

Swagelok Knows Hose



For more than 75 years, Swagelok leak-tight componentry has helped the global Oil & Gas, Chemical, Refining, Power, Steel, Research, and other major markets employing fluid systems, to stay safe, productive, efficient, and profitable. Our tube fittings, with their grip-type mechanism that creates a unique hinging-and-colleting action, deliver unsurpassed performance in even the most challenging applications – as do our valves, manifolds, gauges, tubing, and regulators.

Our **Industrial Hoses**, though, continue to set new standards for reliable, repeatable results when you need a flexible connection between stationary and moving equipment, when a connection is temporary or disconnects are frequent, or when you must isolate from high-vibration machinery. In all these operational scenarios, hose use means far fewer connections – and, thus, substantially less potential for dangerous and costly leakage. Some basics:

RULE #1:

*Know that your hoses are **STAMPED**. In other words, apply our methodology to ensure that you're choosing the ideal hose for the job at hand:*

SIZE What's the necessary OD, ID, and length for your work?

TEMPERATURE of the material to be conveyed and your environment.

APPLICATION What are your conditions of use?

MATERIAL being conveyed. What's its type and concentration?

PRESSURE to which the assembly will be exposed.

ENDS The style, type, orientation, attachment methods...

DELIVERY What testing, quality checks, packaging, and other requirements are involved?

RULE #2:

Know the four primary hose core types and 11 end connections available to you:

All-Metal



For High-Temperature, Medium-Pressure, Vacuum, Corrosive, or General-Purpose applications

FX-Series style shown

Fluoropolymer



For Inert and Flexible applications

T Series PTFE style shown

Thermoplastic



For High-Pressure, Low-Temperature applications

TP Series style shown

Rubber



For Flexible applications

PB Series style shown

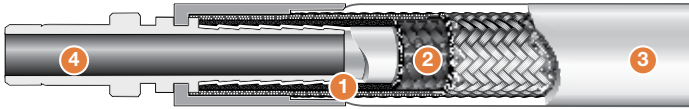
11 END CONNECTIONS

Tube Stub	Kwik Clamps	Lap Joint Flange
Tube Fittings	Cam and Groove	SAE 37 JICo (Male and Female)
VCR/VCO	ISO/BSP	NPT (Male and Female)
Tube Butt Weld	KF	

RULE #3:

Know the importance of a reinforcement layer:

Such built-in backup strengthens the core tube axially and longitudinally to ensure that your hose can withstand increased pressures.



In addition, such reinforcement delivers kink and crush resistance, electrical continuity, hoop and torsion strength, volumetric expansion control, flexibility, and force to bend.

However, like hoses in general, not all hose reinforcements are of the same quality and composition. Swagelok offers and recommends braided reinforcement styles that employ wires or fibers in a strong, resilient configuration that will not untwist when your hose is pressurized, resulting in far superior longevity versus coiled models.

RULE #4:

Know your enhancement options:

Choose from our six **covers** and/or four **tags** to dramatically improve service life:

Fire Jacket: Provides insulation from internal system temperature extremes.

Thermosleeve: Protects from weld spatter and resists UV light effects.

Armor Guard: Protects against kinking and abrasion; highly flexible.

Spring Guard: Protects against kinking and abrasion; highly flexible.

Spiral Guard: Protects against abrasion; highly flexible.

Thermal Wrap: Delivers superior insulation.



CHOOSE FROM 4 TAGGING OPTIONS



Lanyard

Attaches with a stainless steel lanyard and aluminum clamp.



Clamp

Attaches with two metal bands.



Mat

Attaches with an adhesive.



Perma

Attaches via an adhesive.

RULE #5:

Know the unquestioned value of a comprehensive maintenance plan:

Establish a routine to get timely and pertinent information on each hose employed within your plant or facility: service life, when installed, when last inspected, inspection frequency, location/inventory of replacement hoses, operating pressures... Developing a meaningful monitoring schedule may not be easy and will take time, but will provide measurable, cost-saving benefits, essentially ensuring that you don't wait too long to replace a hose and run the risk of system failure, or changeout too early and lose precious uptime.

