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Onan®

OPERATOR'S MANUAL AND PARTS CATALOG

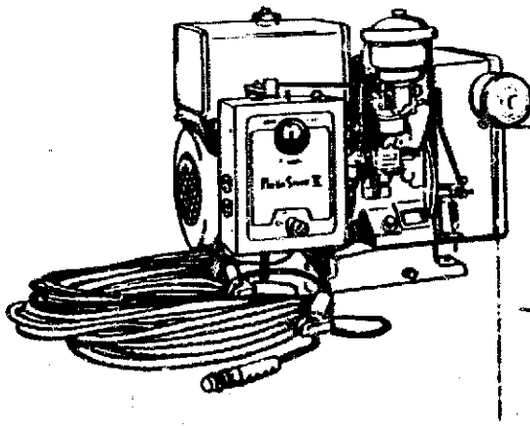
FOR

PortaStart®

AC/DC GENERATOR SETS

MODEL

205AJ-1E3900/1H
205AJ-1E3900/1J
205AJ-1E3900/1K
2.5AJ-1E/3900L



11HL74
(Replaces 9HL70)

PortaStart®

AC/DC

Generator Set

TABLE OF CONTENTS

PortaStart® is a trademark of the Onan Corporation.

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 **Onan uses this symbol 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, Gaseous Fuel And Diesel Fuel. A constant potential explosive or fire hazard exists.**

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

  Be sure all fuel supplies have a positive shutoff valve.

  Fuel lines must be of steel piping, adequately secured and free from leaks. Do not use copper piping on flexible lines as copper becomes hardened and brittle. Use black pipe on natural gas or gaseous fuels, not on gasoline or diesel fuels. Piping at the engine should be approved flexible line.

  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**

  Remove 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.

  Use extreme caution when working on electrical components. High voltages cause 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**

  Provide an adequate exhaust system to properly expel discharged gases. Check exhaust system regularly for leaks. Ensure that exhaust manifolds are secure and not warped.

  Be sure the unit is well ventilated.

- **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.

  Dispose of oily rags. Keep the floor clean and dry.

- **Protect Against Moving Parts.**

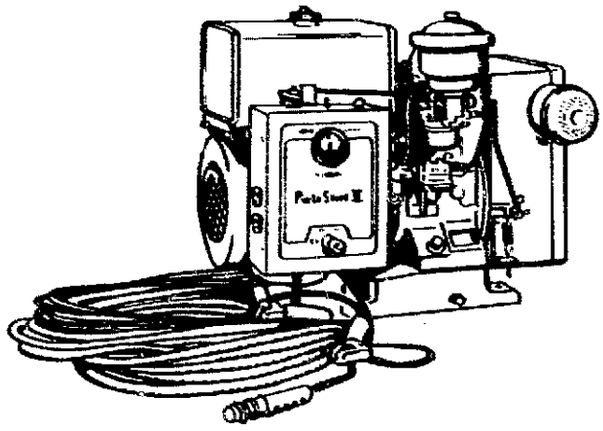
  Avoid moving parts of the unit. Loose jackets, shirts or sleeves should not be permitted because of the danger of becoming caught in moving parts.

  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.

GENERAL INFORMATION

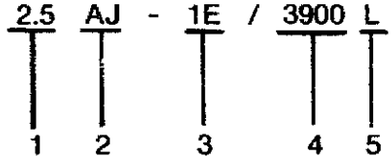


The PortaStart® AC/DC generator set functions as DC energizer or as an AC generator.

This manual provides information on the installatio operation and maintenance of the PortaSta generator set. Information on major overhaul is n included.

When instructions in this manual refer to a specif model, identify your model by referring to the MODE and SPECIFICATION NUMBER as shown on the ur nameplate. Electrical characteristics are shown c the lower portion of the nameplate.

How to Interpret Model Number



1. Kilowatt rating of the unit.
2. Factory code for general identification.
3. Specific type:
   M - Manual starting with Readi-pull starter.
   E - Electric starting at the set only.
4. Factory code for optional equipment.
5. Specification letter advances when the factory makes production modifications to the unit.

Onan

MANUFACTURER'S GENERAL WARRANTY

Manufacturer extends to the original purchaser of Goods for use, the following warranties, subject to the qualifications indicated:

(a) Manufacturer warrants satisfactory performance for a period of one (1) year from the date each product is placed in service, so long as such product is installed, operated and serviced in accordance with Manufacturer's written instructions. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING FITNESS FOR A PARTICULAR PURPOSE.

(b) Manufacturer's liability and purchasers' sole remedy for a failure of Goods to perform as warranted, and for any and all other claims arising out of the purchase and use of the Goods, including negligence on the part of Manufacturer, shall be limited to the repair or replacement of Goods returned to Manufacturer's factory or one of its Authorized Service Stations, transportation prepaid. The cost of any labor included shall be as specified in Manufacturer's written instructions. MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

(c) All claims shall be brought to Manufacturer's attention within Thirty (30) days after discovery that the Goods failed to perform as warranted, but in no event shall a claim be accepted after one (1) year from the date such product is placed in service.

No person is authorized to give any other warranty or to assume any other liability on Manufacturer's behalf unless made or assumed in writing by an Officer of Manufacturer, and no person is authorized to give any warranty or assume any liabilities on the Manufacturer's behalf unless made or assumed in writing by such Manufacturer.

ONAN 1400 73RD AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432

SPECIFICATIONS

ENGINE

Displacement	14.9 cu. in. (244.2 cm^3)
Bore	2-3/4 in. (69.85 mm)
Stroke	2-1/2 in. (63.50 mm)
Horsepower	5.5 at 3600 rpm

GENERATOR

Voltage	120
Phase	1
Wire	2
RPM	3600
60 Hertz	Yes
Output in Watts	
AC at 10.4 amps	1250
DC at 300 amps, 8.3 volts	2500

Tune-Up Specifications

Spark Plug Gap	0.025 in. (0.635 mm)
Magneto Breaker Point Gap	0.020 in. (0.508 mm)
Carburetor Float Adjustment	11/64 in. (4.37 mm)
Ignition Timing @ 3600 rpm	25° BTC
Tappet Adjustment (Engine Cold)	
Intake	0.010 in. - 0.012 in. (0.254 mm - 0.305 mm)
Exhaust	0.010 in. - 0.012 in. (0.254 mm - 0.305 mm)
Magneto Pole Shoe Air Gap	0.010 in. - 0.015 in. (0.254 mm - 0.381 mm)
Cylinder Head Bolt Torque (lbs. ft.)	27-29 (37-39 N•m)
Oil Base Mounting (lbs. ft.)	24-26 (33-35 N•m)

INSTALLATION CONSIDERATIONS

Consider each installation individually. Use this information as a general guide. Be sure to meet all regulations of local building codes, fire ordinances, etc., that may affect any installation details.

LOCATION

Provide a location for the generator set that enables easy access for starting and maintaining the unit. Be sure the unit receives enough cooling air for proper operation.

WARNING **Be sure the hot exhaust gases are discharged safely to avoid burns and inhaling harmful gases. Install a flexible tubing as illustrated in Figure 1.**

Begin Spec J, be sure the unit is located where the starting cables can reach the truck's battery.

MOUNTING

If the PortaStart generator set functions primarily as a DC energizer, mount the unit on a truck for mobility. When using it primarily as an AC generator, mount the unit to a solid foundation. In either application, the set can be mounted to a light weight, semi-portable skid base, sturdy enough to prevent excessive vibration.

When the unit is mounted in a compartment, provide vents for air circulation - 12 square inches (77 cm²) air inlet and 24 square inches (155 cm²) outlet opening.

WARNING **To prevent shock hazard, ground the set to the truck frame with a #8 or larger wire from the solderless terminal located on the generator frame.**

FUEL SUPPLY AND CONNECTIONS

The PortaStart generator set has an engine-mounted, two-gallon (7.58 liters) fuel tank. It also has a two-way valve to the fuel pump so fuel can be drawn from the mounted tank or from a separate tank by turning the valve. A section of flexible fuel line must be installed between the rigid line and the fuel pump. Keep the fuel source within 4 feet (1.2 m) of fuel pump height.

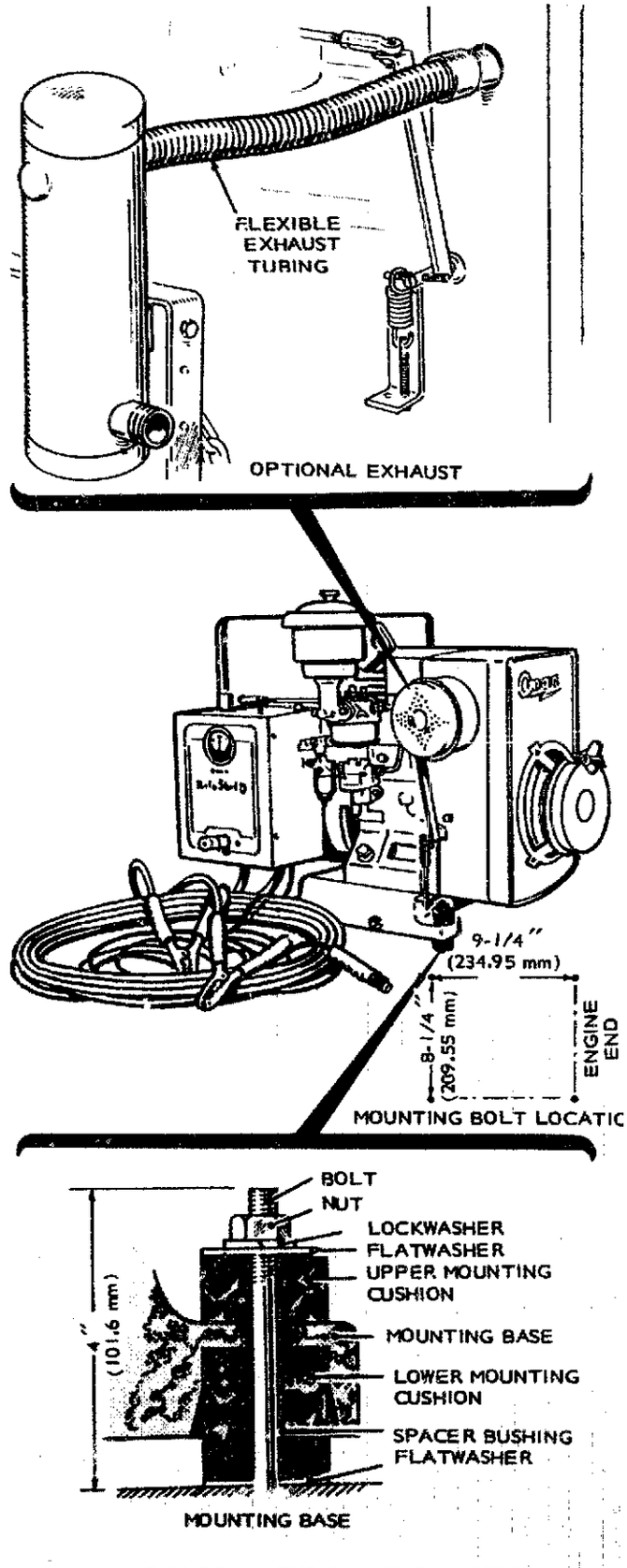


FIGURE 1. TYPICAL INSTALLATION

BATTERY CONNECTIONS

Begin Spec J, the generator set uses the service vehicle's battery for starting. Two battery cables are supplied for the connection. Connect the longer, 10-foot (3 m) cable to the ungrounded side of the vehicle's battery and the shorter, 4-foot (1.2 m) cable to a suitable ground on the vehicle. A third cable, 12 to 18 inches (305 mm - 457 mm) long, is supplied for making a connection between the vehicle's engine and the frame. If any of the supply cables are not long enough, replace them with #2 or heavier braided cable of the required length.

Cable connections must be clean and tight (remove any paint, grease, etc.) to ensure satisfactory operation of the generator set.

OPERATION

PRE-STARTING

Preparations for the first starting and each additional starting operation include careful checks of the oil, fuel, cooling and electrical systems.

Before putting the PortaStart generator set into service, be sure there are no loose or missing parts. If an abnormal condition, defective or loose part, or operating difficulty is detected, repair or replace as required.

Prior to starting the engine, check the crankcase and the fuel tank to be sure they are properly filled.

Crankcase Oil

Use a heavy duty detergent oil that meets the API (American Petroleum Institute) service designations SE or SE/CC. Oil must be labeled as having passed the MS Sequence Tests (also known as the ASTM(IV Sequence Tests) and the MIL-L2104B tes' Recommended SAE oil numbers for expected ar bient temperatures are as follows:

Above 30° F (-1.1° C)	SAE30
0° to 30° F (-17.8° C to -1.1° C)	SAE 10W
Below 0° F (-17.8° C)	SAE 5W or 5W-20

Crankcase capacity is about 3 pints (1.42 lit). Wi the unit level, full the crankcase to the top of tl threads in the oil fill hole.

