Operation and Maintenance Manual

HYDRAULIC BREAKER
6 Series

Revision Date: 2009-05-09
FOREWORD

WARNING!
It is very important for you to read and understand this manual before operating and to keep
the instructions provided herewith. Never fail to follow the instruction related to safety.

This manual contains instructions and information on safe and correct use of MAGNUM hydraulic hammers.

- Please read and understand this manual before operation, inspections and maintenance of the hydraulic hammer.
  Keep this manual with your equipment all the time for your quick and easy reference, and read it regularly.
- Do not operate the hydraulic hammer until you have been trained in the use of all operating controls and understand the hydraulic hammer operation.
- Get a replacement manual from MAGNUM dealer if you lost it.
- If you transfer the hydraulic hammer to the other, do transfer this manual as well.
- The figures in this manual are for better understanding and may not correspond exactly to the hydraulic hammer. For exact shape, refer to the parts list or ask MAGNUM.
- For the purpose of constant product improvement, some parts of this manual may be changed. If you found the parts unclear or not corresponding to the hydraulic hammer, call and consult MAGNUM dealer or service center
- Important information on safety is described in the safety information chapter of this book. Be familiarized with the instructions on the safe operation and observe the instructions before and during operation
- Injury, death or damage caused by unauthorized product modifications and operation under disallowed application will not be responsible by MAGNUM. Consult MAGNUM for such modifications and applications.
- Use MAGNUM genuine parts. MAGNUM takes no responsibility for damages caused by use of non-MAGNUM spare parts.
- For warranty, we refer you to the warranty conditions provided separately.

We always exert all our efforts for your satisfaction, and promise you quick and constant service.
We thank you for using MAGNUM hydraulic hammer and wish you a good luck in every your job,

Jul. 2010
MAGNUM
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* Specifications and features presented in this document are subject to change without notice.
1. Safety Information

This manual describes the correct use of the product and basic safety instructions. Important instructions in this manual are marked with this symbol ⚠️. When you see this symbol in this manual or stickers on the product, you must be alert to the possibility of personal injury or death. Be sure to observe the instruction in the safety message.

The safety messages in this manual do not describe all the possibilities that could cause personal injury, death or damage to the product. These safety messages are intended to provide basic instructions for safe operation and service.

Although this manual does not cover all the possible situations, it is the operator’s responsibility to observe the safety instructions and regulations.

*Remember! Safety is up to you.*

Safety Alert Symbol

The Safety Alert Symbol represents that ATTENTION is involved.

If you see the mark in this manual or on the products, never fail to read and observe the instructions for safe operation.

Signal Words

The words “DANGER”, “WARNING”, “CAUTION” and “IMPORTANT” appeared with the above Safety Alert Symbol indicate degree of risk of hazards or unsafe practices. All four degrees of risk indicate that safety is involved. Observe precautions indicated whenever you see the Safety Alert Symbol, no matter which signal word appears next to the “Exclamation Point” symbol.

⚠️ DANGER! Indicates imminent hazard of a situation that, if not avoided, is very likely to cause death or extremely serious injury. It may also be used to alert against product that may exploded or detonate if handled or treated carelessly.

⚠️ WARNING! Indicates potential of a hazardous situation that, if not avoided, could result in serious injury or death. It may also be used to alert against a highly unsafe practice.

⚠️ CAUTION! Indicates potential of a hazardous situation that, if not avoided, could result in minor or moderate injury. It may also be used to alert against a general unsafe practice.

⚠️ IMPORTANT! Indicates potential of damages that, if not avoided, could caused to the product or shorten the product life.
1.1 Basic Safety Information

**WARNING!**
The following instructions are those that should **ALWAYS** be observed in operation of construction equipment.

**Know yourself**

Operators and service personnel must wear appropriate safety equipment, including hearing protection, respirator, hardhat, safety shoes, eye protection, heavy gloves etc, as required.

**Note:** The wearing of loose clothing or any accessories such as neckties, scarves, untied shoe laces, rings, wrist watches or long hair could cause personal injury or death.

Always use the proper tools for inspection or maintenance work, which must only be carried out after ensuring that the equipment has been stopped completely, and it is placed suitably in a safe place.

**Know your equipment**

Before installation or operation of the hammer, the operator and maintenance personnel must read and understand the safety messages, operation manual and service instructions.

Only the operator who has been trained and qualified to operate the carrier and hammer should do so. Be skilled and knowledgeable in all operational and technical aspects of the carrier and hammer.

**Know the work site**

Before operating the hammer, check the area of work site for any unusual conditions that could be dangerous, and prepare the appropriate warnings for safe working. Be careful, particularly when working in the vicinity of electric power lines, gas pipes or other buried services.

Pay particular attention to other workers, bystanders and other machinery that may pass by near to the work site. Immediately stop operation of the hammer if personnel enter the danger area.
Know the rules

Everybody who operates or maintains the equipment should know the meaning of the rules and laws in terms of handling the equipment. Use the hammer in accordance with all regulations regarding construction practice and public safety.

For emergency use, keep the fire extinguisher and the first-aid case in the operator’s cab.

1.2. Preparation for safe operation

Some prior checks and scheduled maintenance must be performed on installing a new hydraulic hammer.

- The hydraulic hammer should only be mounted on a carrier with sufficient load capacity.
- In case of using a quick coupler (hitch), determine the total weight including the quick coupler.
- Carriers below this weight class will not provide the required degree of stability and could even fall over during hammer use, causing personnel injury or machine damage. Carriers above this weight class may apply excessively high mechanical loads to the hammer.
- Make sure the hammer is compatible and match in capacity with carrier hydraulic systems.
- To protect the operator from injury due to flying rock splinters, the operator’s cab should be equipped with a protective shield or splinter guard. For information on the cab protector, consult carrier manufacturer or MAGNUM dealer.
- Mounting the hydraulic hammer requires the presence of an assistant, who must be instructed by the carrier driver. The carrier driver and assistant should agree beforehand on clear hand signals.
- To avoid equipment damage, follow the carrier maintenance schedule before operating the hammer.
- Check the hammer for wear, getting loose, breakage or crack. Do not operate in case any damages or failure is found.

<table>
<thead>
<tr>
<th>Hammer Model</th>
<th>Carrier class (Standard)</th>
<th>Hammer Model</th>
<th>Carrier class (Standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHB301</td>
<td>0.7 ~ 1.2</td>
<td>RHB317</td>
<td>18 ~ 22</td>
</tr>
<tr>
<td>RHB302</td>
<td>1.0 ~ 2.0</td>
<td>RHB320</td>
<td>20 ~ 24</td>
</tr>
<tr>
<td>RHB303</td>
<td>1.5 ~ 3.0</td>
<td>RHB325</td>
<td>20 ~ 26</td>
</tr>
<tr>
<td>RHB304(H)</td>
<td>2.5 ~ 4.5</td>
<td>RHB330</td>
<td>26 ~ 32</td>
</tr>
<tr>
<td>RHB305</td>
<td>4.0 ~ 6.0</td>
<td>RHB340</td>
<td>32 ~ 40</td>
</tr>
<tr>
<td>RHB306</td>
<td>6.0 ~ 8.0</td>
<td>RHB350</td>
<td>40 ~ 60</td>
</tr>
<tr>
<td>RHB310</td>
<td>8.0 ~ 12</td>
<td>RHB370</td>
<td>60 ~ 110</td>
</tr>
<tr>
<td>RHB313</td>
<td>12 ~ 16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.3. Safety information on safe operating

- Always operate the hammer from the operator’s seat in the carrier cab, and also close the splinter guard on the driver’s cab during hammer operations.

- The hydraulic hammer must not be used for disallowed applications. Refer to Section “6.2. Correct working methods” of this manual for instructions on how to handle the hydraulic hammer, and applications for which the hydraulic hammer is unsuitable and must not be used.

- Stop the operation if an abnormal noise or vibration is detected during the operation. Check the carrier and hammer.

- Never use the hammer in or underwater unless compressed air is supplied to the hammer. Refer to Section “6.2. Correct working methods for details”.

1.4. Safety information on maintenance

Always follow the instructions described in this manual when performing maintenance work on the hammer.

- Pay careful attention to all relevant safety regulations. Most accidents occur when the instructions are not observed.

- Maintenance work should be performed with the carrier completely stopped, the stop valves shut off. The carrier must be on firm and flat ground with all the control levers switched off.

- Use only the lifting points provided and sufficiently strong lifting equipment when lifting the hammer.

- Do not start maintenance on the hammer until it has cooled because the hammer is heated up during operation. Some components, for example, chisel (tool), valve, piston or hydraulic connection parts become very hot.

- The hydraulic oil may be very hot and may cause severe scald. Before disconnecting hydraulic lines, bleed all hydraulic pressure in the lines. And, always relieve tank pressure of the carrier.

- Oil spouted out from the crack or small hole on hydraulic system can penetrate the skin and cause serious injury. Therefore, be sure that all the connections are tight and pipes and hoses are in good condition. Use a sheet of cardboard or wood to search for suspected oil leaks.

- To avoid an explosion and equipment damage, use only pure nitrogen gas (99.8% or over) in the gas chamber of the back-head and accumulator.

- Only the proper tools should be used for maintenance. Use of improper tools may cause personal injury, or damage to the hammer.

- Oily, greasy ground may be very slippery. Collect any oil and grease, and dispose it correctly for safety and environment.

- Keep personnel away from the hammer while servicing the chisel, gas chambers or hydraulic system.

- Unauthorized alteration on the hammer may cause the hammer serious troubles or reduce hammer life and performance. These cases cannot be guaranteed by MAGNUM.
3. Product information

3.1. Configuration of the MAGNUM hydraulic hammer

The MAGNUM hydraulic hammer has the following main components or assemblies:

1. Cylinder
2. Piston
3. Valve
4. Cylinder bush
5. Accumulator
6. Front-head
7. Chisel bush
8. Chisel pins
9. Front bush
10. Chisel
11. Back-head
12. Back-head gas charging valve
13. Through bolts
14. Front-head nuts
15. Back-head nuts
16. Lower damper
17. Wear plates
18. Side dampers
19. Upper damper
20. Dust protector
21. Bracket

The graphic shows only a general view of the main components, the actual details may vary on different models of hydraulic hammer.

The hammer is hydraulically operated equipment, and can be used on any carrier that meets the necessary hydraulic and mechanical installation requirements (Refer to Section “4. Technical specifications”).
3.2. Information for ordering and service

The equipment serial number is marked with the type and serial number on the nameplate (refer to Section "3.3. Markings and labels"). It is important to make correct reference to the serial number of the hammer when making repairs or ordering spare parts. Identification by serial number is the only proper means of maintaining and identifying parts for specific hammers.

Model Code and Serial Number

Model code: **RHB3O0 -6□□**  
Serial Number: **□□ - □□□□□**

Example: RHB313-6BA  
Example: 13 - H001

- **DR:** Model prefix
- **B:** Product group code (B: breaker)
- **13:** Model number  
  13: 13 tonne carrier class
- **6:** Power-cell version
- **B:** Bracket version  
  - **N:** side plate  
  - **B:** silenced
- **A:** Mounting type  
  - **A:** adapter mounted type  
  - **D:** direct mounted type  
  - **L:** backhoe loader mount type

Available bracket version

<table>
<thead>
<tr>
<th>Hammer model code</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>10</th>
<th>13</th>
<th>17</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA: Adapter mounted side-plate bracket</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL: Loader mounted side-plate bracket</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA: Adapter mounted silenced bracket</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SLA: Skid steer loader mounted bracket</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Available features (standard & option)

<table>
<thead>
<tr>
<th>Hammer model code</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>10</th>
<th>13</th>
<th>17</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-speed control</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>□□</td>
<td>□□</td>
<td>□□</td>
</tr>
<tr>
<td>Anti-blank blow</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>ALL</td>
<td>□□</td>
<td>□□</td>
<td>□□</td>
<td>□□</td>
</tr>
<tr>
<td>Dust protector</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
</tr>
<tr>
<td>Auto-greasing kit</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
</tr>
</tbody>
</table>

Note: Depending on bracket type;  
**BOLD:** standard features for the designated bracket version  
**Italic:** optional features for the designated bracket version  
–: not available
3.3. Markings and labels

This figure shows only a general view. Details may vary on different hammer models.

1. MAGNUM Logo

2. Name plate (with CE label)

3. Greasing Port
   Indicates grease point. Apply grease at the interval prescribed.

4. Lifting Point
   Indicates the hooking points used when lifting the hammer.
Pay special attention to the marks and labels related to safety such as follows.

5. General safety

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The operator must be fully protected by a protection shield from the breaker during operation.</td>
</tr>
<tr>
<td>• Do not operate breaker when bystanders are in working area. The working breaker, carrier and/or rock splinters can be fatally dangerous to the operator or bystanders.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMPORTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lubricate the tool every 2 hours or anytime the tool dried.</td>
</tr>
<tr>
<td>• Never operate the breaker in or under water unless compressed air is supplied to the breaker.</td>
</tr>
<tr>
<td>• Follow the maintenance timetable and short / long-period storage instruction.</td>
</tr>
</tbody>
</table>

Read the manuals prior to initial use and follow the instructions for safety.