RULE #6:

*Know that your nearby Swagelok distributor is **always** ready and able to help:*

Our two certified Swagelok Hose Advisors can conduct an onsite survey to look for, evaluate, and report:



Gary Osman
Field Services
Engineer



Mike Gagel
Strategic Support
Services Specialist

- Broken Wires
- Abrasion
- Corrosion
- Ovality
- Stiffness/Hardness
- Color Changes
- Cover Blisters
- Leakage
- Motion
- Improper Sizing
- Damaged Reinforcements
- Correct Type for Application
- Operating Conditions: Pressure, Temperature, Flow...
- Environmental Factors: Temperature, Humidity...
- Kinks/Flat Spots
- Cleaning and Storage Practices
-and so much more!

Or, our Swagelok-trained fabrication master technicians can build your hose to exact specifications the first time – and every time – with all work fully warranted by Swagelok Company.

Plus, we offer renowned **Swagelok Hose Safety Essentials** training where you'll learn:

- best selection, sizing, storage, maintenance, and routing practices
- exactly why, when, where, and how hose should be used and how to achieve optimum life

For complete Swagelok Hose information:

<https://pittsburgh.swagelok.com/-/media/distributor-media/o-s/pittsburgh/pdfs/hose-brochure-322web.ashx>

Your Exceptional Customer Experience is Our Rule

Our goal is to always deliver premier value and performance, no matter how challenging your application or operating conditions. We continually strive to improve – in everything we do – to ensure that we gain and maintain your trust today and in the future. These four primary pillars are the foundation for our ongoing promise and commitment to you:



QUALITY

Since 1947, Swagelok products have kept companies in the global fluid-handling industry safe, productive, and profitable. Our people on the plant floor, our manufacturing processes and procedures, our materials, and our strict quality control are paramount to the unsurpassed Swagelok brand eminence – we do not disappoint under pressure.



EXPERTISE

Our Swagelok Field Engineer and Technical Sales Managers will assist you in selecting the ideal Swagelok tooling for your specific requirements, simple jobs to your most complex projects. In addition, these professionals will provide insightful recommendations on how you can improve safety, while quickly reducing downtime and other significant inefficiencies.



AVAILABILITY

Having superior products is one thing; having them readily in stock is another. We inventory more than 3,000 Swagelok SKUs at all times at our 49 Meade Avenue (Pittsburgh) facility – for your pick up or our 99+% accurate shipments to you right when and where you need them.



SUPPORT

- a certified Swagelok Field Engineer
- 6 Engineers on staff
- 22 Customer-First Associates who genuinely appreciate your business and work tirelessly to keep it
- 15,000 sq. ft. Warehouse, Fabrication, and Staging area
- Masterful Custom Design and Build capabilities, sub-assemblies to large, intricate panels
- Application-Solution Panels: Grab Sampling, Gas Distribution, Mechanical Seal Support
- Onsite Tube Bending
- 20+ Swagelok Safety Training Titles – at your site or ours
- 30+ Swagelok Rental Tools: Multi-Head Hydraulic Swagers, Benchtop Benders, Orbital Welders
- Vendor-Managed Inventories
- Media-Loss and Industrial Hose Advisories

FINEST IN THE FIELD *(SIXTH IN A SERIES)*

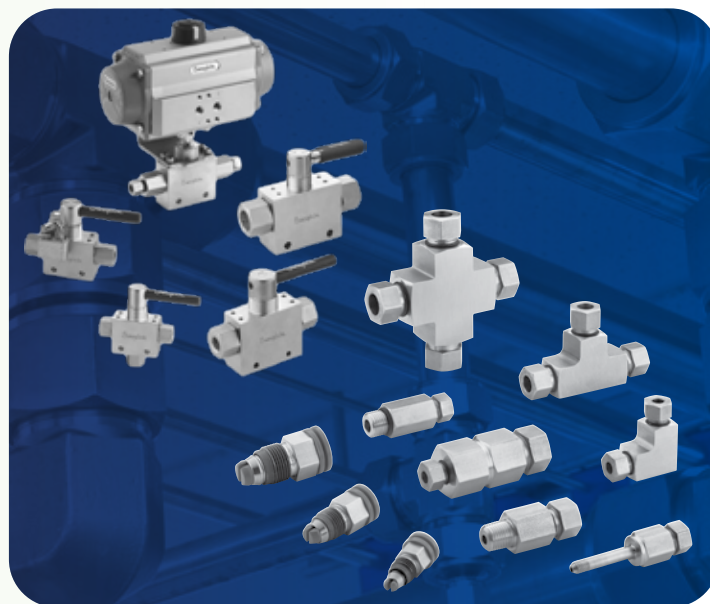
Customer Challenge:

