Simply the Best!
INDECO
NORTH AMERICA
120 Dodge Avenue
Stratford, CT 06615
Phone (203)377-7791
FAX (203)377-7796

*PPM2000150*
*$35.00*

INDECO Hydraulic Breaker

# MES150 Service and Maintenance Manual

# IMPORTANT SAFETY NOTICE

Most accidents involving service and maintenance are caused by failure to observe basic safety rules or precautions. Accidents can often be avoided by recognizing potentially hazardous situations before an accident occurs.

It is necessary to read and understand all safety precautions before performing service and maintenance to any INDECO attachment. Safety precautions are outline in this manual where they exist and failure to follow these precautions could cause serious bodily injury or death.

INDECO can not anticipate every possible situation that could involve a potential hazard. Therefore the warnings in this guide are not to be considered all inclusive. If a tool or repair procedure is not specifically recommended by INDECO, you must satisfy yourself that it is safe for you and other people who could be involved. You should not modify or change the configuration of INDECO attachments without the expressed written authorization of the manufacturer.

Improper maintenance of any attachment can be dangerous and could result in bodily injury or death.

Do not perform any maintenance on INDECO attachments until you have read and understand the procedures as described in the Service and Maintenance Manual.

If you have any questions or these procedures contact INDECO's Product Support Department at (203) 377-7791.

**WARNING**

# Table of Contents

# PREFACE

The perfect match of hydraulic breaker to carrier is essential in order to guarantee the correct working conditions. However, in order to obtain maximum efficiency, it is strongly recommended that regular and appropriate maintenance be performed.

Every attempt has been made to insure accuracy of the information provided. However, the manufacturer reserves the right to update this manual subject to the technological development of the product and service. For the most current information, a review of the Product Support Bulletins is recommended prior to any breaker repair.

For further information, please contact:

INDECO North America Product Support Department
120 Dodge Avenue
Stratford, CT 06615
Phone: (203) 377-7791
Fax: (203) 377-7697

# BREAKER INSTALLATION

**Figure 01-01:** Testing Excavator Circuit Flow and Pressure

**Figure 01-02:** Testing Tractor Loader Backhoe Circuit Flow and Pressure

**Figure 01-03:** Flow Meter and Pressure Gauge Connection

**Figure 01-04:** Testing Skidsteer Loaders Circuit Flow and Pressure

**Note:** During these test, be certain that the carrier's hydraulic fluid is at operating temperature, usually 130 F to 170 F. This will insure that the attachment will operate at optimum performance. Also, if the carrier has any hydraulic problems, they should appear during testing procedures.

**BEFORE YOU HOOK UP THE HOSES TO THE ATTACHMENT:**

1. Install attachment hydraulic circuit on the carrier.

2. Connect a flow meter (Figure 01-03) to the circuit's pressure line into the meter's inlet and the return side into the meter outlet. Also, install a 600 psi gauge into the return circuit at the flow meter. (This will allow for a starting point for the back pressure of the return circuit. Refer to the Operators Manual for the specifications on the attachment you are installing.)

3. Before engaging the circuit, be certain the pressure-regulating valve on the flow meter (Figure 01-03) is in the fully open position.

4. Start the carrier unit and check for hydraulic leaks. Check and note the flow and back pressure readings at the meter.

5. Increase engine RPM while a second person is monitoring the pressure and flow at the meter. If the backpressure reading goes above specifications the cause **must** be determined before proceeding. You may need to rework the return circuit to reduce the backpressure to INDECO specifications. (Contact the Product Support department at (203) 377-7791 for assistance if required.)

6. Adjust the circuit's flow to the required specification. (NOTE: It is better to be 5-10% under the required GPM then to be over.)

7. Bring the pressure on the flow meter up to the high pressure reading for the attachment you are installing. Check to assure that the correct GPM's are maintained and adjust if needed.

8. Once the GPM's, operating pressure and backpressure are within specification check the attachment circuit relief. This setting **must** be at least 500 psi above the Attachments operating pressure. (Be certain the GPM reading remains the same as in the above steps.)

9. Next, position the 4-position adjustment chip, (pos. 420), located under the link (pos. 401), to the correct setting. The correct setting is determined by reviewing the attached graph, (see Appendix B, Breaker Regulation Chip).

10. Install the breaker and connect a 0-3000 psi gauge inline with the hydraulic inlet port of the attachment.

11. Before operating the breaker, verify that the tool and bushings have been properly lubricated. Verify that the hose can move freely and are not rubbing against any other parts.

12. Place the breaker on a hard, compact surface and, with shut off (if so equipped) turn on, run the breaker at low Rpm's. Gradually increase rpm's to the maximum. Operating pressure and return (back) pressure **must** remain within specifications in order for the attachment to operate at maximum efficiency (See Appendix A, Breaker Technical and Torque Specifications - Page 96 for the correct specification). Run the breaker until the hydraulic oil is at operating temperature and again note the pressure readings.

**Note:** The breaker should be fast during the initial stages. As the tool penetrates the material the breaker should slow to a rhythm close to the minimum blows per minute.

13. If readings are not within this range please refer to the trouble shooting and problem diagnosis section of this manual.

14. Record the readings taken during the installation procedures on the Attachment Delivery Report (ADR) (Figure 01-05). **This report must be on file with INDECO before any warranty consideration can be given.**

The performance and reliability of any hydraulic attachment are directly related to the proper operation, maintenance, installation and adjustment. For this reason it is imperative that pressures and flows are verified each time an attachment is installed on a different carrier. The customer should be advised of the correct operation and maintenance procedures. The ADR should be used as a checklist for each delivery of an INDECO attachment. A small investment of time to check these readings will save maintenance and repair costs and increase customer satisfaction by offering trouble free, productive performance.

Simply the Best! INDECO NORTH AMERICA

# ATTACHMENT DELIVERY REPORT

120 Dodge Avenue
Stratford, CT 06615
Phone (203)377-7791
FAX (203)377-7796

Date _____
Model _____
S/N _____

Dealer _____
Address _____
City _____ State _____ Zip _____
Customer _____
Address _____
City _____ State _____ Zip _____

| SERVICE DEPT. TEST RESULTS<br>PLEASE RECORD THE FOLLOWING: | SALES DEPT. DELIVERY INFORMATION<br>PLEASE CHECK THE FOLLOWING |
|---|---|
| Test Date _____<br>Carrier Make/Model _____<br>Carrier Serial Number _____<br>Oil Flow at Attachment _____ gpm<br>Carrier Circuit or System Relief Pressure * _____ psi<br>Operating Pressure at Attachment _____ psi<br>Return Circuit Pressure at Attachment _____ psi<br>Oil Temperature _____ f./c.<br>* Carrier Circuit or System Relief Pressure should be a minimum of 500 PSI greater than the Attachment Operating Pressure. | Customer has received complete operating instructions. (Yes ☐ No ☐)<br>Customer has received and reviewed all documentation including: |

| | Yes | No |
|---|---|---|
| CIMA Safety Manual | ☐ | ☐ |
| Operatior's Manual | ☐ | ☐ |
| Routine Maintenance | ☐ | ☐ |
| General Operation | ☐ | ☐ |
| Warranty | ☐ | ☐ |
| Breaker Lubrication | ☐ | ☐ |

The distributor has instructed me and or my operator regarding correct operation, maintenance and safety consideration of this equipment, and delivered it to me in satisfactory condition. Furthermore, I have read the warranty and understood that such warranty is exclusive and no other warranty, expressed or implied, is given on this equipment.

**NO WARRANTY REQUEST WILL BE ACCEPTED WITHOUT COMPLETION AND RETURN OF THIS FORM WITHIN THIRTY (30) DAYS FROM DELIVERY**

Customer Signature _____
Dealer _____
Dealer Authorized Signature _____

WHITE - INDECO N.A. YELLOW - DEALER PINK - OWNERS GOLDENROD - UNIT FILE

**Figure 01-05:** Sample Attachment Delivery Report (ADR)

# GENERAL BREAKER USAGE

This hydraulic demolition hammer, as a general rule, should be used with the same technique as a jackhammer. Choose the appropriate tool in order to obtain maximum productivity. The profile of the tool should be chosen according to the nature of the material, depending on the type of job: quarry, earth moving, trench work, tunnels, demolition, etc.

**a)** Position the carrier so that the reach to the work is adequate. Ensure that the carrier is in a stable position and is not placed on a crumbling or slipping surface during operation. (Figure 02-01) This guarantees a constant load on the hammer.

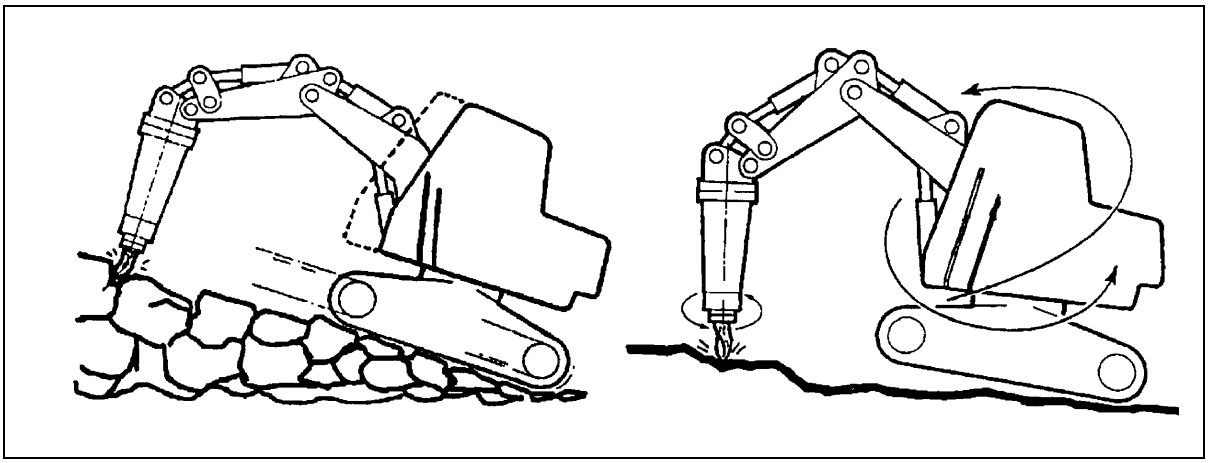


**Figure 02-01:** Position Carrier Correctly

**b)** Place the hammer tool perpendicular to the surface to be broken. (Figure 02-02) Always act with the carrier arm, keeping the hammer perpendicular to the work and describing a slight arc, closing the arm towards the operator. This method of operation will dramatically extend the life of the tool and bushing.

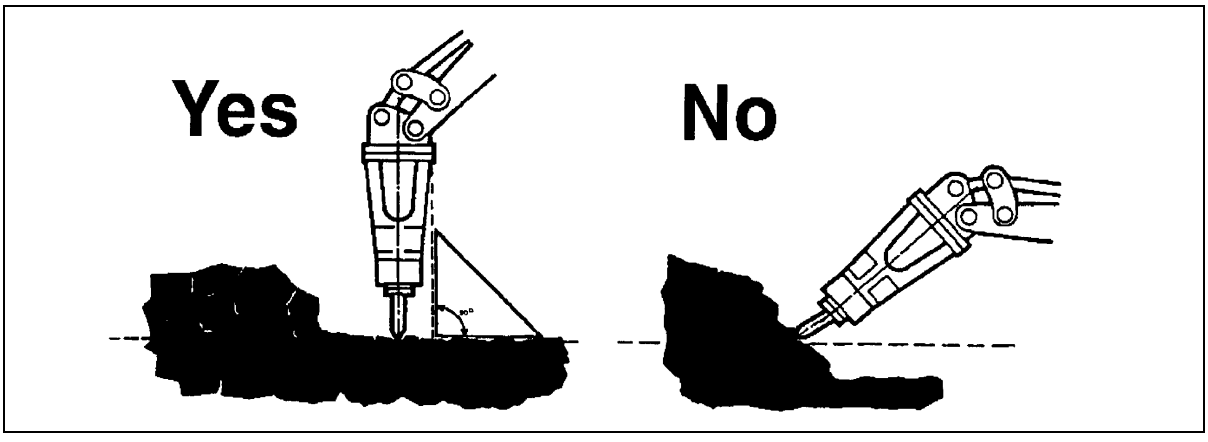



**Figure 02-02:** Keep Tool Perpendicular to Working Surface

**c)** Maintaining an even pressure from the carrier to the hammer, start the hammer. If the downward pressure from the boom is too weak, you will hear metallic (rather than sharp) strokes, because the hammer is not striking the tool correctly. If the downward pressure is excessive, it will produce strong vibrations in the carrier and the tool, retaining axle, bushings, etc. (Figure 02-03)

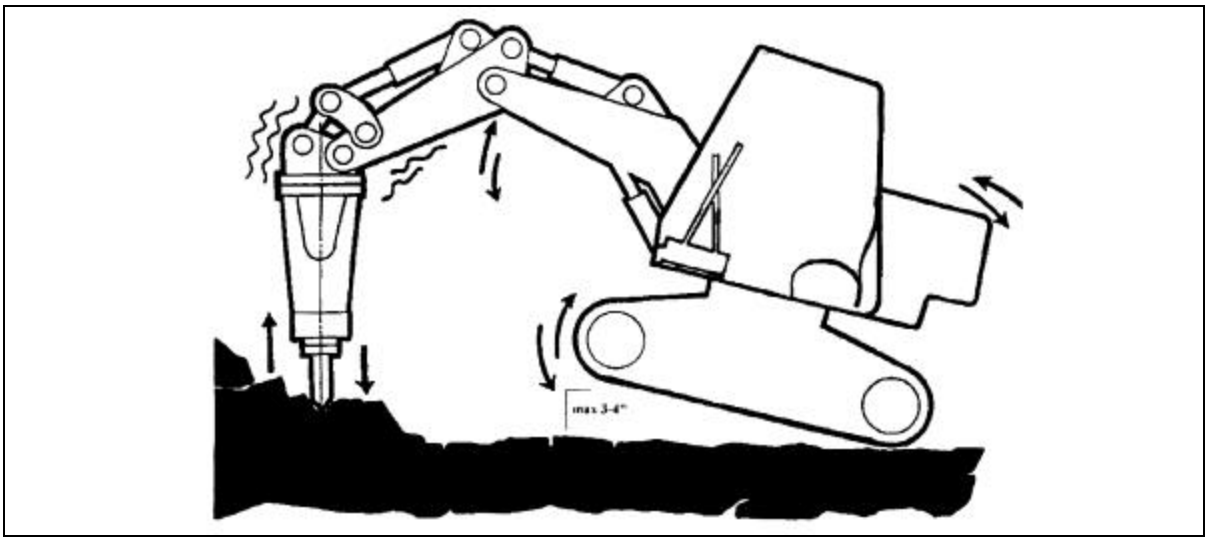



**Figure 02-03:** Maintain Even Working Pressure

**d)** If the hammer is in the correct position, and the hammer and case are vibrating (Figure 02-04), the downward pressure from the carrier is insufficient. If exerting further pressure from the carrier does not solve the problem, it may be that internal hydraulic leaks from the rams or valves may not be allowing the carrier to exert the correct amount of pressure. In this case, replace the carrier cylinder seals and/or check the control valve seals.

