

## Honda VTX Speedometer Backlight Modification (by Jim-Eye)

- 1) Disconnect speedometer wiring assembly (tank remains on bike)
  - a. Remove rubber housing (simply pull or work back) – Right side, front, underneath tank.



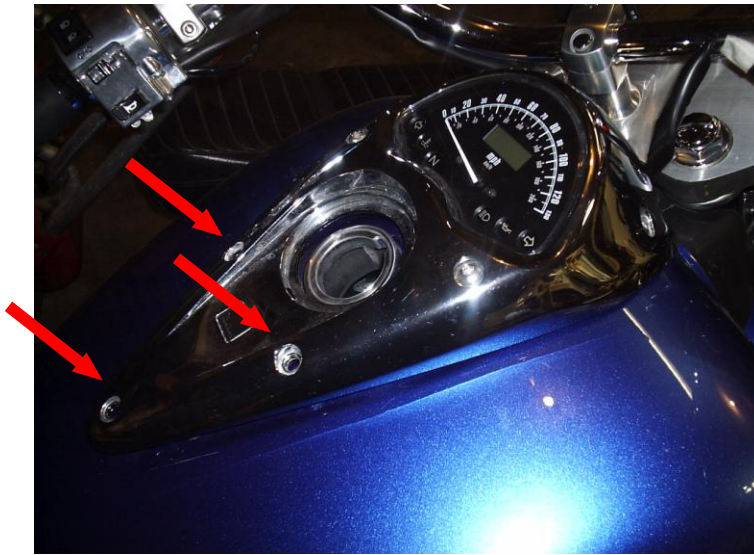
Right front sparkplug cover / cylinder trim

- b. Disconnect two (2) small green connectors. Use small (eyeglasses sized) screwdriver to release catch

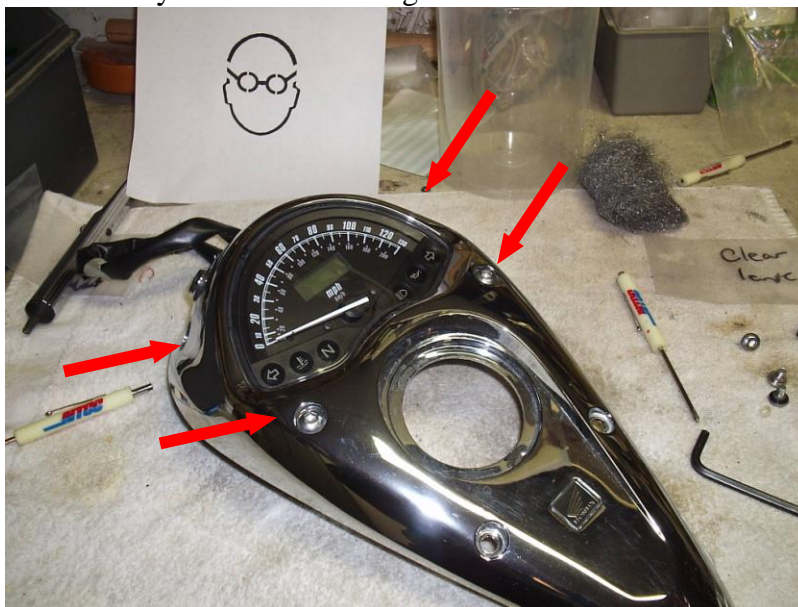


- c. Work wiring harness out behind tank support, bend flexible tab/finger on underside of tank

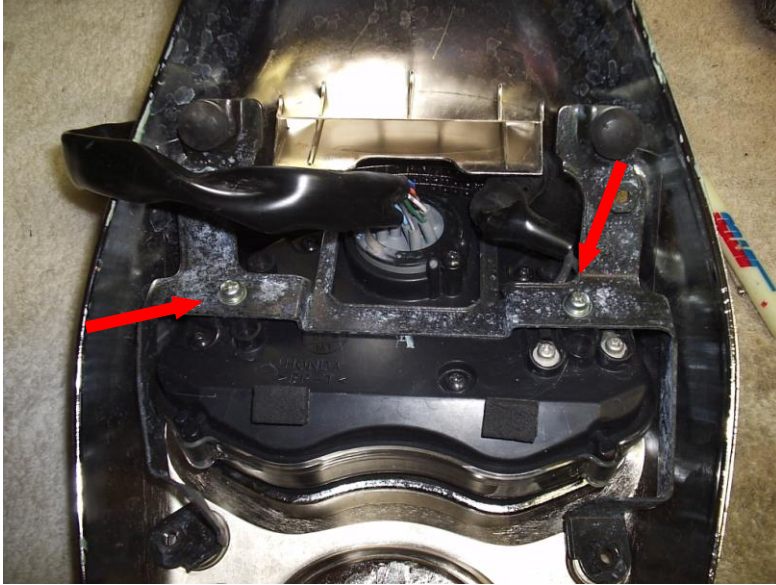
- 2) Remove three (3) screws holding chrome speedometer assembly (lower three – closest to rider). Remove gas cap, lift rear of assembly up over gas neck and then entire assembly forward. **Replace gas cap.**



