

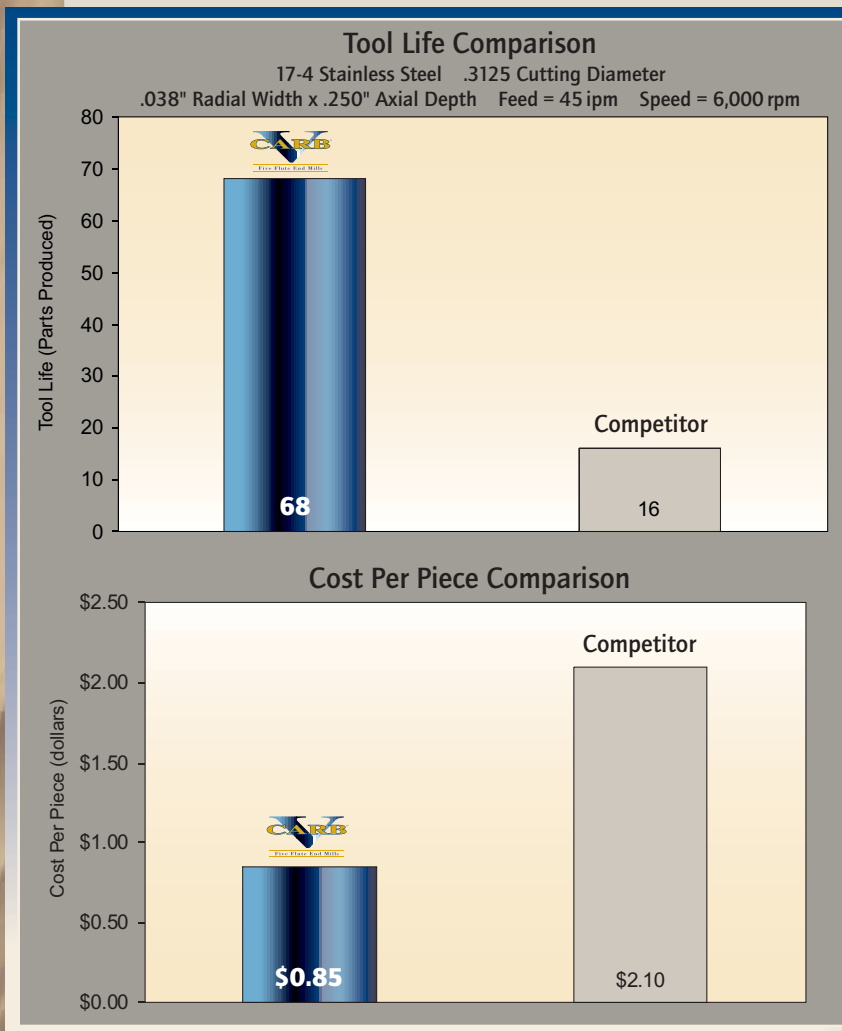
Five Flute End Mills

Features & Benefits

- Unique 5-flute geometry
- Certified premium micro-grain carbide
- Available in stub-, regular-, and long-flute lengths
- Corner radii improves corner strength
- Ti-NAMITE-A (AlTiN) coated for longer tool life
- Reduced harmonics:
 - Improved finishes
 - Heavier stock removal
- Can be run at higher production rates
- Suitable for a variety of materials up to 45 Rc

Application Tips

- Tool holders with adequate gripping pressure are required
- Stub length solid holders are recommended for heavy stock removal
- Avoid remilling chips
- Set-up rigidity critical during heavy roughing
- Regrind and recondition services are available from SGS Tool Company



Expect more from a finishing mill...

