

MODEL NO.

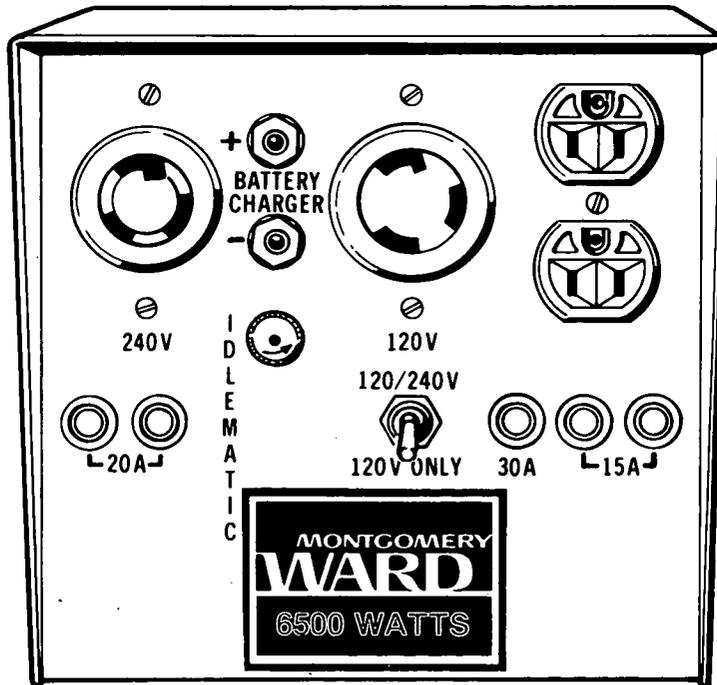
MX-76806A
MX-76811A

FORM NO.
89M-651B*(1)

6500 WATT PORTABLE ALTERNATOR

MONTGOMERY
WARD

owner's guide



SERVICE NATIONWIDE



HOW TO OBTAIN REPLACEMENT PARTS AND SERVICE

The merchandise you have purchased from us has been carefully engineered and manufactured under Wards rigid quality standards and should give you satisfactory and dependable operation. However, like all mechanical merchandise, it may occasionally require adjustment, replacement parts or maintenance. Should you ever need technical assistance or parts, please contact or write your nearest Wards Retail Store, Central Service Center, Catalog Store or Catalog House.

provide the following:

1. Model, serial number and all of the other data shown on the model plate.
2. The date and the Wards branch from which you purchased your merchandise.
3. State briefly the trouble you are having.
4. Also give the part number or numbers as shown in the parts list that came with the product.

Replacement Parts will be made available at current prices. If requested, prices will be quoted in advance when not listed.

If you order parts by mail, you will pay the transportation charges from the shipping point.

FORM NO. 89M-651B*(1)

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Safety Precautions

The following symbols in this manual signal potentially dangerous conditions to the operator or equipment. Read this manual carefully. Know when these conditions can exist. Then, take necessary steps to protect personnel as well as equipment.

WARNING This symbol is used throughout this manual to warn of possible serious personal injury.

CAUTION This symbol refers to possible equipment damage.

Fuels, electrical equipment, batteries, exhaust gases and moving parts present potential hazards that could result in serious, personal injury. Take care in following these recommended procedures.

- **Use Extreme Caution Near Gasoline. A constant potential explosive or fire hazard exists.**

Do not fill fuel tank with engine running. Do not smoke or use open flame near the unit or the fuel tank.

Have a fire extinguisher nearby. Be sure extinguisher is properly maintained and be familiar with its proper use. Extinguishers rated ABC by the NFPA are appropriate for all applications. Consult the local fire department for the correct type of extinguisher for various applications.

- **Guard Against Electric Shock**

Disconnect electric power before removing protective shields or touching electrical equipment. Use rubber insulative mats placed on dry wood platforms over floors that are metal or concrete when around electrical equipment. Do not wear damp clothing (particularly wet shoes) or allow skin surfaces to be damp when handling electrical equipment.

Jewelry is a good conductor of electricity and should be removed when working on electrical equipment.

DO NOT PLUG PORTABLE ALTERNATOR DIRECTLY INTO A HOUSE RECEPTACLE TO PROVIDE EMERGENCY POWER. It is possible for current to flow from alternator into the utility line. This creates extreme hazards to anyone working on lines to restore power.

Use extreme caution when working on electrical components. High voltages can cause severe injury or death.

Follow all state and local electrical codes. Have all electrical installations performed by a qualified licensed electrician.

- **Do Not Smoke While Servicing Batteries**

Lead acid batteries emit a highly explosive hydrogen gas that can be ignited by electrical arcing or by smoking.

- **Exhaust Gases Are Toxic**

Engine exhaust contains CARBON MONOXIDE, a dangerous gas that is potentially lethal. Avoid carbon monoxide inhalation by operating the alternator outdoors where exhaust gases can be discharged directly into the open air.

Do not operate the alternator in any type of enclosure that could allow exhaust gases to accumulate. Direct exhaust away from areas where people are gathered and away from buildings or enclosures.

- **Keep The Unit And Surrounding Area Clean**

Remove all oil deposits. Remove all unnecessary grease and oil from the unit. Accumulated grease and oil can cause overheating and subsequent engine damage and may present a potential fire hazard.

Do NOT store anything on the alternator such as oil cans, oily rags, chains, wooden blocks, etc. A fire could result or the alternator operation may be adversely affected. Keep the set clean and dry.

- **Protect Against Moving Parts**

Avoid moving parts of the unit. Loose jackets, shirts or sleeves should not be worn because of the danger of becoming caught in moving parts.

Make sure all nuts and bolts are secure. Keep power shields and guards in position.

If adjustments must be made while the unit is running, use extreme caution around hot manifolds, moving parts, etc.

Do not work on this equipment when mentally or physically fatigued.

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WARNING

MANUFACTURER RECOMMENDS THAT ALL SERVICE INCLUDING INSTALLATION OF REPLACEMENT PARTS BE DONE BY QUALIFIED ELECTRICAL AND/OR MECHANICAL SERVICE PERSONNEL. TO PREVENT POSSIBLE INJURY AND/OR EQUIPMENT DAMAGE IT IS IMPORTANT THAT ALL SERVICE PERSONNEL BE QUALIFIED.