A major Oil and Gas company required componentry that would provide unfailing, ultra-reliable, leak-tight performance while withstanding 15,000 psi operating pressures on the firm's nine chemical injection skids – each with 1,500 connections (or 1,500 potential leaks points per skid). Finding – and then fixing – any significant leakage had always meant dozens of hours in manpower, weeks of downtime, and, most importantly, production delays of at least four months.



OUR SOLUTION:

Swagelok FK-Series Gaugeable, Compression Tube Fittings, made of 316 stainless steel, for temperatures up to 1,000° F, and for working pressures up to 20,000 psi, feature a two-piece design, with a female body and a preassembled cartridge containing a male nut and color-coded front and back ferrules for simple and proper installation. These components were employed in conjunction with compact Swagelok FKB-Series Trunnion-Style Low-Emission, Low-Torque Ball Valves – also for working pressures up to 20,000 psi and available with 2-way or 3-way flow patterns and multiple mounting options.



BOTTOM LINE:

The site experienced **ZERO leaks** after more than 6,000 cycles of hydrostatic testing, saved over 160 man-hours of maintenance labor, and realized up to 100 times more valve cycles versus past tooling and efforts!



TAKE NOTHING FOR GRANTED

Often, small media leaks are neglected as you focus on larger, more pressing site concerns. But no matter how seemingly inconsequential the connection issue, potential health, downtime, and negative financial implications should be considered.

For example:

- Lose fluid lubrication and risk expensive equipment damage, perhaps even machine failure.
- Shut down a process for repair and reduce production and hurt your Bottom Line.
- Produce off-spec product due to improper instrument calibration/operation and be faced with material rework, slashed selling prices, or substantial scrap.
- Ignore leak-caused spills or drips and jeopardize worker safety.
- Ignore leaking systems and machinery and face probable non-compliance fines or worse.

In most cases, unreliable metal-to-metal seals and poorly assembled tube fittings are the major culprits for leakage. Even the tiniest air leaks can lead to you spending more money to effectively run your plant's equipment. But **sub-par tubing selection, handling, and preparation** could also be key causes for your operating inefficiencies, potentially placing your staff and valuable assets in extreme danger, especially in gas and high-pressure applications.

So, how can we help?

First, learn how to expertly prepare tubing: Know how to cut it squarely to create an angled end. To avoid compromising the integrity of a seal, make sure to then debur or file the ends of any tubes that have been cut. The more time and attention you devote to your tubing activities before installation, the fewer, and less severe, your future system safety and performance issues.

Secondly, have the tools readily available to cut and debur: hacksaws, tube cutters, rasps, files... anything relevant to executing a clean, square cut. Improper handling results in scratches, nicks, and dents. Say a worker pulls a 20' stick of tubing from a container, cuts a 6' piece, then slides the remainder of the stick back onto the rack. If the end of the cut piece isn't deburred or filed, the other tubing still in the container will likely be nicked or scratched. Denting usually occurs when the end of a stick of tubing hits the ground when pulled off the rack. Any of these imperfections, no matter how slight, can dramatically impact the performance of your system.

LOST FLUID

**LOST
PRODUCTION**



**EQUIPMENT
DAMAGE**



**OFF-SPECIFICATION
PRODUCT**

**DEGRADED
WORK
ENVIRONMENT**



**FINES
FOR
NONCOMPLIANCE**



CLEANUP

Plus, we offer proven **Technical Application Consultation**. **Simply email our Swagelok Field Engineer, Gary Osman, at gary.osman@swagelok.com** for expert Swagelok tooling and services recommendations on how we can quickly help resolve even your toughest fluid-related challenges. Or enroll in our comprehensive, all-day **Swagelok Tube Fitting Installation/Inspection & Tube Bending Safety Essentials** course to learn the safest and proper way to pull up fittings and bend tubing of various materials and diameters. We supply all class materials! (And, if you want to take your bending skills to a master level, consider our multi-day **Swagelok Advanced Tube Bending** event for optimum fluid-line performance and aesthetics.)

