Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference. 23g

VIKING™

WHEELED BATTERY CHARGER, ENGINE STARTER AND ALTERNATOR TESTER

BC

Visit our website at: http://www.harborfreight.com
Email our technical support at: productsupport@harborfreight.com

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When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

⚠WARNING

Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.

Table of Contents

WARNING SYMBOLS AND DEFINITIONS	
⚠	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

V	Volts
~	Alternating Current
A	Amperes
CCA	Cold Cranking Amps
RC	Reserve Capacity
Ah	Ampere-hours

	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved splash-resistant safety goggles.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Fire. Follow connection procedure.

IMPORTANT SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS** –
   This manual contains important safety and operating instructions for this battery charger.
2. Do not expose charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
5. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
   a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
   b. That extension cord is properly wired and in good electrical condition; and
   c. That wire size is large enough for AC ampere rating of charger as specified in Table A.

Table A: Recommended minimum AWG size for extension cords for battery chargers

AC input rating, amperes*		AWG size of cord			
		Length of cord, feet			
Equal to or greater than	But less than	25	50	100	150
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	8
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:
1250 watts/125 volts = 10 amperes

6. Do not operate charger with damaged cord or plug – replace the cord or plug 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 serviceman.
8. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
10. WARNING – RISK OF EXPLOSIVE GASES.
    a. 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 YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.
    b. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.
11. PERSONAL PRECAUTIONS
    a. Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
    b. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
    c. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
    d. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
    e. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
    f. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
    g. 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.
    h. Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. 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.
    i. NEVER charge a frozen battery.

12. PREPARING TO CHARGE
    a. 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.
    b. Be sure area around battery is well ventilated while battery is being charged.
    c. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
    d. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
    e. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
    f. Determine voltage of battery by referring to vehicle owner's manual and make sure it matches output rating of battery charger. If charger has adjustable charge rate, charge battery initially at lowest rate.
13. CHARGER LOCATION
    a. Locate charger as far away from battery as DC cables permit.
    b. Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
    c. Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
    d. Do not operate charger in a closed-in area or restrict ventilation in any way.
    e. Do not set a battery on top of charger.
14. DC CONNECTION PRECAUTIONS
    a. Connect and disconnect DC output clips only after setting any charger switches to "off" position and removing AC cord from electric outlet. Never allow clips to touch each other.
    b. Attach clips to battery and chassis as indicated in 15(e), 15(f), and 16(b) through 16(d).
15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
    a. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
    b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
    c. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N,–) post.
    d. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e). If positive post is grounded to the chassis, see (f).
    e. For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts.
    f. For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, –) ungrounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts.
    g. When disconnecting charger, turn switches to off, disconnect AC cord, and then remove clip from battery terminal.
    h. See operating instructions for length of charge information.
16. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
    a. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, –) post.
    b. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
    c. Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (BLACK) charger clip to free end of cable.
    d. Do not face battery when making final connection.
    e. When disconnecting charger, always do so in reverse sequence of connecting procedure.
    f. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.
17.  Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery. Battery acid can cause permanent blindness.
18. Do not use Engine Start setting to charge batteries. Use to jump start only.
19. Maintain labels and nameplates on the charger. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
20. This product is not a toy. Keep it out of reach of children.

21. Unplug the Battery Charger from its electrical outlet before connecting its cables to a battery, or performing any inspection, maintenance, or cleaning procedures.

22. **Use this Charger with flooded lead-acid batteries only.** When charging a maintenance-free battery, always monitor the progress of the charge by viewing the Battery Voltage / % on the Display. Do not overcharge a maintenance-free battery.

23. Do not attempt to charge non-rechargeable or defective batteries.

24. Do not charge more than one battery at one time.

25. Have your charger serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the charger is maintained.

26. Do not use charger while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating charger may result in serious personal injury.

27. Before moving charger, disconnect power supply and battery, then allow charger to cool.

28. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:
    • Avoid operating alone.
    • Properly maintain and inspect to avoid electrical shock.
    • Properly ground power cord. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.

29. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS.

Grounding and AC Power Cord Connection Instructions

Charger should be grounded to reduce 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.

DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

CAUTION – Risk of Fire or Electric Shock. Connect battery charger directly to grounding receptacle (three-prong). An adapter should not be used with battery charger.