Specifications

GENERAL

Electric Start Model	
Model Number	MX-76806A
Article Number	89-76806R
Manual Start Model	
Model Number	MX-76811A
Article Number	89-76811R
Nominal Dimensions	
Height	21.4 in. (54.4 cm)
Width	24.3 in. (61.7 cm)
Length	36.0 in. (91.4 cm)
Weight	225 lbs. (102 kg)

ENGINE DETAILS

Engine Design	Four Cycle, Air-cooled, Horizontally Opposed
Horsepower (bhp)	16.0
Number of Cylinders	2
Displacement	43.3 cu. in. (713 cm ³)
Engine Speed	3600 RPM

GENERATOR DETAILS

Generator Design	Revolving Field, 2-pole, Single Phase
Maximum Power Rating	6,500 watts
Output Voltage (AC)	120/240

CAPACITIES AND REQUIREMENTS

Recommended Fuel	Nonleaded Gasoline
Oil Capacity	
Electric Start	1.75 qts.
Manual Start	2.0 qts
Battery Requirements (Electric Start Model)	One 12 Volt Battery
BCI Group	U1
Cranking Perf. at 0° F	220 Amps
Amp Hr. 20 Hr. Rating	32 AH

TUNE-UP SPECIFICATIONS

Spark Plug Gap025 in. (.64 mm)
Breaker Points Gap (Cold)021 in. (.53 mm)
Ignition Timing (Static)	21° BTC

ASSEMBLY TORQUES

Cylinder Head Stud Nuts (Cold)	17 lb-ft (24.0 N•m)
Spark Plug	17 lb-ft (24.0 N•m)

Operation

ABOUT THIS MANUAL

This manual provides complete information for operating, maintaining, and adjusting the alternator. Study this manual carefully and observe all warnings and cautions. Using the alternator properly and following a regular maintenance program will result in longer alternator life, better performance, and safer operation.

INITIAL START

Fill the engine crankcase with oil and the fuel tank with fuel before attempting to operate the alternator. Refer to the MAINTENANCE section for the lubricating oil and fuel recommendations. In addition, inspect new units for loose, missing, or damaged parts and correct as required.

WARNING

Do not permit any flame, cigarette, or other igniter near the fuel system.

Fuel is highly flammable and potentially explosive and could result in severe personal injury or death.

LOCATION

Operate the alternator outdoors where the exhaust gases and engine waste heat can be discharged directly into the open air. Do not operate the alternator in-doors or in any type of enclosure that may allow exhaust fumes to accumulate. Do not operate the alternator near an open window, door, air intake, or any other place where exhaust gases may enter the interior of a building.

BATTERY CONNECTIONS (Electric Start Models)

A 12 volt battery is required for the electric start model alternators. A 32 AMP hour lead-acid battery (BCI Group U1) is recommended.

Fasten positive (+) and negative (-) cables to corresponding battery terminals. Attach negative cable last to prevent the possibility of arcing.

WARNING

ENGINE EXHAUST GAS (CARBON MONOXIDE) IS DEADLY!

Carbon monoxide is an odorless, colorless gas formed by incomplete combustion of hydrocarbon fuels. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. Some of the symptoms or signs of carbon monoxide inhalation are:

- *Dizziness*
- *Intense Headache*
- *Weakness and Sleepiness*
- *Vomiting*
- *Muscular Twitching*
- *Throbbing in Temples*

If you experience any of the above symptoms, get out into fresh air immediately.

The best protection against carbon monoxide inhalation is proper installation and regular, frequent inspections of the complete exhaust system. If you notice a change in the sound or appearance of exhaust system, shut the unit down immediately and have it inspected and repaired by a competent mechanic.

GROUNDING REQUIREMENTS

The alternator has all non-current carrying metal parts electrically bonded and solidly connected to the alternator neutral to meet National Electric Code requirements for portable AC alternators. Local code enforcement officials may require that the alternator frame be electrically connected to a grounding electrode (water pipe, earth-driven grounding rod, etc.) during operation. A grounding lug (see Figure 1) has been provided for connecting the alternator frame to a grounding electrode conductor if required.

WARNING *If faulty electrical equipment is connected to the alternator, an electrical shock hazard exists which could result in serious personal injury or death. Check all electrical equipment for frayed cords or breaks in the insulation before using.*

Properly maintain all electrical equipment used with the alternator. As a minimum measure of protection, use only 3-wire or double insulated equipment. All 3-wire equipment must be used only with properly maintained 3-wire extension cords. Additional backup protection (in case of a faulty equipment grounding wire or flawed insulation) can be provided by Ground Fault Circuit Interrupters (GFCI's). It is recommended that where moisture or faulty cord-and-plug equipment may represent a hazard, GFCI's be used in addition to (but not instead of) the protection provided by 3-wire equipment or double insulation.

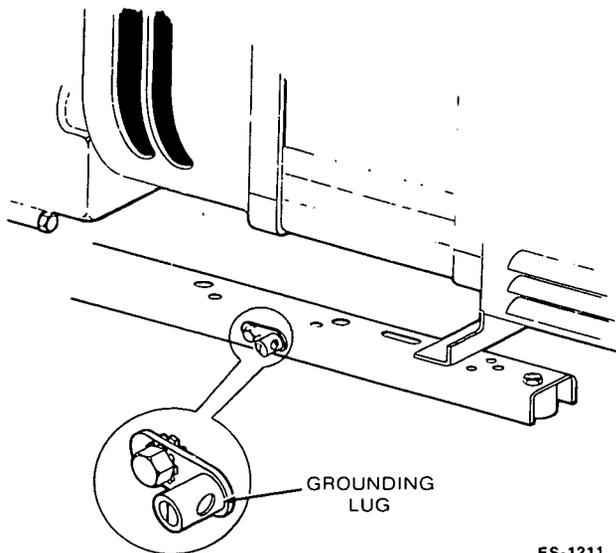


FIGURE 1. GROUNDING CONNECTION

STARTING/STOPPING

The following sections cover starting and stopping the alternator.

New engines sometimes fail to start because the rust inhibitor oil used at the factory during assembly may have fouled the spark plugs. Remove the spark plugs

and clean in a suitable solvent. Dry the plugs thoroughly and reinstall. Heavy exhaust smoke when the engine is first started is normal and is caused by the rust inhibitor oil.

Manual Start

Manual start models have a recoil type rope starter mounted on the front of the engine. Electric start models have a rope sheave at the front of the engine for manual starting if necessary. Wind the pull rope around the sheave for each starting attempt. Use the following procedure to start the engine:

1. Pull choke control all the way out unless the engine is already warm from previous operation. Manual start models have the choke knob located near the front of the engine. Electric start models have the choke knob located near the receptacle panel as shown in Figure 2.

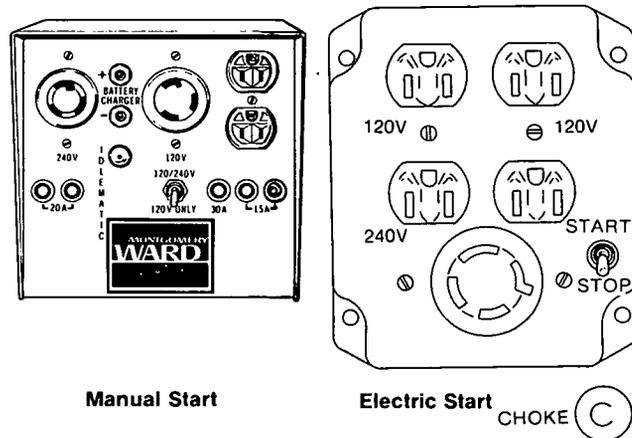


FIGURE 2. RECEPTACLE PANELS

2. On electric start models, place the Start/Stop switch in the center (run) position.
3. Pull the starting rope with a fast steady pull to crank the engine. Do not jerk the rope or let it snap back into the rewind mechanism.
4. Push the choke control all the way in as soon as the engine starts.

