

Auto-Trol® Limited

1660 SW 196th Avenue * Aloha, OR 97003

Model AT-1000 Installation Instructions

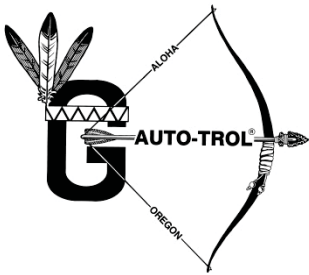
The model **AT-1000 Auto-Trol®** Battery Charger Control extends battery life reduces maintenance power by replacing existing timers on all makes of battery chargers so that the battery always becomes fully charged, without being overcharged, each recharge cycle.

The AT-1000 - includes all of the following desirable control features:

1. **Battery Cells 6, 12 (Factory Default) 18, 24, 32, 36, 48, and 64:** You will need to decide which cell battery to choose for your current application. For other Battery Cell Counts (6 to 72 cells) contact Auto-Trol Limited.
2. **Timer Trip Voltage Adjustment:** This feature allows the control board to be matched to differing battery/charger combinations. You can choose between **2.37V (Factory Default)**, 2.42V, 2.45V per cell.
3. **Overvoltage Shutdown (OVS):** Prevents overcharging due to charger malfunction. The OVS feature shuts off the charger immediately if the preset voltage level is reached at any time during the recharge cycle so the battery is not damaged. Overvoltage option points are 2.55V, 2.60V, 2.65V, **2.70V (Factory Default)** per cell.
4. **Auto-Equalize:** Battery manufacturer recommend that the battery be “equalized” periodically. When **ENABLED**, the Auto-Equalize feature performs the “equalize” charging at selected intervals of 8, 16, 32, or 64 recharge cycles.
Manual Equalize Only (Factory Default).
5. **Delayed Start:** Save on your power costs just by having the battery charge in non-peak power times such as 9pm at night. The Delayed Start feature option points are **12 seconds (Factory Default)**, 45min, 90min, 180min, 360min.
6. **Spike Charge Limiting:** This feature limits the charging of a fully charged battery to 22 minutes or less. This feature is bypassed during the equalize mode.
7. **Time Retention Latch (TRL) OPTION:** This OPTION is primarily used when power management systems are present. This feature retains elapsed charge time if AC power is lost during the charging process.
8. **Battery Watering System Control OPTION available.** Aux Relay contacts configured to close during the last 15 minutes of charging.
9. **Red, Green & Yellow LED Indicators** reflect the current status of the control board.
 - a. Delay Start Timing => Slow OFF/ON Blink RED
 - b. Charging ON – Below Trip Voltage => GREEN ON – Above Trip Voltage => Slow ON/DIM Blink GREEN- Last 15 Minutes of Charge => Rapid ON/DIM Blink GREEN
 - c. Charging Complete => RED ON & Slow OFF/DIM Blink GREEN
 - d. Equalize Cycle => YELLOW ON
 - e. Backup 13 hour timer Timeout => Rapid Blink RED & Slow OFF/DIM Blink GREEN
 - f. Under/Over-Voltage Alarm Faults => Rapid Blink RED

Express Warranty

This product is warranted to be free of defects in material and workmanship under normal use for a period of one year. If defective product is encountered, return it for replacement free of charge. This Express Warranty is in lieu of any other warranty, express, implied or statutory, including without limitation, any warranty of fitness or merchantability. The sole liability of the manufacturer under this warranty is limited to replacing the defective product. This warranty shall not apply to any product which has been damaged by improper usage, accident, neglect, alteration or abuse. The liability of the manufacturer is limited solely to replacing the defective product. In no event shall the manufacturer be liable for special or consequential damages to any buyer, user or other person.



Auto-Trol® Model AT-1000

Installation Instructions

1. **Disconnect** or **turn off** AC power to battery charger.
2. Verify that the charger has an AC power contactor. If it does not have one, an AC power contactor (P&B model#PRD7AYO-XXX or equivalent) must be installed.
3. Remove existing timer.
4. Use **TEMPLATE** to locate and drill 5 holes, then mount the Auto-Trol®.

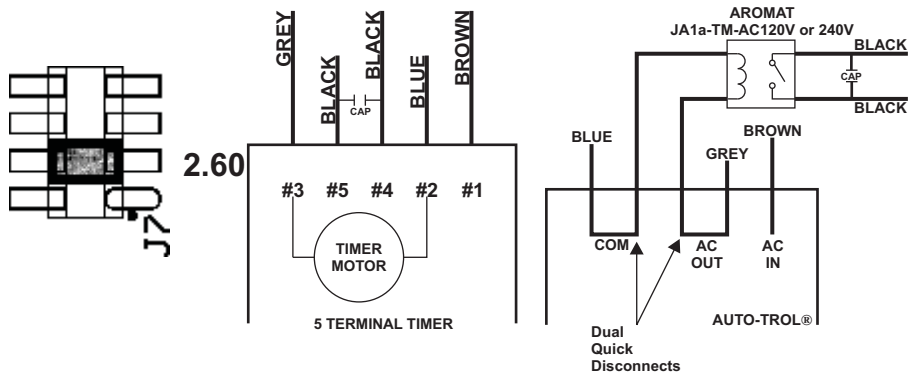
La Marche A45 Series (5 Terminal type)

5. Configure J7 for 2.60 volts per cell:
6. Connect wires as follows:

<u>Timer Terminal</u>	<u>Wire Color</u>	<u>Auto-Trol® Terminal</u>
#1	Brown	AC IN
#2	Blue	Com
#3	Grey	AC Out
#4 & 5	Black	Aux Contactor

with orange capacitor

7. Install the auxiliary contactor above the Auto-Trol® and connect the wires as illustrated.
8. Connect wires from the Auto-Trol® to DC output: Red to Positive (+), Black to Negative (-).

