

# Forney

2 AMP TRICKLE • 10 AMP FAST • 50 AMP ENGINE START • BATTERY CHARGER

# OWNER'S MANUAL

AUTOMATIC SHUT OFF • REVERSE POLARITY PROTECTION



- 2 Amp trickle charge
- 10 Amp fast charge
- 50 Amp for emergency engine starting
- Made for 12 Volt batteries
- 90 Second Engine Start
- 4 Hours to Full Charge (Approximate)
- Heavy Duty Construction
- Fully automatic
- Over-charging protection
- Reverse hook-up protection
- Short circuit protection
- Overheat protection
- Meter and LED indicator
- 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.

This unit contains or emits chemicals 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:

<u>Length of cord (feet):</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>150</u>
AWG size of cord:	18	18	18	16
11. Always charge battery in a well ventilated area. NEVER operate in a closed-in or restricted area without adequate ventilation. **WARNING:** Risk of explosive gas.
12. Position 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 set a battery on top of charger.
16. NEVER place charger directly above battery being charged. Gases from battery will corrode and damage charger.
17. NEVER touch the battery clips together when the charger is energized.
18. NEVER crank engine with charger attached to battery. **WARNING:** Battery chargers get hot during operation and must have proper ventilation. Air needs to flow around entire charger. Do not set on flammable items like carpeting, upholstery, paper, cardboard, etc. Will damage leather and melt plastic and rubber.
19. DO NOT open or attempt to alter this unit. There are no user serviceable parts in this unit other than what are described in this owner's manual.

## 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!

## PREPARING TO CHARGE

1. Make sure you have a 12 volt lead-acid battery and select battery charger switch accordingly.
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.
8. Select the proper charge rate and voltage setting

## BATTERY CHARGER CONTROLS



### CHARGE RATE AND VOLTAGE SWITCH SETTING

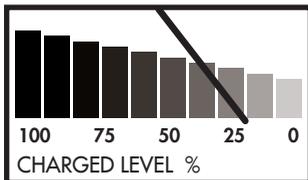
For 12 volt batteries either 2 or 10 amp charge rate may be selected. You may use either the 2 or 10 amp charge rate on large batteries. For batteries rated 28 ampere hours and less, use the 2 amp charge rate. The smaller the battery the greater the risk of harming it by using the 10 amp charge rate. Select 50 amp Engine Start to assist in engine cranking of 12 volt systems. **DO NOT** use on 6 volt systems. Use the 50 amp engine start position for cranking automobiles or light trucks. Use only with battery in the vehicle. This will reduce the chance of damaging sensitive electronic equipment in the vehicle

**NOTE:** It is important to determine the battery type before charging.

## PERCENT OF CHARGE

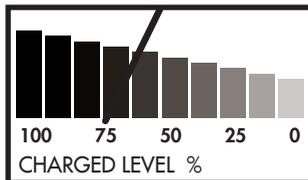
The percent of charge scale is intended as a visual aid to help simplify reading the state of charge. The percent of charge is based on current drawn by the battery. For this reason accuracy will vary with the size and battery type. Typically a 28 ampere hour gell cell battery will draw less current at end of charge then a 140 ampere hour wet cell battery. This means that the indication for a fully charged large battery may be slightly less than 100%.

## READING METER



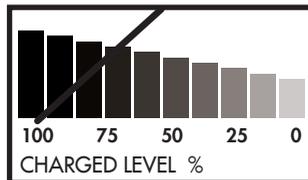
### FULLY DISCHARGED BATTERY

Initial charge current to the battery is typically 10 Amps. The needle points toward the 25% mark.



### APPROACHING FULL CHARGE

Charge current to the battery is typically 6 Amps. The needle points toward the 75% mark.



### FULLY CHARGED BATTERY

Charge current to the battery is 0 Amps and the full charge green LED glows. The needle points toward the full charge.

## CIRCUIT BREAKER

This battery charger is equipped with a self-resetting circuit breaker. This device protects the charger from temporary overloads. In the event of an overload, the circuit breaker will trip open and after a short cooling off period will reset automatically. This process is known as cycling and can be recognized by an audible clicking sound.

**NOTE:** Clicking sound is normal. Wait until charger automatically resets itself.

**CAUTION:** Persistent clicking (more than 30 minutes) may indicate reverse connection or shorted battery cells. (See **TROUBLESHOOTING**)

## BATTERY TYPES

Three basic types of lead-acid batteries can be given a charge with this charger: (1) Conventional and Low Maintenance, (2) Maintenance Free, (3) Deep Cycle

**Conventional and Low Maintenance Batteries.** These are the antimony/lead batteries. Conventional/Low Maintenance batteries require periodic addition of water to the acid solution (electrolyte). Additional water may be added by removing the filler caps located on the top of the battery.

**IMPORTANT:** When antimony is known to be one of the materials used in the battery's construction, that battery is a Low Maintenance/Conventional type.

**CAUTION:** Some Low Maintenance batteries have a relatively smooth top without any apparent battery filler caps. If, however, the battery manufacturer/distributor recommends periodic checking of electrolyte

level and provides access to the battery for water additions, the battery is probably a Low Maintenance/Conventional type.

**Maintenance Free Batteries.** These are calcium/lead batteries and normally do not require water additions. Therefore, filler caps have been removed from the battery surface. These batteries will have a smooth or sealed appearance.