Specifications

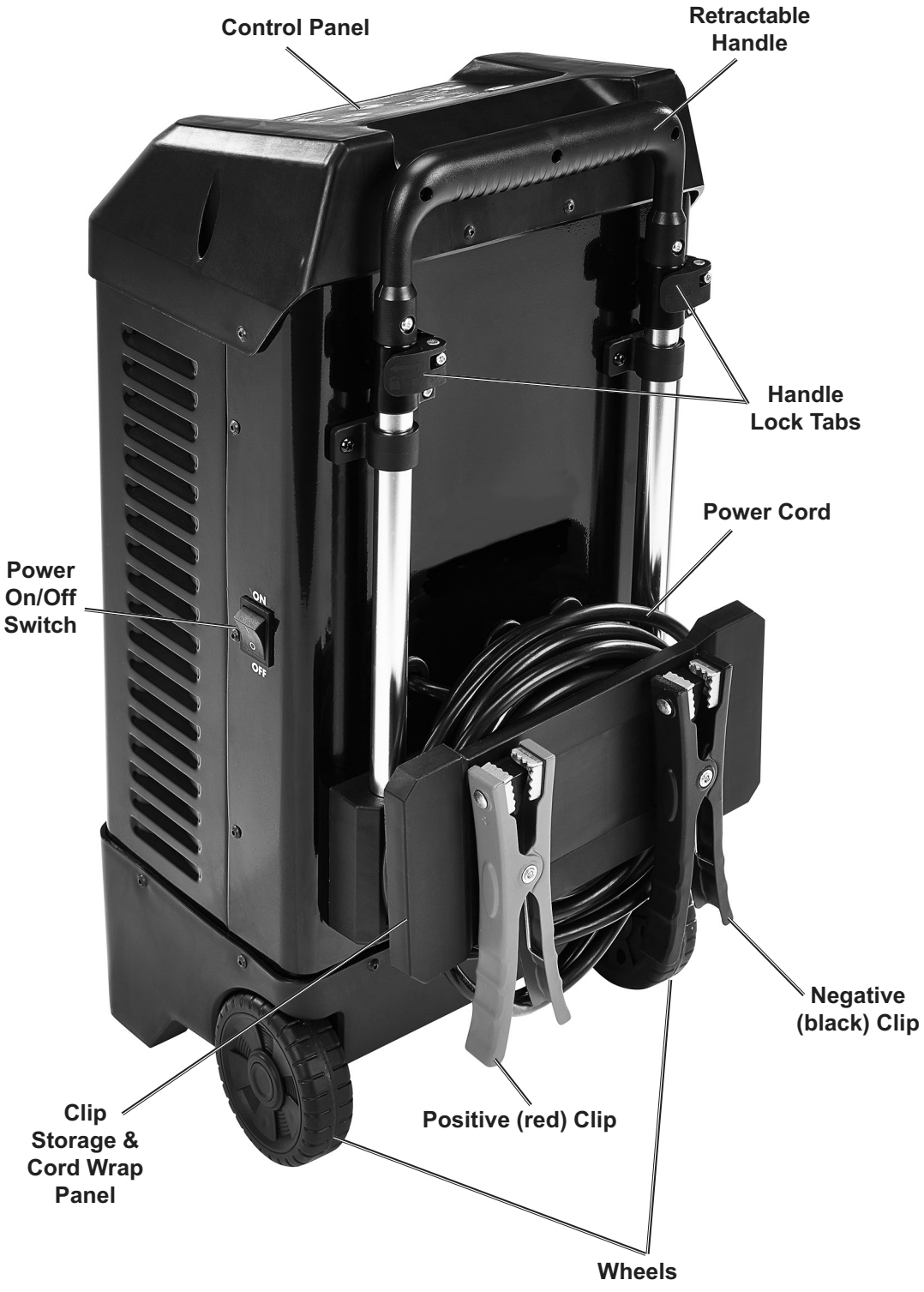
Input	Electrical Rating	120VAC / 60Hz / 11.5A Maximum continuous, 50A Maximum intermittent
Output	Charge Rate	Charge-2A: 6/12VDC, 2A. Charge-15A: 6/12VDC, 15A. Boost: 6/12VDC, Duty-cycle operation, a cycle is: 50A-120 Seconds, 40A-60 Seconds, 30A-60 Seconds, 20A-60 Seconds, 30A-60 Seconds, 40A-60 Seconds
	Engine Start	12V-START, 250A 10 Seconds On, 120 Seconds Off

