

SECTION B MAINTENANCE

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GENERAL

This section provides the routine service procedures necessary to maintain the special equipment covered in this manual in good operating condition. Scheduled maintenance is primarily based either on time intervals or seasons of the year.

MAINTENANCE SCHEDULE

Maintenance schedules are intended as basic guides for proper service of equipment. Sustained heavy duty operation or adverse operating conditions may necessitate shorter intervals or additional tasks. The tasks and intervals listed are derived from experience, testing and evaluation during normal operating conditions.

OWNER'S/OPERATOR'S RESPONSIBILITY

The owner and/or operator of the equipment have the responsibility of determining the operating conditions (normal or heavy duty), to provide for service according to the conditions and **Maintenance Schedule** and to pay for the necessary replacement parts and labor.

CAUTION: *Failure to comply with the maintenance schedule at the correct intervals constitutes negligence and could void provisions of the equipment warranty.*

SCHEDULED MAINTENANCE

Snow Plow—Electronic Power Packs

Cleanliness

The primary foe of any hydraulic system is contamination. Therefore, cleanliness is mandatory during installation, operation, service and repair.

Reliable performance of the power unit is dependent on the vehicle electrical system.

- Battery: Must maintain a full charge.
- Battery terminals: Must be clean and free of corrosion.
- Electrical connections: Must be tight and free of corrosion.
- Alternator: Must provide the rated output.

NOTE: *Heavy duty batteries and alternators are recommended for vehicles with snow plows.*

Meyer Hydraulic Fluid M-1

This is a specially formulated mineral oil with an almost constant viscosity from normal to sub-zero temperatures. Because it free flows during extremely low temperatures, reliable equipment performance and efficiency are maintained regardless of the temperature.

Post-Season Maintenance

At the end of the snow plowing season:

(1) Completely drain the hydraulic fluid (including fluid in hoses and cylinders for E-47 and E-47H models). Drain fluid **only** from filler hole (fig. B-1) by completely retracting lift rod and unbolting unit to pour fluid out, or by using a suction pump. With E-47 and E-47H models, disconnect the fittings at the power angle cylinders, completely retract the cylinder rods and purge cylinders (and hoses) of all hydraulic fluid.

(2) Remove the two screen type filters (fig. B-1) located in the base of the pump (models E-46 and E-46H have only one filter), clean with mineral spirits (or equivalent), blow out with compressed air and reinstall.

(3) Refill the power unit with the specified fluid by fully retracting the lift rod and filling reservoir to within 1/2 inch of the filler hole. With E-47 and E-47H units, fill and bleed the hoses and power angling cylinders by loosening the hydraulic fittings located on the cylinders until they leak. With power, angle the plow left and right repeatedly until the fluid flows steadily from the fittings. While doing so, constantly check the reservoir fluid level. Refill as necessary. Tighten fittings. Raise and lower the plow several times and, with the lift rod fully retracted, check fluid level. Refill as necessary and reinstall filler plug.

(4) Grease plow pivot pins both before and after plowing season.

(5) Protect chromed lift rod from rust and corrosion by fully extending it and coating it with chassis lubricant. With E-47 and E-47H units, also coat the exposed areas of the power angling rods with chassis lubricant (fig. B-1).

(6) Check all bolts, nuts, screws and other attaching hardware for security. Retighten to specified torque as

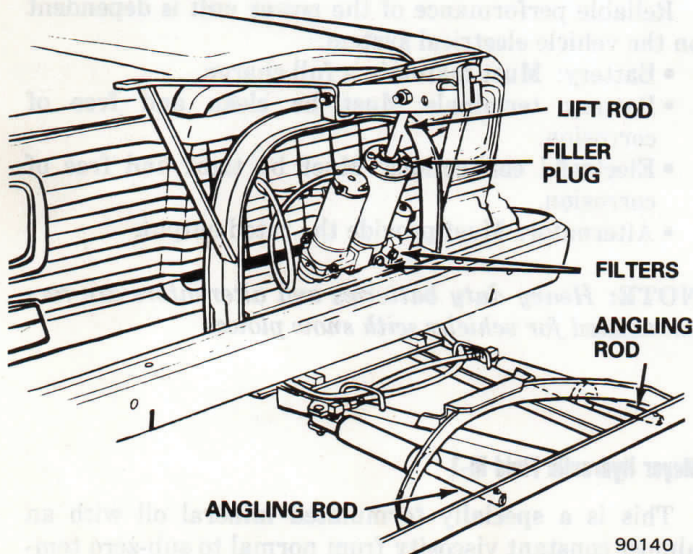


Fig. B-1 Snow Plow Servicing Areas

necessary. Paint blade surface areas with Meyer Sno Flo paint (or equivalent).

