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I MAIN DATA

I - 1 Overall dimensions
I - 2 Technical specifications

<table>
<thead>
<tr>
<th></th>
<th>1000 ft.lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact class</td>
<td>1000 ft.lbs</td>
</tr>
<tr>
<td>Oil supply</td>
<td>26 gpm</td>
</tr>
<tr>
<td>Blows / minute</td>
<td>1000</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>1120 psi</td>
</tr>
<tr>
<td>Working weight</td>
<td>700 lbs</td>
</tr>
<tr>
<td>Height</td>
<td>60 in</td>
</tr>
<tr>
<td>Shock dampener in hydraulic circuit</td>
<td>Yes</td>
</tr>
<tr>
<td>Automatic cut-off</td>
<td>Yes</td>
</tr>
<tr>
<td>Tool diameter</td>
<td>3 in</td>
</tr>
</tbody>
</table>

The 26 gpm oil flow is the maximum oil flow setting allowed on the BRH125 hammer. The BRH125 hammer can be used with carriers providing lower oil flows, but will produce lower blow rates. To maintain an efficient hammer power, pressure adjustment slides have been designed [see paragraph II-2].

<table>
<thead>
<tr>
<th>Tool references</th>
<th>Dimension</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard moil point</td>
<td>25 in</td>
<td>36481</td>
</tr>
<tr>
<td>Long moil point</td>
<td>37.5 in</td>
<td>36554</td>
</tr>
<tr>
<td>Chisel</td>
<td>25 in</td>
<td>36482</td>
</tr>
<tr>
<td>Long chisel</td>
<td>37.5 in</td>
<td>218027</td>
</tr>
<tr>
<td>Spade</td>
<td>8 in wide</td>
<td>100772</td>
</tr>
<tr>
<td>Blunt</td>
<td>25 in</td>
<td>36484</td>
</tr>
<tr>
<td>Compactor [Tamp foot]</td>
<td>16 x 16 in²</td>
<td>SDS125</td>
</tr>
<tr>
<td>,, ,, [Shank]</td>
<td></td>
<td>DCA125</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>hammer</th>
<th>excavator tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum temperature</td>
<td>175 °F</td>
<td>160 °F</td>
</tr>
</tbody>
</table>

Oil temperature plays an important role as excessively hot oil increases internal leakage [which lowers efficiency] and deteriorates the piston seals and the accumulator diaphragm.
II MAINTENANCE INSTRUCTIONS

The life of a tool is determined by its operating time. The hour-meter of your excavator will not produce an accurate measurement of the hammer operating time. Travelling and boom positioning are excavator functions that consume a lot of time but do not involve actual hammer operating time.

II-1 Mounting tool and pin

When taking delivery of your new hammer, spend just a few minutes to familiarize yourself with the tool changing procedure.

III-1.1 To insert a tool

a> Insert the tool [rep. 50] into the front guide. Make sure that the two flat edges are well positioned in order to insert the retaining pins.

b> Push the two retaining pins [rep. 36] to the end. The two locks [rep. 34] will release themselves.

Before inserting a new tool inside the hammer, make sure the shank of the tool, the bushing, and the two retaining pins are hand-greased [as a grease, we recommend the use of TRAMAC BRH7].
II-1.2 To remove a tool

a> Use a screw-driver to push in the lock [rep. 34] in hole A  
b> Using another screw-driver, push retaining pin [rep. 36] out of hole B.  
c> Repeat on the other side for the second pin.  
d> remove the tool.

When removing the tool, take care not to drop the tool on sharp objects, or polished surfaces may be damaged permanently.

II-2 Lubrication

The only routine maintenance for the TRAMAC model BRH125 is point lubrication. It is essential and cannot be overlooked; it reduces considerably the frictions between the bushing and the tool and lengthens the life of your hammer.

a> Before inserting the tool [rep. 50] inside the hammer, hand-grease the shank of the tool, the bushing, and the two tool-retainers.

b> During normal daily operation, every two hours 10 shots with a hand operated grease pump in the grease fitting [rep. 37]. Use TRAMAC BRH7 grease which may be obtained from your TRAMAC dealer.

A properly lubricated hammer will show some grease running down the point: Keep the tool wet all the time.
II-3 Tool retainers

Examine the retaining pins [rep. 36] 2 or 3 times a week. Change them when they show signs of heavy wear (like becoming oval shaped or showing big cracks).

Deep and irreversible damages may result from ignoring the above mentioned recommendations and lead to forfeiture of warranty.

II-4 Tool bushing and front guide wear parameters

TRAMAC BRH125 features a replaceable chuck-bushing [rep. 39]. The bushing and front guide must be regularly checked for wear. Excess wear will cause misalignment between the tool and the striking piston. Thus, the impact will generate stress contractions detrimental to the striking faces.

Wearing limits table

<table>
<thead>
<tr>
<th>Rep.</th>
<th>Designation</th>
<th>Length (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Front guide diameter</td>
<td>? 2.677</td>
</tr>
<tr>
<td>B</td>
<td>Chock bushing diameter</td>
<td>? 3.287</td>
</tr>
<tr>
<td>X</td>
<td>Striking chamber length</td>
<td>? 5.098</td>
</tr>
</tbody>
</table>

Check wear regularly to be sure not to exceed 3/16 " between tool and bushing. When wear exceeds above indicated tolerances, consult your TRAMAC dealer for part replacement.
II-5 Side-rods

Daily, inspect the tie rods [rep. 25] for possible breakage or loosening by tapping on each rod with a metal object. You will notice if a rod is broken by its particular sound.

Daily, check for loose tie rods. Consult your TRAMAC dealer for the tie rod tightening procedure. It is a very sensitive undertaking and incorrect methods can result in serious consequences. Your TRAMAC dealer knows the torque specifications and will assist you in tightening the tie rods.
II-6 Accumulator

TRAMAC accumulators [rep. 3] should stay charged for at least one operating year. In normal operation, the two hammer hoses vibrate lightly; but when the accumulator is discharged, the hoses will jump violently. You will also note a power loss as the hammer will continue to fire, but will have no force.