Setup

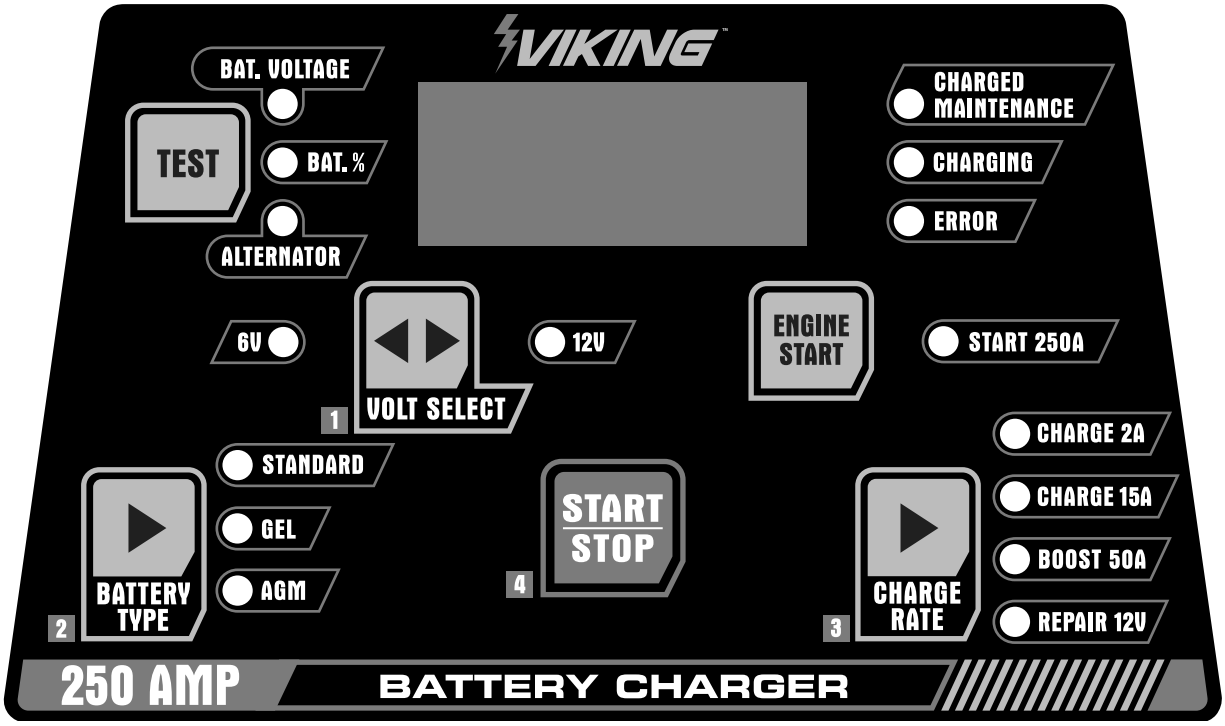
Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

⚠WARNING **TO PREVENT SERIOUS INJURY:**
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

Functions



Control Panel



1. **Volt Select:** Battery Voltage selection button. Press ◀▶ to cycle between the **6V** and **12V** selections.

2. **Battery Type:** Press ▶ to cycle through selections below**.** Selections are **Standard, Gel,** and **AGM (Absorbed Glass Mat).** Button will not work during charging.

Note: During charging, the battery voltage will be slightly higher the rated voltage.

3. **Charge Rate:** Press ▶ to cycle through below selections. Button will not work during charging.
   a. **CHARGE 2A** - slow charge at 2A max.
   b. **CHARGE 15A** - fast charge at 15A max.
   c. **BOOST 50A** - quick boost at 50A max.
   d. **REPAIR 12V** - slow charge when attempting to repair a 12V lead-acid battery.

NOTICE: REPAIR 12V for use with 12V lead-acid battery only. Read vehicle operator's manual before using this mode. Repairing process could take from 2-8 hours to complete. Some deeply damaged or shorted cells cannot be repaired.

4. **Start/Stop -** Press START STOP to **Start** or **Stop** selected functions.

5. **ENGINE START**: Press ENGINE START to select **START 250A** used only for engine start assist.

6. **LED Indicators:**
   a. **CHARGED MAINTENANCE:** Illuminates when battery is fully charged.
   b. **CHARGING**: Illuminates when battery is charging.
   c. **ERROR**: Illuminates when a problem has been detected.

