MPC-4 STROKE SENSOR TEST

Watermakers with MPC-3000 shipped before Dec 1, 2004 are equipped with stroke sensors. The stroke sensor, p/n EL-MPC-SC15, is located on the Clark pump in a cavity on the valve body end cap. It has a small green light that blinks on and off with each pump cycle. The stroke sensor is used by the MPC controller to calculate the GPH (LPH) PRODUCT display, and for the SYSTEM STALLED alarm. Inside the stroke sensor are two magnetically actuated switches. One switch turns the light on and off using power between the red and black wires. The other switch is between the green signal wire and the black ground wire. The signal wire has 4.9 volts supplied to it from the Printed Circuit Board. There is a small magnet inside the Clark pump which moves back and forth with each cycle. The magnetic switches are alternately open, keeping 4.9 volts on the signal wire, and turning off the light, and closed, turning on the light while dumping the signal voltage to ground and dropping the voltage on the signal wire to zero.

If you can hear the Clark pump cycling but the green light is not blinking you can test it as follows: Remove it from the cavity for testing [use a pocket knife to pry it out]. With the power on to the watermaker, place a magnet next to the back of the sensor and see if the light comes on. NOTE: the magnet must be polarized properly so try both sides. If the light goes on and off the sensor may be good. In this case the problem could be with the magnet in the valve body of the Clark pump. If the light does not come on, check the wiring and the connections inside the MPC box. There should be five volts between the red and black wires in the stroke sensor cable. If there is no power to the sensor the printed circuit board has a fault. If there is power to the sensor but it won't blink it could be either the sensor or the wiring that has failed. Check for broken wires at the sensor.

If the light is going on and off with each cycle of the Clark pump but you are getting a SYSTEM STALLED alarm, then the signal that the Clark pump is stroking is not getting through to the controller. Check the voltage from the green wire to the black wire in the sensor cable connector. The voltage should cycle between 4.9 volts and 0 volts with each stroke of the Clark pump. If it stays at 4.9 volts, either the stroke sensor is bad or the green signal wire is broken or has a bad connection. Carefully check the wiring.

If the voltage stays at zero while the green light is cycling on and off either the stroke sensor is bad, the Printed Circuit Board is not providing power to the signal terminal, or there is a short in the cabling between Signal and ground. First remove the green signal wire from the connector and check for voltage. If the voltage comes up to 4.9V the sensor is bad or there is a short in the wiring.

If the voltage at the connector stays at zero with the signal wire disconnected, it is a PCB problem. Try moving the wires to the other set of stroke sensor terminals in the connector. If that doesn't work replace the PCB.

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