



MODEL NO. 03605-30001 & UP

OPERATORS
GUIDE

REELMASTER 350 D

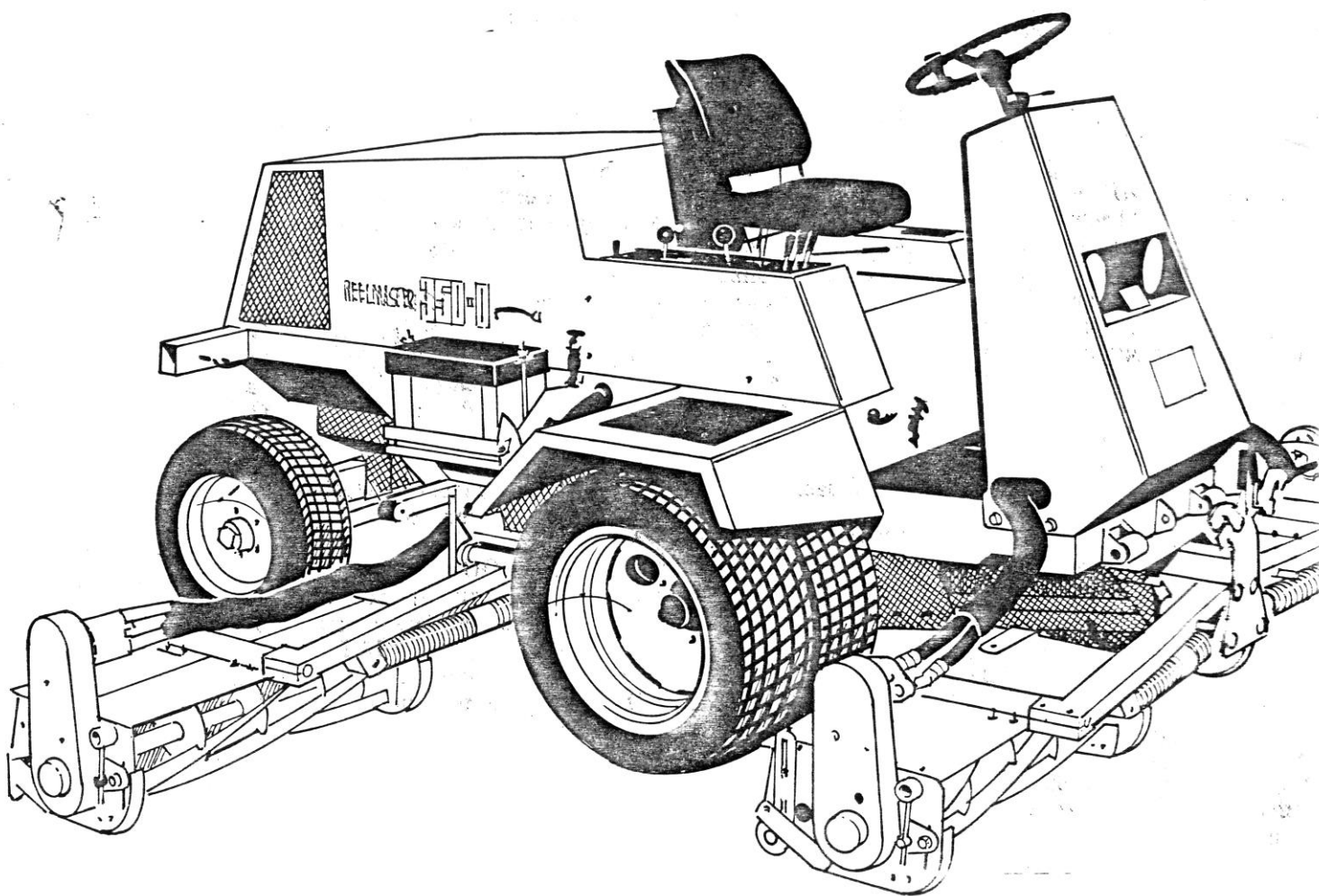


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SAFETY INSTRUCTIONS

1. Read this operators guide. Do not operate machine without proper instruction.
2. Remove all debris or other objects that might be picked up and thrown. Keep by-standers away from operating area.
3. Keep all shields and safety devices in place. Repair or replace defective or damaged parts before operating. Tighten all fasteners to ensure machine is in safe operating condition.
4. Do not wear loose fitting clothing because it could get caught in moving parts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes and a helmet is advisable.
5. Check the interlock switches daily for proper operation. If a switch should fail, replace the switch before operating the machine.
6. Fill fuel tank with fuel before starting the engine. Avoid spilling any fuel. Since fuel is flammable, handle it carefully. Use an approved fuel container. Do not fill fuel tank when engine is hot or running. Do not smoke while handling fuel. Fill fuel tank outdoors to about 25mm (1 inch) from the top of the tank not the filler neck. Wipe up any spilled fuel.
- 7a. Before starting the engine: sit on the seat. Set parking brake. Make sure traction pedal is in neutral and reel drive control is off.
- 7b. After engine is started, release parking brake and keep off traction pedal. Machine must not move. If movement is evident, the neutral return mechanism is adjusted incorrectly; therefore, shut engine off and adjust until machine does not move when traction pedal is released. Refer to Adjusting Traction Control Linkage, page 13.
8. Do not run the engine in a confined area without adequate ventilation. Exhaust is hazardous and could be fatal.
9. Operate only in day light or when there is good artificial light. Do not drive close to holes, a sand trap, ditch, creek or other hazard. Watch for hidden hazards. Reduce speed when turning. Avoid sudden stops and starts. Never carry passengers.
10. Traverse slopes carefully. Do not start or stop suddenly.
11. Raise the cutting units and secure safety locks when transporting.