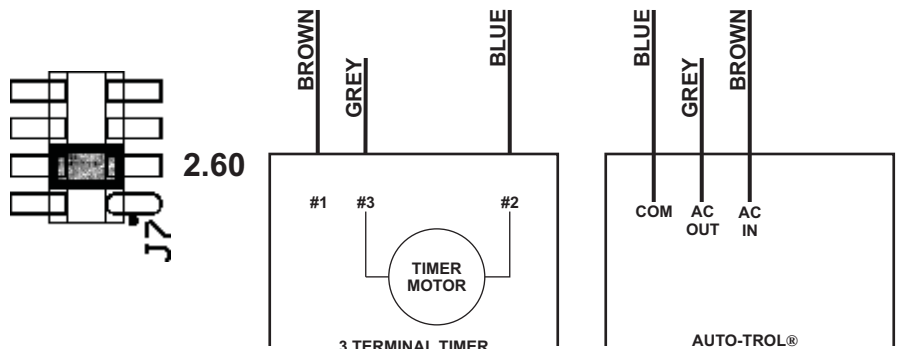


La Marche A7 & A45 Series (3 Terminal type)

5. Configure J7 for 2.60 volts per cell:
6. Connect wires as follows:

<u>Timer Terminal</u>	<u>Wire Color</u>	<u>Auto-Trol® Terminal</u>
#1	Brown	AC IN
#2	Blue	COM
#3	Grey	AC Out

7. Connect wires from the Auto-Trol® to DC output: Red to Positive (+), Black to Negative (-).

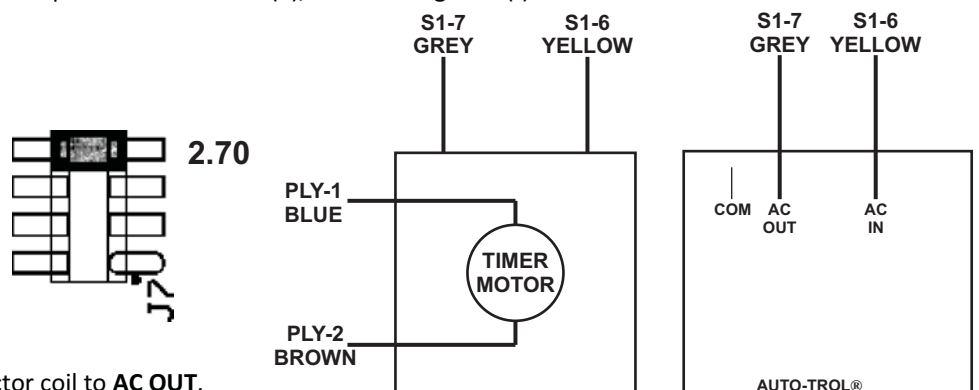


GBC/Hertner Model TF/3F

5. Configure J7 for 2.70 volts per cell:
6. Connect wires as follows:

- a. Disconnect and tape off wires Ply-1 (Blue) and Ply-2 (Brown) going to the timer motor.
- b. Connect wire S1-6 (Yellow) from AC Line (L3) to **AC IN**.
- c. Connect wire S1-7 (Grey) from contactor coil to **AC OUT**.

7. Connect leads from the Auto-Trol® to DVC output terminals: Red to Positive (+), Black to Negative (-)



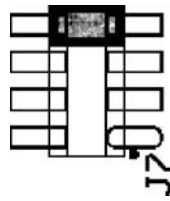
Hobert, Gould, Hester, Ferro – Resonant

5. Configure J7 for 2.70 volts per cell:

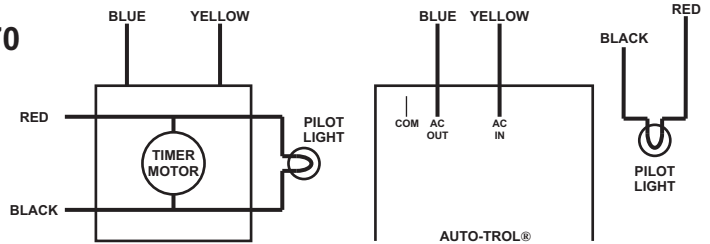
6. Connect wires as follows:

- a. YELLOW wire (from AC line) to **AC IN**.
- b. BLUE wire (from contactor) to **AC OUT**.
- c. Connect RED wire from charger and PILOT LIGHT together and insulate.
- d. Connect BLACK wire from charger and PILOT LIGHT together and insulate.

7. Connect wires from the Auto-Trol® to DC output: RED to Positive (+), BLACK to Negative (-).



2.70



Chloride, Crusader, Ferro – Resonant

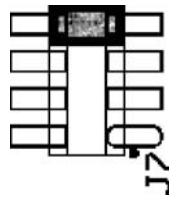
(Excide & Pacific Ferromate similar)

5. Configure J7 for 2.70 volts per cell:

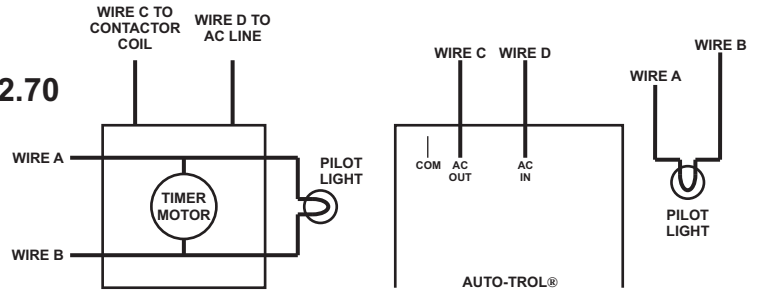
6. Connect wires as follows:

- a. Wire D (from AC line) to **AC IN**.
- b. Wire C (from contactor) to **AC OUT**.
- c. Connect wire A and PILOT LIGHT together and insulate.
- d. Connect wire B and PILOT LIGHT together and insulate.

