3.4 DRILL MAST

3.4.1 VISUAL INSPECTION

Make a visual inspection of the mast structure, checking for any cracked or deformed structural parts (structural integrity). Special attention should be directed to the following parts:

- Mast pivot,
- Tilt cylinders and stiff leg attachments,
- Feed and pull cylinder attachments,
- Drill head base or base guiding slide.

Check also the hose connections, the hydraulic cylinders, the hydraulic motor, the FUNK transmission, the head gear case, the chuck and the rod clamp for oil leaks or mechanical defects.

3.4.2 DRILL HEAD

![Diagram of Drill Head]
TRANSMISSION DETAILS

DETAIL A

Transmission breather
Magnetic drain plug
Breather hose clamp

DETAIL B
HEAD LUBRICATION POINTS

A) Lubricate the chuck and the upper bearings of the drill head.

First use

Ensure that the bearing and the chuck bowl are properly greased. Refer to your service department for instructions.

Application:

Refer to the “Lubrication and maintenance service interval chart” for quantities.
Every 12 HOURS of operation:
Lubricate the bearing inside the lower part of the chuck. The grease fitting is located at the front of the chuck and is directly connected to the bearing. The rotating part of the chuck containing the jaws must be greased (2 grease fittings) at the same frequency.

IMPORTANT: Do not over-lubricate the bearing. Excess grease may cause permanent damage.

B) Check Oil Level

IMPORTANT: Check oil level at the beginning of each shift the machine is used. Inspect the motor, the transmission, the gearbox and the chuck for leaks or visible damage.

1. Run the drill head until the lubricating oil is warm
2. Stop engine before servicing the drill head
3. Clean around the sight glass and the hoses
4. Check oil level on the transmission and the drill head gearbox

NOTE: Keep the oil level as shown in the previous illustration

IMPORTANT: Too much oil in the transmission may be an indication that an oil seal on the hydraulic motor has failed and must be changed.

Too much oil in the drill head (overflow from drill head breather) may be an indication that an oil seal between the transmission and the head has failed and must be changed.

If the oil within the drill head is also of an off-white color, this indicates the presence of water. The oil must be changed and the spindle upper seals (2) checked.

The oil should be changed whenever it shows traces of dirt, contamination by other fluids or the effects of high temperature as evidenced by discoloration or strong odour. Under no circumstances should the gearbox and transmission oil go unchanged for more than six months. Condensation may contaminate the oil and reduce its effectiveness.

5. Add oil or change oil if necessary

IMPORTANT: Do not overfill. Too much oil will cause overheating of the transmission and head gearbox.
C) Change Oil on drill head

First oil change

Change oil after the first **SIX MONTHS** or **100 HOURS** of service, whichever comes first.

Routine oil changes

Change oil every **SIX MONTHS** or **250 HOURS** of service, whichever comes first.

Oil change procedure:

1. Run the drill head until the lubricating oil is warm
2. Stop engine before servicing the drill head
3. Make absolutely certain that the main switch on the engine is “OFF” and locked out (padlock)
4. Clean around the oil drain, fill, and check locations
5. Look for oil leaks and damage
6. Under the drain location, place a container that is large enough to hold the combined volumes of oil in both the transmission and head gearbox
7. Remove the drain plug
8. Look for metal particles on the magnetic end of the drain plug
9. Under the drain location, place a container that is large enough to hold the combined volumes of oil in both the transmission and head gearbox
10. Remove the cover plate of the gearbox to clean the inside thoroughly
11. Inspect the chain and sprockets for any premature wear or damage
12. Clean and replace the drain plug
13. Remove the fill plug (drill head) and the hose breather clamp (transmission)
14. Clean, inspect, and check the function of the breather

**IMPORTANT:** If you find any metal particles on the magnetic end, immediately advise your service department and await instructions.

**NOTE:** The breather should allow pressure to equalize inside the gear case as it alternately heats and cools all the while keeping out dirt and water.

**IMPORTANT:** Do not overfill. Too much oil will cause the transmission/gearbox to overheat.
15. Refill the transmission/gearbox to the proper level using one of the recommended oils.
16. Replace the fill plug and breather assembly.
17. Operate the drill head for several minutes. Look for oil leaks and listen for unusual sounds.

**IMPORTANT:** The thrust bearing (top bearing) inside the drill head is “splash” lubricated. Lubrication comes from the immersion and movement of the chain in an oil bath.

Run the drill head for at least one minute at maximum RPM (4th gear on FUNK transmission). This will ensure proper lubrication for the drill head bearing.

When drilling at low RPM the thrust bearing is not lubricated sufficiently because the chain doesn’t create any oil projection inside the head.

To overcome this problem, two solutions exist. First, at a frequency predetermined by your company, disengage the chuck from the drill rod to have the head free for rotation. Then run the drill head for at least one minute at maximum RPM (4th gear on FUNK transmission). This will insure proper lubrication of the drill head bearing.

The second solution is to install a lubrication pump (optional). This device will insure continuous lubrication of the bearing independently of the working conditions.