When adding oil between oil changes, use the sar brand as is in the crankcase. Various brands of oil m. not be compatible when mixed together. Refer to tl

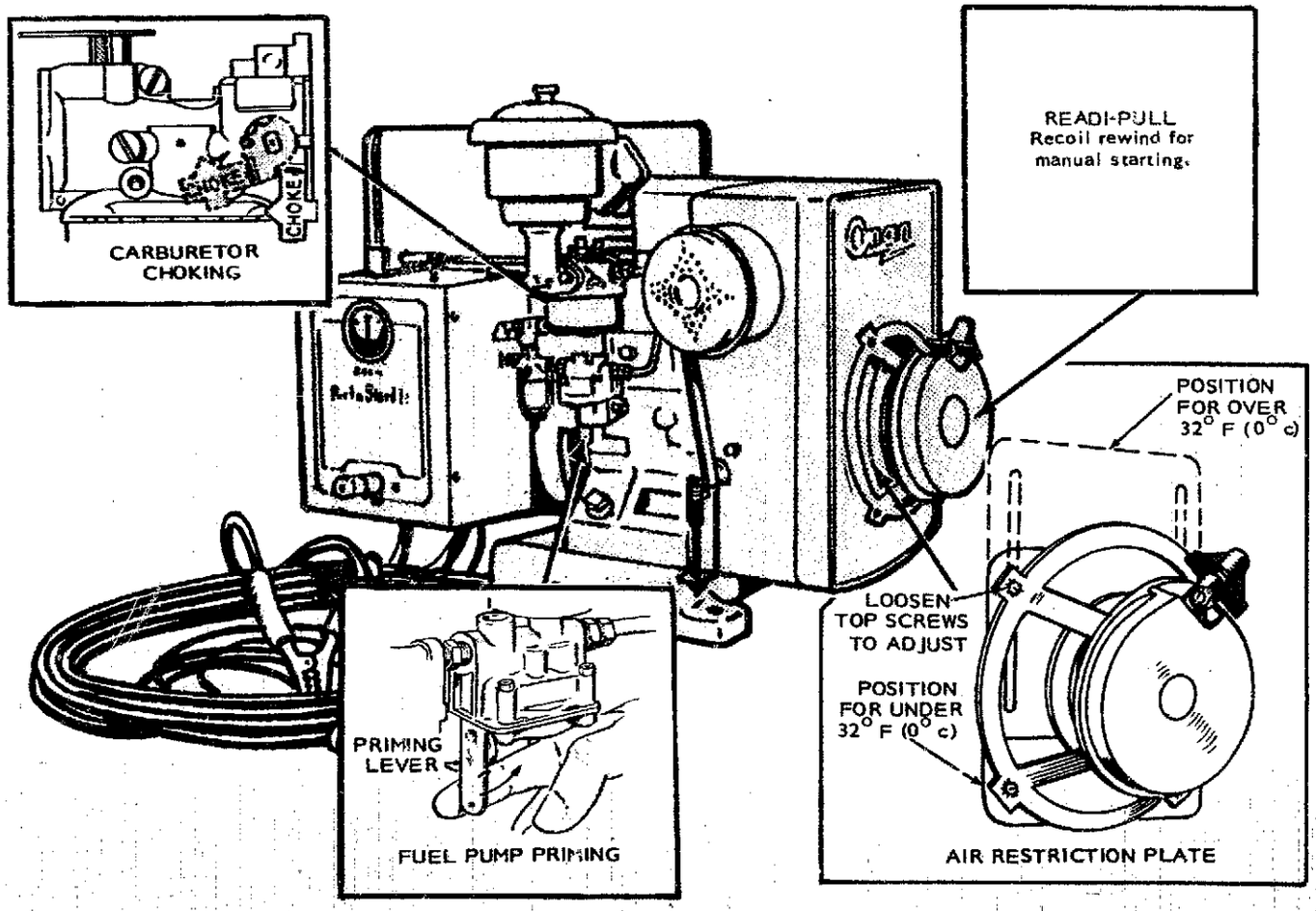


FIGURE 2. STARTING AND OPERATION

MAINTENANCE section for recommended oil change intervals.

Recommended Fuels

Use clean, fresh regular grade, automotive gasoline. For new engines, most satisfactory results can be obtained by using nonleaded gasoline. For older engines, that have previously used leaded gasoline, the heads must be taken off and all lead deposits removed from the engine before switching to non-leaded gasoline.

CAUTION **If lead deposits are not removed from the engine before switching from leaded to non-leaded gasoline, pre-ignition could occur causing severe damage to the engine.**

WARNING **Never fill the tank when the engine is running - engine fuels are highly flammable. Leave some fuel expansion space to avoid leaks or a possible explosion.**

INITIAL START

Be sure the engine has been properly filled with oil and fuel. If the engine fails to start at the first attempt, rust inhibiting oil used at the factory may have fouled the spark plug. Remove the plug, clean it in a suitable solvent, dry thoroughly and reinstall. Heavy exhaust smoke when the engine is first started is normal and is caused by the inhibitor oil.

PRIMING FUEL SYSTEM

On a new or reconditioned unit or when the engine has not been started for more than a day, the fuel in the lines drains back into the fuel tank. It is then necessary to prime the fuel system by lifting up several times on the hand priming lever. See Figure 2. This forces fuel into the carburetor and makes the unit easier to start. The fuel system is primed when the priming lever works with no resistance when lifted. It is not possible to flood the carburetor by over priming.

BATTERIES

Check all battery connections, especially ground connections from the set-to-frame, battery-to-frame or engine-to-frame. Use larger capacity batteries for starting in cold weather; small capacity batteries do not provide enough cranking current.

STARTING SEQUENCE

The starting and stopping sequence, Figure 3, shows the manual, mechanical and electrical events required for satisfactory start, run and stop cycles.

See Figure 3 for the following:

DETAIL A: Interrupt long cranking attempts, allowing 2 minutes between each 30-second cranking period to avoid damage to the vehicle starter.

CAUTION **Remove all electrical load (turn off radio, lights, etc.) when boosting 6-volt systems. Do not crank in periods exceeding 20 seconds to avoid damaging vehicle electrical system.**

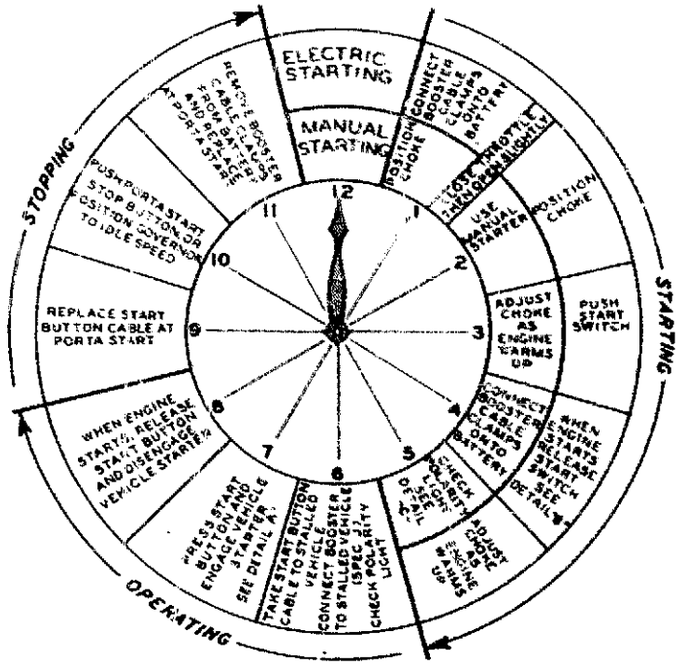


FIGURE 3. STARTING, OPERATING AND STOPPING SEQUENCE

DETAIL B (Prior to Spec J): When using the vehicle battery to start the generator set, the generator on the set polarizes to the vehicle's electrical system.

DETAIL C: If the green polarity light *does not glow*, the booster cable clamps have been connected incorrectly. The start button will be ineffective for boosting until the clamps are reversed. Prior to Spec L, PortaStart generator set used a red polarity light that comes on if the polarity *is incorrect*.

STARTING

The PortaStart generator set has no batteries of its own. Begin Spec J, starting is as indicated in Figure 3. Prior to Spec J, the set can be started with the Readi-pull starter or electrically by connecting the booster cable clamps to the storage battery of:

- a disabled vehicle,
- the service vehicle transporting the PortaStart generator set, or
- a battery supplied by the operator used just for starting the generator set.

When starting a vehicle having a battery that is completely run down (parking lights do not glow), remove all electrical loads from the battery. Allow the battery five minutes to regain enough charge to start the unit. If the battery is still too weak to start the set, use the Readi-pull starter or connect the generator set to the battery on the service truck.

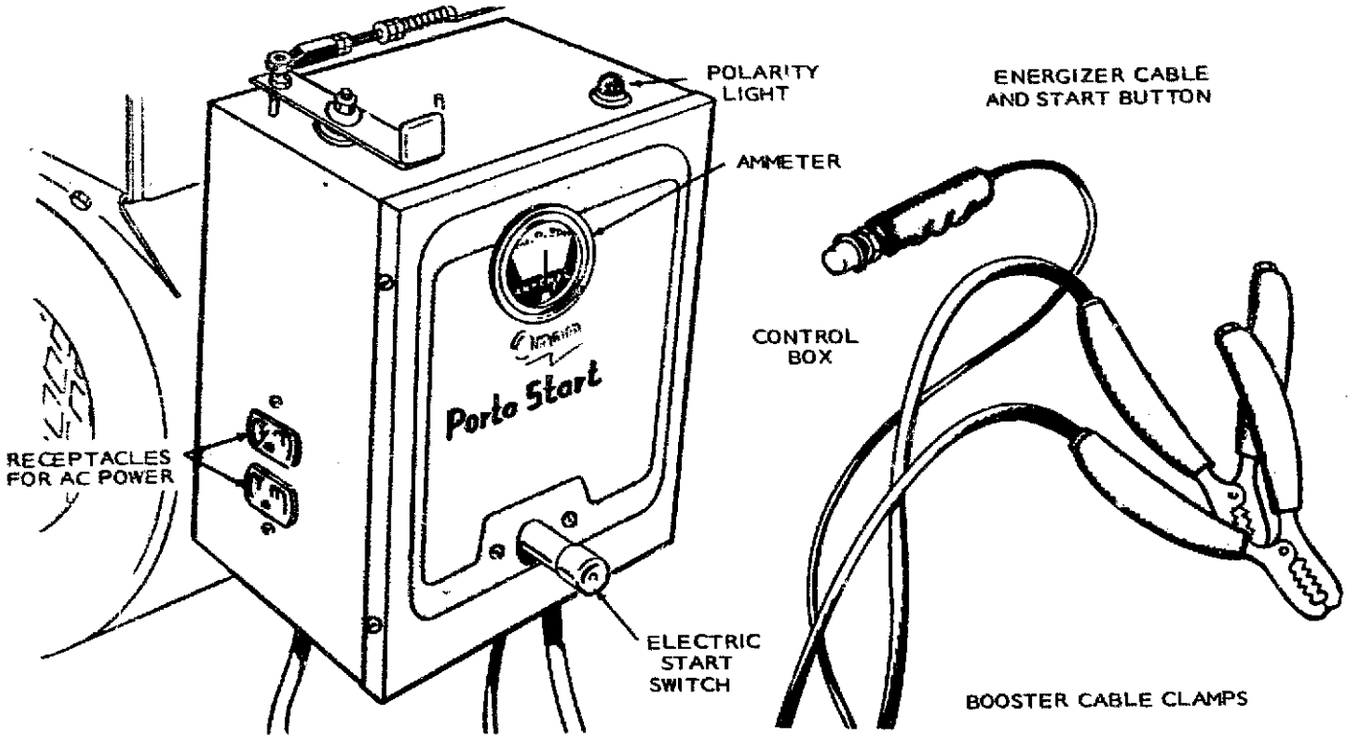


FIGURE 4. VEHICLE STARTING CONTROLS

Electric Start Procedure: Have the truck engine running when starting the PortaStart electrically.

1. Set the throttle to the idle (1800 rpm) position.
2. Close the choke completely.
3. Electrically crank the set for two or three revolutions.
4. Set the choke at 1/4 open.
5. Electrically crank until engine starts — usually 3 or 4 revolutions.
6. After the unit starts, slowly open the choke.
7. If the set does not start, use the Readi-pull starter.

Manual Start Procedure:

1. Pull the starting rope very slowly until piston just passes over compression.
2. Rewind starter rope to last 6 to 8 inches from the handle.
3. Pull the rope its entire length with a fast, steady pull. If the engine fails to start, repeat procedure.

MANUAL CHOKE

The engine has a manual choke that controls the air-to-fuel mixture in the carburetor. When ambient and engine temperatures are cold, close the choke to provide a richer mixture. Gradually open the choke as the engine reaches normal operating temperature.

TWO-SPEED GOVERNOR CONTROL

A manually operated two-speed governor controls engine speed (Figure 2). The two positions of the governor control allow for an idle speed of 1800 rpm and 3600 rpm when AC or DC current is required.

When using the PortaStart unit as a DC energizer for boosting, any AC load on the generator decreases DC output. For maximum DC output, remove all AC load. When not boosting, full AC power is available.

AIR RESTRICTION PLATE

The PortaStart engine has an air restriction plate that reduces the volume of cooling air when the unit is operating in cold weather. When operating in temperatures below 32° F (0° C), this plate must be in place as shown in Figure 2. When operating in temperatures above 32° F (0° C), loosen the two top starter screws and raise the plate. Fasten it to the upper mounting holes.

When removing the air restriction plate for replacement, etc., the Readi-pull starter must be removed.

COMBINATION 12/24-VOLT DC SYSTEMS

When systems use two 12-volt DC batteries for starting, but one 12-volt battery for running, boost across one battery only because of the special series parallel circuit. For more efficient starting, connect the PortaStart generator set to one 12-volt battery. Start the energizer for about two minutes. DO NOT START VEHICLE. Then, connect the PortaStart generator set to the other 12-volt battery and start the vehicle in the normal manner.

CONTROL COMPONENTS

The control box contains the components for starting the generator set and connecting AC and DC output to the load.

CAUTION **If a battery is considered dead - produces less than 2 volts (packing lights do not glow) - the polarity relay cannot sense the correct polarity. When the set is used with this condition, it is done with the risk of boosting with reversed polarity and damaging the vehicle's electrical system.**

POLARITY

Begin Spec L, the control uses a solid state protection circuit. With the generator set running and the booster cable clamps connected with proper polarity to the vehicle battery, the green light should glow when the start button on the energizer cable is pressed. If the green light does NOT come on, the cable clamps are connected in reverse polarity and the start button is ineffective. If this occurs, reverse the cable clamps on the vehicle battery.

Booster cable clamps are not identified as positive (+) or negative (-).

If the stalled vehicle battery will not crank the ONAN unit, use the truck battery or another battery to start it. Then, move the cables in the same polarity hook-up to the stalled vehicle.