NOTE: After the equipment is initially used, retighten all nuts to the specified torque.

Snow Plow—Hylo**Cleanliness**

The primary foe of any hydraulic system is contamination. Therefore, cleanliness is mandatory during installation, operation, service and repair.

Routine Maintenance

(1) Check fluid level before each use of plow.

(2) After initial five hours of use, remove and clean in-line filter thoroughly (fig. B-2). Replace if necessary.

(3) Drain and clean oil reservoir at least twice during plowing season. Fill to within 1/2 inch of top with cylinder retracted. Use API Service Classification "SE" 10W-30 engine oil only. Any other type of oil or fluid may cause unit to malfunction. Run vehicle engine for three minutes to purge system of air.

(4) Ensure pump pulley set screws are tight. Check before each use of plow (fig. B-3).

(5) Before using plow, inspect drive belt (fig. B-3) for excessive wear. Use Tension Gauge J-23600 to check drive belt tension, 60-70 pounds (267-311 Newtons) is acceptable.

Post-Season Maintenance

At the end of the plowing season:

(1) Protect chromed lift rod and angling rods from rust and corrosion by fully extending them and coating with chassis lubricant (fig. B-1)

(2) Grease plow pivot pins.

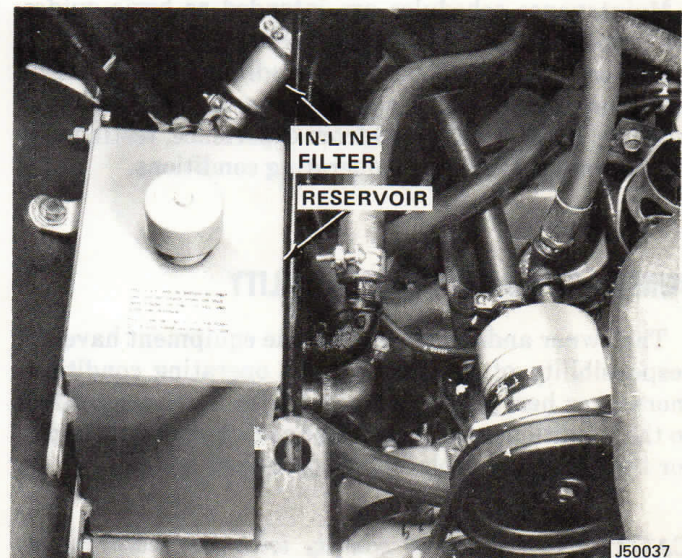


Fig. B-2 Hylo Reservoir

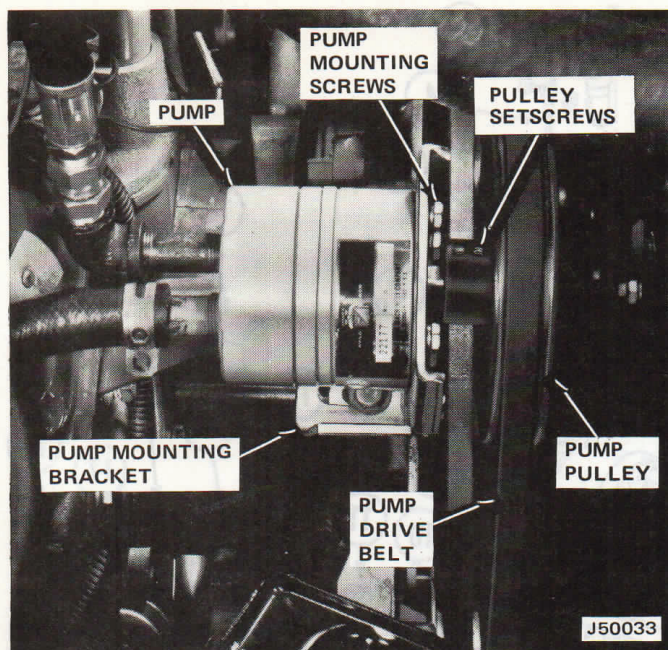


Fig. B-3 Hylo Pump

(3) Check all bolts, nuts, screws and other attaching hardware for security. Retighten to specified torque as necessary. Paint blade surface area with Meyer Sno Flo paint (or equivalent).

