



PNEUMATIC DRILLING MACHINE

INSTRUCTION MANUAL



► INTRODUCING THE 65-90B MULTIFUNCTIONAL PNEUMATIC DRILL

The 65-90B Multifunctional Pneumatic Drill is designed for optimal performance in quarrying, especially suited for creating large holes (90mm to 100mm) for diamond wire applications.

Its practical design features a simple, lightweight construction, making it exceptionally user-friendly.

Equipped with a pneumatic rotation head and the DTH CIR90 hammer, the drill achieves impressive depths at high penetration speeds in both vertical and horizontal drilling operations.

A unique support column with a spherical joint and anchor system allows for drilling in any direction. Chains and turnbuckles further stabilize the setup, enabling reliable performance across various applications.

Additionally, the drill's construction allows it to operate close to the ground for horizontal drilling, maximizing safety and ease of use.

► INSTRUCTION AND MAINTENANCE MANUAL

THE FOLLOWING PAGES PROVIDE ESSENTIAL GUIDANCE FOR THE RECOMMENDED USE OF YOUR MACHINE.

⚠ WARNING:

- This manual contains critical safety information.
- Before operating or handling this equipment, please carefully review this manual.
- Store this manual in a safe, dry location for future reference, ensuring it remains intact and readily accessible.
- While this manual offers comprehensive instructions for proper machine use, it cannot substitute for user experience.
- For additional copies or updates, please contact Harlen Supplies directly. Our team is available to address any questions or concerns.



Disclaimer:

Harlen Supplies (Pty) Ltd assumes no responsibility for direct or indirect damages to persons or property resulting from the use of this manual or machine under conditions not specified, or that do not ensure operator safety.

All data provided in this manual is indicative and not binding, as we reserve the right to modify or update our machines without prior notice.

GENERAL NOTES ON DELIVERY

Upon receiving the machine, please:

- Open the package and ensure the equipment is undamaged.
- Report any damage to Harlen Supplies immediately.
- Inform Harlen Supplies (Pty) Ltd if any parts are missing.

GUARANTEE

This machine is guaranteed against manufacturing and material defects for six months from the date on the transport document. The guarantee applies only if any defects are promptly reported to Harlen Supplies. Defective parts will be replaced at Harlen Supplies' discretion, provided the defect is not due to failure to follow use and maintenance instructions, improper use, or normal wear. Replacement or repair parts will be available at our company.

The user is responsible for shipping, transport, labor, and any travel expenses required if one of our technicians must perform repairs onsite. Parts subject to normal wear are not covered by this guarantee.

MODIFICATIONS

Harlen Supplies reserves the right to modify machines as needed without prior notice.

IDENTIFICATION OF SPARE PARTS

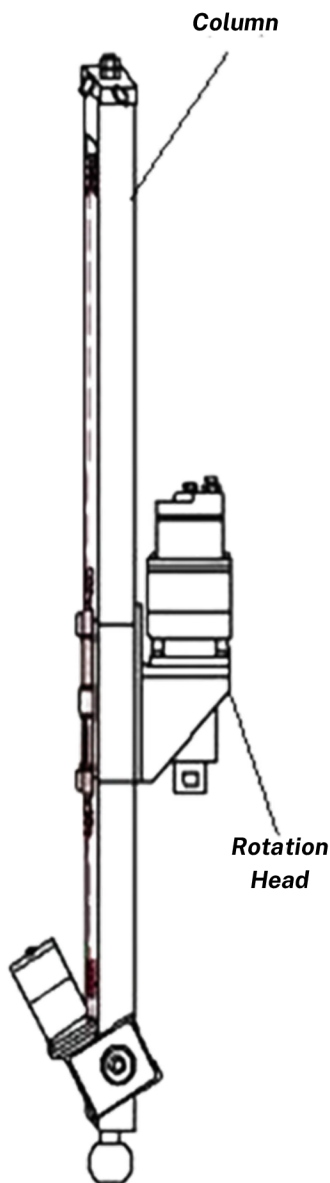
When requesting spare parts, please include the machine's serial number (found on the test card) and the part number from the enclosed spare parts list.

TECHNICAL DESCRIPTION

MODEL: 65.90B

SERIAL NO:

► OPERATING AND MAINTENANCE GUIDE

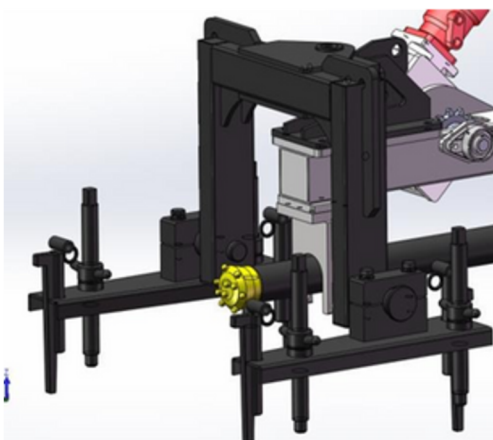


The pneumatic drill consists of a support column that holds a rotating head with an attachment for the down-the-hole (DTH) hammer. The rotating head can be fitted with a threaded connection for rods with a cylindrical, male fitting (RD60). A pneumatic gear motor drives the chain that advances the rotating head.

► STANDARD EQUIPMENT INCLUDES:

- Support column
- Anchoring jack with a spherical joint for column engagement and four leveling screws
- Control panel with line lubricator
- Socket wrench for locking bolts on the column's spherical joint
- Four wrenches for hammer disengagement
- Ten drilling rods, each 1000 mm in length
- One down-the-hole (DTH) hammer
- One CIR 90 drill bit
- Column anchoring chains (for the 3000 mm model only)

Air Consumption During Drilling:
9,000–12,000 l/min at 6 bar



Anchoring Down Jack



Control Panel

SAFETY

General Safety Information:

Specific safety measures were implemented during the design and construction phases to protect operators. Detailed documentation of these safety measures is available in the technical dossier at Harlen Supplies' offices.

Some risks, however, could not be fully addressed at the design level. In such cases, this manual outlines safety guidelines to ensure the safest possible operation.

WARNING:

Our company strongly recommends that all users strictly follow the instructions, procedures, and guidelines provided in this manual, take all necessary precautions, and comply with current safety regulations.

