








# TuffCut® AL / X-AL

## 134 / 135 / 135N Recommended Cutting Data - Profile Milling Inch

Workpiece Material Group	ISO	Coolant • Preferred	Profile Milling (ae)				End Mill Diameter							
							3/16*	1/4*	5/16	3/8	1/2	5/8	3/4	1
			10%	20%	30%	50%	ae > .3D use < 1D ap ae < .2D use < 2D ap *Profile Milling at > 25% ap is not recommended for diameters 1/4" and below.							
				3.8	3.1	2	1	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.						
Max.	vc - SFM				fz - in/tooth									
Non-Ferrous - Aluminum / Aluminum Alloys < 10% Si	N	•	2000	1800	1200	900	.0018	.0025	.0032	.0037	.0050	.0065	.0075	.0100
Non-Ferrous - Aluminum / Aluminum Alloys > 10% Si	N	•	1500	1200	1000	800	.0018	.0025	.0032	.0037	.0050	.0065	.0075	.0100
Non-Ferrous - Brass	N	•	900	800	600	500	.0025	.0032	.0037	.0050	.0065	.0075	.0100	.0120
Non-Ferrous - Cu/Cu Alloys / Magnesium	N	•	1000	800	600	500	.0025	.0032	.0037	.0050	.0065	.0075	.0100	.0120
Non-Ferrous - Plastics	N	•	900	800	600	500	.0025	.0032	.0037	.0050	.0065	.0075	.0100	.0120

Above 20,000 RPM, Tool Balancing Required

## 134 / 135 / 135N Recommended Cutting Data - Profile Milling Metric

Workpiece Material Group	ISO	Coolant • Preferred	Profile Milling (ae)				End Mill Diameter (mm)								
							3*	5*	6*	8	10	14	16	18	25
			10%	20%	30%	50%	ae > .3D use < 1D ap ae < .2D use < 2D ap *Profile Milling at > 25% ap is not recommended for diameters 6mm and below.								
				3.8	3.1	2	1	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.							
Max.	vc - m/min				fz - mm/tooth										
Non-Ferrous - Aluminum / Aluminum Alloys < 10% Si	N	•	600	550	365	275	.030	.045	.063	.081	.093	.127	.165	.190	.254
Non-Ferrous - Aluminum / Aluminum Alloys > 10% Si	N	•	450	365	305	250	.030	.045	.063	.081	.093	.127	.165	.190	.254
Non-Ferrous - Brass	N	•	275	250	180	150	.045	.063	.081	.093	.127	.165	.190	.254	.304
Non-Ferrous - Cu/Cu Alloys / Magnesium	N	•	300	250	180	150	.045	.063	.081	.093	.127	.165	.190	.254	.304
Non-Ferrous - Plastics	N	•	275	250	180	150	.045	.063	.081	.093	.127	.165	.190	.254	.304

Above 20,000 RPM, Tool Balancing Required

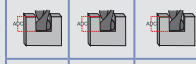
Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  

$$\frac{\text{Calculated Feed} \times \text{Spindle Maximum}}{\text{Calculated Speed}}$$

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

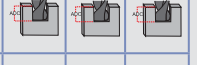
# TuffCut® AL / X-AL

## 134 / 135 / 135N Recommended Cutting Data - Slotting Inch

Workpiece Material Group	ISO	Coolant • Preferred	Slotting			End Mill Diameter							
						3/16*	1/4*	5/16	3/8	1/2	5/8	3/4	1
			25%	50%	100%	*Slotting at > 25% ap is not recommended for diameters 1/4" and below.							
			Max.	vc - SFM		fz - in/tooth							
Non-Ferrous - Aluminum / Aluminum Alloys < 10% Si	N	•	2000	1500	1000	.004-.006	.004-.008	.006-.009	.007-.012	.010-.045	.015-.045	.015-.045	.015-.040
Non-Ferrous - Aluminum / Aluminum Alloys > 10% Si	N	•	1500	1200	800	.004-.006	.004-.008	.006-.009	.007-.012	.010-.045	.015-.045	.015-.045	.015-.040
Non-Ferrous - Brass	N	•	600	500	400	.004-.006	.004-.008	.006-.009	.007-.012	.010-.045	.015-.045	.015-.045	.015-.040
Non-Ferrous - Cu/Cu Alloys / Magnesium	N	•	500	400	300	.0025	.0032	.0037	.0050	.0065	.0075	.0100	.0120
Non-Ferrous - Plastics	N	•	1200	1000	800	.004-.006	.004-.008	.006-.009	.007-.012	.010-.045	.015-.045	.015-.045	.015-.040

Above 20,000 RPM, Tool Balancing Required

## 134 / 135 / 135N Recommended Cutting Data - Slotting Metric

Workpiece Material Group	ISO	Coolant • Preferred	Slotting			End Mill Diameter (mm)								
						3*	5*	6*	8	10	14	16	20	25
			25%	50%	100%	*Slotting at > 25% ap is not recommended for diameters 6mm and below.								
			Max.	vc - m/min		fz - mm/tooth								
Non-Ferrous - Aluminum / Aluminum Alloys < 10% Si	N	•	600	450	300	.076-.101	.101-.152	.101-.203	.152-.203	.177-.304	.254-1.143	.381-1.016	.381-1.016	
Non-Ferrous - Aluminum / Aluminum Alloys > 10% Si	N	•	450	365	250	.076-.101	.101-.151	.101-.203	.152-.203	.177-.304	.254-1.143	.381-1.016	.381-1.016	
Non-Ferrous - Brass	N	•	180	150	120	.076-.101	.101-.152	.101-.203	.152-.203	.177-.304	.254-1.143	.381-1.016	.381-1.016	
Non-Ferrous - Cu/ Cu Alloys / Magnesium	N	•	150	120	90	.045	.063	.076	.093	.127	.165	.190	.254	.304
Non-Ferrous - Plastics	N	•	365	300	250	.076-.101	.101-.152	.101-.203	.152-.203	.177-.304	.254-1.143	.381-1.016	.381-1.016	

Above 20,000 RPM, Tool Balancing Required

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  

$$\frac{\text{Calculated Feed} \times \text{Spindle Maximum}}{\text{Calculated Speed}}$$

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

For product information, call your local distributor.