6. Stay clear

Indicates the distance that must be kept from the breaker, to be safe from the flying rock splinter

![Stay clear](image)

7. Safety on gas charging in Back-head

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Never disassemble the back-head before discharging gas from the back-head.</td>
</tr>
<tr>
<td>• Use pure nitrogen gas only. Other gas may cause to explode.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMPORTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gas charging pressure:</td>
</tr>
<tr>
<td>• Check every 2 weeks and refill if necessary.</td>
</tr>
<tr>
<td>• Refer to operation manuals for charging instruction.</td>
</tr>
</tbody>
</table>

8. Safety on gas charging in Accumulator

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Never disassemble the accumulator cover before discharging gas from the accumulator.</td>
</tr>
<tr>
<td>• Use pure nitrogen gas only. Other gas may cause to explode.</td>
</tr>
<tr>
<td>• The maintenance of the accumulator is recommended to be served by authorized service.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMPORTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gas charging pressure: 60 ± 2 bar</td>
</tr>
<tr>
<td>• Check every 5 months and contact service if necessary.</td>
</tr>
</tbody>
</table>
### 4. Technical specifications

#### RHB301 / 302 / 303 / 304(H)

<table>
<thead>
<tr>
<th>Model</th>
<th>RHB301-6</th>
<th>RHB302-6</th>
<th>RHB303-6</th>
<th>RHB304-6(H)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bracket version</strong> ¹)</td>
<td>NA</td>
<td>BA</td>
<td>NA</td>
<td>BA</td>
</tr>
<tr>
<td>Working weight ²)</td>
<td>kg</td>
<td>116</td>
<td>116</td>
<td>116</td>
</tr>
<tr>
<td>Weight w/o mounting adapter</td>
<td>kg</td>
<td>98</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>Overall length ³)</td>
<td>mm</td>
<td>1,207</td>
<td>1,215</td>
<td>1,207</td>
</tr>
<tr>
<td>Required oil flow rate</td>
<td>l/min</td>
<td>15 ~ 25</td>
<td>20 ~ 35</td>
<td>20 ~ 35</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>bar</td>
<td>100 ~ 130</td>
<td>100 ~ 130</td>
<td>100 ~ 130</td>
</tr>
<tr>
<td>Input power (max.)</td>
<td>kW</td>
<td>5.4</td>
<td>7.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Impact rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>bpm</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>High speed mode</td>
<td>bpm</td>
<td>700 ~ 1,200</td>
<td>700 ~ 1,200</td>
<td>550 ~ 1,000</td>
</tr>
<tr>
<td>Impact Energy ⁴)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>Joule</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>High speed mode</td>
<td>Joule</td>
<td>180</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Tool shank diameter</td>
<td>mm</td>
<td>45</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td>Applicable carrier weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimal range</td>
<td>tonne</td>
<td>0.7 ~ 1.2</td>
<td>1.0 ~ 2.5</td>
<td>1.5 ~ 3.0</td>
</tr>
<tr>
<td>Available range</td>
<td>tonne</td>
<td>0.7 ~ 2.5</td>
<td>1.0 ~ 4.0</td>
<td>1.5 ~ 4.5</td>
</tr>
<tr>
<td>Gas charging pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-head</td>
<td>bar</td>
<td>8~10</td>
<td>8~10</td>
<td>8~10</td>
</tr>
<tr>
<td>Accumulator</td>
<td>bar</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Hydraulic piping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line size; min. internal diameter</td>
<td>mm (in)</td>
<td>9.5 (3/8)</td>
<td>12 (1/2)</td>
<td>12 (1/2)</td>
</tr>
<tr>
<td>Acceptable back pressure ⁵)</td>
<td>bar</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Hose connection ports for</td>
<td>Oil supply(IN) &amp; return(OUT)</td>
<td>BSP 3/8”</td>
<td>O-Ring boss female</td>
<td>BSP 1/2”</td>
</tr>
<tr>
<td>Pressure relief (min.)</td>
<td>bar</td>
<td>30 bar higher than measured maximum operating pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptable Hydraulic oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>°C</td>
<td>-20 ~ +80</td>
<td>-20 ~ +80</td>
<td>-20 ~ +80</td>
</tr>
<tr>
<td>Viscosity</td>
<td>cSt</td>
<td>1,000 ~ 12</td>
<td>1,000 ~ 12</td>
<td>1,000 ~ 12</td>
</tr>
</tbody>
</table>

**Note:**

1) For the specifications of other versions of bracket, contact your MAGNUM dealer or service.

2) Including standard tool, standard mounting adapter and spacers but excluding hydraulic hoses, fittings and mounting pins.

3) Measured from the tool tip of the standard tool to the top of the breaker excluding standard mounting adapter.

4) Measured in accordance with the certified test procedure which comply with the AEM Tool Energy Rating for hydraulic breakers.

5) The maximum allowed oil pressure at the breaker’s connection point to the return line (measured statically without the breaker)
<table>
<thead>
<tr>
<th>Model</th>
<th>RHB305-6</th>
<th>RHB306-6</th>
<th>RHB310-6</th>
<th>RHB313-6</th>
<th>RHB317-6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bracket version</strong> 1)</td>
<td>NA</td>
<td>BA</td>
<td>NA</td>
<td>BA</td>
<td>NA</td>
</tr>
<tr>
<td>Working weight 2)</td>
<td>kg</td>
<td>330</td>
<td>314</td>
<td>455</td>
<td>468</td>
</tr>
<tr>
<td>Weight w/o mounting adapter</td>
<td>kg</td>
<td>284</td>
<td>268</td>
<td>385</td>
<td>398</td>
</tr>
<tr>
<td>Overall length 3)</td>
<td>mm</td>
<td>1,674</td>
<td>1,682</td>
<td>1,916</td>
<td>1,933</td>
</tr>
<tr>
<td>Required oil flow rate</td>
<td>l/min</td>
<td>35 ~ 65</td>
<td>45 ~ 90</td>
<td>60 ~ 110</td>
<td>80 ~ 140</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>bar</td>
<td>130 ~ 170</td>
<td>130 ~ 170</td>
<td>140 ~ 180</td>
<td>140 ~ 180</td>
</tr>
<tr>
<td>Input power (max.)</td>
<td>kW</td>
<td>18.4</td>
<td>25.5</td>
<td>42</td>
<td>51</td>
</tr>
<tr>
<td>Impact rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>bpm</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>380 ~ 700</td>
</tr>
<tr>
<td>High speed mode</td>
<td>bpm</td>
<td>550 ~ 1,000</td>
<td>520 ~ 1,000</td>
<td>500 ~ 1,000</td>
<td>550 ~ 850</td>
</tr>
<tr>
<td>Impact Energy 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>Joule</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>2,500</td>
</tr>
<tr>
<td>High speed mode</td>
<td>Joule</td>
<td>700</td>
<td>1,000</td>
<td>1,350</td>
<td>2,150</td>
</tr>
<tr>
<td>Tool shank diameter</td>
<td>mm</td>
<td>68</td>
<td>80</td>
<td>105</td>
<td>117</td>
</tr>
<tr>
<td>Applicable carrier weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimal range</td>
<td>tonne</td>
<td>4.0 ~ 6.0</td>
<td>6.0 ~ 8.0</td>
<td>8.0 ~ 12</td>
<td>12 ~ 16</td>
</tr>
<tr>
<td>Available range</td>
<td>tonne</td>
<td>3.5 ~ 8.0</td>
<td>5.0 ~ 11</td>
<td>7.0 ~ 15</td>
<td>12 ~ 20</td>
</tr>
<tr>
<td>Gas charging pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-head</td>
<td>bar</td>
<td>15~17</td>
<td>15 ~ 17</td>
<td>15 ~ 17</td>
<td>15 ~ 17</td>
</tr>
<tr>
<td>Accumulator</td>
<td>bar</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Pressure adjust valve setting</td>
<td></td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>(No. of turns open from full-close)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic piping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line size; min. internal diameter</td>
<td>mm (in)</td>
<td>12 (1/2)</td>
<td>19 (3/4)</td>
<td>19 (3/4)</td>
<td>19 (3/4)</td>
</tr>
<tr>
<td>Acceptable back pressure 5)</td>
<td>bar</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Hose connection ports for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil supply(IN) &amp; return(OUT)</td>
<td></td>
<td>BSP 1/2&quot;</td>
<td>BSP 3/4&quot;</td>
<td>BSP 1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>O-Ring boss</td>
<td>O-Ring boss female</td>
<td>O-Ring boss female</td>
<td></td>
</tr>
<tr>
<td>Pressure relief (min.)</td>
<td>bar</td>
<td>40 bar higher than measured maximum operating pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptable Hydraulic oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>°C</td>
<td>1,000 ~ 10</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
</tr>
<tr>
<td>Viscosity</td>
<td>cSt</td>
<td>35 ~ 65</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
</tr>
</tbody>
</table>

**Note:**
1) For the specifications of other versions of bracket, contact your MAGNUM dealer or service.
2) Including standard tool, standard mounting adapter and spacers but excluding hydraulic hoses, fittings and mounting pins.
3) Measured from the tool tip of the standard tool to the top of the breaker excluding standard mounting adapter.
4) Measured in accordance with the certified test procedure which complies with the AEM Tool Energy Rating for hydraulic breakers.
5) The maximum allowed oil pressure at the breaker’s connection point to the return line (measured statically without the breaker)
<table>
<thead>
<tr>
<th>Model</th>
<th>RHB320-6</th>
<th>RHB325-6</th>
<th>RHB330-6</th>
<th>RHB340-6</th>
<th>RHB350-6</th>
<th>RHB370-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket version 1)</td>
<td>BA</td>
<td>BA</td>
<td>BA</td>
<td>BA</td>
<td>BA</td>
<td>BA</td>
</tr>
<tr>
<td>Working weight 2)</td>
<td>kg</td>
<td>1,502</td>
<td>1,754</td>
<td>2,400</td>
<td>3,179</td>
<td>3,890</td>
</tr>
<tr>
<td>Weight w/o mounting adapter</td>
<td>kg</td>
<td>1,282</td>
<td>1,534</td>
<td>2,100</td>
<td>2,739</td>
<td>3,440</td>
</tr>
<tr>
<td>Overall length 3)</td>
<td>mm</td>
<td>2,760</td>
<td>2,935</td>
<td>3,281</td>
<td>3,531</td>
<td>3,735</td>
</tr>
<tr>
<td>Required oil flow rate</td>
<td>l/min</td>
<td>100 ~ 150</td>
<td>130 ~ 180</td>
<td>170 ~ 240</td>
<td>200 ~ 280</td>
<td>230 ~ 330</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>bar</td>
<td>160 ~ 180</td>
<td>160 ~ 180</td>
<td>165 ~ 185</td>
<td>165 ~ 185</td>
<td>165 ~ 185</td>
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<tr>
<td>Input power (max.)</td>
<td>kW</td>
<td>45</td>
<td>54</td>
<td>74</td>
<td>86</td>
<td>102</td>
</tr>
<tr>
<td>Impact rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>bpm</td>
<td>340 ~ 550</td>
<td>330 ~ 500</td>
<td>310 ~ 490</td>
<td>330 ~ 450</td>
<td>250 ~ 370</td>
</tr>
<tr>
<td>High speed mode</td>
<td>bpm</td>
<td>440 ~ 700</td>
<td>430 ~ 650</td>
<td>400 ~ 680</td>
<td>420 ~ 600</td>
<td>350 ~ 500</td>
</tr>
<tr>
<td>Impact Energy 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low speed mode</td>
<td>Joule</td>
<td>3,500</td>
<td>4,300</td>
<td>6,100</td>
<td>7,600</td>
<td>10,400</td>
</tr>
<tr>
<td>High speed mode</td>
<td>Joule</td>
<td>2,800</td>
<td>3,200</td>
<td>4,200</td>
<td>6,000</td>
<td>7,900</td>
</tr>
<tr>
<td>Tool shank diameter</td>
<td>mm</td>
<td>125</td>
<td>135</td>
<td>150</td>
<td>165</td>
<td>180</td>
</tr>
<tr>
<td>Applicable carrier weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimal range</td>
<td>tonne</td>
<td>17 ~ 20</td>
<td>20 ~ 26</td>
<td>26 ~ 32</td>
<td>32 ~ 40</td>
<td>40 ~ 60</td>
</tr>
<tr>
<td>Available range</td>
<td>tonne</td>
<td>16 ~ 25</td>
<td>20 ~ 30</td>
<td>26 ~ 35</td>
<td>32 ~ 45</td>
<td>40 ~ 70</td>
</tr>
<tr>
<td>Gas charging pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-head</td>
<td>bar</td>
<td>15 ~ 17</td>
<td>15 ~ 17</td>
<td>15 ~ 17</td>
<td>16 ~ 18</td>
<td>16 ~ 18</td>
</tr>
<tr>
<td>Accumulator</td>
<td>bar</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Pressure adjust valve setting (No. of turns open from full-close)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic piping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line size; min. internal diameter</td>
<td>mm (in)</td>
<td>25 (1)</td>
<td>25 (1)</td>
<td>32 (1-1/4)</td>
<td>32 (1-1/4)</td>
<td>32 (1-1/4)</td>
</tr>
<tr>
<td>Acceptable back pressure 5)</td>
<td>bar</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Hose connection ports for Oil supply(IN) &amp; return(OUT)</td>
<td></td>
<td>BSP 1&quot; O-Ring boss female</td>
<td>BSP 1-1/4&quot; O-Ring boss female</td>
<td>BSP 1-1/2&quot; O-Ring boss female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure relief (min.)</td>
<td>bar</td>
<td>40 bar higher than measured maximum operating pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptable Hydraulic oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>°C</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
<td>-20 ~ +85</td>
</tr>
<tr>
<td>Viscosity</td>
<td>cSt</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
<td>1,000 ~ 10</td>
</tr>
</tbody>
</table>

Note: 1) For the specifications of other versions of bracket, contact your MAGNUM dealer or service.
2) Including standard tool, standard mounting adapter and spacers but excluding hydraulic hoses, fittings and mounting pins.
3) Measured from the tool tip of the standard tool to the top of the breaker excluding standard mounting adapter.
4) Measured in accordance with the certified test procedure which comply with the AEM Tool Energy Rating for hydraulic breakers.
5) The maximum allowed oil pressure at the breaker's connection point to the return line (measured statically without the breaker).
5. Installation

**IMPORTANT!**
Improper installation can cause serious damage to the hammer and to the carrier. Do not install the hammer if you are unsure. Contact your MAGNUM dealer for more information.