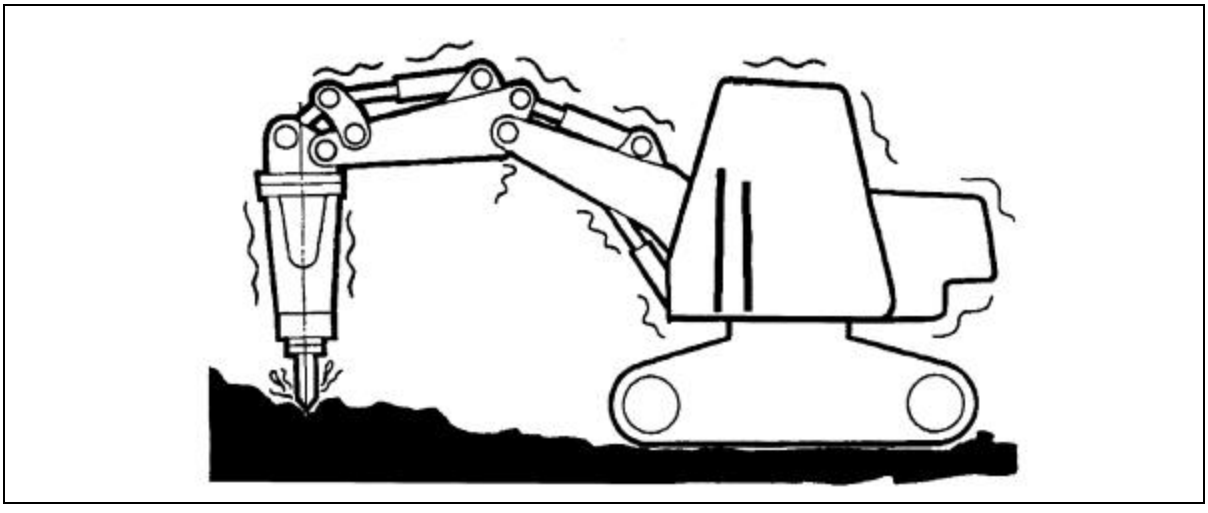


**Figure 02-04:** Insufficient Downward Pressure Results in Vibrations

**e)** If vibrations start to occur after the hammer has been operative for some time, this means that the carrier downward pressure has not followed the tool penetration. You must maintain a constant pressure from the carrier on the hammer, as the hammer is penetrating the work.

**f)** An INDECO hammer senses the strength and density of the surface being broken, and adjusts hammer impact power accordingly. The operator will be able to hear the difference in the blows when a rock is broken or not broken. The hammer rhythm will be fast and sharp if the material is frail and flaky; slow and powerful if the rock is compact and uniform. Impact speed will also be slower the deeper the hammer penetrates.

**g)** As soon as cracks start to appear in the material being worked on, and the tool starts to appear from the bushing, stop the hammer at once. Do not raise the hammer from the material until it has stopped completely.

**h)** If cracks in the material do not appear in **30 seconds**, move to a new position along the grain of the material (Figure 02-05), perhaps working on a smaller section or edge of the material. Always look for advantageous weak points in the material (e.g. cracks, bumps, veins) at which to start. This saves undue stress on the breaker.

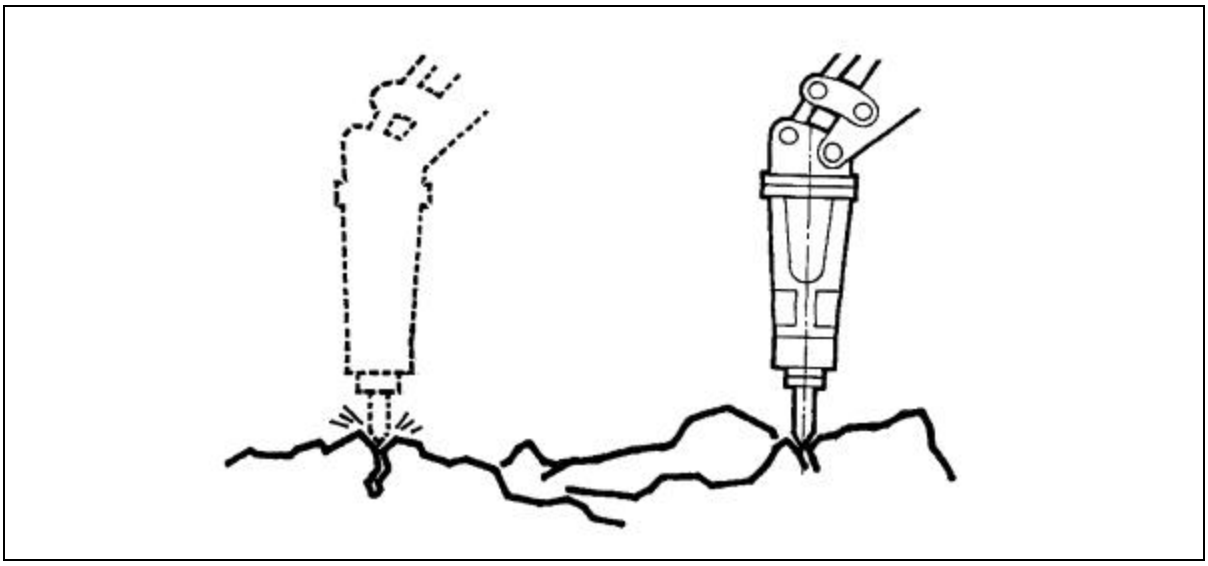


**Figure 02-05:** Reposition Breaker Every 30 Seconds

**i)** In a quarry, or when breaking oversized rocks, position the material to be broken on a hard base to minimize vibrations of the material.

**j)** In the case of horizontal or upside-down operations (e.g. tunnels), once every hour the operator should lower the hammer to a vertical position (Figure 02-06), so that any particles of rock which have collected in the hammer can fall out. (Operator can alternate hammering up and down.) If this is not done, the hammer impact will be wasted on the rock particles, and in addition will create thermal energy in the particles and hammer, causing overheating. Prolonged overheating will cause the hammer materials to lose their original mechanical resistance. In order to keep particles out of the hammer, an air hose may be installed in the same way as would be done for underwater usage.

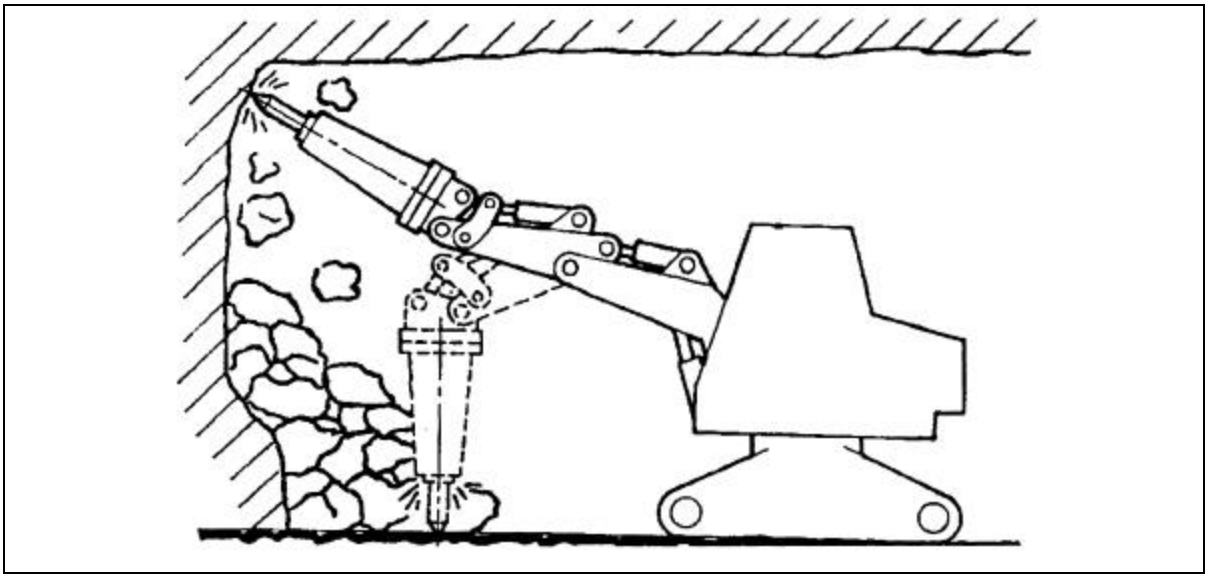


**Figure 02-06:** Lower Breaker Every Hour When Working Overhead

**k)** If the breaker is operating at temperatures below -15° Celsius, increase the nitrogen charge pressure by 20% of the value recommended in normal conditions. Disassemble the tool and store it in a place where the temperature is above 0° Celsius. DO NOT heat up the tool with a torch or other device before operation. Operate the tool slowly for the first 15 feet of excavation in order to gradually warm up the tool. Never leave the tool exposed to inclement weather, as this will oxidize the bushing contact area.

**l)** The hydraulic oil feed viscosity must not be below 15 CST. The maximum oil temperature during operation should not exceed 75° Celsius (160° Fahrenheit).

**m)** When the hammer is not in use, it must be kept in a vertical position. (Figure 02-07) This will allow any water or condensation to run off of the piston and prevent rusting which may cause seal failure and leakage.

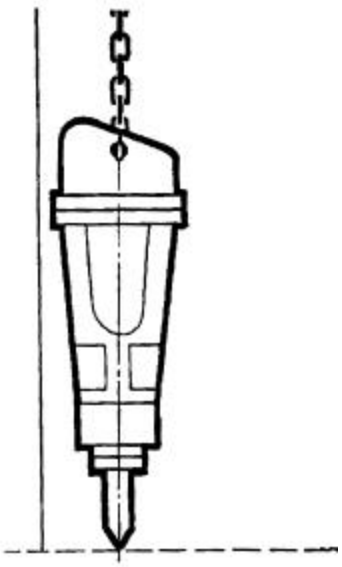


**Figure 02-07:** Store Breaker in an Upright Position

***SUMMARY OF INSTRUCTIONS***

a) Maintain even pressure on the hammer.
b) Follow the hammer during penetration of the material.
c) Always maintain a constant optimal pressure level.
d) Correct loading ensures hammer productivity and avoids damage to its component.

# COMMON CAUSES OF BREAKER DAMAGE

**a)** The hammer must not be used as a ripper, nor should it be used as a lever. Under no circumstances should the tool be used as a hook to lift weights. (Figure 03-01) This could cause serious damage to the tool, the bushing and the housing.

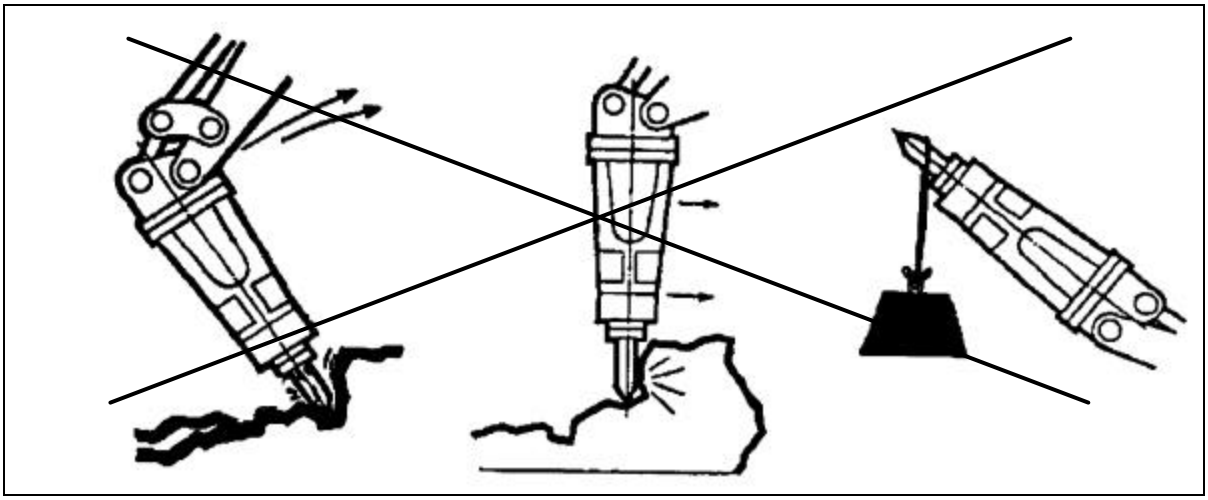


**Figure 03-01:** Don't Use Breaker as a Ripper, Lever or Crane

**b)** The hammer must operate perpendicular to the work. This ensures that: the tools are not forcibly stressed; bending stress does not occur; and the specific pressures in the contact areas are maintained. This will greatly extend the life of the tool and the bushings.

**c)** Check that the **tool contact areas (especially the chuck housing) are well lubricated and smooth.** A properly lubricated tool will show streaks of grease below the lower bushing on the tool shank. Remove any bumps or rough areas with a soft grinding wheel and wire brush. The point of a chisel tool can be re-sharpened in the same way. Tools should be rotated 180° to evenly distribute the wear.

**d)** The hammer must be free to operate without any obstructions, chafing or interference. (Figure 03-02) There should also be no obstruction between the hammer and the tool.

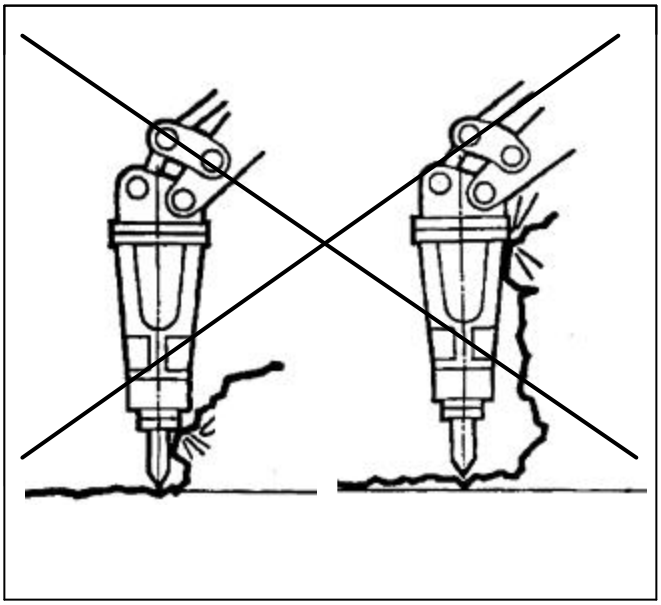


**Figure 03-02:** Operate Breaker Free and Clear of Obstructions

**e)** When breaking large blocks of rock, any protrusions should be broken off first, in order to reduce the overall size of the block.

