

MASTER
CATALOG 2023

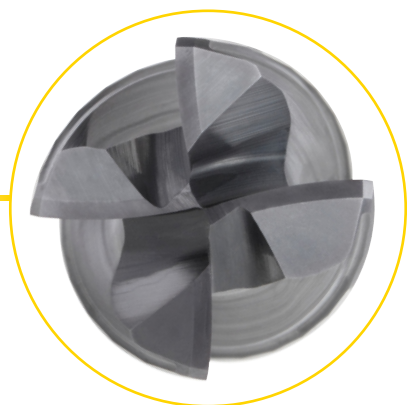
INCH



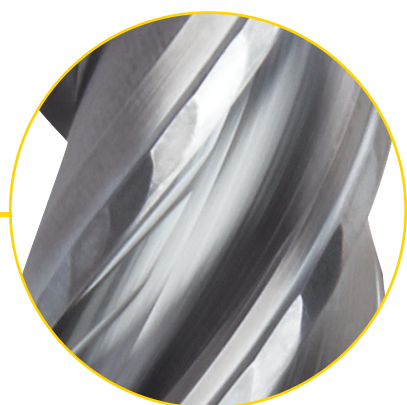
SOLID CARBIDE END MILLING | MODULAR END MILLING

HARVI™ I TE

Innovative proprietary design features driving maximum productivity.



Twisted end face.



Faceted eccentric relief.



Chip gashes within flutes.

MASTER CATALOG

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Tool Selector

| HIGH-PERFORMANCE ROUGHING AND FINISHING | | | | | |
|---|---|---|---|--|---|
| HARVI™ I TE | | | | | |
| |  |  |  |  |  |
| Series | H1TE4CH..S-X.. | H1TE4RA..S-X.. | H1TE4RA..N-E.. | H1TE4SE..S-X.. | H1TE4BN..R-L.. |
| Page | 10-11 | 12-15 | 16-17 | 18-19 | 20-21 |
| Tool type | | | | | |
| Rougher | ● | ● | ● | ● | ● |
| Finisher | ○ | ○ | ○ | ○ | ○ |
| Chamfering | | | | | |
| Main operation |  |  |  |  |  |
| Workpiece material | | | | | |
| Primary | P M K | P M K S | P M K S | P M K | P M K |
| Secondary | S H | H | H | S H | S H |
| Corner style |  |  |  |  |  |
| Corner radius [R _c] | — | .010-.250" | .015-.250" | — | — |
| Corner chamfer width [BCH] | .015-.020" | — | — | — | — |
| Cutter diameter [D1] | 1/8-1-1/4" | 1/8-1-1/4" | 1/4-1" | 1/16-1-1/4" | 1/16-1" |
| Length of cut | 1.2-4 x D | 1.2-4 x D | 1.1-1.5 x D | 1.2-4 x D | 1.5-4 x D |
| Maximum cutting depth [A _{p1} max] | 1/4-4" | 1/4-4" | 3/8-1-1/8" | 1/8-4" | 1/8-3-1/4" |
| Flute helix angle | 36°/39° | 36°/39° | 36°/39° | 36°/39° | 36°/39° |
| Number of flutes [ZU] | 4 | 4 | 4 | 4 | 4 |
| Center cutting | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional operations |  |  |  |  |  |






























- Primary
- Secondary

Tool Selector

| HIGH-PERFORMANCE ROUGHING AND FINISHING | | | | | | |
|---|--|--|--|---|---|---|
| | HARVI™ II | | HARVI III | | | |
| |  |  |  |  |  |  |
| Series | UCDE | UCDE with Neck | UDDE | UJDE | UJDE with Neck | UJBE |
| Page | 30-32 | 33 | 34-35 | 36-38 | 38-39 | 39 |
| Tool type | | | | | | |
| Rougher | ● | ● | ● | ● | ● | ○ |
| Finisher | ○ | ○ | ○ | ○ | ○ | ● |
| Chamfering | | | | | | |
| Main operation |  |  |  |  |  |  |
| Workpiece material | | | | | | |
| Primary | P M K | P M S K | P S | M S | M S | M S |
| Secondary | S H | H | | P H | P H | P H |
| Corner style |   |  |   |   |  |  |
| Corner radius [R _ε] | .015-.120" | .015-.030" | .015-.120" | .015-.250" | .015-.120" | — |
| Corner chamfer width [BCH] | — | — | — | — | — | — |
| Cutter diameter [D1] | 3/16-1" | 1/4-1" | 1/2-1" | 3/8-1-1/4" | 3/8-1" | 3/8-1" |
| Length of cut | 1.75-3.3 x D | 1.75-2.5 x D | 1.75-2.5 x D | 1.3-4 x D | 1.5-2.5 x D | 1.5-2.5 x D |
| Maximum cutting depth [A _{p1} max] | 5/8-1-3/4" | 1/2-1-3/4" | 1-1/4-1-3/4" | 1-2-1/4" | 7/8-1-3/4" | 7/8-1-1/2" |
| Flute helix angle | 38° | 38° | 38° | 38° | 38° | 38° |
| Number of flutes [ZU] | 5 | 5 | 5 | 6 | 6 | 6 |
| Center cutting | | | | ✓ | ✓ | ✓ |
| Additional operations |    |    |    |   |   |   |

- Primary
- Secondary

Tool Selector

| HIGH-PERFORMANCE ROUGHING AND FINISHING | | | | | | |
|---|---|---|---|---|---|---|
| HARVI™ III | | | | HARVI II Long | | |
| |  |  |  |  |  |  |
| Series | UJBE with Neck | UJDE Aero | UJBE Aero | UJBE | UGDE 3 x D | UGDE 5 x D |
| Page | 39 | 40-42 | 43 | 44 | 45 | 46 |
| Tool type | | | | | | |
| <i>Rougher</i> | ○ | ● | ○ | ○ | | |
| <i>Finisher</i> | ● | ○ | ● | ● | ● | ● |
| <i>Chamfering</i> | | | | | | |
| Main operation |  |  |  |  |  |  |
| Workpiece material | | | | | | |
| <i>Primary</i> | M S | M S | M S | M S | P M S | P M S |
| <i>Secondary</i> | P H | P H | P H | P H | K H | K H |
| Corner style |  |  |  |  |   |   |
| Corner radius [R_ε] | — | .030-.500" | — | — | .015-.120" | .015-.120" |
| Corner chamfer width [BCH] | — | — | — | — | — | — |
| Cutter diameter [D1] | 3/8-1" | 1/2-1-1/2" | 1/2-1-1/4" | 1/8-7/16" | 1/4-1" | 1/4-1" |
| Length of cut | 1.25 x D | 1.3-5.3 x D | 1.3-5.3 x D | 1.7-9.5 x D | 3 x D | 5 x D |
| Maximum cutting depth [Ap1 max] | 1/2-1-1/4" | 1-6-1/2" | 1-6-1/2" | 3/4-2 x D | 3/4-3" | 1-1/4-5" |
| Flute helix angle | 38° | 38° | 38° | 38° | 43° | 43° |
| Number of flutes [ZU] | 6 | 6 | 6 | 6 | 5 | 5 |
| Center cutting | ✓ | ✓ | ✓ | ✓ | | |
| Additional operations |   |   |   |  |  |  |

- Primary
- Secondary

Tool Selector

| DYNAMIC MILLING | | | | | | | |
|---|--------------|--------------|--------------------|-----------------|--------------|--------------|--------------|
| | KOR5™ DS | | KOR5 ^{DA} | | | KOR6™ DT | |
| | | | | NEW! | | | |
| Series | KOR5..R.. | KOR5..L.. | KOR5..R..I | KOR5..L..I.. | KOR5..R..C | KOR6..R.. | KOR6..L.. |
| Page | 56 | 57 | 58-59 | 62-63 | 60-61 | 64 | 65 |
| Tool type | | | | | | | |
| Rougher | ● | ● | ● | ● | ● | ● | ● |
| Finisher | ○ | ○ | ○ | ○ | ○ | | |
| Chamfering | | | | | | | |
| Main operation | | | | | | | |
| Workpiece material | | | | | | | |
| Primary | P M | P M | N | N | N | S | S |
| Secondary | K S H | K S H | | | | P M K H | P M K H |
| Corner style | | | | | | | |
| Corner radius [R _e] | 0.030–0.060" | 0.030–0.060" | 0.015–0.120" | 0.015–0.120" | 0.015–0.120" | 0.030–0.060" | 0.030–0.060" |
| Corner chamfer width [BCH] | – | – | – | – | – | – | – |
| Cutter diameter [D1] | 1/4–1" | 1/4–1" | 3/8–1" | 0.015–0.120" | 3/8–1" | 3/8–1" | 3/8–1" |
| Length of cut | 3 x D | 5 x D | 3 x D | 5 x D | 3 x D | 3 x D | 5 x D |
| Maximum cutting depth [A _{p1} max] | 3/4–3" | 1 1/4–5" | 1 1/8–3" | 1 7/8–5" | 1 1/8–3" | 1 1/8–3" | 1 7/8–5" |
| Flute helix angle | 40° | 40° | 35° | 35° | 35° | 38° | 38° |
| Number of flutes [ZU] | 5 | 5 | 5 | 5 | 5 | 6 | 6 |
| Coolant | | | | | | | |
| Additional operations | | | | | | | |

- Primary
- Secondary

HARVI™ I TE

High-Performance Roughing and Finishing with Maximum Versatility



Materials



Applications



Slotting



3D Profiling



Side Milling/
Shoulder Milling



Ramping



Slotting:
Ball Nose



Helical Interpolation



Plunge Milling



Trochoidal Milling

Four-flute end mill for roughing and finishing covering the broadest range of applications and materials.

The HARVI I TE series solid carbide end mills ensure maximum metal removal rates in a variety of operations, including dynamic milling and extreme ramping operations.

Applicable in steels, stainless steel, cast iron, high-temperature alloys, and hardened materials.

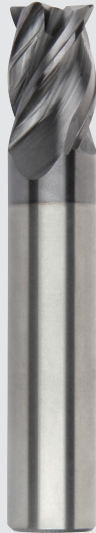
HARVI I TE — Maximum metal removal. Maximum productivity. Maximum benefit.

Chamfered.

**Chamfered.
Sharp edge.
Short version.**

**Necked.
Chamfered.
Radiused.
Sharp edge.**

**Ball nose.
Short version
with neck.
Long version.**



Faceted eccentric relief.

Chip gashes within
the flutes.

Twisted end face.

Asymmetrical divided flutes
and variable helix.

Proprietary end face design — Twisted cutting edge increases corner stability, enabling soft cutting action even at highest ramping angles.

Asymmetrical divided flutes and variable helix, enabling vibration dampening and unmatched feed rates.

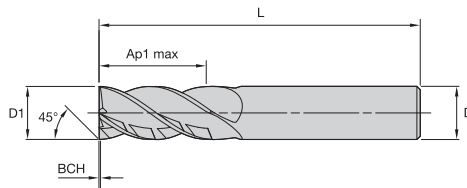
Proprietary relief — A precision-faceted eccentric relief reduces vibrations and friction. For excellent cutting conditions in multiple materials.

Proprietary flute design — Innovative chip gashes within the flutes reduce cutting forces and support efficient chip evacuation.

Proprietary core design — Increases tool stability.

