

PantoRouter®

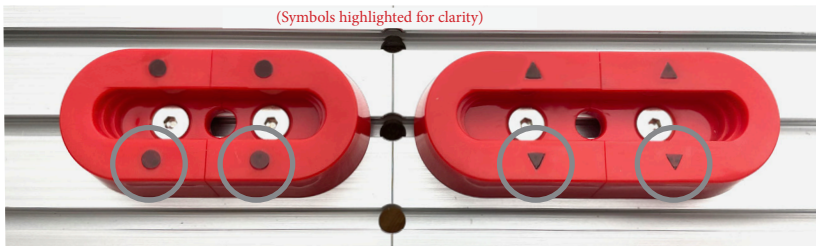
Segmented Mortise and Tenon Templates



The Segmented Mortise and Tenon Template Set includes two sets of end-pieces and five segments used to make any of 154 different sizes of round-end M&Ts. The set has two end-pieces for making square-end tenons, which are explained on page 4.

When the $\frac{3}{8}$ " bit is used for the mortise, the pair of round-end pieces marked with circles make a 1"-wide mortise and tenon and the pair marked with triangles make a $1\frac{1}{4}$ " mortise and tenon. Adding segments between the end-pieces makes the M&T wider, and the chart shows the combination and pattern of end-pieces and segments for each size.

All mortises are made with the same 10mm-diameter guide bearing, so if a bit larger than $\frac{3}{8}$ " is used for the mortise, a wider mortise is cut. If a smaller bit is used, the mortise will be slightly narrower. See the chart for the exact dimensions for each bit and template combination.

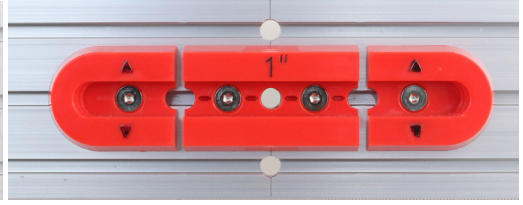
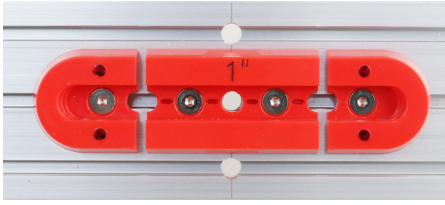


The two end-pieces marked with a circle make a 1" wide M&T x $\frac{3}{8}$ " thick.

The two end-pieces marked with a triangle make a $1\frac{1}{4}$ " wide M&T x $\frac{3}{8}$ " thick.

How It Works

The smallest mortise and tenons are made with the two end pieces marked with circles. Using the two pieces marked with triangles adds $\frac{1}{4}$ ". Adding segments between these end-pieces adds the number of inches marked on the segment. In the left example below, the resulting M&T will be 2" wide when the $\frac{3}{8}$ " bit is used for the mortise. The example on the right yields a $2\frac{1}{4}$ " M&T. The template segments are always squeezed together before their mounting screws are tightened.



Two circle end-pieces plus a 1" segment makes a 2" wide mortise and tenon at $\frac{3}{8}$ " thickness.

Two triangle end-pieces plus a 1" segment makes a $2\frac{1}{4}$ " wide mortise and tenon at $\frac{3}{8}$ " thickness.

Select The Segments

Use these three steps to select any of 154 sizes of round-end mortise and tenon template combinations from the chart.

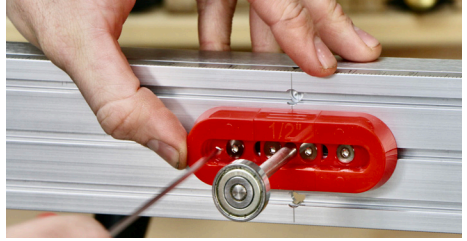
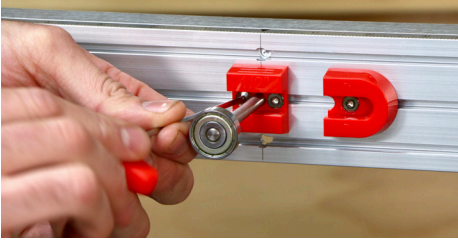
1. Select the M&T thickness (mortise bit diameter)
2. Choose the desired width
3. Find the combination of end-pieces and segments

