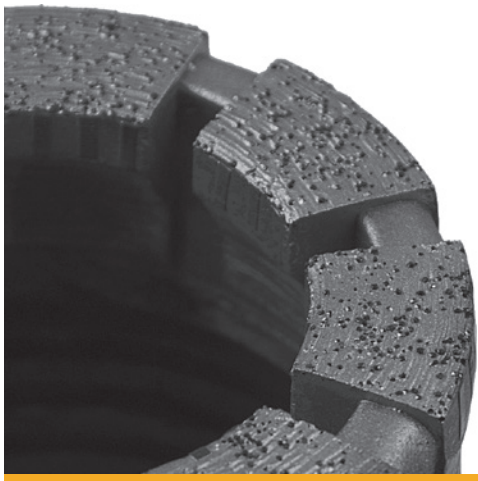


MATRIX TROUBLESHOOTING



IDEAL WEAR

Even wear to the carbides with the diamonds evenly worn.



DIAMONDS OVERLY EXPOSED

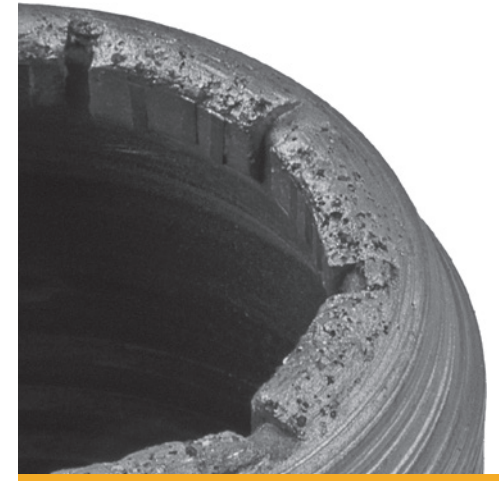
Matrix wears before diamonds have worn out. Diamonds pop out prematurely, reducing bit life.

Caused by:

- Drilling pressure too high for the speed of rotation
- Water flow is too low
- Matrix used is 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)



BURNT

Matrix has completely melted, waterways are closed.

Caused by:

- Water ran out
- Poor water circulation

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



CORE BIT POLISHED OR GLAZED

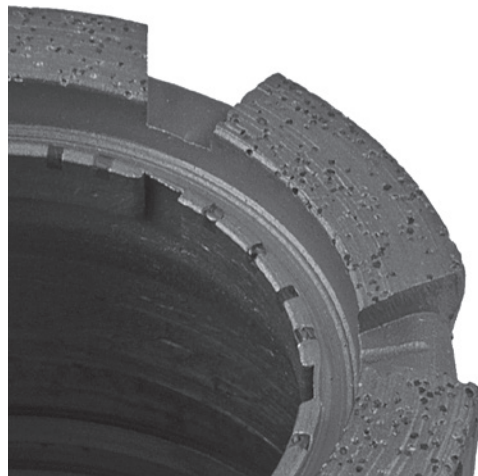
Bit doesn't cut and diamonds appear polished.

Caused by:

- Drilling pressure too low for the speed of rotation
- Water flow too high
- Matrix used is 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)



I.D. GAUGE LOSS

Wear of inside diameter and inside ringing. Concave wear pattern.

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 and adjust the length of inner tube



O.D. GAUGE LOSS

Wear of outside diameter and outside ringing. Convex wear pattern.

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)
- Try new configurations (deep lateral discharge or deep water way)



INSIDE WEAR PATTERN

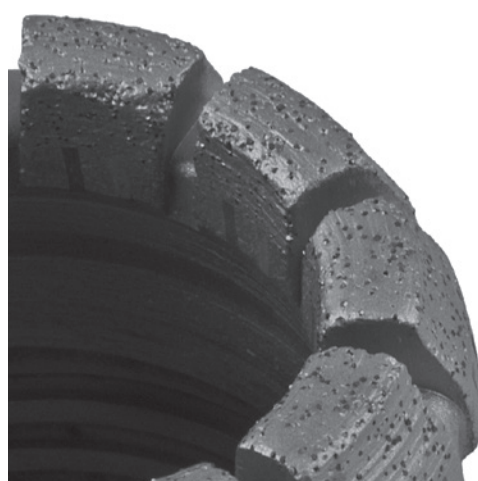
Inside of the bit has worn down before the outside, in a concave pattern.

Caused by:

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

Solutions:

- Decrease drilling pressure
- Increase rotation speed
- Check and adjust the length of inner tube
- Add drilling fluids (fractured ground)
- Don't try to push through a core block



OUTSIDE WEAR PATTERN

Outside of the bit has worn down before the inside, in a convex pattern.

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