HARVI™ I TE • Chamfered • 4 Flutes • Plain Shank • Inch

- first choice
- alternate choice



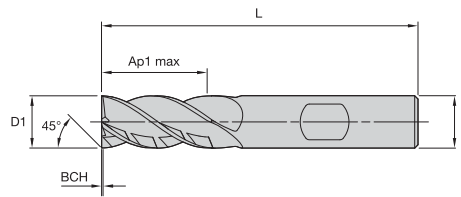
| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | BCH | KCPM15 |
|--------------|-------------------|-------|-------|---------|-------|------|--------|
| 6676987 | H1TE4CH0125R025HA | 1/8 | 1/8 | 1/4 | 1 1/2 | .015 | ● |
| 6676988 | H1TE4CH0125X050HA | 1/8 | 1/8 | 1/2 | 2 | .015 | ● |
| 6676989 | H1TE4CH0156L044HA | 5/32 | 3/16 | 7/16 | 2 | .015 | ● |
| 6676990 | H1TE4CH0188S031HA | 3/16 | 3/16 | 5/16 | 1 1/2 | .015 | ● |
| 6676991 | H1TE4CH0188L063HA | 3/16 | 3/16 | 5/8 | 2 1/4 | .015 | ● |
| 6676992 | H1TE4CH0219R044HA | 7/32 | 1/4 | 7/16 | 2 | .015 | ● |
| 6676993 | H1TE4CH0250S038HA | 1/4 | 1/4 | 3/8 | 2 | .015 | ● |
| 6676994 | H1TE4CH0250L075HA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● |
| 6676995 | H1TE4CH0281R063HA | 9/32 | 5/16 | 5/8 | 2 1/2 | .015 | ● |
| 6676996 | H1TE4CH0313S050HA | 5/16 | 5/16 | 1/2 | 2 | .015 | ● |
| 6676997 | H1TE4CH0313R075HA | 5/16 | 5/16 | 3/4 | 2 1/2 | .015 | ● |
| 6676998 | H1TE4CH0375S050HA | 3/8 | 3/8 | 1/2 | 2 | .020 | ● |
| 6676999 | H1TE4CH0375R088HA | 3/8 | 3/8 | 7/8 | 2 1/2 | .020 | ● |
| 6677000 | H1TE4CH0438R100HA | 7/16 | 7/16 | 1 | 2 3/4 | .020 | ● |
| 6677001 | H1TE4CH0500S063HA | 1/2 | 1/2 | 5/8 | 2 1/2 | .020 | ● |
| 6677002 | H1TE4CH0500R100HA | 1/2 | 1/2 | 1 | 3 | .020 | ● |
| 6677003 | H1TE4CH0500R125HA | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .020 | ● |
| 6677004 | H1TE4CH0500L150HA | 1/2 | 1/2 | 1 1/2 | 4 | .020 | ● |
| 6677005 | H1TE4CH0625S075HA | 5/8 | 5/8 | 3/4 | 3 | .020 | ● |
| 6677006 | H1TE4CH0625R125HA | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .020 | ● |
| 6677007 | H1TE4CH0625X225HA | 5/8 | 5/8 | 2 1/4 | 5 | .020 | ● |
| 6677008 | H1TE4CH0750S088HA | 3/4 | 3/4 | 7/8 | 3 1/2 | .020 | ● |
| 6677009 | H1TE4CH0750R150HA | 3/4 | 3/4 | 1 1/2 | 4 | .020 | ● |
| 6677010 | H1TE4CH0750L225HA | 3/4 | 3/4 | 2 1/4 | 5 | .020 | ● |
| 6677031 | H1TE4CH0750X300HA | 3/4 | 3/4 | 3 | 6 | .020 | ● |
| 6677032 | H1TE4CH1000S150HA | 1 | 1 | 1 1/2 | 4 1/2 | .020 | ● |
| 6677033 | H1TE4CH1000R225HA | 1 | 1 | 2 1/4 | 5 | .020 | ● |
| 6677034 | H1TE4CH1000L300HA | 1 | 1 | 3 | 6 | .020 | ● |
| 6677035 | H1TE4CH1000X400HA | 1 | 1 | 4 | 7 | .020 | ● |
| 6677036 | H1TE4CH1250R300HA | 1 1/4 | 1 1/4 | 3 | 7 | .020 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |



HARVI™ I TE • Chamfered • 4 Flutes • Weldon® Shank • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |
| | |

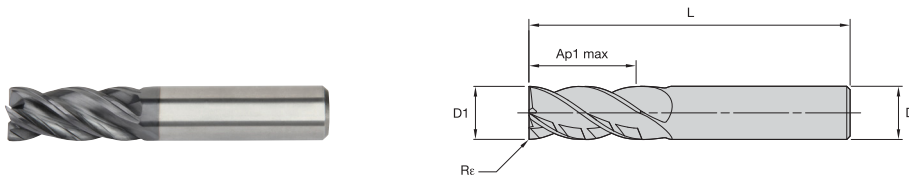
| order number | catalog number | D1 | D | Ap1 max | L | BCH | KCPM15 |
|--------------|-------------------|-------|-------|---------|-------|------|--------|
| 6677037 | H1TE4CH0375S050HB | 3/8 | 3/8 | 1/2 | 2 | .020 | ● |
| 6677038 | H1TE4CH0375R088HB | 3/8 | 3/8 | 7/8 | 2 1/2 | .020 | ● |
| 6677039 | H1TE4CH0438R100HB | 7/16 | 7/16 | 1 | 2 3/4 | .020 | ● |
| 6677040 | H1TE4CH0500S063HB | 1/2 | 1/2 | 5/8 | 2 1/2 | .020 | ● |
| 6677051 | H1TE4CH0500R100HB | 1/2 | 1/2 | 1 | 3 | .020 | ● |
| 6677052 | H1TE4CH0500R125HB | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .020 | ● |
| 6677053 | H1TE4CH0500L150HB | 1/2 | 1/2 | 1 1/2 | 4 | .020 | ● |
| 6677054 | H1TE4CH0625S075HB | 5/8 | 5/8 | 3/4 | 3 | .020 | ● |
| 6677055 | H1TE4CH0625R125HB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .020 | ● |
| 6677056 | H1TE4CH0625X225HB | 5/8 | 5/8 | 2 1/4 | 5 | .020 | ● |
| 6677057 | H1TE4CH0750S088HB | 3/4 | 3/4 | 7/8 | 3 1/2 | .020 | ● |
| 6677058 | H1TE4CH0750R150HB | 3/4 | 3/4 | 1 1/2 | 4 | .020 | ● |
| 6677059 | H1TE4CH0750L225HB | 3/4 | 3/4 | 2 1/4 | 5 | .020 | ● |
| 6677060 | H1TE4CH0750X300HB | 3/4 | 3/4 | 3 | 6 | .020 | ● |
| 6677061 | H1TE4CH1000S150HB | 1 | 1 | 1 1/2 | 4 1/2 | .020 | ● |
| 6677062 | H1TE4CH1000R225HB | 1 | 1 | 2 1/4 | 5 | .020 | ● |
| 6677063 | H1TE4CH1000L300HB | 1 | 1 | 3 | 6 | .020 | ● |
| 6677064 | H1TE4CH1000X400HB | 1 | 1 | 4 | 7 | .020 | ● |
| 6677065 | H1TE4CH1250R300HB | 1 1/4 | 1 1/4 | 3 | 7 | .020 | ● |

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| 163-164 | 165 | 117-119 | 168 |



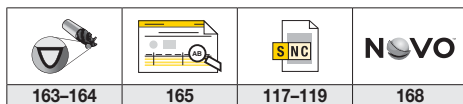
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- first choice
- alternate choice



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| P | ● |
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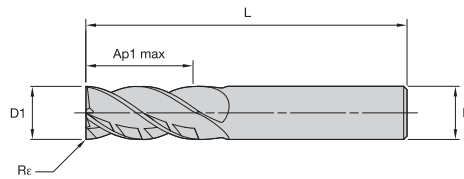
| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|------|------|---------|-------|------|--------|
| 6676348 | H1TE4RA0125R025HAR010 | 1/8 | 1/8 | 1/4 | 1 1/2 | .010 | ● |
| 6676349 | H1TE4RA0125R025HAR015 | 1/8 | 1/8 | 1/4 | 1 1/2 | .015 | ● |
| 6676350 | H1TE4RA0125X050HAR010 | 1/8 | 1/8 | 1/2 | 1 1/2 | .010 | ● |
| 6676351 | H1TE4RA0125X050HAR015 | 1/8 | 1/8 | 1/2 | 1 1/2 | .015 | ● |
| 6676352 | H1TE4RA0156L044HAR010 | 5/32 | 3/16 | 7/16 | 2 | .010 | ● |
| 6676353 | H1TE4RA0188R038HAR010 | 3/16 | 3/16 | 3/8 | 2 | .010 | ● |
| 6676354 | H1TE4RA0188R038HAR030 | 3/16 | 3/16 | 3/8 | 2 | .030 | ● |
| 6676355 | H1TE4RA0188L063HAR010 | 3/16 | 3/16 | 5/8 | 2 1/4 | .010 | ● |
| 6676356 | H1TE4RA0188L063HAR030 | 3/16 | 3/16 | 5/8 | 2 1/4 | .030 | ● |
| 6676357 | H1TE4RA0219R044HAR010 | 7/32 | 1/4 | 7/16 | 2 | .010 | ● |
| 6676358 | H1TE4RA0250S038HAR015 | 1/4 | 1/4 | 3/8 | 2 | .015 | ● |
| 6676359 | H1TE4RA0250S038HAR030 | 1/4 | 1/4 | 3/8 | 2 | .030 | ● |
| 6676360 | H1TE4RA0250R050HAR015 | 1/4 | 1/4 | 1/2 | 2 1/2 | .015 | ● |
| 6676361 | H1TE4RA0250R050HAR030 | 1/4 | 1/4 | 1/2 | 2 1/2 | .030 | ● |
| 6676362 | H1TE4RA0250R050HAR060 | 1/4 | 1/4 | 1/2 | 2 1/2 | .060 | ● |
| 6676363 | H1TE4RA0250R050HAR090 | 1/4 | 1/4 | 1/2 | 2 1/2 | .090 | ● |
| 6676370 | H1TE4RA0250L075HAR015 | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● |
| 6676371 | H1TE4RA0250L075HAR030 | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 6676372 | H1TE4RA0250L075HAR060 | 1/4 | 1/4 | 3/4 | 2 1/2 | .060 | ● |
| 6676373 | H1TE4RA0250L075HAR090 | 1/4 | 1/4 | 3/4 | 2 1/2 | .090 | ● |
| 6676374 | H1TE4RA0281R063HAR010 | 9/32 | 5/16 | 5/8 | 2 1/2 | .010 | ● |
| 6676375 | H1TE4RA0313S050HAR015 | 5/16 | 5/16 | 1/2 | 2 | .015 | ● |
| 6676377 | H1TE4RA0313S050HAR030 | 5/16 | 5/16 | 1/2 | 2 | .030 | ● |
| 6676378 | H1TE4RA0313S050HAR060 | 5/16 | 5/16 | 1/2 | 2 | .060 | ● |
| 6676379 | H1TE4RA0313R081HAR015 | 5/16 | 5/16 | 13/16 | 2 1/2 | .015 | ● |
| 6676380 | H1TE4RA0313R081HAR030 | 5/16 | 5/16 | 13/16 | 2 1/2 | .030 | ● |
| 6676381 | H1TE4RA0313R081HAR060 | 5/16 | 5/16 | 13/16 | 2 1/2 | .060 | ● |
| 6676382 | H1TE4RA0375R088HAR015 | 3/8 | 3/8 | 7/8 | 2 1/2 | .015 | ● |
| 6676383 | H1TE4RA0375R088HAR030 | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | ● |
| 6676384 | H1TE4RA0375R088HAR060 | 3/8 | 3/8 | 7/8 | 2 1/2 | .060 | ● |
| 6676385 | H1TE4RA0375R088HAR090 | 3/8 | 3/8 | 7/8 | 2 1/2 | .090 | ● |
| 6676386 | H1TE4RA0375R100HAR015 | 3/8 | 3/8 | 1 | 3 | .015 | ● |
| 6676387 | H1TE4RA0375R100HAR030 | 3/8 | 3/8 | 1 | 3 | .030 | ● |
| 6676388 | H1TE4RA0375R100HAR060 | 3/8 | 3/8 | 1 | 3 | .060 | ● |
| 6676389 | H1TE4RA0375R100HAR090 | 3/8 | 3/8 | 1 | 3 | .090 | ● |
| 6676390 | H1TE4RA0375X150HAR015 | 3/8 | 3/8 | 1 1/2 | 4 | .015 | ● |
| 6676401 | H1TE4RA0375X150HAR030 | 3/8 | 3/8 | 1 1/2 | 4 | .030 | ● |
| 6676402 | H1TE4RA0375X150HAR060 | 3/8 | 3/8 | 1 1/2 | 4 | .060 | ● |
| 6676403 | H1TE4RA0438R100HAR015 | 7/16 | 7/16 | 1 | 2 3/4 | .015 | ● |
| 6676404 | H1TE4RA0438R100HAR030 | 7/16 | 7/16 | 1 | 2 3/4 | .030 | ● |
| 6676405 | H1TE4RA0500S063HAR015 | 1/2 | 1/2 | 5/8 | 2 1/2 | .015 | ● |
| 6676406 | H1TE4RA0500S063HAR030 | 1/2 | 1/2 | 5/8 | 2 1/2 | .030 | ● |
| 6676407 | H1TE4RA0500S063HAR060 | 1/2 | 1/2 | 5/8 | 2 1/2 | .060 | ● |
| 6676408 | H1TE4RA0500R100HAR015 | 1/2 | 1/2 | 1 | 3 | .015 | ● |
| 6676409 | H1TE4RA0500R100HAR030 | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 6676410 | H1TE4RA0500R100HAR060 | 1/2 | 1/2 | 1 | 3 | .060 | ● |
| 6676421 | H1TE4RA0500R100HAR090 | 1/2 | 1/2 | 1 | 3 | .090 | ● |
| 6676422 | H1TE4RA0500R100HAR120 | 1/2 | 1/2 | 1 | 3 | .120 | ● |
| 6676423 | H1TE4RA0500R125HAR015 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .015 | ● |
| 6676424 | H1TE4RA0500R125HAR030 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .030 | ● |
| 6676425 | H1TE4RA0500R125HAR060 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .060 | ● |
| 6676426 | H1TE4RA0500R125HAR090 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .090 | ● |



