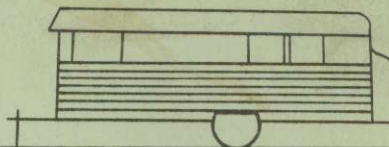
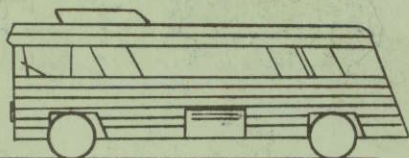
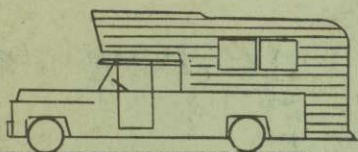


**OPERATOR'S MANUAL
AND
PARTS CATALOG**



ELECTRIC GENERATING PLANTS



FOR RECREATIONAL VEHICLES

SERIES NH

ONAN

• 1400 73RD AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432
A DIVISION OF ONAN CORPORATION

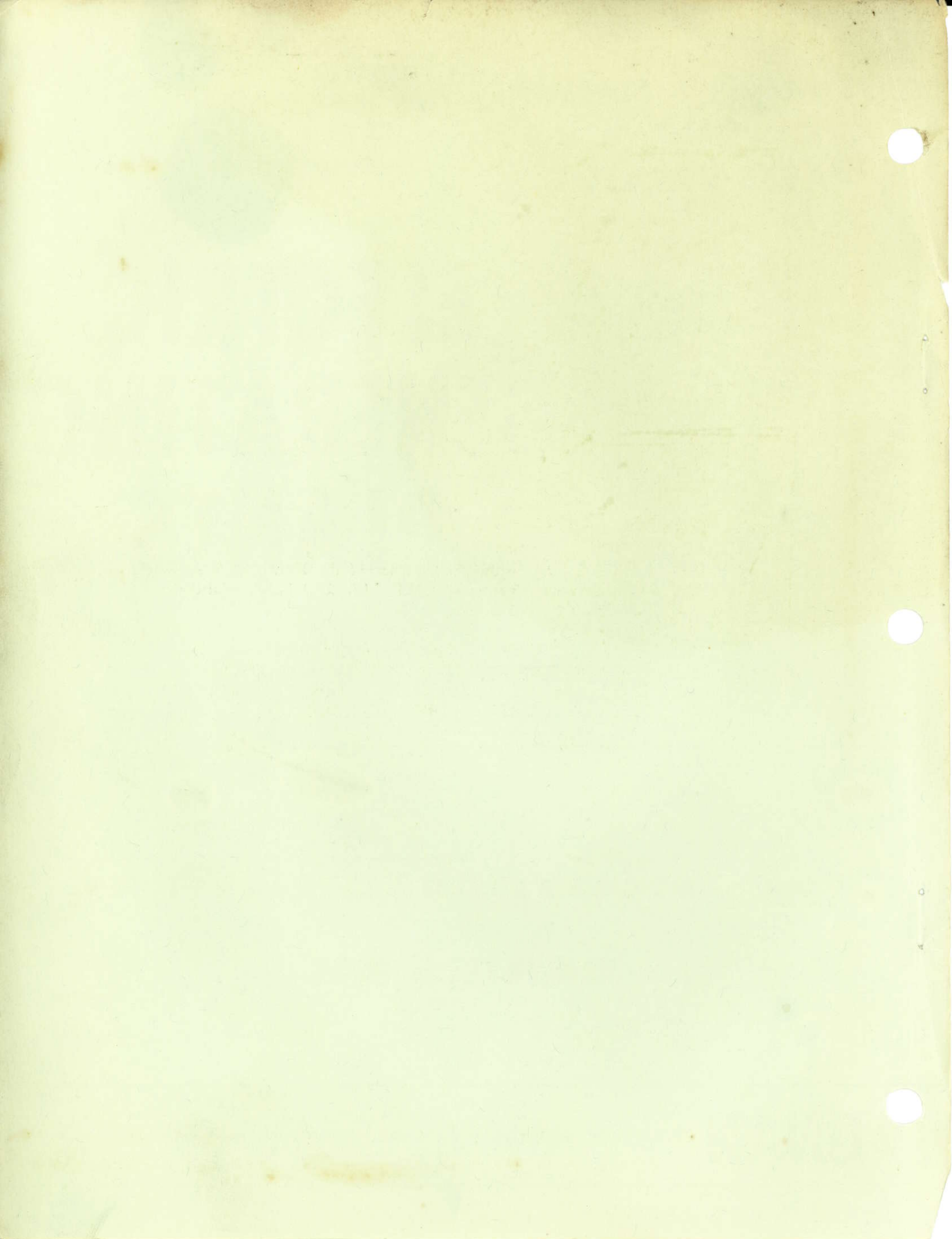


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INTRODUCTION

THIS OPERATOR'S MANUAL CONTAINS INFORMATION PERTAINING TO THE INSTALLATION, OPERATION, AND MAINTENANCE OF YOUR ONAN UNIT. A PARTS CATALOG IS ALSO INCLUDED IN THIS MANUAL.

WE SUGGEST THAT THIS MANUAL AND THE WIRING DIAGRAM WHICH ACCOMPANIES EVERY ONAN UNIT BE RETAINED AND REFERRED TO WHEN MAKING EQUIPMENT ADJUSTMENTS OR ORDERING PARTS. ADDITIONAL COPIES ARE AVAILABLE FOR A NOMINAL CHARGE FROM YOUR ONAN DISTRIBUTOR.

WHEN ORDERING PARTS REMEMBER TO INCLUDE THE ONAN MODEL, SPECIFICATION LETTER, AND SERIAL NUMBER LOCATED ON THE NAMEPLATE OF YOUR ONAN UNIT. THIS IS ESSENTIAL TO ENSURE THE CORRECT PART IS SHIPPED TO YOU.

FOR MAJOR REPAIR SERVICE, CONTACT YOUR ONAN AUTHORIZED DISTRIBUTOR.

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GENERAL INFORMATION

INTRODUCTION

This manual includes instructions for the installation, operation, and maintenance of the NH electric generating plants used in recreational vehicles. Identify your model by referring to the MODEL AND SPECIFICATION NUMBER as shown on the Onan nameplate. Electrical characteristics are shown on the lower portion of the nameplate.

How to interpret the MODEL and SPEC NO.

| | | | | | |
|-----|----|-------|---|-------|---|
| 6.5 | NH | - 3CR | / | 12000 | D |
| | | | | | |
| 1 | 2 | 3 | | 4 | 5 |

1. Indicates KW rating.
2. Factory code for Series identification.
3. Combines with 1 and 2 to indicate model.
3 - 120/240 voltage.
C - Indicates reconnectible feature.
- R - REMOTE. Electric starting at the set or from a remote location.
4. Factory code for optional equipment added to unit.
5. Specification (Spec) letter. Advances when factory makes production modifications.

Onan electric plants are given a complete running test under various load conditions and are thoroughly checked before leaving the factory. Upon receipt of your unit check it thoroughly for any damage that may have occurred during shipping. Tighten loose parts, replace missing parts, and repair any damage before putting the unit into operation.



MANUFACTURER'S WARRANTY

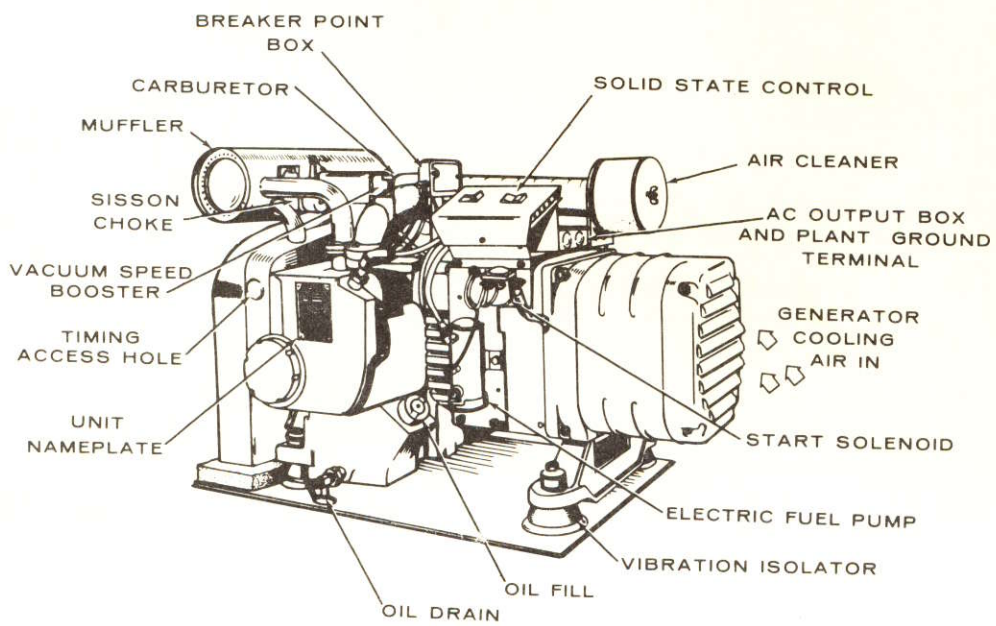
Onan warrants, to the original user, that each product of its manufacture is free from defects in material and factory workmanship if properly installed, serviced and operated under normal conditions according to Onan's instructions.

Onan will, under this warranty, repair or replace, as Onan may elect, any part which on examination shall disclose to Onan's satisfaction to have been defective in material and workmanship; provided that such part shall be returned to Onan's factory or one of its Authorized Service Stations, transportation charges prepaid, not later than one (1) year after the product is first placed in service. Such defective part will be repaired or replaced free of charge, including labor (in accordance with rates approved by Onan) during the stated one (1) year coverage under this warranty.

THIS WARRANTY AND ONAN'S OBLIGATION THEREUNDER IS IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES, INCLUDING LIABILITY FOR INCIDENTAL AND CONSEQUENTIAL DAMAGE.

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

ONAN 1400 73RD AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55422
A DIVISION OF DANAK CORPORATION



TYPICAL NH FOR RECREATIONAL VEHICLES

SPECIFICATIONS

ENGINE

| | |
|--|------------------------------|
| | 6.5 NH |
| Horsepower | 14.0 bhp @ 1800 RPM |
| Number of Cylinders | 2 |
| Cubic Inch Displacement | 60 |
| Cylinder Bore (inches) | 3-9/16 |
| Piston Stroke (inches) | 3 |
| Compression Ratio | 7.0 to 1 |
| RPM (60 Hertz) | 1800 |
| Ignition Type | Battery |
| Battery Voltage | 12 Volt |
| Battery Size | |
| SAE Group 60 | One |
| SAE Rating - 20 Hour (nominal) | 74 amp/hr. |
| Battery Charge Rate | Two-Step |
| Maximum | 6 amp. |
| Minimum | 1.5 amp. |
| Starting System | Exciter Cranking |
| Fuel | Regular Grade |
| Oil Capacity (Quarts) | 4.0 (4.5 with Filter Change) |

GENERATOR

| | |
|---|--------------|
| AC Voltage Regulation | ±4% |
| AC Frequency Regulation (No Load to Rated Load) | 5% (3 Hertz) |
| 60 Hertz Recreational Vehicle Rating (watts) | 6500 |
| Current Rating (amperes) | 27.1 * |
| Phase | Single |
| Power Factor | 1.0 |

SET DIMENSIONS (Approximate)

| | |
|------------------|------------|
| Length | 33 " |
| Width | 20-13/16 " |
| Height | 21-1/2 " |
| Weight | 350 lbs. |

NOTE: Hertz is a unit of frequency equal to one cycle per second.

* Reconnectible to deliver rated output at 120 volt, 2 wire (54.2 amp);
240 volt, 2 wire (27.1 amp).

DIMENSIONS AND CLEARANCES

ALL CLEARANCES GIVEN AT ROOM TEMPERATURE OF 70°F
 All dimensions in inches unless otherwise specified.

| | Minimum | Maximum |
|--|---------|----------------|
| Valve Tappet Clearance | | |
| Intake | | 0.003* |
| Exhaust | | 0.010* |
| Valve Stem in Guide – Intake | 0.0010 | 0.0025 |
| Valve Stem in Guide – Exhaust | 0.0025 | 0.0040 |
| Valve Spring Length | | |
| Free Length | | 1.662 |
| Compressed Length | | 1.375 |
| Valve Spring Tension (lb.) | | |
| Open | 71 | 79 |
| Closed | 38 | 42 |
| Valve Seat Bore Diameter | | |
| Intake | 1.5645 | 1.5655 |
| Exhaust | 1.2510 | 1.2520 |
| Valve Seat Diameter | | |
| Intake | 1.569 | 1.570 |
| Exhaust | 1.255 | 1.256 |
| Valve Stem Diameter | | |
| Intake | 0.3425 | 0.3430 |
| Exhaust | 0.3410 | 0.3415 |
| Valve Guide Diameter (I.D.) | 0.344 | 0.346 |
| Valve Lifter Diameter | 0.7475 | 0.7480 |
| Valve Lifter Bore | 0.7505 | 0.7515 |
| Valve Seat Interference Width | 1/32 | 3/64 |
| Valve Face Angle | | 44° |
| Valve Seat Angle | | 45° |
| Valve Interference Angle | | 1° |
| Crankshaft Main Bearing | 0.0025 | 0.0038 |
| Crankshaft End Play | 0.005 | 0.009 |
| Camshaft Bearing | 0.0015 | 0.0030 |
| Camshaft End Play | 0.003 | – |
| Camshaft Lift | | 0.033 |
| Camshaft Bearing Diameter | 1.3760 | 1.3770 |
| Camshaft Journal Diameter | 1.3740 | 1.3745 |
| Rod Bearing (Forged Rod) | 0.0005 | 0.0023 |
| Connecting Rod End Play (Ductile Iron) | 0.002 | 0.016 |
| Timing Gear Backlash | 0.002 | 0.003 |
| Oil Pump Gear Backlash | 0.002 | 0.005 |
| Piston to Cylinder, Strut Type (Measured below oil-controlling ring – 90° from pin) Clearance | 0.0015 | 0.0035 |
| Piston Pin Diameter | 0.7500 | 0.7502 |
| Piston Pin in Piston | | Thumb Push Fit |
| Piston Pin in Rod | 0.0001 | 0.0005 |
| Piston Ring Groove Width | | |
| Top 1 | 0.0955 | 0.0965 |
| Top 2 | 0.0955 | 0.0965 |
| Top 3 | 0.1880 | 0.1890 |
| Piston Ring Gap in Cylinder | 0.010 | 0.020 |
| Piston Ring Side Clearance (Top compression ring only) | | 0.006 |
| Breaker Point Gap (Full Separation) | | 0.020 |
| Spark Plug Gap – For Gasoline Fuel | | 0.025 |

| | | |
|---|--------|--------|
| Crankshaft Main Bearing Journal – Standard Size | 1.9992 | 2.0000 |
| Main Bearing Diameter | 2.0015 | 2.0040 |
| Main Bearing Clearance | 0.0015 | 0.0043 |
| Crankshaft Rod Bearing Journal – Standard Size | 1.6252 | 1.6260 |
| Cylinder Bore – Standard Size | 3.5625 | 3.5635 |
| Ignition Timing (Without Automatic Spark Advance) | 22°BTC | |
| Stopped (With Automatic Spark Advance) | 3°ATC | |
| Running (With Automatic Spark Advance) | 22°BTC | |
| Magneto Pole Shoe Air Gap | 0.010 | 0.015 |

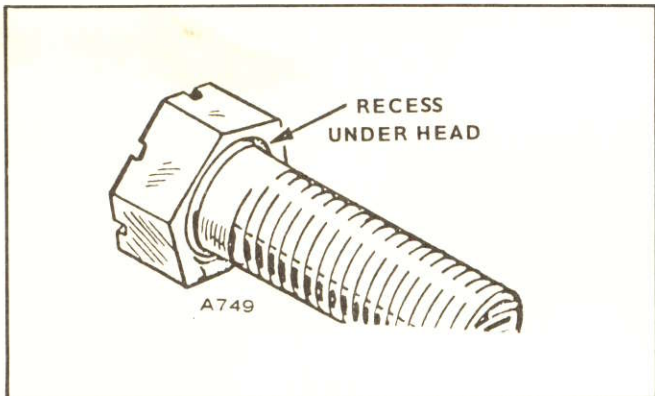
* ± .001 "

ASSEMBLY TORQUES AND SPECIAL TOOLS

TORQUE

Assembly torques as given here require the use of a torque wrench. These assembly torques will assure proper tightness without danger of stripping the threads. If a torque wrench is not available, you will have to estimate the degree of tightness necessary for the stud, nut or screw being installed and tighten accordingly. Be careful not to strip the threads. Check all studs, nuts and screws often with the engine cold. Tighten as needed to prevent them from working loose.

Special Place Bolts do not require lockwashers or gaskets. Never attempt to use a lockwasher with these bolts, it will defeat their purpose. Check all studs, nuts and screws often. Tighten as needed.



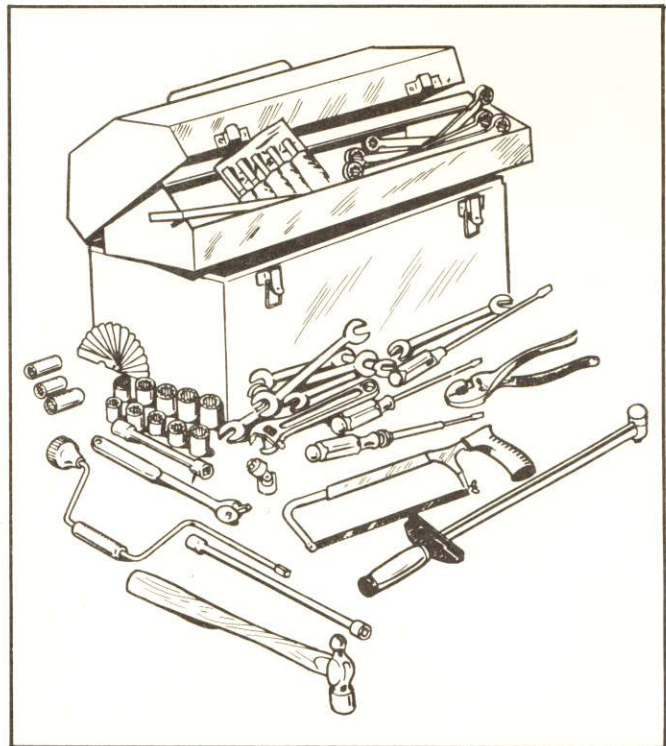
TORQUE SPECIFICATIONS IN LB-FT

| | Min. | Max. |
|---|------|------|
| Connecting Rod Bolt | 27 | 29 |
| Flywheel Mounting Screw | 35 | 40 |
| Fuel Pump Mounting Screws | 5 | 6 |
| Oil Pump | 7 | 9 |
| Gearcase Cover | 8 | 10 |
| Rear Bearing Plate | 25 | 27 |
| Oil Base Mounting Screws | 18 | 23 |
| Cylinder Head Bolt | 17 | 19 |
| Spark Plugs | 15 | 20 |
| Valve Cover Nut | 4 | 8 |
| Manifold Screws - Intake and Exhaust | 16 | 23 |
| Magneto Stator Screws | 8 | 10 |
| Carburetor Mounting Stud Nuts | 8 | 12 |
| Armature Through Stud Nut | 35 | 40 |
| Generator Through Stud Nut | 14 | 16 |
| Blower Housing Screws | 10 | 15 |
| Generator Adapter - To Cylinder Block | 15 | 18 |
| Starter Bracket - To Oil Base | 43 | 48 |

SPECIAL TOOLS

These tools are available from Onan to aid service and repair work.

| | |
|--|---------|
| Crankshaft Gear Pulling Ring | 420A248 |
| Main Crankshaft Bearing Driver | |
| Front and Rear | 420B67 |
| Camshaft Bearing Driver | |
| Front | 420A66 |
| Rear | 420A307 |
| Valve Seat Driver | 420A308 |
| Valve Seat Staker | |
| Intake | 420A309 |
| Exhaust | 420A310 |
| Valve Seat Cutter | 420B311 |
| Oil Seal Guide and Driver | 420B181 |
| Camshaft Bearing Remover | 420A314 |
| Crankshaft Bearing Remover | 420A315 |



ENGINE TROUBLESHOOTING

| TROUBLE | Backfire at Carburetor | Bearing Wear | Black Exhaust | Blue Exhaust | Burned Valves | Connecting Rod Wear | Cylinder Sticking | Engine Wear | Failure to Start | Governor Hunting | High Oil Pressure | Low Oil Pressure | Loss of Coolant (Water Cooled) | Mechanical Knocks | Misfiring | Overheating (Water Cooled) | Overheating (Air Cooled) | Piston Wear | Ring Wear | Poor Compression | Sticking Valves | GASOLINE ENGINE TROUBLESHOOTING GUIDE |
|---------|------------------------|--------------|---------------|--------------|---------------|---------------------|-------------------|-------------|------------------|------------------|-------------------|------------------|--------------------------------|-------------------|-----------|----------------------------|--------------------------|-------------|-----------|------------------|-----------------|---------------------------------------|
| | | | | | | | | | | | | | | | | | | | | | | CAUSE |
| | | | | | | | | | | | | | | | | | | | | | | STARTING SYSTEM |
| | | | | | | | | | | | | | | | | | | | | | | Loose or Corroded Battery Connection |
| | | | | | | | | | | | | | | | | | | | | | | Low or Discharged Battery |
| | | | | | | | | | | | | | | | | | | | | | | Faulty Starter |
| | | | | | | | | | | | | | | | | | | | | | | Faulty Start Solenoid |
| | | | | | | | | | | | | | | | | | | | | | | IGNITION SYSTEM |
| | | | | | | | | | | | | | | | | | | | | | | Ignition Timing Wrong |
| | | | | | | | | | | | | | | | | | | | | | | Wrong Spark Plug Gap |
| | | | | | | | | | | | | | | | | | | | | | | Worn Points or Improper Gap Setting |
| | | | | | | | | | | | | | | | | | | | | | | Bad Ignition Coil or Condenser |
| | | | | | | | | | | | | | | | | | | | | | | Faulty Spark Plug Wires |
| | | | | | | | | | | | | | | | | | | | | | | FUEL SYSTEM |
| | | | | | | | | | | | | | | | | | | | | | | Out of Fuel - Check |
| | | | | | | | | | | | | | | | | | | | | | | Lean Fuel Mixture - Readjust |
| | | | | | | | | | | | | | | | | | | | | | | Rich Fuel Mixture or Choke Stuck |
| | | | | | | | | | | | | | | | | | | | | | | Engine Flooded |
| | | | | | | | | | | | | | | | | | | | | | | Poor Quality Fuel |
| | | | | | | | | | | | | | | | | | | | | | | Dirty Carburetor |
| | | | | | | | | | | | | | | | | | | | | | | Dirty Air Cleaner |
| | | | | | | | | | | | | | | | | | | | | | | Dirty Fuel Filter |
| | | | | | | | | | | | | | | | | | | | | | | Defective Fuel Pump |
| | | | | | | | | | | | | | | | | | | | | | | INTERNAL ENGINE |
| | | | | | | | | | | | | | | | | | | | | | | Wrong Valve Clearance |
| | | | | | | | | | | | | | | | | | | | | | | Broken Valve Spring |
| | | | | | | | | | | | | | | | | | | | | | | Valve or Valve Seal Leaking |
| | | | | | | | | | | | | | | | | | | | | | | Piston Rings Worn or Broken |
| | | | | | | | | | | | | | | | | | | | | | | Wrong Bearing Clearance |
| | | | | | | | | | | | | | | | | | | | | | | COOLING SYSTEM (AIR COOLED) |
| | | | | | | | | | | | | | | | | | | | | | | Poor Air Circulation |
| | | | | | | | | | | | | | | | | | | | | | | Dirty or Oily Cooling Fins |
| | | | | | | | | | | | | | | | | | | | | | | Blown Head Gasket |
| | | | | | | | | | | | | | | | | | | | | | | COOLING SYSTEM (WATER COOLED) |
| | | | | | | | | | | | | | | | | | | | | | | Insufficient Coolant |
| | | | | | | | | | | | | | | | | | | | | | | Faulty Thermostat |
| | | | | | | | | | | | | | | | | | | | | | | Worn Water Pump or Pump Seal |
| | | | | | | | | | | | | | | | | | | | | | | Water Passages Restricted |
| | | | | | | | | | | | | | | | | | | | | | | Defective Gaskets |
| | | | | | | | | | | | | | | | | | | | | | | Blown Head Gasket |
| | | | | | | | | | | | | | | | | | | | | | | LUBRICATION SYSTEM |
| | | | | | | | | | | | | | | | | | | | | | | Defective Oil Gauge |
| | | | | | | | | | | | | | | | | | | | | | | Relief Valve Stuck |
| | | | | | | | | | | | | | | | | | | | | | | Faulty Oil Pump |
| | | | | | | | | | | | | | | | | | | | | | | Dirty Oil or Filter |
| | | | | | | | | | | | | | | | | | | | | | | Oil Too Light or Diluted |
| | | | | | | | | | | | | | | | | | | | | | | Oil Level Low |
| | | | | | | | | | | | | | | | | | | | | | | Oil Too Heavy |
| | | | | | | | | | | | | | | | | | | | | | | Dirty Crankcase Breather Valve |
| | | | | | | | | | | | | | | | | | | | | | | THROTTLE AND GOVERNOR |
| | | | | | | | | | | | | | | | | | | | | | | Linkage Out of Adjustment |
| | | | | | | | | | | | | | | | | | | | | | | Linkage Worn or Disconnected |
| | | | | | | | | | | | | | | | | | | | | | | Governor Spring Sensitivity Too Great |
| | | | | | | | | | | | | | | | | | | | | | | Linkage Binding |

INSTALLATION

If the electric generating plant is to operate properly, it must be correctly installed. This manual gives some of the more important aspects of installation. For more details, a Technical Bulletin (T-012) is available from Onan.

Ventilation is the most important factor to consider. The unit must have enough cooling air to operate safely and efficiently. The heated air must be disposed of to keep the engine from overheating and losing power. For the

NH plant running at 1800rpm, the amount of air discharged is 750cfm. The minimum free air inlet with no filter or restriction is 140 sq. in.