Segmented Mortise and Tenon Templates for the PantoRouter™

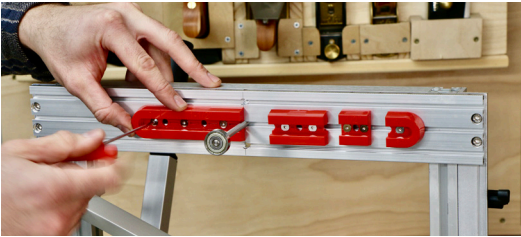
Mortise Bit Size	1/8" M&T	1/16" M&T	3/8" M&T	1/2" M&T	3/4" M&T	1" M&T	Segment Combinations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Guide Bearing	6mm	12mm	15mm	22mm	35mm	48mm	All tenons use the 1/2" bit and guide bearings listed to left																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Mortise and Tenon Width (Rounded to 1/16")	3/4	1	1 1/16	1 1/4	1 1/2	1 3/4	2	2 1/8	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4	13	13 1/4	13 1/2	13 3/4	14	14 1/4	14 1/2	14 3/4	15	15 1/4	15 1/2	15 3/4	16	16 1/4	16 1/2	16 3/4	17	17 1/4	17 1/2	17 3/4	18	18 1/4	18 1/2	18 3/4	19	19 1/4	19 1/2	19 3/4	20	20 1/4	20 1/2	20 3/4	21	21 1/4	21 1/2	21 3/4	22	22 1/4	22 1/2	22 3/4	23	23 1/4	23 1/2	23 3/4	24	24 1/4	24 1/2	24 3/4	25	25 1/4	25 1/2	25 3/4	26	26 1/4	26 1/2	26 3/4	27	27 1/4	27 1/2	27 3/4	28	28 1/4	28 1/2	28 3/4	29	29 1/4	29 1/2	29 3/4	30	30 1/4	30 1/2	30 3/4	31	31 1/4	31 1/2	31 3/4	32	32 1/4	32 1/2	32 3/4	33	33 1/4	33 1/2	33 3/4	34	34 1/4	34 1/2	34 3/4	35	35 1/4	35 1/2	35 3/4	36	36 1/4	36 1/2	36 3/4	37	37 1/4	37 1/2	37 3/4	38	38 1/4	38 1/2	38 3/4	39	39 1/4	39 1/2	39 3/4	40	40 1/4	40 1/2	40 3/4	41	41 1/4	41 1/2	41 3/4	42	42 1/4	42 1/2	42 3/4	43	43 1/4	43 1/2	43 3/4	44	44 1/4	44 1/2	44 3/4	45	45 1/4	45 1/2	45 3/4	46	46 1/4	46 1/2	46 3/4	47	47 1/4	47 1/2	47 3/4	48	48 1/4	48 1/2	48 3/4	49	49 1/4	49 1/2	49 3/4	50	50 1/4	50 1/2	50 3/4	51	51 1/4	51 1/2	51 3/4	52	52 1/4	52 1/2	52 3/4	53	53 1/4	53 1/2	53 3/4	54	54 1/4	54 1/2	54 3/4	55	55 1/4	55 1/2	55 3/4	56	56 1/4	56 1/2	56 3/4	57	57 1/4	57 1/2	57 3/4	58	58 1/4	58 1/2	58 3/4	59	59 1/4	59 1/2	59 3/4	60	60 1/4	60 1/2	60 3/4	61	61 1/4	61 1/2	61 3/4	62	62 1/4	62 1/2	62 3/4	63	63 1/4	63 1/2	63 3/4	64	64 1/4	64 1/2	64 3/4	65	65 1/4	65 1/2	65 3/4	66	66 1/4	66 1/2	66 3/4	67	67 1/4	67 1/2	67 3/4	68	68 1/4	68 1/2	68 3/4	69	69 1/4	69 1/2	69 3/4	70	70 1/4	70 1/2	70 3/4	71	71 1/4	71 1/2	71 3/4	72	72 1/4	72 1/2	72 3/4	73	73 1/4	73 1/2	73 3/4	74	74 1/4	74 1/2	74 3/4	75	75 1/4	75 1/2	75 3/4	76	76 1/4	76 1/2	76 3/4	77	77 1/4	77 1/2	77 3/4	78	78 1/4	78 1/2	78 3/4	79	79 1/4	79 1/2	79 3/4	