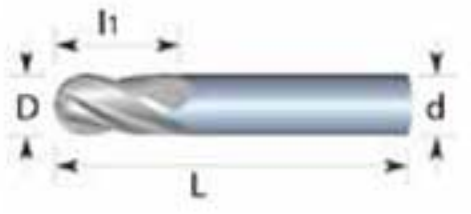
DAYTON TOOL LTD

| | | |
|---|---|---|
| P | ● | Steel |
| M | ◒ | Stainless Steel |
| K | ● | Cast Iron |
| N | ○ | Non-Ferrous |
| S | | High Temp. Alloys |
| H | | Hardened Steel |

● GOOD ◒ OK ○ NOT OPTIMAL

# GENERAL PURPOSE

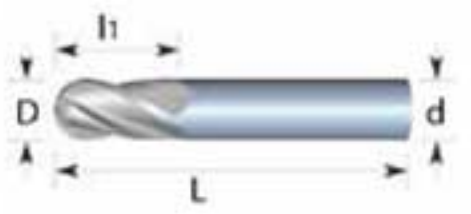
- General Purpose
- 30 deg Helix Carbide with honed edges
- 10% Micro Grain Carbide
- Diameter Tolerances: +0.0000"/-0.0020"






## Ball Nose, Standard Carbide, Stub Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/32 | 1/8 | 1/16 | 1-1/2 | 013-031-2 | 013-031-3 | 013-031-4 | $9.41 | 015-031-2 | 015-031-3 | 015-031-4 | $11.25 |
| 3/64 | 1/8 | 3/32 | 1-1/2 | 013-046-2 | 013-046-3 | 013-046-4 | $9.41 | 015-046-2 | 015-046-3 | 015-046-4 | $11.25 |
| 1/16 | 1/8 | 1/8 | 1-1/2 | 013-062-2 | 013-062-3 | 013-062-4 | $8.35 | 015-062-2 | 015-062-3 | 015-062-4 | $10.22 |
| 3/32 | 1/8 | 3/16 | 1-1/2 | 013-093-2 | 013-093-3 | 013-093-4 | $8.35 | 015-093-2 | 015-093-3 | 015-093-4 | $10.22 |
| 1/8 | 1/8 | 1/4 | 1-1/2 | 013-125-2 | 013-125-3 | 013-125-4 | $6.68 | 015-125-2 | 015-125-3 | 015-125-4 | $8.55 |
| 5/32 | 3/16 | 5/16 | 2 | 013-156-2 | 013-156-3 | 013-156-4 | $11.08 | 015-156-2 | 015-156-3 | 015-156-4 | $13.78 |
| 3/16 | 3/16 | 3/8 | 2 | 013-187-2 | 013-187-3 | 013-187-4 | $11.08 | 015-187-2 | 015-187-3 | 015-187-4 | $13.78 |
| 7/32 | 1/4 | 7/16 | 2 | 013-218-2 | 013-218-3 | 013-218-4 | $13.58 | 015-218-2 | 015-218-3 | 015-218-4 | $18.44 |
| 1/4 | 1/4 | 1/2 | 2 | 013-250-2 | 013-250-3 | 013-250-4 | $12.75 | 015-250-2 | 015-250-3 | 015-250-4 | $17.60 |
| 5/16 | 5/16 | 1/2 | 2 | 013-312-2 | 013-312-3 | 013-312-4 | $16.28 | 015-312-2 | 015-312-3 | 015-312-4 | $23.14 |
| 3/8 | 3/8 | 5/8 | 2 | 013-375-2 | 013-375-3 | 013-375-4 | $19.84 | 015-375-2 | 015-375-3 | 015-375-4 | $26.68 |
| 7/16 | 7/16 | 5/8 | 2-1/2 | 013-437-2 | 013-437-3 | 013-437-4 | $30.28 | 015-437-2 | 015-437-3 | 015-437-4 | $40.06 |
| 1/2 | 1/2 | 5/8 | 2-1/2 | 013-500-2 | 013-500-3 | 013-500-4 | $33.40 | 015-500-2 | 015-500-3 | 015-500-4 | $43.31 |
| 5/8 | 5/8 | 3/4 | 3 | 013-625-2 | 013-625-3 | 013-625-4 | $63.68 | 015-625-2 | 015-625-3 | 015-625-4 | $78.95 |
| 3/4 | 3/4 | 1 | 3 | 013-750-2 | 013-750-3 | 013-750-4 | $87.68 | 015-750-2 | 015-750-3 | 015-750-4 | $105.13 |
| 1 | 1 | 1 | 3 | 013-100-2 | 013-100-3 | 013-100-4 | $168.87 | 015-100-2 | 015-100-3 | 015-100-4 | $203.81 |