Prior to Spec L, the polarity relay in the control box determines polarity. This relay functions whenever the generator set is running and the cables are connected to a battery. The relay has a voltage-sensitive coil that becomes energized at reversed polarity because the resulting voltage would be equal to that of the generator plus the voltage of the weak or discharged battery.

The polarity relay protects against reversed polarity by preventing the load solenoid from energizing which renders the energizer start button ineffective. A red polarity signal light automatically indicates reversed (wrong) polarity. Battery cables must then be reversed.

Spec H: If the disabled vehicle's battery is used for starting the energizer, the unit will automatically polarize itself to that of the vehicle.

EXTENDED OUT-OF-SERVICE PROTECTION

Protect a unit that will be out-of-service for more than 30 days:

1. With the generator under 1/2 load, run the set until it reaches normal operating temperature.
2. Drain the gasoline from the fuel tank. Shut off the engine fuel supply and allow the engine to run until it stops. This will empty fuel lines and the carburetor.
3. Drain the oil while the engine is still warm. Refill crankcase with new oil. Attach a tag indicating viscosity used.
4. Remove spark plug. Pour 1 ounce of rust inhibiting oil into the cylinder. Crank the engine over several times. Reinstall spark plug.
5. Service air cleaner.
6. Clean throttle and governor linkage; protect by wrapping with a clean cloth.
7. Plug exhaust outlet to prevent entrance of moisture, bugs, dirt, etc.
8. Remove dust and dirt from unit. Be sure unit is dry. Coat parts likely to rust with a light film of oil or grease.
9. Disconnect battery and follow standard battery storage procedure. Apply a film of petroleum jelly to battery cable terminals.
10. Provide a protective cover for the entire unit.

RETURNING UNIT TO SERVICE

1. Remove the protective covering from the unit. Remove the plug from the exhaust outlet.
2. Be sure viscosity of oil in crankcase is correct for existing ambient temperatures. Check tag.
3. Clean and check battery. Measure specific gravity (should be about 1.260 at 77° F (25° C). Charge battery if specific gravity is low. Check electrolyte level. Level should be at split ring. If level is low, add distilled water and charge until specific gravity is correct. Do not overcharge.

   WARNING **Do not smoke while servicing battery. Batteries emit explosive gases. Ignition of these gases can cause severe personal injury.**

4. Connect battery.
5. Be sure no load is connected to the unit.
6. Start engine.

   When started, the engine exhausts excessive blue smoke and runs rough. This condition continues until the rust inhibiting oil burns away.

7. After engine starts, apply at least 50% of rated load capacity. This will allow crankcase oil to work its way throughout the engine lubricating components.
8. Unit is ready for service.

HIGH TEMPERATURE CONDITION

Do not allow anything to obstruct air flow to and from the unit. Keep the cooling fins clean. Be sure air housings are properly installed and undamaged. Keep ignition timing properly adjusted.

LOW TEMPERATURE CONDITION

1. Use the proper SAE No. oil for temperature conditions. Change oil only when engine is hot. If an unexpected temperature drop causes an emergency, move the unit to a warm location or apply heated air (never use open flame) externally until oil flows freely. An optional electric engine heater is available for continuous cold weather starting.
2. Use fresh, winter grade (not premium) gasoline. Protect against moisture condensation. Below 0° F (-17.8° C), open the carburetor main jet one additional turn. Keep the spark plug and breaker

points clean and properly adjusted. Keep battery well charged.

3. During low temperatures, keep the air restriction plate closed. Avoid overheating.

If the generator set is subjected to rapid and severe temperature changes - from warm storage area to cold outside temperatures - condensation may form and freeze in the generator preventing electric cranking. Crank the engine manually three or four times to free the generator, then crank electrically.

CAUTION **Discharged batteries are subject to severe damage if exposed to freezing temperatures. Store all batteries in a fully charged condition and maintain charge during storage.**

DUSTY OR DIRTY CONDITIONS

1. Keep the set clean. Do not allow cooling fins become coated or obstructed with debris.
2. Service the air cleaner as required.
3. Change crankcase oil every 50 operating hou

HIGH ALTITUDE OPERATION

When operating at altitudes over 1500 feet (450 r above sea level, close the carburetor main jet adjus ment slightly to maintain proper air-to-fuel rati (Refer to *ADJUSTMENTS* section.) Engine pow drops approximately 1000 feet (300 m) after the fi 1000 feet (300 m) above sea level.

ADJUSTMENTS

The PortaStart generator set is factory-adjusted to deliver voltage as indicated on the unit nameplate. No adjustments should be required. If the unit fails to produce rated voltage after many hours of operation, check for binding, looseness, worn linkage or parts, improper carburetor adjustments, etc. Do not change governor setting until everything else has been checked for proper operating condition.

CARBURETOR

If the carburetor is completely out of adjustment, turn the idle adjustment and main adjustment needle in gently onto their seats (Figure 5). Prior to Spec K, the main adjustment needle was located on the top of the carburetor.

CAUTION **Do not force needles into their seats - Tight seating causes needle damage.**

Back off the idle needle one turn and the main adjustment needle 2-1/2 turns to permit starting the unit.

Start the set and allow it to reach normal operating temperature. With a full rated load connected, turn the main needle in slowly until the set begins to lose speed (or voltage drops). Then, turn the needle back out to the point where the set will carry the full load. Check operation under various loads. If there is any tendency to hunt, turn the main jet needle out to the point where operation is steady. Do not turn it out more than 1/2 turn past the point of smooth full-load operation.

Continuous unstable operation may be caused by an improper governor adjustment.

Adjust the idle needle with no AC load connected (or at the lowest possible charge rate if the unit is a battery charging set). Turn the needle in slowly until the set loses speed. Then, turn the needle out to obtain smooth operation.

With the set still running with no load, turn the throttle lever stop screw so it just touches the stop lever. Then, back off the screw one full turn.

To adjust the carburetor float level (Figure 6), bend the float near the shaft to obtain the correct level of 11/64 inch (4.37 mm).

GOVERNOR

The governor controls engine speed which, in turn, determines the voltage and frequency of the generator. Binding at any point of the governor (the linkage or the carburetor throttle) causes sluggish governor action. Loose or worn parts can also cause erratic governor action that could be mistaken for an incorrect carburetor adjustment.

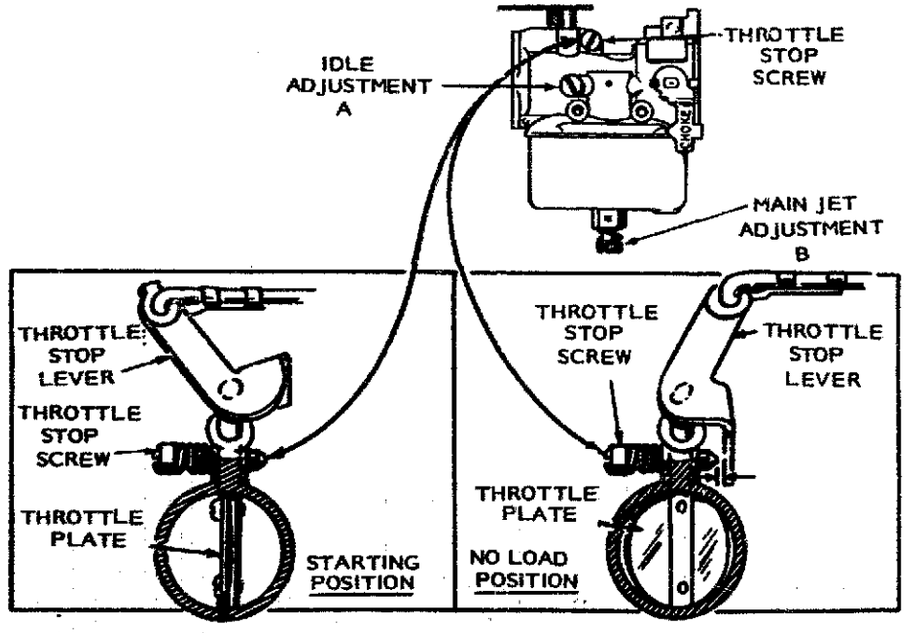


FIGURE 5. CARBURETOR ADJUSTMENTS

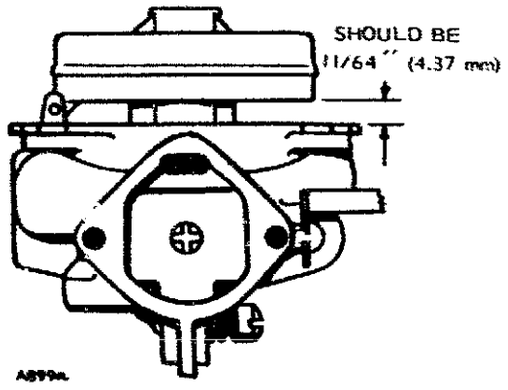


FIGURE 6. FLOAT ADJUSTMENTS

Adjust the governor (Figure 7) so that the length of the linkage A (with tension on spring B) allows the carburetor stop lever to clear the carburetor boss by a maximum of 1/32 inch (25.43 mm). If necessary, change the length of linkage A by turning the ball joint.

AC Voltage Adjustment

Start the unit. Using a voltmeter, adjust the governor speed for 126 volts AC at no load to assure a safe speed during warm-up. After the unit has reached normal operating temperature, connect an AC voltmeter across one of the AC receptacles. Adjust the speed nut to get not more than 126 volts at no load. Then, connect a 1250-watt AC load. Adjust the governor sensitivity screw to get the minimum voltage drop - not below 108 volts AC when operating at full load of 1250 watts AC without a hunting condition.

Changing the sensitivity screw setting requires a compensating change in the speed adjustment nut C (Figure 7).

When using a frequency meter, the AC frequenc should not be more than 63 cycles at no load and nc less than 59 cycles at full load. Fine adjustment c engine speed gives correct AC output.

DC Voltage Adjustment

With the unit operating with no load connected a 3600 rpm, connect a DC voltmeter across the batter lead terminals in the control box. This open circu voltage should be 16 volts DC when the generator hot. If DC output is incorrect, adjust the governor.

Recheck AC output to be sure it stays in the 5 63 cycle range.

Two-Speed Governor Control

The governor has a manually operated two-spee control lever mounted on the control box. See Figur 7. Pulling the lever toward the engine provide 3600 rpm engine speed. When the lever is pushe away from the engine, engine speed is governed a 1800 rpm idle speed. The governor control lever mus be in one of these two positions at all times.

To adjust the governor control lever, move the tw lock nuts (on the rod at the ball joint) toward or awa from the rod spring until exact lever position i obtained for idle and running speed.

BREAKER POINTS

The breaker points, located on the left side of th crankcase just behind the gear cover, connect to generator field resistor. A condenser connects acros the breaker points to prevent sparking and burning c the contacts.

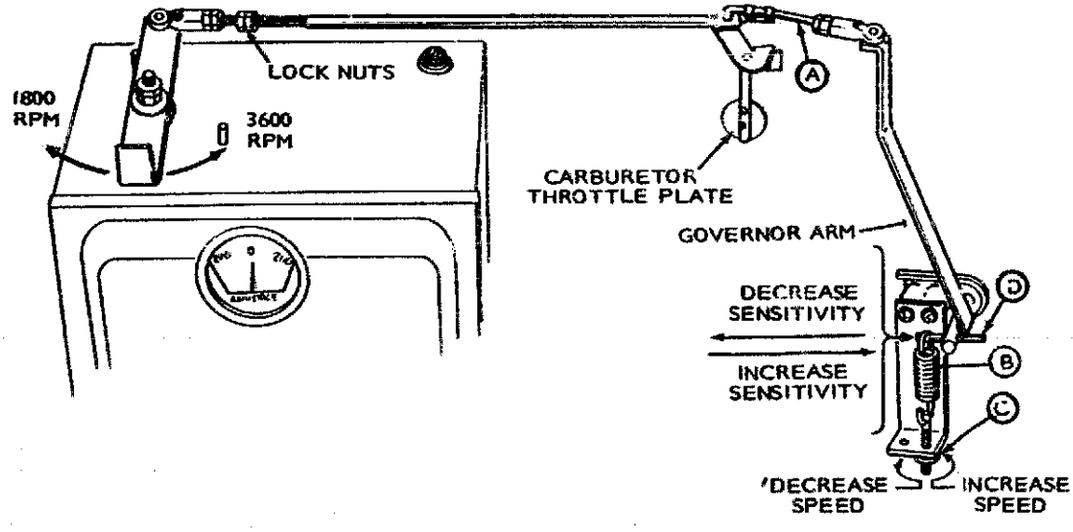


FIGURE 7. GOVERNOR CONTROL

Burned or pitted contact points are usually an indication of a defective condenser. Breaker point gap at full separation should be 0.020 inch (0.508 mm). See Figure 8.

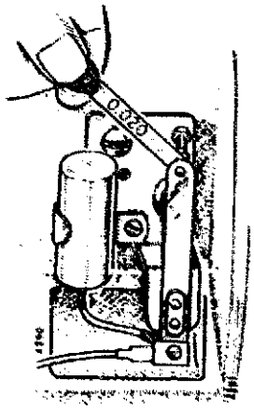


FIGURE 8. POINT SETTING

MAINTENANCE

Follow a definite schedule of inspection and servicing, based on operating hours and conditions. Regular service periods are recommended for normal service and operating conditions. For continuous duty, extreme temperatures, etc., service more frequently. For infrequent use, light duty, etc., service periods can be lengthened accordingly.

WARNING **Before beginning any maintenance work on the engine, generator or control box, disconnect batteries if so equipped. Failure to do so could result in damage to the equipment or serious personal injury in the event of inadvertent starting.**

The operator should periodically make a complete visual inspection with the set running at rated load. Check for the following:

1. Possible leakage in any fuel or oil line.
2. Possible leakage or cracks in exhaust lines and mufflers.
3. Dirty cooling fins.
4. Security and fray damage in electrical wires and connections.

