

Forney

140-55-20-2 AMP • 12 VOLT • BATTERY CHARGER

OWNER'S MANUAL

MANUAL OPERATION WITH ENGINE START



- 140A for Emergency Engine Start
- 55A Rapid Charge
- 20A Fast Charge
- 2A Trickle Charge
- Fan Cooled
- Rotary Switch for Ease-of-Use & Accuracy
- Timer with Hold for Continuous Charging
- Reverse Hookup & Short Circuit Protection
- Overheat Protection
- ETL certified
- 5-3-1 Warranty with "Advanced Replacement"

POWER TO GET THE JOB DONE

WARNING

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 that each time before using your charger, you read this manual and follow the instructions exactly.

Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

SAFETY PRECAUTIONS

1. Before you use your battery charger, be sure to read all instructions and cautions printed on:
 - Battery Charger
 - Battery
 - Vehicle or unit using battery
2. Use battery charger on LEAD ACID type rechargeable batteries only, such as used in autos, trucks, tractors, airplanes, vans, RVs, trolling motors, etc. Charger is not intended to supply power to low-voltage electrical system other than in an automotive application.
WARNING: Do not use 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.
3. Use only attachments recommended or sold by manufacturer. Use of non-recommended attachments may result in fire, electric shock, or injury.
4. When disconnecting the battery charger, pull by the plug not by the cord. Pulling on the cord may cause damage to cord or plug.
5. Locate battery power cord so it cannot be stepped on, tripped over, or subjected to damage or stress.
6. Do not operate charger with damaged cord or plug. Have cord replaced immediately.
7. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way. Take it to a qualified professional for inspection and repair.
8. Do not disassemble charger. Take it to a qualified professional when service or repair is required. Incorrect reassembly may result in electric shock or fire.
9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.
10. Do not use an extension cord unless absolutely necessary. Use of an improper extension cord could result in fire or electric shock. If an extension cord must be used, make sure that:
 - Pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
 - Extension cord is properly wired and in good electrical condition.
 - Wire size is large enough for AC ampere rating of charger, as specified below:

Length of cord (feet):	25	50	100	150
AWG size of cord:	16	12	10	8
11. Always charge battery in a well ventilated area NEVER operate in a closed-in or restricted area without adequate ventilation because of risk of explosive gases. WARNING: Risk of explosive gas.
12. Locate charger as far away from battery as DC charger cables permit.
13. Do not expose charger to rain or snow.
14. NEVER charge a frozen battery. If battery fluid (electrolyte) is frozen, bring into a warm area to thaw before charging.
15. NEVER allow battery acid to drip on charger when reading specific gravity or filling battery.
16. NEVER set a battery on top of charger.
17. NEVER place charger directly above battery being charged. Gases from battery will corrode and damage charger.
18. NEVER touch the battery clips together when the charger is energized.

PERSONAL PRECAUTIONS AND SAFETY

1. **WARNING:** Wear complete eye protection and clothing protection when working with lead-acid batteries.
2. Make sure someone is within range of your voice or close enough to come to your aid when you work with or near a lead-acid battery.
3. Have plenty of fresh water and soap nearby for use if battery acid contacts skin, clothing, or eyes. If battery acid contacts skin or clothing, wash immediately with soap and water.
4. Avoid touching your eyes while working with a battery. Acid particles (corrosion) may get into your eyes! If acid enters your eye, immediately flood eye with running cold water for at least 10 minutes. Get medical attention immediately.
5. Remove all 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.
6. Take care not to drop a metal tool or other metal onto the battery. Metal may cause sparking or short circuit the battery or another electrical device. Sparking may cause an explosion.
7. Always operate battery charger in an open, well ventilated area.
8. **NEVER** smoke or allow a spark or flame in the vicinity of the battery or engine. Batteries generate explosive gases!

GROUND AND AC POWER CORD CONNECTIONS

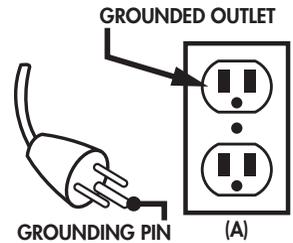
Charger should be grounded to reduce the risk of electric shock.

Charger is equipped with an electric cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. This battery charger is designed for use on a nominal 120 volt circuit and has a grounded plug that looks like the plug illustrated in FIGURE 1 (A). This plug should be used in a grounded outlet. The plug pins must fit the receptacle (outlet).

ADAPTER: A temporary adapter may be used to connect the charger plug to a two pole receptacle (outlet).

NOTE: The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician.

DANGER: Never alter the AC cord or plug provided. If it will not fit outlet, have a proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electrical shock. **DANGER:** Before using an adapter be certain that the center screw of the outlet plate is grounded. The green-colored rigid ear or lug extending from the adapter must be connected to a properly grounded outlet. Make certain it is grounded. If necessary, replace original outlet cover plate screw with a longer screw that will secure adapter ear or lug to outlet cover plate and make ground connection to grounded outlet.