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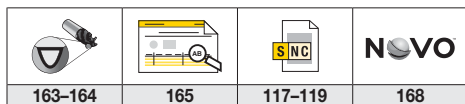
(continued)

- first choice
- alternate choice

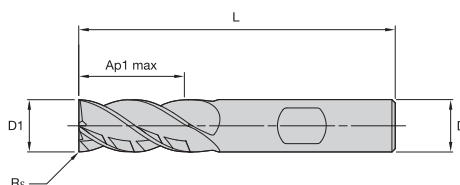


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| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|-------|-------|---------|-------|------|--------|
| 6676427 | H1TE4RA0500R125HAR120 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .120 | ● |
| 6676428 | H1TE4RA0500L150HAR030 | 1/2 | 1/2 | 1 1/2 | 4 | .030 | ● |
| 6676429 | H1TE4RA0500L150HAR060 | 1/2 | 1/2 | 1 1/2 | 4 | .060 | ● |
| 6676430 | H1TE4RA0500X200HAR030 | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 6676431 | H1TE4RA0500X200HAR060 | 1/2 | 1/2 | 2 | 4 | .060 | ● |
| 6676432 | H1TE4RA0625S075HAR030 | 5/8 | 5/8 | 3/4 | 3 | .030 | ● |
| 6676433 | H1TE4RA0625S075HAR060 | 5/8 | 5/8 | 3/4 | 3 | .060 | ● |
| 6676434 | H1TE4RA0625R125HAR015 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .015 | ● |
| 6676435 | H1TE4RA0625R125HAR030 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 6676436 | H1TE4RA0625R125HAR060 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .060 | ● |
| 6676437 | H1TE4RA0625R125HAR090 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .090 | ● |
| 6676438 | H1TE4RA0625R125HAR120 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .120 | ● |
| 6676439 | H1TE4RA0625X225HAR030 | 5/8 | 5/8 | 2 1/4 | 5 | .030 | ● |
| 6676440 | H1TE4RA0625X225HAR060 | 5/8 | 5/8 | 2 1/4 | 5 | .060 | ● |
| 6676451 | H1TE4RA0625X225HAR090 | 5/8 | 5/8 | 2 1/4 | 5 | .090 | ● |
| 6676452 | H1TE4RA0625X225HAR120 | 5/8 | 5/8 | 2 1/4 | 5 | .120 | ● |
| 6676453 | H1TE4RA0750S088HAR030 | 3/4 | 3/4 | 7/8 | 3 1/2 | .030 | ● |
| 6676454 | H1TE4RA0750S088HAR060 | 3/4 | 3/4 | 7/8 | 3 1/2 | .060 | ● |
| 6676455 | H1TE4RA0750R150HAR015 | 3/4 | 3/4 | 1 1/2 | 4 | .015 | ● |
| 6676456 | H1TE4RA0750R150HAR030 | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 6676457 | H1TE4RA0750R150HAR060 | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 6676458 | H1TE4RA0750R150HAR090 | 3/4 | 3/4 | 1 1/2 | 4 | .090 | ● |
| 6676459 | H1TE4RA0750R150HAR120 | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 6676460 | H1TE4RA0750L225HAR030 | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 6676461 | H1TE4RA0750L225HAR060 | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6676462 | H1TE4RA0750L225HAR090 | 3/4 | 3/4 | 2 1/4 | 5 | .090 | ● |
| 6676463 | H1TE4RA0750L225HAR120 | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |
| 6676464 | H1TE4RA1000S150HAR030 | 1 | 1 | 1 1/2 | 4 1/2 | .030 | ● |
| 6676465 | H1TE4RA1000S150HAR060 | 1 | 1 | 1 1/2 | 4 1/2 | .060 | ● |
| 6676466 | H1TE4RA1000S150HAR090 | 1 | 1 | 1 1/2 | 4 1/2 | .090 | ● |
| 6676467 | H1TE4RA1000S150HAR120 | 1 | 1 | 1 1/2 | 4 1/2 | .120 | ● |
| 6676468 | H1TE4RA1000S150HAR250 | 1 | 1 | 1 1/2 | 4 1/2 | .250 | ● |
| 6676469 | H1TE4RA1000R225HAR030 | 1 | 1 | 2 1/4 | 5 | .030 | ● |
| 6676470 | H1TE4RA1000R225HAR060 | 1 | 1 | 2 1/4 | 5 | .060 | ● |
| 6676471 | H1TE4RA1000R225HAR090 | 1 | 1 | 2 1/4 | 5 | .090 | ● |
| 6676472 | H1TE4RA1000R225HAR120 | 1 | 1 | 2 1/4 | 5 | .120 | ● |
| 6676473 | H1TE4RA1000R225HAR250 | 1 | 1 | 2 1/4 | 5 | .250 | ● |
| 6676474 | H1TE4RA1000L300HAR030 | 1 | 1 | 3 | 6 | .030 | ● |
| 6676475 | H1TE4RA1000L300HAR060 | 1 | 1 | 3 | 6 | .060 | ● |
| 6676476 | H1TE4RA1000X400HAR030 | 1 | 1 | 4 | 7 | .030 | ● |
| 6676477 | H1TE4RA1000X400HAR060 | 1 | 1 | 4 | 7 | .060 | ● |
| 6676478 | H1TE4RA1250R300HAR030 | 1 1/4 | 1 1/4 | 3 | 7 | .030 | ● |
| 6676479 | H1TE4RA1250R300HAR060 | 1 1/4 | 1 1/4 | 3 | 7 | .060 | ● |
| 6676480 | H1TE4RA1250R300HAR120 | 1 1/4 | 1 1/4 | 3 | 7 | .120 | ● |



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● first choice

○ alternate choice

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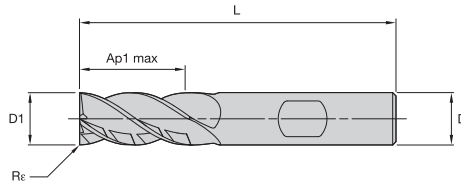
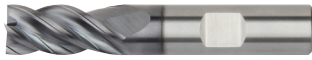
| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|------|------|---------|-------|------|--------|
| 6676481 | H1TE4RA0375R088HBR015 | 3/8 | 3/8 | 7/8 | 2 1/2 | .015 | ● |
| 6676482 | H1TE4RA0375R088HBR030 | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | ● |
| 6676483 | H1TE4RA0375R088HBR060 | 3/8 | 3/8 | 7/8 | 2 1/2 | .060 | ● |
| 6676484 | H1TE4RA0375R088HBR090 | 3/8 | 3/8 | 7/8 | 2 1/2 | .090 | ● |
| 6676485 | H1TE4RA0375R100HBR015 | 3/8 | 3/8 | 1 | 3 | .015 | ● |
| 6676486 | H1TE4RA0375R100HBR030 | 3/8 | 3/8 | 1 | 3 | .030 | ● |
| 6676487 | H1TE4RA0375R100HBR060 | 3/8 | 3/8 | 1 | 3 | .060 | ● |
| 6676488 | H1TE4RA0375R100HBR090 | 3/8 | 3/8 | 1 | 3 | .090 | ● |
| 6676489 | H1TE4RA0375X150HBR015 | 3/8 | 3/8 | 1 1/2 | 4 | .015 | ● |
| 6676490 | H1TE4RA0375X150HBR030 | 3/8 | 3/8 | 1 1/2 | 4 | .030 | ● |
| 6676491 | H1TE4RA0375X150HBR060 | 3/8 | 3/8 | 1 1/2 | 4 | .060 | ● |
| 6676492 | H1TE4RA0438R100HBR015 | 7/16 | 7/16 | 1 | 2 3/4 | .015 | ● |
| 6676493 | H1TE4RA0438R100HBR030 | 7/16 | 7/16 | 1 | 2 3/4 | .030 | ● |
| 6676494 | H1TE4RA0500S063HBR015 | 1/2 | 1/2 | 5/8 | 2 1/2 | .015 | ● |
| 6676495 | H1TE4RA0500S063HBR030 | 1/2 | 1/2 | 5/8 | 2 1/2 | .030 | ● |
| 6676496 | H1TE4RA0500S063HBR060 | 1/2 | 1/2 | 5/8 | 2 1/2 | .060 | ● |
| 6676497 | H1TE4RA0500R100HBR015 | 1/2 | 1/2 | 1 | 3 | .015 | ● |
| 6676498 | H1TE4RA0500R100HBR030 | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 6676499 | H1TE4RA0500R100HBR060 | 1/2 | 1/2 | 1 | 3 | .060 | ● |
| 6676500 | H1TE4RA0500R100HBR090 | 1/2 | 1/2 | 1 | 3 | .090 | ● |
| 6676501 | H1TE4RA0500R100HBR120 | 1/2 | 1/2 | 1 | 3 | .120 | ● |
| 6676502 | H1TE4RA0500R125HBR015 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .015 | ● |
| 6676503 | H1TE4RA0500R125HBR030 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .030 | ● |
| 6676504 | H1TE4RA0500R125HBR060 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .060 | ● |
| 6676505 | H1TE4RA0500R125HBR090 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .090 | ● |
| 6676506 | H1TE4RA0500R125HBR120 | 1/2 | 1/2 | 1 1/4 | 3 1/4 | .120 | ● |
| 6676507 | H1TE4RA0500L150HBR030 | 1/2 | 1/2 | 1 1/2 | 4 | .030 | ● |
| 6676508 | H1TE4RA0500L150HBR060 | 1/2 | 1/2 | 1 1/2 | 4 | .060 | ● |
| 6676509 | H1TE4RA0500X200HBR030 | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 6676510 | H1TE4RA0500X200HBR060 | 1/2 | 1/2 | 2 | 4 | .060 | ● |
| 6676511 | H1TE4RA0625S075HBR030 | 5/8 | 5/8 | 3/4 | 3 | .030 | ● |
| 6676512 | H1TE4RA0625S075HBR060 | 5/8 | 5/8 | 3/4 | 3 | .060 | ● |
| 6676513 | H1TE4RA0625R125HBR015 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .015 | ● |
| 6676514 | H1TE4RA0625R125HBR030 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 6676515 | H1TE4RA0625R125HBR060 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .060 | ● |
| 6676516 | H1TE4RA0625R125HBR090 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .090 | ● |
| 6676517 | H1TE4RA0625R125HBR120 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .120 | ● |
| 6676518 | H1TE4RA0625X225HBR030 | 5/8 | 5/8 | 2 1/4 | 5 | .030 | ● |
| 6676519 | H1TE4RA0625X225HBR060 | 5/8 | 5/8 | 2 1/4 | 5 | .060 | ● |
| 6676520 | H1TE4RA0625X225HBR090 | 5/8 | 5/8 | 2 1/4 | 5 | .090 | ● |
| 6676521 | H1TE4RA0625X225HBR120 | 5/8 | 5/8 | 2 1/4 | 5 | .120 | ● |
| 6676522 | H1TE4RA0750S088HBR030 | 3/4 | 3/4 | 7/8 | 3 1/2 | .030 | ● |
| 6676523 | H1TE4RA0750S088HBR060 | 3/4 | 3/4 | 7/8 | 3 1/2 | .060 | ● |
| 6676524 | H1TE4RA0750R150HBR015 | 3/4 | 3/4 | 1 1/2 | 4 | .015 | ● |
| 6676525 | H1TE4RA0750R150HBR030 | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 6676526 | H1TE4RA0750R150HBR060 | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 6676527 | H1TE4RA0750R150HBR090 | 3/4 | 3/4 | 1 1/2 | 4 | .090 | ● |
| 6676528 | H1TE4RA0750R150HBR120 | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 6676529 | H1TE4RA0750L225HBR030 | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 6676530 | H1TE4RA0750L225HBR060 | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6676551 | H1TE4RA0750L225HBR090 | 3/4 | 3/4 | 2 1/4 | 5 | .090 | ● |
| 6676552 | H1TE4RA0750L225HBR120 | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |

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| 163-164 | 165 | 117-119 | 168 |

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(continued)

- first choice
- alternate choice



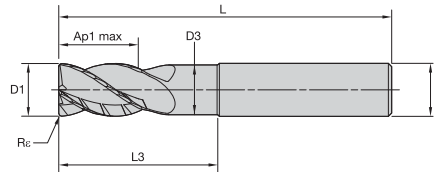
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| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|-------|-------|---------|-------|------|--------|
| 6676553 | H1TE4RA1000S150HBR030 | 1 | 1 | 1 1/2 | 4 1/2 | .030 | ● |
| 6676554 | H1TE4RA1000S150HBR060 | 1 | 1 | 1 1/2 | 4 1/2 | .060 | ● |
| 6676555 | H1TE4RA1000S150HBR090 | 1 | 1 | 1 1/2 | 4 1/2 | .090 | ● |
| 6676556 | H1TE4RA1000S150HBR120 | 1 | 1 | 1 1/2 | 4 1/2 | .120 | ● |
| 6676557 | H1TE4RA1000S150HBR250 | 1 | 1 | 1 1/2 | 4 1/2 | .250 | ● |
| 6676558 | H1TE4RA1000R225HBR030 | 1 | 1 | 2 1/4 | 5 | .030 | ● |
| 6676560 | H1TE4RA1000R225HBR060 | 1 | 1 | 2 1/4 | 5 | .060 | ● |
| 6676561 | H1TE4RA1000R225HBR090 | 1 | 1 | 2 1/4 | 5 | .090 | ● |
| 6676562 | H1TE4RA1000R225HBR120 | 1 | 1 | 2 1/4 | 5 | .120 | ● |
| 6676563 | H1TE4RA1000R225HBR250 | 1 | 1 | 2 1/4 | 5 | .250 | ● |
| 6676564 | H1TE4RA1000L300HBR030 | 1 | 1 | 3 | 6 | .030 | ● |
| 6676565 | H1TE4RA1000L300HBR060 | 1 | 1 | 3 | 6 | .060 | ● |
| 6676566 | H1TE4RA1000X400HBR030 | 1 | 1 | 4 | 7 | .030 | ● |
| 6676567 | H1TE4RA1000X400HBR060 | 1 | 1 | 4 | 7 | .060 | ● |
| 6676568 | H1TE4RA1250R300HBR030 | 1 1/4 | 1 1/4 | 3 | 7 | .030 | ● |
| 6676569 | H1TE4RA1250R300HBR060 | 1 1/4 | 1 1/4 | 3 | 7 | .060 | ● |
| 6676570 | H1TE4RA1250R300HBR120 | 1 1/4 | 1 1/4 | 3 | 7 | .120 | ● |

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|---------|-----|---------|-----|
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| 163-164 | 165 | 117-119 | 168 |

HARVI™ I TE • Radiused • 4 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice



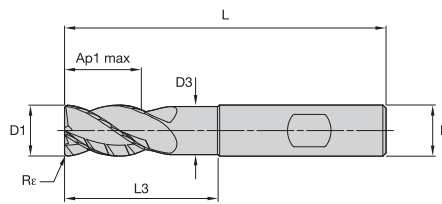
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| H | ○ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | R _c | KCSM15 |
|--------------|-----------------------|-----|-----|-------|---------|-------|-------|----------------|--------|
| 6767785 | H1TE4RA0250N038HAR015 | 1/4 | 1/4 | .2350 | 3/8 | 1 1/4 | 4 | .015 | ● |
| 6767786 | H1TE4RA0250N038HAR030 | 1/4 | 1/4 | .2350 | 3/8 | 1 1/4 | 4 | .030 | ● |
| 6767788 | H1TE4RA0250N038HAR060 | 1/4 | 1/4 | .2350 | 3/8 | 1 1/4 | 4 | .060 | ● |
| 6767789 | H1TE4RA0250N038HAR090 | 1/4 | 1/4 | .2350 | 3/8 | 1 1/4 | 4 | .090 | ● |
| 6767790 | H1TE4RA0375N050HAR015 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .015 | ● |
| 6767811 | H1TE4RA0375N050HAR030 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .030 | ● |
| 6767812 | H1TE4RA0375N050HAR060 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .060 | ● |
| 6767814 | H1TE4RA0375N050HAR090 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .090 | ● |
| 6767815 | H1TE4RA0500N063HAR015 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .015 | ● |
| 6767816 | H1TE4RA0500N063HAR030 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .030 | ● |
| 6767817 | H1TE4RA0500N063HAR060 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .060 | ● |
| 6767818 | H1TE4RA0500N063HAR090 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .090 | ● |
| 6767819 | H1TE4RA0500N063HAR120 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .120 | ● |
| 6767820 | H1TE4RA0625N075HAR015 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .015 | ● |
| 6767821 | H1TE4RA0625N075HAR030 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .030 | ● |
| 6767822 | H1TE4RA0625N075HAR060 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .060 | ● |
| 6767823 | H1TE4RA0625N075HAR090 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .090 | ● |
| 6767824 | H1TE4RA0625N075HAR120 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .120 | ● |
| 6767825 | H1TE4RA0750N100HAR030 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .030 | ● |
| 6767826 | H1TE4RA0750N100HAR060 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .060 | ● |
| 6767827 | H1TE4RA0750N100HAR090 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .090 | ● |
| 6767828 | H1TE4RA0750N100HAR120 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .120 | ● |
| 6767829 | H1TE4RA0750E100HAR030 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .030 | ● |
| 6767830 | H1TE4RA0750E100HAR060 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .060 | ● |
| 6767842 | H1TE4RA0750E100HAR090 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .090 | ● |
| 6767843 | H1TE4RA0750E100HAR120 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .120 | ● |
| 6767844 | H1TE4RA1000N113HAR030 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .030 | ● |
| 6767845 | H1TE4RA1000N113HAR060 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .060 | ● |
| 6767846 | H1TE4RA1000N113HAR120 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .120 | ● |
| 6767847 | H1TE4RA1000N113HAR250 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .250 | ● |

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| 163-164 | 165 | 117-119 | 168 |



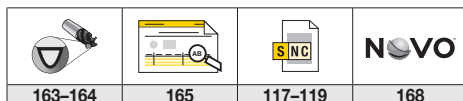
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- first choice
- alternate choice

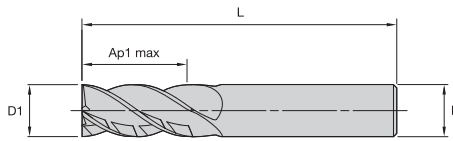
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| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | KCSM15 |
|--------------|-----------------------|-----|-----|-------|---------|-------|-------|------|--------|
| 6767849 | H1TE4RA0375N050HBR015 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .015 | ● |
| 6767850 | H1TE4RA0375N050HBR030 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .030 | ● |
| 6767851 | H1TE4RA0375N050HBR060 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .060 | ● |
| 6767852 | H1TE4RA0375N050HBR090 | 3/8 | 3/8 | .3525 | 1/2 | 2 | 4 | .090 | ● |
| 6767853 | H1TE4RA0500N063HBR015 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .015 | ● |
| 6767854 | H1TE4RA0500N063HBR030 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .030 | ● |
| 6767855 | H1TE4RA0500N063HBR060 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .060 | ● |
| 6767856 | H1TE4RA0500N063HBR090 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .090 | ● |
| 6767858 | H1TE4RA0500N063HBR120 | 1/2 | 1/2 | .4700 | 5/8 | 2 1/4 | 4 | .120 | ● |
| 6767859 | H1TE4RA0625N075HBR015 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .015 | ● |
| 6767860 | H1TE4RA0625N075HBR030 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .030 | ● |
| 6767861 | H1TE4RA0625N075HBR060 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .060 | ● |
| 6767862 | H1TE4RA0625N075HBR090 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .090 | ● |
| 6767863 | H1TE4RA0625N075HBR120 | 5/8 | 5/8 | .5875 | 3/4 | 2 1/4 | 4 | .120 | ● |
| 6767864 | H1TE4RA0750N100HBR030 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .030 | ● |
| 6767865 | H1TE4RA0750N100HBR060 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .060 | ● |
| 6767866 | H1TE4RA0750N100HBR090 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .090 | ● |
| 6767868 | H1TE4RA0750N100HBR120 | 3/4 | 3/4 | .7050 | 1 | 2 1/4 | 4 1/2 | .120 | ● |
| 6767869 | H1TE4RA0750E100HBR030 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .030 | ● |
| 6767870 | H1TE4RA0750E100HBR060 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .060 | ● |
| 6767892 | H1TE4RA0750E100HBR090 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .090 | ● |
| 6767893 | H1TE4RA0750E100HBR120 | 3/4 | 3/4 | .7050 | 1 | 3 1/4 | 5 1/2 | .120 | ● |
| 6767894 | H1TE4RA1000N113HBR030 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .030 | ● |
| 6767896 | H1TE4RA1000N113HBR060 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .060 | ● |
| 6767897 | H1TE4RA1000N113HBR120 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .120 | ● |
| 6767898 | H1TE4RA1000N113HBR250 | 1 | 1 | .9400 | 1 1/8 | 3 1/4 | 5 1/2 | .250 | ● |