Report this immediately to your TRAMAC dealer.

CAUTION

Check nitrogen pressure with test gauge P/N 21006 and, if necessary, recharge with charging fixture P/N 51347.

<table>
<thead>
<tr>
<th>Accumulator pressure</th>
<th>385 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulator tightening screw [rep 4] torque</td>
<td>145 ft.lbs</td>
</tr>
</tbody>
</table>

TRAMAC accumulators do not loose their charge through leakage. A TRAMAC accumulator consists of two flanges between which is held a diaphragm (reassembling a pie plate). The only time a TRAMAC accumulator will loose its charge will be when this diaphragm becomes perforated.

Never try to open the accumulator without discharging previously the pressure through the inflating screw.

II-7 Storage

Put the appropriate plugs on the hammer and excavator couplings, to avoid any oil leakage and dust penetration. Put the breaker away under cover in a clean place. Lubricate with grease the visible part of the piston and the entire tool to avoid damage from rust.
Remember, a corroded piston destroys its seals in a few minutes. This operation can't be overlooked in case of underwater work, and in particular, in the case of seawater.

II-8 Underwater working

The TRAMAC BRH125 model in the standard version must not be used for underwater work, even for very short periods of time. If the chamber between the piston and the tool fills with water when the piston strikes, the water will not be evacuated fast enough and a considerable pressure rise will then occur which will destroy the piston seal (with a risk of seizure).

II-8.1 Underwater kit

For underwater operation, two different procedures have to be followed depending on the front guide your hammer is equipped with:

case A : if equipped with new standard front guide (P/N 46289, since 1989), install air-presurization kit 78341

case B : If equipped with the old standard front guide (P/N 43852), put new front guide (P/N 46289) and air pressurization kit 78341.
II-8.2 Compressor pressure

Pressure from the compressor must be at least 22 psi above the water pressure at the working depth.
III OPERATING INSTRUCTIONS

III-1 Cold weather starting

Start up the excavator and circulate the hydraulic oil to warm it up before starting the hammer. When oil is warm, raise the hammer from ground, idle the engine and energize the hammer control valve. The oil will pass through the hammer but the hammer will not fire. Run this way for 5 to 10 minutes; this will warm up the hammer parts. In below zero temperatures, we suggest the tool be stored in a warm shed at night. Extreme cold can crack the point when you start the breaking operation.

III-2 How to obtain maximum productivity and long life

TRAMAC working tools are made from a special steel far superior to any tool steel commercially available. Unlike other tools on the market, our steel is hardened all the way through - no thin shell of hard steel which wears quickly. When the tools lose their edge, either at the tip or on the sides, it is possible to sharpen them without repeating heat treatment, using one of the following methods:

A> With a milling or planning machine for chisels and cutters, or with a lathe for the moils and chisels. These operations must be completed using the adequate type of hard metal tool.

B> By sharpening: this operation must be performed using a coolant, in order not to overheat the tool to be maintained.

As a general rule, never let the tool cool quickly or suddenly, even when it is used with the breaker.

The fact of dipping a tool into water when it has been heated in the course of work, or leaving it in the snow in winter, results in a quenching effect on the tip or cutting bit, and this increases the risk of breakage.
Tools are covered by TRAMAC against metal defects (very uncommon). It is not unusual that some operations (working at angles, blank firing, ...) lead to tool breakage, including inside the chuck housing. The use of aftermarket tools will void your warranty for any claim related to parts in contact with the tool (which includes the main piston).

Learning to run a hammer properly is not difficult. It takes a little time and just plain common sense. To preserve the life of the tool and obtain maximum hammer productivity, we urge you to read the following.

III-3 How a demolition tool cracks rock and concrete

When the hammer piston strikes the top of a demolition tool, it sends a compressive stress wave down to the working end of the tool. Provided the demolition tool is in contact with the rock or concrete which requires breaking, it is this compressive stress wave which fractures the rock. Then, immediately following the compressive wave, a tensile stress wave is formed due to the hammer piston lifting from the top of the demolition tool.

The cycle of compressive and tensile stresses flowing down the tool is repeated for each hammer blow. Obviously, anything that interferes with the strength of the compressive stress wave during service, for example "Blank Firing" or bending of the demolition tool due to leverage, will result in loss of breaker efficiency of up to 80 % and possible failure of the tool itself.

III-4 Cause and effect of fatigue

III-4.1 Correct operating conditions

The continuous cycle of compressive and tensile stresses in the demolition tool, even under correct operating conditions, creates fatigue stress in the tool which can lead to the fatigue failure of the tool before it is worn out. Anything which interferes with the cycle of compressive and tensile stresses will also increase the level of fatigue stress being applied to the demolition tool and, thus, increases the risk of early fatigue failure of the tool.
The main cause of increased fatigue stress in a demolition tool is any form of side pressure during service which creates bending. Thus, utilizing the tool as a lever, using an incorrect driving angle or attempting to break ground using the pull of the excavator are all detrimental to the life of a demolition tool and should be avoided [see figure].

The hydraulic power available in the machine far exceeds the strength of a demolition tool if it is used incorrectly and can "snap the tool like a carrot".

III-4.2 Other causes of increased fatigue stress in a demolition tool include:

A> Free running (or Blank firing)
Free running occurs when the hammer piston strikes the top of the demolition tool when the working end is not in proper contact with the rock or concrete to be broken. This includes jobs where the tool slides off the work and also when break-through of thin concrete slabs or boulders occurs.

B> Cold:
Low temperatures cause a demolition tool to be more susceptible to fatigue failure. Tools should be warmed before use.

C> Mechanical and thermal damage:
Any form of damage to the surface of a demolition tool renders it more liable to suffer fatigue failure. Thus, all care must be exercised to prevent scratches, gouges or weld marks occurring due to accidental damage, galling caused by contact between the tool and chuck bushing through the lack of lubrication or excessive bending.

