

- Thread pitch gauge capable of measuring inch and metric thread pitches
- I.D./O.D. caliper capable of measuring both inches and millimeters
- Seat angle gauge capable of measuring different sealing angles (i.e., 30° or 45° flare and 60° or 24° inverted flares)
- Reference materials showing different threaded ends (inch and metric systems) using a fitting manufacturer's catalog. Some are listed in this manual.

NPT is the tapered thread form commonly used in the United States. BSPT is the tapered thread form common from European or Asian suppliers. These two thread types use the tapered thread interference to form a seal.

NPT thread uses a 60° pitch angle and a thread taper angle of 1° 47'. BSPT thread uses a 55° pitch angle and a thread taper angle of 1° 47'. Even though the taper angle is the same, the different pitch angle will prevent the threads from properly engaging, resulting in a leak path (R or RC is also commonly used to refer to BSPT threads). BSPP uses the same thread pitch and pitch angle as BSPT but is a parallel thread that uses an elastomer or metal contact to seal the fitting. There is also a metric tapered thread seen in European systems.

Thread Type Chart							
Nominal size/ mm*	NPTF**	BSP** Tapered or Parallel	45° Flare	30° Flare Metric Thread	PTT 30° Flare	ISO 9974 Metric Thread	Metric Tapered Thread
02/M3	1/8-27	1/8-28	5/16-24	--	1/8-28	--	--
03/M5	--	--	3/8-24	--	--	--	--
04/M6	1/4-18	1/4-19	7/16-20	M14x1.5	1/4-19	M12x1.5	--
05/M8	--	--	1/2-20	--	--	M14x1.5	M8X1.0 keg
06/M10	3/8-18	3/8-19	5/8-18	M18x1.5	3/8-19	M16x1.5	M10x1.0 keg
08/M12	1/2-14	1/4-14	3/4-16	M22x1.5	1/4-14	M18x1.5	M12x1.5 keg
10/M16	--	--	7/8-14	M24x1.5	--	M22x1.5	M16x1.5 keg
12/M19	3/4-14	3/4-14	1 1/16-14	M30x2.0	3/4-14	M27x2.0	--
14/M22	--	--	--	--	--	M33x2.0	M22x1.5 keg
16/M25	1 - 11 1/2	1 - 11	--	M33x2.0	1 - 11	--	--

\* Nominal size in 1/16 in increments and equivalent millimeters.  
 \*\* Predominant in the pneumatic industry.  
 Note: Small components may use M5x1.0 or 10-32 thread with elastomer seal.

It is important to learn the three basic steps to identifying a fitting/end connection. Similarity of threads in measurement as well as appearance can result in a mismatch and possible serious consequences.

### 1. Measure the thread pitch.

- Use a thread pitch gauge to determine the number of threads per inch or the distance between two threads for a metric connection. In the inch thread system (SAE and NPT), the thread pitch is referred to as the number of threads per inch or, in other words, how many crests there are per inch. The metric system measures the distance between two threads or crests.
- Measuring the thread pitch tells us two things:
  1. The thread pitch.
  2. Whether it is inch or metric thread.