Safety Guidelines:

- Only qualified personnel should perform the installation, maintenance, and operation of this machine.
- Before performing any cleaning or maintenance, ensure that the power supply is disconnected.
- Do not remove any fixed safety guards that protect moving parts of the machine.
- Avoid placing hands in areas where there is a risk of crushing or trapping.
- The operator should stand by the control panel, maintaining the maximum safe distance and protection.
- During operation, the operator should always remain behind the control panel.
- Machine handling or component adjustments must be done with the machine turned off, power disconnected, and only by specialized personnel using appropriate tools.
- Use only original spare parts when replacing machine components.

NOISE EMISSION

THE PNEUMATIC DRILL EMITS THE FOLLOWING AMOUNT OF NOISE: 93 - 98 DB

WARNING:

Operators must wear adequate ear protection at all times.

RISKS IDENTIFIED THROUGH THE ANALYSIS OF HAZARDS AND HAZARDOUS CIRCUMSTANCES DURING WORK

Exposure to overhead electrical lines, electrical shocks, collisions, impacts, compressive forces, vibrations, slips, falls at the same level, excessive noise, shear forces, grinding activities, the risk of falling materials from above, and contact with mineral oils and their derivatives.

➤ SAFETY (CONTINUE)

Safety Precautions and Operating Guidelines for Machine Operators:

Before Operation:

- Ensure all bolts on the machine are securely fastened.
- Confirm there are no overhead power lines that may interfere with the machine's range of movement.
- Inspect the tracks and work areas, setting up any necessary bracing structures.
- Stabilize the machine effectively to prevent any unintended movement.
- Check the blocking systems and ground clamping mechanisms to verify they are working properly.
- Be aware that the operating area is subject to high noise levels.
- Restrict access to the area around the machine to prevent entry by unauthorized personnel.

During Operation:

- Immediately report any malfunction or hazardous conditions.
- Position yourself in a way that avoids contact with any moving parts.
- Never attempt to adjust or intervene with moving parts while the machine is running.
- Stay focused and avoid distractions to ensure safety.

After Operation:

- Disconnect the machine's air supply.
- Properly position the machine, ensuring that no tools are left suspended.
- Bring the translation carriage to a stop.
- Perform any required inspection and maintenance tasks with the power supply disconnected.
- Follow all maintenance instructions outlined in this manual to prepare the machine for safe reuse.

Safety Precautions and Operating Guidelines for Machine Operators:

- Safety boots
- Hard hat
- Safety glasses
- Protective gloves
- Earplugs or earmuffs

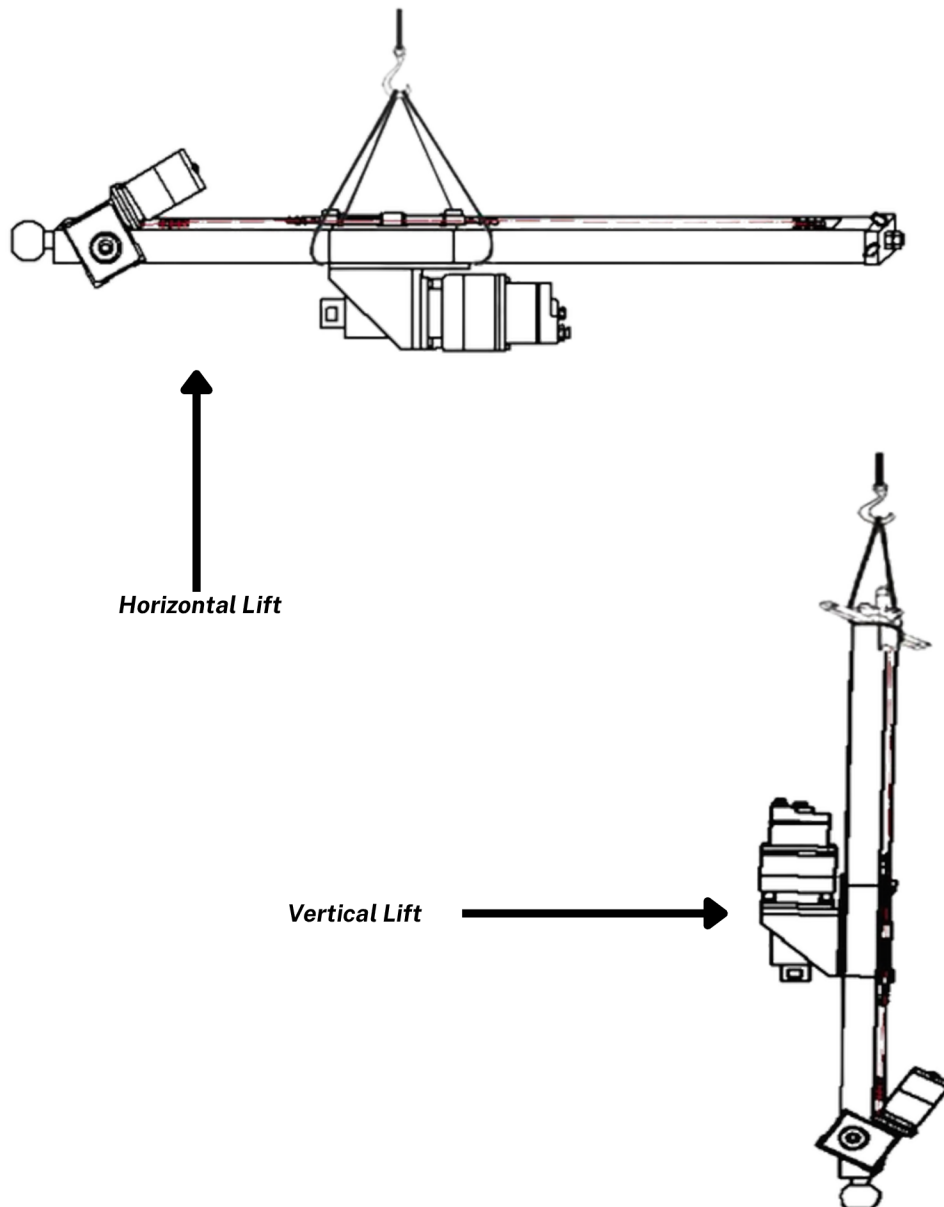


➤ SAFETY (CONTINUE)

HANDLING AND TRANSPORTATION:

⚠ WARNING:

Only specialized or properly trained personnel should handle and transport this machine, using suitable lifting equipment.



