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:

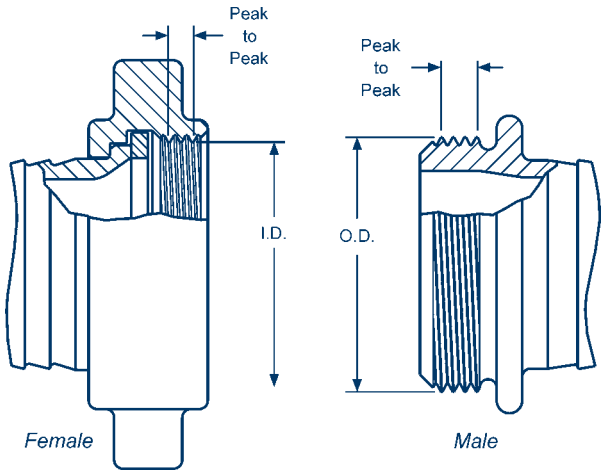
1) Determine the number of threads per inch by measuring the distance from peak of thread to peak of thread across the largest number of whole threads. Then divide the number of threads by the measurement (This will provide the TPI).
2) Check to see if the thread is straight or tapered.

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.

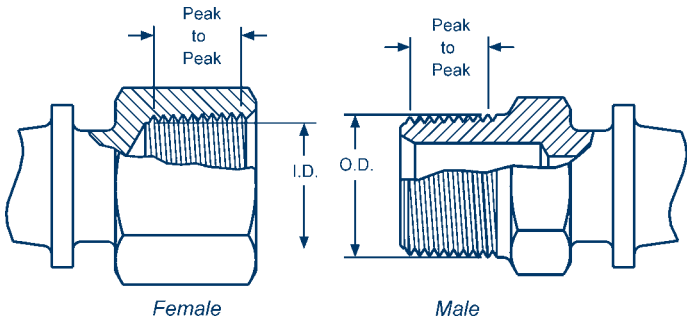
b) Tapered Threads
Measure the "Outside Diameter of the Male" (ODM) at the large end and the small end, or the "Inside Diameter of the Female" (IDF) at the large end and the small end, from peak of thread to peak of thread. Then measure the Outside Diameter (OD) of the unthreaded pipe.

Once the application and these two pieces of information have been determined, the thread can generally be determined. When in doubt, *contact the factory.*

Straight Thread



Tapered Thread



Identifying Threads

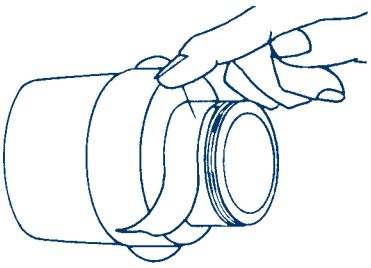


FIG. 1

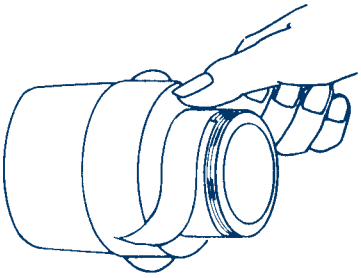


FIG. 2

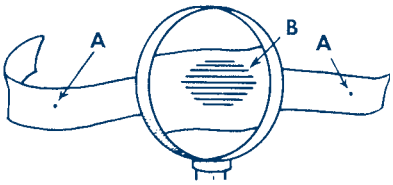


FIG. 3

When calipers and O.D. tapes are not available, the following method may be useful.

Cut a strip of paper not over 5/8" wide by approximately 18" long. Then wrap the strip tightly around the circumference of the male thread, making sure it is well back against the male shoulder, and the ends overlap. Then pierce once through both layers of the strip with a pin (Fig 1). After removing the strip, mark your pin holes by circling them as shown (or with arrows), to make sure the correct measurement can be taken. The distance between the pin holes, divided by 3.1416 equals the outside diameter of the thread.

