

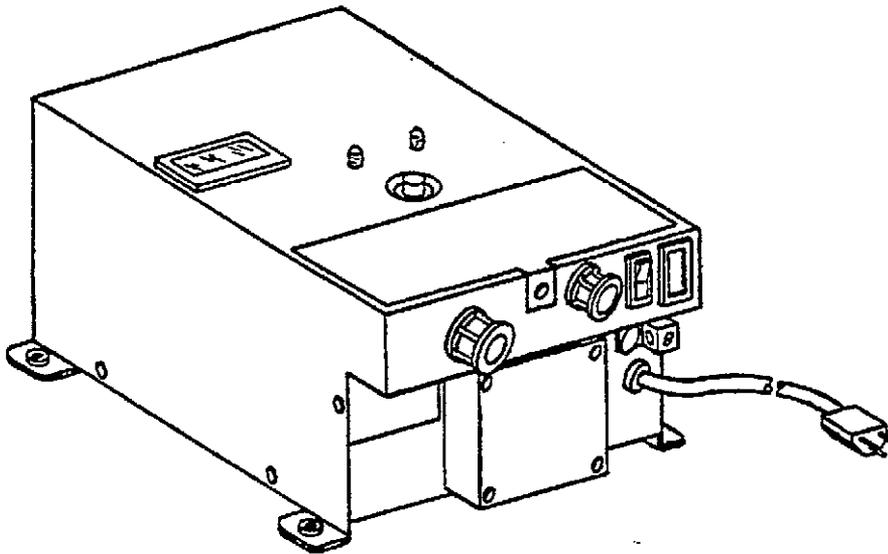


Onan

Model

**Onan Number
305-0856**

Operator's Manual



12 and 24 Volt Battery Charger

901-0103
9-90
Printed in U.S.A.

Safety Precautions

This manual includes the following symbols to indicate potentially dangerous conditions to the operator or equipment. Read the manual carefully and know when these conditions exist. Then take the necessary steps to protect personnel and the equipment.

⚠ DANGER *This symbol warns of immediate hazards that will result in severe personal injury or death.*

⚠ WARNING *This symbol refers to a hazard or unsafe practice that can result in severe personal injury or death.*

⚠ CAUTION *This symbol refers to a hazard or unsafe practice that can result in personal injury or product or property damage.*

IMPORTANT SAFETY INSTRUCTIONS

1. Save these instructions. This manual contains important safety and operating instructions.
2. Working in the vicinity of a battery is dangerous. Batteries generate explosive gasses during normal battery operation. For this reason, it is of utmost importance that you read all instructions and cautionary markings on the battery charger, the battery, and the generator set each time before using the battery charger.
3. To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment that is used in the vicinity of the battery. Review and follow all cautionary markings on these products.
4. To reduce risk of injury, only use the battery charger to charge lead-acid batteries. Other types of batteries (such as dry cell batteries) can burst, causing personal injury and property damage.
5. Never smoke or allow an open spark, arcing equipment or flame in the vicinity of the battery or generator set.
6. Do not expose the battery charger to rain, snow, or other precipitation.
7. Never charge a frozen battery.
8. Use of an attachment not recommended or sold by the battery charger manufacturer can result in a risk of fire, electric shock, or personal injury.
9. Do not operate the battery charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service technician.
10. Do not disassemble the battery charger; take it to a qualified service technician when service or repair is required. Incorrect reassembly can result in a risk of electric shock or fire.
11. To reduce the risk of electrical shock, disconnect the battery charger from AC power before performing any maintenance or cleaning. Turning off controls does NOT reduce this risk.
12. If it is necessary to remove the battery from the generator set battery tray to charge, always remove the grounded (-) terminal from the battery first and replace it last. Make sure that all switches on the generator set control panel are off in order to prevent an arc.
13. Study all battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, and recommended rates of charge.
14. Do not use the battery charger unless the battery voltage matches the output voltage rating of the charger. Refer to the generator set operator's manual to determine the voltage of the battery.
15. Never place the charger directly above or below the battery; gases or fluids from the battery can corrode and damage the charger. Locate the charger as far away from the battery as practical.
16. Do not operate the battery charger in a closed-in area or restrict ventilation in any way.
17. Grounding Instructions: This battery charger should be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor should be run with circuit conductors and connected to an equipment-grounding terminal or lead on the battery charger. Connections to the battery charger must comply with all local codes and ordinances.

