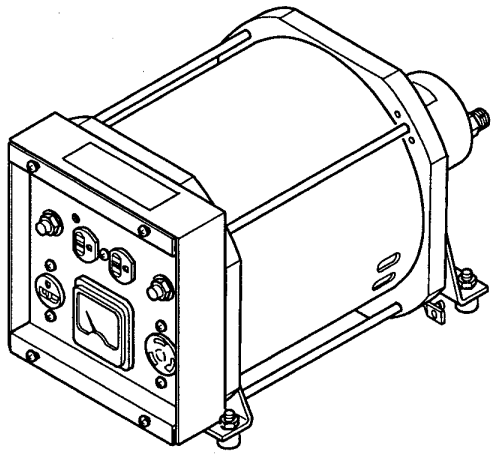
AL35

Hydraulic Alternator



Safety, Operation and Maintenance
Service Manual

⚠ DANGER

SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS TOOL.

REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

STANLEY®

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CONTENTS

SERVICING THE AL35 Alternator: This manual contains safety, operation, and service instructions. Stanley Hydraulic Tools recommends that servicing of hydraulic tools, other than routine maintenance, be performed by an authorized and certified dealer. Please read the following warning.

⚠ DANGER

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REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your protection. Review them carefully before operating the tool and before performing general maintenance or repairs.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations.

GENERAL SAFETY PRECAUTIONS

- The alternator will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the alternator and hose before operation. Failure to do so could result in personal injury or equipment damage.
- Operator must start in a work area without bystanders. Keep bystanders clear of your work area. The operator must be familiar with the work area such as excessive slopes and dangerous terrain conditions.
- Establish a training program for all operators to ensure safe operation.
- Do not operate the alternator unless thoroughly trained or under the supervision of an instructor.
- Always wear safety equipment such as goggles, ear and head protection, and safety shoes at all times when operating the alternator.
- Never use tools near energized transmission lines. Know the location of buried or covered services before starting your work.
- Do not overreach. Maintain proper footing and balance at all times.
- Do not inspect or clean the alternator while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Always connect hoses to the alternator hose couplers before energizing the hydraulic power source. Be sure all hose connections are tight.
- Do not operate the alternator at oil temperatures above 140°F/60°C. Operation at higher temperatures can cause higher than normal temperatures at the tool which can result in operator discomfort.
- Never transport or carry the alternator with the unit energized and connected to electrical loads.
- Do not operate a damaged, improperly adjusted, or incompletely assembled alternator.
- Observe local and national electrical codes for load wiring. To prevent electrical shock from faulty equipment, ground the alternator. If ground bonding is required, connect a length of heavy wire between the alternator ground terminal and the ground bond point.
- Exercise reasonable caution to prevent electrical shock; do not operate the alternator with wet hands.
- Do not operate the alternator in rain or snow. Do not let the alternator get thoroughly wet.
- Do not connect the alternator to a building circuit. This could cause damage to the alternator or to electrical equipment in the building.

- Do not start the alternator with electrical loads connected and in a power "ON" state.
- Ensure that the alternator is at operating speed/voltage before connecting an electrical load.
- Only use hydraulic hose labeled and certified as non-conductive when using hydraulic tools on or near electrical lines. Failure to do so may result in death or serious injury.
- Before using hose labeled and certified as non-conductive, be sure the hose is maintained as nonconductive. The hose should be regularly tested for electric current leakage in accordance with your safety department instructions.
- A hydraulic leak or burst may cause oil injection into the body or other severe personal injury.
- Do not exceed specified flow and pressure for the alternator. Excess flow or pressure may cause a leak or burst.
- Do not exceed the rated working pressure of hydraulic hose used with the alternator. Excess pressure may cause a leak or burst.
- Check alternator hose couplers and connectors daily for leaks. Do not feel for leaks with your hands. Contact with a leak may result in severe personal injury.
- Do not lift or carry the alternator by the hoses. Do not abuse the hoses. Do not use kinked, torn or damaged hydraulic hose.
- Make sure hydraulic hoses are properly connected to the alternator before pressuring the hydraulic system. The system pressure hose must always be connected to the alternator IN port. The system return hose must always be connected to the alternator OUT port. Reversing the connections may cause reverse tool operation which can result in severe personal injury.
- Do not connect open-center hydraulic tools to closed-center hydraulic systems. This may result in loss of other hydraulic functions powered by the same system and/or may cause severe personal injury. *The AL35 alternator is an open-center hydraulic tool.*
- To avoid personal injury or equipment damage all tool repair maintenance and service must only be performed by authorized and properly trained personnel.

SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.

DANGER

This safety symbol may appear on the tool. It is used to alert the operator of an action that could place him/her or others in a life threatening situation.

⚠ WARNING

This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.

IMPORTANT

This safety symbol appears in these instructions to identify an action or condition that could result in damage to the tool or other equipment.

Always observe safety symbols. They are included for your safety and for the protection of the tool.

LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

TOOL STICKERS AND TAGS

Stickers and decals placed on the alternator at time of manufacture are shown to the right and on the next page. These stickers and decals have been placed on the alternator to aid the operator with safety and general maintenance.

The information listed on these stickers and decals must be legible at all times.

Always replace any sticker or decal that has become worn or damaged. Replacements are available from your Stanley distributor.

CAUTION

7-9 GPM/26-34 LPM
DO NOT EXCEED 2000 PSI/140 BAR

■DO NOT EXCEED SPECIFIED FLOW OR PRESSURE. ■USE CLOSED-CENTER TOOL ON CLOSED-CENTER SYSTEM. ■USE OPEN-CENTER TOOL ON OPEN-CENTER SYSTEM. ■CORRECTLY CONNECT HOSES TO TOOL 'IN' AND 'OUT' PORTS. ■IMPROPER HANDLING, USE OR MAINTENANCE OF TOOL COULD RESULT IN A LEAK, BURST, OR OTHER TOOL FAILURE. ■CONTACT AT A LEAK OR BURST CAN CAUSE OIL INJECTION INTO THE BODY. ■FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS PERSONAL INJURY.

