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HYDRAULIC ROCK BREAKER OPERATING, MAINTENANCE &PARTMANUAL

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PROPEL G8H

HYDRAULIC ROCK BREAKER OPERATING, MAINTENANCE AND PART MANUAL

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|-------------|-----------|--------------|-----|
| CUSTOMER: _ | | | |
| ORDER NO: _ | | DATE: _ | |
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PARTS ORDERING INSTRUCTION WHILE ORDERING PARTS PLEASE PROVIDE PARTS NO., DESCRIPTION AND MACHINE SERIAL NO. ETC. SO THAT IT WILL HELP US TO DELIVER THE PARTS IMMEDIATELY.



ROCK BREAKER G8H OPERATING, MAINTENANCE AND PART MANUAL



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SPECIFICATION

1. SPECIFICATIONS

1.1 GENERAL SPECIFICATION (BOX) - G8H



| SR. NO | ITEM | SPECIFICATIONS |
|--------|--------------------|----------------|
| 1 | WORKING WEIGHT | 454 KG |
| 2 | IMPACT FREQUENCY | 520-1000 BPM |
| 3 | OPERATING PRESSURE | 110-130 BAR |
| 4 | RELIEF PRESSURE | 160-180 BAR |
| 5 | OIL FLOW | 60-80 LPM |
| 6 | BACK PRESSURE | 10 BAR |
| 7 | TOOL DIAMETER | 75 MM |
| 8 | OIL TEMPERATURE | -20 - +80°C |
| 9 | PRESSURE LINE SIZE | 3/4" |
| 10 | RETURN LINE SIZE | 3/4'' |
| 11 | CARRIER WEIGHT | 3-8 TONS |



1.2 TOOL SPECIFICATION FOR - G8H



| MODEL | TYPE | LENGTH (MM) | WEIGHT (KG) | DIAMETER (MM) |
|-------|-----------------|----------------|----------------|------------------|
| | CONE TOOL (A) | 730 | 22 | 75 |
| 0.011 | CHISEL TOOL (B) | 730 | 22 | 75 |
| GõH | BLUNT TOOL (C) | 730 | 22 | 75 |
| | MOIL TOOL (D) | 730 | 22 | 75 |

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1.3 STRUCTURE DETAIL





OPERATION

2. OPERATION

2.1 PRODUCT NUMBER - G8H

The rock breaker stamped serial number plate is attached to the front head. It is important to refer to the serial number during repair or ordering spare parts.

Identification of the machine with its serial number is the good procedure to maintain and identify parts of a specific product.





2.2 SELECTION OF TOOLS

PROPEL can offer the selection of standard and special tools to suit each application. The correct type of tool must be selected to get the best possible working result and the longest lifetime for the tool.

- 1. Blunt
 - For igneous (e.g. granite) and tough rock metamorphic (e.g. gneiss) in to which the tool doesn't penetrate.
 - Concrete
 - Breaking boulders.
- 2. Chisel, Cone, Moil
 - For sedimentary (e.g. sandstone) and weak metamorphic rock into which the tool penetrates.
 - Concrete
 - Teaching and benching.

2.3 PRINCIPLE OF BREAKING

There are basically two types of breaking with a hydraulic breaker:

1. Penetrative (or cutting) breaking

In this form of breaking, cone point or chisel tool is forced inside the material. This method is most effective in soft, layered, plastic and low abrasive material.



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- 2. IMPACT BREAKING
 - In impact breaking material is broken by transferring very strong mechanical stress from tool into material to be broken.
 - Best possible energy transfer between tool and object is achieved with a blunt tool.
 - Impact breaking is most effective in hard, brittle and very abrasive material.



2.4 CORRECT WORKING METHODS

- 1. Prepare the carrier as for normal excavation work.
 - Move the carrier top to proper position.
 - Engage the parking brake.
 - Set the drive to neutral.
 - Disengage the boom lock (if fitted).
- 2. Set engine speed to recommended engine rpm.
- 3. Place tool against the object at 90 degree.
 - Avoid small irregularities on object which will break easily and cause either idle strokes or incorrect working angle.
 - Incorrect working method may cause failure in operation of breaker or housing.
- 4. Use excavator boom to press the breaker firmly against the object.
 - Do not pry the breaker with the boom.
 - Do not press too much or too little with the boom.
- 5. START THE BREAKER.

6. DO NOT LET TOOL MOVE OUTWARD FROM THE BREAKER WHEN IT PENETRATES. FEED BREAKER ALL-TIME WITH EXCAVATOR BOOM.

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- 7. KEEP TOOL AT 90 DEGREES AT ALL TIMES.
 - If object starts to move or it's surface breaks, correct the angle immediately.
 - Keep feed forces and tool aligned.
- 8. STOP BREAKER QUICKLY.
 - Do not allow breaker to fall down, make idle strokes when the object breaks. The constant idle stroke have a deteriorating effect on breaker.
 - If breaker falls down, side plates could be worn out more quickly.
- 9. DO NOT STRIKE ONE SPOT FOR MORE THAN 15 SECONDS AT A TIME.

If the objects does not break, stop breaker and change the position of the tool which dampens the impact effect and cause the tool to overheat.

