



## Swagelok® Training Programs

A range of valuable and practical tools for meeting day-to-day challenges related to fluid system and sampling system design, operation, and maintenance.

### Expand Your Knowledge with Training by Industry Experts.

**In-depth, hands-on courses taught by experienced instructors help both new team members and industry veterans. Whether you need to build a foundational understanding of fluid and sampling systems or you want to stay up to date on the latest technologies and best practices, Swagelok offers robust training options.**

Our service offerings enable our customers to operate more productively, efficiently and safely. We listen to our customers' needs and collaborate with them to solve critical business challenges that consistently deliver high-quality, reliable results.

### Your Pain-Points, Our Solutions:

- Offset a workforce that is retiring or lacks critical skills
- Mitigate unsafe labor practices
- Improve system performance and efficiency
- Address leakage and other existing fluid system issues
- Replace fittings and hoses less often

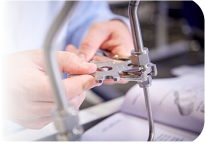
Well-trained associates are valuable assets that can save your company money and increase the productivity and safety of your workplace. Our trainers can provide you, your associates, installers, and maintenance vendors with a wide range of training to minimize installation, maintenance errors, and ensure your system maintains its reliability.

We provide training courses designed to enhance your team's critical skills for designing, building, and maintaining high-performing fluid systems. Rely on Swagelok-certified trainers to arm your team members with the knowledge they need at times and locations convenient for you.



*Participants of Swagelok® training programs receive a Certificate of Completion*

## Swagelok Tube Fitting Installation and Safety - 8 Hour Class



This full-day seminar conducted by our Swagelok® Certified Training Team is designed for those involved in the installation, design, and/or fabrication of fluid systems. Quality control and safety professionals will gain insight into component limitations and maintenance requirements.

### Course Outline:

- Tube fitting design and function and how fitting design changes have impacted seal performance
- Installation and assembly instructions designed to assure leak-free operation
- Understanding the importance of proper selection, care, handling, and prep of tubing and pipe
- Thread I.D. of: ISO, SAE, NPT, and Metric Threads, conversion fittings and hands-on exercises
- Practice the “measure-bend method” through hands-on exercises using Swagelok Hand Tube Bender
- Demonstrate tube bending concepts necessary to complete quality 45°, 90°, 180° and offset bends
- Identify common tube bend defects
- Labor saving techniques and fitting products that make your job easier

## Swagelok Tube Fitting Installation - 4 Hour Class



Decrease costs, increase employee safety and equipment up time, and minimize leaks with correct tube fitting selection, preparation, and installation. Attendees will learn the proper way to cut and deburr tubing, install, disassemble and reassemble a Swagelok tube fitting, and identify basic thread types. Zero leaks and reworks are possible with critical skill training.

### Course Outline:

- Identify correct tube system design, selection and placement
- Perform the installation and reassembly of Swagelok tube fitting components
- List the effects of leakage within a system
- Recognize tube fitting design characteristics and differentiate between fitting types
- Identify common pipe thread types and sealing techniques
- Explain NPT thread installation and the use of thread lubricants and sealants
- Identify tools available to make the installer's job easier

## Swagelok Inspection Essentials - 4 Hour Class



This course is designed to provide technicians, maintenance, and quality assurance associates with comprehensive knowledge to identify potential issues within their fluid systems. Upon completion of this course, students will be able to identify the most common errors that lead to tube fitting leakage including mixed component fittings, tube bending defects, and damaged threads due to cross-threading or over-tightening.

### Course Outline:

- Identify correct tube system design, selection and placement
- Perform the installation and reassembly of Swagelok tube fitting components
- List the effects of leakage within a system
- Recognize tube fitting design characteristics and differentiate between fitting types
- Identify common pipe thread types and sealing techniques
- Explain NPT thread installation and the use of thread lubricants and sealants
- Identify tools available to make the installer's job easier



**Swagelok Tube Bending Essentials - 4 Hour Class**

This course provides instruction in the key elements of tube bending to ensure learners know how to make the right bends and don't waste material. In this class, attendees bend tube and practice the essentials. Bend with the best, improve your system performance, and reduce rework time by making the right bends the first time.

**Course Outline:**

- Identify correct tube system placement
- Understand the installation and reassembly of Swagelok tube fitting components
- Practice the "measure-bend method" through hands-on exercises using Swagelok Hand Tube Bender
- Demonstrate tube bending concepts necessary to complete quality 45°, 90°, 180° and offset bends
- Identify correct tubing types for the specific applications & Identify common tube bend defects

**Swagelok Local Orbital Welding - 4 Hour Class**

Orbital welding provides repeatable excellence with each weld. This training provides instruction on the fundamentals and benefits of orbital welding. Learners gain knowledge on equipment setup and operation in order to use our Orbital Welder rental.

**Course Outline:**

- Learn orbital welding principles and set up
- Run and troubleshoot an orbital welding system
- Learn how to operate the Swagelok Welding System

**Swagelok Thread Identification - 4 Hour Class**

Swagelok Thread Identification Essentials aims to provide our customers with the tools and understanding of how to correctly identify common thread forms and small bore tubing (SBT) system components, an awareness of pressure capabilities of the connections, and of pressure injection injuries.

**Course Outline:**

- Thread identification - practical and theoretical activities
- Tapered threads: NPT, BSPT (ISO7/1)
- Straight (parallel) threads: BSPP (ISO228/1), SAE/MS, JIC (AN), Metric, etc.
- Tapered thread sealant application
- Straight thread seal mechanisms
- Common SBT system connections and configurations
- Pressure ratings awareness
- Pressure injection injuries awareness

**2 Hour Class Offering**

Swagelok can help build your team's fluid system expertise with a variety of two-hour training courses designed by our Engineers and Fluid System Experts.

**Course Outline:**

- Regulators
- Valves
- Hoses
- Tube Fittings
- Tube Bending
- Small Bore Tubing

## Factory Training

**Swagelok offers training programs at our training facility in Solon, Ohio each focused on making business easy for the local customer.**



### **Swagelok Advanced Orbital Welding**

Swagelok offers a five-day Advanced Orbital Welder Training course that will train you to provide quality, repeatable welds with the most advanced tubing welding process available. Whether you are an experienced or an entry-level welder, we'll guide you through:

- An understanding of welding principles
- Instructions for setup and operation of the orbital welding system
- Troubleshooting for frequently encountered welding problems
- An emphasis on operational issues through hands-on experience

On the fifth day you can choose to test for ASME Section IX qualification if you need to fulfill QA/QC requirements. All of our instructors hold Certified Weld Inspector (CWI) and Certified Weld Educator (CWE) qualifications, as well as at least five years' experience in orbital welding instruction.



### **Sampling System Training**

Swagelok's hands-on training helps you design effective sampling systems, and diagnose and eliminate existing issues so you can increase efficiency and save money. Anyone who designs, constructs, operates or maintains sampling systems will gain valuable knowledge to enhance their operations. All

classes are taught by industry experts, each with over 30 years' experience, and are designed for participants of varying experience levels and industries. The courses are derived from Industrial Sampling Systems, a technical reference book authored by industry expert and consultant Tony Waters.

**If you are interested in our wide variety of training courses offered and the various packages available to you, contact us to learn more.**



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