12. If cutting unit strikes a solid object or machine vibrates abnormally, move Reel Speed control to off, move throttle to slow, set parking brake and shut engine off. Remove key from switch. Check for damage or defective parts and repair before operating.
13. Do not touch engine, muffler or radiator while engine is running or soon after it is stopped. These areas could be hot enough to cause a burn.

SAFETY INSTRUCTIONS (Continued)

14. Make sure reels are not spinning, key is removed from ignition and parking brake is set, whenever machine is left unattended.
15. Before getting off the seat, remove foot from traction pedal. Set parking brake. Move Reel Speed control to Off. Shut engine off and remove key. Wait for all movement to stop before dismounting.
16. Remove key from ignition switch to prevent accidental starting when servicing, adjusting or storing machine.
17. To reduce potential fire hazard, keep engine free of excessive grease and debris.

SPECIFICATIONS

PRODUCT -

ENGINE - Mitsubishi model, 4 cycle, 4 cylinder, water cooled diesel. 2.1 liter (127 Cu.In.) displacement, 21:1 Compression ratio, 38 hp at 2250 rpm, high idle speed of 2500 rpm. 7 liter (7.4 qt.) oil capacity with replaceable filter. Heavy duty 3 phase air cleaner.

COOLING SYSTEM - Tube and fin radiator construction, with separate hydraulic oil cooler to the rear of radiator.

FUEL TANK - Approximate Capacity 58 liters (15.3 gallons).

ELECTRICAL - Heavy duty 84 amp hour battery. 12 volt negative ground, 35 amp alternator with integral regulator. Electric solenoid on injection pump operates shut off device to stop fuel flow, thereby stopping engine.

TIRES - Front, 27 X 8.50 - 15, Rear 23 X 8.50 - 12.

TIRE PRESSURE - 0.84 Kg/Cm² (12 P.S.I.)

BRAKES - 12" hydraulically actuated drum brakes.

GROUND SPEED - 0-10 Km/hr (6.2 mph) in "MOW", 0-20 Km/hr (12.4 mph) in "Transport".

TRANSMISSION - All hydraulic using a variable displacement tandem hydrostatic pump.

HYDRAULIC OIL RESERVOIR - Capacity is 46 liters (12 gallons).

CUTTING UNITS - 203 mm (8 in.) Cutting diameter, 5 blade, 752 mm (29.6 in.) width. Heavy duty welded construction. Rear roller and side skids standard. Height-of-Cut - 10 mm to 76 mm (3/8 inch to 3 inches) Width-of-Cut - 348 Cm. (137 inches)

CUTTING UNIT LIFT SYSTEM - Hydraulic with mechanical safety locks for transporting.

