

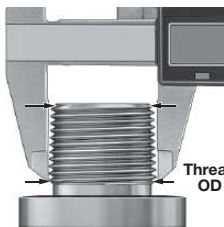
How to Identify and Measure Pipe Fittings & Pipe

Measure Your Thread OD or ID

Use a caliper to measure the OD of the male threads or the ID of the female threads.

First, measure the threads at the widest part. This measurement will be your thread OD or ID.

Next, measure the threads at the smallest part. If the two measurements differ, the thread is tapered. Some tapered threads may have a taper as slight as 0.01". If both measurements are the same, the thread is straight.

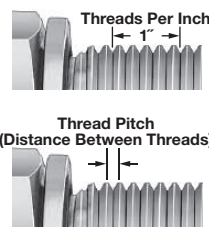


Threads Per Inch (TPI) and Thread Pitch

Threads per inch (TPI) is the number of threads within a one inch measurement. Thread types such as NPT, BSP, and UN/UNF (SAE) are specified by threads per inch.

Thread pitch is the distance in millimeters between two threads. Metric sizes are specified by thread pitch.

Use a thread gauge to measure threads per inch and thread pitch. You'll know you've found the right size when the gauge lines up with the threads without any movement or space.



Identify Your Thread Type and Your Pipe Size or Thread Size

With your thread OD or ID and your threads per inch (TPI) or thread pitch, use the guide below to find your thread type and your pipe size or thread size. If your thread OD or ID does not exactly match the measurements listed in the table, round to the nearest OD or ID. For example, if you have tapered male threads with an OD of 1.290" and 11.5 threads per inch, the closest OD in the table would be 1.305". Your pipe size is 1 NPT.

Tapered Threads									
Actual OD (Male)	Actual ID (Female)	Threads Per Inch	Thread Type	Pipe Size	Actual OD (Male)	Actual ID (Female)	Threads Per Inch	Thread Type	Pipe Size
0.304"	0.258"	28	BSPT	1/16	0.835"	0.741"	14	BSPT	1/2
0.308"	0.244"	27	NPT/NPTF	1/16	0.902"	0.811"	14	BSPT	5/8
0.383"	0.337"	28	BSPT	1/8	1.041"	0.949"	14	BSPT	3/4
0.401"	0.336"	27	NPT/NPTF	1/8	1.043"	0.914"	14	NPT/NPTF	3/4
0.518"	0.451"	19	BSPT	1/4	1.305"	1.148"	11.5	NPT/NPTF	1
0.533"	0.436"	18	NPT/NPTF	1/4	1.309"	1.193"	11	BSPT	1
0.656"	0.589"	19	BSPT	3/8	1.649"	1.491"	11.5	NPT/NPTF	1 1/4
0.668"	0.571"	18	NPT/NPTF	3/8	1.650"	1.534"	11	BSPT	1 1/4
0.821"	0.718"	14	NPT/NPTF	1/2	1.822"	1.766"	11	BSPT	1 1/2

