



SWAGELOK TRAINING

COMPREHENSIVE CERTIFIED
TRAINING PROGRAMS



Since 1976, Swagelok Indonesia has been the authorized sales and service center for customers in Indonesia, providing leading solutions in fluid system technologies.

We offer the highest quality fluid system products, assemblies, and services, enabling our customers to achieve their goals consistently and confidently, even in the most demanding and critical situations.

PT NusaFluid Solusi Utama (NusaFluid) is the sole agent for Swagelok in Indonesia. As part of Swagelok, we are committed to providing our customers with custom training services that align with their specific needs and concerns.

SWAGELOK INDONESIA TRAINING SERVICES

Strong training and development programs help to develop workers who are better equipped to handle the demands of their jobs, operate more safely, and more productive. And we are passionate about making sure that such training exists for those who design, operate and maintain fluid systems.

We offer a wide range of training and services who are just entering the world of fluid systems and to those who have worked in it for years.

Our standard training offerings meet or exceed the requirements of many recognized local governing bodies and are available worldwide. You can rest assured that the class you are taking today is consistent with our organization's core values of continuous improvement, quality, and innovation, and will provide you a wealth of knowledge.

Participants leave Swagelok training with an advanced understanding of processes that can enhance workplace safety, and improve efficiency and productivity.



- Globally standardized training courses (applied to 200 Swagelok sales and service centers around the world)
- Swagelok certified trainers (theoretical, practical, & facilitation)
- Record of past attendees unique trainee identification number
- On-site training available
International subject matter experts

Save Cost
Improve Safety
Minimize Errors
Increase Productivity



SWAGELOK® VIRTUAL CUSTOMER TRAINING PROGRAM

NusaFluid has a Live Customer Training Program with the following schedule. The current available topic is **Swagelok® Essentials Training Program**.

Customers may choose from the regular training schedule below to participate. Please contact us for further details.

Venue: Swagelok Indonesia Service Center		
Month	Live Training Schedule	
January	Monday-Tuesday, 12-13	Wednesday-Thursday, 28-29
February	Monday-Tuesday, 2-3	Wednesday-Thursday, 25-26
March	Monday-Tuesday, 2-3	Wednesday-Thursday, 25-26
April	Monday-Tuesday, 6-7	Wednesday-Thursday, 29-30
May	Monday-Tuesday, 4-5	Wednesday-Thursday, 20-21
June	Monday-Tuesday, 8-9	Wednesday-Thursday, 24-25
July	Monday-Tuesday, 6-7	Wednesday-Thursday, 29-30
August	Monday-Tuesday, 3-4	Wednesday-Thursday, 26-27
September	Monday-Tuesday, 7-8	Wednesday-Thursday, 23-24
October	Monday-Tuesday, 5-6	Wednesday-Thursday, 28-29
November	Monday-Tuesday, 2-3	Wednesday-Thursday, 25-26
December	Monday-Tuesday, 7-8	Wednesday-Thursday, 16-17

SWAGELOK® COMPREHENSIVE TRAINING SERIES

We, at NusaFluid, consider safety to be our top priority. Our customers depend on our fluid control products to deliver and transfer materials safely and securely – just as we depend on our associates to adhere to the highest safety standards. NusaFluid is uniquely qualified to provide outstanding training on proper product application and installation.

Our **Swagelok® Comprehensive Training Series** include:

- **Swagelok® Essentials Training Program**
- **Swagelok® Tube Fitting Installation Inspection Essentials Training**
- **Swagelok® Tube Bending Essentials Training**
- **Swagelok® Hose Essentials Training**
- **Swagelok® Valve Essentials Training**
- **Swagelok® Medium & High Pressure Cone & Thread Installation Essentials**
- **Swagelok® FK Essentials Training**



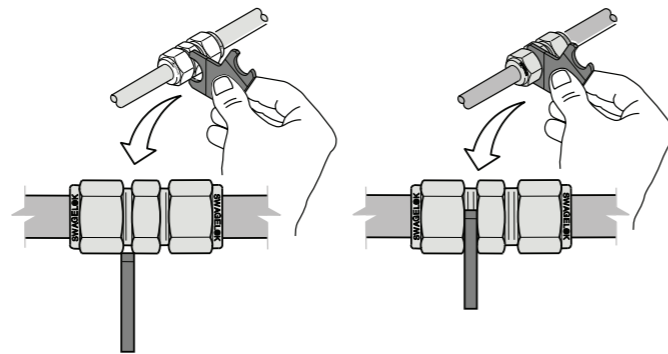
SWAGELOK® ESSENTIALS TRAINING PROGRAM

Course Aims

The integrity and performance of the fluid system, whether liquid or gas, depends on a combination of elements: good design, quality fluid system components, and competent assembly and installation by qualified personnel. Well trained installation inevitably leads to reduced material costs, more efficient installations, and improved safety. Our customers trust us to provide expert hands-on training on the proper application and installation of our many fluid system products. We teach our customers to perform and thrive under pressure, just like we do.