10. WHEN BREAKING CONCRETE HARD OR FROZEN GROUND, NEVER STRIKE AND BEND THE TOOL AT THE SAME TIME.

- This action may cause the tool to break.
- Bending may be caused by a stone or frozen ground which is hard inside.
- Stop striking if you find sudden resistance under the tool.



2.5 OPERATING TEMPERATURE

The optimized operating temperature of the hammer is -20° C ~ 80° C. If the temperature is lower than -20° C, the breaker and tool must be preheated before starting the operation in order to avoid damage of the tool. They will remain warm during operation.

2.6 OTHER IMPORTANT POINTS

1. Listen to the breaker's sound while you are using it.

- If the sound becomes thinner then the impact is less efficient. The tool is misaligned with the material and/or there is not enough "pressing" force on the tool.
- Realign the tool and press the tool firmly against the material.
- 2. The breaker as a standard assembly, must not be used underwater.

If water fills the space where the piston strike the tool, a strong pressure wave is generated and the breaker may be damaged.





2.7 STORAGE

1. Short term storage

For short term storage between works, place hammer horizontal on wooden blocks. Make sure that tool is lubricated and hydraulic hoses are securely capped. Cover hammer with a waterproof tarp.

2. Long term storage

Check the followings for safe long term storage of the hammer to prevent rust and to keep the hammer in good condition:

- Hammer must be stored in upright position.
- Discharge gas pressure on back head.
- Remove tool and push piston all the way in.
- Grease exposed front end of the piston.
- Plug hydraulic hoses.
- Cover hammer with a waterproof tarp.

2.8 MOUNTING AND DISMOUNTING THE HAMMER

Removal from carrier

- 1. Position hammer horizontally on the floor and remove the tool.
- 2. Stop carrier engine. Operate boom and hammer controls to release pressure trapped inside the hoses. Wait ten minutes for oil pressure to drop.
- 3. Close inlet and outlet lines of the hammer. If quick couplers are used it will, disconnect automatically.
- 4. Disconnect hoses, plug the hoses and the hammer inlet and outlet ports.
- 5. Remove bucket pins and other parts.
- 6. The carrier can be moved aside.

Installation

- 1. Install hammer in the same manner as mounting a bucket. Install bucket pins.
- 2. Connect hoses. Hammer inlet port is marked on the back head with "IN" and outlet port with "OUT".
- 3. Open hammer inlet and outlet lines.

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WARNING!



2.9 SETTING OF OPERATING PRESSURE

- 1. Carrier engine
 - Assemble high-pressure gauge to high pressure measuring port. Start the engine.
 - Set tool of the breaker e.g. on thick steel plate.
 - Adjust engine revolution and start operating breaker.
 - Read average pressure from high gauge operating pressure.
 - Operating pressure is pre-adjust at factory if required.
 - Stop carrier and remove gauge.
 - Tighten plug of the pressure measuring point.
- 2. Relief valve
 - The relief valve is safety device which is used to protect the breaker when pressure rise in hydraulic circuit.
 - The operating pressure of breaker determines the seating of the relief valve in the pressure line.
 - The relief valve setting should be acceptable as per the specification of each PROPLE models.

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2.10 SPECIFICATION OF HOSE AND PIPES

| MODEI | HOSE ASSEMBLY | | PIPING LINE SIZE | | REMARK |
|-------|---------------|---------|------------------|---------|--------|
| WODLL | IN | OUT | IN | OUT | |
| G8H | PF 3⁄4" | PF 3⁄4" | PF 3⁄4" | PF 3⁄4" | |

2.11 HYDRAULIC CIRCUIT





LUBRICATION

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3. LUBRICATION

3.1 MANUAL LUBRICATION

Grease interval

- Tool shank must be well lubricated at regular intervals before installing tool.
- 5-10 stroke from the grease gun to tool bushing and tool at regular intervals.
- Adapt interval and amount of grease to decrease wearing of tool and good working conditions. This should be done every two hours.

Insufficient greasing or improper grease may cause:

- Abnormal wear of tool bushing and tool.
- Tool breakage.

Technical data

- Graphite grease.
- Synthetic oil base with aluminum complex soap.
- Approximately 15% graphite copper solids to reduce metal to metal concept damage.
- Dropping point 260°C (500°F).
- Viscosity 15 cSt.
- Temperature range -30°-230° (-20°-450°F).



3.2 HYDRAULIC OIL

General requirements for hydraulic oil

In general, hydraulic oil originally intended for carrier can be used with this product. However, the temperature of the oil must be monitored. If the temperature of hydraulic oil exceeds +80°C, an auxiliary oil cooler is needed.

When breaker is used continuously, temperature of hydraulic oil converges at a certain level depending on conditions of environment and carrier. At this temperature, the viscosity of the hydraulic oil should be 20-40 cSt (2.90-5.35°E). The hammer should not start if the viscosity of the hydraulic oil is above 1000 cSt (131 °E) or below 15 cSt (2.35°E).

When the oil is too thick, the following problems may occur:

- Difficult startup
- Stiff operation
- Irregular and slow strike.
- Danger of cavitations in the pumps and hydraulic breaker.
- Sticky valves
- Filter bypass, remaining of impurities in oil.

