

OPERATING DTH HAMMERS - ROTATION SPEEDS

Where drill bit life and cost is a major consideration on a drill site, rotation speeds should be carefully monitored.

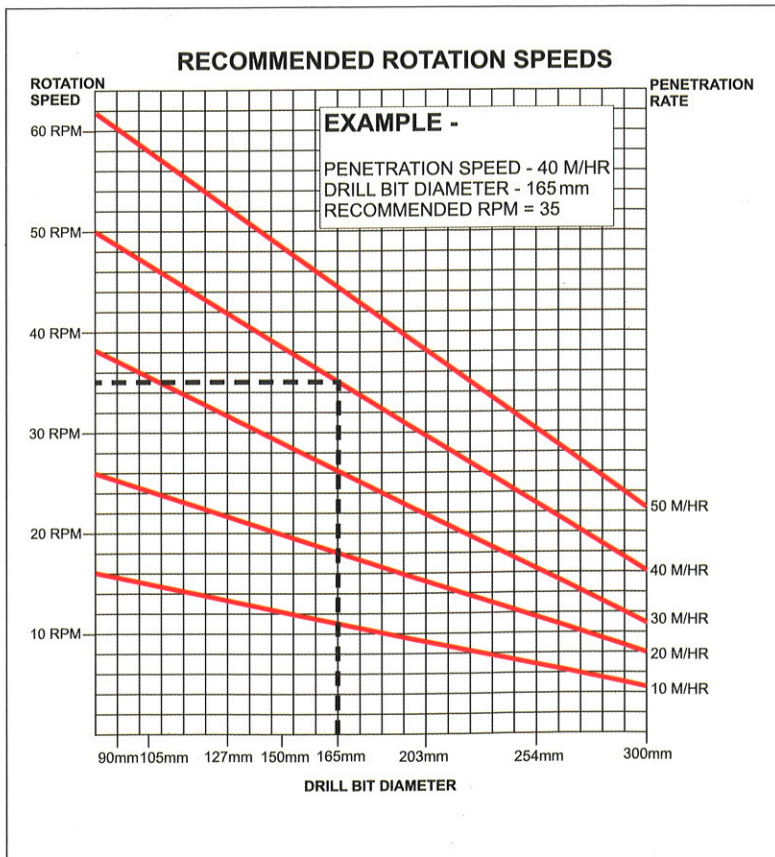
DTH drill bits are rotary - PERCUSSIVE tools with the emphasis on PERCUSSIVE. Their function is to fracture the material being drilled which should then be immediately carried away by the exhaust air. Button bits have no cutting or tearing action as such and the effect of rapid rotation can be detrimental to the life of the bit, especially in abrasive rock which wears away fast moving peripheral inserts or in solid dense material which causes the peripheral inserts to overheat and spall due to friction.

If the string is rotated too slowly, the buttons impact previously chipped areas of the hole with a resultant drop in penetration speed.

As a general guide - the harder the rock or the larger the bit diameter - the slower the rotation speed required.

It may be necessary to increase the rotation speed where the rock is badly fissured in order to prevent stalling.

A bit stalling in the bore hole could be the result of an overly worn bit. Increasing the rotation speed in these circumstances will only accelerate the problem.



THRUST (PULLDOWN) / HOLDBACK / TORQUE

Thrust should be kept as low as possible at all times to avoid excessive vibration in the drill string. Hold back should be increased more and more as additional rods are added and as drilling progresses. DTH drilling is primarily percussive drilling using the energy imparted by the hammer piston to the rock through the bit. Any attempts to apply too much weight could damage the bit, hammer and drill string and impair the drilling rate.

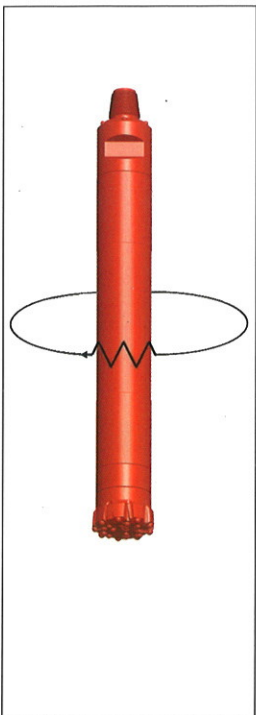
Although the base of the hammer should maintain contact with the drill bit, there should not be excess thrust or vibration due to the reaction between the hammer and drill bit. Insufficient thrust will cause the hammer to bounce resulting in a low blow energy to the rock causing vibration and also potential damage.



