

## 16. LIMITED WARRANTY

WIRTHCO ENGINEERING, INC., MINNEAPOLIS, MN 55439 MAKES THIS LIMITED WARRANTY TO THE ORIGINAL PURCHASER AT RETAIL OF THIS PRODUCT. THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

WirthCo Engineering, Inc. has a limited warranty for this battery charger for five years from date of purchase at retail against defective material or workmanship. If such should occur, the unit will be repaired or replaced at the option of the manufacturer. It is the obligation of the purchaser to forward the unit together with proof of purchase, transportation and/or mailing charges prepaid to the manufacturer or its authorized representative.

- This limited warranty is void if the product is misused, subjected to careless handling, or repaired by anyone other than the manufacturer or its authorized representative.
- The manufacturer makes no warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for consequential damages.
- This is the only express limited warranty and the manufacturer neither assumes nor authorizes anyone to assume or make any other obligation towards the product other than this express limited warranty. The manufacturer makes no warranty of merchantability or fitness for purpose of this product and expressly excludes such from this limited warranty.
- Some states do not allow the exclusion or limitation of incidental or consequential damages or length of implied warranty so the above limitations or exclusions may not apply.
- This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

## OWNER'S MANUAL (MODEL #20026)

### 900mA Battery Charger & Maintainer Instructions for 6 & 12 Volt Batteries

#### Read Instructions Carefully for Safe Operation

**READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT.  
FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY OR DEATH.**

**WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT, EACH TIME BEFORE USING THE CHARGER, READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**

This manual will show how to use the charger safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

The signal word indicates the level of the hazard in a situation.

- ▲ DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.
- ▲ WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.
- ▲ CAUTION** indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.
- ▲ IMPORTANT** indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.

Safety messages in this manual contain two different type styles.

- Unnumbered type states the hazard
- Numbered type states how to avoid the hazard.

The icon gives a graphical description of the potential hazard.



Pursuant to California Proposition 65, this product contains chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

#### 1. IMPORTANT SAFETY INSTRUCTIONS



Risk of electric shock or fire.

- 1.1 Do not expose the charger to rain or snow.
- 1.2 Use only recommended attachments. Use of an attachment not recommended by WirthCo Engineering, Inc. may result in a risk of fire, electric shock or injury to persons or damage to property.

**IMPORTANT SAFETY INSTRUCTIONS • SAVE THESE INSTRUCTIONS**

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- 1.3 To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
- 1.4 An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in the risk of fire and electric shock. If an extension cord must be used, make sure:
  - That the pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger
  - That the extension cord is properly wired and in good electrical condition
  - That the wire size is large enough for the AC ampere rating of the charger as specified in the table in Section 8
- 1.5 To reduce the risk of electrical shock, unplug the charger from the outlet before attempting any maintenance or cleaning.
- 1.6 Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- 1.7 Do not operate the charger with a damaged cord or plug; take it to a qualified service person.
- 1.8 Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- 1.9 Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock.

## 2. PERSONAL PRECAUTIONS



Risk of explosive gases

- 2.1 Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of utmost importance the instructions are followed each time the charger is used.
- 2.2 To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment used in the vicinity of the battery. Review the cautionary markings on these products and on the engine.
- 2.3 This charger employs parts, such as switches and circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches or more above floor level.
- 2.4 NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.
- 2.5 Be extra cautious to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.6 Use this charger for charging LEAD-ACID batteries only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use this battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- 2.7 NEVER charge a frozen battery.
- 2.8 NEVER overcharge a battery.

## 3. PREPARING TO CHARGE



Risk of contact with battery acid. Battery acid is a highly corrosive sulfuric acid.

- 3.1 Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
- 3.2 Have plenty of fresh water and soap nearby in case battery acid contacts the skin, clothing or eyes.
- 3.3 Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching eyes while working near the battery.
- 3.4 If battery acid contacts the skin or clothing, immediately wash the area with soap and water. If acid enters the eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.
- 3.5 If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make sure all of the accessories in the vehicle are off to prevent arcing.
- 3.6 Be sure the area around the battery is well ventilated while the battery is being charged.
- 3.7 Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with the eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch eyes, nose or mouth.
- 3.8 Add distilled water to each cell of the battery to be charged until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead-acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.

## 12. MAINTENANCE INSTRUCTIONS

This charger requires minimal maintenance. As with any appliance or tool, a few common sense rules will prolong the life of the battery charger. ALWAYS BE SURE THE CHARGER IS UNPLUGGED BEFORE PERFORMING ANY MAINTENANCE OR CLEANING.

- 12.1 Store in a clean, dry place
- 12.2 Coil up the cords when not in use.
- 12.3 Clean the case and cords with a slightly damp cloth.
- 12.4 Clean any corrosion from the clamps with a solution of water and baking soda.
- 12.5 Examine the cords periodically for cracking or other damage and have them replaced if necessary.