When the oil is thin, the following problems may occur:

- Low efficiency (internal leaks).
- Leakage
- Accelerated component
- Wearing due to decreased lubrication efficiency.

Oil filter

The purpose of the oil filter is to remove impurities from hydraulic oil. Impurities normally enter carrier hydraulic system in case of repairing components, installing the hammer on the carrier.

Oil filter specifications

- The oil filter must allow maximum particle size of 25 microns.
- The oil filter material must be man-made fiber cloth or very fine gauge metallic mesh to withstand pressure fluctuations.
- The oil filter must have a nominal flow capacity of at least twice the hammer's maximum flow
- In general, oil companies guarantee new oils to have a particle count of 40 microns maximum. Filter the oil when filling the tank.

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Reduced working life of the pumps and other components

- Cavitations
- Oil leakage
- Oil overheating
- Oil quality deteriorates.
- Electro-chemical changes in hydraulic oil.
- Accelerated wear of moving parts and seals.
- Reduced hammer efficiency.
- Improper function of valves.
- Piston seizing up.
- Spools binding

Damage caused by hydraulic oil impurities

- Reduced working life of the pumps and other components.
- Cavitations
- Oil leakage
- Oil overheating
- Oil quality deteriorates.
- Electro-chemical changes in hydraulic oil.
- Accelerated wear of moving parts and seals.
- Reduced hammer efficiency.
- Improper function of valves.
- Piston seizing up.
- Spools binding

Oil Cooler

The correct place to connect the hammer return line is between the oil cooler and the main filters. The hammer return line should not be connected before the oil cooler. Routing the hammer flow through the cooler, might damage either the cooler, due to pulsating flow or the hammer, due to increased back pressure.

The carrier hydraulic system must be able to maintain the temperature within an acceptable level during the hammer operation because seals, wipers, membrane can normally withstand temperature up to 80°C and higher the temperature is, the less oil viscosity becomes.

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Recommended Oil, Temperature and Viscosity





MAINTENANCE

4. MAINTENANCE

1. General Precautions

Maintenance instructions should be followed to ensure breaker operates in best condition. Check every components of the machine before and after operating the breaker and repair or replace the related items if necessary, for maximum durability.

Clean machine before inspection.

Breaker housing should be cleaned for removing dirt before inspection to ensure proper detection of damage of the breaker.

Keep away from the heat.

Excavator, breaker body, hydraulic oil still have high level of temperature after certain operation. Due to the reason, do not touch any parts which has high temperature and wait until they are cooled down, otherwise it may cause serious injury.

Release pressure in the hydraulic system.

Before disassembling hydraulic parts (e.g. hydraulic hose, plug, adjust bolt) make sure that stop valves on both hydraulic lines are fully closed and wait until the pressure in the hydraulic system of the machine are lowered to prevent hydraulic oil from popping out.

Keep record inspection history.

Inspect the machine regularly and record the inspection result for future maintenance.

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4.1 PERIODICAL INSPECTION AND SCHEDULE

At all times refer to machine hours given below, while breaker is being installed.

Every 2 hours

Grease the tool and the tool bushing

Every 10 hours or at least once a day

- Check the wear conditions of the tool and the tool pin. Grind off if necessary.
- Check if the tool has sufficient greasing. Grease if necessary.
- Check if the housing bolts and the top bracket bolts are loosened. Re-tighten if necessary.

Every 50 hours or at least once a week

- Remove the tool, the tool bushing, the bushing pin and check the wear conditions.
- Check the hydraulic hoses. Replace if damaged. Do not let dirt get into the hammer.
- Check if the housing joint bolts and the top cover bolts are loosened. Replace or retighten.
- Check gas pressure in the back head. Recharge if necessary.
- Check hydraulic oil condition. Replace or refill if necessary.

Every 100 hours or at least once a month

- Check all the connection of hydraulic pipeline and in/out hoses.
- Check the operating pressure and the oil flow setting. Adjust if necessary.
- Check the relief pressure of the hydraulic system from the main carrier.

Every 600 hours of at least once a 6 month

- Make a regular exterior inspection (crack, loosening, oil leakage, etc.) of the breaker.
- Check every part of the power cell, the housing and the bracket.
- Change all the seals including the membrane in the accumulator.
- Check if the side rod bolts have cracks on the threads.
- Check all the hydraulic connections.
- Replace and inspect the hydraulic oil filters of the main carrier.

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4.2 REMOVAL AND INSTALLATION OF TOOL



Removal

- 1. Place breaker on level ground.
- 2. Make sure that carrier's transmission is in neutral position and parking brake is engaged.
- 3. Stop the engine.
- 4. Push-lock pin A as far as it will go.
- 5. Remove tool pin B.
- 6. Remove tool.

Installation

- 1. Clean all parts.
- 2. Clean and lubricate the tool.
- 3. Check the wear of used tool.
- 4. Check that the tool pin B is secured by the lock pin A.



4.3 CHANGING TOOL BUSHING





Removal

Place the breaker on level ground.

- 2. Make sure that the carrier's transmission is in neutral and the parking brake is engaged.
- 3. Stop the engine.
- 4. Push the spring pin A as far as it will go.
- 5. Remove the tool pin B.
- 6. Remove the tool.
- 7. Remove the bushing pin C.
- 8. Remove the tool bushing D.
- 9. Check the tool and tool bushing for wear.