## Ball Nose, Standard Carbide, Regular Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/64 | 1/8 | 1/16 | 1-1/2 | 016-015-2 | 016-015-3 | 016-015-4 | $13.42 | 018-015-2 | 018-015-3 | 018-015-4 | $13.07 |
| 1/32 | 1/8 | 3/32 | 1-1/2 | 016-031-2 | 016-031-3 | 016-031-4 | $9.89 | 018-031-2 | 018-031-3 | 018-031-4 | $11.84 |
| 3/64 | 1/8 | 1/8 | 1-1/2 | 016-046-2 | 016-046-3 | 016-046-4 | $9.89 | 018-046-2 | 018-046-3 | 018-046-4 | $11.84 |
| 1/16 | 1/8 | 3/16 | 1-1/2 | 016-062-2 | 016-062-3 | 016-062-4 | $8.79 | 018-062-2 | 018-062-3 | 018-062-4 | $10.75 |
| 5/64 | 1/8 | 1/4 | 1-1/2 | 016-078-2 | 016-078-3 | 016-078-4 | $8.79 | 018-078-2 | 018-078-3 | 018-078-4 | $10.02 |
| 3/32 | 1/8 | 3/8 | 1-1/2 | 016-093-2 | 016-093-3 | 016-093-4 | $8.79 | 018-093-2 | 018-093-3 | 018-093-4 | $10.75 |
| 7/64 | 1/8 | 3/8 | 1-1/2 | 016-109-2 | 016-109-3 | 016-109-4 | $8.79 | 018-109-2 | 018-109-3 | 018-109-4 | $9.23 |
| 1/8 | 1/8 | 1/2 | 1-1/2 | 016-125-2 | 016-125-3 | 016-125-4 | $7.03 | 018-125-2 | 018-125-3 | 018-125-4 | $8.99 |
| 9/64 | 3/16 | 9/16 | 2 | 016-140-2 | 016-140-3 | 016-140-4 | $12.09 | 018-140-2 | 018-140-3 | 018-140-4 | $15.91 |
| 5/32 | 3/16 | 9/16 | 2 | 016-156-2 | 016-156-3 | 016-156-4 | $11.65 | 018-156-2 | 018-156-3 | 018-156-4 | $14.50 |
| 11/64 | 3/16 | 9/16 | 2 | 016-171-2 | 016-171-3 | 016-171-4 | $12.09 | 018-171-2 | 018-171-3 | 018-171-4 | $15.58 |
| 3/16 | 3/16 | 5/8 | 2 | 016-187-2 | 016-187-3 | 016-187-4 | $11.65 | 018-187-2 | 018-187-3 | 018-187-4 | $14.50 |
| 13/64 | 1/4 | 5/8 | 2-1/2 | 016-203-2 | 016-203-3 | 016-203-4 | $15.27 | 018-203-2 | 018-203-3 | 018-203-4 | $20.79 |
| 7/32 | 1/4 | 5/8 | 2-1/2 | 016-218-2 | 016-218-3 | 016-218-4 | $14.28 | 018-218-2 | 018-218-3 | 018-218-4 | $19.40 |
| 15/64 | 1/4 | 3/4 | 2-1/2 | 016-234-2 | 016-234-3 | 016-234-4 | $15.27 | 018-234-2 | 018-234-3 | 018-234-4 | $20.17 |
| 1/4 | 1/4 | 3/4 | 2-1/2 | 016-250-2 | 016-250-3 | 016-250-4 | $13.40 | 018-250-2 | 018-250-3 | 018-250-4 | $18.52 |