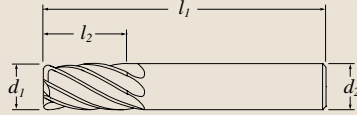
Produce exceptional results in semi-finish and finish milling applications

Tackle heavy milling tasks, including roughing and slotting



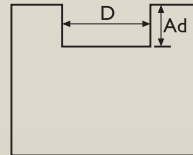
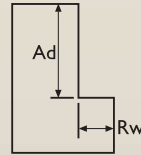


V-Carb™ - Series 55CR - Fractional 5 Flute End Mills with Corner Radius



| TOLERANCES | |
|---------------------------|--|
| $d_1 = +0.000 / -0.002$ | |
| $d_2 = -0.0001 / -0.0004$ | |

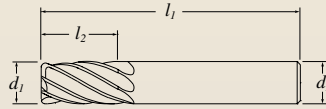
| Cutting Diameter d_1 | Length of Cut l_2 | Overall Length l_1 | Shank Diameter d_2 | Corner Radius | Ti-NAMITE-A (ALN) EDP Number | Ti-NAMITE-A (ALN) EDP Number w/Flat |
|------------------------|---------------------|----------------------|----------------------|---------------|------------------------------|-------------------------------------|
| 1/8 | 1/4 | 1-1/2 | 1/8 | .010+0/-0.002 | 32606 | |
| 1/8 | 1/2 | 1-1/2 | 1/8 | .010+0/-0.002 | 32607 | |
| 5/32 | 5/16 | 2 | 3/16 | .010+0/-0.002 | 32608 | |
| 5/32 | 9/16 | 2 | 3/16 | .010+0/-0.002 | 32609 | |
| 3/16 | 5/16 | 2 | 3/16 | .010+0/-0.002 | 32610 | |
| 3/16 | 5/8 | 2 | 3/16 | .010+0/-0.002 | 32611 | |
| 7/32 | 3/8 | 2 | 1/4 | .015+0/-0.002 | 32612 | |
| 7/32 | 3/4 | 2-1/2 | 1/4 | .015+0/-0.002 | 32613 | |
| 1/4 | 3/8 | 2 | 1/4 | .015+0/-0.002 | 32614 | |
| 1/4 | 3/4 | 2-1/2 | 1/4 | .015+0/-0.002 | 32615 | |
| 1/4 | 1-1/4 | 4 | 1/4 | .015+0/-0.002 | 32616 | |
| 5/16 | 7/16 | 2 | 5/16 | .015+0/-0.002 | 32619 | |
| 5/16 | 13/16 | 2-1/2 | 5/16 | .015+0/-0.002 | 32620 | |
| 5/16 | 1-1/4 | 4 | 5/16 | .015+0/-0.002 | 32621 | |
| 3/8 | 1/2 | 2 | 3/8 | .015+0/-0.002 | 32625 | |
| 3/8 | 1 | 2-1/2 | 3/8 | .015+0/-0.002 | 32626 | 32628 |
| 3/8 | 1-1/2 | 4 | 3/8 | .015+0/-0.002 | 32627 | |
| 7/16 | 1 | 2-3/4 | 7/16 | .015+0/-0.002 | 32632 | |
| 7/16 | 2 | 4 | 7/16 | .015+0/-0.002 | 32633 | |
| 1/2 | 5/8 | 2-1/2 | 1/2 | .025+0/-0.002 | 32636 | |
| 1/2 | 1-1/4 | 3 | 1/2 | .025+0/-0.002 | 32637 | 32639 |
| 1/2 | 2 | 4 | 1/2 | .025+0/-0.002 | 32638 | |
| 5/8 | 1-5/8 | 3-1/2 | 5/8 | .035+0/-0.002 | 32642 | 32644 |
| 5/8 | 2-1/2 | 5 | 5/8 | .035+0/-0.002 | 32643 | |
| 3/4 | 1 | 3 | 3/4 | .035+0/-0.002 | 32645 | |
| 3/4 | 1-5/8 | 4 | 3/4 | .035+0/-0.002 | 32646 | 32649 |
| 3/4 | 3-1/4 | 6 | 3/4 | .035+0/-0.002 | 32648 | |
| 1 | 1-1/2 | 4 | 1 | .035+0/-0.002 | 32651 | 32654 |
| 1 | 2-5/8 | 6 | 1 | .035+0/-0.002 | 32653 | |