7. **TEST Indicators**: Press TEST to cycle through the selections below.
   a. **BAT. VOLTAGE**: Battery voltage LED illuminates when selected. Display shows current battery voltage.
   b. **BAT. %**: Battery % LED illuminates when selected. Display shows percentage of battery charged.
   c. **ALTERNATOR**: LED illuminates when selected. Display shows the Alternator test result of Pass or Bad after tested.

8. **Digital Display** messages:
   a. **INIT**: Charger is starting up.
   b. **REDY**: Charger is ready to charge.
   c. **REPR**: Repair cycle.
   d. **CHRG**: Charging in process.
   e. **ANAL**: Charger is analyzing battery.
   f. **FULL**: Battery is fully charged.

Note: Error Messages can be found on page 13.

Preparing to Charge

⚠WARNING

Use this Charger only on flooded lead-acid batteries.
Other batteries may be damaged or may overheat, leak, or catch fire.
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

TO PREVENT SERIOUS INJURY:
Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery.
Battery acid can cause permanent blindness.

1. 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.
2. Make sure area around battery is well ventilated while battery is being charged.
3. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
5. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
6. Determine voltage of battery by referring to vehicle owner's manual and make sure it matches output rating of battery Charger. If Charger has adjustable charge rate, charge battery initially at lowest rate.
7. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

BATTERIES WITH HYDROMETER EYE:
Do not depend on hydrometer eye to determine battery charge level.

Charger Location

1. Locate Charger as far away from battery as DC cables permit.
2. Never place Charger directly above battery being charged; gases from battery will corrode and damage Charger.
3. Never allow battery acid to drip on Charger when reading electrolyte specific gravity or filling battery.
4. Do not operate Charger in a closed-in area or restrict ventilation in any way.
5. Do not set a battery on top of Charger.

TABLE B: CHARGING RATE/TIME

Battery Size / Rating			12V Charge Rate Charging Time (based on battery at 50% charge)		
			Charge 2A	Charge 15A	Boost 50A
Small batteries (Motorcycle, Garden Tractor, etc.)		6-12 Ah	3 - 6 hr	Do not use these rates for small batteries.	
Cars / Trucks	200-315 CCA	40-60 RC	13 - 20 hr	2-1/2 - 4 hr	1/4 - 3/4 hr
	315-550 CCA	60-85 RC	20 - 35 hr	4 - 7 hr	1/2- 2 hr
	550-875 CCA	85-125 RC	35 - 55 hr	7 - 11 hr	1 1/2 - 3 hr

WARNING! TO PREVENT SERIOUS INJURY, FIRE, AND PROPERTY DAMAGE: Monitor charging during use.

Raising or Lowering Handle

1. Unlock the Handle Lock Tabs on both sides of the Handle.
2. Pull up the Handle to the desired height.
3. Lock the Handle Lock Tabs back in position.

Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

⚠WARNING **TO PREVENT SERIOUS INJURY:**
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

Charging Battery Installed in Vehicle

⚠WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

TO PREVENT SERIOUS INJURY:
Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery.
Battery acid can cause permanent blindness.

CAUTION! Do not use Engine Start 250A to charge batteries.

COLD BATTERIES: Begin charging at lowest rate, increase rate as battery reaches normal temperature. **DO NOT CHARGE A FROZEN BATTERY.**

1. Unplug Charger.
2. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
3. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
4. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N,–) post.
5. Determine which battery post is grounded (connected) to the chassis. If negative post is grounded to chassis, see a (below). If positive post is grounded to the chassis, see b (below).
   a. **For negative-grounded vehicle** (as in most vehicles)**:**
      - Connect POSITIVE (RED) Clip from battery Charger to POSITIVE (POS, P, +) ungrounded post of battery.
      - Connect NEGATIVE (BLACK) Clip to vehicle chassis or engine block away from battery. **Do not connect Clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.**

   b. **For positive-grounded vehicle:**
      - Connect NEGATIVE (BLACK) Clip from battery Charger to NEGATIVE (NEG, N, –) ungrounded post of battery.
      - Connect POSITIVE (RED) Clip to vehicle chassis or engine block away from battery. **Do not connect Clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.**
6. Plug Charger into grounded 120VAC receptacle.
7. Turn Power Switch on. The display will show **INIT** for one second then **REDY** when the battery is detected and the Charger is ready.

NOTICE: If an error message appears on the Display, turn Power Switch off and correct the problem before proceeding. See *ERROR Messages* on page 13 for meaning and solution.