Electric Start

Refer to Figure 2 for the location of the Start/Stop switch and choke control. Use the following procedure to start the engine:

1. Pull choke control all the way out unless the engine is already warm from previous operation.
2. Push the Start/Stop switch on the receptacle panel to the START position.
3. Release Start/Stop switch and push the choke control all the way in as soon as the engine starts.

Use short starting cycles (2 to 3 seconds) to provide the longest battery life. The battery is recharged during operation by a battery charger which is standard equipment on electric start models. The standard charger provides a constant charge rate of 1-1/2 to 3 amps during alternator operation.

Stopping

Manual Start Model: Push the stop button in (located at front of engine) and hold until set stops completely.

Electric Start Model: Push the Start/Stop switch on the receptacle panel to the STOP position.

CONNECTING A LOAD

If practical, allow the alternator to warm up before connecting a load. Receptacles are located on a panel on the end of the alternator as shown in Figure 2. Connect the load by inserting the load wire plugs into the proper output receptacle. Use the receptacle (120 volt **duplex**, 120 volt **twist lock**, or 240 volt **twist lock**) that corresponds to the equipment plug.

Power Output Rating

The alternator maximum power output is stamped on the nameplate. Do not exceed the maximum power output rating by connecting too many loads.

CAUTION *Continuous overloading will cause high operating temperatures that can damage the alternator. Keep load within the alternator's rating.*

To determine if the load is within the maximum power output rating of the alternator set, add up the wattage requirements of all the electrical loads that will be operated simultaneously. Most appliances or tools have the wattage requirements imprinted on the nameplate. Table 1 can be used as a guide if the wattage requirements are not listed on the equipment. The total should be LESS than the maximum power output rating of the alternator. See Derating section for factors that affect the maximum power output.

**TABLE 1
POWER REQUIREMENTS FOR APPLIANCES**

Appliance or Tool	Approximate Running Wattage
Air Conditioner	800-4000
Attic Fan	375
Battery Charger	Up to 800
Broiler	1325
Clothes Dryer	4500
Clothes Washer	250-1000
Coffee Percolator	550-700
Dishwasher (conventional)	300
Dishwasher (heating element)	1150
Electric Blanket	50-2000
Electric Broom	200-500
Electric Drill	250-750
Electric Frying Pan	1000-1350
Electric Iron	500-2000
Electric Saw	400-1500
Electric Stove (per element)	350-1000
Electric Water Heater	1000-1500
Electric Water Pump	500-600
Freezer	300-1000
Furnace Fan	225
Garbage Disposal Unit	325
Hair Dryer	350-500
Space Heater	1000-1500
Microwave Oven	700-1500
Oil Burner	250
Radio	50-200
Refrigerator	600-1000
Sump Pump	250-500
Television	200-600
Vacuum Cleaner	500-1500
Well Water Pump	250-1000

Circuit Breakers (Manual Start Model)

Circuit breakers are standard equipment on manual start sets. Circuit breakers limit current flow by opening when the current flow exceeds a specified amount. If a circuit breaker should open while the set is operating, locate and correct the cause of the overcurrent. When the problem is corrected, push the reset button to restore power to the circuit.

Voltage Selector Switch (Manual Start Model)

The voltage selector switch is standard equipment on manual start alternators. When the switch is in the 120

V ONLY position, power may be drawn from the single 120 volt **twist lock** receptacle and from the 120 volt **duplex** receptacle. When the switch is in the 120/240 V position, power may be drawn from the 240 volt **twist lock** receptacle and from the 120 volt **duplex** receptacle. The 120 volt **twist lock** receptacle should only be used when the selector switch is in the 120 V ONLY position. Drawing power simultaneously from the 120 and 240 volt **twist lock** receptacles will place an unbalanced load on the alternator.

Derating

The alternator maximum power output is based on operation at sea level at 60°F ambient temperature. When the alternator is operated at altitudes above sea level or at temperatures above 60°F, the power rating must be derated. The reduction in the power rating is necessary to compensate for the reduction in engine horsepower that occurs at higher altitudes or higher temperatures.

A general rule applies for derating an alternator because of changes in temperature or altitude. A one percent deration can be expected for every 10°F rise in temperature above 60°F (16°C). A 3.5 percent deration can be expected for every 1000 foot increase in altitude above sea level.

For example: A 6500 watt alternator operating at 80°F (27°C) ambient temperature and at 3000 feet above sea level should be derated by 12.5 percent or 813 watts.

$6500 - 813 = 5687$ (derated power output)

VOLTAGE BUILD UP

The AC voltage should quickly build up as soon as the alternator is started. If no AC voltage is present, it is possible that the alternator field laminations have lost their residual magnetism. This can happen when the alternator is not used for long periods of time or if the unit is dropped. Contact an authorized service center for assistance if no AC voltage is present.

BREAK-IN PROCEDURE

Controlled break-in with the proper oil and a conscientiously applied maintenance program will help to assure satisfactory service from your alternator. Break-in is as follows:

1. One half hour at 1/2 load (approximately 3,250 watts).
2. One half hour at 3/4 load (approximately 4,875 watts).

3. Change crankcase oil after the first 25 hours of operation.
4. Use regular grade leaded gasoline for the first 25 hours of operation.

The alternator is designed to operate with a load applied. When possible, avoid running the alternator for extended periods of time without a load, especially during the first 50 hours of operation. Failure to follow the recommended break-in procedure may result in poor piston ring seating.

HIGH/LOW OPERATING TEMPERATURES

The alternator will operate satisfactorily in both high (above 100°F/38°C) and low (below 0°F/-18°C) temperatures. Use the oil recommended in the MAINTENANCE section for the expected temperature conditions.

High Operating Temperatures

1. See that nothing obstructs air flow to and from the alternator.
2. Keep cooling fins clean. Cylinder air housings should be properly installed and undamaged.
3. Keep ignition timing properly adjusted.

Low Operating Temperatures

1. Use fresh gasoline and keep the tank filled to avoid condensation.
2. Keep the spark plug clean and correctly gapped.
3. Maintain the battery on electric start models in a well charged condition.

EXTREMELY DUSTY OR DIRTY CONDITIONS

Observe the following when operating the alternator in extremely dusty or dirty conditions:

1. Keep the alternator clean and do not allow dust and dirt to accumulate on the set.
2. Check the air cleaner element at least every 25 hours and replace if necessary.
3. Change the crankcase oil every 25 operating hours.
4. Keep oil and gasoline in dust-tight containers suitable for the storage of fuels.

OUT-OF-SERVICE PROTECTION

Protect a unit that will be out of service for more than 6 months as follows:

1. Run the engine until it reaches normal operating temperature.
2. Turn off the fuel supply and run the engine until it stops.
3. Drain oil from oil base while the engine is still warm. Refill with fresh crankcase oil and attach a tag stating viscosity used.