Onan Vacu-Flo cooled units are specifically designed for mounting in small compartments (where proper cooling is difficult) and are equipped to provide sufficient cooling air and adequate disposition of heated air. With this type of cooling, a centrifugal fan in a scroll housing pulls cooling air into the compartment

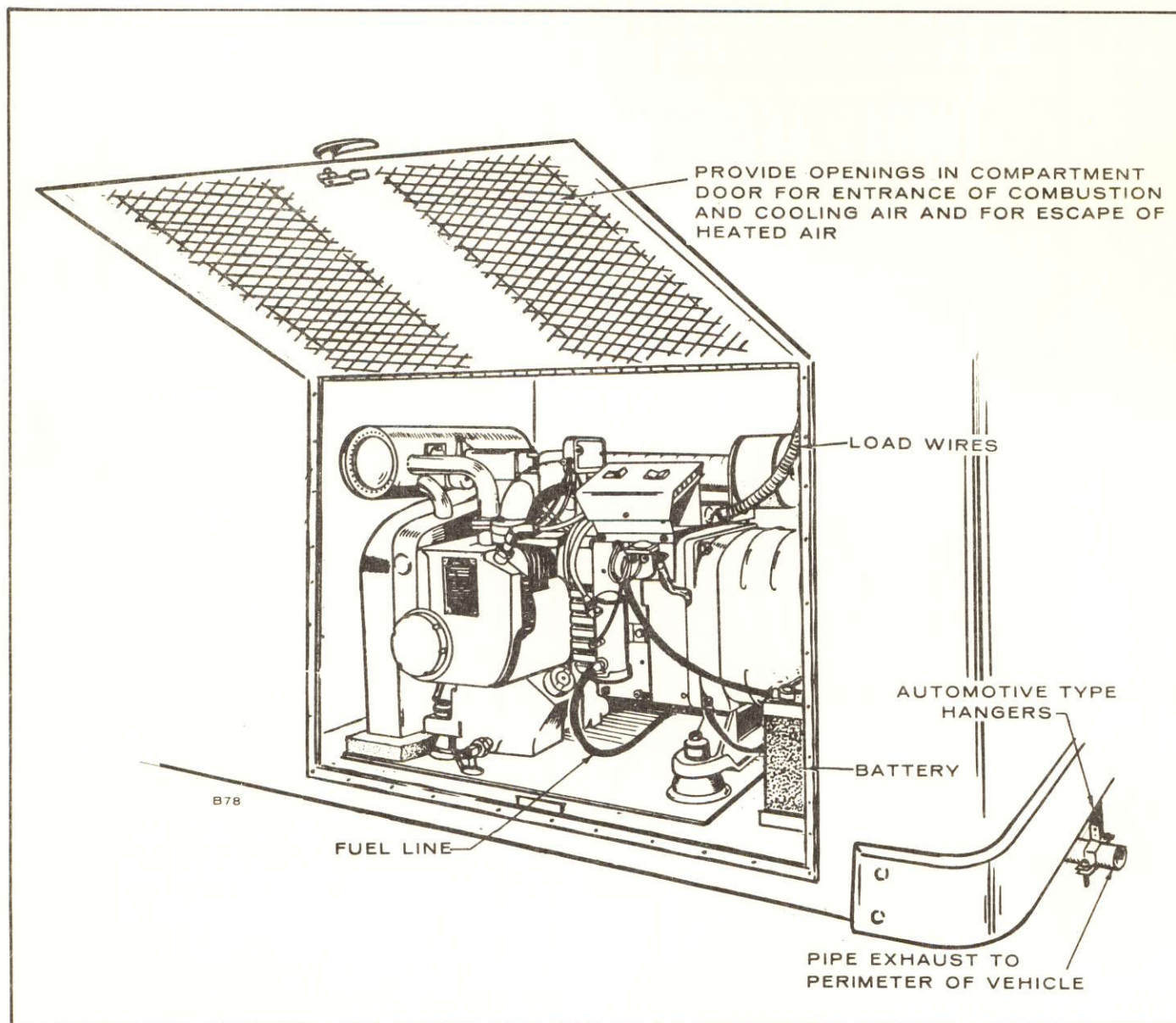


FIGURE 1. TYPICAL MOBILE INSTALLATION

and over the cooling fins and surfaces of the engine. Heated air is expelled through a single discharge and away from the unit and installation area.

LOCATION

The compartment itself should be of vapor tight design and completely independent of living quarters. The interior lining should be fireproof. A sheet metal covered compartment may be readily sealed and lends itself easily to treatment. The set may have to be removed for service, so make the door large enough to facilitate removal of the unit.

The compartment location is determined by physical size, access opening and most important, best mounting support. Allow 2" clearance on all sides of the unit for rocking on mounts.

POSITIONING

The following should be considered for accessibility when mounting the unit in a compartment. (Position so operating instructions and nameplate are visible and/or install an accessible nameplate, data decal or sticker.)

1. Make air discharge duct as short as possible. Position so exhaust heated air is not drawn into cool air inlet.
2. Air cleaner should be easy to remove and service.
3. Battery or batteries must be accessible for service.
4. Oil fill tube cap should be easy to reach.
5. The control box switch should be visible.
6. Provide space for muffler.
7. Oil drain should be readily accessible.
8. Cylinder head should be readily accessible for service.
9. Rope start sheave should be accessible.

MOUNTING

The best method of mounting is to attach the plant to a mounting platform using Onan vibration isolators. See Figure 2. The vibration isolators must be properly installed to minimize vibration. The Onan mounts are a "fail-safe" type with mounting bolts that prevent the unit from breaking loose if the mounts are damaged.

The mounting base should be fastened directly to the supporting frame. Channel, box or angle iron can be used for a mounting base frame. This will provide the greatest support, plus a base sealed against air, dirt and sound. Do not use sheet metal or thin plate without a supporting frame.

CAUTION Plywood is vulnerable to climatic elements, will tend to become oil soaked, and is not fireproof.

The supporting base or platform must be strong enough to withstand the shock from sharp turns, bumps, holes, etc. which accompany mobile applications. Brace the mounting platform to eliminate any chance of the platform bowing or bending.

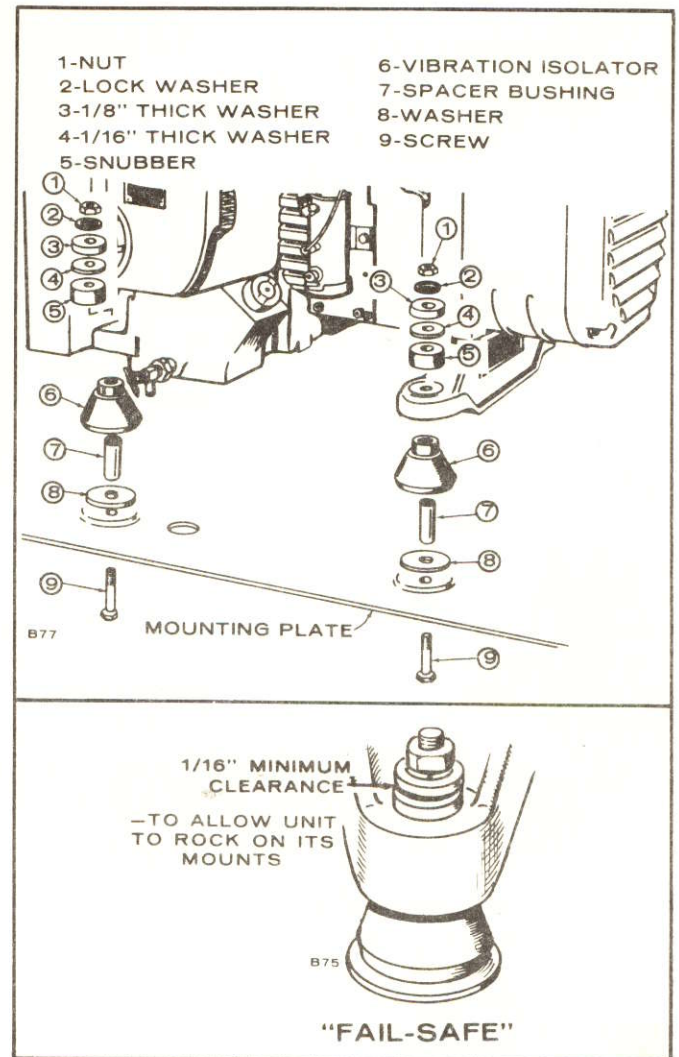


FIGURE 2. ONAN VIBRATION ISOLATORS

FUEL SUPPLY (GASOLINE)

Install a separate fuel tank for the unit. If the plant has to be connected to the vehicle supply tank, do not tee off the vehicle supply line. The generating plant must have a separate fuel line because the more powerful vehicle fuel pump will starve the generating unit for gasoline.

FUEL LINES

Use annealed copper or seamless steel tubing and flared connections. Run fuel lines, at the top level of the tank to a point as close to the engine as possible, to reduce the danger of fuel siphoning out of the tank if the line should break. Install lines so they are accessible at all times and protected from mechanical injury. Use nonferrous metal straps, without sharp edges, to secure the fuel lines.

EXHAUST SYSTEM

Observe the following when installing the plant's exhaust system:

1. Construct exhaust system to prevent damage from leakage and vibration. Use automotive type hangers and connections under the vehicle.
2. Use an insulating thimble where exhaust piping passes through a partition or floor of flammable material. Exhaust lines may be asbestos wrapped to reduce heat radiation within the compartment.
3. Terminate the exhaust outlet aft of the set compartment and extend to perimeter of vehicle so DEADLY exhaust fumes will not enter vehicle under ordinary conditions of driving or parking.

WARNING Do not install the exhaust outlet closer than three feet from the gasoline filler spout. Do not pipe exhaust into Vacu-Flo scroll.

When installing mufflers, other than those supplied with the unit or if the exhaust system is excessively complicated, the exhaust back pressure should be checked. Exhaust back pressure at rated load, measured at the exhaust manifold, should not exceed 2 in. Hg. (Mercury column). Where a tapped hole is not provided, the manifold and/or a pipe coupling may be drilled and tapped. After measurement is made, plug the hole with an ordinary pipe plug.

WARNING Do not use discharged Vacu-Flo air for heating since it may contain carbon monoxide or other poisonous gases.

BATTERY CONNECTION

Connect the positive (+) battery cable to the start solenoid. Connect the negative (-) cable to the generator through-bolt. Refer to Figure 3.

CAUTION Do not disconnect the starting batteries while the engine is running. The resulting overvoltage will damage the electric choke and other control components. Do not reverse battery connections; doing so may damage the electrical system.

In mobile applications where the generator is normally operated in ambient temperatures above 0°F and the battery is kept charged by frequent running of the unit, a single 12 volt battery of 74 amp/hr capacity minimum is sufficient.

GROUND (GENERATOR TO VEHICLE)

A solderless terminal is provided between AC output box and control on top side of unit. Connect a ground between this terminal and clean, bare metal on vehicle frame. See Figure 3.

LOAD WIRE CONNECTIONS

The set nameplate shows the electrical output rating of the set in watts, volts and cycles. The wiring diagram shows the electrical circuits and connections necessary for the available output voltage. Also see Figure 4.

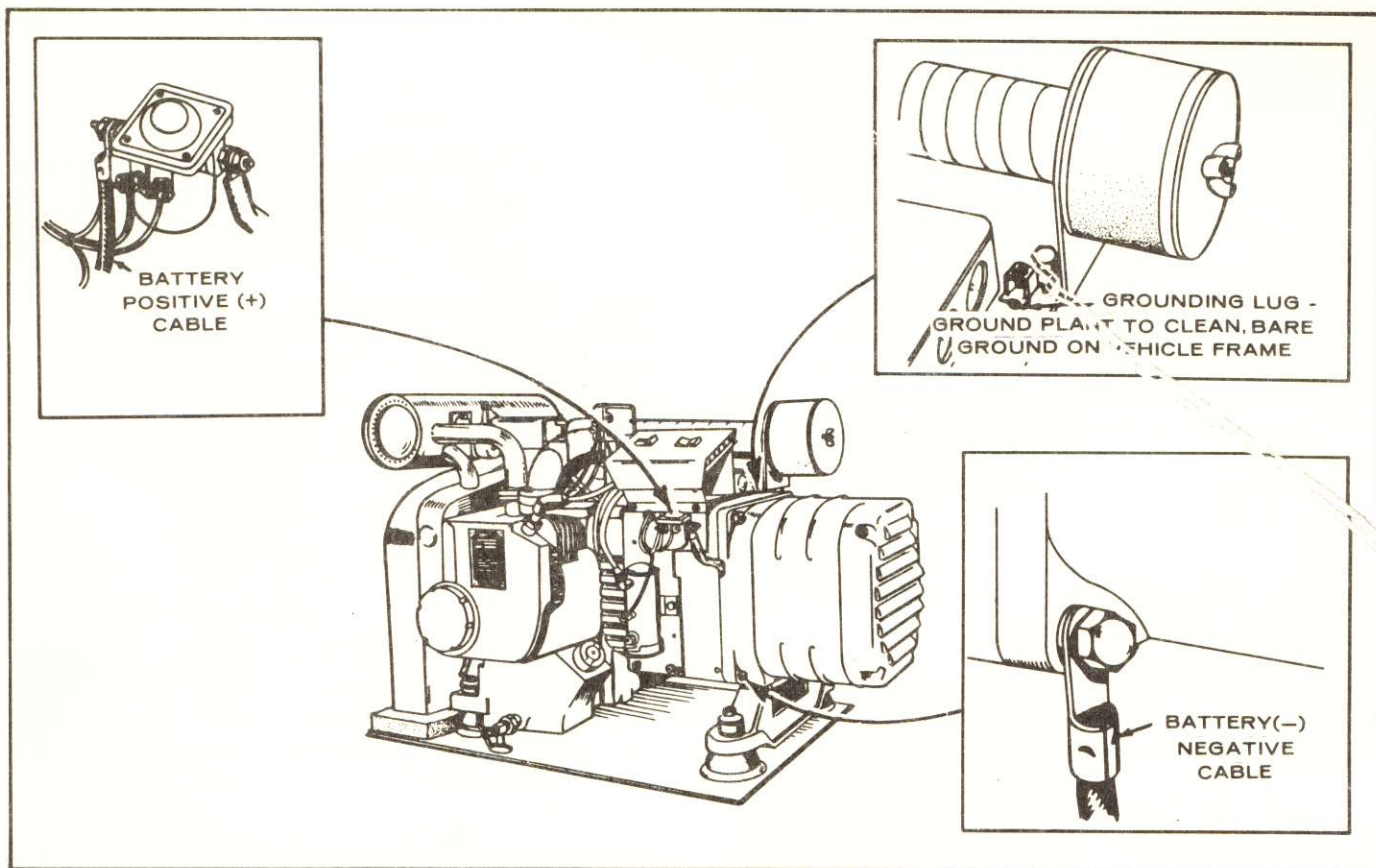


FIGURE 3. BATTERY AND GROUND CONNECTION

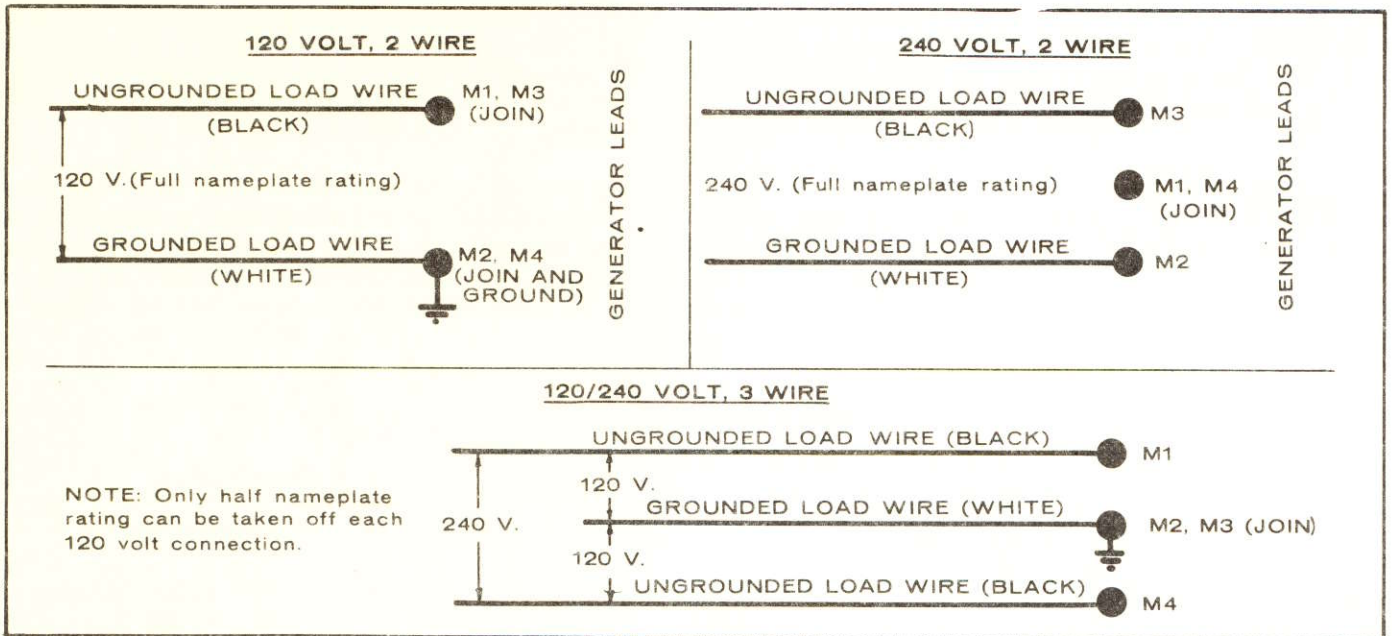


FIGURE 4. LOAD CONNECTIONS

Meet all applicable code requirements. A qualified serviceman or electrician should make the installation and the installation should be inspected and approved. The AC output box has provisions to accommodate load wires. Use flexible conduit and stranded load wires near the set to absorb vibration. Use sufficiently large insulated wires. Strip the insulation from the wire ends as necessary for clean connections. Connect each load wire to the proper generator output lead inside the AC output box. Insulate bare ends of ungrounded wires. Install a fused main switch (or circuit breaker) between the generating set and the load.

Output Lead Markings: Generator leads are marked, M1, M2, M3 and M4. These identifying marks also appear on the wiring diagram.

Voltage Selection on Reconnectable Single Phase Generators: These units are reconnectable for use as 120/240volt, 3 wire; 120 volt, 2 wire; or a 240 volt, 2 wire power source (see Figure 4). Use the connection for two wire service when one load exceeds 1/2 the rated capacity. Balance the load when connecting for three-wire service.

Balancing the Load: Current for any one output lead must not exceed nameplate rating. Serious overloading can damage the generator windings. When two or more single phase circuits are available, divide the load equally between them.

CONTROL BOARD REMOTE WIRING (BEGIN SPEC R)
The printed circuit board (located under start-stop control) is the "heart" of the generating plant's control system. Terminals 1 through 9, on the left side of printed circuit board, (Figure 6) connect to engine components such as:

- Ignition Points
- Ignition Coil and Fuel Pump
- Start Solenoid
- LOP (Low Oil Pressure)
- HET (High Engine Temperature)
- Charging Resistors

Terminals 10 through 18, located on right side of printed circuit board, are for connection to a Remote Control Station. These include the following options:

- Start-Stop Switch
- Charging Ammeter
- Running Time Meter
- Generator "On" Light
- LOP (Low Oil Pressure) Alarm
- HET (High Engine Temperature) Alarm

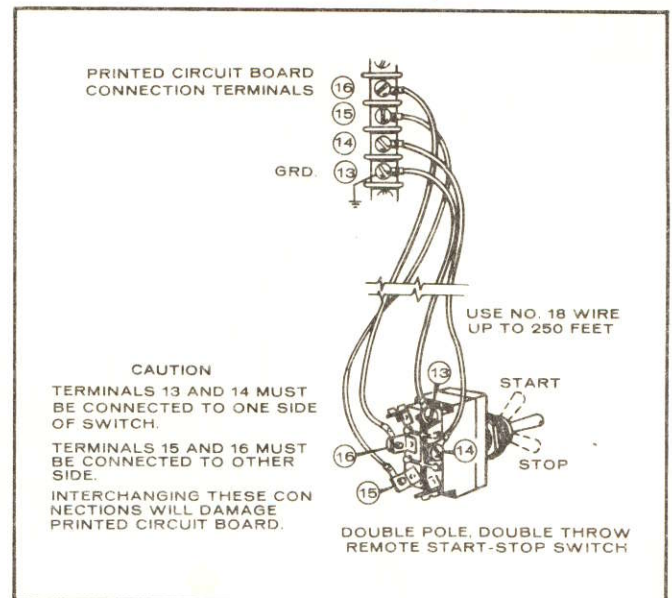


FIGURE 5. REMOTE START-STOP SWITCH

Remote Start-Stop Switch: To connect a remote start-stop switch, use a double-throw, double-pole switch (Onan No. 308A329) and connect as shown in Figures 5 and 6. Use No. 18 wires for connection for distances up to 250 feet.

CAUTION Terminal 13 is a ground connection for the printed circuit board and must always be connected.

CAUTION Do not attempt to check for current flow on the printed circuit board by jumper-

ing across components with a screwdriver, wire, etc. Always have these boards checked by an authorized Onan Service Center or a qualified electrician using the proper instruments (e.g. voltmeter, ohmmeter or multimeter).

Fused Connection: A small fuse (F1), used to protect the circuit in case battery connections are reversed, is located under the Stop side of Start-Stop switch (between CR4 and CR5). If fuse is damaged, replace by carefully clearing out solder holes and replacing the fuse with a bare, No. 36 wire and resoldering the holes.

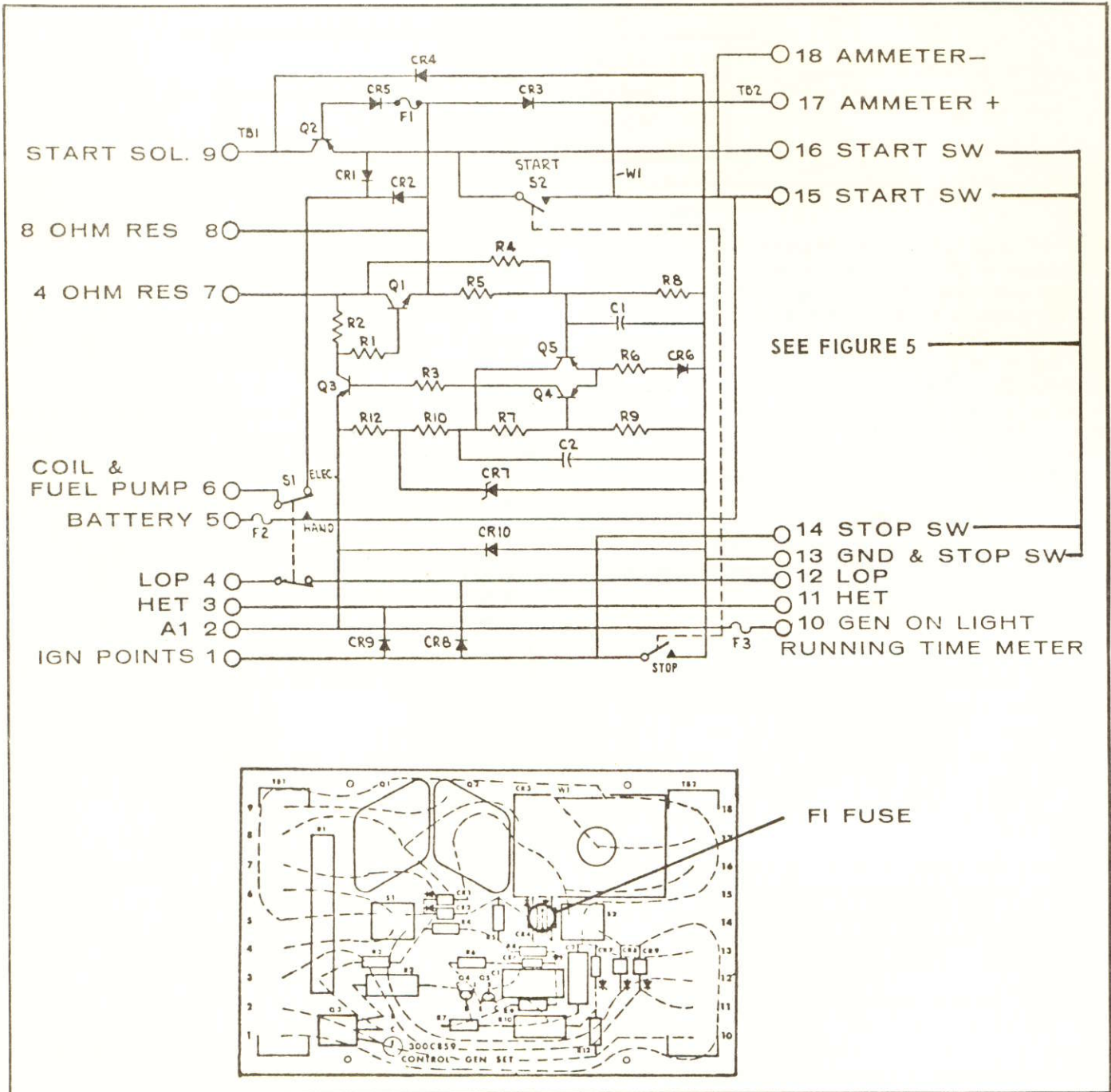


FIGURE 6. SOLID-STATE CONTROL BOARD

OPERATION

BEFORE STARTING

Crankcase Oil: Be sure the crankcase has been filled with oil to the "FULL" mark on the oil level indicator. Refer to the MAINTENANCE SECTION for the recommended oil changes and complete lubricating oil recommendations.

Recommended Fuel: Use clean, fresh, regular grade, automotive gasoline. Do not use highly leaded premium types.

For new engines, the most satisfactory results are obtained by using unleaded gasoline. For older engines that have previously used leaded gasoline, heads must be taken off and all lead deposits removed from engine before switching to unleaded gasoline.

CAUTION *If lead deposits are not removed from engine before switching from leaded to unleaded gasoline, preignition could occur causing severe damage to the engine.*

ELECTRIC STARTING

Push the Start-Stop switch to its "START" position. Release the switch as soon as the engine starts.

If the engine fails to start at first try, inhibitor oil used at the factory may have fouled the spark plugs. Remove the plugs, clean in a suitable solvent, dry thoroughly and install. Heavy exhaust smoke when the engine is first started is normal and is caused by the inhibitor oil.

APPLYING LOAD

If practical, allow unit to warm up before connecting a heavy load. Continuous generator overloading may cause high operating temperatures that can damage the windings. Keep the load within the nameplate rating.

STOPPING

1. Push Start-Stop switch to "STOP" position.
2. Release switch when unit stops.

BREAK-IN PROCEDURE

Controlled break-in with the proper oil and a conscientiously applied maintenance program will help to assure satisfactory service from your Onan electric generating plant.

When operating engine for the first time, use the following sequence using SE or SE/CC oil (former designation was MS or MS/DG):

1. One half hour at 1/2 load.
2. One half hour at 3/4 load.
3. Full load.
4. Change crankcase oil after the first 50 hours of operation.

BATTERY CHARGING (Begin Spec D)

The battery charge rate is automatically controlled by a solid-state voltage regulator. The high charge rate was set at the factory for average operating conditions.