Straight Threads									
Actual OD (Male)	Actual ID (Female)	Thread Pitch/TPI	Thread Type	Thread/Pipe Size	Actual OD (Male)	Actual ID (Female)	Thread Pitch/TPI	Thread Type	Thread/Pipe Size
0.180"	0.160"	0.5mm	Metric	M3	0.624"	0.587"	1.5mm	Metric	M16
0.190"	0.180"	32	UN/UNF (SAE)	10-32	0.625"	0.578"	18	UN/UNF (SAE)	5/8"-18
0.220"	0.180"	0.8mm	Metric	M5	0.656"	0.589"	19	BSPP	3/8
0.250"	0.230"	28	UN/UNF (SAE)	1/4"-28	0.658"	0.608"	18	NPSM	3/8
0.260"	0.220"	1mm	Metric	M6	0.703"	0.666"	1.5mm	Metric	M18
0.304"	0.258"	28	BSPP	1/16	0.750"	0.707"	16	UN/UNF (SAE)	3/4"-16
0.310"	0.286"	1mm	Metric	M8	0.781"	0.745"	1.5mm	Metric	M20
0.313"	0.277"	24	UN/UNF (SAE)	5/16"-24	0.818"	0.753"	14	NPSM	1/2
0.375"	0.340"	24	UN/UNF (SAE)	3/8"-24	0.835"	0.741"	14	BSPP	1/2
0.383"	0.337"	28	BSPP	1/8	0.860"	0.824"	1.5mm	Metric	M22
0.389"	0.356"	1mm	Metric	M10	0.875"	0.814"	14	UN/UNF (SAE)	7/8"-14
0.394"	0.361"	27	NPSM	1/8	0.902"	0.811"	14	BSPP	5/8
0.436"	0.395"	20	UN/UNF (SAE)	7/16"-20	1.000"	0.914"	14	UN/UNF (SAE)	1"-14
0.467"	0.430"	1.5mm	Metric	M12	1.000"	1.000"	14	NPSH	3/4
0.468"	0.440"	32	UN/UNF (SAE)	15/32"-32	1.018"	0.966"	1.5mm	Metric	M26
0.500"	0.457"	20	UN/UNF (SAE)	1/2"-20	1.029"	0.964"	14	NPSM	3/4
0.518"	0.451"	19	BSPP	1/4	1.041"	0.949"	14	BSPP	3/4
0.522"	0.474"	18	NPSM	1/4	1.056"	1.005"	2.0mm	Metric	M27
0.545"	0.509"	1.5mm	Metric	M14	1.062"	0.937"	11.5	GHT	3/4
0.563"	0.515"	18	UN/UNF (SAE)	9/16"-18	1.063"	0.990"	12	UN/UNF (SAE)	1 1/16"-12

Unthreaded Pipe Dimensions and Schedule

Metal pipe, plastic pipe, and plastic pipe fittings are generally rated by schedule, which refers to the wall thickness. As the schedule increases, the walls get thicker towards the center for any given pipe size.

Metal pipe fittings are not usually rated by schedule; they are instead rated by the amount of pressure (psi) they can withstand.

Standard Pipe Dimensions											
Pipe Size	Actual OD	Thin Wall (Schedule 10)		Standard Wall (Schedule 40)		Thick Wall (Schedule 80)		Extra-Thick Wall (Schedule 160)		Super-Thick Wall (Schedule XXH)	
		Actual ID	Wall Thick.	Actual ID	Wall Thick.	Actual ID	Wall Thick.	Actual ID	Wall Thick.	Actual ID	Wall Thick.
1/8	0.405"	0.307"	0.049"	0.269"	0.068"	0.215"	0.095"	—	—	—	—
1/4	0.540"	0.410"	0.065"	0.364"	0.088"	0.302"	0.119"	—	—	—	—
3/8	0.675"	0.545"	0.065"	0.493"	0.091"	0.423"	0.126"	—	—	—	—
1/2	0.840"	0.674"	0.083"	0.622"	0.109"	0.546"	0.147"	0.464"	0.188"	0.252"	0.294"
3/4	1.050"	0.884"	0.083"	0.824"	0.113"	0.742"	0.154"	0.612"	0.219"	0.434"	0.308"
1	1.315"	1.097"	0.109"	1.049"	0.133"	0.957"	0.179"	0.815"	0.250"	0.599"	0.358"
1 1/4	1.660"	1.442"	0.109"	1.380"	0.140"	1.278"	0.191"	1.160"	0.250"	—	—
1 1/2	1.900"	1.682"	0.109"	1.610"	0.145"	1.500"	0.200"	1.338"	0.281"	1.100"	0.400"
2	2.375"	2.157"	0.109"	2.067"	0.154"	1.939"	0.218"	1.687"	0.344"	1.503"	0.436"
2 1/2	2.875"	2.635"	0.120"	2.469"	0.203"	2.323"	0.276"	2.125"	0.375"	—	—
3	3.500"	3.260"	0.120"	3.068"	0.216"	2.900"	0.300"	2.624"	0.438"	—	—
4	4.500"	4.260"	0.120"	4.026"	0.237"	3.826"	0.337"	3.438"	0.531"	—	—
5	5.563"	5.295"	0.134"	5.047"	0.258"	4.813"	0.375"	4.313"	0.625"	—	—
6	6.625"	6.357"	0.134"	6.065"	0.280"	5.761"	0.432"	5.187"	0.719"	—	—
8	8.625"	8.329"	0.148"	7.981"	0.322"	7.625"	0.500"	6.813"	0.906"	—	—

For a measuring guide for unthreaded pipe and fittings up to pipe size 8, go to mcmaster.com and search for **4347KAC**.