SPECIFICATIONS (Continued)

FLUIDS

ENGINE OIL

SAE 10W30 YEAR ROUND

FUEL

NO. 2 DIESEL FUEL YEAR ROUND

COOLING SYSTEM

50/50 SOLUTION WATER AND ANTI-FREEZE YEAR ROUND

HYDRAULIC SYSTEM

SAE 10W40 or
SAE 10W30 YEAR ROUND

CONTROLS

TRACTION PEDAL - To move forward, depress top of pedal to increase speed and bottom of pedal to decrease speed. When reverse is desired, pedal must be returned to neutral and used in conjunction with Reverse lockout pedal.

REVERSE LOCKOUT PEDAL - Used in conjunction with traction pedal to achieve reverse. With traction pedal in neutral, press down on reverse lockout pedal, then press down on rear of traction pedal while holding down reverse lockout pedal.

THROTTLE CONTROL - Pull up on control to increase engine speed, push down to decrease speed.

SERVICE BRAKE - Press down on brake pedal to actuate drum brakes on wheels.

PARKING BRAKE - Pull out parking brake whenever engine is shut off. To release brake, press in lever on handle, pull up slightly to release brake and push handle down to its fully released position.

TRACTION SPEED SELECTOR - Position control in Mow position for mowing operation. Position control in Transport position for transport. Cutting units are disengaged and maximum ground speed is doubled in Transport. Reel Speed control must be in off position and traction pedal in neutral to shift control.

GROUND SPEED CONTROL LEVER - Control limits traction pedal movement, assists in providing accurate control of length of clip and eliminates speed variation on rough terrain. See decal on control panel for proper speed selection.

REEL SPEED CONTROL LEVER - Regulates reel speed and has six positions, OFF 1, 2, 3, 4 and backlap. Reel speed lever works in conjunction with Ground Speed control to achieve the appropriate rate of clip.

CUTTING UNIT LIFT CONTROLS - Raises outside cutting units independently, and three middle cutting units at once. Individual reel shutoff upon lifting.

CUTTING UNIT LOCKUP LATCHES - Allows cutting units to be individually latched in a raised position for transport.

LOCKOUT HUBS - Disengages front wheel from wheel motors allowing machine to be towed or pushed around shop..

FUEL GAUGE - Indicates quantity of fuel remaining.

OIL PRESSURE GAUGE - Indicates the amount of oil pressure in the engine.

TEMPERATURE GAUGE - Indicates the operating temperature of the engine coolant.

HOURLY METER - Registers hours of engine operation.

ELECTRICAL CHARGE INDICATOR - Indicates when battery is discharging.

OPERATING INSTRUCTIONS

STARTING/STOPPING

IMPORTANT - The fuel system must be primed on initial start up of a new engine, if engine has ceased running due to lack of fuel or if maintenance has been performed to fuel system.

PRIMING INSTRUCTIONS

1. Loosen plug on top of fuel filter, loosen cap on priming plunger, pump priming plunger until all air or bubbles are forced out of fuel filter. Tighten fuel filter plug.
2. Loosen (2) air vent plugs on engine, pump priming plunger until all air or bubbles are forced out of system. Tighten air vent plugs on engine.

STARTING

1. Move Reel Speed control to Off, remove foot from traction pedal and insure it is neutral.
2. Depress brake pedal and set throttle to desired position.
3. Turn key to preheat position, and hold in this position for 15-45 seconds depending on atmospheric temperatures.
4. Turn key to start position.