DAYTON TOOL LTD

| | | |
|---|---|---|
| P | ● | Steel |
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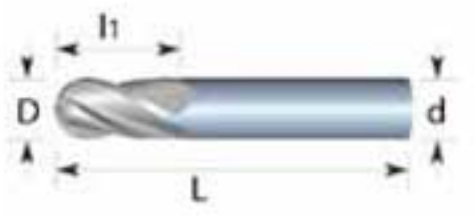
| K | ● | Cast Iron |
| N | ○ | Non-Ferrous |
| S | | High Temp. Alloys |
| H | | Hardened Steel |

● GOOD ◒ OK ○ NOT OPTIMAL

- General Purpose
- 30 deg Helix Carbide with honed edges
- 10% Micro Grain Carbide
- Diameter Tolerances: +0.0000"/-0.0020"

# GENERAL PURPOSE






## Ball Nose, Standard Carbide, Regular Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17/64 | 5/16 | 7/8 | 2-1/2 | 016-265-2 | 016-265-3 | 016-265-4 | $20.00 | 018-265-2 | 018-265-3 | 018-265-4 | $26.22 |
| 9/32 | 5/16 | 7/8 | 2-1/2 | 016-281-2 | 016-281-3 | 016-281-4 | $18.68 | 018-281-2 | 018-281-3 | 018-281-4 | $24.79 |
| 19/64 | 5/16 | 7/8 | 2-1/2 | 016-296-2 | 016-296-3 | 016-296-4 | $20.00 | 018-296-2 | 018-296-3 | 018-296-4 | $25.29 |
| 5/16 | 5/16 | 7/8 | 2-1/2 | 016-312-2 | 016-312-3 | 016-312-4 | $17.14 | 018-312-2 | 018-312-3 | 018-312-4 | $24.35 |
| 21/64 | 3/8 | 7/8 | 2-1/2 | 016-328-2 | 016-328-3 | 016-328-4 | $22.52 | 018-328-2 | 018-328-3 | 018-328-4 | $30.72 |
| 11/32 | 3/8 | 7/8 | 2-1/2 | 016-343-2 | 016-343-3 | 016-343-4 | $20.88 | 018-343-2 | 018-343-3 | 018-343-4 | $28.08 |
| 23/64 | 3/8 | 7/8 | 2-1/2 | 016-359-2 | 016-359-3 | 016-359-4 | $22.52 | 018-359-2 | 018-359-3 | 018-359-4 | $28.76 |
| 3/8 | 3/8 | 1 | 2-1/2 | 016-375-2 | 016-375-3 | 016-375-4 | $20.88 | 018-375-2 | 018-375-3 | 018-375-4 | $28.08 |
| 25/64 | 7/16 | 1 | 2-1/2 | 016-390-2 | 016-390-3 | 016-390-4 | $34.72 | 018-390-2 | 018-390-3 | 018-390-4 | $45.55 |
| 13/32 | 7/16 | 1 | 2-1/2 | 016-406-2 | 016-406-3 | 016-406-4 | $34.06 | 018-406-2 | 018-406-3 | 018-406-4 | $43.60 |
| 27/64 | 7/16 | 1 | 2-1/2 | 016-421-2 | 016-421-3 | 016-421-4 | $33.84 | 018-421-2 | 018-421-3 | 018-421-4 | $42.59 |
| 7/16 | 7/16 | 1 | 2-1/2 | 016-437-2 | 016-437-3 | 016-437-4 | $32.96 | 018-437-2 | 018-437-3 | 018-437-4 | $43.27 |
| 29/64 | 1/2 | 1 | 3 | 016-453-2 | 016-453-3 | 016-453-4 | $37.58 | 018-453-2 | 018-453-3 | 018-453-4 | $50.54 |