CHARGER LOCATION PRECAUTIONS

Never place charger directly above the battery being charged, gases from battery could damage the charger.

Never allow battery acid to drip on the charger when reading specific gravity of filling battery.

Never operate charger in a closed in area, or restrict ventilation in any way.

Do not set battery on top of the charger.

PREPARING TO CHARGE

1. Make sure you have a 12 volt lead-acid battery and select appropriate battery charger switch.
2. Clean battery terminals. Take care to keep corrosion from coming in contact with your eyes.
3. If required, add distilled water in each cell until battery acid reaches levels specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.
4. Study all battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, and recommended rates of charge.
5. Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
6. If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
7. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

OPERATING INSTRUCTIONS: CHARGING BATTERY IN VEHICLE

When charging battery in the vehicle, take care to determine the battery type and which post is grounded (connected to vehicle chassis). To reduce risk of a spark near battery, follow these steps when battery is installed in vehicle. **A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION.**

1. Position AC power cord and DC charging cords to reduce risk of damage by hood, door, or moving engine parts.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury.
3. Check polarity of battery posts. Battery case will be marked by each post: **POSITIVE (POS, P, +) and NEGATIVE (NEG, N, -)**. **NOTE:** The positive battery post usually has a larger diameter than the negative post.
4. Determine which post of battery is ground (connected) to chassis.
NOTE: The negative post is normally grounded.

NEGATIVE GROUNDED POST

- 5A. For negative-grounded vehicle, connect POSITIVE (RED) clamp from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clamp to vehicle chassis or engine block away from battery. Connect to a heavy-gauge metal part of the frame or engine block.

POSITIVE GROUNDED POST

- 5B. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Connect to a heavy-gauge metal part of the frame or engine block.

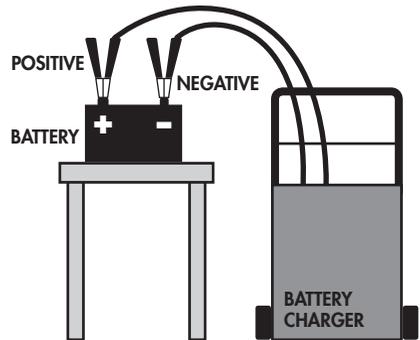
WARNING: Do not connect clip to carburetor, fuel lines, or sheetmetal body parts. **NOTE:** Attach clamps to battery post and twist or rock back and forth several times to make a good connection. This tends to keep clamps from slipping off terminals and helps to reduce risk of sparking.

6. Select amperage.
7. When the battery is fully charged, unplug the charger from the AC power source.
8. Remove charger clips from (1) chassis and (2) battery pole in that order.
9. Clean and store battery charger.

OPERATING INSTRUCTIONS: CHARGING BATTERY OUT OF VEHICLE

When charging battery out of the vehicle, take care to determine the battery type. To reduce risk of a spark near battery, follow these steps when battery is outside vehicle. **WARNING:** A spark near battery may cause battery explosion. **WARNING:** When removing battery from vehicle or boat, disconnect grounded post first. When disconnecting, make sure all accessories are off, so as not to cause an arc. (**NOTE:** A marine (boat) battery must be removed and charged on shore. (To charge on board requires special equipment designed for marine use.) **WARNING:** When reinstalling battery, attach the ground post first.

1. Check polarity of battery posts. Battery case will be marked by each post: POSITIVE (POS, P, +) and NEGATIVE (NEG, N, -). **NOTE:** The positive battery post usually has a larger diameter than the negative post.
2. Attach a 24-inch long (or longer) 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post. (The 24" lead is not supplied. You may purchase at most automotive stores.) The 24" lead provides a safer connection condition. Sparking or arcing could occur when connecting the charger clip to the lead.
3. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery. Rock clip back and forth to make good connection.
4. Position yourself and free end of 24 inch cable as far away from battery as possible. Then connect NEGATIVE (BLACK) charger clip to free end of cable. **WARNING:** Do not face battery when making final connection. Rock clip back and forth to make a good connection.
5. Select amperage:
6. When battery is fully charged, unplug charger from AC outlet.
7. When battery is fully charged and the charger is unplugged: (1) Remove clip from end of the Negative end of cable, then (2) Remove clip from Positive battery post, in that order.
8. Clean and store battery charger. **WARNING:** Be sure area around the battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.