WARNING *Hot crankcase oil could cause burns. When draining the crankcase, take precautions such as wearing protective clothing to avoid splashing hot oil on skin or face.*

4. Remove spark plugs. Pour 1 ounce (2 tablespoons or 28 grams) of rust inhibitor or SAE #50 oil into the cylinders. Crank the engine over a few times. Reinstall spark plugs.
5. Service air cleaner as outlined in MAINTENANCE section.
6. Clean governor linkage and protect by wrapping with a clean cloth.
7. Tie a plastic bag over the exhaust outlet to prevent entrance of moisture, dirt, bugs, etc.
8. Wipe entire alternator. Coat rustable parts with a light film of grease or oil.
9. Provide a suitable cover for the entire unit.
10. If battery equipped, disconnect battery and store in a cool dry place.

To Return To Service

1. Remove cover and all protective wrapping. Remove plug from exhaust outlet.
2. Check tag on oil base and verify that oil viscosity is still correct for existing ambient temperatures.
3. Clean and check battery on electric start alternators. If the electrolyte level is low, add distilled water and charge. **DO NOT OVERCHARGE.**
4. Check that fuel filter and fuel lines are secure, with no leaks.

5. Remove spark plug and crank engine to clear any remaining oil from the combustion chamber. Check spark plug gap and reinstall.
6. Connect battery and start engine. After engine has started, blue smoke is exhausted until the excess oil has burned away.
7. After starting, apply load to at least 50 percent of the maximum power output.
8. Alternator is ready for service.

BATTERY CHARGER OPERATION (Optional Accessory)

The optional battery charger is designed for charging 12 volt batteries ONLY. It will provide 12 volts DC at 5-8 amps continuous charging current.

Before connecting battery to charger, check battery electrolyte level and add distilled water to battery if level is low. Check battery electrolyte level periodically during charging and add water if level drops.

CAUTION *When operating battery charger, the charging rate does not taper off as battery becomes recharged. DO NOT OVERCHARGE batteries as prolonged charging could cause the battery to boil dry and ruin battery.*

To use charger, connect cables as follows:

1. Connect the ten foot color coded charging cables to battery terminals, red to positive (+) and black to negative (-).
2. Connect charger cables to the red (+) and black (-) terminals on the receptacle panel. Always observe correct polarity, positive to positive (red to red) and negative to negative (black to black).
3. To disconnect charger, first remove cables from receptacle terminals. Do not disconnect charger cables at the battery while charger is operating to avoid creating sparks near the battery.

WARNING *Lead acid batteries emit highly explosive hydrogen gas which can be ignited by electrical arcing or a lighted cigarette. Do not smoke while charging or servicing batteries.*

Maintenance

Regularly scheduled maintenance is the key to lower operating costs and longer service life for the alternator. Use the time intervals shown in the Periodic Maintenance Schedule as a guide for regular maintenance.

However, actual operating conditions should be the determining factor in establishing a maintenance schedule. The maintenance time intervals must be reduced when operating in very dusty or dirty conditions or hot and cold temperature extremes.

Periodic Maintenance Schedule

SERVICE THESE ITEMS	AFTER EACH CYCLE OF INDICATED HOURS				
	Daily or after 8 hours	25	50	100	200
General Inspection	X ¹				
Check Oil Level	X				
Change Crankcase Oil		X ^{2,3}			
Service Air Cleaner Polyband Filter		X ³			
Change Oil Filter			X ³		
Clean Cooling Fins			X ³		
Clean Spark Arrester			X		
Replace Spark Plugs				X	
Inspect Breaker Points				X	
Clean Governor Linkage					X ³
Replace Air Cleaner Element					X
Adjust Valve Lash					X ⁴
Clean Crankcase Breather					X
Check Battery And Recharge	Monthly				
Clean Alternator Brushes	Yearly ⁴				

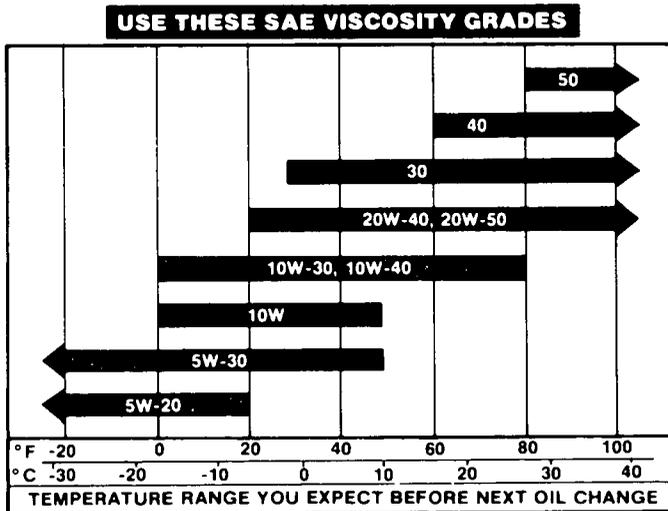
- 1 - Refer to Safe Operation: Inspection section of the manual.
- 2 - Sets with oil filter may extend oil change interval to 50 hours.
- 3 - Perform more often in extremely dusty or dirty conditions.
- 4 - Contact an authorized service center for service.

ALTERNATOR MAINTENANCE

The part of the alternator that generates electrical current normally needs little maintenance other than a yearly check of the brushes and collector rings by an authorized service center. If a major repair job on the alternator should become necessary, the electrical equipment must be checked by a competent electrician who is thoroughly familiar with the operation of electric alternators.

LUBRICATION SYSTEM

Use oil with the API (American Petroleum Institute) designation SE or SE/CC. Oil should be labeled as having passed MS Sequence Tests (also known as having passed ASTM-G-1V Sequence Tests). Refer to oil chart for recommended viscosity.



Oil consumption may be higher with a multigrade oil than with a single grade oil if both oils have comparable viscosities at 210° F (99° C). Therefore, single grade oils are generally more desirable, unless anticipating a wide range of temperatures.

Before adding oil, place the alternator on a level surface and clean the area around the oil plug or dipstick. Refer to the SPECIFICATIONS section for the engine oil capacity.

Oil Fill

Fill the crankcase until the oil reaches the FULL mark on the oil level indicator (see Figure 3). DO NOT OVERFILL. Overfilling may cause foaming and result in engine damage.

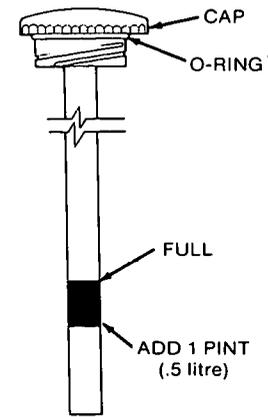


FIGURE 3. OIL LEVEL INDICATOR

Oil Level Check

Check the oil level daily or after every 8 operating hours and add as required. Check more frequently on a new or reconditioned engine as oil consumption is higher until the piston rings seat. Use the same brand of oil as in the crankcase when adding oil between changes. BE SURE OIL LEVEL IS MAINTAINED.