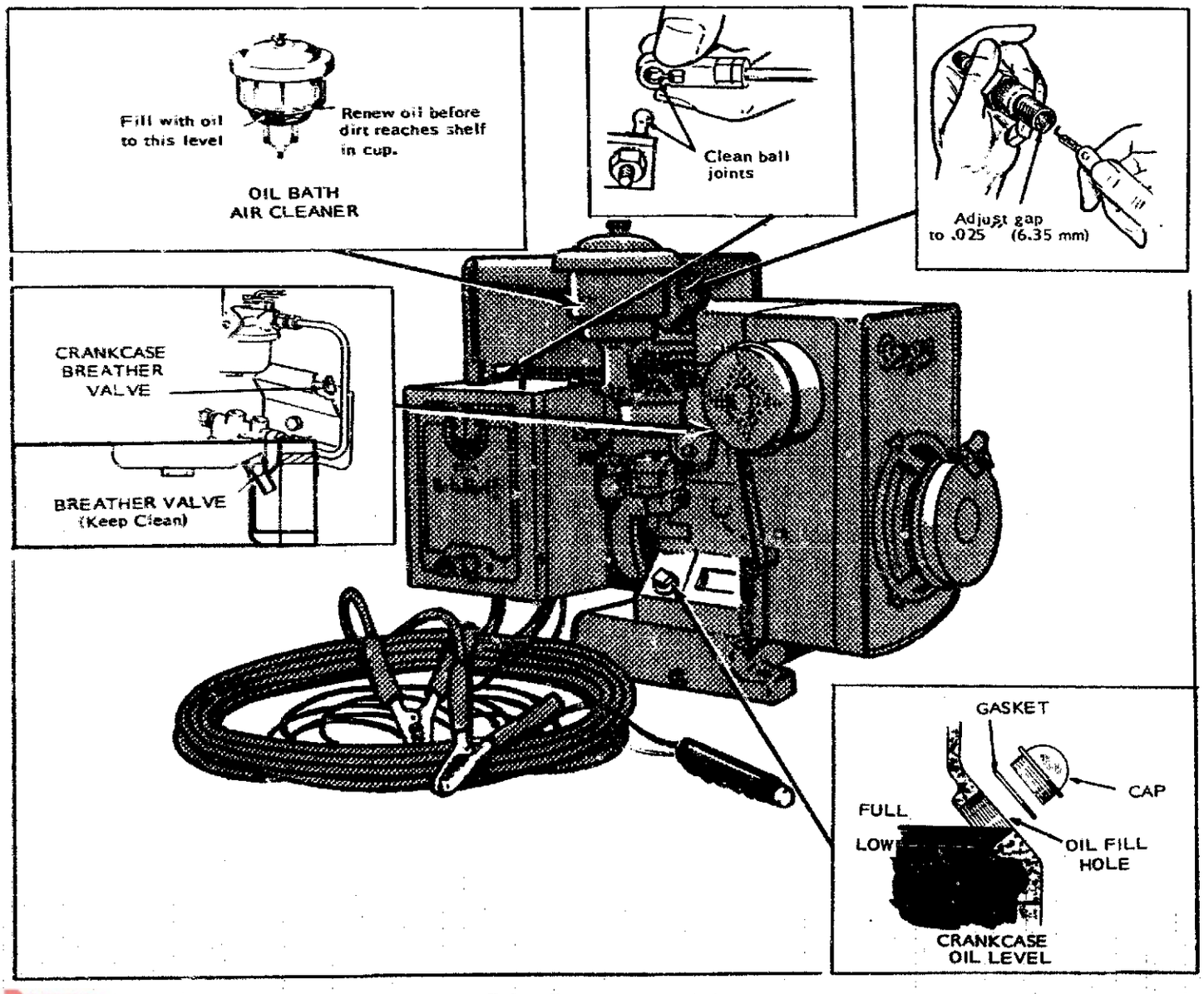


FIGURE 9. MAINTENANCE

If the generator requires major repair or servicing, contact an authorized Onan dealer or distributor.

OIL DRAIN

Remove the oil drain plug and install an extension pipe nipple and coupling for convenience in draining oil.

TABLE 1. MAINTENANCE SCHEDULE

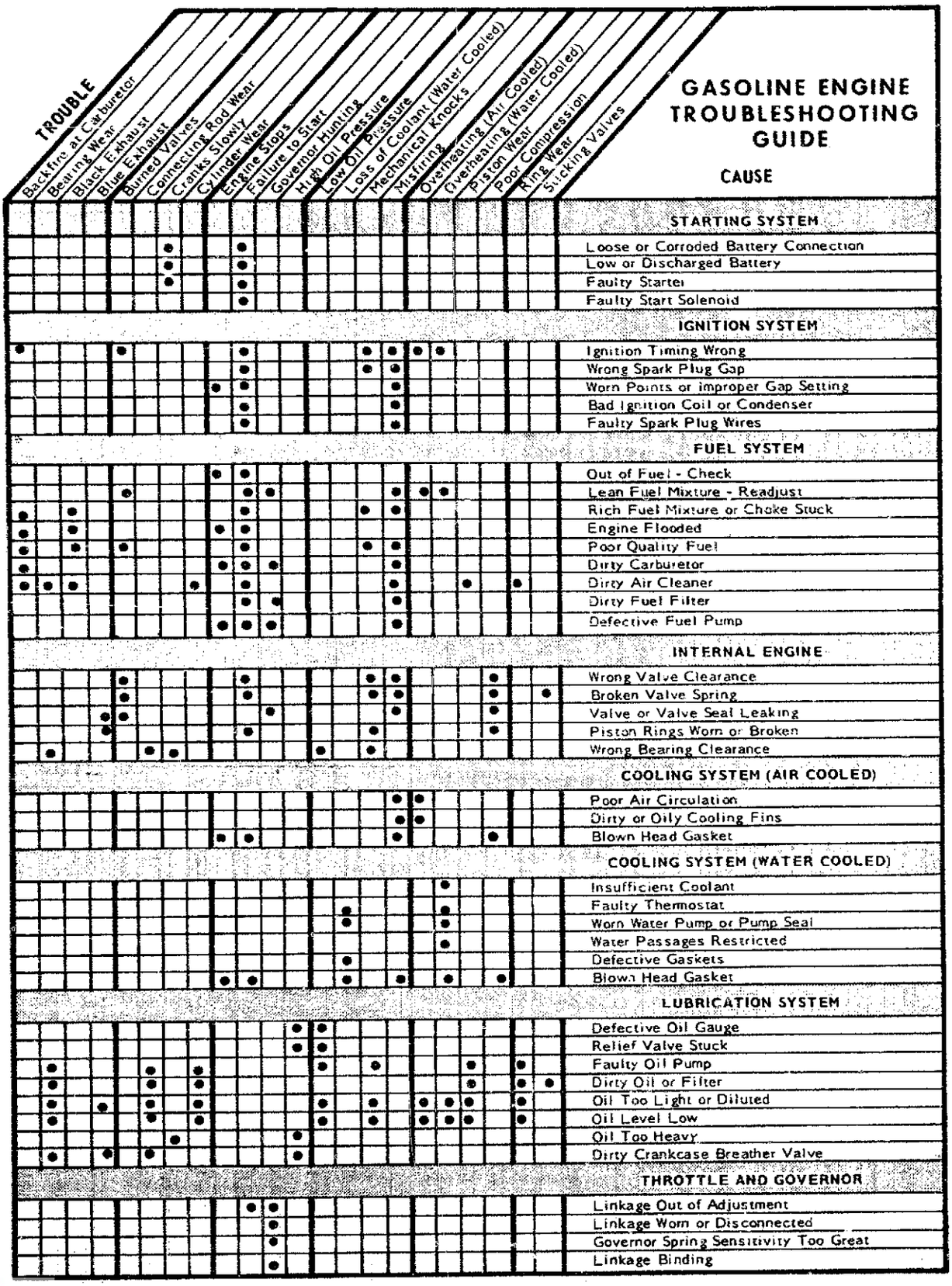
HOURS OF OPERATION	MAINTENANCE TASK
8	• Inspect Generator Set. • Check Fuel. • Check Oil Level.
50	• Check Air Cleaner. See Note 1. • Clean Governor Linkage. See Note 1.
100	• Check Spark Plug. • Change Crankcase Oil. See Note 1. • Clean Crankcase Breather. See Note 1.
200 Call Onan Service Personnel	• Clean Fuel System. • Inspect Breaker Points. • Clean Commutator and Slip Rings. See Note 3. • Check Brushes. See Note 2.
500 Call Onan Service Personnel	• Remove Carbon and Lead from Unit.
1000 Call Onan Service Personnel	• Clean Generator. • Remove and Clean Oil Base. • Grind Valves • Clean Carburetor.
5000 Call Onan Service Personnel	• General Overhaul.

Note 1. Perform more often in extremely dusty conditions.

Note 2. Replace commutator brushes when worn to 5/8" (15.88 mm).

Note 3. Smooth commutator and slip rings with #240 sandpaper - Never use emery or carborundum abrasives.

TROUBLESHOOTING GUIDE



PARTS CATALOG

This parts catalog applies to ONAN PORTA-START, Model 2.5AJ-1E/3900 generating set.

Parts are arranged in groups of related items. Each illustrated part is identified by a reference number corresponding to the same reference number in the Parts List for the group.

Common hardware items such as screws, washers, nuts, etc., which are available locally are not listed.

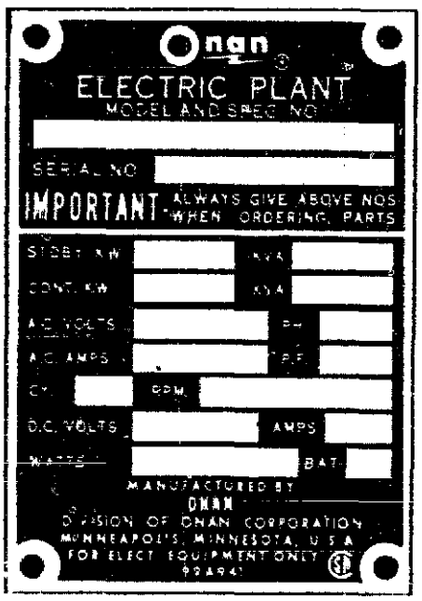
INSTRUCTIONS FOR ORDERING REPAIR PARTS

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Onan Parts and Service Center.

To avoid errors or delay in filling your parts order, please furnish all information requested.

Always refer to the nameplate on your unit:

1. Always give the MODEL and SPEC NO. and SERIAL NO.

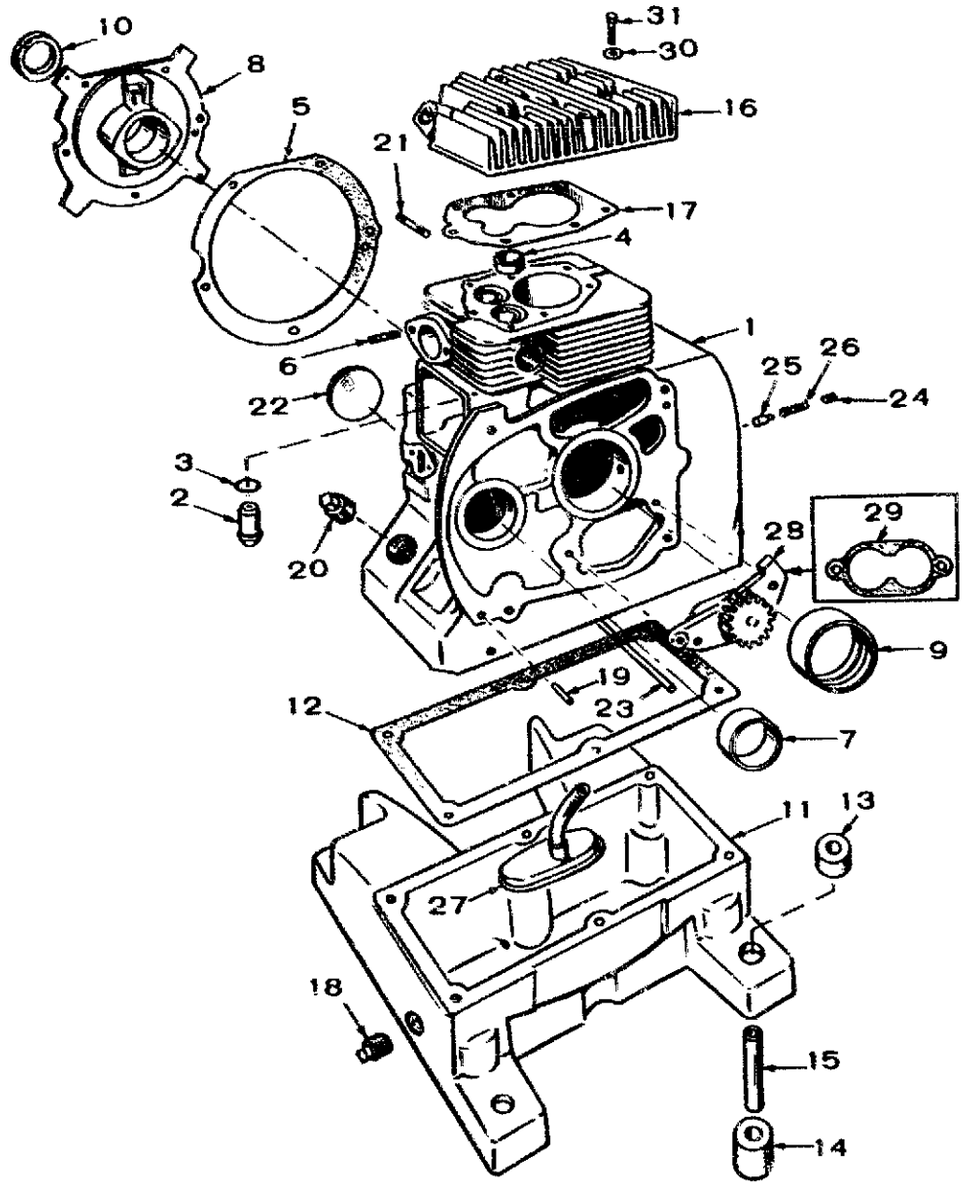


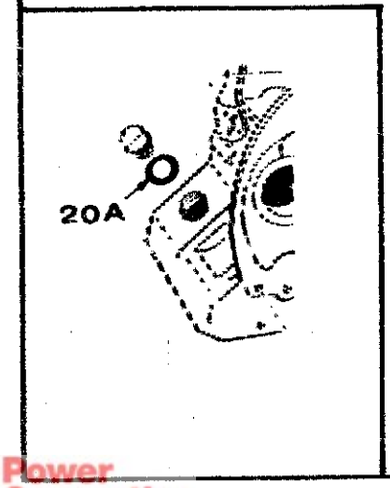
For handy reference, insert YOUR engine nameplate information in the spaces above.