INFREQUENT SERVICE

If the unit is used infrequently, extended shutdown periods can result in difficult starting. Run unit at least 30 minutes every week to eliminate hard starting.

HIGH TEMPERATURES

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

LOW TEMPERATURES

1. Use correct SAE No. oil for temperature conditions. Change oil only when engine is warm. If an unexpected temperature drop causes an emergency, move the vehicle to a warm location.
2. Use fresh gasoline. Protect against moisture condensation. Below 0°F adjust carburetor main jet for a slightly richer fuel mixture.
3. Keep ignition system clean, properly adjusted and batteries in a well charged condition.
4. Partially restrict cool air flow, but use care to avoid overheating.

OUT-OF-SERVICE PROTECTION

Protect a plant that will be out-of-service for more than 30 days as follows:

1. Run the plant until thoroughly warm.
2. Turn off fuel supply and run until engine stops.
3. Drain oil from oil base while still warm. Refill and attach a warning tag stating oil viscosity used.
4. Remove each spark plug. Pour 1 oz. (two table-spoons) of rust inhibitor (or SAE #50 oil) into each cylinder. Crank engine slowly (by hand) several times. Install spark plugs.
5. Service air cleaner.
6. Clean governor linkage and protect by wrapping with a clean cloth.
7. Plug exhaust outlet to prevent entrance of moisture, dirt, bugs, etc.
8. Wipe generator brushes, slip rings, etc. Do not apply lubricant or preservative.

9. Wipe entire unit. Coat rustable parts with a light film of grease or oil.
10. If battery is used, disconnect and follow standard battery storage procedure.

DUST AND DIRT

1. Keep plant clean. Keep cooling surfaces clean.
2. Service air cleaner as frequently as necessary.
3. Change crankcase oil every 50 operating hours or sooner.
4. Keep oil and gasoline in dust-tight containers.
5. Keep governor linkage clean.
6. Clean generator brushes, slip rings and commutator. Do not remove normal (dark brown) film. Do not polish.

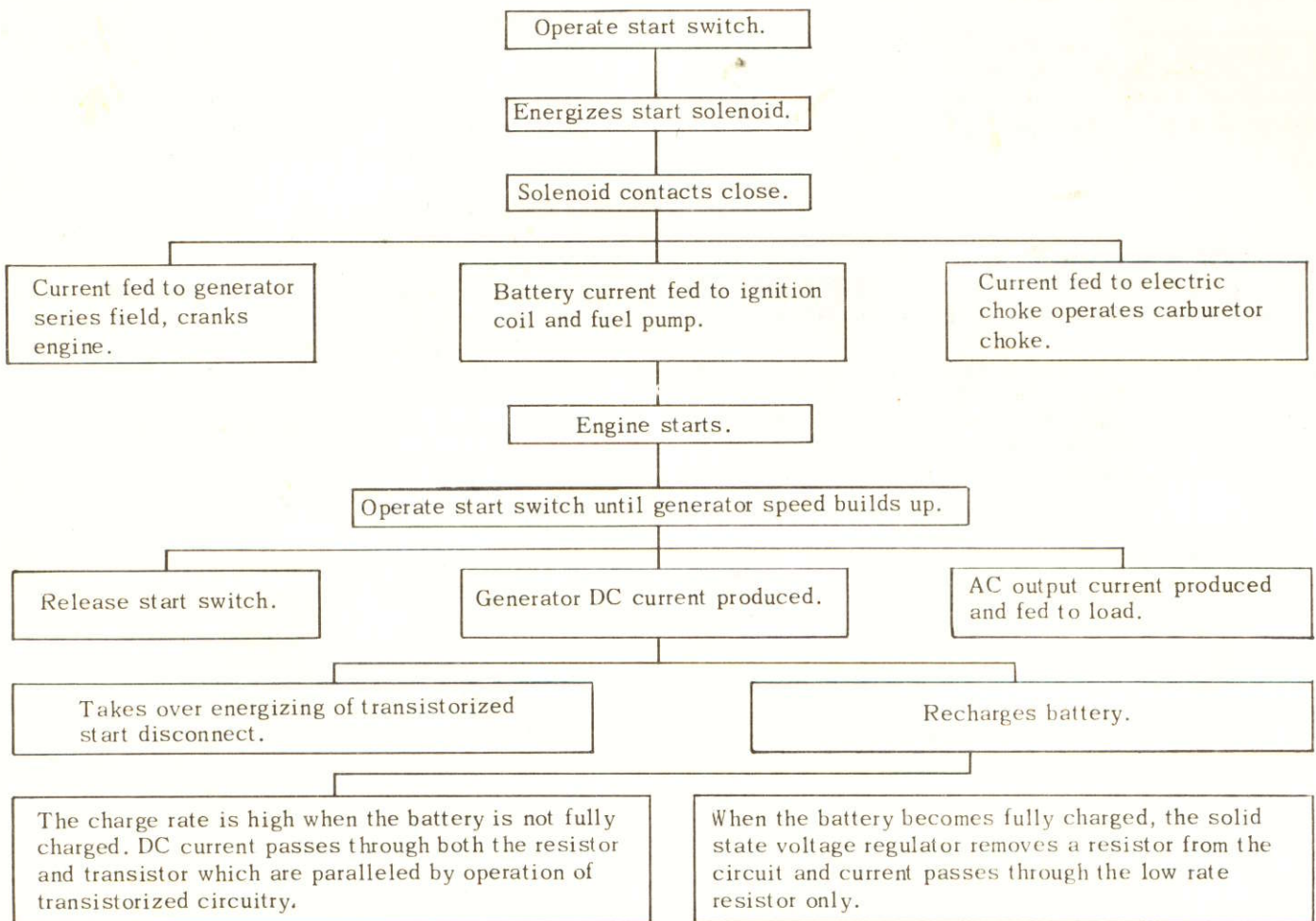
HIGH ALTITUDE

For operation at altitudes of 2500 feet above sea level, close carburetor main jet adjustment slightly to maintain proper air-to-fuel ratio (refer to the ADJUSTMENT SECTION). Maximum power will be reduced approximately 4% for each 1000 feet above sea level, after the first 1000 feet.

SEQUENCE OF OPERATION

See Table 1 for a typical sequence of operation for your Onan electric generating plant.

TABLE 1. SEQUENCE OF OPERATION



ADJUSTMENTS

GENERAL

Satisfactory engine performance is largely dependent upon correct adjustments. However, adjustments cannot fully compensate for low engine power due to wear, etc. If trouble develops, follow an orderly procedure to determine the cause before making any adjustment. Refer to the Troubleshooting Chart for help in checking causes of troubles which may occur.

BREAKER POINTS

1. Remove the two screws and the cover on the breaker box.
2. Remove the two spark plugs so engine can be easily rotated by hand.
3. Turn flywheel in a clockwise direction approximately 1/4 turn after top center (TC).
4. To adjust gap refer to Figure 7. Loosen screws (A) and turn cam (B) until point gap measures .020" with a flat thickness gauge. Retighten screws (A) and recheck gap.
5. If points are slightly burned, dress smooth with a file or fine stone. If points appear to be burned and pitted, replace them with a new set.
6. Replace spark plugs and breaker box cover.

IGNITION TIMING

Both spark plugs on the NH fire simultaneously, thus the need for a distributor is eliminated. Spark advance is set at 22°BTC (before top center) and should be maintained for best engine performance. Always check timing after replacing ignition points or if noticing poor engine performance. Proceed as follows:

Timing Procedure – Engine Running:

1. To accurately check the ignition timing, use a timing light when engine is running. Connect the timing light according to its manufacturer's instructions. Either spark plug can be used as they fire simultaneously.
2. Remove the plug from the timing hole.
3. Start the engine and check the timing. The mark on the flywheel should line up with the 22°BTC mark on the cover.
4. If timing needs adjustment, loosen the mounting screws on breaker box and move left to retard or right to advance the timing.
5. Start engine to be sure mark on flywheel lines up with 22° mark on cover.
6. Tighten all screws, replace timing plug.

Timing Procedure – Engine Not Running:

1. Connect a continuity test lamp set across the ignition breaker points. Touch one test prod to the breaker box terminal to which the coil lead is connected and touch the other test prod to a good ground on the engine.
2. Turn crankshaft against rotation (counterclockwise) until the points close. Then slowly turn the crankshaft with rotation (clockwise).
3. The lamp should go out just as the points break which is the time at which ignition occurs (22°BTC).

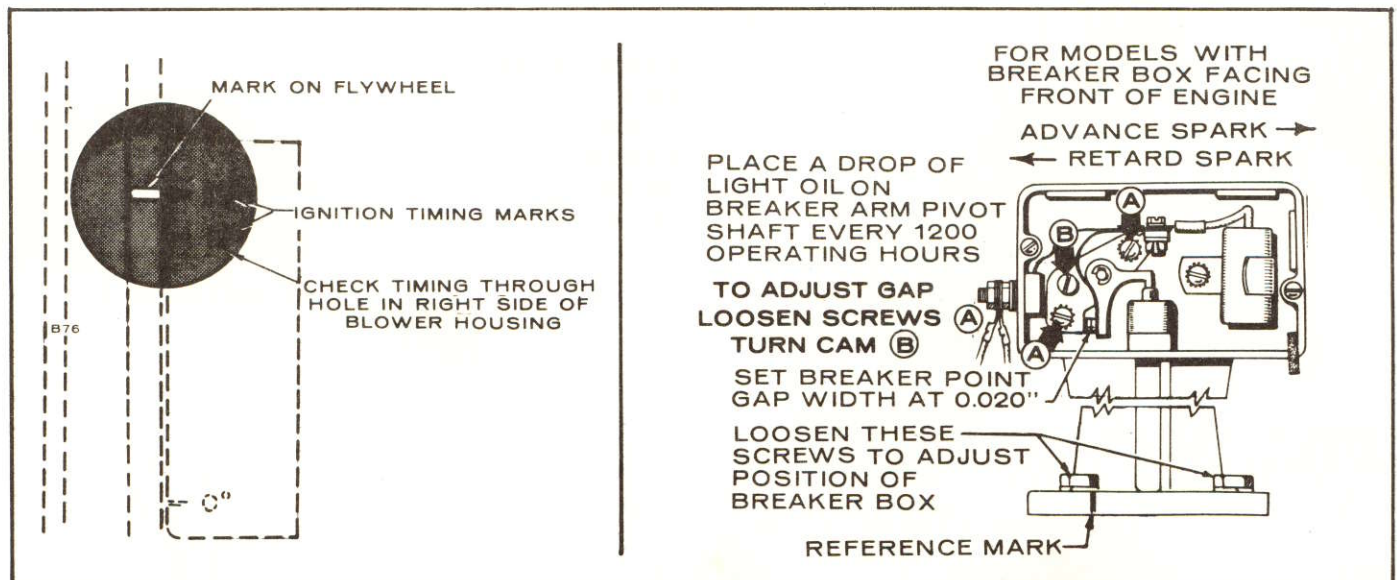


FIGURE 7. IGNITION TIMING AND BREAKER POINTS

CARBURETOR ADJUSTMENT

The carburetor (Figure 8) has a high speed fuel main adjustment (needle A) and a fuel idle adjustment (needle B).

Adjust the carburetor to obtain the correct fuel-to-air mixture for smooth, efficient operation. The carburetor should be adjusted in two steps – first the load adjustment and then the idle adjustment.

IMPORTANT: *If the carburetor is completely out of adjustment so the engine will not run, open both needle valves 1 to 1-1/2 turns off their seats to permit starting. Do not force the needle valves against their seats. This will bend the needle.*

Before adjusting the carburetor, be sure the ignition system is working properly and the governor is adjusted. Then allow the engine to warm up.

1. With no load, turn the idle adjustment out until the engine speed drops slightly below normal. Then turn the needle in until the engine speed returns to normal.
2. Apply a full load to the engine.
3. Carefully turn the main adjustment in until speed drops slightly below normal. Then turn needle out until speed returns to normal.

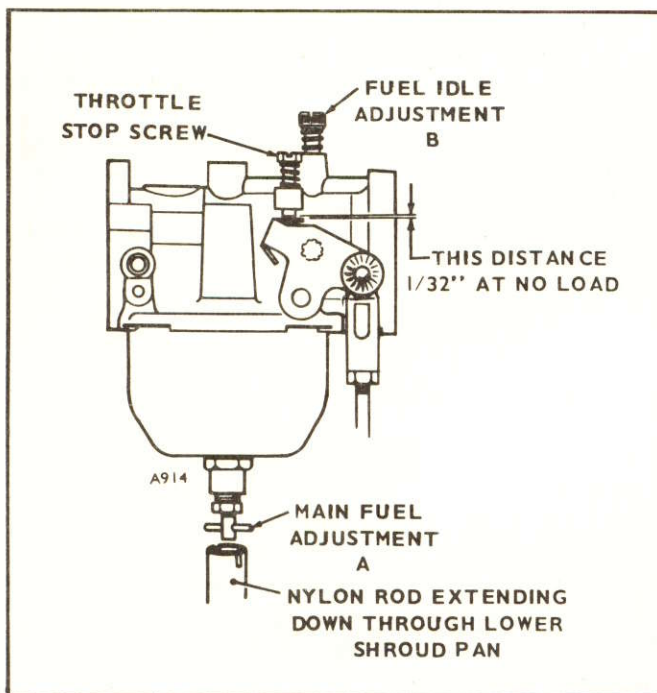


FIGURE 8. CARBURETOR ADJUSTMENTS

Alternate Method: Use When There is No Load Adjustment Possible.

1. Start the engine and allow it to warm up.
2. Push in on the governor mechanism to slow the unit down to about 800-900rpm.
3. Set the idle adjustment screw for even operation (so the engine is running smoothly).

4. Release the governor mechanism to allow the engine to accelerate. If the engine accelerates evenly and without a lag, the main adjustment is correct. If not, adjust the needle outward about 1/2 turn and again slow down the engine and release the mechanism. Continue until the engine accelerates evenly and without a time lag after releasing the governor.

With the carburetor and governor adjusted, set the throttle stop screw, Figure 8, to allow 1/32 inch clearance to the stop pin with the engine operating at no load. This prevents excessive hunting when a large load is suddenly removed.

To check float level, remove the entire main fuel adjustment assembly from the float bowl (unscrew large nut from the float bowl). The proper distance from the float to the carburetor body is 1/8 inch. The float tab should just touch the fuel inlet valve. Adjust by bending the tab on the float. See Figure 9.

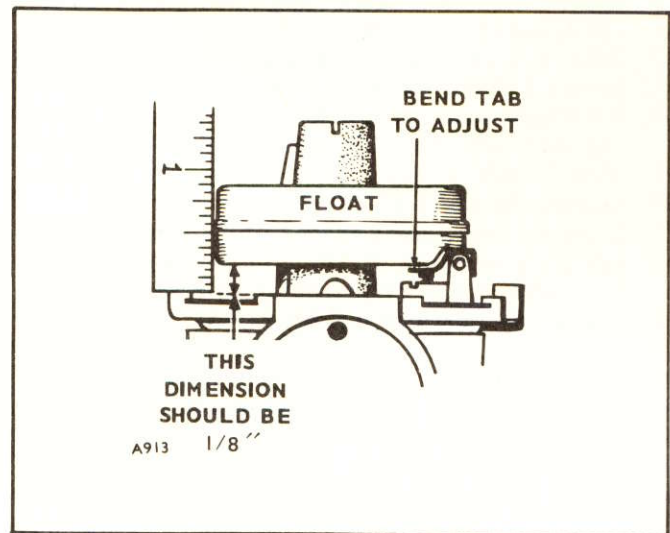


FIGURE 9. ZENITH CARBURETOR FLOAT ADJUSTMENT

SISSON CHOKE

This choke uses a heat sensitive bimetal element to control the choke plate position. In addition to this, a solenoid is actuated during engine cranking, closing the choke all the way. The bimetal is factory set to position the choke to the proper opening under any ambient condition.

If adjustment of the bimetal is needed, it must be made at ambient temperature. Do not attempt adjustments until engine has been shut down for at least one hour. Loosen the screw which secures the choke actuating arm to the linkage. Refer to Figure 10. Shortening the actuating arm makes the fuel mixture richer. Lengthening the arm makes the fuel mixture lean. For ambient temperatures above 85°F, the choke should be fully opened. For ambient temperatures below 25°F, the choke should be opened 1/4 inch with the solenoid not engaged. Tighten the screw that secures the choke actuating arm to the linkage.

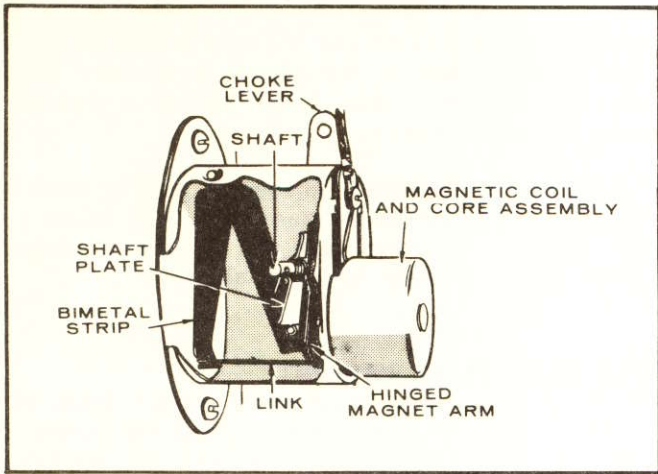


FIGURE 10. SISSON CHOKE

GOVERNOR ADJUSTMENT

Where engine speed is governor controlled, the governor is set at the factory to allow a nominal engine speed of 1875 rpm at no load operation. Proper governor adjustment is one of the most important factors in maintaining the power and speed desired from the engine.

Before making governor adjustment, run the engine about 15 minutes to reach normal operating temperature. It is difficult to determine if, after long usage, the governor spring has become fatigued. If, after properly making all other adjustments, the regulation is still erratic, install a new spring (Figure 11).

A tachometer for checking engine speed is required for accurate governor adjustment.

Check the governor arm, linkage, throttle shaft and lever for binding or excessive wear at connecting points. A binding condition at any point will cause the governor to act slowly and regulation will be poor. Excessive looseness will cause a hunting condition and regula-

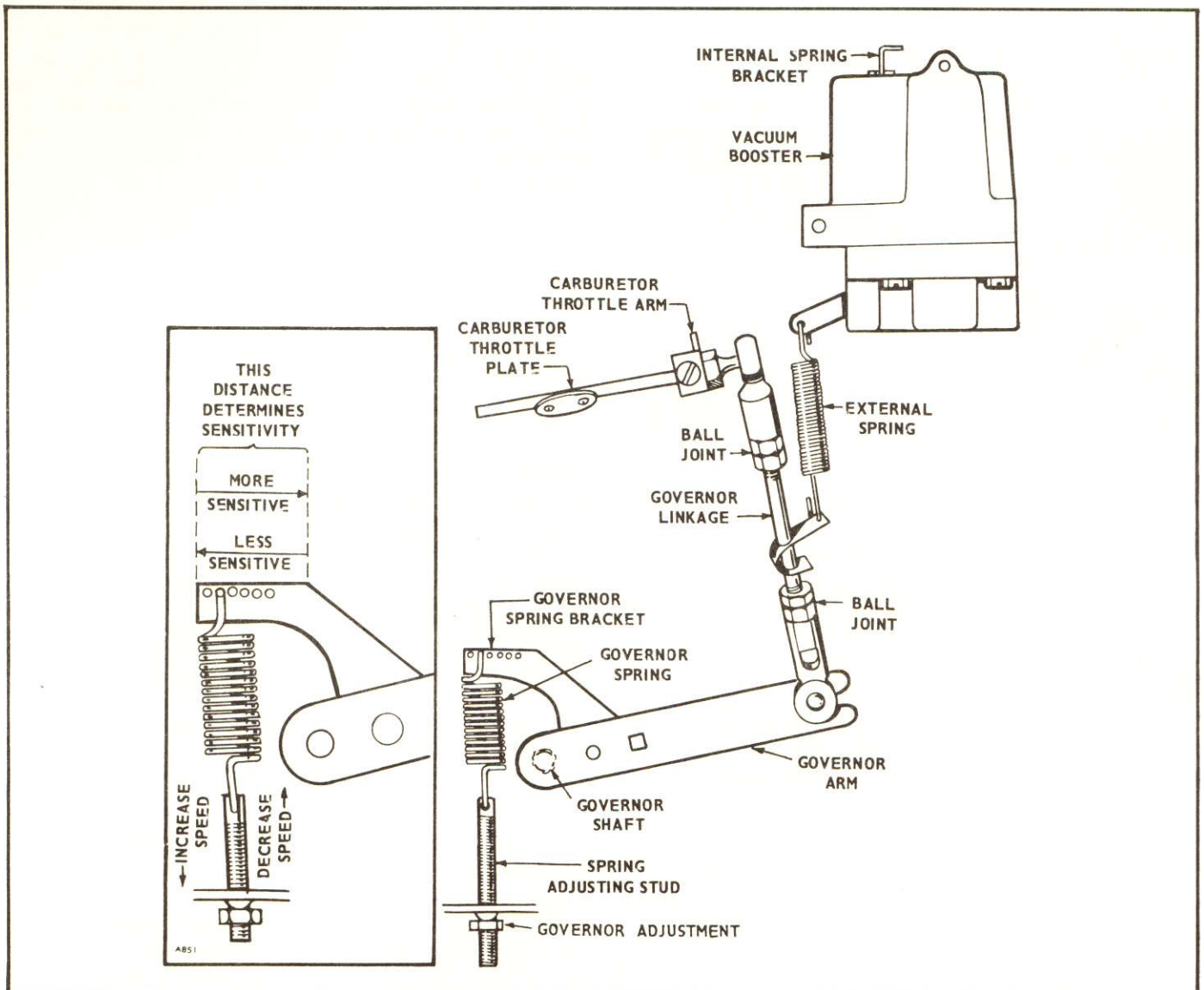


FIGURE 11. GOVERNOR ADJUSTMENTS

tion will be erratic. Work the arm back and forth several times by hand while the engine is idle. If either of these conditions exist, determine the cause and adjust or replace parts as needed.

PROCEDURE

1. Adjust the carburetor main jet for the best fuel mixture while operating the plant with a full rated load connected.
2. Adjust the carburetor idle needle with no load connected.
3. Adjust the length of the governor linkage.
4. Check the governor linkage and throttle shaft for binding or excessive looseness.
5. Adjust the governor spring tension for rated speed at no load operation (booster temporarily disconnected).
6. Adjust the governor sensitivity.
7. Recheck the speed adjustment.
8. Set the carburetor throttle stop screw.
9. Adjust booster (where used).

Linkage: The engine starts at wide open throttle. The length of the linkage connecting the governor arm to the throttle arm is adjusted by rotating the ball joint housing. Adjust the length so that with the engine stopped and tension on the governor spring, the stop on the carburetor throttle lever is 1/32 inch from the carburetor stop boss. This setting allows immediate control by the governor after starting and synchronizes travel of the governor arm and the throttle shaft.

Speed Adjustment: The speed at which the engine operates is determined by the tension applied to the governor spring. Increasing spring tension increases engine speed. Decreasing tension decreases engine speed. The no-load speed of the engine should be slightly higher than the speed requirements of the connected load.

For example: If the connected load is to turn at 1800 rpm, set the no-load speed of the engine at 1875 rpm (approx.). Check the speed with a tachometer.

If a speed adjustment is needed, turn the speed adjusting nut in to increase the speed or out to decrease the speed. See Figure 11.

SENSITIVITY ADJUSTMENT

The engine speed drop from no-load to full-load should not be less than 60rpm. Check the engine speed with no-load connected, and again after connecting full-load.

The sensitivity of the governor depends upon the position of the arm end of the governor spring. A series of holes in the governor arm provides for adjustment. To increase sensitivity, move the spring toward the governor shaft. To decrease sensitivity, move the spring toward the linkage end of the governor arm.

If the setting is too sensitive, a hunting condition (alternate increase and decrease in engine speed) will

result. If the setting is not sensitive enough, the speed variation between no-load and full-load conditions will be too great. Therefore, the correct sensitivity will result in the most stable speed regulation without causing a surge condition.

Always recheck the speed adjustment after a sensitivity adjustment. Increasing sensitivity will cause a slight decrease in speed and will require a slight increase in the governor spring tension.

SPEED BOOSTER ADJUSTMENT

After satisfactory performance under various loads is attained by governor adjustments without the booster, connect the booster. Connect the external booster spring to the bracket on the governor linkage. With the plant operating at no-load, slide the bracket on the governor linkage to a position where there is no tension on the external spring.

Apply a full rated electrical load to the generator. The output voltage should stabilize at nearly the same reading at full-load as for no-load operation. The speed may remain about the same or increase when the load is applied, resulting in 1 or 2 hertz higher than the no-load frequency (1 hertz is equal to 60 rpm). If the rise in frequency is more than 2 hertz, lessen the internal spring tension. If there is a drop in frequency, increase the internal booster spring tension. To increase the tension, pull out the spring bracket and move the pin to a different hole.

With the booster disconnected, a maximum drop of 5 hertz from no-load to full-load is normal. With the booster in operation, a maximum increase of 2 hertz from no-load to 2/3 load is normal. A drop of 1 hertz at 1/4 load is permissible, giving an overall spread of 3 hertz maximum.

TAPPET ADJUSTMENT

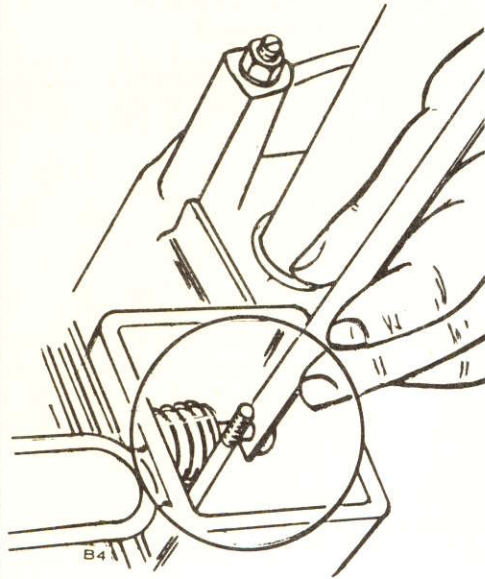
The engine is equipped with adjustable tappets. To make a valve adjustment, remove the valve covers. Crank the engine slowly by hand until the left hand intake valve, when facing the flywheel, opens and closes. Continue about 1/4 turn until the mark on the flywheel and the TC mark on the gear cover are in line. This should place the left hand piston in the necessary position to obtain correct valve adjustment.

Correct valve clearances are .003 for intake and .010 for exhaust. For each valve, the gauge should just pass between the valve stem and valve tappet (Figure 12).

To correct the valve clearance, turn the adjusting screw as needed to obtain the right clearance. The screw is self-locking.

