GENERAL MAINTENANCE

GENERAL

To insure that the machine is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Defects discovered during operation of the unit should be noted for future correction to be made as soon as operation has ceased.

Include a day-to-day inspection of the unit to detect minor defects, which if unattended will evolve into major problems. This type of care is performed according to a regular plan and is known as preventive maintenance.

PREVENTIVE MAINTENANCE

Regular maintenance, checking and adjustments (if necessary) avoid major breakdowns and should be performed regularly to keep the machine in good working condition.

Initiate a planned, definite Preventive Maintenance procedure to insure against unnecessary downtime of major repairs and irritating minor repairs.

General Lubrication Instructions

1. Lubrication is one of the most important preventive maintenance services. Faithful, careful lubrication will result in prolonged life of engine and components.

2. Always clean around oil filler opening before removing caps or plugs. Wipe off grease fittings with a clean cloth before lubricating.

3. Do not overlubricate or overfill oil reservoirs. Such practice is not only wasteful, but can be detrimental. Apply grease to fittings until it begins to ooze from part being lubricated.

4. Prevent dust, dirt, water and other foreign matter from contaminating the lubricants and lubricating equipment. Keep lubricants in sealed containers in cool, protected areas. Wipe off lubricating equipment after use to minimize collecting dirt.

5. Do not mix brands, weights or types of oil or fluid in various components to bring up to proper level.

6. All parts of the hydraulic system are lubricated by the hydraulic oil in the circuit. Particular attention must be paid to keep oil in the systems clean. Where there is reason to believe metal particles may be in circuit, the oil must be drained, flushed clean and filter screens thoroughly cleaned. New oil should be supplied for the entire system.

Maintenance Lubrication Chart

All points requiring lubrication on a regular basis are identified on the Maintenance Lubrication Chart (Figure 1).

1. 10 HOUR SERVICE MAINTENANCE

A. Refer to operator service chart and perform all lubrication maintenance services listed for 10-hour intervals.

2. 50 HOUR SERVICE MAINTENANCE

A. Refer to table operator service chart and perform all lubricating services listed for 50 hour intervals.

B. Check the electrolyte level in the batteries and the charge. Add water and charge as necessary.

C. Fins of radiator and oil cooler must be kept clean so that cooling capacity is not reduced. Under some applications, this could be a daily maintenance item due to dust.

D. Hydraulic oil filter to be changed after the first 50 hours of operation and every 600 hours thereafter.

3. OTHER PREVENTATIVE MAINTENANCE

A. Refer to operator service chart and perform services listed for 300 hours, 600 hours and 1200 hours.

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TROUBLE	INDICATION	POSSIBLE CAUSE AND REMEDY
Engine Drive Train Malfunction	CONTACT YOUR SKYTRAK DEALER	
Hydraulic System	1. Inoperative	1. Check hydraulic fluid level. Check main hydraulic pump.
	2. Sluggish operation	2. Check engine RPM, adjust idle.
	3. All systems operate in a jerky manner	3. Bleed all systems. Check hydraulic fluids levels.
	4. Low oil pressure	4. Relief valve malfunctioning.
	5. Pump noisy	5. Air leaks. Tighten connections. Fluid too cold. Run machine at low RPM until oil warms up. Worn pump shaft. Replace pump drive shaft. Intake strainer plugged. Remove and clean.
	6. Hydraulic fluid temperature exceeds 200°F.	6. Internal leakage in system components due to wear. Replace worn components. Fluid going over relief due to improper machine operation for extended periods.
Fork Tilt Operation	1. Forks do not level as main boom is raised.	1. Hoses on slave cylinder installed improperly.
	2. Fork tilt operation jerky or spongy.	2. Perform bleed procedure.
	3. Fork won't hold load.	3. Faulty port cylinder relief valve.
Stabilization System	1. Stabilization cylinders do not lock when boom is extended.	1. Check operation of limit switch and solenoid valve. Valve should operate when shooting boom is extended.
	2. Stabilization cylinders locked when shooting boom is retracted.	2. Check operation of limit switch and valve.