7. Connect wires from the Auto-Trol® to DC output: RED to Positive (+), BLACK to Negative (-).



2.70



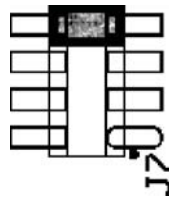
C&D Auto-Reg

5. Configure J7 for 2.70 volts per cell:

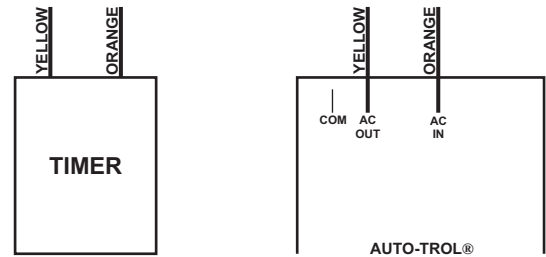
6. Connect wires as follows:

- a. YELLOW wire (from contactor coil) to **AC OUT**.
- b. ORANGE wire (from AC line) to **AUX**.

7. Connect wires from the Auto-Trol® to DC output: RED to Positive (+), BLACK to Negative (-).



2.70



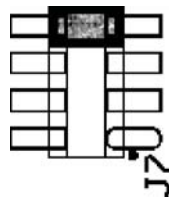
C&D Auto-Reg FR Series (with 24vac control)

5. Configure J7 for 2.70 volts per cell:

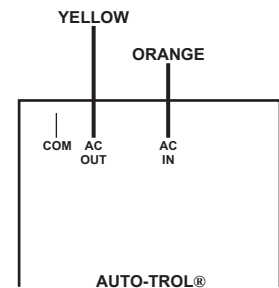
6. Connect wires as follows:

- a. YELLOW wire (from contactor coil) to **AC OUT**.
- b. ORANGE wire (from control transformer) to **AC IN**.

7. Connect wires from the Auto-Trol® to DC output: RED to Positive (+), BLACK to Negative (-).

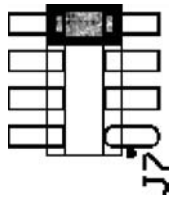


2.70



IBE CVC Series

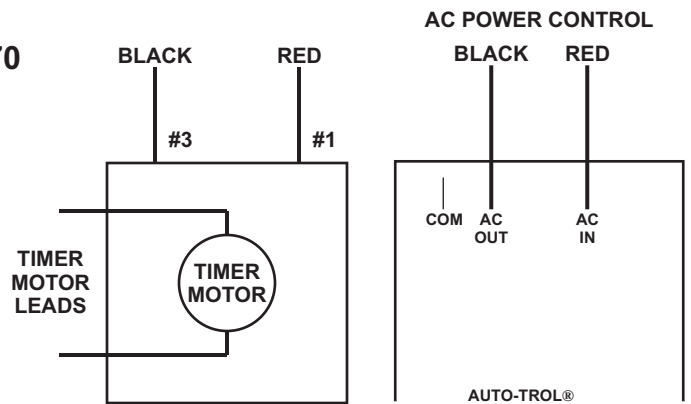
5. Configure J7 for 2.70 volts per cell:



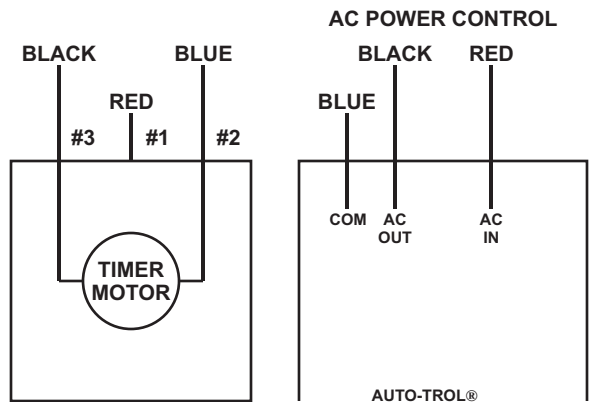
6. The charger **MUST** have AC contactor or magnetic switch (some models do not). If the charger does **NOT** have one, then a contactor must be installed to handle the main AC power.