D> Lubrication:
Care must be taken to avoid metal to metal contact that, as a result of galling, could cause deep damage marks which, in turn, may lead to the formation of fatigue cracks and eventually failure of the demolition tool. Make sure that the shank of the demolition tool is well lubricated before inserting it into the hammer.
E> Corrosion:
A rusty demolition tool is more likely to suffer fatigue failure. Keep tools well greased and sheltered from the weather when not in use.

III-5 Demolition tool fatigue failure

Demolition tool fatigue failure will occur approximately 4 inches either side of the chuck front face [see figure] or through the retainer pin flat. Another slightly less common failure area can fall approximately 8 inches from the working end, subject to the nature of use. The fracture face itself will normally exhibit semi-circular polished area with the remainder being of rougher appearance (see figure). The polished semi-circular area is the fatigue area and generally started from a damage mark or other stress initiated on the outside of the demolition tool and spread inwards.

The fatigue area slowly widens until the stresses being applied to the demolition tool cause sudden failure of the remaining section. Generally, the size of the fatigue area indicates the level of stress applied to the tool, i.e. the smaller the fatigue area, the higher the stress level, although it must be borne in mind that once initiation of a fatigue crack has taken place, it requires a lower stress level to cause it to grow.
III-6 Typical failures

TRAMAC demolition tools are manufactured from first class materials and then heat treated to produce a fatigue and wear resistant tool. Thus when a tool has apparently failed to give a satisfactory service life, a brief visual inspection can often give a quick indication about the cause.

Wear is dictated by the conditions of the material being broken, but, in general, the following guidelines apply:

- Blank tools worn more than 1/3 of their diameter, or moils and chisels worn back more than 2 inches from the working end, are classed as reasonable life.

III-7 TRAMAC demolition tool guide

<table>
<thead>
<tr>
<th>Ref</th>
<th>Tool type</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Moil point</td>
<td>Low abrasive, homogenous material</td>
</tr>
<tr>
<td>B</td>
<td>Chisel</td>
<td>Plastic or heterogeneous material</td>
</tr>
<tr>
<td>C</td>
<td>In-line chisel</td>
<td>Plastic or heterogeneous material</td>
</tr>
<tr>
<td>D</td>
<td>Blunt</td>
<td>Crumbly rock</td>
</tr>
<tr>
<td>E</td>
<td>In-line asphalt cutter</td>
<td>Asphalt cutter and trenching</td>
</tr>
<tr>
<td>F</td>
<td>Spade Frost</td>
<td>Asphalt and trenching</td>
</tr>
</tbody>
</table>
Fatigue breakage with typical fatigue wrinkles due to steel defect. 

100% WARRANTY

Failure due to blank firing or excessive wear of bushings and/or chuck housing. 

NO WARRANTY

Failure due to:
- operation with worn out retaining pins,
- blank firing,
- twisting tool.

NO WARRANTY

Typical failure caused by misalignment between down pressure, hammer and tool (prying, levering).

NO WARRANTY

Breakage due to improper contact between the tool's tip and rock or concrete.

NO WARRANTY

Mushrooming or fast wearing caused by operating too long on the same spot.

NO WARRANTY
IV HAMMER TEST

Measurement of the high pressure setting

For normal day to day work, TRAMAC's BRH 125 hammer has been preadjusted in manufacturing to obtain 1120 psi at 26 gpm for an oil temperature of 110 °F on a moderately hard ground.

<table>
<thead>
<tr>
<th>MAX FLOW RATE</th>
<th>MAX WORKING PRESSURE</th>
<th>MAIN SYSTEM RELIEF SETTING</th>
<th>MAX BACK PRESSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 GPM</td>
<td>1120 PSI</td>
<td>1600 PSI</td>
<td>45 PSI</td>
</tr>
</tbody>
</table>
1. Never use the hammer as a lifting device.
2. Stay clear of hammer while in operation, flying objects can cause severe injuries, even death.
3. Be sure decals are clearly visible. Clean or replace as necessary.
4. Activate the hammer only when the operator is seated in the cabin with full-control of the machine.
5. Do not make any alterations to the hammer without authorization from Tramac Product Support department.
6. Use only Tramac replacement parts.
7. The major hammer components are heavy. Take safety precautions when handling.
8. When installing or removing hammer, keep hands and fingers clear of mounting pin holes and linkage. Instruct operator to touch controls only when signaled.
9. Be cautious of possible flying metal particles when striking any hardened surfaces with a hand tool. Wear safety glasses when performing such activities.
10. Wear ear protection if conditions warrant. Consult OSHA regulations.
11. Use hammer for its intended purpose only.
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<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Qty.</th>
<th>DESCRIPTION</th>
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<td>1</td>
<td>36467</td>
<td>1</td>
<td>Back head including:</td>
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<tr>
<td>2</td>
<td>58082</td>
<td>4</td>
<td>(HC insert thread</td>
</tr>
<tr>
<td>3</td>
<td>18992</td>
<td>1</td>
<td>O-ring</td>
</tr>
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<td>4</td>
<td>31118</td>
<td>1</td>
<td>Accumulator</td>
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<td>5</td>
<td>31121</td>
<td>10</td>
<td>Screw</td>
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<td>20463</td>
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<td>Knee piece 1&quot; 1/4 NPTF</td>
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<tr>
<td>6</td>
<td>14283</td>
<td>2</td>
<td>O-ring</td>
</tr>
<tr>
<td>7</td>
<td>6711</td>
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<td>O-ring</td>
</tr>
<tr>
<td>8</td>
<td>38061</td>
<td>1</td>
<td>O-ring</td>
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<tr>
<td>9</td>
<td>21292</td>
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<td>Threaded plug</td>
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<td>ROTATING CONNECTIONS LP:</td>
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</tr>
<tr>
<td>10</td>
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<td>Knee piece 1&quot; 1/4 NPTF</td>
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<tr>
<td>11</td>
<td>14283</td>
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<td>O-ring</td>
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<td>12</td>
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<td>13</td>
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<td>Threaded plug</td>
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<tr>
<td>15</td>
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<td>1</td>
<td>Pressure adjustment slide (see II-2)</td>
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<td>PISTON ASSEMBLY:</td>
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<td>16</td>
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<td>Cylinder</td>
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<td>33420</td>
<td>2</td>
<td>Lip seal</td>
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<td>18</td>
<td>29203</td>
<td>3</td>
<td>O-ring</td>
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<td>19</td>
<td>36473</td>
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<td>Piston</td>
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<td>36474</td>
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<td>Distributor</td>
</tr>
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<td>Plunger</td>
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<td>36475</td>
<td>1</td>
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<td>58143</td>
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<td>Pin</td>
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<tr>
<td>ASSEMBLING:</td>
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<tr>
<td>25</td>
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</tr>
<tr>
<td>31</td>
<td>46289</td>
<td>1</td>
<td>Chuck housing</td>
</tr>
<tr>
<td>32</td>
<td>38894</td>
<td>1</td>
<td>Plug (included with 46289)</td>
</tr>
<tr>
<td>33</td>
<td>22681</td>
<td>2</td>
<td>Lock spring</td>
</tr>
<tr>
<td>34</td>
<td>24824</td>
<td>2</td>
<td>Lock</td>
</tr>
<tr>
<td>35</td>
<td>9927</td>
<td>2</td>
<td>Roll pin</td>
</tr>
<tr>
<td>36</td>
<td>31069</td>
<td>2</td>
<td>Tool retaining pin</td>
</tr>
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<td>37</td>
<td>6178</td>
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<td>43853</td>
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<td>Pin</td>
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<tr>
<td>41</td>
<td>6218</td>
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<td>Plug</td>
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**SIDE PLATE MOUNTING BRACKETS:**