5.1. Carrier requirements

The MAGNUM hammer can be installed on any carrier that meets necessary mechanical and hydraulic installation requirements. Refer to Section “4. Technical specifications” to determine the carrier specification required.

Check following points when installing the hammer:

- **Carrier weight:**
  The hydraulic hammer should only be mounted on a carrier with sufficient load capacity. In case of using a quick coupler (hitch), determine the total weight including the quick coupler.

- **Mounting dimension:**
  To fit the hammer on the carrier, proper mounting adapter must be used. This mounting adapter varies according to carrier model and should be ordered separately with follows:
  - Excavator model and year built
  - Arm(stick) type
  MAGNUM’s standard mounting adapters are designed to fit most carrier, and parts for fitting, such as spacers and pins can also be provided.

- **Hydraulic line:**
  Check the nominal bore size of the hammer piping lines on the carrier. Both supply and return lines must have sufficiently large inner diameters. Small line size causes backpressure increase, overheating of oil or irregular blows.

- **Hydraulic pressure:**
  The hydraulic pressure and oil flow of the carrier’s hammer piping should be adequate for operating the hammer.
  The maximum hydraulic pressure of the carrier must be higher than the recommended relief pressure setting for the hammer. If not, the impact rate of the hammer becomes slow or the hammer does not start blowing.

- **Oil flow:**
  Oil flow, which controls impact rate of hammer, is the most important factor in the hydraulic parameters to operate hammer with a good performance, and should not only be too low but also be too high. Insufficient oil flow cause low impact rates, and on the contrary excessive oil flow causes an increase in the operating pressure and overheating of the oil. If the output of the pump is more than the maximum acceptable flow of the hammer, a flow control valve is needed.

- **Oil cooler:**
  Too low or too high oil temperature reduces the working performance of a hammer. The temperature of the hydraulic oil shall never exceed 90°C (194°F), maximum allowed limit, which may cause damage to the hammer as well as the carrier. If the carrier’s oil cooler is too small, either the original cooler should be replaced with a larger one or an auxiliary cooler must be installed.
  For sufficient cooling of oil, return oil from the hammer must run through oil cooler to oil tank.
5.2. Attaching the mounting adapter

1. Stand the hammer on the flat and stable base or lay the hydraulic hammer on squared beams or a pallet with the service window of the hammer box facing upwards.

2. Fix the adapter (1) to the hammer box with two screws. For silenced hammer, insert the upper damper (2) in the hammer box before fixing the adapter.

3. Then fit all screws (3) and tighten to the specified torque. The sizes of screws for different hammer types are as follows;

- RHB301 ~ 303 : 12 mm
- RHB304 ~ 310 : 20 mm
- RHB313 ~ 325 : 30 mm
- RHB330 ~ 370 : 36 mm

5.3. Mounting the hydraulic hammer on the carrier

**DANGER!**

While mounting the hammer or removing the bucket, make sure that there are no persons in the vicinity of the carrier.

When moving the carrier, do not touch any part of the carrier or hydraulic hammer. Keep hands away from linkage area and pin-bores.

When aligning pin-bores, never put a finger into the bore, align only by sight or with using drift pin.

Agree with the assistant on clear hand signals.
During hammer mounting, the carrier should only be operated from the operator’s cab.

1. Following the direction of an assistant, carefully move the excavator arm (2) into the adapter (4), until the bore in the arm is flush with those in the adapter.

2. Insert the arm pin (3).

3. Fit the stop ring (5) to the arm pin (3) and lock by using the bolt and nuts (6).

4. Lift up the hammer (1) to a proper height.

5. Extend the bucket cylinder (7) until the bore in the link (9) is flush with those in the adapter (4).

6. Insert the link pin (8).

7. Fit the stop ring (5) to the bucket pin (8) and lock by using the bolt and nut (6).

8. Check there are any mechanical difficulties, slacks or incompatibility in manipulating.
IMPORTANT!
After mounting the hammer, extend and retract the carrier’s cylinder to its full extent in each direction to ensure that carrier’s cylinder can move without any difficulty or damage.
If problems are encountered, consult your local MAGNUM dealer.

5.4. Connecting the hydraulic lines of the hammer
Before connecting the hydraulic lines to the carrier, check following points:

- To avoid hammer damage, the hydraulic oil of the carrier must be kept clean. Check the contamination of the oil, then, if necessary, change the oil or flush the oil through a external filtration system, and replace the carrier oil filter according to the maintenance schedule of the carrier.

- In case of using a newly installed hammer piping, remove the contamination in the hydraulic line through bypass flushing (without connecting the hammer).

- Check the pressure setting of the relief valve on the hammer hydraulic line, this pressure-relief setting should be at least 30 ~ 40 bar higher than the measured maximum operating pressure of the hydraulic hammer.

- The sealing faces and connecting threads of the hoses or fittings must be undamaged and free of sand or similar foreign particles.

If the hydraulic lines are in good preparation for operating the hammer, connect the hammer as follows:

1. If the connection hoses are not installed on the hammer, remove the cover plate on the service window and connect the “IN” & “OUT” hoses (1, 2) to the hammer.

2. Confirm both of the stop valves (5) are closed.

3. Remove the end caps (3) from the stop valves (5) and remove the hose plugs (4) from the hoses. Put them in the toolbox for safekeeping.

4. Connect the “IN” & “OUT” hoses (1,2) to the stop valves on both sides of the carrier arm.

5. Open the stop valves (5).

1. High pressure hose (In)
2. Low pressure hose (Out)
3. End caps
4. Hose plugs
5. Stop valves
5.5. Connection ports of the hammer

The graphic shows only a general view of the connection ports on the hammer power-cell, and the brackets are not shown for explanation. The details of port location and port size may vary on different hammer models. Refer to followings:

<table>
<thead>
<tr>
<th>Connection ports</th>
<th>RHB301 ~ 304</th>
<th>RHB305 ~ 310</th>
<th>RHB313 ~ 370</th>
</tr>
</thead>
<tbody>
<tr>
<td>I / O</td>
<td>Varies according to hammer model, refer to Section &quot;4. Technical specifications&quot;.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Minimess coupling (plastic cap)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use the gas charging kit provided with the hammer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Not available.</td>
<td>BSP 1/2&quot; O-ring boss port 10 mm Hex. socket plug</td>
<td>BSP 3/4&quot; O-ring boss port Steel plug (12mm Hex. socket)</td>
</tr>
<tr>
<td>GL</td>
<td>Not available.</td>
<td>Not available.</td>
<td>BSP 3/8&quot; O-ring boss port Steel plug (8mm Hex. socket)</td>
</tr>
<tr>
<td>TP, TT</td>
<td>Not available.</td>
<td>Not available.</td>
<td>BSP 3/8&quot; O-ring boss port Steel plug (8mm Hex. socket)</td>
</tr>
</tbody>
</table>
5.6. Dismounting the hydraulic hammer from the carrier

**WARNING!**
Wear safety shoes to protect feet.
Personal injury can result from dropping pins during dismounting.

Put the hydraulic hammer on a clean, flat, level surface, and engage the parking brake on the carrier machine.

1. Close the stop valves completely.
2. Disconnect the hydraulic hoses (I, O) from the stop valves.
3. Ensure no leakage occurs from hoses and stop valves.
4. To prevent contamination, apply the end caps to the stop valves and hose plugs to the hoses.
5. Remove the stop rings from the arm and link pins.
6. Lift the arm away from the hydraulic hammer, so that the hydraulic hammer can be carried away, or another attachment mounted on the carrier.

5.7. Fitting / removing the chisel

**WARNING!**
The chisel shall only be installed in the way described. Failure to do so could allow the chisel to be drawn out from the hammer with force possibly causing safety accidents.

When installing the chisel, the carrier must be switched off before fitting or removing the chisel. Always wear safety glasses and gloves because metal chips or debris may fly off when driving the chisel or the chisel pins.

Never put fingers in the chisel pin-bores of the hammer.

Do not stand in front of chisel; possible blank blow caused by the pressure trapped inside the hammer can cause personnel injury.

In case of large size hammer, the chisels are very heavy and difficult to lift by hands. Always use a hoist with a sling when lifting the chisel. Be careful of falling down.

After operating the hammer, the chisel, especially the tip, may remain very hot for some time and can cause severe burn.

**IMPORTANT!**
Use only genuine MAGNUM chisels. Use of other brands of chisel may occur serious trouble to the hammer and cause warranty rejected.

It is important that the chisel be used correctly for longer chisel life. Pay particular attention to Section "6.2. Correct working methods", and refer to a extra document “A guide for proper use of tool” to determine the warranty guide for chisel failure.

In general the chisel is not fitted when the hammer is delivered. Before fitting the chisel, move the hydraulic hammer into a horizontal position using the carrier and place it on a suitable support (e.g. squared beams).
1. Stop pins
2. PU-sleeves
3. Plugs
4. Chisel pins
5. Plugs
6. Chisel

This figure shows only a case of the BA version. Detail configurations may vary on different bracket version and hammer models.

For the entire bracket version, fit the chisel as follows:

1. Remove the plugs (3), (5) by using the screw bolt and remove the stop pins (1) by using a hand-hammer and the special tool provided. Drive the stop pins out from the chamfered small diameter side to the large diameter side.

2. If the PU-sleeve (2), which was inserted in the hole, is damaged, replace it with a genuine replacement.

3. Remove the chisel pins (4).

4. Check the inside of the front-head for wear or foreign bodies. In case of replacing the chisel after use, do check and maintenance work according to Section "7.6. Chisel, wear bushings and chisel pins".

5. While lifting up the chisel, clean away any dirt adhering to the chisel shank in the inserted portion, then sufficiently lubricate the chisel shank and the bushes in the hammer. For details of chisel lubricating and applicable grease refer to Section "7.4. Grease".

6. Insert the chisel (6) to the chisel bore of the front-head.

7. Align the recesses of the chisel shank to the chisel pin holes on the front-head by turning the chisel.

8. Then insert the chisel pins (4).

9. Drive the stop pin (1) into the front-head, small diameter side first, making sure that the stop pin is inserted completely and insert the plugs (3), (5).

10. Moving the carrier and stand the hammer vertically on the chisel. Check that the chisel can move up and down smoothly by applying contact pressure and releasing it.
5.8. Adjusting the pressure-adjusting valve
For RHB313-6 and bigger model

1. Fixing nut
2. O-ring
3. Pressure-adjusting valve
4. Backup ring
5. O-ring

The graphic shows only a general view of the pressure-adjusting valve. The position of the pressure-adjusting valve may vary on different hammer models.

The RHB313 ~ RHB370 hydraulic hammer have a pressure-adjusting valve to allow adjustment of the operating pressure which have an effect on the blow power. The pressure-adjusting valve controls the hammer’s drain pressure during the piston raising operation. By controlling the working pressure, the blow power can be increased or decreased.

- To increase the blow power, turn the pressure-adjusting valve clockwise.
- To decrease the blow power, turn the pressure-adjusting valve anticlockwise.