7. Connect wires from the Auto-Trol® to DC output terminals:
RED to Positive (+), BLACK to Negative (-).

2.70

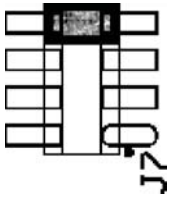


Timer Motor common to AC Control circuit



Motor Appliance Corp. (Mac) Chargers

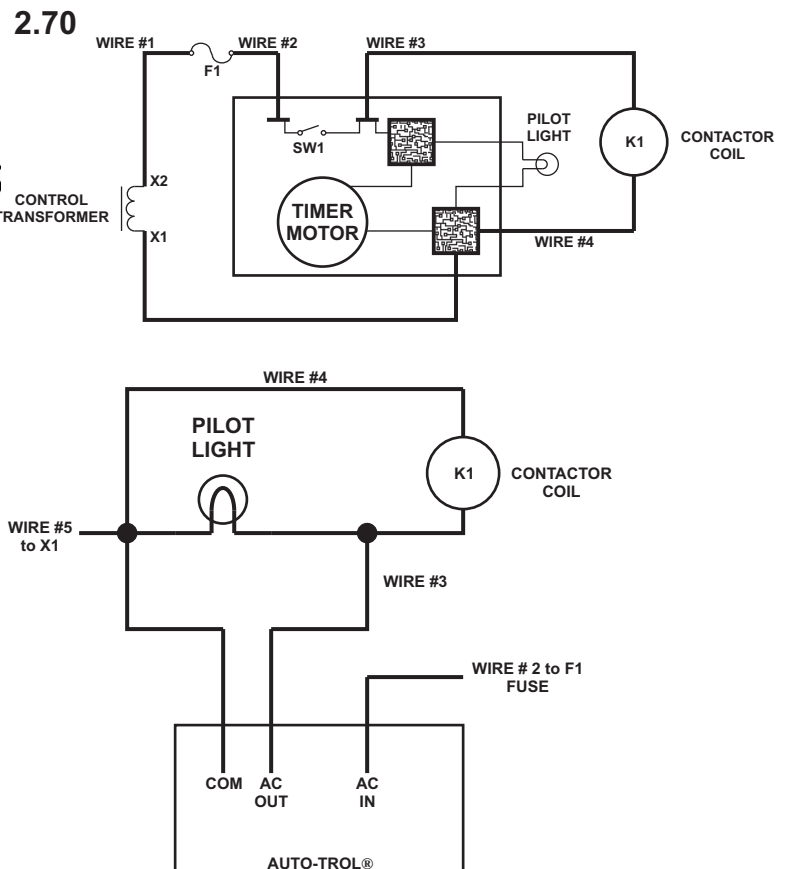
5. Configure J7 for 2.70 volts per cell:



6. Connect wires as follows:

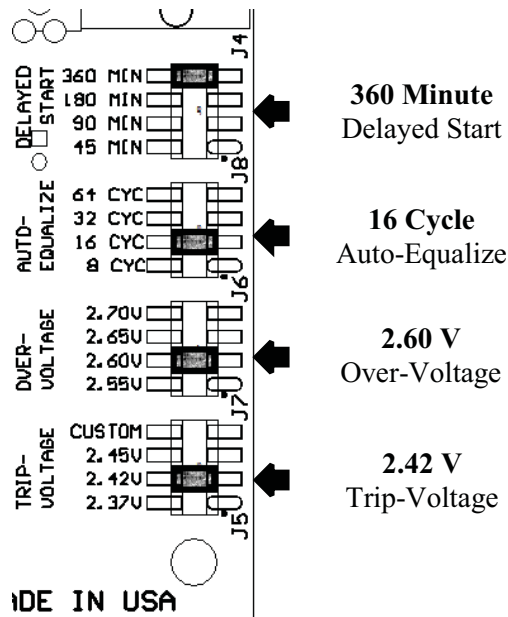
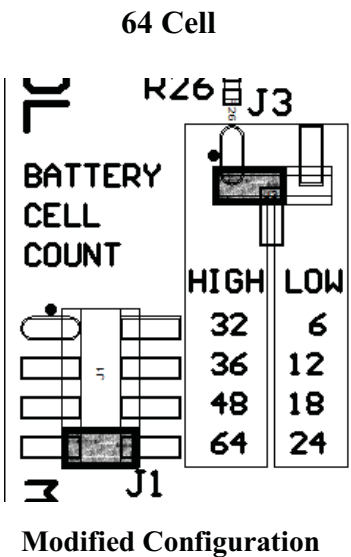