<table>
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<th>Part Number</th>
<th>Qty.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
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<td>Left mounting plate</td>
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<td>1</td>
<td>Right mounting plate</td>
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<td>75531</td>
<td>1</td>
<td>Protecting plate</td>
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<td>36114</td>
<td>2</td>
<td>Screw</td>
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<td>47</td>
<td>36149</td>
<td>6</td>
<td>Washer</td>
</tr>
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<td>48</td>
<td>21834</td>
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<td>Nut</td>
</tr>
<tr>
<td>49</td>
<td>31138</td>
<td>4</td>
<td>Screw</td>
</tr>
</tbody>
</table>
### BRH 125 Accumulator HP

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Qty.</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>31119</td>
<td>1</td>
<td>Lower flange</td>
</tr>
<tr>
<td>2</td>
<td>27175</td>
<td>1</td>
<td>Diaphragm</td>
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<tr>
<td>3</td>
<td>31120</td>
<td>1</td>
<td>Upper flange</td>
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<tr>
<td>4</td>
<td>65386</td>
<td>10</td>
<td>Screw</td>
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<tr>
<td>5</td>
<td>26428</td>
<td>1</td>
<td>Inflating screw</td>
</tr>
<tr>
<td>6</td>
<td>14826</td>
<td>1</td>
<td>Ring</td>
</tr>
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</table>

**ACCUMULATOR ASSEMBLY:**

**MIANTENANCE ACCESSORIES LIST:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>DESCRIPTION</th>
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<tr>
<td>46294</td>
<td>1</td>
<td>Seal kit</td>
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<tr>
<td>31069</td>
<td>2</td>
<td>Tool retainers</td>
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<tr>
<td>6178</td>
<td>1</td>
<td>Grease fitting</td>
</tr>
<tr>
<td>36481</td>
<td>1</td>
<td>Spare tool</td>
</tr>
</tbody>
</table>

Tighten Bolts to 140 ft-lbs
TROUBLES SHOOTING ... REMEDIES
A - Oil leakage on hammer.
Damaged or worn seals.
Call your TRAMAC distributor.

B - The breaker loses power; high vibrations in breaker hoses.
The accumulator is deflated or diaphragm punctured. Check the oil temperature.
If oil is too hot, ask a technician to check the breaker circuit relief valve setting.
Call your TRAMAC distributor.

C - The hammer operates normally, then slows down and stops. A few minutes later the hammer will start again then stop again.
Hydraulic oil is too hot.
Excavator circuit must be checked for heat source.
If necessary reduce the breaker operating pressure.

D - One side rod bolt has broken.
Stop working immediately and call your TRAMAC distributor.

E - After connection to carrier, the breaker operates for few blows then stops.
The return hose is plugged, check the quick coupling seat (if installed).
Recommendation: Check oil temperature and settings of carrier relief valves. If relief valve is not adjusted properly, oil may heat up quicker due to the high total power of rock breaker. This will cause the rock breaker to perform poorly.

PANNES POSSIBLES ... REMÉDES
A - Fuite d'huile au niveau du marteau.
Joints d'étanchéité endommagés ou usés.
Consultez votre distributeur TRAMAC le plus proche.

B - Le marteau manque de puissance, les flexibles de raccordement battent.
L'accumulateur est dégonflé, la membrane de l'accumulateur est percée. Vérifier la température de l'huile. En cas d'échauffement important, faire vérifier par un technicien, le réglage des clapets de décharge du circuit de pelle. Consultez votre distributeur TRAMAC le plus proche.

C - Le marteau fonctionne normalement puis la cadence ralentit et le marteau s'arrête. Quelque temps après le marteau redémarre puis s'arrête.
L'huile hydraulique est trop chaude.
Excavator circuit must be checked for heat source.
If necessary reduce the breaker operating pressure.

D - Un tirant d'assemblage est cassé.
Arrêter le travail immédiatement.
Consultez votre distributeur TRAMAC le plus proche.

E - Après adaptation au porteur, le marteau tape quelques coups puis s'arrête.
Le flexible retour est bouché, vérifier le coupleur (si montée).
Recommandation: Le brise roche ayant une puissance globale élevée, veiller au bon refroidissement de l'huile. Un mauvais réglage du clapet de suppression du porteur peut être la cause d'un échauffement important de l'huile entrainant un mauvais fonctionnement du brise roche.
TECHNICAL PROBLEMS

Before looking for a hammer problem, look for a problem in the installation, like bad quick couplers or a plugged filter [see page M3 for how to check the installation].

Make sure that the hammer has not been hooked up backwards.

Make sure that the hammer has the proper tool.

Make sure that the down pressure has been applied.

