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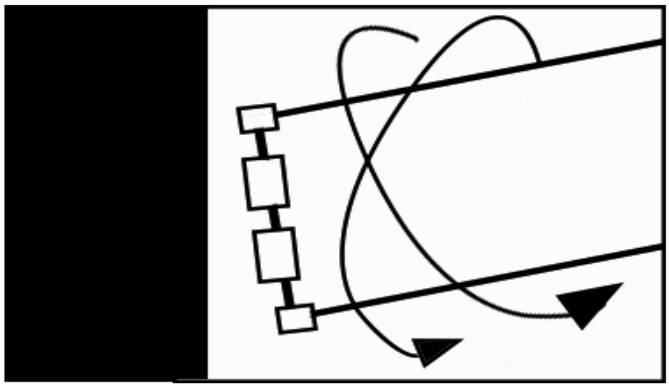
Training Manual

Wet Diamond Drilling



Problem 1

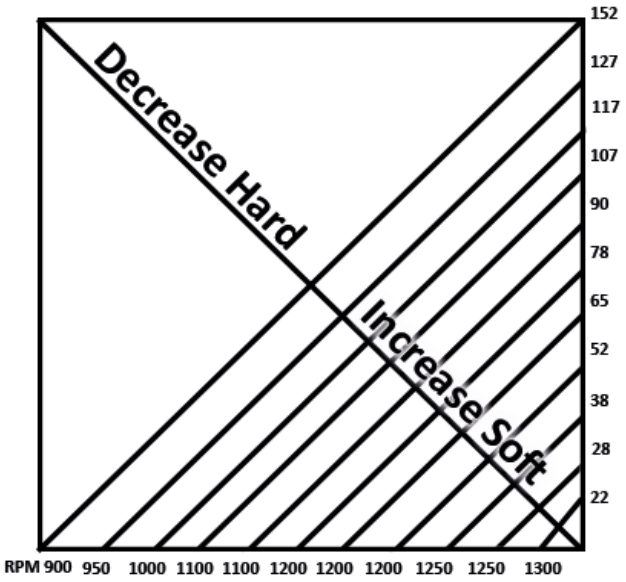
Diamond drill does not cut and when beginning a cut “runs off.”

Cause

- Diamond core is glazed or has not been sufficiently dressed.
- Diamond core is bent or insufficiently balanced.
- Machine spindle is bent or damaged, or bearings need replacing.
- Machine is insufficiently anchored and moves.
- Carriage of machine has worn and needs readjusting or replacing.

Solution

- Dress the diamond core in dressing stone - part number: 350-100-0003.
- Replace or repair core.
- Check play on machine spindle and repair/replace if spindle or bearings are damaged/ worn.
- Check machine and anchor securely.
- Check machine carriage, adjust position and replace where necessary.



Problem 2

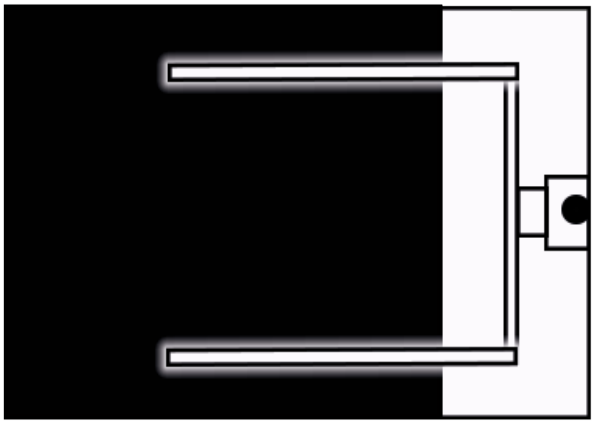
Diamond core drill does not drill or drills too slowly.

Cause

- Rpm of drilling machine is incorrect (too fast).
- Insufficient feed pressure.
- Diamond core is glazed or polished.
- A lot of steel is being drilled (a typical sign of this is when the water that comes out of the bore hole is clean and contains lots of steel shavings).
- Diamond core is too hard for the material being drilled.

Solution

- Check rpm, observe recommended rpm. If drilling machine has a lower speed, use next lower speed.
- Increase feed pressure, but ensure that you do not apply excessive pressure.
- Dress diamond core by drilling into dressing stone, part number: 350-100-0003
- Be patient, give the diamond core time to drill through the steel.
- Use special diamond core with different bond more suited for your material.



