

### Safe Starting Conditions for Boring Applications

MATERIALS	BHN	SURFACE SPEED (SFM)	FEED RATE (I.P.R.)	DEPTH OF CUT* (per side/inch)	SURFACE SPEED (m/min)	FEED RATE (mm/r)	DEPTH OF CUT* (per side/mm)
<b>NON-FERROUS MATERIALS</b>							
Aluminum - Aluminum Alloys	140-425	175-2000	.0005-.030	.0002-.090	53-610	.013-.076	.005-2.3
Brass - Bronze	80-120	175-2000	.0005-.030	.0002-.090	53-457	.013-.076	.005-2.3
Copper	80-120	150-400	.0005-.030	.0002-.090	61-457	.013-.076	.005-2.3
Zinc Alloys	80-120	150-350	.0005-.030	.0002-.090	46-107	.013-.076	.005-2.3
Non-Metallics	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Acrylics	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Fiberglass	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Graphites	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Nylons	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Phenolics	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
Plastics	-	200-1000	.0005-.030	.0002-.090	61-305	.013-.076	.005-2.3
<b>CAST IRONS</b>							
Cast Iron - Gray	160-260	100-900	.0005-.025	.0002-.030	30-84	.013-.064	.005-.076
Cast Iron - Ferritic	140-200	75-750	.0005-.025	.0002-.030	23-229	.013-.064	.005-.076
Cast Iron - Pearlitic	220-260	75-650	.0005-.025	.0002-.030	23-198	.013-.064	.005-.076
Iron - SG Nodular	160-260	164-262	.0005-.025	.0002-.030	50-80	.013-.064	.005-.076
<b>STEELS</b>							
Low Carbon - Unalloyed	160-260	75-800	.0005-.015	.0002-.025	23-244	.013-.038	.005-.064
Medium Carbon - Unalloyed	140-200	75-800	.0005-.015	.0002-.025	23-244	.013-.038	.005-.064
High Carbon - Unalloyed	220-260	75-800	.0005-.015	.0002-.025	23-244	.013-.038	.005-.064
Low Carbon Alloys	220-260	75-800	.0005-.015	.0002-.025	23-244	.013-.038	.005-.064
Medium Carbon Alloys	220-260	75-800	.0005-.015	.0002-.025	23-244	.013-.038	.005-.064
High Strength Alloys	220-260	75-600	.0005-.015	.0002-.025	23-183	.013-.038	.005-.064
Tool Steels	220-250	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
Heat Treated Alloys	32-40RC	75-250	.0005-.015	.0002-.025	23-76	.013-.038	.005-.064
Powder Metal Alloys	230-260	75-250	.0005-.015	.0002-.025	23-76	.013-.038	.005-.064
<b>STAINLESS STEELS</b>							
300 Series	135-185	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
400 Series	180-220	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
13-8 PH	32-35RC	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
15-5 PH	32-35RC	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
17-4 PH	32-35RC	75-500	.0005-.015	.0002-.025	23-152	.013-.038	.005-.064
<b>HIGH TEMPERATURE ALLOYS</b>							
Monel 400	140-300	70-300	.0003-.010	.0002-.020	21-91	.013-.025	.005-.051
Monel 500	140-300	70-300	.0003-.010	.0002-.020	21-91	.013-.025	.005-.051
K Monel	140-300	70-300	.0003-.010	.0002-.020	21-91	.013-.025	.005-.051
A286	225-363	75-300	.0003-.010	.0002-.020	23-91	.013-.025	.005-.051
Hastelloy	225-363	75-300	.0003-.010	.0002-.020	23-91	.013-.025	.005-.051
Inconel	225-363	75-300	.0003-.010	.0002-.020	23-91	.013-.025	.005-.051
Rene	225-363	75-300	.0003-.010	.0002-.020	23-91	.013-.025	.005-.051
Waspalloy	225-363	75-300	.0003-.010	.0002-.020	23-91	.013-.025	.005-.051
<b>HARDENED MATERIALS</b>							
Titanium Alloys	300-500	70-140	.0002-.008	.0001-.005	21-43	.005-.020	.003-.013
Extra Hard Steels	45-50RC	65-147	.0001-.005	.0001-.005	20-45	.003-.013	.003-.013
Hardened and Tempered	51-55RC	65-131	.0001-.005	.0001-.005	20-40	.003-.013	.003-.013

Machining Data for Speeds, Feeds, and Depth of Cuts are considered to be "safe starting conditions" and may need to be adjusted to obtain optimal performance.