The pressure adjusting-valve is set in the factory before delivery; if you need to reset it, follow instructions below:

1. Loosen the fixing nut (1) to enable the adjust valve to be turn.
2. Turn the pressure-adjusting valve (3) clockwise or anticlockwise as required.
3. Tighten the fixing nut (1) to the prescribed torque (140 ~ 180 N·m)
4. The standard factory settings are as follows:
   No. of turns open from the full-close:

<table>
<thead>
<tr>
<th>Hammer Model</th>
<th>RHB313</th>
<th>RHB317</th>
<th>RHB320</th>
<th>RHB325 / 330</th>
<th>RHB340 / 350</th>
<th>RHB370</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Turns</td>
<td>2.0 ~ 2.5</td>
<td>1.5 ~ 2.0</td>
<td>2.0 ~ 2.5</td>
<td>2.5 ~ 3.0</td>
<td>3.0 ~ 3.5</td>
<td>2.0 ~ 2.5</td>
</tr>
</tbody>
</table>
5.9. Adjusting impact rate – 2-speed selection
For RHB313-6 and bigger model

![Diagram of speed selection switch and cylinder]

The RHB313 ~ RHB370 hydraulic hammers have a 2-speed selection valve on the cylinder body to change the impact rate and the impact energy according to working condition.

- **Low speed: working with normal impact rate and maximum percussive power**
  Breaking large rocks embedded under ground, or breaking heavy-reinforced concrete structures requires strong percussive power rather than high impact rate. When impact energy per blow of hammer is not sufficient to make breakage on material, however fast impact rate may be, the hammer does not give expected breaking productivity because the chisel cannot penetrate into the material.

  For this kind of work, maximum percussive power, even though low impact rate, is needed.

  The speed selection switch is set to the low speed mode (mark I) in the factory when delivered, as shown in the previous figure.

- **High speed: working with increased impact rate and reduced percussive power**
  When breaking small or soft rocks, or when tearing up thin concrete surfaces reduced percussive power is sufficient, and the impact rate switching system allows the hammer to be operated at a higher impact rate, by reducing the stroke. The impact energy is thus adapted to the lighter application.

  To change impact rate to high speed:
  1. Push the locking button (2) with a small size screwdriver.
  2. Turn the speed selection switch (1) counter-clockwise by using an 8 mm hex L-wrench so that the locking button (2), faces toward the high speed mode (mark II).
5.10. Anti-Blank-Blow (Auto-Stop) function
For RHB320-6 and bigger model

The RHB320 ~ RHB370 hydraulic hammers are equipped with Anti-Blank-Blow (Auto-Stop) function as standard for easier operation and longer product life. The Anti-Blank-Blow function prevent the hammer operating in no-load condition, i.e., when the chisel is not properly pre-loaded by contact with the object to be broken.

Blank blows – in other word, idle blows – which apply impact on the chisel without contact with the object, are very harmful for the hammer. Therefore, without the Anti-Blank-Blow function, the hammer always should be pressed down onto the object before starting the hammer and should be stopped immediately as soon as the object is broken. When operated without pre-load or operated furthermore after that the object is broken completely, blank blows could result in excessive wear, deformation or breakage to major components such as chisel, chisel pins, stop pins and front head.

With the Anti-Blank-Blow function, the hammer does not start operating unless the chisel is pre-loaded by contact with the object, and the hammer stop operating automatically when the chisel does not contact with the object according as the object is completely broken even though the operator keep operating switch pressed ‘on’.

The Anti-Blank-Blow function is constructed with a by-pass line and a Shut-off Valve in the cylinder. The Shut-off Valve is a switching valve to disable the Anti-Blank-Blow function for special application.

■ Disabling the Anti-Blank-Blow function
For special working condition, e.g. breaking over-size boulders or non-rigid object, the Anti-Blank-Blow function can be disabled by inserting the Shut-off valve as shown in the figure above.

To disable the Anti-Blank-Blow function,
1. Stop the carrier, and close the stop valves
2. Remove the plug (1) (which include O-ring).
3. Insert the shut-off valve (3) using a M10 bolt.
4. Tighten the plug (1) again with the specified torque.

To enable the Anti-Blank-Blow function again, remove the shut-off valve in the same way above.

Important! When operating the hammer with the Anti-Blank-Blow function disabled, be sure to not operating the hammer in blank blowing condition.
5.11. Inspection after installation

After the hammer has been installed on the carrier and set ready to operate, installation inspection must be carried out. Check inspection items and specifications as follows:

- **The oil flow supplied to the hammer;**
  should be measured from the ‘IN’ line with a flowmeter while operating the hammer. As alternative, oil flow can be measured, without hammer operating, using a flowmeter that has a throttle valve, which set to the operating pressure of the hammer.

- **The operating pressure of the hammer;**
  should be measured as close to the hammer ‘IN’ port as possible.
  Note: The oil flow and the operating pressure should be measured in minimum and maximum values because those fluctuate slightly while operating the hammer.

- **The relief pressure of the hammer piping;**
  should be measured with the stop valve shut off. And, it must be set to 30~40 bar higher than the measured maximum operating pressure of the hammer.

- **The prefilled gas pressures in the back-head gas chamber and the accumulator;**
  must be measured statically, the hammer not operating, at the ambient temperature before operating. Refer to Section “7.5. Gas” for details about measuring the gas pressures.

- **The impact rate;**
  can be measured if a blow frequency counter is available. It is highly recommended to measure the impact rate.

- Refer to Section “4. Technical specifications” for given limits of the specification.
6. Operating the hydraulic hammer

This chapter describes how to choose the correct chisel for the job and how to operate the hammer correctly. To increase the hammer’s breaking performance and working life, pay attention to this chapter.

The hammer is powerful machinery and lots of damage can be done if you do not know how to use the hammer safely. Read this chapter before operating the hammer.

6.1. Selecting the right chisel

The correct type of chisel must be selected to get the best possible working results and longest lifetime for chisel.

The recommended selections of standard chisels for various kind of job are depicted as follows:

Basically, there are two types of breaking principle with a hydraulic hammer.

- Penetrative (or cutting) breaking:
  A conical, pyramid or wedge type tool is forced into the material. This method is most effective in soft, layered or plastic material. The sharper edge the chisel has, the better the hammer penetrate the material. However, breaking hard material will cause the sharp edges to wear very quickly.

- Impact breaking:
  Transferring strong mechanical stress wave into material breaks material. Best possible energy transfer between chisel and material is achieved with a blunt chisel. This impact breaking is more effective in hard, brittle and very abrasive materials. Generally, small size hammer is not suitable for impact breaking.

**Standard chisels:**

<table>
<thead>
<tr>
<th>Type of Chisel</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moil point (Conical)</td>
<td>Universal use; Breaking concrete, bedrock and pavement</td>
</tr>
<tr>
<td>Moil wedge (Pyramid)</td>
<td>Universal use; Breaking concrete, bedrock and pavement</td>
</tr>
<tr>
<td>Flat wedge</td>
<td>Mining, Foundation, Trenching and benching, Concrete demolition, Finishing slopes</td>
</tr>
<tr>
<td>Flat wedge - cross-cut</td>
<td></td>
</tr>
<tr>
<td>Flat wedge - inline-cut</td>
<td></td>
</tr>
<tr>
<td>Flat end (Blunt)</td>
<td>Breaking oversize boulders, Concrete demolition</td>
</tr>
<tr>
<td>Wide flat wedge (Asphalt cutter)</td>
<td>Mining, foundation, trenching, demolition, finishing slopes, Breaking asphalt pavement</td>
</tr>
</tbody>
</table>

Note:

- Chisels are subject to wear and tear in the course of normal operations. (Replacement of these parts due to wear is not covered by the warranty.)
- Only genuine MAGNUM chisels should be used, if other makes of chisels are used the warranty may become void.
- Special designs available on request.
6.2. Correct working methods

■ Advance:

Move the impact point from the edge to the interior. Never try to break off a too large block, if the object has not broken within 30 seconds. The object should be broken up piece by piece in small blocks. Large distance steps will not improve working results.

Operating the hammer longer than 30 seconds may cause damage to the hammer.

■ Angle of attack:

The hammer should always be positioned at right angles to the surface of the material. If the hammer is operated at slant angle,

The chisel slide off the material surface and it cause blank blows that damage the hammer. And the chisel will wear more quickly, or broken more frequently.

■ Never use as a sledgehammer:

Before starting up, place the chisel point on the ground.

Never attempt to use the hammer as a sledgehammer to break material, as the result of such action will cause damage to the hammer and the carrier.
Never drive the chisel into the ground:

If the advance is too large and the chisel is not rocked to release the dust, the chisel will be driven into the material without breaking the material. This causes the chisel tip to glow red-hot and lose its hardness. As a result, the chisel wears out more quickly. Operating in this way is not permitted.

Dust dampens impact power, when the chisel is inserted into the ground, and reduces the efficiency of the hammer. Tilt the hammer slightly backward and forward, not more than 5°, while operating so that the dust can escape. Do not rock the hammer at angles greater than 5° or the chisel will be broken.

Never use as a lever:

Do not use the chisel as a lever; e.g. crowbar, as this will cause the chisel to break.
Under any circumstances, operating in this way is not permitted.

Most of bending failure of the chisel may be caused by lever action in stone that is inside hard or frozen ground. Be careful and stop operating if you feel sudden resistance under the chisel.

Never use for transport purposes:

The hydraulic hammer is not designed to lift or transport loads. Never use the chisel as a lifting point.
This is dangerous and could damage the hammer or the chisel.
Never use the hydraulic hammer under water:

The hydraulic hammer, as a standard assembly, must never be used in or under water without prior conversion. If you use under water, water fills the impact chamber between the piston and the chisel, a strong hydraulic pressure wave is generated and will damage the seals in the hammer. And, in addition, corrosion, lack of lubrication or penetration of water could result in further damage to components of the hammer and the carrier.

To operate the hammer under water, compressed air must be supplied into the hammer, into the impact chamber of the front-head, prior to use. Refer to the manual of underwater kit, which is a separate document, provided with the underwater kit.

Never use the chisel or hydraulic hammer to move rocks or other objects:

The hydraulic hammer is not designed for this usage. Do not use the hammer or chisel to roll, push the object or reposition the carrier. This may cause damage to the hammer and the carrier.

Blank blows:

Blank blows, which are impact on the chisel without contact with the object, are very harmful for the hammer. Always press the chisel down onto the material before starting the hammer. And stop operation immediately as soon as the object has been broken. If operation is continued, blank blows could result in excessive wear to major components.

Recent RHB320 and bigger hammers have a Anti-Blank-Blow function to prevent blank blowing.

Consult MAGNUM dealer for the operating the hammer in special applications such as: operation under water, operation in very high or low temperature, operation in chemical factory, etc.
7. Maintenance

**IMPORTANT!**
Always follow the instructions described in this section when performing maintenance work on the hammer. Neglecting the maintenance schedule can cause damage to the hammer.

This section of the manual describes how to care and maintain your hammer. Check every item before and after operating the hydraulic hammer to always keep the hammer in good condition.

Neglecting the maintenance schedule and improper maintenance can cause damage to the hammer and the carrier.

### 7.1. General Information

Whenever maintenance work is carried out, always follow the basic rules:

- Absolute cleanliness and great care are basic and essential matters in the handling of any hydraulic components of the hammer. *(Dirt is the worst enemy of hydraulic systems.)*

- Hammer parts should be handled carefully and stored clean using lint free cloth or cleaning papers for hydraulic use.

- Do not use anything other than the correct cleaning fluid for cleaning hydraulic parts. *(Never use water, steam, paint thinners or acid fluid)*

- Sealing components, such as O-rings, packings and wipers in the hydraulic hammer should be oiled with clean hydraulic oil before assembling. Especially, for sealing parts used for tight fitting, apply lubricant paste onto the sliding portions of the seals.

- Always release the prefill gas in the back-head and accumulator before carrying out maintenance or repair work to the hydraulic hammer.

- Only the proper tools should be used for maintenance. Use of improper tools may cause personal injury, or damage to the hammer.

- Unauthorized alteration on the hammer may cause the hammer serious troubles or reduce hammer life and performance. MAGNUM cannot guarantee these cases.

Since the hydraulic hammer is a precision machine, never disassemble the power-cell and main moving parts. If it needs disassembly, contact your local MAGNUM dealer. If the customer disassembles the hammer, we don’t take responsibility for it.

