

Installing of SCIT Tool for Hydrostatic Isolations

Definition:

Self-Centring Isolation and Test Tool (SCIT Tool)

PWHT: Post Weld Heat Treatment

Selecting Proper Tool and Seals

- ❖ *Determine the proper Schedule of Pipe. The best way to do this is by physical measurement of the pipe wall thickness (WT) and refer to pipe tables to determine the actual schedule.*
- ❖ *Once the Schedule of pipe has been Determined you must refer to Vital Tool Size Chart and Seal Selection Chart to determine the series of tool required to install. (Appendix A)*
- ❖ *Now that you have determined the actual tool size that needs to be installed in the pipe you now must refer to the same chart to determine which seal to use.*
- ❖ *For example, if you are installing the tool into an 8" Schedule 80/XS pipe you will need *8A-XS Seal kit. If the pipe schedule is 40/STD, you will need 8A-STD Seal Kit. If you Pipe wall Schedule 100 you will need 8B-100 Seal kit.*

***8 = Pipe Size / A = Tool Series / XS = Pipe Schedule**

NOTE: If testing is required across a welded area that has two different diameters (schedules), you must use two different seal sizes in order to match the difference in the pipe diameters and still achieve suitable pressures and a successful test.

Guidelines:

- Request a gas test (each time) prior to working in the area of the piping assembly. Certain situations will require continuous monitoring of the area and may require for each technician to wear personal monitoring devices.
- Disassemble SCIT Tool and have it ready to accept the VITAL Seals.
- Install one seal on the spigot of the front plate and one seal on the spigot of the back plate.
- Reassemble tool with the seals installed, hand tight.
- "De-burr" piping edges using metal file or wire brush, where applicable.
- Insert SCIT Tool into the pipe. The tool will centre itself during the tightening process.



- When installing the Isolation, position the tool as far back as possible so that the tool does not interfere with the welder. The positioning of the SCIT Tool is more a matter of ease of use than protecting the seal from the heat of the weld. If there is a concern of over-heating the seals (i.e. PWHT) use the Vital Hydrodynamic Isolation Procedure.
- Ensure that all SCIT Tool compression nut(s) will be accessible after the work has been accomplished (welded flange or fitting).
- The fill and vent fittings must be positioned at 12 and 6 o'clock (when possible) to allow medium to properly fill the tool cavity and allow air to bleed off.
- For single bolt tools, tightening is accomplished by Feel Only (practice) using a crescent wrench (or equivalent). The nut on a single bolt tool must always be accessible.
- For multi-bolt tool systems, a torque wrench may be used to tighten the compression nuts to the specified pattern and values.
- To introduce medium into the cavity of the SCIT Tool, connect a hose from the pump to the lower fitting and fill until medium begins to seep out of the upper fitting - then attach all hoses.
- Install pressure gauge and ready for pressure application.
- Pressurize system (20PSI is recommended) and maintain static pressure between seals.
- During pressurization, visually inspect for leakage around SCIT Tool assembly.
- When no leaks have been found and pressure gauge holds steady, SCIT Tool seal is proven.
- **NEVER PLUG THE VENT HOLE. THIS MAY CAUSE A PRESSURE TO BUILD UP BEHIND THE SCIT TOOL!**
- Hook up vent hoses and vent gauge (0-30PSI) and vent to a safe area out of the hot work zone.
- Grounding: For practical purposes the tool is essentially grounded to the pipe via water. If pure water is used, you may consider using an external ground to prevent arcing from the pipe to the tool during the welding process.
- Monitor isolations while hot work is being performed to insure a positive pressure is maintained on the seals. Ensure the following:

❖ *While the tool is installed, at no time can parts (vent gauges or hoses) be removed. Welders and Pipefitters may request to*



have the venting apparatus temporarily removed so that they can perform their work and have easier access to the work. This practice is strictly forbidden. When the venting assembly is removed from the SCIT Tool, you have essentially created a donut in the line, instead of an isolation.

- ❖ Only trained installers are authorized to monitor isolation.
- ❖ No hot work can be performed in the affected area unless SCIT Tool seal is checked and monitoring of SCIT Tool gauges occurs.
- ❖ Loss of pressure shown on the pressure gauge represents one seal has failed. Work is to be stopped until the Isolation seal is re-checked and proven.
- ❖ Increase of pressure shown on the pressure gauge represents an increase of
- ❖ temperature of the pipe. If pressure is increased too high, it is possible one of the seals may leak. Reduce the pressure to maintain a pressure between 20-50psi.
- ❖ Pressure increase on vent gauge represents a build-up of pressure / product behind the SCIT Tool. Work is to stop immediately, and area cleared until upstream pressure is reduced to original levels, prior to starting work in the area.
- ❖ **At NO TIME shall any workers be standing or monitor gauges directly in front of the SCIT Tool. All workers are to remain off to the side and out of the "LINE OF FIRE".**
- ❖ When a SCIT Tool is left unattended, a warning sign should be placed in the area to alert plant personnel that a Vital Isolation is in place.
- ❖ Once the weld has been completed and cooled down, the isolation can be removed.

➤ Release the pressure and recover all test medium following notification by the Customer/Inspector that isolation requirements have been met.

Before starting any disassembly, carefully remove the vent hose and check for any hazards behind the tool. Hazards include, but are not limited to:

1. Toxic gases,
2. Pressure or vacuum build-up,
3. Fluid build-up behind the tool.

If a hazard is identified, it must be addressed before removing the tool.

HAZARD

SOLUTION

Toxic Gas

Use respiratory protection while removing tool.



Pressure or Vacuum
Fluid Build-up

Let pressure equalize before removing tool.
Request from customer a method to capture and dispose of the fluid before removing the tool.

When there is the potential that liquid may have accumulated behind the SCIT Tool while it is in place, set up appropriate containment measures.

Note: Important removal precautions – if the SCIT Tool was installed under supplied fresh air, it must be removed under fresh air. If supplied fresh air is not going to be used when removing the tool, a gas test must be requested. The gas test must be taken through the vent pipe opening and check for heavier than air gases, such as H₂S gas.

- Disconnect gauge and pump hose assemblies.
- Loosen compression nut(s) until VITAL SCIT Tool is movable within the piping assembly.
- Remove SCIT Tool from piping assembly area (pull out and disassemble).
- Be careful to stand beside the tool and pipe opening at this point, in the event fluid or gases have built up behind the tool and is released when the tool is loosened.
- Isolation completed once all inspection forms and sign-off sheets have been completed and the tools and the area have been cleaned up.