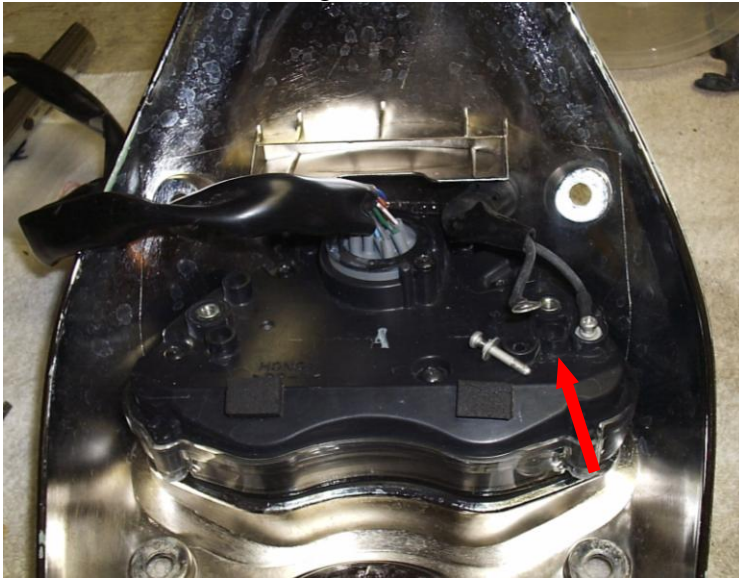
- 3) Moving to work bench, remove remaining four (4) screws holding speedometer assembly to chrome housing.



- 4) Remove two (2) short silver screws – separate speedometer assembly from bracket.



5) Remove two (2) long thin silver screws – reset switch wires



6) Remove speedometer assembly from chrome housing.

7) Remove two (2) black screws from wiring collar ring, push grey rubber seal through opening (free it from seal)



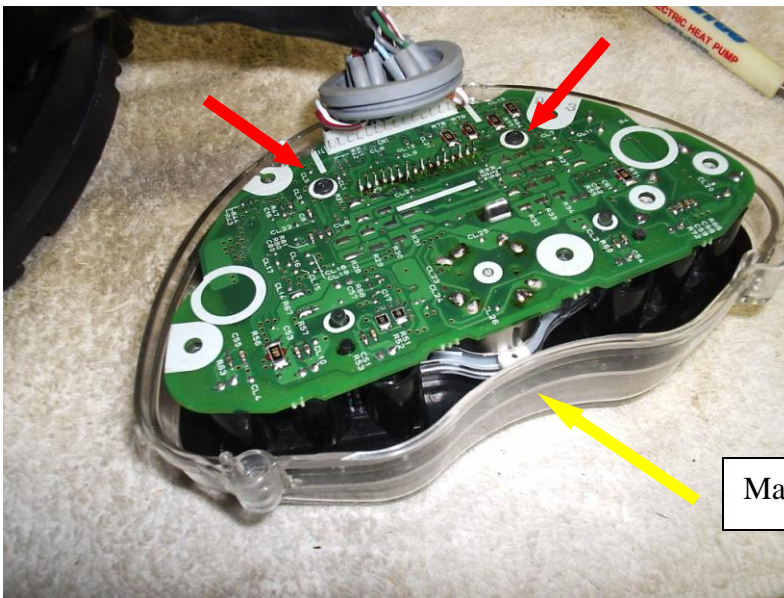
8) Remove four (4) black screws, remove back of speedometer assembly.



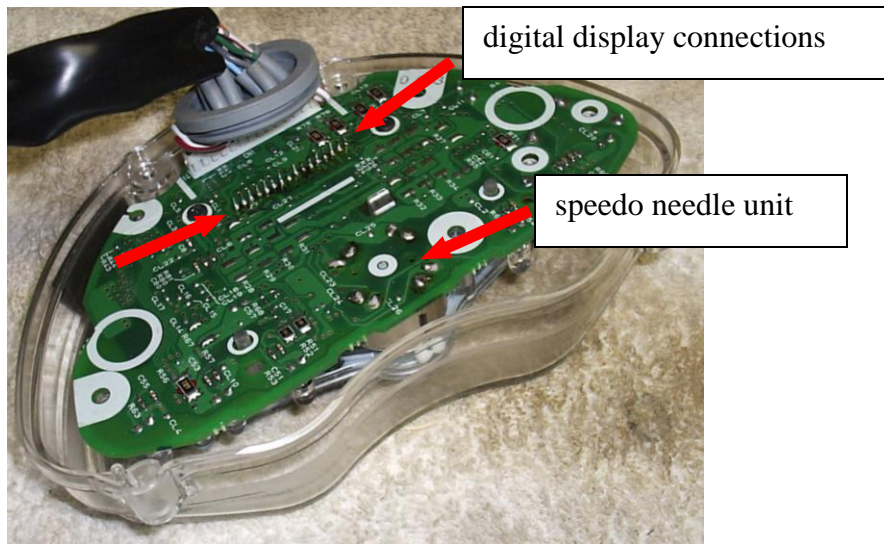
9) Remove four (4) black screws, white washers from speedometer assembly faceplate.



