

tool type	description	FR 4		FR 2	CEM 1 CEM 3	Filled / HTG	PE	PTFE	PMMA	Polyimide	Flex / Rigid Flex	Al	Cu / brass	Metal composite laminates	remark
		oc	ic												
626	diamond-patterned teeth	●	●	●	●	○								○	standard contour router
726 756 790	spiral-patterned teeth	●	●	●	●	○ ● ●					○			○	standard contour router good chip transport and edge quality
817 818	1-flute		●	○	○		●	●	●	●	● ○	○	●	○	very good edge quality, burr- free and for soft and flexible materials
826 827 828	2-flute		●	○	○	○	●	●	●	●	○ ● ○		● ○	○	all-purpose tool for working with plastics and metals
836	3-flute		●	○	○	○	○	○	○	●	○		○	○	for metallised slots
80X	V-groove cutter	●		●	●	●	●	●	●	●	○	●	●	○	good chip transport and edge quality
850	Countersink	●		●	●	●	●	●	●	●		●	●	○	chamfering of PCBs
876	Contour finishing	○		○	○	○	○	○	○	○	○	○	○	●	burr free routing (goldfingers)
891	2-flute	○		○	○	○	○	○	○	○		●	○	○	good chip transport and edge quality

parameters														
cutting speed $v_s$ [m/min]	190-220	160-180	160-180	110-170	100-120	100-120	110-130	100-120	80-120	200-250	180-220	100-125	Cutting speed and chip load are basic recommendations depending on the material specification.  Parameters have to be adjusted accordingly.	
	$\varnothing$ [mm]	oc	ic	chip load [µm/1]										
1,0	8	8	10	10	8-12	10	10	20	10	8	3	3	2	
1,2	12	10	14	14	12-16	14	14	30	14	12	5	5	3	
1,6	20	15	25	25	22-26	25	25	40	25	23	8	8	4	
2,0	38	30	45	45	40-48	35	35	50	35	32	12	12	4	
2,4	48	34	55	55	50-60	40	40	60	40	35	15	15	5	

**Key:**

optimal material = ●  
possible alternative = ○

ic = inner contour  
oc = outer contour

**Formula: spindle speed  $n$  [rpm]**

$$n = v_s \cdot 1000 / (3.14 \cdot \varnothing)$$

**feed rate  $F$  [m/min]**

$$F = f \cdot n$$

$$f = F / n \text{ [µm/rev]}$$