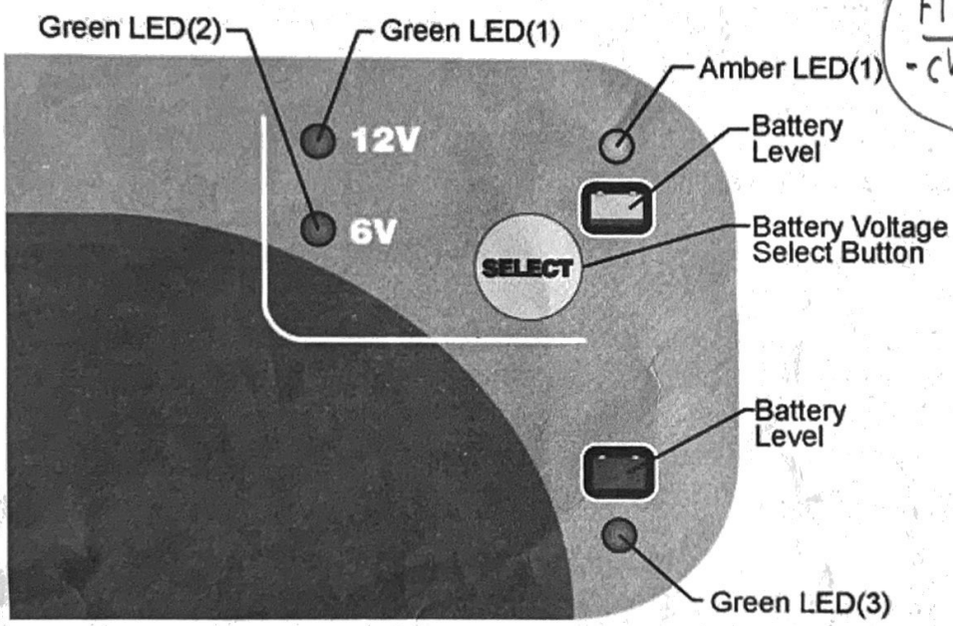
USER INSTRUCTIONS

AUTOMATIC CHARGING AND BATTERY STATUS MONITORING: Battery Tender® chargers are completely automatic and may be left connected to both AC power and to the battery that they is charging for long periods of time. The charger output power, voltage, and current depend on the condition of the battery it is charging. Battery Tender® chargers have several status LED indicators that provide a visual means to determine the operating mode of the charger and hence the condition of the battery connected to the charger.

Flashing
- check - connection
OR - Fuse



When AC power is first applied to the charger, all of the LEDs will illuminate for two to three seconds before starting the charge sequence listed below.

The two battery level status LED indicator lights (Amber LED 1, Green LED 3) are available to determine whether the charger is operating in one of the four primary charge modes:

1) **Qualification/initialization mode:** The Monitor Circuit verifies appropriate battery voltage levels and good electrical continuity between the battery and the charger DC output.
2) **Bulk mode** (full charge, constant current, battery is 0% to 80% charged)
3) **Absorption mode** (high constant voltage, battery is 80% to 100% charged).
4) **Storage/float maintenance mode** (low constant voltage, battery is 100% to 103% charged).

When the battery is fully charged, the battery level status Green LED (3) indicator will turn solid green and the charger will switch to a storage/float maintenance charge mode. The Battery Tender® charger will automatically monitor and maintain the battery at full charge.

BATTERY VOLTAGE SELECT BUTTON

The Battery Tender® charger has a "SELECT" button which allows you to switch between charging a 6-volt battery or a 12-volt battery.

The battery voltage can be selected once the charger has AC power applied and before the charger is connected to the battery.

Once the charger has AC power and is also connected to the battery the voltage (12V or 6V) selection cannot be changed. To change the mode, disconnect the battery from the charger.

If the AC power is interrupted the charger will resume charging at the last battery voltage setting used.

The charger can also detect if the incorrect battery voltage has been selected once the connection has been made to the battery. One of the Green LEDs (LED 1 or 2) located next the 12V or 6V symbol will flash preventing the charge cycle from starting. In order to begin a new charge cycle, reset the charger by disconnecting it from the AC supply as well as the wrong or defective battery for 7-10 seconds. Reconnect the AC supply and the charger will be ready for a new charge cycle.

ATTENTION: The Battery Tender® CHARGER HAS A SPARK FREE CIRCUITRY. The output alligator clips or ring terminals will not spark when they are touched together. The Battery Tender® charger will not produce an output voltage until it senses at least 3 volts from the battery. It must be connected to a battery with the correct polarity before it will start charging a battery. Therefore, if you plug the AC power cord into an AC power outlet, and if the output alligator clips or ring terminals are not connected to a battery, and if you touch the alligator clips or ring terminals together, there will be no electrical spark.

NOTE:

THE OUTPUT CLIPS OR RING TERMINALS MUST BE CONNECTED TO A BATTERY BEFORE THE CHARGER CAN PRODUCE AN OUTPUT VOLTAGE.

TIME REQUIRED TO CHARGE A BATTERY:

The Battery Tender® charges at a rate of 3.0 amps or 3 amp-hours per hour. Therefore, a fully discharged 15 amp-hour battery will take approximately 4 hours to recharge to 80% capacity.