OUTPUT SELECTOR CONTROLS

The **Ammeter** indicates the amount of current measured in amperes that is being drawn by the battery. For example, In the 20 amp charge rate a typical discharged battery will initially draw approximately 20 amps. As the battery continues to charge, current will taper to 5 to 6 amps at full charge. The Start area of the meter indicates a high rate of current being drawn from the charger. When cranking an engine, the starter motor draws upwards to 200-300 amps. The meter needle will be at the extreme right side of the start area. Sometimes a battery for the first few minutes of it's charge will draw more than 40/60 amps, in this case the needle may be within but not to the extreme right side of the start area. The 2 amp charge rate may indicate some activity on the meter. The meter doesn't have the resolution to display this low rate.

ENGINE START

Using the Engine Start feature

Your battery charger can be used to jumpstart your car if the battery is low. Follow these instructions on how to use the ENGINE START feature. **WARNING:** Follow all safety instructions and precautions for charging your battery. Wear complete eye protection and clothing protection. Charge your battery in a well-ventilated

area. **IMPORTANT:** Using the ENGINE START feature WITHOUT a battery installed in the vehicle could cause damage to the vehicle's electrical system. **NOTE:** If you have charged the battery and it still will not start your car, do not use the engine start feature, or it could damage the vehicle's electrical system.

1. Set the charge rate switch and the timer to the OFF position.
2. With the charger unplugged from the A.C. outlet, connect the charger to the battery following the instructions given in Section "FOLLOW THESE STEPS WHEN THE BATTERY IS INSTALLED IN A VEHICLE".
3. Plug the charger A.C. power cord into the A.C. outlet, and then move the timer switch from OFF to the HOLD position.
4. With the charger plugged in and connected to the battery of the vehicle, set the charge rate selector switch to the engine start position.
5. Crank the engine until it starts or 5 seconds pass. If the engine does not start, wait 3 minutes before cranking again. This allows the charger and battery to cool down.

NOTE: During extremely cold weather, or if the battery is under 2 volts, charge the battery for 5 minutes before cranking the engine.

6. If the engine fails to start, charge the battery for 5 more minutes before attempting to crank the engine again.
7. After the engine starts, move the charge rate selector switch and timer to the off position and unplug the A.C. power cord before disconnecting the battery clips from the vehicle.
8. Clean and store the charger in a dry location.

NOTE: If the engine does turn over but never starts, there is not a problem with the starting system; there is a problem somewhere else with the vehicle. STOP cranking the engine until the other problem has been diagnosed and corrected.

BATTERY CHARGING

CHARGER MUST BE ASSEMBLED BEFORE USING.

1. Before charging any battery, make sure the electrolyte (battery liquid) in each cell is at correct level.
2. Set all switches to the OFF position.
3. If the battery is being charged inside the vehicle, use connection procedures outlined in "OPERATING INSTRUCTIONS: CHARGING BATTERY IN VEHICLE". Should the battery be removed from the vehicle, follow the instruction in Section "OPERATING INSTRUCTIONS: CHARGING BATTERY OUT OF VEHICLE". Plug the power cord into the AC outlet.

4. Set the charge rate switch to the desired charge position. See Charge Charts.

NOTE: These battery chargers are not automatic and can overcharge a battery if permitted to operate for extended periods of time. Monitor the charging often

Also, your charger may exhibit a noise (buzzing) during charging. Laminations of the transformer tend to vibrate. This is normal...continue to charge the battery. The noise may continue after charger is disconnected from battery.

BATTERY SIZE/RATING			CHARGE RATE*/CHARGING TIME - HOURS**					
			2 AMP	10 AMP	30 AMP	35 AMP	50 AMP	60 AMP
SMALL BATTERIES	Motorcycle, Garden Tractor, etc.	6 - 12 AH	1.5 to 3	NR	NR	NR	NR	NR
		12 - 32 AH	3 to 8					
CAR/TRUCKS	200 - 315 CCA	40 - 60 RC	11 to 15	2.5 to 3	.75 to 1	.5 to .75	NR	NR
	315 - 550 CCA	60 - 85 RC	15 to 18	3 to 4	1 to 1.5	.75 to 1	.5 to .75	.5 to .63
	550 - 875 CCA	85 - 125 RC	18 to 25	4 to 5	1.5 to 1.7	1 to 1.5	.75 to 1	.63 to .75
MARINE/DEEP CYCLE		55 MC	15	4	NR	NR	NR	NR
		80 MC	19	5	2	1.75	NR	NR
		105 MC	23	6	2.5	2	NR	NR

*Charge Rates for this model are listed on the front panel.