8. Battery voltage can be checked by pressing **TEST** button. When **Bat. Voltage** LED is illuminated, the Display will show the current battery voltage.
9. Press **VOLT SELECT** button until the voltage that matches the rating of the vehicle battery illuminates.
10. Press **BATTERY TYPE** button until the type that matches the vehicle battery illuminates. AGM is the most commonly used in automotive.
11. Press **CHARGE RATE** button until the desired charge rate illuminates.

CAUTION! Do not use Engine Start 250A to charge batteries.

12. Press **START/STOP** button to start charging.
    a. When charging starts, the **Charging** LED will flash.
    b. Progress can be viewed by pressing **TEST** button until the **Bat. %** LED is illuminated. The Display will show how much of the battery has been charged.

Note: **Volt Select**, **Battery Type** and **Charge Rate** cannot be changed during charging. To change selection, press **START/STOP** to stop, make new selection, and then press **START/STOP** to resume charging.

c. When the battery is fully charged, the **Charged Maintenance** LED will flash and **Charging** LED will extinguish. During this stage the maintaining mode is activated and will restart maintaining when necessary.

d. If the **Error** LED illuminates, correct the problem immediately. See *ERROR Messages* on page 13 for Display message meaning.

e. After clearing the error, press **START/STOP** button to resume.

13. When finished, press **START/STOP** button. Turn Power Switch off, unplug power cord, remove Clip from vehicle chassis, and then remove Clip from battery terminal.

14. After use clean, then store the Charger indoors out of children's reach.

Charging Battery Outside Vehicle

⚠WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

TO PREVENT SERIOUS INJURY:
Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery.
Battery acid can cause permanent blindness.

CAUTION! Do not use Engine Start 250A to charge batteries.

COLD BATTERIES: Begin charging at lowest rate, increase rate as battery reaches normal temperature. **DO NOT CHARGE A FROZEN BATTERY.**

1. Unplug Charger.
2. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, –) battery post.
3. Connect POSITIVE (RED) Charger Clip to POSITIVE (POS, P, +) post of battery.

CAUTION! Do not face battery when making final connection.

4. Position yourself and free end of battery cable as far away from battery as possible – then connect NEGATIVE (BLACK) Charger Clip to free end of battery cable.
5. Plug Charger into grounded 120VAC receptacle.
6. Turn Power Switch on. The display will show **INIT** for one second then **REDY** when the battery is detected and the Charger is ready.

CAUTION!: If a message other than **REDY** is seen on the display, turn Power Switch off and correct the problem before proceeding. See *ERROR Messages* on page 13 for meaning and solution.

7. Battery voltage can be checked by pressing **TEST** button. When **Bat. Voltage** LED is illuminated, the Display will show the current battery voltage.
8. Press **VOLT SELECT** button until the voltage that matches the rating of the vehicle battery illuminates.
9. Press **BATTERY TYPE** button until the type that matches the vehicle battery illuminates. AGM is the most commonly used in automotive.
10. Press **CHARGE RATE** button until the desired charge rate illuminates.

CAUTION! Do not use Engine Start 250A to charge batteries.

11. Press **START/STOP** button to start charging.

a. When charging starts, the **Charging** LED will flash.

b. Progress can be viewed by pressing **TEST** button until the **Bat. %** LED is illuminated. The Display will show how much of the battery has been charged.

Note: **Volt Select**, **Battery Type** and **Charge Rate** cannot be changed during charging. To change section, press **START/STOP** to stop charging, make new selection, and then press **START/STOP** to resume charging.

c. When the battery is fully charged, the **Charged Maintenance** LED will flash and Charging LED will extinguish. During this stage the maintaining mode is activated and will restart maintaining when necessary.

d. If the **Error** LED illuminates, correct the problem immediately. See *ERROR Messages* on page 13 for Display message meaning.

e. After clearing the error, press **START/STOP** button to resume.

12. When finished, press **START/STOP** button to stop. Turn Power Switch off and unplug power cord.

13. When disconnecting Charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
14. After use clean, then store the Charger indoors out of children's reach.

Engine Starting (starting assist)

⚠WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.
DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

TO PREVENT SERIOUS INJURY:
Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery.
Battery acid can cause permanent blindness.

NOTICE

Some vehicles with onboard computers may be damaged from the high-current starting output. Thoroughly read the vehicle service manual before using this procedure.

CAUTION! Do not use Engine Start 250A to charge batteries.

Note: During extremely cold weather or when battery is severely exhausted, charge the battery at 10A for about five minutes before attempting to start engine.