Make sure that no valve(s) are closed.

For any other problem, refer to the Trouble Shooting page M1. If you cannot identify the problem, BEFORE calling your TRAMAC dealer, collect the following information. A complete diagnosis cannot be done without it.

| A. Flow rate in high pressure line running to the hammer at operating temperature and operating pressure. |
| B. Value of high pressure at hammer inlet when hammer is operating (use a 0-3000 psi gauge). |
| C. Value of back pressure in return line (use a 0-160 psi gauge). |
| D. Setting of relief valve in the system. For more details, please refer to page M3. |
How to check hydraulic circuit and installation

Mount a flow meter in place of the hammer. Also, mount a low pressure (0-160 psi) gauge on the outlet of the flow meter in order to test the back pressure in the return circuit.

With the flow meter in place, activate the circuit and bring the machine up to operating temperature; do not test the machine cold.

If the control valve is equipped with solenoid, switch on the solenoid before starting the engine to avoid damage to the flow meter. Do not switch on or off the solenoid when the engine is running. Adjust the flow output to match the requirements of the BRH 125 - see table on page 18.

After the flow has been adjusted, load the flow meter to the hammer operating pressure value (see table on page 18) plus 400 psi, and readjust the flow if necessary to keep the hammer flow value constant for pressure varying between 1000 psi and hammer operating pressure value (see table on page 18) plus 400 psi.

Relief valve problems

If you cannot reach the proper oil flow at the hammer operating pressure value plus 400 psi, you may have a bad system relief setting or a bad hammer control valve.

To check system relief valve see excavator manual for proper relief setting. Build pressure with flow meter to determine relief cracking pressure (usually 50 to 100 psi below relief setting). Reset relief if needed.

There should be 400 to 500 psi between hammer regulated pressure value and system cracking pressure or heat may develop.

Pump problems

If you cannot produce proper oil flow against pressure varying from 500 psi to hammer operating pressure plus 400 psi, the pump could be bad or there is excessive leakage in the circuit.

Hammer control valve problems

If relief valve and pump are good, open and close valve three or four times: The valve spool may be sticking or back pressure is developing on return line.

With the flow adjusted and the flow meter loaded to hammer operating pressure value plus 400 psi, take note of the low pressure gauge reading.

The return pressure should be less than 45 psi. If the back pressure is more than 45 psi, the restriction causing this higher pressure must be found and eliminated.

After the flow meter test is completed, disconnect the flow meter and connect the hoses to the hammer. Mount a high pressure gauge (0-3000 psi) on the hammer HP line and take the machine outside. Run the hammer on a heavy 3 inch by 40 inch by 40 inch steel plate on hard ground and take note of the pressure reading. Call your TRAMAC dealer if pressure adjustments are needed.
First, remove the point from the hammer by

- Pushing the lock (#34) with a screwdriver or a steel rod.

At the same time, drive out the tool retaining pin (#36) with another screwdriver. The same has to be performed on the other retaining pin before removing the point.

Drive both retaining pins (#36) half way inside the front-guide (#31).
Install the hammer in the special stand (P/N --). Secure the hammer by pushing on the 2 retaining pins (# 36).

Unscrew and remove the 6 assembling bolts (# 46 & 49) using a 1 1/2" wrench. Remove both side-plates (# 43 & 44).

Unscrew and remove the 10 bolts (# 4) on top of the accumulator (# 3) with a 1 1/8" socket.

Screw in two bolts (# 4) on the side of the accumulator assembly (# 3). Use these two bolts to handle and to remove the accumulator (# 3) as well as the o'ring (# 2).
Unscrew and remove the two plugs (# 9 & 14) with a 1 1/2” wrench.

Remove the two swivels (# 5 & 10) by hand.

Never use a hammer to remove these parts. You may damage permanently the seats of the swivels (# 5 & 10) on the back-head (# 1).

Loosen the four nuts (# 26) in the front-guide (# 31). The dimension of the nuts is 42 mm (around 1.65”). A special wrench is available from TRAMAC (P/N 41777).

To drive out the back-head (# 1), install under each nut (# 26) a steel piece (1 5/8” height by 2” ø). Then unscrew progressively the nuts (# 26) until the back-head (# 1) is free. Then, remove the back-head (# 1) with the 4 side-rods (# 25) attached.
During the operation, make sure that the back-head stays aligned with the cylinder (# 16).

Check that the back-head (# 1) is driven out of the cylinder (# 16) and not the cylinder (# 16) out of the front-guide (# 31).

If not, fully screw two bolts (# 4) into the cylinder. Then, using a hammer and a piece of wood, drop the cylinder (# 16) back into the front-guide (# 31).

Remove the centering pin (# 22) on top of the distribution cover (# 23).

Remove the distribution cover (# 23) and the centering pin (# 22) on top of the cylinder (# 16).

Remove the plunger (# 21), the distributor (# 20) from the cylinder (# 16).
Pull up the cylinder (# 16) from the front-guide (# 31). Remove the piston (# 19) from the cylinder (# 16).

Handle the piston (# 19) very carefully. Take a special care of the distributor seat on top of the piston. If not, you may permanently damage this part.

Remove the centering pin (# 24) on top of the front-guide (# 31).
Some parts like the cylinder (# 16), the distributor (# 20) or the plunger (# 21), are protected with an "Antiseize" black coat. These parts must be cleaned with gasoline only. If not, the protective coat may be damaged and seizure may occur later.

In case of lapping, always clean and wipe the lapping compound after the operation. Always use fine grain products. During lapping or grinding, make sure to always turn in the same direction around the part. Never lap or grind vertically to avoid making longitudinal marks which may induce greater internal leakage or o'ring failures.

In case a black area ("Antiseize" protection coat) should be polished, always keep the area as small as possible around the damaged surface. If not, the protection coat will no longer be efficient and seizure may occur later.

To wipe parts, always use new service rags. If textile fibers remain inside the hammer, they may disturb the operation of the hammer.