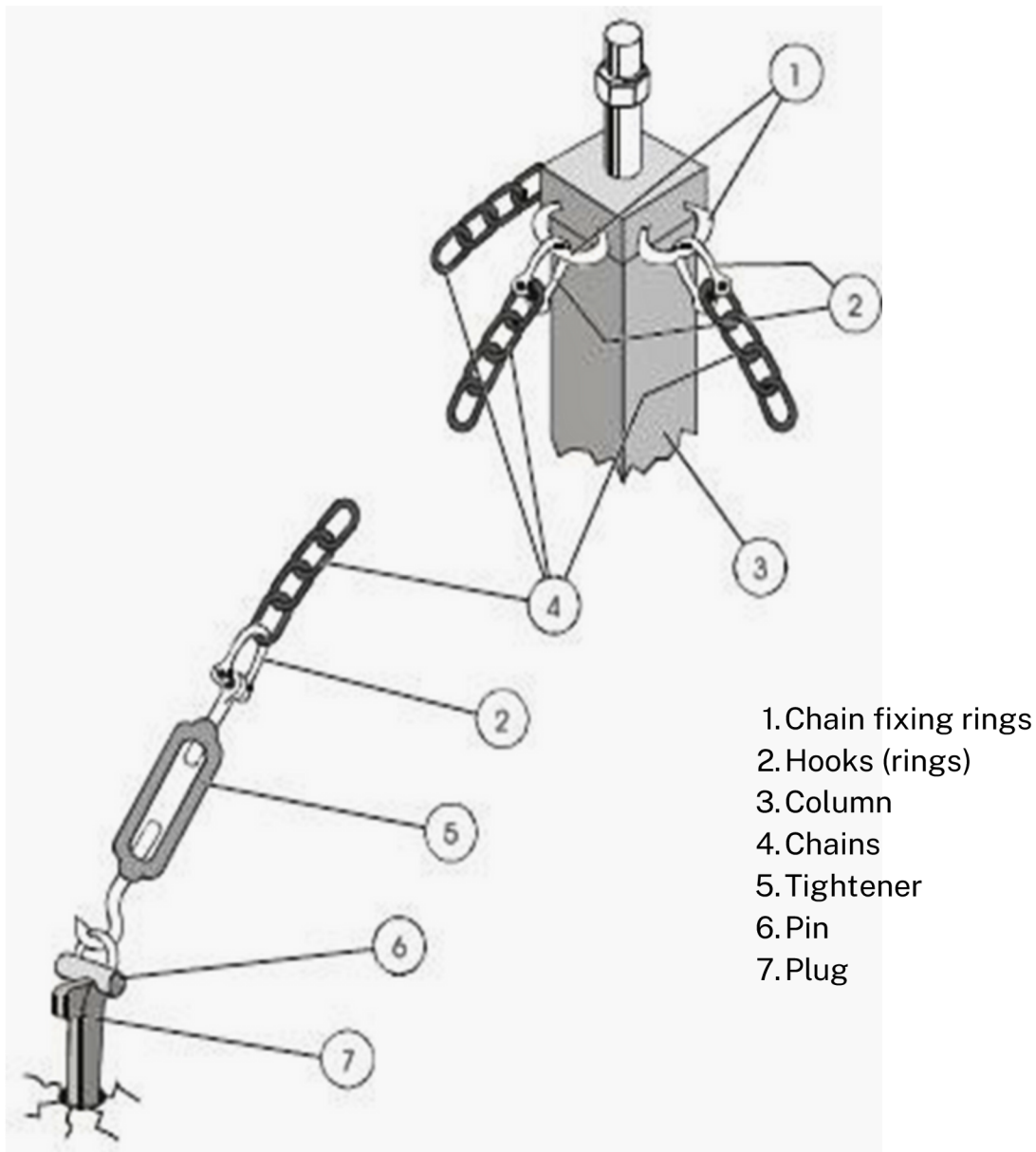
Horizontal And Vertical Lifting:

- Follow specific procedures and use designated lifting points to ensure stability and prevent damage to the machine during horizontal transport.

► COLUMN ANCHORING WITH CHAINS - SUPPLIED ONLY FOR THE MODEL

1. Drill three holes, each 34 mm in diameter and 20 cm (8 inches) deep.
2. Attach the chains (4) to the column rings (1) by connecting them with the hooks (2).
3. Loosen the tighteners (5) to prepare for tensioning.
4. Secure the chains (4) to the ground with the designated anchoring pins (6-7), following the "Down Jack Anchoring" procedure.
5. Evenly tighten the chains using the tighteners (5) to ensure equal tension.

- **Note: Each chain should measure 3,300 mm in length.**



➤ AIR CONNECTIONS

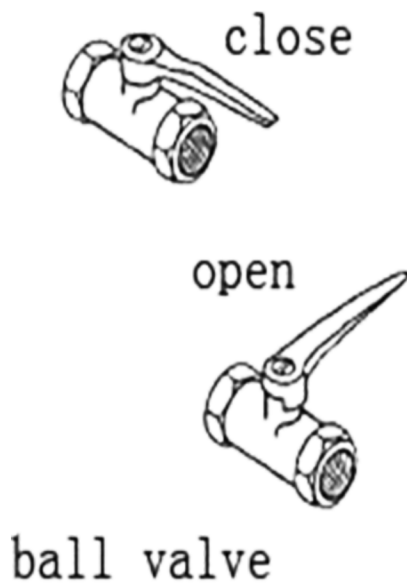
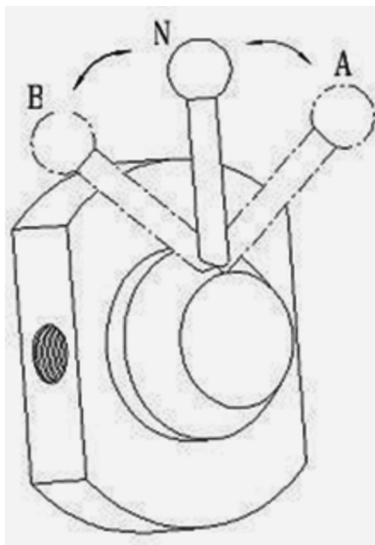


