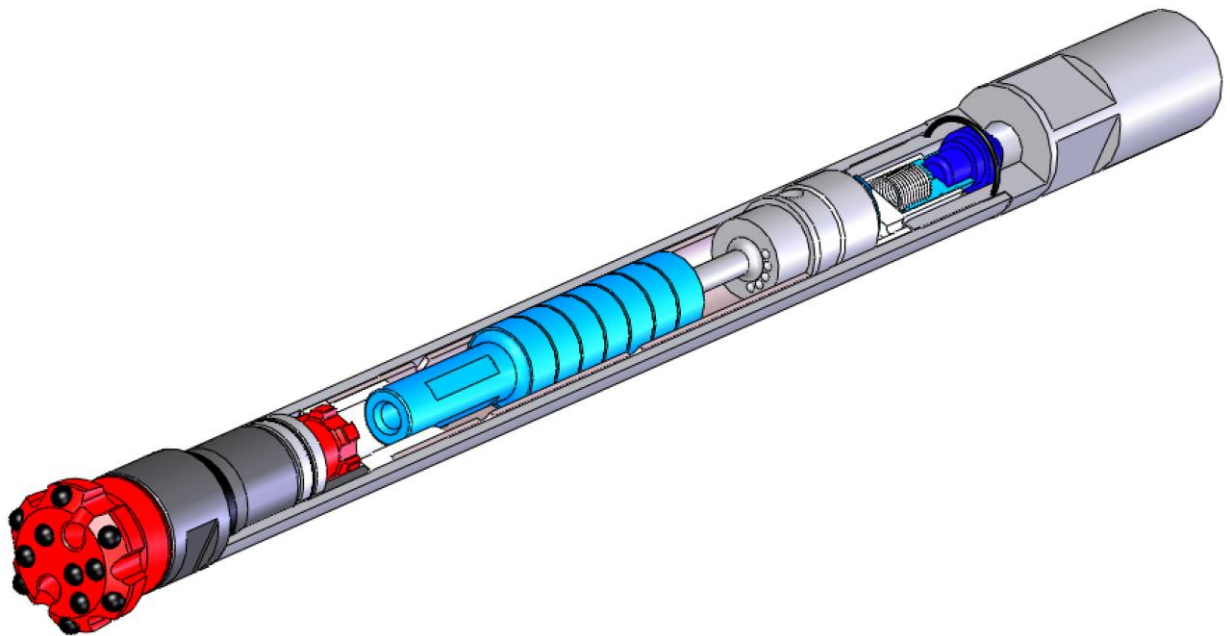




ROK LT

ROK 20LT & 30LT SERIES DTH HAMMER OPERATION & SERVICE GUIDE



**R O C K M O R E
I N T E R N A T I O N A L**

Rock Drilling Tools

Construction • Quarrying • Environmental • Exploration • Geothermal

ROK 20LT & 30LT SERIES DTH HAMMER OPERATION & SERVICE GUIDE

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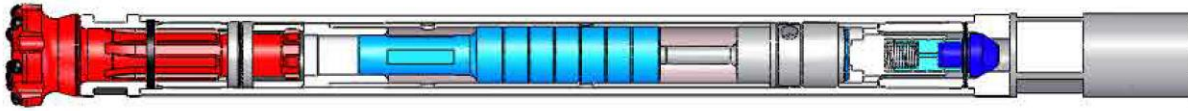
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1. INTRODUCTION:

ROK 20LT & 30LT Series High-Performance Hammers

The ROK 20LT & 30LT series hammers provide high performance at low pressure, a robust and reliable design, Valve controlled Piston, no Blow Tube, and a Check Valve to guard against back flow of water and debris.

The applications for the ROK 20LT & 30LT series hammers include construction, quarry, environmental, exploration, and geothermal.

2. OPERATION:

2.1 – Initial Hammer Inspection

Upon delivery, inspect the contents in the crate to make sure you have ordered the correct ROK LT Series DTH hammer.

2.2 – Operating Parameters

The ROK LT series hammers are designed for optimal performance at low pressure. The recommended maximum operating air pressure level is 145 PSI (10.0 Bar). Do not operate the ROK LT Series Hammers above this level. Air pressure and air consumption levels are listed below.

ROK 20LT	
Air Pressure	Air Consumption
6.0 Bar [87 PSI]	2.0 m3/min [73 SCFM]
10.0 Bar [145 PSI]	3.8 m3/min [138 SCFM]

ROK 30LT	
Air Pressure	Air Consumption
6.0 Bar [87 PSI]	3.75 m3/min [132 SCFM]
10.0 Bar [145 PSI]	5.5 m3/min [193 SCFM]

2.3 – Initiating the ROK LT Hammer

We recommend using DTH bits in good condition. Avoid using DTH bits that are overrun, as this will alter your drilling penetration rates and can cause premature wear on various components of the hammer.