Who Should Attend?

The Training Essentials Program by NusaFluid is designed for anyone dealing with instrumentation such as fabrication; operations and technicians who install fittings; and engineers and draftsmen who design systems have also benefited from a better understanding of the capabilities of tubing systems.



What is Included?

- All materials, Swagelok products, tubing, and fittings used on the course
- Swagelok Pocket Installation Manual (for use on-site) and Swagelok Pocket Tube Bending Manual (for use on-site)
- Two Swagelok Training Manuals (which covers the entire course contents)
- Theoretical Assessment
- Two Practical Assessments (Tube Fitting Installation and Tube Handling/Bending)
- Certificate of Competency for the Swagelok® Installation Training Course
- Credit Card Pass ID (and Global Registration)
- Lunch and refreshments throughout the day (if held at NusaFluid Office)

Assessing for Competency

NusaFluid takes our training seriously hence there is an assessment that follows the theoretical portion of the course followed by two practical exams comprising of tube bending and tube fitting installation.

If a pass mark of 75% is reached in the test and the practicals are passed satisfactorily then the attendees will be qualified in the Swagelok® Installation Training course and will receive a certificate of competency and credit card style pass ID (and registered on our global database).

End User can check with NusaFluid that contractors and staff working on-site have been equipped with the proper skills and safety awareness regarding fluid system installation practices.

Course Content

Half day - Tube Fitting Installation and Inspection Essentials

- Tubing preparation, handling, and selection
- Correct material selection
- Metric versus fractional part identification
- Safe tube fitting installation procedures (initial assembly and re-assembly)
- Tube fitting inspection procedures
- Tubing versus piping installation
- Leakage terminology and its implications
- Quarter-turn demonstration
- Product and design characteristic of tube fitting
- Identify components required to make leak free connection
- Intermix/interchange
- Thread terminology, identification, sealing methods and Threaded installation
- Best practice in tube fitting installation (using port connector, cap, plug, depth marking tool, and pre-swaging tool)



Course Outcome

Attendees on the course, conducted by NusaFluid training staff, will learn how they can:

- Enhance fluid system performance & efficiency
- Improve safety in the work place
- Reduce costly downtime
- Help eliminate unnecessary leakage and fugitive emissions

One & half days - Tube Bending Essentials

- Tube cutting and deburring
- Bending terminology
- Hand tube bender components
- Direct measurement bending method
- Gain adjustment bending method
- Offset calculation
- Minimum bend length calculation
- Bend defects
- How to make both simple and complex offset bends
- Tube bending exercise: bending in confined space (panel)
- Tube bending exercise: 1/4 inch Tube OD Stainless
- Steel tubing with hand tube bender 1/4 inch



PART NUMBER: TRAINING-E

Delivery Classroom

Practical Content 70%

Theoretical Content 30%

Course Duration: One & Half day

Maximum Class Size: 15 attendees

Prerequisite: None

Course Assessment: Written and practical exams to measure participants' knowledge and skills

Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)

SWAGELOK® TUBE FITTINGS INSTALLATION INSPECTION ESSENTIALS TRAINING

Course Aims

In order to achieve leak free connection, it requires not only high quality of tubing, fitting but also the skilled installer about proper tubing selection and preparation, sufficient fitting installation. This is the reason why this course is designed. Another goal of this workshop is to provide the attendees with critical keys of inspection of common installation errors as well as its remedial actions.

Who Should Attend?

Anyone dealing with instrumentation such as fabrication; operations and technicians who install fittings; personnel responsible for verification and inspection of pressure tubing installations; and engineers and draftsmen who design systems.