Prior to maintenance work, perform the following sequence:

1. Put the hammer in a stable position on a level surface, for easy maintenance and repair.

2. Turn off the carrier.

3. Shut off the stop valves.

4. Disconnect the hoses if needed and seal them with plugs to prevent entry of impurities.

In special application such as: tunneling, scaling, operating in ironwork, underwater use, etc., service interval is considerably shorter than usual usage.
7.2. Care and maintenance schedule
To keep the hammer condition at its best, maintenance must be done regularly to the schedule below.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Maintenance Tasks</th>
</tr>
</thead>
</table>
| Every 2 hours | - Grease the chisel and chisel bush.  
- Check hydraulic oil temperature, piping & connection and impact efficiency.  
- Tighten loose connections. |
| Every 10 hours or daily | - Remove the retaining pin and the chisel and check their condition. Grind off any burrs that may be present.  
- Check that the chisel has been receiving sufficient grease. Grease more frequently, if you needed. |
| Every 50 hours or weekly (Main inspection) | - Check gas pressure in the back-head. Refill the gas if necessary.  
- Check for wear of the chisel, front bush, chisel bush and piston lower part.  
- Check the hydraulic hoses, Replace if necessary  
- Check through bolts, Replace and/or re-tighten if necessary. |
| Every 100 hours or monthly | It is recommended to have the main inspection done by your local MAGNUM dealer.  
- Check all hydraulic hoses and pipe connections.  
- Check interference between hoses with carrier. |
| Every 600 hours or 6 monthly | It is recommended that the annual maintenance be carried out by your local MAGNUM dealer, or after 600 operating hours.  
- Check all hydraulic pipe, hose connections and conditions of oil filters  
- Check through bolts for cracks on the threads and shanks.  
- Change all seals including the accumulator diaphragm.  
- Check the conditions of the power cell and bracket. |

7.3. Hydraulic oil
Most of the hydraulic oil brands prescribed by the carrier manufacturer are suitable for the MAGNUM hydraulic hammer. However, operating the hydraulic hammer will heat up the oil much more than the usual earth moving work.

Therefore, the hydraulic oil should correspond to viscosity class HLP32 or higher; in general case viscosity class HLP46 is recommended. In summer and in hotter climates, oils of viscosity class HLP 68 or higher should be used.

- Optimum viscosity range: 20 ~ 60 cSt
- Maximum initial viscosity: 1,000 cSt
- Minimum viscosity: 12 cSt for RHB301 ~ 304  
10 cSt for RHB305 ~ 370
- Maximum oil temperature (with HLP46 oil):  
80°C (176°F) for RHB301 ~ 304  
85°C (185°F) for RHB305 ~ 370
In some working environments with a high ambient temperature, the oil temperature may affect hammer in its performance and durability. The hydraulic system of the carrier must have a proper cooling system according to these working environments.

The temperature of the hydraulic oil must never exceed the permissible maximum oil temperature. If higher temperatures are measured in the tank, the hydraulic system and/or the pressure-relief valve have to be checked. Troubles due to incorrect oil viscosity or improper oil temperature are as follows:

Too thick oil (too low oil temperature) may cause:
- Slow or irregular blows and difficult to start
- Damage to the hammer parts by cavitation
- Low impact power

Too thin oil (too high oil temperature) may cause:
- Decreasing of flow delivery from carrier’s pump
- Low impact rate; low breaking efficiency
- Insufficient lubrication; accelerated wear of hammer parts and damage to the sealing parts

When using special oils (e.g. biological oils or fire-resistive oils), contact oil manufacturer or MAGNUM.

Hydraulic oil filter

Contamination of the hydraulic oil may result in parts damage, not only to the hammer, but also to the hydraulic components of carrier.

Impurities in the hydraulic oil can cause
- Accelerated parts wear
- Stick or seizure of moving parts or Score on the sliding surface of moving parts
- Oil leak and decreasing of hammer efficiency
- Deterioration of oil quality

Air bubble and water are also impurities in hydraulic oil and may induce cavitation failure.

Check the oil filter in the return line of the carrier’s hydraulic system, the grade of this filter should not exceed 50 micrometers and a magnetic separator should be fitted.

We recommend hydraulic oil and oil filter replacement, as shown in the following table, and this is based on 100% hammer operation.

Replacement intervals for hydraulic oil and oil filter:

<table>
<thead>
<tr>
<th>MACHINE OPERATING HOURS</th>
<th>BREAKER OPERATION RATE (%)</th>
<th>Hydraulic Oil Replacement</th>
<th>Filter Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full time hammer operation: 500 hours</td>
<td>Filter replacement: 100 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation without hammer work: 1000 hours</td>
<td>Filter replacement: 250 hours</td>
</tr>
</tbody>
</table>
■ Working in high or low ambient temperatures

**IMPORTANT!**

Feeding hot hydraulic oil to an extremely cold hammer will cause internal stresses in the hammer resulting in its failure.

- If the hammer is used without pre-heating the oil:
  - The sealing parts of the hammer may fracture.
  - The diaphragm in the accumulator may tear.

High ambient temperature:

When operating the hammer in high ambient temperature: summer or tropical climates, above 30°C (86°F), the temperature of the hydraulic oil must be monitored to ensure it does not exceed the specified temperature limits.

If the oil temperature exceeds the maximum permissible operating temperature limits, use hydraulic oil of proper viscosity. In this case the hydraulic oil of viscosity class HLP68 should be used. If the oil temperature is still too high in spite of using the high viscosity oil, the auxiliary hydraulic cooler must be installed.

Low ambient temperature:

At temperatures below 0°C (32°F), the carrier must be warmed up prior to use in the way described by the carrier manufacturer. Ensure that the hydraulic oil of the carrier is at least 0°C (32°F), before starting up the hydraulic hammer.

**Note:**

The hydraulic hammer and the carrier will not operate to full capacity until the oil temperature has reached at least 60°C (140°F).

7.4. Grease

**IMPORTANT!**

If grease is not supplied sufficiently, then high heat is generated due to friction at the chisel of the hammer. The heat can cause premature wear and cracking of the parts related to the chisel.

Always observe the relevant safety regulations when handling oils and greases.

Lubricate and check the grease regularly (refer to Section “7.2. Care and maintenance schedule”). Every two hours of continuous operation lubricate the chisel with appropriate amount of moly-based grease. Inject grease between the chisel and the chisel bush, through the grease nipple provided.

- Every 2 hours
- 5 ~ 10 strokes for RHB301 ~ 313,
  12 ~ 15 strokes for RHB317 ~ 370
  using a large size grease gun
- Adjust greasing interval and amount of grease to the hammer models and working conditions.
When lubricate the chisel, the hammer must be standing upright against the chisel with enough down pressure applied to force the chisel into the hammer. This will prevent excessive grease getting into the impact chamber which could cause the hammer to lose power due to cushioning, or to stop operating due to a hydraulic lock in the impact chamber.

Failure to lubricate the hammer regularly will reduce the life of the chisel, the chisel bush and front bush.

**Recommended grease products by makers:**

<table>
<thead>
<tr>
<th>Maker</th>
<th>Grease Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALTEX</td>
<td>MULTIFAC EP2</td>
</tr>
<tr>
<td>CASTROL</td>
<td>SPHEEROL EP2</td>
</tr>
<tr>
<td>ESSO</td>
<td>RONEX MP2</td>
</tr>
<tr>
<td>GULF</td>
<td>CROWN EP2</td>
</tr>
<tr>
<td>MOBIL</td>
<td>MOBILUX EP2</td>
</tr>
<tr>
<td>SHELL</td>
<td>ALVANIA EP2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>MULTIS EP2</td>
</tr>
</tbody>
</table>

For other than those recommended consult MAGNUM or our dealer prior to use.

### 7.5. Gas

**DANGER!**

Using other gases could result in an explosion. Use pure nitrogen; 99.8% purity, only.

The MAGNUM hammer is a gas assisted type hydraulic hammer. The gas prefilled in the back-head gives strong impact power and the gas prefilled in the accumulator decrease the pressure fluctuation in the hammer. For this type of hammer, operating performance of hammer is under the control of the gas pressure. Therefore, the charging pressures in these gas chambers are very important factor in the hammer and must always be maintained within the specified limits (refer to Section “4. Technical specifications”).

This section describes how to fill the gas and check the gas pressure in the back-head and accumulator of your hammer. Use only pure nitrogen of 99.8% purity and ensure that no other gas, e.g. air or oxygen is used. Gas charging kits should be on hand all the time, to allow the following checking and maintenance work to be performed.

#### 7.5.1. Checking and charging the gas in the back-head

If the impact power of the hydraulic hammer starts to drop, the gas pressure in the back-head should be checked.

The back-head need not to be refilled until the gas pressure has decreased to below the specified value. In general, checking the back-head gas pressure recommended at least every 50 hours or weekly. And, Refill the gas if necessary.

**Note:**

When checking or charging the gas pressure, always lay the hydraulic hammer flat without any contact force applying to the chisel. The gas pressures should be checked with the hammer at the ambient temperature before operating or at the gas temperature of 60°C to 70°C (140 to 158°F) after operating.
Gas charging kit:

1. Regulator
2. Adapter
3. Mini-mess coupling I
4. Exhaust valve I
5. Cap nut
6. Coupling
7. Hose
8. Adapter
9. Handle
10. Gas valve
11. Accumulator gauge
12. Back-head gauge
13. Back-head mini-mess coupling
14. Accumulator charging plug
15. O-ring
16. Accumulator charging valve
17. Gas charging port
18. Back-head
19. Accumulator
20. Mini-mess coupling II
21. Exhaust valve II

1. Ensure the exhaust valve I (4) and gas valve (10) are closed, and then connect the cap nut (5) to the nitrogen bottle.
2. Be sure handle (9) is fully opened (loosened).
3. Connect each end of the hose (7) to the Mini-mess coupling I (3) and the Mini-mess coupling (13) on the back-head.
4. Open the gas valve (10). And, turn the handle (9) clockwise to charge.
5. Adjust the handle (9) until the back-head gauge (12) pointer indicates the specified gas pressure.
6. If the back-head is charged over the specified gas pressure, adjust the gas pressure by opening the exhaust valve I (4) slightly to reduce the gas pressure.
7. Close the gas valve (10), and carefully vent the hose (7) by opening the exhaust valve I (4) before removing it.
Back-head gas charging pressure:

<table>
<thead>
<tr>
<th>Hammer model</th>
<th>CHARGING at ambient temperature; 20°C (68°F) bar (psi)</th>
<th>CHECKING at operating temperature; 60<del>70°C (140</del>158°F) bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHB301</td>
<td>8 ~ 10 (116 ~ 145)</td>
<td>9.1 ~ 11.4 (132 ~ 165)</td>
</tr>
<tr>
<td>RHB302</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB303</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB304(H)</td>
<td>10 ~ 12 (145 ~ 174)</td>
<td>11.4 ~ 13.7 (132 ~ 187)</td>
</tr>
<tr>
<td>RHB305</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB306</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB310</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB313</td>
<td>15 ~ 17 (218 ~ 247)</td>
<td>17.0 ~ 19.3 (247 ~ 280)</td>
</tr>
<tr>
<td>RHB317</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB325</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB330</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB340</td>
<td>16 ~ 18 (232 ~ 261)</td>
<td>18.2 ~ 20.5 (264 ~ 297)</td>
</tr>
<tr>
<td>RHB350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB370</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: In general, as a basic rule, if the gas temperature increases 30°C (86°F) higher, then the gas pressure increases of about 10% on the initial pressure.

7.5.2. Checking and charging the gas in the accumulator

1. Ensure the exhaust valve II (21) and the gas valve (10) are closed, and connect the cap nut (5) to the nitrogen bottle.
2. Be sure the handle (9) is fully opened (loosened).
3. Remove the accumulator charging plug (14) and the O-ring (15) from the accumulator (19). Put them in the toolbox for safekeeping.
4. Connect the Mini-mess coupling III (22) to the gas charging port (17).
5. Connect each end of the hose (7) to the Mini-mess couplings II (20) and III (22), respectively.
6. Open the accumulator charging valve (16), by turning it counter-clockwise a half turn.
7. Open the gas valve (10) to charge the accumulator, until the gauge pointer on the accumulator gauge (11) indicates the specified gas pressure. If the accumulator is charged over the specified gas pressure, open the exhaust valve II (21) slowly to reduce the gas pressure.
8. After the gas charging is completed, close the accumulator charging valve (16).
9. Close the gas valve (10), and carefully vent the hose (7) by opening the exhaust valve II (21).
10. Remove the Mini-mess coupling III (22) from the accumulator, and close the accumulator charging port (17) with the plug (14) and O-ring (15).
Accumulator gas charging pressure:

<table>
<thead>
<tr>
<th>Hammer model</th>
<th>CHARHING at ambient temperature; 20°C (68°F) bar (psi)</th>
<th>CHECKING at operating temperature; 60<del>70°C (140</del>158°F) bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHB317</td>
<td>60 ± 2 (870 ±30)</td>
<td>68 ± 2 (990 ±30)</td>
</tr>
<tr>
<td>RHB320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB325</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB330</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHB370</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.6. Chisel, wear bushings and chisel pins

Operating the hammer, even though it is regular and correct, wear the chisel and its wear parts such as:

- Wear bushings; chisel bush, front bush
- Thrust ring
- Chisel pin, stop pins and PU-sleeves
- Wiper and wiper retainer (for SA version only)

These wear of chisel and wear parts is caused by:

- Wear by metal-to-metal sliding
- Tear of contact point by micro-welding
- Particle engaged abrasive wear
- Collapse or peeling of surface by extremely high contact pressure
- Heat generated by friction accelerates wear

Check the chisel, chisel bush and front bush for wear every 50 hours of hydraulic hammer use or weekly. And, replace them if the amounts of wear exceed the permissible wear limits.

