Machining Guide for Shefcut® reaming applications

The information below is intended as a **starting point** for selecting the spindle speed and feed rate that will produce optimum results in Shefcut® precision reaming applications, when factors such as material type, blade lead, blade rake, and coolant are taken into consideration. The wide range in the recommendations reflects the fact that each application is unique and is influenced by these and other variables, such as the type of machine on which the tool is run, the manner in which the tool is held in the spindle, etc.

MATERIAL (TENSILE STRENGTH)	COOLANT STYLE AND BLADE LEAD							RADIAL RAKE ON BLADE	
	External Flood Coolant	Internal Coolant							
	C0.6, C1.3 & C3.0	C3.0	C1.3	C0.6	GR	GD	GDR		
	Cutting Speed (m/min) Feed (mm/rev)	Cutting Speed (m/min) Feed Rate (mm/rev)						Preferred	Option
Steel (<400 Mpa)	12-50 0.05 - 0.4	25-100 0.05-0.4			Not Recommended			12°	6°
Steel (400-750 Mpa)	8 - 35 0.05 - 0.4	25-100 0.05-0.4			Not Recommended			12°	6°
Steel (>750 Mpa)		25-80 0.05-0.4			Not Recommended			12°	6°
Nickel Chrome Steel		15-60 0.05-0.3			Not Recommended			12°	6°
Stainless Steel	5-16 0.05 - 0.3	8-40 0.05-0.3			Not Recommended			12°	6°
Grey Cast Iron	20-50 0.1 - 0.4	20-80 0.05-0.4	30-110 0.05-0.4					0°	6°
Nodular Cast Iron	20-50 0.1 - 0.3	20-90 0.05-0.3						12°	6°
Aluminum	20-70 0.05 - 0.4	Not Recommended	50-400 0.03-0.3			100-1200 0.05-0.15		12°	0°
Aluminum with high Silicon	20-70 0.05 - 0.4	Not Recommended	50-200 0.05-0.3		80-320 0.03-0.1			12°	6°
Zinc Alloy	20-70 0.05 - 0.4	Not Recommended	50-150 0.05-0.3		80-800 0.05-0.15			12°	0°
Brass - short chipping	10-50 0.05 - 0.4	25-80 0.05-0.4	25-150 0.03-0.4					0°	6°
Brass - long chipping	8-25 0.05 - 0.3	20-50 0.1-0.4	20-100 0.05-0.4					12°	6°
Copper - hard	10-30 0.05 - 0.4	15-60 0.1-0.4	20-100 0.03-0.4					0°	6°
Copper - soft		15-60 0.1-0.3	20-60 0.05-0.3		30-100 0.03-0.15			12°	6°
Phosphor Bronze	12-50 0.05 - 0.4	25-80 0.05-0.4	30-100 0.03-0.4					6°	12°

In general, you will find that the following guidelines will hold true:

1. Power feed should always be used when running a Shefcut tool.
2. Start at the middle of the recommended speed range, and at the lower side of the recommended feed range, for Shefcut precision reaming applications. Then adjust both rates as necessary to achieve optimum results and production rates.
3. Shefcut precision boring tools are often run at higher speeds and lower feeds than shown below.
4. Tools with coated blades can be operated at higher speeds than shown.
5. Run the tool at reduced speeds when through-tool coolant feed is not available.

INCH UNITS

MATERIAL (TENSILE STRENGTH)	COOLANT STYLE AND BLADE LEAD							RADIAL RAKE ON BLADE	
	External Flood Coolant	Internal Coolant							
	C0.6, C1.3 & C3.0	C3.0	C1.3	C0.6	GR	GD	GDR		
	Cutting Speed (s.f.m) Feed (in/rev)	Cutting Speed (s.f.m) Feed Rate (in/rev)						Preferred	Option
Steel - (<57k psi)	40-170 0.002 - 0.016	80-330 0.002-0.016			Not Recommended			12°	6°
Steel - (57k to 107k psi)	30 - 120 0.002 - 0.016	80-330 0.002-0.016			Not Recommended			12°	6°
Steel - (>107k psi)		80-260 0.002-0.016			Not Recommended			12°	6°
Nickel Chrome Steel		50-200 0.002-0.012			Not Recommended			12°	6°
Stainless Steel	20-50 0.002 - 0.012	30-130 0.002-0.012			Not Recommended			12°	6°
Grey Cast Iron	70-170 0.004 - 0.016	70-260 0.002-0.016	100-360 0.002-0.016					0°	6°
Nodular Cast Iron	70-170 0.004 - 0.012	70-300 0.002-0.012						12°	6°
Aluminum	70-230 0.002 - 0.016	Not Recommended	160-1310 0.001-0.012			330-3940 0.002-0.006		12°	0°
Aluminum with high Silicon	70-230 0.002 - 0.016	Not Recommended	160-660 0.002-0.012	260-1050 0.001-0.004				12°	6°
Zinc Alloy	70-230 0.002 - 0.016	Not Recommended	160-490 0.002-0.012	260-2630 0.002-0.006				12°	0°
Brass - short chipping	30-170 0.002 - 0.016	80-260 0.002-0.016	80-490 0.001-0.016					0°	6°
Brass - long chipping	30-80 0.002 - 0.012	70-160 0.004-0.016	70-330 0.002-0.016					12°	6°
Copper - hard	30-100 0.002 - 0.016	50-200 0.004-0.016	70-330 0.001-0.016					0°	6°
Copper - soft		50-200 0.004-0.012	70-200 0.002-0.012	100-330 0.001-0.006				12°	6°
Phosphor Bronze	40-170 0.002 - 0.016	80-260 0.002-0.016	100-330 0.001-0.016					6°	12°