Course Content

- Advantages of tubing systems over pipe
- Proper tubing selection, tubing preparation, tubing handling
- Proper assembly, disassembly and re-assembly of fittings
- Thread identification and installation
- Common errors leading to tube fitting leakage
- Identification of installation errors on:
 - Tubing installation
 - Tube fitting installation
 - Threaded fitting installation
- Disassembly and reassembly procedure for inspection
- Identification of mixed-component fittings (intermix/in-terchange)
 - Fractional/metric fittings
 - Alloy fittings
- Remedial actions
- Exercise of tube fitting installation and loop inspection



PART NUMBER: TRAINING-TFI

Delivery Classroom

Practical Content 50%

Theoretical Content 50%

Course Duration: Half day

Maximum Class Size: 15 attendees

Prerequisite: None

Course Assessment: Written and practical exams to measure participants' knowledge and skills

Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)



SWAGELOK® TUBE BENDING ESSENTIALS TRAINING

Course Aims

The goal of this workshop is to focus on the many different elements necessary to assure accurate and proficient tube bending. This seminar was designed with the users in mind, but is well suited for anyone interested in the design or fabrication of tubing systems. As a supplier of high quality tube, tube benders and tube preparation tools, we offer this class to provide a training resource that demystifies aspects of fluid system fabrication. Good tube fabrication techniques can improve system performance while good layout and execution can enhance the aesthetics of a system and reflect on the skill of the installer.

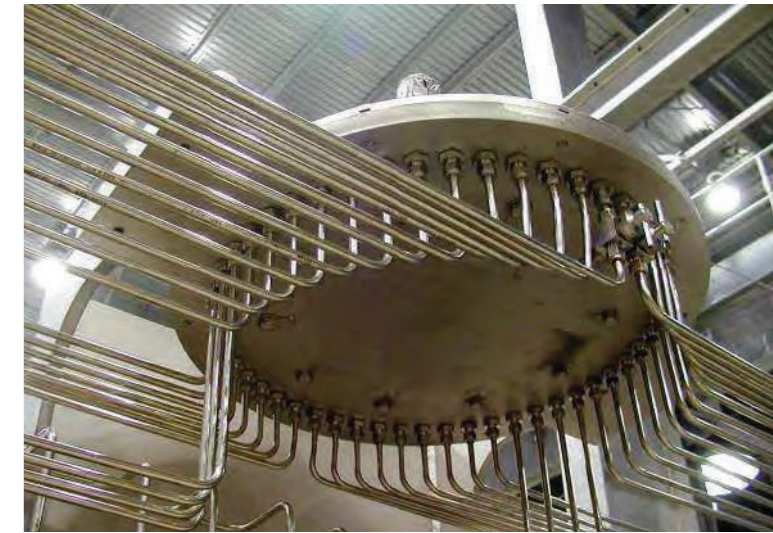
Who Should Attend?

Designed for installers and operators to ensure competency in bending as well as engineers and draftsmen who design systems.



Course Content

- Identify components of the Hand Tube Bender
- Necessary steps to prepare to complete a tube bend
- Define bending terminology, measurement marks, minimum bend lengths, offset
- Bending methods
- General approaches to tube bending
- Point out common bending defects
- Bend exercise completing quality 45°, 90°, 180° and offset bends



PART NUMBER: TRAINING-TB

Delivery Classroom

Practical Content 80%

Theoretical Content 20%

Course Duration: One day

Maximum Class Size: 15 attendees

Prerequisite: None

Course Assessment: Written and practical exams to measure participants' knowledge and skills

Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)



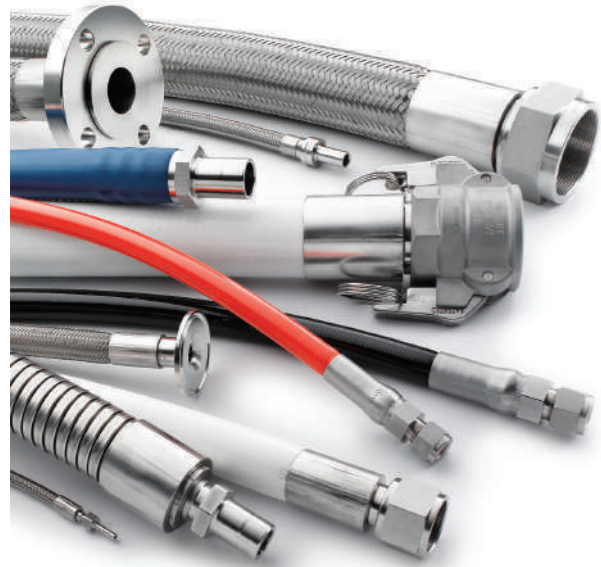
SWAGELOK® HOSE ESSENTIALS TRAINING

Course Aims

The goal of this workshop is to provide delegates with comprehensive knowledge on hose and flexible tubing construction, components, identification, selection, installation and best practices. The training covers inspection practices in line with the energy institute guidelines.