FIGURE 6



Rotation distributor and
advance distributor

FIGURE 7

1. Place the control panel at a safe, appropriate distance from the equipment.
2. Adjust the control panel to the most secure and suitable position for performing the operations.
3. Close the compressor entry valve 2 (Plate Two) and the supply valve for the down-the-hole hammer 10 (Plate Two), as shown in Figure 6.
4. Connect the 1 1/4" feeding hose (Plate Two) for the down-the-hole hammer to the fitting on the rotating head's output group 4 (Plate One) and fitting 11 on the control panel (Plate Two).
5. Attach the head rotation feeding hoses (3/4") to their corresponding fittings 5 on the rotating head (Plate One) and fittings 5 on the control panel (Plate Two).
6. Connect the up and down hoses (1/2") to their respective fittings 8 on the advance motor (Plate One) and fittings 12 on the control panel (Plate Two).
7. Move the rotation distribution lever 4 and advance lever 7 (Plate Two) to the closed or rest position (central position N for "NIL").
 - Refer to Figure 7 for visual guidance on these three positions.
8. Connect the main feeding hose from the air compressor to the corresponding fitting 1 (Plate Two) on the control panel.

- **Note: Ensure the air supply hose is no smaller than 1 1/4".**

LEVER POSITIONS:

Rotation:

- **A: Anticlockwise (rod unscrewing)**
- **N: Rest**
- **B: Clockwise (drilling)**

Advance:

- **A: Up (backwards)**
- **N: Rest**
- **B: Down**

► VERIFICATIONS AND ADJUSTMENT

⚠ WARNING:

For a new machine or after extended periods of inactivity, add oil directly into the drill supply pipes to ensure quick initial lubrication.



Gauge on the control panel

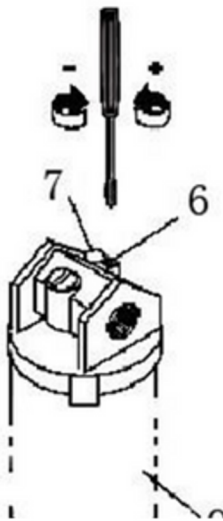
FIGURE 8

Lubrication Check:

- Ensure there is an adequate amount of lubricating oil in tank 9 (see Plate Two and Figure 9). If the oil is low, refer to the "Maintenance: Adding Oil" section.

Pressure Check:

- Confirm that the compressor provides sufficient pressure to position gauge needle 3 (Plate Two) within the 5.5–7 bar range on the dial (Figure 8).
 - Note: The ideal operating pressure is 6 bar. During drilling, maintain this pressure in the gauge's green zone.
 - If the pressure falls outside this range, consult "Problem Solving Suggestions" on page 21.



Lubricator

FIGURE 9

Oil Flow Adjustment:

- Adjust the oil flow rate using adjustment screw 6 (Plate Two and Figure 9) until you observe one drop of oil every two seconds in visualizer 7. This indicates the correct flow rate for lubrication.

Lubrication Test:

- To confirm adequate lubrication, disconnect the drill's supply pipe and simulate air flow as if in operation. When holding your palm near the air jet, you should feel a slight oiliness.

⚠ WARNING:

When testing the air flow, gradually open the air valve, keeping the hose securely anchored to prevent any movement.

➤ USING THE MACHINE

⚠ WARNING:

Before using the machine, ensure it is securely anchored to the ground, and that all bolts and air hoses are firmly tightened.

Fitting the Down-the-Hole (DTH) Hammer:

- The machine is typically supplied with the down-the-hole hammer already attached to the rotating head. The hammer will have the drilling bit attached at its bottom, chosen based on customer specifications or optimized for the material being drilled.
- If using a DTH hammer not supplied with the machine, follow the manufacturer's instructions carefully.
- The DTH hammer is threaded onto the rotating head's output group in a clockwise direction. Before fitting, verify that the threaded fitting matches the rotating head type: either cylindrical RD50 or RD60.
- Use the special wrenches provided to tighten the DTH hammer securely (see "Extension Rod Joint" on page 17 for details).

Operational Steps:

1. **Power On the Control Panel:** Open valve 2 (Plate Two) as shown in Figure 10.
2. **Pressure Check:** Verify that gauge needle 3 (Plate Two) fluctuates within the range of 5.5 to 6 bar on the dial (Figure 10).
3. **Position the Hammer Bit:** Move the hammer bit to the surface to be drilled by lowering distribution lever 7 (Plate Two) to position B (Figure 11). This action advances the rotating head and DTH hammer group toward the surface.
4. **Start Drilling:** Open valve 10, then engage rotation and percussion by lowering distribution lever 4 (Plate Two) to position B (Figure 11). This initiates clockwise rotation of the hammer bit.
5. **Adjust Advance Speed:** Use the pressure regulator to adjust the advance speed. Lift knob A, and turn clockwise to increase speed or counterclockwise to decrease speed. The value on gauge B will change accordingly (Figure 12).
6. **Drilling has now started.**

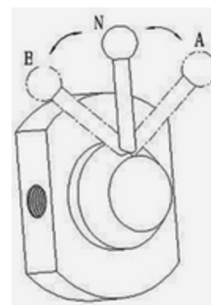
⚠ WARNING:

The advance function is intended only to maintain the drill bit in close proximity to the rock, not to apply pressure against it. Excessive force may cause damage to the equipment or impair drilling efficiency.



