

Subject: Troubleshooting Guide for 500, 700, and 900 Series Speedometers	Initial Release Date: 02/16/99	Revision Date:	Revision:
	Product Group:	Heavy Duty Instruments	

1. Required Materials and Tools

You will need an inexpensive volt-ohmmeter that can measure from 0 to 35 volts DC.

Note - *The calibration references in this document reflect the most common sensor arrangements. If you have other applications, the troubleshooting steps still apply; call our Service Department for calibration information.*

2. Procedure

Symptom	Action to Take
Nothing in the speedometer unit works.	Go to Section 2.1.
Speedometer is okay, odometer is dead.	500 Series: Go to Section 2.2. 700 and 900 Series: replace unit.
Speedometer and odometer are both inaccurate.	Magnetic sensor-driven units: Go to Section 2.3. Sender generator-driven units: Go to Section 2.4. TTL/Square-wave-driven units: Go to Section 2.5.
Trip odometer dead or intermittent (900 Series only).	Replace the unit.
Speedometer does not register zero when ignition is on and the vehicle is stopped, or is erratic when the vehicle is moving.	See Product Information Note 072-40282, <i>Reducing Electrical Noise</i> .

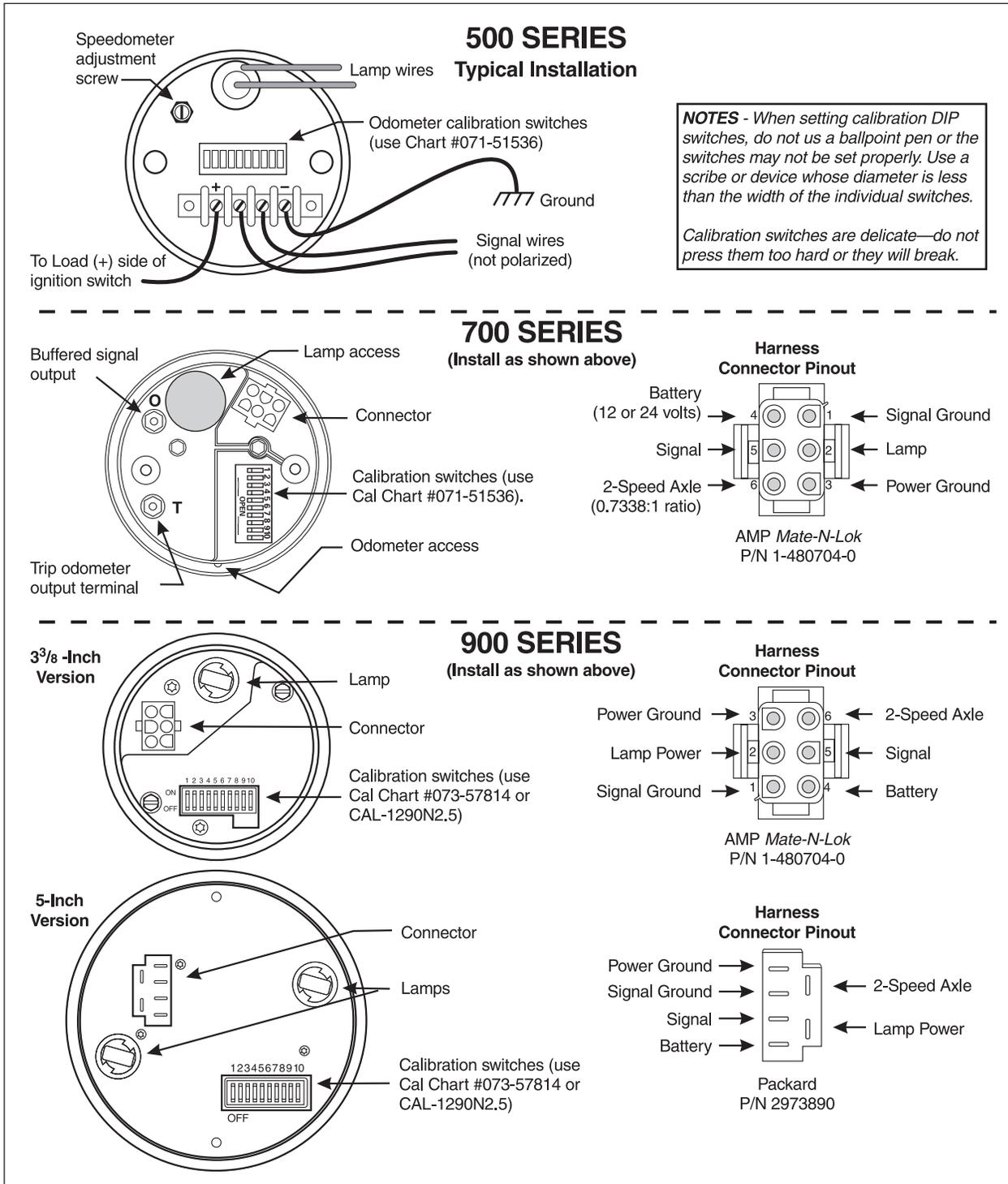
2.1 Checking Power and Ground

Note - *Correctly installed 500 Series units may indicate a momentary needle jump each time power is applied. This is normal and not a defect.*

1. Unplug the connector from the rear of the speedometer, turn the ignition on and measure the voltage between the harness connector's Battery and Ground pins.
2. You should measure between 11 and 14 volts (22 and 27 volts on 24-volt systems).
 - a. If no voltage is present, check for broken or shorted harness wires.
 - b. If voltage is present, check for proper calibration using the calibration charts noted in the illustration on page 2.

2.2 500-Series Odometer Dead

All adjustable 500 Series speedometers have a single-turn pot to calibrate the speedometer and DIP switches to calibrate the odometer. Be sure the switch settings are correct. If the odometer is still dead, replace the unit.



2.3 Magnetic Sensor-Driven Speedometer Check

1. Unplug the connector from the rear of the speedometer and measure the resistance between the harness Signal and Signal Ground pins.
 - a. If you measure between 99 and 4000 ohms, the sensor and wiring are probably good; go to Step 2.