Always use TRAMAC genuine seals and o'rings. They are made with high quality elastomers in order to increase their resistance and to lengthen their life expectancy. Grease the seals and o'rings in order to facilitate their installation.
Before installing any part, always coat it with an oil film. Never hit a part with a steel tool. Use always either a rubber sledge hammer or a piece of wood between the part and the hammer.

Plunger (# 21):
- Check the outside surface (both large diameter section and small diameter section).
- Make sure that the widest section moves freely in its housing in the piston (# 19).
- Make sure that the narrowest section moves freely through the distributor cover (# 23).
In case of major damage on the plunger (#21) like seizure, deep marks, ... the part must be replaced.

If the plunger (#21) is slightly damaged, lap the damaged area without modifying the diameter.

In any case, remove any potential mark on the piston (#19) and the distributor cover (#23). Always use a fine grain hone for removing the high spots without modifying the inside diameters.

To check internal leakages apply the following procedures;

- The plunger (#21) and the distributor (#20) must be dry without any lubricant inside or outside,

- Close the central hole on the plunger (#21) and then push down the plunger. You should feel a resistance due to over-pressurization of the trapped air. This resistance should stay at least 4 seconds.

- Close the central hole before pulling up the plunger (#21). A vacuum should be created at the bottom of the plunger and should last at least 4 seconds.
Check the opposite seats on the distributor cover (# 23) and the cylinder (# 16). In case of slight damage, remove the high spots.

Check the seat of the distributor (# 20) in contact with the piston (# 19). If necessary, lap the seat. Never remove more than 0.004".

Never remove the V shape notch on the distributor (# 20). This is an orifice controlling the cycling of the hammer.

Check the opposite seats on the distributor (# 20) and the distributor cover (# 23). If necessary, lap the seats. Never remove more than 0.004 ".

Check the opposite seats on the distributor cover (# 23) and the back-head (# 1). No damage should be observed. However,
- In case of damage on the distributor cover, remove the high spots by grinding slightly with an emery stone.
- In case of damage on the back-head (# 1), remachine this surface. Make sure to remove less than 0.020 ". If not, you may alter the specially treated outside steel layer. Make sure to keep the surfaces parallel when machining.
Piston (#19) and cylinder (#16):

Check the outside surface of the piston. In case of slight damage, grind the high spots with an emery paper (finer than nº 400). Always grind around a circumference. In case of heavy damage like seizure, deep marks, ... contact TRAMAC Service Department.

Check the inside of the cylinder (#16). In case of slight damage, hone the inside of the cylinder. Remove only the highest spots and save as much of the black "Antiseize" coat as possible.

To control the tolerances between piston and cylinder, apply the following procedures:

- Oil both parts (piston #19 & cylinder #16),
- Drop the piston (#19) inside the cylinder (#16)
- At the end of the stroke, the piston should be stopped by an oil cushion.

In case of direct metal-to-metal contact, contact TRAMAC Service Department.

Then, install the cylinder in a horizontal position and make sure that the piston can move and rotate freely inside the cylinder.
Check the striking face of the piston (# 19). In case of wear or mushrooming of the piston (more than 0.040 " deep), it is recommended to change the part.

Back-head (# 1):

Check the seats of the 3 o' rings (# 18) inside the back-head. If necessary, lap these seats.

Check the threads of the 4 side-rods (# 25) (use a 24 mm wrench or a 15/16" wrench). Also check the helicoils (P/N 58082) in the back-head (# 1).

Check the surfaces in contact with the swivels (# 5 & # 10). If necessary, lap these surfaces by using emery cloth No. 400 or finer. In case of heavy damage, contact Tramac Service Department.

Also lap the inside of the 2 swivels (# 5 & # 10).
Check the threads of the 4 side-rods (# 25) and the 4 nuts (# 26). The nuts (# 26) should be easily hand-screwed. If not, replace the damaged side-rods and nuts.

In case of side-rod replacement, it is recommended to exchange the complete set (4 side-rods + 4 nuts).
Remove the front-guide (# 31) from the working stand and make a visual inspection looking for cracks.

Check the seats of the side-rod nuts (# 26). If not flat, remachine these seats.

Never remove more than 0.020" [1 mm] to avoid damaging the hardened superficial layer.

Install a new tool inside the front-guide (# 31). Make sure that the tool is in close contact with the shank stop. Rotate the front-guide around the tool and make sure that the rotation is smooth and free.

Always use genuine Tramac tools.
Check the wear on the bushing (# 39) and the front-guide (# 31). If the wear exceeds the maximum limits shown in the following table, contact Tramac Service Department.

<table>
<thead>
<tr>
<th></th>
<th>P/N</th>
<th>Factory Dim. (in/mm)</th>
<th>max. Dim (in/mm)</th>
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<tbody>
<tr>
<td>Front-guide : Dim A</td>
<td>46289</td>
<td></td>
<td>2.677 / 68.0</td>
</tr>
<tr>
<td>Dim C</td>
<td></td>
<td>1.732 / 44.0</td>
<td>1.595 / 40.5</td>
</tr>
<tr>
<td>Dim D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bushing : Dim B</td>
<td>43853</td>
<td></td>
<td>3.287 / 83.5</td>
</tr>
</tbody>
</table>

Check both lock assemblies composed of the lock (# 34), the spring (# 33), and the elastic pin (# 35).
To replace these locks, push out the elastic pin (# 35) using a steel rod. In case of jammed lock (# 34), screw in a 5/16" bolt on its end and then pull the bolt.

In case of replacement of the bushing (# 39):
- first remove the 4 plastic plugs (# 41) and the 2 pins (# 40).
- then, using a bushing extractor or a hydraulic press, press out the bushing (# 39).

Before inserting a new bushing (# 39), make sure that the inside surface of the front-guide is smooth. Lubricate both surfaces to facilitate the installation.

To insert the bushing (# 39), either cool the bushing with liquid nitrogen or use a hydraulic press (50 tons min.).

Before inserting the bushing, make sure that the grooves are properly aligned with the pin holes on the front-guide.
Side-plates:

Make a visual inspection of the side plates (# 43 & # 44). Check especially:

- the seats of bolts (# 46 & # 49) and nuts (# 48) on the outside,
- the seats of the reinforcement tubes (# 45) on the inside,
- the housing of the front-guide (# 31) in the inside for welding cracks.