Installation

- 1. Clean all parts.
- 2. Apply Mos2 spray to the contact surface of tool bushing and front head.
- 3. Install tool bushing D.
- 4. Install bushing pin C.
- 5. Install rubber plug B.
- 6. Install snap ring A.

4.4 WEAR LIMITS OF TOOL BUSHING

The normal clearance between the tool and tool bushing is 4 mm.

In case the tool is contracting the tool bushing or there happens some scratch on the tools. Please check the wear condition of the tool bushing inside the tool bushing and change it with new tool bushing.

The tool bushing can be used continuously unless a serious wear is found in it.



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Standard inside diameter of the Tool Bushing and Tool Thrust Ring



| MODEL | NEW | REJECT |
|--------------|-----|--------|
| TOOL BUSHING | 75 | 77 |
| TOOL | 75 | 73 |

4.5 WEAR LIMIT OF TOOL



| MODEL | NEW | REJECT |
|-------|-----|--------|
| G8H | 437 | 250 |

4.6 DISASSEMBLE AND ASSEMBLE OF HAMMER ASSEMBLY

Disassemble

- 1. Remove the tool and set the breaker to vertical position on the floor.
- 2. Disconnect the hoses and plug them as well as the breaker inlet and outlet.
- 3. Loosen the mounting bracket bolt B, plane washer C, nut D to remove the mounting bracket A from the breaker.
- 4. Remove front head joint bolt E and washer F.
- 5. Remove the side brackets.

Assemble

- 1. Set the hammer assembly to vertical position on the floor.
- 2. Install the side brackets.
- 3. Install the washer and cap nut the housing joint bolts.
- 4. Connect the mounting bracket by tightening the mounting bracket bolts.
- 5. Remove the plugs from the hoses and then connect the hoses and the breaker inlet and outlet.
- 6. Connect pressure and return lines.



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| | NEW | REJECT | REMARKS |
|--------------|-----|--------|---------|
| TOOL BUSHING | 75 | 77 | |
| TOOL | 75 | 73 | |

- 4.7 ASSEMBLING AND INSTALLING ACCUMULATOR SET
- 1. Releasing the pressure from the accumulator set
 - Remove the breaker from the side brackets.
 - Set the hammer assembly into the assembly stand D by removing the accumulator cap E from the pressure accumulator cap E from the pressure accumulator set and lifting the hammer assembly with lifting ring A.
 - Remove the ring A.
 - Carefully open the accumulator gas bolt B and usit-ring C when there is no pressure in the accumulator.
 - If you cannot understand how to proceed this work. Please contact your dealer or manufacturer in your territory.



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Installation

- 1. Clean all parts.
- 2. Apply Mos2 spray to the contact surface of tool bushing and front head.
- 3. Install tool bushing D.
- 4. Install bushing pin C.
- 5. Install rubber plug B.
- 6. Install snap ring A.

4.4 WEAR LIMITS OF TOOL BUSHING

The normal clearance between the tool and tool bushing is 4 mm.

In case the tool is contracting the tool bushing or there happens some scratch on the tools. Please check the wear condition of the tool bushing inside the tool bushing and change it with new tool bushing.

The tool bushing can be used continuously unless a serious wear is found in it.



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4.8 DISASSEMBLE AND ASSEMBLE IN COVER BUSHING

Disassemble

- 1. Remove snap ring A.
- 2. Install eye bolt in the cover bushing and desert in cover bushing D, from valve housing E.
- 3. Remove O-rings B and backup ring C.

Assemble

- 1. Install the O-ring B and the backup ring C inside valve housing E.
- 2. Insert the in cover bushing D, by using eyebolt M12 into the valve housing E.
- 3. Install the snap ring A.

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- 4.9 CHARGING ACCUMULATOR SET
 - 1. Furnish the accumulator assembly with a new usit-ring E and the accumulator gas bolt D.
 - 2. Connect the gas charging device C to the accumulator.
 - 3. Open the accumulator gas bolt D through the gas charging device.
 - 4. Open the valve of the nitrogen bottle and observe the gauge pressure.
 - 5. Set the pressure to that shown in column A and shut the bottle valve.
 - 6. Wait for 2 minutes to allow the pressure to stabilize.
 - 7. Adjust the pressure to that shown in column B by releasing screw F.
 - 8. Shut the accumulator gas bolt D, tightening torque 20 N-m.
 - 9. Release the pressure from the hose and remove the gas charging device.
 - 10.Check for leakage at the accumulator gas bolt D by dropping a small quantity of oil around the accumulator gas bolt D.
 - 11.Place the accumulator cap G.

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| MODEL | А | В |
|-------|------------------|------------------|
| G8H | 45 bar (650 psi) | 40 bar (580 psi) |



4.10 REMOVAL AND INSTALLATION OF VALVE HOUSING

- 1. Loose operating cover bolt and J, I by using 8 mm hex. wrench.
- 2. Remove G, H.
- 3. After disassembling A, C firstly, later on, disassemble B, D, E and F one by one.