03786

GPM Sticker - P/N 03786

HYDRAULIC REQUIREMENTS

HOSE REQUIREMENTS

Hydraulic hose types authorized for use with this unit are:

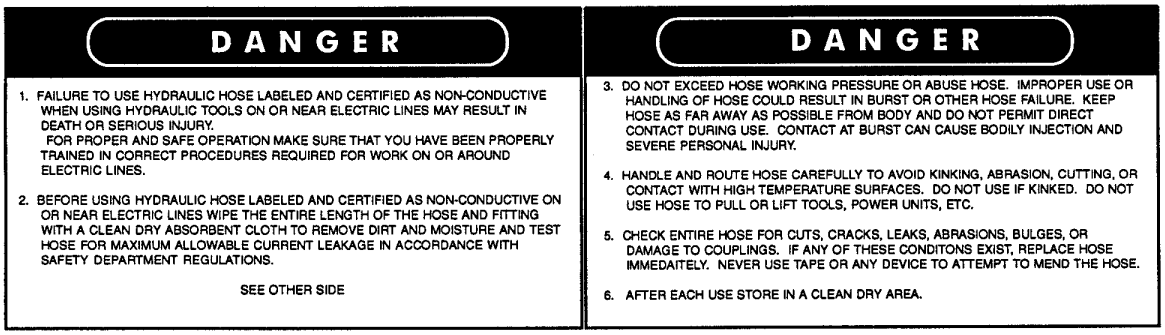
1. Certified non-conductive
2. Wire-braided (conductive)
3. Fabric-braided (not certified or labeled non-conductive)

Type 1 is the only hose authorized for use near electrical conductors. Hose types 2 and 3 are conductive and must never be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hose exceeding 6 feet in length purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

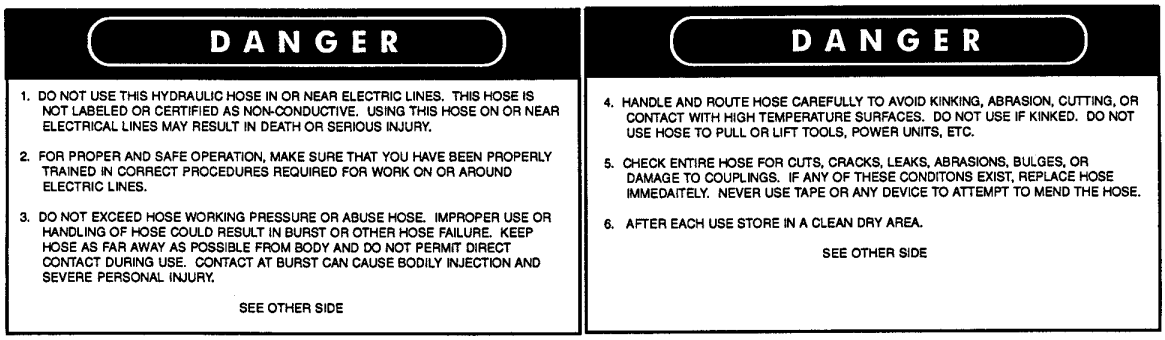
If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag may be obtained at no charge from the manufacturer or any dealer.

Certified Non-Conductive Hose Tag



SIDE 1 SIDE 2

Wire-/Fabric-Braided (not certified or labeled non-conductive) HoseTag



SIDE 1 SIDE2

HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose must be equal or higher than the relief valve setting on the hydraulic system used to power the alternator.

SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 7-9 gpm/26-34 lpm at an operating pressure of 2000 psi/140 bar.
- Recommended relief valve setting is 2100 psi/145 bar.
- No more than 250 psi/ 17 bar backpressure measured at the tool end of the operating hoses. System conditions for measurement are at maximum fluid viscosity of 400 ssu/82 centistokes (with minimum operating temperatures).
- Enough heat rejection capacity to limit the maximum oil temperature to 140°F/60°C at the maximum expected ambient temperature.
- Recommended minimum cooling capacity is 5 hp/3.73 kW at a 40° F/ 22°C difference between ambient temperature and oil temperature.
- Minimum of 25 micron filtration. Recommend using filter elements sized for a flow of at least 30 gpm/ 114 lpm for cold temperature startup and maximum dirt holding capacity.
- Hydraulic fluid should have a viscosity of 100-400 ssu/2-82 centistokes at the maximum and minimum expected operating temperatures. Petroleum-based hydraulic fluids with antiwear properties and a viscosity index over 140 ssu/28 centistokes will meet the recommended requirements over a wide range of operating temperatures.
- Recommended hose size is .500 inch/12 mm I.D. up to 50 ft/15 m long and .625 inch/16 mm I.D. minimum up to 100 ft/30 m long.

PRE-OPERATION PROCEDURES

Inspect ventilation holes to ensure they do not contain packing debris or other contaminants..

Electrical Ground

If required, ground the electrical load and alternator at the ground lug on the alternator frame, lower right (as viewed from the front).

Check Hydraulic Power Source

1. Using a calibrated flowmeter and pressure gauge, ensure that the hydraulic power source develops a flow of 7-9 gpm/26-34 lpm at 2000 psi/140 bar.

2. Ensure that the hydraulic power source has a relief valve set to open at 2100 psi/145 bar maximum.

Connect Hoses

1. Wipe all hose couplers with a clean lint-free cloth before making connections.

2. Connect the hoses from the hydraulic power source to the hose couplers on the alternator. Connect the return hose first, and disconnect it last, to minimize/avoid trapped pressure in the hydraulic motor on the alternator.

3. Observe flow indicators stamped on hose couplers to be sure that oil will flow in the proper direction. The female coupler is the inlet coupler.

Note: Pressure increase in uncoupled hoses left in the sun may result in making them difficult to connect. When possible, connect the free ends of operating hoses together.

OPERATION

CAUTION

In addition to the safety precautions listed on Page 2 and 3, observe the following cautions for equipment protection and care.

- Store the alternator in a clean dry space, safe from damage or pilferage.
- Do not exceed rated electrical load limits or use the alternator for applications beyond its design capacity.
- Protect the alternator from extremely dusty or wet conditions.
- Keep critical markings, such as Labels and Warning stickers legible.
- Replace hoses, couplings and other parts with replacement parts as identified in the parts list. Supply hoses must have a minimum working pressure rating of 2500 psi/175 bar.
- Only experienced personnel should perform repairs. When in doubt, return an assembly to the dealer for maintenance.
- Wipe all couplers clean before connecting. Use only lint-free cloths.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling the alternator. Failure to do so may result in damage to the quick couplers, and cause overheating of the hydraulic system.
- The alternator should be up to operating speed before connecting and applying power to the electrical load.
- For continuous operation, do not exceed the rated output power of 3500W.
- Do not exceed the current rating specified for the electrical outlet in use.
- Check fastener tightness often, and before each use daily.