(4) Remove drive belt from hydraulic pump.

Mini-Spreaders

Routine Maintenance

The following tasks should be performed after each use of the spreader.

(1) Inspect for security of bolts and nuts, for frayed or cracked electrical wire insulation and ensure ground wire connection on motor is tight.

CAUTION: Do not use a pick or other sharp object to loosen material in hopper.

(2) Empty hopper and flush clean with water hose.

(3) When spreader will not be used for an extended period of time, remove from vehicle. Remove any rust and corrosion from metal. Prime and paint as necessary. Store spreader in a sheltered location.

Ramsey Winches

Routine Maintenance

(1) Keep worm gear housing filled to the level of side plug with SAE 140 multipurpose gear oil. Drain once a year, flush with kerosene and fill with new gear oil.

NOTE: Change gear oil sooner if winch is used on a frequent basis.

(2) Keep spur gear housing filled to level of plug located in side cover with SAE 20 oil.

(3) Lubricate motor with SAE 20 oil twice a year.

(4) Lubricate components that have grease fittings at least twice a year.

(5) Every six months check electrical connections and mounting bolts for security—tighten as necessary.

(6) Spool cable properly on drum when storing between jobs. Lubricate rollers at ends as required.

(7) Ensure battery maintains a full charge and alternator provides rated output.

NOTE: Heavy duty batteries and alternators are recommended for vehicles with winches.

(8) If winch will not be used for an extended period of time, disconnect winch power cable from battery.

Warn Winches

Warn winches do not require periodic maintenance with the exception of the brake pawl. Lubricate the brake pawl with chassis grease every 90 days. With sustained usage, the brake pawl will require lubrication more often.

Ensure the battery maintains a full charge and the alternator provides the rated output.

NOTE: Heavy duty batteries and alternators are recommended for vehicles with winches.

Apsco Portable Winches

Routine Maintenance

(1) To avoid rust or corrosion, maintain a light coat of petroleum jelly on inside of electric power socket.

(2) Lubricate cable and drum frequently. As cable is being wound, spray with cable lubricant.

(3) Lubricate internal components of winch once a year with a quality brand light-weight engine oil.

CAUTION: Use extreme care when lubricating components to avoid oiling the clutch lining. Clutch will slip!

