

FITTINGS FACTS:

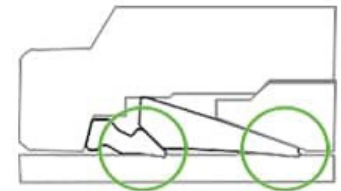
Types, Threads, Pitch, and More



Critical considerations when choosing a fitting for your application:

Compression Tube Fittings

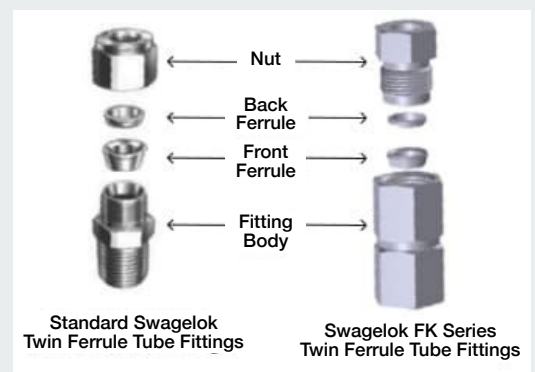
- Commonly employ ferrules to create a leak-tight seal
- **Action:** Ferrule bites into tubing as it's compressed between nut and fitting during tightening
- **Overall Advantages:** Easy to assemble/disassemble; exceptional grip strength and seal
- **Two-Ferrule Design Advantage:** Excellent vibration resistance as the back ferrule, in a hinging-and-colleting maneuver, delivers more back ferrule material for direct and axial support during tube grip; a highly reliable gas seal is created as well



Two-Ferrule, Mechanical Grip Design

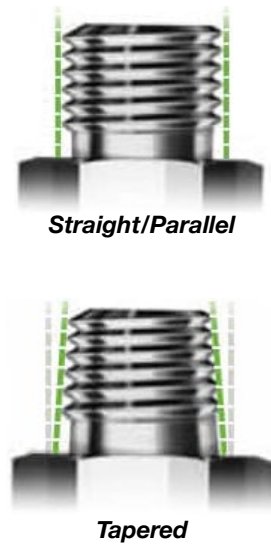
Medium-Pressure Tube Fittings

- Use a female body, a male nut, and two pre-oriented ferrules in a hinging-colleting action
- A unique, dynamic wedge is created – enabling remakeable pullups via torque
- Provide enhanced tube bite for a superior gas seal – initial installation and every remake
- Our FK Series feature a pre-assembled cartridge to assure proper/safe ferrule orientation to slash installation time and future maintenance costs



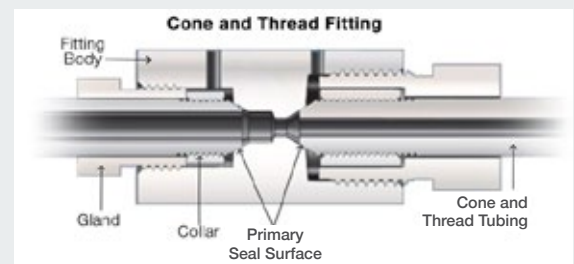
Threaded Fittings

- Make a connection by inserting a Male (with threads on outside) into a Female thread
- **Two varieties:** with **Straight/Parallel** or with **Tapered** threads
- **Straight** hold a nut onto a fitting body by gasket, O-ring, or metal-to-metal contact to create a leak-tight seal; parallel to the centerline
- **Straight:** For applications where system pressure will not exceed 5,000 psi
- **Tapered** seal as the Male and Female threads converge; angled to the centerline
- **Tapered:** Require tape or sealant to fill gaps between crests and roots to avoid leakage
- **Tapered:** For applications for system pressures up to 15,000 psi



Cone-and-Thread Tube Fittings

- Multiple alloys available
- Ideal for medium to high pressure applications
- Feature a gland, a collar, a female port, and a weep hole for optimum leak detection and correct installation
- Require special coning/threading tools, plus lubrication, to make a connection



Thread and Connections: Some Basics

Thread Gender:

The placement of threads on the fitting; **Male** outside, **Female** inside;
Male threads insert into **Female** threads

Crest and Roots:

Crests are peaks; **Roots** are valleys

Often distinct according to different thread standards

Flank:

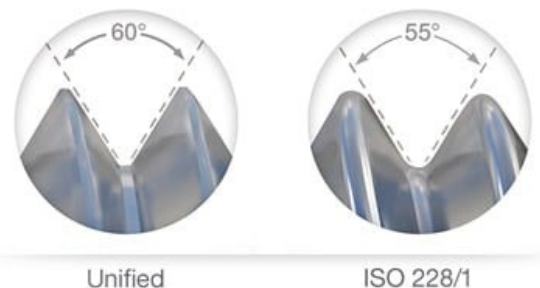
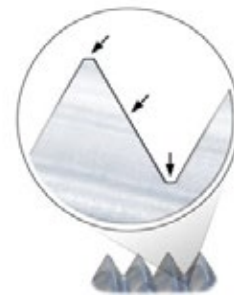
The flat surface between crest and root

Pitch:

Distance between the fitting's threads; identification varies by standard: NPT, ISO, UTS...

Angle:

Measures the degree of angle between threads; also varies by standard



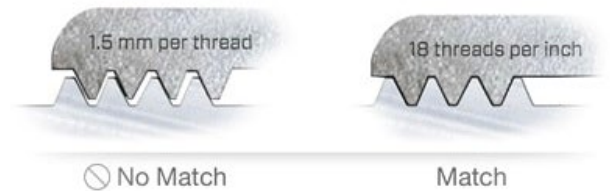
Identifying Thread Types | Measuring Thread Diameters

Make sure you have the proper tools to safely determine whether a thread is tapered or straight: calipers, pitch gauge, and a thread pitch ID guide. **Expert advice:** Use a caliper to measure the male or female thread's crest-to-crest diameter on the first, fourth, and last full threads...such results will not only tell you a thread's type, but will give you its diameter, too. Also be sure to note the geometry of the thread's roots and crests to assure compatibility.



Determining Thread Pitch

Use a pitch gauge to check the thread against each form until you find the perfect match. (This may take some time...some fractional and metric forms are quite similar.)



Establishing Thread Standard

Once you know your thread's gender, type, nominal diameter, and pitch, reference the **Swagelok Thread and End Connection Identification Guide** to determine your thread standard AND to identify your appropriate end connection.



Support:

Visit www.swagelok.com/en/blog/small-bore-tube-fittings-key-differences
and www.swagelok.com/en/blog/fittings-identifying-thread-size-pitch

For more information, contact:

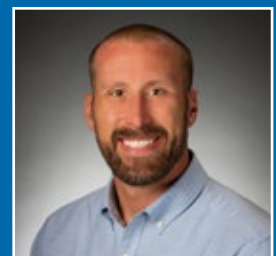
Gary Osman, Swagelok Field Engineer

gary.osman@swagelok.com • 412.761.3212



Tony Del Bianco, Direct Sales Representative

tony.delbianco@swagelok.com • 412.761.3212



P: 412.761.3212 **W:** pittsburgh.swagelok.com



@SwagelokPGH



SwagelokPittsburgh



Swagelok Pittsburgh | Tri-State Area

All service marks and trademarks shown are owned and registered by Swagelok Company. © 2022 Swagelok Company. www.swagelok.com

Swagelok

Swagelok Pittsburgh | Tri-State Area