WARNING

Do NOT check oil while the alternator is operating. Hot oil could cause burns by blowing out of oil fill tube due to crankcase pressure.

Oil And Filter Change

Change the oil after the first 25 hours of operation. Thereafter, change oil at recommended intervals. Remove the oil drain plug and drain oil while the engine is warm. Replace drain plug. Remove oil level indicator and refill with new oil or the proper grade and viscosity. Replace oil level indicator. See Figure 4.

WARNING

Hot crankcase oil could cause burns. When draining the crankcase, take precautions such as wearing protective clothing to avoid splashing hot oil on skin or face.

Change the oil filter (manual start models) after every 50 hours of operation and more often in extremely dusty conditions. Place a pan under the filter and remove by turning counterclockwise. Coat new oil filter gasket lightly with oil and install filter. Turn clockwise until gasket touches mounting base and then tighten an additional 1/2 turn.

WARNING

Wipe up oil spills immediately to avoid an accident due to slipping.

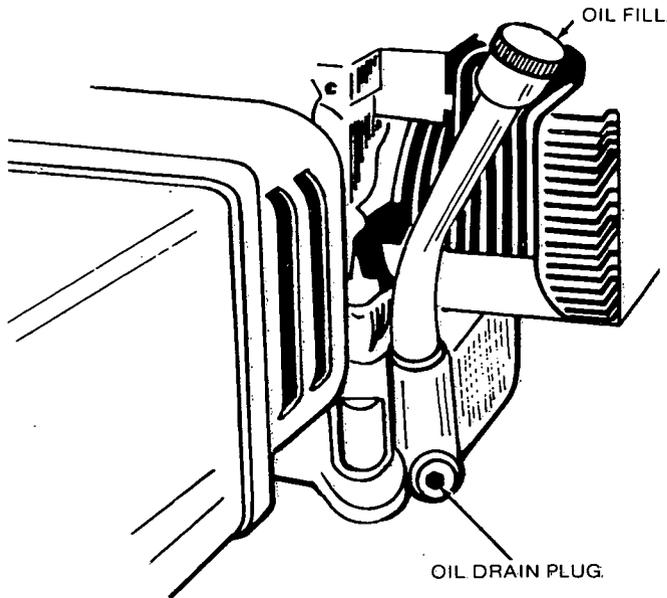


FIGURE 4. OIL CHANGE

FUEL SYSTEM

Use clean, fresh, unleaded or regular grade gasoline for fuel. Using unleaded gasoline will result in longer spark plug life and better overall performance. If regular grade gasoline is used, carbon and lead deposits must be periodically removed from the cylinder heads to avoid power loss. Do not use highly leaded premium fuels.

WARNING *If an engine is switched to unleaded gasoline after an extended period of operation with regular gasoline, all carbon and lead deposits must be removed from the cylinder heads. Failure to remove deposits could lead to preignition and result in damage to the engine if operated with unleaded gasoline.*

A remote fuel tank (see Figure 5) is standard equipment. Fill the tank with the recommended fuel and connect the fuel line to the tank using the quick disconnect fittings provided. Route the fuel line away from any hot exhaust system components or moving parts. Squeeze the primer bulb to pump fuel through the fuel line and to the carburetor.

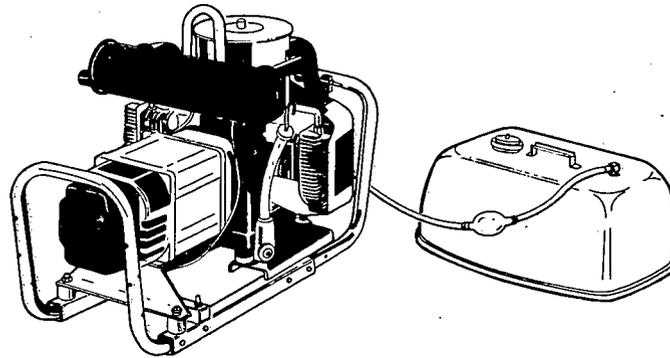


FIGURE 5. FUEL TANK

CAUTION *Hot engine parts create a potential fire hazard if fuel is spilled while filling the fuel tank. Stop the engine and allow the set to cool before filling. Leave some space in the tank for fuel expansion.*

Fuel Filter

Remove and replace the fuel filter after every 500 hours. When installing, make certain the inlet and outlet sides of the filter are consistent with the fuel flow. See Figure 6.

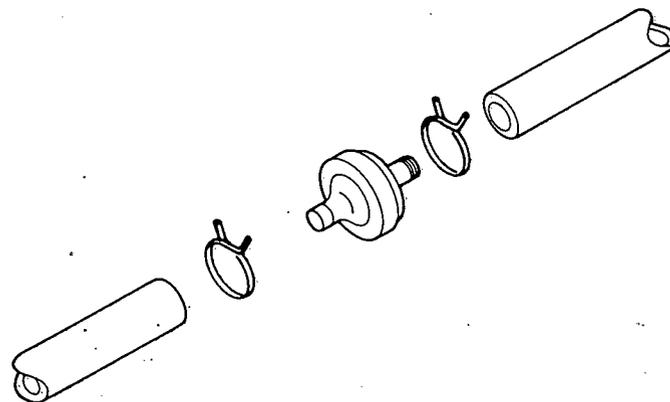


FIGURE 6. FUEL FILTER

SAFE OPERATION INSPECTION

Make a daily inspection of the alternator. Check for loose or missing parts or for damages that may have occurred during use. Inspect the following items making certain that all connections are secure and all fasteners are tight:

- Battery cable connections (electric start model)
- Fuel line and fittings
- Muffler and exhaust system
- Intake manifold cap screws
- Grounding strap
- Air cleaner wing nut
- Carburetor hold down screws
- Spark plug lead
- Inspect visually and audibly for exhaust leaks

COOLING SYSTEM

A flywheel blower fan cools the alternator by blowing air over the cylinder and cooling fins. The air path is directed by sheet metal shrouds and plates. These shrouds and plates must always be kept in place.

CAUTION *Do not operate alternator without shrouds and plates in place or engine will overheat.*

Check and clean (if necessary) the cooling fins at least every 50 hours of operation. Remove any dust, dirt or oil which may have accumulated.

CAUTION *Plugged or clogged cooling fins can cause overheating and engine damage.*

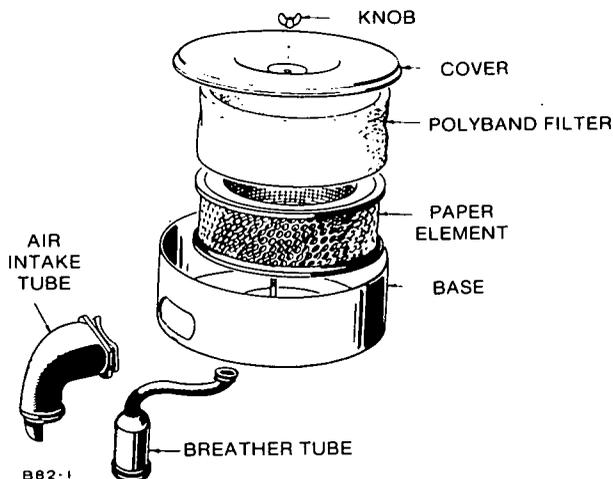


FIGURE 8. AIR CLEANER

GOVERNOR LINKAGE

The linkage must be able to move freely through its entire travel. Every 200 hours of operation, clean the joints and lubricate as shown in Figure 7. Also inspect the linkage for binding, excessive slack and wear.