| 15/32 | 1/2 | 1 | 3 | 016-468-2 | 016-468-3 | 016-468-4 | $37.25 | 018-468-2 | 018-468-3 | 018-468-4 | $48.34 |
| 31/64 | 1/2 | 1 | 3 | 016-484-2 | 016-484-3 | 016-484-4 | $36.92 | 018-484-2 | 018-484-3 | 018-484-4 | $47.24 |
| 1/2 | 1/2 | 1 | 3 | 016-500-2 | 016-500-3 | 016-500-4 | $35.16 | 018-500-2 | 018-500-3 | 018-500-4 | $45.47 |
| 33/64 | 9/16 | 1-1/4 | 3-1/2 | 016-515-2 | 016-515-3 | 016-515-4 | $81.31 | 018-515-2 | 018-515-3 | 018-515-4 | $101.54 |
| 17/32 | 9/16 | 1-1/4 | 3-1/2 | 016-531-2 | 016-531-3 | 016-531-4 | $76.91 | 018-531-2 | 018-531-3 | 018-531-4 | $100.14 |
| 35/64 | 9/16 | 1-1/4 | 3-1/2 | 016-546-2 | 016-546-3 | 016-546-4 | $74.71 | 018-546-2 | 018-546-3 | 018-546-4 | $96.27 |
| 9/16 | 9/16 | 1-1/4 | 3-1/2 | 016-562-2 | 016-562-3 | 016-562-4 | $67.02 | 018-562-2 | 018-562-3 | 018-562-4 | $83.11 |
| 37/64 | 5/8 | 1-1/4 | 3-1/2 | 016-578-2 | 016-578-3 | 016-578-4 | $82.40 | 018-578-2 | 018-578-3 | 018-578-4 | $95.43 |
| 19/32 | 5/8 | 1-1/4 | 3-1/2 | 016-593-2 | 016-593-3 | 016-593-4 | $78.01 | 018-593-2 | 018-593-3 | 018-593-4 | $94.69 |
| 39/64 | 5/8 | 1-1/4 | 3-1/2 | 016-609-2 | 016-609-3 | 016-609-4 | $75.81 | 018-609-2 | 018-609-3 | 018-609-4 | $94.12 |
| 5/8 | 5/8 | 1-1/4 | 3-1/2 | 016-625-2 | 016-625-3 | 016-625-4 | $67.02 | 018-625-2 | 018-625-3 | 018-625-4 | $83.11 |
| 41/64 | 3/4 | 1-1/2 | 4 | 016-640-2 | 016-640-3 | 016-640-4 | $113.17 | 018-640-2 | 018-640-3 | 018-640-4 | $126.64 |
| 21/32 | 3/4 | 1-1/2 | 4 | 016-656-2 | 016-656-3 | 016-656-4 | $113.17 | 018-656-2 | 018-656-3 | 018-656-4 | $124.97 |
| 43/64 | 3/4 | 1-1/2 | 4 | 016-671-2 | 016-671-3 | 016-671-4 | $112.07 | 018-671-2 | 018-671-3 | 018-671-4 | $123.28 |
| 11/16 | 3/4 | 1-1/2 | 4 | 016-687-2 | 016-687-3 | 016-687-4 | $105.48 | 018-687-2 | 018-687-3 | 018-687-4 | $122.07 |
| 45/64 | 3/4 | 1-1/2 | 4 | 016-703-2 | 016-703-3 | 016-703-4 | $103.28 | 018-703-2 | 018-703-3 | 018-703-4 | $123.80 |
| 23/32 | 3/4 | 1-1/2 | 4 | 016-718-2 | 016-718-3 | 016-718-4 | $103.28 | 018-718-2 | 018-718-3 | 018-718-4 | $123.34 |
