



Technical Manual

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Conditions are rarely ideal. It is always too hot, too cold, too dry or too wet. The air is always saturated with fine abrasive dust. High production schedules tax both men and machines.

Down time and delays are intolerable. Down time can not be eliminated, but it can be kept to a minimum by a progressive and conscientious program of preventive maintenance.

Aside from regular lubrication, proper and accurate adjustments, the personnel should be aware of any deviation from the normal, which could be evidence of impending break down or component failure.

The maintenance people should inspect, during their rounds, structural members for evidence of cracked, broken or loose parts. Evidence of a member stretching, bending, or buckling can often be determined by the conditions of the surface paint. Highly stressed parts will show striae ripples or waves in the paint or check marks.

Grease or oil on the surface or a collection of dust along a line may indicate a crack in the metal. Pay particular attention to those areas around openings where corners or angles are cut out, at the ends of gussets or at brace connections and at transitional points where heavy and thin parts join.

Stresses in a monolithic structure may travel some distance from the damaged area and manifest itself at a remote point in some seemingly unrelated place.

The maintenance people should check all bolts, nuts, cap screws and rod bolts. Lock washers and other locking devices must be in place.

Be sure that bolted and assembled parts are tight. Evidence of movement may be detected by signs of scuffed paint, worn or bright spots adjacent to the part. Often a slight movement of parts that can't be seen with the eye can be felt with the finger tip when the machine is working.

1968

LUBRICATION OF LEVELING JACKS

NO.	NAME OF PART	TYPE	NO. OF POINTS	LOCATION	LUB METHOD & SYM	FREQUENCY (HRS.)
30.	Leveling Jack Case	Bushing	6	In Side of Case	MPG	As Required
31.	Leveling Cylinder Anchor	_____	_____	Front Piped Out to Front of Frame	_____	_____
32.	Jack Foot Pad	Plain	3	Pour	GL	Keep Coated

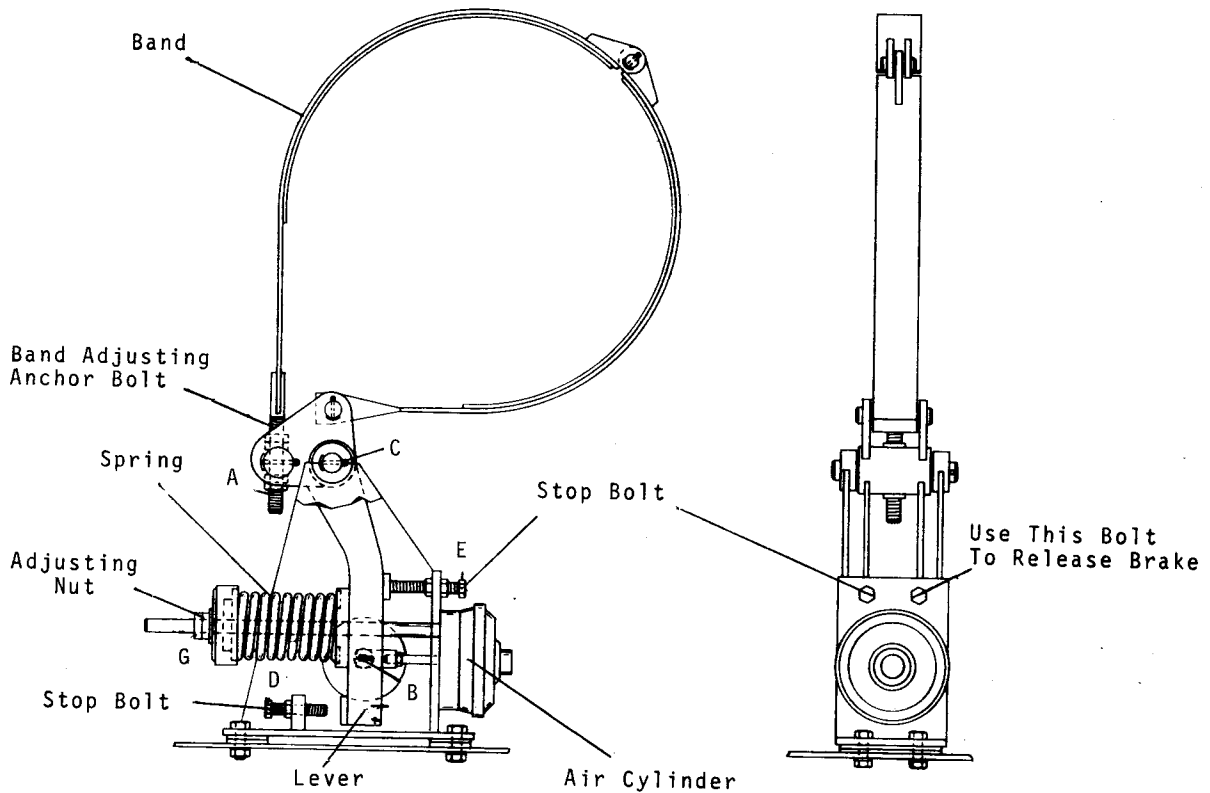
LUBRICATION OF ROTARY DRIVE & PULL - DOWN

