

# How to Identify and Measure Pipe Fittings & Pipe

Before making a connection you'll need to know the thread type and the pipe size or thread size. The thread types must be compatible, and the sizes must be the same in order for two components to mate properly.

## Pipe Size and Thread Size

**Pipe size** is not an actual measured size, but rather an industry designation. People sometimes refer to pipe size as IPS or nominal size. Thread types that are measured by pipe size include NPT, BSP, and NPSM threads. Unthreaded fittings are also measured by pipe size.

**Thread size** is the actual measured diameter of the threads and the threads per inch (TPI) or thread pitch. Thread types that are measured by thread size include UN/UNF (SAE) and metric threads.

## Thread Style

**Tapered** thread types include NPT, NPTF, and BSPT.

**Straight** thread types include BSPP, UN/UNF (SAE), NPSM, NPSL, NPSC, and metric straight threads. Male threads typically have an O-ring or gasket to make a seal.



Tapered



Straight

## Thread Compatibility

Use this thread compatibility chart to see which threads will mate together. Metric threads, UN/UNF (SAE) threads, GHT (Garden Hose) threads, and NH/NST (National Hose/National Standard) threads are not compatible with any other thread types.

Thread Type (M = male; F = female)		NPT		NPTF		BSPT		JIS Taper		BSPP		JIS Straight		NPSM		NPSL		NPSC		NPSH	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Tapered Threads	NPT—National Pipe Taper (Also known as MPT and FPT threads)	M	✓	✓	✓									✓		✓		✓		✓	
	NPTF—National Pipe Taper Fuel (Also known as Dryseal threads)	M	✓	✓	✓									✓							✓
	BSPT—British Standard Pipe Taper (Also known as R threads and 55 Whitworth)	M				✓	✓	✓	✓	✓											
	JIS Taper—Japanese Industrial Standard (Also known as PT threads)	M				✓	✓	✓	✓												
Straight Threads	BSPP—British Standard Pipe Parallel (Also known as G threads and 55 Whitworth)	M				✓				✓	✓	✓	✓								
	JIS Straight—Japanese Industrial Standard (Also known as PF threads)	M								✓	✓	✓	✓								
	NPSM—National Pipe Straight Mechanical	M	✓		✓									✓	✓						✓
	NPSL—National Pipe Straight Locknut	M	✓																		
	NPSC—National Pipe Straight Coupling	M	✓																		
	NPSH—National Pipe Straight Hose	M	✓		✓									✓						✓	✓

## Measuring Gauges and Kits

Accurately determine the size of your fittings and pipe with one of these kits. For more gauges, see pages 2324-2326.

### Pipe Thread and Thread Pitch Identifiers

In addition to measuring male and female threads in NPT and BSPT pipe sizes  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ , and 2, use the two included gauges for measuring thread pitch.

**5887T1** ..... \$8.13      **7863K1** ..... \$57.04

### Thread Identifier Sets

Set includes calipers, four gauges, and an instruction book to identify male and female NPT, BSPT, BSPP, and metric threads.


### Pipe Size Measuring Kits

Kits contain 304 stainless steel 90° male×female elbows so you can determine the size of a fitting or pipe without measuring.

No. of Pieces	Pipe Size	NPT Kits		BSPT Kits	
6	$\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{3}{4}$ , 1	<b>7843K5</b>	\$22.33	<b>7843K7</b>	\$24.14
9	$\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{3}{4}$ , 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ , 2	<b>7843K6</b>	64.17	<b>7843K8</b>	69.31

## How to Measure Pipe Size for NPT or BSP Threads

Align your pipe or fitting with the "0" line as shown below. The line on the opposite edge gives the pipe size.

 To measure larger pipe and fittings up to pipe size 8, go to [mcmaster.com](http://mcmaster.com) and search for **4464KAC**.

### Measuring OD of Male Threads



### Measuring ID of Female Threads

