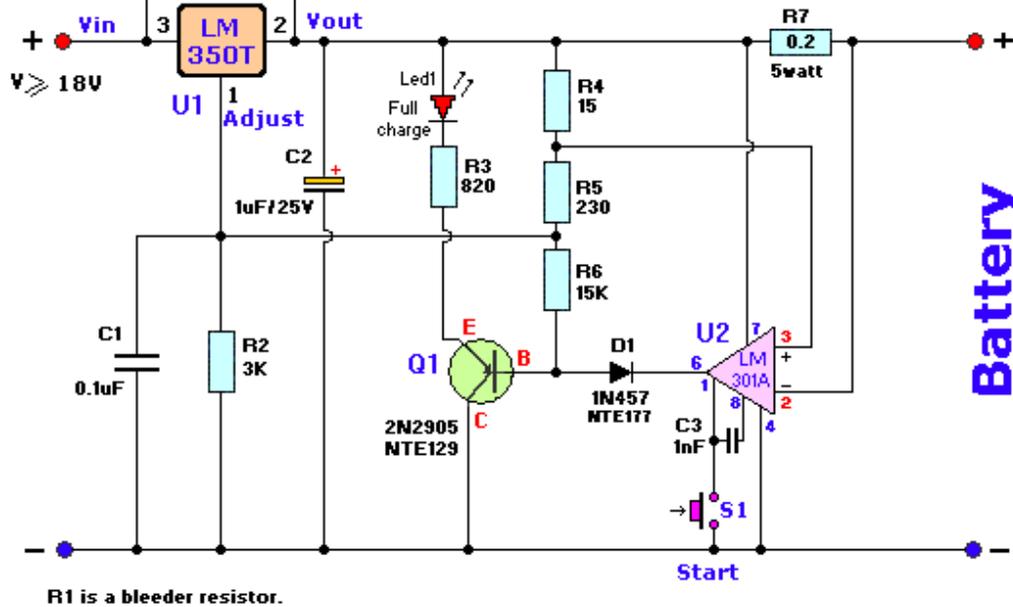


Gelled Lead Acid Battery Charger

<http://www.uoguelph.ca/~antoon>



Parts List:

All resistors are carbon, 1/4 watt, 5% tolerance, unless otherwise indicated.

R1 = 500 ohm	C1 = 0.1µF (100nF), ceramic	U1 = LM350T
R2 = 3K	C2 = 1µF/25 volt	U2 = LM301A
R3 = 820 ohm	C3 = 1000pF (1nF), ceramic	S1 =
Pushbutton switch (normally-open)		
R4 = 15 ohm	D1 = 1N457 (or equiv.)	
R5 = 230 ohm	Led1 = Red, 5mm, ultra-bright	
R6 = 15K	T1 = 2N2905	
R7 = 0.2 ohm, 5W, WW		

This high-performance circuit first quickly starts (and holds) the charge at 2 amp, but as the voltage rises the current will consequently decrease.

When the current falls below 150mA, the charger automatically switches to a lower 'Float' voltage to prevent overcharging.

At the point that a full charge is reached, T1 will bias and the LED will light.

The [LM301A](#) is a 8-pin OpAmp. Transistor T1 is a PNP, Silicon, AF-Out type with a TO-39 metal case and can be substituted for a NTE or ECG129. Diode D1, a Si, GP Det. type, can be substituted with a NTE177 or ECG177. The [LM350 \(U1\)](#) needs to be cooled. The input voltage should equal or about 18volts.

R1's function is to bleed some of the input voltage to the output and vice-versa. A 1N4002 or similar diode can be used also.

R2 & R5 are actually metal-film type resistors but carbon is okay to use. To get the 3K for R2 use two 1K5 (1500 ohm) resistors in series. For R5 use two 470 ohm resistors in parallel. Or whatever combination to get to these values. For R1, 500 ohm, you can use

two 1K in parallel or 470 + 33 ohms in series.

R7, the 0.2 ohm resistor, is a 5 watt wire-wound type. Do **not** use the standard carbon type.

S1 is a subminiature pushbutton switch, normally open. I received a couple emails in regards to this switch. I thought the diagram was pretty clear. It shows an 'open' switch with the arrow indicating a 'momentary' connection when pushed. Nothing out of the ordinary here folks and a standard symbol for electronics...

When the start switch is pushed, the output of the charger goes to 14.5 V. As the battery approaches full charge, the charging current decreases and the output voltage is reduced from 14.5V to about 12.5V, terminating the charging process. Transistor T1 then lights the led as a visual indication of a full charge.

