



TECHNICAL BULLETIN

Edition 4.7.20

Resistance Control Hose Heat Issues

Dear UPC Customers,

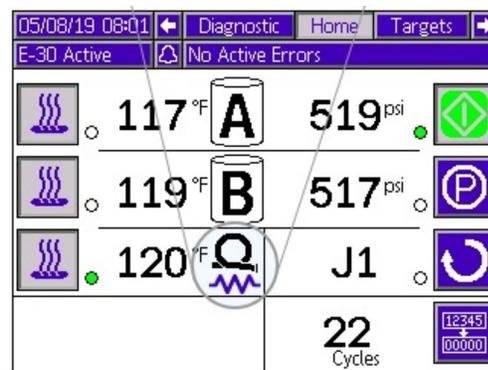
Over the past few months we've dealt with a handful of troubleshooting issues that all pointed to inconsistencies with Graco's new Resistance Control Mode (RCM). While RCM is a great advancement in hose heating technology, it may not be right for everyone and needs to be understood to utilize correctly.

The issues usually begin with customer complaints surrounding open-cell foam either being too drippy or pulling away from the substrate (voids). Identifying the cause is often elusive, as the Reactor's diagnostics appeared normal. Through manual assessment, we've been able to determine that actual hose temperatures are often 10°F+ colder than what RCM is displaying. A hose that is 10°F colder than optimal processing parameters can result in a dramatic reduction in yield and performance. High-yield foams will be even more susceptible to temperature error, since they typically have a very narrow window of tolerance. In fact, we've witnessed yields for high-yield open-cell jump from an abysmal 14,000 BF to over 20,000 BF once the hose temperatures were corrected. Even with closed-cell foam we've seen yields decrease 15%+ with this hose heating inconsistency.

The exact cause for these sporadic RCM false readings is not fully known, but we have several theories. For technical reasons that may seem counterintuitive and too lengthy to discuss here, RCM temp readings may dis-associate more in warmer, shoulder-season weather. One issue we know for certain, in order for RCM to properly assess hose temperature, the hose must be completely uncoiled out of the Rig.

Understanding Resistance Control Mode

RCM allows you to have full temperature control of your Graco heated hoses without depending on the RTD/FTS sensor and cables for temperature monitoring and control. RCM uses the electrical resistance of the hose's heating element to monitor hose temperature. The electrical resistance will change as temperature changes. The Reactor monitors how the resistance of the hose is changing and then





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calculates the actual temperature. Resistance mode must only be used with Graco hoses. RCM is an upgrade available on all Reactor 2's.

RCM takes the average of the electrical resistance throughout the hose. So if the first half of the hose is coiled up in a heated Rig then the resistance of that section will be very different than the uncoiled section. What's most important is the temperature of the hose near the gun, not the average that RCM is calculating. As a result, the hose may be under-heated where it matters, near the gun. To potentially help correct the problem in RCM, the hose needs to be fully uncoiled and placed outside the Rig. If this is understandably inconvenient, we suggest switching back to the traditional RTD/FTS sensor and cable.

Likewise, we've experienced similar issues with Manual Hose Heat Mode (Amp Mode) which sends constant current into the hose without adequate temperature control. This is even more true with high-yield foams which perform optimally within a narrow processing window.

If you or your customers are suddenly experiencing any problems dialing in any of UPC's wall-foam products, or any foam for that matter, you should inquire whether Resistance Control Mode (RCM) is being utilized. We've resolved many troubleshooting issues by simply turning RCM off and correctly connecting the RTD/FTS sensor and cable (FTS Control Mode). For any questions troubleshooting this issue, please do not hesitate to call.

To learn more about Resistance Control Mode, visit: [Reactor 2: Resistance Control Mode for Heated Hose | Graco](#)



Sincerely,

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