRICATION

Our oil provides exceptional lubrication, minimizing friction and wear to extend the life of your DTH hammer and enhanced drilling efficiency.

ECO-FRIENDLY FORMULA

Made with biodegradable ingredients, our oil is designed to minimize environmental impact while ensuring high performance. It's the responsible choice for environmentally conscious operations.

OUTSTANDING THERMAL STABILITY

Maintain optimal performance under extreme temperatures with our oil's ability to retain viscosity and efficiency, even in harsh conditions.

ADVANCED CORROSION PROTECTION

Safeguard your equipment with our oil's powerful anti-corrosion properties, designed to prevent rust and deterioration in challenging environments.

REDUCED MAINTENANCE AND COSTS

Lower your operational costs with oil that minimizes wear and tear, reducing the frequency of maintenance and associated expenses.

Choose our eco-friendly DTH hammer oil to optimize your drilling performance while protecting the environment. Contact us today to discover how our innovative solutions can benefit your operations and contribute to sustainable practices.

- **VEGETABLE BASED LUBRICANT, ENVIRONMENTALLY SAFE**
- **SUPERB PERFORMANCE AND HAMMER PISTON LIFETIME**
- **RECOMMENDED HAMMER OIL BY MAXA**
- **SAFETY DATA SHEET AVAILABLE ON REQUEST**



VISCOSITY @ 100C: 8.42
CST. @ 40C: 46.0 CST.
SPECIFIC GRAVITY @ 25C: 0.907
VI: 214
POUR POINT: -36 DEGREES CELCIUS - WINTER GRADE
FLASH POINT: 292C
LC50: 10,000 PPM+
HEAVY METALS: NONE

STOCK SIZES:
18 LITER PAIL
208 LITER DRUM

RODMATE

VEGETABLE OIL BASED THREAD COMPOUND

- › Protects threaded tool joints, for example API REG and BECO
- › Makes opening thread joints easier (for example Drill Rods, Shock Absorbers)
- › Protects O-rings and rod gaskets
- › Suitable for Drill Rods, Shock Absorbers, Rotary Heads, threaded bolts, etc.
- › Ideal for water wells, geothermal projects, harbor projects, piles drilling, anchor drilling, blasthole drilling

PROPERTIES

- › HIGHLY RESISTANT TO WASH-OFF
- › ENVIRONMENTALLY SAFE
- › VEGETABLE OIL BASED
- › CONTAINS NO HAZARDOUS MATERIALS
- ›› IMPROVED JOB SAFETY

STOCK SIZES: 18 LITER PAIL



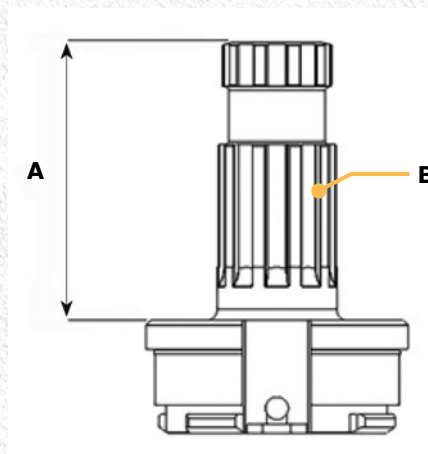
BIT SHANKS TABLE

THE DIMENSIONS OF THE SHANK ARE IMPORTANT AND SHOULD BE TAKEN INTO ACCOUNT WHEN CHOOSING THE CORRECT PILOT BIT.

THE BIT SHANK DIMENSIONS ARE DEFINED BY:

A - Length of the working part of the shank

B - Number of splines



SPECIFICATIONS

TYPE OF SHANK, NAME	LENGTH OF THE WORKING PART OF THE SHANK (MM)	NUMBER OF SPLINES, QTY
DHD 340	209	8
QL 40	279,4	10
DHD 350	260	8
QL 50	239,6	12
DHD 360	308	8
QL 80	332	16
DHD 380	350	10
SD 10	356	8
SD 12	468	8
N125	490	10
QL 120	491	12
DHD 112	491	8
QL 200	492,2	9
N180	529	12
N240	563,5	12
MK360	580	16
C330	687,4	12
MK360-S	728	16

THE CONTENTS OF THE SHANK TABLE ARE ORDERED BY THE LENGTH OF THE WORKING PART OF THE SHANK, BY THE LENGTH OF THE GUIDE AND THE NUMBER OF SPLINES.

DTH HAMMER BREAKOUT BENCH

STRONGEST BREAKOUT BENCH IN THE WORLD

Opening large DTH-Hammers requires special equipment. During drilling, they tend to stuck in very tightly. TRI-MACH has designed and developed the strongest and most advanced Breakout Bench, with patented grip mechanism and Roll-Off Truck transport options. This means the AP-900 Breakout Bench is easily transferred to drilling sites.



- > Hammer Sizes = 8" - 36"
- > Patented hammer grip mechanism
- > Radio Controlled
- > Transitable with Roll-Off Truck



TECHNICAL DATA

HAMMER SIZES = 8" - 36"

**BREAKOUT MOMENT = 900 KNM
/ 90 TON (MAX)**

TOTAL WEIGHT = 6500 KG

DIMENSIONS (TRANSPORT POSITION)

Height = 2200mm
Width = 2500mm
Length = 5800mm

ELECTRICAL SUPPLY

Operating Voltage: 3 × 400 V AC / N / PE / 50 Hz
Mains form: TN-S
Feed line fuse: 3 × 35 A
Conductor cross-section: min. 5G6 mm²
Protection level: IP66

DIMENSIONS (MAXIMUM BREAKOUT POSITION)

Height = 2500mm
Width = 4000mm
Length = 5800mm





PROJECT SUPPORT

WHAT MAKES US DIFFERENT FROM OTHER EQUIPMENT MANUFACTURERS?