80	80 1/4	80 1/2	80 3/4	81	81 1/4	81 1/2	81 3/4	82	82 1/4	82 1/2	82 3/4	83	83 1/4	83 1/2	83 3/4	84	84 1/4	84 1/2	84 3/4	85	85 1/4	85 1/2	85 3/4	86	86 1/4	86 1/2	86 3/4	87	87 1/4	87 1/2	87 3/4	88	88 1/4	88 1/2	88 3/4	89	89 1/4	89 1/2	89 3/4	90	90 1/4	90 1/2	90 3/4	91	91 1/4	91 1/2	91 3/4	92	92 1/4	92 1/2	92 3/4	93	93 1/4	93 1/2	93 3/4	94	94 1/4	94 1/2	94 3/4	95	95 1/4	95 1/2	95 3/4	96	96 1/4	96 1/2	96 3/4	97	97 1/4	97 1/2	97 3/4	98	98 1/4	98 1/2	98 3/4	99	99 1/4	99 1/2	99 3/4	100	100 1/4	100 1/2	100 3/4	101	101 1/4	101 1/2	101 3/4	102	102 1/4	102 1/2	102 3/4	103	103 1/4	103 1/2	103 3/4	104	104 1/4	104 1/2	104 3/4	105	105 1/4	105 1/2	105 3/4	106	106 1/4	106 1/2	106 3/4	107	107 1/4	107 1/2	107 3/4	108	108 1/4	108 1/2	108 3/4	109	109 1/4	109 1/2	109 3/4	110	110 1/4	110 1/2	110 3/4	111	111 1/4	111 1/2	111 3/4	112	112 1/4	112 1/2	112 3/4	113	113 1/4	113 1/2	113 3/4	114	114 1/4	114 1/2	114 3/4	115	115 1/4	115 1/2	115 3/4	116	116 1/4	116 1/2	116 3/4	117	117 1/4	117 1/2	117 3/4	118	118 1/4	118 1/2	118 3/4	119	119 1/4	119 1/2	119 3/4	120	120 1/4	120 1/2	120 3/4	121	121 1/4	121 1/2	121 3/4	122	122 1/4	122 1/2	122 3/4	123	123 1/4	123 1/2	123 3/4	124	124 1/4	124 1/2	124 3/4	125	125 1/4	125 1/2	125 3/4	126	126 1/4	126 1/2	126 3/4	127	127 1/4	127 1/2	127 3/4	128	128 1/4	128 1/2	128 3/4	129	129 1/4	129 1/2	129 3/4	130	130 1/4	130 1/2	130 3/4	131	131 1/4	131 1/2	131 3/4	132	132 1/4	132 1/2	132 3/4	133	133 1/4	133 1/2	133 3/4	134	134 1/4	134 1/2	134 3/4	135	135 1/4	135 1/2	135 3/4	136	136 1/4	136 1/2	136 3/4	137	137 1/4	137 1/2	137 3/4	138	138 1/4	138 1/2	138 3/4	139	139 1/4	139 1/2	139 3/4	140	140 1/4	140 1/2	140 3/4	141	141 1/4	141 1/2	141 3/4	142	142 1/4	142 1/2	142 3/4	143	143 1/4	143 1/2	143 3/4	144	144 1/4	144 1/2	144 3/4	145	145 1/4	145 1/2	145 3/4	146	146 1/4	146 1/2	146 3/4	147	147 1/4	147 1/2	147 3/4	148	148 1/4	148 1/2	148 3/4	149	149 1/4	149 1/2	149 3/4	150	150 1/4	150 1/2	150 3/4	151	151 1/4	151 1/2	151 3/4	152	152 1/4	152 1/2	152 3/4	153	153 1/4	153 1/2	153 3/4	154	154 1/4	154 1/2	154 3/4

Example: For $3\frac{1}{4}$ " x $\frac{3}{8}$ " mortise and tenon, the two triangle end-pieces are combined with two segments marked 1".