If these parts are used beyond their wear limits, the piston and chisel may be damaged severely. Especially, when the hydraulic hammer has too much clearance between the chisel and both wear bushes, the chisel can be broken by bending through wrong impacts.

Replacement of the parts below due to wear is not covered by the warranty.

Chisel and wear parts in the front-head:

This is a general angled section view of front-head.

1. Piston 2. Chisel 3. Thrust ring
4. Chisel bush 5. Front bush 6. Chisel pin
7. Stop pin
Chisel:

Initial diameter (D1) for the chisel is shown in the following table. The chisel diameter should be measured in the direction of minimum diameter. Replace the chisel if the diameter is worn down to below the lower limit (D2) specified in the table.

Chisel bush and front bush:

The inner diameters of the chisel bush and front bush are the same when new. The initial diameter (D3) for chisel bush and front bush is shown below. Replace the both bushes, if the diameter (D4) is exceeded upper limit specified in the table.

RHB301 ~ 304(H) is not equipped with the chisel bush, so checking of the front-head is required.

When replacing the chisel bush and the front bush, ensure the bushes and bore of the front head are cleaned without any dirt. And, apply Moly-based grease to their mating surfaces.

**Dimension limits of Chisel, Chisel Bush and Front Bush:**

<table>
<thead>
<tr>
<th>Hammer model</th>
<th>Nominal diameter of Chisel and bushes (D1, D3)</th>
<th>Lower limit of Chisel diameter (D2)</th>
<th>Upper limit of Chisel Bush &amp; Front Bush (D4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHB301 / 302</td>
<td>45</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>RHB303</td>
<td>50</td>
<td>47</td>
<td>52</td>
</tr>
<tr>
<td>RHB304(H)</td>
<td>58</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>RHB305</td>
<td>68</td>
<td>65</td>
<td>71</td>
</tr>
<tr>
<td>RHB306</td>
<td>80</td>
<td>77</td>
<td>83</td>
</tr>
<tr>
<td>RHB310</td>
<td>85</td>
<td>82</td>
<td>88</td>
</tr>
<tr>
<td>RHB313</td>
<td>105</td>
<td>102</td>
<td>109</td>
</tr>
<tr>
<td>RHB320</td>
<td>125</td>
<td>122</td>
<td>129</td>
</tr>
<tr>
<td>RHB325</td>
<td>135</td>
<td>132</td>
<td>140</td>
</tr>
<tr>
<td>RHB330</td>
<td>150</td>
<td>147</td>
<td>155</td>
</tr>
<tr>
<td>RHB340</td>
<td>165</td>
<td>162</td>
<td>171</td>
</tr>
<tr>
<td>RHB350</td>
<td>180</td>
<td>177</td>
<td>186</td>
</tr>
<tr>
<td>RHB370</td>
<td>205</td>
<td>201</td>
<td>211</td>
</tr>
</tbody>
</table>
Chisel pins:
Check the chisel pins for wear, every 50 hours of hydraulic hammer use or weekly as well as each time the chisel is replaced. Any burr and swelling on the chisel pins must be smoothed off carefully by grinding.

Circular type chisel pins (RHB301 ~ RHB310):
The initial diameters (D1) of the chisel pins are shown in the following table. Replace the chisel pin, if the diameter is less than the lower limit (D2) of the diameter.

Plate type chisel pins (RHB313 ~ RHB370):
Check the width of the chisel pins including the worn out portion.
If the wear on the first side exceeds 1.5 mm, both chisel pins must be inverted together to use the other side.
Replace the chisel pins, if the final widths are less than lower limits (D2) of the width.

---

**Dimension limits of Chisel Pins:**

<table>
<thead>
<tr>
<th>Hammer Model</th>
<th>Original Dimensions (D1)</th>
<th>Lower Limits (D2)</th>
<th>Pin shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHB301/302/303/304(H)</td>
<td>25</td>
<td>23</td>
<td>Circular</td>
</tr>
<tr>
<td>RHB305</td>
<td>30</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>RHB306</td>
<td>33 / 38</td>
<td>31 / 36</td>
<td></td>
</tr>
<tr>
<td>RHB310</td>
<td>34</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>RHB313</td>
<td>69</td>
<td>65</td>
<td>Plate</td>
</tr>
<tr>
<td>RHB317/320/325</td>
<td>90</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>RHB330</td>
<td>89</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>RHB340</td>
<td>98 / 108</td>
<td>93 / 103</td>
<td></td>
</tr>
<tr>
<td>RHB350</td>
<td>108 / 118</td>
<td>103 / 113</td>
<td></td>
</tr>
<tr>
<td>RHB370</td>
<td>130</td>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>
7.7. Bracket and Adapter

Check the bracket and the adapter installed at the top, whenever the chisel is replaced or at least 4 times a year, to see if there are any cracks. If any crack is found out, the breaker must not be used until it is repaired.

If the bottom of the bracket is worn away, replace the bottom plate as needed.

If it is necessary to repair by welding, contact your local MAGNUM dealer for advice.

7.8. Screw tightening

On percussive tools such as hydraulic hammers, the screw fasteners are subjected to particularly high loads and extreme vibration. During the first 50 operating hours the screw fasteners on the hammer must be checked daily, and thereafter once a week. Tighten any loose screws taking care not to exceeding the specified tightening torque below.

- Screws to check and/or re-tighten regularly:

<table>
<thead>
<tr>
<th>Applied part</th>
<th>Hex. size mm</th>
<th>Tightening Torque N·m (ft·lbf)</th>
<th>Applied hammer models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulator body</td>
<td>17 (socket)</td>
<td>500 ~ 550 (370 ~ 410)</td>
<td>RHB317 ~ 350</td>
</tr>
<tr>
<td>Accumulator cover</td>
<td>14 (socket)</td>
<td>250 ~ 300 (185 ~ 220)</td>
<td>RHB317</td>
</tr>
<tr>
<td>Through bolts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>400 ~ 450</td>
<td>(300 ~ 330)</td>
<td>RHB301, 302</td>
</tr>
<tr>
<td>36</td>
<td>450 ~ 500</td>
<td>(330 ~ 370)</td>
<td>RHB303</td>
</tr>
<tr>
<td>41</td>
<td>800 ~ 850</td>
<td>(590 ~ 630)</td>
<td>RHB304(H), 305</td>
</tr>
<tr>
<td>50</td>
<td>950 ~ 1050</td>
<td>(700 ~ 770)</td>
<td>RHB306, 310</td>
</tr>
<tr>
<td>55</td>
<td>1500 ~ 1600</td>
<td>(1110 ~ 1180)</td>
<td>RHB313</td>
</tr>
<tr>
<td>60</td>
<td>2400 ~ 2500</td>
<td>(1770 ~ 1850)</td>
<td>RHB317</td>
</tr>
<tr>
<td>65</td>
<td>2400 ~ 2500</td>
<td>(1770 ~ 1850)</td>
<td>RHB320, 325</td>
</tr>
<tr>
<td>71</td>
<td>3400 ~ 3600</td>
<td>(2500 ~ 2650)</td>
<td>RHB370</td>
</tr>
<tr>
<td>75</td>
<td>3400 ~ 3600</td>
<td>(2500 ~ 2650)</td>
<td>RHB330</td>
</tr>
<tr>
<td>85</td>
<td>4200 ~ 4400</td>
<td>(3100 ~ 3250)</td>
<td>RHB340</td>
</tr>
<tr>
<td>90</td>
<td>4900 ~ 5100</td>
<td>(3600 ~ 3750)</td>
<td>RHB350</td>
</tr>
<tr>
<td>Side bolts on the bracket</td>
<td>NA Version</td>
<td>300 ~ 350 (220 ~ 260)</td>
<td>RHB301, 302, 303</td>
</tr>
<tr>
<td>30</td>
<td>300 ~ 350</td>
<td>(220 ~ 260)</td>
<td>RHB301, 302, 303</td>
</tr>
<tr>
<td>41</td>
<td>550 ~ 600</td>
<td>(400 ~ 440)</td>
<td>RHB304(H)</td>
</tr>
<tr>
<td>46</td>
<td>850 ~ 950</td>
<td>(630 ~ 700)</td>
<td>RHB305</td>
</tr>
<tr>
<td>Mounting adapter</td>
<td></td>
<td>100 ~ 120 (75 ~ 90)</td>
<td>RHB301, 302, 303</td>
</tr>
<tr>
<td>19</td>
<td>100 ~ 120</td>
<td>(75 ~ 90)</td>
<td>RHB301, 302, 303</td>
</tr>
<tr>
<td>30</td>
<td>550 ~ 600</td>
<td>(410 ~ 440)</td>
<td>RHB304(H), 305, 306, 310</td>
</tr>
<tr>
<td>46</td>
<td>800 ~ 1000</td>
<td>(590 ~ 740)</td>
<td>RHB313, 317, 320, 325</td>
</tr>
<tr>
<td>55</td>
<td>1000 ~ 1200</td>
<td>(740 ~ 890)</td>
<td>RHB330, 340, 350, 370</td>
</tr>
</tbody>
</table>
### Screws for common use (reference for assembling):

<table>
<thead>
<tr>
<th>Application</th>
<th>Hex. size mm</th>
<th>Type of head</th>
<th>Torque N·m (ft·lbs)</th>
<th>Applied hammer models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease nipple</td>
<td>14</td>
<td>H</td>
<td>50 ~ 60 (37 ~ 44)</td>
<td>All models</td>
</tr>
<tr>
<td>Air plug</td>
<td>30</td>
<td>S</td>
<td>200 ~ 250 (148 ~ 184)</td>
<td></td>
</tr>
<tr>
<td>Air check valve</td>
<td>36</td>
<td>H</td>
<td>250 ~ 300 (184 ~ 221)</td>
<td></td>
</tr>
<tr>
<td>Back-head gas valve body (steel plugged, old version)</td>
<td>32</td>
<td>H</td>
<td>200 ~ 250 (148 ~ 184)</td>
<td></td>
</tr>
<tr>
<td>Plug for back-head gas valve (old version)</td>
<td>19</td>
<td>H</td>
<td>30 ~ 40 (22 ~ 30)</td>
<td></td>
</tr>
<tr>
<td>Mini-mess gas coupling (back-head and accumulator)</td>
<td>14</td>
<td>H</td>
<td>50 ~ 60 (37 ~ 44)</td>
<td></td>
</tr>
<tr>
<td>Pressure control valve fixing nut</td>
<td>24</td>
<td>H</td>
<td>140 ~ 180 (103 ~ 133)</td>
<td></td>
</tr>
<tr>
<td>Accumulator gas charging valve</td>
<td>8</td>
<td>S</td>
<td>40 ~ 60 (30 ~ 44)</td>
<td>RHB317, 320, 325, 330, 340, 350, 370</td>
</tr>
<tr>
<td>Fixing cap for accumulator gas charging valve (old version)</td>
<td>24</td>
<td>H</td>
<td>140 ~ 160 (103 ~ 118)</td>
<td></td>
</tr>
<tr>
<td>Plug for accumulator gas charging port</td>
<td>10</td>
<td>S</td>
<td>80 ~ 100 (59 ~ 74)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>H</td>
<td>40 ~ 60 (30 ~ 44)</td>
<td>RHB301</td>
</tr>
<tr>
<td>Connecting adapters for hose, Swivel nuts of hose</td>
<td>22</td>
<td>H</td>
<td>150 ~ 200 (111 ~ 148)</td>
<td>RHB302, 303, 304(H), 305</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>H</td>
<td>200 ~ 250 (148 ~ 184)</td>
<td>RHB306, 310, 313</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>H</td>
<td>300 ~ 350 (221 ~ 258)</td>
<td>RHB317, 320, 325</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>H</td>
<td>500 ~ 550 (369 ~ 406)</td>
<td>RHB330, 340</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>H</td>
<td>600 ~ 650 (443 ~ 479)</td>
<td>RHB350, 370</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>H</td>
<td>700 ~ 750 (520 ~ 550)</td>
<td></td>
</tr>
<tr>
<td>Plugs for blocking oil line of the cylinder</td>
<td>5, 6</td>
<td>S</td>
<td>20 ~ 30 (15 ~ 22)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>S</td>
<td>80 ~ 100 (59 ~ 74)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>S</td>
<td>120 ~ 140 (89 ~ 103)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>S</td>
<td>40 ~ 60 (30 ~ 44)</td>
<td>Thread size BSP 1/4</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>S</td>
<td>200 ~ 250 (148 ~ 184)</td>
<td>Thread size BSP 3/4</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>S</td>
<td>250 ~ 300 (184 ~ 221)</td>
<td></td>
</tr>
</tbody>
</table>
7.9. Replacing the through bolts

The through bolts connect and retaining the body sections of the hydraulic hammer.