To adjust the valves on the right hand cylinder, crank the engine over one complete revolution and again line up the mark on the flywheel and the TC mark on the gear cover. Then follow the adjustment given for the valves of the left hand cylinder.

INTAKE AND EXHAUST VALVES
(SEE TABLE OF CLEARANCES)



NOTE - USE A STANDARD
AUTOMOTIVE TYPE WRENCH
TO ADJUST THE TAPPETS.

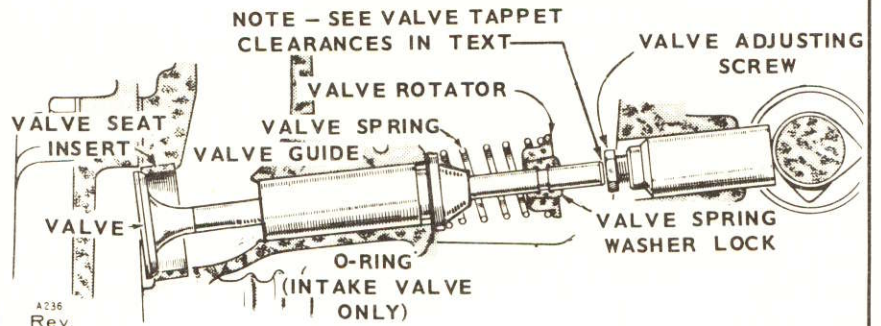


FIGURE 12. TAPPET ADJUSTMENT

OIL PRESSURE RELIEF VALVE ADJUSTMENT

Engine oil pressure is adjusted by means of the slotted stud and locknut located near the breather tube. See Figure 13. Oil pressure readings, when the engine is thoroughly warmed up, should be between 30 and 35 lbs. To increase oil pressure, loosen the locknut and turn the stud inward. To decrease oil pressure, loosen the locknut and turn the stud outward. Be sure to tighten the locknut securely after making an adjustment. The spring and plunger can be removed and cleaned.

NOTE: *Plants beginning with Spec D have a fixed oil pressure relief valve. No adjustment is necessary.*

Low oil pressure may indicate worn main or connecting rod bearings, improper clearance at these points, a weak or broken bypass spring, an improperly adjusted bypass or a defective gauge. Check the oil pressure gauge before making any other test; it may be defective.

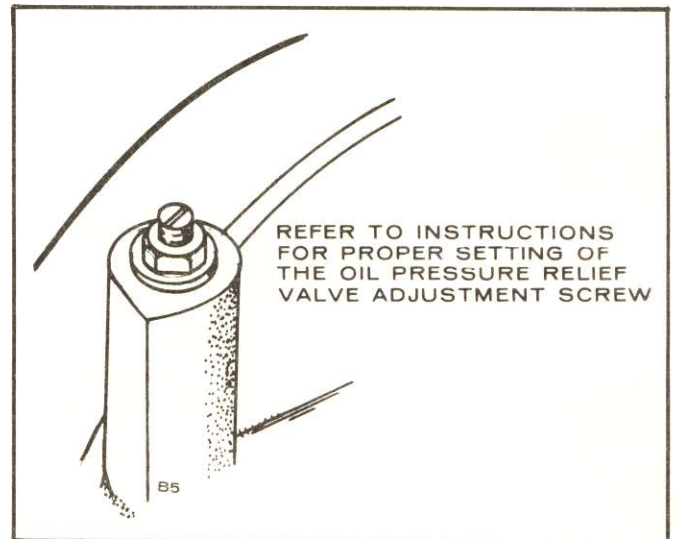


FIGURE 13. OIL PRESSURE RELIEF VALVE ADJUSTMENT

SERVICE AND MAINTENANCE

OPERATOR MAINTENANCE SCHEDULE (Performed by Owner)

| MAINTENANCE ITEMS | OPERATIONAL HOURS | | | | |
|------------------------------|-------------------|----|----------------|-----|-----|
| | 8 | 50 | 100 | 200 | 500 |
| Inspect Plant Generally | x | | | | |
| Check Fuel Supply | x | | | | |
| Check Oil Level | x | | | | |
| Clean Governor Linkage | | x | | | |
| Service Air Cleaner | | | x [£] | | |
| Change Crankcase Oil | | | x* | | |
| Check Battery | | | x | | |
| Clean or Replace Fuel Filter | | | x | | |
| Check Spark Plugs | | | x | | |
| Replace Oil Filter | | | | x | |
| Replace Air Cleaner Element | | | | | x |

* Change every 50 hours when operating at high ambient temperatures (100°F and above).

£ Service more often under extreme dust conditions.

PERIODIC MAINTENANCE SCHEDULE

Regularly scheduled maintenance is the key to lower operating costs and longer service life for the unit. The above schedule can be used as a guide. However, actual operating conditions under which a unit is run should be the determining factor in establishing a maintenance schedule. When operating in very dusty or dirty conditions, some of the service periods may have to be reduced. Check the condition of the crankcase oil, the filters, etc. frequently until the proper service time periods can be established.

When any abnormalities occur in operation – unusual noises from engine or accessories, loss of power, overheating, etc. – contact your Onan dealer.

CRANKCASE OIL

The oil capacity is four U.S. quarts (4-1/2 with a filter change). Fill to the "FULL" mark on the oil level indicator. Use a good quality heavy duty oil with the API designation MS, MS/DG, SE or SE/CC. Oil should be labeled as having passed the MS Sequence Tests (also known as the ASTM G-IV Sequence Tests) and the MIL-L-2104B Tests. When adding oil between changes, always use the same brand that is in the crankcase. Various brands of oil may not be compatible when mixed together.

Oil consumption may be higher with a multi-grade oil than with a single grade oil if both oils have comparable viscosities at 210°F. Therefore, single grade oils are generally more desirable, unless anticipating a wide

CRITICAL MAINTENANCE SCHEDULE (Performed by Onan Dealer)

| MAINTENANCE ITEMS | OPERATIONAL HOURS | | |
|---|-------------------|-----|------|
| | 100 | 500 | 1000 |
| Check Breaker Points | x | | |
| Clean Commutator and Collector Rings | | | x |
| Check Brushes | | x | |
| Remove Deposits From Combustion Chamber | | x | |
| Check Valve Clearance † | | x | |
| Clean Generator | | | x |
| Inspect Valves, Grind If Necessary | | | x |

† - Tighten head bolts and adjust valve clearance after first 50 hours on a new or overhauled engine.

range of temperatures. Use the proper grade oil for the expected conditions.

| TEMPERATURE | GRADE |
|--------------|-------------------|
| Above 90°F | SAE 50 |
| 30°F to 90°F | SAE 30 |
| 0°F to 30°F | SAE 10W-40, 5W-30 |
| Below 0°F | SAE 5W-30 |

Check oil level daily. Change oil every 100 hours under normal operating conditions. When operating in extremely dusty or dirty conditions, change oil every 50 hours or sooner (see Figure 14).

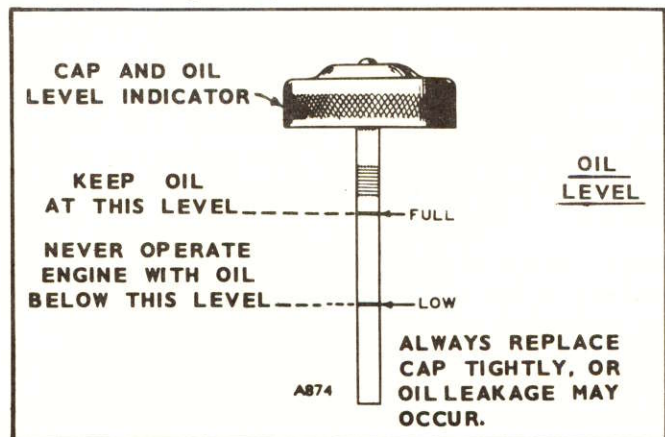


FIGURE 14. OIL LEVEL INDICATOR

OIL FILTER

Change the crankcase oil filter every 200 hours. Remove the filter by turning counterclockwise, using a filter wrench. Add the gasket provided with the filter to prevent air loss in the area indicated. It is advisable to wipe dry the drip pan located below the filter. Install the filter finger-tight plus 1/4 to 1/2 turn. If oil becomes so dirty that the markings on the oil level indicator cannot be seen, change the filter and shorten the filter service period (see Figure 15).

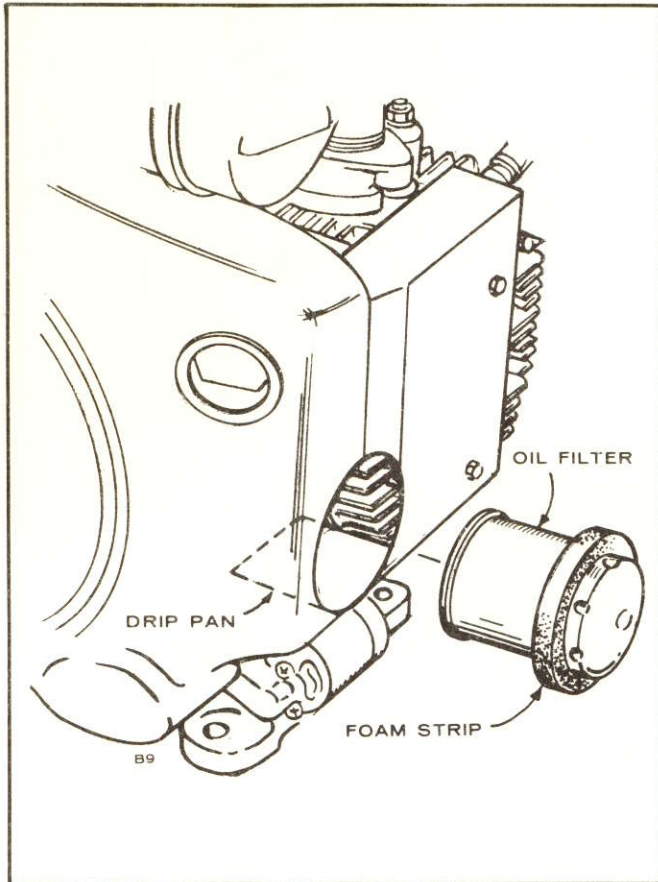


FIGURE 15. OIL FILTER

AIR CLEANER

Proper maintenance of the air cleaner is extremely important. Negligence of regular routine maintenance will result in reduced engine life.

Allowing the element to become plugged with dirt will restrict the intake of air into the engine. Inspect the element for tiny holes or tears which would permit particles of dust or dirt to enter the engine.

Remove the paper element every 100 operating hours (see Figure 16) and clean by removing foam wrapper and tapping element against a flat surface to loosen dust and dirt accumulation. The dirt can be blown out from the clean to the dirty side, but be sure to use less than 100psi air pressure. The element and foam wrapper can be washed in a solution of warm water and mild detergent if additional cleaning seems necessary.

The element will normally require replacement every 500 operating hours and more often under severe operating conditions.

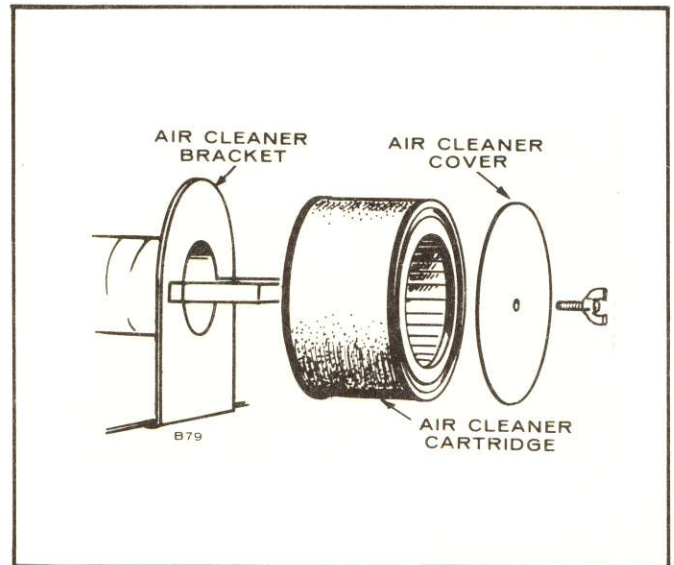
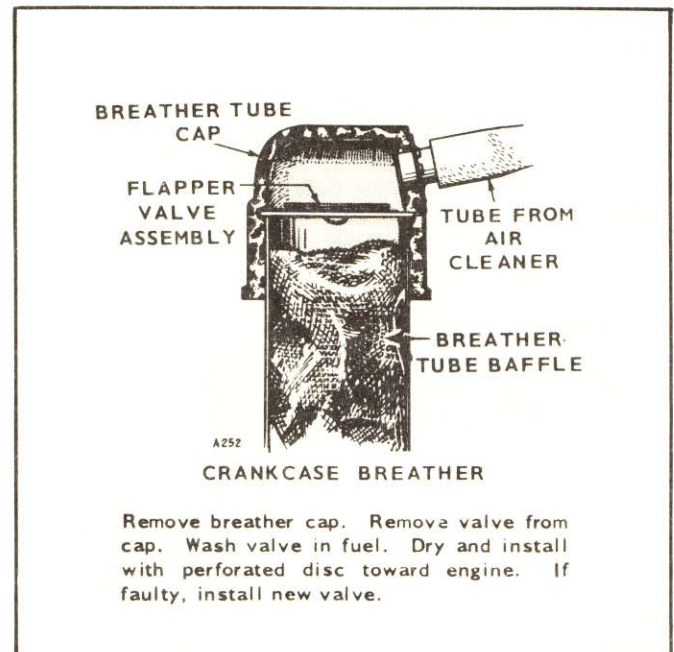


FIGURE 16. AIR CLEANER

CRANKCASE BREATHER

Lift off rubber breather cap. Carefully pry valve from cap. Otherwise press hard with both of your thumbs on top of cap and fingers below to release valve from rubber cap. Wash this fabric flapper type check valve in a suitable solvent. Dry and install. Position perforated disc toward engine.



Remove breather cap. Remove valve from cap. Wash valve in fuel. Dry and install with perforated disc toward engine. If faulty, install new valve.

FIGURE 17. CRANKCASE BREATHER

SPARK PLUG GAP

Gap spark plug to 0.025 '' using a spark plug gapping tool. See Figure 18.

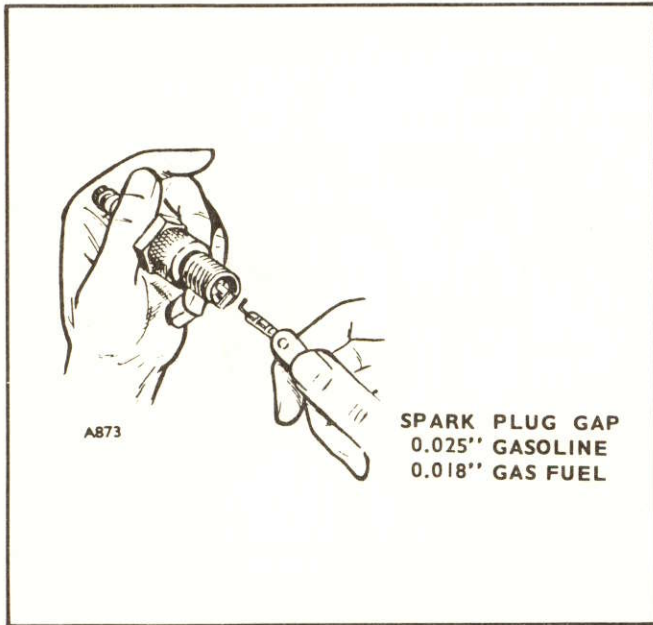


FIGURE 18. SPARK PLUG GAP

GENERATOR MAINTENANCE

The generator normally needs little care other than a periodic check of the brushes, commutator and collector rings. If a major repair job on the generator should become necessary, have the equipment checked by a competent electrician who is thoroughly familiar with the operation of electric generating equipment.

BRUSH REPLACEMENT

Install new brushes when the old ones are worn to the dimensions shown in Figure 19. Remove the end bell band and the end cover to expose the brush holders. Remove the three screws holding each brush holder in place. Remove the old brushes and clean the holders so the new brushes can move easily in their holders. Install the new brushes in the same manner as the old ones. Always use the correct brush as listed in the Parts Catalog Section. Never substitute a brush which may appear to be the same, for it may have different characteristics. New brushes are shaped to fit and seldom need sanding to seat properly. If some brush sparking occurs after replacing brushes, run the plant under a light load until the brushes wear to a good seat.

Collector rings acquire a glossy brown finish in normal operation. Do not attempt to maintain a bright newly machined appearing surface. Ordinary cleaning with a dry, lint free cloth is usually sufficient. Very fine sandpaper (#00) may be used to remove slight roughness. Use only light pressure on the sandpaper, while the plant is operating. Do not use emery or carborundum paper or cloth. Clean out all carbon dust from the generator.

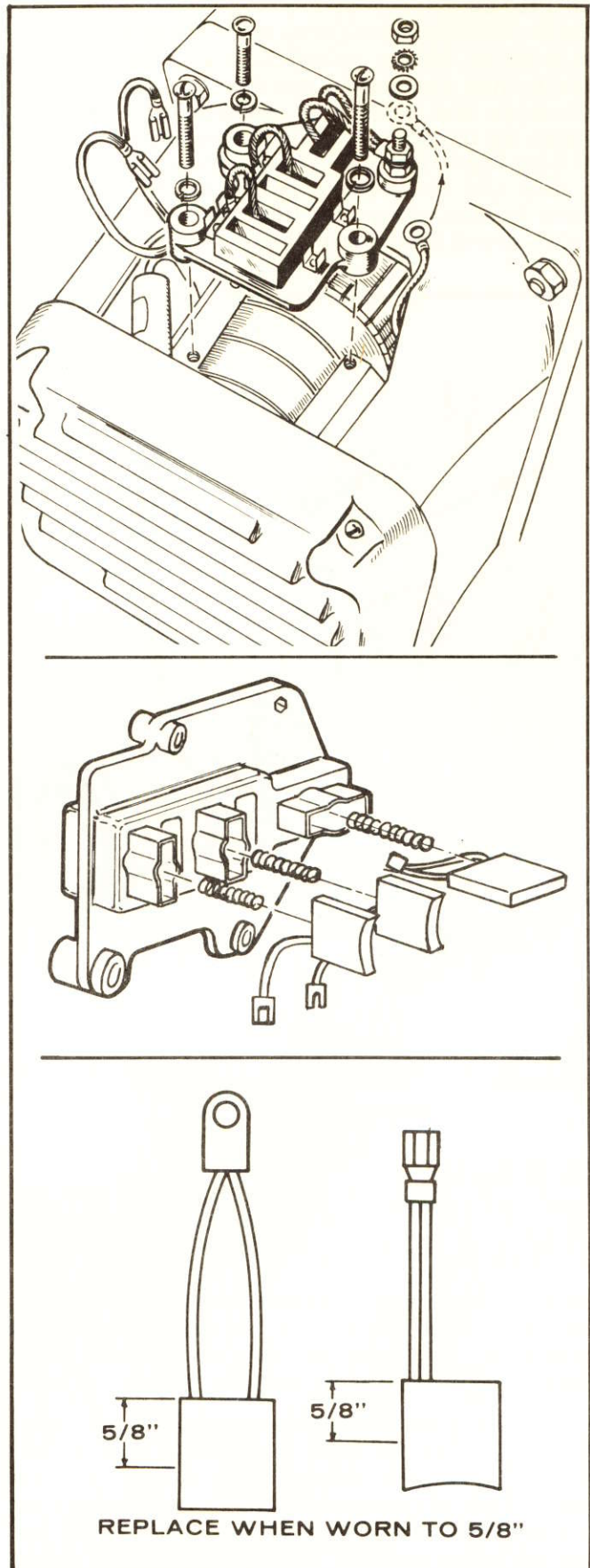


FIGURE 19. GENERATOR BRUSHES

SPEED BOOSTER

Use a fine wire to clean the small hole in the short vacuum tube which fits into the hole in the top of the engine intake manifold. Do not enlarge this hole.

If there is tension on the external spring when the plant is operating at no load or light load, it may be due to improper adjustment, restricted hole in the small vacuum tube, or a leak in the booster diaphragm or gasket. See Figure 20.

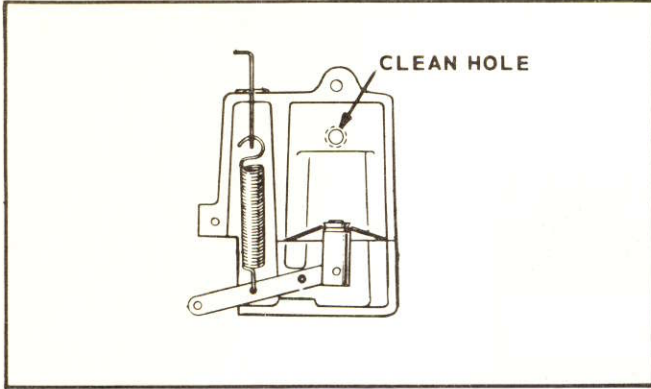


FIGURE 20. VACUUM SPEED BOOSTER

GOVERNOR LINKAGE

The linkage must be able to move freely through its entire travel. Every 50 hours of operation, clean the joints (do not lubricate) as shown in Figure 21. Also inspect the linkage for binding, excessive slack and wear.

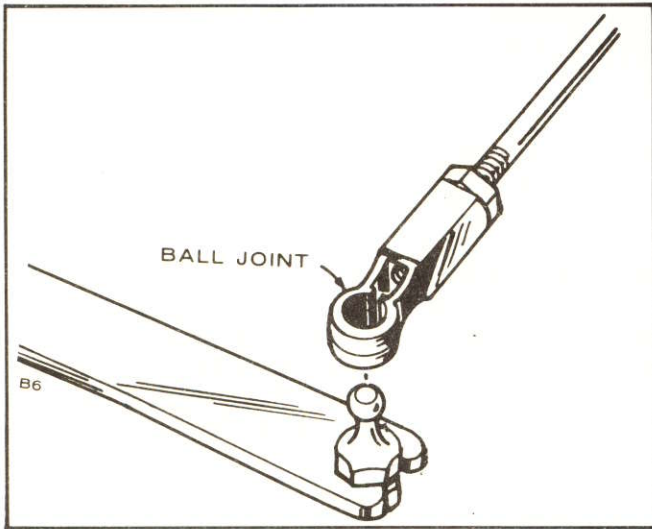


FIGURE 21. GOVERNOR BALL JOINTS

FUEL SEDIMENT

Every 100 hours or sooner, drain fuel pump and check filter element. Turn hex nut on base of electric fuel pump to gain access to filter element. If element appears dirty, replace with a new one. Be sure to replace gaskets when reassembling. See Figure 22.

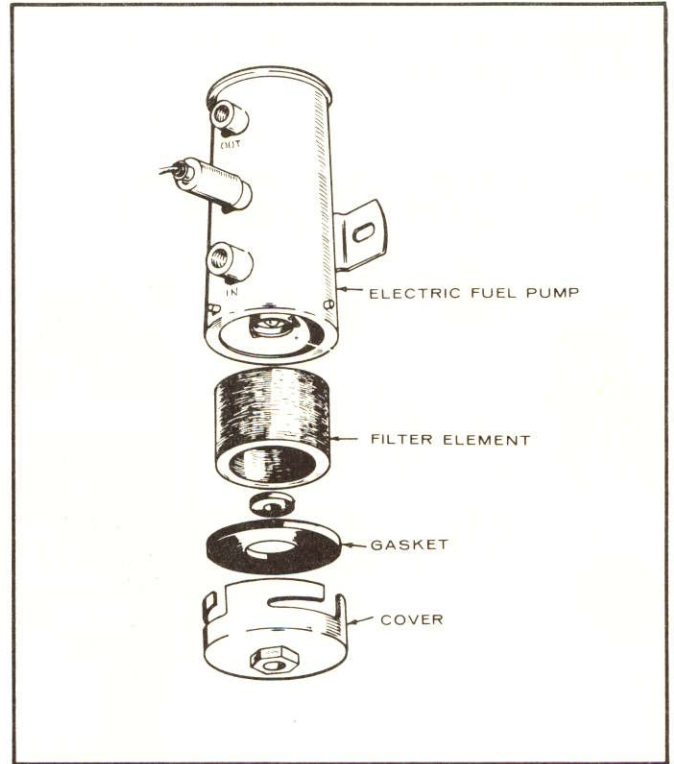


FIGURE 22. FUEL FILTER

PARTS CATALOG


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.

| | |
|---|-----------------|
| Onan ELECTRIC PLANT MODEL AND SPEC. NO. | |
| [] | |
| SERIAL NO. [] | |
| IMPORTANT: ALWAYS GIVE ABOVE NOS. WHEN ORDERING PARTS | |
| A.C. VOLTS [] | PH [] |
| K.V.A. [] | WATTS [] |
| P.F. [] | AMPS [] Hz [] |
| D.C. VOLTS [] | AMPS [] |
| WATTS [] | |
| R.P.M. [] | BAT. [] |
| MANUFACTURED BY ONAN DIVISION OF ONAN CORPORATION MINNEAPOLIS, MINNESOTA MADE IN U.S.A. FOR ELECT. EQUIPMENT ONLY  | |
| 99A444 | |

For handy reference, insert YOUR plant 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.

For current parts prices, consult your Onan Dealer, Distributor or Parts and Service Center.

“En esta lista de partes los precios se omiten de proposito, ya que bastante confusion resulto de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extranjeros, etc.”

Consiga los precios vigentes de su distribuidor de productos “ONAN”.

This catalog applies to the standard NH Mobile Plants as listed below. Parts are arranged in groups of related items. Each illustrated part is identified by a reference number corresponding to the same reference number below the illustration. Parts illustrations are typical. Using the MODEL and SPEC NO. from the plant nameplate, select parts from this catalog that apply to your plant. Unless otherwise mentioned in the description, parts are interchangeable between models. Right and left plant sides are determined by FACING the engine end (front) of the plant.