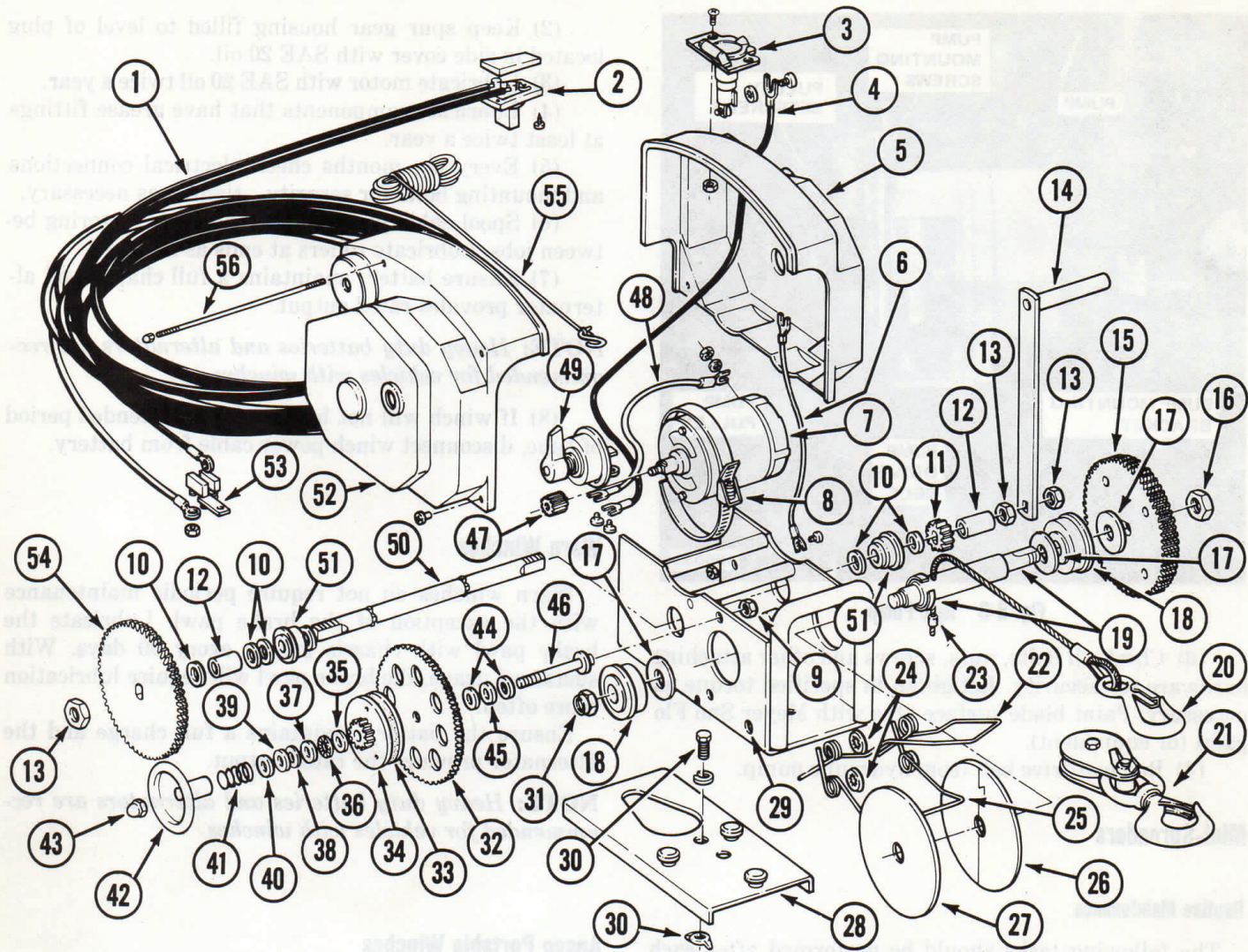
(a) Refer to figure B-4 for parts identification.

(b) Remove acorn nut securing control knob and unscrew control knob.

(c) Remove left-hand side case and screw control knob on shaft to retain components.

(d) Lubricate clutch assembly stud, thrust bearings, rear shaft bearings, compound drive gear roller clutch assembly and needle bearing, pinion clutch gear and needle bearing. Do not remove needle bearings.

NOTE: Heavy duty batteries and alternators are recommended for vehicles with winches.



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| <ul style="list-style-type: none"> 1 POWER CABLE 2 POWER CABLE CONNECTOR 3 CONNECTOR RECEPTACLE 4 DIRECTIONAL SWITCH-TO-RECEPTACLE WIRE 5 CASE HALF - RIGHT SIDE 6 RECEPTACLE GROUND WIRE 7 WINCH MOTOR 8 MOTOR MOUNTING CLAMP (2) 9 CLUTCH STUD LOCKNUT 10 REAR SHAFT BEARING SPACERS 11 PINION GEAR 12 REAR SHAFT TUBE 13 REAR SHAFT LOCKNUTS 14 EMERGENCY HAND CRANK 15 DRUM GEAR 16 DRUM SHAFT LOCKNUT 17 DRUM SHAFT BEARING SPACER 18 DRUM SHAFT BEARING 19 DRUM SHAFT AND CABLE GUIDE CLIP 20 WINCH CABLE AND HOOK 21 SNATCH BLOCK (OPTIONAL) 22 LEVEL WIND SPRING (UPPER) 23 CABLE RETAINING CLIP 24 SPRING RETAINERS (4) 25 LEVEL WIND SPRING (LOWER) 26 DRUM SHAFT GUIDE (2-PIECE) 27 DRUM SHAFT GUIDE (ONE-PIECE) 28 ADAPTER PLATE | <ul style="list-style-type: none"> 29 WINCH FRAME 30 MOUNTING BOLT, LOCKWASHER AND WING NUT 31 DRUM SHAFT LOCKNUT 32 COMPOUND DRIVE GEAR/ROLLER CLUTCH ASSEMBLY 33 CLUTCH LINING 34 PINION CLUTCH GEAR AND BEARING 35 THRUST BEARING RACE (.030 THICK) 36 OUTER THRUST BEARING 37 THRUST BEARING RACE (.060 THICK) 38 BELLEVILLE SPRING WASHER 39 BELLEVILLE SPRING WASHER 40 BACKLASH SPRING WASHER 41 BACKLASH SPRING 42 CONTROL KNOB 43 ACORN NUT 44 THRUST BEARING RACE (.030 THICK) 45 INNER THRUST BEARING 46 CLUTCH STUD 47 MOTOR GEAR 48 DIRECTIONAL SWITCH-TO-MOTOR WIRE 49 DIRECTIONAL SWITCH 50 REAR SHAFT 51 REAR SHAFT BEARING 52 CASE HALF, LEFT-SIDE 53 DUAL CIRCUIT BREAKER ASSEMBLY 54 REAR SHAFT DRIVE GEAR 55 REMOTE CONTROL LANYARD 56 CASE ATTACHING RODS AND ACORN NUTS (2) |
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Fig. B-4 Portable Winch

