

Identifying Threads

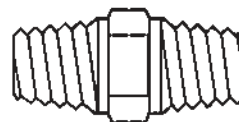
Pipe Threads

Pipe threads are either tapered or straight (parallel). The two styles may or may not be compatible. Refer to thread information chart on page 706.

Tapered threads

Tapered threads are the most common type of thread available. As the name implies, they have a slight taper. When mated together and tightened, the threads compress and may form a seal. Usually a thread sealant is required. The mating threads both hold the fitting in place and seal the connection. The most widely used pipe threads in North America are NPT (National Pipe Taper). Some confusion may result from the use of NPT, FPT, and MPT in describing threads. Both FPT and MPT are NPT threads, with FPT meaning female threads (internal) and MPT meaning male threads (external).

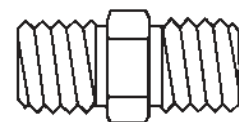
NPTF (Dryseal) threads are modified NPT threads, which are less likely to leak without a sealant. For a leak-free seal, we recommend using a sealant compound or PTFE tape. You can use NPTF threads with NPT threads, but you'll lose some of the leak-free characteristics.



tapered threads

Straight threads

Straight (parallel) threads are used for mechanical joining. They serve one purpose - to hold a fitting in place. As a result, an O-ring (elastomer), hard metal seal or a soft seat seal is required. Straight pipe threads include NPSM (National Pipe Straight Mechanical), and NPSH (National Pipe Straight Hose) Sizing and pitches may differ from the NPT threads



straight threads

Less common straight threads are GHT (Garden Hose) and NST (fire hose coupling).

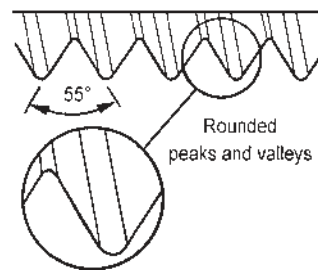
NPT vs. BSP (British Standard Pipe)

BSP threads are common in many countries outside the United States. BSP consists of two types of threads - BSPT (British Standard Pipe Taper) and BSPP (British Standard Pipe Parallel).

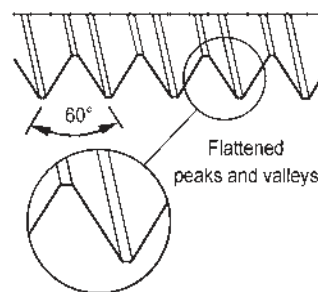
BSPT threads have a slight taper similar to NPT. BSPP threads are straight (parallel) threads and have the same thread angle, shape and threads per inch (pitch) as BSPT threads. *BSPT and BSPP threads should not be substituted for NPT threads.*

NPT and BSPT/BSPP threads have different angles, shape, and (in most cases) threads per inch (pitch). The thread angle is 60° for NPT threads; 55° for BSPT/BSPP threads. NPT threads are flattened at the peaks and valleys, while BSPT/BSPP threads are rounded.

BSPT/BSPP threads



NPT threads



Nominal Pipe Size	Threads per inch	
	NPT	BSPT / BSPP
1/16"	27	---
1/8"	27	28
1/4"	18	19
3/8"	18	19
1/2"	14	14
3/4"	14	14
1"	11½	11
1-1/4"	11½	11
1-1/2"	11½	11
2"	11½	11
2-1/2"	8	11
3"	8	11
3-1/2"	8	11
4"	8	11
5"	8	11
6"	8	11
8"	8	11



Identifying Threads

It is important to identify the threads required before ordering couplings.

Identifying threads can sometimes be the most difficult and frustrating part of coupling selection. However, without the right combination of threads, you may not provide a functional or safe connection.

The diameters, threads per inch (TPI) and thread pitch, etc. are necessary to completely identify a thread. Ring, plug and GO/NOGO gauges are required to accurately gauge or identify threads. In the field, in the absence of these gauges, thread leaf gauges can be used to identify the Threads Per Inch (TPI) and the thread pitch. On threads you have determined to be straight threads, a caliper can be used to measure the Outside Diameter of the male (ODM) or the Inside Diameter of the female (IDF). A caliper can also be used to take measurements of tapered thread diameters. However, these are more difficult to define because of the taper. Fortunately, there are few tapered threads to deal with and these can usually be identified from the nominal ODM and the TPI.

However, identifying the thread may not fully identify what is needed in a mating fitting. The application is the primary *limiting factor on the thread type used*. Dixon offers products with a wide variety of threads used with hose, pipe and hydraulics.

When attempting to choose a fitting, it is always advisable to first identify the thread to which it must connect. This may entail checking with a fitting or equipment manufacturer.

The fire hose thread specifications for some local municipal fire equipment and hydrants may vary according to local specifications. These can generally be most easily identified by contacting the local fire department responsible for the hydrant. The most common thread used on fire equipment is National Standard Thread (NST), also known as National Hose thread (NH).

When it is not possible to identify the thread:

1. Determine the number of threads per inch by measuring the distance from peak of thread to peak of thread across the largest number of whole threads. Then divide the number of threads by the measurement (this will provide the TPI).

2. Check to see if the thread is straight or tapered.

a) Straight Threads

Measure the Outside Diameter of the Male (ODM) or the Inside Diameter of the Female (IDF), from peak of thread to peak of thread.

b) Tapered Threads

Measure the Outside Diameter of the Male (ODM) at the large end and the small end, or the Inside Diameter of the Female (IDF) at the large end and the small end, from peak of thread to peak of thread. Then measure the Outside Diameter (OD) of the unthreaded pipe.

Once the application and these two pieces of information have been determined, the thread can generally be determined. When in doubt, call the Factory at 800.355.1991.

