



VortexFLOW SX (SURFACE) TOOL INSTALLATION INSTRUCTIONS

VortexFLOW SX (Surface) Tools in Gathering Lines:

IMPORTANT SAFETY INSTRUCTIONS

- The gas line must be shut in and evacuated before tool installation.
- *All* regional and/or field specific instructions and precautions from the operator and per required codes and standards for gas line—digging, purging, removal, installation and welding—should be on hand and reviewed prior to commencing work.
- All people who will be on-site and involved in this installation should review these installation instructions for the VortexFLOW tools. Everyone involved with the installation of the tool should be very familiar with these instructions and precautions.

DANGER – An improper valve closer may result in the risk of gas leaking into the atmosphere and/or an explosion that could result in serious injury or death. DO NOT open the upstream valve to reinitiate flow in the gas line until the connections are checked for leaks and seals secured.

STEP 1: SHUT LINE IN – DANGER –

- Gas flow in the flowline/pipeline must be shut-in and the line purged, as required, prior to cutting the line.

STEP 2: EXCAVATE FLOW LINE

- The production line should be unearthed adequately in order to work safely on the line.

STEP 3: CUT PRODUCTION LINE

- Place and/or measure the Vortex Tool next to the production line to estimate the exact location of the line cuts.

STEP 4: ATTACH VORTEX TOOL TO GATHERING LINE (flange or weld-in)

- The installation direction of the tool should be checked against the flow direction mark on the tool to assure proper installation of the upstream and downstream ends.
- For flanged ends, the tool is to be secured to the production line using the built in flanges using proper strength studs and nuts on the inlet and outlet of the tool.
- For field weld installation, the Vortex tools inlet and outlet will arrive beveled. The weld end prep should be checked for any damage and correct weld angle with the abutting line. Repairs should be made on site, as required.
- The Vortex Tool should be supported while welding onto the abutting lines or when bolting the flanges together with flanges that have been welded to the production line. Make sure to use appropriate sealing procedure.
- Welded connections should be appropriately nondestructively inspected to assure adequate penetration, acceptable fusion and a good strength weld according to the approved welding procedure.
- For optimum tool performance, the tool should only have full port (ball) valves downstream and have at least one section of straight line downstream of the outlet of the tool; *the fewer the valves/swages and the greater the straight line downstream of installation the better.*

WARNING: Make certain that the Vortex Tool is installed with the “Inlet” section attached to the upstream side of the line and the “Outlet” section is attached to the downstream portion of the production line.

STEP 5: OPEN UPSTREAM VALVE AND PURGE GATHERING LINE

- Check Vortex tool for proper installation.
- Begin field or area approved line purge procedures.
- Open upstream gas line valve.
- The Inlet and Outlet connections should be checked for gas leaks.

DANGER - Gas line must be SHUT IN immediately should any gas leaks be detected. Improper installation may result in damage to production line connections and may cause serious injury or death.

STEP 6: REVIEW INSTALLATION

- Leave installation exposed for field or area approved time to ensure proper seal and installation.
- When a proper seal has been verified, the excavated production line is ready to be back-filled, as required.

NOTE: The Vortex Oil and Gas Tool is an inert gas well device that has no moving parts and does not require ongoing maintenance.



VortexFLOW™

VortexFLOW SX (SURFACE) TOOL INSTALLATION INSTRUCTIONS

Tangential Entry Tools:

IMPORTANT SAFETY INSTRUCTIONS

- The gas line must be shut in and evacuated before tool installation.
- **All** regional and/or field specific instructions and precautions from the operator and per required codes and standards for gas line—digging, purging, removal, installation and welding—should be on hand and reviewed prior to commencing work.
- All people who will be on-site and involved in this installation should review these installation instructions for the VortexFLOW tools. Everyone involved with the installation of the tool should be very familiar with these instructions and precautions.

DANGER – An improper valve closer may result in the risk of gas leaking into the atmosphere and/or an explosion that could result in serious injury or death. DO NOT open the upstream valve to reinitiate flow in the gas line until the connections are checked for leaks and seals secured.

STEP 1: SHUT WELL IN – **DANGER** – Gas flow must be shut-in prior to cutting flow line.