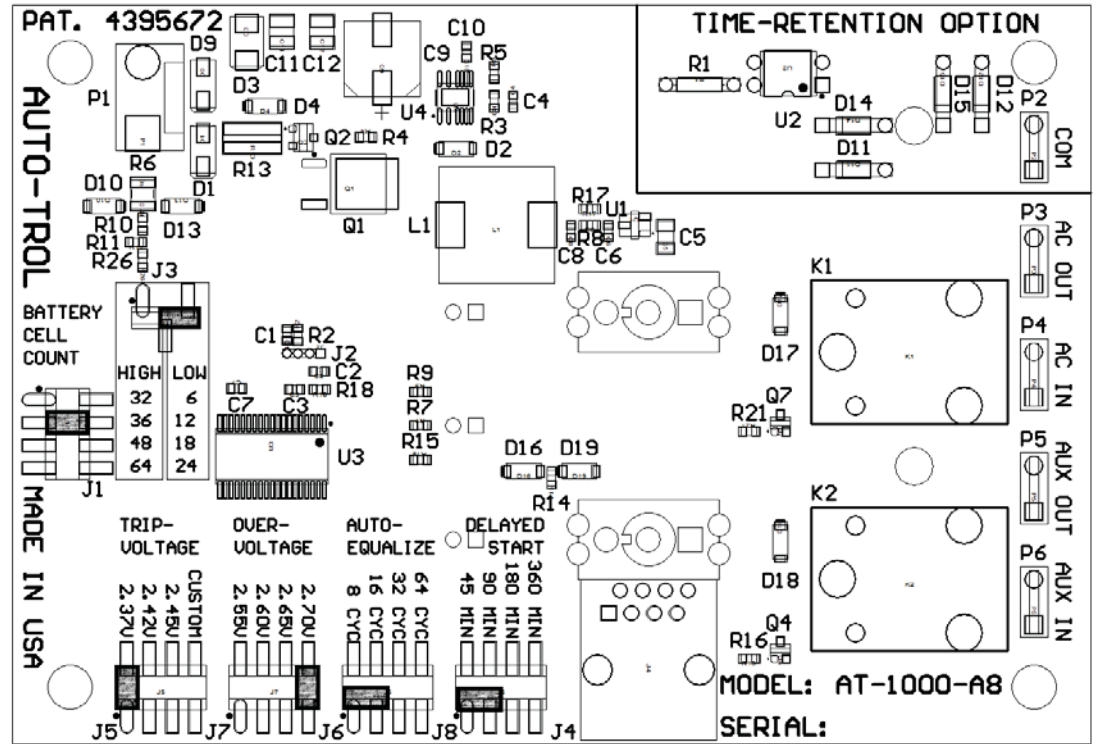
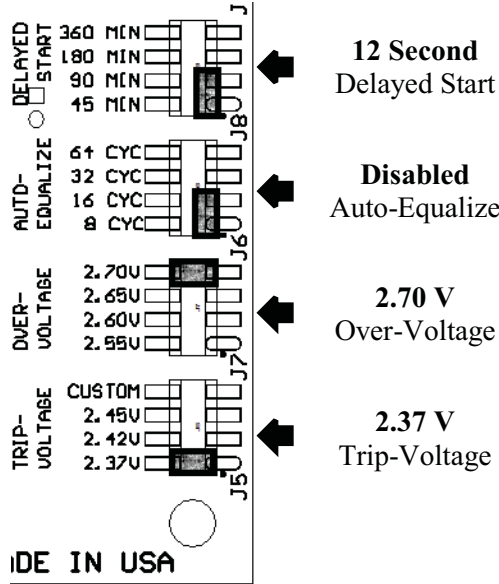
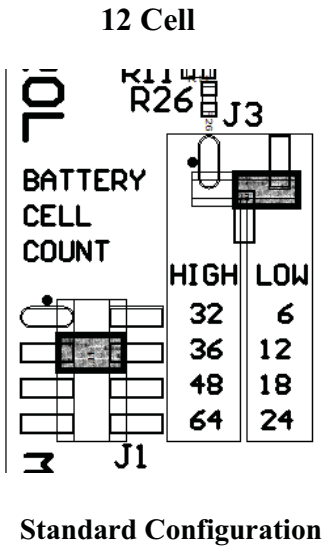
- Wire #2 (from fused side of Control Transformer X2) to **AC IN**.
- Splice Wire #3 (from Contactor Coil K1) and PILOT LIGHT lead together and connect to **AC OUT**.
- Splice Wire #4 (from Contactor Coil K1), PILOT LIGHT Lead, and Wire #5 (from Control Transformer X1) together and connect to **COM**.

