

# BSPT (British Standard Pipe Thread)

The British standard pipe thread (BSP thread) is a family of standard screw thread types that has been adopted internationally for interconnecting and sealing pipe ends by mating an external (male) with an internal (female) thread.

## Types

Two types of threads are distinguished:

- Parallel threads, which have a constant diameter.(G)
- Taper threads, whose diameter increases or decreases along the length of the thread.(R)

They can be combined into two types of joints:

- Jointing threads: These are pipe threads for joints made pressure-tight by the mating of the threads. They always use a taper external thread, but can have either parallel or taper internal threads. (In Continental Europe, taper internal pipe threads are not commonly used.)
- Longscrew threads: These are parallel pipe threads used where a pressure-tight joint is achieved by the compression of a soft material (gasket) on to the surface of the external thread by tightening a backnut against a socket.

## Threadform

For both the taper and the parallel pipe threads, the Whitworth thread form is used, which has the following characteristics:

- symmetrical V-thread in which the angle between the flanks is  $55^\circ$  (measured in an axial plane)
- one-sixth of this sharp V is truncated at the top and the bottom
- the threads are rounded equally at crests and roots by circular arcclend tangentially with the flanks
- the theoretical depth of the thread is therefore 0.64times the nominal pitch the relation between



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## Pipe thread sizes

A list of 15 thread sizes are defined by the standards, ranging from 1/16 to 6. The size number was originally based on the inner diameter measured in inches (25.4 mm) of a steel tube for which the thread was intended, but is in the modern metric version of the standard simply a size number.

Thread size	Threads per inch	Pitch [mm]	Major diameter of the thread		Gauge length [mm]	Corresponding pipe		
			[mm]	[in]		DN	OD [mm]	OD [in]
1/16	28	0.907	7.723	0.304	4			
1/8	28	0.907	9.728	0.383	4	6	10.2	0.402
1/4	19	1.337	13.157	0.518	6	8	13.5	0.532.3
3/8	19	1.337	16.662	0.656	6.4	10	17.2	0.682.3
1/2	14	1.814	20.995	0.825	8.2	15	21.3	0.842.6
3/4	14	1.814	26.441	1.041	9.5	20	26.9	1.062.6
1	11	2.309	33.249	1.309	10.4	25	33.7	1.333.2
1¼	11	2.309	41.910	1.650	12.7	32	42.4	1.673.2
1½	11	2.309	47.803	1.882	12.7	40	48.3	1.903.2
2	11	2.309	59.614	2.347	15.9	50	60.3	2.373.6



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<b>2½</b>	<b>11</b>	<b>2.309 75.184</b>	<b>2.960</b>	<b>17.5</b>	<b>65</b>	<b>76.1</b>	<b>3.003.6</b>
<b>3</b>	<b>11</b>	<b>2.309 87.884</b>	<b>3.460</b>	<b>20.6</b>	<b>80</b>	<b>88.9</b>	<b>3.504</b>
<b>4</b>	<b>11</b>	<b>2.309 113.030</b>	<b>4.450</b>	<b>25.5</b>	<b>100</b>	<b>114.3</b>	<b>4.504.5</b>
<b>5</b>	<b>11</b>	<b>2.309 138.430</b>	<b>5.450</b>	<b>28.6</b>	<b>125</b>	<b>139.7</b>	<b>5.505</b>
<b>6</b>	<b>11</b>	<b>2.309 163.830</b>	<b>6.450</b>	<b>28.6</b>	<b>150</b>	<b>165.1</b>	<b>6.505</b>

The major diameter listed is the outer diameter of the external thread. For a taper thread, it is the diameter at the "gauge length" from the small end of the thread. The taper is "1 to 16", meaning that for each 16 mm increase in the distance from the end, the diameter increases by 1 mm.

## Pipe thread designations

These standard pipe threads are formally referred to by the following sequence of blocks:

- the words "Pipe thread",
- the document number of the standard (e.g., "ISO 7" or "EN 10226")
- the symbol for the pipe thread type:
  - G = external+internal parallel (ISO 228)
  - R = external taper (ISO 7)
  - Rp = internal parallel (ISO 7)
  - Rc = internal taper (ISO 7)
- the thread size

Threads are normally right-hand. For left-hand threads, the letters "LH" are appended.

Example: **Pipe thread EN 10226 Rp 2 1/2**