NO.	NAME OF PART	TYPE	NO. OF POINTS	LOCATION	LUB METHOD & SYM	FREQUENCY (HRS.)
33.	Chain Sprocket (Derrick Head)	Anti-Friction	4	In End of Shaft	MPG	500 Hrs.
34.	Chain Sprocket at Base of Derrick	Anti-Friction	4	In End of Shaft	MPG	500 Hrs.
35.	Spring Case & Spring	_____	_____	Apply to Part	M0	As Required
36.	Pull-Down Chain	_____	_____	Apply to Part	Dil. OGL	As Required
37.	Deflecting Sprocket of Drive Head Frame	Anti-Friction	2	In End of Shaft	MPG	500 Hrs.
38.	Drive Sprocket Shaft	Anti-Friction	2	In Top of Bearing Housing	MPG	500 Hrs.
39.	Idler Spur Gear	Bushing	2	In End of Idler Shaft	MPG	8 Hrs.

PROPEL
BRAKE

The propel brake is a band type brake that acts on the outside diameter of the propel clutch drum. The propel brake is released by an air cylinder and set by a spring.

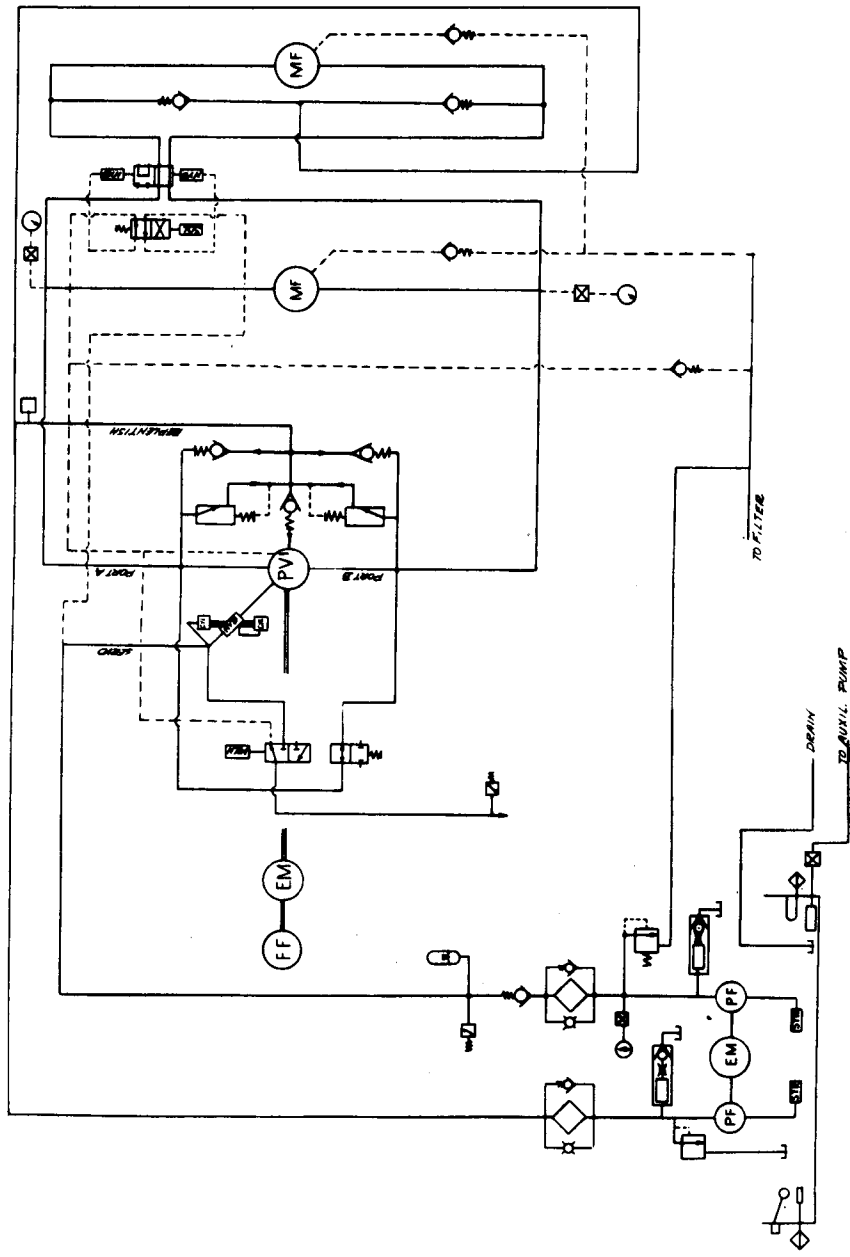
The band is adjusted by turning the nut on the live end anchor rod.