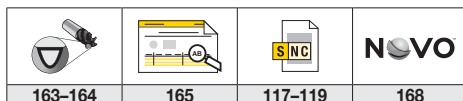
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- first choice
- alternate choice

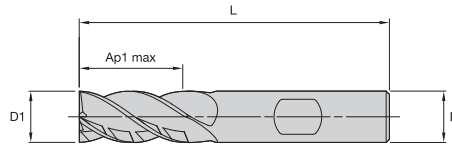
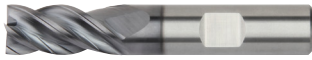


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| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|-------|-------|---------|-------|--------|
| 6767731 | H1TE4SE0063R013HA | 1/16 | 1/8 | 1/8 | 1 1/2 | ● |
| 6767733 | H1TE4SE0078R016HA | 5/64 | 1/8 | 5/32 | 1 1/2 | ● |
| 6767734 | H1TE4SE0094R019HA | 3/32 | 1/8 | 3/16 | 1 1/2 | ● |
| 6767735 | H1TE4SE0109R025HA | 7/64 | 1/8 | 1/4 | 1 1/2 | ● |
| 6676840 | H1TE4SE0125R025HA | 1/8 | 1/8 | 1/4 | 1 1/2 | ● |
| 6676911 | H1TE4SE0125X050HA | 1/8 | 1/8 | 1/2 | 2 | ● |
| 6676912 | H1TE4SE0156L044HA | 5/32 | 3/16 | 7/16 | 2 | ● |
| 6676913 | H1TE4SE0188S031HA | 3/16 | 3/16 | 5/16 | 1 1/2 | ● |
| 6676914 | H1TE4SE0188L063HA | 3/16 | 3/16 | 5/8 | 2 1/4 | ● |
| 6676915 | H1TE4SE0219R044HA | 7/32 | 1/4 | 7/16 | 2 | ● |
| 6676916 | H1TE4SE0250S038HA | 1/4 | 1/4 | 3/8 | 2 | ● |
| 6676917 | H1TE4SE0250R050HA | 1/4 | 1/4 | 1/2 | 2 1/2 | ● |
| 6676918 | H1TE4SE0250L075HA | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 6676919 | H1TE4SE0250X100HA | 1/4 | 1/4 | 1 | 3 | ● |
| 6676920 | H1TE4SE0281R063HA | 9/32 | 5/16 | 5/8 | 2 1/2 | ● |
| 6676921 | H1TE4SE0313S050HA | 5/16 | 5/16 | 1/2 | 2 | ● |
| 6676922 | H1TE4SE0313R075HA | 5/16 | 5/16 | 3/4 | 2 1/2 | ● |
| 6676923 | H1TE4SE0375S050HA | 3/8 | 3/8 | 1/2 | 2 | ● |
| 6676924 | H1TE4SE0375R088HA | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 6676925 | H1TE4SE0375R100HA | 3/8 | 3/8 | 1 | 3 | ● |
| 6676926 | H1TE4SE0375X150HA | 3/8 | 3/8 | 1 1/2 | 4 | ● |
| 6676927 | H1TE4SE0438R100HA | 7/16 | 7/16 | 1 | 2 3/4 | ● |
| 6676928 | H1TE4SE0500S063HA | 1/2 | 1/2 | 5/8 | 2 1/2 | ● |
| 6676929 | H1TE4SE0500R100HA | 1/2 | 1/2 | 1 | 3 | ● |
| 6676930 | H1TE4SE0500R125HA | 1/2 | 1/2 | 1 1/4 | 3 1/4 | ● |
| 6676941 | H1TE4SE0500L150HA | 1/2 | 1/2 | 1 1/2 | 4 | ● |
| 6676942 | H1TE4SE0500X200HA | 1/2 | 1/2 | 2 | 4 | ● |
| 6676943 | H1TE4SE0625S075HA | 5/8 | 5/8 | 3/4 | 3 | ● |
| 6676944 | H1TE4SE0625R125HA | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 6676945 | H1TE4SE0625X225HA | 5/8 | 5/8 | 2 1/4 | 5 | ● |
| 6676946 | H1TE4SE0750S088HA | 3/4 | 3/4 | 7/8 | 3 1/2 | ● |
| 6676947 | H1TE4SE0750R150HA | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 6676948 | H1TE4SE0750L225HA | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 6676949 | H1TE4SE0750X300HA | 3/4 | 3/4 | 3 | 6 | ● |
| 6676950 | H1TE4SE1000S150HA | 1 | 1 | 1 1/2 | 4 1/2 | ● |
| 6676961 | H1TE4SE1000R225HA | 1 | 1 | 2 1/4 | 5 | ● |
| 6676962 | H1TE4SE1000L300HA | 1 | 1 | 3 | 6 | ● |
| 6676963 | H1TE4SE1000X400HA | 1 | 1 | 4 | 7 | ● |
| 6676964 | H1TE4SE1250R300HA | 1 1/4 | 1 1/4 | 3 | 7 | ● |



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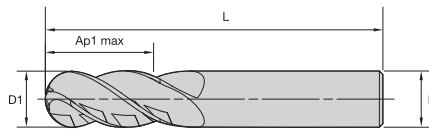
- first choice
- alternate choice

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| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|-------|-------|---------|-------|--------|
| 6676965 | H1TE4SE0375S050HB | 3/8 | 3/8 | 1/2 | 2 | ● |
| 6676966 | H1TE4SE0375R088HB | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 6676967 | H1TE4SE0375R100HB | 3/8 | 3/8 | 1 | 3 | ● |
| 6676968 | H1TE4SE0375X150HB | 3/8 | 3/8 | 1 1/2 | 4 | ● |
| 6676969 | H1TE4SE0438R100HB | 7/16 | 7/16 | 1 | 2 3/4 | ● |
| 6676970 | H1TE4SE0500S063HB | 1/2 | 1/2 | 5/8 | 2 1/2 | ● |
| 6676971 | H1TE4SE0500R100HB | 1/2 | 1/2 | 1 | 3 | ● |
| 6676972 | H1TE4SE0500R125HB | 1/2 | 1/2 | 1 1/4 | 3 1/4 | ● |
| 6676973 | H1TE4SE0500L150HB | 1/2 | 1/2 | 1 1/2 | 4 | ● |
| 6676974 | H1TE4SE0500X200HB | 1/2 | 1/2 | 2 | 4 | ● |
| 6676975 | H1TE4SE0625S075HB | 5/8 | 5/8 | 3/4 | 3 | ● |
| 6676976 | H1TE4SE0625R125HB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 6676977 | H1TE4SE0625X225HB | 5/8 | 5/8 | 2 1/4 | 5 | ● |
| 6676978 | H1TE4SE0750S088HB | 3/4 | 3/4 | 7/8 | 3 1/2 | ● |
| 6676979 | H1TE4SE0750R150HB | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 6676980 | H1TE4SE0750L225HB | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 6676981 | H1TE4SE0750X300HB | 3/4 | 3/4 | 3 | 6 | ● |
| 6676982 | H1TE4SE1000S150HB | 1 | 1 | 1 1/2 | 4 1/2 | ● |
| 6676983 | H1TE4SE1000R225HB | 1 | 1 | 2 1/4 | 5 | ● |
| 6676984 | H1TE4SE1000L300HB | 1 | 1 | 3 | 6 | ● |
| 6676985 | H1TE4SE1000X400HB | 1 | 1 | 4 | 7 | ● |
| 6676986 | H1TE4SE1250R300HB | 1 1/4 | 1 1/4 | 3 | 7 | ● |

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| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ I TE • Ball Nose • 4 Flutes • Regular • Plain Shank • Inch

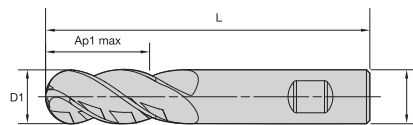
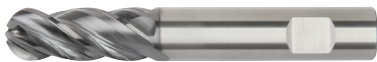


- first choice
- alternate choice

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| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|------|------|---------|-------|--------|
| 6767762 | H1TE4BN0063R013HA | 1/16 | 1/8 | 1/8 | 1 1/2 | ● |
| 6767763 | H1TE4BN0094R019HA | 3/32 | 1/8 | 3/16 | 1 1/2 | ● |
| 6767764 | H1TE4BN0125R025HA | 1/8 | 1/8 | 1/4 | 1 1/2 | ● |
| 6767765 | H1TE4BN0188R038HA | 3/16 | 3/16 | 3/8 | 2 1/4 | ● |
| 6767766 | H1TE4BN0250R075HA | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 6767768 | H1TE4BN0313R075HA | 5/16 | 5/16 | 3/4 | 2 1/2 | ● |
| 6767769 | H1TE4BN0375R088HA | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 6767771 | H1TE4BN0438R088HA | 7/16 | 7/16 | 7/8 | 2 1/2 | ● |
| 6767772 | H1TE4BN0500R100HA | 1/2 | 1/2 | 1 | 3 | ● |
| 6767774 | H1TE4BN0625R125HA | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 6767775 | H1TE4BN0750R150HA | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 6767777 | H1TE4BN1000R150HA | 1 | 1 | 1 1/2 | 4 1/2 | ● |





HARVI I TE • Ball Nose • 4 Flutes • Regular • Weldon® Shank • Inch



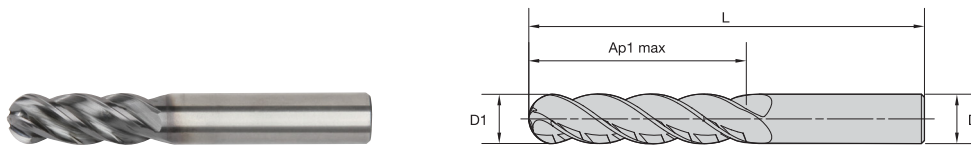
- first choice
- alternate choice

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| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|-----|-----|---------|-------|--------|
| 6767778 | H1TE4BN0500R100HB | 1/2 | 1/2 | 1 | 3 | ● |
| 6767780 | H1TE4BN0625R125HB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 6767781 | H1TE4BN0750R150HB | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 6767782 | H1TE4BN1000R150HB | 1 | 1 | 1 1/2 | 4 1/2 | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ I TE • Ball Nose • 4 Flutes • Long • Plain Shank • Inch