Next, press your thumb firmly against the threads (Fig. 2) hard enough to make thread impressions on the strip (Fig. 3) thereby giving an impression from which the number of threads per inch can be obtained.

NYF – New York Fire Dept. Thread	1½"	(2.100 ODM x 8 tpi)	—	2½"	(3.030 ODM x 8 tpi)
CF – Chicago Fire Dept. Thread	1½"	(1.933 ODM x 11.5 tpi)	—	2½"	(2.990 ODM x 7.5 tpi)
NYC – New York Corporation Thread	1½"	(2.093 ODM x 11 tpi)	—	2½"	(3.000 ODM x 8 tpi)

PERSONAL SPECIAL THREAD TABLE

There are well over a hundred special threads in use on fire equipment in the USA.

We provide the following table to allow you to chart your special thread requirements for future reference.

Please help us better serve you in the future, if you come across a special thread not listed in our chart, please e-mail or fax the thread information to us at sales@dixonvalve.com or 800-283-4966, we will archive it for future reference.

Size	1½"		2½"				
City or Town	**ODM**	**TPI**	**ODM**	**TPI**	**ODM**	**TPI**	

If you are unable to determine the threads you need:

1) Contact the Fire Department or Fire Marshall responsible for the area where the equipment will be located.
2) Request the threads required for fire hose connections in that area consistent with your requirements. (usually 1½" and 2½")
3) If this fails to get the information you need, contact our Fire Equipment Specialists at 800-355-1991.

Always indicate the HOSE THREAD required when ordering!

Thread Information

Abbreviation	System Name	Compatibility	Seal Method
BSPP	**B**ritish **S**tandard **P**ipe **P**arallel	Male BSPP with Female BSPP Female BSPP with Male BSPP Female BSPP with Male BSPTr	Washer Washer Washer
BSPTr	**B**ritish **S**tandard **P**ipe **T**aper	Male BSPTr with Female BSPTr Male BSPTr with Female BSPP Female BSPTr with Male BSPTr *Female BSPTr not compatible with Male BSPP*	Thread Washer Thread
CHT	American Standard Fire Hose Thread (1" National Hose Thread is **C**hemical **H**ose **T**hread, also known as Booster Hose Thread)	1" Male NH (NST) with 1" Female NH (NST) 1"Female NH (NST) with 1" Male NH (NST) 1" Thread is used on both ¾" hose and 1" hose. *Not compatible with other systems*	Washer Washer
GHT	**G**arden **H**ose **T**hread	Male GHT with Female GHT Female GHT with Male GHT Thread is same for all size hose *Not compatible with other systems*	Washer Washer
IPS	**I**ron **P**ipe **S**traight Thread	Generic Name for Straight Pipe Thread See NPSH for compatibility	Washer
IPT	**I**ron **P**ipe **T**hread	Generic Name for All Pipe Thread *More information required*	
NH or NST	American Standard Fire Hose Coupling Thread (**N**ational **H**ose thread also known as **N**ational **S**tandard **T**hread)	Male NH (NST) with Female NH (NST) Female NH (NST) with Male NH (NST) *Not compatible with other systems* Thread pitch and diameters of fire threads may vary according to local and municipal regulations.	Washer Washer
NPT	American Standard Taper Pipe Thread (**N**ational **P**ipe **T**apered)	Male NPT with Female NPT Male NPT with Female NPTF Male NPT with Female NPSM Male NPT with Female NPSH Female NPT with Male NPT Female NPT with Male NPTF Female NPT not compatible with Male NPSM or Male NPSH	Thread Thread Washer Washer Thread Thread
NPTF	American Standard Taper Pipe Fuel Dryseal Thread (**N**ational **P**ipe **T**apered **F**ine)	Male NPTF with Female NPTF Male NPTF with Female NPT Male NPTF with Female NPSM Male NPTF with Female NPSH Female NPTF with Male NPTF Female NPTF with Male NPT *Female NPTF with Male NPSM or NPSH* *Note: NPTF with NPTF threads do not require sealant for the initial use. After that, sealant is required.*	Thread Thread Washer Washer Thread Thread *Not Compatible*
NPSH	American Standard Straight Pipe for Hose Couplings (**N**ational **P**ipe **S**traight **H**ose)	Male NPSH with Female NPSH Female NPSH with Male NPSH Female NPSH with Male NPT Female NPSH with Male NPTF Female NPSH with Male NPSM	Washer Washer Washer Washer Washer
NPSM	American Standard Straight Mechanical Joints (**N**ational **P**ipe **S**traight **M**echanical)	Male NPSM with Female NPSM Male NPSM with Female NPSH Female NPSM with Male NPSM Female NPSM with Male NPT Female NPSM with Male NPTF	Seal can be either mechanical or washer. Mating fittings must be of same type.
SIPT	**S**traight **I**ron **P**ipe **T**hread	Generic name for Straight Pipe Thread	Washer
TIPT	**T**apered **I**ron **P**ipe **T**hread	Generic name for Tapered Pipe Thread	Thread