| 47/64 | 3/4 | 1-1/2 | 4 | 016-734-2 | 016-734-3 | 016-734-4 | $103.28 | 018-734-2 | 018-734-3 | 018-734-4 | $122.75 |
| 3/4 | 3/4 | 1-1/2 | 4 | 016-750-2 | 016-750-3 | 016-750-4 | $92.29 | 018-750-2 | 018-750-3 | 018-750-4 | $110.66 |
| 49/64 | 7/8 | 1-1/2 | 4 | 016-765-2 | 016-765-3 | 016-765-4 | $204.25 | 018-765-2 | 018-765-3 | 018-765-4 | $237.87 |
| 25/32 | 7/8 | 1-1/2 | 4 | 016-781-2 | 016-781-3 | 016-781-4 | $204.25 | 018-781-2 | 018-781-3 | 018-781-4 | $237.37 |
| 51/64 | 7/8 | 1-1/2 | 4 | 016-796-2 | 016-796-3 | 016-796-4 | $204.25 | 018-796-2 | 018-796-3 | 018-796-4 | $236.88 |
| 13/16 | 7/8 | 1-1/2 | 4 | 016-812-2 | 016-812-3 | 016-812-4 | $204.25 | 018-812-2 | 018-812-3 | 018-812-4 | $234.47 |
| 53/64 | 7/8 | 1-1/2 | 4 | 016-828-2 | 016-828-3 | 016-828-4 | $198.43 | 018-828-2 | 018-828-3 | 018-828-4 | $235.57 |
| 27/32 | 7/8 | 1-1/2 | 4 | 016-843-2 | 016-843-3 | 016-843-4 | $198.43 | 018-843-2 | 018-843-3 | 018-843-4 | $235.08 |
| 55/64 | 7/8 | 1-1/2 | 4 | 016-859-2 | 016-859-3 | 016-859-4 | $198.43 | 018-859-2 | 018-859-3 | 018-859-4 | $234.47 |
| 7/8 | 7/8 | 1-1/2 | 4 | 016-875-2 | 016-875-3 | 016-875-4 | $180.19 | 018-875-2 | 018-875-3 | 018-875-4 | $212.34 |
| 57/64 | 1 | 1-1/2 | 4 | 016-890-2 | 016-890-3 | 016-890-4 | $208.43 | 018-890-2 | 018-890-3 | 018-890-4 | $248.97 |
| 29/32 | 1 | 1-1/2 | 4 | 016-906-2 | 016-906-3 | 016-906-4 | $208.43 | 018-906-2 | 018-906-3 | 018-906-4 | $246.00 |
| 59/64 | 1 | 1-1/2 | 4 | 016-921-2 | 016-921-3 | 016-921-4 | $208.43 | 018-921-2 | 018-921-3 | 018-921-4 | $241.72 |
| 15/16 | 1 | 1-1/2 | 4 | 016-937-2 | 016-937-3 | 016-937-4 | $200.52 | 018-937-2 | 018-937-3 | 018-937-4 | $236.88 |
| 61/64 | 1 | 1-1/2 | 4 | 016-953-2 | 016-953-3 | 016-953-4 | $200.52 | 018-953-2 | 018-953-3 | 018-953-4 | $238.11 |
| 31/32 | 1 | 1-1/2 | 4 | 016-968-2 | 016-968-3 | 016-968-4 | $200.52 | 018-968-2 | 018-968-3 | 018-968-4 | $237.43 |
| 63/64 | 1 | 1-1/2 | 4 | 016-984-2 | 016-984-3 | 016-984-4 | $200.52 | 018-984-2 | 018-984-3 | 018-984-4 | $236.88 |
| 1 | 1 | 1-1/2 | 4 | 016-100-2 | 016-100-3 | 016-100-4 | $182.39 | 018-100-2 | 018-100-3 | 018-100-4 | $214.54 |