Radial Width of Cut (Rw)
 Axial Depth of Cut (Ad)
 Tool Diameter (D)
 Speed Correction Factor (SpC)
 Feed Correction Factor (FeC)

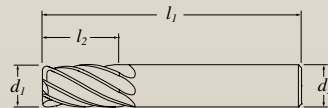
V-CARB HIGH PERFORMANCE

V-CARB™ - Series 55 - Fractional - 5 Flute End Mills With Square Corner



| Cutting Diameter d_1 | Length of Cut l_2 | Overall Length l_1 | Shank Diameter d_2 | EDP No. | EDP No. |
|---------------------------|------------------------|-------------------------|-------------------------|------------------------------|------------------------------|
| | | | | Ti-NAMITE-A (AlTiN)w/Flat | Ti-NAMITE-A (AlTiN)w/Flat |
| 1/8 | 1/2 | 1-1/21/8 | | 32655 | |
| 5/32 | 9/16 | 2 | 3/16 | 32656 | |
| 3/16 | 5/8 | 2 | 3/16 | 32657 | |
| 7/32 | 3/4 | 2-1/2 | 1/4 | 32658 | |
| 1/4 | 3/4 | 2-1/2 | 1/4 | 32659 | |
| 5/16 | 13/16 | 2-1/2 | 5/16 | 32660 | |
| 3/8 | 1 | 2-1/2 | 3/8 | 32661 | 32662 |
| 7/16 | 1 | 2-3/4 | 7/16 | 32663 | |
| 1/2 | 1-1/4 | 3 | 1/2 | 32664 | 32665 |
| 5/8 | 1-5/8 | 3-1/2 | 5/8 | 32666 | 32667 |
| 3/4 | 1-5/8 | 4 | 3/4 | 32668 | 32669 |
| 1 | 1-1/2 | 4 | 1 | 32670 | 32671 |

V-CARB™ - Series 55M - Metric - 5 Flute End Mills With Square Corner



| Cutting Diameter d_1 | Length of Cut l_2 | Overall Length l_1 | Shank Diameter d_2 | EDP No. | EDP No. |
|---------------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|
| | | | | Ti-NAMITE-A (AlTiN) | Ti-NAMITE-A (AlTiN) |
| 6 | 12 | 50 | 6 | 42606 | |
| 6 | 19 | 63 | 6 | 42607 | |
| 6 | 25 | 75 | 6 | 42608 | |
| 8 | 12 | 50 | 8 | 42609 | |
| 8 | 20 | 63 | 8 | 42610 | |
| 8 | 25 | 75 | 8 | 42611 | |
| 10 | 16 | 50 | 10 | 42612 | |
| 10 | 22 | 75 | 10 | 42622 | 42613 |
| 10 | 38 | 100 | 10 | 42614 | |
| 12 | 19 | 63 | 12 | 42615 | |
| 12 | 25 | 75 | 12 | 42616 | 42623 |
| 12 | 50 | 100 | 12 | 42617 | |
| 16 | 32 | 89 | 16 | 42618 | 42624 |
| 16 | 75 | 150 | 16 | 42619 | |
| 20 | 38 | 100 | 20 | 42620 | 42625 |
| 20 | 75 | 150 | 20 | 42621 | |



V-Carb™ - Series 55CR and 55 - Fractional 5 Flute End Mills

Speed and Feed Recommendations

| | Finishing ★★☆☆ | | | | Semi-Finishing ★☆☆ | | | | Heavy Peripheral ★★ | | | | Slotting ★★ | | | |
|-------|----------------|-------|-----|-----|--------------------|-------|-----|-----|---------------------|----------|-----|-----|-------------|--------|-----|-----|
| | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC |
| Stub | .05 x D | LOC | 0 | 0 | .1 x D | LOC | .8 | 1.2 | .5 x D | 1.25 x D | .6 | .35 | D | .7 x D | .5 | .30 |
| Reg | .05 x D | LOC | 0 | 0 | .1 x D | LOC | .8 | 1.2 | .5 x D | 1 x D | .6 | .35 | D | .5 x D | .5 | .30 |
| Long* | .02 x D | 3 x D | 0 | 0 | .05xD | 3 x D | 0 | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