CHG-3

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Introduction

ABOUT THIS MANUAL

This manual provides information for operation of the Cummins/Onan 12- and 24-volt battery chargers.

These chargers are for use in permanently-wired, industrial applications. Installation and service are to be performed only by technically qualified personnel.

The battery chargers are fully automatic. Under normal float-charge operation, as the battery reaches a pre-set voltage, charging current automatically tapers to a lower value.

HOW TO OBTAIN SERVICE

When the battery charger requires servicing, contact your nearest dealer or distributor. Factory-trained Parts and Service representatives are ready to handle all your service needs.

If unable to locate a dealer or distributor, consult the Yellow Pages. Typically, our distributors are listed under:

GENERATORS-ELECTRIC,
ENGINES-GASOLINE OR DIESEL, OR
RECREATIONAL VEHICLES-EQUIPMENT,
PARTS AND SERVICE.

For the name of your local Cummins/Onan or Onan-only distributor in the United States or Canada, call 1-800-888-ONAN (This automated service utilizes touch-tone phones only). By entering your area code and the first three digits of your local telephone number, you will receive the name and telephone number of the distributor nearest you.

For the name of your local Cummins-only distributor, or if you need more assistance, please call Onan Corporation, 1-612-574-5000, 7:30 AM to 4:00 PM, Central Standard Time, Monday through Friday.

When contacting your distributor, always supply the complete Model Number and Serial Number as shown on the battery charger nameplate.

▲WARNING

INCORRECT SERVICE OR REPLACEMENT OF PARTS CAN RESULT IN DEATH, SEVERE PERSONAL INJURY, AND/OR EQUIPMENT DAMAGE. SERVICE PERSONNEL MUST BE QUALIFIED TO PERFORM ANY SERVICE.

Operation

DESCRIPTION

All operation controls—switches, indicators, meter, output adjustment, and AC fuse are on either the top or end panel of the battery charger (Figure 1). A cover on the top panel allows access to the DC output terminals, the alarm relay output terminals, and a DC output fuse. The following describes the functions of these controls and components, and the lead connections.

AC Power Switch: Located on the charger end-panel, it controls AC power to the battery charger. With power available and in the On position, the switch is illuminated green. A green LED on the top panel (Power Good) will also be on.

Override Reset Switch: This switch overrides the normal foldback-current-limiting operation of the battery charger and places it in a straight-current-limit mode of operation for approximately one (1) hour. The red LED (Foldback Override) light comes on.

Fuse, F1 (AC Power): This fuse is located next to the On/Off switch and is rated at 12 amperes. It is accessible by sliding the fuse housing to the left and pulling outward. Replace with the same type and ampere rating.

Fuse, (DC Output, 60-Amp): This fuse is located under the access cover shown in Figure 1. It protects the charger if the battery is connected reverse-polarity. Replace with the same type and ampere rating.

Output Adjust: This adjustment is a control on the printed circuit board (PCB), and sets the DC output voltage to the battery. It can be adjusted using a small, flat-blade screwdriver through the hole in the top cover. The nominal output voltage setting at 77° F (25° C) is 13.2 VDC for the 12-volt model, and 26.4 VDC for the 24-volt model charger.

Alarm Relay: An alarm relay provides circuit completion or opening to a remote annunciator to indicate that AC power is lost, or the battery charger is not operating. The relay supplies normally-open and normally-closed contacts rated at 5 amperes, 240 VAC. Connections are made to a three-terminal strip TB1.

DC Output: Connection lugs for the leads going to the battery positive (+) and negative (-) terminals. The two screw-down lugs will accept #6 gauge copper wire maximum.

Common Ground Connection: A grounding-lug (next to the fan) provides a common-ground connection point. The lug will accept #8 gauge wire.