**f)** For secondary demolition, before starting the hammer, adjust the material to be broken so that it is on a hard, stable surface. (Figure 03-03)

**g)** A small pocket of rock dust can sometimes occur in the "well" formed by the tool. (Figure 03-04) The hammer impact may be released on this, therefore not breaking the rock. The tool will then overheat and may deform. The solutions to this are either to make another parallel hole nearby, or to carry out small movements of the hammer to disburse the rock dust. **Do not** continue in the same spot. This will waste the hydraulic power and damage the tool.

**h)** When using the hammers in these positions, the tool should be removed every 8 hours, and the internal faces of the bush cleaned with a wire brush or lubricant cleaner. (Figure 03-05) If the hammer is very full of rock particles, remove the appropriate plug from the side of the chuck housing, and blow out the hammer with compressed air.

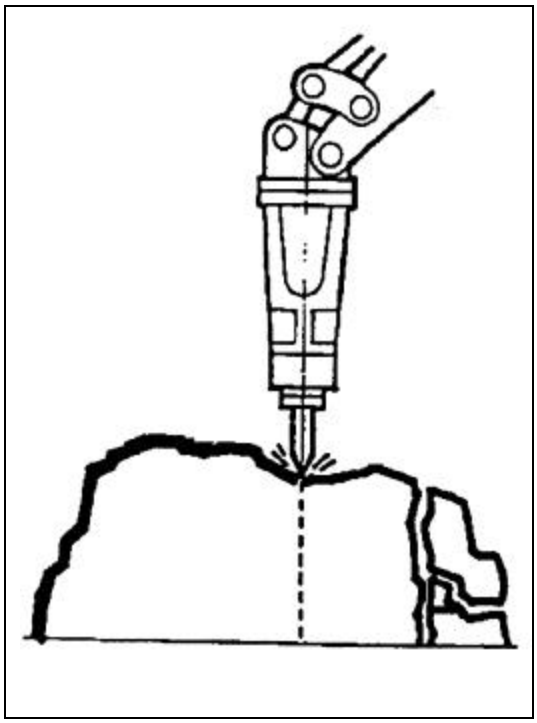


**Figure 03-03:** Maintain Hard Stable Working Surface

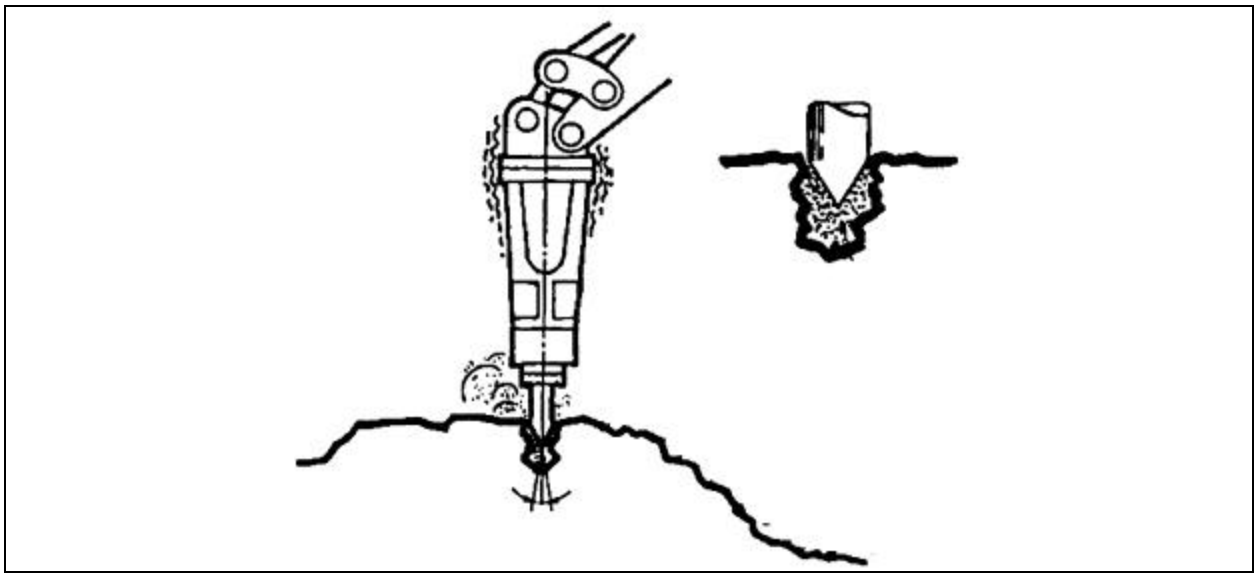


**Figure 03-04:** Dust Pockets May Cause Tools To Become Deformed

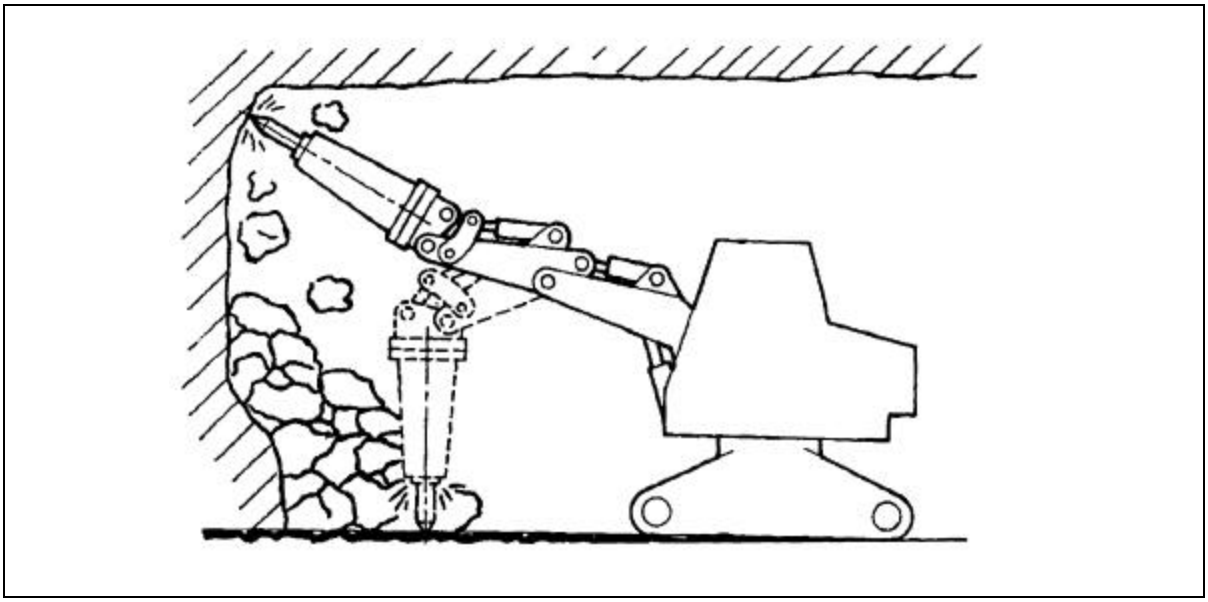


**Figure 03-05:** Remove Tool and Clean Breaker Every Eight Hours

**h)** Do not use the tool of the hammer to rotate the carrier. This causes superficial cuts on the contact areas which could cause breakage under stress.

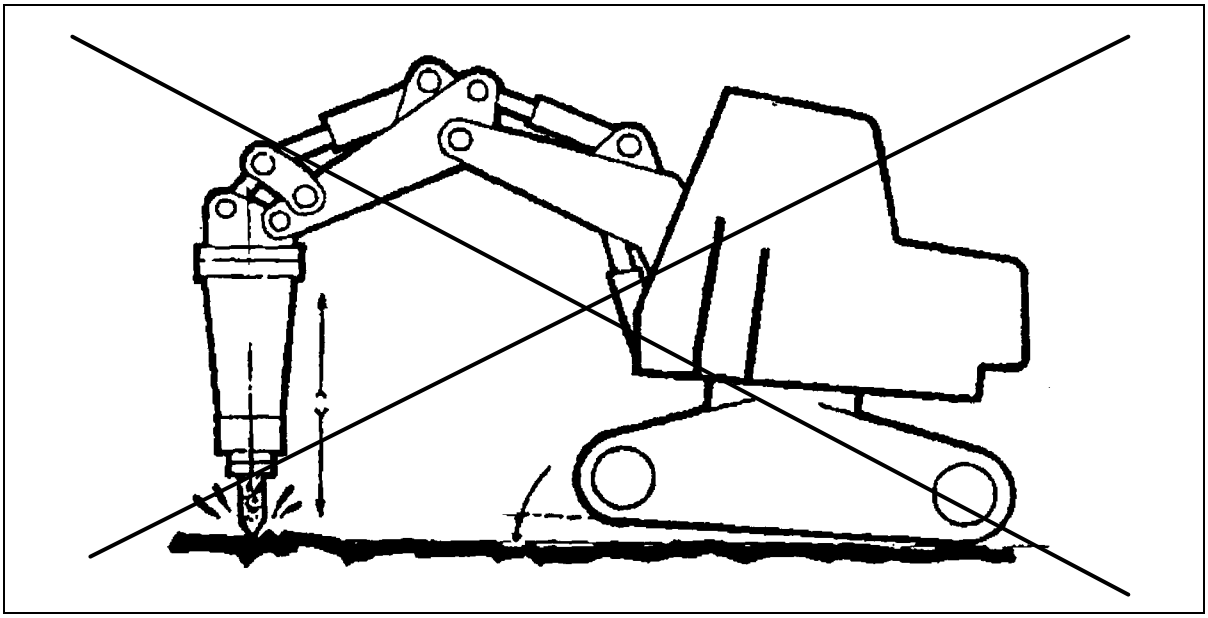


**Figure 03-06:** Do Not Rotate Carrier on the Breaker's Tool

# ROUTINE MAINTENANCE

## Daily

- Grease breaker every 2 hours. If working in very dusty conditions, grease each hour.
- Check cradle, side shocks and side bolts for loose, cracked or missing bolts.
- Check tightness of tool retainers and locking bolts.
- Examine hydraulic hoses for leaking or chaffing.
- Visually inspect breaker for housing or side plate damage.

## Weekly

- Remove tool and wash out tool cavity with solvent.
- Inspect upper and lower bushings, retaining axles and face of piston for cracks, uneven wear or mushrooming.
- Before inserting tool, re-apply grease to upper, lower bushings, and retaining axles.
- Re-insert greased tool after rotating 180 degrees from original position and secure retaining axles.
- Measure length of tool. If too short, replace to prevent damage to breaker bushing and housing (Maximum Wear is 50% of exposed portion of tool when new) .

## 500 HOURS

- Check accumulator charge. Refer to INDECO specification for correct charge.
- Measure wear of lower and upper bushing.
- Rotate retaining axles 180 degree or replace if worn.
- Verify carrier hydraulic flow and pressure to initial specifications.

## 1000 Hours

- Complete weekly and 500 hour inspection procedures
- Replace all rubber and polypack internal seals
- Inspect piston for scouring, cracks or other related damage
- Inspect spacer while piston is out and replace if needed.
- Inspect tie rods for stress in threaded area. Die penatrant magnaflux is recommend.
- Replace rods as a complete set.
- Check the breaker's condition and replace all worn components.
- Check all hydraulic tubes and hoses and replace if worn or damaged.

## Breaker Lubrication

It is essential to lubricate the tool using the grease chart (Figure 04-01) below as a guideline. Lubricate at grease fitting on chuck housing (Figure 04-02). If working in dusty conditions, the tool should be greased even more frequently. The tool should also be removed weekly and the cavity cleaned and packed with new grease. The tool must always have grease on the hammer contact area.

# * ATTENTION *

**INDECO** GREASING REQUIREMENTS

?? **WARNING !!!** A coating of grease must be maintained between the tool and the bushing of the breaker in order to avoid damage and eventual failure of the breaker.

?? The amount of grease necessary to maintain proper lubrication of the tool varies with conditions.

?? It is the responsibility of the **Operator** to monitor the amount of grease on the tool.

?? When raising the breaker, the portion of the tool extending from the breaker should always show grease!

CHECK FOR GREASE HERE

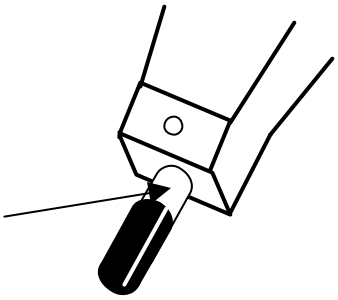


**Figure 04-01:** grease chart


**Figure 04-02:** MES 150 Lube Points

# Lower Bushing and Insert Inspection

**1.** Remove the tool (See *Tool Replacement* - Section 5 Page 30) and clean the inside of the Chuck Bushing (Position 102) or the Insert (Position 153).

**2.** Inspect the insert bushing for condition and wear. When the insert bushing has worn down flush with any part of the circlip (pos. 154) and/or the tool is making contact with the circlip, the insert bushing has meet it's service limit and in need of replacement.

**Note:** The greatest amount of wear normally occurs from front to back.

**3.** If the Insert Holder (Position 152) needs replacement it is recommended to remove the Breaker's Chuck Housing and remove the Chuck Bushing with a hydraulic press. (See *Disassembly of the Chuck Housing* - Section 7 Page 51).

**Figure 04-10** Measuring the Lower Chuck Bushing or Insert for Wear

**4.** To replace the Insert (Position 153), remove the circlip (Position 154) and insert bushing (Position 153) and clean the insert holder (Position 152) (Figure 04-11 and Figure 04-12)

**Note:** If the insert bushing does not slide out of the holder, the bushing will need to be cut.

**Note: SUGGESTED PROCEDURE -** Protect the upper portion of housing (Position 101), upper bushing (Position 104), spacer (Position 105) and piston (Position 309). Relieve insert by cutting a slot lengthwise, using a right angle (90°) die grinder with cut-off wheel. **Caution:** Be careful not to cut insert holder. Remove insert. Optional removal - use a universal sleeve puller with slide hammer to remove insert (See figure 04-13).