OPERATING PROCEDURES

1. Observe all safety precautions.

CAUTION

Do not connect or otherwise apply power to an electrical load until the alternator has come up to speed.

2. Move the hydraulic circuit control to the "ON" position. As the alternator comes up to speed, a maximum electrical load of 3500W, single-phase 60-Hz alternating current, at 120-volts becomes available.

3. Connect the electrical loads.

CAUTION

Do not exceed the alternator's rated 3500W capacity.

Note: Output voltage is proportional to the RPM of the hydraulic motor.

COLD WEATHER OPERATION

Before using the alternator in cold weather, preheat the hydraulic oil at low engine speed. When using the normally recommended oils, oil should

CAUTION

Damage to the hydraulic system or alternator can result from use with oil that is too viscous or thick.

be at or above 50°F/10°C (400 ssu/82 centistokes) before use.

TROUBLESHOOTING

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation of the alternator, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the alternator as listed in the table. Use a flowmeter known to be accurate. Check the flow with the hydraulic oil temperature at least 80°F/ 27°C.

TROUBLESHOOTING CHART

PROBLEM	CAUSE	CORRECTION
Alternator does not run	Hydraulic power source not functioning	Check power source for proper flow and pressure (7-9 gpm/26-34 lpm, 1000-2000 psi/70-140 bar
	Couplers or hoses blocked	Locate and remove blockage
	Hyrevz motor failure	Inspect and repair
	Hydraulic lines not connected	Connect lines
No electrical output	Open circuit breaker	Reset circuit breaker
	Faulty receptacle	Replace receptacle
	Loose/broken wires	Locate and repair
	Loss of residual magnetism	Flash the Field (see Service Instructions later in this manual)
	Short circuit in rotor field or diodes	Return to Authorized Service Dealer
	Shorted AC or exciter stator windings	Check with Ohmmeter. Continuity should exist between black/white and red/red wires; no continuity from black/white to red wire or any wire to ground. If a short is found, replace the stator.

Continued...

TROUBLESHOOTING CHART, continued

PROBLEM	CAUSE	CORRECTION
Low output	Hyrevz motor speed too slow	Check for proper flow (7-9 gpm/26-34 lpm)
	Unbalanced or excessive load	Balance load between circuits; load should not exceed rated capacity
	High backpressure	Check for excessive backpressure (over 250 psi/ 17 bar).
	Couplers/hoses blocked	Locate and remove blockage
	Oil too hot/cold (above 150°F/66°C or below 50°F/10°C)	Check hydraulic power source for proper oil temperature. Bypass cooler to warm oil; or provide cooler to maintain proper temperature.
	Relief valve set too low	Adjust relief valve to 2100-2250 psi/145-155 bar
	Motor worn	Inspect; repair/replace
Output too high	Motor overspeeding	Check power unit for proper flow (7-9 gpm/26-34 lpm)
Alternator overheats	Overloaded	Reduce electrical load; load should not exceed rated capacity
	Air intake plugged or covered	Clear air intake
	Windings covered with dirt	Clean windings

SERVICE INSTRUCTIONS

Field Service of the alternator is very difficult beyond the level of replacing seals and bearings. If elements of the receptacle panel, motor, or the rotor/stator need repair, it is recommended that the assembly be sent to the nearest Authorized Service Dealer.

Note: For orientation of piece parts in the following procedures, refer to the location diagram in the PARTS LIST section of this manual.

RECEPTACLE PANEL REMOVAL AND REPLACEMENT

REMOVAL

1. Clean the exterior of the alternator and place on a clean work surface.

2. Remove the four 5/16-24 x 1/2 inch/1.27 cm machine screws and washers securing the receptacle panel assembly to the receptacle frame.

3. Locate the wire harness connected between the stator and the receptacle panel and unplug it.

4. The receptacle panel assembly can now be laid aside or its components individually inspected and serviced as required.

REPLACEMENT

1. Plug the wire harness from the stator to the receptable panel.

2. Install the receptacle panel onto the receptacle frame and secure with four 5/16-24 x 1/2 inch long Phillips head machine screws and washers.

CAUTION

When installing the receptacle panel assembly, make sure no wires are pinched under the cover. Bundle the wires and secure with tie wraps; otherwise they may come in contact with the rotor and become damaged.

ROTOR REMOVAL AND REPLACEMENT

REMOVAL

1. If the alternator has a handle, remove the nuts, washers, and feet which secure the frame to the alternator. Remove the handle from the alternator.

2. Perform the RECEPTACLE PANEL REMOVAL procedure.

3. Locate the capacitor in the receptacle box, tag and disconnect the two red wires connected to it.

4. Remove the four 1/4-20 x 9-1/2 inch/32 cm long stator bolts securing the stator between the receptacle and the outboard bearing bracket assembly and the inboard engine end adapter. Set the receptacle boxaside.

CAUTION

Excess pressure can fracture the molded bearing support on the rotor. Damage to the molded support requires replacement of the complete rotor assembly.

5. Using a soft-faced mallet, carefully and lightly tap around the outboard bearing bracket assembly from the inboard side until it is free of the stator.

6. Lift the stator free of the inboard engine end adapter and lay it aside.

7. Remove the rotor assembly from the motor drive shaft by loosening the rotor attaching capscrew using a typical thinwall 1/2-inch end wrench until the "C" washer drops out. Lift the rotor assembly up and away from the inboard engine end adapter. It may be necessary to loosen the capscrew (27) further against the rotor assembly to force the rotor assembly off the drive shaft.

REPLACEMENT

Note: Be sure all machined surfaces are clean, free of burrs and damage.

1. Turn the capscrew (27) about halfway into the drive shaft; then slip the rotor assembly onto the shaft.

2. Install the "C" washer onto the capscrew between the bolt head and the hydraulic motor drive shaft. Tighten the capscrew with a thinwall 1/2-inch end wrench.

3. Position the stator so that the vents are positioned down. Slip the stator over the rotor assembly and onto the inboard motor end adapter pilot. Seat into place by lightly tapping with a soft-faced mallet.

4. The webs of the outboard bearing bracket assembly resemble the letter "Y". Position the outboard bearing bracket assembly so the vertical portion of the Y is at the bottom of the bracket.

5. Align the outboard bearing bracket assembly stub shaft with the rotor assembly bearing inner race bore and the bearing bracket pilot with the stator.

CAUTION

Pressure or tapping on the bearing bracket assembly other than in the center, can fracture the molded bearing support on the rotor. Damage to the molded support requires replacement of the entire rotor assembly.

