TenonCam ™

www.tenoncam.com

CNC SYSTEM

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Licensed TenonCam Bit Manufacturer • R & B Tool Supply • Keith Beezley

13535 Pawnee Road • Apple Valley, CA 92308 • Ph: (760) 247-7323 • Fx: (760) 247-7357

625-240T - ⅝ Compression, Two Flute, ¼ TenonCam Bit for ¾ material

Feed Rate:	840 ipm	14 ips	21 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	16,000 rpm	16,000 rpm	15,750 rpm
Chip Load:	0.02625	0.02625	0.02625

625-181T - ⅝ Compression, Two Flute, 3/16 TenonCam Bit for ⅝ material

Feed Rate:	840 ipm	14 ips	21 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	16,000 rpm	16,000 rpm	15,750 rpm
Chip Load:	0.02625	0.02625	0.02625

500-120T - ½ Compression, Two Flute, ⅛ TenonCam Bit for ½ material

Feed Rate:	840 ipm	14 ips	21 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	16,000 rpm	16,000 rpm	15,750 rpm
Chip Load:	0.02625	0.02625	0.02625

Patented TenonCam router bits are only available under License from R & B Tool Supply. The TenonCam router bits are throw away, as sharpening will change the geometry of the bits and render them useless. TenonCam bit life can be anywhere from one to four hundred sheets of material, depending upon the type and quality of the materials being cut.

Recommended Standard Bit Manufacturer • Vortex Tool Company • Lynn Wilkowski

5605 Jelinek Avenue • Schofield, WI 54476 • Ph: (800) 355-7708 • Fx: (715) 355-7353

3189 - ½ Compression, Two Flute, with ¼ Upcut

Feed Rate:	960 ipm	16 ips	25 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	18,675 rpm	18,675 rpm	19,150 rpm
Chip Load:	0.0257	0.0257	0.0257
Feed Rate:	900 ipm	15 ips	23 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	17,500 rpm	17,500 rpm	17,500 rpm
Chip Load:	0.0257	0.0257	0.0257

3289m - ½ Compression, Three Flute, with ¼ Upcut

Feed Rate:	1,200 ipm	20 ips	31 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	16,000 rpm	16,000 rpm	16,275 rpm
Chip Load:	0.025	0.025	0.025

1350 - ½ Downcut, Two Flute

Feed Rate:	960 ipm	16 ips	25 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	18,675 rpm	18,675 rpm	19,150 rpm
Chip Load:	0.0257	0.0257	0.0257
Feed Rate:	900 ipm	15 ips	23 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	17,500 rpm	17,500 rpm	17,500 rpm
Chip Load:	0.0257	0.0257	0.0257

1950 - ½ Downcut, Three Flute

Feed Rate:	1,200 ipm	20 ips	31 mpm
Decent Rate:	300 ipm	5 ips	8 mpm
Spindle Speed:	16,000 rpm	16,000 rpm	16,275 rpm
Chip Load:	0.025	0.025	0.025

1330 - ¼ Downcut, Two Flute

Feed Rate:	480 ipm	8 ips	12 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	18,000 rpm	18,000 rpm	18,000 rpm
Chip Load:	0.013	0.013	0.013

1320 - 3/16 Downcut, Two Flute, ¼ Shank

Feed Rate:	360 ipm	6 ips	9 mpm
Decent Rate:	180 ipm	3 ips	5 mpm
Spindle Speed:	18,000 rpm	18,000 rpm	17,715 rpm
Chip Load:	0.010	0.010	0.010

1310 - ⅛ Downcut, Two Flute, ¼ Shank

Feed Rate:	240 ipm	4 ips	6 mpm
Decent Rate:	180 ipm	3 ips	5 mpm
Spindle Speed:	20,000 rpm	20,000 rpm	19,685 rpm
Chip Load:	0.006	0.006	0.006

Feed Rate:	180 ipm	3 ips	5 mpm
Decent Rate:	180 ipm	3 ips	5 mpm
Spindle Speed:	15,000 rpm	15,000 rpm	16,400 rpm
Chip Load:	0.006	0.006	0.006

7060 - 45º Insert V-Groove Cutter, ¾ Shank (Replacement Insert Number: IVB-40)

