YASKAWA
PARTNER SUPPORT
Shared Integration Experience

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at partnersupport@motoman.com for updates or clarification.

Dealing with Arc Start Failures

Generally, arc failures occur due to weld parameters or a worn-out consumable. Below is a list of items to check on your system.

1. **Check the liner.** It can wear, but also accumulate dust and dirt from the wire and the environment. This is a consumable and a typical lifespan can be 3 months depending on duty cycle. The same goes for conduit delivering wire to the back of the feeder, these wear out and accumulate dust as well. They should be blown out and checked for wear and replaced when needed.
2. **Check the contact tip.** This should be changed *at least once per shift* as this is a consumable as well. If there is excessive wear or spatter replace as needed.
3. **Has the gas flow been checked at the nozzle of the torch?** This lets you know the actual flow rate the arc is seeing as well as helps to determine if there has been a leak introduced. Welds do not like 02 as shielding gas.
4. **Check the gooseneck assembly.** It is easy for dirt, dust, and spatter to accumulate. This can cause the diffuser to become blocked and can cause arcs on the inside of the torch.
5. **Does the arc failure occur in the same spots?** If so, that would be a place to focus attention. If the robot is stretched out, it is good to check the mounting of the feeder and cables. If there is excessive tension adjust the feeder if needed or look at cable routing to ensure there is not too much tension on the cables while welding. Unless the parts were programmed by Motoman, we will set the feeder to a standard location. It will be up to the programmer to ensure cable routing is acceptable for your application.
6. **What does the wire or puddle look like when this happens?** Are you burning back to the contact tip? Does the wire try to ignite then go out? Grab a welding helmet and look, this can usually tell you a lot about the issue.

7. **Check your stick out prior to welding the problem joint.** Ensure that the wire is at an acceptable length and not bent. To short of a stick out can cause issues just like having a stick out that is too far. 15mm is a good distance to start with and you can adjust depending on applications.
8. **Have the grounds been physically or electronically checked?** First would be to physically tighten the grounds. The other method after that is to check the resistance at the part. This will tell you the resistance of the part in the fixture through the secondary of the welder. This will tell you exactly how well the part is grounded. If there is damage to the weld leads or ground, replace them.
9. **Are your weld cables coiled?** If so uncoil them as this will cause issues while welding.
10. **Have the arc files been modified?** If so, check the settings as improper settings can lead to issues as well. If this controller has multiple robots (DR2C. TR3C etc...) ensure the ASF (Arc Start File) is setup for the correct robot and power source. Do not call an ASF for R1 when it was setup as R2.
11. **Has the power pin pulled out, or is the power pin loose at the connector?** Also check the inside of the feeder is not accumulating dirt and dust.
12. **Check your part fit up.** Ensure you are presenting a well fixtured part. While small gaps can be welded, without the proper equipment and programming structure the robot is not able to react to changing gaps like a human welder. With robotic processes gaps should be reduced and or eliminated for quality output.
13. **Is your metal clean?** High concentrations of oil or mill scale can cause arc failures and weld defects. Anything on the surface of the metal will be introduced to the weld puddle during welding. This will cause weld defects, issues striking an arc, and issues maintaining a stable arc.

When dealing with issues such as Arc Failures and problem welds, generally the issue is outside the robot. Welding basics should be checked first, depending on the issue. The first thing to check is that your welding speeds and welding parameters are correct for the joint you are currently experiencing problems with. If the travel speeds and weld parameters are correct, then the next step would be to check the issues related to your current problem. If you have porosity check your gas and flow rate, and for obstructions from the diffuser for example. Following the above tips should help ensure you are producing good, repeatable welds.