WORKING WITH A DEAD BATTERY OR A BATTERY WITH A VERY LOW VOLTAGE:

If you try to charge a dead battery having a voltage below 3 volts, the Battery Tender® charger will not start. An internal safety circuit prevents the charger from generating any output voltage unless it senses at least 3 volts at the charger output. In this situation, the amber LED will continue to flash, indicating that a charge has not been initiated.

NOTE:

If a 12-volt, lead-acid battery has an output voltage of less than 9 volts when it is at rest, when it is neither being charged nor supplying electrical current to an external load, there is a good chance that the battery is defective. As a frame of reference, a fully charged 12-volt, lead-acid battery will have a rest-state, no-load voltage of approximately 12.9 volts. A fully discharged 12-volt, lead-acid battery will have a rest-state, no-load voltage of approximately 11.4 volts. That means that a voltage change of only 1.5 volts represents the full range of charge 0% to 100% on a 12-Volt, lead-acid battery. Depending on the manufacturer, and the age of the battery, the specific voltages will vary by a few tenths of a volt, but the 1.5-volt range will still be a good indicator of the battery charge %.

STATUS INDICATING LIGHT: If the light is not lit, then the battery is not properly connected and/or the charger is not plugged into AC power. The following describes light operation:

< **AMBER LIGHT FLASHING** (Amber LED 1) – The amber LED flashing indicates that the battery charger has AC power available and that the microprocessor is functioning properly. If the amber LED continues to flash, then either the battery voltage is too low (less than 3 volts) or the output alligator clips or ring terminals are not connected correctly.

OR FUSE
7.5 V

< **AMBER LIGHT ON STEADY** (Amber LED 1) – Whenever the amber LED is on steady, a battery is connected properly and the charger is charging the battery. The amber LED will remain on until the charger completes the charging stage.

< **GREEN LIGHT FLASHING** (Green LED 3) – When the green LED is flashing and the amber LED (Amber LED 1) is solid the battery is greater than 80% charged and may be removed from the charger and used if necessary. Whenever possible, leave the battery on charge until the green light is solid.

< **GREEN LIGHT ON STEADY** (Green LED 3) – When the green LED burns steady, the charge is complete and the battery can be returned to service if necessary. It can also stay connected to maintain the battery for an indefinite period of time

TROUBLESHOOTING

1) If the charger does not turn on and none of the LEDs illuminate.

   a. Check to make sure the AC outlet is supplying power by plugging in a lamp, an appliance, or a voltage meter.

2) The green LED (3) comes on immediately when charging a discharged battery.
   a. The battery is probably defective, take the battery to the dealer to be tested.

3) When charging a battery the green LED never comes on.
   a. The battery may be defective, take the battery to the dealer to be tested.
   b. The battery has an excessive current draw, remove or disconnect the battery from the equipment.

4) The amber LED continues to flash even with a connection to the battery:
   a. Check the fuse in the accessory cable. (7.5v)

5) 12V green LED is flashing.
   a. The battery is damaged or the incorrect battery voltage has been selected.

6) 6V green LED is flashing.
   a. The battery is damaged or the incorrect battery voltage has been selected.

7) Amber and Green LED are toggling.
   a. Reverse polarity connection to the battery.
   b. The chargers safety timer has activated due to the battery not reaching its optimal voltage. The battery may be defective, take the battery to the dealer to be tested.

FCC Warning

Title 47 Subpart, 15.105(b)
Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ICES-001: Industrial, Scientific, and Medical (ISM) Radio Frequency Generators

This product has been tested with the listed standards and found to be compliant with the Code of Industry Canada ES-001 and the measurement Procedure according to CISPR 11.

CAN ICES-1/NMB-1

Deltran Battery Tender® Selectable

Designed for six-cell lead-acid batteries from 1.2 – 66Ah and three-cell lead-acid batteries from 1.2 – 66Ah