**Based on battery at 50% charge.

AH Ampere Hours
 NR Not Recommended
 CCA Cold Cranking Amps
 RC Reserve Capacity
 MC Marine Capacity

ASSEMBLY INSTRUCTIONS

Wheel Charger Assembly Instructions:

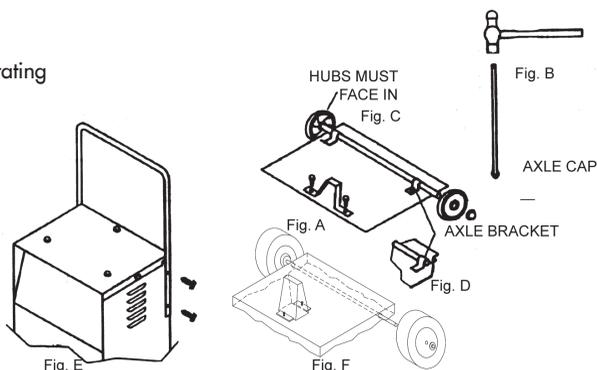
NOTE: Charger must be assembled before operating

Parts

(2) 10-32 screws	5/16" wrench
(2) 1/4-20 screws	3/8" wrench
(2) wheels	Hammer
(2) axle caps	Screwdriver
(1) handle	
(1) mounting foot	
(1) axle	

Tools necessary

1. First place the charger on its side.
2. Next mount the mounting foot FIG. A with (2) 1/4-20 screws, or FIG. F with (2) 10-32 screws.
3. Next pound the axle firmly into an axle cap using a hammer FIG. B.
4. Slide one wheel onto the axle with hub facing in, as shown in FIG. C.
5. Poke above assembly thru holes in charger back until axle sticks out of the other end.
6. Turn charger on its other side.
7. Slide wheel and pound cap onto the axle end.
8. Next turn the charger right side up onto its foot and wheels.
9. Remove the (2) top screws from each side of the charger, line up the handle and reinstall the screws FIG. E.



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
No Meter Reading (AC Cord Unplugged)	Clips are not making a good connection. Battery voltage is too low. 2 amp charge rate being used	Rock clips back and forth for a better connection. Plug AC line into outlet. Meter should now indicate. None, meter will not indicate here.
Charger will not turn on when properly connected.	AC outlet is dead. Poor electrical connection.	Plug in a lamp to check for voltage. Check connections, rock back and forth for a better connection.
Clicking noise from charger.	Circuit breaker is cycling. Battery is defective. Severely discharged battery but otherwise a good battery. Reverse connections at battery.	May be in the wrong switch position. Have Battery checked. Allow charging to continue until battery has a chance to recover sufficiently to take a charge. If more that 20 min. stop charging and have the battery checked. Shut off charger and correct lead connections.

5/3/1 LIMITED WARRANTY

FORNEY INDUSTRIES, INC. 1830 LAPORTE AVENUE, FORT COLLINS CO 80521 MAKES THIS LIMITED WARRANTY TO THE ORIGINAL RETAIL PURCHASER OF THIS PRODUCT. THIS LIMITED WARRANTY IS NOT TRANSFERABLE OR ASSIGNABLE.

Subject to the terms and conditions below, Forney Industries, Inc. of Fort Collins, Colorado warrants this product to the original retail purchaser, to be free from defects in material and workmanship for a period of one, three or five years (as specified below) from the date of sale. Within the warranty periods listed below, Forney will replace or repair any warranted parts or components that fail due to defects in material or workmanship. Proof of purchase is required.

For warranty service, return the product, with proof of purchase to Forney Industries, Inc., 3900 Canal Drive, Fort Collins, CO 80524 or contact customer service at 1-800-521-6038. "Advanced Replacement", at Forney's option, requires the product must be registered within thirty (30) days of the date of purchase. Registration on line is available at www.forneyind.com.

Forney Industries must be notified in writing within thirty (30) days of any equipment failure that begins within the warranty time periods. All implied warranties begin on the delivery date of the equipment to the original retail purchaser.

1. 5 Years – Parts & Labor or Full Replacement: Transformer
2. 3 Years – Parts & Labor or Full Replacement: All components and parts inside the battery charger cover with the exception of the transformer
3. 1 Year – Parts & Labor (90 days for industrial use): All components and parts outside the battery charger cover, Included but not limited to cables, clamps. Knobs, wheels and axle are not covered.
4. Consumable components that fail due to normal wear are not covered under this warranty.
5. Equipment that has been modified or changed by any one other than Forney Industries or their authorized repair station, or equipment that has been improperly installed or operated or misused based on industry standards, or equipment that has not had reasonable and necessary maintenance or equipment which has been used for purposes outside of the specifications or the original intended use is not covered by this warranty.

Forney makes no other warranties, including warranty for any accessories used with this product that are not manufactured by Forney Industries and/or approved for use with this product. This "Limited Warranty" is void if the product is misused, subjected to abuse or is repaired or modified by anyone other than Forney or its authorized repair station. It is the purchaser's obligation to read and follow the instructions provided in the owner's manual. Using this product in any other way than its original intended use will void the warranty.



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