The founders of our company have spent most of their careers drilling large diameter pile foundations, so we know firsthand what drilling is, what equipment should be used and how important it is to have a reliable partner in the implementation of projects.

All our equipment is designed and manufactured taking into account all aspects that are important and critical in drilling, first of all, reliability, ease of installation and maintenance, and much more. All this helps to minimize the downtime of the drilling team, thereby increasing the speed of foundation installation, which ultimately minimizes the cost of installing one of its own.

CONSULTATION OFTEN INCLUDES FOR EXAMPLE

- > Selecting and modifying a DTH piling rig
- > Optimizing DTH Drilling Tools for site conditions
- > Improving production rates on site
- > Solving difficult geotechnical matters

Our trained experts accompany each project, starting from consulting on the selection of equipment, ending with the solution of problems encountered during the implementation of the project. All our customers, having once contacted us, appreciate our attitude and professionalism, and after trying our equipment, they are convinced that TRI-MACH products are one of the best on the market.

WE ARE DEDICATED TO OUR WORK AND SUPPORT OUR CUSTOMERS AT ALL STAGES OF THE PROJECT.

SELECTED REFERENCES

**THE DRAMMEN-PROJECT,
IMPLEMENTED IN NORWAY.
762/20MM CASINGS UP TO 70M / PILES.
INTEGRATED HEAVY DUTY SYSTEM
(CUSTOM)**



KLAIPEDA, LITHUANIA

- > DTH Drilled Pile Wall, 813/16 for Klaipeda Harbor breakwater expansion
- > Pile lengths up to 30m
- > All piles drilled from a jack-up barge at sea
- > Tri-Mach was responsible for all DTH Drilling tools, such as DTH Ring Bits, DTH Pilot Bits, DTH Hammers, DTH Drill Rods, Shock Absorbers and Adapters
- > Tri-Mach helped the Client in setting up the rig, improving production rates and dealing with difficult geotechnical conditions on site.



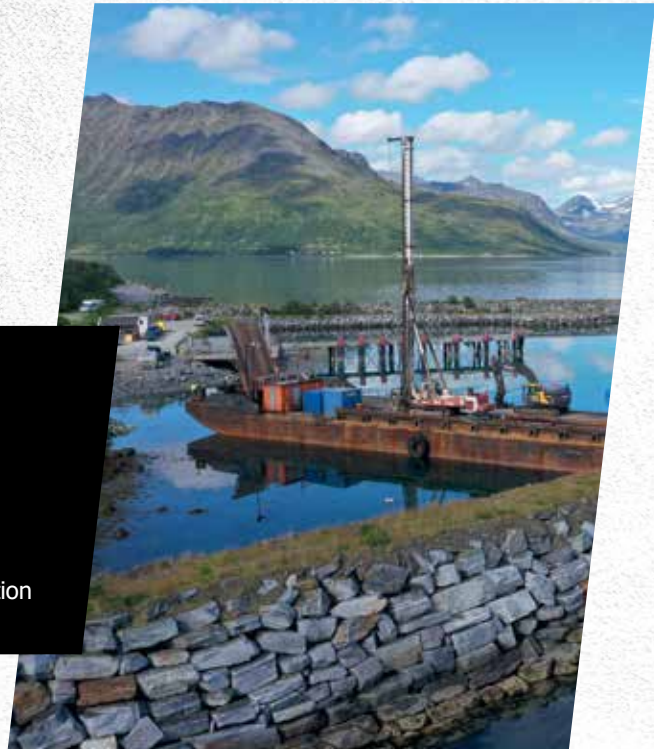
TRIPLA MALL, FINLAND

- > Large piles for Mall support columns
- > 175pcs 1220mm piles, up to 20m pile lengths
- > Extremely tight tolerance requirements
- > First large-scale 1220mm drilling project in the Nordics



NORRBOTTEN, SWEDEN

- > 400pcs 406mm drilled piles
- > 500pcs 610mm drilled piles
- > 160pcs 813mm drilled piles
- > Pile lengths up to 40m
- > Bedrock drilling up to 12m/pile



STORSTEIN NORWAY

- > New quay for Storstein Ferry
- > Pile diameters 610mm & 813mm
- > Bedrock drilling up to 13 meters / pile
- > All piles drilled from a barge, at sea
- > Inclined piles, Integrated Ring Bit solution

MORE THAN 30 YEARS OF EXPERIENCE IN MANUFACTURING THE TOUGHEST DTH DRILLING TOOLS

- › **DTH CASING RING BITS & PILOT BITS**
- › **DTH BUTTON BITS AND HOLE OPENERS**
 - › **DTH HAMMERS**
 - › **DTH SHOCK ABSORBERS**
 - › **DTH DRILL PIPES (API + BECO + HEX)**
 - › **HORIZONTAL CASING RING BITS**
 - › **HORIZONTAL AUGER RODS**
 - › **DTH HAMMER OILS**
 - › **DTH ROTARY HEADS**
- › **DTH HAMMER BREAKOUT BENCHES**
- › **DTH CONSULTATION & EXPERTISE**

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