

VQ45VB - Inch sizes NEW

Ball nose, Short cut length, 4 flute, Variable curve

CARBIDE

Shoulder milling (Slotting)

| | | | | | | | | | | | | |
|----------------------------------|---|------------------------|----------------------------------|---------------------|----------------------------------|---------------------------|--|------------------------|----------------------------------|---------------------|-------|---------------------------|
| Work material | Carbon steel, Alloy steel, Mild Steel, Pre-hardened steel AISI 1010, AISI 1035, AISI 1050, ASTM 283, AISI H13, AISI 4140, AISI P21 | | | | | | Austenitic stainless steel, Titanium alloy, Hardened stainless steel, Cobalt chromium alloy, Ferritic and Martensitic stainless steels AISI 304, AISI 316, AISI S17400, AISI S17700, AISI 430, AISI 420 | | | | | |
| | PRFRAD (inch) | $\alpha \leq 15^\circ$ | | $\alpha > 15^\circ$ | | Depth of cut a_p (inch) | Pick feed pf (inch) | $\alpha \leq 15^\circ$ | | $\alpha > 15^\circ$ | | Depth of cut a_p (inch) |
| Revolution (min^{-1}) | | Feed rate (IPM) | Revolution (min^{-1}) | Feed rate (IPM) | Revolution (min^{-1}) | | | Feed rate (IPM) | Revolution (min^{-1}) | Feed rate (IPM) | | |
| .0625 | 30000 | 283.5 | 20000 | 118.1 | .0098 | .0313 | 22500 | 189.0 | 15000 | 74.8 | .0098 | .0313 |
| .0938 | 20000 | 220.5 | 13400 | 102.4 | .0165 | .0469 | 15000 | 137.8 | 10000 | 59.1 | .0165 | .0469 |
| .1250 | 15000 | 177.2 | 10000 | 82.7 | .0197 | .0626 | 11200 | 126.0 | 7500 | 55.1 | .0197 | .0626 |
| .1563 | 12000 | 169.3 | 8000 | 74.8 | .0315 | .0781 | 9000 | 126.0 | 6000 | 55.1 | .0315 | .0781 |
| .1875 | 10000 | 161.4 | 6700 | 70.9 | .0394 | .0937 | 7500 | 118.1 | 5000 | 51.2 | .0394 | .0937 |
| .2500 | 7600 | 149.6 | 5000 | 70.9 | .0472 | .125 | 5600 | 118.1 | 3800 | 51.2 | .0472 | .125 |
| Depth of cut | | | | | | | | | | | | |

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|----------------------------------|-----------------------|------------------------|----------------------------------|---------------------|----------------------------------|---------------------------|---|------------------------|----------------------------------|---------------------|-------|---------------------------|
| Work material | Copper, Copper alloys | | | | | | Heat resistant alloy Inconel718 etc. | | | | | |
| | PRFRAD (inch) | $\alpha \leq 15^\circ$ | | $\alpha > 15^\circ$ | | Depth of cut a_p (inch) | Pick feed pf (inch) | $\alpha \leq 15^\circ$ | | $\alpha > 15^\circ$ | | Depth of cut a_p (inch) |
| Revolution (min^{-1}) | | Feed rate (IPM) | Revolution (min^{-1}) | Feed rate (IPM) | Revolution (min^{-1}) | | | Feed rate (IPM) | Revolution (min^{-1}) | Feed rate (IPM) | | |
| .0625 | 36000 | 338.6 | 24000 | 141.7 | .0098 | .0313 | 6000 | 25.2 | 4000 | 13.4 | .0051 | .0313 |
| .0938 | 24000 | 263.8 | 16000 | 122.0 | .0165 | .0469 | 4000 | 20.9 | 2700 | 9.8 | .0083 | .0469 |
| .1250 | 18000 | 212.6 | 12000 | 98.4 | .0197 | .0626 | 3000 | 19.7 | 2000 | 8.3 | .0098 | .0626 |
| .1563 | 14000 | 196.9 | 9600 | 90.6 | .0315 | .0781 | 2400 | 16.9 | 1600 | 7.5 | .0157 | .0781 |
| .1875 | 12000 | 192.9 | 8000 | 82.7 | .0394 | .0937 | 2000 | 16.5 | 1300 | 7.1 | .0197 | .0937 |
| .2500 | 9100 | 181.1 | 6000 | 86.6 | .0472 | .125 | 1500 | 13.8 | 1000 | 5.9 | .0236 | .0125 |
| Depth of cut | | | | | | | | | | | | |

- 1) SMART MIRACLE coating has reduced electric conductivity; therefore an external contact type (electric transmitted) tool setter may not work. When measuring the tool length, please use an internal contact type (non-electricity type) tool setter or a laser type tool setter.
- 2) When cutting austenitic stainless steels, the use of water-soluble cutting fluid is especially effective.
- 3) If the depth of cut is smaller than this table, feed rate can be increased.
- 4) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is very low, then vibration can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
- 5) α is the inclination of the machined surface.

