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EVO: Engine Control - Sub-03b

95-03 VSS / Speedometer / TSM - Various Signals

This is the source thread in the XLForum -

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-electrical/sportster-motorcycle-lighting/175521-self-cancelling-indicator-wiring/page2?t=1883180>

Post#9 - IXL2Relax

The Pre-95 speedometer used a mechanical cable to drive it - It had a reed switch (internal) which was activated to ground on each revolution of the cable... The White/Green wire to the TSM was internally (in the TSM) pulled to a high state and the reed switch pulled it to ground.

The TSM did all the calculations internally to determine when to cancel the turn signals. The TSM is called the Turn Signal Canceller in the parts listing because that was the added function it brought to the table from the simple flasher unit used previously.

The 95+ electronic Speedo has more intelligence to interpret the VSS. The TSM part number changed that year as well.

Post#13 - Decman

The Speedo is different for a 883 vs a 1200 in those years 95-03 (maybe other years also) The sensor is timed off the 5th gear teeth in the tranny but the final drive pulley ratio is different. So the speedo has to account for that.

Post#14 - IXL2relax

the part numbers for speedos changed during each of 95/96/97 (and as you said, different between 883 & 1200) while the TSM was the same between 883 & 1200 so the Speedo probably did the signal conversion to create a standardized count to the TSM.

Post#16 -

From the Service Manual - TSM (1200 models): Check for voltage on W/G wire in connector [30B] while connected. Meter should alternate between 6-12VDC (from Turn Signal Module) and 0-1VDC when rear wheel is rotated.

For 883 TSM models, the troubleshooting section specifies 9-11VDC with the rear wheel stationary and 3-6VDC when the rear wheel is rotated faster than 3mph.

The TSM (or "Turn Signal Canceller" in the parts manual) is the same part number (68540-96) for all

models, as is the speed sensor, so the 883 speedometer seems to convert the sensor's voltage, but the TSM seems capable of dealing with different input voltage ranges - presumably it's just registering what is effectively an on/off square wave signal.

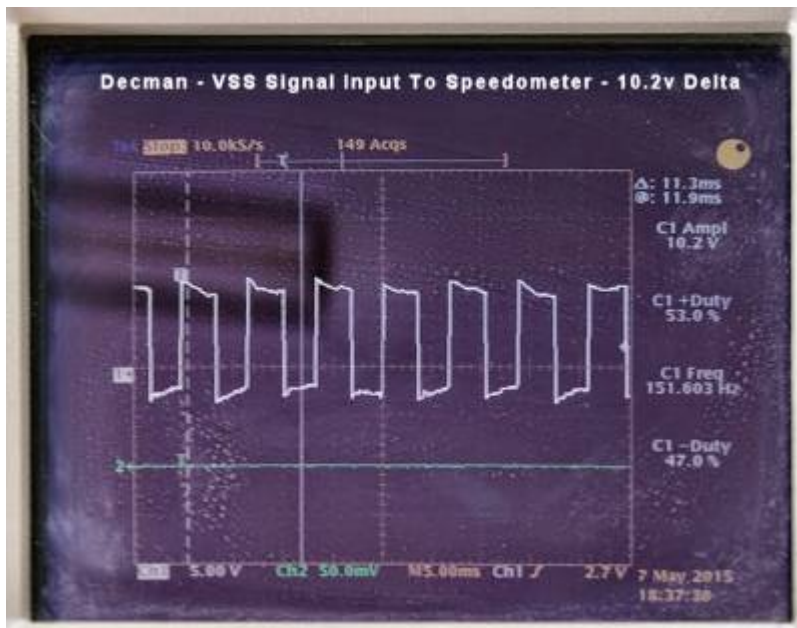
The Speedometer section says (of the VSS signal): Check for voltage on W wire in connector [65B] while connected. Meter should read 6-12VDC when gear tooth absent and 0-1VDC when the gear tooth is present.

Post#20 - Decman

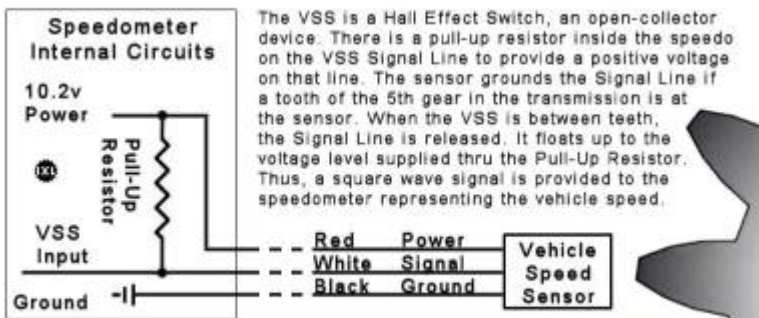
I had the bike on the lift in first gear with no throttle (idle) so the speed was low and varied some.

The speedo output (WHITE/Green Wire) is a different frequency than the Sensor (WHITE Wire) output by a factor of 7~9 depending on the speed. In another test, the frequencies were 225Hz incoming to the Speedo and 28Hz Outgoing to the TSM.

Also note that the sensor output was 10v and the Speedo output is at 12v.

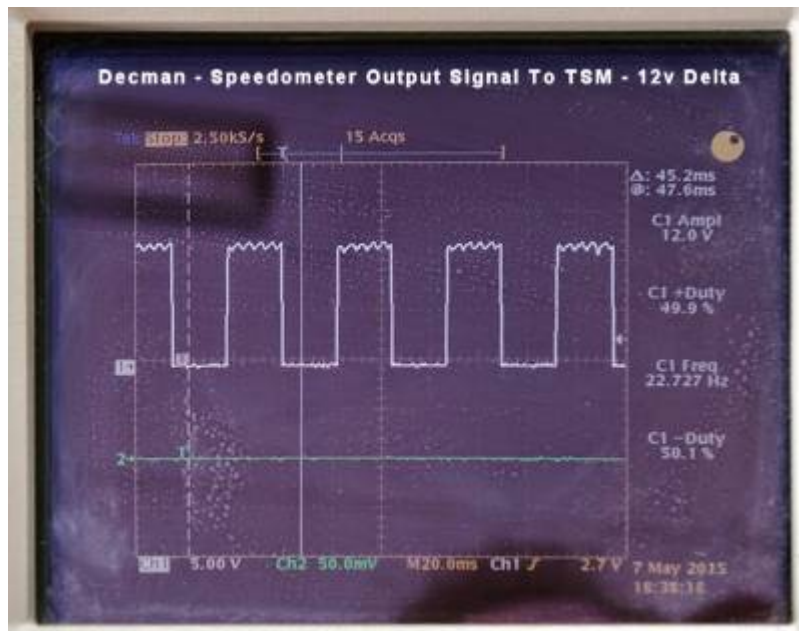


95-03 Function of the VSS For Speed Info To The Speedometer



Using this VSS information, the Speedometer will calculate an output signal to send to the TSM. The TSM will calculate when to cancel the turn signals.

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See this XLFForum Post -

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-electrical/sportster-motorcycle-electrical-and-ignition/4957902-speedo-issues-again/page2#post4958246>

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