PROPEL BRAKE

TO ADJUST
THE BRAKE

Back off the stop screw (D&E) and adjust the live end rod (A) bolt until the band is tight in the set position with the operating lever clevis pin (B) 2-5/8" ahead of the lever pivot pin (C).



HYDRAULIC SYSTEM SCHEMATIC (MAIN)

**DRILLING
AIR**

Drilling air circulation for chip removal is provided by a rotary vane compressor located in the main machinery compartment.

The compressor is driven by a 150 hp electric A.C. motor through a set of "V" belts. The "V" belt drive consist of ten (10) matched belts.

The ten (10) grooved pulleys are mounted on the motor and compressor shafts. The pulleys are pulled over a tapered hub by cap screws which lock the pulley on the hub without the use of key or splines.

The pulley can be re-aligned by loosening the pulley from the hub and re-aligning the hub. Tighten the cap screws after reseting the hub.

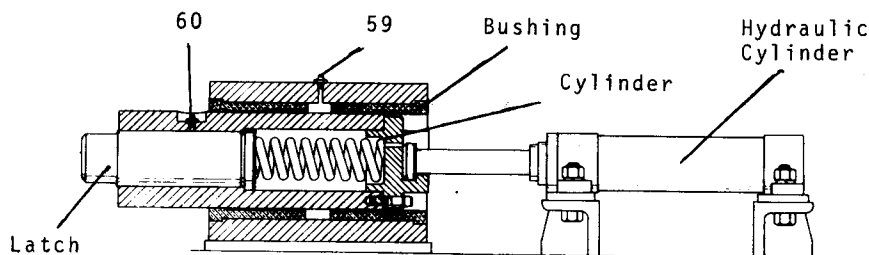
The "V" belt tension is adjusted by moving the electric motor on the sliding base. The belt tension is correct when an individual strand can be deflected about 1" by hand.

The air intake of the drilling air compressor is through a filter located above the compressor. This is a dry type filter with a replaceable cartridge. A precleaner removes heavier dust particles and these are conveyed outside the house by means of bled air from the main compressor.

Thus the compressor is triply protected from dust by means of two (2) precleaners and one (1) filter.

TO REMOVE
DRILL STEM
FROM THE
STRING

1. Hoist the drill string until the milled slots below the joint, where the stem is to be removed, is in line with the drill table lock.
2. Pull the stem lock lever. Hydraulic cylinders move the stem lock pistons against the stem.
3. Slowly rotate the stem until the spring loaded pins snap into the milled slots. Hoist the string, if necessary, so that the lock pins are at the bottom of the slots. This is important to allow space for the stem pin thread to back out of the stem box thread. Release center stem guide clamp.
4. Press the "Jog Reverse" button. If the joint at the stem lock breaks, continue rotation to run out the thread.



STEM LOCK

5. If any joint other than the joint at the drill table lock breaks, press the button "Jog Forward" to reset the thread. Break-out tong must then be used.

Swing the break-out tong, which have been suspended from the derrick head, and clamp on the stem above the joint as shown in illustration. Push lever "TONG" to extend piston. Pull lever to break joint. Turn the stem only enough to "Crack" the thread. Proceed as in item 4, after removing break-out tong.

SECTION 4

OPERATION

CONTROL
PANELHYDRAULIC ALARM (1)

Red light with "ON" marker. Illumination of light or "ON" indicates one of the following:

- a. Hydraulic oil, high temperature - over 150°.

Sounds buzzer alarm.
Sets hoist brake and propel brake.
Releases propel clutch.
Drives main pump to zero stroke.
Shuts down main hydraulic system.

- b. Loss of servo pressure.

Sounds buzzer alarm.
Sets hoist brake and propel brake.
Releases propel clutch.
Drives main pump to zero stroke.
Shuts down main hydraulic system.

- c. Loss of replenish pressure.

Sounds buzzer alarm.
Sets hoist brake and propel brake.
Releases propel clutch.
Drives main pump to zero stroke.
Shuts down main hydraulic system.

- d. Loss of electrical control power for hydraulic system.

Sounds buzzer alarm.
Sets hoist brake and propel brake.
Releases propel clutch.
Drives main pump to zero stroke.
Shuts down hydraulic system.

- e. Overload on main hydraulic drive motor (75 h.p.)

Sounds buzzer alarm.
Sets hoist brake and propel brake.
Releases propel clutch.
Drives main pump to zero stroke.
Shuts down main hydraulic system.

CONTROL
PANEL
CONT'D.

LOWER
L.H. STEM RACK (32)
RAISE

Used to control hydraulic valve located in derrick. Pushing lever lowers rack into position. Pulling lever raises rack into storage position.

* Not on all machines (not on M-II, Key 2403)

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