Installation

- 1. Put shim plate which needs to adjust oil pressure into the center hole inside operation valve cover.
- 2. Put B, D and E inside C as shown below.
- 3. Assemble above "A" assembly and above "B" assembly.
- 4. After putting new O-ring H, G to each O-ring groove, apply grease on O-ring surface and assemble valve housing.
- 5. After greasing to the surface of operating valve cover bolt, fix the bolt by 8 mm hex. wrench.



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4.11 LOOSENING AND TIGHTENING THE SIDE RODS

- 1. Loosening
 - Remove the accumulator set.
 - Remove the rubber rings A (4 pcs) and the lock washer B (8 pcs).
 - Mark each side rod C and its nut D as pairs.
 - Remove the nut D, do not turn nuts D upside down.
- 2. Tightening
 - Use a crack detecting equipment to check if there are any cracks on the side rods. If there are, change the side rod and its nut.
 - Clean the side rods and apply thread grease to the screw threads and the contact surface of the side rods and valve housing.
 - Install side rod C. Check each side rod has a correct nut as its pair. Do not turns nuts D upside down.
 - Using a torque wrench. tighten the nuts in three or four steps.
 - Install the lock washer B is not loose for avoiding the looseness of the side rods install rubber ring A.
 - Fill the groove between the side rods and the front head with silicon compound.

| HYDRAULIC HAMMER SIDE ROD TIGHTENING TORQUE | | | | |
|---|-----|-----|-----|--|
| TORQUE (N-m) MODEL | 1st | 2nd | 3rd | |
| G8H | 150 | 300 | 600 | |

| SIDE ROD HEXAGON SOCKET SIZE | | |
|------------------------------|--|--|
| MODEL G8H | | |
| SIZE 27mm | | |

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4.12 DISASSEMBLE AND ASSEMBLE OF CYLINDER

Disassemble

- 1. Remove the accumulator set and side rods.
- 2. Install the screw M12 lifting eye bolt M in the tap hole of piston A and lift them carefully out with a seal housing B and distributer C.
- 3. Install the screw M10 eyebolt N (2pcs) in the tap hole of cylinder D and carefully remove in the front head.
- 4. Remove from the seal housing seal F, wiper E and O-ring G.
- 5. Remove from the cylinder D guide pin J, seal K, wiper L and O-ring H.

Assemble

- 1. Check the condition of piston A, seal housing B, distributor C and cylinder D. If necessary, use fine emery cloth or grinding agent. Clean and oil parts carefully.
- 2. Install the new seal K and wiper L into the cylinder.
- 3. Install M10 lifting eye bolt N (2pcs) into the hole of the cylinder and move it from end and install it into the front head.
- 4. Apply Mos2 spray on the contact surface of the cylinder D front head, fit guide pin J, O-ring grease and on the O-ring.



- 5. Install the M12 lifting eye bolt M in the eye bolt of piston A and cylinder D. Apply some grease on the contact surface of the piston A and cylinder D.
- 6. Install the distributor C into a cylinder. Apply Mos2spray on the contact surface of the distributor C and cylinder D.
- 7. Install seal F, wiper E and O-ring G in place. Apply Mos2 spray on the contact surface of the cylinder D and valve housing.
- 8. Install the side rods and accumulator set.



4.13 DISASSEMBLE AND ASSEMBLE OF FRONT HEAD

Disassemble

- 1. Remove accumulator assembly, side rods, valve housing, piston, seal housing, distributor and cylinder.
- 2. Remove the thrust ring and the upper bushing B [the upper bushing B will wear only two sides. If the biggest diameter is 2mm (0.079 in) more thin standard specification. the upper bushing has to be rejected]. Using the sleeve puller, pull the upper bushing out. If the upper bushing is tight, warm the underparts of the front head C. Standard inside diameter of upper bushing.
- 3. Remove guide pin D.

Assemble

- 1. Check the condition of thrust ring A, upper bushing B and front head C. If necessary, use fine emery cloth or grinding agent clean and oil/grease parts carefully.
- 2. Check upper bushing B for wear.
- 3. If necessary freeze the upper bushing B. Apply some lactate 275 on the outside of it and install into the front head C.
- 4. Install the upper bushing B so that the grooves are upwards.
- 5. Install the thrust ring A. Apply Mos2 spray on the contact surface of thrust ring A and front head C.
- 6. Install the guide pin D
- 7. Install cylinder, piston, distributor, seal housing, valve housing, side rods and accumulator set





4.14 TORQUES



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| ITEM | N-m | Kg.f-m | lb.f-ft | Remarks | Qty |
|------|-----|--------|---------|----------------------------|-----|
| A | 12 | 1 | 9 | Accumulator gas bolt | 1 |
| В | 400 | 31 | 221 | Accumulator cover bolt | 8 |
| С | 250 | 26 | 184 | Accumulator bottom bolt | 8 |
| D | 600 | 61 | 443 | Side rod | 4 |
| E | 300 | 30 | 221 | Top cover bolt | 12 |
| G | 55 | 6 | 44 | Operating valve cover bolt | 4 |
| Н | 30 | 3 | 22 | Operating valve guide | 1 |

