CP-10: TIGHT PISTONS

Low product flow with high feed pressure is commonly caused by clogged up membranes and/or pre-filters. However, some 700 and 1000 model watermakers may exhibit these symptoms due to “tight pistons”. The pistons used in the Clark Pump cylinders on these models may swell after a time, especially in very warm waters. The piston will begin to drag inside the cylinder, slowing the Clark Pump and causing the feed pressures to rise and production to fall. In most cases the system will also be erratic, operating for a time and then shutting down on “System Stalled” or “High Pressure” and/or showing varying system pressures.

To diagnose and repair this problem, remove the cylinder end caps. Using a wooden stick or a rubber hammer handle, try to push one of the pistons farther into the cylinder. If the pistons won’t move, remove the cylinders from the center block. Drive the pistons out of the cylinders using the wooden stick and a mallet. Push on the end cap side of the piston (the smooth side) to avoid damaging the piston rod socket, which is on the rod side of the piston.

Replacement pistons from Spectra Watermakers have been redesigned to prevent this from recurring. There are two different piston designs depending on the Clark Pump model. The Clark pump model can be determined from the Clark Pump serial number. If the serial number engraved on the front of the center block ends in “-15” It is a fifteen percent pump. If the serial number ends in “-20” it is a 20 percent pump. Order two p/n KIT-HP-15PAs for 15 percent pumps or two p/n KIT-HP-20PAs for each 20% model.

If you need to get the watermaker working while waiting for replacement parts, remove the white piston rings and the orange O-ring and take the pistons to a machine shop. Have the outside diameter turned down to 2.735 inches (69.50mm). Do not machine inside the piston ring grooves. In a pinch you could carefully sand or file the outside diameter down until the piston slides into the cylinder easily. Be very careful to clean off any abrasive particles from the piston as they will cause rapid cylinder wear.

4/26/06