6. Carefully and lightly tap on the outboard bearing bracket assembly, center only, until the bracket seats on the stator.

7. Secure the stator between the outboard bearing bracket assembly and receptacle box and the inboard engine end adapter using the four 1/4-20 x 9-1/2 inch/32 cm long stator bolts and nuts .

Note: The stator bolt holes must line up on both surfaces.

8. Perform steps 1 and 2 of the RECEPTACLE PANEL REPLACEMENT procedure to complete the reassembly.

MOTOR REMOVAL, DISASSEMBLY, INSPECTION, CLEANING

Obtain Seal Kit, PN 07388, to replace all seals exposed during disassembly. Note orientation of seals before removing them. Install new seals in the same way.

REMOVAL

1. Perform steps 1 through 7 of the ROTOR REMOVAL procedure and lay the removed assemblies aside.

2. Remove the four 3/8-16 x 2 inch/51 mm long capscrews securing the inboard engine end adapter to the motor adapter plate.

3. Lift the motor and attached motor adapter plate up and away from the inboard engine end adapter.

4. Place the motor in a vise (with soft jaws or V-blocks) with the motor adapter up.

5. Remove the two 5/16-18 x 3/4 inch/19 mm long capscrews securing the motor adapter plate to the motor.

DISASSEMBLY

1. Place the motor in the vise so the soft jaws or V-blocks are around the bearing housing end with the drive shaft down.

2. Remove the eight 1/4-20 x 2-1/4 inch/57 mm long capscrews securing the gear housing assembly and bearing housing.

3. Using a flat-blade screwdriver or similar tool, gently pry the gear housing assembly away from the bearing housing. Lift the gear housing assembly straight up.

Note: Do not tilt the housing or pry on the flat surface inside of the surrounding groove. For prying, use only the groove provided at the split between the parts to prevent scratches on the inner mating surfaces.

4. Remove the idler gear, drive gear, needle roller key, and the idler shaft.

5. Remove the large o-ring while being careful not to damage the o-ring groove or surrounding surface.

6. Remove the bearing housing from the vise. While protecting the mating surface from damage, remove the retaining ring from around the bearing. Hold the bearing housing and tap lightly on the small diameter end of the drive shaft to remove it and the bearing from the front of the bearing housing.

CAUTION

Do not remove the ball bearing from the drive shaft unless it requires replacement; it can be damaged during removal.

7. To remove the bearing from the drive shaft, remove the retaining ring on the drive shaft next to the bearing. Press on the gear end of the drive shaft while supporting the outer race of the bearing. Discard the old bearing.

8. Remove the retaining ring at the bottom of the bearing bore to service the seal gland, o-ring and quad ring. Remove the seal gland using typical o-ring service tools to pry it out of its bore. Take care to avoid damaging the seal surfaces. Note seal orientation. Remove the o-ring from the outside of the seal gland. Remove the quad ring from the inside of the seal gland.

9. If the bushings are to be replaced, remove the four bushings from the bearing housing and gear housing assembly using a typical bushing removal tool with a 7/16 inch collet.

INSPECTION AND CLEANING

Inspect, and clean the following parts and assemblies with a degreasing solvent. Blow dry with compressed air and wipe clean. Use only lint-free cloths with a degreasing solvent.

⚠ WARNING

Use cleaning solvent in well ventilated areas. Avoid prolonged inhalation of vapors and prolonged or repeated contact with skin. Keep away from heat or open flame.

Gear Housing Assembly

The chamber bores and bottoms around the shaft bushings should be polished and not rough or grooved. If the bushing bores are yellow-bronze, replace them and investigate the cause of wear.

The flat surfaces at each end of the gear housing assembly should be flat and free of nicks or burrs that could cause misalignment or leaks.

Bushings

The inside of the bushings should be gray with some bronze showing through. If significant yellow-bronze shows, replace the bushings. Inspect drive shaft for corresponding wear and replace as required.

Gears

The drive gear and idler gear should have straight tips without nicks; square tooth ends and a smooth even polish on the teeth and end faces. Check for cracks between the drive gear keyway and gear tooth root. Replace the gear if cracks are present.

Bearing Housing

The surface near the gears should show two interconnecting polished circles without a step. The bottom of the o-ring groove should be smooth as should the rest of the flat surface.

The bore for the drive shaft seal (inside of the seal gland) should be smooth or oil leakage may occur. The bore in which the seal gland fits should also be smooth. Shake the bearing housing and a rattle should be heard. The bearing housing contains two seal check balls which are retained by hex socket type plugs. The hex socket plugs can be viewed from the outside of the bearing housing. The check balls and hex socket plugs are not field serviceable. The purpose of the seal balls is to prevent oil pressure from damaging the drive shaft seals in the event hydraulic system supply and return hoses are connected incorrectly (see CONNECT HOSES on page 7). If the balls do not rattle, this may mean they are jammed because of fluid contaminants. Replace the bearing housing.

Drive Shaft and Idler Shaft

Shaft diameters at bearing and seal locations must be smooth. Grooves, roughness or a reduced diameter indicate fluid contamination or damaged bushings. Grit particles may have been embedded in the bushings, grinding into the hardened shaft. If abnormal shaft wear as above occurs (more than

normal polishing), replace both the shaft and associated bushings.

Also check the hydraulic system for excess contamination in the fluid, and for filter condition. Operating conditions may require changing from a 25-micron filter to an oversized 10-micron filter.

RE-ASSEMBLY

Replace all exposed seals with new parts.

Apply clean grease or o-ring lubricant to all parts during reassembly.

1. Carefully install the quad ring into the groove on the inside of the seal gland. Carefully install the o-ring onto the smaller outside diameter of the seal gland and install the seal gland into the bore of the bearing housing. Replace the retaining ring.

2. To replace the bearing on the drive shaft, support the bearing inner race and press the drive shaft through the bearing inner race. Install the retaining ring next to the bearing on the shaft.

3. Install the bushings into the housings using a typical bearing pusher. Make sure the bushing is flush with the surface of the bearing housing. A protruding bushing will bind the gears.

4. Place the bearing housing on a smooth clean arbor press surface (protected from damage) with the large bearing bore facing up. Position the piece so a clearance hole exists for the insertion of the drive shaft.

5. Apply grease to the drive shaft and keyway; then insert it through the seal gland. Using a bearing pusher, or a sleeve/socket with a diameter of the bearing, press the bearing and drive shaft assembly into place. Press only on the outer race. Install the bearing retaining ring.