Inspect threads of the drill pipe and Top Sub to ensure proper fit between the two components. Apply thread grease to the threads prior to fitting the hammer onto the drill pipe in order to avoid any galling or corrosion in this area. While fitting the hammer onto the drill pipe, it is important to avoid debris, dirt, or dust. This type of contamination can weaken the thread connection and thus alter drilling performance.

It is important to apply thread grease to the DTH bit shank and the Driver Sub to allow for easier disassembly of the hammer. Thread grease should be reapplied at every bit change.

Our hammers are stocked and shipped with an adequate supply of rock drill oil. Prior to starting the hammer, it is crucial to add additional rock drill oil through the Top Sub. When adding oil, the hammer



2.3 – Initiating the ROK LT Hammer (continued)

should be held upright so that the oil can lubricate all internal components. Please reference section 3.1 below for minimum amounts of rock drill oil required for all ROK LT Series DTH Hammers.

The percussive mechanism begins to operate as the air supply is turned on and when the drill bit is pushed firmly into the hammer. Excessive pressure is not needed to initiate the hammer. Rotate the hammer clockwise at approximately 30-rpm and the hammer will begin. The DTH bit will now push into the Driver Sub and percussive action begins. When the hammer is lifted from the rock face, the DTH bit extends from the Driver Sub and percussive action ceases. Extra air will pass through the hammer, which can be used to flush the hole clean. By adjusting airflow, air pressure, feed force and rotation optimal penetration rate and productivity can be achieved.

Rotation speed should be selected according to drilling conditions and drill rig capabilities. Please be aware that excessive rotation may result in premature wear on the drill bit and not better penetration rates.

3. HAMMER MAINTENANCE:

3.1 – Lubrication

Proper lubrication is necessary for effective and efficient drilling operations. Inadequate amounts of lubrication may damage the hammer resulting in premature hammer failure. With insufficient amounts of lubrication the temperatures of the Piston surface can exceed 1400° F (752° C). These excessive temperatures generate heat checks (fine cracks) on the surface finish that may propagate through impact and initiate Piston failure. Improper oil selection may result in decarburization, which greatly reduces the tensile strength of the material allowing fractures to initiate.

The ***minimum*** amount of rock drill oil required for the operation of all ROK Series and ROK T Series DTH hammers is 0.2 l/hr per 3.0 m³/min (1/3 pint/hr per 100 cfm).

Pneumatic rock drill oils are the only acceptable lubricants for DTH hammers. In ambient temperatures of 80° Fahrenheit (27° Celsius) or higher, use SAE 50 rock drill oil.

Several acceptable rock drill oils are listed below:

	Medium SAE 30	Heavy SAE 50
Exxon	Aroc 150	Aroc 302
Shell	Torcula 150	Torcula 320
Texaco	Rock Drill Lube 100	Rock Drill Lube 320
Chevron	Vistac 150	Vistac 320
Rockmore	Hammer Guard	

3.2 – Contamination

Contamination is another common cause of DTH hammer and bit failures. Be sure to keep all connections covered and clean at all times. It is a good idea when connecting a hammer to a drill string to cover the connection to the hammer and blow high-pressure air and water through the drill string for several seconds to remove any loose scale, rust or other foreign materials. When installing a bit in the hammer, take care to remove any cuttings or foreign material from the bit shank.



3.3 – Corrosion

Corrosion is another common cause of DTH hammer and bit failures. Corrosion is the deterioration of a material due to a reaction with its environment. The best preventative action against corrosion is to keep the DTH hammer well lubricated with rock drill oil. In addition, when finished drilling with foam/polymers, it is necessary to rinse all drilling tools with fresh clean water and lubricate them properly. Prolonged exposure to the atmosphere creates a corrosive reaction between the steel and the foam.

The most detrimental type of corrosion encountered in DTH hammers is oxidation cavitation (finite notches in the material surfaces). The easiest areas for this condition to exist are in the non-moving areas of the hammer. For example, thread roots and O-ring grooves are common places to find oxidation cavitation.

4. SERVICING:

4.1 – Disassembly

The ROK LT hammers use right-hand threads.

Use tools appropriate for removing the Driver Sub and the Top Sub from the Wear Sleeve of the ROK LT hammer. There are wrench flats on both the Top Sub and the Driver Sub for assembly and disassembly. Do not apply heat to the hammer. Do not hit the hammer or apply excessive force with improper tools as this could initiate cracks, reduce operating life, and most importantly would void any warranty.