Feed Rate:	240 ipm	4 ips	6 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	15,000 rpm	15,000 rpm	15,000 rpm

7080 - 22 ½ º Insert V-Groove Cutter, ½ Shank (Replacement Insert Number: IVB-20)

Feed Rate:	240 ipm	4 ips	6 mpm
Decent Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	15,000 rpm	15,000 rpm	15,000 rpm

7030 - 3" Insert Spoilboard Cutter, ¾ Shank (Replacement Insert Number: 13273)

Feed Rate:	600 ipm	10 ips	15 mpm
Decent Rate:	120 ipm	2 ips	3 mpm
Spindle Speed:	15,000 rpm	15,000 rpm	15,000 rpm

The Vortex router bits listed above are generic and can be supplied by the tooling manufacturer of your choice.

Carbide Tipped Drill Bits

4mm x 70mm Thru-Hole Drills - One Required in the Cross Cut Axes

Left Hand: DTH04070LO
Right Hand: DTH04070RB

Feed Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	4,000 rpm	4,000 rpm	4,000 rpm

5mm x 57mm Brad Point Drills - Per Quantity of Drill Positions in the Rip Axes

Left Hand: DDB05057LO
Right Hand: DDB05057RB

Feed Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	4,000 rpm	4,000 rpm	4,000 rpm

5mm x 70mm Thru-Hole Drills - One Required in the Cross Cut Axes

Left Hand: DTH05070LO
Right Hand: DTH05070RB

Feed Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	4,000 rpm	4,000 rpm	4,000 rpm

6mm x 70mm Thru-Hole Drills - One Required in the Cross Cut Axes

Left Hand: DTH06070LO
Right Hand: DTH06070RB

Feed Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	4,000 rpm	4,000 rpm	4,000 rpm

8mm x 57mm Brad Point Drills - One Required in the Cross Cut Axes

Left Hand: DDB08057LO
Right Hand: DDB08057RB

Feed Rate:	240 ipm	4 ips	6 mpm
Spindle Speed:	4,000 rpm	4,000 rpm	4,000 rpm

The Vortex drill bits listed above are generic and can be supplied by the tooling manufacturer of your choice.

The following information should be used as a guideline or starting point. Actual Feed Rates (ipm) and Spindle Speeds (rpm) will vary as a result of "contributing factors" such as machine rigidity, horsepower, spindle integrity, vacuum holding power and the quality of the material being cut. In general, solid carbide spiral tooling will perform better at faster Feed Rates.

Feed Rates are measured in Inches Per Minute = ipm
Spindle Speeds are measured in Revolutions Per Minute = rpm
Chip Load is a measurement of the chip size of the material being removed by each flute during a cut.

In general, normal operating spindle speeds are between 10,000 and 20,000 rpm. Usually, the higher the rpm, the cleaner the cut. However, the higher the rpm, the greater the friction generated between the tool and the material. Friction is what causes a cutting edge to become dull. The objective is the correct balance of the fastest Feed Rate at the slowest Spindle Speed within the Chip Load range of the type of material to be milled, that will yield a clean cut, without breaking or prematurely dulling the bit.

1/8" Tool Diameter for Plywood Core	**Chip Load = .004" to .007"**
1/8" Tool Diameter for Particle Board	**Chip Load = .004" to .007"**
1/4" Tool Diameter for Plywood Core	**Chip Load = .011" to .013"**
1/4" Tool Diameter for Particle Board	**Chip Load = .013" to .016"**
3/8" Tool Diameter for Plywood Core	**Chip Load = .017" to .020"**
3/8" Tool Diameter for Particle Board	**Chip Load = .020" to .023"**
1/2" (and larger) Tool Diameter for Plywood Core	**Chip Load = .021" to .025"**
1/2" (and larger) Tool Diameter for Particle Board	**Chip Load = .025" to .027"**

Formulas:

Chip Load = ipm / (rpm x number of flutes)

Feed Rate (ipm) = rpm x number of flutes x chip load

Spindle Speed (rpm) = ipm / (number of flutes x chip load)

Inches Per Second (ips) = Inches Per Minute (ipm) / 60

Meters Per Minute (mpm) = Inched Per Minute (ipm) / 39.374