6. Install the needle roller in the keyway of the drive shaft. Use grease to keep the needle roller in place. Slide the drive gear over the needle roller and drive shaft. Install the idler shaft and idler gear.

CAUTION

Do not force parts together.

7. Apply grease to the face seal o-ring groove; then install the o-ring.

8. Note the screw hole pattern on the bearing housing and the gear housing assembly. They will only assemble one way. With all parts aligned, carefully slide the gear housing assembly over the gears until it contacts the bearing housing.

9. Turn the drive shaft manually to check for free rotation. Install the eight 1/4-20 x 2-1/4 inch/ 57 mm long capscrews and tighten to 100-120 in-lbs torque. Recheck rotation.

10. Connect the motor to a hydraulic power source and check for smooth running.

Note: Make sure the hydraulic power source is running at the lowest gpm/lpm rate it can while still producing full pressure.

11. Motors will sometimes be tight and require "break-in". Accomplish this by turning the drive shaft with a wrench while applying hydraulic pressure. Turn the shaft both with and against the hydraulic pressure until the Hyrevz motor starts and runs freely.

⚠ WARNING

During the break-in procedure, maintain a firm grip on the wrench while hydraulic power is applied to the motor. Loosing your grip may result in injury.

REPLACEMENT

1. Place the motor in a soft-jawed vise. Install the motor on the motor adapter plate using the two 5/16-18 x 3/4 inch/19 mm long capscrews.

2. Secure the motor adapter plate to the inboard engine end adapter using the four 3/816 x 2 inch/ 51 mm long capscrews,

3. Perform steps 1 through 8 of the ROTOR REPLACEMENT procedure to complete the reassembly.

FLASHING THE FIELD

This procedure establishes residual magnetism in the field windings, to provide start-up excitation and proper output voltage levels.

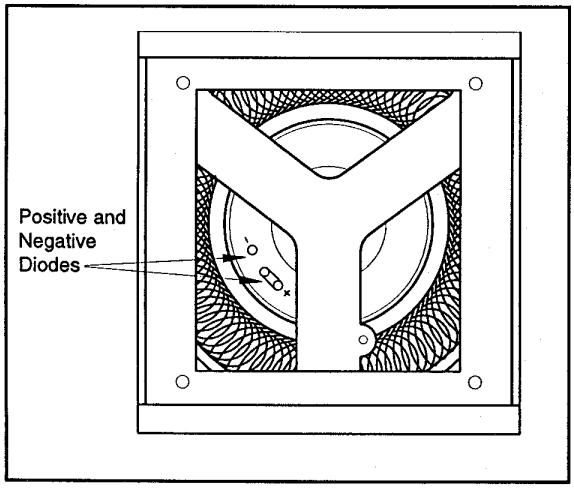
1. Stop the alternator.

2. Remove the receptacle panel.

3. Using a 12 volt automotive battery, touch the positive lead to the positive (+) diode set with the white or silver band, located on the rotor assembly. At the same time touch the negative lead to the negative (-) diode. Hold the leads against the diodes for 2-4 seconds.

NOTE: Do not reverse the polarity of the leads. This may cause damage to the diodes or the rotor or both.

4. Replace the receptacle panel and start the alternator.



Diode Location

PREVENTATIVE MAINTENANCE SCHEDULE

In Dirty or Moist Environments - 90 Day Intervals

If the unit is operated or stored in a dirty, moist, or salt moisture environment, the electrical contacts, rotor and stator should be inspected and cleaned every 90 days or more frequently as deemed necessary.

In Clean, Dry Environments - 12 Month Intervals

If the unit is operated or stored in a clean and dry environment, the electrical contacts, rotor, and stator should be inspected and cleaned every 12 months or more frequently as deemed necessary.

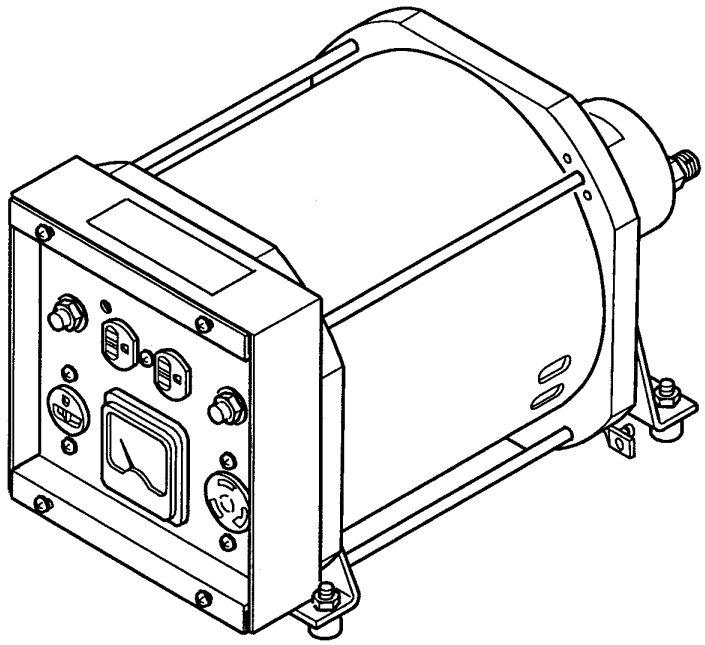
No other preventative maintenance is required.

SPECIFICATIONS

The AL35 is a hydraulic motor powered electrical alternator, designed to provide power for lights, small power tools, and small appliances. It produces 3500 watts of power at a nominal 120/240 volts a.c. single phase at 60 Hertz frequency. The unit requires hydraulic power delivered at 7-9 gallons per minute (gpm) with pressure up to 2000 pounds per square inch (psi).

SPECIFICATIONS

Capacity	3500W 120/240V, 60-Hz at 8 gpm/30 lpm Input
Outlets	240V/15A, 120V/20A, 120V/15A Duplex
Pressure Range	2000 psi/140 bar
Flow Range	7-9 gprn/26-34 lpm
Optimum Flow	8 gpm/30 lpm
Porting	10 SAE O-ring
Connect Size and Type	1/2 NPT Pipe Fitting
Weight	70 lb/31.8 kg
Overall Length	19 inches/47.9 cm
Width	9 inches/22.7 cm
Height	10 inches/25.4 cm
Motor	Stanley Hyrevz PN-21446



NOTE: Weights, dimensions and operating specifications listed on this sheet are subject to change without notice. Where specifications are critical to your application, consult the factory.

