

Low Line Pressure Troubleshooting for Smart Tech and Legacy Dryers

Issue: Dryer displays a low line pressure alarm or unable to maintain the desired line pressure. Alternatively, the line pressure fluctuates considerably during the dwell time of the drypak cycle. (Example: Line pressure remains steady except for a 2-3 second time when it raises up right before the purge valves switch.) Note that this troubleshooting guide is only applicable to dryers which utilize water sealed compressors such as the Smart Tech ST dryers and older SE, ME and RE dryers.

Operation: To troubleshoot this issue, we must first understand that a compressor does not produce pressure, instead, it produces flow. Any pneumatic resistance to the flow being produced is what provides pressure. In this application the resistance comes from the hoses and lines being pressurized.

There are three primary causes for low line pressure alarm issues:

1. The output airflow produced by the air dryer has decreased due to compressor wear and the dryer is no longer able to produce the rated flow capacity.
2. There is an air leak inside the dryer or air is being dumped from the system controller muffler due to a malfunction or a humidity alarm.
3. There is increased demand from the system being pressurized and even though the dryer may be working normally it cannot keep up with the flow demand. (Such as a new leak or damage in the system being pressurized.)

The line pressure alarm setpoints are also user adjustable, ensure that the pressure setpoint is not higher than your desired line pressure. From the factory, the low line pressure alarm is set to 8 PSI.

Troubleshooting Steps:

- Verify the flow rate the dryer is producing as shown on the digital display or flow meter does not exceed the rated capacity of the air dryer. For example, if a 33,000ST dryer displays a flowrate of 34,000SCFD this immediately indicates that there is no issue with the dryer but that the dryer cannot keep up with the flow demand from the system. (The model number of the dryer is it's rated output in SCFD)
- If the dryer output flow displayed is less than its rated capacity, attempt to raise the line pressure using the line pressure regulator. If the pressure does not go up proceed to the next step.
- If the system pressure of the dryer remains normal but the line pressure is low and not able to be adjusted up higher with the line pressure regulator, adjust the system pressure lower by several PSI and see if the line pressure starts coming up. This is only a temporary test however if the line pressure goes up, as the system pressure is turned down, then typically the compressor output is low and rebuilding the compressor or installing replacement compressors is recommended.

- Ensure that there is no air being dumped from the system controller exhaust muffler. A water sealed compressor style dehydrator runs at 100% output all of the time. Any air that is not consumed by the system is automatically exhausted from the system controller block. If a dryer cannot keep up with the flow demand of the system (causing the low line pressure) then there should be no excess air available to be exhausted from the muffler. If there is air being dumped from the muffler, first ensure the dryer is not in an active humidity alarm and if not, replace the humidity shutoff solenoid valve. On 22,000 and 33,000ST dryers the humidity shutoff solenoid valve is located on the rear of the system pressure regulator. On 5500-16,500ST dryers the valve is located attached to the system controller block. In older SE/ME dryers the shutoff valve is “SV4” and will have tubes labelled with “4” numbers (41,42,43)
- If the line pressure remains steady but suddenly raises up just before a purge cycle and then falls back down again, this issue typically goes back to low compressor output. In an attempt to get more line pressure out of the dryer a technician will turn the line pressure regulator clockwise to try and raise the line pressure. Because there is no more available flow the line pressure does not go up, but the regulator is now adjusted up much higher than normal, sometimes to it’s mechanical limits. During the 3 second dwell time before the drying towers switch sides the purge air is turned off which results in a sudden increase in the amount of available airflow produced by the compressor. Because of the sudden increase in airflow the line pressure instantly builds up but only until the other purge valve opens at the end of the 3 second dwell time. This is another symptom of low compressor output requiring compressor rebuild or replacement.
- If the line pressure appears correct and the alarm setpoint is lower than what the adjusted line pressure is set to, use a hand-held gauge to measure the line pressure at the test point in the dryer located on the line pressure regulator. If the measured line pressure does not match the line pressure displayed on the screen the sensor board may require calibration or have a faulty pressure sensor. (ST models only)