STOPPING

1. Turn key to off position and remove key.

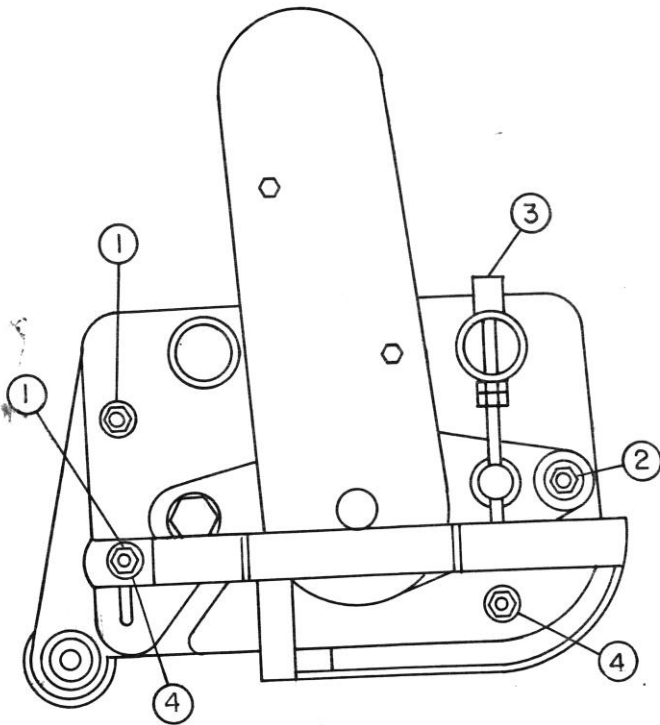
CHECK INTERLOCK SWITCHES

1. Position Reel Speed Control in "OFF" and traction pedal in neutral. While sitting on seat start engine, engine should start.
2. With engine running, lower reels and engage Reel Speed Control to Mow position, reels should turn. Carefully lift off seat, engine should stop. Check also in backlap position.
3. Sit on seat, start engine, depress traction pedal slowly forward and lift off seat. Engine should stop. Test in reverse also.
4. Stop engine. Move traction pedal forward and lift off seat. Engine should not start. Test also in reverse.
5. Move Reel Speed Control to # 1 position, lift off seat. Engine should not start. Test also in Backlap position.

OPERATING INSTRUCTIONS (Continued)

ADJUSTING HEIGHT-OF-CUT

1. Loosen (2) flangenuts on each side of cutting unit and position roller up or down as desired. Use marks and notches to gauge adjustment. (See Illustration.)
2. Retighten flangenuts. Make sure height is adjusted equally on each end of reel.



- ① Height-of-cut Adjusting nuts
- ② Bedknife adjusting nut
- ③ Bedknife adjusting screw
- ④ Skid adjusting nuts

ADJUSTING BEDKNIFE

1. Loosen mounting flangenut on each side 3/4 turn.
2. Turn adjusting screws Clockwise to tighten reel to bedknife.
 - a) Check to make sure reel and bedknife are parallel.
 - b) Tighten until reel will cut newsprint cleanly the full length of reel.
3. Retighten flangenut, using caution not to change adjustment.

OPERATING INSTRUCTIONS (Continued)

SIDE SKID ADJUSTMENT

1. Loosen (2) flangenuts on each skid.
2. Move skid up or down, depending on terrain.

NOTE: SKIDS SHOULD BE POSITIONED AS HIGH AS POSSIBLE TO PREVENT PUSHING DOWN UN CUT GRASS AND LOW ENOUGH TO PREVENT SCALPING ON UNDULATING TERRAIN.

BACKLAPPING

Use a good grade of medium grit (80) commercial lapping compound with a water soluble carrier to assure the compound will be easily washed away at the completion of the operation. Dry lapping compound should be mixed with liquid detergent until it is of a freeflowing consistency.

NOTE: Paste-type pre-mixed lapping compound is also sold in some areas. This is generally used in its original composition and therefore is not freeflowing.

1. Two persons are necessary to perform the backlapping operation, one to work the controls and one to apply lapping compound.
2. Engage the parking brake, block the front wheels, start the engine and lower the cutting units. Make a precise bedknife to reel adjustment to all cutting units to assure the bedknife is parallel with the reel and light contact is evident.
3. Have assistant on seat start engine and adjust throttle control to Slow throttle setting.
4. Dip 76mm (3 in.) paint brush attached to Toro part No. 29-9200 Handle Assembly into lapping compound, stand clear of cutting units and instruct assistant to engage reels in backlap mode.

! DANGER: UNDER NO CIRCUMSTANCES USE A SHORT HANDLED PAINT BRUSH.

5. Apply lapping solution evenly over full length of all reels assuring all reel blades are covered. Re-apply lapping solution whenever noise of reel operating against bedknife begins to disappear or when reel appears to have uneven concentrations of material.

OPERATING INSTRUCTIONS (Continued)

6. Adjust, when necessary to maintain light contact between the reel and bedknife.

! DANGER: DO NOT ADJUST CUTTING UNITS WHILE REELS AND ENGINE ARE OPERATING. INSTRUCT ASSISTANT TO STOP REELS AND SHUT ENGINE OFF WHEN ADJUSTMENT IS NECESSARY.