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CAPACITIES

Fuel Tank	
U.S. Gal.	20.0

NOTE

In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable; such as the use of SAE 5W (CC) in extreme cold temperatures or the

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remove cylinder from tractor and disassemble cylinder. Install appropriate packing kit and reassemble cylinder. After repair of cylinder, reassemble to the SKYTRAK and bleed system as follows:

1. Connect fitting to the cylinder.

NOTE

When assembling cylinder, care is required to prevent crimping the supply pipe belted to the lower side of the cylinder.

2. Raise boom to its upper limit and hold for approximately 20 seconds.

3. Lower boom to ground level then raise to its upper limit.

4. Repeat steps 2 and 3 at least five times or until operation of the main boom is normal (no spongy operation).

5. Check hydraulic fluid reservoir and fill as required.

FORK LEVELING SLAVE CYLINDERS

To remove cylinders raise main boom to retract cylinders. Lower forks to maximum down tilt limit and disconnect upper hydraulic connections. Remove upper pins. Disconnect lower hydraulic connections and allow hydraulic fluid residue to drain. Remove lower pins and lift out cylinders with the appropriate sling. Reassemble cylinder to SKYTRAK after repair and perform bleed procedure.

FORK TILT CYLINDERS

To remove fork tilt cylinders, tilt forks to level position and lower main boom until forks are resting on the floor or ground. Disconnect upper hydraulic connection (closest to grille assembly) and allow hydraulic fluid residue to drain. Remove lower hydraulic connection and allow fluid to drain. Disconnect lower pin connection and remove upper pin. Repair cylinder with appropriate kit. Reassemble cylinder to SKYTRAK after repair and perform bleed procedure.

FORK LEVELING AND TILT CYLINDER BLEED PROCEDURE

The fork tilt and leveling cylinders operate in a closed loop operation and cannot be bled through operation. If air becomes trapped in this part of the hydraulic system perform the following procedures:

NOTE

The following procedure will require an operator and helper to properly bleed the fork tilt and leveling cylinders.

1. Open bleed fitting on lower end of leveling slave cylinders at rear of machine.

2. Raise main boom approximately 1/3 up and close bleed fittings before stopping boom travel.

3. Level forks. Open bleed fittings.

4. Raise main boom approximately 1/3 more and close bleed fitting before stopping boom travel.

5. Level forks. Open bleed fittings.

6. Raise main boom the remainder of its travel and close bleed fittings just before main boom reaches its upper limit.

7. Level forks and open bleed fittings on upper end of leveling slave cylinders.

8. Lower main boom approximately 1/3 and close bleed fitting just before stopping boom travel.

9. Level forks and open upper bleed fittings.

10. Lower main boom approximately 1/3 more and close bleed fitting before boom travel stops.

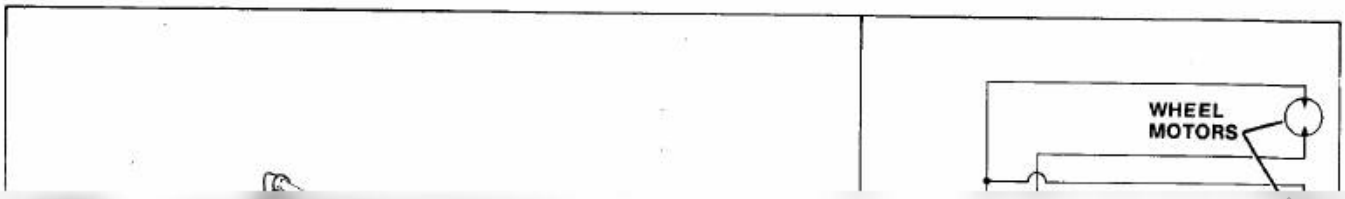
11. Level forks and lower boom to ground. Close bleed fittings before stopping boom travel.

12. Fill hydraulic fluid reservoir as required.

13. Operate boom through a complete cycle and check to insure that forks remain level. If forks do not level as the boom is raised and lowered repeat steps 1 through 12.