Gauge

FIGURE 10



Rotation distributor
and advance
distributor

FIGURE 11

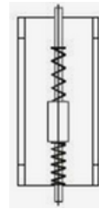


Pressure
regulator

FIGURE 12

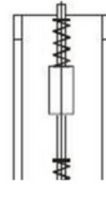


FIGURE 13



Carriage

FIGURE 14



Spring play recovery

FIGURE 15

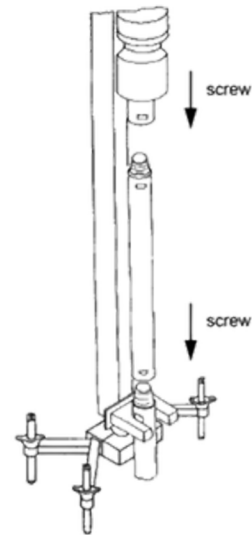


FIGURE 16

► EXTENSION ROD JOINTING - END OF DRILLING LIMIT PROCEDURE:

1. **Stop Operations:** Block advance, rotation, and percussion by placing distributors 4 and 7 in the "rest" (N) position (see Figures 7 and 11) and close valve 10 (Plate Two).
2. **Release Carriage Spring Tension:** Slightly lift the rotating head to release the tension in the carriage springs (see Figures 13 and 14).
3. **Prevent Reducer Damage:** Insert the supplied wrench into seat (a) of the output group and secure it against the column to prevent the reducer from advancing and to protect the rotating head from counter-blows while changing rods (see Figure 15).
4. **Loosen Hammer or Rod:** Place the wrench in seat (b) of the hammer or rod, keeping it secured against the wrench in (a). Apply a few hammer blows to the wrench in seat (b) to release the hammer or rod (see Figure 15).
5. **Remove Wrenches and Unscrew the Hammer or Rod:** Take out the wrenches, set the rotating head to rotate counterclockwise (position A on distributor 1 - Figure 7, page 13), and unscrew the hammer or rod. Raise the rotating head to a high position on the column.
6. **Attach Extension Rod:** Manually screw the extension rod onto the hammer or onto the rod already in the hole, as necessary (see Figure 16).
7. **Reattach and Secure:** Lower the rotation head, set it to rotate clockwise (position B on distributor 1 - Figure 7, page 13), and screw it securely to the rod or hammer.
8. **Resume Drilling:** Verify that the rod is firmly connected to both the head and hammer (or the existing rod in the hole), then resume drilling. For additional joints, repeat these steps as needed.

⚠ WARNING:

Never unscrew rods or the hammer using only the rotation head's force. Always position the control panel as far away from the column as possible during these operations.

▶ ROD AND HAMMER RECOVERING

1. **Stop Advance, Rotation, and Percussion:** Block the advance, rotation, and percussion functions by closing distributors and valve 4, 7, and 10 (Plate Two).
2. **Position the Rotating Head:** Raise the rotating head high on the column, as close to the top as possible.
3. **Secure the Rod in the Hole:** Insert the supplied wrench into seat (d) on the rod in the hole, resting it on the rod guide. For vertical drilling, this wrench prevents the rods from falling into the drill when unscrewed from the rotating head.
4. **Prevent Movement of the Rotating Head:** Insert the wrench into seat (a) on the rotating head and secure it against the column.
5. **Prepare to Release the Rod:** Insert the wrench into seat (b).
6. **Loosen the Rod:** Use a hammer to strike the wrench in seat (b), rotating the rod clockwise to release it.
7. **Remove Wrenches and Unscrew the Rod:** Take out the wrenches from seats (a) and (b), rotate the head, and unscrew it from the rod.
8. **Reposition the Rotating Head:** Lift the rotating head up the column to nearly its highest point.
9. **Remove the First Rod:** Insert the wrench into seat (c) and secure the wrench in seat (d) against the column. Strike the wrench in seat (c) with a hammer to release and unscrew the rod, fully removing the first rod.
10. **Attach to the Next Rod:** Lower the rotating head to engage with the second rod still in the drill and screw it onto the head, allowing it to lift the rod.
11. **Repeat for Remaining Rods:** Repeat this procedure to continue retrieving each rod and the hammer in sequence.

⚠ WARNING:

Do not use the rotation head's force alone to unscrew the rods or hammer. Keep the control panel at a safe distance from the column to avoid accidental maneuvers.

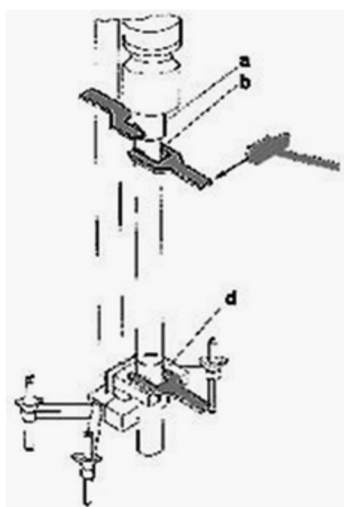


FIGURE 17

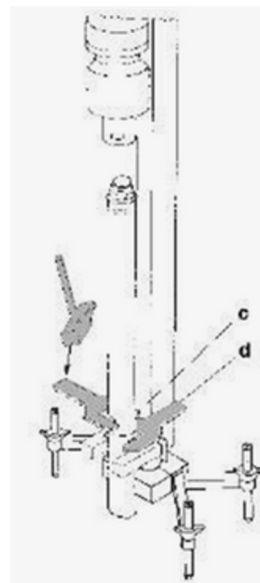


FIGURE 18

► MAINTENANCE

⚠ WARNING:

Before adding oil, stop the machine, close the compressor air supply, and release any remaining air in the control panel by opening valve 10 (Plate Two). Removing the plug or lubricator tank while the control panel is pressurized is dangerous and should be avoided.

Adding Oil to the Line Lubricator

Preparation:

- Ensure the machine is off and unpowered. The compressor air supply should be closed, and any residual air should be discharged by opening valve 10 (Plate Two) to prevent pressurized release of components.

Add Oil:

- Option 1: Unscrew the screw plug 1 (Fig. 20) and add oil directly.
- Option 2: Press button 5 and rotate the lock ring to release the tank, then add oil.

Extended Idle Periods:

- If the machine has been idle or if long idle periods are expected, apply oil directly into the supply inlets of the rotating head and advance motor. Slowly rotate these parts to ensure thorough lubrication of mechanical components.
- **Recommended Oils:** Use MOBIL ALMO 525 or SHELL TORCULA 100, or a similarly fluid equivalent.
- **Recommended Grease:** Use ROL-OIL ALCOPLEX 2 or equivalent.