Thread Dimensions

Nominal Dimensions of Standard Threads

ODM -- Outside Diameter of the Male IDF -- Inside Diameter of the Female TPI -- Threads Per Inch

Size	Pipe O.D.	Tapered Threads		Straight Threads											
		NPT	BSPTr	NPSH			NPSM			NST (NH)			BSPP		
		TPI	TPI	TPI	ODM (*max*)	IDF (*min*)	TPI	ODM (*max*)	IDF (*min*)	TPI	ODM (*max*)	IDF (*min*)	TPI	ODM (*max*)	IDF (*min*)
1/8"	.405	27	28				27	0.397	0.358					0.383	0.337
1/4"	.504	18	19				18	0.526	0.468					0.516	0.450
3/8"	.675	18	19				18	0.662	0.603					0.656	0.588
1/2"	.840	14	14	14	0.8248	0.7395	14	0.823	0.747					0.825	0.733
3/4"	1.050	14	14	14	1.0353	0.9500	14	1.034	0.958	8	1.375	1.2246		1.041	0.950
1"	1.315	11.5	11	11.5	1.2951	1.1921	11.5	1.293	1.201	8	1.375	1.2246	11	1.309	1.193
1-1/4"	1.660	11.5	11	11.5	1.6399	1.5369	11.5	1.638	1.546				11	1.650	1.534
1-1/2"	1.900	11.5	11	11.5	1.8788	1.7758	11.5	1.877	1.785	9	1.990	1.8577		1.882	1.766
2"	2.375	11.5	11	11.5	2.3528	2.2498	11.5	2.351	2.259				11	2.347	2.231
2-1/2"	2.875	8	11	8	2.8434	2.6930	8	2.841	2.708	7.5	3.068	2.9104	11	2.960	2.844
3"	3.500	8	11				8	3.467	3.334	6	3.623	3.5306	11	3.460	3.344
4"	4.500	8	11				8	4.466	4.333	4	5.010	4.7111		4.450	4.334
4-1/2"										4	5.760	5.4611	11		
5"	5.563	8	11				8	5.528	5.395	4	6.260	5.9602	11	5.450	5.359
6"	6.625	8	11				8	6.585	6.452	4	7.025	6.7252		6.450	6.359
8"	8.625	8													
10"	10.750	8													
12"	12.750	8													

GHT (3/4") -- 1.0625 ODM, 11-1/2 TPI

NOTE: Female NPT (Tapered Pipe) thread is not available on hose swivel nuts.

Special Thread Information

2½" thread

threads per inch	**6**	**7**	**7½**	**8**
outside diameter of male	3.058	3.125	2.990 (Chicago)	2.841 (NPSH)
	3.062 (Pittsburgh)		3.062 (NST)	3.000 (NY Corp)
	3.093		3.125 (Detroit)	3.031 (NYFD)
	3.125			3.062
	3.156			3.078 (Cleveland)
	3.187			3.093
	3.234			3.140
	3.250			3.156
	3.312			3.312