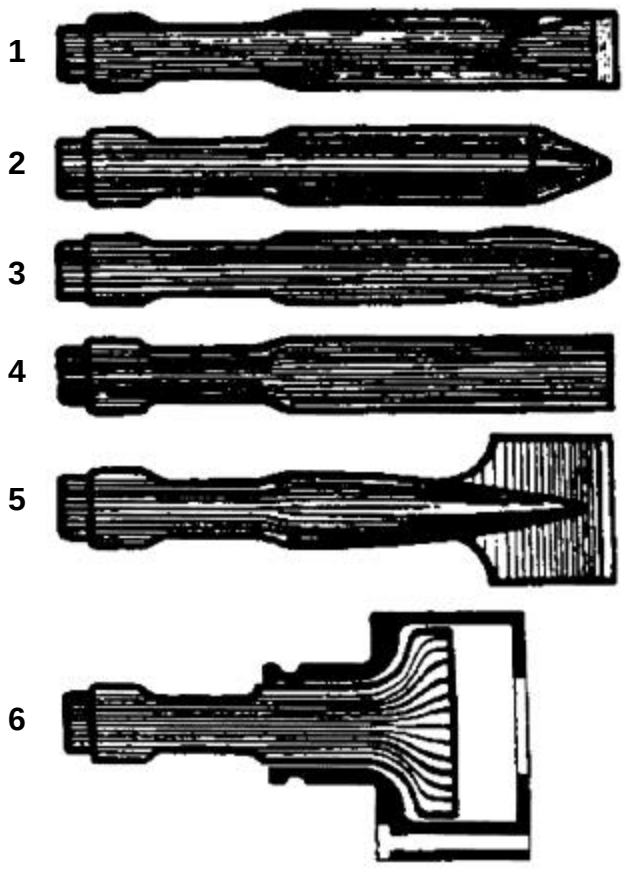
**Figure 04-11:** Remove Insert Snap Ring

**Figure 04-12:** Remove Insert

**Figure 04-13:** Universal sleeve puller

## Tool Selection

Choose the most suitable tool for the operation required. (Figure 05-01) For the breaking of boulders, use **MOIL or OLGIVE** points. In restricted areas, such as trenches, use **CHISEL** points and proceed in-line with the work face. In particularly narrow places, progress gradually, through small sections of material, making the most of the regularity of the striking frequency. Keep the front of the hammer parallel to the operator, with the machine arm drawn up. This will avoid damage to the tool, especially during cutting and squaring.




**Point and Recommended Use**

1) **Chisel** All earth-moving duties or excavations in narrow trenches or stratified soil or rock up to medium rock.

2) **Moil** Demolition of rocks and materials, not stratified rock, up to medium hardness.

3) **Olgive** Demolition of hard to very hard rock.

4) **Blank or Blunt** Demolition of rocks up to medium hardness to be broken into smaller pieces.

5) **Asphalt Cutter or Spade** Cutting of concrete paving, brick walls or turf.

6) **Pole or Pipe Cutter** Driving pipes, poles or pre-shaped metal objects (IE. shaped metal guardrail poles) into Different materials.

**Figure 05-01:** Breaker Tool Selection

# Tool Breakage Analysis

### Description of Typical Stress

In order to understand the complexity of the stress phenomena that results in tool breakage, some general information needs to be addressed. The tool is considered an elastic element designed to transmit shock or kinetic energy from the hammer piston to the material to be demolished.

- The typical tool break starts as a small fracture in the surface of the tool that is the most stressed area. Eventually a surface crack is created from: micro-welds from surface work hardening; localized heating and cooling on the tool surface; and tension and compression on opposite sides of the tool. The surface crack then grows in a series of concentric rings until the section weakens and can no longer support the stresses imposed. Complete failure occurs at this time.

- Stress per blow is not as critical as the frequency of blows. The stress level in the tool becomes more critical with higher blows per minute and changes in the blows per minute.

- For the same phenomena, longer tools at equal energy and frequency bear more stress than shorter ones.

- Breakers working at higher frequencies must be lubricated more often due to the above-mentioned stress on the tool as well as the thermal damage created by the friction of the tool and lower bushing.

- Matching a small breaker to a carrier larger than hammer specification creates high stress conditions on the tool.

- Operators are not always skillful in using the breaker. Visibility problems, site conditions and the use of the point to move materials can set up surface fractures in the tool. Breakage may not occur immediately but the conditions are now in place for a future failure.

### Method to Reduce These Effects & Increase Tool Life

- To drastically reduce the undesirable stresses on the tool, the breaker should be positioned perpendicular to the material to be worked. Slight arching-in of the hammer toward the operator while firing and following the progression of the tool into the material will deliver uniform pressure on the bushing in the contact areas. This will also allow the lubricating grease to flow around and cool the tool, thus avoiding seizures, micro-welding, and the creation of localized hot spots detrimental to the heat-treating of the tool.

- All attempts must be made to eliminate prying with the tool or moving the carrier while the weight is on the tool. Do not pivot the carrier on the tool!

- Overheating of the tool should be avoided on the point or chisel end. This occurs when the tool works in an area longer than 30 seconds, creating a “dust pocket” between the tool and hard material.

- The tool should be constantly lubricated with INDECO Supreme 1000 grease. You can never over-grease the lower end of the breaker!! Attention to this fact will add longevity to your tool and bushing life.

# Typical Tool Failures

### Misalignment or Pry Break

(Figure 05-02)

The bending stress exceeds the materials strength and the tool snaps. Caused by working at an incorrect angle or using the tool for mechanical leverage. The failure usually occurs near the tool bushing's front face. This failure can also be caused by the breaker slipping while hammering at angles not perpendicular to the surface of the material being broken. The failure type is a brittle type and typically has a lip formation.

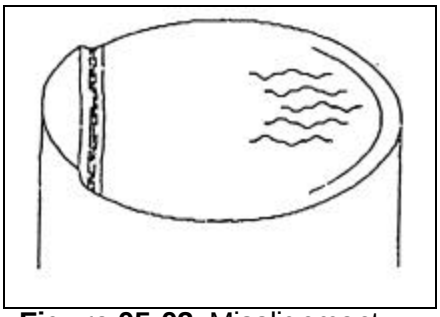


**Figure 05-02:** Misalignment Break

### Seizing in the Tool Bushing

(Figure 05-03)

Strong side loading and striking the tool at the same time causes the tool and bushing surface to be damaged. This failure is cause by incorrect or insufficient lubrication. The failure generally occurs in the front tool bushing area. The failure type is a fatigue fracture starting at the surface of the tool.

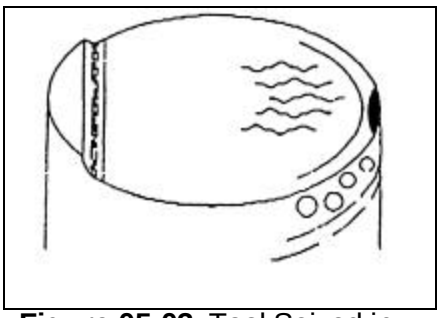


**Figure 05-03:** Tool Seized in Bushing

### Blank or Dry Firing

(Figure 05-04)

Occurs when the working end of the tool is not in proper contact with the material being broken. The failure can also occur when breaking through the material and the breaker strikes the tool a last time. When struck without resistance at the working end the tool , the tool stops abruptly when it is stopped by the retainers instead of the material. This results in breaking and deformation in the retaining groove.

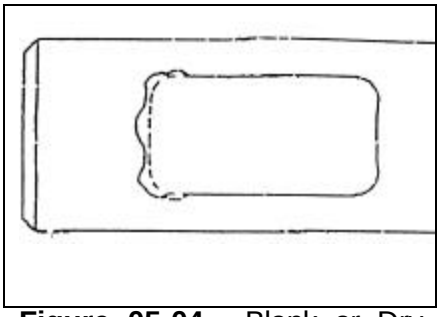


**Figure 05-04:** Blank or Dry Firing

### Mechanical Damage on the Tool's Surface

(Figure 05-05)

This is caused by heavy scratching on the tools surface. The failure usually occurs outside the tool bushing. The failure is generally a fatigue type fracture.

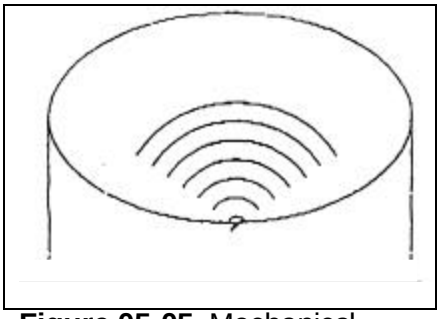


**Figure 05-05:** Mechanical Damage on Tools Surface

### Cold Fracture

(Figure 05-06)

Cold temperatures can cause the tool to become brittle and break. This failure can be avoided by warming the tool when working in cold temperatures.

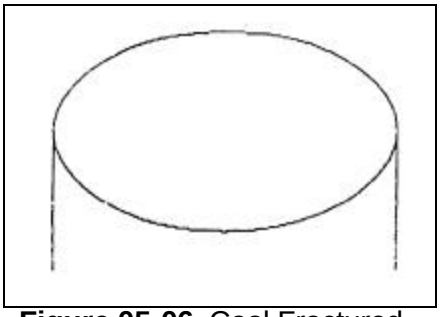


**Figure 05-06:** Cool Fractured Tool

### Break at Retaining Groove

(Figure 05-07)

This failure is a result of using a tool with worn or damaged retainers. Any time a tool is replaced the tool retainers should be inspected for wear and replaced if worn or damaged.

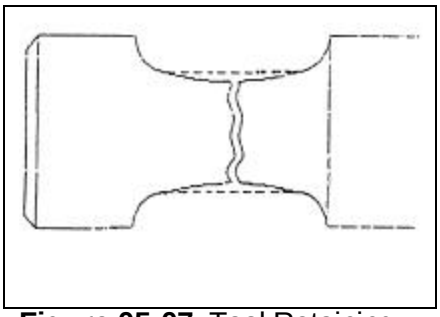


**Figure 05-07:** Tool Retaining Groove Break

### Breaking of Chisel Tip

(Figure 05-08)

This failure is caused by the improper contact between the tool and the material being broken.

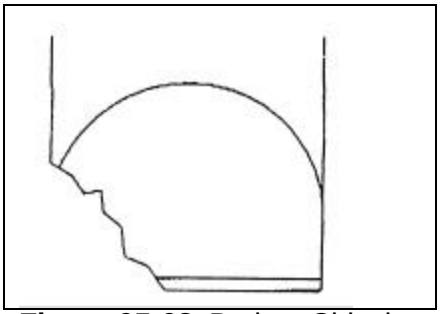


**Figure 05-08:** Broken Chisel Tip

### Mushrooming of Tip

(Figure 05-09)

This failure is caused by hammering too long without penetration of the material. This generates extreme heat and softens the tools materials which then mushrooms. Once a tool has been overheated, the properties of the tool's materials are permanently altered. This change of properties can then lead to premature failure of the tool. This damage can be prevented by proper lubrication and operation.

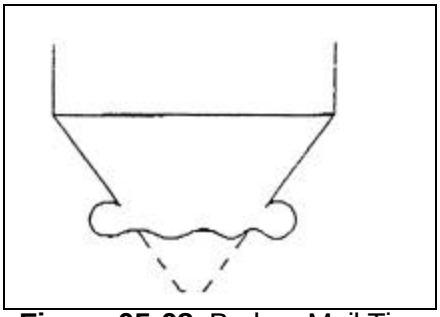


**Figure 05-08:** Broken Moil Tip

# Tool Replacement

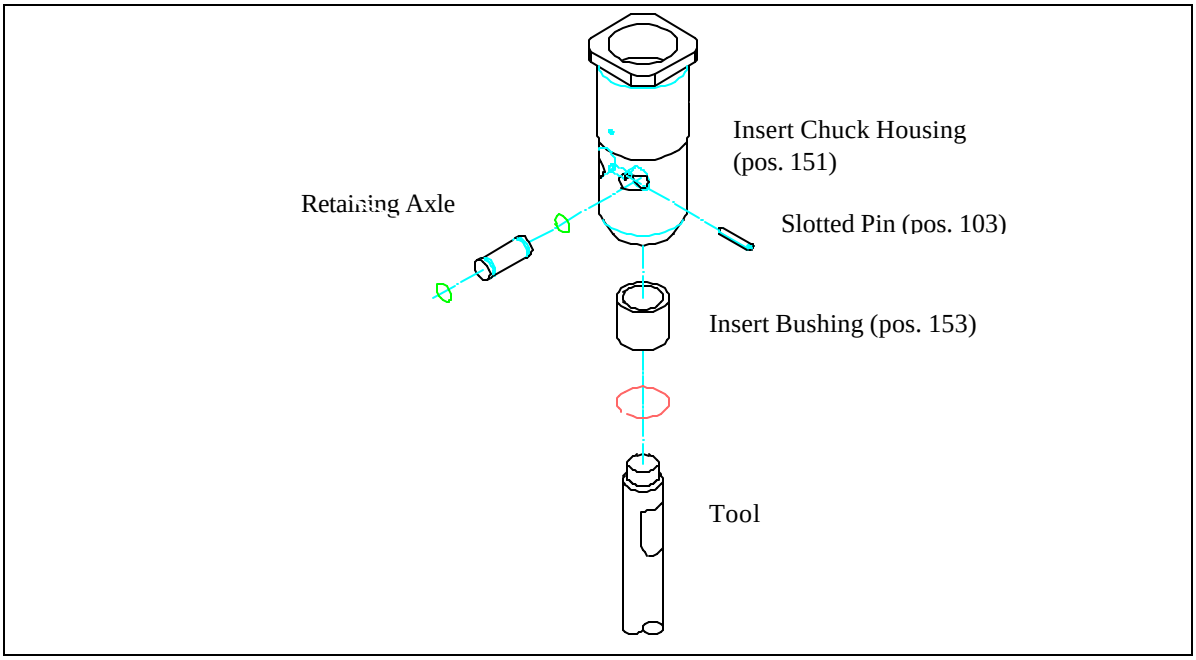



**Figure 05-09:** Check and Unlock Retaining Axles

a) The retaining axles are held in with a slotted pin and require a hammer and a roll pin punch to drive the slotted pin (Position 103) out of the Insert chuck housing. (Figure 05-09)
b) Drive pin (pos.103) in one direction to clear the end of the retaining axle below it.

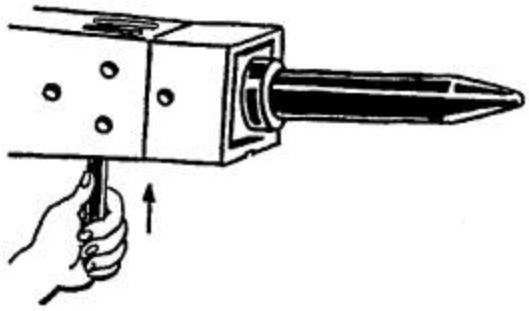


**Figure 05-10:** Push Retaining Axle Out

c) With a blunt tool, push the retaining axle out from the opposite side. (Figure 05-10) Repeat the operation for the second retaining axle.
d) The tool is now free and can be removed from the breaker.