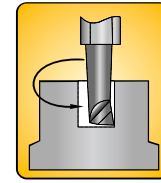
For greater Depth of Cuts...reduce the Feed Rates. Depth of Cuts not recommended to exceed 20% of the D1 dimension.  
To obtain better surface finish, reduce Feed Rates.



**QBM Boring Tools Tolerances:**

Shank Diameter:  
-.0001"(-.0025mm) to -.0003"(-.0076mm)  
Minimum Bore Diameter:  
±.0005"(±.013mm)  
Maximum Bore Depth:  
+.030"(+0.8mm) - .000"(-.00mm)  
Overall Length:  
±.001"(±.025mm)

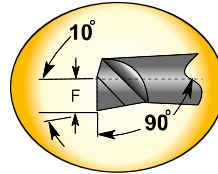
**OTHER  
SIZES  
AVAILABLE  
UPON REQUEST**



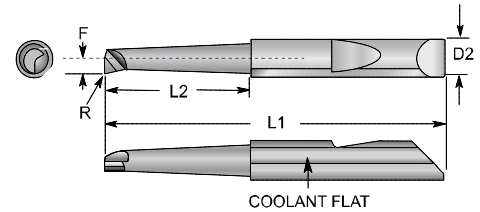
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**Coated Tools AVAILABLE!**  
**AlTiN** Add an "X" to end of Catalog No.

OTHER COATINGS UPON REQUEST, SEE PAGE 326  
LEFT-HAND TOOLS AVAILABLE



Tool Radius:  
±.001"(±.025mm)



For current pricing and availability please visit our website at: [www.micro100.com](http://www.micro100.com)

QBM Catalog No.	Minimum Bore Diameter		Maximum Bore Depth (L2)		Tool Centerline to Cutting Tip (F)		Tool Radius (R)		Overall Length (L1)		Shank Diameter (D2)	
	inch	metric	inch	metric	inch	metric	inch	metric	inch	metric	inch	metric
<b>1/4" / 6.4mm Shanks</b>												
QBM-118500	.118	3.00	.500	12.7	.055	1.40	.003	0.08	2.000	51	.2500	6.4
QBM-118750			.750	19.1								
QBM-150500	.150	3.81	.500	12.7	.071	1.80	.008	0.20	2.500	64	.2500	6.4
QBM-150750			.750	19.1								
QBM-200500	.200	5.08	.500	12.7	.095	2.41	.008	0.20	2.500	64	.2500	6.4
QBM-200750			.750	19.1								
QBM-2001250			1.250	31.8					2.500	64		
QBM-230750	.230	5.84	.750	19.1	.110	2.79	.008	0.20	2.000	51	.2500	6.4
QBM-2301250			1.250	31.8								
QBM-2301500			1.500	38.1								
			3.000	76								
<b>3/8" / 9.5mm Shanks</b>												
QBM-3001000	.300	7.62	1.000	25.4	.145	3.70	.008	0.20	2.500	64	.3750	9.5
QBM-3001500			1.500	38.1								
QBM-3001750			1.750	44.5								
QBM-3601000	.360	9.14	1.000	25.4	.175	4.50	.008	0.20	2.500	64	.5000	12.7
QBM-3601500			1.500	38.1								
QBM-3602000			2.000	50.8								
			3.500	89								
<b>1/2" / 12.7mm Shanks</b>												
QBM-4601000	.460	11.7	1.000	25.4	.225	5.70	.008	0.20	2.500	64	.5000	12.7
QBM-4601500			1.500	38.1								
QBM-4602000			2.000	50.8								
QBM-4602500			2.500	63.5								
QBM-4603000			3.000	76.2								

See pages 69-75 for Toolholder Selections.  
Refer to pages 323-363 for Technical Data.