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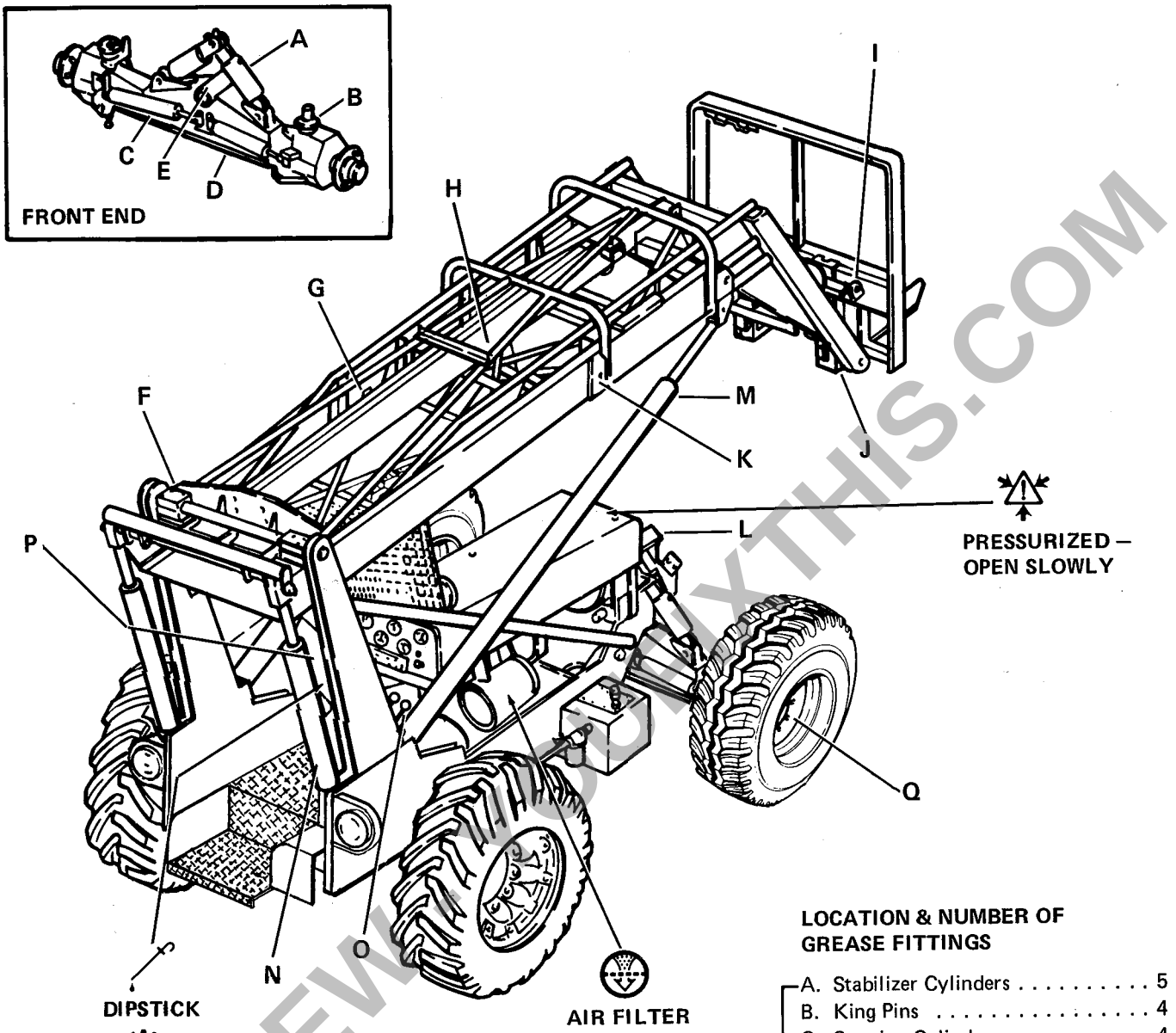
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° LITHIUM MP GREASE	48 PLACES	AS REQ'D.
◇ RANDO HD 46 (Texaco or equivalent)		WEEKLY
★ 90 EP OIL		WEEKLY

◇ Check hydraulic fluid with forks resting on the ground and boom retracted.