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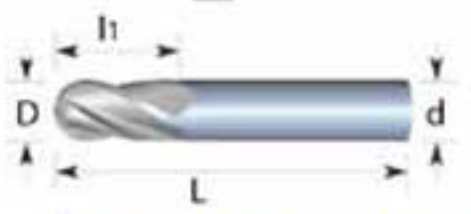
| S | | High Temp. Alloys |
| H | | Hardened Steel |

● GOOD ◒ OK ○ NOT OPTIMAL

- General Purpose
- 30 deg Helix Carbide with honed edges
- 10% Micro Grain Carbide
- Diameter Tolerances: +0.0000"/-0.0020"

# GENERAL PURPOSE






## Ball Nose, Standard Carbide, Long Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | 1/8 | 3/4 | 2-1/2 | 019-125-2 | -- | 019-125-4 | $14.94 | 021-125-2 | -- | 021-125-4 | $17.60 |
| 3/16 | 3/16 | 3/4 | 2-1/2 | 019-187-2 | -- | 019-187-4 | $17.84 | 021-187-2 | -- | 021-187-4 | $21.36 |
| 1/4 | 1/4 | 1-1/8 | 3 | 019-250-2 | -- | 019-250-4 | $23.14 | 021-250-2 | -- | 021-250-4 | $27.86 |
| 5/16 | 5/16 | 1-1/8 | 3 | 019-312-2 | -- | 019-312-4 | $28.02 | 021-312-2 | -- | 021-312-4 | $35.12 |
| 3/8 | 3/8 | 1-1/8 | 3 | 019-375-2 | -- | 019-375-4 | $36.26 | 021-375-2 | -- | 021-375-4 | $43.47 |
| 7/16 | 7/16 | 2 | 4 | 019-437-2 | -- | 019-437-4 | $52.93 | 021-437-2 | -- | 021-437-4 | $61.90 |
| 1/2 | 1/2 | 2 | 4 | 019-500-2 | -- | 019-500-4 | $57.95 | 021-500-2 | -- | 021-500-4 | $70.82 |
| 5/8 | 5/8 | 2-1/4 | 5 | 019-625-2 | -- | 019-625-4 | $108.62 | 021-625-2 | -- | 021-625-4 | $127.96 |
| 3/4 | 3/4 | 2-1/4 | 5 | 019-750-2 | -- | 019-750-4 | $152.72 | 021-750-2 | -- | 021-750-4 | $174.74 |
| 1 | 1 | 2-1/4 | 5 | 019-100-2 | -- | 019-100-4 | $237.32 | 021-100-2 | -- | 021-100-4 | $275.91 |



## Ball Nose, Standard Carbide, Extra Long Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | 1/8 | 1 | 3 | 022-125-2 | -- | 022-125-4 | $17.71 | 024-125-2 | -- | 024-125-4 | $20.37 |
| 3/16 | 3/16 | 1-1/8 | 3 | 022-187-2 | -- | 022-187-4 | $19.65 | 024-187-2 | -- | 024-187-4 | $23.16 |
| 1/4 | 1/4 | 1-1/2 | 4 | 022-250-2 | -- | 022-250-4 | $25.82 | 024-250-2 | -- | 024-250-4 | $32.24 |
| 5/16 | 5/16 | 1-5/8 | 4 | 022-312-2 | -- | 022-312-4 | $31.53 | 024-312-2 | -- | 024-312-4 | $39.88 |
| 3/8 | 3/8 | 1-3/4 | 4 | 022-375-2 | -- | 022-375-4 | $41.75 | 024-375-2 | -- | 024-375-4 | $60.76 |
| 1/2 | 1/2 | 3 | 6 | 022-500-2 | -- | 022-500-4 | $91.19 | 024-500-2 | -- | 024-500-4 | $104.77 |
| 5/8 | 5/8 | 3 | 6 | 022-625-2 | -- | 022-625-4 | $127.45 | 024-625-2 | -- | 024-625-4 | $148.88 |
| 3/4 | 3/4 | 3 | 6 | 022-750-2 | -- | 022-750-4 | $171.40 | 024-750-2 | -- | 024-750-4 | $197.13 |
| 1 | 1 | 3 | 6 | 022-100-2 | -- | 022-100-4 | $296.65 | 024-100-2 | -- | 024-100-4 | $341.64 |