Recommended Thrust Capacities

Hammer Size	Min. Thrust	Max. Thrust
3" 76 mm	150 KG (330 Lbs)	300 KG (660 Lbs)
4" 101 mm	250 KG (550 Lbs)	500 KG (1100 Lbs)
5" 127 mm	400 KG (880 Lbs)	900 KG (1980 Lbs)
6" 152 mm	500 KG (1100 Lbs)	1500 KG (3300 Lbs)
8" 203 mm	800 KG (1760 Lbs)	2000 KG (4400 Lbs)
12" 304 mm	1600 KG (3520 Lbs)	3500 KG (7700 Lbs)

When the total weight of the drill string including the weight of the rotary head exceeds the optimum thrust level, the drill string should be put in tension by gradually applying holdback as more tubes are added.

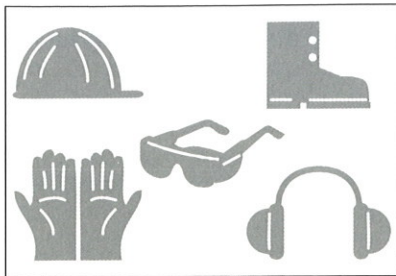


Recommended Torque Ratings

Down the Hole drill bits unlike rotary tricones require very little rotation torque.

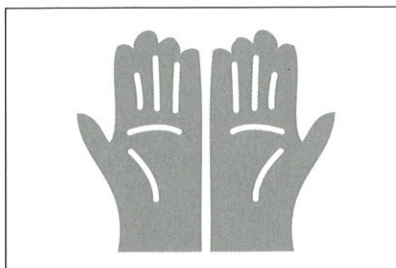
Drill Bit Dia.	Torque (Recommended)
105 mm (4.1/8")	50 kgm (360 ft/lbs)
127 mm (5")	120 kgm (865 ft/lbs)
165 mm (6.1/2")	250 kgm (1800 ft/lbs)
200 mm (7.7/8")	300 kgm (2170 ft/lbs)
300 mm (11.7/8")	350 kgm (2530 ft/lbs)
445 mm (17.1/2")	425 kgm (3075 ft/lbs)

COMMISSIONING DTH HAMMERS AND DRILL BITS



Safety

Always wear the correct safety equipment.
(Please check with local safety regulations)



Manual Handling

Components might be heavy. Please carry out a manual handling assessment prior to use.



Identification Numbers

Keep a note of equipment serial numbers for future reference. Retain the test certificate and spare parts list supplied with the hammer.



Sub Adaptor

A sub adaptor will be required if the hammer top thread differs to the drill tube thread.



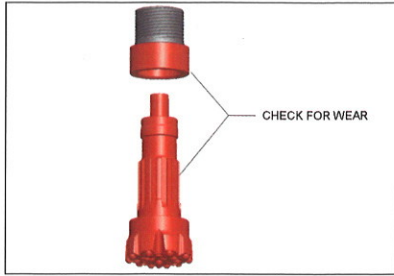
Non Return Valve

You may remove the non-return valve in dry drilling conditions to give a slight increase in performance.



Bit Retaining Rings

Never mix pairs of retaining rings which generally are manufactured as matched pairs. Always re-fit them in the same orientation as when dismantled from the hammer.



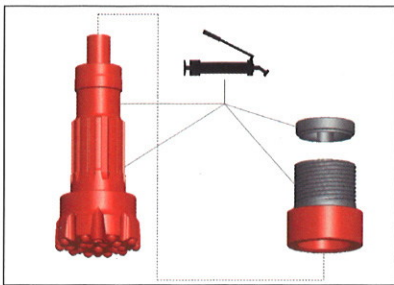
New Hammer or Chuck with used Drill Bit

Check the drill bit splines for wear. If splines are worn damage to the new chuck could occur.



Hammers Equipped with Spline Drive Pins

Always ensure that a full set of serviceable drive pins are fitted to these hammers before operating otherwise damage to splines will occur. In these circumstances, warranty from the manufacturer will not apply.



Grease Components

Grease all threads and splines when assembling drill bit into the hammer.



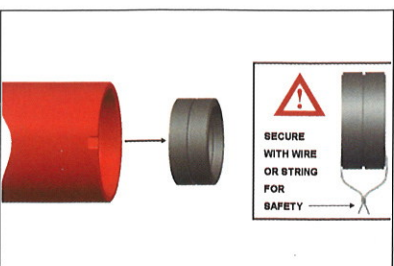
Check Drill Bit Diameter to Hole Diameter

Never try to use a drill bit which is larger in diameter than a partially drilled hole.



Commissioning

Ensure hammer lubricator is working. Pour 1/2 pint (0.30 litres) of air line oil into the hammer. When attached to drill rig, blow air through to ensure all internal parts are lubricated. Operate at low pressure initially. Progressively increasing, during the first hour, in order to run in the hammer.



Compression Spring

If applicable remove compression spring from cylinder. Ensure that eye protection is worn when removing the compression spring.

Note: Remove with great care as the components may spring apart without warning if dropped. If removed intact secure with wire or string before separating.