

DTH Hammer General Recommendations

Safety & Handling

When operating any air powered DTH equipment, always be aware of pressurized exhaust air discharge, dust and rock chips.

Never work on hammers or change bits without securing the hammer and ensuring all pressurized chambers has been drained from the drill string.

Never work beneath a suspended load.

Handling:

Familiarise yourself with the weight of the hammer being handled and be aware that the reciprocating piston will move within the cylinder, altering the point of balance.

Refer to Safe handling procedures for all lifting operations.

Beware of the drill bit to hammer closure, never place hands or fingers between the drill bit and drive sub. Avoid whenever possible placing hands beneath the drill bit.

Be aware of sharp edges forming on all parts; always wear gloves when handling hammers, internal parts will be slippery from lubrication if taken from the enclosed cylinder.

Refer to MSDS information for any fluids (Rock drill oil, Grease, Foams & additives) used during operation, maintenance and storage.

Recommended PPE:

Minimum required for handling;

1. Gloves
2. Steel cap footwear
3. Safety glasses
4. Appropriate work wear (Long sleeve shirt and full leg work pants)
5. Approved dust mask and hearing protection as required during operation.

Hammer breakout:

Always refer to specific hammer diagram when dismantling hammers.

Refer to specific hammer breakout tool placement and familiarise yourself with the safe operation of specific breakout equipment.

Beware of flying objects when breaking out any DTH equipment.

Always work in a clear and open area when performing maintenance

Operating parameters

- a) Down feed (weight on bit)
- b) Working air pressure (Rig air capacity)
- c) Rotation speed
- d) Rotation torque

Down feed and rotation speed need to be adjusted in accordance with formation being drilled.

Weight on bit needs to be applied to bring the operating air pressure up to compressor capacity.

Compressor capacity (Volume & Pressure) is needed to calculate specific hammer operating pressure (refer to specific hammer air consumption chart).

Rotation speed needs adjustment after setting down feed to give optimum button coverage, to achieve the desired penetration of **two rotations per 25mm penetration.**

Lubrication

Recommended lubrication of a good quality Rockdrill Oil, for all DTH Hammers, at the minimum rate of **200ml per 100cfm per hour of air supply**, is recommended.

Example **1000 cfm** air supply **requires 2 liters per hour, minimum.**

Additional benefit can be achieved by the use of a soluble “Molydisulphide” additive, at the rate of 2.5% per liter.

320 Grade viscosity Rockdrill Oil is recommended for most operating conditions, whether mineral based or biodegradable oil.

Increased rates of injected lubrication is required when fluid injection (water & or foam) is used, regular use of foam injection can require doubling of injected lubricant.

A metered or constant in line injection system is the preferred method of lubrication.

Avoid grease ingress into the hammer

Avoid dust, rock chips or other particle contamination of the lubrication system.

Regularly check in-line air supply hoses for rubber liner de-lamination.

Storage

When storing hammers always ensure they have been cleaned, dried and lubricated with all threaded joints greased and re-assembled securely.

Seal both ends of the cylinder of complete hammer to avoid oil leakage and dust/dirt contamination.

Wear limits

Each hammer will have a recommended wear limit for specific components. Check individual parts for wear and damage from operations.

External wear:

Check **Cylinder** wear at both top sub and drive sub ends. Take measurement at between 80 – 150 mm from the cylinder shoulder each end.

Drive sub, check the OD wear limit similar to the cylinder. Monitor spline wear and damage. Retire drive sub if 50% of spline is worn and or if showing any damage such as severe galling, chunking or deformation. The thrust shoulder and mating cylinder shoulder need regular checking along with the male thread section, monitor for deformation or damage when changing bits.

Top Sub wear on OD especially around spanner flats is common. Monitor cylinder mating shoulder along with cylinder wear. Note if back head dig out buttons are damaged. Ensure top sub pin connection is flush with mating sub or drill pipe.

Internal wear:

Internal components should only need inspection if the hammer stops running or has significant drop in performance. Hammers are often broken out for cleaning if they become blocked or suffer serious damage. Otherwise they should run for a reasonable working life without the need for regular internal inspection.

If a hammer is stood down for storage it can be broken apart and inspected. Specific maintenance guide lines apply for internal inspection of individual hammer