4.15 WORKSHOP TOOL LIST

| Part name | Specification | Qty | Remarks |
|-------------------|---------------|-----|---------|
| | 24mm | 1 | |
| Spappor | 27mm | 2 | |
| Spainlei | 36mm | 2 | |
| | 41mm | 1 | |
| L-wrench | 8mm | 1 | |
| Squarehead hammer | 2lb | 1 | |
| Pin Bar | D 10 | 1 | |
| Snapping plier | | 1 | |
| Grease gun | 500cc | 1 | |



GENERAL AND SAFETY INFORMATION

5. GENERAL AND SAFETY INFORMATION

5.1 GENERAL

Do not use or install the breaker until you can use the carrier. Do not rush the job of learning. Take your time and learn safety

- If there is anything you do not understand ask your PROPLE service center to advice.
- The breaker serial number is stamped on a metal plate, which is on the backhead, nearby the inlet connection.
- Correct reference to serial number of the breaker is important in case of repairs or ordering spare parts. Identifying parts for specific breaker is possible only through serial number.

5.2 SAFETY

- 1. Manuals
 - Read this manual before installing, operating or maintaining the breaker. If there is anything you don't understand ask your employer or your PROPLE dealer to explain it.
 - Keep this manual in good condition.
- 2. Clothing

You can be injured if you do not wear proper clothing. Losing clothing can get caught in the machinery. Wear protective clothing to suit the job e.g. safety helmet, safety shoes, safety glasses, well-fitting overalls, ear protectors and industrial gloves. Keep cuff fastened.

- 3. Worksites
 - Inspect the site before working on it.
 - Check for potholes, weak ground, hidden rocks, etc.
 - Check for utilities (electric, cable, gas and water pipes, etc)

4. Metals splinters

- You can be injured by flying splinters when driving metal pins in and out.
- Always wear safety glasses.

5. Accumulator

- The accumulator is pressurized even when there is no hydraulic pressure in the breaker.
- Attempting to dismantle pressure accumulator without first releasing the pressure

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can cause injury.

- Do not try to dismantle the pressure accumulator, contact PROPEL service center first.
- 6. Hydraulic pressure
 - Hydraulic fluid at system pressure is dangerous.
 - Before disconnecting or connecting hydraulic hoses, stop the carrier engine and operate the control in order to release pressure trapped in the hoses.
 - Keep people away from the hydraulic hoses during breaker operation.

Regulation and laws

Observe all laws, work-site rules and local regulations which affect you and your equipment.

Practice

- You and others can be seriously injured if you carry out unfamiliar operation without practicing them first.
- Practice away from job site on a clear area.
- Keep people away
- Do not perform new operations until you are sure you can do them safely.

Equipment condition

- Defective equipment can injure you or others. Do not operate equipment which is defective or has missing parts.
- Make sure the maintenance procedure in this manual are completed before using equipment.

Equipment limits

- Operating the equipment beyond it's design limits can cause damage. It can also be dangerous.
- Do not operate the equipment beyond limits.
- Do not try to upgrade the equipment's performance by non-approved modification.



TROUBLE SHOOTING GUIDE



6. TROUBLE SHOOTING GUIDE

1. Breaker does not start

Piston is in its lower hydraulic breaker

• Keep the hammer control valve open and force the tool against to the object. The tool head will push the piston out of its area.

Hammer control valve does not open

• When operating the hammer control valve, check that the pressure line pulsation this indicates the hammer control valve is opened. If the valve does not operate, check the operating means: mechanical connections, pilot pressure or electrical control.

Relief valve in hydraulic circuit is opened at a low pressure

• Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line.

Leakage from return line in carrier hydraulic circuit

• Check the installation. Check the pump and the other hydraulic components.

Pressure and return hoses installed backwards

• Change the pressure and return hoses.

Failure in hammer valve operation

- The hammer must be serviced in an GAINWELL authorized service center.
- Piston failure
 - The hammer must be serviced in an authorized service shop.
- 2. The hammer operates irregularly but the blow has full power

Relief valve in hydraulic circuit opens at a low pressure. If hammer operating pressure is not reached

• Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line.

Failure in hammer valve operation

• The hammer must be serviced in an GAINWELL authorized service center.

Not enough feed force from the carrier

• Refer to correct working methods

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3. The breaker operates poorly and the blow has no power

Relief valve in hydraulic circuit opens at low pressure. Hammer operating pressure is not opened

• Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line.

Pressure loss in the accumulator

• The hammer must be serviced in an authorized service shop.

The working method is not correct

• Refer to correct working methods.

Pressure control valve setting is incorrect

• The hammer must be serviced in an PROPLE authorized service center.

4. Impact rate slows down

Oil overheated (over 80°C)

• Check for the fault in the oil cooling system or an internal leakage in the hammer. Check the hydraulic circuit of the carrier. Check the relief valve operation in the carrier. Check the line size. Assemble an extra oil cooler.

Relief valve in hydraulic circuit opens at a low pressure. Hammer operating pressure is not reached

• Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line.

Leakage from return line in carrier hydraulic circuit

• Check the installation. Check the pump and the other hydraulic components.

Pressure loss in the accumulator

• The hammer must be serviced in an PROPLE authorized service center.