**▲WARNING** All other service should be done by qualified personnel only.

## 13. STORAGE INSTRUCTIONS

- 13.1 Store the charger unplugged. The cord will still conduct electricity until it is unplugged from the outlet.
- 13.2 Store inside, in cool, dry place.
- 13.3 Do not store the clips clipped together, on or around metal or clipped to cables.

## 14. TROUBLESHOOTING

Problem	Indication	Cause	Solution
Charger does not work	No indicator lights on	No AC power	Check AC connections and make sure power point is turned on
Charger has no DC output	'Error' LED in on	Output is short circuited Reverse polarity connection to battery	Check DC connection between charger and battery and make sure they are not short circuiting Check that the alligator clips haven't fallen off the battery Check that the alligator clips/ring terminals are connect to the correct polarity
Long charging time, 'Charged' light does not come on	'Error' LED is on	Battery capacity too large Battery is defective	Check that the charger specification matches the battery capacity Battery cannot be charged and much be replaced

### LED STATUS INDICATOR TABLE:

	Power (Red)	Charging (Yellow)	Charged (Green)	Error (Red)
AC power connected, battery disconnected	ON	OFF	OFF	OFF
Bulk charging	ON	ON	OFF	OFF
Level 1 charging	ON	ON	OFF	OFF
Level 2 and 3 charging	ON	OFF	ON	OFF
Battery reverse polarity connection	ON	OFF	OFF	ON
AC power off	OFF	OFF	OFF	OFF

## 15. BEFORE RETURNING FOR REPAIRS

- 15.1 When a charging problem arises, make certain that the battery is capable of accepting a normal charge. Be sure to double check all connections, AC outlet for power, charger clips or ring terminals are clean and for proper polarity.
- 15.2 When a battery is very cold, partially charged or sulfated, it will not draw the full rated amperes from the charger. It is both dangerous and damaging to a battery to force higher amperage into it than it can effectively use.

## 10. OPERATING INSTRUCTIONS

### **⚠ DANGER**

Before using review all safety and connection directions before using charger. Failure to do so can damage battery and cause serious injury or death.

#### 10.1 Charging:

- Connect the charger to the battery per instructions in sections 6 or 7; depending on the battery set-up.
- Connect the charger to AC outlet.
- Choose battery type by sliding the voltage select switch to the correct battery voltage.
- If the charger does not detect a properly connected battery, the "Error LED" will light until a battery is detected. Charging will not begin while the Error LED is on. When the charging begins, the "Charging LED" will light up.
- When charging is complete, the "Charged LED" will light up. Unplug the charger first from the AC outlet.
- Remove the negative connection first, then the positive connection.

#### 10.2 Automatic Charge Mode:

- Stage One - Diagnosis: The charger's smart technology will perform a series of steps to analyze the battery's charge state and determine which stage the battery charger needs to begin with. It will also determine if the battery is good or hooked up improperly.
- Stage Two - Charging battery at a current of 900mA until the battery reaches full charge. In 12V mode, the 20026 will shut off at 14.4 volts. In 6V mode, the battery charger will shut off at 7.2 volts.
- Stage Three - Pulse Float level / Automatic On-Off Monitoring. The charger DC output will shut off and monitor a battery. The 20026 will send pulse charges to keep the battery stable between 13.4-14.0V for 12V batteries and 6.7-7.0V for 6V batteries. Always make sure to randomly inspect the battery and charger while hooked up for long periods of time.

### **⚠ IMPORTANT**

Follow all safety instructions and precautions for charging the battery. Wear complete eye protection and clothing protection. Charge the battery in a well-ventilated area.

NOTE: During extremely cold weather, charge the battery for 5 minutes before cranking the engine. If the engine fails to start, charge the battery for 5 more minutes before attempting to crank the engine again. After the engine starts unplug the AC power cord before disconnecting the battery clips from the vehicle.

## 11. CALCULATING CHARGE TIME

- Use the following table to more accurately determine the time it will take to bring a battery to full charge. First, identify where the battery fits into the chart.
- The times given are for batteries with a 50% charge prior to recharging. Add more time for severely discharged batteries.

Battery Size/Rating			Charge Rate/Charging Time
			900mA
Small Batteries (6 Volt)	Motorcycle, Garden, Tractor, Etc.	6 - 12 AH	7 - 14 hrs
		12 - 32 AH	14 - 36 hrs
Cars/Trucks (12 Volt)	200 - 315 CCA	40 - 60 RC	22 - 28 hrs
	315 - 550 CCA	60 - 85 RC	28 - 40 hrs
	550 - 1000 CCA	80 - 190 RC	40 - 80 hrs
Marine/Deep Cycle (12 Volt)		80 RC	44 hrs
		140 RC	70 hrs
		160 RC	88 hrs
		180 RC	90 hrs

- 3.9 Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Study all of the battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.10 Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage selector switch is set to the correct voltage.
- 3.11 Make sure that the charger's alligator clips or ring terminals are secured.