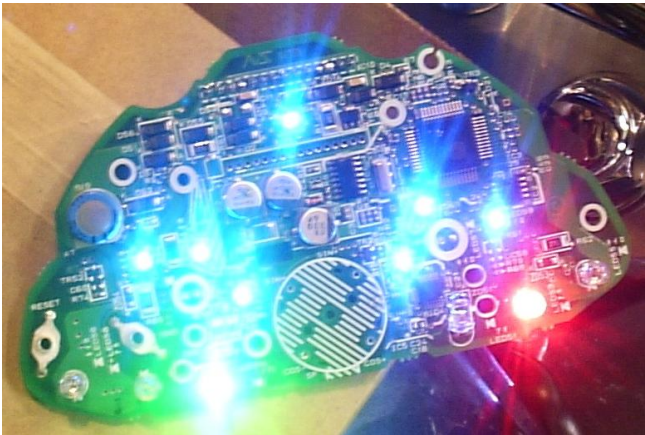
- 10) Remove face plate, store in a non-abrasive area (soft plastic?)
- 11) Remove two (2) small black screws from back of circuit board.



- 12) Mark (magic marker) a stripe on speedometer needle motor
- 13) Unsolder speedometer motor pins (8), I used solder wick, straighten tabs



- 14) Unsolder digital readout pins (16 long row of pins in middle of board. Make sure pins are free, when they are, board will separate from display.
- 15) Mark original LEDs on non-solder side ( I used a red marker – to make sure you don't reuse the originals)
- 16) Unsolder the seven (7) LEDs. I used a hot air station at work to remove mine, this was very simple. I also tested using solder wick, and this also works. The hot air is quick; using wick will take a bit longer but works. (a hot air soldering station costs about \$600 – I do not own one)



(Sorry, I did not get a good photo of LED's on top side of board. They are small white squares, with corner notched for polarity. You can see by this photo where they are on the board.)

- 17) Verify placement, note that the notch in the LED is placed where the triangle is printed on the circuit board.
- 18) Use your soldering iron and flatten the solder at each LED trace to a smooth level.
- 19) Using soldering iron, 'tack' the first side of the LED to the solder pool. Then solder the other side, go back to the first and resolder the first tack.

- 20) When complete seven (7) LEDs replaced, put a towel or cardboard on tank, plug in unit and verify that LEDs work. If good, then reassemble unit in reverse order from disassembly.



- 21) Solder digital display, needle motor.  
22) Faceplate, back plate so that speedometer assembly complete.  
23) Attach switch wires, bracket, and mount to housing. Reattach housing to tank, while making sure wires are properly routed.  
24) Test and verify operation.  
25) Ride bike, display cool new backlight when ever opportunity presents.

#### NOTES:

- 1) A soldering iron with a very SMALL tip is required for soldering the surface mount components. The standard radio shack 25 watt iron does not look like it will work very well. I have a 35 watt Weller with interchangeable tips and I used the smallest tip you can get for the surface mount components.
- 2) A magnifying glass will be helpful. Checking the solder joints will require a magnifying glass and very good light. I'd suggest a combo unit, lighted magnifying glass. I used one at work, but a regular handheld magnifying glass and a mini-mag flashlight will work just fine.
- 3) I am pretty sure this mod will void portions of warranty.
- 4) I used Blue LED's from DigiKey, part # 516-1464-1-ND.

Part #'s: found on DigiKey catalog- Pg 2617

<http://dkc3.digikey.com/PDF/T091/P2617.pdf>

BLUE LED's: Digi Key # 516-1464-1-ND / Avago Technologies HSMN-A100-P00J1

GREEN Digi Key # 516-1463-1-ND / Avago Technologies HSMM-A100-S00J1

Rectangular Surface Mount LED's

SMD LEDs (3.2mm x 2.8mm) Standard PLCC Package

3.20mm x 2.80mm 3.4v 30 ma 120° viewing angle \$1.08 per unit

I am sure other colors can be found at different sources. Here are some other sources to check:

<http://www.oznium.com/plcc-2>

<http://www.newark.com/avago>

<http://www.newark.com/jsp/content/printCatalog.jsp?cat=c126&page=1271&display=single>

[http://www.led.net/markets/smt\\_index.htm](http://www.led.net/markets/smt_index.htm)

<http://www.ledtronics.com/products/ProductsDetails.aspx?WP=C397K1863>

<http://www.bivar.com/pdf/04opto31.pdf>

#### TIME ESTIMATE:

- 1) Housing removal (10 – 20 minutes)
- 2) speedometer assembly removal ( 10 – 20 minutes)
- 3) speedometer assembly disassembly / unsolder (20-30 minutes)
- 4) LED removal replacement (30 – 45 minutes)
- 5) speedometer assembly reassemble / solder (20-30 minutes)
- 6) speedometer assembly replacement ( 10 – 20 minutes)
- 7) Housing replacement (10 – 20 minutes)

Total time estimate: between 1 ½ hours to 3 hours (but plan on 6 – better to go slow and be safe)

