

# TMB Oiles Toughmet Bushings

Selection Guide

Product Information

Plastic Bearing

Multi-layer Bearing

Metallic Bearing

Air Bearings

Slide Shifter

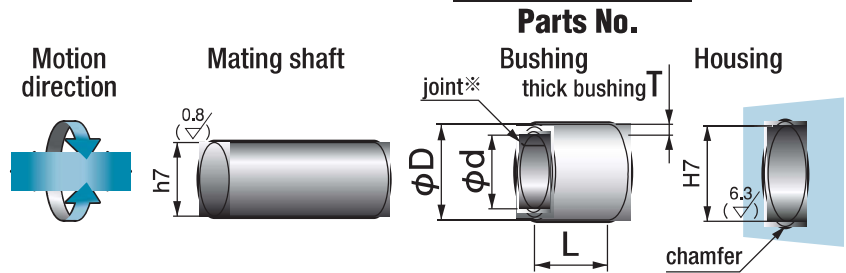
Technical Information

Corporate Profile



Specify Part No. by required I.D. and length.

(e.g.) I.D. is 25mm and length is 20mm. **TMB - 2520**

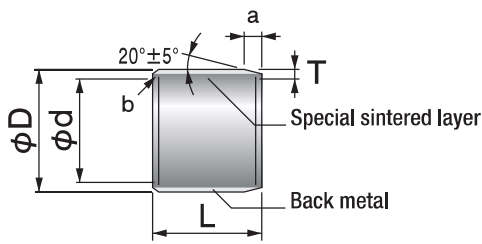


※The joint causes no influences upon rotation of the shaft. Be careful when press-fitting so that the joint is not at the position to which the maximum load is applied.