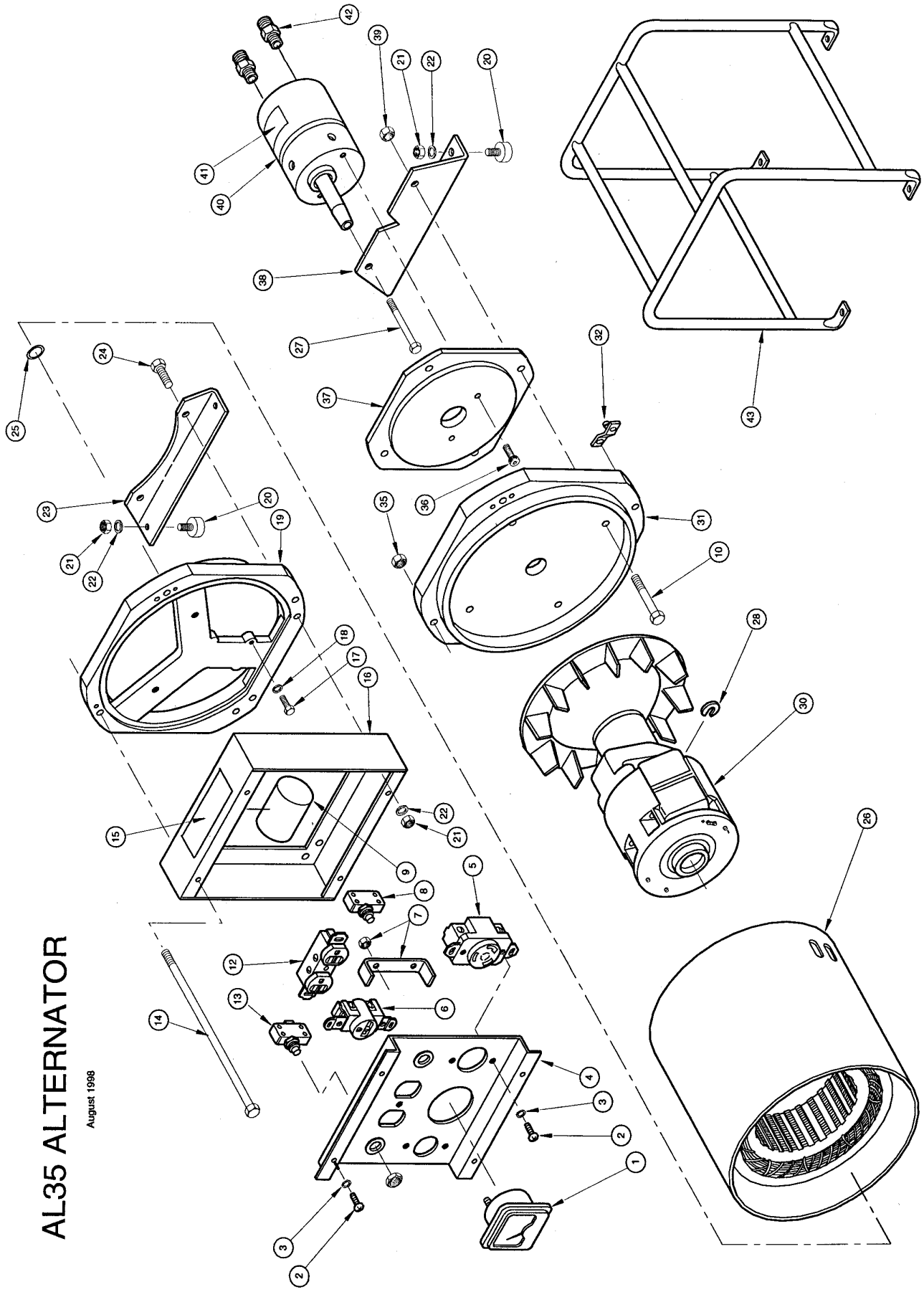
AL35 PARTS LIST

Item No	Part No	Qty	Description
1	15100	1	Voltmeter
2	COM*	4	Phillips Head Machine Screw, 5/16-24 x 1/2
3	COM*	4	Washer
4		1	Receptacle Panel
5	15101	1	Receptacle, 30A, 120V
6	15103	1	Receptacle, 15A, 240V
7	----	--	included with Item 1
8	15106	1	Circuit Breaker, 30A
9	32535	1	Capacitor
10	05734	4	Capscrew, 3/8-16 x 2 Hex Head
11	04353	4	Esna Nut, 3/8-16
12	15102	1	Receptacle, 15A, 120V
13	15105	1	Circuit Breaker, 15A
14	12692	4	Stator Bolt 11" long
15	12735	1	Nametag
16	26604	1	Receptacle Box
17	COM*	1	Capscrew
18	COM*	1	Lockwasher
19	26607	1	Outboard Bearing Bracket Ass'y
20	05351	4	Foot
21	00429	6	Hex Nut 5/16-18
22	03031	6	Washer 5/16

Item No	Part No	Qty	Description
23	12628	1	Mounting Bracket - short
24	21315	2	Capscrew, 5/16-18x1-1/4 Hex Head
25	00171	1	O-ring
26	35237	1	Stator Assy
27	12690	1	Capscrew
28	12691	1	"C" Washer
29	------	---	No Item
30	35236	1	Rotor Assembly
31	26606	1	Adapter, Inboard Engine End
32	12694	1	Grounding Lug
33	------	---	No Item
34	------	---	No Item
35	20051	4	Nut, Lockwasher 1/4-20
36	02688	2	Capscrew 5/16-18x3/4 Hex Socket Head
37	05325	1	Motor Adaptor
38	12622	1	Mounting Bracket - Tall
39	04353	4	Esna Nut
40	21446	1	Hyrevz Motor Assembly
41	03786	1	Sticker, GPM
42	00936	2	Adaptor
43	13427	1	Frame Weldment