WARNING

**Caution the tool may be hot if the breaker was just being used.**

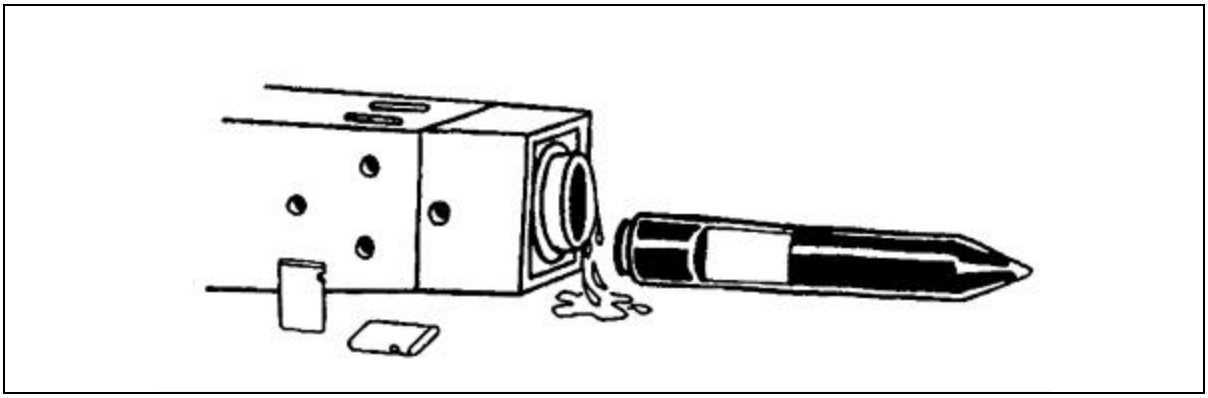


**Figure 05-11:** Grease New Tool And Align

e) Grease the new tool well. Insure the cavity is clean and the bush is lubricated. Slide it in so that the side notches are in line with the axle slots and push in snugly. (Figure 05-11)

f) Reverse the procedure to re-install the retaining axles and slotted pin.

# VI. Accumulator Removal and Rebuilding

## Safety Instructions


**Before working on the Accumulator, PLEASE read the following safety procedures thoroughly. If you have any questions, consult your INDECO dealer or INDECO N.A.**

### *Warnings*

Compressed gases, by their nature, are hazardous. They are capable of creating environments that are oxygen deficient, **flammable or** explosive. **Death has** occurred during a routine repair on a carrier when a nitrogen-charged canister on the carrier exploded as it was being disassembled.

Nitrogen, which is present in our atmosphere, can still displace the oxygen in a room or enclosure and cause suffocation.

**Never** deliberately breathe, or allow others to breathe, any compressed gas of any type. It is possible to deplete the oxygen in the bloodstream and cause rapid suffocation and DEATH.

Always wear proper clothing for the job. Protective clothing, safety shoes and leather gloves should be worn, in addition to the required helmet or other protective gear. Any time compressed gases are handled, safety glasses should be worn.

Keep a fire extinguisher close at hand. Situate flammable gas cylinders in a location so that if a fire does occur, it may be easily extinguished. In some cases, it may be better to evacuate the area and let the cylinder burn, especially if escaping gas could collect and explode.

**Never** attempt to adapt fittings from one device or cylinder to another. Fittings or hoses may not be compatible with the gas products and may fail **violentl**y. Gases should never be transferred from one cylinder to another. The rate of flow of the gas itself may be sufficient to cause an explosion.

Check valves are an important safety feature, but don't rely on them 100% to prevent a "backflow" condition. Always open the cylinder **slowly** Purge the regulator and hoses by allowing a small amount of gas to pass through the system.

### *Potential Hazards*

**Fire or Explosion**
Nitrogen may burn, but will not ignite readily. The Cylinder may explode in the heat of a fire.
**Health Hazards**
Vapors may cause dizziness or suffocation. Contact with liquid may cause frostbite. Fire may produce irritating or poisonous gases.

## *Emergency Action*

Keep unnecessary people away. Isolate the hazard area and deny entry. Stay up-wind; keep out of low areas. Telephone local emergency professionals. Positive-pressure, self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.

**Fires**
Small Fires: Dry Chemical or C02
Large Fires: Water spray, fog or regular foam
Move container from fire area if you can do so without risk. Apply cool water to sides of container that is exposed to flames until well after the fire is out. Withdraw immediately in case of rising sound from venting safety device or any discoloration of container. If nitrogen is spilled, it may evaporate leaving a flammable residue.

**Leaks**
Stop leak if you can do it without risk.

**First Aid**
Move victim to fresh air and call emergency medical care. If the victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.

If you suspect a problem with the Accumulator, it should be bench-tested for the pressure. Before proceeding to any other operation, connect a charging unit to the inflating screw. If the pressure is within specs, it may be assumed the Accumulator is okay. If the pressure is low, note that it is normal for an Accumulator to lose pressure over time with no defects. If pressure has been lost in a short time, there may be a problem with the diaphragm, sealing ring or inflating screw. If the pressure is checked and it is zero, be suspect of a ruptured diaphragm.

**WARNING:** If the pressure is checked and the gauge creeps up past the original specs, **exercise extreme care -** the diaphragm may be ruptured. If so, the hydraulic oil may have leaked into the nitrogen chamber and the pressure in the chamber may be greater than 2000 psi. Bleed off the pressure slowly through the Inflating Screw, while guarding yourself from bodily injury. (Figure 06-01) (Please read the safety warnings at the beginning of this chapter.) (Explanation: The nitrogen is in at 500 lbs. pressure. The System pressure is 1500 -2000 psi. If the diaphragm ruptures at the edge, it lets the oil in to make up the pressure, thereby increasing the nitrogen chamber pressure. In other words, the fluid takes up the volume and increases the pressure on the gas.)

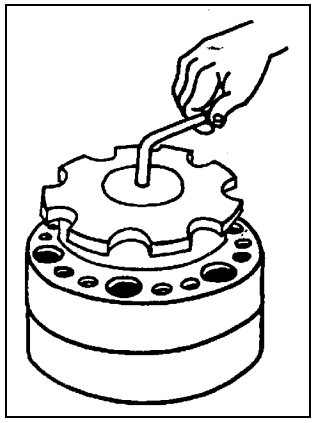


**Figure 06-01:** Loosen Inflation Screw Carefully

# Accumulator Indicators

In order to ensure smooth operation of the hammer, it is necessary that the Accumulator be charged correctly. If the Hammer is exhibiting strong vibrations of the oil supply pipe, it is likely that Accumulator is discharged (flat).

We recommend that the Accumulator be disassembled every 500 working hours. At this time, the Diaphragm (Position 503) should be replaced, even if it appears to be in good condition. WHEN THE ACCUMULATOR GOES FLAT, THE RUBBER DIAPHRAGM MUST BE REPLACED, EVEN IF ITS CONDITION APPEARS SATISFACTORY.

When recharging the Accumulator, also replace the Sealing Ring (Position 505) and the O-Ring (Position 508). Before reassembling, wrap Teflon tape around the Inflating Screws (Position 504) in order to deter them from loosening.

## ATTENTION:

**The accumulator charging Specifications for all INDECO Breaker accumulators are:**

***475 PSI to 550 PSI (32 to 38 BAR)***
**For all models up to and including the MES 1200.**

***520 PSI to 620 PSI (36 to 43 BAR)***
**For all models MES 1500 HD and larger.**

# Accumulator Rebuilding MES 150

**1.** Carefully discharge the accumulator and remove the Inflating Screw (Position 504) and O-ring (Position 505). (Figure 06-02)

**2.** Loosen and remove the Self Locking Nuts (Position 314) and Shell Fixing Screws (Position 506). (Figure 06-03)

**Figure 06-02:** Loosen Inflation Screw Carefully MES 150

**Figure 06-03:** Remove Accumulator Shell Bolts MES 150

**3.** Remove the Plate (Position 313) and Upper Shell Half (Position 502).

**4.** Remove the Diaphragm (Position 503) and replace. (Figure 06-04)

**5.** Reassemble the Accumulator and torque to the required specification. (Figure 06-05)

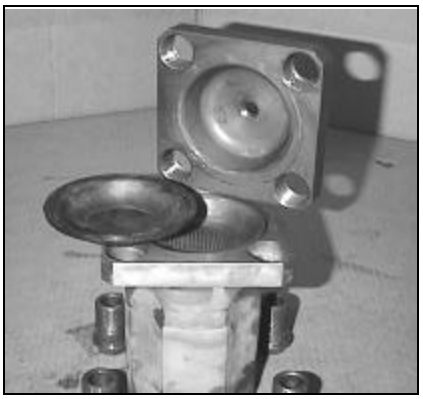


**Figure 06-04:** Remove Diaphragm MES 150

**Figure 06-05:** Torque Accumulator Shell Bolts MES 150

**6.** Install a new O-ring (Position 505) on the Inflating Screw and wrap Teflon tape around the threads of the Inflating Screw before installation. Install Inflation Screw in the Upper Shell Half (Position 502). Do not tighten at this time.

**7.** The Accumulator is ready to be charged with nitrogen (See *Nitrogen Recharge* Section 6 Page 32) and installation.

**1.** Install the Accumulator onto the Breaker and fasten the Accumulator Nuts (Position 507), cross-tightening as per Torque Specifications. (Figure 06-06)

**Figure 06-06:** Install and Torque Accumulator MES 150

## ATTENTION:

**The accumulator charging Specifications for all INDECO Breaker accumulators are:**

***475 PSI to 550 PSI (32 to 38 BAR)***
**For all models up to and including the MES 1200.**

***520 PSI to 620 PSI (36 to 43 BAR)***
**For all models MES 1500 HD and larger.**

# Nitrogen Recharge

**Note:** On Breaker Models MES 150 through MES 200, the accumulator must be assembled on the breaker prior to the nitrogen charge.

**1.** Carefully install the Pressure Reducer/Regulator assembly into the nitrogen tank, following the safety instructions. (Figure 06-20) The nitrogen bottle must not have a level below 45 bars (652.5 psi).

**2.** Attach the Rubber Hose to the Pressure Reducer/Regulator and the nitrogen tank valve.

**3.** Attach the Inflating Body so the hexagonal pin fits inside the Inflating Screw (Position 504). (8 mm HEX on Breakers up to 300 Series; 14 mm HEX on Breakers 500 Series and up). Check the O-Ring on the sealing face. (Figure 06-21)

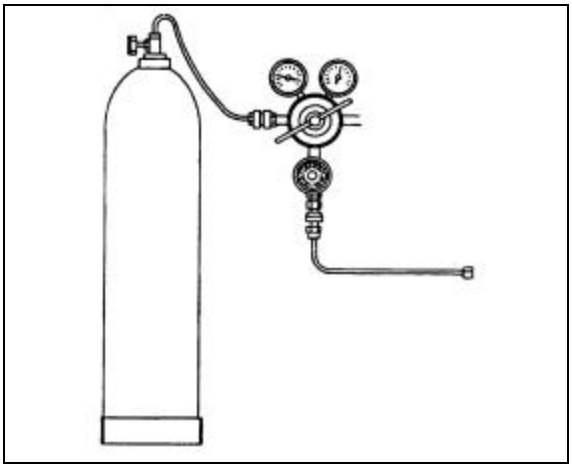


**Figure 06-20:** Assemble and Install Pressure Regulator Onto Nitrogen Tank

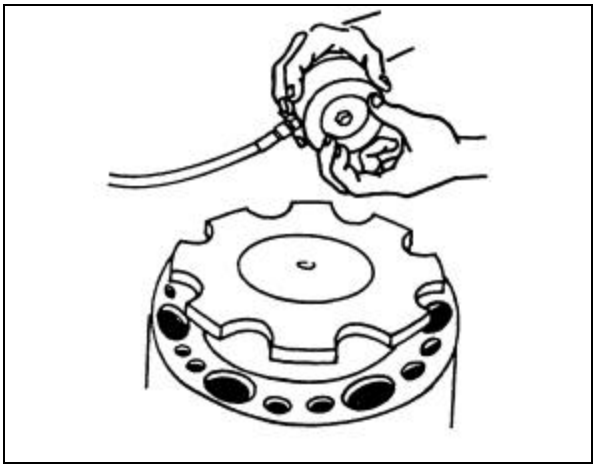


**Figure 06-21:** Attach and Install Inflation Body

**4.** Install the Inflating Body to the Accumulator. (Figures 06-22)

**Figure 06-22:** Installation of Inflation Body MES 150

**5.** Loosen the Accumulator Charge Plug (Position 34) by turning the Spanner Wrench in the Charging Fixture counter-clockwise.

**6.** Open the main valve on the nitrogen tank and purge the charge hose.

**7.** Charge the accumulator to the correct pressure. (See *Nitrogen Recharge* - Section 6 Page 41).

**8.** Tighten the Accumulator Charge Plug (Position 34) by turning the Spanner Wrench in the Charging Fixture clockwise.

**9.** Bleed the pressure from the charge hose and remove the Charging Fixture from the Accumulator.

**10.** Tighten Accumulator Charge Plug (Position 34) to specified torque.

**11.** Using some oil, verify that there are no nitrogen leaks from the Inflating Screw or on the sides. (Figure 06-25)

**12.** Turn the Accumulator upside down and fill the holes with oil to check the Diaphragm has no defects. If no bubbles appear, the Accumulator is correctly charged and ready to be installed on the breaker.