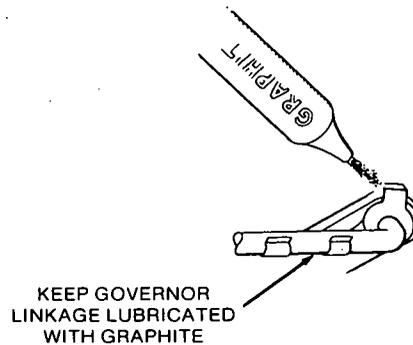
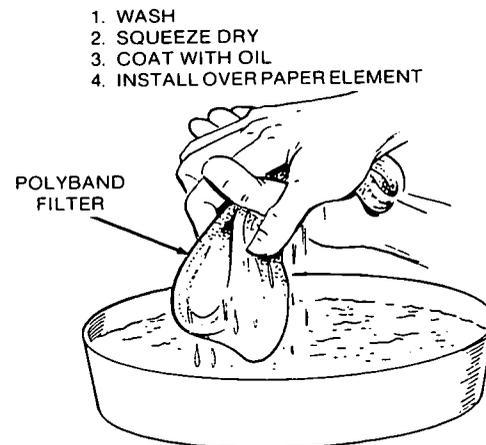


FIGURE 7. GOVERNOR LINKAGE

AIR CLEANER

Air Cleaner Polyband Filter: Wash in water and detergent and squeeze dry like a sponge. Allow to dry, then coat evenly with three tablespoons (42.5 grams) of SAE 30 engine oil. Knead into and wring excess oil from pre-cleaner. Reinstall over cartridge.

Air Cleaner Element: Check and clean air cleaner element every 100 hours. Clean by gently tapping element on a flat surface. Replace the element every 200 hours. Clean or replace more frequently in dusty operating conditions (see Figure 8).



CRANKCASE BREATHER

The engine uses a crankcase breather valve and "Pack" for maintaining crankcase vacuum. If the crankcase becomes pressurized as evidenced by oil leaks at the seals, clean baffle, valve, and pack in a commercial parts cleaning solvent. See Figure 9.

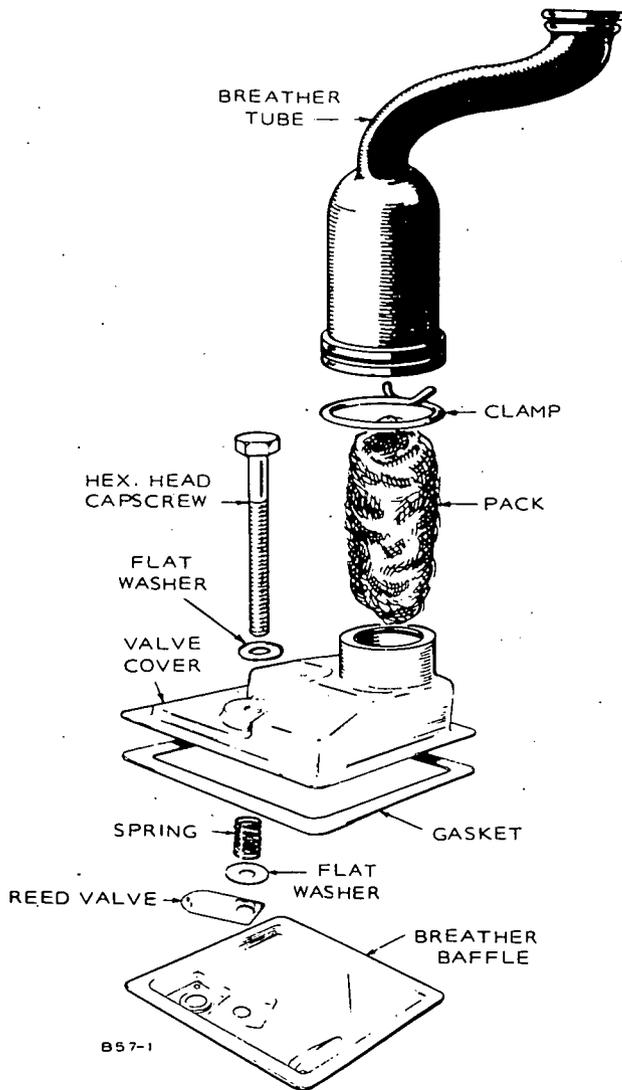


FIGURE 9. CRANKCASE BREATHER

BATTERY CARE (Electric Start Model)

To increase battery life, the operator can perform a number of routine checks and some preventive maintenance.

1. Keep the battery case clean and dry.
2. Make sure the battery cable connections are clean and tight.
3. Coat the battery terminals with a mineral grease or petroleum jelly to reduce corrosion and oxidation.
4. Identify each battery cable to be positive or negative before making any connection. Always connect the ground (negative) cable last.

5. Maintain the electrolyte level by adding water (drinking quality or better) as needed for filling to split level marker.
6. The standard battery charger will provide a constant charge rate of 1-1/2 to 3 amps during alternator operation. If the alternator is not operated often enough to keep the battery charged, connect battery to a separate charger at least once a month to maintain a full charge.

WARNING

Lead acid batteries emit highly explosive hydrogen gas which can be ignited by electrical arcing or a lighted cigarette. Do not smoke while charging or servicing batteries.

SPARK PLUGS

Remove and replace the spark plugs every 100 hours. A badly fouled plug will cause misfiring, poor operation, or stopping when a load is applied.

- Black deposits indicate a rich mixture.
- Wet plug indicates misfiring.
- Badly or frequently fouled plug indicates the need for a major tune-up.

Set spark plug gap at .025 in. (see Figure 10) when replacing.

CAUTION

Do not clean spark plug by sand-blasting. Spark plug should be cleaned by scraping or wire brushing and washing with a commercial solvent.

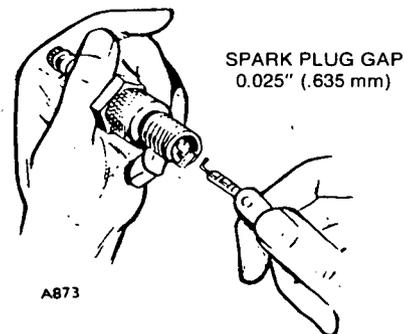


FIGURE 10. SETTING SPARK PLUG GAP

EXHAUST SPARK ARRESTER

Exhaust spark arresters are standard on all alternators. Some state and federal parks require them. All spark arresters require periodic clean-out (every 50 hours) to maintain maximum efficiency and prevent clogging.

