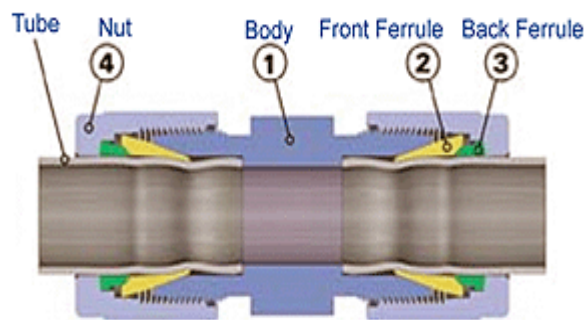


Tube Fittings



Lawrence Present a wide range compression tube fittings which are carefully designed and manufactured to very stringent tolerances to provide a zero leak, Torque-Free seal at all tubing connections. Lawrence Tube fittings connect runs of tubing for in-line, offset, multi-port, and mounting configurations to other tubing sections, pipe, hose, and other fluid transfer components. Systems are typically configured with straight sections connected by fittings or specially formed connections and joints.

Straight Fittings	Male Connector Female Connector 37 Deg Flare Port Connector Union
90 Deg Elbow Fittings	Male Elbow Female Elbow Union Elbow
45 Deg Elbow Fittings	45 Deg Male Elbow
Tee Fittings	Male Tee Female Tee Union Tee
Cross Fittings	Union Cross
Components	Ferrule Nut Tube Cap Tube Plug Gasket Insert
Others Fittings	Weld Fittings



Features

- Lawrence fittings design meets the requirements of ANSI B 31.1, ANSI 31.3
- Lawrence fittings are machined from materials which meets ASTM specification
- Lawrence fittings are available with NPT (National pipe taper), BSP (British standard pipe), ISO (International standard organization) threads.
- Protective end caps would prevent damaged to the exposed caps.
- Compression Nut Threads are silver plated to Extend the life and avoid galling in extreme condition.
- Lawrence Tube fittings provide safe and reliable performance from cryogenic temperature to high temperature upto 380° C.
- Lawrence Tube Fittings having deep vacuum capability with good quality tubing.
- Lawrence Tube Fittings are rated the maximum working pressure Tubing as shown below in the Tubing
- Lawrence S Compression nuts are internally silver plated which prevents galling at high temperature.

Material of Construction

Lawrence Tube Fittings are available as standard in SS316.

- Straight fittings are manufactured from hex bar SS 316 Bar Stock:- ASTM A-479
- Tee ,Elbow & Cross fittings are manufactured from stainless steel SS 316 Forgings:- ASTM A-182

(Other materials are available on request)

Assembly instruction

Insert tubing into the Lawrence fitting.

Check that the tube rest on the shoulder and that the nut is finger tight.

At this point it is recommended that a scribe mark be drawn on the hex of the nut extending onto the fitting body.

This mark will serve as an indicator for the starting point and proper pull-up. 1&1/4 turns of the nut is required for 1/4" (6 mm) and higher. 3/4 turns of the nut are required for 3/16" (4 mm) and lower.

Reassembly Instructions

Lawrence connections may be disconnected and remade repeatedly, without loss of leaktight seal.

Before disconnecting, mark the position of the nut in relation to the fitting body.

To reassemble, use a wrench to tighten nut to original position

Tighten slightly with wrench until a slight rise in torque is felt.

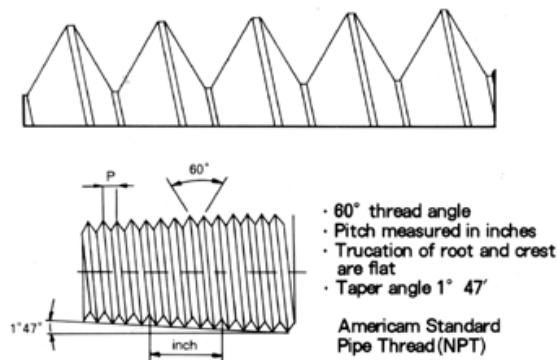
Thread Information

Threads of many different kinds are used for different purposes in small piping components.