Who Should Attend?

Technicians, maintenance and engineering personnel who requires knowledge and understanding on hose and flexible tubing selection, installation, inspection and best practices.



Course Content

- Hose and flexible tubing construction
- The components of a hose assembly
- Hose assembly identification
- Hose selection considerations
- Hose inspection considerations
- Troubleshooting and examples of bad practices in hose and flexible tubing installation
- Hose installation and inspection
- Practical activities in line with the industry guidelines
- Written assessment



PART NUMBER: TRAINING-HOSE

Delivery Classroom
Practical Content 20%
Theoretical Content 80%

Course Duration: Half day
Maximum Class Size: 15 attendees
Prerequisite: None
Course Assessment: Written and practical exams to measure participants' knowledge and skills
Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)



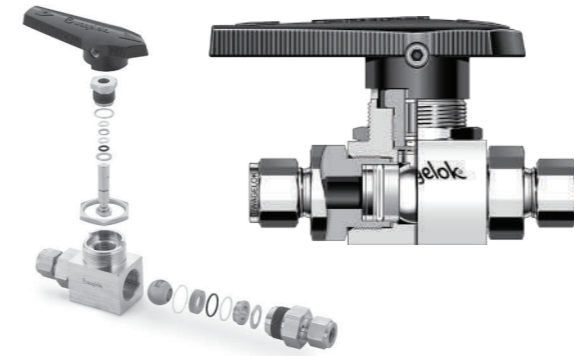
SWAGELOK® VALVE ESSENTIALS TRAINING

Course Aims

To provide foundational system knowledge that helps to reduce costs, ensure safety and extend production cycle in your valve systems by identifying proper valve types and functions, understand and identify constructions and common issues.

Who Should Attend?

Technicians, maintenance and engineering personnel who require knowledge and understanding of how to choose the right valves for your applications.



Course Content

- Identify valve types, functions, constructions, and operation
- Understand proper installation, repair, and troubleshooting of valves
- Define leakage and how to control the defined flow
- Understand the system's factors impacting the flow
- Identify and list factors affecting the service life
- How to read the flow curves and Pressure-Temperature tables
- Written assessment



PART NUMBER: TRAINING-VALVE

Delivery Classroom
Practical Content 20%
Theoretical Content 80%

Course Duration: Half day
Maximum Class Size: 15 attendees
Prerequisite: None
Course Assessment: Written and practical exams to measure participants' knowledge and skills
Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)



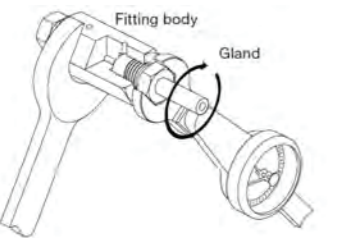
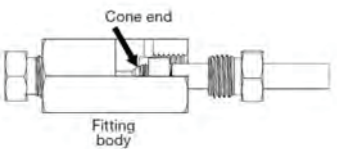
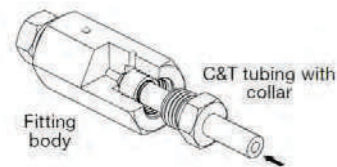
SWAGELOK® MEDIUM & HIGH PRESSURE CONE & THREAD INSTALLATION ESSENTIALS

Course Aims

The purpose of this course is to build up comprehensive understanding about cone and thread fittings in both medium and high-pressure design. It is important to differentiate the components between medium and high-pressure version. Proper tube selection, installation and inspection of coned and threaded tubing system will also be provided in the course as well as its remedial action.

Who Should Attend?

Technicians, maintenance and engineering personnel involved in the installation, maintenance, inspection and design of medium and high pressure coned and threaded tubing systems.



Course Content

- Medium & high pressure tubing
- Cone & thread connections
- Medium & high sealing features
- Assembly procedure & torque values
- Component identification
- Needle, ball, & check valves
- Safety consideration
- Tube preparation & handling
- Written assessment



PART NUMBER: TRAINING-CT

Delivery Classroom and Workshop
Practical Content 50%
Theoretical Content 50%

Course Duration: One day
Maximum Class Size: 15 attendees
Prerequisite: None
Course Assessment: Written and practical exams to measure participants' knowledge and skills
Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)

SWAGELOK® FK ESSENTIALS TRAINING

Course Aims

The purpose of this course is to provide a comprehensive understanding of FK Series Fittings and their installation for medium-pressure applications.

