

# Hole Sizes and Class of Fit for Thredfloers

The tables on pages 19, 20 and 21 give hole sizes for three thread percentages when used with the recommended "H" or "D" numbers. The largest "H" or "D" numbers will place the finished thread pitch diameter .0005" to .0010" under the "NO-GO" P.D. limit. They will also provide the longest tap life before the tap wears undersize. For a slightly tighter fit, the smaller recommended "H" or "D" numbers may be used.



## Machine Screw and Fractional Size Thredfloers

Size	Threads per inch		Hole Size Required			Tap* Drill Size (65% Thread)	"H" Number per Class Fit			Stock "H" Numbers
	NC UNC	NF UNF	For 75% Thread	For 65% Thread	For 55% Thread		2B	3B	2	
0		80	.0546	.0552	.0558	#54 or 1.4 mm*	3, 2	2	2	
1	64		.066	.067	.068	#51 or 1.7 mm	4, 3	3, 2	3, 2	2
		72	.067	.068	.069	#51 or 1.75 mm	4, 3	3, 2	3, 2	
2	56		.078	.079	.080	#47 or 2.0 mm	4, 3	3, 2	3, 2	3
		64	.079	.080	.081	2.0 mm*	4, 3	3, 2	3, 2	
3	48		.090	.091	.092	2.3 mm*	5, 4	3, 2	3, 2	5
		56	.091	.092	.093	2.3 mm*	5, 4	3, 2	3, 2	
4	40		.100	.101	.103	#39	5, 4	4, 3	4, 3	6
		48	.103	.104	.105	#37	5, 4	4, 3	3, 2	
5	40		.113	.114	.116	#33 or 2.9 mm	5, 4	4, 3	4, 3	7
		44	.114	.115	.117	#33 or 2.9 mm	5, 4	4, 3	4, 3	
6	32		.124	.125	.126	3.1 mm	6, 5	4, 3	5, 4	2
		40	.126	.127	.128	1/8" or 3.2 mm*	6, 5	4, 3	4, 3	
8	32		.149	.150	.152	#25 or 3.8 mm	6, 5	4, 3	4, 3	3
		36	.151	.152	.153	#24	5, 4	4, 3	3, 2	
10	24		.170	.172	.174	11/64"	7, 6, 5	5, 4	5, 4	4
		32	.175	.176	.178	#16 or .176**	6, 5, 4	4, 3	4, 3	
12	24		.196	.198	.200	#9 or 5.0 mm	7, 6, 5	5, 4	5, 4	6
		28	.199	.201	.203	#7 or 5.1 mm	7, 6, 5	4, 3	4, 3	
1/4"	20		.225	.227	.230	5.75 mm*	8, 7, 6	5, 4	5, 4	8
		28	.233	.235	.237	"A"	7, 6, 5	5, 4	4, 3	
5/16"	18		.285	.287	.291	7.25 mm*	9, 8, 7	6, 5	6, 5	10
		24	.292	.294	.297	.293*	8, 7, 6	5, 4	5, 4	
3/8"	16		.344	.347	.350	"S" or 11/32"	9, 8, 7	7, 6	7, 6	4
		24	.355	.356	.359	9.0 mm*	8, 7, 6	6, 5	5, 4	
7/16"	14		.402	.405	.409	"Y"	10, 9, 8	7, 6, 5	8, 7, 6	5
		20	.414	.416	.418	"Z" or 10.5 mm*	9, 8, 7	6, 5, 4	5, 4	
1/2"	13		.462	.466	.470	.463**	11, 10, 9	8, 7, 6	8, 7, 6	7
		20	.475	.477	.480	.476**	9, 8, 7	6, 5, 4	5, 4	
9/16"	12		.520	.524	.528	.521**	11, 10, 9	8, 7, 6	9, 8, 7	8
		18	.535	.537	.540	.536**	9, 8, 7	7, 6, 5	7, 6, 5	
5/8"	11		.579	.583	.586	37/64"	12, 11, 10	9, 8, 7	9, 8, 7	9
		18	.598	.600	.603	.598*	10, 9, 8	7, 6, 5	7, 6, 5	
3/4"	10		.700	.704	.709	45/64"	13, 12, 11	9, 8, 7	11, 10, 9	10
		16	.720	.723	.726	23/32"	11, 10, 9	10, 9, 8	7, 6, 5	
7/8"	9		.818	.823	.829	.823"	14, 13, 12	10, 9, 8	12, 11, 10	11
		14	.839	.843	.845	27/32"	12, 11, 10	9, 8, 7	8, 7, 6	
1"	8		.935	.942	.948	15/16"	14, 13, 12	11, 10, 9	13, 12, 11	12
		12	.959	.963	.967	.963	13, 12, 11	10, 9, 8	10, 9, 8	

NOTE: Drill sizes were selected wherever possible to produce approximately 65% thread. The drills marked \* are stocked by Balax.