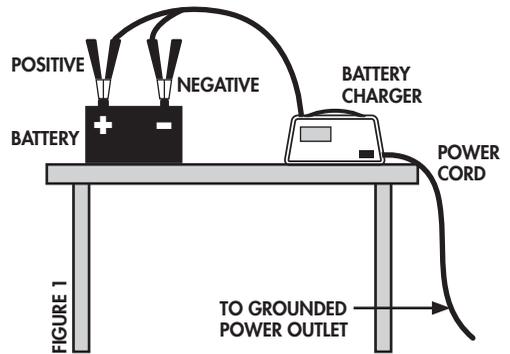
**Deep Cycle Batteries.** These heavy duty batteries are used in boats, construction equipment, sump pumps, etc. They are normally marked DEEP CYCLE on the outside of the case.

## OPERATING INSTRUCTIONS: CHARGING BATTERY OUT OF THE 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. Connect POSITIVE (RED) charger clamp to POSITIVE (POS, P, +) battery post. Rock clamp back and forth to make good connection.
3. Position yourself as far away from battery as possible. Then connect NEGATIVE (BLACK) charger clamp to NEGATIVE (NEG, N, -) battery post. **WARNING:** Do not face battery when making final connection. Rock clamp back and forth to make a good connection. FIGURE 1 shows the connection.
4. Plug charger AC cord into 120 volt outlet.
5. **WARNING:** Be sure the area around battery is well ventilated while battery is being charged.
6. When battery is fully charged, unplug charger from AC power source.
7. When battery is fully charged and charger is unplugged, (1) remove clamp from end of Negative end of cable, and (2) remove clamp from Positive battery post, in that order.
8. Clean and store battery charger.



AMP RATING	CHARGING HOURS	RECOMMENDED BATTERY USE
50 AMP	—	FOR EMERGENCY ENGINE START
10 AMP	3 – 5	<b>CHARGE:</b> Car, Truck, RV, Trolling, Outboard, Tractor, Farm Equipment
2 AMP	2 – 12	<b>TRICKLE:</b> Car, Motorcycle, Snowmobile, Lawn Mower, Truck, RV, Marine

## OPERATING INSTRUCTIONS: CHARGING BATTERY IN VEHICLE

When charging battery in vehicle, take care to determine the battery type and which pole is grounded. To reduce risk of a spark near battery, follow these steps when battery is inside vehicle. **WARNING: A spark near the battery may cause 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 grounded (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.

**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.

### 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.
6. Select amperage.
7. Plug charger AC cord into a grounded 120 volt outlet.
8. **WARNING:** Be sure area around battery is well ventilated while battery is being charged.
9. When battery is fully charged, unplug charger from AC power source.
10. Remove charger clamps in order of grounded (metal surface) first and battery post second.
11. Clean and store battery charger.

## MAINTENANCE/CLEANING INSTRUCTIONS

Very little maintenance is required for the battery charger. Follow common sense in wiping the charger clean and store in a clean, dry area.

1. After use, use a dry cloth to wipe all battery corrosion and other dirt or oil from clamp, cord, and the charger case.
2. Secure battery charger cords to prevent damage and premature wear.
3. Have any cracked or frayed cords replaced by a qualified professional.
4. Store battery charger in a clean, dry area.

## TROUBLESHOOTING

The battery charger is designed to work automatically. However, if a problem does occur, check the following:

PROBLEM	POSSIBLE CAUSE	SOLUTION
No meter reading.	Charger is not plugged in  Connections are reversed.  Poor electrical connection.  AC outlet is dead.  Battery is defective (will not accept charge).	Plug in  With charger unplugged, reverse clamps and reconnect (rock back and forth to bite in).  Clean clamps and battery poles and reconnect (rock back and forth to bite in).  Plug in a lamp or other appliance to check for voltage.  Have battery checked.
Charger will not turn on when properly connected to power.	Battery recently used in vehicle and is fully charged.	Battery does not need charging.  (If battery is in vehicle, turning on headlights will lower battery voltage in a few seconds and charger should then turn on.)  Battery has less than .7 volts, set to Manual and retry.
Charger will not turn OFF.	Battery has a problem and will not take a full charge.	Have battery checked. (If in MANUAL, switch to AUTOMATIC).
Meter needle pulses (fluctuates) every few seconds AFTER THREE HOURS without slowing down.	Two or more batteries connected in parallel.  Battery of 200 ampere hours or larger.  Battery is connected to application that draws a small current (such as a vehicle's dome light).	Requires more time to charge: continue charging.  Requires more time to charge: continue charging.  Requires more time to charge: continue charging.
Charging current is less than full output rating of charger.	Battery is partially charged.  Battery is defective (battery plates are crusted) and will not accept a full charge.  AC power supply is low.	Continue charging.  Have checked and replace battery.  Plug charger into another grounded AC outlet.
Meter needle moves to extreme right, remains a short time, then returns to zero, accompanied by a clicking sound.	Severely discharged battery (but otherwise good battery).  In MANUAL with battery connections reversed.  Battery is defective (will not accept charge)  Charger is cycling after circuit breaking overload.	Allow charging to continue until battery has recovered sufficiently to take a charge (Circuit breaker will continue to cycle and needle will swing side to side until battery has recovered).  Unplug charger and change to correct connections.  Have battery checked.  Wait until charger automatically resets itself (DO NOT RETURN FOR SERVICE).

## 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](http://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.



**Forney Industries, Inc.**  
1830 LaPorte Avenue  
Fort Collins, CO 80526  
800-521-6038  
[www.forneyind.com](http://www.forneyind.com)