Course Content

- Advantages of Swagelok® FK Series Fitting compared to Cone & Thread Fitting
- Identify key design characteristics of the Swagelok® FK Tube Fitting
- Describe the variables and considerations of medium pressure tubing, and how to prepare it for installation with the FK Fitting
- Properly install a Swagelok® FK Tube Fitting
- List common installation errors and how to avoid them

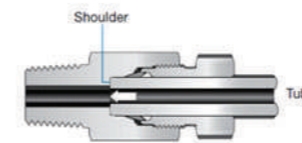
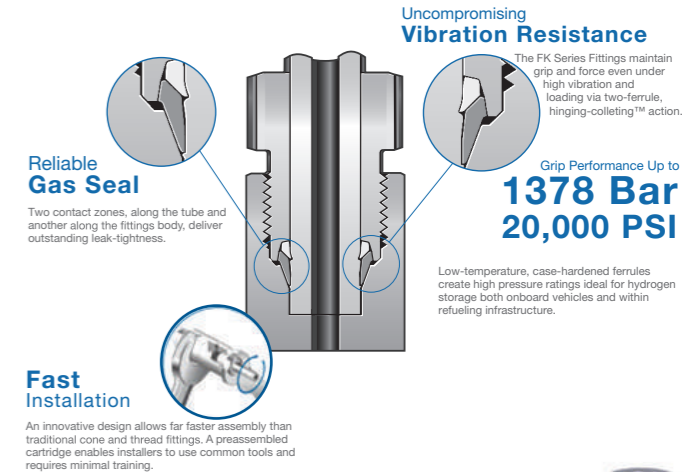
Who Should Attend?

Technicians, maintenance and engineering personnel involved in the installation, maintenance, inspection and design of medium and high pressure coned and threaded tubing systems.

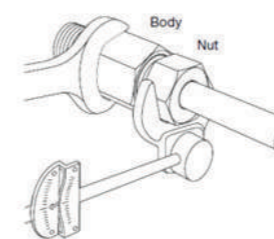
PART NUMBER: TRAINING-FK

Delivery Classroom and Workshop
Practical Content 50%
Theoretical Content 50%

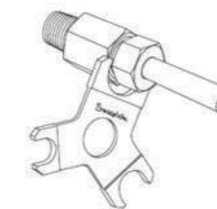
Course Duration: One day
Maximum Class Size: 15 attendees
Prerequisite: None
Course Assessment: Written and practical exams to measure participants' knowledge and skills
Training Validity: Swagelok® Certificate of Completion with 3 years validity (Subject to successful completion of both practical and theoretical exam)



Make sure that the tube rests firmly on the shoulder of the fitting body.



Hold the body steady and tighten the nut to the specified torque.



Use the Swagelok® medium-pressure gap inspection gauge to ensure that the fitting has been tightened sufficiently.

Male Nut

Back Ferrule
 Front Ferrule

Fitting Body



**Swagelok Indonesia
(Head Office and Service Center)**

PT NusaFluid Solusi Utama
Infinia Park, Block A No. 60-61
Jl. Dr. Saharjo, No. 45, RT.1/RW.7,
Manggarai, Kec. Tebet, Jakarta 12850.
T: +62-21 2200 8485
E: nusafluid.solusiutama@swagelok.co.id
W: indonesia.swagelok.com

**Swagelok Indonesia
(Sales Representative Office)**

PT NusaFluid Solusi Utama
Spazio Building, 6th Floor, Unit 625B,
Jl. Mayjend Yono Sewoyo Kavling 3,
Pradahkalikendal, Dukuh Pakis,
Surabaya, 60226
Tel: +62 21-2200 8485
Email: nusafluid.solusiutama@swagelok.co.id

**Swagelok Indonesia
(Sales Representative Office)**

Indofluid System Technologies Pte Ltd
10 Ubi Crescent, #05-97 Ubi Techpark
(Lobby E), Singapore 408564
Tel: +65 6908 5300
Email: info@indofluid.swagelok.com



**ENGINEERED TO PERFORM
UNDER PRESSURE**

NusaFluid can provide you with a wide variety of service solutions. Our quality, performance and reliability will reduce your costs in designing, sourcing, installing and maintaining fluid system solutions.