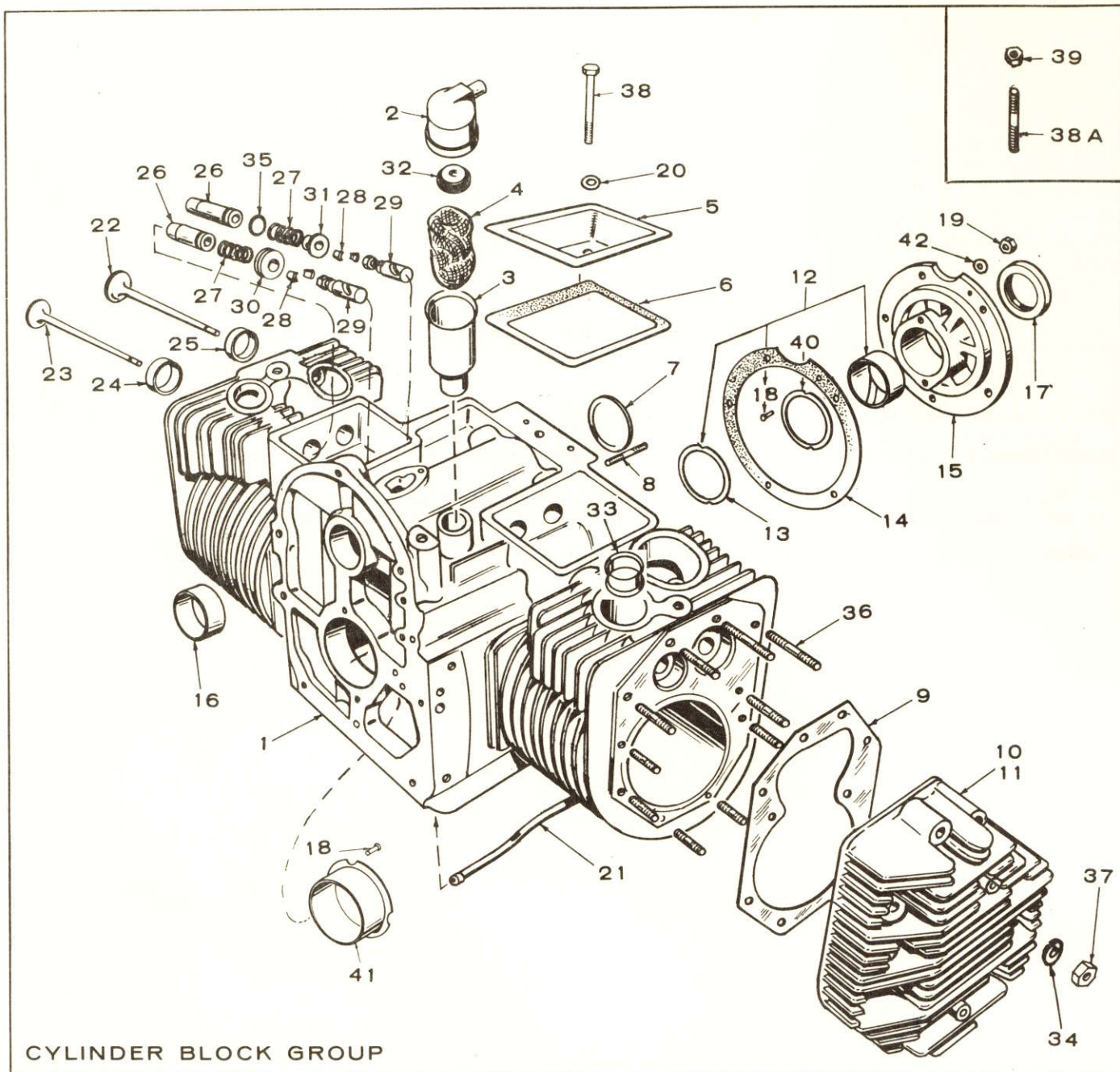
PLANT DATA TABLE

| MODEL AND SPEC | ELECTRICAL DATA | | | | |
|----------------|-----------------|---------|-------|------|-------|
| | WATTS | VOLTS | HERTZ | WIRE | PHASE |
| 6.5NH-3CR/* | 6500 | 120/240 | 60 | ** | 1 |

* The Specification Letter advances (A to B, B to C, etc.) with manufacturing changes.

** Plant is reconnectible for 120 volt, 2 wire; 240 volt, 2 wire or 120/240 volt, 3 wire service.

NOTE: Hertz is a unit of frequency equal to one cycle per second.



CYLINDER BLOCK GROUP

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|-----------------------------|-----------|--|
| 1 | 110A1835 | 1 | Block Assembly, Cylinder (Includes Parts Marked *) |
| 2 | 123A787 | 1 | Cap, Breather |
| 3 | 123A645 | 1 | Tube, Breather |
| 4 | 123P865 | 1 | Baffle, Breather Tube |
| 5 | 110A1624 | 2 | Cover, Valve Compartment |
| 6 | 110B1720 | 2 | Gasket, Valve Cover |
| 7 | 517-48 | 1 | *Plug, Camshaft Expansion |
| 8 | 520A736 | 5 | *Stud, Rear Bearing Plate Mtg. |
| 9 | 110C1731 | 2 | Gasket, Cylinder Head |
| 10 | 110B1905 | 1 | Head, Cylinder - (#2) RH |
| 11 | 110B1906 | 1 | Head, Cylinder - (#1) LH |
| 12 | *BEARING, CRANKSHAFT - REAR | | |
| | 101K420 | 1 | Standard |
| | 101K420-02 | 1 | .002" Undersize |
| | 101K420-10 | 1 | .010" Undersize |
| | 101K420-20 | 1 | .020" Undersize |
| | 101K420-30 | 1 | .030" Undersize |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|--|-----------|---|
| 13 | 104A575 | 2 | £*Washer, Crankshaft Bearing Thrust |
| 14 | 101B415 | 1 | *Gasket, Bearing Plate |
| 15 | 101D407 | 1 | *Plate, Rear Bearing (Excludes Bearing - Includes Pins) |
| 16 | 101B405 | 2 | *Bearing, Camshaft Front & Rear (Precision) |
| 17 | 509A41 | 1 | Seal, Bearing Plate |
| 18 | 516A72 | 4 | *Pin, Main Bearing Stop |
| 19 | 104A91 | 5 | *Nut, Bearing Plate Stud |
| 20 | 526-63 | 2 | Washer (Copper), Valve Compartment Cover |
| 21 | 120B680 | 1 | Tube, Crankcase Oil |
| 22 | 110B1718 | 2 | Valve, Intake |
| 23 | 110B1719 | 2 | Valve, Exhaust (Stellite) |
| 24 | *INSERT, EXHAUST VALVE SEAT (STELLITE) | | |
| | 110A1716 | 2 | Standard |
| | 110A1716-02 | 2 | .002" Oversize |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------------------------|-----------|--|
| | 110A1716-05 | 2 | .005 " Oversize |
| | 110A1716-10 | 2 | .010 " Oversize |
| | 110A1716-25 | 2 | .025 " Oversize |
| 25 | *INSERT, INTAKE VALVE SEAT | | |
| | 110A1933 | 2 | Standard |
| | 110A1933-02 | 2 | .002 " Oversize |
| | 110A1933-05 | 2 | .005 " Oversize |
| | 110A1933-10 | 2 | .010 " Oversize |
| | 110A1933-25 | 2 | .025 " Oversize |
| 26 | *GUIDE, VALVE | | |
| | 110A1939 | 4 | Standard |
| | 110A1939-01 | 4 | .001 " Oversize |
| 27 | 110A539 | 4 | Spring, Valve |
| 28 | 110A639 | 8 | Lock, Valve & Spring Retaining |
| 29 | TAPPET, VALVE | | |
| | 115A6 | 4 | Standard |
| | 115A6-05 | 4 | .005 " Oversize |
| 30 | 110A904 | 2 | Rotocap, Exhaust Valve |
| 31 | 110A893 | 2 | Washer, Retainer - Intake Valve Spring |
| 32 | 123A315 | 1 | Valve, Breather |
| 33 | 154A1424 | 2 | Insert, Exhaust Port |
| 34 | 526A250 | 20 | Washer, Flat - Cylinder Head Stud |
| 35 | 110A68 | 2 | *Gasket, Valve Guide (Intake) |

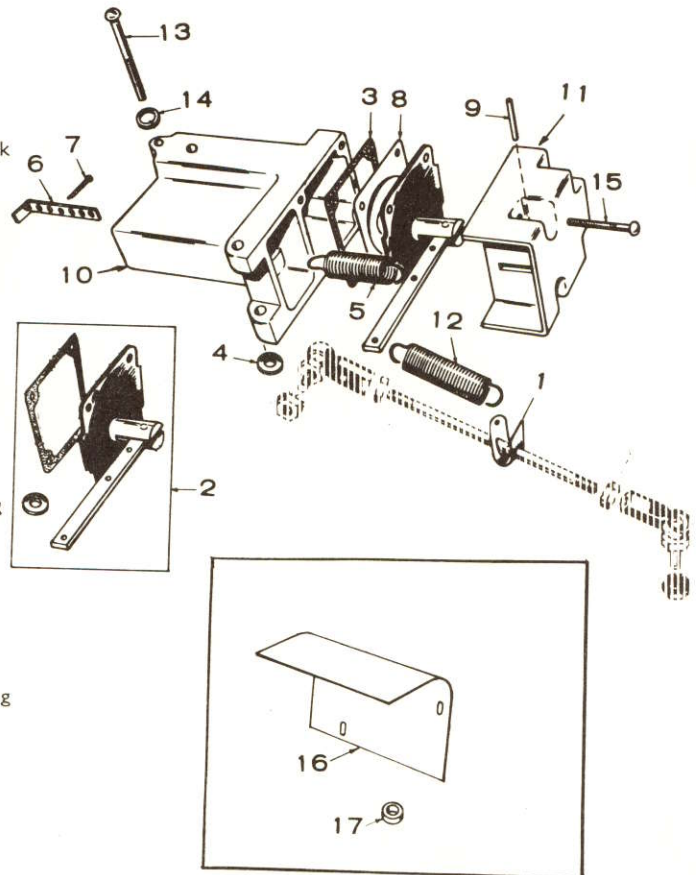
| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|------------------------------|-----------|---|
| 36 | STUD, CYLINDER HEAD MOUNTING | | |
| | 520A717 | 8 | 3/8 " x 1-7/8 " |
| | 520A715 | 8 | 3/8 " x 2-3/4 " |
| | 520A716 | 4 | 3/8 " x 2-1/2 " |
| 37 | 104A91 | 20 | Nut, Flange - Cylinder Head Stud |
| 38 | 800-11 | 2 | Screw (1/4-20 x 2 ") - Valve Box Cover - Begin Spec D |
| 38A | 520A714 | 2 | Stud, Valve Box Cover - Spec C Only |
| 39 | 115A25 | 2 | Nut, Hex - Valve Box Cover Stud - Spec C Only |
| 40 | 104A776 | As Req. | *Shim (.005 ") , Crankshaft Thrust |
| 41 | *BEARING, CRANKSHAFT - FRONT | | |
| | 101K432 | 1 | Standard |
| | 101K432-02 | 1 | .002 " Undersize |
| | 101K432-10 | 1 | .010 " Undersize |
| | 101K432-20 | 1 | .020 " Undersize |
| | 101K432-30 | 1 | .030 " Undersize |
| 42 | 526Q251 | 5 | Washer, Flat (3/8 ") - Bearing Plate Stud |

* - Included in Cylinder Block Assembly.

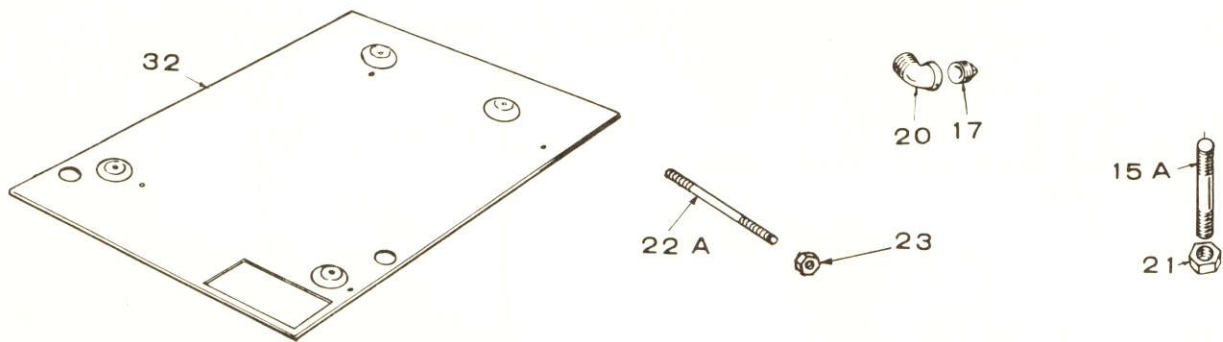
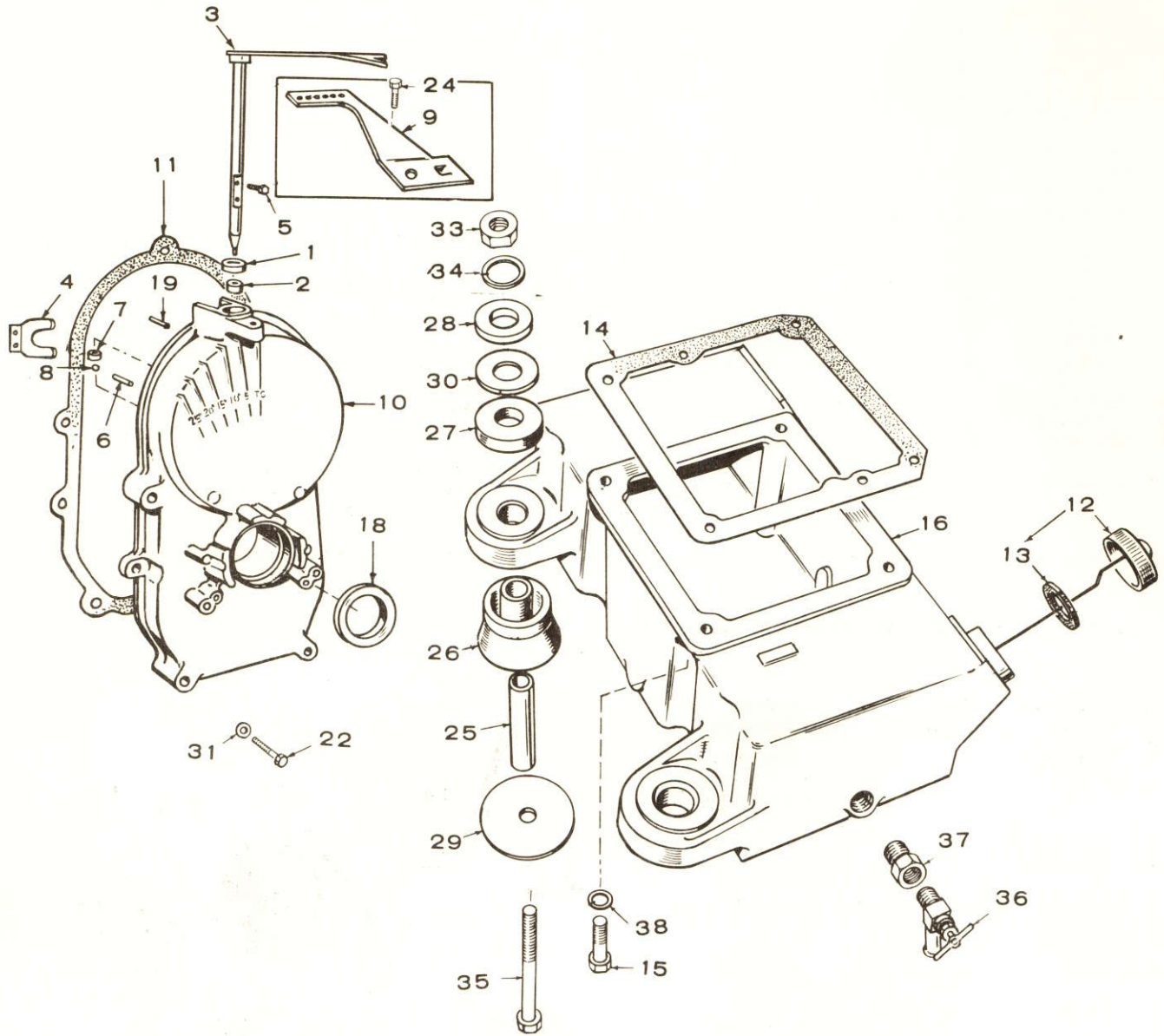
£ - Use one only with rear bearing on units with flange type front bearing.

VACUUM SPEED BOOSTER GROUP

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--|
| | 150K1030 | 1 | Kit, Vacuum Speed Booster - Replacement Includes External Spring & Mounting Gasket |
| 1 | 150A430 | 1 | Bracket, Spring to Governor Link |
| 2 | 150K1031 | 1 | Kit, Diaphragm Replacement, Includes Gaskets |
| 3 | 150A668 | 1 | Gasket, Diaphragm Plate |
| 4 | 150A425 | 1 | Gasket, Booster to Manifold |
| 5 | 150A475 | 1 | Spring, Internal |
| 6 | 150A376 | 1 | Bracket, Internal Spring Adjustment |
| 7 | 516-39 | 1 | Pin, Cotter (3/32 x 5/8 ") Adjusting Bracket |
| 8 | 150A666 | 1 | Plate, Diaphragm |
| 9 | 516A85 | 1 | Pin (3/32 x 3/4 ") Diaphragm Lever Pivot |
| 10 | | 1 | Housing, Vacuum Booster (Not Sold Separately) |
| 11 | | 1 | Cover, Vacuum Booster Housing (Not Sold Separately) |
| 12 | 150A471 | 1 | Spring, External |
| 13 | 813-111 | 2 | Screw (10-32 x 2-1/4 ") - Booster Mounting |
| 14 | 853-8 | 2 | Washer, Lock |
| 15 | 815-148 | 4 | Screw (8-32 x 7/8 ") |
| 16 | 150A1332 | 1 | Shield, Heat |
| 17 | 526A196 | 2 | Washer, Spacer - Shield Mounting |



GEAR COVER AND OIL BASE GROUP

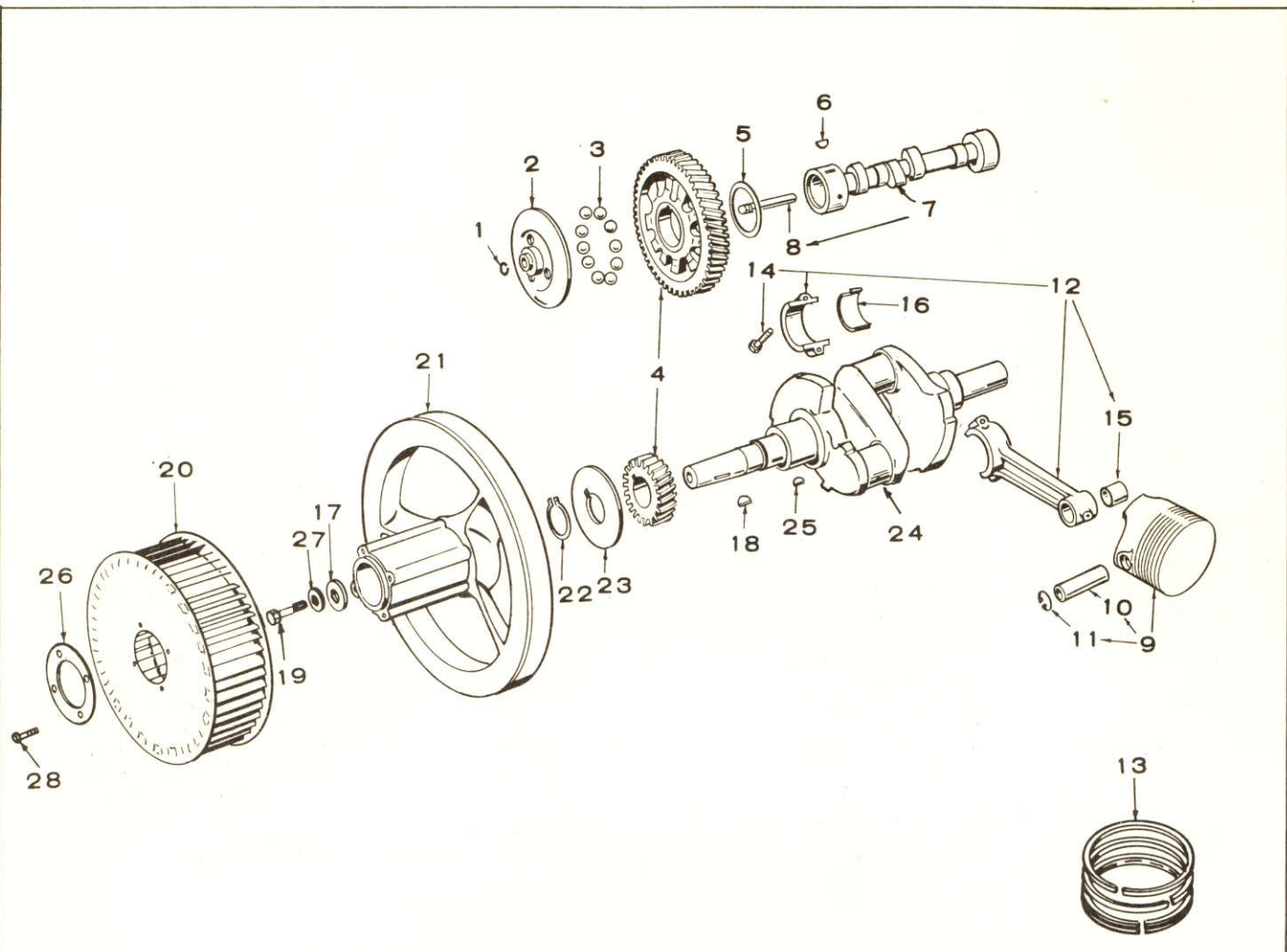


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|---|-----------|---|
| 1 | 509P8 | 1 | ★Seal, Oil - Governor Shaft |
| 2 | 510P13 | 1 | ★Bearing, Governor Shaft (Upper) |
| 3 | 150B1260 | 1 | ★Shaft & Arm, Governor |
| 4 | 150B1187 | 1 | ★Yoke, Governor Shaft |
| 5 | 815-46 | 2 | ★Screw, Yoke Mounting (8-32 x 3/8 ") |
| 6 | 516-130 | 1 | ★Pin, Governor Cup Stop (In Gear Cover) |
| 7 | 510A8 | 1 | ★Bearing, Governor Shaft (Lower) |
| 8 | 510P14 | 1 | ★Ball, Bearing, Governor Shaft |
| 9 | 150B1073 | 1 | Extension, Governor Arm |
| 10 | 103B329 | 1 | Cover Assembly, Gear (Includes Parts Marked ★) |
| 11 | 103B11 | 1 | Gasket, Gear Cover |
| 12 | 123A489 | 1 | Cap & Indicator, Oil Fill |
| 13 | 123A191 | 1 | Gasket, Oil Fill Cap |
| 14 | 102B646 | 1 | Gasket, Oil Base Mounting |
| 15 | 800-51 | 4 | Screw (3/8-16 x 1-1/4 ") - Oil Base to Block - Begin Spec D |
| 15A | 520A712 | 4 | Stud, Oil Base to Block - Spec C Only |
| 16 | 102A672 | 1 | Base, Oil |
| 17 | 505-56 | 1 | Plug, Oil Drain - Spec C Only |
| 18 | 509A40 | 1 | ★Seal, Gear Cover |
| 19 | 516A11 | 2 | Pin, Gear Cover (5/16 x 1-1/8 ") |
| 20 | 505-50 | 1 | Elbow, Street - Oil Drain - Spec C Only |
| 21 | 104A91 | 4 | Nut, Hex - Oil Base Stud - Spec C Only |
| 22 | SCREW, GEAR COVER TO BLOCK - BEGIN SPEC D | | |
| | 800-32 | 4 | 5/16-18 x 1-3/4 " |
| | 800-34 | 1 | 5/16-18 x 2-1/4 " |
| 22A | STUD, GEAR COVER TO BLOCK - SPEC C ONLY | | |
| | 520A710 | 4 | 5/16 x 2-1/8 " |
| | 520A711 | 1 | 5/16 x 3-11/16 " |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------------------------|-----------|---|
| 23 | 110A445 | 5 | Nut, Gear Cover Mounting Stud - Spec C Only |
| 24 | 815-181 | 1 | Screw, Extension Arm Mounting - (10-32 x 1/2 ") |
| 25 | 402A290 | 4 | +Bushing, Spacer, Vibration Mount |
| 26 | 402B284 | 4 | Cushion, Vibration (Front & Rear) |
| 27 | 402A282 | 4 | +Snubber, Shock Mounting |
| 28 | 526-14 | 4 | +Washer (29/64 " I.D. x 1-1/2 " O.D. x 1/8 ") |
| 29 | 526A195 | 4 | +Washer (29/64 " I.D. x 3-1/4 " O.D. x 1/8 ") |
| 30 | 526A198 | As Req. | +Washer (5/8 " I.D. x 1-1/2 " O.D. x 1/16 ") |
| 31 | 526-65 | 5 | Washer (Copper) - Gear Cover Mounting |
| 32 | PLATE, MOUNTING - OPTIONAL | | |
| | 403B958 | 1 | Spec C Only |
| | 403B1010 | 1 | Begin Spec D |
| 33 | 862-4 | 4 | +Nut, Hex (7/16-14) |
| 34 | 850-55 | 4 | +Washer, Lock (7/16 ") |
| 35 | 800-82 | 4 | +Screw (7/16-14 x 3-3/4 ") |
| 36 | 504-92 | 1 | Valve, Oil Drain (3/8 ") - Begin Spec D (NOTE: Also used Prior to Spec D by using 505-19 Bushing) |
| 37 | 505-19 | 1 | Bushing, Reducer (1/2 x 3/8) - Begin Spec D |
| 38 | 850-50 | 4 | Washer, Lock (3/8 ") |
| | 402B364 | 1 | Hardware Package, Mounting (Includes Parts Marked +) |

★ - Included in Gear Cover Assembly.