4.2 – Routine Inspection

Regularly inspect all parts carefully for any signs of damage – galling, cracks, corrosion. Any sharp edges should be removed from the Piston striking face using emery paper or files. In cases of severe galling or cracking, we strongly recommend replacing the Piston to avoid further damage to the hammer. Galling and cracking can be signs of poor lubrication techniques or contamination. Please refer back to sections 3.1 and 3.2 on lubrication and contamination.

The amount of wear on all major components (Wear Sleeve, Piston, Air Guide, and Top Sub) should be regularly inspected and checked. The minimum diameter difference between the Wear Sleeve and bit should be no less than 8mm or 0.3 inches.

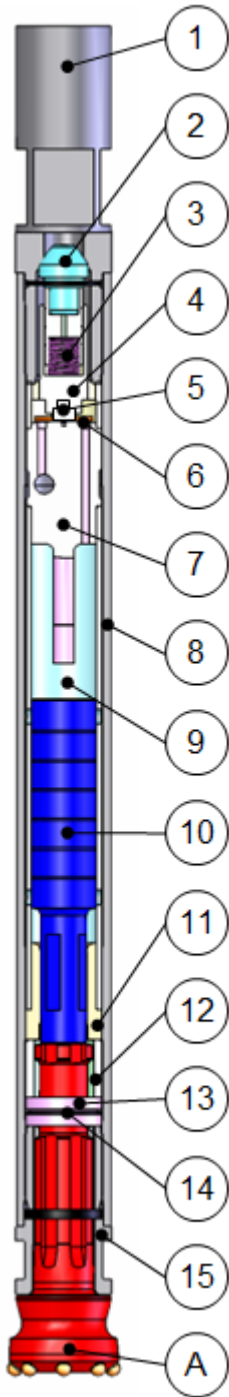
4.3 – Assembly

Remove and polish all galling and burrs with emery paper. Particularly during the replacement of broken components, extra care must be taken to be certain that the mating surfaces were not damaged.

Carefully lubricate all internal hammer parts again with rock drill oil and coat threads with thread grease prior to reassembly. Use a soft-headed hammer tool to carefully tap components together to ensure proper alignment. Never use excessive force.



5. ROK 20LT & 30LT SERIES HAMMER PARTS LIST:



Item Number	Part Name
1	Top Sub
2	Check Valve
3	Spring
4	Valve Chest
5	Valve Centralizer
6	Main Valve
7	Valve Seat
8	Wear Sleeve
9	Cylinder
10	Piston
11	Bearing
12	Spacer
13	Bit Retainer
14	O-ring (Bit Retainer)
15	Driver Sub
A	DTH Bit



6. SAFETY:

The percussive hammer drilling environment poses many opportunities for injury for the careless and unprepared. Be sure to work safely at all times. Rotating equipment can entangle loose clothing. Loud noises accompany the hammer operation and high-pressure air can throw dust and debris. Protect your sight and hearing with appropriate safety equipment. Keep your hands and feet clear of the borehole at all times. Keep fingers from getting trapped between the hammer and the bit.

7. WARRANTY:

ROCKMORE guarantees all ROK LT Series Hammers and spare parts to be free of raw material and manufacturing defects. Warranty coverage is valid for six months after date of shipment.

In order to be eligible for warranty service, you must first file a claim and obtain a Returned Goods Authorization number, authorizing you to return the goods to our facility. All goods returned to us, either new or used must be returned prepaid freight. Please contact your local salesman or the appropriate office directly for more information.

ROCKMORE reserves the right to refuse claims associated with the following problems:

- Damage caused by applying excessive force to any components of the hammer
- The use of non-original ROCKMORE hammer parts
- Any attempt to physically alter any components of the hammer, in particular but not limited to the application of heat or weld
- Failure to follow recommended operating and maintenance procedures (i.e. lubrication, contamination, corrosion)
- Failures due to abuse, misuse, careless maintenance and repairs
- Common wear and tear during normal drilling procedures

The recommended maximum operating air pressure level for our ROK LT Series hammers is 145 PSI (10.0 Bar). Do not operate the ROK LT Series Hammers above this level.

Liability

ROCKMORE shall not be liable for any claims that occur from personal injury due to negligent procedures, handling, operation, and/or maintenance of ROCKMORE DTH hammers and bits. ROCKMORE will decline any liability for failure to disregard recommended health and safety measures, i.e. protective eye wear and clothing, safety glasses, etc.



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