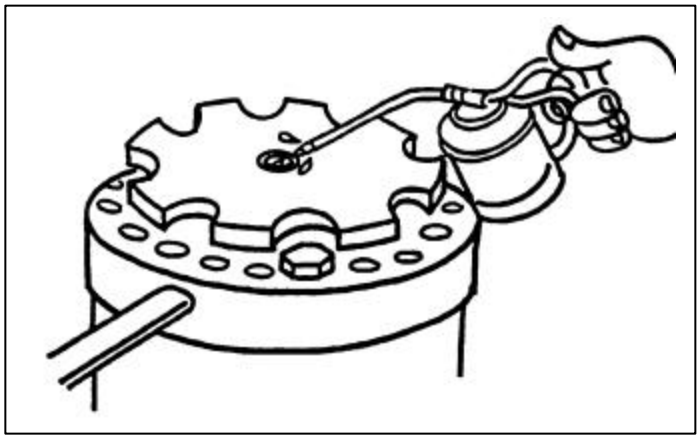


**Figure 06-25:** Check Accumulator for Leaks

## ATTENTION:

**The accumulator charging Specifications for all INDECO Breaker accumulators are:**

***475 PSI to 550 PSI (32 to 38 BAR)***
**For all models up to and including the MES 1200.**

***520 PSI to 620 PSI (36 to 43 BAR)***
**For all models MES 1500 HD and larger.**

## Removing Breaker Side Plates

**1.** Position the breaker horizontally on a flat work surface with the pressure and return fittings pointing upward. On MES 150 Breakers there are eight (8) bolts attaching the side plates (Position 607). (Figure 07-01)

**Figure 07-01:** Remove Side Plates
MES 150

**2.** Remove the eight bolts (Position 608) from the side plates (Position 609) and remove the side plates from the breaker

# Breaker Head Removal and Disassembly

## *MES 150*

**1.** Loosen and remove Nuts (Position 314). (Figure 07-02)

**2.** Lift the Head, Cylinder and Piston Assembly (Position 301) from the Chuck Housing (Position 101). (Figure 07-03)

**Figure 07-02:** Loosen Nuts

**Figure 07-03:** Lift Head, Cylinder and Piston Assembly from Chuck Housing

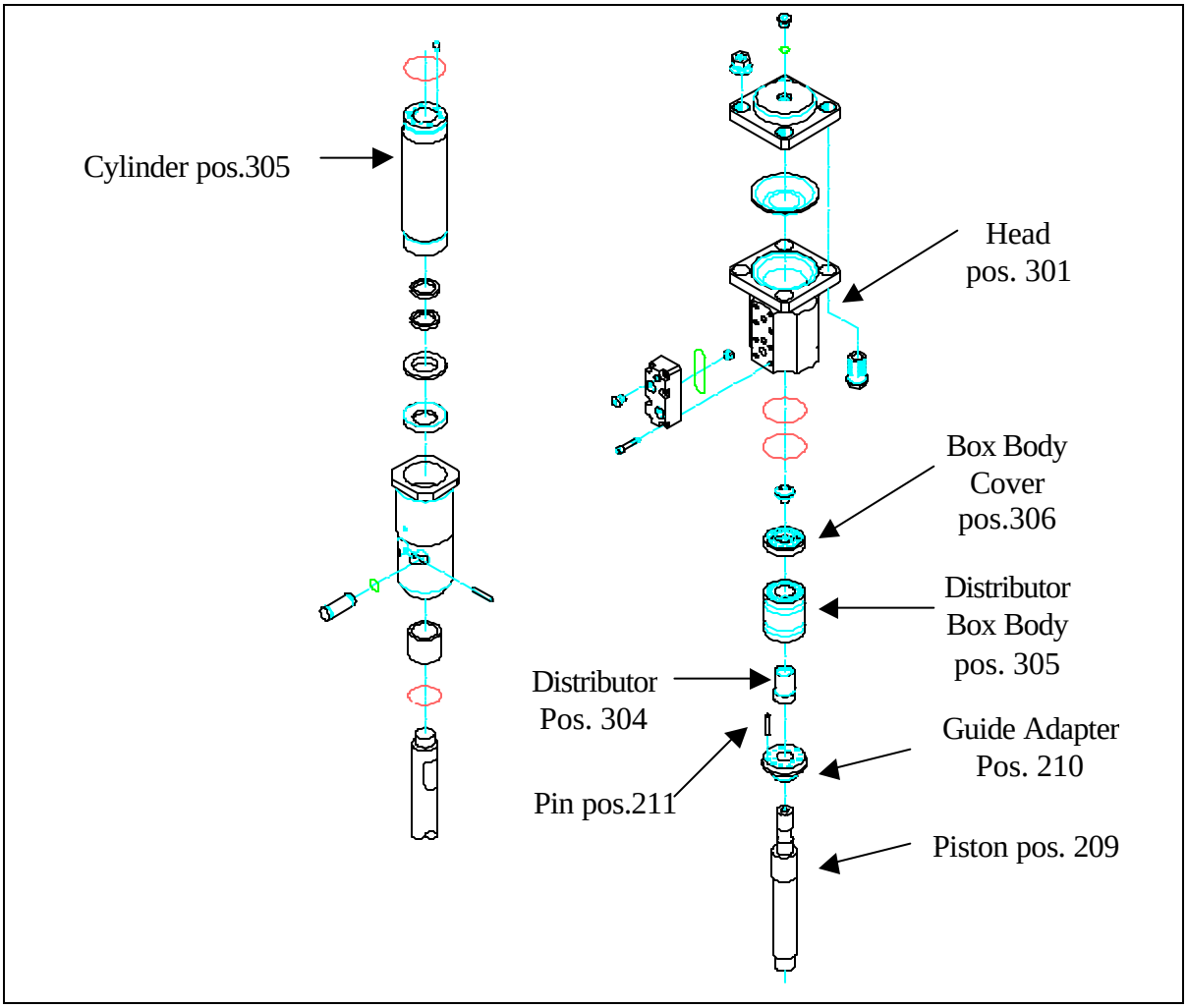



**Figure 07-04:** Exploded View

**3.** Remove the Cylinder (Position 305) with Piston and Guide Adapter from the Head Assembly (Position 302). Remove and note the location of the Pin (Position 211). (Figure 07-04)

**4.** Slide out Distributor (pos. 304) from bottom of the Distributor Box Body (Position 302).

**5.** Using suitable puller, remove Distributor Box Body (pos. 302) from Head.

**6.** Remove Distributor Box Body Cover (pos.305) and Valve (pos. 306) from Head.

**7.** Check that the Distributor face and inside are smooth and clean.

# Cylinder Removal and Disassembly

**1.** Remove the piston (Position 209) (Figure 07-05) The Guide Adapter (Position 210) will come out of the Cylinder (Position 210) with the piston. Check that the two parts are not worn, especially at the support surfaces.

**2.** Remove the Valves (Position 205/206) off the Cylinder and check the seating surface. This surface should be perfectly circular, of equal thickness all around and without indentation. Clean the valves and replace if necessary. Check the sealing area of the Cylinder. Check the guiding areas of the Cylinder, by the head. (Figure 07-06)

**Figure 07-05:** Remove Piston

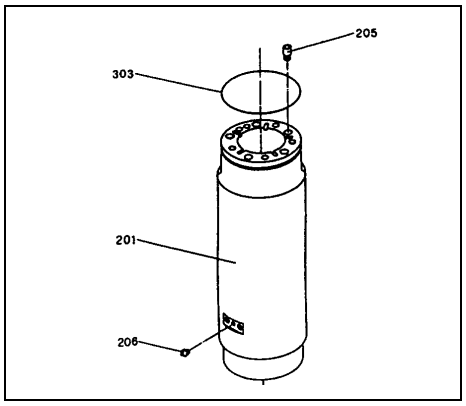



**Figure 07-06:** Remove Valves from Cylinder

**3.** Check the inside of the Cylinder for scoring and defects. Hone out defects in the Cylinder walls with the appropriate, lubricated tool (Recommended: BRM Flex-Hone)]. (If this operation is performed, the Cylinder should then be cleaned out with warm, soapy water and then re-oiled). Replace the Cylinder if necessary.

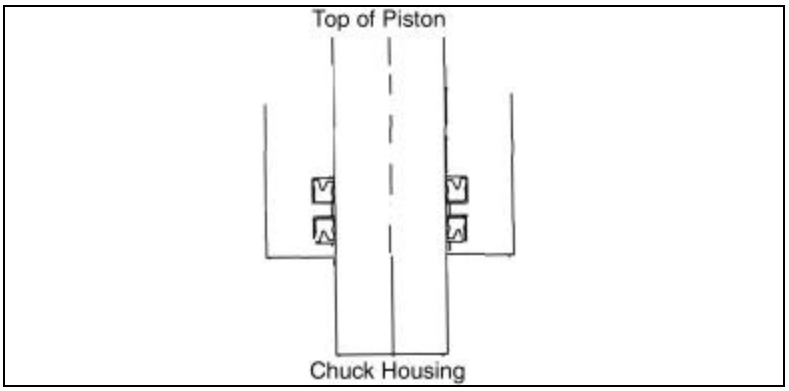



**Figure 07-07:** Remove Cylinder U-joint Seals

**4.** Remove the O-ring (Position 303) and the U-joint seals (Position 204) and carefully clean u-joint seal's internal grooves. (Figure 07-07)

# Disassembly of Chuck Housing

1. Slide out the Insert Chuck Housing (Position 105) from the chuck housing (pos. 307) by hand. (Figure 07-10) If resistant, gently tap with a small hammer.

2. Slide out the Upper (Position 107) and Lower (Position 104) Flange by hand. (Figure 07-11)

3. Drive out the Elastic Pins (Position 109) from the insert chuck housing (Position 105).

4. Drive out Retaining Axle, Position 110), from the insert chuck housing (Position 105). (Figure 07-11)

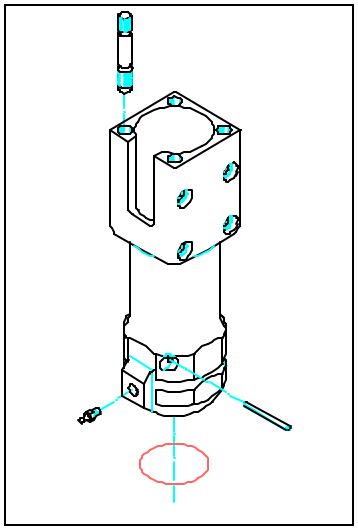


**Figure 07-10:** Chuck Housing

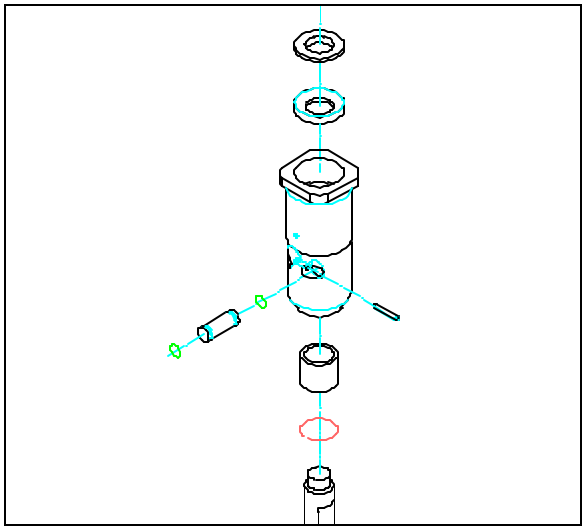


**Figure 07-11:** Remove Elastic Pin and Retaining Axle

5. Check the wear on the Lock Bolt, “O” rings and pins.

6. Remove the circlip (Position 154) and then remove the insert bushing (Position 153) Clean the insertchuck housing (Position 105) (Figure 07-11)

## Chuck Housing Assembly

1. Clean the insert chuck housing (Position 105) (Figure 08-21) and then install the insert bushing (Position 153). Install the circlip (Position 154) to retain insert bushing.

2. Slide the Insert Chuck Housing (Position 105) into the chuck housing (pos. 307) by hand. (Figure 08-20) If resistant, gently tap with a small hammer. Position flat edge of insert chuck housing in alignment with pin in chuck housing.

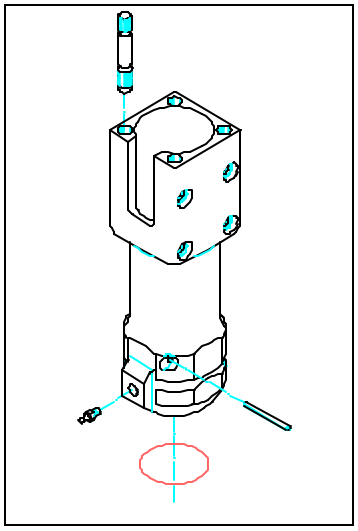


**Figure 08-20:** Chuck Housing

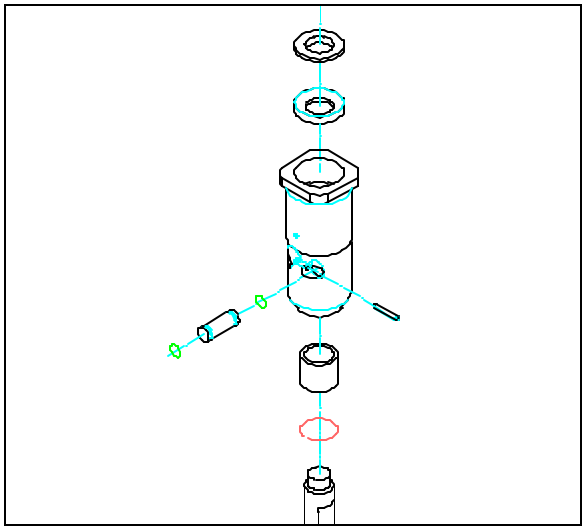


**Figure 08-21:** Insert Chuck Housing

# Cylinder Assembly

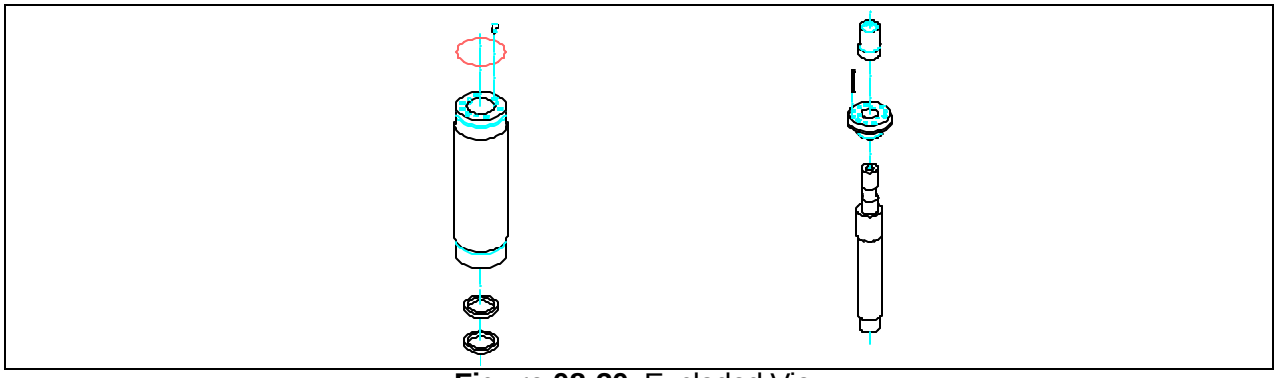


**Figure 08-30:** Exploded View

**1.** Assemble the U-joint Seal (Position 204) into the internal grooves of the Cylinder (Position 201). After installation of seals in cylinder, lubricate seals with oil.