7. Connect wires from the Auto-Trol® to DC output terminals: RED to Positive (+), BLACK to Negative (-).





AT-1000 Special Feature Adjustment

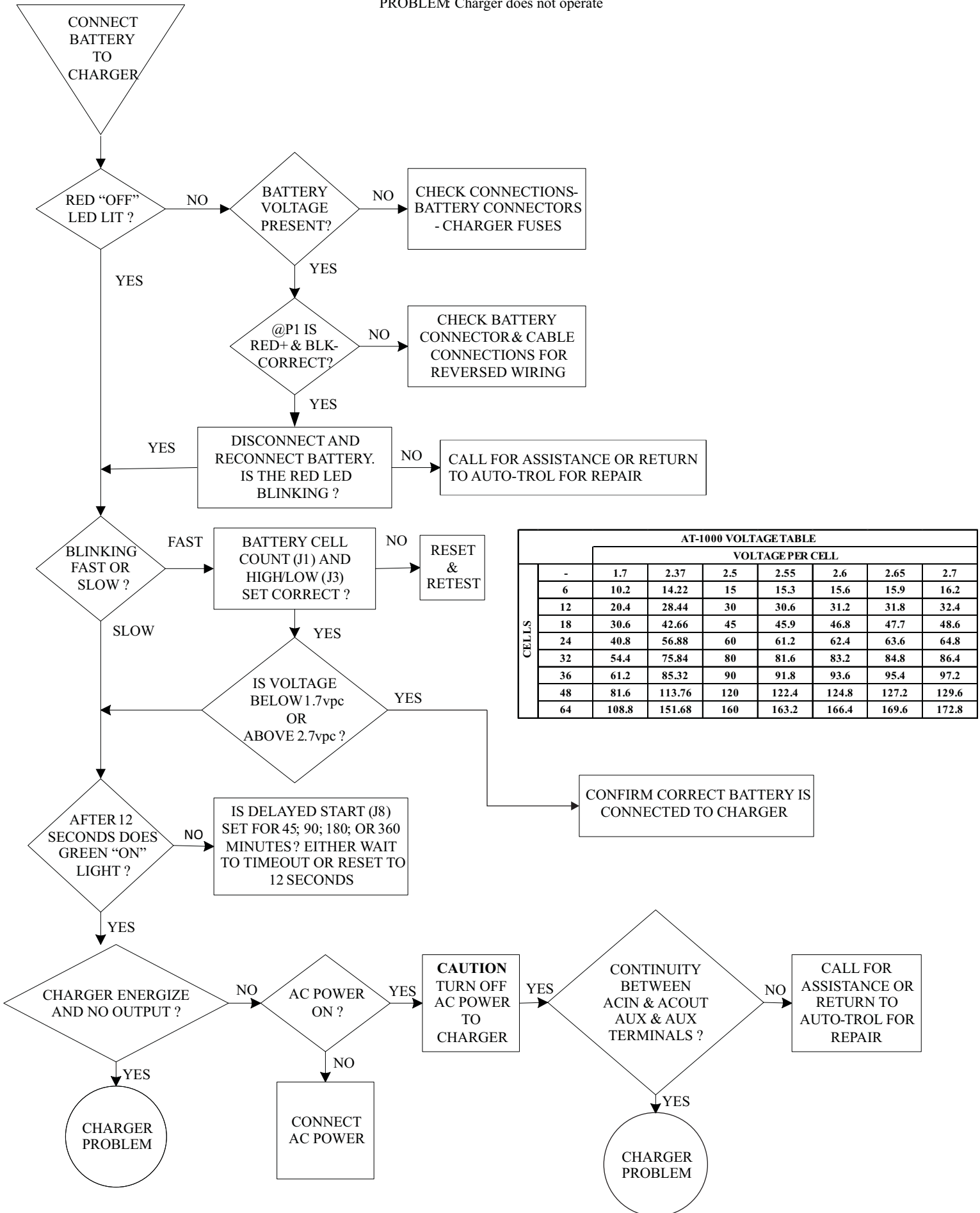


AT-1000-A8 Battery Cell Count Jumper Table

Battery Cell Count	# of Jumpers	Jumper Position (s)	Range Selector High/Low
6	1	6	Low
12	1	12	Low
18	1	18	Low
24	1	24	Low
32	1	32	High
36	1	36	High
48	1	48	High
64	1	64	High