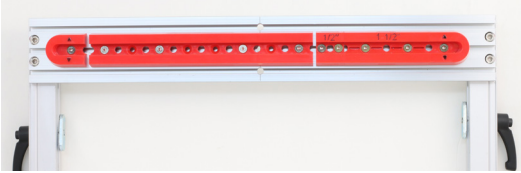
Align to Center



Center the middle segment using a non-tapered guide-bearing shaft then slide segments and end-pieces together and tighten the mounting screws.



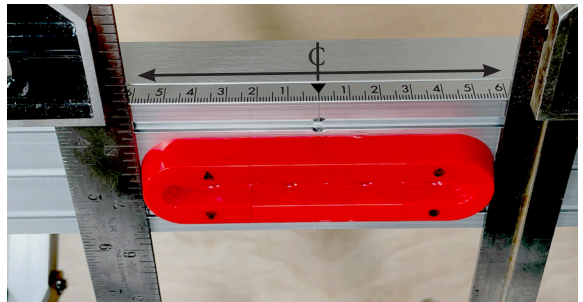
Several segments can be combined for large arrays. In this case the combination makes a 4" mortise and tenon, $\frac{3}{8}$ " thick.



The segmented-mortise-and-tenon templates have the same profile as the slot-mortise template set (sold separately) so they can be combined for even larger

M&Ts. Each bar from the slot-mortise set makes a 4" wide segment. This example makes a $7\frac{1}{4}$ " wide mortise and tenon at $\frac{3}{8}$ " thick!

To center an array of segments that does not have a center hole option, use a square to locate each end equidistant from the center of the template holder. The metric scale on the template holder is easiest for this.



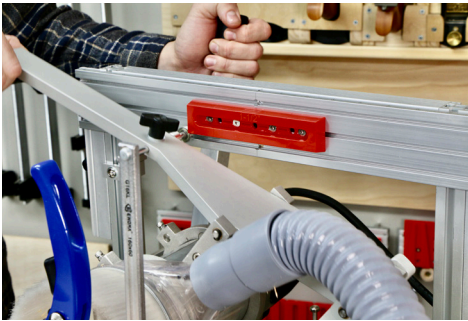
A mortise and tenon $\frac{1}{8}$ " larger or smaller than the sizes shown on the chart can be made using one circle end-piece and one triangle end-piece. The centering hole will be off by $\frac{1}{8}$ " when using the templates this way, so use the measuring method described above to center them.

Adjust Mortise Width



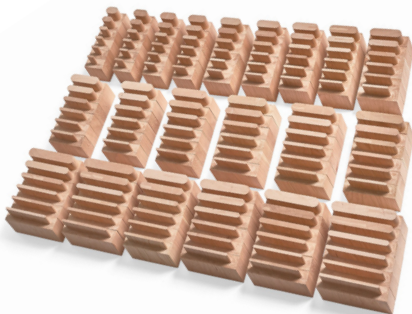
The three steps in the ends of the mortise slot allow three widths of mortise. Use the lowest step when you need a perfect fit side-to-side such as for through-mortise and tenon. Use the second or third step if you prefer a little side-to-side adjustability, which can sometimes be helpful during glue-up. Using the third step allows room to wedge the tenon.

Square Tenons



Traditional through-tenons sometimes have square ends. Since a round bit is used to cut the mortise on the PantoRouter™, the mortise can't be made square. But the tenon can, using the square-end templates provided in the kit, which saves a step and improves precision. Set up those templates for the desired

M&T, and cut the mortise first as usual. Now cut the tenon using the same template setup, and square the ends of the mortise with a chisel to produce a perfect square-ended M&T. Seventy-six different sizes of square tenons are possible using the segments provided.



Enjoy the hundreds of sizes of mortise & tenon possible with the PantoRouter!

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