2. Do not order by reference number or group number; always use part number and description.
3. Give the part number, description and quantity needed of each item. If an older part cannot be identified, return the part prepaid to your dealer or nearest AUTHORIZED SERVICE STATION. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.
4. State definite shipping instructions. Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

Prices are purposely omitted from this Parts Catalog due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

CYLINDER BLOCK, OIL BASE AND OIL PUMP GROUP



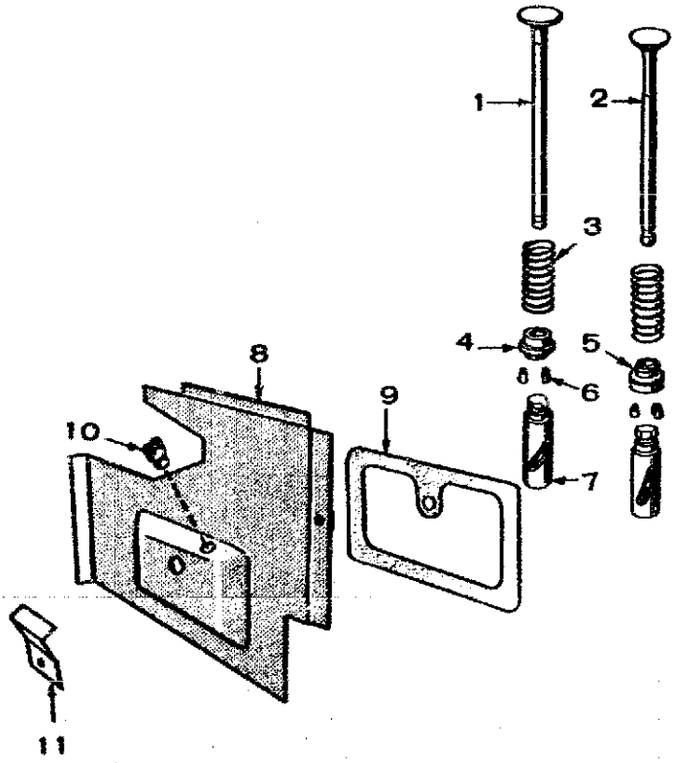


REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	110-0877	1	Block, Cylinder - Includes Parts Marked *
2	110-0441	2	*Guide, Valve
3	110-0068	1	*Gasket, Valve Guide - Intake
4	INSERT, EXHAUST VALVE SEAT		
	110-0826	1	*Standard
	110-0826-02	1	.002" Oversize
	110-0826-05	1	.005" Oversize
	110-0826-10	1	.010" Oversize
	110-0826-25	1	.025" Oversize
5	101-0257	1	*Gasket Kit Bearing Plate
6	STUD, CARBURETOR MOUNTING		
	520-0363	2	Spec H and J
	520-0632	2	Begin Spec K
7	101-0367	2	*Bearing, Precision Camshaft
8	101-0252	1	*Plate, Bearing
9	BEARING, MAIN		
	101-0290	2	*Standard
	101-0290-02	2	.002" Undersize
	101-0290-10	2	.010" Undersize
	101-0290-20	2	.020" Undersize
	101-0290-30	2	.030" Undersize
10	509-0041	1	*Seal, Crankshaft Rear Oil
11	102-0439	1	Base, Oil
12	102-0018	1	Gasket, Oil Base
13	402-0076	4	Cushion, Rubber - Upper
14	402-0045	4	Cushion, Rubber - Lower
15	402-0141	4	Bushing, Cushion Spacer

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
16	110-1778	1	Head, Cylinder
17	110-0836	1	Gasket, Cylinder Head
18	505-0110	1	Plug, Pipe (3/8) Oil Drain
19	516-0012	2	*Pin, Dowel - Gear Cover
20	505-0130	1	Plug, 3/4" Oil Fill (Replaces Plastic Plug)
20A		1	Gasket, Oil Fill Plug - Order 505-0130 Plug
21	520-0526	5	*Stud, Bearing Plate
22	517-0048	1	*Plug, Expansion - Rear Cam Opening
23	120-0387	1	*Tube, Crankcase Oil
24	505-0274	1	Plug, Oil By-Pass
25	120-0012	1	Plunger, Oil By-Pass
26	120-0140	1	Spring, By-Pass Plunger
27	120-0571	1	Cup & Pipe, Oil Intake
28	120-0394	1	Pump, Oil
29	120-0161	1	Gasket Kit, Oil Pump
30	526-0208	7	Washer, Cylinder Head
31	SCREW, HEX HEAD - HARDENED		
	110-0879	4	Cylinder Head (5/16-18 x 1-1/4)
	110-0284	3	Cylinder Head (5/16-18 x 1-1/2)
	110-0284	2	Gear Cover (5/16-18 x 1-1/2)

* - Parts included in the Cylinder Block Assembly.

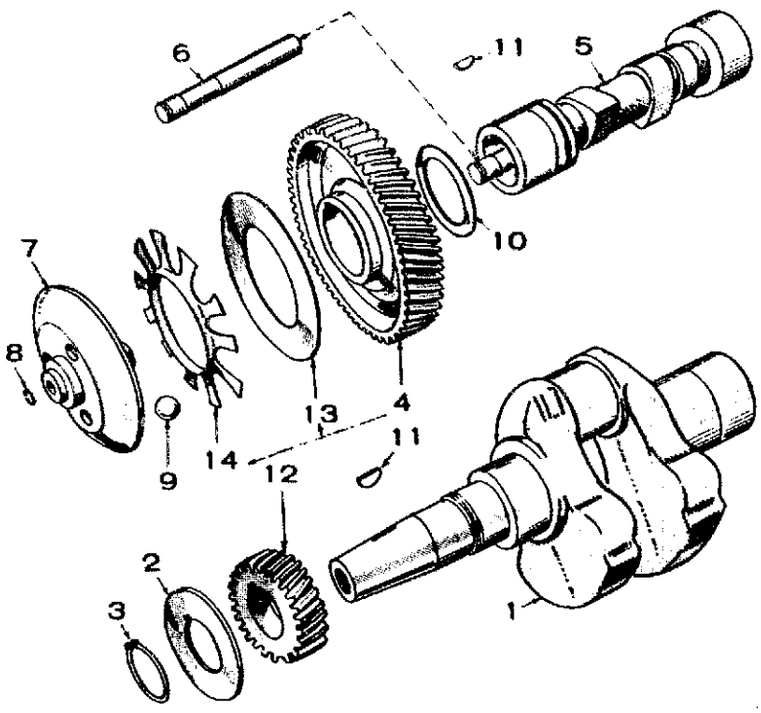
VALVE AND BREATHER GROUP



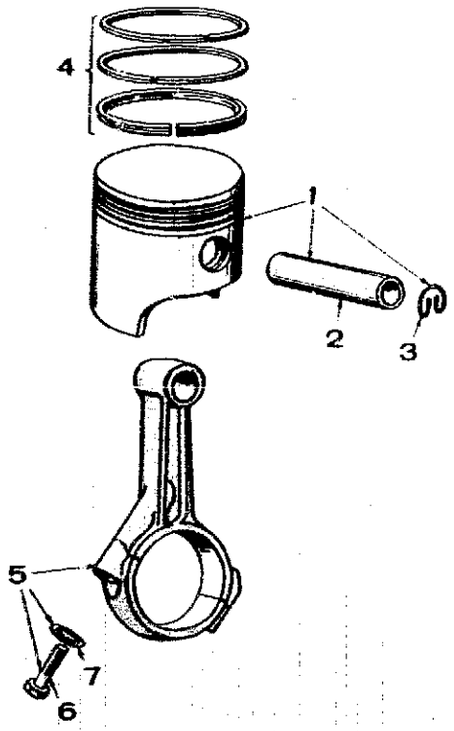
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	110-0828	1	Valve, Intake
2	110-0827	1	Valve, Exhaust
3	110-0609	2	Spring, Valve
4	110-0558	1	Retainer, Intake Valve Spring
5	110-0540	1	Rotocap, Exhaust Valve
6	110-0008	4	Lock, Spring Retainer
7	TAPPET, VALVE		
	115-0006	2	Standard
	115-0006-05	2	.005" Oversize
8	110-0840	1	Cover, Valve
9	110-0832	1	Gasket, Valve Cover
10	123-0486	1	Valve, Breather
11	123-0788	1	Baffle, Breather
	800-0015	1	Screw, Hex Cap - Valve Cover
	526-0063	1	Washer, Copper - Valve Cover

CRANKSHAFT, CAMSHAFT AND GOVERNOR CUP GROUP

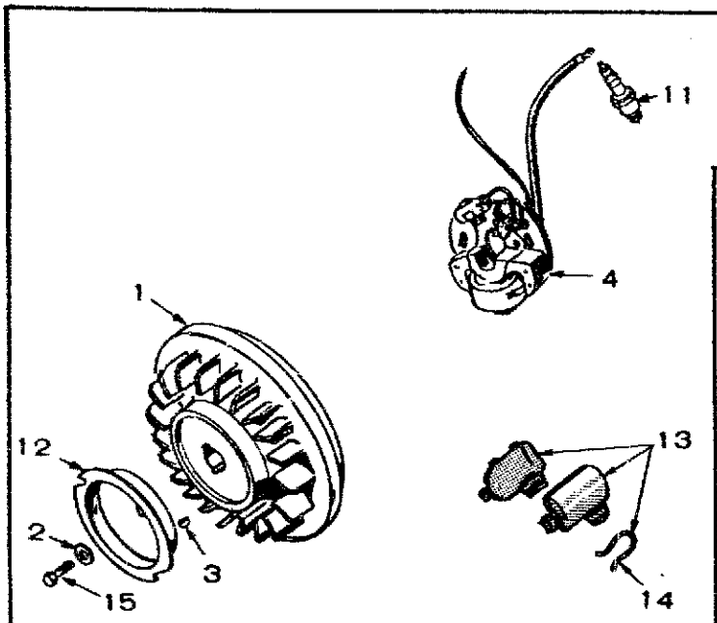
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	104-0265	1	Crankshaft
2	104-0050	1	Washer, Crankshaft Gear
3	518-0012	1	Ring, Lock - Crank Gear Washer
4	105-0377	1	Gear, Camshaft (Includes Flyball Spacer & Plate)
5	105-0139	1	Camshaft & Pin Assembly
6	150-0075	1	Pin, Camshaft Center
7	150-1116	1	Cup, Governor
8	150-0078	1	Ring, Lock - Center Pin
9	510-0015	10	Ball, Governor Fly
10	105-0004	1	Washer, Camshaft Thrust
11	515-0001	2	Key, Gear
12	104-0048	1	Gear, Crankshaft
13	150-0077	1	Plate, Governor Flyball
14	150-1257	1	Spacer, Governor Flyball

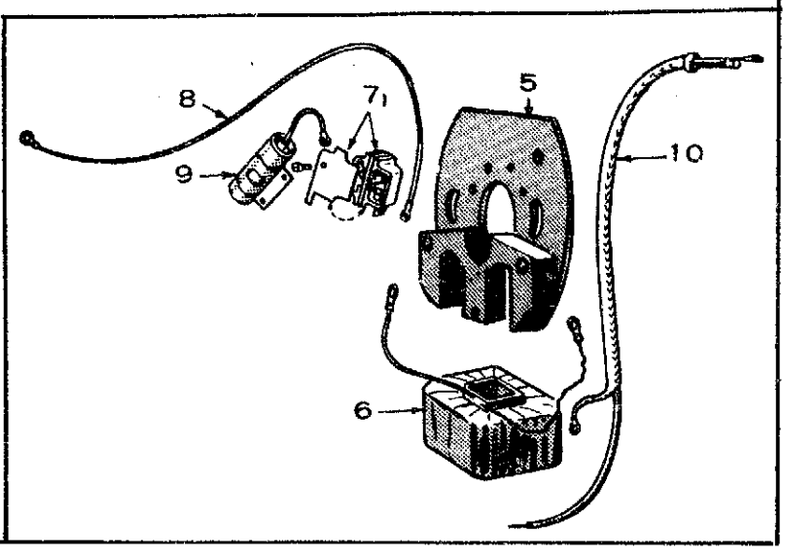


PISTON AND CONNECTING ROD GROUP



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	PISTON AND PIN		
	112-0074	1	Standard
	112-0074-05	1	.005" Oversize
	112-0074-10	1	.010" Oversize
	112-0074-20	1	.020" Oversize
	112-0074-30	1	.030" Oversize
	112-0074-40	1	.040" Oversize
2	112-0063	1	Pin, Piston
3	112-0013	2	Ring, Pin Retaining
4	RING SET		
	113-0084	1	Standard
	113-0084-05	1	.005" Oversize
	113-0084-10	1	.010" Oversize
	113-0084-20	1	.020" Oversize
	113-0084-30	1	.030" Oversize
	113-0084-40	1	.040" Oversize
5	ROD, CONNECTING		
	114-0095	1	Standard
	114-0095-10	1	.010" Undersize
	114-0095-20	1	.020" Undersize
	114-0095-30	1	.030" Undersize
6	114-0023	2	Screw, Rod Cap
7	854-0014	2	Washer, Lock - Cap Screw