## METRIC - Ball End, Standard Carbide, Regular Length, Single End

| Cutter Diam. D | Shank Diam. d | Length Of Cut l1 | O.A.L. L | Uncoated 2 Flute Part# | Uncoated 3 Flute Part# | Uncoated 4 Flute Part# | Uncoated Price | TiALN Coated 2 Flute Part# | TiALN Coated 3 Flute Part# | TiALN Coated 4 Flute Part# | TiALN Coated Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 3 | 38 | 043-010-2 | 043-010-3 | 043-010-4 | $10.55 | 044-010-2 | 044-010-3 | 044-010-4 | $11.60 |
| 1.5 | 2 | 5 | 38 | 043-015-2 | 043-015-3 | 043-015-4 | $10.55 | 044-015-2 | 044-015-3 | 044-015-4 | $11.60 |
| 2 | 2 | 6 | 38 | 043-020-2 | 043-020-3 | 043-020-4 | $8.70 | 044-020-2 | 044-020-3 | 044-020-4 | $9.58 |
| 3 | 3 | 12 | 38 | 043-030-2 | 043-030-3 | 043-030-4 | $8.70 | 044-030-2 | 044-030-3 | 044-030-4 | $9.58 |
| 3.5 | 4 | 12 | 50 | 043-035-2 | 043-035-3 | 043-035-4 | $12.00 | 044-035-2 | 044-035-3 | 044-035-4 | $13.22 |
| 4 | 4 | 14 | 50 | 043-040-2 | 043-040-3 | 043-040-4 | $11.60 | 044-040-2 | 044-040-3 | 044-040-4 | $12.79 |
| 4.5 | 5 | 14 | 50 | 043-045-2 | 043-045-3 | 043-045-4 | $12.00 | 044-045-2 | 044-045-3 | 044-045-4 | $13.23 |
| 5 | 5 | 16 | 50 | 043-050-2 | 043-050-3 | 043-050-4 | $12.77 | 044-050-2 | 044-050-3 | 044-050-4 | $14.05 |
| 6 | 6 | 19 | 63 | 043-060-2 | 043-060-3 | 043-060-4 | $14.90 | 044-060-2 | 044-060-3 | 044-060-4 | $16.44 |
| 7 | 7 | 19 | 63 | 043-070-2 | 043-070-3 | 043-070-4 | $23.29 | 044-070-2 | 044-070-3 | 044-070-4 | $25.62 |
| 8 | 8 | 19 | 63 | 043-080-2 | 043-080-3 | 043-080-4 | $18.32 | 044-080-2 | 044-080-3 | 044-080-4 | $20.29 |
| 9 | 10 | 22 | 70 | 043-090-2 | 043-090-3 | 043-090-4 | $30.26 | 044-090-2 | 044-090-3 | 044-090-4 | $33.28 |
| 10 | 10 | 22 | 70 | 043-100-2 | 043-100-3 | 043-100-4 | $27.36 | 044-100-2 | 044-100-3 | 044-100-4 | $30.08 |
| 11 | 12 | 25 | 70 | 043-110-2 | 043-110-3 | 043-110-4 | $36.26 | 044-110-2 | 044-110-3 | 044-110-4 | $39.88 |
| 12 | 12 | 25 | 75 | 043-120-2 | 043-120-3 | 043-120-4 | $35.16 | 044-120-2 | 044-120-3 | 044-120-4 | $38.67 |
| 14 | 14 | 30 | 88 | 043-140-2 | 043-140-3 | 043-140-4 | $51.64 | 044-140-2 | 044-140-3 | 044-140-4 | $56.80 |
| 16 | 16 | 32 | 88 | 043-160-2 | 043-160-3 | 043-160-4 | $69.07 | 044-160-2 | 044-160-3 | 044-160-4 | $74.87 |
| 18 | 18 | 36 | 100 | 043-180-2 | 043-180-3 | 043-180-4 | $91.77 | 044-180-2 | 044-180-3 | 044-180-4 | $98.74 |
| 20 | 20 | 38 | 100 | 043-200-2 | 043-200-3 | 043-200-4 | $114.09 | 044-200-2 | 044-200-3 | 044-200-4 | $120.00 |
| 22 | 25 | 38 | 100 | 043-220-2 | 043-220-3 | 043-220-4 | $135.36 | 044-220-2 | 044-220-3 | 044-220-4 | $144.50 |
| 25 | 25 | 38 | 100 | 043-250-2 | 043-250-3 | 043-250-4 | $166.30 | 044-250-2 | 044-250-3 | 044-250-4 | $176.33 |