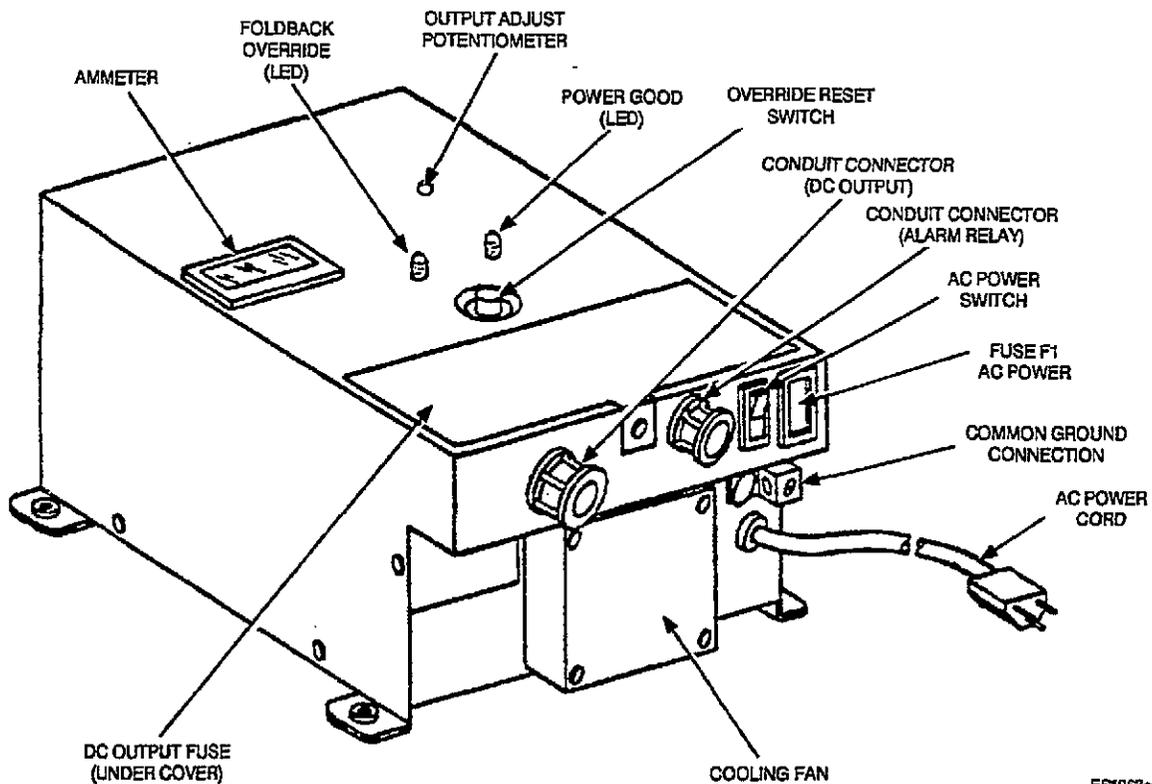


FIGURE 1. BATTERY CHARGER

BATTERY CHARGING

Power On - Float Charge

For industrial applications the charger is left plugged into a grounded AC receptacle. The battery charger requires a 15 ampere, 120 VAC power source. When power is first applied, the charger output is automatically in a straight-current-limit mode of operation—charging current is limited (40 amperes maximum for the 12-volt charger, 20-amperes maximum for the 24-volt charger) regardless of the battery load.

After about one hour, the charger reverts back to foldback current-limiting operation. The Override Reset switch, when activated, will override the foldback current-limiting function for about one hour. This feature allows the charger to have full output current capabilities under excessive loads, such as a deeply discharged battery.

The charger's electronic sensor checks the battery voltage. If the voltage is below the set reference level, the charger supplies necessary charging current to the battery. As the battery reaches the pre-set voltage, charging current automatically tapers to a small value.

FLOAT VOLTAGE ADJUSTMENT

The float voltage is factory-set at the correct value and should not require adjustment. However, it can be changed if the battery shows signs of being over- or under-charged. A high specific gravity, bubbling of electrolyte, and loss of water indicates the voltage setting is too high. A low specific gravity indicates the voltage setting is too low.