**Note:** Be certain that the seals are assembled back-to-back, with the lips in the proper direction. (Figure 08-31)

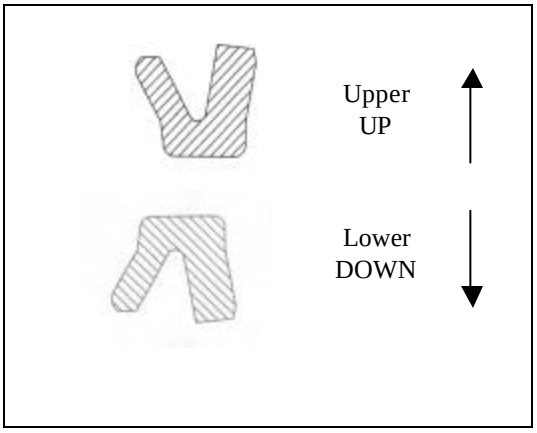



**Figure 08-31:** Install Cylinder Seals

**2.** Lubricate piston surface with oil. Lower the Piston onto the Cylinder. (Figure 08-32)

**3.** Install the O-ring (Position 303) onto the Cylinder (Position 201). (Figure 08-33)

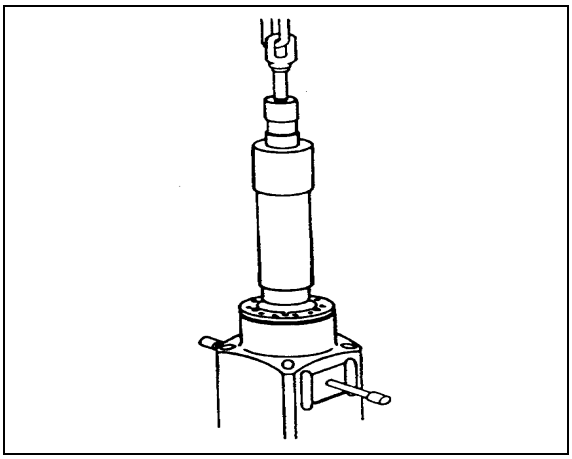


**Figure 08-32:** Install Piston Into Cylinder

**Figure 08-33:** Install Cylinder O-ring

**4.** Insert the Check Valves (Position 205) into the Cylinder.(Figure 08-34)

**5.** Insert the Centering Pin (Position 211) into the Guiding Plug (Position 210). Insert this assembly into the Cylinder. (Figure 08-35)

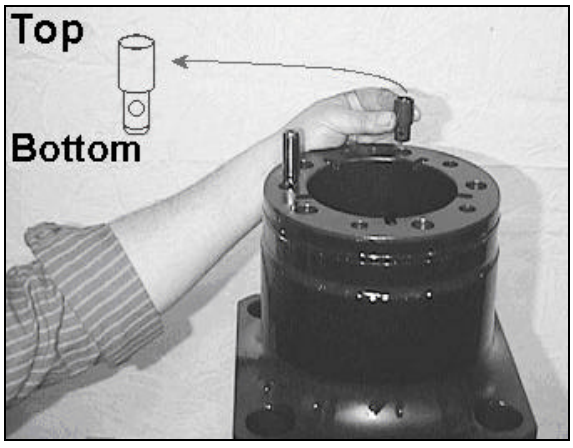



**Figure 08-34:** Insert Check Valves Into the Cylinder

**Figure 08-35:** Insert Cylinder Centering Pin

**6.** Install guide adapter over upper end of piston with smaller end pointing down. Align it with the centering pin in the top of the cylinder. Bottom guide adapter on top of cylinder.

**7.** Place the Distributor (Position 304) over the piston bottoming on the Guiding Adapter. (Figure 08-36)

**8.** Brush the Centering Pin with Lithium grease. Lower the Distributor Box Body (Position 302) Assemble the Dowel (Position 310) and the O-Ring (Position 311), and screw into the Distributor Box Body. Place the Box Body Cover (Position 305) onto the Distributor Box. (Figure 08-37)

**9.** Insert the mushroom valve into the box body cover. (Figure 08-38)

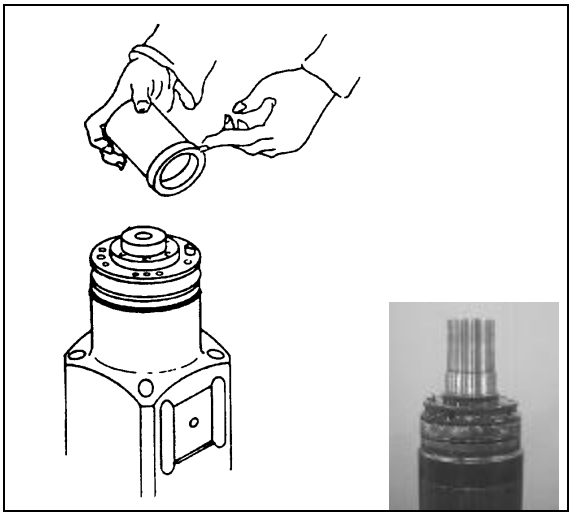


**Figure 08-36:** Install Distributor

**Figure 08-37:** Install Box Body Cover

**Figure 08-38:** Install Mushroom Valve

# Breaker Head Assembly

**1.** Insert the O-ring Seal(s) (Position 303) into the o-ring groove located at the lower portion of the Head Assembly (Position 301). (Figure 08-41)

**2.** Lubricate all sliding areas between the Box Body Cover and the Head. (Figure 08-42)

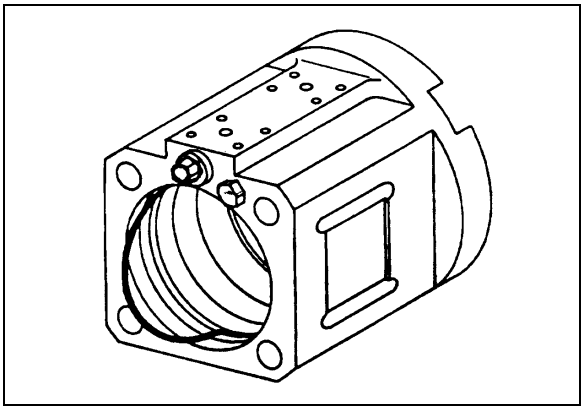


**Figure 08-41:** Install O-ring Into Breaker Head

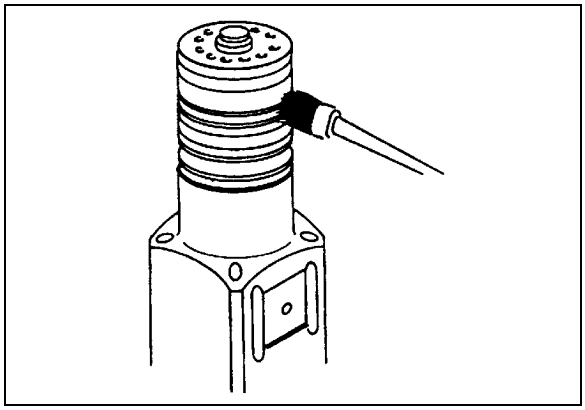


**Figure 08-42:** Lubricate Sliding Areas

**Note:** On MES150 the Side Rods (Position 312) must be torqued into the Chuck Housing Assembly (Position 307). (Figure 08-43)

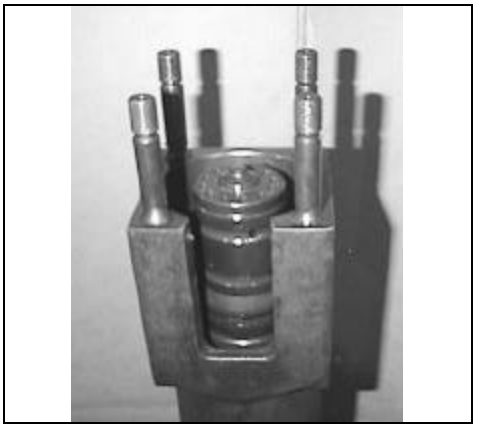


**Figure 08-43:** MES 150 Side Rods

**3.** Lower the Head (Position 301) onto the Cylinder (Position 201).

**4.** Using a plastic/dead-blow sledgehammer, drive the head down over the Distributor Box Body Cover (Position 302) until it bottoms out on the Cylinder (Position 201). (Figure 08-44)

**Figure 08-44:** Using a Dead Blow Hammer to Drive Head down

**5.** Cross-tighten the Side Bolts to the specified Initial torque. Tighten 1/3 of the specified torque at a time. (Figures 08-45)

**Note:** On MES 121 through MES 553, tighten the Side Rod Nuts using a box style wrench.

**Figure 08-45:** Assemble and Tighten Side Bolts

# Breaker Side Plate Assembly

**1.** Position the Breaker and chuck housing on a level work surface.

**2.** Position the Side Plate with the large holes pointing away from the accumulator
.

**3.** Fasten the Side Plates to the Breaker using eight (8) bolts (Position 607) (Figure 08-50)

**Figure 08-50:** Install Side Plates
MES 150

**4.** Tighten and torque the Side Plates to the proper specification. (See *Appendix A - Breaker Torque Specifications* Page 52).

# Breaker Regulation Chip

1. The link housing is secured to the head with six (6) socket head screws. An “O” ring sets un a grove machined into the link housing and seals the mating surfaces (Position 607) (Figure 08-60)

2. A four (4)-position chip fits in the link housing to regulate operating pressure of the breaker. The four positions are 1.5mm, 2.0mm, 2.5mm and 3.0mm.

3. The top, right port on the link is a test port. The threads are British Standard Parallel Pipe, (BSPP) –04, (1/4 inch). A pressure gauge, (minimum of 3000 psi) is inserted into the test port to take operating pressure readings

**Note:** See appendix “B” (page 53) for further instructions on setting chip.

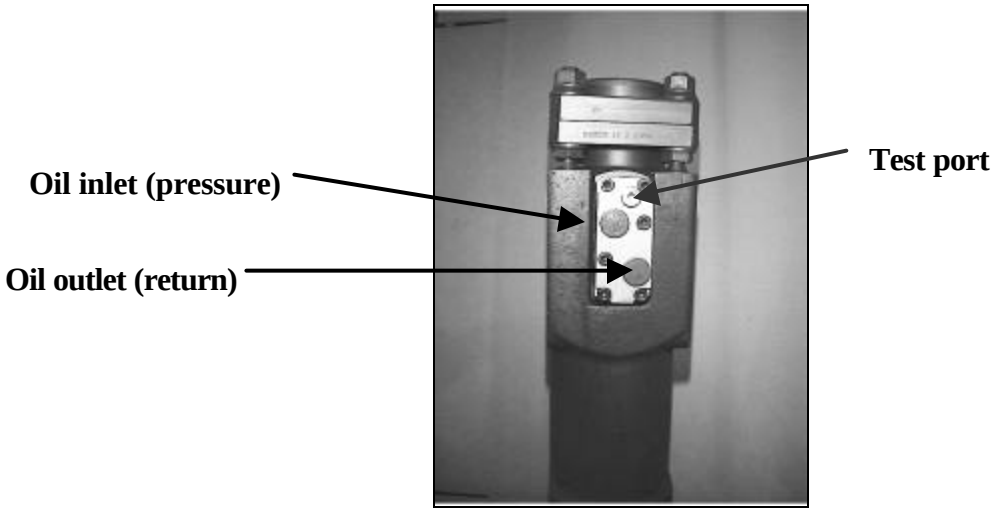



**Figure 08-60:** Link housing and regulation chip

## Checklist for Accurate Breaker Problem Diagnosis

As in any repair it is very important to ask the customer the right questions. In many cases the answers to a repair technicians questions will allow for a quicker and more cost effective resolve the customers problem. Below are questions that will assist the technician in quick and accurate problem resolution of INDECO Breakers:

**a.** Model and Serial Number of the breaker. _____

**b.** Make, Model and Serial Number of the carrier. _____

**c.** Are both shut-offs on the carrier, if present, both in the full on position? _____

**d.** Are quick couplers being used? _____

Are the male and female ends of the same manufacturer and type? _____

Have you by-passed the couplers using a direct hose connection? _____

**e.** What are the results of the flow test of the carrier?

INITIAL READINGS

Full Flow: GPM _____ Back Pressure _____

Attachment Operating _____ GPM @ _____PSI Back Pressure _____PSI

Carrier Circuit Relief_____GPM @ _____PSI Back Pressure _____PSI

*Pressures at Test Ports: Inlet _____ PSI Outlet (Back Pressure) _____ PSI

FINAL READINGS

Full Flow: GPM _____ Back Pressure _____

Attachment Operating _____ GPM @ _____PSI Back Pressure _____PSI

Carrier Circuit Relief_____GPM @ _____PSI Back Pressure _____PSI

*Pressures at Test Ports: Inlet _____ PSI Outlet (Back Pressure) _____ PSI

**f.** Does the breaker sound like it is cycling? _____

**g.** Do the whip hoses appear to have fluid flowing through them? _____

**h.** Does the breaker run and then stop? If it does, how long does it run and how do you get it to run again? _____

**i.** With the carrier at an idle, remove the tool and verify that the piston is moving._____

**j.** Is the piston hitting the tool? _____

**k.** If the breaker is a model MES 1750 HD or larger, does there seem to be air coming out around the valve assemble where the under water kit attaches to? _____

**l.** Was the breaker recently rebuilt? If yes, what was done and what parts were installed? _____

_____

_____

_____

In many cases service personnel, when called for assistance will ask these questions. Having the answers ready will save you time and allow the product support department at your dealer to assist you quicker and more efficiently.

# Troubleshooting

## *Low Working Pressure on Breaker Test Gauges*

**1.** Check to verify that you are hitting on a suitably hard surface.

**2.** Remove and adjust the pressure regulating valve as follows: install the necessary number of shims underneath the spring (Position 414), inside the guiding plug (Position 418) to obtain the correct pressure reading (See Appendix A - *Breaker Technical and Torque Specifications* Page 96). Each 1 mm shim inserted increases the pressure approximately 73 PSI. (5 Bars). **Note:** The maximum number of shims allowed is 7. Remove shims to decrease pressure. Add shims to increase pressure.

**3.** Replace the spring in the guiding plug, reassemble and tighten the pressure regulating valve.

**4.** Retest the breaker and, if the readings are still not with in the correct specification, repeat the above steps until the correct pressures are achieved.

**5.** If the pressure cannot be corrected, call INDECO North America at (203)377-7791 for assistance.

## *Return (Back) Pressure on Test Gauges Is Above the Specification*

**1.** Check the return filter and replace if necessary. **Note:** Some applications may require a larger return filter.

**2.** Check to verify that the return lines are not restricted and are large enough to allow for unrestricted return oil flow.