AUTO-TROL AT -1000 TESTING INSTRUCTIONS

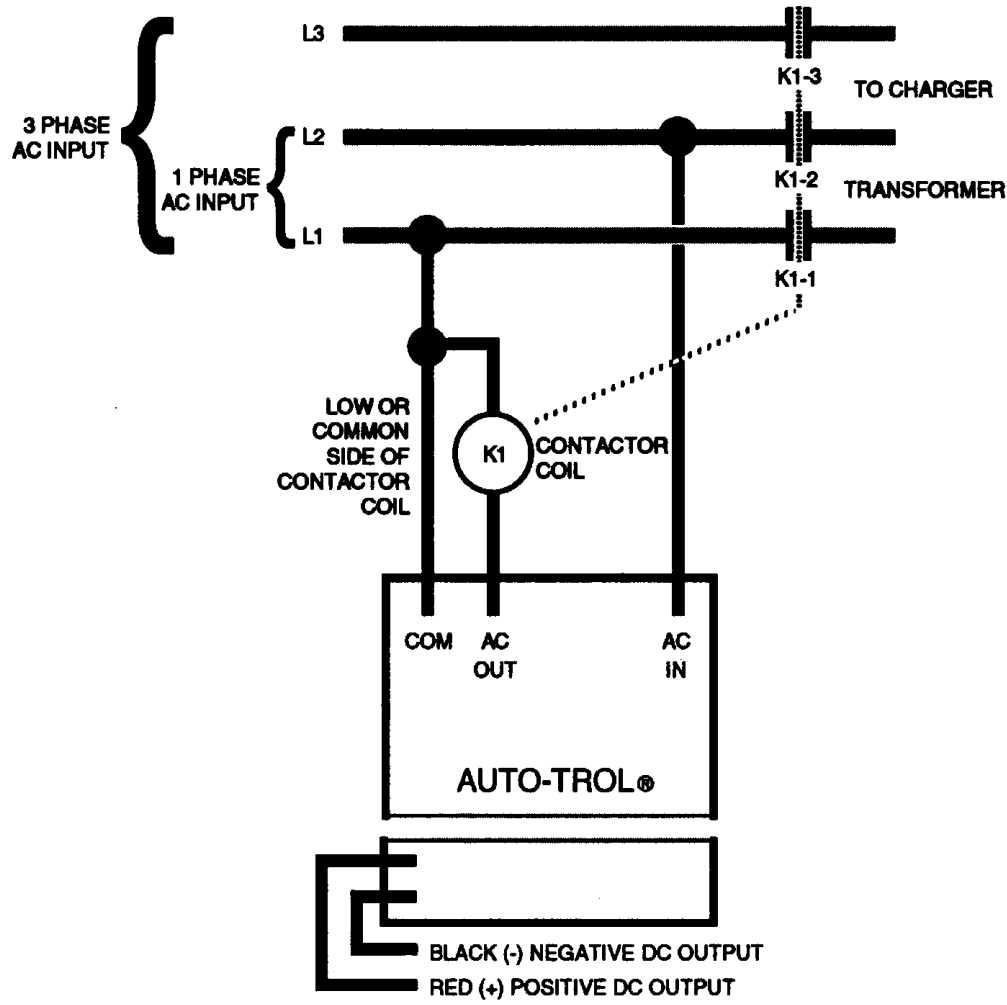
PROBLEM: Charger does not operate



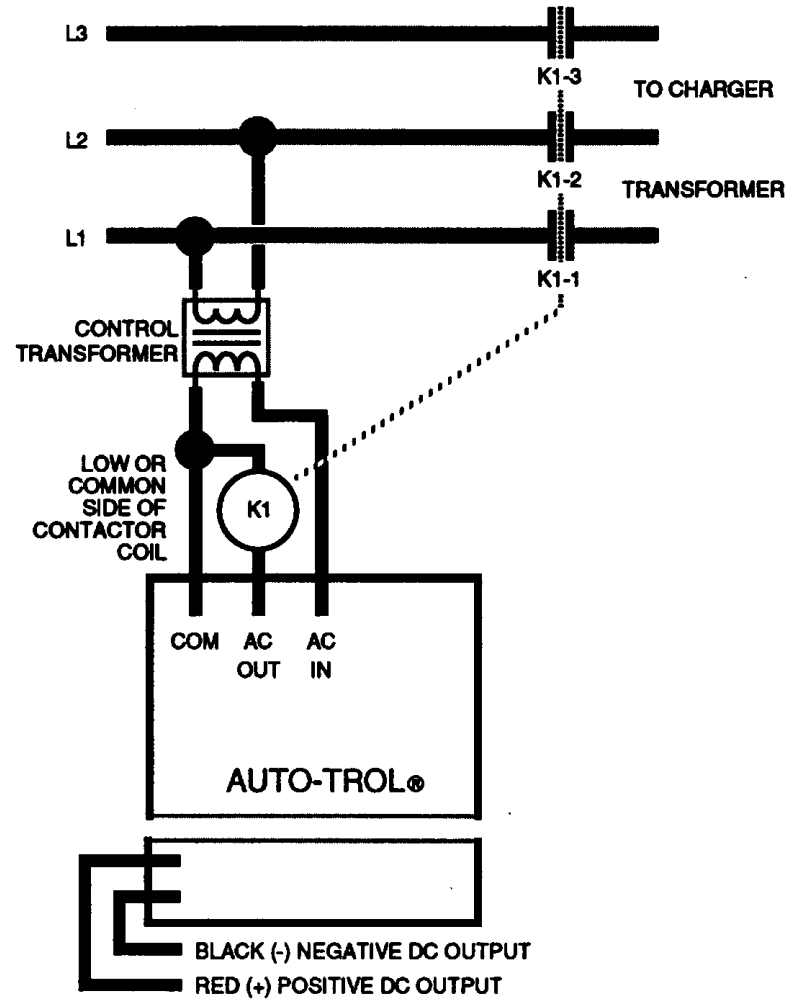
AT-1000 VOLTAGE TABLE								
CELLS	VOLTAGE PER CELL							
	-	1.7	2.37	2.5	2.55	2.6	2.65	2.7
6	10.2	14.22	15	15.3	15.6	15.9	16.2	
12	20.4	28.44	30	30.6	31.2	31.8	32.4	
18	30.6	42.66	45	45.9	46.8	47.7	48.6	
24	40.8	56.88	60	61.2	62.4	63.6	64.8	
32	54.4	75.84	80	81.6	83.2	84.8	86.4	
36	61.2	85.32	90	91.8	93.6	95.4	97.2	
48	81.6	113.76	120	122.4	124.8	127.2	129.6	
64	108.8	151.68	160	163.2	166.4	169.6	172.8	