 - b. If you do not measure between 99 ohms and 4000 ohms, unplug the wires from the sensor and measure the resistance between the sensor terminals.

- c. If you still do not measure between 99 ohms and 4000 ohms at the sensor, replace it. If you *do* measure between 99 and 4000 ohms, look for an open or shorted signal or signal ground wire between the speedometer connector and the sensor.
2. Verify the sensor gap adjustment is correct by turning the sensor clockwise until it bottoms out, then counter-clockwise 1/2 to 3/4 turn (clearance = 0.048 to 0.062 inch).
3. Check for proper calibration using the calibration charts noted in the illustration.
4. If the wiring, sensor, and calibration are good, replace the speedometer.

2.4 Sender Generator-Driven Speedometer Check

1. Unplug the connector from the rear of the speedometer and measure the resistance between the harness Signal and Signal Ground pins.
 - a. If you measure between 99 and 231 ohms, the sender and wiring are probably good; go to Step 2.
 - b. If you do not measure between 99 ohms and 231 ohms, unplug the wires from the sender and measure the resistance between the sender terminals.
 - c. If you still do not measure between 99 ohms and 231 ohms at the sensor, replace it. If you *do* measure between 99 and 231 ohms, look for an open or shorted signal or signal ground wire between the speedometer connector and the sender. PIN 072-40289 provides additional troubleshooting information about speed senders.
2. Check for proper calibration using the calibration charts noted in the illustration.
3. If the wiring, sensor, and calibration are good, replace the speedometer.

2.5 TTL- or Square-Wave-Driven Speedometer Check

Note - *Engine calibration and programming may affect the speedometer's accuracy. Consult a properly trained mechanic or the engine manufacturer for additional information.*

1. Check the continuity of signal wire between the TTL or Square Wave output on the Transmission ECU (or other source) and the speedometer for opens and shorts.
2. Check for proper calibration using the calibration charts noted in the illustration.
3. If the wiring, and calibration is correct, replace the speedometer.

3. For Additional Support

Troubleshooting assistance is available from our Service Department Monday through Thursday from 7 a.m. to 5:30 p.m. MT, and Friday from 7 a.m. to 3:30 p.m. MT, at (970) 244-1243 or (970) 244-1259. You may also leave a detailed message at service@ametekdixson.com.