Shaft		Housing		I.D.		O.D.		Wall thickness		Length L Tolerance $_{-0.3}^0$					
Size	h7 Tolerance	Size	H7 Tolerance	$\phi d$	$\phi D$	Tolerance	T	Tolerance	5	6	8	10	12	15	
5	$\begin{smallmatrix} 0 \\ -0.012 \end{smallmatrix}$	7	$\begin{smallmatrix} +0.015 \\ 0 \end{smallmatrix}$	5	7	$\begin{smallmatrix} +0.055 \\ +0.025 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$	<b>0505</b>		<b>0508</b>				
6	$\begin{smallmatrix} 0 \\ -0.012 \end{smallmatrix}$	8	$\begin{smallmatrix} +0.015 \\ 0 \end{smallmatrix}$	6	8	$\begin{smallmatrix} +0.055 \\ +0.025 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$		<b>0606</b>		<b>0610</b>			
7	$\begin{smallmatrix} 0 \\ -0.015 \end{smallmatrix}$	9	$\begin{smallmatrix} +0.015 \\ 0 \end{smallmatrix}$	7	9	$\begin{smallmatrix} +0.055 \\ +0.025 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$					<b>0712</b>		
8	$\begin{smallmatrix} 0 \\ -0.015 \end{smallmatrix}$	10	$\begin{smallmatrix} +0.015 \\ 0 \end{smallmatrix}$	8	10	$\begin{smallmatrix} +0.055 \\ +0.025 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$			<b>0808</b>	<b>0810</b>	<b>0812</b>	<b>0815</b>	
9	$\begin{smallmatrix} 0 \\ -0.015 \end{smallmatrix}$	11	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	9	11	$\begin{smallmatrix} +0.060 \\ +0.030 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$				<b>0910</b>			
10	$\begin{smallmatrix} 0 \\ -0.015 \end{smallmatrix}$	12	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	10	12	$\begin{smallmatrix} +0.060 \\ +0.030 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$				<b>1010</b>		<b>1015</b>	
12	$\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	14	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	12	14	$\begin{smallmatrix} +0.060 \\ +0.030 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.030 \\ -0.075 \end{smallmatrix}$				<b>1210</b>		<b>1215</b>	
14	$\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	16	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	14	16	$\begin{smallmatrix} +0.065 \\ +0.035 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.035 \\ -0.085 \end{smallmatrix}$		<b>1406</b>		<b>1410</b>		<b>1415</b>	
15	$\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	17	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	15	17	$\begin{smallmatrix} +0.065 \\ +0.035 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.035 \\ -0.085 \end{smallmatrix}$				<b>1510</b>		<b>1515</b>	
16	$\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	18	$\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	16	18	$\begin{smallmatrix} +0.070 \\ +0.035 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.035 \\ -0.085 \end{smallmatrix}$						<b>1615</b>	
18	$\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	20	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	18	20	$\begin{smallmatrix} +0.075 \\ +0.040 \end{smallmatrix}$	1.0	$\begin{smallmatrix} -0.035 \\ -0.085 \end{smallmatrix}$						<b>1815</b>	
20	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	23	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	20	23	$\begin{smallmatrix} +0.080 \\ +0.045 \end{smallmatrix}$	1.5	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$					<b>2012</b>	<b>2015</b>	
22	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	25	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	22	25	$\begin{smallmatrix} +0.080 \\ +0.045 \end{smallmatrix}$	1.5	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$				<b>2210</b>			
24	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	27	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	24	27	$\begin{smallmatrix} +0.080 \\ +0.045 \end{smallmatrix}$	1.5	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
25	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	28	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	25	28	$\begin{smallmatrix} +0.085 \\ +0.050 \end{smallmatrix}$	1.5	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$				<b>2510</b>		<b>2515</b>	
26	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	30	$\begin{smallmatrix} +0.021 \\ 0 \end{smallmatrix}$	26	30	$\begin{smallmatrix} +0.085 \\ +0.050 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
28	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	32	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	28	32	$\begin{smallmatrix} +0.090 \\ +0.050 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
30	$\begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	34	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	30	34	$\begin{smallmatrix} +0.090 \\ +0.050 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$						<b>3015</b>	
31	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	35	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	31	35	$\begin{smallmatrix} +0.090 \\ +0.050 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
32	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	36	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	32	36	$\begin{smallmatrix} +0.090 \\ +0.050 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
35	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	39	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	35	39	$\begin{smallmatrix} +0.095 \\ +0.055 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$						<b>3515</b>	
38	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	42	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	38	42	$\begin{smallmatrix} +0.095 \\ +0.055 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
40	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	44	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	40	44	$\begin{smallmatrix} +0.095 \\ +0.055 \end{smallmatrix}$	2.0	$\begin{smallmatrix} -0.030 \\ -0.090 \end{smallmatrix}$							
42	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	47	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	42	47	$\begin{smallmatrix} +0.095 \\ +0.055 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
45	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	50	$\begin{smallmatrix} +0.025 \\ 0 \end{smallmatrix}$	45	50	$\begin{smallmatrix} +0.100 \\ +0.060 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
50	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	55	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	50	55	$\begin{smallmatrix} +0.105 \\ +0.060 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
55	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	60	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	55	60	$\begin{smallmatrix} +0.110 \\ +0.065 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
60	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	65	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	60	65	$\begin{smallmatrix} +0.120 \\ +0.070 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
65	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	70	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	65	70	$\begin{smallmatrix} +0.125 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
70	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	75	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	70	75	$\begin{smallmatrix} +0.125 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
75	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	80	$\begin{smallmatrix} +0.030 \\ 0 \end{smallmatrix}$	75	80	$\begin{smallmatrix} +0.130 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
80	$\begin{smallmatrix} 0 \\ -0.030 \end{smallmatrix}$	85	$\begin{smallmatrix} +0.035 \\ 0 \end{smallmatrix}$	80	85	$\begin{smallmatrix} +0.130 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
85	$\begin{smallmatrix} 0 \\ -0.035 \end{smallmatrix}$	90	$\begin{smallmatrix} +0.035 \\ 0 \end{smallmatrix}$	85	90	$\begin{smallmatrix} +0.130 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
90	$\begin{smallmatrix} 0 \\ -0.035 \end{smallmatrix}$	95	$\begin{smallmatrix} +0.035 \\ 0 \end{smallmatrix}$	90	95	$\begin{smallmatrix} +0.130 \\ +0.075 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.035 \\ -0.095 \end{smallmatrix}$							
100	$\begin{smallmatrix} 0 \\ -0.035 \end{smallmatrix}$	105	$\begin{smallmatrix} +0.035 \\ 0 \end{smallmatrix}$	100	105	$\begin{smallmatrix} +0.140 \\ +0.080 \end{smallmatrix}$	2.5	$\begin{smallmatrix} -0.055 \\ -0.115 \end{smallmatrix}$							

