

BatteryMINDER®

BatteryMINDER® **Plus** Model 12117TC Charger / Maintainer / Desulfator* Instruction Manual



INCLUDES:

- 2' Battery Clip Cord Set with Quick Connector
- Auto-Temp Compensation Sensor (installed)

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800.379.5579 x6 (M - F)

***NOT for use with Aviation Type Batteries**

READ AND SAVE THESE INSTRUCTIONS

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**Underwriters Laboratories (UL)
REQUIRED IMPORTANT SAFETY INSTRUCTIONS
WARNING
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR
INJURY TO PERSON, OBSERVE THE FOLLOWING:**

1. SAVE THESE INSTRUCTIONS

- This manual contains important safety and operating instructions for BatteryMINDer Model 12117TC.
2. Do not expose charger to rain or snow.
 3. Use of an attachment not recommended or sold by VDC Electronics 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 extension cord is properly wired and in good electrical condition; and
 - b) That wire size is large enough for AC ampere rating of charger as specified in Table below.
 7. Do not operate charger with damaged extension cord or plug – replace the cord or plug immediately.
 8. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; call **VDC Electronics Tech Support Dept. 800.379.5579 x6 (ET)** for advice.

Recommended minimum AWG size for extension cords for battery chargers					
AC input rating, amperes^a		AWG size of cord			
Equal to or greater than	But less than	Length of cord, feet (m)			
		25 (7.6)	50 (15.2)	100 (30.5)	150 (45.6)
0	2	18	18	18	16
<small>^aIf 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</small>					

9. Do not disassemble charger; call **VDC Electronics Tech Support Dept. 800.379.5579 x6 (ET)** for advice when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
10. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

11. 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 manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.

12. PERSONAL PRECAUTIONS

a) Consider having someone close enough 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. 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 or a battery at a temperature above 122°F.

13. 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 car owner's manual and make sure it matches output rating of battery charger.

14. 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.

15. DC CONNECTION PRECAUTIONS

- a) Connect or disconnect DC output clips only when the unit is unplugged from AC power. Never allow clips to touch each other.
- b) Attach clips to battery and chassis as indicated in 16(e), 16(f), and 17(b) through 17(d).

16. 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 DC cord 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. 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 gage metal part of the frame or engine block.

f) 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 gage metal part of the frame or engine block.

g) When disconnecting charger, first disconnect the charger from AC power, remove clip from vehicle chassis, and then remove clip from battery terminal.

h) See operating instructions for length of charge information.

17. 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 NEGATIVE (**BLACK**) charger clip to NEGATIVE (NEG, N, -) battery post.

c) Connect POSITIVE (**RED**) charger clip to POSITIVE (POS, P, +) post of battery.

d) 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.

e) Do not face battery when making final connection.

f) When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.









g) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.





SIMPLE INSTRUCTIONS:

- Place the positive (**RED**) connection on the positive battery terminal.
- Place the negative (**BLACK**) connection on the negative battery terminal.
- Plug in the BatteryMINDER.
- CHARGING/MAINTENANCE** LED should be **GREEN**. **AC POWER ON** LED should be **RED**.

DETERMINING YOUR CHARGING STATUS:

- Match the LEDs on your BatteryMINDER 12117TC to one of the stages in the **STAGE/FAULT Table** below and note the **LED INDICATION Letter (A - I)**. (This table can also be found on the top enclosure of the charger.) Refer to **STAGE/FAULT LEGEND Table** if needed.
- Go to the corresponding **LED INDICATION Letter** in the **LED INDICATION Table** for a detailed explanation.

STAGE/FAULT	CHG	PWR	LED INDICATION
Charging			B, C, D or E
Maintaining			F or G
BATT Disconnected/Polarity			A or H
BATT Weak			I

STAGE/FAULT LEGEND			
			
Green STEADY	Red STEADY	FLASHING	OFF

LED INDICATION				
	LED DISPLAY STATUS	CHARGING (GREEN)	POWER (RED)	COMMENTS
A	A.C. Power Connected, Battery Disconnected	OFF	ON	Check battery connection
B	Bulk Charging	ON	ON	Normal CHARGING state
C	Analysis Stage	ON	ON	
D	Absorption Charging	ON	ON	
E	Equalization Charging	ON	ON	
F	Float Charging	Flash	ON	Normal MAINTENANCE state
G	Maintenance Charging	Flash	ON	
H	Battery Reverse Polarity	OFF	ON	Check battery connection
I	Analysis Failed	Flash	Flash	Both RED & GREEN flash simultaneously Contact VDC Tech Support

MAINTENANCE BUTTON

If the battery voltage is above 12.5V before connecting the charger to AC power, proceed and connect to AC power. Pressing the Maintenance Button will cause the charger to skip the Charging Stage and go directly to Maintenance Mode. Pressing and holding the Maintenance Button for more than 3 seconds will force the charger out of Maintenance Mode.

TROUBLESHOOTING**VDC Electronics Technical Support: (800) 379-5579 x6**

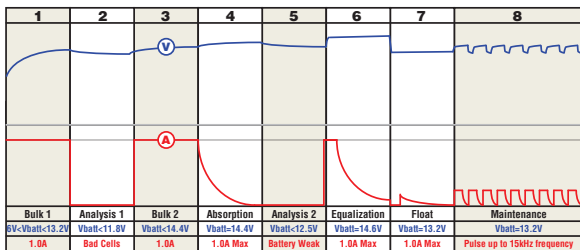
- Unit will not operate if battery is below the minimum voltage (6 Volts).
- If there is a load on your battery, disconnect it and charge again. If the problem persists, your battery may be badly sulfated and is non-recoverable.
- Unit does not have an output unless connected to a battery. In order to test the output using a meter, connect the meter to your battery. When you connect the unit, you will see the voltage rise.
- Badly sulfated batteries may need 2 - 4 weeks of float charging to show results.