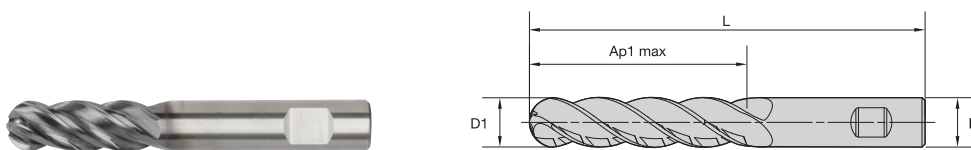


- first choice
- alternate choice

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| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|------|------|---------|-------|--------|
| 6767736 | H1TE4BN0125L050HA | 1/8 | 1/8 | 1/2 | 2 | ● |
| 6767737 | H1TE4BN0188L075HA | 3/16 | 3/16 | 3/4 | 2 1/2 | ● |
| 6767738 | H1TE4BN0250L100HA | 1/4 | 1/4 | 1 | 3 | ● |
| 6767739 | H1TE4BN0313L125HA | 5/16 | 5/16 | 1 1/4 | 3 | ● |
| 6767740 | H1TE4BN0375L125HA | 3/8 | 3/8 | 1 1/4 | 3 | ● |
| 6767751 | H1TE4BN0438L150HA | 7/16 | 7/16 | 1 1/2 | 4 | ● |
| 6767752 | H1TE4BN0500L175HA | 1/2 | 1/2 | 1 3/4 | 4 | ● |
| 6767754 | H1TE4BN0625L225HA | 5/8 | 5/8 | 2 1/4 | 5 | ● |
| 6767755 | H1TE4BN0750L263HA | 3/4 | 3/4 | 2 5/8 | 6 | ● |
| 6767757 | H1TE4BN1000L325HA | 1 | 1 | 3 1/4 | 6 | ● |

HARVI I TE • Ball Nose • 4 Flutes • Long • Weldon® Shank • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KCPM15 |
|--------------|-------------------|-----|-----|---------|---|--------|
| 6767758 | H1TE4BN0500L175HB | 1/2 | 1/2 | 1 3/4 | 4 | ● |
| 6767759 | H1TE4BN0625L225HB | 5/8 | 5/8 | 2 1/4 | 5 | ● |
| 6767760 | H1TE4BN0750L263HB | 3/4 | 3/4 | 2 5/8 | 6 | ● |
| 6767761 | H1TE4BN1000L325HB | 1 | 1 | 3 1/4 | 6 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ I TE • Side Milling/Slotting • Application Data • Inch



| Material Group | | | | | KCPM15-KCSM15 | | | Recommended feed per tooth (Fz = IPT) for side milling (A). For slotting (B), reduce Fz by 20%. | | | | | | | | | | | |
|----------------|----|----------|----------|-----------|---------------------------|-----|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | | D1 – Diameter | | | | | | | | | | | |
| | ap | ae | ap | min | Start | max | frac. | 1/8 | 5/32 | 3/16 | 1/4 | 9/32 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 0 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 490 | 580 | 660 | IPT | .0009 | .0012 | .0016 | .0019 | .0022 | .0026 | .0031 | .0036 | .0044 | .0049 | .0054 |
| | 1 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 490 | 580 | 660 | IPT | .0009 | .0012 | .0016 | .0019 | .0022 | .0026 | .0031 | .0036 | .0044 | .0049 | .0054 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 460 | 540 | 620 | IPT | .0009 | .0012 | .0016 | .0019 | .0022 | .0026 | .0031 | .0036 | .0044 | .0049 | .0054 |
| | 3 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 390 | 450 | 520 | IPT | .0007 | .0010 | .0013 | .0016 | .0019 | .0022 | .0026 | .0030 | .0038 | .0044 | .0049 |
| | 4 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 300 | 400 | 490 | IPT | .0007 | .0009 | .0012 | .0014 | .0017 | .0019 | .0023 | .0027 | .0033 | .0038 | .0042 |
| | 5 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 200 | 260 | 330 | IPT | .0006 | .0008 | .0011 | .0013 | .0015 | .0017 | .0021 | .0024 | .0030 | .0035 | .0039 |
| M | 1 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 300 | 340 | 380 | IPT | .0007 | .0010 | .0013 | .0016 | .0019 | .0022 | .0026 | .0030 | .0038 | .0044 | .0049 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 200 | 230 | 260 | IPT | .0006 | .0008 | .0011 | .0013 | .0015 | .0017 | .0021 | .0024 | .0030 | .0035 | .0039 |
| K | 1 | 1.5 x D1 | 0.5 x D1 | 1.0 x D1 | 390 | 440 | 490 | IPT | .0009 | .0012 | .0016 | .0019 | .0022 | .0026 | .0031 | .0036 | .0044 | .0049 | .0054 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 1.0 x D1 | 360 | 410 | 460 | IPT | .0007 | .0010 | .0013 | .0016 | .0019 | .0022 | .0026 | .0030 | .0038 | .0044 | .0049 |
| S | 3 | 1.5 x D1 | 0.5 x D1 | 1.0 x D1 | 360 | 390 | 430 | IPT | .0006 | .0008 | .0011 | .0013 | .0015 | .0017 | .0021 | .0024 | .0030 | .0035 | .0039 |
| | 1 | 1.5 x D1 | 0.5 x D1 | 0.75 x D1 | 160 | 230 | 300 | IPT | .0007 | .0010 | .0013 | .0016 | .0019 | .0022 | .0026 | .0030 | .0038 | .0044 | .0049 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 0.75 x D1 | 160 | 210 | 260 | IPT | .0006 | .0008 | .0011 | .0013 | .0015 | .0017 | .0021 | .0024 | .0030 | .0035 | .0039 |
| | 3 | 1.5 x D1 | 0.5 x D1 | 0.5 x D1 | 80 | 100 | 130 | IPT | .0004 | .0006 | .0007 | .0008 | .0010 | .0011 | .0014 | .0016 | .0020 | .0023 | .0027 |
| H | 1 | 1.5 x D1 | 0.5 x D1 | 1.25 x D1 | 160 | 180 | 200 | IPT | .0005 | .0007 | .0009 | .0011 | .0014 | .0016 | .0019 | .0022 | .0028 | .0032 | .0036 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 1.0 x D1 | 260 | 360 | 460 | IPT | .0007 | .0009 | .0012 | .0014 | .0017 | .0019 | .0023 | .0027 | .0033 | .0038 | .0042 |
| | 2 | 1.5 x D1 | 0.5 x D1 | 1.0 x D1 | 230 | 310 | 390 | IPT | .0005 | .0007 | .0009 | .0011 | .0013 | .0015 | .0017 | .0020 | .0025 | .0028 | .0031 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.
For tools with reach >4,5 x D, reduce Fz up to 30% and use lower range of cutting speed as starting condition.

Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1–3.6 | 1.6–3 | 1.6–2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
This can also be considered based on the machinability of the material, from difficult to free cutting.
These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:

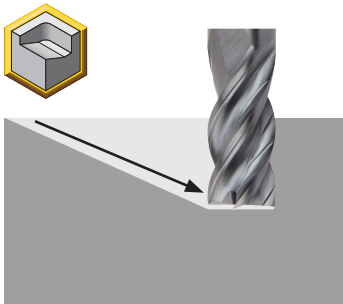
Application: D1 = 1";
S4 material group;
Ae 0.1" (Ae = 10% D)
Cutting data recommendation: 180 SFM;
Fz = 0.0036 IPT
Adjustment coefficients: Ae = 0.1" equals 10%;
Kv = 1.4; KFz = 1.67

Final cutting data recommendation:

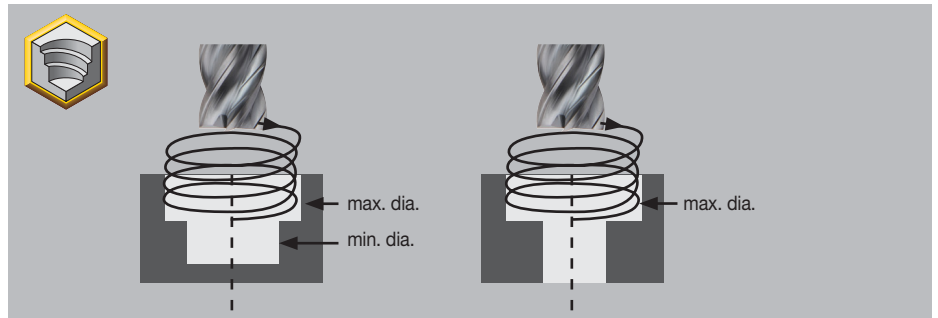
Vc new = 180 SFM * 1.4 = 252 SFM
Fz new = .0036 IPT * 1.67 = .0060 IPT

HARVI™ I TE • Application Information • Ramping

Linear Ramping



Helical Ramping



ATTENTION!

For helical ramping operations, the min. and max. hole diameter can be calculated with the following formula:

Min. hole Ø = End mill -Ø x 1.1 + 2x corner configuration (Re/CHF) size. Hole -Ø/End mill -Ø min 1:1.15

Max. hole Ø = 2x End mill -Ø 2x corner configuration (Re/CHF) size. Hole -Ø/End mill -Ø max 1:1.9

HARVI I TE • Ramping 0°-15° • Application Data • Inch



| Material Group | Max Depth | Cutting Speed – Vc SFM | | Diameter – D1 [Ømin-Ømax] for helical interpolation | | | | | | | | | | | | | | | | |
|----------------|-----------|------------------------|-------|---|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | min | Start | max | frac. | 1/8 | 5/32 | 3/16 | 7/32 | 1/4 | 9/32 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | |
| | | KCPM15-KCSM15 | | | | Recommended feed per tooth (fz = IPT) for Helical Interpolation and Ramping – z _{eff} = 2 | | | | | | | | | | | | | | |
| P | 0 | 1.25 x D1 | 490 | 580 | 660 | IPT | .0009 | .0012 | .0016 | .0017 | .0019 | .0023 | .0026 | .0031 | .0033 | .0036 | .0044 | .0049 | .0054 | .0057 |
| | 1 | 1.25 x D1 | 490 | 580 | 660 | IPT | .0009 | .0012 | .0016 | .0017 | .0019 | .0023 | .0026 | .0031 | .0033 | .0036 | .0044 | .0049 | .0054 | .0057 |
| | 2 | 1.25 x D1 | 460 | 540 | 620 | IPT | .0009 | .0012 | .0016 | .0017 | .0019 | .0023 | .0026 | .0031 | .0033 | .0036 | .0044 | .0049 | .0054 | .0057 |
| | 3 | 1.25 x D1 | 390 | 450 | 520 | IPT | .0007 | .0010 | .0013 | .0014 | .0016 | .0019 | .0022 | .0026 | .0028 | .0030 | .0038 | .0044 | .0049 | .0052 |
| | 4 | 1.25 x D1 | 300 | 400 | 490 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0019 | .0023 | .0025 | .0027 | .0033 | .0038 | .0042 | .0045 |
| | 5 | 1.25 x D1 | 200 | 260 | 330 | IPT | .0006 | .0008 | .0011 | .0012 | .0013 | .0015 | .0017 | .0021 | .0022 | .0024 | .0030 | .0035 | .0039 | .0041 |
| M | 6 | 1.25 x D1 | 160 | 200 | 250 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0013 | .0015 | .0017 | .0018 | .0020 | .0025 | .0028 | .0031 | .0032 |
| | 1 | 1.25 x D1 | 300 | 340 | 380 | IPT | .0007 | .0010 | .0013 | .0014 | .0016 | .0019 | .0022 | .0026 | .0028 | .0030 | .0038 | .0044 | .0049 | .0052 |
| | 2 | 1.25 x D1 | 200 | 230 | 260 | IPT | .0006 | .0008 | .0011 | .0012 | .0013 | .0015 | .0017 | .0021 | .0022 | .0024 | .0030 | .0035 | .0039 | .0041 |
| K | 3 | 1.0 x D1 | 200 | 210 | 230 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0013 | .0015 | .0017 | .0018 | .0020 | .0025 | .0028 | .0031 | .0032 |
| | 1 | 1.0 x D1 | 390 | 440 | 490 | IPT | .0009 | .0012 | .0016 | .0017 | .0019 | .0023 | .0026 | .0031 | .0033 | .0036 | .0044 | .0049 | .0054 | .0057 |
| | 2 | 1.0 x D1 | 360 | 410 | 460 | IPT | .0007 | .0010 | .0013 | .0014 | .0016 | .0019 | .0022 | .0026 | .0028 | .0030 | .0038 | .0044 | .0049 | .0052 |
| S | 3 | 1.0 x D1 | 360 | 390 | 430 | IPT | .0006 | .0008 | .0011 | .0012 | .0013 | .0015 | .0017 | .0021 | .0022 | .0024 | .0030 | .0035 | .0039 | .0041 |
| | 1 | 0.75 x D1 | 160 | 230 | 300 | IPT | .0007 | .0010 | .0013 | .0014 | .0016 | .0019 | .0022 | .0026 | .0028 | .0030 | .0038 | .0044 | .0049 | .0052 |
| | 2 | 0.75 x D1 | 160 | 210 | 260 | IPT | .0006 | .0008 | .0011 | .0012 | .0013 | .0015 | .0017 | .0021 | .0022 | .0024 | .0030 | .0035 | .0039 | .0041 |
| | 3 | 0.5 x D1 | 80 | 100 | 130 | IPT | .0004 | .0006 | .0007 | .0007 | .0008 | .0010 | .0011 | .0014 | .0015 | .0016 | .0020 | .0023 | .0027 | .0029 |
| H | 4 | 1.25 x D1 | 160 | 180 | 200 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0014 | .0016 | .0019 | .0020 | .0022 | .0028 | .0032 | .0036 | .0039 |
| | 1 | 1.0 x D1 | 260 | 360 | 460 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0019 | .0023 | .0025 | .0027 | .0033 | .0038 | .0042 | .0045 |
| | 2 | 1.0 x D1 | 230 | 310 | 390 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0013 | .0015 | .0017 | .0018 | .0020 | .0025 | .0028 | .0031 | .0032 |

