



## REAL SYSTEM SOLUTIONS FOR REAL SYSTEM PROBLEMS

***Gary Osman, who has served you for nearly 10 years as our Applications Engineer, is now a fully certified Swagelok Regional Field Engineer.***

In this highly enhanced role, Gary will be your principal technical liaison to not only Swagelok Pittsburgh | Tri-State Area, but to Swagelok Company as well. He'll bring advanced first-hand knowledge and expertise to all aspects of your fluid systems, including Analytical Instrumentation, Process Instrumentation, Grab Sampling Systems, Mechanical Seal Support Systems, and overall System Audits: Energy-Loss Evaluations and Hose Advisories.

In addition, he's your trusted resource for the development of customized fluid-handling solutions – through project support and onsite troubleshooting – to positively impact your operational productivity, efficiency, and profitability. He specializes in creating P&IDs and dispensing product selection and placement counsel for your specific system/applications. Gary is also your helpful contact for compliance with regulatory demands for worker/site safety and emissions.



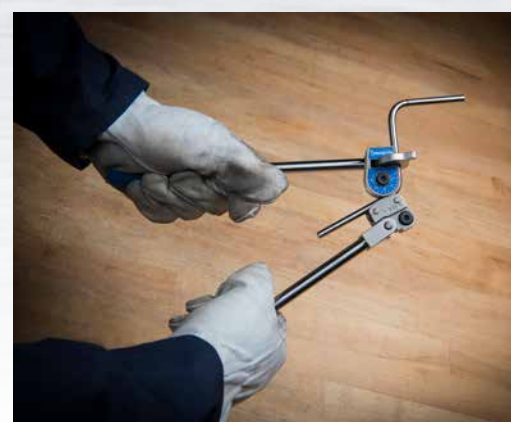
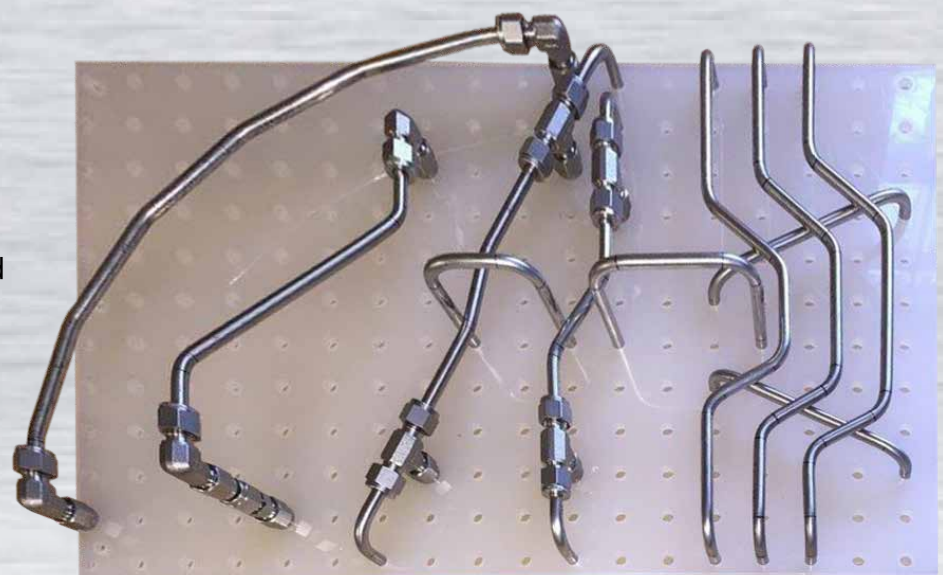
This Pittsburgh-area native holds a Civil Engineering degree from Penn State University and has also been recognized as a Fluid Power Specialist by the International Fluid Power Society. An avid fan of all local sports teams, Gary and his wife, Ashley, are the proud parents of two daughters, Stella and Chloe, and Bindi, the family's beloved Boxer.

## THE FINE ART OF TUBE BENDING

Tubing, when bent properly, delivers several distinct advantages over threaded or welded pipe in a fluid system. Because tubing can be more easily routed, it provides technicians the ability to create a more intricate and efficient system design with fewer connection points. And that means, of course, a greatly reduced potential for costly and dangerous leakage.

Pipe also requires cutting, deburring, and threading. Male threads must be wrapped with PTFE tape or covered with sealant. All these steps result in extended labor time and money. You need to prepare, cut, and deburr tubing, too...but a directional change is made via a bend versus the addition of a new fitting and, thus, another possible source of system media loss. Tubing also facilitates a less turbulent flow through a system and, because it's significantly lighter than pipe, less bracketing support is necessary.

But thought, skill, and practice are required to bend tubing properly. Your primary task is to transport fluids or gases from point A to point B without interfering with other critical areas of your overall system. In theory, that sounds simplistic; but often, it is not.