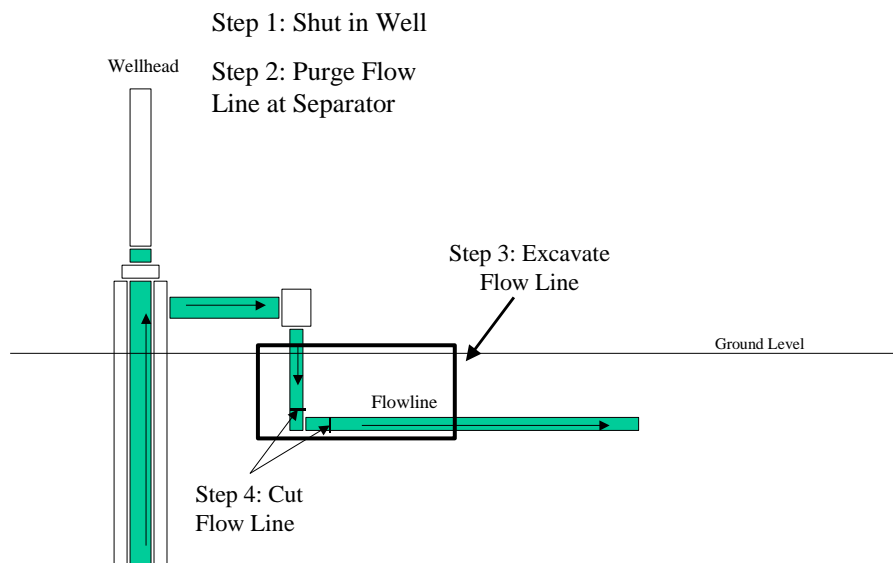


Figure 1

STEP 2: PURGE FLOWLINE at the SEPARATOR

STEP 3: EXCAVATE FLOW LINE

- The flow line should be uncovered in order to work safely at the point where the line makes its 90-degree bend from vertical to horizontal.

STEP 4: CUT FLOW LINE

- Place the Vortex Oil and Gas Tool next to the flowline to estimate the exact location of the flow line cuts.
- First cut should be made on the vertical section of flow line just above where the line makes its 90-degree bend.
- Second cut should be made on the horizontal section of flow line just after the line makes its 90-degree bend.

STEP 5: ATTACH VORTEX FLOWLINE TOOL TO FLOW LINE

- The Unit is to be secured to the flow line using male threaded nipples on the inlet and outlet of the Unit.
- Support the Vortex Tool while sliding female couplers onto the Unit's threaded nipples shown at "A" in Figure 2. Tighten couplers with the flow line and unit with appropriate sealing procedure.
- The Unit should not have any valves/swages etc. downstream of installation point except at outlet (i.e. separator, dehydrator etc.)

WARNING: Make certain that the Vortex Tool is installed with the "Inlet" section attached to the vertical flow line and the "Outlet" section is attached to the horizontal flow line.

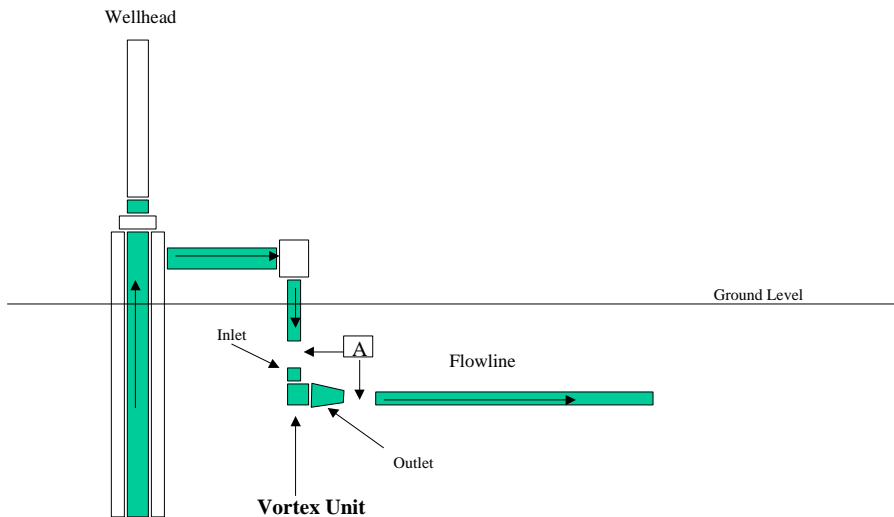


Figure 2

STEP 6: OPEN GAS WELL

- Check Vortex Oil and Gas Tool for proper installation.
- Open gas well.
- Inlet and Outlet connections should be checked for gas leaks and repaired, as required.

DANGER - Gas well must be SHUT IN immediately should any gas leaks be detected. Improper installation may result in damage to flow line connections and may cause serious injury or death.

STEP 7: REVIEW INSTALLATION

- Leave installation exposed for 12 hours or as required.
- Inspect installation after 12 hours for proper seal.

- When a proper seal has been verified, the excavated flowline is ready to be back-filled.

NOTE: The Vortex Oil and Gas Tool is an inert gas well device that has no moving parts and does not require ongoing maintenance.



Figure 1: Acceptable install.
Installed at a 90-degree angle after a well head (optimal install at the well head).



Figure 2: Acceptable install.
This is an in-line install with spool in gathering laterals. Note that the inlet is on top.



Figure 3: NOT an acceptable install (continued on page 6)

This is an in-line install with spool in gathering laterals. This is incorrect since the inlet is on bottom of the tool.



Figure 4: Acceptable install.

Installed at the first 90-degree angle on the surface (this is the easiest location for installation at the wellhead).



Figure 5: Acceptable install

A surface line install. Note the inlet is on the top of the tool

Please call VortexFlow at (303) 761-7010 with any questions.

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