

94-98 Ford Mustang VSS Sensor Characterization
Mark Olson
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In order to better be able to debug VSS-related issues and develop VSS-related products, we have characterized a 94-98 Ford Mustang Vehicle Speed Sensor.

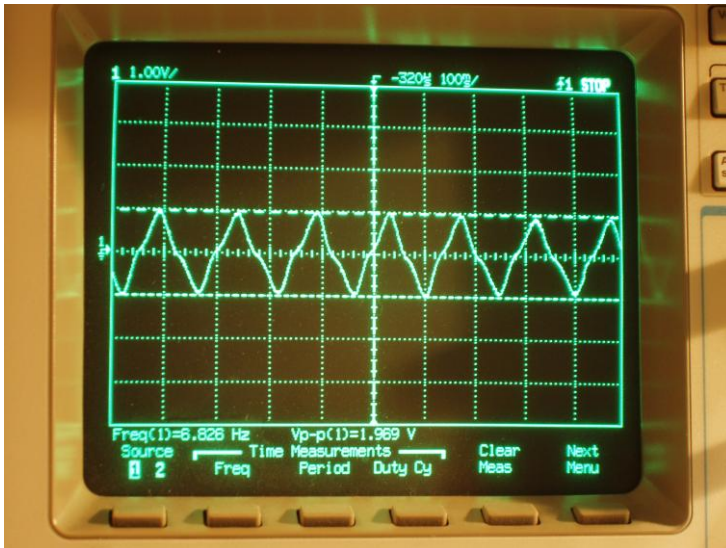
94-98 Mustang PCMs and speedometers/odometers expect an 8000 pulse per mile signal. To convert from frequency (pulses per second) to speed (miles per hour), the following equation is used:

$$\text{Speed in M/H} = \text{Freq in P/S} * (1\text{M}/8000\text{P}) * 3600\text{S}/\text{H} = \text{Freq} * 0.45$$

We put a junkyard VSS (from a 1998 Mustang) on our bench and hooked the leads to a scope. We drove it with a Dewalt cordless drill:



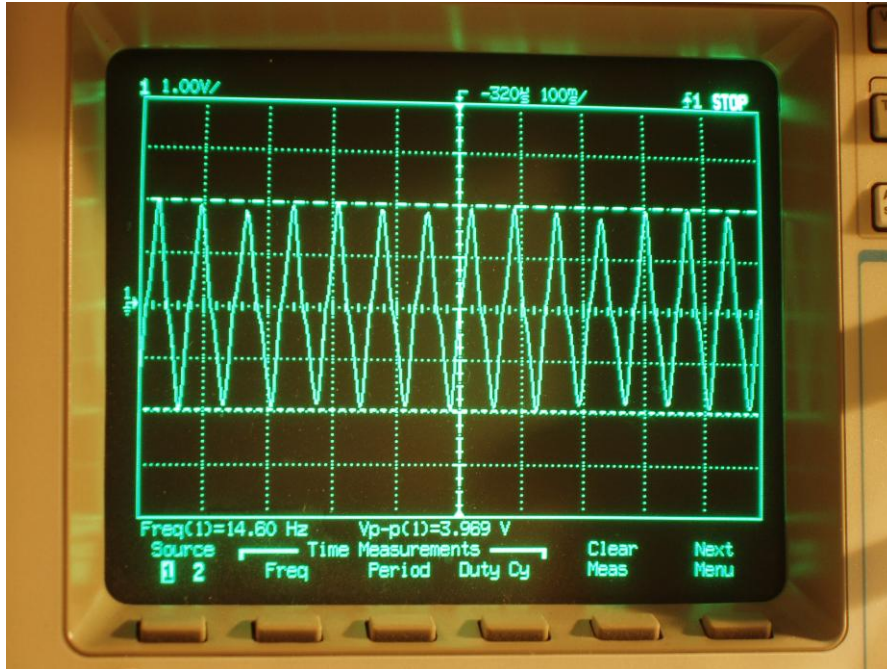
We spun the drill to get it to about 2V P-P on the scope and snapped a shot of the signal:



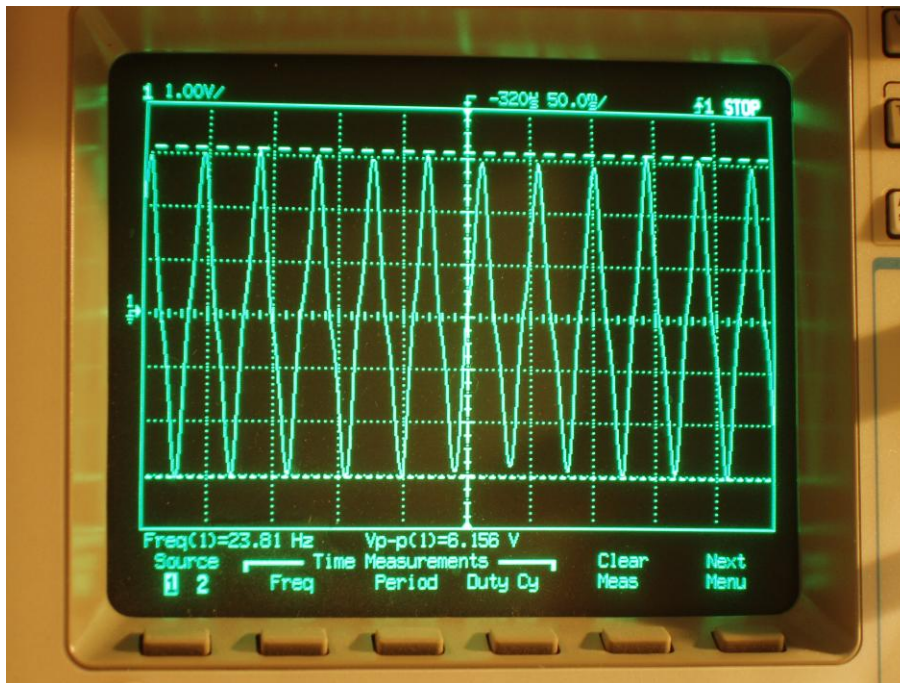
You can see that the frequency of the VSS signal is 6.826Hz. From the formula above, you can see that the corresponding speed is 3.0717 MPH.

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Next, we spun it up to about 4V P-P:



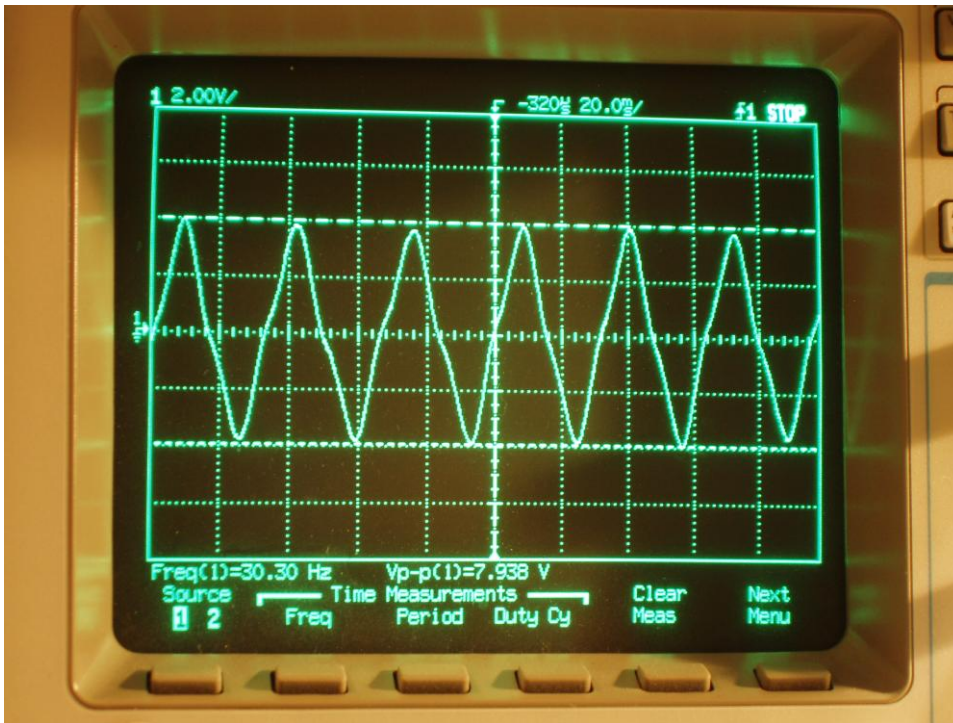
You can see that the frequency is 14.6Hz which corresponds to 6.57MPH. Next, we spun it up to about 6V P-P:



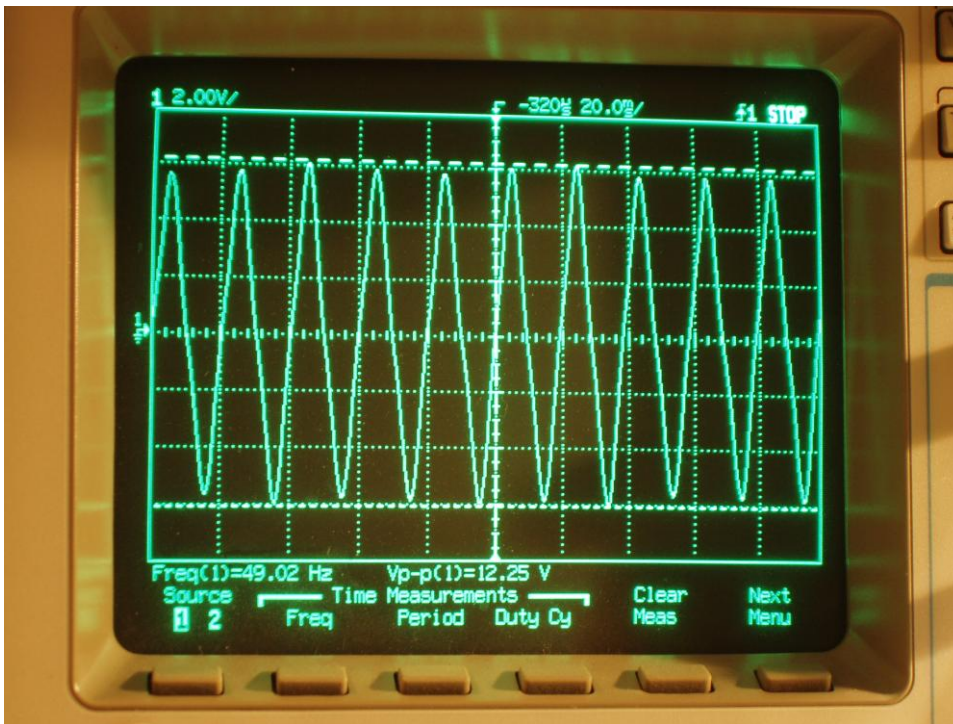
You can see that the frequency is 23.81Hz which corresponds to 10.7145MPH.

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Next, we spun it up to about 8V P-P:



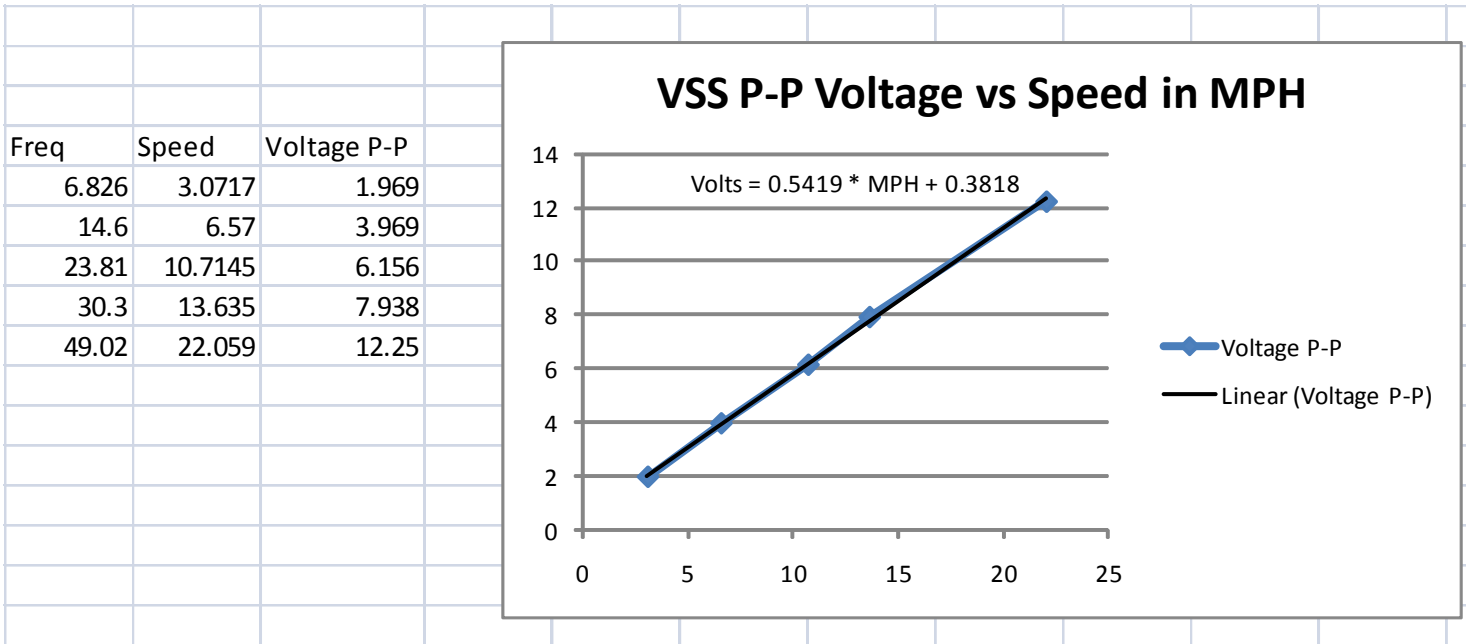
You can see that the frequency is 30.3Hz which corresponds to 13.635MPH. Next, we spun it up to about 12V P-P:



You can see that the frequency is 49.02Hz which corresponds to 22.059MPH. That was as fast as our drill will spin.

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Here is a spreadsheet we made to analyze the VSS signal:



You can see that the VSS signal puts out about 0.54 volts for every mile per hour up to at least 22 MPH and 12 volts.