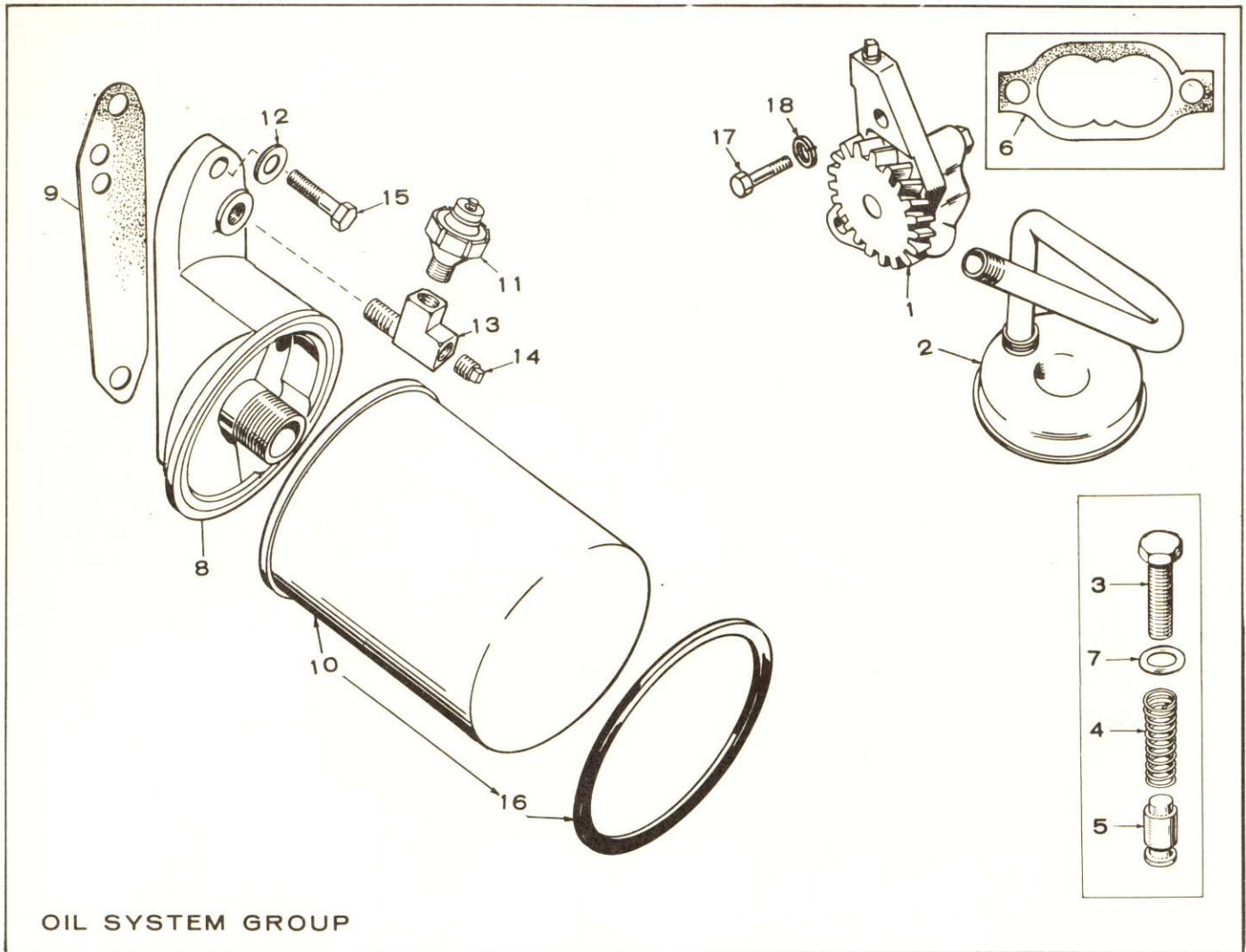
+ - Included in Mounting Hardware Package.



CRANKSHAFT, FLYWHEEL, CAMSHAFT AND PISTON GROUP

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|---|-----------|--|
| 1 | 150A78 | 1 | Ring, Camshaft Center Pin |
| 2 | 150B612 | 1 | Cup, Governor |
| 3 | 510P15 | 10 | Ball, Fly - Governor |
| 4 | 105A353 | 1 | Gear Set, Timing - Includes 1 each Crankshaft & Camshaft Gears (Includes Flyball Spacer & Plate) |
| 5 | 105A4 | 1 | Washer, Camshaft Gear Thrust |
| 6 | 515P1 | 1 | Key, Camshaft Gear Mounting |
| 7 | 105B309 | 1 | Camshaft (Includes Center Pin) |
| 8 | 150A75 | 1 | Pin, Center - Camshaft |
| 9 | PISTON AND PIN (INCLUDES RETAINING RINGS) | | |
| | 112-111 | 2 | Standard |
| | 112-111-05 | 2 | .005" Oversize |
| | 112-111-10 | 2 | .010" Oversize |
| | 112-111-20 | 2 | .020" Oversize |
| | 112-111-30 | 2 | .030" Oversize |
| | 112-111-40 | 2 | .040" Oversize |
| 10 | PIN, PISTON | | |
| | 112A112 | 2 | Standard |
| | 112A112-02 | 2 | .002" Oversize |
| 11 | 518P294 | 4 | Ring, Piston Pin Retaining |
| 12 | 114C203 | 2 | Rod, Connecting (Includes Bushing & Bolts) |
| 13 | RING SET, PISTON | | |
| | 113A165 | 2 | Standard |
| | 113A165-05 | 2 | .005" Oversize |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|------------------------------|-----------|---|
| | 113A165-10 | 2 | .010" Oversize |
| | 113A165-20 | 2 | .020" Oversize |
| | 113A165-30 | 2 | .030" Oversize |
| | 113A165-40 | 2 | .040" Oversize |
| 14 | 805A10 | 4 | Bolt, Place - Connecting Rod Cap |
| 15 | 114A36 | 2 | Bushing, Piston Pin - Connecting Rod |
| 16 | BEARING HALF, CONNECTING ROD | | |
| | 114B188 | 4 | Standard |
| | 114B188-02 | 4 | .002" Undersize |
| | 114B188-10 | 4 | .010" Undersize |
| | 114B188-20 | 4 | .020" Undersize |
| | 114B188-30 | 4 | .030" Undersize |
| 17 | 526A17 | 1 | Washer, Wheel Mounting |
| 18 | 515-2 | 1 | Key, Wheel Mounting |
| 19 | 104A170 | 1 | Screw, Wheel Mounting |
| 20 | 134C2130 | 1 | Wheel, Blower |
| 21 | 104D739 | 1 | Flywheel |
| 22 | 518P14 | 1 | Lock, Crankshaft Gear Washer Retaining |
| 23 | 104A43 | 1 | Washer, Crankshaft Gear Retaining |
| 24 | 104D821 | 1 | Crankshaft |
| 25 | 515P1 | 1 | Key, Crankshaft Gear Mounting |
| 26 | 134A911 | 1 | Plate, Blower Wheel |
| 27 | 850-55 | 1 | Washer, Lock (7/16) |
| 28 | 821-18 | 4 | Screw (1/4-20 x 5/8") - Blower Wheel Mounting |

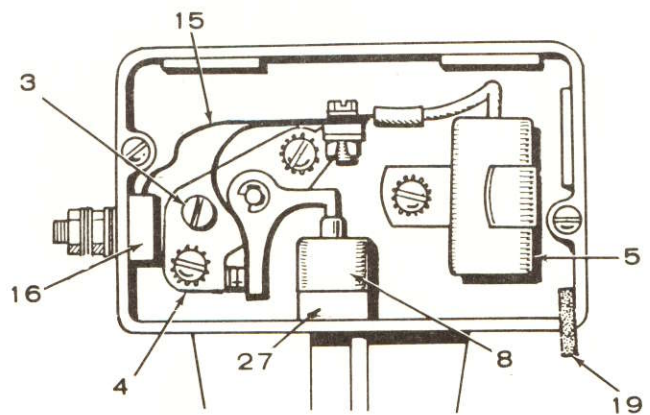
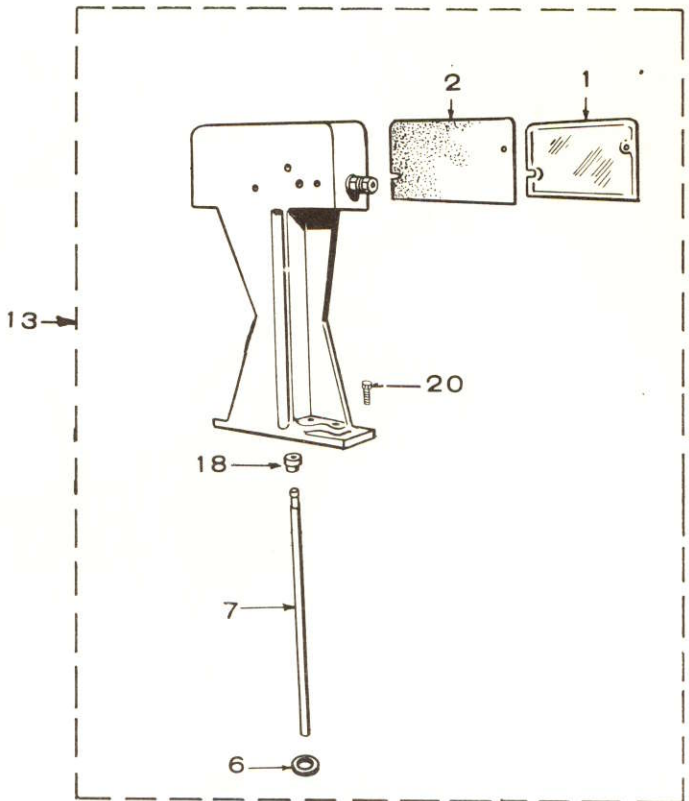
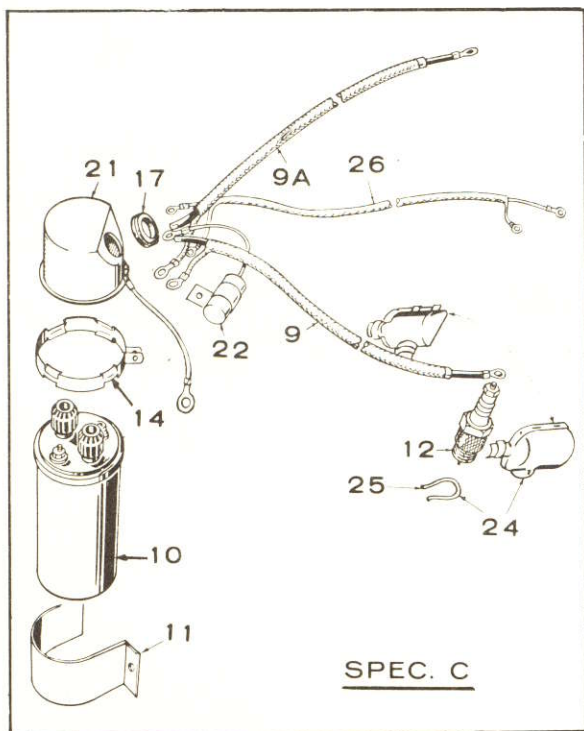
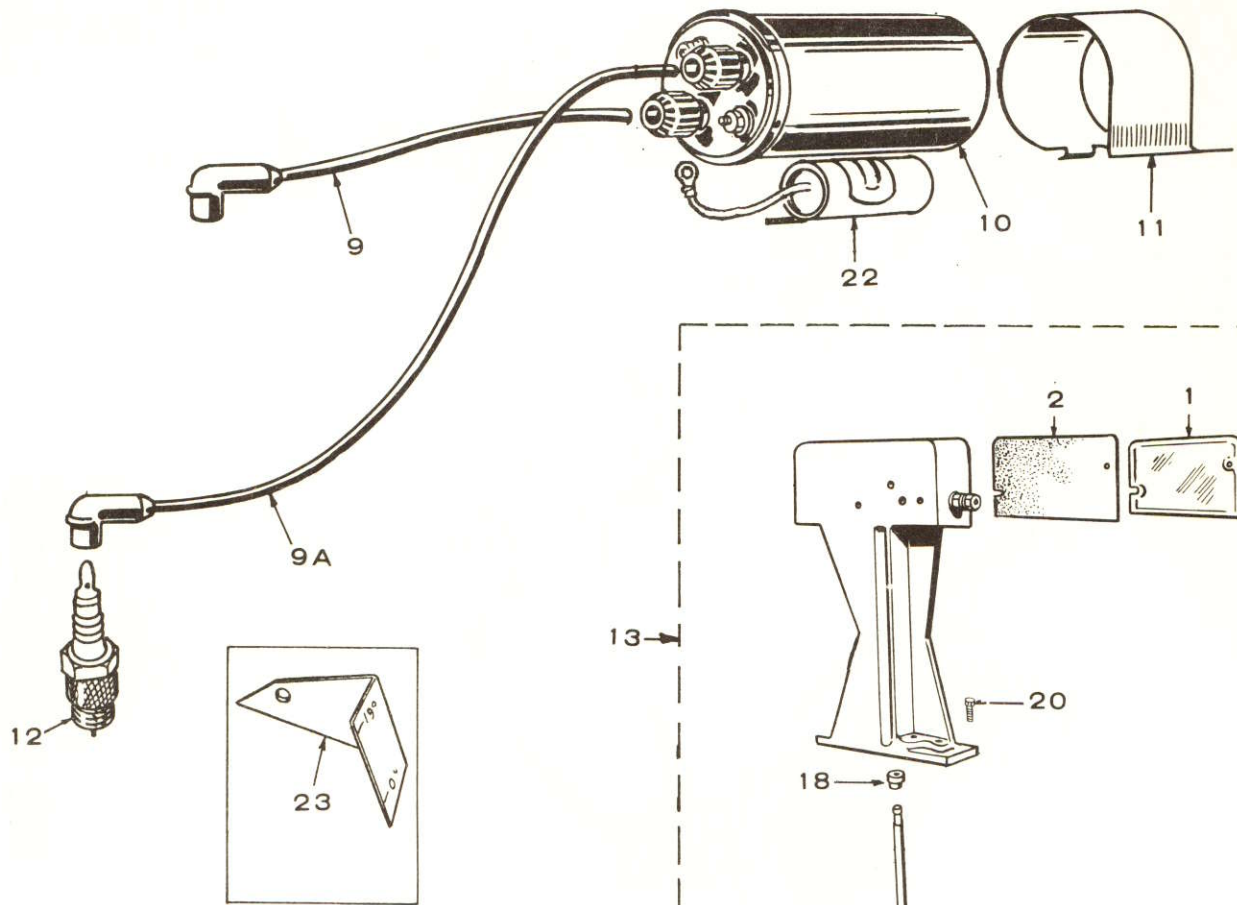


OIL SYSTEM GROUP

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|---|
| 1 | 120A491 | 1 | Pump, Oil (Compon ents Not Sold Separately) |
| 2 | 120B400 | 1 | Intake, Oil Pump - Includes Cup, Screen & Pipe |
| 3 | 801-50 | 1 | Screw (3/8-24 x 1'') - Oil By-Pass |
| 4 | 120A140 | 1 | Spring, By-Pass Valve |
| 5 | 120A398 | 1 | Valve, By-Pass |
| 6 | 120K161 | 1 | Gasket Kit, Oil Pump |
| 7 | 526-66 | 1 | Washer, Oil Pressure Relief Valve Adjusting Screw |
| 8 | 122D320 | 1 | Adapter, Oil Filter |
| 9 | 122A321 | 1 | Gasket, Adapter |
| 10 | 122B323 | 1 | Filter, Oil (Includes Gasket) |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|------------------------------------|-----------|--|
| 11 | SWITCH, LOW OIL PRESSURE 309A10 | 1 | Spec C Only |
| | 309P237 | 1 | Begin Spec D |
| 12 | 526-65 | 2 | Washer (Copper), Adapter Mounting |
| 13 | 502-58 | 1 | Tee, Low Oil Pressure Switch |
| 14 | 505-57 | 1 | Plug (1/8) |
| 15 | 800-28 | 2 | Screw (5/16-18 x 1'') - Adapter Mounting |
| 16 | 122A347 | 1 | Gasket, Oil Filter |
| 17 | 800-7 | 2 | Screw (1/4-20 x 1'') - Oil Pump Mounting |
| 18 | 850-40 | 2 | Washer, Lock (1/4) |

IGNITION GROUP

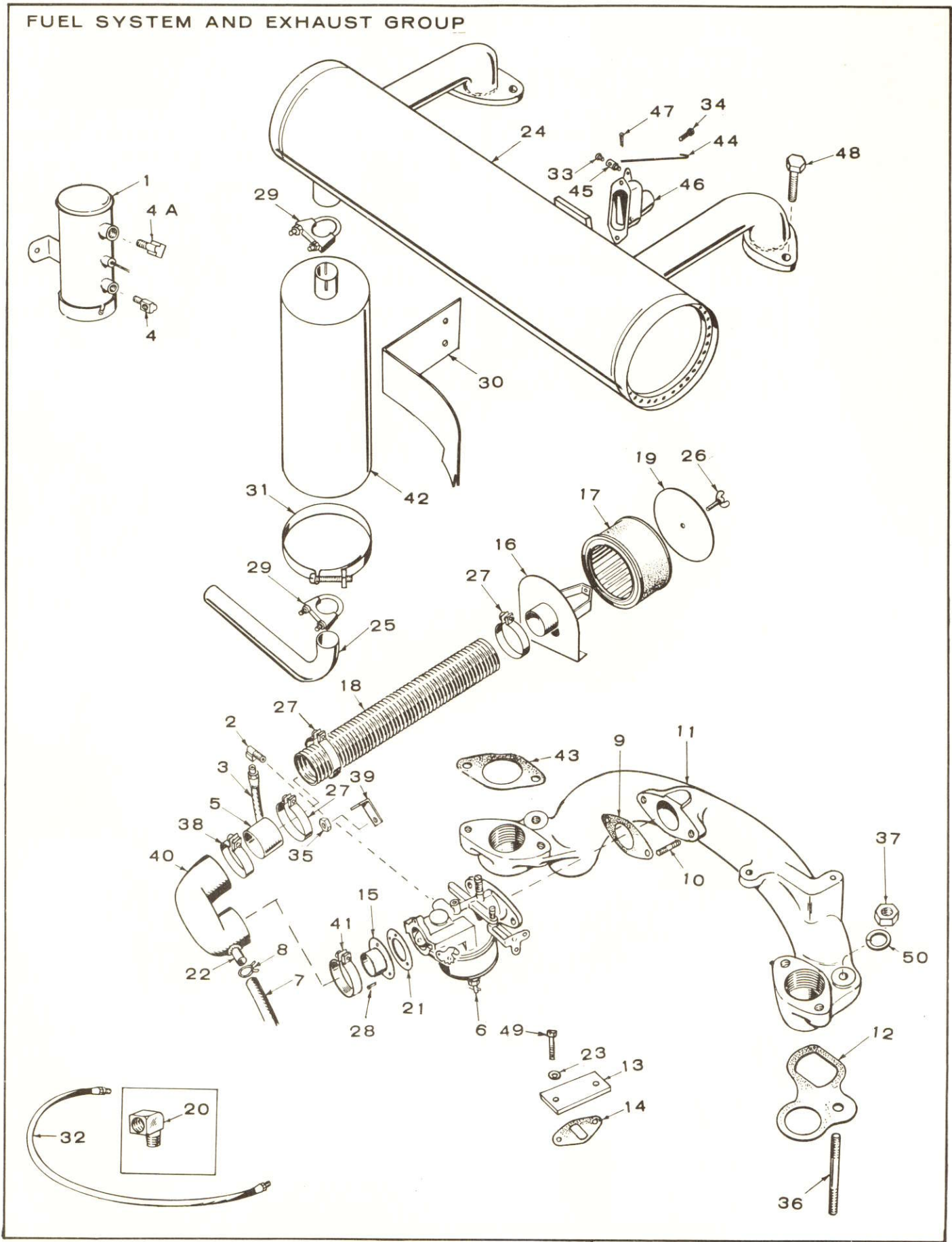


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|--------------------------|-----------|--|
| 1 | 160A930 | 1 | *Cover, Breaker Box |
| 2 | 160A150 | 1 | *Gasket, Breaker Box Cover |
| 3 | 160A75 | 1 | *Cam, Point Gap Adjusting |
| 4 | 160A2 | 1 | *Point Set, Breaker |
| 5 | 312A69 | 1 | *Condenser, Breaker Points |
| 6 | 160A1040 | 1 | *Gasket, Breaker Box Mounting |
| 7 | 160A723 | 1 | *Plunger |
| 8 | 160A1143 | 1 | *Diaphragm, Breaker Box |
| 9 | CABLE, SPARK PLUG - L.H. | | |
| | 167A1553 | 1 | Spec C Only |
| | 167A1520 | 1 | 7-1/2 " Long - Begin Spec D |
| 9A | CABLE, SPARK PLUG - R.H. | | |
| | 167A1553 | 1 | Spec C Only |
| | 167A1557 | 1 | 14-1/2 " Long - Begin Spec D |
| 10 | 166B535 | 1 | Coil, Ignition |
| 11 | CLAMP, COIL | | |
| | 166B577 | 1 | Spec C Only |
| | 166B588 | 1 | Begin Spec D |
| 12 | 167-241 | 2 | Plug, Spark |
| 13 | 160A1135 | 1 | Box Assembly, Breaker (Includes Parts Marked *) |
| 14 | 166A541 | 1 | Clamp, Coil Cover - Spec C Only |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--|
| 15 | 160A428 | 1 | *Strap, Point Set to Terminal Block |
| 16 | 160A349 | 1 | *Block & Terminal Assembly |
| 17 | 508P1 | 1 | Grommet, Ignition Coil Cover - Spec C Only |
| 18 | 160A1041 | 1 | *Bushing, Breaker Box (Bottom) |
| 19 | 160A261 | 1 | *Wick, Breaker Box |
| 20 | 815P357 | 2 | *Screw, Mounting - Breaker Box |
| 21 | 166A563 | 1 | Cover, Ignition Coil - Spec C Only |
| 22 | 312A27 | 1 | Condenser (.5Mfd.), Ignition Coil Suppression |
| 23 | 166B519 | 1 | Bracket, Timing |
| 24 | 167A67 | 2 | Shield, Spark Plug (Includes Clamp & Shield) - Spec C Only |
| 25 | 167A64 | 2 | Clamp, Spark Plug Shield - Spec C Only |
| 26 | 336A2080 | 1 | Lead Assembly, Shielded - Spec C Only |
| 27 | 160A931 | 1 | *Guide, Plunger |

* - Included in Breaker Box Assembly.

FUEL SYSTEM AND EXHAUST GROUP

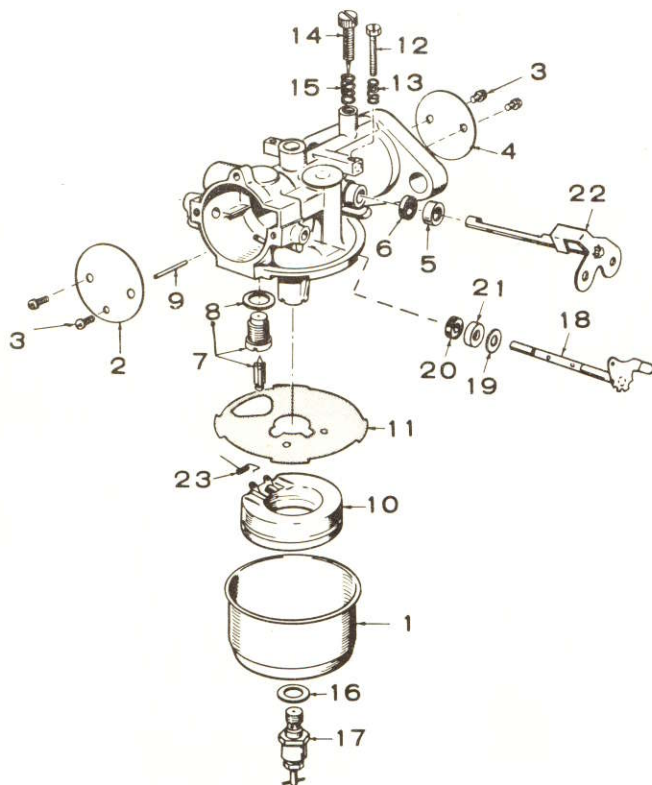


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|-------------------------------|-----------|--|
| 1 | 149P650 | 1 | Pump, Fuel (Electric) |
| 2 | 502-2 | 1 | Elbow (90°), Carburetor Inlet |
| 3 | LINE, FUEL PUMP TO CARBURETOR | | |
| | 501A122 | 1 | Spec C Only |
| | 501A197 | 1 | Begin Spec D |
| 4 | ELBOW, FUEL PUMP INLET | | |
| | 502-2 | 1 | Spec C Only |
| | 502-20 | 1 | Begin Spec D |
| 4A | 502-2 | 1 | Elbow, Fuel Pump Outlet |
| 5 | 140A1151 | 1 | Tube, Air Inlet |
| 6 | 141A801 | 1 | *Carburetor, Gasoline (Sisson Choke) |
| 7 | 503A486 | 1 | Hose, Breather |
| 8 | 503-171 | 1 | Clamp, Breather Hose |
| 9 | 141A281 | 1 | Gasket, Carburetor Mounting |
| 10 | 520A526 | 2 | Stud, Carburetor Mounting |
| 11 | 154C1385 | 1 | Manifold, Intake |
| 12 | 154A1250 | 2 | Gasket, Intake Manifold to Cylinder Block |
| 13 | 149A136 | 1 | Plate, Fuel Pump Hole Cover |
| 14 | 149A3 | 1 | Gasket, Fuel Pump Hole Cover Plate |
| 15 | 145A398 | 1 | Adapter, Carburetor Air Inlet |
| 16 | BRACKET, AIR CLEANER | | |
| | 140B1152 | 1 | Spec C Only |
| | 140B1173 | 1 | Begin Spec D |
| 17 | 140B495 | 1 | Cartridge, Air Cleaner |
| 18 | 503A628 | 1 | Hose, Air Inlet |
| 19 | 140A1153 | 1 | Cover, Air Cleaner |
| 20 | 502-20 | 1 | Elbow, Street - Fuel Supply Line |
| 21 | 140A921 | 1 | Gasket, Adapter to Carburetor |
| 22 | 123A733 | 1 | Tube, Adapter to Breather Hose |
| 23 | 526A63 | 2 | Washer (Copper), Hole Cover Plate Mounting |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|------------------|-----------|--|
| 24 | MUFFLER, EXHAUST | | |
| | 155C1186 | 1 | Left Hand Outlet |
| | 155C1178 | 1 | Right Hand Outlet - Optional |
| 25 | 155A1189 | 1 | Elbow, Exhaust |
| 26 | 518-56 | 1 | Screw, Wing - Air Cleaner Cover |
| 27 | 503-4 | 3 | Clamp, Air Inlet Hose |
| 28 | 815-199 | 3 | Screw (10-32 x 5/16") - Adapter Mounting |
| 29 | 155P1015 | 2 | Clamp, Pipe - Exhaust |
| 30 | 155B1188 | 1 | Support, Muffler |
| 31 | 503-621 | 1 | Clamp, Muffler Support |
| 32 | 501A5 | 1 | Line, Fuel, Flexible (18-1/2") |
| 33 | 815-104 | 1 | Screw, Set (8-32 x 5/16") |
| 34 | 813-98 | 2 | Screw (10-32 x 3/8") - Choke Mounting |
| 35 | 868-2 | 2 | Nut (5/16-24) - Carburetor Mounting |
| 36 | 520A713 | 2 | Stud, Intake Manifold Mounting |
| 37 | 104A91 | 2 | Nut, Intake Manifold Stud |
| 38 | 503P581 | 1 | Clamp, Hose - Air Cleaner |
| 39 | 140-1150 | 1 | Bracket, Air Inlet Hose |
| 40 | 140A1157 | 1 | Elbow, Carburetor Air Inlet |
| 41 | 503-280 | 1 | Clamp, Hose - Air Inlet Elbow to Adapter |
| 42 | 155P1181 | 1 | Muffler, Exhaust |
| 43 | 154A1383 | 2 | Gasket, Exhaust Manifold |
| 44 | 153A443 | 1 | Linkage, Choke |
| 45 | 152A155 | 1 | Swivel, Choke Linkage |
| 46 | 153A223 | 1 | Choke, Sisson |
| 47 | 516-59 | 1 | Pin, Cotter - Choke |
| 48 | 800-28 | 4 | Screw (5/16-18 x 1") - Muffler Mounting |
| 49 | 800-4 | 2 | Screw (1/4-20 x 5/8") |
| 50 | 850-50 | 2 | Washer, Lock (3/8) |

* - See separate group for components and service kits.