1. Unplug Charger.
2. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
3. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
4. Determine which battery post is grounded (connected) to the chassis. If negative post is grounded to chassis, see a. If positive post is grounded to the chassis, see b.
   a. **For negative-grounded vehicle** (as in most vehicles)**:**
      - Connect POSITIVE (RED) Clip from battery Charger to POSITIVE (POS, P, +) ungrounded post of battery.
      - Connect NEGATIVE (BLACK) Clip to vehicle chassis or engine block away from battery. **Do not connect Clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.**

   b. **For positive-grounded vehicle:**
      - Connect NEGATIVE (BLACK) Clip from battery Charger to NEGATIVE (NEG, N, –) ungrounded post of battery.
      - Connect POSITIVE (RED) Clip to vehicle chassis or engine block away from battery. **Do not connect Clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.**
5. Plug Charger into grounded 120VAC, 12A receptacle.
6. Turn Power Switch on. The display will show **INIT** for one second then **REDY** when the battery is detected and the Charger is ready.

NOTICE: If a message other than **REDY** is seen on the display, turn Power Switch off and correct the problem before proceeding. See *ERROR Messages* on page 13 for meaning and solution.

7. Press **VOLT SELECT** button until the voltage that matches the rating of the vehicle battery illuminates.
8. Press **BATTERY TYPE** button until the type that matches the vehicle battery illuminates.
9. Press **ENGINE START** button to illuminate **START 250A** LED.
10. Press **START/STOP** button to start function. **START 250A** LED will light. Turn vehicle's ignition key. Once an engine starting attempt is detected, a charge will be delivered for 10 seconds and then stop for a mandatory cool down of 120 seconds. Engine should start within 3 seconds. If it does not start, turn off ignition and wait for Charger and battery to cool before trying again.

Note: Display will flash **120S / COOL** message during cool down. Engine Start is not the same as jump starting. Deeply discharged and larger vehicle batteries may require more than one Engine Start application.

11. Once the Display shows **REDY** the function can be tried again.
12. If engine fails to start, stop function and press **TEST** to check the battery voltage:

a. If the battery is under 9 volts or in extremely cold weather, press **CHARGE RATE** and run **BOOST 50A** to charge the battery for 5 minutes before attempting to start the engine.

b. If engine fails to start after trying engine start a few times, the battery could be bad. Reconditioning the battery may help. (See *Repair 12V* on page 12.)

Note: If the engine turns over but does not start, stop trying to start the engine. There is likely a problem with the vehicle's starting system. Have a technician diagnose and correct the problem.

13. After the engine starts, turn Charger's Power Switch off and unplug the power cord.
14. Remove Clip from vehicle chassis, and then remove Clip from battery terminal.
15. After use, clean and then store the Charger indoors out of children's reach.

Test

1. Battery voltage can be tested by pressing **TEST** button once.
   a. When not jump starting and **Bat. Voltage** LED is illuminated, the Display will show the current battery voltage.
2. During charging, the progress of charging can be viewed by pressing the **TEST** button twice.
   a. When the **Bat. %** LED is illuminated, the Display will show how much of the battery has been charged.
3. The vehicle's alternator can be checked by pressing the **TEST** button a third time.
   a. When not charging and the **ALTERNATOR** LED is illuminated, the Display will show the output voltage of the vehicle's charging system.
      - **GOOD**: Output is within normal range (13.4 to 14.4 V).
      - **LOW**: Output below 13.4V.
      - **HI**: Output over 14.4 V.
      - If reading is **LOW** or **HI** and the battery tests ok, the vehicle's electrical system should be checked by a qualified technician.
   b. Start the vehicle's engine. Rev the engine at 2000-2400 RPM for 15 seconds. Turn off the engine after 15 seconds.

Repair 12V

Notice: **Repair 12V** is a recovery mode for repairing old, idle, stratified or sulfated batteries and should be attempted on 12V batteries only.

1. Remove the battery from the vehicle.
2. Connect Charger to battery as described in *Charging Battery Outside Vehicle* on page 10.
3. Turn Power Switch on. The display will show **INIT** for one second then **REDY** when the battery is detected and the Charger is ready.

CAUTION!: If a message other than **REDY** is seen on the display, turn Power Switch off and correct the problem before proceeding. See *ERROR Messages* on page 13 for meaning and solution.