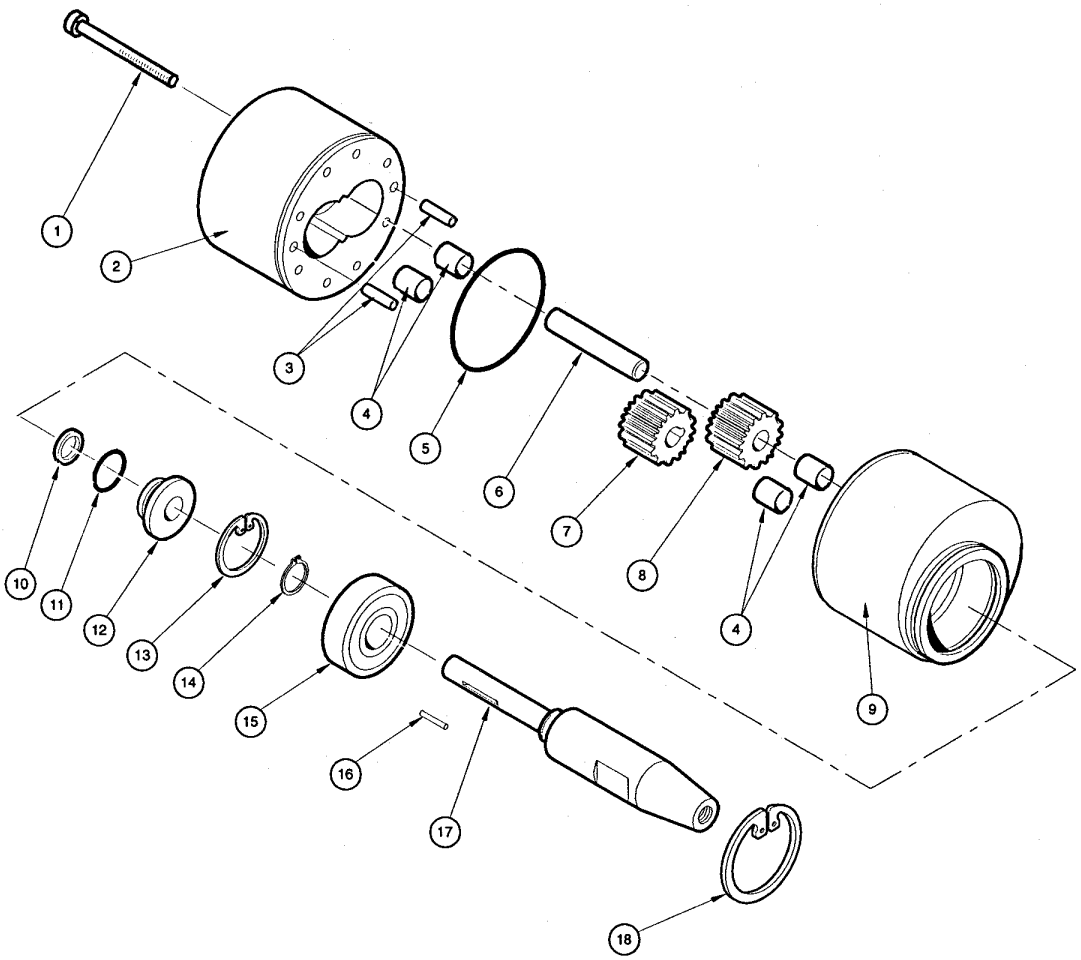
COM* indicates common parts available through local sources

NOTE: Use Part Number, Part Name and Serial Number when ordering.