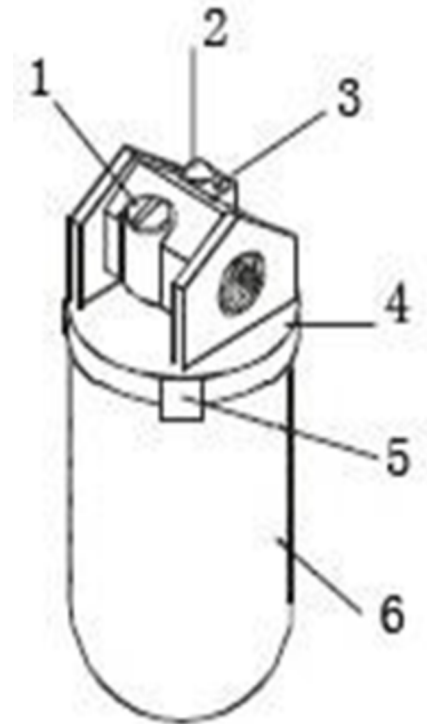


FIGURE 20

Routine Maintenance and Checks

Daily:

- Verify the oil level in the line lubricator.
- Check all bolts and air hoses for secure tightening.
- Inspect chain tension and adjust with tightener 17 (Plate One) if needed.
- Examine the drill bit for wear and integrity.

Weekly:

- Grease the advance group chain using the provided greasers and recommended grease.
- Inspect the neck of the sphere for any cracks. If cracks are detected, stop using the machine immediately.

PNEUMATIC DRILLING MACHINE TROUBLE SHOOTING CHART - TROUBLE, CAUSE & REMEDY

Trouble -

Insufficient Air Pressure (Below 5.5-7 Bar) -

Cause -

- Insufficient air generated by the compressor.
- Feeding hose diameter is too small or the hose length is excessive.

Remedy -

- Replace the compressor with one that has a higher air delivery rate.
- Use a feeding hose with a larger diameter appropriate for the length. A minimum diameter of 1"1/4 is recommended.

Trouble -

Low Yield -

Cause -

- Lack of lubrication.
- Insufficient operating pressure.
- Worn, dirty, or malfunctioning down-the-hole hammer.
- Worn drill bit.

Remedy -

- Check and ensure proper lubrication of the down-the-hole hammer.
- Clean the hammer and perform any necessary maintenance.
- Recondition or replace the hammer, and sharpen the drill bit as needed.

Trouble -

Advance Cannot Be Regulated by the Pressure Regulator -

Cause -

- Malfunctioning pressure regulator.
- Advance feeding hoses are connected incorrectly (see position 13 on Plate Two).

Remedy -

- Replace the pressure regulator (see Plate Two).
- Correct the orientation of the advance feeding hoses at position 13.

Trouble -

Advance Motor Does Not Turn -

Cause -

- Insufficient lubrication.
- Foreign material obstructing the rotation group.

Remedy -

- Check and ensure proper lubrication.
- Remove the motor cap, clean it, and confirm free movement of the rotor and blades.

► PNEUMATIC DRILLING MACHINE TROUBLE SHOOTING CHART - TROUBLE, CAUSE & REMEDY

Trouble -

Rotating Head Does Not Turn -

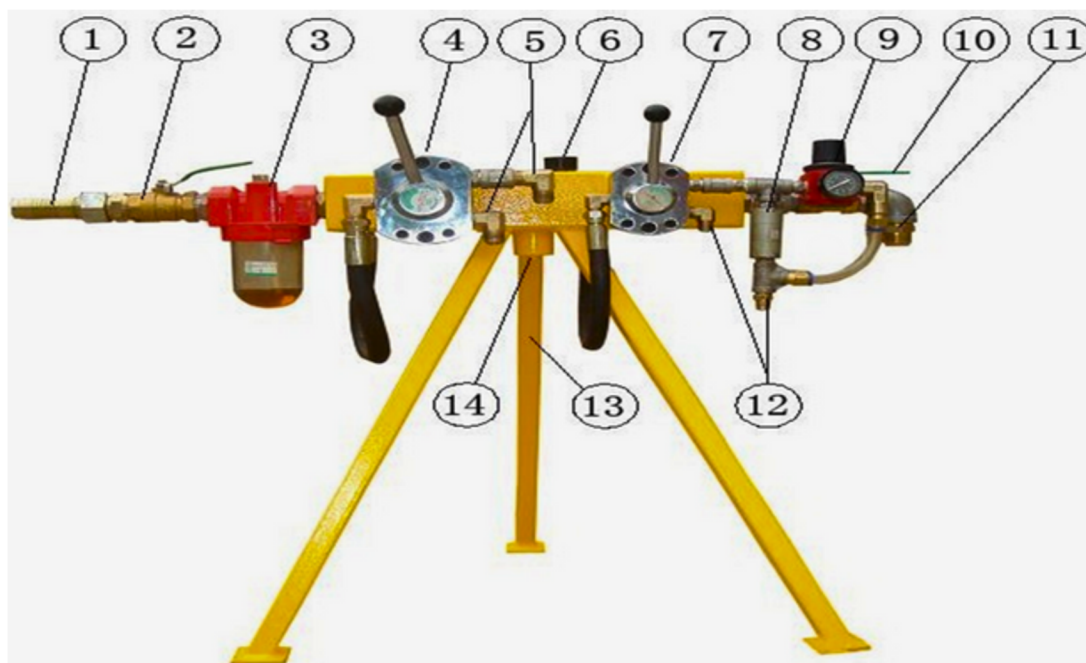
Cause -

- Insufficient lubrication.
- Piston seizure due to lack of lubrication or entry of foreign objects.
- Motor piston breakage due to water in air hoses.
- Seized rotating valve due to foreign objects or poor lubrication.
- Reduction gear breakage from improper rod handling or unscrewing actions.
- Damage to rotation group from accidental column impact.
- Exceeding maximum pressure limit (over 6 bars).

Remedy -

- Check lubrication and replace damaged components as needed:
- Replace the piston and consider using a condensation separator.
- Replace the rotating valve and reduction gear if seized or damaged.
- Replace the rotating head if damaged.
- If the air pressure is too high, either switch to a lower-pressure compressor or use a control panel with a pressure reducer.