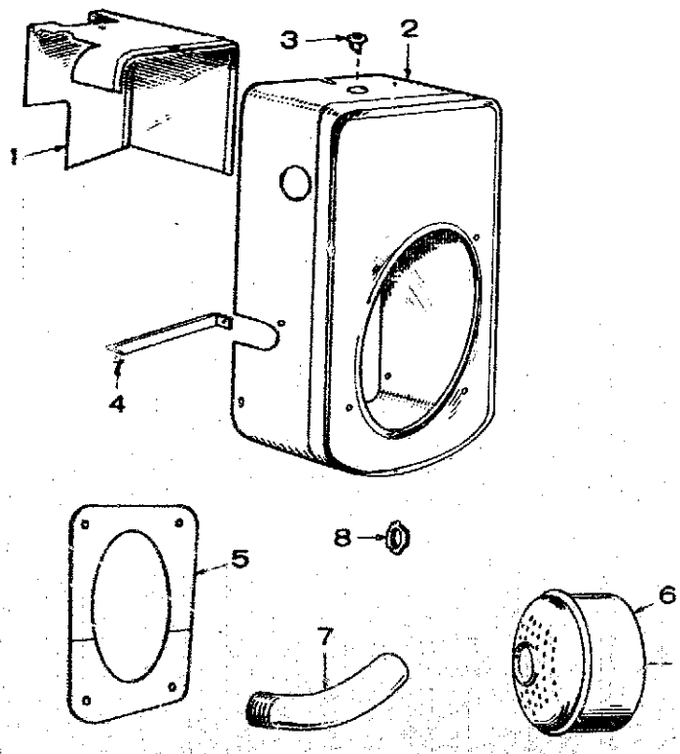




MAGNETO IGNITION GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	160-0460	1	Flywheel
2	526-0141	1	Washer, Flywheel Mounting
3	515-0113	1	Key, Flywheel Mounting
4	160-0487	1	Backplate Assembly, Magneto - Includes Parts Marked *
5	160-0454	1	*Backplate & Poleshoe
6	160-0155	1	*Coil
7	160-0540	1	*Point Set
8	336-0345	1	*Lead, Stop
9	312-0033	1	*Condenser
10	167-1272	1	*Lead, Spark Plug
11	167-0241	1	Plug, Spark
12	192-0261	1	Sheave, Rope
13	167-0067	1	Shield & Clamp - Spark Plug
14	167-0064	1	Clamp Only, Shield
15	104-0237	1	Screw, Flywheel Mounting

AIR HOUSING AND EXHAUST GROUP

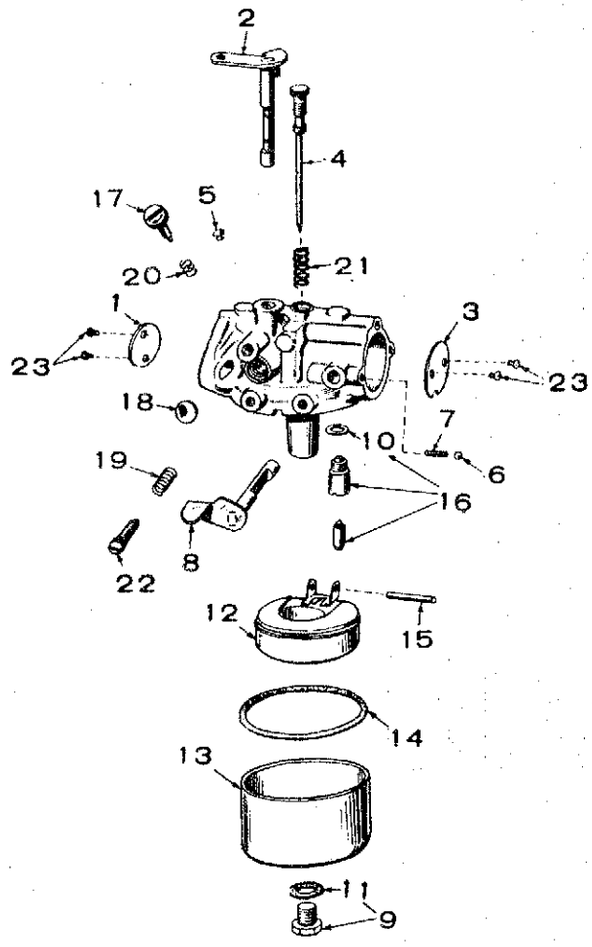


REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	134-1018	1	Shroud, Cylinder Air
2	134-1016	1	Housing, Blower
3	313-0018	1	Button, Stop
4	134-1014	1	Bracket, Blower Housing
5	134-1438	1	Plate, Air Restriction
6	155-0487	1	Muffler, Exhaust
7	155-0766	1	Tube, Exhaust (Curved)
8	331-0038	1	Locknut, Exhaust Tube (3/4")

CARBURETOR PARTS GROUP (SPEC H AND J)

(CARTER) **Note:** See separate group beginning Spec K.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
	146-0125	1	Carburetor (Illustrated in Fuel System Group)
	143-0081	1	Repair Kit, Carburetor - Includes Parts Marked * & **
	143-0080	1	**Gasket Kit, Carburetor - Includes Parts Marked *
	145-0111	1	Gasket, Air Cleaner
	145-0110	1	*Gasket, Carburetor Mounting
1	143-0097	1	Valve, Throttle
2	143-0098	1	Shaft & Lever, Throttle
3	143-0267	1	Valve, Choke
4	143-0078	1	**Needle, Idle Jet & High Speed Adjusting
5	143-0030	1	Plug, Idle Passage
6	143-0117	1	Ball, Choke Shaft
7	143-0113	1	Spring, Choke Shaft Ball
8	143-0101	1	Shaft & Lever, Choke
9	143-0118	1	Screw & Gasket, Bowl
10	143-0015	1	*Gasket, Fuel Inlet Valve
11	143-0036	1	*Gasket, Bowl Screw
12	143-0105	1	Float & Lever
13	143-0119	1	Bowl
14	143-0077	1	*Gasket, Bowl Ring
15	143-0212	1	Pin, Float Lever
16	143-0039	1	**Valve, Fuel Inlet
17	143-0109	1	Screw, Idle Adjustment
18	143-0110	1	Plug, Welch
19	143-0111	1	Spring, Throttle Lever Screw
20	143-0112	1	Spring, Idle Screw
21	143-0114	1	Spring, High Speed Needle
22	143-0115	1	Screw, Throttle Lever Adjusting
23	812-0014	4	**Screw, Choke & Throttle Valve

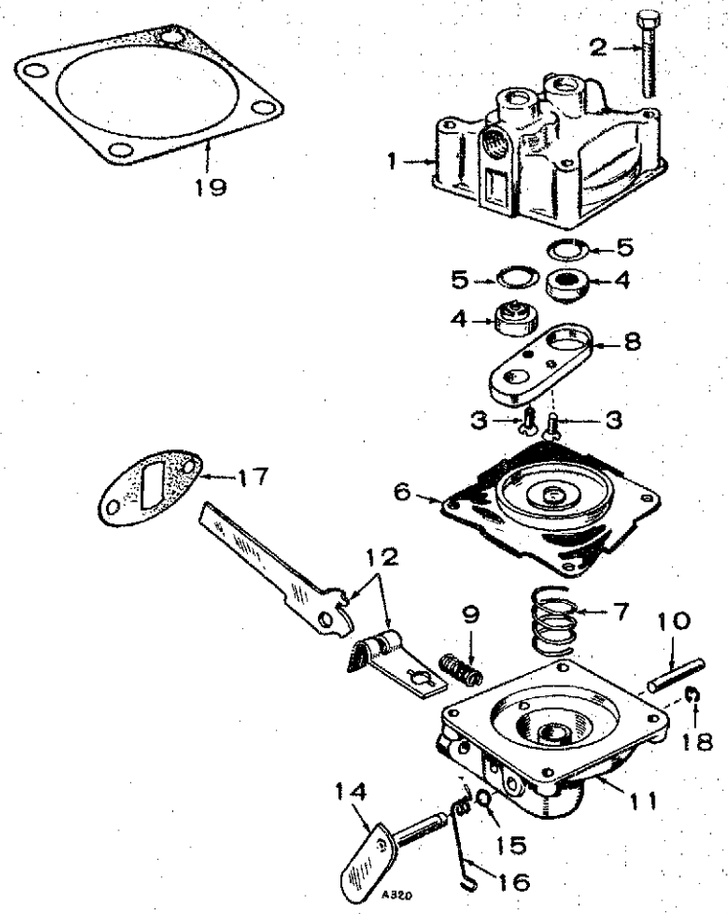


* - Parts in Gasket Kit.
** - Parts in Repair Kit.

FUEL PUMP PARTS GROUP

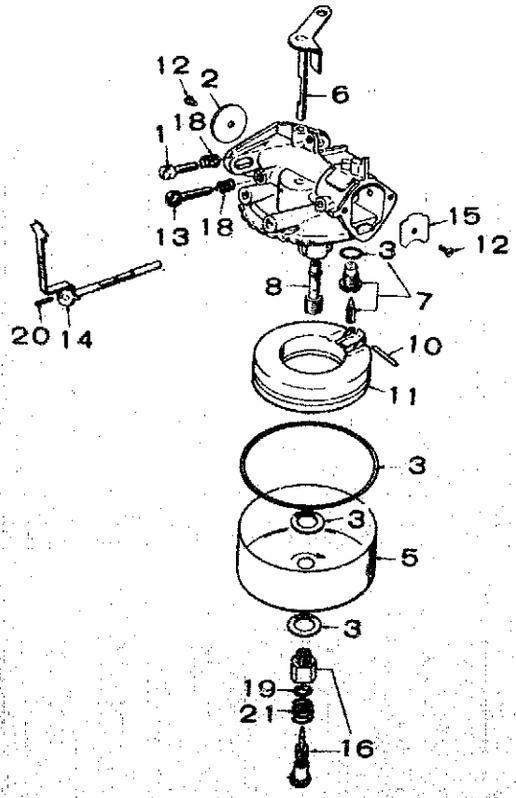
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
	149-0693	1	Pump, Fuel (Illustrated in Fuel System Group)
	149-0526	1	Repair Parts Kit (Includes Parts Marked *)
1		1	Body, Not Sold Separately
2	815-0148	4	Screw (#8-32 x 7/8"), Self Tapping, Slotted Capscrew
3	815-0147	2	Screw, Phillips Self Tapping (#6-32 x 5/8") - Valve Retainer
4	149-0096	2	*Valve and Cage
5	149-0095	2	*Gasket, Valve
6	149-0582	1	*Diaphragm Assembly
7	149-0672	1	*Spring
8	149-0539	1	Retainer, Valve Cage
9	149-0675	1	*Spring
10	516-0113	1	Pin, Rocker Arm
11		1	Body, Not Sold Separately
12	149-0710	1	Link and Arm, Rocker (Sold only as a set)
14	149-0551	1	Lever, Primer
15	509-0065	2	Seal, "O" Ring
16	149-0404	1	Spring, Primer Lever
17	149-0003	1	*Gasket, Pump Mounting
18	518-0129	1	Ring, Retainer - Primer Lever
19	149-0858	1	†*Gasket, Diaphragm - Lower Side (Optional)

* - Included in Repair Kit.
† - Used on some models to prevent air lock.



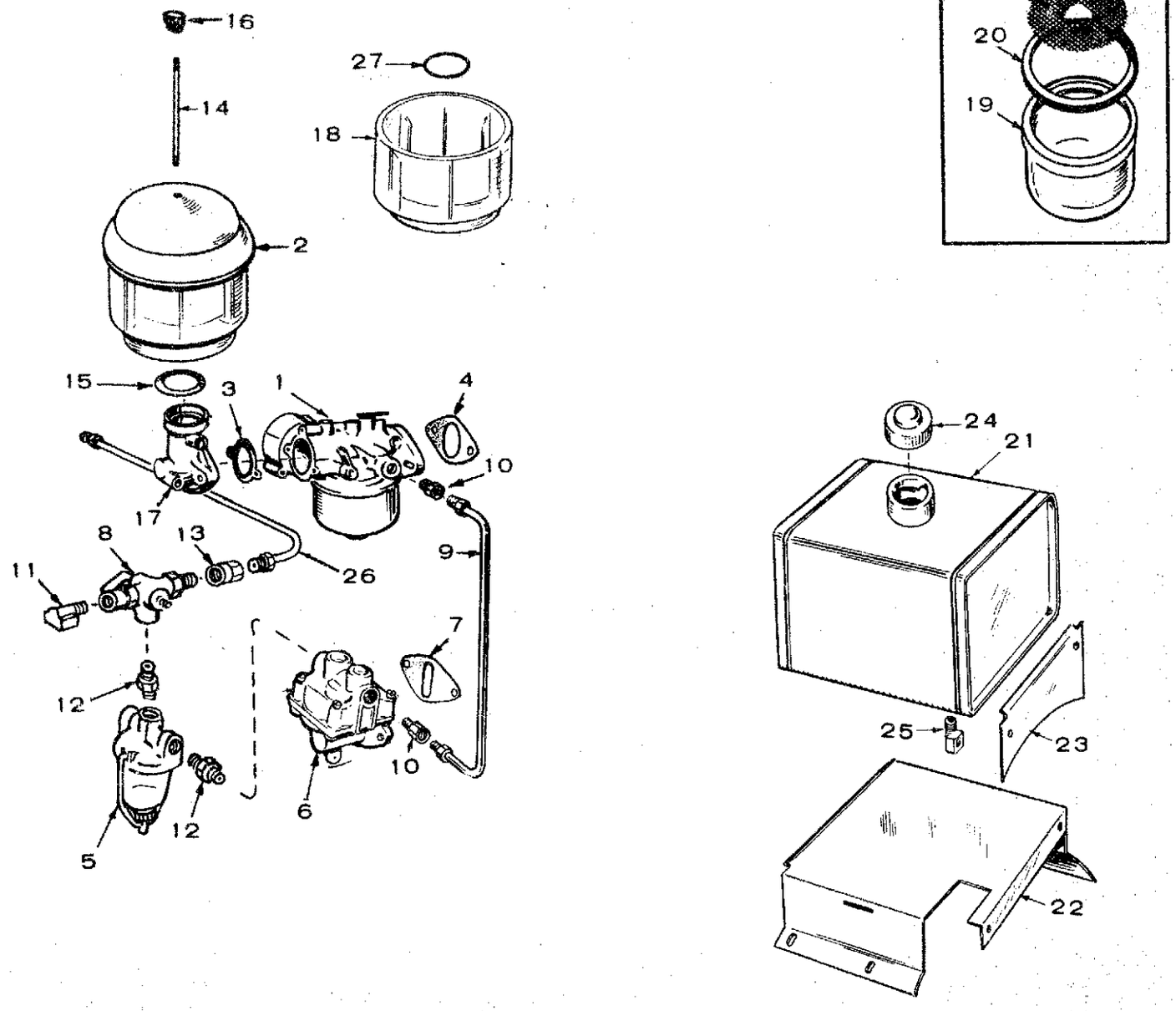
CARBURETOR PARTS GROUP (BEGIN SPEC K) WALBRO

NOTE: See separate group Spec H and J.



