

Ref: SERVICE PREFILTER ALARM (STANDARD & 'FALSE')

From: Spectra Watermakers

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SERVICE PREFILTER ALARM (STANDARD & 'FALSE')

During normal operation, the feed water is filtered in two stages. First it enters a fine mesh metal sea strainer then passes through a boost pump. This protects the boost pump from damage. After passing through the boost pump, the feed water enters the filter housings containing 20- and 5-micron elements. These filters remove very fine particles which could damage the Feed Pump or Clark pump, and potentially shorten membrane life. Some systems will only have a 5-micron filter.

Service schedules will vary widely depending on how and where the system is used. If large amounts of feed water are run through the system in a relatively short period in biologically fertile near shore waters, the prefilters will plug up, the pressure drop across the filters will rise, product production and quality will drop, and the system will sense plugged filters and give a SERVICE PREFILTERS alarm.

When the system is on, the sensor should be reading a value around the 12 – 20 range, anything below 10 will trigger the alarm. The service prefilter alarm on your system can be triggered by anything causing a flow restriction/pressure drop between your feed pump and the ocean. Obviously the prefilter is one option, but others worth looking into are:

- *Clogged through hull*
- ***Sea strainer check valve filled with grass/seaweed***
- *Sea strainer screen*
- *Kinked or leaking hose*
- *Boost pump weak, off, or receiving less than 24V*

Black Check Valve can be separated into two pieces



Service Prefilter Alarm (Systems WITH boost pump)

The Service Prefilter alarm for systems that use a boost pump is triggered by the absolute pressure sensor (typically marked with yellow heat shrink). If you have a Service Prefilter alarm that continues, the best thing to do is observe what your absolute pressure sensor is seeing in real time.

For MPC 5000 systems the Prefilter Fault is programmed via **Clean Pressure**, **Low Vacuum Limit**, and the **Inlet Offset** parameter.

CLEAN PRESSURE: *This should be set to one whole number below the pressure seen at the inlet sensor when the system is running with a brand new prefilter. After installing a new filter, run the machine by flipping the toggle switch on the MPC box to RUN MAN. The number on the right is adjusted to be one whole number below the number on the left, which is the inlet sensor reading. This parameter sets the "Clean" end of the prefilter condition bar graph. Factory default is **15**.*

LOW VACUUM LIMIT: *Set point for the maximum allowable pressure drop through the prefilter. If the inlet pressure reading drops below this point, the unit will alarm "Service Prefilter" and shut down. This set point is in absolute pressure and determines the "Replace" end of the Prefilter Condition bar graph. In most cases this parameter should be set to **10**.*

INLET OFFSET: *This parameter calibrates the boost pressure sensor found on the intake manifold of the feed pump (marked yellow). The number on the left is the real time pressure reading and the number on the right is the offset. This should be set to **0.0**, other settings are typically masking the real issue.*

To view the real time reading for an MPC 5000 system, run the system with the "Run Manual" toggle switch and access the programming settings.

Our linked YouTube video goes over how to access the MPC programming menu.

<https://www.youtube.com/watch?v=RCRWLuhTB10>

When you are in the programming navigate to the Inlet Offset screen note how the real time (left side) value is behaving (right side, the offset, should be a 0.0.)

To view this reading in real time on a Connect system, you must bypass the alarm in the system programming and then run the system and note the "Boost Pressure".

If the numbers jump around, you probably need a new sensor. If the numbers seem steady but unreasonable, we suggest you take off the sensor and clean out the port with a wire or paper clip. You can also check to see that all connections are good at the printed circuit board. If neither of these do the trick, you should probably disable the alarm and get a new sensor.

See <https://katadyngroup.ladesk.com/913701-How-to-test-a-Pressure-Sensor-MPC-or-Connect> for tips on testing out pressure transducers.

----- *If you are seeing Service Prefilter when you freshwater flush your system, see this link for help---*
<https://katadyngroup.ladesk.com/989400-Slowing-down-pump-during-a-Fresh-Water-Flush->

Service Prefilter Alarm (Systems with NO boost pump)

The Service Prefilter alarm for systems without a boost pump is triggered by pressure sensors on either side of your filter bowls. The alarm is designed to trip when the filters get clogged and the difference in pressure between the two sensors hits a programmed limit, the Differential Limit.

DIFFERENTIAL LIMIT: This function compares the pressure reading from the two pressure sensors (red and green) on the 20- and 5-micron filter housings to determine the pressure drop across the filters. The left-hand number on the display is the real time pressure differential and the right-hand number is the maximum differential set point. If the pressure drop across the prefilters exceeds the set point the system will alarm "Service Prefilters" and shutdown. Factory default is **10 PSI**.

If you want to use the differential limit to help bypass the alarm, you will want to increase it from 10. However, doing this or messing with the offset is really just masking the issue. The differential limit does not go too high for safety reasons, it's meant to go lower for people who want no chance of dirty filters.

INLET OFFSET: This parameter calibrates the pressure sensor on the inlet side of the black prefilter housings. This sensor, and its cable, are usually marked with **red** heat shrink tubing. The number on the left is the real time pressure reading and the number on the right is the offset. Factory default for this is 0. The reading can be increased or decreased by putting a positive or negative number in the offset setting.

OUTLET OFFSET: Outlet offset calibrates the sensor on the outlet side of the black prefilter housings. This sensor, and its cable, are usually marked with **green** heat shrink tubing. In addition to providing the differential pressure reading, across the prefilters, this sensor also provides the Feed Pressure reading. The number on the left is the real time pressure reading and the number on the right is the offset. Factory default for this is **0**.

If you think you are having a sensor issue, you should start running the system with the "Run Manual" toggle switch. Then, with the system running, enter the programming settings and note how the real time value is behaving.

Our linked YouTube video goes over how to access the MPC programming.

<https://www.youtube.com/watch?v=RCRWLuhTB10>

If the numbers jump around more than 10 psi, you likely need a new sensor. If the numbers seem steady but unreasonable, we suggest you take them off and clean out the port with a wire or paper clip. If cleaning does not do the trick, you should probably disable the alarm and get a new sensor. You can also open the pressure relief valve and check that both the pressures drop, or at least change. If one does not, then it is not working properly.

See <https://katadyngroup.ladesk.com/913701-How-to-test-a-Pressure-Sensor-MPC-or-Connect> for tips on testing out pressure transducers.