► CONTROL PANEL



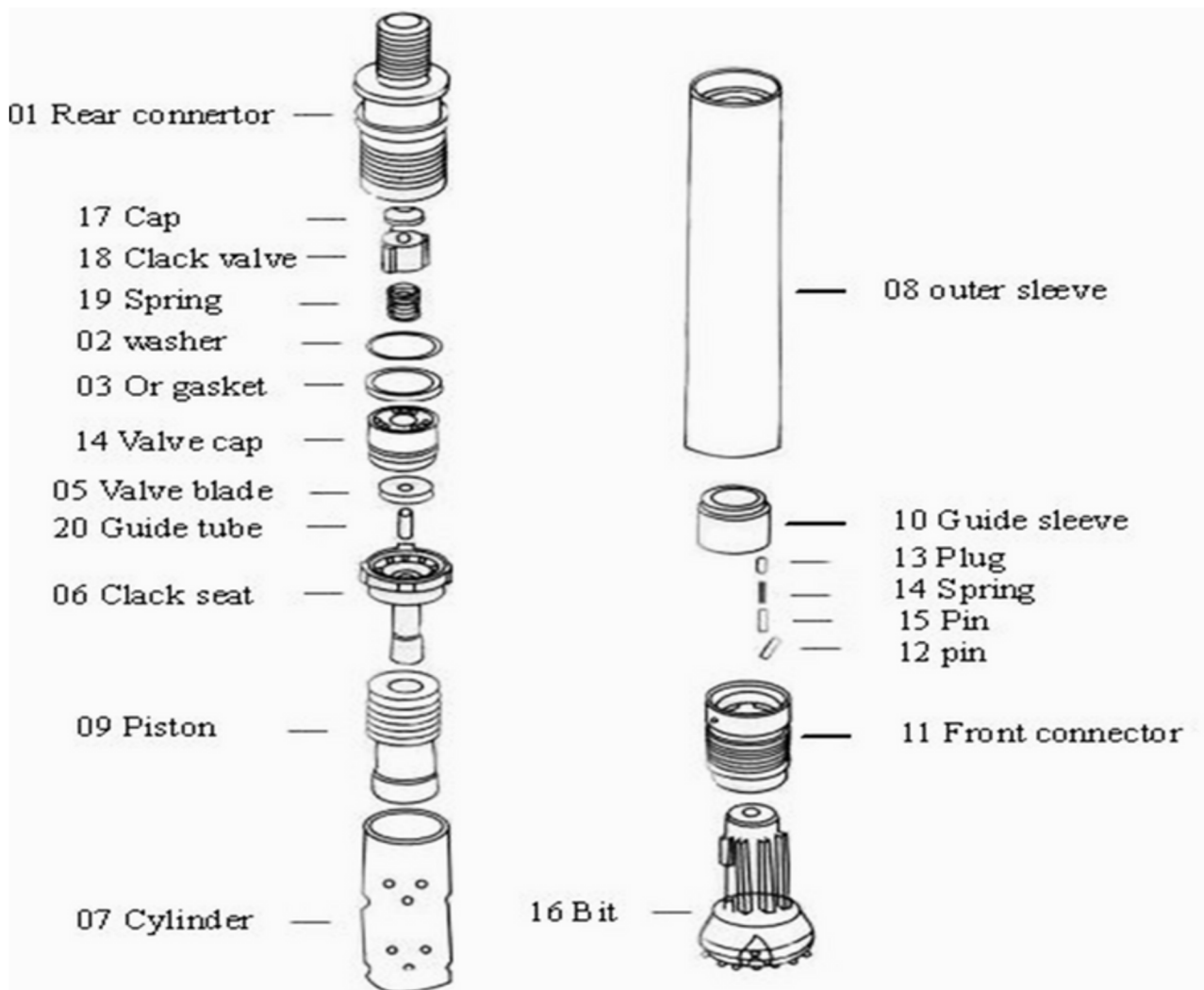
1. 1 1/2" air-hose fitting
2. Air supply control valve for compressor supply
3. Line lubricator
4. Rotating head distributor
5. 3/4" air-hose fittings for rotating head
6. Gauge
7. Advance distributor
8. Retaining valve

9. Pressure regulator
10. Control Valve
11. 1 1/4" air-hose fitting
12. 1/2" air-hose fittings for down the hole hammer for advance motor
13. Control panel rest (tripod)
14. Water outlet

► PACKING LIST

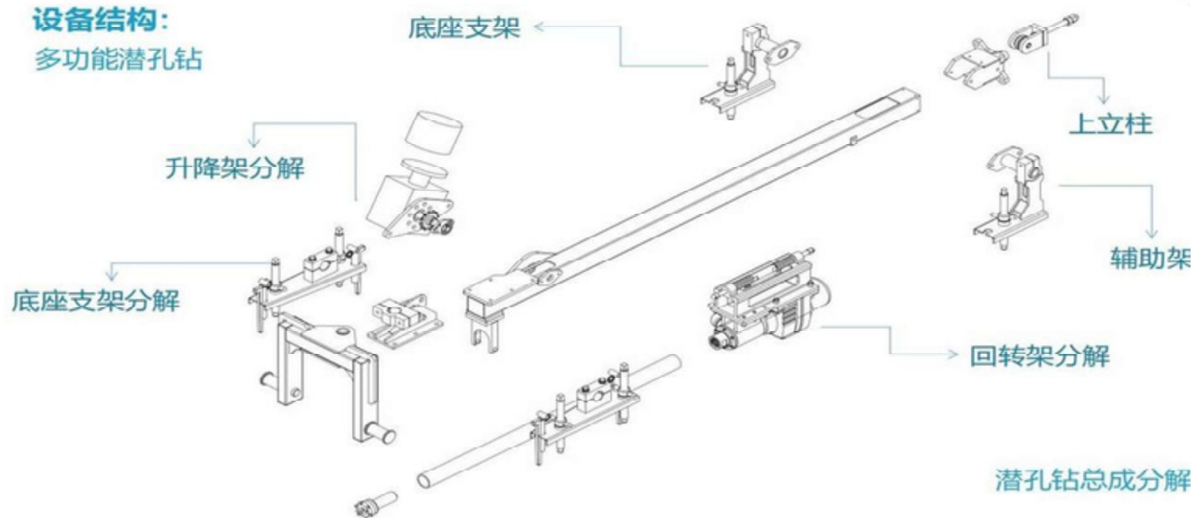
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6. Gauge
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8. Retaining valve