Hubs

Locking hubs should be serviced at the same time the wheel bearings are repacked. They should be cleaned and the internal surfaces coated with all purpose grease.

Service kits are available for the hubs. They contain the necessary gaskets, seals, lockwashers, snap rings, screws and friction shoes for installing the hubs correctly after wheel bearing or brake repair.

To ensure proper lubrication of the front axle, engage the hubs for a minimum of five miles each month.

UNSCHEDULED MAINTENANCE

General

The tasks described in this subsection have no specified frequency. They are to be performed as necessary to maintain the equipment in functional condition. The need for unscheduled maintenance is usually indicated by a change in performance, handling or appearance. Owners, operators and service technicians should be alert for indications that maintenance is required.

Snow Plow Maintenance

(1) A significant drop in hydraulic fluid level indicates a leak that must be located and corrected. Otherwise the result may cause severe damage to the power unit.

(2) If repairs are necessary, it is recommended that the proper repair kit or kits be available prior to disassembly.

(3) When necessary to disconnect hydraulic lines, ensure ends are secured above reservoir level.

(4) Before reassembly, ensure all components are clean and free of dirt, dust and other foreign matter.

Ramsey Winch Maintenance

(1) If winch is submerged, drain oil, flush and refill both gear housings. Lubricate grease fittings, motor and rollers.

(2) A vent plug is located at the top of the gear housing for the purpose of releasing oil vapor. Ensure it is open. If clogged, pressure build-up in the housing can cause excessive temperature and oil leakage.

(3) If repairs are necessary, ensure repair parts are available prior to disassembly.

Warn Winch Maintenance

Warn winches are sealed units. On reassembly, 1/2 pint (0.2 liter) of automatic transmission fluid (ATF) must be poured into lower gear housing prior to attaching and securing upper gear housing.

Apsco Portable Winch Maintenance

(1) If cable is not correctly wound (either too loose or on one side of drum shaft), unwind and, with tension on cable, rewind tightly and evenly with power.

(2) Grease, oil or excessive glazing may cause clutch lining to slip. If cleaning is impossible, lining must be replaced.

Hub Maintenance

If the hubs are submerged in water or exposed to blowing sand, they must be serviced.

Fabric Top Maintenance

CAUTION: *To avoid scratching, do not wash windows with brush.*

(1) Wash top frequently with nondetergent soap, a soft bristle brush and plenty of water. Rinse thoroughly.

(2) Vinyl wax will help preserve a new appearance.

(3) Leaking seams can be sealed with liquid vinyl fabric sealers. Apply both inside and outside of seam.

(4) Do not use an ice scraper or rub windows with paper towels. Avoid rolling windows when dusty or dirty.

(5) Vinyl window scratch removal compounds may be used to remove scratches.

(6) Top will contract and become more taut than usual during cold weather. **Extra** care must be taken in converting top to up or down position. If possible, this should be done when top is warm and pliable.

(7) Improper adjustment of windshield can cause looseness in top that will result in sagging and leaking rain flaps. Rain flaps are not effective if top is not **centered** when snapped to windshield.

Cab Maintenance

Lubricate door locks, hinges, latches and striker plates as necessary to obtain smooth operation.

Sun Roof Maintenance

Lubricate sun roof seals with petroleum jelly as necessary to maintain waterproof seal.