To clean spark arrester, remove pipe plug from bottom of muffler. Run set under load for 5 minutes to exhaust carbon particles from muffler. Replace plug.

Adjustments

CARBURETOR ADJUSTMENTS

The carburetor idle and main adjustment screws were set at the factory and should normally not be disturbed. If adjustments seem necessary, first make certain the ignition is not the source of the problem. If the factory setting has been disturbed, it may be necessary to make an initial adjustment to allow the engine to be started. Turn both adjustment screws in until lightly seated and then back the idle adjustment screw out 1 turn and the main adjustment screw out 1-1/4 turn. See Figure 11.

WARNING To avoid personal injury, use extreme caution when making adjustments while the engine is running. Do not touch hot exhaust pipes or moving parts; do not wear loose clothing that may be caught in moving parts.

Start generator set and allow it to warm up for at least 10 minutes before making any adjustments. When the procedure calls for full load, connect several loads or use a load test panel.

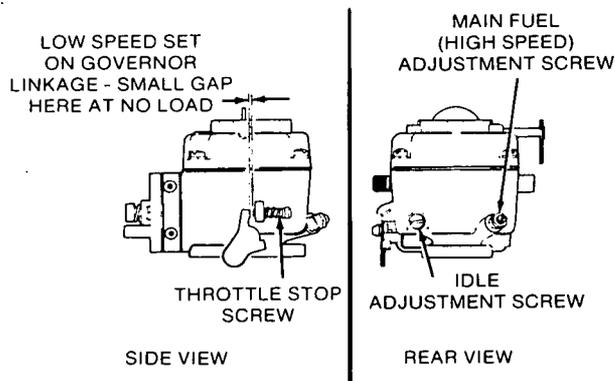
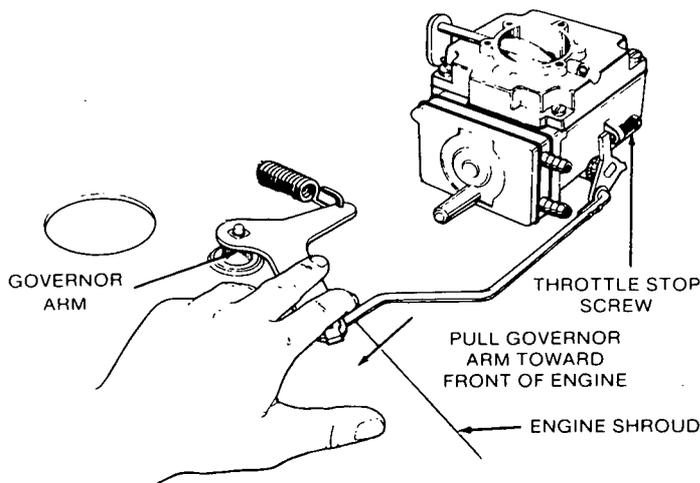


FIGURE 11. CARBURETOR ADJUSTMENTS

WARNING When determining fuel mixture settings, never force the fuel mixture adjustment needles against their seats. Forcing will damage the needles and seats and make accurate adjustment impossible.

1. Remove all electrical loads and connect a tachometer or frequency meter to the alternator.
2. Pull the governor linkage toward the front of the set so that the throttle lever on the carburetor is resting against the throttle stop screw. Adjust the throttle stop screw to obtain a setting of 2250 RPM on the tachometer or 37.5 hertz on the frequency meter.
3. Continue to hold the governor linkage. Determine the best idle mixture setting by first turning the idle adjustment screw inward until set RPM (or frequency) drops (indicating a lean mixture) and then outward until set RPM (or frequency) drops again (rich mixture). Over a narrow range between these two settings the alternator RPM (or frequency) will remain at its highest. Set the idle adjustment screw 1/8 turn outward (rich) from the midpoint of this highest range. Readjust the throttle stop screw as needed to retain the 2250 RPM or 37.5 hertz setting.
4. Release the governor and apply a full load to the set. Set the main adjustment screw using the same procedure as given above for idle adjustment. Final adjustments should be to a point slightly outward (rich) from the midpoint of the highest RPM range (highest frequency).
5. Remove the load and observe the stability of the alternator. Add and remove a full load several times to make certain the alternator does not bog down.

Refer to GOVERNOR ADJUSTMENTS section when all carburetor adjustments are complete. Making adjustments to the carburetor usually changes the governed speed of the engine which affects the set output voltage.

GOVERNOR ADJUSTMENTS

Before making governor adjustments, run the unit about 10 minutes under light load to reach normal operating temperature. If governor is completely out of adjustment, make a preliminary adjustment at no load to first obtain safe voltage operating range.

Engine speed determines the output voltage and current frequency of the alternator. By increasing the engine speed, alternator voltage and frequency are increased, and by decreasing the engine speed, alternator voltage and frequency are decreased. An accurate voltmeter or frequency meter (preferably both) should be connected to the alternator output in order to correctly adjust the governor. A small speed drop not noticeable without instruments will result in an objectionable voltage drop.

WARNING To avoid personal injury, use extreme caution when making adjustments while the engine is running. Do not touch hot exhaust pipes or moving parts; do not wear loose clothing that may be caught in moving parts.

1. Adjust the carburetor before making any adjustments to the governor (see CARBURETOR ADJUSTMENTS section).
2. Check the governor linkage and throttle shaft for binding or excessive looseness. The engine starts at wide open throttle.
3. With the warmed-up unit operating at NO LOAD, adjust the tension of the governor spring (see Figure 12). Turn the speed adjusting nut to obtain a voltage of 130 volts (for 120 volt operation) or 260 volts (for 240 volt operation).
4. Check the voltage with no load connected and again with a full load and note the voltage difference. Adjust the governor sensitivity to give the

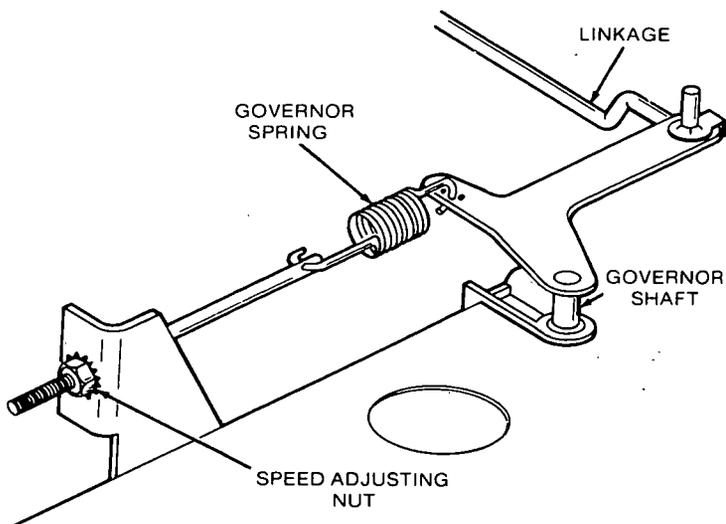


FIGURE 12. GOVERNOR ADJUSTMENTS

closest regulation (least voltage difference between no load and full load) without causing a hunting condition. Moving the governor spring closer to the governor shaft increases sensitivity. See Figure 12.