CARBURETOR PARTS GROUP

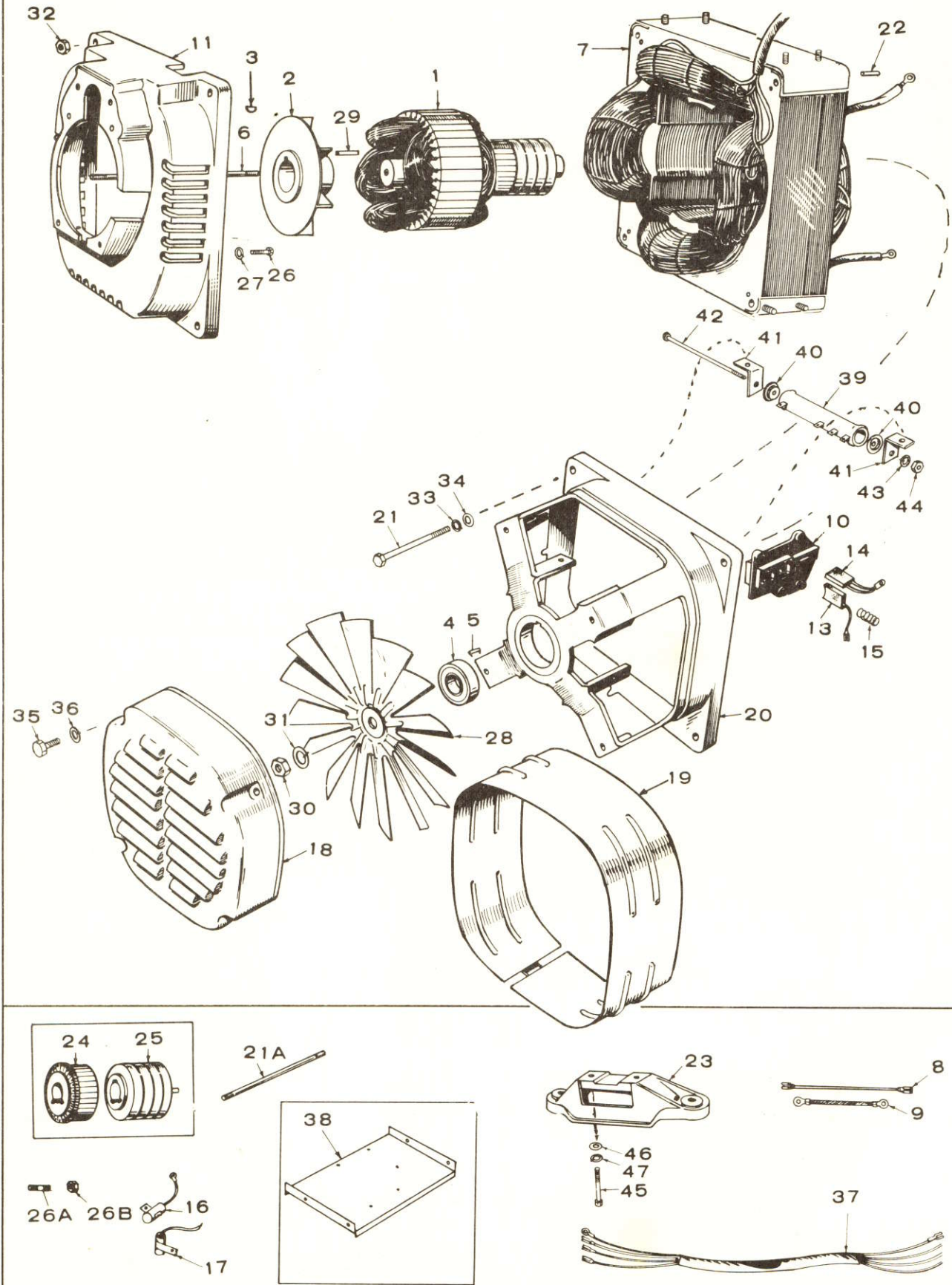


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|---|
| | 141A801 | 1 | Carburetor, Gasoline |
| | 141P747 | 1 | Repair Kit (Includes Parts Marked *) |
| | 141K748 | 1 | Gasket Kit (Includes Parts Marked ★) |
| | 141A281 | 1 | *★Gasket, Carburetor Flange |
| 1 | 141P708 | 1 | Bowl, Fuel |
| 2 | 141P741 | 1 | Plate, Choke |
| 3 | 141P698 | 4 | Screw & Washer, Choke & Throttle Plate Mounting |
| 4 | 141P793 | 1 | Plate, Throttle |
| 5 | 141P705 | 1 | *Retainer, Seal |
| 6 | 141-661 | 1 | *★Seal, Rubber |
| 7 | 141P798 | 1 | *Valve Seat Assembly, Fuel |
| 8 | 141P696 | 1 | *Washer, Fuel Valve Seat |
| 9 | 141P703 | 1 | *Shaft, Float |
| 10 | 141P702 | 1 | Float Assembly |
| 11 | 141P701 | 1 | *★Gasket, Bowl to Body |
| 12 | 141P700 | 1 | Screw, Throttle Stop |
| 13 | 141P711 | 1 | Spring, Throttle Stop |
| 14 | 141P713 | 1 | Needle, Idle Adjusting |
| 15 | 141P710 | 1 | Spring, Idle Needle |
| 16 | 141A77 | 1 | *★Washer, Main Jet Assembly |
| 17 | 141P712 | 1 | Jet Assembly, Main (Adjustable) |
| 18 | 141-742 | 1 | Shaft, Choke |
| 19 | 141P699 | 1 | *Washer, Choke Shaft |
| 20 | 141P697 | 1 | *Seal, Felt |
| 21 | 141P203 | 1 | *Retainer, Felt Seal |
| 22 | 141P709 | 1 | Shaft & Lever, Throttle |
| 23 | 141-799 | 1 | *Spring, Float |

* Parts contained in Repair Kit.

★ Parts contained in Gasket Kit.

GENERATOR GROUP

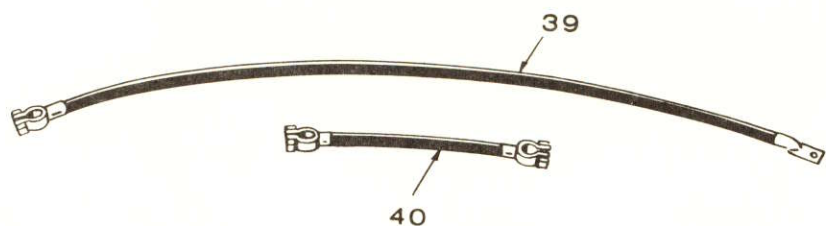
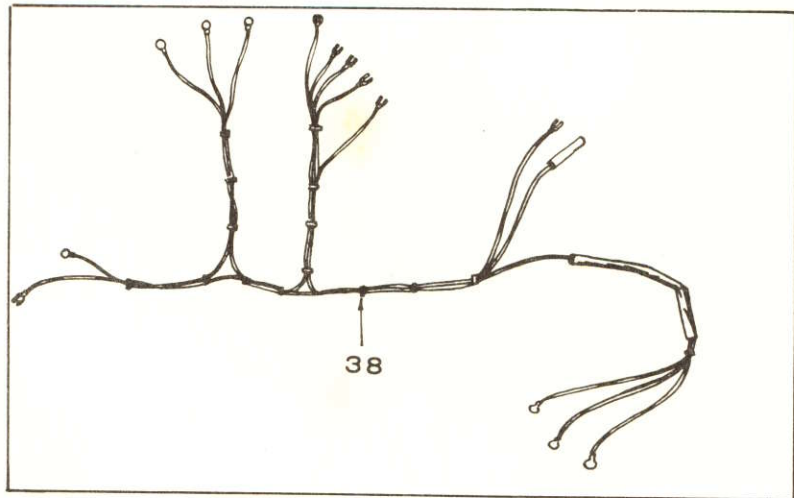
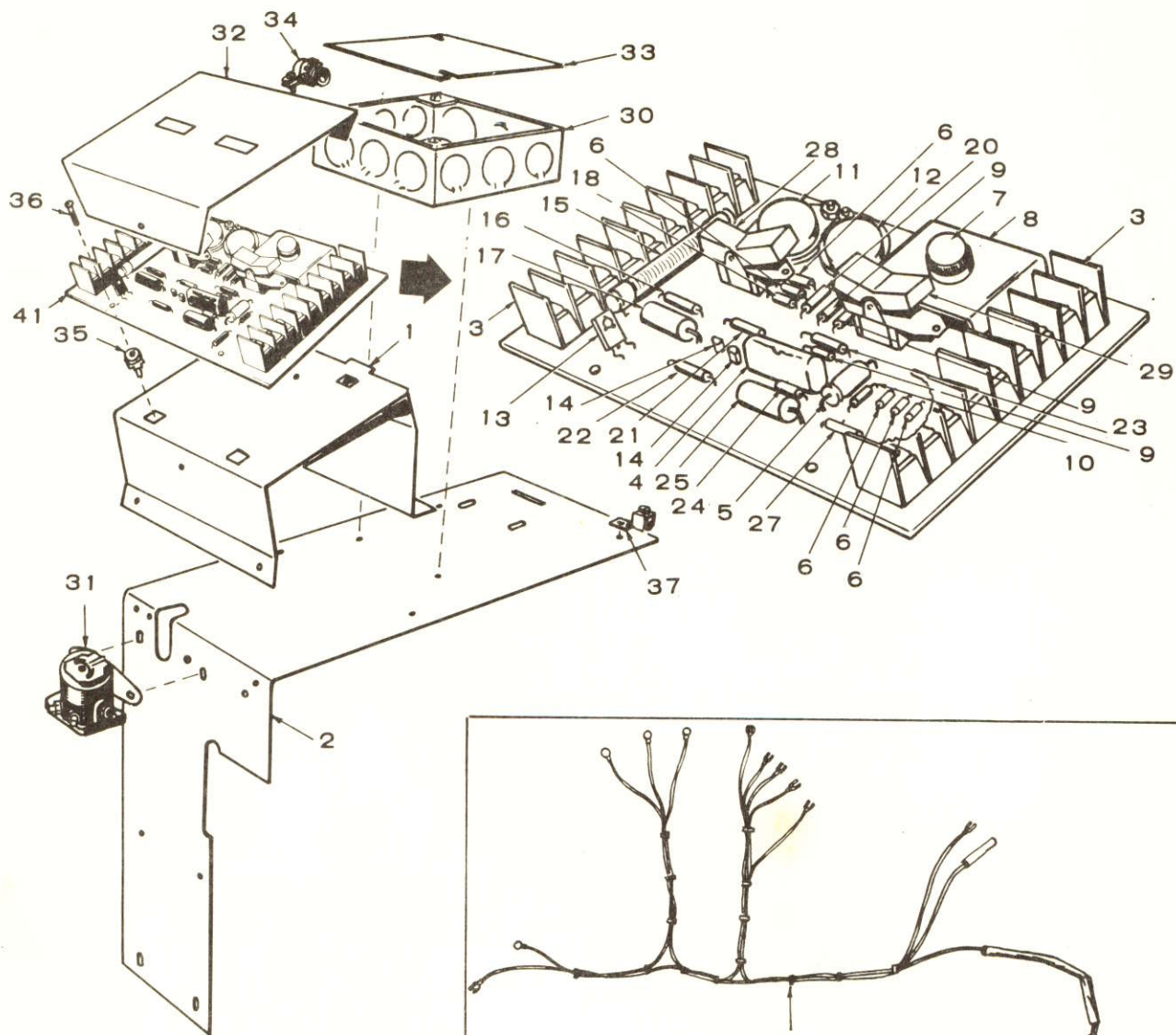


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|---|-----------|--|
| 1 | * | 1 | Rotor Assembly, Wound |
| 2 | HUB, DRIVE | | |
| | 232C2108 | 1 | Spec C Only |
| | 232C2316 | 1 | Begin Spec D |
| 3 | 515-6 | 1 | Key, Rotor to Crankshaft |
| 4 | 510A47 | 1 | Bearing (Ball), Rotor |
| 5 | 232A596 | 1 | Clip, Bearing Stop |
| 6 | 520A733 | 1 | Stud, Rotor Through |
| 7 | * | 1 | Stator Assembly, Wound |
| | LEAD ASSEMBLY, BRUSH | | |
| 8 | 336A1891 | 4 | Blade Type Terminals (9'') |
| 8 | 336A1890 | 2 | Blade Type & Round Type Terminal (4'') (NOTE: Spec C Units used Quantity of 1) |
| 9 | 336A186 | 2 | Ground, Jumper (3-1/2'') |
| 10 | BLOCK ASSEMBLY, BRUSH (Includes Parts Marked +) | | |
| | 212C345 | 2 | Lower & Right |
| | 212C346 | 2 | Upper & Left |
| 11 | ADAPTER, ENGINE TO GENERATOR | | |
| | 231E150 | 1 | Spec C Only |
| | 231E164 | 1 | Begin Spec D |
| 13 | 214A95 | 4 | +Brush, Commutator |
| 14 | 214A96 | 8 | +Brush, Collector Ring |
| 15 | 212A1232 | 12 | +Spring, Brush |
| 16 | 312A17 | 2 | Condenser (.5Mfd.) DC - Spec C Only |
| 17 | 312A58 | 3 | Condenser (.1Mfd.) AC - Spec C Only |
| 18 | 232D2107 | 1 | Cover, Generator Fan |
| 19 | 234C362 | 1 | Wrapper, End Bell |
| 20 | 211E187 | 1 | Bell, End |
| 21 | 800-44 | 4 | Screw (5/16-18 x 7-1/2''), Generator Through - Begin Spec D |
| 21A | 520A730 | 4 | Stud (5/16-18 x 8-5/8'') - Generator Through - Spec C Only |
| 22 | 516-182 | 8 | Pin, Roll, Generator Frame (1/4 x 3/4'') |
| 23 | SUPPORT, GENERATOR | | |
| | 232D2109 | 1 | Spec C Only |
| | 232D2321 | 1 | Begin Spec D |
| 24 | COMMUTATOR | | |
| | 203A151 | 1 | Spec C Only |
| | 203C152 | 1 | Begin Spec D |
| 25 | COLLECTOR RING | | |
| | 204B108 | 1 | Spec C Only |
| | 204C110 | 1 | Begin Spec D |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|--------------------------|-----------|---|
| 26 | 800-51 | 4 | Screw (3/8-16 x 1-1/4'') - Generator Adapter Mounting - Begin Spec D |
| 26A | 520A737 | 4 | Stud (3/8 x 2'') - Generator Adapter Mounting - Spec C Only |
| 26B | 104A91 | 4 | Nut (3/8 x 24) - Generator Adapter Mounting - Spec C Only |
| 27 | 850-50 | 4 | Washer, Lock (3/8) |
| 28 | 205C90 | 1 | Fan, Generator |
| 29 | 515-7 | 1 | Key, Drive Hub |
| 30 | 867-4 | 1 | Nut, Hex (7/16-20) |
| 31 | 850-55 | 1 | Washer, Lock (7/16) |
| 32 | 862-15 | 4 | Nut, Hex (5/16-18) - Generator Through Stud (NOTE: Spec C Units used a Quantity of 8) |
| 33 | 850-45 | 4 | Washer, Lock (5/16) |
| 34 | 526-115 | 4 | Washer, Flat (5/16) |
| 35 | 812-156 | 4 | Screw (1/4-20 x 1-1/2'') - Cover Mounting |
| 36 | 850-40 | 4 | Washer, Lock (1/4) |
| 37 | HARNESS ASSEMBLY, WIRING | | |
| | 338B592 | 1 | Spec C Only |
| | 338B642 | 1 | Begin Spec D |
| 38 | 232B2216 | 1 | Bracket, Stator Cover - Spec C Only |
| 39 | 353A47 | 1 | Resistor, Tapped - Begin Spec D |
| 40 | 304A15 | 2 | Washer, Centering - Begin Spec D |
| 41 | 304A706 | 2 | Bracket, Resistor Mounting - Begin Spec D |
| 42 | 812-118 | 1 | Screw (10-24 x 5''), Resistor Mounting - Begin Spec D |
| 43 | 850-30 | 1 | Washer, Lock (#10) - Begin Spec D |
| 44 | 860-11 | 1 | Nut, Hex (10-24) - Begin Spec D |
| 45 | 800-51 | 2 | Screw (3/8-16 x 1-1/4'') - Generator Support |
| 46 | 526-30 | 2 | Washer, Flat (3/8'') |
| 47 | 850-50 | 2 | Washer, Lock (3/8'') |

* - Order by description, giving complete Model and Serial Number (Onan Nameplate).

+ - Included in Brush Block Assembly.



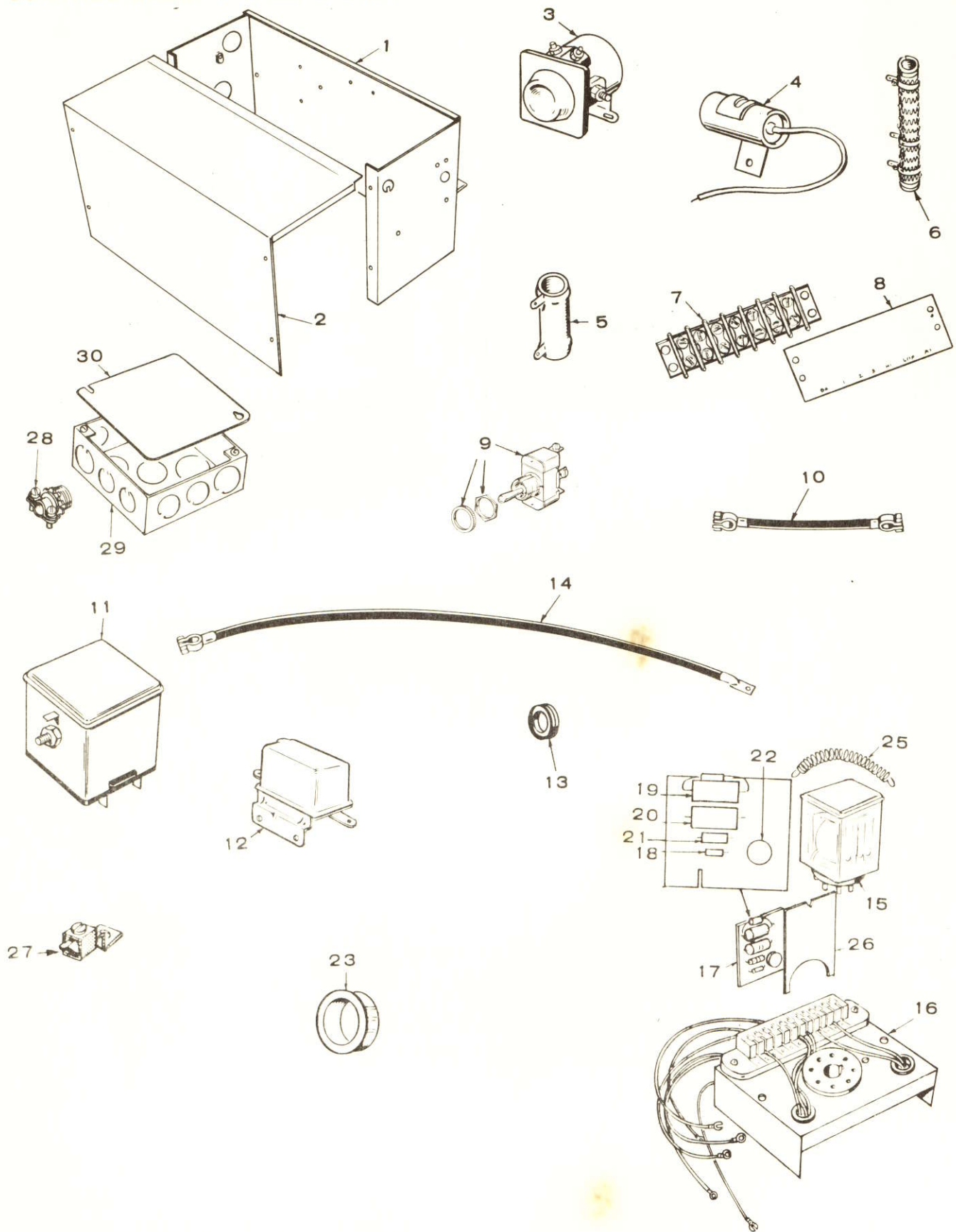
CONTROL GROUP- BEGIN SPEC. D

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|-----------------------------------|
| 1 | 301C3481 | 1 | Bracket, Control Mounting |
| 2 | 301B3483 | 1 | Bracket, Control Mounting |
| 3 | 332-1450 | 2 | *Block, Terminal |
| 4 | 355P26 | 1 | *Capacitor, .47 Mfd. |
| 5 | 356A46 | 1 | *Capacitor, 5 Mfd. |
| 6 | 357A17 | 5 | *Rectifier, Epoxy Case |
| 7 | 358B26 | 1 | *Rectifier, Silicon |
| 8 | 363A63 | 1 | *Sink, Heat |
| 9 | 357A4 | 3 | *Rectifier, Silicon |
| 10 | 359A26 | 1 | *Diode, Zener (18 Volt) |
| 11 | 362A18 | 1 | *Transistor, Power (2N3055) |
| 12 | 362A33 | 1 | *Transistor, Power (MJ2955) |
| 13 | 362A28 | 1 | *Transistor (2N4918) |
| 14 | 362P11 | 2 | *Transistor, Silicon (NPN) |
| 15 | 353P43 | 1 | *Resistor, Fixed (35-Ohm, 10Watt) |
| 16 | 350-437 | 1 | *Resistor (120,000-Ohm, 1/2 Watt) |
| 17 | 350-977 | 1 | *Resistor (390-Ohm, 2 Watt) |
| 18 | 350-427 | 1 | *Resistor (47,000-Ohm, 1/2 Watt) |
| 20 | 350-402 | 1 | *Resistor (4,300-Ohm, 1/2 Watt) |
| 21 | 350-315 | 1 | *Resistor (1-Ohm, 1/2 Watt) |
| 22 | 350-355 | 1 | *Resistor (47-Ohm, 1/2 Watt) |
| 23 | 350-379 | 1 | *Resistor (470-Ohm, 1/2 Watt) |
| 24 | 350-530 | 1 | *Resistor (330-Ohm, 1/2 Watt) |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--|
| 25 | 350-983 | 1 | *Resistor (680-Ohm, 2 Watt) |
| 27 | 350-673 | 1 | *Resistor (270-Ohm, 1 Watt) |
| 28 | 308A323 | 1 | *Switch, Rocker (DPDT) - Electric - Hand |
| 29 | 308A320 | 1 | *Switch, Rocker (DPDT) - Start |
| 30 | 330B28 | 1 | Box, AC Outlet (Not Part of Control Assembly) |
| 31 | 307B1166 | 1 | Solenoid, Start (Not Mounted in Control) |
| 32 | 301B3484 | 1 | Cover, Control |
| 33 | 330-6 | 1 | Cover, AC Outlet Box |
| 34 | 331-27 | 1 | Connector, AC Outlet Box |
| 35 | 870A263 | 4 | Nut, Insulator |
| 36 | 815-365 | 4 | Screw, Self Tapping (8-32 x 3/4 ") |
| 37 | 332-142 | 1 | Terminal, Solderless |
| 38 | 338D640 | 1 | Harness, Wiring |
| 39 | 416A77 | 2 | Cable, Battery (28 ") |
| 40 | 416A4 | 1 | Cable, Battery Jumper |
| 41 | 300C859 | 1 | Control Assembly, Complete (Includes Parts Marked *) |

* - Included in 300C859 Control Assembly.