∞ FRONT WHEEL ASSIST ONLY

LOCATION & NUMBER OF GREASE FITTINGS

10 ☐

- A. Stabilizer Cylinders 5
- B. King Pins 4
- C. Steering Cylinders 4
- D. Tie Rod 2
- E. Axle Pin 1
- F. Pillow Blocks 2
- G. Hose Reels 2
- H. Boom Cylinder 1
- I. Tilt Cylinders 4
- J. Grille Pins 2
- K. Boom Rollers 4
- L. Univ. Joint (pump to engine) 2
- M. Lift Cylinders 6
- N. Slave Cylinders 4

20 50 ☐

- O. Main Control Valve 3
- P. Shuttle Pedal Linkage 2

∞★

- Q. Torque Hubs 2

Figure 1. Lubricating and Maintenance Points

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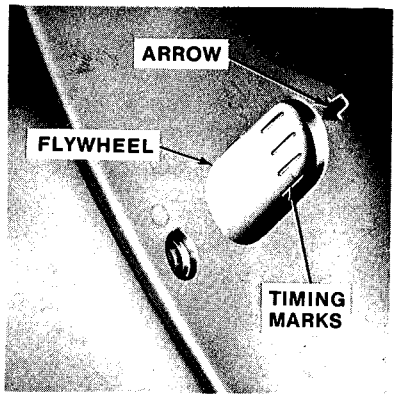


Figure 14. Rear Cover Plate Timing Inspection Hole

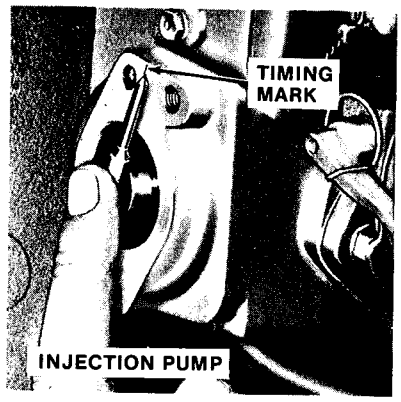


Figure 15. In-Line Injection Pump Timing Mark

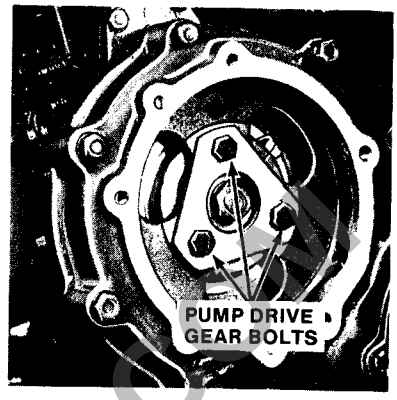


Figure 16. In-Line Injection Pump Adjustment Bolts

IMPORTANT

Do not crank the engine when the pump mounting bolts are loose. Also, if the pump is removed, and then reinstalled, make sure the pin in the drive gear (not shown) is aligned with the slot in the pump drive hub before tightening the mounting bolts.

NOTE

If the arrrow on the end of the pump camshaft is pointing away from the timing mark on the pump (Figure 15), and the 19° btdc mark is centered, the piston is on its exhaust stroke. If this is the case, rotate the flywheel 360° (one full turn) until the 19° btdc mark is again aligned with the arrow (Figure 14).

IN-LINE TYPE PUMP

The injection pump is correctly timed to the engine when fuel injection at the No. 1 piston occurs 19° btdc on the compression stroke. Determine correct timing as follows:

1. Remove the flywheel inspection cover from the right rear of the engine (Figure 14), and the cover and gasket from the rear of the injection pump (Figure 15).

2. With the diesel engine stop control pulled out, rotate the flywheel by "bumping" the starter with the key-starter switch until the timing marks (Figure 14), can be seen on the flywheel.

3. Using a screwdriver, through the inspection cover opening, continue to turn the flywheel until the 19° btdc mark is aligned with the arrow. The No. 1 piston should now be at 19° btdc on its compression stroke.

4. After positioning the No. 1 piston at 19° btdc on the compression stroke, place a pointer in the V-notch of the pump camshell as shown in Figure 15. If the pointer does not align with the timing mark, the pump is not correctly timed to the engine and should be retimed as outlined in Steps 5 through 8.

5. Drain the coolant from the radiator and remove the lower hose.

6. Remove the inspection plate and gasket from the front of the engine (Figure 16).

7. Loosen the pump drive gear bolts and rotate the pump until the pointer (Figure 15), aligns with the timing mark.

8. Tighten the pump drive gear bolts, and install all covers, gaskets, and plates previously removed. Install the radiator lower hose and fill the radiator.

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4. Pressure gauge must indicate 1000 PSI. If not, adjust control valve fork down relief for 1000 PSI indication on gauge.