5. Recheck the voltage adjustment made in step 3 and readjust if necessary.

BREAKER POINTS AND IGNITION TIMING

The ignition adjustments should be made with the engine stopped and cold. Make sure feeler gauge is clean and free of any grease, oil, or dirt.

The correct point gap setting is .021 inch (0.53 mm) and should be adjusted as follows:

1. Remove cover by loosening screw and lift off.
 2. To set the point gap, turn the engine crankshaft (with rotation) until the maximum breaker point gap is obtained.
 3. Using an allen head wrench, adjust set screw (A) for .021 (0.53 mm). Measure point gap with a flat thickness gauge. See Figure 13.
- The timing is adjusted during initial engine assembly and is fixed by the point gap adjustment. A .021 point gap is equivalent to 21° BTC.
4. Replace point box cover.

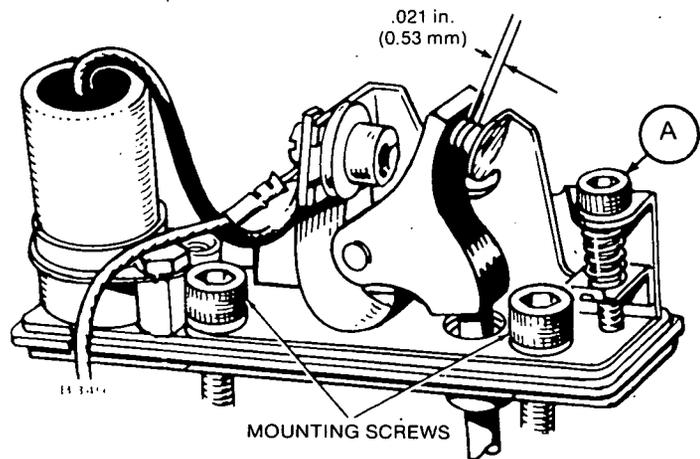


FIGURE 13. BREAKER POINTS

Optional Accessories

The alternator model numbers are listed in the SPECIFICATIONS section

HOME STANDBY KIT 89-76820R (MX-76820A)

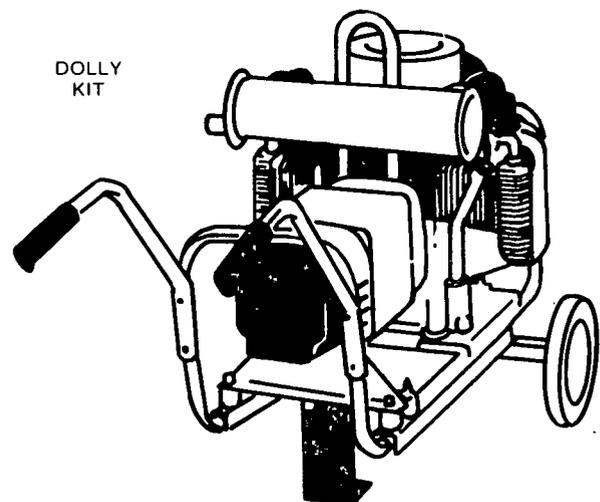
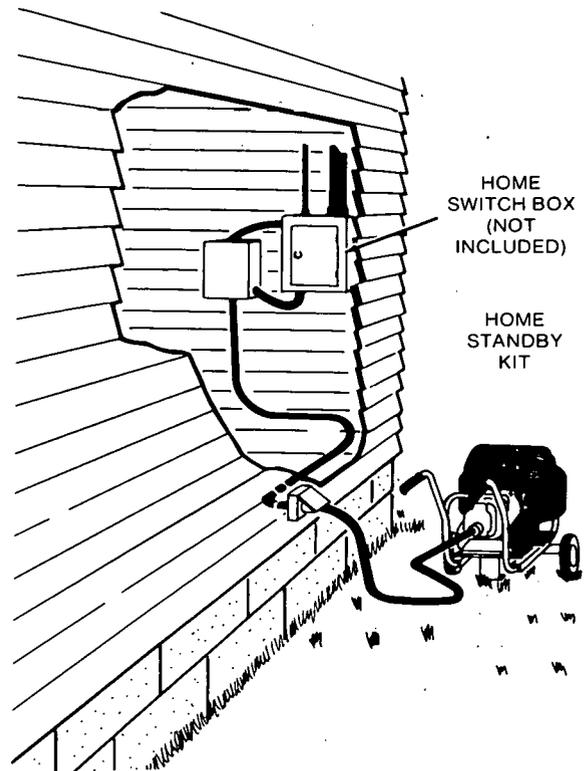
Allows homeowner to provide power directly to home electrical circuits when normal utility power is interrupted. Designed for homes supplied with 3 wire electrical utility power of 120, 240 or 120/240 volts AC. House circuits are easily retransferred when normal utility power is restored. Includes transfer switch, wiring harness, connectors, and installation instructions. For alternator 89-76806R.

DOLLY KIT 89-76818R (MX-76818A)

Allows one person to easily wheel alternator to desired location. Eliminates lifting and carrying. Includes wheels, axle, handles, and installation instructions. For alternators 89-76806R and 89-76811R.

BATTERY CHARGER 89-76821R (MX-76821A)

Allows alternator to provide charging current for 12 volt batteries. Provides 12 volts DC at 5 to 8 amps continuous charging current. Includes charging cables, fuse holder, diode rectifier, and installation instructions. For alternator 89-76811R.



These alternators have been designed to be light-weight and portable so that you can have electrical power wherever you may require it. Whether you

need it for recreation, business use, home use, or emergencies, your portable alternator is ready to meet your power needs.

RECREATIONAL USES

A portable alternator can be taken to any outdoor outing where power is needed.

Power For:
Picnics
Summer cabins
Campouts
Hunting and Fishing trips
Outdoor Parties

EMERGENCY USES

Natural disasters such as floods, hurricanes, or tornadoes can interrupt utility power for days. A lengthy interruption in power can be much more than just an inconvenience.

At home, power for:

Furnace
Refrigerator or Freezer
Stove
Water heater
Air Conditioners

At your business, power for:

Lighting
Heating
Office machines
Cooling Equipment
Security Systems

On your farm, power for:

Ventilation equipment
Milking machines
Irrigation pumps
Lighting and heating systems
Electric Fencing

HOME USES

A portable alternator can also have many uses at home besides back-up for a power outage. Often, there is not a convenient power outlet for operating many outdoor appliances.

Power for:
Lawn equipment
Power tools
Air compressors
Sprayers
Hedge trimmers and weed cutters

BUSINESS USES

A mobile or portable alternator can provide power at any work site where utility power is not available.

Power for:
Construction and Repair equipment
Drills and Saws
Impact wrenches
Pumps and Compressors
Lighting towers
Welders
Battery chargers