7. Backlap until the cutting edges are sharp, even, and consistent on all reel blades. A 0.79mm (1/32 inch) minimum land area must be achieved on newly sharpened reel assemblies.
8. Stop the reels and shut the engine off upon completion. Lightly pass a fine file across the front face of bedknife to remove any burr and wash the units thoroughly of all lapping material with a low pressure stream of water.
9. Check the sharpness of the reel and bedknife with strips of newsprint. The paper should be cleanly sheared across the entire width of the bedknife and reel with light contact. Continue backlapping if newsprint is not sheared acceptably.

DAILY MAINTENANCE

MAINTENANCE	INTERVAL	SPECIFICATION
CHECK INTERLOCK SYSTEM	DAILY	VERIFY OPERATION OF SWITCHES.
CHECK ENGINE OIL LEVEL	DAILY	READ LEVEL ON DIPSTICK. SEE SPECIFICATIONS.
CHECK HYDRAULIC SYSTEM OIL LEVEL	DAILY	READ LEVEL ON SIGHT GAGE. SEE SPECIFICATIONS.
CHECK RADIATOR & COOLANT	DAILY	CLEAN RADIATOR FINS & CHECK COOLANT LEVEL IN OVERFLOW BOTTLE. SEE SPECIFICATIONS.
SERVICE AIR CLEANER	DAILY	CLEAN AIR CLEANER DUST CUP.
CHECK WATER SEPARATOR	DAILY	VISUAL INSPECTION
CHECK BEDKNIFE ADJUSTMENT	DAILY	ADJUST IF REQUIRED
CHECK BRAKE OPERATION	DAILY	VERIFY OPERATION
CHECK TURN SIGNAL OPERATION	DAILY	VERIFY OPERATION

PERIOD MAINTENANCE

MAINTENANCE	INTERVAL (hours)	SPECIFICATION
CHECK ALTERNATOR AND FAN BELT TENSION (INITIAL)	5	CHECK TENSION AND CONDITION
REPLACE HYDRAULIC OIL FILTERS (HIGH & LOW PRESSURE (INITIAL)	10	SEE PARTS MANUAL FOR FILTER NUMBERS.
TIGHTEN FRONT WHEEL NUTS (INITIAL)	10	TORQUE TO 11-12 Kgm (80-90 ft. lb)
CHANGE ENGINE OIL & FILTER ELEMENT	60	SEE SPECIFICATIONS.
CHECK CUTTING UNIT BELTS (INITIAL)	60	CHECK TENSION AND CONDITION.
CHECK BATTERY	60	CHECK ELECTROLYTE LEVEL AND TERMINAL CONDITION.

MAINTENANCE (Continued)

LUBRICATE GREASE FITTINGS	60	NO. 2 GENERAL PURPOSE LITHIUM GREASE
CHECK TIRE PRESSURE	60	AIR PRESSURE FRONT & BACK 83 KPA (12 psi)
SERVICE AIR CLEANER	60	CLEAN DUST CUP & BAFFLE.
CHECK FASTENERS	60	INSPECT FOR LOOSE FASTENERS, TIGHTEN AS NECESSARY.
CHANGE ENGINE OIL	100	SEE SPECIFICATIONS.
CHANGE ENGINE OIL FILTER	100	SEE PARTS MANUAL FOR CARTRIDGE NUMBER.
CHECK ENGINE BELTS	100	CHECK TENSION AND CONDITION.
CHECK HYDRAULIC LINES, HOSES AND FITTINGS	100	INSPECT CONDITION AND FOR LOOSE FITTINGS
CUTTING UNIT BELTS	250	CHECK TENSION AND CONDITION.
SERVICE AIR CLEANER	250	CLEAN BY COMPRESSED AIR OR WASHING METHOD. (FILTER CLEANER, TORO PART NO. 27-7220). REPLACE AFTER 6 CLEANINGS.
CHANGE HYDRAULIC OIL FILTERS (HIGH AND LOW PRESSURE)	250	SEE PARTS MANUAL FOR FILTER NUMBERS.
CHECK REAR WHEEL TOE-IN	250	ADJUST TO ACHIEVE 0-1/8" TOE-IN AND 0" TOE OUT.