IMPORTANT SAFETY INSTRUCTIONS

1) SAVE THESE INSTRUCTIONS – THIS MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTIONS.
2) 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, AND THAT YOU READ AND FOLLOW THE INSTRUCTIONS PROVIDED EXACTLY.
3) TO REDUCE THE RISK OF BATTERY EXPLOSION, FOLLOW THESE INSTRUCTIONS AND THOSE MARKED ON THE BATTERY.
4) NEVER SMOKE OR ALLOW AN OPEN SPARK OR FLAME IN THE VICINITY OF THE BATTERY OR ENGINE.
5) USE CHARGER FOR CHARGING A LEAD-ACID BATTERY ONLY. IT IS NOT INTENDED TO SUPPLY POWER TO AN EXTRA-LOW-VOLTAGE ELECTRICAL SYSTEM OR TO CHARGE DRY-CELL BATTERIES. CHARGING DRY-CELL BATTERIES MAY CAUSE THEM TO BURST AND CAUSE INJURY TO PERSONS AND DAMAGE TO PROPERTY.
6) NEVER CHARGE A FROZEN BATTERY.
7) IF IT IS NECESSARY TO REMOVE THE BATTERY FROM VEHICLE TO CHARGE IT, ALWAYS REMOVE GROUNDED TERMINAL FROM THE BATTERY FIRST. MAKE SURE ALL ACCESSORIES IN THE VEHICLE ARE OFF IN ORDER TO PREVENT AN ARC.
8) STUDY ALL BATTERY MANUFACTURE'S SPECIFIC PRECAUTIONS SUCH AS REMOVING OR NOT REMOVING CELL CAPS WHILE CHARGING AND RECOMMENDED RATES OF CHARGE.
9) FOR A CHARGER HAVING AN OUTPUT VOLTAGE SELECTOR SWITCH, REFER TO THE CAR OWNER'S MANUAL IN ORDER TO DETERMINE THE VOLTAGE OF THE BATTERY AND TO MAKE SURE THE OUTPUT VOLTAGE IS SET AT THE CORRECT VOLTAGE. IF AN OUTPUT VOLTAGE SELECTOR SWITCH IS NOT PROVIDED, DO NOT USE THE BATTERY CHARGER UNLESS THE BATTERY VOLTAGE MATCHES THE OUTPUT VOLTAGE RATING OF THE CHARGER.
10) NEVER PLACE THE CHARGER DIRECTLY ABOVE THE BATTERY BEING CHARGED; GASES OR FLUIDS FROM THE BATTERY WILL CORRODE AND DAMAGE THE CHARGER. LOCATE THE CHARGER AS FAR AWAY FROM THE BATTERY AS THE DC CABLES PERMIT.
11) DO NOT OPERATE CHARGER IN A CLOSED-IN AREA OR RESTRICT VENTILATION IN ANY WAY.
12) CONNECT AND DISCONNECT DC OUTPUT CLIPS ONLY AFTER SETTING ANY CHARGER SWITCHES TO THE OFF POSITION AND REMOVING AC CORD FROM THE ELECTRIC OUTLET. NEVER ALLOW CLIPS TO TOUCH EACH OTHER.
13) FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR A BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR A BATTERY:
    a. POSITION AC AND DC CORDS 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. A POSITIVE (POS, P, +) POST USUALLY HAS A LARGER DIAMETER THAN A NEGATIVE (NEG, N, -) POST;
d. DETERMINE WHICH POST OF THE BATTERY IS GROUNDED (CONNECTED) TO THE CHASSIS. IF NEGATIVE POST IS GROUNDED TO CHASSIS (AS IN MOST VEHICLES), SEE ITEM (e). IF POSITIVE POST IS GROUNDED TO THE CHASSIS, SEE ITEM (f);
e. FOR A NEGATIVE-GROUNDED VEHICLE, CONNECT THE POSITIVE (RED) CLIP FROM BATTERY CHARGER TO POSITIVE (POS, P, +) UNGROUNDED POST OF BATTERY. CONNECT THE 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;
f. FOR A POSITIVE-GROUNDED VEHICLE, CONNECT THE NEGATIVE (BLACK) CLIP FROM THE BATTERY CHARGER TO THE NEGATIVE (NEG, N, -) UNGROUNDED POST OF BATTERY. CONNECT THE 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;
g. CONNECT CHARGER AC SUPPLY CORD TO ELECTRIC OUTLET; AND
h. WHEN DISCONNECTING CHARGER, TURN SWITCHES TO OFF, DISCONNECT AC CORD, REMOVE CLIP FROM VEHICLE CHASSIS, AND THEN REMOVE CLIP FROM BATTERY TERMINAL.

14) FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
a. CHECK POLARITY OF BATTERY POST. A POSITIVE (POS, P, +) BATTERY POST USUALLY HAS A LARGER DIAMETER THAN A NEGATIVE (NEG, N, -) POST;
b. ATTACH AT LEAST A 60 CM 6-GAUGE (AWG) INSULATED BATTERY CABLE TO A NEGATIVE (NEG, N, -) BATTERY POST;
c. CONNECT THE POSITIVE (RED) CHARGER CLIP TO THE POSITIVE (POS, P, +) POST OF BATTERY;
d. POSITION YOURSELF AND THE FREE END OF CABLE AS FAR AWAY FROM BATTERY AS POSSIBLE, THEN CONNECT THE NEGATIVE (BLACK) CHARGER CLIP TO FREE END OF CABLE;
e. DO NOT FACE BATTERY WHEN MAKING FINAL CONNECTION;
f. CONNECT CHARGER AC SUPPLY CORD TO ELECTRICAL OUTLET; AND
g. WHEN DISCONNECTING CHARGER, ALWAYS DO SO IN REVERSE SEQUENCE OF CONNECTING PROCEDURE AND BREAK FIRST CONNECTION WHILE STANDING AS FAR AWAY AS FROM BATTERY AS PRACTICAL.

15) USE OF AN ADAPTER IS NOT ALLOWED IN CANADA. IF A GROUNDING TYPE RECEPTACLE IS NOT AVAILABLE, DO NOT USE APPLIANCE UNTIL THE PROPER OUTLET IS INSTALLED BY A QUALIFIED ELECTRICIAN.