Problem 3

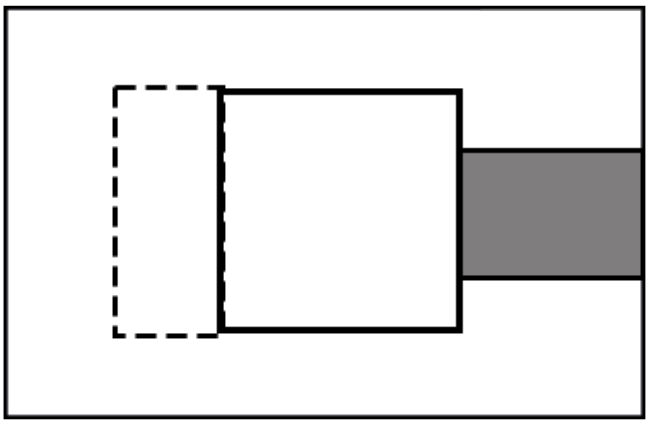
Diamond core jams/stalls in the hole.

Cause

- Drilling machine is loose, i.e. insufficiently anchored.
- Loose material (stone or reinforcing) is trapping the diamond core.
- Inadequate water supply.
- Diamond core is damaged or bent.
- Motor clutch set is too low or worn out.

Solution

- Check drilling machine, realign machine and anchor securely.
- Remove the diamond core and remove loose material.
- Check water supply.
- Check diamond core for dents and straightness.
- Have clutch adjusted and/or replaced.



Problem 4

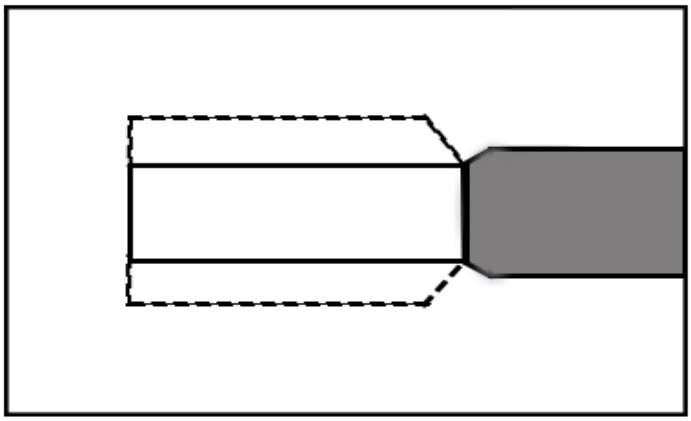
Diamond core is wearing too quickly.

Cause

- Incorrect drilling speed (insufficient speed).
- Excessive feed pressure.
- Insufficient water.
- Drilling machine is unstable.
- Material is very abrasive and/on heavily reinforced.

Solution

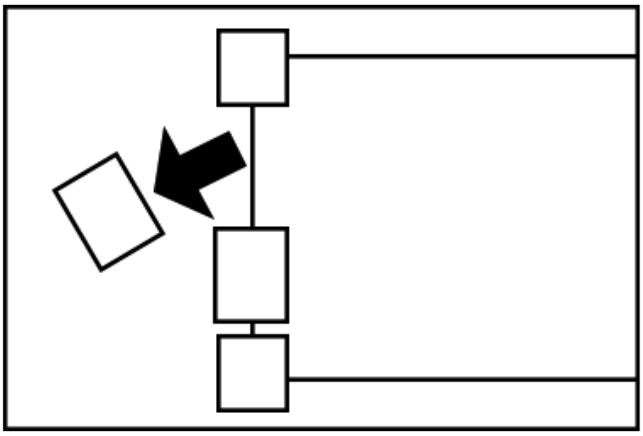
- Check rpm of machine. Observe recommended rpm. If drilling machine has a faster speed, try next faster speed.
- Reduce the feed pressure.
- Increase volume of water (water flow).
- Check drilling machine, ensure it is secured properly.
- Use special core with different bond more suited to your material.



Problem 5

Segments of the diamond core are losing side clearance.

Cause	Solution
• Drilling machine is insecurely anchored.	• Check machine and ensure it is secured firmly.
• Insufficient water.	• Check water supply and ensure that sufficient water is getting to the diamond tips.
• Bearing or spindle of the drilling motor are worn and diamond core drill is running eccentric.	• Check play on machine, and spindle and repair/replace if spindle or bearings are worn.
• Carriage of machine has worn and needs readjusting or replacing.	• Check machine carriage, adjust position and replace where necessary.



Problem 6

Segment loss.