4. Press **CHARGE RATE** until **REPAIR 12V** illuminates.
5. Press **START/STOP** button to start charging and the **CHARGING** LED will flash.
   - One repair cycle may take up to 8 hours.
   - If the battery can be charged after 8 hours, the Charger will automatically enter the **CHARGE 15A** mode (**CHARGE 15A** LED will flash).
6. When the battery is fully charged, the **CHARGED MAINTENANCE** LED turn off**.**
7. When finished, turn Power Switch off and unplug power cord.
8. When disconnecting Charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
9. After use, clean and then store the Charger indoors out of children's reach.

Maintenance Instructions

Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠WARNING

TO PREVENT SERIOUS INJURY: Unplug the Charger, disconnect any battery, and allow Charger to cool completely before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:
Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

1. **BEFORE EACH USE,** inspect the general condition of the Charger. Check for:
   - loose hardware
   - cracked or broken parts
   - damaged electrical wiring or cable insulation
   - any other condition that may affect its safe operation.
2. **AFTER USE,** wipe external surfaces of the tool with clean cloth.
3. **⚠WARNING! TO PREVENT SERIOUS INJURY: If the supply cord of this Charger is damaged, it must be replaced only by a qualified service technician. DO NOT OPEN CHARGER HOUSING, NO USER-SERVICEABLE PARTS INSIDE.**

Troubleshooting

Problem	Possible Causes	Likely Solutions
No Display reading.	No power to Charger.	Check power and cable outlet connections.
Charging voltage not to full output.	1. Battery is partially charged. 2. Defective battery, will not hold full charge.	1. Continue charging battery. 2. Check and/or replace battery.

Follow all safety precautions whenever diagnosing or servicing the tool. Disconnect power supply before service.

ERROR Messages

Display Message	Possible Problem	Likely Solutions
OVER TEMP	Charger running too hot.	Allow Charger to cool while plugged in. The fan will help the Charger cool more quickly.
CONN-CLMP	1. No battery connected. 2. Battery voltage is less than 1V. 3. Battery clips connected together. 4. Battery clips damaged.	1. Clean battery posts and connect battery clips. 2. Defective battery, replace it. 3. Separate battery clips and connect them correctly. 4. Have technician replace battery clips.
CLMP-REVR	Battery clip connected in reverse.	Reconnect battery clips to correct battery posts.
WRG-VOLT	Battery voltage does not match type selected.	Select Battery Type and Volt Select that matches battery.
BAD-BATT	1. Battery fluctuates between high and low voltages. 2. Battery cannot hold charge. Charged % stays unchanged.	1. If 12V battery, run REPAIR cycle. See *Repair 12V* on page 12. 2. Defective battery, replace it.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Parts List and Diagram

Parts List

Part	Description	Qty
1	Handle	1
2	Tapping Screw	2
3	Upper Handle Bar	2
4	Handle Lock Button	2
5	Pinch Plate	2
6	Bar Holder	2
7	Check Nut	4
8	Hex Socket Machine Screw	2
9	Hex Socket Machine Screw	2
10	Tapping Screw	4
11	Handle Bar Fixing Seat	2
12	Rear Housing	1
13	Power Cord	1
14	Tapping Screw	6
15	Strain Relief	3
16	Lower Handle Bar	2
17	Wire Spool Seat	1
18	Wire Spool 1	1
19	Wire Spool 2	1
20	Tapping Screw	24
21	Screw	6
22	Spring Washer	12
23	Washer	12
24	Nut	7
25	Machine Screw	2
26	OT Cable Cord End Terminal	2
27	Hex Round Head Tapping Screw	35
28	Output Wire	2
29	Wheel Shaft	1
30	Negative Clip, Black	1
31	Positive Clip, Red	1
32	Wheel Clamping Ring	2
33	Tapping Screw	2
34	Isolation Column 1	7
35	Tapping Screw	7