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
	146-0092	1	Carburetor, Gasoline
	146-0123	1	Repair Kit, Carburetor - Includes Parts Marked *
1	146-0122	1	Screw, Throttle Stop
2	146-0119	1	Valve, Throttle
3	146-0124	1	*Gasket Kit, Carburetor
5	146-0118	1	Bowl, Fuel
6	146-0112	1	Shaft Assembly, Throttle
7	146-0115	1	*Float Valve, Seat, & Gasket Assembly
8	146-0113	1	Nozzle
10	146-0111	1	*Shaft, Float
11	146-0110	1	Float Assembly
12	146-0109	2	Screw & Washer
13	146-0116	1	*Needle, Idle
14	146-0108	1	Shaft Assembly, Choke
15	146-0105	1	Valve, Choke
16	146-0102	1	*Needle Assembly, High Speed
18	146-0121	2	Spring, Throttle Stop Screw and Idle Screw
19	146-0120	1	Seal, "O" Ring - High Speed Needle
20	146-0114	1	Spring, Choke Stop
21	146-0117	1	Spring, High Speed Needle

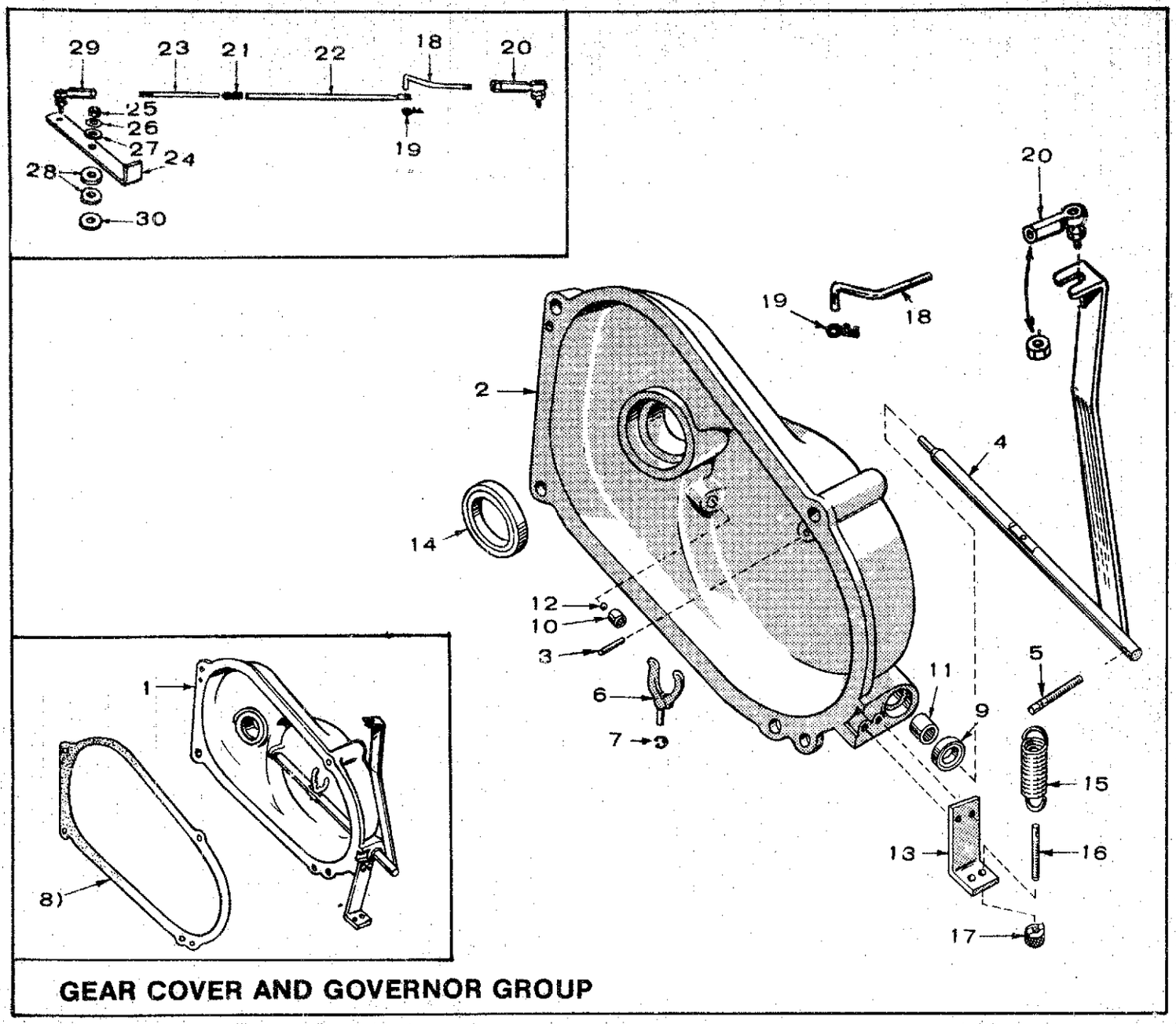
* - Parts Included in Repair Kit.



FUEL SYSTEM GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	CARBURETOR		
	146-0125	1	Spec H and J (Includes Fuel Line)
	146-0092	1	Begin Spec K
2	140-0441	1	Cleaner, Air
3	145-0111	1	Gasket, Air Cleaner
4	145-0110	1	Gasket, Carburetor Mounting
5	149-0079	1	Filter, Fuel
6	149-0693	1	Pump, Fuel
7	149-0003	1	Gasket, Pump Mounting
8	504-0004	1	Valve, Fuel (3 way)
9	LINE, PUMP TO CARBURETOR		
	149-0561	1	Spec H and J
	149-1110	1	Begin Spec K
10	502-0003	2	Connector, Fuel Line - (1) Carburetor Inlet (1) Fuel Pump Outlet
11	502-0020	1	Elbow, Fuel Valve

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
12	502-0082	1	Nipple, Filter Mounting
13	502-0017	1	Connector, Fuel Valve
14	520-0538	1	Stud, Air Cleaner
15	140-0443	1	Gasket, Air Cleaner
16	140-0587	1	Knob, Plastic Air Cleaner
17	140-1269	1	Adapter, Air Cleaner
18	140-0469	1	Cup, Plastic Air Cleaner
19	149-0150	1	Bowl, Fuel Filter
20	149-0149	1	Gasket, Filter Bowl
21	159-0234	1	Tank, Fuel
22	159-0717	1	Bracket, Tank Mounting
23	159-0718	1	Bracket, Tank Hold-down
24	159-0007	1	Cap, Fuel Tank
25	502-0002	1	Elbow, Tank Outlet
26	159-0852	1	Line, Tank to Filter
27	509-0135	1	Seal, "O" Ring
28	149-0202	1	Screen, Filter Bowl

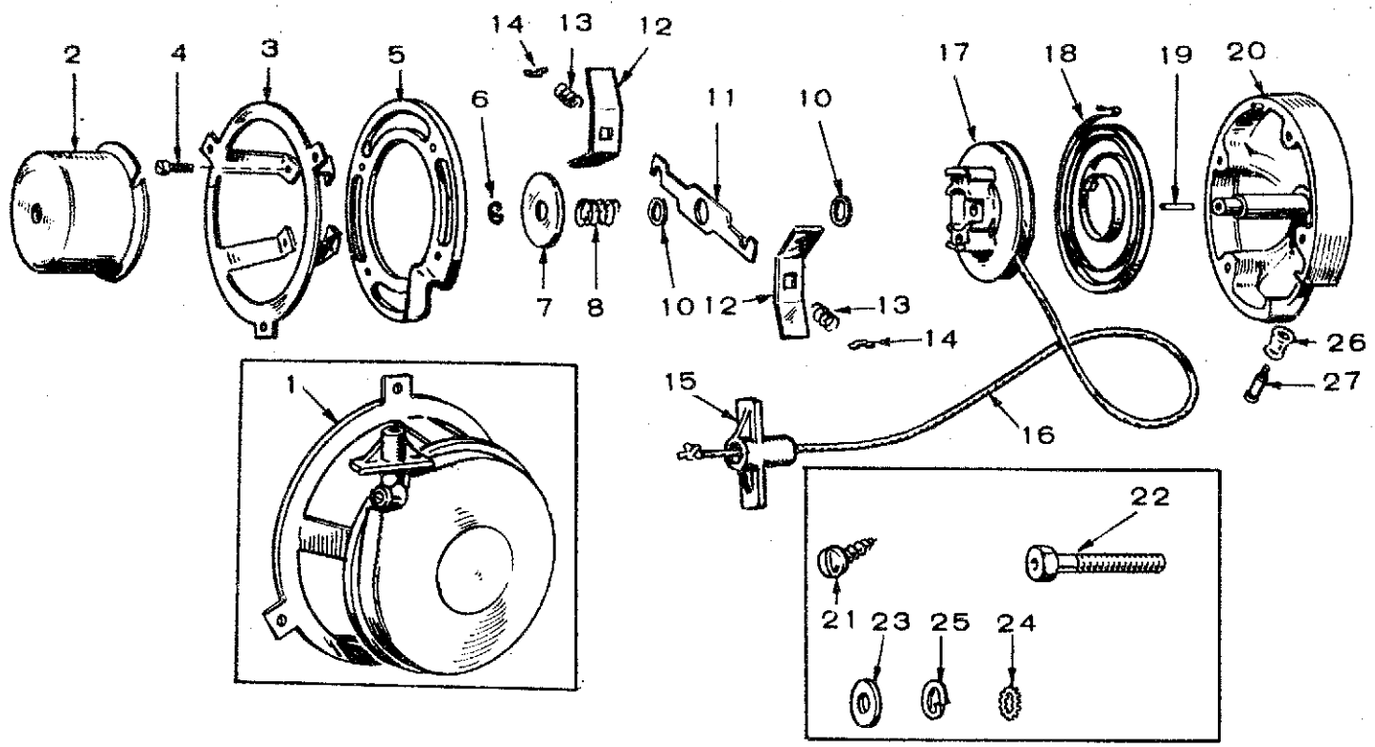


GEAR COVER AND GOVERNOR GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	103-0222	1	Cover Assembly, Gear - Includes Parts Marked *
2			*Cover, Gear - Not Sold Separately
3	516-0117	1	*Pin, Roll - Governor Cup Stop
4	150-0789	1	*Arm and Shaft
5	150-0177	1	*Stud, Sensitivity Adjusting
6	150-0620	1	*Yoke, Shaft
7	518-0129	1	*Ring, Yoke Retainer
8	103-0013	1	Gasket, Gear Cover
9	509-0008	1	*Seal, Shaft Oil
10	510-0008	1	*Bearing, Shaft Lower
11	510-0013	1	*Bearing, Shaft Upper
12	510-0014	1	*Ball, Shaft Thrust
13	150-0156	1	*Bracket, Spring
14	509-0012	1	*Seal, Crankshaft Front Oil
15	150-0098	1	Spring, Governor
16	150-0213	1	Stud, Spring Tension Adjusting
17	870-0131	4	Nut & Washer - Linkage

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
18	150-0786	1	Link, Governor to Carburetor
19	518-0004	1	Clip, Link to Carburetor
20	150-0974	1	Joint, Ball
21	150-0991	1	Spring, Speed Adjusting
22	150-0992	1	Tube, Rod Adapter
23	150-0990	1	Rod, Speed Adjusting
24	150-1002	1	Lever, Speed Adjusting
25	870-0134	1	Pal Nut, Lever Mounting
26	152-0041	1	Washer, Lever Mounting Spring
27	508-0018	1	Washer, Lever Mounting Fibre
28	526-0180	2	Washer, Lever Mounting (1/8" Steel)
29	150-1081	1	Joint, Ball
30	526-0130	1	Washer, Lever Mounting (1/16" Steel)

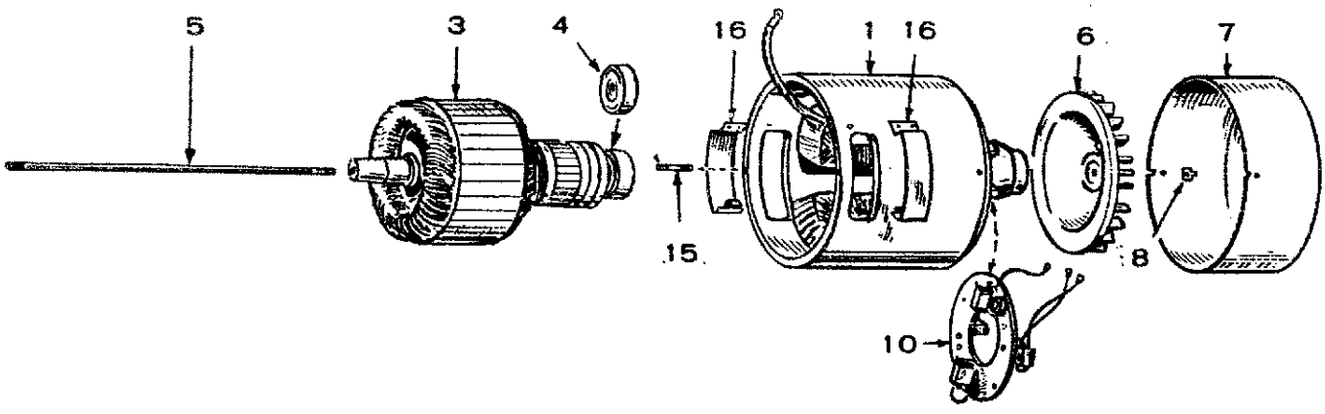
* - Parts contained in Gear Cover Assembly.