TYPICAL SCHEMATIC INSTALLATION

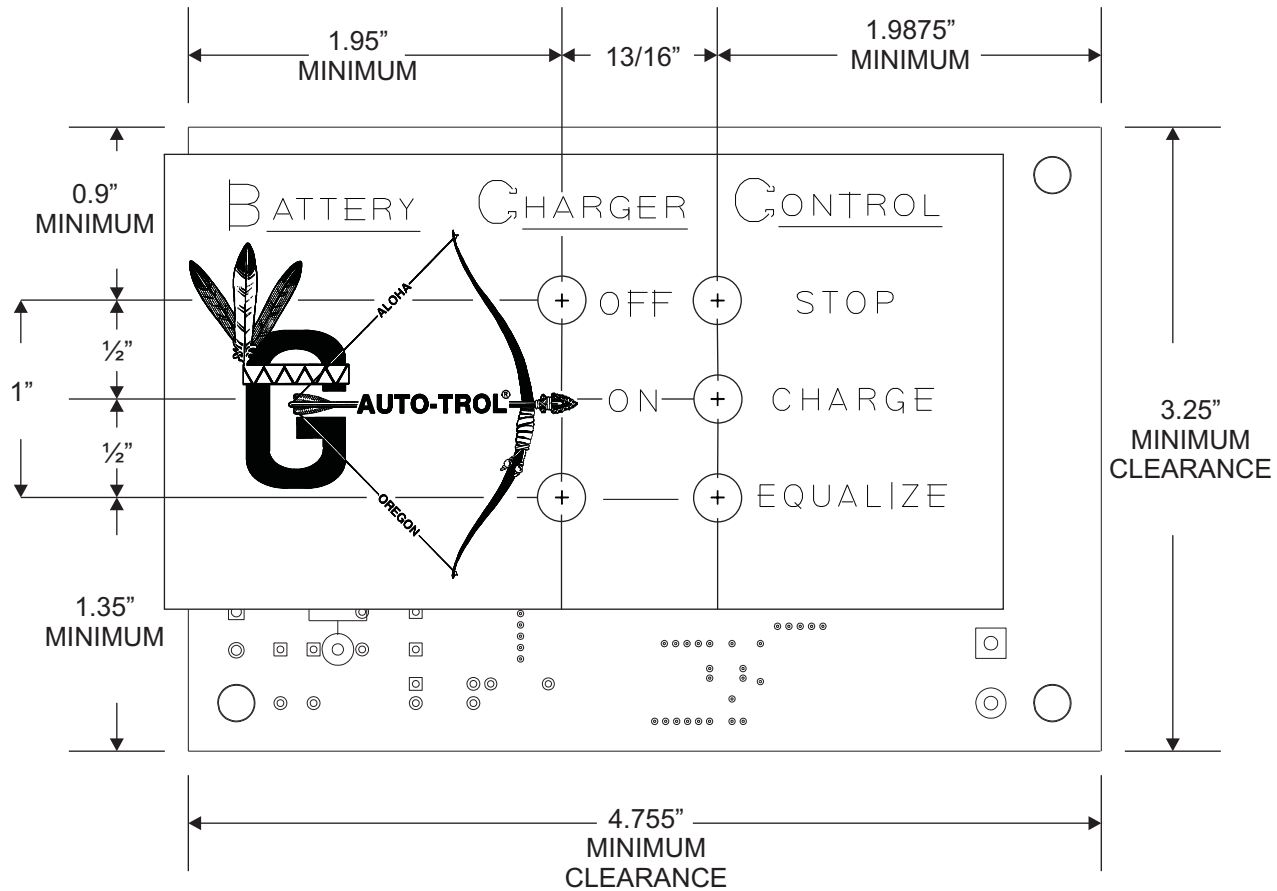
WITHOUT A CONTROL TRANSFORMER



WITH A CONTROL TRANSFORMER

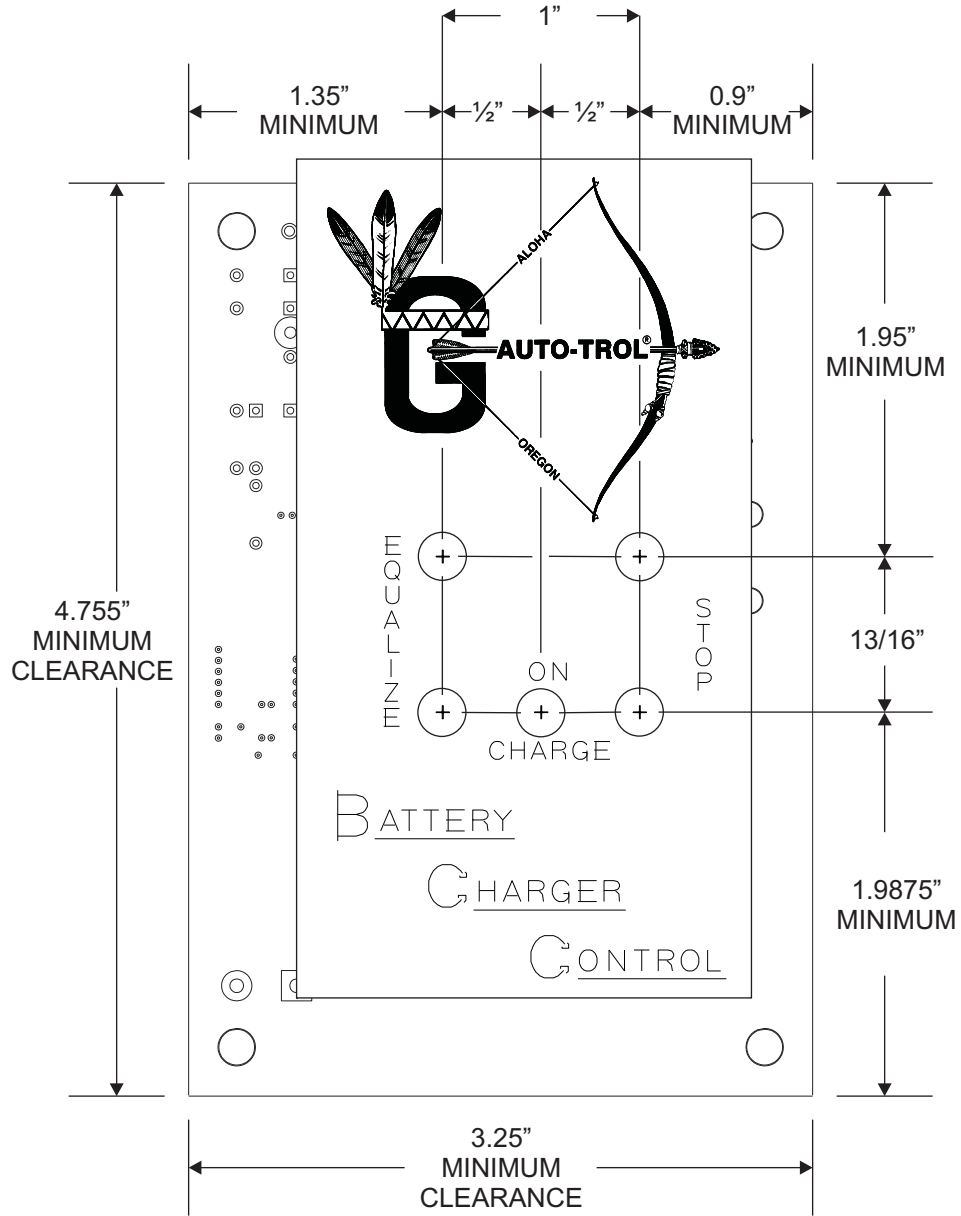


AUTO-TROL® MODEL AT-1000-A8 FRONT PANEL MOUNTING TEMPLATE



DRILL FIVE (5) HOLES - 1/4 in. (0.25) DIAMETER

AUTO-TROL® MODEL AT-1000-A8 FRONT PANEL MOUNTING TEMPLATE



DRILL FIVE (5) HOLES - 1/4 in. (0.25) DIAMETER