DON'T DISMISS

(the Convenience of)

THIS CASE



KIT CONTENTS:

- *Hand Tube Benders*
- *Tee Wrenches*
- *Pre-Swaging Tools*
- *Ratchet Wrenches*
- *Tube Deburring Tool*
- *Gap Inspection Gauges*
- *Depth Marking Tools*
- *Tube Cutter*
- *Tube Fitter's Manual*



Call **412.261.3212** or email tony.delbianco@swagelok.com today for complete details on our highly durable, easily portable, and weather-resistant **Swagelok Tube Fitter's Tool Case**. It contains just about everything you'll need – in one nicely organized place – to install a fluid system: hand tube benders, tee and ratchet wrenches, pre-swaging, depth marking, and tube-deburring tools, gap-inspection gauges, tube cutters, and your very own Swagelok Tube Fitter's Manual! **Just specify part number: MS-TOOL-CASE** for a quote or to purchase.

RENTAL UPGRADE

We've recently added **QR Codes** to our rental tool packages. Now when you lease our Multi-Head Hydraulic Swaging Units (for 1" and smaller OR 1" and higher installs), Benchtop Benders, and Orbital Welder Power Supplies and Heads, simply scan the code on each case to go directly to a brief Swagelok instructional video on how to safely and properly operate each tool. And remember, we rent our equipment by the day, week, month, or entire duration of your projects.

Contact rudy.frank@swagelok.com or your local Swagelok rep for full details.



Scan for our instructional video.

UP IN LIGHTS



If you're traveling on I-70 East in the Washington, Pa., area, be on the lookout for our five large rotating **digital billboards** that detail our commitment to your safe and sustainable future. Swagelok exceptionally durable components and panel designs/assemblies are constructed of premium materials to be ultra-leak-tight to drastically reduce harmful emissions when even the smallest-molecule gases are involved. Our billboards will run through the middle of February.



MOVIE BRIEF

We encourage you to watch all our [Quick-Look videos](#) on the [Resources Page](#) of [pittsburgh.swagelok.com](#)

There, you'll find numerous tips, in visual format, on how to stay safe, while strongly boosting your overall productivity and efficiency, no matter your market, equipment, operating conditions, or application severity.



Check out our brand-new Clean Energy short clip:

<https://pittsburgh.swagelok.com/en/resources/product-and-services-quick-looks/swagelok-sustainability>

Your 2023 Safety and Productivity Investment: SWAGELOK TRAINING COURSES

Schedule these proven, in-depth classes to help you improve site and project performance and profitability:



Our Essentials Series

- **1 Day** - Fitting Installation & Tube Bending
- **1 Day** - Fitting Inspection & Tube Bending
- **½ Day** - Fitting Installation & Inspection
- **½ Day** - Valve Selection & Maintenance
- **½ Day** - Hose Selection & Maintenance



Our Masters Series

- **4 Days** - Advanced Tube Bending
- **5 Days** - Orbital Welding
- **1 Day** - Materials Science



Our Process Analyzer Series

- **2 Days** - Sampling System Problem-Solving & Maintenance
- **5 Days** - Process Analyzer Sampling Systems/PASS 1
- **5 Days** - Process Analyzer Sampling Systems/PASS Sub-Systems
- **5 Days** - Process Analyzer Sampling Systems/PASS Plus

WHY SWAGELOK

- We offer an unparalleled array of pertinent and timely course titles.
- We can bring our training directly to your site or project location.
- All our classes include a full money-back guarantee.
- All graduates receive a genuine Swagelok Certificate of Completion, plus several valuable take-home items.
- We supply all class materials – students just need to show up!
- Our classes count toward **Continuing Education** credits.

FOR MORE DETAILS:

including costs and event logistics, please contact:

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CONTACT US

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