- The through bolts for RHB301 ~ RHB313 models are directly assembled directly into the female threads in the front-head.
- The through bolts for RHB317 ~ RHB370 models use the separate nuts (the front-head nuts) at the front-head.

The through bolts can be checked visually, once the sealing plugs in the inspection holes in the top of the bracket have been removed.

If the through bolts get loose or damaged during operation, stop hammer work. And, repairs must be done immediately in the following manner:

1. Place the hammer on flat and firm ground. Separate the power-cell of the hammer from the bracket.
2. Discharge the nitrogen gas from the back-head completely.
3. Remove all the through bolts, and inspect for the presence of any cracks at the threads and the shank of the bolts.
4. Always apply thread paste, made of molybdenum disulphide (MoS2), to the threads of the through bolts before installing.
5. At first, tighten the entire bolts to the half of the specified torque in diagonal pattern.
6. Tighten the bolts to the specified torque in diagonal pattern.
7. Repeat 1~2 times in the same way.

7.10. Checking the bottom of the piston

CAUTION!

Be sure to turn off the power switch of the carrier and to shut off the stop valves before checking the bottom of the piston. Never insert hands into the front-head. Check only by sight.

Check the bottom of the piston, which impact the chisel directly, every week, at least every 50 hours or whenever the chisel is changed. Check the impact surfaces of the piston for wear, sinking or cracking.

If the hammer is continuously used once the bottom of the piston has any failure or crack, the hammer can be seriously damaged.

- Permissible dent depth:
  - RHB301 ~ RHB313: less than 1mm
  - RHB317 ~ RHB350: less than 2mm

Any modification such as re-machining, welding or heat treatment is not allowed.

Use only genuine replacement parts, or it may invalidate the warranty.
7.11. Storage of the hammer

Short periods of non-use
Dismount the hammer from the carrier according to the instruction in Section “5.6. Dismounting the hydraulic hammer from the carrier”. Storing the hydraulic hammer in horizontal position can be permitted for short period (maximum 2 weeks).

Long periods of non-use
If the hammer is to remain out of use for more than 2 weeks, the following maintenance work must be performed:
- The chisel must be removed.
- The gas in the back-head must be discharged completely.
- The percussion piston must be positioned at the upper end of its stroke.
- The lower end of the piston, chisel and bushes must be well protected with grease or anti-lust fluid.
- All the hydraulic connections must be sealed with clean plugs to prevent oil leak or dirties from getting in to the hammer.
- The hammer must be stored in a vertical position.
- The hammer must be stored in a dry location.

Washing the hydraulic hammer
When the hydraulic hammer is working, dirt, mud, rock powder etc. can attach itself to the hammer. Always wash the outside of the hydraulic hammer with a pressure washer before sending it to the workshop otherwise dirt can cause difficulties in the disassembly and reassembly of the hammer.
## 8. Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| The hammer will not start.                   | Pressure and return lines inverted  
Stop valve in pressure and/or return lines closed  
Gas pressure in back head too high  
Hydraulic oil level in tank to low  
Relief valve opens at to low a pressure  
Failure in valve and piston  
Leakage from pressure to return in excavator hydraulic circuit  
Operating pressure too low | Connect hammer hoses correctly  
Open stop valves  
Check gas pressure in back head, reset to correct value  
Check and refill hydraulic oil tank  
Re-adjustment relief pressure  
Contact your MAGNUM dealer  
Check the installation, pump and other hydraulic components  
Check carrier engine speed and/or operating pressure |
| The impact rate of hydraulic hammer is too low | Insufficient hydraulic oil delivery from carrier  
Flow resistance too high on oil filter or oil cooler  
Hydraulic oil overheated  
Gas pressure in back head too low  
Chisel out of range for piston  
Inside diameter of return line too small  
Return pressure too high  
Relief valve opens at to low a pressure  
Hydraulic oil level in tank to low  
Poor pump performance  
Diaphragm in accumulator defective  
Pressure adjustment valve is screwed too much  
Delivery flow rate of hydraulic system is inadequate | Contact your MAGNUM dealer  
Check oil filter/cooler, clean or replace  
Check and replace filter, cooler  
Push down chisel by carrier  
Increase inner diameter of the return line. (Refer to section 5.1.)  
Check and lower return pressure  
Re-adjust the relief pressure  
Check and refill hydraulic oil tank  
Contact authorized service man  
Replace diaphragm  
Re-adjust pressure adjusting valve (Refer to section 5.8.)  
Check pump characteristics with measuring device and compare with original specifications |
| The impact rate is irregular                  | Gas pressure of accumulator is too low  
Failure in hammer valve or distributor operation | Check and refill with nitrogen gas  
Contact your MAGNUM dealer |
<p>| Oil leaks between back head and cylinder     | Seals defective                                                                   | Check and replace seals                                                 |</p>
<table>
<thead>
<tr>
<th>Issue</th>
<th>Cause and Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil leaks at accumulator</td>
<td>O-ring and or back-up ring defective</td>
</tr>
<tr>
<td></td>
<td>Check and replace o-ring and back-up ring</td>
</tr>
<tr>
<td>Oil leaks from chisel</td>
<td>Cylinder seals defective</td>
</tr>
<tr>
<td></td>
<td>Disassemble hydraulic hammer and replace the seals</td>
</tr>
<tr>
<td>Hydraulic oil temperature too high</td>
<td>Hydraulic oil level in tank too low</td>
</tr>
<tr>
<td></td>
<td>Carrier pump delivery too high</td>
</tr>
<tr>
<td></td>
<td>High outside temperature and no cooler fitted</td>
</tr>
<tr>
<td></td>
<td>Pressure-relief valve defective</td>
</tr>
<tr>
<td></td>
<td>Refill hydraulic oil tank</td>
</tr>
<tr>
<td></td>
<td>Correct carrier engine speed. Reset pump</td>
</tr>
<tr>
<td></td>
<td>Fit oil cooler</td>
</tr>
<tr>
<td></td>
<td>Fit new pressure-relief valve</td>
</tr>
<tr>
<td>Back head gas leaks</td>
<td>Loose through bolts</td>
</tr>
<tr>
<td></td>
<td>Defect in back head gas valve</td>
</tr>
<tr>
<td></td>
<td>Defective O-ring on back head</td>
</tr>
<tr>
<td></td>
<td>Defective cylinder bush seals</td>
</tr>
<tr>
<td></td>
<td>Tighten through bolts (Refer to section 7.9.)</td>
</tr>
<tr>
<td></td>
<td>Replace back head gas valve</td>
</tr>
<tr>
<td></td>
<td>Replace O-ring</td>
</tr>
<tr>
<td></td>
<td>Check and replace the piston bush seals</td>
</tr>
</tbody>
</table>
2.0 Warranty Conditions

Magnum hydraulic hammers and our associated parts are serviced and warranted against defects in materials and workmanship for a period of 36 months from the date of purchase. Magnum Attachments reserves the right to repair or replace only those parts which prove to have been defective at the time of purchase. If you sell the equipment to a customer, please fill out the “Delivery Inspection Report” and send it to Magnum by fax or mail.

⚠️ IMPORTANT! : Warranty will not be provided if the “Delivery Inspection Report” is not returned within 15 days after delivery to customer(user) is completed.

Model Code and Serial Number

<table>
<thead>
<tr>
<th>Model code: RHB000□□</th>
<th>Serial Number: 000□□ - □□□□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: RHB325BA</td>
<td>Example: 325BA - H001</td>
</tr>
</tbody>
</table>

(□: Arabian number, □: Alphabet)

The equipment serial number is marked with the type and serial number on the nameplate. It is important to make correct reference to the serial number of the hammer when making repairs or ordering spare parts. Identification by serial number is the only proper means of maintaining and identifying parts for specific hammers.

⚠️ IMPORTANT! : Magnum does not take responsibility for the results induced contrary to recommendations in the operation manual provided with the attachment.

1. Problems caused by incorrect operation or using to non-recommended application.
2. Problems caused by improper handling or storage.
3. Problems caused by improper maintenance.
4. Problems caused by using non-genuine parts.

Magnum reserves the right to modify the design or change the specifications without prior notice for the improvement of performance or quality.

This warranty guideline has been made to provide the distributors and/or the customers with all information and instructions in terms of processing warranty claims for our product, Hydraulic Breakers.

We would like you to refer carefully to this guideline to take preventive steps against damage or failure before it breaks out.

For further information on warranty, please feel free to contact us.
2.1 Coverage of warranty claims

Product  (Hereinafter called “product”)

Hydraulic Breaker is designated “RHB” in its model.
Hydraulic Crusher is designated “RHC” in its model.
Hydraulic Pulverizer is designated “RHC” in its model.
Hydraulic Compactor is designated “RHP” in its model.

2.2 Conditions and obligations for warranty claims

Instruction to the Customer

It is the dealer’s responsibility to provide proper instruction and training on the product to the customer.

Operation manual

Distributor must provide the user with a copy of the operation manual and instruct user to read it carefully before putting the product into operation.

Delivery inspection

Distributor must fill out the “Delivery Inspection Report” which is attached in Section 2.9, and return a copy to Magnum. The date of delivery written in “Delivery Inspection Report” is also the starting date for the warranty.

⚠️ IMPORTANT! : Warranty will not be provided if the “Delivery Inspection Report” is not returned within 15 days after delivery to customer(user) is completed.

Genuine spare and Wear parts

Only genuine Magnum spare and wear parts must be used during the warranty period. If you fail to observe this requirement, warranty will not be covered for the complete product. Be sure to use genuine Magnum parts for maximizing the life of the product even after warranty has expired.

Observance of wears limits

Wear parts should be monitored at the intervals indicated in the operation and maintenance manual. The parts should be replaced at the wear limits indicated. Continued use of the product with parts over the wear limits may cause damage, which is not covered by the warranty. Damage of wear parts caused by wear and tear is not covered by warranty.

Correct storage

The more detailed warranty guidelines to the correct storage of product are described in Section 2.4, which must be observed. Any case of damage from incorrect storage is not covered by warranty.
Correct usage

Follow the operation manual or service manual for correct usage of product. Any damage occurring from incorrect usage is not covered by warranty.

2.3 Product warranty and validity

Validity

This warranty guideline applies to Magnum Hydraulic Hammers sold as of February 01, 2004.

Base warranty

Magnum’s products are warranted for twelve (12) months from the date of delivery to the actual and original buyer for the failure by the reason of defective material or poor workmanship, except wear and sealing items such as stipulated in the ‘Limited Warranty’.

3 Year Limited warranty

1. Sealing parts

Sealing parts such as seals, O-rings and diaphragm installed in new products are warranted for six (6) months from the date of delivery to the original buyer, but no more than seven (7) months from the shipping date from Magnum Attachments factory.

2. Wear parts

Wear items listed herein below are warranted for three (3) months from the date of delivery to the original buyer, but no more than four (4) months from shipping date from Magnum’s factory.


Spare parts

Spare parts other than those indicated as wearing parts or consumable parts will be warranted for three (3) months after the date of delivery to the actual or original buyer, but within four (4) months from the shipping date from Magnum’s factory.

Magnum 2nd Year Limited Warranty.

Magnum Attachments will extend the coverage of the piston and cylinder for an additional 12 months provided the following requirements are met.

1) During the initial 10-12 months of operation an authorized Magnum Attachments
Distributor must inspect the hammer. (Note: The distributor may ship the hammer to Magnum Attachments Inc. facility for the inspection). Magnum Attachments will charge the hammer reseal rate as outlined in the Hydraulic Hammer Warranty Labor Guide. The distributor is responsible for all shipping and wear part charges.

2) The inspection will consist of a complete teardown and examination of all breaker components by factory-trained personnel. Any parts that the Distributor considers to be worn, or do not meet factory specifications must be replaced. All replacement parts will have the same warranty as stated above.

3) All charges for labor, transportation and wear items are the sole responsibility of the owner.

4) Magnum Attachments Inc. will supply a Seal Kit and Accumulator Bladder at no charge to the Authorized Magnum Distributor.

5) Upon completion of inspection the Authorized Distributor must complete the 12-month inspection report and submit it to Magnum Attachments within 30 days. Failing to do so would void the 2nd year warranty.

**Magnum 3rd Year Limited Warranty.**

Magnum Attachments will be responsible for half the cost of the piston and cylinder for an additional 12 months provided the following requirements are met.

1) The hammer must be inspected between months 20-24 from the date of purchase by an Authorized Magnum Attachments Distributor. (Note: The distributor may ship the hammer to Magnum Attachments Inc. facility for the inspection. Magnum Attachments will charge the hammer reseal rate as outlined in the Hydraulic Hammer Warranty Labor Guide. The distributor is responsible for all shipping and wear part charges.

2) The inspection will consist of a complete teardown and examination of all breaker components. Any parts that the Distributor considers to be worn, or do not meet factory specifications must be replaced. All replacement parts will have the same warranty as stated above.

3) All charges for labor, transportation and wear items are the sole responsibility of the owner.

4) Magnum Attachments Inc. will supply a Seal Kit and Accumulator Bladder at no charge to the Authorized Magnum Distributor.