| material type | Bhn | 1/8 | | 3/16 | | 1/4 | | 5/16 | | 3/8 | | 1/2 | | 5/8 | | 3/4 | | 1 | |
|-----------------------|------|--------|--------|--------|--------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| | | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min | rpm | in/min |
| low carbon steels | ~175 | 20,935 | 50 | 13,960 | 60 | 10,465 | 70 | 8,375 | 70 | 6,980 | 70 | 5,235 | 60 | 4,185 | 60 | 3,490 | 60 | 2,615 | 55 |
| low carbon steels | ~275 | 18,320 | 35 | 12,225 | 40 | 9,160 | 50 | 7,335 | 50 | 6,110 | 50 | 4,580 | 45 | 3,665 | 45 | 3,055 | 45 | 2,290 | 40 |
| med alloy steels | ~275 | 15,265 | 30 | 10,185 | 35 | 7,635 | 40 | 6,110 | 40 | 5,090 | 40 | 3,815 | 40 | 3,055 | 40 | 2,545 | 40 | 1,910 | 35 |
| mold and die steels | ~275 | 13,750 | 25 | 9,170 | 30 | 6,875 | 35 | 5,500 | 35 | 4,585 | 35 | 3,440 | 35 | 2,750 | 35 | 2,290 | 35 | 1,720 | 30 |
| cast iron - gray | ~200 | 11,765 | 35 | 7,845 | 40 | 5,880 | 40 | 4,705 | 40 | 3,920 | 40 | 2,940 | 40 | 2,355 | 35 | 1,960 | 35 | 1,470 | 30 |
| cast iron - ductile | ~300 | 10,545 | 20 | 7,030 | 25 | 5,270 | 25 | 4,215 | 25 | 3,515 | 25 | 2,635 | 25 | 2,110 | 25 | 1,755 | 25 | 1,320 | 20 |
| cast iron - malleable | ~300 | 6,570 | 10 | 4,380 | 15 | 3,285 | 15 | 2,630 | 15 | 2,190 | 15 | 1,645 | 15 | 1,315 | 15 | 1,095 | 15 | 820 | 10 |
| stainless 300 series | ~275 | 10,695 | 15 | 7,130 | 20 | 5,350 | 25 | 4,280 | 25 | 3,565 | 25 | 2,675 | 25 | 2,140 | 25 | 1,785 | 25 | 1,335 | 20 |
| stainless 400 series | ~185 | 15,265 | 30 | 10,185 | 40 | 7,635 | 45 | 6,110 | 45 | 5,090 | 45 | 3,815 | 45 | 3,055 | 45 | 2,545 | 45 | 1,910 | 40 |
| stainless PH series | ~325 | 9,160 | 10 | 6,110 | 15 | 4,580 | 20 | 3,665 | 20 | 3,055 | 20 | 2,290 | 20 | 1,830 | 20 | 1,525 | 20 | 1,145 | 15 |
| titanium alloys | ~295 | 11,460 | 25 | 7,640 | 30 | 5,730 | 35 | 4,585 | 35 | 3,820 | 35 | 2,865 | 35 | 2,290 | 35 | 1,910 | 35 | 1,435 | 30 |
| high temp alloys | ~300 | 3,055 | 6 | 2,035 | 7 | 1,530 | 8 | 1,220 | 8 | 1,020 | 8 | 765 | 8 | 610 | 8 | 510 | 8 | 380 | 7 |

Rates shown are for finish milling. When performing an alternate cut, multiply the speed and feed rates shown by the correction factors SpC and FeC. V-Carbs are not intended for plunging. Recommendations are a starting point. Some adjustments may be required.
 *Available in diameters 1/4, 5/16, 3/8, 7/16, 1/2, 5/8 and 3/4

