

Tech Tip, (Heated Hoses)

I'd like to focus on spray hoses. Aside from the spray gun, the heated hose assemblies represent the most problematic equipment component for most customers. This is largely due to the constant movement and simple wear and tear that the hoses are put through. However, there are a few things that you can do to minimize problems with hose assemblies.

You should avoid the following things:

- * A) Tight bends / kinks - When you are pulling the hose out of the rig, putting it back in the rig, and even during the course of the day, avoid tight coils and sharp bends in the hose. These can easily result in damage to the heating elements and even compromise the integrity of the hose, causing it to leak or rupture.
- * B) Walking / stepping on the hose - Walking or stepping on the hose, or setting heavy objects on the hose, can also damage heating elements and damage the hose itself. It's wise to also caution other construction personnel on the jobsite about walking on the hose or rolling heavy objects across it.
- * C) Jerking on the hose - Jerking on the hose or using a whipping motion to free a hose that has become snagged, can lead to element damage, hose damage, and damage to fittings.
- * D) Too much voltage / amperage - On the Graco Reactor units, it's almost impossible to apply too much electrical power to the hoses. On the latest models, you cannot adjust the power to the hoses manually under normal circumstances. These units are equipped with current sensors and the equipment automatically adjusts the power to provide optimum hose heat (this also applies to some Glas-craft units and the Graco / Gusmer H20/35 Pro units). On earlier E series Reactors, manual adjustments to a wire on the transformer are required if you add or subtract sections of hose. On these units, there are still some safety devices in place to prevent you from applying too much power to the hoses (results in an E02 error code). However, on the Gusmer & Glas-craft units it is possible to incorrectly set the power applied to the hoses. If too much power is applied to the hoses, it will usually result in premature failure of the heating elements.

There are some additional things I would suggest you do to maximize the life of your hoses:

- * A) ALL of your spray hoses should be covered with a scuff jacket.
- * B) Cover all of the hoses that can be removed from the rig with a layer of duct tape (on top of the scuff jacket). The scuff jacket will not do anything to keep dirt and moisture out of your hoses and this layer of duct tape will help to prevent the hoses from snagging on nails, etc. At the junctions of hose sections, a helpful hint would be to wrap one layer of duct tape sticky side out and a second layer sticky side down. This will add protection in areas that don't have a scuff jacket and it makes it easier to access these junctions when troubleshooting, repairing, or replacing sections of hose. You should avoid wrapping the duct tape too tight, as this will make the hoses less flexible.
- * C) On a monthly basis, pull all of the hose out of your spray rig and do a thorough inspection all of the way from the machine to the gun. This will allow you to identify possible problem spots and repair damaged duct tape before you encounter a problem.
- * D) On the Graco hoses, replace the white marine-style connectors with the new splice kits. This is especially true if you have had repetitive problems with E03 (no hose heat) error codes. The white marine-style connectors were an improvement over the previous design, but the new splice kits are far superior. No matter how well you take care of your hoses or what you do to protect them, sooner or later you are likely to encounter a problem with them. On the Reactor units this will show up as an E03 error code. Other units (Glas-craft, Gusmer, etc.) don't have a function to alert you to a loss of hose heat. Usually the only two indications are a low actual temperature reading on the controller or a straight stream coming from the gun when it is triggered

(as opposed to a normal spray pattern). The latter of these two is a classic symptom of low or no hose heat. Typically the pattern will open up into a somewhat normal pattern, once hotter material from the machine reaches the gun.

While there are several possible causes for a loss of hose heat, by far the most common is a break in the electrical circuit through the hose assemblies. A quick continuity (ohm) test is usually all that is necessary to confirm whether or not that is the case. For this reason, I highly recommend that everyone purchase an inexpensive multi-meter (ohm meter) and learn to do a continuity test. The test is simple to do and you would conduct the test with absolutely no power going through the hoses during the test. We will be happy to “walk” you through this test, but it is extremely helpful if you understand the basics of a continuity test. Typically, if there is a break (open) in the hose circuit, it will be in the heated whip hose since it takes the most wear and tear. If that is the case, there is an easy way to by-pass the whip (electrically speaking) so that the rest of your 50 foot sections will still work until you can replace the whip hose. Whether the hose has ruptured or if there has been a failure in the electrical aspects of the hose, you should NEVER try to patch the hose in any way. To do so, is usually not very successful and can often lead to other problems. From a machine function and safety standpoint, it is better to replace the faulty section of hose.

On the Glas-craft units that utilized a low voltage hose heat system (such as the Guardian & MH series), the electrical aspects of the hoses have always been a bit of a weak link. These hoses are now obsolete and would have to be replaced with Graco hoses and an adaptor kit (to compensate for the difference in fitting size). The Graco hoses have proven to be far more durable, as well as more flexible. However, you do not have to replace all of the Glas-craft hoses with Graco versions at one time. Rather, you can replace them one at a time, as needed.

The FTS (Fluid temperature sensor, also known as the TSU or thermocouple) is a critical element in maintaining proper hose heat. It sends temperature information to the hose heat controls of the proportioning unit. If for some reason the FTS is dis-connected from the proportioning unit (broken wire or detached connector), the Reactor units will display an E04 error code (or an 0A when you initially turn the Reactor on). On other units, you will see an error message in the temperature controller instead of a temperature reading (this message will vary depending on whether you have a Watlow, Ogden, or Cal Controls controller). Often a visual inspection of the wires and/or connectors going back to the machine will help you find the problem. However, if you don't find an issue with the wires and/or connectors, the FTS can easily be tested with the same multi-meter (ohm meter) mentioned earlier. Also, the FTS can be tested to confirm that it is operating within specifications and reading accurately, by using the same ohm meter.