**3.** If the pressure is still excessive, call the manufacturer of the hydraulic installation kit for assistance in lowering the pressure.

## *Breaker Does Not Hammer*

**1.** Check to verify that the carrier's shut-off valves are open.

**2.** Check the operation of the breaker control pedal. Check the carrier pump for correct flow and pressure. Push the hammer to the bottom to charge the piston and try again.

**3.** Connect the pressure line to the return line and verify that the full load does not cause excessive back-pressure. Check the condition of the carriers hydraulic filter; if necessary, replace it. Verify that the diameter of the return pipe is in line with the specifications.

**4.** Check the condition and position of the side bolts. Tighten if loose; replace if broken.

**5.** Disassemble the variable valve (Guiding Plug - Position 418) and verify that it is working correctly.

6. Disassemble the tool and, looking into the upper bushing, check that the piston is completely free.

7. Check the wear of the bushings in the chuck housing.

8. Check that the point end of the tool is in usable condition. Check the wear of the upper bushing.

9. If the problem cannot be resolved, call INDECO North America at (203) 377-7791 for

## *Breaker Lacks Power*

1. Check to verify that the carrier's shut-off valves are open.

2. Check the operation of the breaker control pedal. Check the carrier pump for correct flow and pressure. Push the hammer to the bottom to charge the piston and try again.

3. Verify that the pressure relief valve of the carrier circuit is not open. If it is, check its calibration level. (The minimum pressure to the carrier must be at least 30% higher than that to the hammer.)

4. Verify that there are no leaks in the carrier hydraulic circuit (pump or other components).

5. Disassemble the variable valve (Guiding Plug - Position 418) and verify that it is working correctly.

6. Check if the pipes and hoses are vibrating or jumping excessively, especially on the pressure side. If necessary, replace the diaphragm and recharge with nitrogen.

7. Check that the inlet operating pressure is not too low (See Appendix A - *Breaker Technical and Torque Specifications* Page 96).

8. Check that the oil flow meets the technical specs in the Owner's Manual.

9. Check that the oil temperature is not too high (over 85° Celsius, or 185° Fahrenheit). Check that the oil viscosity is good; if necessary, change the oil.

10. Check that there are no defects in the carrier cooling system. Check that there are no internal leaks in the hammer (evidenced by a rustling noise). If the hammer leaks, replace the seals. If it is still leaking, re-machine the contact surfaces.

11. Check if the inlet operating pressure gets lower as the tool penetrates. The O-Ring at the pressure valve may be damaged and should be replaced. Also check that the spring is not broken, and the slide is not worn or loose in the barrel.

12. Check that the point end of the tool is in usable condition. Check the wear of the upper bushing.

**13.** If the problem cannot be resolved, call INDECO North America at (203) 377-7791 for assistance.

## *Carrier Oil Is Over Heating*

**1.** Check the operation of the breaker control pedal. Check the carrier pump for correct flow and pressure. Push the hammer to the bottom to charge the piston and try again.

**2.** Verify that the pressure relief valve of the carrier circuit is not open. If it is, check its calibration level. (The minimum pressure to the carrier must be at least 30% higher than that to the hammer.)

**3.** Verify that there are no leaks in the carrier hydraulic circuit (pump or other components).

**4.** Check the condition and position of the side bolts. Tighten if loose; replace if broken.

**5.** Disassemble the variable valve (Guiding Plug - Position 418) and verify that it is working correctly.

**6.** Check that the inlet pressure is not too low (see technical specs in Owner's Manual).

**7.** Check that the oil temperature is not too high (over 85° Celsius, or 185° Fahrenheit). Check that the oil viscosity is good; if necessary, change the oil.

**8.** Check that there are no defects in the carrier cooling system. Check that there are no internal leaks in the hammer (evidenced by a rustling noise). If the hammer leaks, replace the seals. If it is still leaking, re-machine the contact surfaces.

**9.** Check if the operating pressure gets lower as the tool penetrates. The O-Ring at the pressure valve may be damaged and should be replaced. Also check that the spring is not broken, and the slide is not worn or loose in the barrel.

**10.** If the problem cannot be resolved, call INDECO North America at (203) 377-7791 for assistance.

## *Oil Leaks Occurring*

**1.** Check that the oil temperature is not too high (over 85° Celsius, or 185° Fahrenheit). Check that the oil viscosity is good; if necessary, change the oil.

**2.** Verify that the piston is not scratched. If it is, replace the piston and the seals.

**3.** Check that the breaker has not worked under water. If it has, perform a general check and cleaning, replacing any unusable parts.

**4.** If the problem cannot be resolved, call INDECO North America at (203) 377-7791 for assistance.

# Breaker Technical and Torque Specifications
# MES 150

***Technical Specifications***

| Technical Specifications | Value |
|---|---|
| **Energy Class** | 180 |
| **Blows Per Minute** | 850 - 1,250 |
| **Carrier Weight** | 1,200 - 5,000 Lbs |
| **Total Height** | 38 In |
| **Working Weight** | 176 Lbs |
| **Length Of Tool** | 17.3 In |
| **Diameter Of Tool** | 1.75 In |
| **Tool Weight** | 11 Lbs |
| **H.P. Fitting Size** | 0.5 In. BSPP |
| **L.P. Fitting Size** | 0.5 In. BSPP |
| **Accumulator Charge** | 475 - 550 Psi |
| **Maximum Lower Bushing ID** | |
| *** Required Flow @ Operating Pressure** | 4 –10.5 Gpm |
| *** Operating Pressure** | 1650 ?100 Psi |
| *** Circuit Relief** | 2,100 Psi |
| *** Preferred Backpressure** | 188 Psi |
| *** Maximum Backpressure** | 260 Psi |
| *** Oil Temperature For Setting Flows & Pressures** | 150 ? F |

** Information required for Attachment Delivery Report (ADR)*

***Torque specifications***

| Item | Position | Bolt Size | Wrench | Ft/Lbs. |
|---|---|---|---|---|
| **Side Bolt Nut** | 314 | | 27 mm | *** |
| **Test Plug** | 403 | | 6 mm Allen | 36 |
| **Link Screw** | 409 | | 6 mm Allen | 22 |
| **Variable Plug** | NA | | | |
| **Inflation Screw** | 504 | | 8 mm Allen | 65 |
| **Accumulator Screw** | NA | | | |
| **Shell Fixing Screw** | 506 | | 27 mm | 238 |
| **Under Water Plug** | NA | | | |
| **Side Plate Screw** | 607 | | 22 mm | 145 |
| **Self Locking Nut** | 608 | | 22 mm | 87 |
| **Top Cap Bolts** | | | | |

*** Initial torque is 80 ft/lbs and final torque is 145 ft/lbs.

# Breaker Regulation Chip

**GB** REGULATION SYSTEM

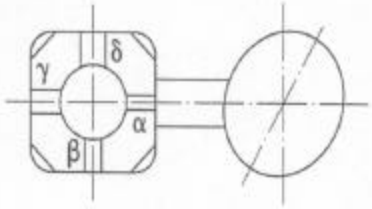
The breaker has a new work pressure regulation system and therefore also a impact energy regulation system. Under the base it has an adjustment chip with four calibrated orifices at a 90° angle. According to the type of flow let in or to the circuit back pressure, the working power can be regulated by moving the chip in the required direction. In the graph the most favourable working field is shown in accordance with the characteristics of the excavator and the type of position to be used.

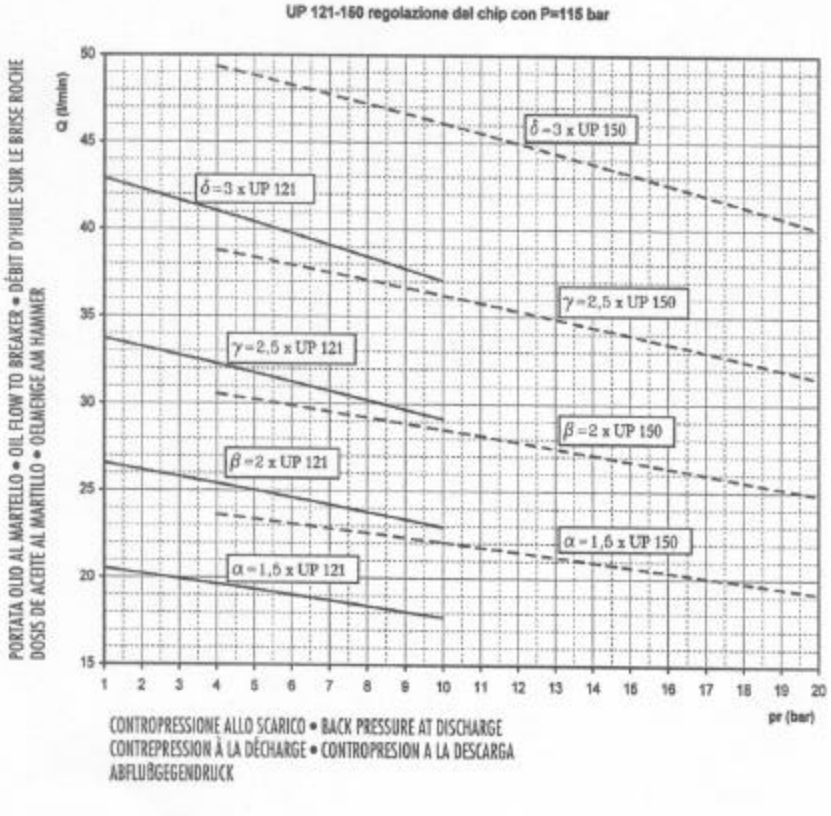
**F** SYSTEME DE REGLAGE

Le démolisseur a un nouveau système de réglage de pression de travail et donc d'énergie de frappe. En effet, on trouve à sa base un puce de réglage avec quatre lampes calibrées disposées à une distance de 90° l'une de l'autre. Suivant le type de débit amené ou de contrepression du circuit de retour, on peut régler sa puissance de travail en déplaçant la puce vers la direction désirée. Sur le graphique, le champ de travail optimal a été indiqué selon les caractéristiques de la machine operante et selon la position dans laquelle elle devra être utilisée.

**D** REGELUNGSSYSTEM

Der Abbruchhammer besitzt ein neues Regelungssystem des Arbeitsdrucks sowie der Schlagenergie. Tatsächlich befindet sich unter der Basis ein Regelungschip mit vier zu 90° zwischeneinander gestellen geeichten Lichten. Je nach eingelassenem Zufluss oder dem Rückstromgegendruck kann die Kraft geregelt werden, indem der Chip auf die gewünschte Richtung verschoben wird. Das Diagramm stellt den optimalen Arbeitsbereich je nach den Charakteristiken der Betriebsmaschine sowie die Position, die benutzt werden soll, dar.



# Breaker Parts Explosions (Reference only)

***MES 150***

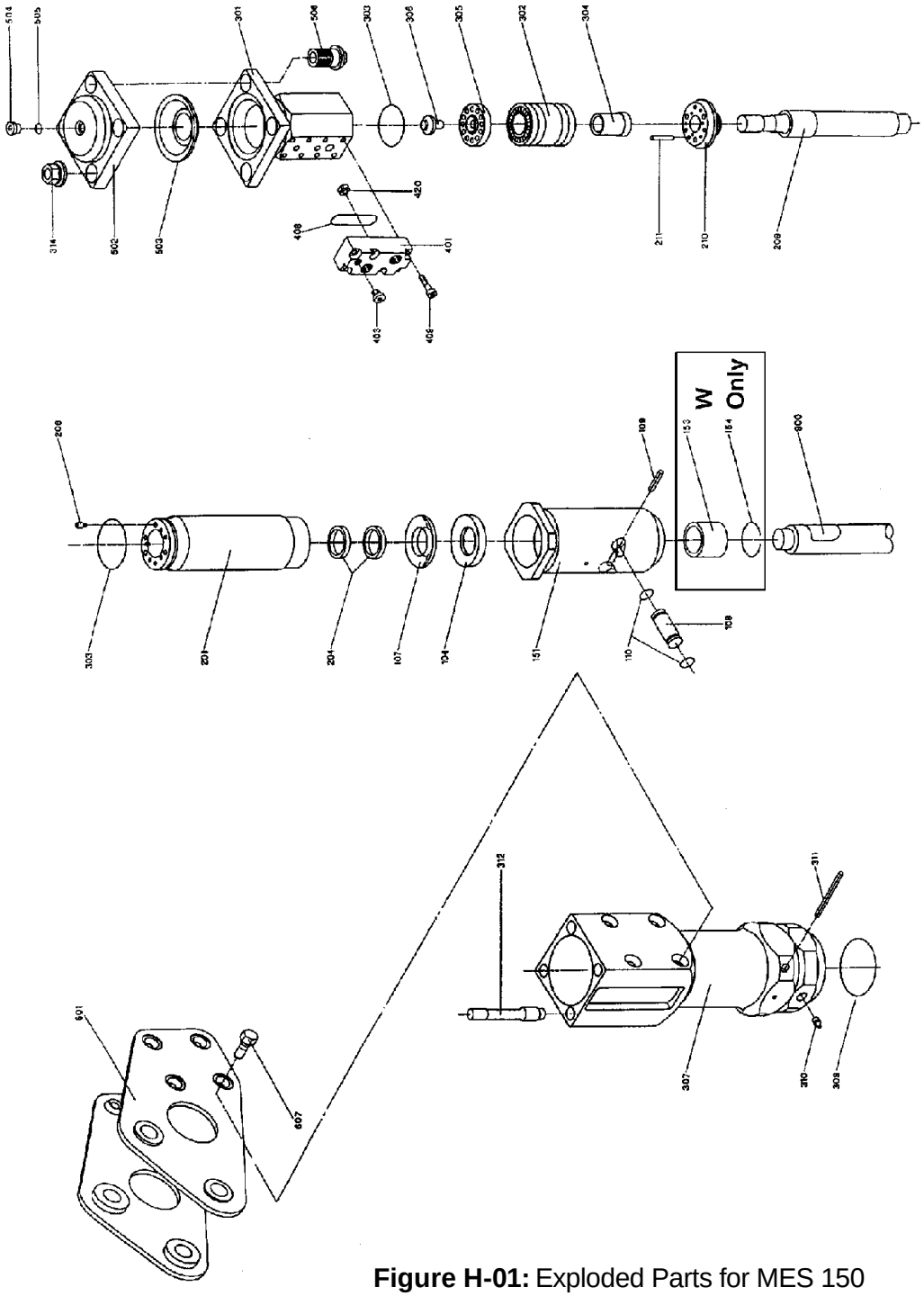



**Figure H-01:** Exploded Parts for MES 150

**This page was intentionally left blank**