## 4. CHARGER LOCATION



Risk of explosion and contact with battery acid.

- 4.1 Locate the charger as far away from the battery as the DC cables permit.
- 4.2 Never place the charger directly above the battery being charged: gases from the battery will corrode and damage the charger.
- 4.3 Do not set the battery on top of the charger.
- 4.4 Never allow battery acid to drip onto the charger when reading the electrolyte specific gravity or filling the battery.
- 4.5 Do not operate the charger in a closed-in area or restrict the ventilation in any way.

## 5. DC CONNECTION PRECAUTIONS

- 5.1 Connect and disconnect the DC output clips only after removing the AC plug from the electrical outlet. Never allow the clips to touch each other.
- 5.2 Attach the ring terminals or the alligator clips to the battery. It is recommended to twist or rock the alligator clips back and forth several times to make a good connection. This tends to keep the alligator clips from slipping off the battery terminals and helps reduce risk of sparking.

## 6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE



A spark near the battery may cause a battery explosion. To reduce the risk of a spark near the battery:

- 6.1 Position the AC and DC cables to reduce the risk of damage by the hood, door, moving or hot engine parts.  
NOTE: If it is necessary to close the hood during the charging process, ensure that the hood does not touch the metal part of the battery clips or cut the insulation of the cables.
- 6.2 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 6.3 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 6.4 Connect the POSITIVE (RED) clip from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) clip to the vehicle chassis or engine block away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.5 When disconnecting the charger, disconnect the AC cord from the wall. Next remove the NEGATIVE (NEG, N, -) from the chassis ground first, then remove the POSITIVE (POS, P, +) clip from the battery terminal. If using the ring terminal assemble as a fixed connection, just simple disconnect the bullet connector on the main cord. MAKE SURE THE END OF THE BULLET CONNECTOR DOES NOT COME IN CONTACT WITH ANY METAL OBJECTS.
- 6.6 See CALCULATING CHARGE TIME for length of charge information in section 11.

## 7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE.



A spark near the battery may cause a battery explosion. To reduce the risk of a spark near the battery:

- 7.1 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 7.2 Attach at least a 24-inch (61 cm) long 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post.
- 7.3 Connect the POSITIVE (RED) charger clip to the POSITIVE (POS, P, +) post of the battery.
- 7.4 Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible – then connect the NEGATIVE (BLACK) charger clip to the free end of the cable.
- 7.5 Do not face the battery when making the final connection.
- 7.6 When disconnecting the charger, always unplug the unit from the wall first. Disconnect the NEGATIVE (NEG, N, -) connection, then remove the POSITIVE (POS, P, +) connection in this sequence.
- 7.7 A marine (boat) battery must be removed and charged on shore. To charge it onboard requires equipment specially designed for marine use.

## 8. BATTERY CHARGING - AC CONNECTIONS



Risk of electric shock or fire.

- 8.1 This battery charger is for use on a nominal 120-volt circuit. The plug must be plugged into an outlet that is in accordance with all local codes and ordinances. The plug pins must fit the receptacle (outlet).
- 8.2 Never alter the AC cord or plug provided – if it does not fit the outlet, have a proper outlet installed by a qualified electrician. An improper connection can result in a risk of electric shock or electrocution.  
NOTE: The use of an adapter plug is not recommended.
- 8.3 Recommended minimum AWG size for extension cord:

AC input rating, amperes*		AWG size of cord Length of cord feet (m)			
At least	But less than	25 (7.6)	50 (15.2)	100 (30.5)	150 (45.6)
0	2	18	18	18	16
2	3	18	18	16	14
3	4	18	18	16	14
4	5	18	18	14	12
5	6	18	16	14	12
6	8	18	16	12	10
8	10	18	14	12	10
10	12	16	14	10	8
12	14	16	12	10	8
14	16	16	12	10	8
16	18	14	12	8	6
18	20	14	12	8	6

\*If the input rating of a charger is given in watts rather than in amperes, the corresponding ampere rating is to be determined by dividing the wattage rating by the voltage rating - for example: 1200 watts/120 volts = 10 amperes

## 9. FEATURES

### VOLTAGE OPTIONS:

- 6V/900mA — Use this setting for charging 6 volt batteries  
 12V/900mA — Use this setting for charging 12 volt batteries

1. Battery Voltage Select Switch
2. Power 'On' LED
3. Battery Charging LED
4. Battery Charged LED - Green  
Error LED - Red
5. Ring Terminal Assembly
6. Alligator Clip Assembly