The most common are :

The following are the more common types of pipe threads used in the small pipe industry :

1. NPT Tapered Pipe Threads

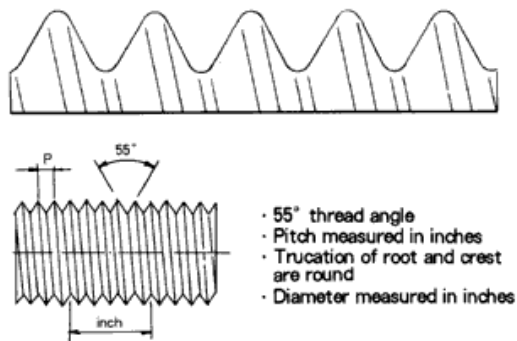


NPT(National Pipe Tapered) is made to specifications outlined in ANSI B1.2. This is the pipe thread used on the pipe end.

2. NPTF(National Pipe Thread Dryseal)(made to specifications outlined in ANSI B1.20.3.)

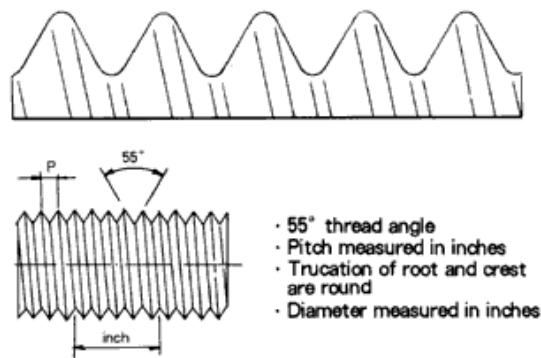
This pipe end is used on some hydraulic equipment and is sometimes specified on military hardware. Lawrence Fittings are not manufactured with Dryseal Pipe Threads.

3. ISO 7/1 Tapered Pipe Threads



International Organization For Standards(ISO 7/1) Tapered.(P.T). ISO tapered threads are equivalent to DIN 2999, BSP TR, JIS B0203, R 1/8 and R 1/4 Keg. In application ISO threads are used similar to NPT threads. However, care should be used that ISO and NPT threads are not mixed. ISO threads have a 55° angle versus 60° for NPT. Thread pitch is usually measured in millimeters but may be expressed in Inch. In many sizes the threads-per-inch are different and the root and crest configurations are different from NPT.

4. ISO 228/1 Parallel Pipe Threads



(International Organization For Standards(ISO 228/1) Parallel(PF))

ISO Parallel threads are equivalent to DIN ISO 228/1, BSP PL, JIS B0202, R 1/8 and R 1/4

These pipe threads are similar in configuration to 7/1 threads except there is no taper. Therefore do not work by thread interference like the tapered pipe threads of ISO 7/1 or NPT. A gasket or O-Ring is normally used to seal into the parallel female threaded component.

Comparison Chart

Pipe Threads

Comparison Chart Pipe Threads

Normal Size	Threads Per inch	Pipe O.D	Included Thread Angle	Pitch
1/16"	NPT/NPTF 27	.312"	60 ⁰	.037"
	ISO 28	.312"	55 ⁰	.036"
1/8"	NPT/NPTF 27	.405"	60 ⁰	.037"
	ISO 28	.398"	55 ⁰	.036"
1/4"	NPT/NPTF 18	.540"	60 ⁰	.0556"
	ISO 19	.535"	55 ⁰	.053"
3/8"	NPT/NPTF 18	.675"	60 ⁰	.0556"
	ISO 19	.672"	55 ⁰	.053"
1/2"	NPT/NPTF 14	.840"	60 ⁰	.0714"
	ISO 14	.843"	55 ⁰	.071"
3/4"	NPT/NPTF 14	1.050"	60 ⁰	.0714"
	ISO 14	1.060"	55 ⁰	.071"
1"	NPT/NPTF 11 - 1/2	1.315"	60 ⁰	.087"
	ISO 11	1.331"	55 ⁰	.091"
1 - 1/4"	NPT/NPTF 11 - 1/2	1.660"	60 ⁰	.087"
	ISO 11	1.669"	55 ⁰	.091"
1 - 1/2"	NPT/NPTF 11 - 1/2	1.900"	60 ⁰	.087"
	ISO 11	1.990"	55 ⁰	.091"
2"	NPT/NPTF 11 - 1/2	2.375"	60 ⁰	.087"
	ISO 11	2.375"	55 ⁰	.091"