5) Upon completion of inspection the Authorized Distributor must complete the 24-month inspection report and submit it to Magnum Attachments within 30 days. Failing to do so would void the 3rd year warranty.
Multi-shift work
Magnum guarantees the defect and failure caused by the normal conditions of work based on an 8hr. workday. In case that the hammer is operated with multi-shift (day and night shift) working, the warranty period will be cut by half.

2.4 Conditions and instructions on correct storage and delivery

Precondition
Complete product should be stored in dry, well-ventilated houses to protect product against rain, snow, dust, humidity and etc. Open-air storage is available as long as the product must be safely and protectively kept by all means complying with the above terms.

Short-term storage
The product which will not remain in storage for longer than two (2) weeks should be stored in standing position and secured against falling over.

Long-term storage
If storage is to exceed two (2) weeks, you should proceed as follows:

1) The chisel must be removed.
2) The gas in the back head be discharged completely.
3) The percussion piston must be positioned at the upper end of its stroke.
4) The lower end of the piston, chisel and bushes must be well protected with grease or anti-rust fluid.
5) All the hydraulic connections must be sealed with clean plugs to prevent oil leakage or contamination.
6) The hammer must be stored in a standing position.
7) The hammer must be stored in a dry location.

Delivery conditions after more than 12 months storage
The product, which has been in storage for longer than twelve (12) months after Magnum’s delivery, will no longer be in coverage of warranty. The extension of warranty period can only be effective after special checkup or arrangement that has been performed by distributor at their own expenses. Before distributors carry out the special checkup, they must inform Magnum and take instructions from Magnum. Especially the seals should be replaced with the new one. The product should be delivered only after the following works have been completed.

1) To Inform Magnum about the description of the product in terms of model, serial no., receiving date and storage condition.
2) To dismantle the product according to Magnum’s instruction.
3) To inspect the inner parts such as percussion piston, cylinder, seals, valve and etc.
4) To submit ‘inspection report’ with attaching the photos of inner parts.
5) To repair or replace the failed part according to Magnum’s instruction, if serious
problem such as rust, deformation or damage is found.
6) To replace the seals with new one before delivery to customer.

After completing the above things, the product can be covered by ‘base warranty’.

⚠️ IMPORTANT! : No dismantling is necessary for Crusher (RHC-series).

2.5 Out of warranty coverage

Delivery Inspection Report
Warranty will not be provided if the ‘Delivery Inspection Report’ is not returned to Magnum
within the required period (15 days).

Incorrect usage
The damage caused by incorrect usage of the product will not be covered by warranty.

Unauthorized modification or change
The warranty will not be applied to any modification or change of the product made by
distributor or customer without the prior written consent of Magnum Attachments Inc.

Improper repair & service
The warranty becomes invalid to improper repair or maintenance by anyone other than
Magnum’s distributor or service establishment authorized by Magnum Attachments Inc.

Spare and wear parts
The warranty on the complete product will become invalid to the use of non-Magnum parts.
Wear-related damage is out of warranty coverage. Damage due to excessive use over
the wear limits is not covered by the warranty.

Incorrect storage
Damage as a result of incorrect storage is not covered by the warranty.

Protective measures
Any protective measures stipulated by Magnum must be observed. Damage due to
infringement of such measures is not covered by the warranty.
Consequential damage

The consequential damage i.e., the damage occurring other than to the object of supply itself is out of warranty coverage.

2.6 Service/repair work and disposal of defective parts and/or assemblies

Use of genuine parts
Use only genuine Magnum spare parts when repairing the product.

Retention & disposal of damaged parts
Be sure to retain all defective and replaced parts and/or assemblies listed on a warranty claim at least six (6) months from the date of claim or until a decision from Magnum Attachments Inc. has been made on the warranty claim.

The defective parts and/or assemblies can be discarded if Magnum does not request for return of defective parts or other instruction is given from Magnum within six (6) months of the warranty claim.

The defective parts should be cleaned unless this destroys the evidence of the cause of defect and any exposed portion should be coated with a light coat of oil, grease or any other anti-rust compounds.

Failed or defective parts and/or assemblies should be stored in an area separated from other parts, and should not be left exposed to customer or other visitors.

All warranty parts and/or assemblies should be kept together and must be properly identified by the claim and part number.

Return of defective parts and/or assemblies
If the defective parts and/or assemblies are requested to return, they should be sent to Magnum within 30 days after receipt of the request.

Responsibility & Risk
The customer must accept responsibility and risk providing appropriate insurance in transport if damaged or defective parts are returned to Magnum for repair or replacement.
### 2.7 Reimbursement policy for warranty claims

**Hydraulic Hammer Warranty Labour Guide**

<table>
<thead>
<tr>
<th>Job Specifications</th>
<th>RHB 304-309</th>
<th>RHB 313-325</th>
<th>RHB 330-350</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammer Reseal</td>
<td>4 hr</td>
<td>6 hr</td>
<td>8 hr</td>
</tr>
<tr>
<td>Replace Through Bolt</td>
<td>1 hr.</td>
<td>2 hr.</td>
<td>3 hr.</td>
</tr>
<tr>
<td>Accumulator Bladder</td>
<td>n.a.</td>
<td>2 hr.</td>
<td>3 hr.</td>
</tr>
<tr>
<td>Retainer Bar</td>
<td>0.3 hr.</td>
<td>0.3 hr.</td>
<td>0.5 hr.</td>
</tr>
<tr>
<td>Lower Bushing</td>
<td>0.5 hr.</td>
<td>0.75 hr.</td>
<td>1 hr.</td>
</tr>
<tr>
<td>Internal Valve</td>
<td>1.5 hr.</td>
<td>2 hr.</td>
<td>3 hr.</td>
</tr>
<tr>
<td>Replace Chisel</td>
<td>0.3 hr.</td>
<td>0.3 hr.</td>
<td>0.5 hr.</td>
</tr>
<tr>
<td>Nitrogen Seal</td>
<td>1 hr.</td>
<td>2 hr.</td>
<td>3 hr.</td>
</tr>
</tbody>
</table>

Magnum Attachments Inc. allows a fixed labour rate of $70.00 per hour. All travel and other related costs incurred are the sole responsibility of the dealer.

**Parts reimbursement**

Magnum Attachments Inc. will at their discretion replace or repair the damaged parts at no charge to the distributor.

**Transport costs**

Magnum Attachments Inc. will pay for regular ground freight and brokerage charges on all warranty replacement parts. Overnight and airfreight charges will be the dealer’s expense.

### 2.8 Warranty claim preparation

**Precondition**

The warranty claim application should be submitted to Magnum within 15 days after repair or failure date. And it is required to enter precise and full details on an appropriate claim form. (Refer to Section 2.9)

**General instruction**
Only one (1) warranty claim application is to be made incidence of damage or per unit. The signature of the service manager or his assigned warranty clerk is required on each warranty claim as confirmation that the claim has been checked for correctness and completeness.

Attach and submit all claim supporting documents such as copy of parts book, photos, sketches or technical reports.

A warranty claim is void unless a signed ‘Delivery Inspection Report’ has been received and registered when the warranty claim is applied.

2.9 Delivery inspection and Warranty registration

**Delivery Inspection Report**

The distributor must fill out and submit the ‘Delivery Inspection Report’, which shall be signed and countersigned by both distributor and customer to Magnum. This report is meant to check whether the normal oil flow and pressure condition are suitable for operation. The condition of installation should be checked and informed to Magnum.

⚠️ IMPORTANT! : Form must be submitted within 15 days after delivery to customer so that the product is covered by warranty from the delivery date.

**Warranty Claim Form**

The distributor must fill out and submit the ‘Warranty Claim Form’ when the failure resulted from the defect of material or workmanship occurred to the product. It should be submitted within fifteen (15) days of the failure. The photo of failed parts should be submitted together with the document as evidence.
DELIVERY INSPECTION REPORT

A) DISTRIBUTOR NAME

Address:

DATE OF DELIVERY

/ / / M D Y

DATE OF INSPECTION

/ / / M D Y

B) TYPE AND CONDITION OF PRODUCT

PRODUCT Model________________ SERIAL NO.__________________________

Oil Flow________________________ GPM

Operating Pressure________________ PSI

Relief Setting___________________ PSI

Return Line Back Pressure___________ PSI

Nitrogen Pressure (Hydraulic hammer)________________ PSI

Flow regulator for attachment

yes ☐ no ☐ .

Oil cooler in excavator

yes ☐ no ☐ .

Oil filter in return line

yes ☐ no ☐ .

Auto Greaser

yes ☐ no ☐ .

C) TYPE AND CONDITION OF BASE CARRIER

MANUFACTURER_____________________ MODEL_____________________ OPERATING HOUR____

REMARKS___________________________

D) WARRANTY

Start Date

/ / / M D Y

Expiry Date

/ / / M D Y

REMARK

E) ACKNOWLEDGEMENT & COMMENT

INSPECTOR’S COMMENT / DISTRIBUTOR

INSPECTOR SIGNATURE

DATE:

INSPECTOR’S COMMENT / CUSTOMER

I hereby acknowledge that the product has been delivered in satisfactory condition and operates satisfactorily, and that I received all items as checked above, and that all aspect of the standard warranty and suggestions in use have been fully explained to me.

INSPECTOR SIGNATURE

DATE:

NOTICE: PLEASE TYPE COMPLETELY AND RETURN TO MAGNUM WITHIN 15 DAYS AFTER DELIVERY COMPLETED
# Warranty Claim Report

## F) Customer and Dates Related

<table>
<thead>
<tr>
<th>Customer Name</th>
<th>Customer Address</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Distributor Name</th>
<th>Location of Product</th>
<th>Type of Application</th>
<th>Magnum Invoice No.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date Product Received</th>
<th>Date of Delivery</th>
<th>Date of Failure</th>
<th>Date of Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / Y M D</td>
<td>/ / / Y M D</td>
<td>/ / / Y M D</td>
<td>/ / / Y M D</td>
</tr>
</tbody>
</table>

## G) Type and Condition of Base Carrier

<table>
<thead>
<tr>
<th>Maker</th>
<th>Model</th>
<th>Operating Hour</th>
<th>Remark</th>
</tr>
</thead>
</table>

## H) Type and Condition of Product

<table>
<thead>
<tr>
<th>Model</th>
<th>Serial Number</th>
<th>Operating Hour</th>
<th>Job Site</th>
</tr>
</thead>
</table>

## I) Failure Information

<table>
<thead>
<tr>
<th>Outline</th>
<th>Cause</th>
<th>Step &amp; Result</th>
</tr>
</thead>
</table>

## J) Warranty Claim Parts

<table>
<thead>
<tr>
<th>Seq. No.</th>
<th>Part Name</th>
<th>Part No.</th>
<th>QTY</th>
<th>Replaced Part</th>
<th>Remarks</th>
</tr>
</thead>
</table>

## K) Decision & Comment

<table>
<thead>
<tr>
<th>Date of Claim / Signature</th>
<th>Distributor Comment</th>
<th>Magnum Decision &amp; Comment</th>
<th>Date of Claim / Signature</th>
</tr>
</thead>
</table>

Notice: Please type completely and return to Magnum.

Please submit to Magnum Office within 15 days after repairs completed.
Magnum Attachments 12 / 24 Month Warranty Re-Build Program

This form must be completed by an Authorized Magnum Attachments Distributor within 10 days of inspection to qualify for additional warranty.

All labor charges and replacement parts are the sole responsibility of the owner.

The hammer shall be disassembled as outlined in the operation and maintenance manual.

L) Product Information:

<table>
<thead>
<tr>
<th>DISTRIBUTOR NAME</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Inspection</td>
<td>Delivery Date</td>
</tr>
<tr>
<td>/ / M D Y</td>
<td>/ / M D Y</td>
</tr>
</tbody>
</table>

Product Model _____________ Serial No. ______________

Oil Flow ____________________ GPM
Operating Pressure ____________________ PSI
Relief Setting ____________________ PSI
Return Line Back Pressure ____________________ PSI
Nitrogen Pressure (Hydraulic Hammer) ____________________ PSI

Flow regulator for attachment Yes ___ No ___
Oil cooler in excavator Yes ___ No ___
Oil filter in return line Yes ___ No ___
Auto Greaser Yes ___ No ___
M) Replacement Parts:

Any parts that the Distributor considers to be worn, or do not meet factory specifications must be replaced. All replacement parts will have the same warranty as stated in the Operation and Maintenance Manual.

<table>
<thead>
<tr>
<th>Seq. No.</th>
<th>Part Name</th>
<th>Part No.</th>
<th>Qty</th>
<th>Replaced Part</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

N) Acknowledgement & Comment

Inspector's Comment / Distributor

Inspector Signature

Date:

Inspector's Comment / Customer

I hereby acknowledge that the product has been delivered in satisfactory condition and operates satisfactorily, and that I received all item as checked above, and that all aspect of the standard warranty and suggestions in use have been fully explained to me.

Inspector Signature