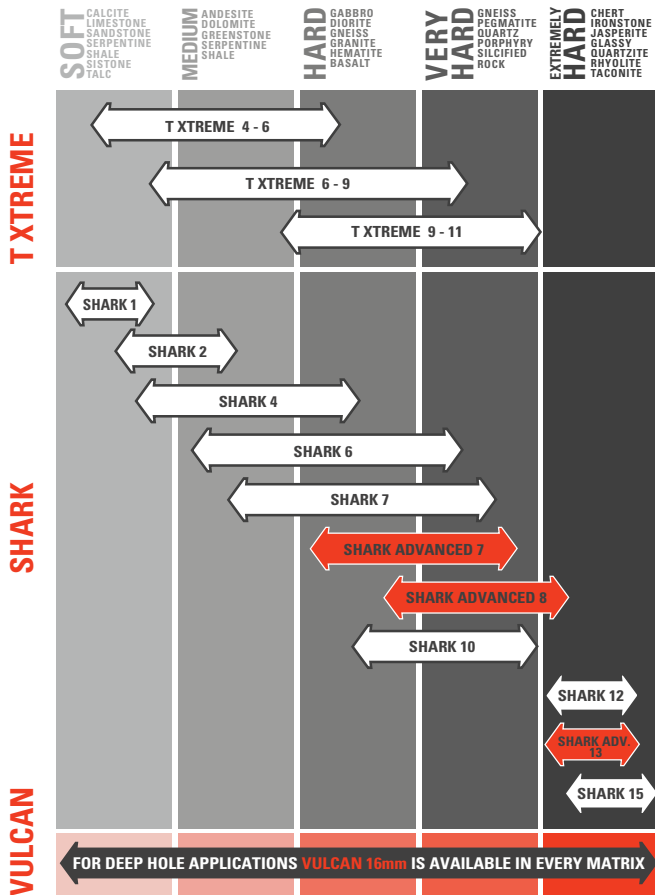




# CORE BIT

## Technical Selection Sheet

Choosing the right bit is an important decision – it has a direct impact on productivity. To select the right bit, use bit selection criteria to estimate which diamond tool is perfectly adapted to the type of job that needs to be done. Since we offer a wide range of diamond tools to complement all your drilling needs, we also encourage you to discuss your situation with one of our sales representatives to get the tools you really need.



### DRILLING PARAMETERS\*

BIT	RPI	RPM in relation to penetration (in./min.)	
		6 in./min.	4 in./min. or less (10 cm/min.)
AWL	225	1,400	1,050 - 950
BWL	215	1,300	850 - 950
NWL	210	1,250	750 - 900
HWL	180	1,100	650 - 750
PWL	160	950	600 - 700

\* These recommendations are made as suggestions.

### WATER FLOW

TYPE	Very hard to extremely hard and competent	Hard to very hard and competent	Other
AWL	3 - 4 (14 - 18)	4 - 5 (18 - 23)	6 - 8 (27 - 36)
BWL	5 - 6 (23 - 27)	6 - 8 (23 - 36)	7 - 10 (32 - 45)
NWL	6 - 8 (27 - 36)	8 - 9 (36 - 50)	12 - 14 (54 - 64)
HWL	8 - 9 (36 - 41)	10 - 12 (45 - 54)	14 - 16 (64 - 73)
PWL	10 - 11 (45 - 50)	12 - 13 (55 - 60)	15 - 17 (68 - 77)

Water Flow Imp. Gal./min. (litres/min.)

### FORDIA'S CORE BIT PRODUCT LINE



**SHARK**  
The Shark core bit series offers a matrix composition that is designed to drill through precise types of ground.



**SHARK ADVANCED**  
Shark Advanced core bits drill through precise types of grounds and are designed to work with powerful drills.



**VULCAN**  
Vulcan core bits are designed for deep hole applications with their greater diamond impregnation height.



**T XTREME**  
T Xtreme core bit are versatile because every matrix is designed to drill through a wide range of ground types.

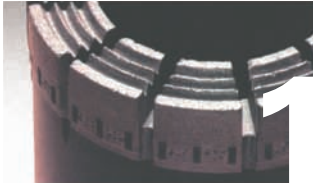


**RHINO**  
Rhino reaming shells use quality diamonds that are cast into a resistant matrix to maintain a full gauge hole and stability.



**GATOR**  
Gator casing shoes are a cost efficient solution for drilling in overburden.

## MATRIX WEAR PROFILE ANALYSIS



**NEW IMPREGNATED BIT**



**IDEAL WEAR**

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



**CONSUMED BIT**

Impregnated bit consumed perfectly and out of the hole.



**DIAMONDS OVERLY 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 the speed of rotation.
- The water flow is too low.
- The use of high series bit (matrix too soft).

**SOLUTIONS :**

- Increase speed of rotation and reduce the drilling pressure.
- Increase the water flow.
- Change the bit for a lower series (harder matrix).



**CORE BIT POLISHED OR GLAZED**

This bit does not cut, the diamonds are polished.

**CAUSED BY :**

- The drilling pressure is too low for the speed of rotation.
- The water flow is too high.
- Using a low series bit for the ground (matrix too hard).

**SOLUTIONS :**

- Sharpen the bit.
- Reduce the rotation speed and increase drilling pressure.
- Reduce water flow.
- Select a bit from a higher series (softer matrix).



**BURNT CORE BIT**

Bit is completely melted and destroyed.

**CAUSED BY :**

- Ran out of water.
- The operator forgot to open the water valve.

**SOLUTIONS :**

- Increase water flow.
- Check if the pump is working well.
- Check the rods for leaks in the joints.
- Confirm whether the inner tube is too long and adjust, if necessary.



**CRACKS IN THE WATER WAYS**

Cracks on the sides of the water ways.

**CAUSED BY :**

- Too much weight on the bit.
- Dropped the rods.
- The inner tube was dropped in a dry hole.
- The bit was crushed by the foot clamp or rod holder.

**SOLUTIONS :**

- Take some weight off the bit (hold-back).
- If it is a "dry-hole", send the tube back with the wireline.



**LOSS OF INSIDE DIAMETER**

Wear of inside diameter and inside ringing.

**CAUSED BY :**

- Drilling pressure too high.
- Very broken ground.
- Core left in the hole.
- Water flow too low.
- Matrix too soft.

**SOLUTIONS :**

- Increase rotation speed.
- Reduce drilling pressure.
- Change for a lower series core bit (harder matrix).
- Increase water flow.
- Check the length of the inner tube.



**LOSS OF OUTSIDE DIAMETER**

Wear of outside diameter and outside ringing.

**CAUSED BY :**

- Vibration.
- Rotation speed too high.
- Water flow too low.
- Cave in, the hole was reamed.

**SOLUTIONS :**

- Increase water flow.
- Reduce rotation speed.
- Check the diameter of reaming shell.
- Add drilling fluids (to reduce vibration).



**INSIDE WEAR PATTERN**

Outside to inside wear of bit.

**CAUSED BY :**

- Drilling pressure too high for the rotation speed.
- Core left in the hole had to be drilled.
- Very broken ground.

**SOLUTIONS :**

- Decrease drilling pressure.
- Increase rotation speed.
- Check the core barrel.
- Add drilling fluids (fractured ground).



**OUTSIDE WEAR PATTERN**

Wear of the bit towards outer diameter.

**CAUSED BY :**

- Water flow too low.
- Loss of water by the rods.
- Hole "reamed".

**SOLUTIONS :**

- Increase the water flow.
- Check for leaks.
- Check the diameter of shell.



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