5. Raise fork tilt to its maximum up limit with FORK TILT control level. Pressure gauge must indicate 1600 PSI. If not, adjust control valve fork up relief for 1600 PSI indication on pressure gauge.

Remove acorn nut and loosen jam nut. Make sure several threads on adjusting screw are engaged in pilot section (Figure 27).

Use a screwdriver and set adjusting screw as follows:

A. Start engine and adjust hand throttle to provide 1000 RPM indication on tachometer.

B. Operate fork plunger of control valve at its extreme position long enough to get a pressure reading on the gauge.

C. Turn adjusting screw clockwise until desired pressure setting is obtained.

D. Holding adjusting screw, tighten jam nut install and tighten acorn nut.

E. Retest to check pressure setting.

NOTE

Results of the above settings will indicate a relatively constant relief valve setting across full engine RPM.

If this procedure does not have the expected results, replace the entire port relief with kit 8902443 for the 1600 PSI relief or kit 8902444 for the 1000 PSI relief.

CONTROL VALVE SEALS AND SPRINGS

Should the control valve show signs of leakage in the area of the valve spools, the seals are to be replaced. The seals may be obtained by ordering seal kit 8902441 and installed in the following manner.

SEAL REPLACEMENT

A one-piece molded combination wiper and seal is used at each end of the plunger (Figure 28). The seals are positioned with a seal ring and retained by seal plates. To replace seal at tang end of plunger, remove screws and seal plate from housing. Carefully remove seal and seal ring from housing. Seal groove must be smooth and completely free of dirt, pits, and metal particles. Examine lip of new seal for damage or mars. Replace seal ring and press firmly in place with a blunt tool (seal ring must fit in molded recess of seal to seat properly). Replace seal plate and round head screws.

To service seal at cap end of plunger, remove plunger cap from housing. Insert a pin through hole of tang and through tang hole of an adjacent plunger to prevent plunger from turning. Remove cap screw from end of plunger. Remove spring seats, plunger spring and seal plate from end of plunger. Remove seal and seal ring from housing. Seal grooves must

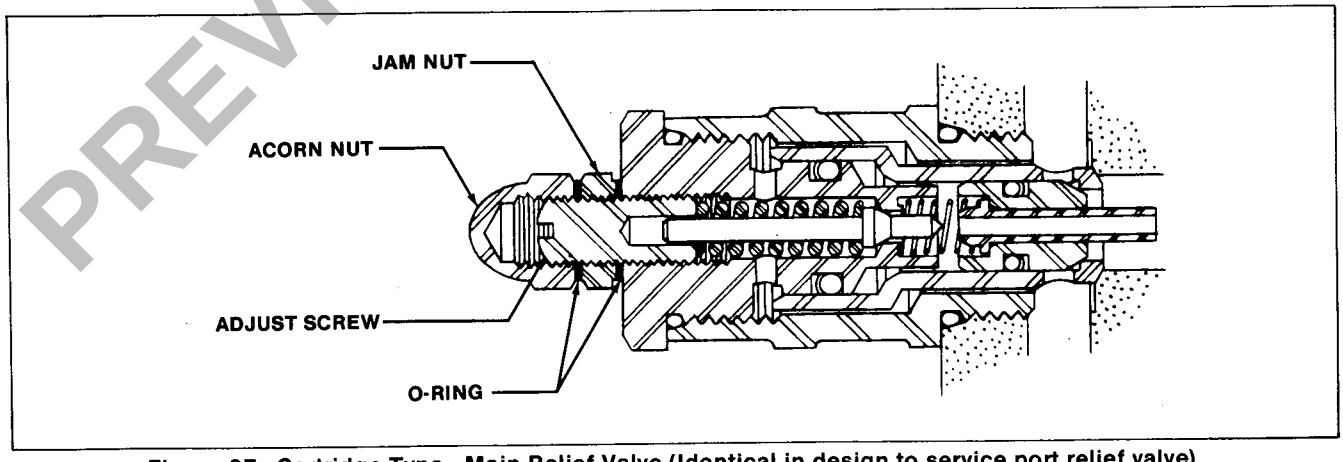


Figure 27. Cartridge Type - Main Relief Valve (Identical in design to service port relief valve)

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