Some tools required are a small screwdriver, an accurate voltmeter (0.5% accuracy), and a hydrometer for checking specific gravity (if the battery is not a sealed, self-maintenance type). A fully-charged lead-acid battery will have a specific gravity of 1.260 at 77° F (25° C). Use the following procedure:

⚠WARNING *Battery electrolyte can cause severe eye damage and burns to the skin. Wear goggles, rubber gloves and a protective apron when working with batteries.*

1. Remove all load from the battery. If connected to a standby generator set, disconnect the genset battery leads, the negative (–) lead first.

⚠WARNING *Ignition of explosive hydrogen gas given off by the battery can cause severe personal injury. Do not smoke or cause any spark, arc, or flame while servicing batteries. Always disconnect the negative (–) lead first, and reconnect it last to prevent arcing if a tool accidentally touches the frame or other grounded metal parts of the equipment while disconnecting or connecting the positive (+) cable.*

2. Connect the voltmeter directly to the battery terminals. The charger must not be in current-limit mode of operation (Foldback Override indicator light on) while adjusting the output voltage, or erroneous voltages will result under normal conditions.
3. Compare the battery voltage reading with the recommended nominal float value—13.2 for a 12-volt charger, 26.4 for a 24-volt charger. These float voltages are referenced at 77° F (25° C). If the voltage is above or below, adjust per Step 4.
4. Use a small flat-blade screwdriver to turn the float adjustment potentiometer counterclockwise to decrease the float voltage, or clockwise to increase the float voltage. Adjust in small increments (0.1 VDC max), and allow battery charge level to stabilize before making further adjustment.

Reduce the voltage by 0.8% for every 10° F (5.5° C) above 77° F (25° C) ambient. Increase the voltage by 0.8% for every 10° F (5.5° C) below 77° F (25° C) ambient.

5. If the battery is connected to a generator set, reconnect the battery leads. Connect the positive (+) lead first, and the negative (–) lead last (see Warning in Step 1).

Troubleshooting

The following procedures in Table 1 describe basic troubleshooting checks. If the trouble cannot be found or if it persists, call an authorized service representative.

⚠WARNING *Voltages within the battery charger present an electrical shock hazard that can cause severe personal injury or death. Disconnect all sources of AC and DC power from the charger before performing any checkout or service.*

⚠WARNING *Ignition of explosive battery gases can cause severe personal injury. Do not smoke or cause any spark, arc, or flame while servicing batteries.*

TABLE 1. TROUBLESHOOTING PROCEDURES

TROUBLE	POSSIBLE CAUSE	CORRECTIVE ACTION
No DC Output.	<ol style="list-style-type: none"> 1. Blown fuse F1 (Power Good indicator light out). 2. Blown DC fuse. 3. No AC power (Power Good indicator light out). 4. Charger failure. 	<ol style="list-style-type: none"> 1. Replace front panel fuse with same type and rating. 2. Correct possible overload and replace fuse. Use fuse of same type and rating. 3. Check cause of AC failure, or call a service representative. 4. Call a service representative.
Low DC Output.	<ol style="list-style-type: none"> 1. Incorrectly set float voltage. 2. Faulty Battery 3. Charger failure. 	<ol style="list-style-type: none"> 1. Refer to adjustment procedure in the Operation Section. 2. Replace battery—procedure is described below. 3. Call a service representative.
High DC Output.	<ol style="list-style-type: none"> 1. Incorrectly set float voltage. 2. Charger failure. 	<ol style="list-style-type: none"> 1. Refer to adjustment procedure in the Operation Section. 2. Call a service representative.

Battery Replacement

Use the following procedure for changing the battery.

⚠WARNING *Ignition of explosive battery gases can cause severe personal injury. Do not smoke or cause any spark, arc, or flame while servicing batteries.*

1. Turn off the battery charger and pull the power cord plug out of the AC receptacle.

2. Remove all load/s from the battery. If the battery is used for generator set starting, put the genset operation-selector switch in Stop position and disconnect the battery negative (-) lead first. The selector switch is located on the genset control panel.
3. Connect the leads to the replacement battery (negative [-] leads last) and place the genset operation selector switch in the Remote position. Plug the charger back into the AC receptacle and check operation.



Onan

Onan Corporation
1400 73rd Avenue N.E.
Minneapolis, MN 55432
612-574-5000
Telex: 275477
Fax: 612-574-8087

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