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.

HARVI™ I TE • Ramping 15°–30° • Application Data • Inch



| Material Group | Max Depth | KCPM15-KCSM15 | | Recommended feed per tooth (fz = IPT) for Helical Interpolation and Ramping – z _{eff} = 2 | | | | | | | | | | | | | | | | | |
|----------------|-----------|------------------------|-------|--|---|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | | Cutting Speed – Vc SFM | | | Diameter – D1 [Ømin–Ømax] for helical interpolation | | | | | | | | | | | | | | | | |
| | | min | Start | max | frac. | 1/8 | 5/32 | 3/16 | 7/32 | 1/4 | 9/32 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | | |
| P | 0 | 1.25 x D1 | 490 | 530 | 580 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0020 | .0023 | .0025 | .0027 | .0033 | .0037 | .0041 | .0044 | |
| | 1 | 1.25 x D1 | 490 | 530 | 580 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0020 | .0023 | .0025 | .0027 | .0033 | .0037 | .0041 | .0044 | |
| | 2 | 1.25 x D1 | 460 | 500 | 540 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0020 | .0023 | .0025 | .0027 | .0033 | .0037 | .0041 | .0044 | |
| | 3 | 1.25 x D1 | 390 | 420 | 450 | IPT | .0005 | .0008 | .0010 | .0011 | .0012 | .0014 | .0017 | .0020 | .0021 | .0023 | .0029 | .0033 | .0037 | .0040 | |
| | 4 | 1.25 x D1 | 300 | 350 | 400 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0013 | .0014 | .0017 | .0018 | .0020 | .0025 | .0029 | .0032 | .0034 | |
| | 5 | 1.25 x D1 | 200 | 235 | 260 | IPT | .0005 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| M | 1 | 1.25 x D1 | 300 | 320 | 340 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0010 | .0011 | .0013 | .0014 | .0015 | .0019 | .0021 | .0023 | .0024 | |
| | 2 | 1.25 x D1 | 200 | 215 | 230 | IPT | .0005 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0030 | |
| | 3 | 1.0 x D1 | 200 | 105 | 210 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0010 | .0011 | .0013 | .0014 | .0015 | .0019 | .0021 | .0023 | .0024 | |
| K | 1 | 1.0 x D1 | 390 | 415 | 440 | IPT | .0007 | .0009 | .0012 | .0013 | .0014 | .0017 | .0020 | .0023 | .0025 | .0027 | .0033 | .0037 | .0041 | .0044 | |
| | 2 | 1.0 x D1 | 360 | 380 | 410 | IPT | .0005 | .0008 | .0010 | .0011 | .0012 | .0014 | .0017 | .0020 | .0021 | .0023 | .0029 | .0033 | .0037 | .0040 | |
| | 3 | 1.0 x D1 | 360 | 375 | 390 | IPT | .0005 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| S | 1 | 0.75 x D1 | 160 | 190 | 230 | IPT | .0005 | .0008 | .0010 | .0011 | .0012 | .0014 | .0017 | .0020 | .0021 | .0023 | .0029 | .0033 | .0037 | .0040 | |
| | 2 | 0.75 x D1 | 160 | 180 | 210 | IPT | .0005 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| | 3 | 0.5 x D1 | 80 | 90 | 100 | IPT | .0003 | .0005 | .0005 | .0005 | .0006 | .0008 | .0008 | .0011 | .0011 | .0012 | .0015 | .0017 | .002 | .0021 | |
| | 4 | 1.25 x D1 | 160 | 170 | 180 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0011 | .0012 | .0014 | .0015 | .0017 | .0021 | .0024 | .0027 | .0028 | |
| H | 1 | 1.0 x D1 | 260 | 310 | 360 | IPT | .0005 | .0007 | .0009 | .0010 | .0011 | .0013 | .0014 | .0017 | .0018 | .0020 | .0025 | .0029 | .0032 | .0034 | |
| | 2 | 1.0 x D1 | 230 | 270 | 310 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0010 | .0011 | .0013 | .0014 | .0015 | .0019 | .0021 | .0023 | .0024 | |

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.

HARVI I TE • Ramping 30°–45° • Application Data • Inch





| Material Group | Max Depth | KCPM15-KCSM15 | | Recommended feed per tooth (fz = IPT) for Helical Interpolation and Ramping – z _{eff} = 2 | | | | | | | | | | | | | | | | | |
|----------------|-----------|------------------------|-------|--|---|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | Cutting Speed – Vc SFM | | | Diameter – D1 [Ømin–Ømax] for helical interpolation | | | | | | | | | | | | | | | | |
| | | min | Start | max | frac. | 1/8 | 5/32 | 3/16 | 7/32 | 1/4 | 9/32 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | | |
| P | 0 | 1.25 x D1 | 420 | 450 | 495 | IPT | .0005 | .0007 | .0010 | .0015 | .0011 | .0014 | .0016 | .0019 | .0020 | .0022 | .0026 | .0029 | .0032 | .0034 | |
| | 1 | 1.25 x D1 | 420 | 450 | 495 | IPT | .0005 | .0007 | .0010 | .0015 | .0011 | .0014 | .0016 | .0019 | .0020 | .0022 | .0026 | .0029 | .0032 | .0034 | |
| | 2 | 1.25 x D1 | 420 | 450 | 495 | IPT | .0005 | .0007 | .0010 | .0015 | .0011 | .0014 | .0016 | .0019 | .0020 | .0022 | .0026 | .0029 | .0032 | .0034 | |
| | 3 | 1.25 x D1 | 315 | 345 | 360 | IPT | .0004 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| | 4 | 1.25 x D1 | 270 | 300 | 330 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0010 | .0011 | .0014 | .0015 | .0016 | .0020 | .0023 | .0025 | .0026 | |
| | 5 | 1.25 x D1 | 210 | 225 | 240 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0009 | .0010 | .0013 | .0013 | .0014 | .0018 | .0021 | .0023 | .0024 | |
| M | 1 | 1.25 x D1 | 165 | 180 | 195 | IPT | .0003 | .0004 | .0005 | .0006 | .0007 | .0008 | .0009 | .0010 | .0011 | .0012 | .0015 | .0017 | .0019 | .0020 | |
| | 2 | 1.25 x D1 | 225 | 255 | 270 | IPT | .0004 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| | 3 | 1.0 x D1 | 150 | 165 | 180 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0009 | .0010 | .0013 | .0013 | .0014 | .0018 | .0021 | .0023 | .0024 | |
| K | 1 | 1.0 x D1 | 330 | 360 | 390 | IPT | .0003 | .0004 | .0005 | .0006 | .0007 | .0008 | .0009 | .0010 | .0011 | .0012 | .0015 | .0017 | .0019 | .0020 | |
| | 2 | 1.0 x D1 | 300 | 330 | 360 | IPT | .0005 | .0007 | .0010 | .0010 | .0011 | .0014 | .0016 | .0019 | .0020 | .0022 | .0026 | .0029 | .0032 | .0034 | |
| | 3 | 1.0 x D1 | 300 | 330 | 360 | IPT | .0004 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0031 | |
| S | 1 | 1.0 x D1 | 270 | 300 | 330 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0009 | .0010 | .0013 | .0013 | .0014 | .0018 | .0021 | .0023 | .0024 | |
| | 1 | 0.75 x D1 | 240 | 255 | 270 | IPT | .0004 | .0006 | .0008 | .0009 | .0010 | .0011 | .0013 | .0016 | .0017 | .0018 | .0023 | .0026 | .0029 | .0030 | |
| | 2 | 0.75 x D1 | 165 | 180 | 195 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0009 | .0010 | .0013 | .0013 | .0014 | .0018 | .0021 | .0023 | .0024 | |
| | 3 | 0.5 x D1 | 60 | 75 | 84 | IPT | .0002 | .0004 | .0004 | .0004 | .0005 | .0006 | .0007 | .0008 | .0008 | .0090 | .0010 | .0012 | .0014 | .0016 | .0017 |
| H | 1 | 1.25 x D1 | 105 | 120 | 135 | IPT | .0003 | .0004 | .0005 | .0006 | .0007 | .0008 | .0010 | .0011 | .0012 | .0013 | .0017 | .0019 | .0022 | .0023 | |
| | 1 | 1.0 x D1 | 225 | 240 | 255 | IPT | .0004 | .0005 | .0007 | .0007 | .0008 | .0010 | .0011 | .0014 | .0015 | .0016 | .0020 | .0023 | .0025 | .0026 | |
| H | 2 | 1.0 x D1 | 195 | 210 | 225 | IPT | .0003 | .0004 | .0005 | .0006 | .0007 | .0008 | .0009 | .0010 | .0011 | .0012 | .0015 | .0017 | .0019 | .0020 | |

