



ENDOT INDUSTRIES, INC.

PIPE AND TUBING • DUCT AND INNERDUCT

What techniques are available for isolating sections of PE pipe for maintenance?

The design of PE pipe networks should follow conventional network practices with the installation of valves at convenient or critical locations. Additionally however PE pipe networks have the advantage that more localized isolation can be implemented by the use of pipe 'squeeze-off' tools. Squeeze-off is used in routine and emergency situations to stop or nearly stop flow in PE pipe by flattening the pipe between parallel bars.

PE pipe squeeze-off utilizes the ductility of PE by allowing the pipe to be squeezed together using relatively simple but specially designed squeeze-off tools thus preventing the flow of fluid or gas and isolating the pipe section. It is important that only specifically designed tools are used and that the squeeze-off controls are set for the specific diameter and SDR of the pipe in order to control the degree of compression of the PE pipe and prevent any damage.

The squeeze off tools are generally mechanically operated up to about 125mm diameter and hydraulically operated for larger diameters. It is important to follow the tool manufacturers instructions when using these tools and to use tools appropriate for the pipe diameter and SDR. Also the tools need to be capable of resisting the operating pressure of the pipe, and there are limits to the pressures that they can sustain.

Properly implemented squeeze-off, using the correct tools, is not expected to cause damage to the PE pipe, which regains its circular cross-section after the tool is released. However squeeze-off is not recommended to be done more than once at any location. If repeated flow control is required a valve or an appropriate flow control device should be installed in the system.

Squeeze-off is not intended as a means to throttle or partially restrict flow.

Complete flow stoppage may not occur in all cases. When squeezing larger pipes, particularly at higher pressures, some seepage is likely. When seepage is not acceptable, it may be necessary to utilize two squeeze off points and to vent the pipe in-between the two squeeze-offs. Any work performed must be downstream of the second squeeze-off.

There are ASTM procedures for squeeze off tool use as listed below:

- ASTM F1041, "Standard guide for Squeeze-Off of Polyolefin Gas Pressure Pipe and Tubing"**
- ASTM F1563, "Standard Specification for Tools to Squeeze-Off Polyethylene (PE) Gas Pipe or Tubing"**
- ASTM F1734, "Standard Practice for Qualification of a Combination of Squeeze Tool, Pipe, and Squeeze-Off Procedures to Avoid Long-Term Damage in Polyethylene (PE) Gas Pipe"**

Squeeze off tools when used properly (according to manufacturer's instructions and ASTM procedures) do not affect the warranty of Endot pipe or tubing.

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SQUEEZE OFF TOOL USE

Using a squeeze off tool requires;

- 1) The tool is made specifically for the size pipe to be shut off. Tools too large or too small can damage the pipe. Some squeeze off tools have interchangeable plates for different sizes of pipe. It is critical that the correct plate is installed matching the size of the pipe to be squeezed off.
- 2) Squeeze off tools must have “safety stops” that are fixed or may be changeable. In all cases be sure that the stops are in place and that the stops in place are the correct size matching the
- 3) pipe size and SDR to be squeezed off.
- 4) Ensure that the tool has squeeze plates that are parallel to each other. There are tools that do not have parallel plates and these should not be used. When plates are not parallel there is a high likelihood of damaging the pipe which will result in eventual failure of the pipe following squeeze off. Inspect all tools prior to use to ensure that the plates are not damaged and remain parallel.
- 5) All pipe must be inspected for cuts, scrapes, gouges or anomalies prior to placing a squeeze off tool on the pipe. If the pipe is damaged in any way a squeeze off tool should not be used to control flow in that pipe.
- 6) Static Discharge grounding is required when squeeze off tools are use for gas line shut off.
- 7) Slow application and release of pressure is important, follow tool manufacturer’s instructions.
- 8) Re-rounding of the pipe using the squeeze off tool at 90 degrees from the squeeze off position after the shut off tool is released may be necessary to restore full flow to the pipe. Follow the manufacturer’s instructions.
- 9) Carefully inspect pipe after squeeze off is complete and the tool has been removed to be sure the pipe has not been damaged. If damage is found the section of pipe must be replaced.
- 10) Pipe squeeze off should not be performed in the same place on a pipe. Squeeze off is not a replacement for a valve on pipes that may need to shut down on a regular basis.

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