SPARE PARTS MANUAL

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7. SPARE PARTS MANUAL

7.1 HOUSING (BOX)



7.1 HOUSING (BOX)

| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|---------|-------------|--------------------|----------|--------|
| 201 | GWHB11116 | HAMMER ASSEMBLY | 1 | |
| 202 | GWHB11117 | HOUSING ASSEMBLY | 1 | |
| 203 | GWHB11119 | TOP COVER PLATE | 1 | |
| 204 | GWHB11120 | WEARING PLATE | 1 | |
| 205 | GWHB11121 | WEARING PLATE | 1 | |
| 206 | GWHB11122 | WEARING PLATE | 1 | |
| 207 | GWHB11123 | WEARING PLATE | 1 | |
| 208 | GWHB11124 | BUFFER (BASE) | 1 | |
| 209 | GWHB11125 | BUFFER (TOP) | 1 | |
| 210 | GWHB11126 | TOP PLATE ASSEMBLY | 1 | |
| 211 | GWHB11127 | WEARING PLATE | 1 | |
| 212 | GWHB11128 | RUBBER | 2 | |
| 213 | GWHB11129 | RUBBER | 1 | |
| 214 | GWHB11130 | RUBBER | 1 | |
| 215 | GWSP11121 | TOP COVER BOLT | 12 | |
| 216 | GWSP11124 | TOP COVER NUT | 12 | |
| 218 | GWSP11122 | PLANE WASHER | 24 | |
| 219 | GWSP11123 | SPRING WASHER | 12 | |

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| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|---------|-------------|--------------------|----------|--------|
| 1 | GWHA11111 | VALVE HOUSING | 1 | |
| 2 | GWHA11112 | ACC. COVER | 1 | |
| 3 | GWHA11113 | ACC. BOTTOM | 1 | |
| 4 | GWHA11114 | SEAL HOUSING | 1 | |
| 5 | GWHA11115 | PISTON | 1 | |
| 6 | GWHA11116 | CYLINDER | 1 | |
| 7 | GWHA11117 | THRUST RING | 1 | |
| 8 | GWHA11118 | UPPER BUSHING | 1 | |
| 9 | GWHA11119 | FRONT HEAD | 1 | |
| 10 | GWSP11129 | SIDE ROD | 4 | |
| 11 | GWSP11130 | SIDE ROD NUT | 4 | |
| 12 | GWHA11120 | TOOL BUSHING | 1 | |
| 13 | GWHA11121 | IN COVER BUSHING | 1 | |
| 14 | GWHA11122 | DISTRIBUTOR | 1 | |
| 15 | GWHA11123 | TOOL INNER BUSHING | 1 | OPTION |
| 16 | GWHA11124 | TOOL BUSHING | 1 | OPTION |
| 17 | GWHA11125 | OPER. VALVE COVER | 1 | |
| 18 | GWHA11126 | OPER. VALVE GUIDE | 1 | |
| 19 | GWHA11127 | OPER. VALVE SPOOL | 1 | |
| 20 | GWHA11128 | TOOL PIN | 1 | |
| 21 | GWHA11129 | BUSHING PIN | 1 | |
| 22 | GWHA11130 | TOOL - CONE | 1 | |
| 23 | GWHA11131 | TOOL - CHISEL | 1 | |
| 24 | GWHA11132 | TOOL - BLUNT | 1 | |

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| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|---------|-------------|---------------------------------|----------|--------|
| 25 | GWSP11128 | LOCK WASHER | 4 | |
| 26 | GWSP11131 | ACC. COVER BOLT | 8 | |
| 27 | GWSP11125 | ACC. BOTTOM BOLT | 8 | |
| 28 | GWHA11133 | GUIDE PIN | 2 | |
| 29 | GWHA11134 | AIR BREATHER | 1 | |
| 30 | GWHA11135 | SOCKET PLUG | 1 | |
| 31 | GWSP11111 | SOCKET PLUG | 1 | |
| 32 | GWHA11136 | ADAPTER | 2 | |
| 33 | GWSP11126 | OPER. VALVE COVER BOLT | 4 | |
| 34 | GWSP11127 | LOCK WASHER | 4 | |
| 35 | GWHA11137 | OPER. VALVE SPRING GUID | E 1 | |
| 36 | GWHA11138 | OPER. VALVE SHIM PLATE | 1 | |
| 37 | GWHA11139 | OPER. VALVE SPRING | 1 | |
| 38 | GWHA11140 | LOCK PIN | 1 | |
| 39 | GWHA11141 | LOCK PIN SPRING | 1 | |
| 40 | GWHA11142 | LOCK PIN SPRING GUIDE | 1 | |
| 41 | GWHA11143 | GREASE NIPPLE | 1 | |
| 42 | GWSP11132 | ACC. GAS BOLT | 1 | |
| 43 | GWHA11144 | SNAP RING | 1 | |
| 44 | GWHA11145 | SNAP RING | 1 | |
| 46 | GWHA11146 | RUBBER PLUG | 2 | |
| 47 | GWHA11147 | TOOL - MOIL | 1 | |
| 48 | GWHA11148 | TOOL INNER BUSHING (PLASTIC) | 1 | OPTION |
| 51 | GWHA11149 | ACC. CAP | 1 | |