ADJUSTING TRACTION CONTROL LINKAGE

1. Park vehicle on a level surface, raise and lock cutting units and turn engine off.
2. Block right front tire and both rear tires so vehicle cannot roll forward or backward.
3. Jack up frame so left front wheel is off the shop floor. Use a jack stand to support the frame.
4. Start engine and allow it to idle for 5 minutes to heat oil in transmission to operating temperature. Position traction speed lever in "MOW".

MAINTENANCE (Continued)

5. Check left front wheel that is off shop floor. Wheel must not be rotating. If wheel is rotating proceed to step 6 for adjustment. If wheel is not rotating, stop engine. Verify the adjustment with throttle in Slow and Fast positions.
6. Because the wheel is rotating, the neutral return collar must be adjusted. Locate forward pump neutral point by moving traction pedal until wheel rotation stops. Note this position and stop engine.
7. Reposition neutral return collar in center of bracket and retighten. Start engine and check for wheel rotation.
8. Stop engine and readjust if necessary.
9. Adjust reverse lockout lever by loosening nut on cam bolt securing reverse lockout lever to frame.
10. Rotate cam until notch in reverse lockout lever contacts pin on traction pedal lever.
11. To readjust Reel Speed Control, adjust rod between pump levers as follows:
12. With left front wheel still off floor and with traction pedal in neutral, move Traction Speed selector to "Transport", if wheel begins to rotate, loosen jam nuts and turn rod connecting levers, until rotation stops.
13. Tighten nuts, and move selector to "MOW", to ensure wheels do not rotate in either position with traction pedal in neutral.
14. Adjust neutral return springs and damper as desired to insure pedal returns to neutral when foot is removed from pedal, with engine running.
15. Remove jack stand from under frame and lower left wheel to floor.

ADJUST HANDBRAKE

1. Remove cotter pin and clevis pin securing hand brake cable to brake lever.
2. Loosen jam nut and rotate clevis to shorten cable as necessary.
3. Initial adjustment should allow:
 - a. A small amount of drag on wheel without pulling up on handbrake.
 - b. No wheel rotation by hand, if handbrake is extended 70 mm (2 3/4 in.)
 - c. Hand brake extension of 108 mm (4 1/4 in.) with maximum operator pull.

NOTE: IF HANDBRAKE EXTENSION EXCEEDS 152mm (6 in.), READJUST CABLE.

OPERATING PRECAUTIONS

- * Shut engine off before performing normal maintenance and adjustments. If engine must be running to perform service, keep away from moving parts to prevent injury.
- * Wear safety goggles and rubber gloves when working with electrolyte, charge battery in a well-ventilated place so gases produced while charging can escape. Since gases are explosive, keep open flame and electrical spark away from battery; do not smoke. Nausea may result if gases are inhaled. Unplug charger from electric outlet before connecting to or disconnecting charger leads from battery. Keep battery terminals and entire case clean because a dirty battery will discharge slowly.
- * When foot is removed from traction pedal, machine should stop; it must not move in either direction. If machine moves, adjust or repair neutral assembly immediately.
- * Do not engage starter motor for longer than 15 seconds because damage could result. After 15 seconds of continuous cranking, wait 2 minutes for starter to cool.
- * Check operation of interlock switches daily to assure system is operating correctly. If switch is defective, replace before operating. Do not disconnect interlock switches. Replace all switches after every two years or 1000 hours whichever comes first.
- * Use a clean funnel with fine screen (200 mesh) when adding oil to hydraulic system. Funnel and oil must be immaculately clean to prevent accidental contamination of hydraulic system.
- * Before welding on machine, disconnect ground cable from (-) battery terminal to prevent damage to electrical system.
- * During backlapping operation all persons working on machine must stay alert. All unnecessary personal must be kept away to prevent distraction. The operator of the controls must be fully instructed on operating procedures.
- * Do not adjust cutting units while reels and engine are operating.
- * As a safety precaution, always check brakes in a wide open space, flat area which is free of other persons and obstructions before and after adjustment.
- * When transporting, make sure cutting units are raised and safety locks are engaged.
- * Use caution when removing lift arms, hydraulic cylinders or counterbalance springs as counterbalance springs are in constant compression. For removal, the lift arm should be in the completely raised position and a spring compressor fitted to compress and retain spring for removal of hydraulic cylinder from the arm. After the cylinder, complete with spring is removed, the compressor can be gradually loosened until spring tension is relieved at complete cylinder extension.