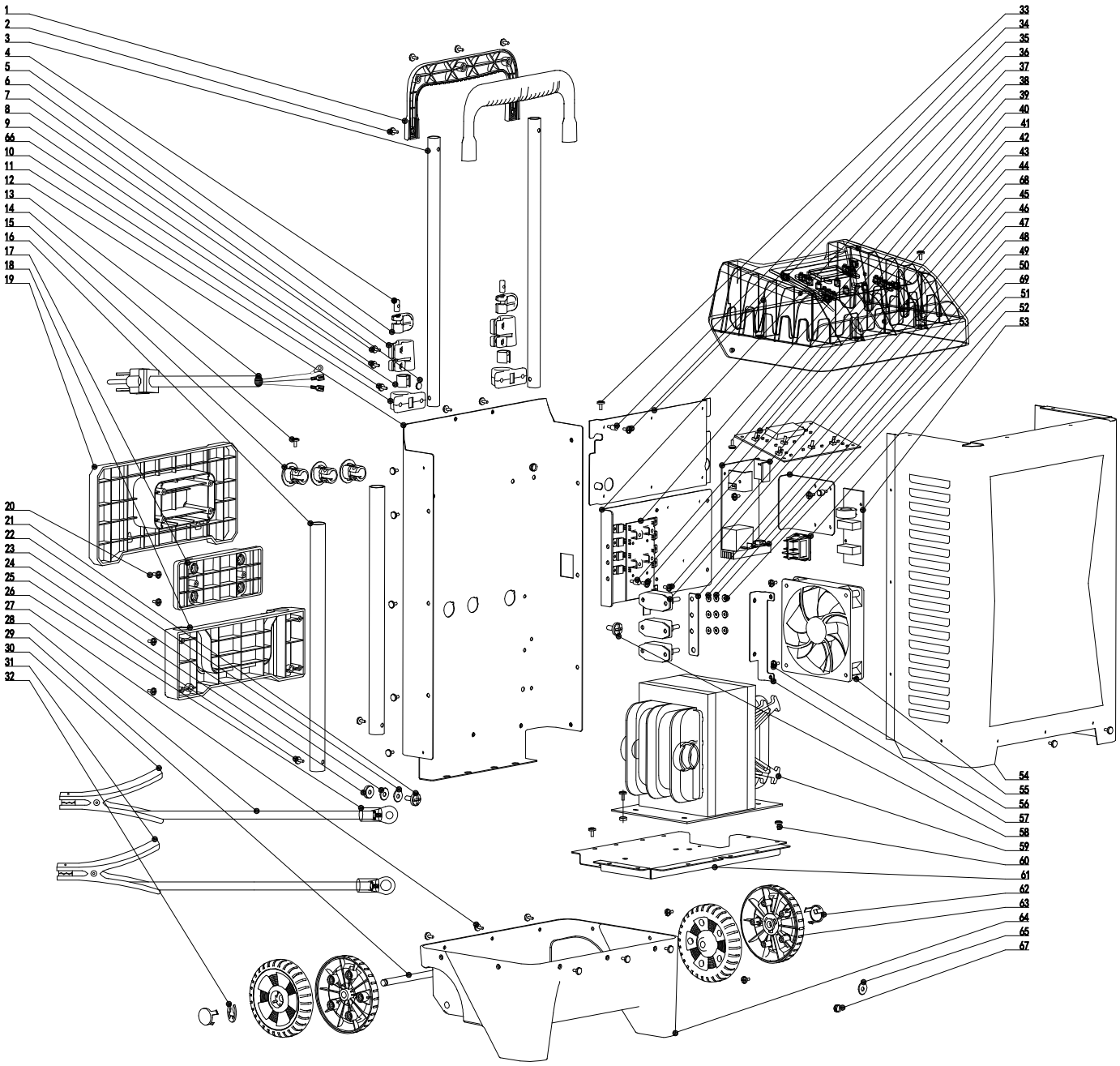
Part	Description	Qty
36	Radiator Support	1
37	Secondary SCR Radiator	1
38	Upper Panel	1
39	Circuit Board 1	1
40	Tapping Screw	6
41	Circuit Board 2	1
42	Control Panel	1
43	Isolation Column 2	4
44	Tapping Screw	10
45	Triple Combination Screw	10
46	Overload Device	3
47	Circuit Board Support	1
48	Connector	1
49	Washer	12
50	Spring Washer	6
51	Nut	6
52	Power On/Off Switch	1
53	Circuit Board 3	1
54	Front Housing	1
55	Fan	1
56	Tapping Screw	2
57	Fan Bracket	1
58	Triple Combination Screw	4
59	Iron-Core Transformer	1
60	Tapping Screw	8
61	Bottom Cover	1
62	Wheel Cover	2
63	Wheel	2
64	Lower Base	1
65	Serrated Gasket	2
66	In-Tube Limiter	2
67	Square Welded Nut	2
68	L-Type Radiator	2
69	Primary SCR Radiator	1

Record Product's Serial Number Here:_____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts. Internal parts are not user-serviceable and are not available. Specify UPC 193175471741 when ordering parts.

Assembly Diagram



Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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