In case of damaged bolt seats, refill and remachine the seats. If not, the bolts will lose their torque during the operation and the side-plates may be definitively damaged.

The clearance between the front-guide and its housing should be as small as possible.

Failure to properly clamp the hammer inside the side-plates will soon induce permanent damage of the side-plates.

Check the wear of the 2 tool retaining pins (# 36). The original diameter is 30 mm (1.181”). These parts should be changed when the wear exceeds 3 mm (0.118”) on one diameter.
Never try to open the accumulator without first discharging the pressure through the inflating screw (#1-5).

Clean the special syringe tool and suck in clean diesel fuel until the syringe is completely full without air bubble. Push the syringe into the central hole in the accumulator grid and press in normal manner (around 45 lbs thrust). When the oil pressure in the syringe reaches the nitrogen pressure, the diaphragm will move away from the grid, the oil will run out from the syringe and will flush out of the other holes of the grid. The pressure in the accumulator is then indicated by the pressure gauge.
Note: If the checking is performed on a stocked accumulator, or if the hydraulic hammer has not been working for a certain time, the value read off the gauge may be higher than that advised. In such case, the diaphragm may have remained glued to the grid or may have hardened, which results in supplementary resistance. The accumulator can, however, be used as such.

If the value is lower than advertised, it is time to repair the accumulator.

Special tools required to service a TRAMAC accumulator:

- Nitrogen gas bottle,
- Regulating gauge installed on top of the nitrogen bottle.
- Charging fixture (P/N 80348)
- Socket 3/8" (or 10 mm)
- Two 1 1/8" wrenches.

Grip the accumulator with a bench-vice. Unscrew the top screw (inflating screw # 3-5) to release the pressure inside the accumulator. Remove the screw (# 3-5) and the tightening (# 3-6).

Unscrew the 10 bolts (# 3-4) using a 5/8" hex-socket. Remove the top flange (# 3.3).
Remove the diaphragm (# 3-2). Check the grid on the bottom flange (# 3-1) and make sure that they are not plugged with debris.

Inspect all steel parts: Upper flange (# 3-3), bottom flange (# 3-1) and bolts (# 3-4). Clean everything with gazole. If necessary smooth with fine emery cloth and wash with oil.

Check carefully the seats of bolts (# 3-4) on the lower flange (# 3-1). A proper surfacing of these seats is very important to keep the torque on these bolts.

Clean and dry completely the top flange (# 3-1) and the diaphragm (# 3-2) before inserting the diaphragm in the lower flange.

Spray the inner part of the diaphragm (# 3-2) with silicone spray. This precaution will avoid a premature wear of the diaphragm due to friction. Do not apply on the outside ring.
Cover with the upper flange (# 3-3). Make sure this flange is clean and dry.

Grease the bolts threads (# 3-4) with "NeverSeize" product like Molykote 1000 available from Tramac. Tighten the bolts. The proper torque is 145 ft.lbs (20 m.kg).

Always cross-tighten bolts by steps : 50 ft.lbs (7 kg.m) each time.

Make sure that the seat of the tight-ring (#3-6) is smooth. If necessary, lap the seat. Install the tight-ring (#3-6) and hand-screw the inflating screw (#3-5).
Make sure that the inflating screw (#3-5) is in close-contact with the tight-ring (#3-6). If not, you may damage the internal threads when installing the charging fixture tool on top.

Make sure that the seat of the charging fixture (P/N 80348) on the top flange is smooth. If not, grind it with fine emery cloth.

Install the charging fixture (P/N 80348) on top of the accumulator with the long bolts going through 2 accumulator holes.
Make sure that the special socket (P/N 21563) is properly seated inside the inflating screw head (#3-5). While tightening the two nuts, make sure that the seal of the charging fixture stays in contact with the accumulator all over its circumference. Use two 1 1/8" wrenchs. Grip the complete assembly on a vice-bench.

Close the charging fixture tap (P/N 80348).

Completely unscrew the regulator.

Make sure that the tap located down-stream of the 0-1000 psi gauge is off.
Open the tap on top of the nitrogen bottle. You should read at least an 800 psi (55 bars) pressure on the 0-3000 psi gauge. If not, recharge the nitrogen bottle.

Carefully screw on the regulating gauge so as to adjust the pressure at 400 psi (27.5 bars) on the 0-1000 psi gauge.

Open the tap downstream from the 0-1000 psi gauge.

Make sure that no nitrogen gas leak occurs between the bottle and the charging fixture. If it is the case, fix the problem before going further.
Unscrew the screw P/N 26428 using the socket P/N 21563 of the charging fixture (P/N 80348).

- Make sure that the nitrogen gas is entering the accumulator (noise).
- Wait until the pressure is stabilized at 400 psi (27.5 bars) (at least 5 minutes).
- Make sure to have the same pressure reading on both 0-1000 psi gauges (gauge on the charging fixture and on the bottle). If not, check the gauges.

In case the nitrogen gas does not enter the accumulator, it may be due to an insufficient unscrewing of the screw P/N 26428. Try again by inserting a nylon washer between the inflating device (P/N 80348) and the accumulator [see diagram at right for proper dimensions].

Tighten the screw P/N 26428 using a 3/8 " socket. The proper torque is 20 ft.lbs.
Turn off the nitrogen bottle tap.

Make sure that the circuit is not pressurized by the nitrogen bottle. Then, open the drain tap on the inflating device (P/N 80348) in order to release the gas pressure in the circuit.

Before removing the charging fixture (P/N 80348) from the top of the accumulator, make sure that the pressure dropped to the atmospheric pressure.

Check the actual accumulator pressure using the syringe P/N 21006.

If you are using the syringe on an accumulator stocked on a shelf or already operated, the pressure reading may be above 360 psi. In such case, the accumulator can be used as is. If not, (pressure reading below 360 psi), the accumulator must be recharged.
To check that seal P/N 14826 is leak-proof, fill the cavity above the screw P/N 26428 with hydraulic oil. If bubbles appear, the accumulator must be recharged again using the same procedure.