To help you create quality bends and reduce downtime, scrap, and rework, Swagelok Pittsburgh | Tri-State Area offers two levels of instruction:

### **Swagelok Tube Fitting Installation & Tube Bending Safety Essentials**

- An eight-hour primer course that awards a graduate two genuine Swagelok Certificates of Completion for a single day of training
- Students will learn how to assemble a tube fitting and make tube bends of 45°, 90°, 180°, and offsets
- We supply all class materials; participants just need to show up at the assigned time and location
- Available at your facility or at our Training Center in Pittsburgh

### **Swagelok Advanced Tube Bending**

- A 3.5-day comprehensive course that shows a student how to expertly use a hand tube bender and a manual benchtop bender
- A traditional Measure/Mark/Bend and a proven Swagelok method (for optimum aesthetics and accuracy) are taught
- Learn about stretch and springback and how to make parallel tubing runs, custom and rolling offset/complex/segmented bends, and so much more
- Learn how to identify and avoid typical bend defects

For more information, email [rudy.frank@swagelok.com](mailto:rudy.frank@swagelok.com)





Choosing the optimum Valve or Hose for a particular application is obviously critical to the overall performance, efficiency, and safety of a fluid system. Choosing the ideal components during the system design phase prevents premature replacement – and cost – of such parts down the line...as most routine maintenance usually involves the swapping out of a worn or poor-performing Valve or Hose with the same type already found within a system.

To help you select the “right” products right from the start, Swagelok® recommends a STAMPED analysis methodology. Think:

S

= Size

**VALVES** - What’s the desired/required flow rate of your system? The size of your Valve must have a flow capacity to accommodate such. Also: What size orifice is needed? How much flow resistance is required?

**HOSES** - What’s the necessary OD, ID, and length of Hose for your application?

T

= Temperature

**VALVES** - Key: Will these be constant or subjected to frequent changes? The answer should influence your valve choice and how often preventative maintenance will be required.

**HOSES** - Similar considerations for the material being conveyed and the overall operating environment.

A

= Application

**VALVES** - Does the valve need to start or stop flow? Does the flow level need to be regulated or redirected? Is overpressure protection needed?

**HOSES** - What are the conditions of use? How and where will hoses be routed? What’s bend radius?

M

= Media

**VALVES** - Your system media must be compatible with the makeup of your bodies, seats, stem tips, and more. Also consider where the valve will be placed into service and, thus, subjected to weather variances.

**HOSES** - What’s the type and concentration of the conveyed material? What’s its conductivity?

P

= Pressure

**VALVES** - Two types to consider: Working, or your system’s normal operating pressure, and Design, the maximum pressure limit specified by the valve manufacturer.

**HOSES** - What’s your working pressure? Is there surge and/or vacuum to consider?

E

= End Connection

**VALVES** - Multiple choices available: tube fittings, pipe threads, flanges, welded ends... Just be certain, to avoid leakage, that whatever you select is sized correctly and can handle your system pressure and temperature.

**HOSES** - 11 different options, including Tube Stubs, Tube Fittings, VCR/VCO, Kwik Clamps, Tube Butt Welds, and more. Think about your attachment method and orientation as well.

D

= Delivery

**VALVES** - Simply: When do you need them? How many do you need?

**HOSES** - As with valves, when/how many....but also: Any special testing or packaging required?

**STAMPED:** An acronym worth remembering and applying to ensure that your fluid-system componentry choices deliver safe and exceptional performance, economy, and profitability!

## CONQUER CORROSION

***DID YOU KNOW THAT CORROSION, the physical degradation of a material due to interactions with its environment, costs the global Oil and Gas production industry more than \$1.3 BILLION ANNUALLY?***

You can avoid major problems by choosing a componentry supplier with established and stringent quality control measures in place to prevent corrosion.

Swagelok’s renowned 316 Stainless Steel tube fittings are subjected to extensive Chloride Stress Corrosion Cracking testing. In a landmark study against 110 competitive products, none of the 72 Swagelok fittings cracked or leaked after more than 700 hours of severe testing. The competitors didn’t fare as well, however, as 43 cracked and three visibly leaked.

Then again, our 316 Stainless Steel maintains a minimum of 17% Chromium and 12% Nickel, even though the American Society of Testing and Materials (ASTM) requires minimums of 16% and 10% for those two metallurgical elements, respectively.

Just another reason our decorated history in Materials Science can help make a Bottom-Line difference in your fluid system safety and performance!



## DELIVERING IN THE MOST DEMANDING ENVIRONMENTS

The new Swagelok® GB Series General-Purpose, Bi-Directional, Full-Flow Ball Valve will slash your installation, maintenance, and inventory costs – no matter how challenging your (up to 6000 psig) Oil and Gas or Chemical and Refining application.



Available in 1/2” or 7/8” bore sizes and in corrosion-resistant materials such as 316/316L, Alloy 2507, 6-Moly, Alloy 625, Alloy 825, and Alloy C-276, our new GB component is equipped with innovative, live-loaded seats to maintain shutoff at low and high pressure changes in temperature. For enhanced safety, it has mechanically locked end screws that will not rotate even when installing/removing the largest end connections. Plus, a reliable stem seal is provided that, among numerous other advantages, features directional stem flats that show you whether valve is open or closed; a bottom-loaded stem that prevents blowout; and a grounding spring that ensures antistatic protection.

No O-rings are required, so you’ll have zero compatibility concerns with most hydrocarbons, solvents, or strong acids. And the GB’s special body bolt pattern enables rapid and economical installation of a lockout handle, panel mount, or pneumatic actuator by your local Fabrication experts at Swagelok Pittsburgh | Tri-State Area.

For a copy of our new Swagelok GB Valve catalog or interactive pdf, contact [andy.wright@swagelok.com](mailto:andy.wright@swagelok.com).

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