Procedure 6.3 - Troubleshooting the Speed Sensor

Circuit Description
The speed sensor is an infrared photoeye that straddles a target. The target is either a plastic disc with alternate clear and opaque sections or a plastic ìfanî type device. The target rotates as the unit is operated and the infrared beam is interrupted when an opaque section or ìfan bladeî passes between the sensor legs. The output from the speed sensor is a 5 Vdc square wave, the frequency of which indicates the operating speed. When a square wave output is not being generated by the speed sensor the system assumes the unit is not in use and removes resistance from the eddy current magnet system after 6 seconds of idle time.

Procedure

1. Remove front and rear covers. Plug the unit into a wall outlet and set the circuit breaker in the ìonî position. Set the unit in the manual program and operate the unit. If a stride rate is not displayed, the speed sensor is not operative. We shall use the presence of a stride rate to determine when the speed sensor is functioning normally.

2. Using a DC voltmeter, measure the voltage between terminal 1 (red wire) and terminal 2 (black wire) on the speed sensor connector. The measurement should be approximately 5 Vdc. If the voltage is correct skip to step 4. If the voltage is missing or significantly low, disconnect the speed sensor connector from the speed sensor and repeat the measurement on the connector. If the voltage is now correct, replace the speed sensor. If the voltage is still missing or significantly low, continue with step 3.

3. Repeat the measurement in step 2 at terminals 1 and 2 of P4 on the lower PCA. If the voltage is missing or significantly low, replace the lower PCA. If the voltage is now correct, replace the speed sensor cable assembly.

4. Using a DC voltmeter, measure the voltage between terminal 1 (red wire) and terminal 5 (white wire) on the speed sensor connector. Slowly rotate the flywheel as you monitor the voltage. The measurement should switch between approximately 0.5 Vdc and approximately 4.25 Vdc. If the voltage is correct, skip to step 5. If the voltage does not switch (the voltage is constantly low or high as the flywheel is slowly rotated), replace the speed sensor. If the voltage does not exceed 3.8 Vdc, adjust potentiometer R24 on the lower PCA and repeat the measurement. If the voltage is now correct, but the stride rate is still not displayed when the unit is operated, skip to step 5. If the voltage is still significantly low, replace the lower PCA.

5. Repeat the measurement in step 4 at terminals 1 and 5 of P4 on the lower PCA. If the voltage is missing or significantly low, replace the speed sensor cable assembly.

6. If you have performed all of the above tests and the stride rate is not displayed when the unit is operated, there are three parts that could cause the problem. There are not any good tests to check these parts other than substituting a known good part. They are lower PCA, ribbon cable and upper PCA. Replace only one part at a time. If the new part does not correct the problem replace the original part.