BatteryMINDER Plus 12117TC Call-Outs

AC Power Input Characteristics		Normal	Withstand	Unit
Input voltage		100-120	90 - 140	Vac
Input voltage frequency		50/60	47 - 63	Hz
Input quiescent power consumption when no battery is connected		0.5	max.	W
Input current consumption		0.28	max.	A/ac
Nominal efficiency		>76%		
Electrical Cable & Physical Parameters				
Input Connector		Wall mount		
Output Cord		SPT-2 18AWG with quick connector, total length 10 Feet		
Extension Cord construction		SPT-2 18AWG Connector with color code battery clamp, total length 2 Feet		
		SPT-2 18AWG Connector with Blade Terminal fuse with Fuse Holder & Ring Terminal Assembly 2 Feet (Optional)		
Enclosure Dimensions		3.8" L x 2.6" W x 2.2" H (95.8 [L] x 65.5 [W] x 55.6 [H] mm)		
Weight		1.1 lbs. (0.5Kg)		
Safety & Protection				
Safety Standards		UL1236		
EMC Standards		FCC part-15		
Built-in Temperature Protection		Output short-circuit, reverse polarity protection		
Temperature Compensation Range		14°F - 122°F (-10°C - 50°C) In float and maintenance stages the minimum voltage will be 13.0V ±0.15V		
Storage Temperature		-4°F - 185°F (-20°C - 85°C)		
Operating Humidity Range		0 to 90% Relative Humidity		

CHARGING CURVE

All Values are related to 77°F (25°C) Ambient Temperature



CHARGING / MAINTAINING MULTIPLE BATTERIES

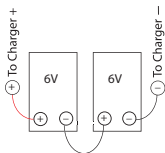
To properly charge or maintain multiple batteries they should all be the same type (flooded or AGM) and condition. It is OK to mix deep cycle and starter. Charge each battery individually before connecting together. **Never connect batteries at different states of charge. The charged battery will rapidly transfer energy to the discharged battery possibly causing catastrophic failure.**

Once the batteries are charged, use 18 gauge or heavier wire to connect the batteries.

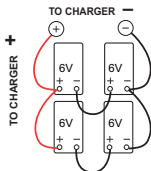
If connecting multiple batteries of the same voltage, wire them in parallel (BatteryMINDER positive to positive A to positive B, BatteryMINDER negative to negative A to negative B). This is the same type of connection you would use when jumping a car (in fact, jumper cables are great for this).

If connecting 2 batteries of half your unit's voltage (example: 6V batteries on a 12V unit), wire them in series (BatteryMINDER positive to positive A, negative A to positive B, negative B to BatteryMINDER negative). When wired in series they act as one large system at the combined voltage (example: $6V + 6V = 12V$). You can connect these systems in a series parallel configuration in order to charge or maintain 4 or batteries in groups of 2. As long as your batteries stay wired together they act as one large battery allowing you to charge and discharge them as a group

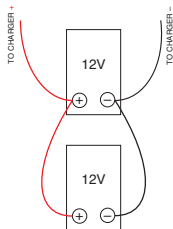
Series Connection Diagram
(12V System using Two 6V Batteries)



Series - Parallel Connection Diagram
(12V System using Four 6V Batteries)



Parallel Connection Diagram
(12V System using Two 12V BatterIES)



FOR REPAIR OR REPLACEMENT

All returns must be authorized by VDC Electronics.

In the event that you believe your product may be defective, you **MUST** speak to a VDC Electronics technician at **1-800-379-5579 x6** (9 - 5 ET) before proceeding further.

NOTES

MODEL **BatteryMINDER** _____

SERIAL NUMBER _____

PLACE OF PURCHASE _____

DATE OF PURCHASE _____

BatteryMINDER® Guarantee and Warranty Policy effective Jan. 2013.

ALL Returns and Replacements must be authorized by a VDC Electronics technician. Units must only be returned to VDC Electronics, Inc., NOT TO THE DEALER FROM WHOM IT WAS PURCHASED.

For ALL Replacements, Returns or Repairs covered by Guarantee or Warranty:

Please call 800-379-5579 x6, M - F, 9 AM - 5 PM (ET) to speak to a technician. Have your unit available when you call. We will ask you for:

Your contact information	Product serial number	Proof of purchase
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One-Year 100% Unconditional Money Back Guarantee:

Your BatteryMINDER product is guaranteed within the first year to perform as claimed or VDC Electronics, Inc. will refund your full purchase price including all taxes, shipping or handling cost applicable to the purchase. Customer will return product to VDC Electronics at their expense.

The Technician will provide you with an RMA number and shipping information. You will be required to fill out a form to complete your return which can be found on BatteryMINDers.com, see Shipping/Returns. Clearly write your RMA number on the outside of the package you are returning. We suggest using a carrier that provides tracking information. VDC Electronics is not responsible for returned packages lost in transit. If the unit is to be replaced, it is shipped by ground with free shipping. Expedited shipping is available at extra cost.

Five-Year Limited Warranty:

Your BatteryMINDER product is warrantied for FIVE years from date of purchase at retail against defective material or workmanship. We make no warranty other than this limited warranty and expressly exclude any implied warranty including any warranty for consequential damages. This limited warranty is not transferable.

If the technician determines defective unit should be **repaired**, customer will return product at their expense. Once we receive the unit it will be repaired and shipped back to customer, all at no charge. Expedited shipping is available at extra cost.

If the technician determines unit does not warrant repair but needs **replacement**, customer will be required to pay a \$9.95 shipping fee for the replacement unit. This fee may be subject to change without notice. There is no cost for the replacement unit itself. Expedited shipping is available at extra cost.

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