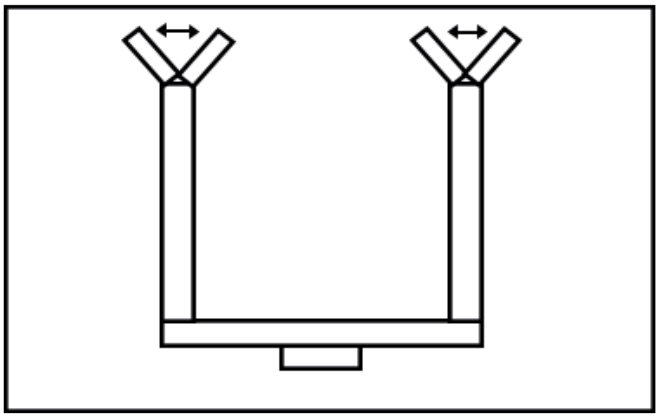
Cause

- Insufficient cooling water.
- Loose material (stone or reinforcing) is trapping the diamond core or the segments and is tearing them off.
- Vibration and hammering because the machine is inadequately anchored
  .
- Excessive pressure.

Solution

- Check the water supply and ensure that sufficient water is getting to the diamond tips.
- Remove the core. Remove the loose material from the bore hole.
- Ensure that the drilling machine is secured firmly. If the machine is faulty, have it serviced.
- Reduce the feed pressure

In the unlikely event of segment loss, ensure that the lost segment is removed from the hole before you continue drilling.



Problem 7

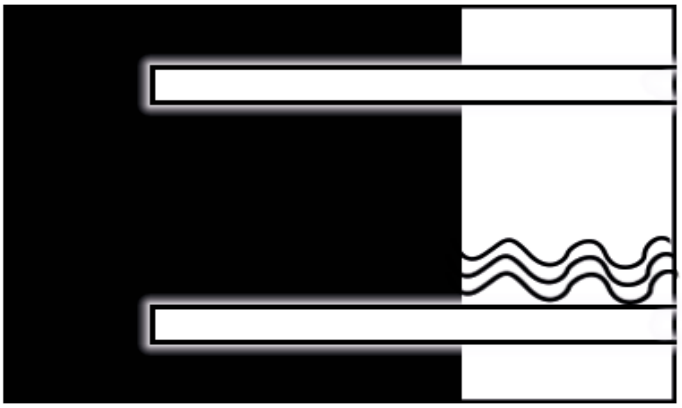
Segments are folding in or out.

Cause

- Excessive feed pressure.
- Diamond core is fed at a speed that exceeds its maximum ability to drill.

Solution

- Reduce the feed pressure in line with how fast the diamond drill can penetrate.



Problem 8

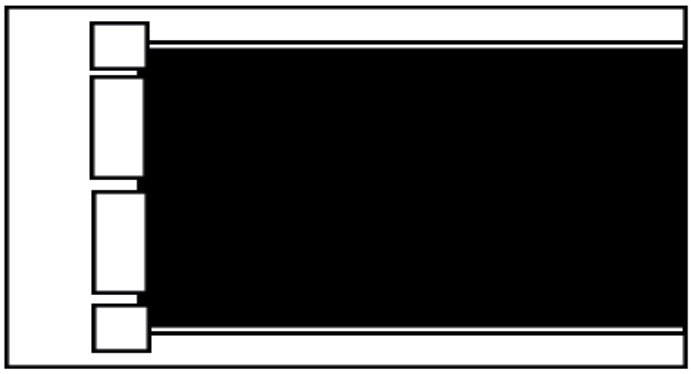
No water flowing out of the bore hole.

Cause

- Water swivel, drill spindle or water supply are blocked.
- Material within the diamond core is blocking the water (insulation material/polystyrene, etc.)

Solution

- Check water supply, remove the diamond drill to check where the blockage is. Free the blockage.
- Remove the core from the diamond drill.



Problem 9

Core is lodged within the diamond drill.

Cause

- The core has broken within the diamond drill.
- The material being drilled has expanded through heat (insufficient water).
- The diamond core has lost its side clearance.

Solution

- Remove the diamond core from the machine.
- Gently work the core free. Do not use force.
- Have the diamond core retipped

Causes and effects of diamond drilling

Cause	Effect
• Insufficient water	• Excessive diamond wear because the diamonds are inadequately cooled and the material being drilled does not get washed away. Ultimately the segments will melt or segment loss will occur.
• Adequate water	• The water is cooling the segments and washes away the material being drilled. The result will be good drilling speed and good core drill life.
• Excessive water	• The segments do not get resharpened. They start polishing. The result will be good diamond drill life but slow drilling speed (penetration).
• Drilling speed (RPM) is too slow	• The diamond segments grind rather than cut. The result is slow penetration and short diamond drill life.
• Correct drilling speed (RPM)	• The Diamond drill penetrates fast and diamond drill life is good.
• Drilling speed (RPM) is too fast	• The diamond segments are polishing and glazing. Penetration is slow and ultimately the diamond core drill will stop penetrating.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