# Hole Sizes and Class of Fit for Thredfloers

## Metric Thredfloers

Thread Size Millimeters	Hole Size Requirement For 6H Tolerance			Tap Drill Size	Hole Size Requirement For 4H Tolerance			Tap Drill Size	Stock "D" Number Class of Fit	
	75% Thread	65% Thread	55% Thread		75% Thread	65% Thread	55% Thread		6H Tolerance	4H Tolerance
M1.6 x 0.35	.057	.058	.059	1.45 mm	.056	.057	.058	#54	D5	D3
M1.7 x 0.35	.061	.062	.063	1.55 mm	.060	.061	.062	#53	D5	D3
M2.0 x 0.40	.072	.073	.074	1.85 mm	.071	.072	.073	1.80 mm	D5	D3
M2.5 x 0.45	.091	.092	.093	2.30 mm	.089	.090	.091	#43	D6	D3
M2.6 x 0.45	.095	.096	.097	2.40 mm	.093	.094	.095	2.35 mm	D6	D3
M3.0 x 0.50	.110	.111	.112	#35	.108	.109	.110	2.75 mm	D6	D3
M3.5 x 0.60	.128	.129	.130	#30	.126	.127	.128	3.2 mm	D7	D4
M4.0 x 0.70	.145	.146	.148	3.7 mm	.144	.145	.147	#27	D7	D4
M5.0 x 0.80	.183	.184	.185	#14	.181	.182	.184	4.6 mm	D8	D4
M6.0 x 1.00	.218	.220	.222	5.5 mm	.216	.218	.220	5.5 mm	D9	D5
M8.0 x 1.25	.291	.294	.296	7.4 mm	.289	.291	.294	7.3 mm	D10	D5
M10 x 1.50	.365	.368	.371	9.3 mm	.362	.365	.368	9.2 mm	D11	D6
M12 x 1.75	.439	.442	.446	7/16	.436	.439	.443	11.0 mm	D12	D6
M14 x 2.0	.512	.516	.520	13.0 mm	.509	.513	.517	12.9 mm	D14	D7
M16 x 2.0	.591	.595	.599	15.0 mm	.588	.592	.596	14.9 mm	D14	D7
M20 x 2.5	.737	.742	.747	18.75 mm	.734	.739	.744	47/64	D15	D7

## Important Notes on Thredfloer Pretap Hole Sizes

### Determining Drill Size

Finding the correct drill size for a Thredfloer Tap may be a "Cut and Try" process.

- Not all drills are alike and therefore the pretap holes produced by different drills may be vastly different. What matters is the actual pretap hole size, how consistently this hole size is maintained, and finally, the after-tap thread percentage or minor diameter. To get good results, you must know the actual hole size and not just the drill size!
- Thin wall parts may expand during tapping and produce oversize after-tap minor diameters.
- Diecast parts may contain porosity which may cause oversize holes due to shrinkage.

### Thread Inspection Procedures

**Pitch Diameter:** The easy part is getting the go and no-go thread gages, which check pitch diameter, to work correctly. As a rule of thumb, Thredfloer Taps must usually be two to three "H" or "D" numbers larger than cutting taps in order to gage correctly. Threads that are tight or loose after tapping can be rectified by increasing or decreasing tap pitch diameter ("H" or "D" number). Don't forget that Balax stocks thread gages as shown on pages 36-38 of this catalog.

**Minor Diameter:** The most common problem is thread percentage. Unless otherwise specified, acceptance criteria are

the minimum and maximum minor diameters for various thread sizes and classes of fit, as published by the ANSI Standards. These measurements are checked with cylindrical plug gages. It is important that these criteria be inspected during the initial "Cut and Try" stages of drilling and tapping. Failure to check minor diameters may be very expensive.

It is often possible to fine tune the after-tap minor diameter by varying the tap pitch diameter. Changing a Thredfloer Tap by one "H" or "D" number is the same as changing the drill size by .0005 inches. For example, if the after tap minor diameter is too large, it may be reduced by using a larger tap pitch diameter, providing the no-go gage doesn't pass the part.

*Example:* A 1/4-20 Class 2B minor diameter should be .196/.207 inches. After tapping with an H5 tap, the part measured .205/.206", which is almost oversize. By switching to an H7 tap, you can reduce the after-tap minor diameter to .202/.203".

### Suggested Procedure for Using a Thredfloer Tap

1. Test drill a part and measure the pretap hole size.
2. Test tap the part. Check pitch diameter with go and no-go gages. Check the thread percentage or minor diameter against the customer requirement.
3. Establish a maximum condition for the pretap hole size and monitor this frequently during the production tap run.