► SPARE PARTS OF THE DOWN THE HOLE HAMMER

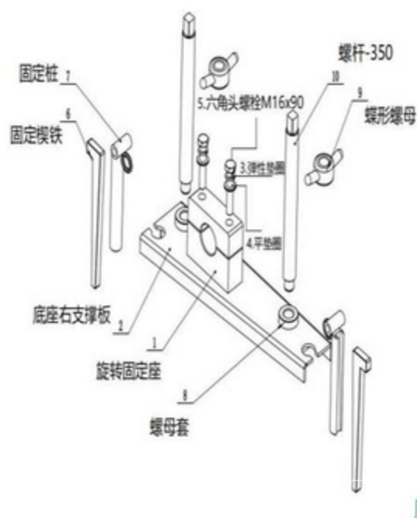
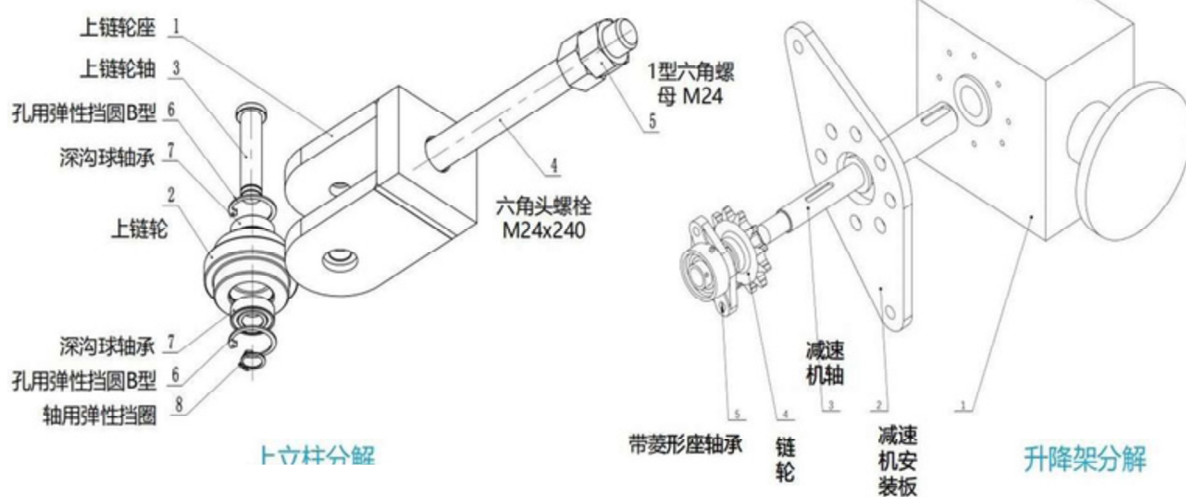


产品介绍

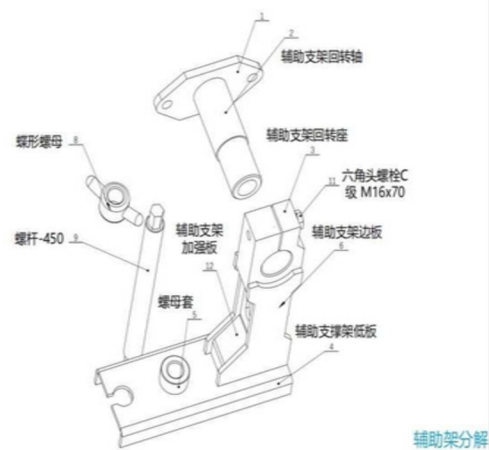
设备结构：
多功能潜孔钻



多功能潜孔钻



底座支架分解



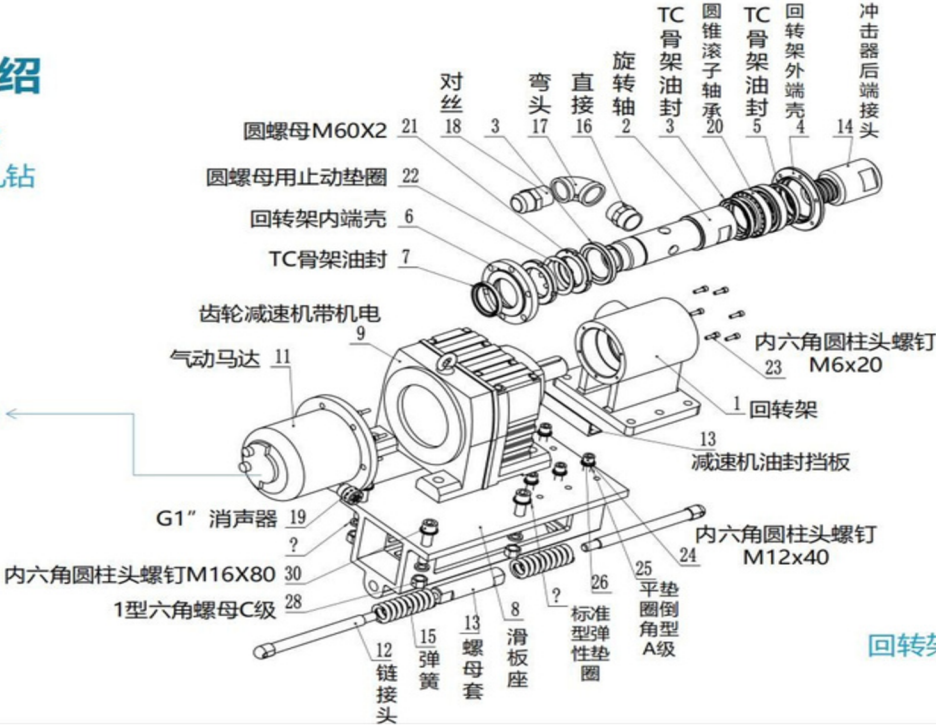
辅助架分解

产品介绍

设备结构:

多功能潜孔钻

全电机



回转架分解

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Harlen Supplies (Pty) Ltd offers an extensive selection of products and solutions for your rock breaking and drilling needs. Our range includes handheld rock drills, drill steel, drill bits, Top Hammer rods, bits and couplings, as well as DTH rods, bits and hammers.