AL35 Alternator Exploded View

AL35 HYDRAULIC MOTOR PARTS LIST

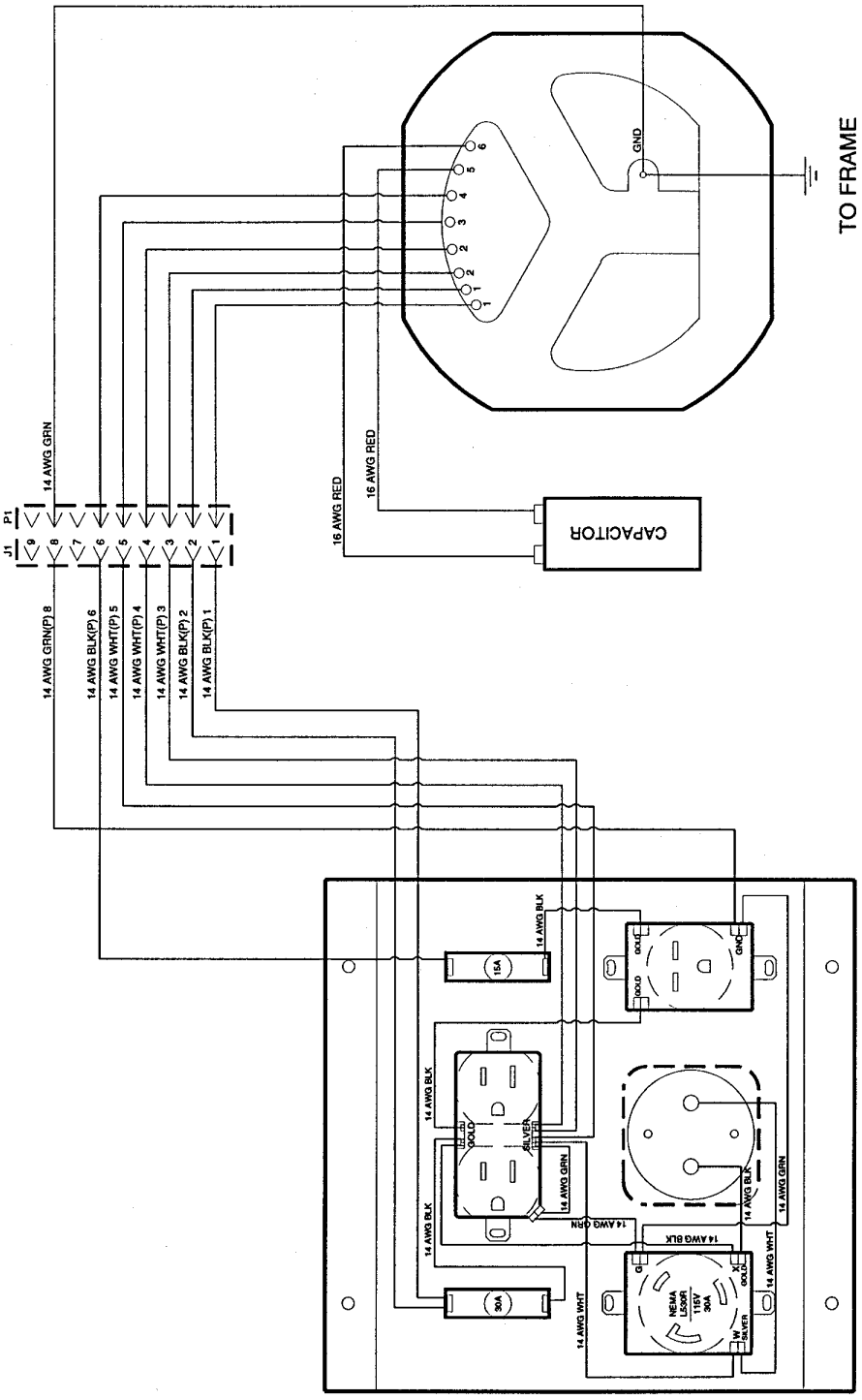


Item No	Part No	Qty	Description
1	00120	8	Capscrew, 1/4-20x2-1/4 HSH
2	07386	1	Gear Housing Assembly
3	00713	2	Dowel Pin
4	06316	4	Bushing
5	00178	1	O-ring*
6	06854	1	Idler Shaft
7	06853	1	Drive Gear
8	06855	1	Idler Gear
9	21432	1	Bearing Housing Assembly
10	00669	1	Quad Ring*
11	00171	1	O-ring*
12	19884	1	Seal Gland
13	00170	1	Retaining Ring
14	00708	1	Retaining Ring
15	00148	1	Bearing
16	06881	1	Needle Roller
17	24216	1	Drive Shaft
18	00166	1	Retaining Ring

NOTE: Use Part Number, Part Name and Serial Number when ordering.

* indicates parts found in replacement Seal Kit

AL35 Hydraulic Motor Assembly Exploded View



NOTE
1. RECEPTACLE TERMINALS ARE DRAWN AS SEEN FROM THE BACK.

AL35 Wiring Diagram

REVISION INFORMATION

SERVICE MANUAL 16798, dated 08/98, Ver 2: The service manual (this manual) provided with the model AL35095 Alternator featuring no brushes. This model was introduced in June of 1995.

SERVICE MANUAL 16798, dated 7/89: The service manual provided with the model AL35000 Alternator (with brushes) at time of introduction.

WARRANTY

Stanley Hydraulic Tools (hereinafter called "Stanley"), subject to the exceptions contained below, warrants new hydraulic tools for a period of one year from the date of sale to the first retail purchaser, or for a period of 2 years from the shipping date from Stanley, whichever period expires first, to be free of defects in material and/or workmanship at the time of delivery, and will, at its option, repair or replace any tool or part of a tool, or new part, which is found upon examination by a Stanley authorized service outlet or by Stanley's factory in Milwaukie, Oregon to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP.

EXCEPTIONS FROM WARRANTY

NEW PARTS: New parts which are obtained individually are warranted, subject to the exceptions herein, to be free of defects in material and/or workmanship at the time of delivery and for a period of 6 months after the date of first usage. Seals and diaphragms are warranted to be free of defects in material and/or workmanship at the time of delivery and for a period of 6 months after the date of first usage or 2 years after the date of delivery, whichever period expires first. Warranty for new parts is limited to replacement of defective parts only. Labor is not covered.

FREIGHT COSTS: Freight costs to return parts to Stanley, if requested by Stanley for the purpose of evaluating a warranty claim for warranty credit, are covered under this policy if the claimed part or parts are approved for warranty credit. Freight costs for any part or parts which are not approved for warranty credit will be the responsibility of the individual.

SEALS & DIAPHRAGMS: Seals and diaphragms installed in new tools are warranted to be free of defects in material and/or workmanship for a period of 6 months after the date of first usage, or for a period of 2 years from the shipping date from Stanley, whichever period expires first.

CUTTING ACCESSORIES: Cutting accessories such as breaker tool bits are warranted to be free of defects in material and or workmanship at the time of delivery only.

ITEMS PRODUCED BY OTHER MANUFACTURERS: Components which are not manufactured by Stanley and are warranted by their respective manufacturers.

a. Costs incurred to remove a Stanley manufactured component in order to service an item manufactured by other manufacturers.

ALTERATIONS & MODIFICATIONS: Alterations or modifications to any tool or part. All obligations under this warranty shall be terminated if the new tool or part is altered or modified in any way.

NORMAL WEAR: any failure or performance deficiency attributable to normal wear and tear such as tool bushings, retaining pins, wear plates, bumpers, retaining rings and plugs, rubber bushings, recoil springs, etc.

INCIDENTAL/CONSEQUENTIAL DAMAGES: To the fullest extent permitted by applicable law, in no event will STANLEY be liable for any incidental, consequential or special damages and/or expenses.

FREIGHT DAMAGE: Damage caused by improper storage or freight handling.

LOSS TIME: Loss of operating time to the user while the tool(s) is out of service.

IMPROPER OPERATION: Any failure or performance deficiency attributable to a failure to follow the guidelines and/or procedures as outlined in the tool's operation and maintenance manual.

MAINTENANCE: Any failure or performance deficiency attributable to not maintaining the tool(s) in good operating condition as outlined in the Operation and Maintenance Manual.

HYDRAULIC PRESSURE & FLOW, HEAT, TYPE OF FLUID: Any failure or performance deficiency attributable to excess hydraulic pressure, excess hydraulic back-pressure, excess hydraulic flow, excessive heat, or incorrect hydraulic fluid.

REPAIRS OR ALTERATIONS: Any failure or performance deficiency attributable to repairs by anyone which in Stanley's sole judgement caused or contributed to the failure or deficiency.

MIS-APPLICATION: Any failure or performance deficiency attributable to mis-application. "Mis-application" is defined as usage of products for which they were not originally intended or usage of products in such a matter which exposes them to abuse or accident, without first obtaining the written consent of Stanley. PERMISSION TO APPLY ANY PRODUCT FOR WHICH IT WAS NOT ORIGINALLY INTENDED CAN ONLY BE OBTAINED FROM STANLEY ENGINEERING.

WARRANTY REGISTRATION: STANLEY ASSUMES NO LIABILITY FOR WARRANTY CLAIMS SUBMITTED FOR WHICH NO TOOL REGISTRATION IS ON RECORD. In the event a warranty claim is submitted and no tool registration is on record, no warranty credit will be issued without first receiving documentation which proves the sale of the tool or the tools' first date of usage. The term "DOCUMENTATION" as used in this paragraph is defined as a bill of sale, or letter of intent from the first retail customer. A WARRANTY REGISTRATION FORM THAT IS NOT ALSO ON RECORD WITH STANLEY WILL NOT BE ACCEPTED AS "DOCUMENTATION".

NO ADDITIONAL WARRANTIES OR REPRESENTATIONS

This limited warranty and the obligation of Stanley thereunder is in lieu of all other warranties, expressed or implied including merchantability or fitness for a particular purpose except for that provided herein. There is no other warranty. This warranty gives the purchaser specific legal rights and other rights may be available which might vary depending upon applicable law.

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