# SPEED & FEED RECOMMENDATIONS

## GENERAL PURPOSE

| Material | | Speed (SFM) | | Feed Per Tooth By End Mill Diameter | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Uncoated | TiALN Coated | 1/4" | 5/16" | 3/8" | 7/16" | 1/2" | 5/8" | 3/4" | 1" |
| Aluminum & Aluminum Alloys | N | 600-1200 | 900-1800 | .0020 | .0025 | .0030 | .0035 | .0040 | .0050 | .0060 | .0080 |
| Copper & Copper Alloys | N | 350-850 | 525-1275 | .0020 | .0025 | .0025 | .0030 | .0030 | .0035 | .0040 | .0060 |
| Brass & Bronze | N | 250-400 | 375-600 | .0020 | .0025 | .0025 | .0030 | .0030 | .0035 | .0040 | .0050 |
| Graphite | N | 500-800 | 500-1200 | .0030 | .0035 | .0025 | .0030 | .0030 | .0040 | .0050 | .0070 |
| Plastics | N | 600-1100 | 600-1650 | .0030 | .0035 | .0040 | .0050 | .0060 | .0080 | .0100 | .0150 |
| Iron, Cast (soft) | K | 250-450 | 375-650 | .0020 | .0022 | .0025 | .0027 | .0030 | .0045 | .0060 | .0080 |
| Iron, Cast (hard) | K | 100-250 | 100-375 | .0008 | .0010 | .0015 | .0017 | .0020 | .0025 | .0030 | .0040 |
| Iron, Ductile | K | 80-400 | 100-600 | .0010 | .0012 | .0015 | .0017 | .0020 | .0030 | .0040 | .0060 |
| Iron, Malleable | K | 150-500 | 225-650 | .0010 | .0015 | .0020 | .0025 | .0030 | .0040 | .0050 | .0070 |
| Carbon Steels, Low | P | 200-400 | 300-600 | .0010 | .0015 | .0020 | .0025 | .0030 | .0040 | .0050 | .0070 |
| Carbon Steels, Medium | P | 100-250 | 150-375 | .0015 | .0016 | .0017 | .0018 | .0020 | .0030 | .0040 | .0050 |
| Carbon Steels Hardened to 35 Rc | P | 130-230 | 130-345 | .0010 | .0011 | .0012 | .0013 | .0015 | .0017 | .0020 | .0030 |
| Carbon Steels Hardened to 50 Rc | P | 70-130 | 70-160 | .0007 | .0007 | .0008 | .0009 | .0010 | .0015 | .0020 | .0030 |
| Carbon Steels Hardened to 60 Rc | P | 30-70 | 30-90 | .0005 | .0006 | .0007 | .0009 | .0010 | .0012 | .0015 | .0020 |
| Steels, Mold | P | 200-350 | 300-525 | .0010 | .0012 | .0015 | .0017 | .0020 | .0025 | .0030 | .0040 |
| Steels, Tool | P | 100-250 | 150-375 | .0010 | .0012 | .0015 | .0017 | .0020 | .0025 | .0030 | .0040 |
| Stainless Steels, Soft | M | 200-350 | 300-450 | .0010 | .0012 | .0015 | .0012 | .0020 | .0030 | .0040 | .0060 |
| Stainless Steels, Hard | M | 100-200 | 150-300 | .0005 | .0006 | .0007 | .0008 | .0010 | .0020 | .0030 | .0050 |
| Monel & High Nickel Steel | S | 75-175 | 75-200 | .0010 | .0012 | .0015 | .0017 | .0020 | .0025 | .0030 | .0040 |
| Titanium, Soft | S | 125-300 | 125-375 | .0010 | .0012 | .0015 | .0017 | .0020 | .0030 | .0040 | .0060 |
| Titanium, Hard | S | 50-150 | 50-175 | .0005 | .0006 | .0007 | .0008 | .0010 | .0015 | .0020 | .0020 |
| Nickel Based High Temp Alloys | S | 50-100 | 50-125 | .0008 | .0008 | .0009 | .0009 | .0010 | .0012 | .0015 | .0020 |

- Higher Feed Per Tooth should be used to start for radial depths of cut less than 25% of the tool diameter. Lower Feed Per Tooth should be used to start for radial depths of cut greater than 25% of the tool diameter.
- The above recommendations are for axial lengths of cut not to exceed 1 times the tool diameter for profiling and .5 times the diameter for full slotting.
- The above parameters are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.
- Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.
- For Light Radial Depths of cut, make certain to increase the feed rate to compensate for Radial Chip Thinning Factor (RCTF). Consult a formula or app to calculate.
- Climb Milling is preferred to Conventional Milling

$$RPM = \frac{SFM}{(3.146 * Cutter\ Diam.) / 12}$$

$$IPM = RPM * Feed\ Per\ Tooth * \#\ of\ Teeth$$