Before installing the accumulator (# 3) on top of the back-head (# 1), make sure that the seat of the o’ring (# 2) is smooth. If necessary, lap it.
Following rules must be applied:

- Assembling of an hydraulic breaker must be done in a clean area.
- All parts must be carefully cleaned and wiped before their installation.
- Make sure that the following parts have been washed with cleaning solvent (gazole).
  - Cylinder # 16
  - Distributor # 20
  - Plunger # 21
- Any dust particle (metal or other) must be removed.
- Blow dry to clean parts.
- Before installing any seal or o’ring, grease them. Their installation will be easier and their life lengthened.
- Make sure to lubricate all parts with hydraulic oil before inserting them.
- Never hit a part with a steel tool in order to drive in, always use a rubber hammer.

Drive both retaining pins (# 36) half-way inside the front-guide (# 31). Then, install the hammer in the special service stand (P/N -----).
Install the centering pin (# 24) in its housing on top of the front-guide (# 31).

Lubricate and install the 2 lip seals (# 17) into the cylinder (# 16). Make sure that both seals are turned to the outside (the top seal must turned upwards and the bottom one downwards).

Grease the three o’rings (# 18) and install them in the proper grooves on top of the cylinder (# 16). Screw two bolts (# 4) into the cylinder to facilitate its assembling.

Grease and then insert the seal (# 38) into the front-guide (# 31). Install the cylinder (# 16) onto the front-guide (# 31). Make sure to properly align the centering pin (# 24) and its housing in the cylinder (# 16).
Lubricate the piston (# 19) and the inside of the cylinder (# 16) with hydraulic oil. Slide the piston (# 19) into the cylinder (# 16).

Lubricate the distributor (# 20) with hydraulic oil. Slide the distributor (# 20) into the cylinder (# 16).

Make sure that the orientation of the distributor is right: the wider diameter should face upwards.

Lubricate the plunger (# 21) with hydraulic oil. Slide it into the distributor, wider diameter first.

Install the centering pin (# 24) on top of the cylinder (# 16). Then cover the cylinder with the distributor cover (# 23). Make sure to align the centering pin (# 24) with the notch on the bottom of the distributor cover (# 23).
Coat the threads of the 4 side-rods (# 25) with Never-Seize grease (like Molykote 1000 available from Tramac).
Screw the four side-rods (# 25) in the back-head (# 1). The proper torque is 375 ft.lbs (50 m.kg).

Make sure that the four nuts (# 26) can be easily hand-screwed.

Grease the threads of the other end of the side-rods with Never-Seize grease like Molykote 1000 available from Tramac.

Insert the centering-pin (# 24) into its housing in the distribution cover (# 23).
Grease the three o’rings (# 18) before mounting the back-head (# 1) on top of the distributor cover (# 23). Make sure that the centering pin (# 24) is properly aligned with its housing in the back-head (# 1).

Protect the center hole of the back head (# 1) with a shop towel. Then tap in the back-head (# 1) over the distribution cover (# 23) and the cylinder (# 16) using a wood block and a hammer. Make sure to keep the alignment between the back-head (# 1) and the cylinder (# 16).

Hand-screw the four nuts (# 26) on the side-rods (# 25) until they are in close contact with their seats. Then cross-tighten them up to 200 ft.lbs (27.5 m.kg) to make sure that all parts are properly aligned and in contact. Once this pretightening is done, completely unscrew the 4 nuts and hand-screw them again.

Using the special wrench (P/N 41777 : 42 mm or 1.654”) cross-screw the 4 nuts. Turn 2.5 to 3 flats each nut (turn all nuts one flat in sequence).

Make sure that the flat are perfectly aligned with the front-guide (# 31) sides. If not the side-plates will not fit.
Install the o’ring (# 2) and the accumulator (# 3) onto the back-head (# 1).

Coat the threads of the 10 bolts (# 4) with Never-Seize grease like Molykote 1000 (available from Tramac). Cross-tighten these bolts up to 225 ft.lbs (30 m.kg).

Always cross-tighten bolts by steps : 50 ft.lbs (7 kg.m) each time.

Grease and install the o’rings (# 6 & 11) in the swivels (# 5 & 10).

Mount the swivels (# 5 & 10) on the back-head (# 1).

If the swivels were not marked during the disassembling, the HP swivel has to be mounted on the side where the S/N is stamped. Also, the return swivel goes on the smaller ID stud.
Grease and install the o'rings (# 8 & 13) on the studs seats. Mount the seals (# 7 & 12) on the plugs (# 9 & 14).

When screwing both plugs (# 9 & 14), make sure that the o'rings (# 8 & 13) stay in position. Use a 1 1/2" wrench.

Assemble the side-plates. Make sure to install the plates with the proper orientation in order to have the inlet circuit on the right side and the return circuit on the left side.

Cross-tighten the 6 bolts (# 46 & 49) in sequence. The proper torque is 550 ft.lbs (75 m.kg) except for the middle bolt row if there is no spacer. In such case the middle row bolts should be tightened at 250 ft.lbs (35 m.kg).

The bolts torque should be checked at the end of the first 8 hours of operation.
Remove the BRH 125 from its stand.

Pull out the two retaining pins (#36). Grease the inside of the front-guide (#31), the tool, the two retaining pins (#36) before mounting the new tool.
Pressure adjustment slides have been designed to provide proper hammer working pressure and to maintain efficient hammer power in cases of flow lower than 24 gpm. Changing the pressure adjustment slide is a very sensitive task: Make sure to tee a high pressure gauge (0-3000 psi) on the inlet of the hammer and not to exceed the working pressure of the hammer. Twenty different slides are available. Number 1 is for flows slightly lower than 24 gpm, number 20 is for very low flows (around 11 gpm). There is no precise rule to select the proper slide depending of the inlet flow. Try several until the slide maintains a pressure of 1100 psi.

Make sure to make the test with warm oil. BRH 125 hammers are shipped without any pressure adjustment slide, since they do not need it for recommended inlet flows. (24 to 26 gpm).

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