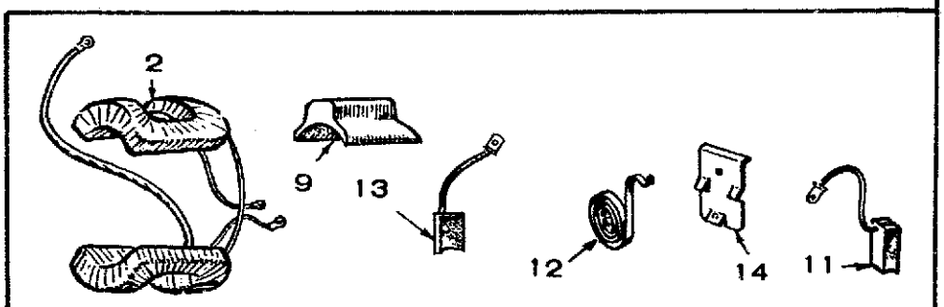


RECOIL STARTER GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	192-0343	1	Starter Kit, Recoil - Complete
2	192-0273	1	Cup, Starter Engaging
3	192-0341	1	Ring, Adapter
4	815-0191	4	Screw, Self Tap Machine
5	192-0274	1	Flange, Middle
6	518-0127	1	Ring, Retainer
7	526-0142	1	Washer, Brake Retainer
8	192-0275	1	Spring, Brake
10	192-0279	2	Washer, Friction
11	192-0277	1	Lever, Brake
12	192-0278	2	Plate, Friction Shoe
13	192-0280	2	Spring, Friction Shoe
14	192-0281	2	Plate, Spring Retainer

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
15	192-0282	1	Handle - Includes Washer
16	192-0283	1	Cord, Rewind
17	192-0284	1	Rotor, Rope Sheave
18	192-0285	1	Spring, Rewind
19	192-0287	1	Pin, Centering
20	192-0286	1	Cover, Starter
21	813-0098	4	Screw, Starter Mounting
22	104-0237	1	Screw, Cup Mounting
23	526-0141	1	Washer, Cup Mounting
24	856-0003	4	Washer, Ring to Housing
25	850-0055	1	Washer, Lock - Cup Mountin
26	192-0339	1	Roller, Rope
27	192-0340	1	Screw, Roller

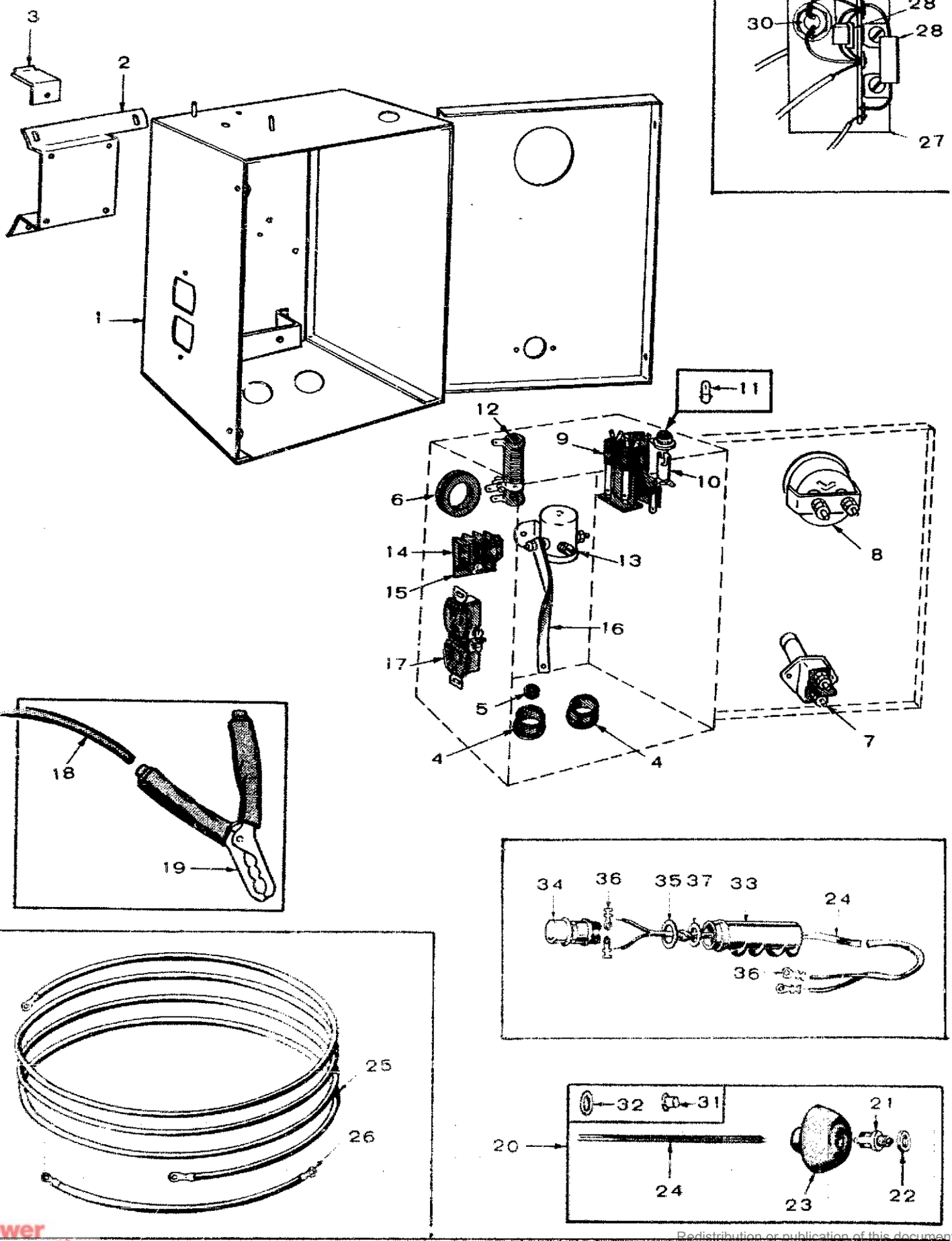




GENERATOR GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	210-1820	1	Frame & Bearing Support - Less Coils & Poleshoes
2	222-1626	1	Coil Assembly, Field
3	201-1247	1	Armature Assembly (with bearing)
4	510-0047	1	Bearing, Armature
5	520-0056	1	Stud, Armature
6	205-0056	1	Blower, Armature
7	234-0249	1	Cover, End
8	232-1362	2	Clip, End Cover
9	221-0142	2	Shoe, Pole
10	212-0289	1	Rig Assembly, Brush (with brushes & springs)
11	214-0082	2	Brush, Commutator
12	212-1011	2	Spring, Commutator Brush
13	214-0072	2	Brush, Collector Ring
14	212-1105	2	Spring, Collector Ring Brush
15	520-0363	4	Stud, Generator
16	234-0119	2	Cover, Air Outlet

CONTROL GROUP



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	BOX, CONTROL		
	301-2433	1	Spec H
	301-2682	1	Begin Spec J
2	301-1870	1	Bracket, Box Mounting
3	301-2441	1	Bracket, Box Support
4	BUSHING, CONTROL MOUNTING		
	331-0088	2	Spec H
	331-0088	4	Begin Spec J
5	508-0002	1	Grommet (for 1/2" hole)
6	508-0004	1	Grommet (for 1-3/8" hole)
7	308-0028	1	Switch, Start
8	302-0556	1	Ammeter, Charge
9	307-0642	1	Relay, Polarity Light - Spec H through K
10	RECEPTACLE, POLARITY LIGHT		
	322-0069	1	Spec H through K (Red)
	322-0076	1	Begin Spec L (Green)
11	320-0004	1	Lamp, Polarity
12	304-0432	1	Resistor, Adjustable
13	307-1046	1	Solenoid, Load
14	332-0609	1	Block, Terminal
15	332-0610	1	Strip, Block Marker
16	332-0570	2	Jumper, Terminal
17	323-0383	1	Receptacle, Duplex
18	416-0525	2	Cable, Battery (less clamp)
19	416-0492	2	Clamp, Cable
20	335-0112	1	Cable Assembly, Start Button - Includes Parts Marked *)
21	308-0258	1	Switch, Start - Used on some Early Models with Ball Grip
22	526-0230	1	Washer, Switch to Ball Grip - Used on Early Models with Ball Grip
23	192-0044	1	Grip, Ball - Used on some Early Models
24	334-0036	1	Cord, Rip (2 wire - #18)
25	CABLE, BEGIN SPEC J		
	336-1607	1	10 ft., to Truck Battery
	336-1608	1	4 ft., to Truck Frame
26	416-0016	1	Cable, Ground - Truck Engine to Frame - Begin Spec J
27	300-0716	1	Protection Assembly, Polarity - Begin Spec L
28	RESISTOR, FIXED (Part of Protection Assembly) - Begin Spec L		
	350-0404	1	1/2 Watt, 5100-Ohm
	350-1126	1	5 Watt, 100-Ohm
29	305-0240	1	Rectifier Diode (part of protection assembly) - Begin Spec L
30	364-0013	1	Rectifier, Gate Controlled (part of protection assembly) - Begin Spec L
31	308-0124	1	Cap, Switch - Used on some Early Models with Ball Grip
32	526-0231	1	Washer (3/4" O.D.) Used on some Early Models with Ball Grip
33	403-0205	1	* Grip, Switch (Long) - Late Models
34	308-0297	1	• Switch, Start - Late Models with Long Grip
35	526-0247	1	• Washer, Flat - Late Models with Long Grip
36	332-0325	4	• Lug, Terminal - Early Models with Ball Grip used 2 only
37	508-0018	1	• Washer, Fibre - Late Models with Long Grip

SERVICE KITS

NOTE: for other kits, refer to the group for the part in question.

98-1100	1	Decal Kit
168-0062	1	Gasket Kit, Plant
333-0124	1	Cold Weather Heater Kit (300 Watt, 120 Volt) - Mounts on cylinder Head under shroud

CUSTOMER SERVICES

OWNER'S WARRANTY SERVICE -
ENGINE DRIVEN ELECTRIC GENERATOR SETS,
SEPARATE GENERATORS, INDUSTRIAL ENGINES

QUALITY OF PRODUCT

Onan products are engineered and designed to perform as stated on product nameplate and published specification. With proper installation and operation, regular maintenance and periodic repair service, the equipment will provide reliable service.

GENERAL WARRANTY PRACTICES

All Onan-manufactured engine-driven electric generator sets, separate generators, and industrial engines are sold with a full one-year warranty. This warranty is issued only to the original user and promises satisfactory performance of the product when properly installed, serviced, and operated under normal conditions, according to the manufacturer's instructions. The text of the Onan published warranty appears in the Onan Operator's Manual sent with the product.

Warranty Registration: A Warranty Registration card accompanies each Onan Product. This card must be properly filled out and returned to the Onan Factory in order to qualify for warranty consideration as covered in this bulletin. When requesting warranty repair work you must provide the purchase date, Onan model, and serial number of the equipment.

Warranty Authorization: Warranty service must be performed by Onan Factory or Onan Authorized Distributors or their Approved and Registered Service Dealers. A complete listing of these Onan Authorized Parts and Service Centers is provided in our brochure F-115, a copy of which is supplied with each Onan Product. These Onan Authorized Service Centers have trained service personnel, parts stock, and the necessary facilities and tools for the service and repair of Onan equipment.

Material Allowances: Onan will allow credit or furnish free of charge to the Onan Authorized Service Station or his Approved Service Dealer, all genuine Onan parts used in a warranty repair of these products which fail to perform as warranted.

Labor Allowance: Onan will allow warranty repair credit to the Onan Authorized Parts and Service Center and his Approved Dealer at straight time labor when the cause of failure is determined to be defective material or factory workmanship. This labor allowance will be based on the factory's standard time schedule of published flat rate labor allowances, or, otherwise a time judged reasonable by the factory. Repair work not covered by warranty will be charged to the owner. The Onan's Warranty practice does not provide for allowance of expenses such as start-up charges, communication charges, transportation charges, travel time and/or mileage, unit removal or installation expense, cost of fuel, oil, normal maintenance adjustments, tune-up adjustments or parts maintenance items, and does not cover incidental or consequential damages.

Administration: Warranty of Onan Products is administered through Onan Authorized Distributors in whose territory the equipment is located. These Distributors and their Approved or Registered Onan Service Dealers are authorized to make settlement of all customer warranty claims within the limits of the manufacturer's warranty policy as described herein.

Onan reserves the right to change warranty practices without prior notice.

MAINTENANCE

A Planned Preventive Maintenance Program is extremely important if you are to receive efficient operation and long service life from your Onan unit. Neglecting routine maintenance can result in premature failure or permanent damage to your equipment. The Onan Operator's Manual sent with the product contains recommended maintenance schedules and procedures.

Maintenance is divided into two categories:

1. Operator Maintenance . . . . . performed by the operator.
2. Critical Maintenance . . . . . performed only by qualified service personnel.

Regular maintenance will help you avoid sudden and costly repairs in the future. Adequate evidence of this scheduled maintenance must be offered when applying for a warranty claim.

INSTALLATION

Installation is extremely important and all Onan Products should be installed in accordance with the manufacturer's recommendations. If the owner experiences any difficulty with such items as mounting, ventilation, exhaust location, fuel lines, wiring, etc., he should immediately contact the company from whom he purchased the equipment so that corrective action can be taken. Although the Onan Authorized Distributor and his Approved or Registered Service Dealers may be able to remedy certain installation difficulties, such repair work is not considered Onan warranty and there will be a charge for this service.

Onan

Minneapolis, Minnesota 55432

MSS-22B
Replaces 23B054 and MSS-22A
Rev. 7-2-73