※Outer diameter is measured by exclusive gauge.

※The I.D. tolerance after press fitting is for reference only.



a: O.D. chamfering for the bushing I.D. of φ10 or more

T	1.0	1.5	2.0	2.5	(mm)
a	0.5	0.8	1.0	1.0	

b: I.D. chamfering for the bushing I.D. of φ10 or more

T	1.0	1.5	2.0	2.5	(mm)
b	0.3	0.5	0.5	0.5	

※ Chamfering of inner or outer diameters less than φ10 mm is done only to remove burrs.

Length L										Tolerance $-0.3$	I.D. tolerance after press fitting (reference)	I.D. φd
20	25	30	35	40	50	60	70	80	95			
											+0.165 +0.060	5
											+0.165 +0.060	6
											+0.165 +0.060	7
											+0.165 +0.060	8
											+0.168 +0.060	9
<b>1020</b>											+0.168 +0.060	10
<b>1220</b>											+0.168 +0.060	12
<b>1420</b>											+0.188 +0.070	14
<b>1520</b>	<b>1525</b>										+0.188 +0.070	15
<b>1620</b>	<b>1625</b>										+0.188 +0.070	16
	<b>1825</b>										+0.191 +0.070	18
<b>2020</b>	<b>2025</b>	<b>2030</b>									+0.201 +0.060	20
<b>2220</b>		<b>2230</b>									+0.201 +0.060	22
		<b>2430</b>									+0.201 +0.060	24
<b>2520</b>	<b>2525</b>	<b>2530</b>	<b>2535</b>								+0.201 +0.060	25
		<b>2630</b>									+0.201 +0.060	26
<b>2820</b>		<b>2830</b>		<b>2840</b>							+0.205 +0.060	28
<b>3020</b>	<b>3025</b>	<b>3030</b>	<b>3035</b>	<b>3040</b>							+0.205 +0.060	30
				<b>3140</b>							+0.205 +0.060	31
<b>3220</b>				<b>3240</b>							+0.205 +0.060	32
	<b>3525</b>	<b>3530</b>		<b>3540</b>	<b>3550</b>						+0.205 +0.060	35
		<b>3830</b>			<b>3850</b>						+0.205 +0.060	38
	<b>4025</b>	<b>4030</b>		<b>4040</b>	<b>4050</b>						+0.205 +0.060	40
					<b>4250</b>						+0.215 +0.070	42
		<b>4530</b>			<b>4550</b>						+0.215 +0.070	45
	<b>5025</b>	<b>5030</b>		<b>5040</b>	<b>5050</b>	<b>5060</b>					+0.220 +0.070	50
	<b>5525</b>			<b>5540</b>			<b>5570</b>				+0.220 +0.070	55
		<b>6030</b>		<b>6040</b>		<b>6060</b>					+0.220 +0.070	60
		<b>6530</b>		<b>6540</b>		<b>6560</b>					+0.220 +0.070	65
		<b>7030</b>		<b>7040</b>				<b>7080</b>			+0.220 +0.070	70
				<b>7540</b>				<b>7580</b>			+0.220 +0.070	75
				<b>8040</b>				<b>8080</b>			+0.225 +0.070	80
				<b>8540</b>				<b>8580</b>			+0.225 +0.070	85
				<b>9040</b>		<b>9060</b>					+0.225 +0.070	90
					<b>10050</b>				<b>10095</b>		+0.265 +0.110	100