V-Carb™ - Series 55 - Metric

Speed and Feed Recommendations

| | Finishing ★★☆☆ | | | | Semi-Finishing ★☆☆ | | | | Heavy Peripheral ★★ | | | | Slotting ★★ | | | |
|-------|----------------|-------|-----|-----|--------------------|-------|-----|-----|---------------------|----------|-----|-----|-------------|--------|-----|-----|
| | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC | Rw | Ad | SpC | FeC |
| Stub | .05 x D | LOC | 0 | 0 | .1 x D | LOC | .8 | 1.2 | .5 x D | 1.25 x D | .6 | .35 | D | .7 x D | .5 | .30 |
| Reg | .05 x D | LOC | 0 | 0 | .1 x D | LOC | .8 | 1.2 | .5 x D | 1 x D | .6 | .35 | D | .5 x D | .5 | .30 |
| Long* | .02 x D | 3 x D | 0 | 0 | .05xD | 3 x D | 0 | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Cutting Diameter

| Material type | Hardness | 6 | | 8 | | 10 | | 12 | | 16 | | 20 | |
|-----------------------|----------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| | | rpm | mm/min | rpm | mm/min | rpm | mm/min | rpm | mm/min | rpm | mm/min | rpm | mm/min |
| low carbon steels | ~175 | 11,080 | 1,780 | 8,310 | 1,780 | 6,645 | 1,780 | 5,540 | 1,525 | 4,155 | 1,525 | 3,325 | 1,525 |
| low carbon steels | ~275 | 9,705 | 1,270 | 7,275 | 1,270 | 5,820 | 1,270 | 4,855 | 1,145 | 3,640 | 1,145 | 2,910 | 1,145 |
| med alloy steels | ~275 | 8,085 | 1,015 | 6,065 | 1,015 | 4,850 | 1,015 | 4,045 | 1,015 | 3,035 | 1,015 | 2,425 | 1,015 |
| mold and die steels | ~275 | 7,280 | 890 | 5,460 | 890 | 4,365 | 890 | 3,640 | 890 | 2,730 | 890 | 2,185 | 890 |
| cast iron - gray | ~200 | 6,230 | 1,015 | 4,670 | 1,015 | 3,735 | 1,015 | 3,115 | 1,015 | 2,335 | 1,015 | 1,870 | 1,015 |
| cast iron - ductile | ~300 | 5,580 | 635 | 4,185 | 635 | 3,350 | 635 | 2,790 | 635 | 2,095 | 635 | 1,675 | 635 |
| cast iron - malleable | ~300 | 3,480 | 380 | 2,610 | 380 | 2,085 | 380 | 1,740 | 380 | 1,305 | 380 | 1,045 | 380 |
| stainless 300 series | ~275 | 5,660 | 635 | 4,245 | 635 | 3,395 | 635 | 2,830 | 635 | 2,125 | 635 | 1,700 | 635 |
| stainless 400 series | ~185 | 8,085 | 1,145 | 6,065 | 1,145 | 4,850 | 1,145 | 4,045 | 1,145 | 3,035 | 1,145 | 2,425 | 1,145 |
| stainless PH series | ~325 | 4,850 | 510 | 3,640 | 510 | 2,910 | 510 | 2,425 | 510 | 1,820 | 510 | 1,455 | 510 |
| titanium alloys | ~295 | 6,065 | 890 | 4,550 | 890 | 3,640 | 890 | 3,030 | 890 | 2,275 | 890 | 1,820 | 890 |
| high temp. alloys | ~300 | 1,615 | 205 | 1,215 | 205 | 970 | 205 | 810 | 205 | 610 | 205 | 485 | 205 |

Rates shown are for finish milling. When performing an alternate cut, multiply the speed and feed rates shown by the correction factors SpC and FeC. V-Carbs are not intended for plunging. Recommendations are a starting point. Some adjustments may be required.
 * Available in diameters 6, 8, 10, and 12

TOLERANCES (mm)

d₁ = +0.000/-0.050
 d₂ = -0.0025/-0.0100

V-CARB HIGH PERFORMANCE