PROPEL GSH

| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|------------|--------------------|-------------------------------|-----------------|-----------|
| 52 | GWHA11150 | USIT RING | 1 | |
| 53 | GWHA11151 | RUBBER RING | 4 | |
| 54 | GWHA11152 | MEMBRANE | 1 | |
| 55 | GWHA11153 | 0-RING | 2 | K1 |
| 56 | GWHA11154 | 0-RING | 1 | K1 |
| 57 | GWHA11155 | 0-RING | 2 | K1 |
| 58 | GWHA11156 | BACKUP RING | 1 | K1 |
| 59 | GWHA11157 | SEAL | 1 | K1 |
| 60 | GWHA11158 | WIPER | 1 | K1 |
| 61 | GWHA11159 | SEAL | 1 | K1 |
| 62 | GWHA11160 | WIPER | 1 | K1 |
| 63 | GWHA11161 | 0-RING | 1 | K1 |
| 64 | GWHA11162 | 0-RING | 2 | K1 |
| 65 | GWHA11163 | 0-RING | 7 | K1 |
| 66 | GWHA11164 | 0-RING | 1 | K1 |
| 67 | GWHA11165 | WIPER | 1 | OPTION |
| 68 | GWHA11166 | SEAL KIT | 1 | |
| Note : Row | s with K1 indicate | es part numbers are constitue | nts of Seal Kit | GWHA11166 |

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7.3 CAT 424B ADAPTATION KIT



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7.3 CAT 424B ADAPTATION KIT

| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|---------|-------------|---------------|----------|--------|
| 1 | GWAK11111 | CLAMP | 2 | |
| 2 | GWAK11112 | HOSE | 1 | |
| 3 | GWAK11113 | HOSE | 1 | |
| 4 | GWAK11114 | HOSE | 2 | |
| 5 | GWAK11115 | HOSE | 2 | |
| 6 | GWAK11116 | HOSE | 2 | |
| 7 | GWAK11117 | HOSE | 2 | |
| 8 | GWAK11118 | HOSE | 2 | |
| 9 | GWAK11119 | HOSE | 1 | |
| 10 | GWAK11120 | CLAMP QRC | 2 | |
| 11 | GWSP11133 | BOLT | 2 | |
| 12 | GWSP11134 | WASHER | 6 | |
| 13 | GWSP11135 | SPRING WASHER | 2 | |
| 14 | GWSP11136 | BOLT | 5 | |
| 15 | GWSP11137 | BOLT | 4 | |
| 16 | GWSP11138 | BOLT | 3 | |
| 17 | GWSP11139 | SPRING WASHER | 3 | |
| 18 | GWSP11140 | PLAIN WASHER | 3 | |
| 19 | GWSP11141 | PLAIN WASHER | 10 | |
| 20 | GWSP11142 | SPRING WASHER | 10 | |
| 21 | GWAK11121 | CONNECTOR | 1 | |
| 22 | GWAK11122 | ADOPTER | 1 | |
| 23 | GWAK11123 | CONNECTOR | 6 | |
| 24 | GWAK11124 | ADAPTER | 3 | |

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7.3 CAT 424B ADAPTATION KIT

| ITEM NO | PART NUMBER | PART NAME | QUANTITY | REMARK |
|---------|-------------|-----------------------|----------|--------|
| 25 | GWAK11125 | CONNECTOR | 1 | |
| 26 | GWAK11126 | SWIVEL CONNECTOR | 3 | |
| 27 | GWAK11127 | CONNECTOR | 5 | |
| 28 | GWSP11143 | CHUCK NUT CONNECTOR | 2 | |
| 29 | GWSP11144 | CHUCK NUT CONNECTOR | 4 | |
| 30 | GWAK11128 | QUICK RELEASE COUPLER | 2 | |
| 31 | GWAK11129 | FOOTSWITCH | 1 | |
| 32 | GWAK11130 | HARNESS WIRE | 1 | |
| 33 | GWAK11131 | MALE DUMMY PLUG | 2 | |
| 34 | GWAK11132 | SWIVEL ELBOW | 1 | |
| 35 | GWAK11133 | SWIVEL ELBOW | 1 | |
| 37 | GWAK11134 | MALE PLUG | 1 | |
| 38 | GWAK11135 | FEMALE DUMMY | 2 | |
| 39 | GWAK11136 | SHUTTLE VALVE | 1 | |
| 40 | GWAK11137 | SUPPORT PLATE | 1 | |
| 41 | GWAK11138 | RETURN REDUCER | 2 | |
| 42 | GWAK11139 | DOWETY SEAL | 8 | |
| 43 | GWAK11140 | DOWETY SEAL | 8 | |
| 44 | GWAK11141 | ROCKER SWITCH | 1 | |
| 45 | GWSP11145 | PLAIN WASHER | 1 | |
| 46 | GWSP11146 | SPRING WASHER | 1 | |
| 48 | GWSP11147 | BOLT | 1 | |
| 49 | GWAK11142 | SWIVEL ELBOW | 3 | |
| 50 | GWAK11143 | PU CLAMP | 1 | |



NOTES



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PROFIL ROCK BREAKER G8H⁷

PROPEL INDENERGY SOLUTIONS PRIVATE LIMITED B-23A,ECOTECH-I EXTN,GAUTAM BUDH NAGAR GREATER NOIDA-201308,DELHI NCR



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