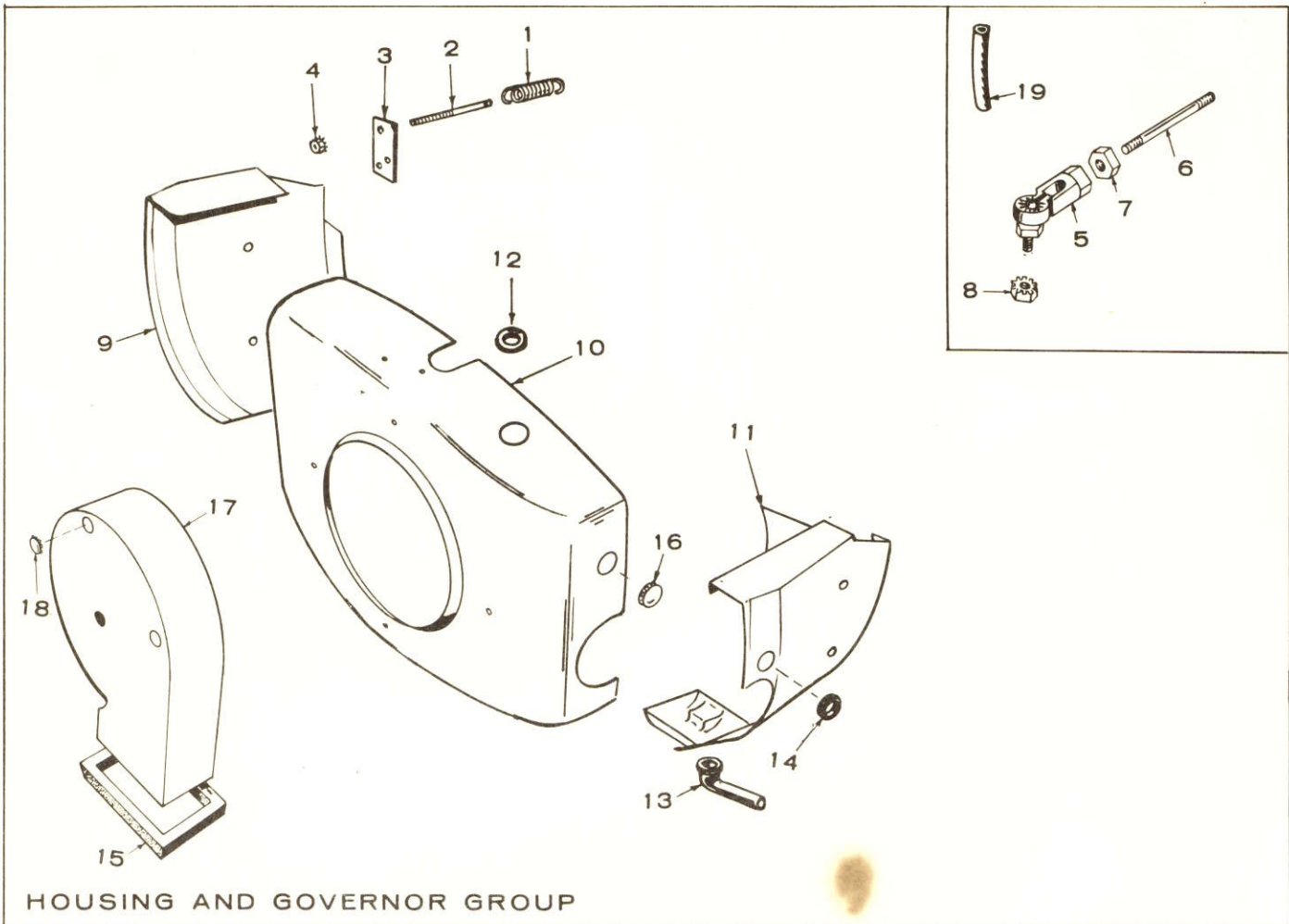
CONTROL GROUP - SPEC. C ONLY



| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|-----------------|-----------|---|
| 1 | 301C3404 | 1 | Box, Control |
| 2 | 301B3405 | 1 | Cover, Control Box |
| 3 | 307B845 | 1 | Solenoid, Start |
| 4 | 312A57 | 1 | Condenser (1.0 Mfd.) Start Solenoid Suppression |
| 5 | RESISTOR, FIXED | | |
| | 353A6 | 1 | 6-Ohm, 50 Watt |
| | 304A251 | 1 | 30-Ohm, 5 Watt |
| 6 | 304A632 | 1 | Resistor, Adjustable (6-Ohm, 100 Watt) |
| 7 | 332A745 | 1 | Block, Terminal, Remote Control |
| 8 | 332A1412 | 1 | Strip, Marker |
| 9 | 308P154 | 1 | Switch, Start-Stop |
| 10 | 416A4 | 1 | Cable, Battery Jumper |
| 11 | 307B1052 | 1 | Relay, Stop |
| 12 | 305B383 | 1 | Relay, Voltage Regulator |
| 13 | 508-4 | 1 | Grommet, For 5/8" Hole |
| 14 | 416A77 | 2 | Cable, Battery (28') |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--|
| 15 | 307B1070 | 1 | Relay, Start-Disconnect |
| 16 | 323B818 | 1 | Socket & Chassis Assembly Start-Disconnect (Includes Leads) |
| 17 | 300A734 | 1 | Amplifier Assembly, Start-Disconnect (Includes Parts Marked *) |
| 18 | 359-28 | 1 | *Diode, Zener |
| 19 | 350-979 | 1 | *Resistor, 470-Ohm, 2 Watt |
| 20 | 350-985 | 1 | *Resistor, 820-Ohm, 2 Watt |
| 21 | 350-397 | 1 | *Resistor, 2700-Ohm, 1/2 Watt |
| 22 | 362P32 | 1 | *Transistor |
| 23 | 331A88 | 2 | Bushing (Nylon) |
| 25 | 301A3306 | 1 | Spring, Relay Hold-down |
| 26 | 301A3307 | 1 | Spacer, Relay to Amplifier |
| 27 | 332-142 | As Req. | Terminal, Solderless |
| 28 | 331-27 | 1 | Connector, Output Box |
| 29 | 330B28 | 1 | Box, AC Output |
| 30 | 330-6 | 1 | Cover, Output Box |

* Included in Amplifier Assembly.



HOUSING AND GOVERNOR GROUP

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|-------------------------------|
| 1 | 150A98 | 1 | Spring, Governor |
| 2 | 150A1331 | 1 | Stud, Speed Adjustment |
| 3 | 134A2321 | 1 | Bracket, Speed Stud |
| 4 | 870-131 | 1 | Nut, Speed Adjustment |
| 5 | 150A939 | 2 | Joint, Ball |
| 6 | 520A623 | 1 | Link, Throttle |
| 7 | 870P188 | 2 | Palnut, Locking |
| 8 | 870-131 | 2 | Nut, Keys |
| 9 | 134D2141 | 1 | Housing, Cylinder Air - Left |
| 10 | 134C2330 | 1 | Housing, Blower |
| 11 | 134B2142 | 1 | Housing, Cylinder Air - Right |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--------------------------------------|
| 12 | 508P166 | 1 | Grommet, Rubber |
| 13 | 122B345 | 1 | Hose, Oil Drain |
| 14 | 508-162 | 1 | Grommet, Rubber |
| 15 | 134A2231 | 1 | Seal, Air Scroll |
| 16 | 517-35 | 1 | Plug, Dot Button (1-1/16") |
| 17 | 134C2320 | 1 | Scroll, Air |
| 18 | 517-21 | 2 | Plug, Dot Button (7/8") - Air Scroll |
| 19 | 503-391 | 1 | Hose, Oil Drain - Early Models Only |

SERVICE KITS AND MISCELLANEOUS

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

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION |
|----------|----------|-----------|--|
| | 98C1100 | 1 | Decal Kit |
| | 168K115 | 1 | Gasket Kit, Carbon Removal |
| | 168K113 | 1 | Gasket Kit, Complete Engine |
| | 160K836 | 1 | Ignition Tune-up Kit |
| | 522K262 | 1 | Overhaul Kit, Engine |
| | 525P137 | 1 | Paint, Touch-up Enamel (Green) 16-ounce Pressurized Can |

REMOTE WIRING CONNECTIONS

These supplementary instructions apply to CCK and NH electric generating plants used in recreational vehicles. For the new Spec units noted below, printed circuit board terminals 10 and 18 are available for connections to a remote switch and instruments used inside the recreational vehicle. Make the remote connections as described for the appropriate instrument. **NOTE:** Separate instruction sheets are available for connecting Onan built remote control stations.

| SERIES | NEW SPEC | OPERATOR'S MANUAL |
|--------|----------|-------------------|
| CCK | R | 927-310 |
| NH | D | 940-310 |

Start-Stop Switch: Connect a remote start-stop, double-pole, double-throw, momentary switch to terminals 13, 14, 15 and 16 as shown in Figures 1 and 5. Use Onan switch 308A329 or similar switch(es) and number 18 or larger wires for connections.

CAUTION Be sure the start-stop switch is momentary contact only. If not, the start solenoid will be damaged.

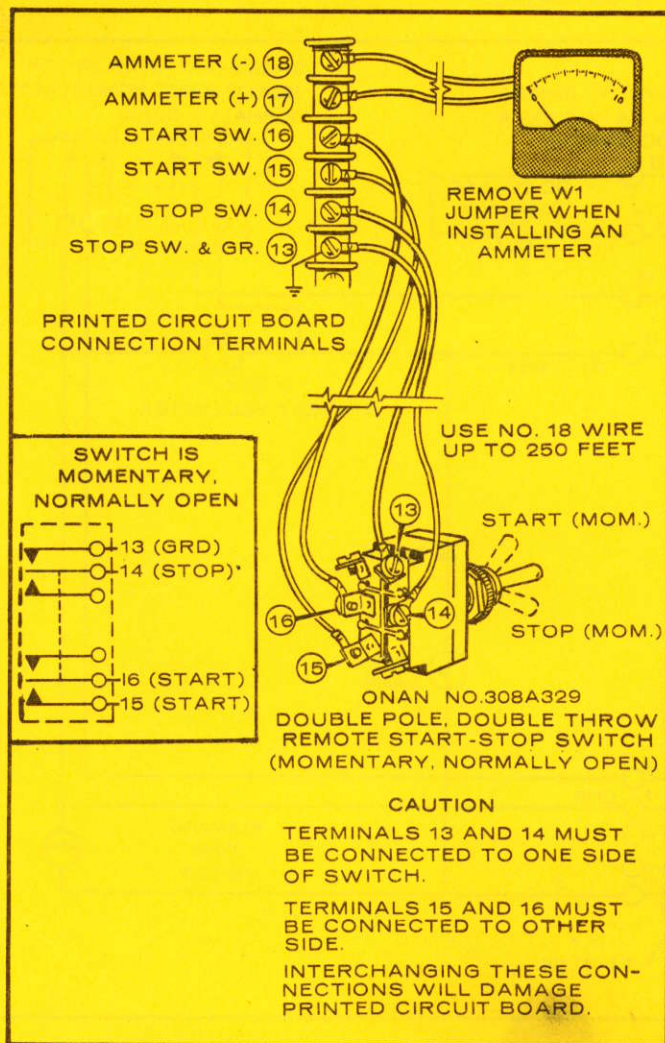


FIGURE 1. START-STOP SWITCH AND AMMETER

DC Ammeter: Connect a direct reading 0 to 10 ampere ammeter (Onan number 302-561) to terminals 17 (+) and 18 (-). For distances up to 10 feet make connections with no smaller than number 18 (Figure 1). When installed, Jumper W1 must be removed from the printed circuit board. See Figures 1 and 5. Jumper W1 is located near the 1-1/4 x 2 inch copper heat sink.

CAUTION Terminal 13 is the ground connection for the printed circuit board and must always be connected.

Running Time Meter: Connect running time meter (Onan number 302-885) to terminals 10 and 13 (Grd.) using number 18 or larger wire. Terminal 10 operates at approximately 30 volts during normal operation. See Figure 2.

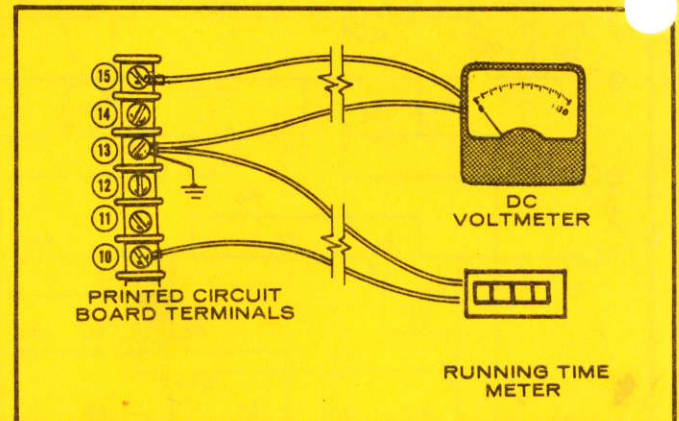


FIGURE 2. RUNNING TIME METER AND DC VOLTMETER

DC Voltmeter: Connect DC voltmeter (Onan number 302-562) between terminals 15 and 13 (Grd.) using number 18 wire. See Figure 2.

24 Volt Generating Lamp: Connect a 24 volt generating lamp between terminals 10 and 15 (Figure 3). Use a diode (IN4004) in series as shown.

12 Volt Generating Lamp: Connect a 12 volt generating lamp between terminals 10 and 15 (Figure 4). Connect a diode (IN4004) on one end of lamp and a 5 watt, 6 volt zener diode (IN5340) on the other end.

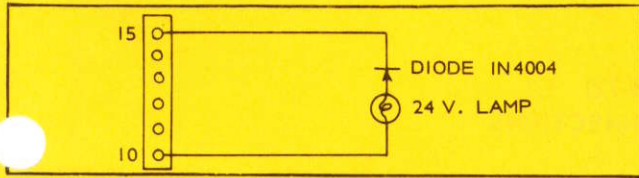


FIGURE 3. 24 VOLT GENERATING LAMP

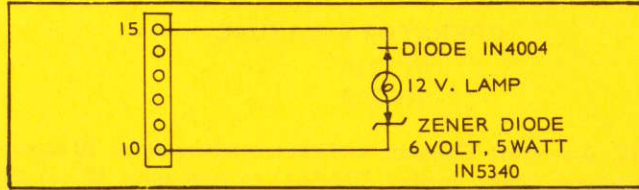


FIGURE 4. 12 VOLT GENERATING LAMP

Fused Connections: A small fuse (F1) used to protect the circuit against reversed battery connections, is located under the "STOP" side of Start-Stop Switch next to CR4. If fuse is damaged, replace by carefully

clearing out solder holes and replacing the fuse with a bare, number 36 wire and re-soldering the holes.

Later models use a 9 amp fuse (F1) which is located in the wiring harness between terminal 5 (on printed circuit board) and battery. If fuse is damaged (caused by connecting battery backwards), replace with an SFE 9 automotive type fuse.

Terminal 5 has a PC fuse connection (F2) in the battery lead to protect the printed circuit board from any shorts on the board or from external remote connections. Terminal 10 has a PC fuse connection (F3) in the generator lead to protect the printed circuit board from any external shorts when using the remote connections. If F2 or F3 printed circuit board path is "blown", replace either with number 22 wire, one inch long and solder into circuit.

CAUTION Do not attempt to check for current flow on the printed circuit board by jumpering across components with a screwdriver, wire, etc. Always have these boards checked by an authorized Onan service center or a qualified electrician using the proper instruments (e.g. voltmeter, ohmmeter, or multimeter).

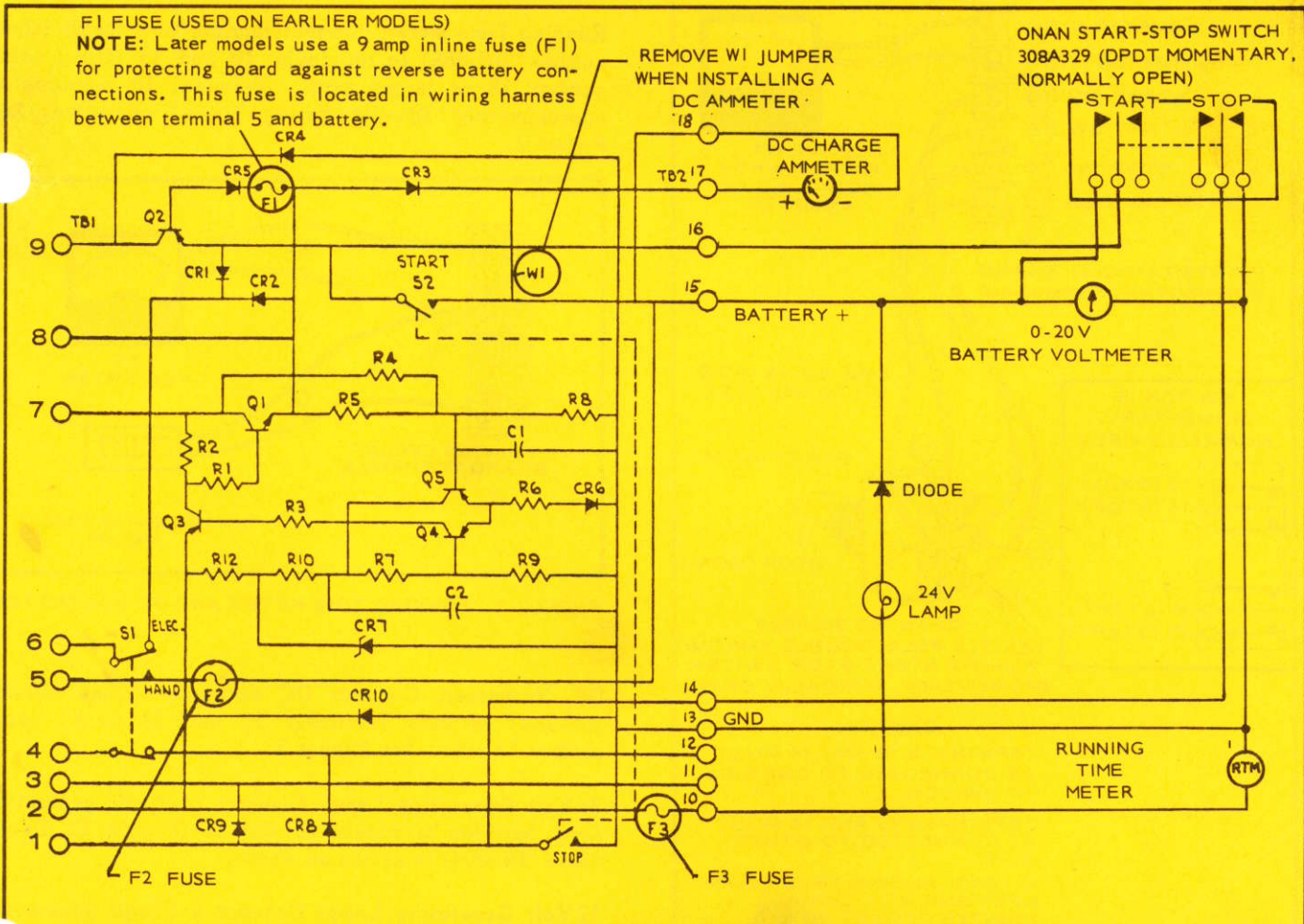
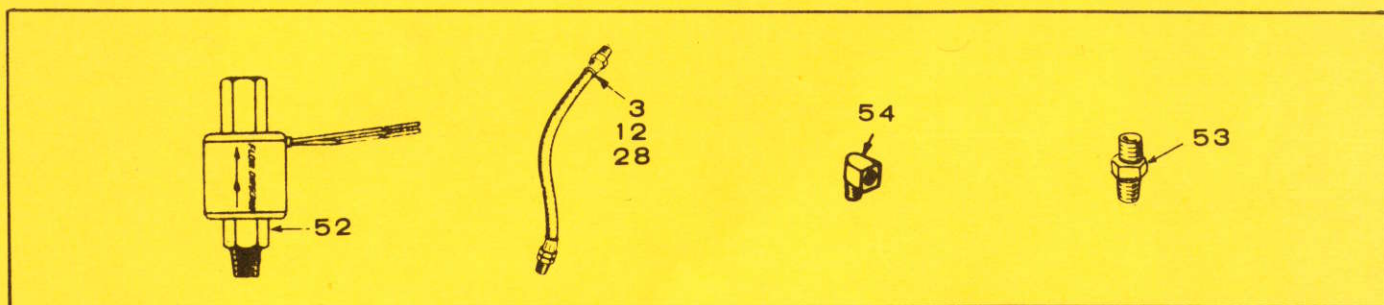


FIGURE 5. REMOTE WIRING SCHEMATIC

SUPPLEMENTARY PARTS LIST (7/73)

These parts apply to the following series Electric Power Plants for Recreational Vehicles and the Operators Manual and Parts Catalog shown adjacent to the model designation. Use these parts in place of or in addition to those shown in the main operators manual and parts catalog.

| <u>MODEL</u> | <u>OPERATORS MANUAL AND PARTS CATALOG</u> |
|-------------------|---|
| AJ | 924-310 |
| BF (Power Drawer) | 965-0315 |
| CCK | 927-310 |
| CCKB | 927-303 |
| LK | 930-310 |
| NH | 940-310 |
| NH (Power Drawer) | 940-0315 |



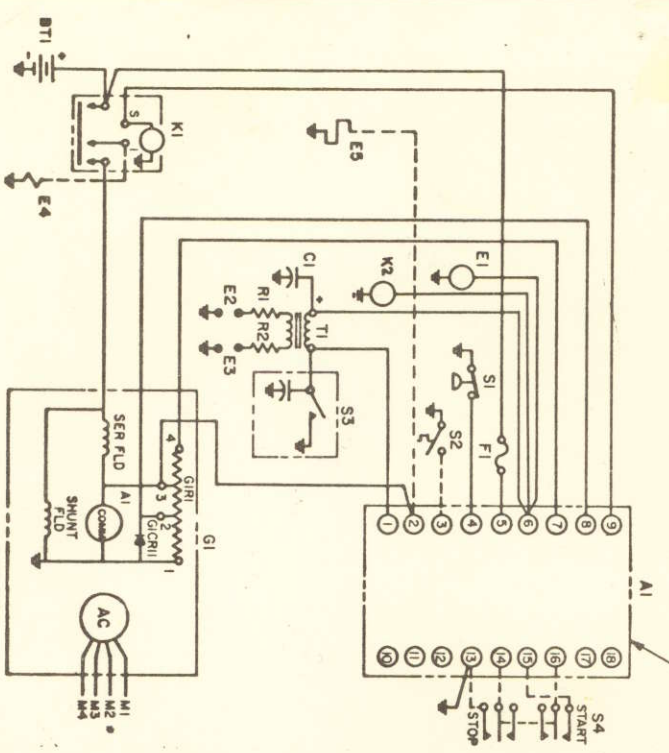
FUEL SYSTEM GROUP

| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u> |
|-----------------|-----------------|------------------|--|
| 3 | 501-204 | 1 | Line, Fuel (NH) |
| 12 | 501-0001 | 1 | Line, Fuel (BF and NH Power Drawer) |
| 28 | 501-204 | 1 | Line, Fuel (CCK) |
| 52 | 307P1279 | 1 | Valve, Fuel Solenoid |
| 53 | 502-82 | 1 | Nipple, Pipe (AJ, CCKB and LK) |
| 54 | 502-99 | 1 | Elbow, Reducing (CCK and NH) |
| 54 | 502-0099 | 1 | Elbow, Reducing (BF and NH Power Drawer) |

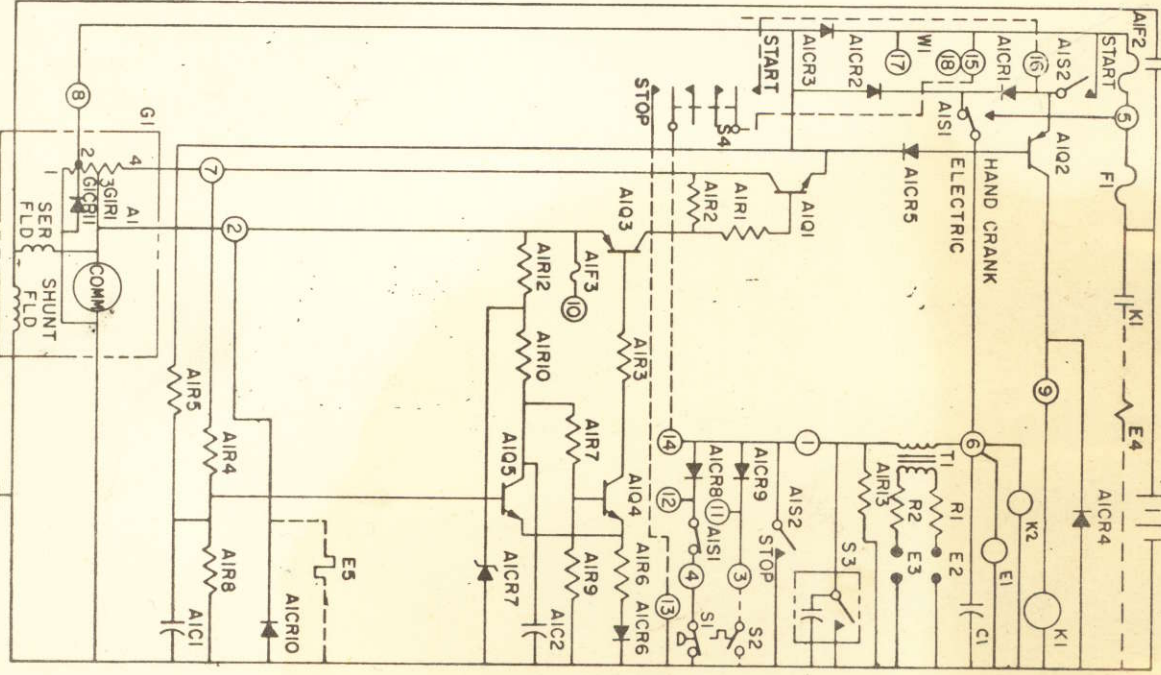
NOTE: Reference numbers do not necessarily follow the last reference number in the main parts catalog.

WIRING DIAGRAM

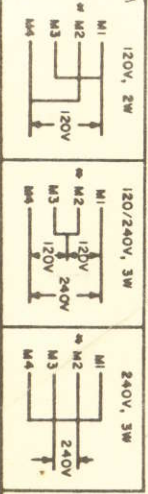
NOTE:
THIS SIDE FOR CUSTOMER
REMOTE CONTROL STATION



SCHEMATIC



| DASH NO | CHOKE | MODEL | WIRING HARNESS |
|---------|---------------|--------|----------------|
| -01 | MISSION CHOKE | CCK,NH | 338D640 |
| -02 | ONAN CHOKE | CCK | 338D691 |



* GROUNDED AC LEAD

| VOLTS | PHASE | WATTAGE |
|----------|-------|------------------------|
| 120/240V | 1 PH | 5.5NH - 53CR/12000R |
| 4W, | 50HZ | 358A2CCK - 53CR/12000R |
| 120/240V | 1 PH | 6.5NH - 3CR/12000R |
| 4W, | 60HZ | 48.5CCK - 3CR/12000R |

DATE: 2-15-73 BY: JTM
CONTROL - GEN SET
WIRING DIAGRAM
611C1086

ADDED FUEL SOLENOID
SUPERSEDES DWG SAME NO DATED 11-17-71
REVISION: 11-17-71
Original

| REF. DES. | PART NO. | QTY | DESCRIPTION |
|--------------------------|--------------------------|-----|-------------------------------------|
| | 30061000 | 1 | CONTROL ASSY |
| A1 | 3006859(REF) | 1 | CONTROL-GEN SET ASSY |
| A2 | 3006935(REF) | 1 | CONTROL-START ADAPTER (A TO 3 WIRE) |
| S4 | | 1 | SWITCH-START STOP (CUSTOMER REMOTE) |
| M1 | SEE TAB | 1 | WIRING HARNESS |
| PARTS LIST ENG GEN (REF) | | | |
| BT1 | BATTERY-12 VDC | | |
| C1 | CAPACITOR-0.1 MFD | | |
| E1 | PUMP-FUEL (WHEN USED) | | |
| E2 E3 | SPARK PLUG | | |
| E4 | CHOKE-SISSON (WHEN USED) | | |
| E5 | CHOKE-ONAN (WHEN USED) | | |
| G1 | GENERATOR | | |
| G1CR11 | 357-17 | 1 | DIODE-3A |
| G1R1 | 363-47 | 1 | RESISTOR |
| K1 | 307/81166 | 1 | RELAY-START SOLENOID |
| F1 | 321P193 | 1 | FUSE-9A |
| K2 | 187B1557 | 1 | SOLENOID-FUEL |
| R1 | 187B1520 | 1 | LEAD ASSY-HI TENSION |
| R2 | 187B1520 | 1 | LEAD ASSY-HI TENSION |
| RT1 | 304-60 | 1 | RESISTOR-ATTCO 1 7W, 25W |
| S1 | | 1 | SWITCH-LOW OIL PRESS |
| S2 | | 1 | SWITCH-HIGH AIR TEMP (WHEN USED) |
| S3 | | 1 | BREAKER & CAP ASSY |
| S4 | | 1 | SWITCH-REMOTE START STOP |
| T1 | | 1 | COIL-IGNITION |

98013119

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. Only quality material and workmanship are used in the manufacture of this product. With proper installation, regular maintenance and periodic repair service, the equipment will provide many enjoyable hours of 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 that these products are free from defects in material or factory workmanship 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 because of defective material or workmanship.

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 other than warranty will be charged to the owner. The Onan Division'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.

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-22A
Replaces 23B054
Rev. 11-1-71

