



MATERIAL TYPES	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
<b>Aluminum / Aluminum Alloys</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Brass / Bronze</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Copper / Copper Alloys</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Magnesium / Magnesium Alloys</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Glass Filled / Phenolics / Plastics</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Cast Irons / Soft</b>	3000	4.5	6000	9	7500	12	10000	15
<b>Cast Irons / Hard</b>	3000	2.4	6000	4.8	7500	6	10000	8
<b>Ductile Iron</b>	3000	3	6000	6	7500	7.5	10000	10
<b>Malleable Iron</b>	3000	3	6000	6	7500	7.5	10000	10
<b>Low Carbon Steel</b>	3000	3	6000	6	7500	7.5	10000	10
<b>Medium Carbon Steel</b>	3000	4.5	6000	9	7500	11.3	10000	15
<b>Hardened Steel</b>	3000	1.5	6000	3	7500	3.8	10000	5
<b>Stainless Steel / Soft</b>	3000	3	6000	6	7500	7.5	10000	10
<b>Stainless Steel / Hard</b>	3000	1.5	6000	3	7500	3.8	10000	5
<b>Monel</b>	3000	3	6000	6	7500	7.5	10000	10
<b>High Nickel Steel</b>	3000	1.5	6000	3	7500	3.8	10000	5
<b>Nickel Base High Temperature Alloys</b>	3000	1.5	6000	3	7500	3.8	10000	5
<b>Titanium / Soft</b>	3000	3	6000	6	7500	7.5	10000	10
<b>Titanium / Hard</b>	3000	1.5	6000	3	7500	3.8	10000	5

To achieve "Optimal Engraving Tool Performance", variations to the machining data shown above may be required. The data given, is considered to be "safe starting conditions".

Plunge Feed to Depth at 50% of feed rates ( shown above for the material being machined).

To reduce tool breakage on harder materials or if sharper points are being utilized, reduce feed rates by as much as 50% and take shallower passes (0.001" per depth of pass is recommended).

To extend tool life, coolant is recommended. The use of coolant also reduces "build up" on the tool's edge.

When engraving lines appear to be "rough and/or jagged", this condition is generally caused by a dull tool or a tool with edge "build up". This type of "build up" mostly occurs in materials such as aluminum, brass, and copper.

When feed rates and/or depths of cuts are too fast, these conditions may not allow the material to be cleanly machined. Making a "finish" pass with a depth of cut (0.001" - 0.002") and a reduced feed rate will provide a solution for the "burred or jagged" edges.





MATERIAL TYPES	RPM	MM/Min	RPM	MM/Min	RPM	MM/Min	RPM	MM/Min
<b>Aluminum / Aluminum Alloys</b>	3000	114	6000	228	7500	304	10000	381
<b>Brass / Bronze</b>	3000	114	6000	228	7500	304	10000	381
<b>Copper / Copper Alloys</b>	3000	114	6000	228	7500	304	10000	381
<b>Magnesium / Magnesium Alloys</b>	3000	114	6000	228	7500	304	10000	381
<b>Glass Filled / Phenolics / Plastics</b>	3000	114	6000	228	7500	304	10000	381
<b>Cast Irons / Soft</b>	3000	114	6000	228	7500	304	10000	381
<b>Cast Irons / Hard</b>	3000	61	6000	122	7500	152	10000	203
<b>Ductile Iron</b>	3000	76	6000	152	7500	191	10000	254
<b>Malleable Iron</b>	3000	76	6000	152	7500	191	10000	254
<b>Low Carbon Steel</b>	3000	76	6000	152	7500	191	10000	254
<b>Medium Carbon Steel</b>	3000	114	6000	229	7500	287	10000	381
<b>Hardened Steel</b>	3000	38	6000	76	7500	97	10000	127
<b>Stainless Steel / Soft</b>	3000	76	6000	152	7500	191	10000	254
<b>Stainless Steel / Hard</b>	3000	38	6000	76	7500	97	10000	127
<b>Monel</b>	3000	76	6000	152	7500	191	10000	254
<b>High Nickel Steel</b>	3000	38	6000	76	7500	97	10000	127
<b>Nickel Base High Temperature Alloys</b>	3000	38	6000	76	7500	97	10000	127
<b>Titanium / Soft</b>	3000	76	6000	152	7500	191	10000	254
<b>Titanium / Hard</b>	3000	38	6000	76	7500	97	10000	127

To achieve "Optimal Engraving Tool Performance", variations to the machining data shown above may be required. The data given, is considered to be "safe starting conditions".

Plunge Feed to Depth at 50% of feed rates ( shown above for the material being machined).

To reduce tool breakage on harder materials or if sharper points are being utilized, reduce feed rates by as much as 50% and take shallower passes (0.001" per depth of pass is recommended).

To extend tool life, coolant is recommended. The use of coolant also reduces "build up" on the tool's edge.

When engraving lines appear to be "rough and/or jagged", this condition is generally caused by a dull tool or a tool with edge "build up". This type of "build up" mostly occurs in materials such as aluminum, brass, and copper.

When feed rates and/or depths of cuts are too fast, these conditions may not allow the material to be cleanly machined. Making a "finish" pass with a depth of cut (0.001" - 0.002") and a reduced feed rate will provide a solution for the "burred or jagged" edges.

L