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



HARVI™ I TE • Plunging/Drilling • Application Data • Inch



| Material Group |   | | KCPM15-KCSM15 | | Recommended feed per revolution (fn = IPR) for plunging and drilling | | | | | | | | | | | | | | | | | | |
|----------------|---|------------|---------------|------------------------|--|-----|---------------|-----|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|--|
| | Max Depth | Applicable | Coolant | Cutting Speed – vc SFM | | | D1 – Diameter | | | | | | | | | | | | | | | | |
| | | | | min | Start | max | frac. | 1/8 | 5/32 | 3/16 | 7/32 | 1/4 | 9/32 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 1 | 1-1/4 | | |
| P | 0 | 1.5 x D | ● | Preferred | 420 | 450 | 495 | IPR | .0013 | .0016 | .0018 | .002 | .0022 | .0024 | .0026 | .0031 | .0034 | .0037 | .0047 | .0063 | .0071 | .0078 | |
| | 1 | 1.5 x D | ● | Required | 420 | 450 | 495 | IPR | .0013 | .0016 | .0018 | .002 | .0022 | .0024 | .0026 | .0031 | .0034 | .0037 | .0047 | .0063 | .0071 | .0078 | |
| | 2 | 1.5 x D | ● | Required | 420 | 450 | 495 | IPR | .0013 | .0016 | .0018 | .002 | .0022 | .0024 | .0026 | .0031 | .0034 | .0037 | .0047 | .0063 | .0071 | .0078 | |
| | 3 | 1 x D | ● | Required | 315 | 345 | 360 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .0039 | .0049 | .0059 | .0067 | |
| | 4 | 1 x D | ● | Required | 270 | 300 | 330 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .0039 | .0049 | .0059 | .0067 | |
| | 5 | 0.5 x D | ● | Required | 210 | 225 | 240 | IPR | .0006 | .0007 | .0008 | .0009 | .0010 | .0012 | .0014 | .0016 | .0018 | .0020 | .0026 | .0033 | .0039 | .0042 | |
| M | 1 | 0.75 x D | ● | Required | 225 | 255 | 270 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .00239 | .0049 | .0059 | .0067 | |
| | 2 | 0.5 x D | ● | Required | 150 | 165 | 180 | IPR | .0006 | .0007 | .0008 | .0009 | .0010 | .0012 | .0014 | .0016 | .0018 | .0020 | .0026 | .0033 | .0039 | .0042 | |
| K | 1 | 1.5 x D | ● | Preferred | 330 | 360 | 390 | IPR | .0013 | .0016 | .0018 | .002 | .0022 | .0024 | .0026 | .0031 | .0034 | .0037 | .0047 | .0063 | .0071 | .0078 | |
| | 2 | 1 x D | ● | Required | 300 | 330 | 360 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .0039 | .0049 | .0059 | .0067 | |
| S | 1 | 0.3 x D | ○ | Required | 240 | 255 | 270 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .0039 | .0049 | .0059 | .0067 | |
| | 2 | 0.1 x D | ○ | Required | 165 | 180 | 195 | IPR | .0006 | .0007 | .0008 | .0009 | .0010 | .0012 | .0014 | .0016 | .0018 | .0020 | .0026 | .0033 | .0039 | .0042 | |
| | 3 | 0.1 x D | ○ | Required | 60 | 75 | 84 | IPR | .0004 | .0005 | .0006 | .00065 | .0007 | .0008 | .0009 | .0011 | .0012 | .0013 | .0018 | .0024 | .0028 | .003 | |
| | 4 | 0.2 x D | ○ | Required | 105 | 120 | 135 | IPR | .0006 | .0007 | .0008 | .0009 | .0010 | .0012 | .0014 | .0016 | .0018 | .0020 | .0026 | .0033 | .0039 | .0042 | |
| H | 1 | 0.3 x D | ○ | Required | 225 | 240 | 255 | IPR | .0008 | .0011 | .0013 | .0014 | .0016 | .0018 | .0020 | .0024 | .0025 | .0028 | .0039 | .0049 | .0059 | .0067 | |
| | 2 | 0.2 x D | ○ | Required | 195 | 210 | 225 | IPR | .0006 | .0007 | .0008 | .0009 | .0010 | .0012 | .0014 | .0016 | .0018 | .0020 | .0026 | .0033 | .0039 | .0042 | |

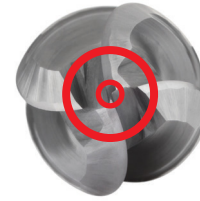
NOTE: Other available diameters are not recommended for plunging applications.

Application Recommendation for Surface Profiling with HARVI™ I TE

Not all four cutting edges reach the center of the HARVI I TE series ball nose end mill. Due to this, certain tilt angles will engage different numbers of cutting edges and can alter the required cutting parameters. This will also be altered by the depths of cut, which will change the contact area and resulting number of edges engaged.

When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible. This is due to the fact that at the tip of the tool only the center cutting edges exist (two in the case of HARVI I TE), and also the fact that the rotational velocity is zero in the center. Therefore, Kennametal recommends tilting the end mill to engage more cutting edges and avoid the zero-speed condition.

As the HARVI I series ball nose end mills do have two center cutting edges, it is possible to machine without tilting if the application requires this. Just factor in the reduced number of cutting edges into the cutting parameter calculations.



At the tip of the tool, only the center cutting edges exist.
The rotational velocity is zero in the center.



When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible

HARVI I TE Ball Nose



0°



24°



52°-55°

In the case of the HARVI I TE ball nose end mill, it is possible to take much larger depths of cut than other standard ball nose end mills.

Therefore, a large depth of cut can result in partial engagement of all four edges at small- or zero-tilt angles.

For tilt angles less than 24° and shallow profiling depths, only two cutting edges will be typically engaged.

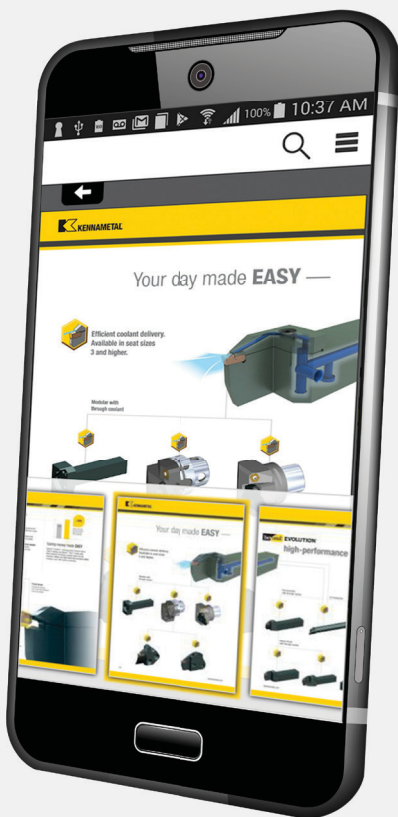
As the end mill is tilted above this, then all four edges will at least be partially engaged.

For maximum profiling performance, a tilt angle of 52° – 55° will result in full engagement of all edges with a wide range of cutting depths.

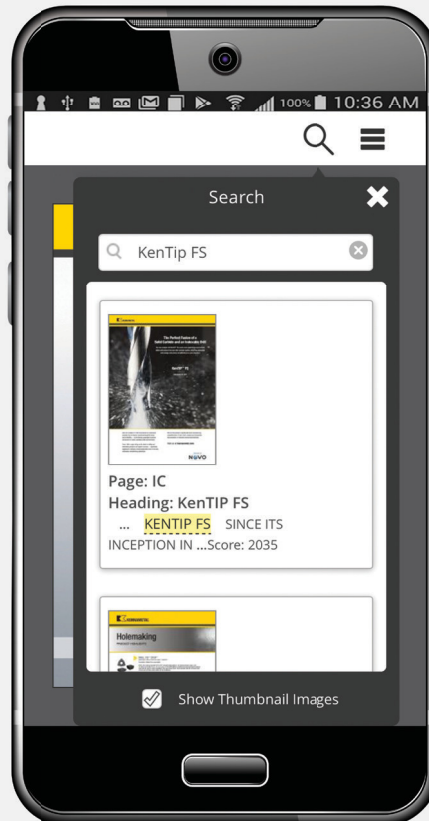
It is important then to decide if the cutting depth is small (profiling) and important to analyze the effect of tilt, or whether the cutting depth is large (roughing / slotting) and then the effect of tilt is minimized.

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HARVI™ Series

High-Performance
Roughing and Finishing



Materials



Applications



Ramping



Slotting: Square End



Trochoidal Milling



Shoulder Milling



Profiling

Roughing and finishing in multiple materials.

Unequally spaced flutes to minimize vibrations and provide high tool life and superior surface quality. Safe-Lock™ shanks with pullout protection deliver increased process safety. Proprietary tapered-core design improves tool stability in roughing and finishing applications.

HARVI II

Five-flute end mill for high-feed roughing and finishing with one tool in multiple materials.

HARVI II Long

Five-flute end mill for semi-finishing and finishing of thin walls and deep pockets in titanium, steels, and stainless steels with excellent surface finishes.

HARVI™ II



HARVI II: Non-center cutting.

HARVI II Long: High feed rate capability for corner machining operations delivers additional productivity.

HARVI III



HARVI III & HARVI III Ball Nose: Tailored design for low cutting forces providing highest productivity, smooth cutting action and best surface finishes.

Center cutting design enables radial and axial finishing pass after roughing operation.

HARVI III Aero: Specific radial and axial rake angles for aerospace high-velocity structural parts machining techniques.

Primarily developed for titanium component machining with highest metal removal rates.

HARVI III Taper Ball Nose: Six flutes in ball nose and taper section for highest metal removal rates. Taper angles of 4° and 6° for a broad range of applications.

HARVI III

Six-flute end mill for high-feed roughing and finishing with maximum metal removal rates in titanium and stainless steel with excellent surfaces.

HARVI III Ball Nose

Six-flute end mill for 3D profiling with highest productivity in titanium and stainless steel.

HARVI III Aero

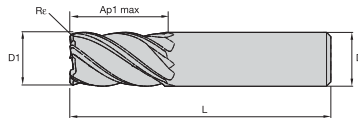
Six flute end mill with aerospace specific length-of-cut, diameters, and radii tailored for high-velocity 3D profiling, semi-finishing and finishing.

HARVI III Taper Ball Nose

Six-flute end mill for 5-axis machining of steel, stainless steel, nickel-based alloys, and titanium to significantly increase output and decrease machining time.

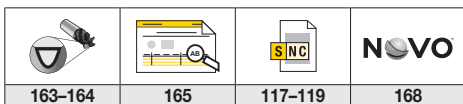
HARVI™ II • Radiused • 5 Flutes • Plain Shank • Inch

- first choice
- alternate choice



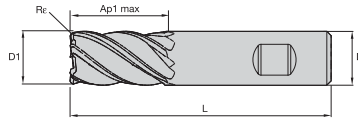
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| S | ● | ● |
| H | ○ | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KC643M | KCPM15 |
|--------------|----------------|------|------|---------|-------|------|--------|--------|
| 3580837 | UCDE188J5BRA | 3/16 | 3/16 | 5/8 | 2 1/4 | .015 | ● | ● |
| 4048709 | UCDE188J5BRA | 3/16 | 3/16 | 5/8 | 2 1/4 | .015 | - | ● |
| 3580838 | UCDE188J5BRB | 3/16 | 3/16 | 5/8 | 2 1/4 | .030 | ● | - |
| 4048710 | UCDE188J5BRB | 3/16 | 3/16 | 5/8 | 2 1/4 | .030 | - | ● |
| 3580840 | UCDE250J5BRA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● | - |
| 4048712 | UCDE250J5BRA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | - | ● |
| 3580841 | UCDE250J5BRB | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● | - |
| 4048713 | UCDE250J5BRB | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | - | ● |
| 3580863 | UCDE312J5BRA | 5/16 | 5/16 | 3/4 | 2 1/2 | .015 | ● | - |
| 4048715 | UCDE312J5BRA | 5/16 | 5/16 | 3/4 | 2 1/2 | .015 | - | ● |
| 3580864 | UCDE312J5BRB | 5/16 | 5/16 | 3/4 | 2 1/2 | .030 | ● | - |
| 4048716 | UCDE312J5BRB | 5/16 | 5/16 | 3/4 | 2 1/2 | .030 | - | ● |
| 3580866 | UCDE375J5BRA | 3/8 | 3/8 | 7/8 | 2 1/2 | .015 | ● | - |
| 4048718 | UCDE375J5BRA | 3/8 | 3/8 | 7/8 | 2 1/2 | .015 | - | ● |
| 3580867 | UCDE375J5BRB | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | ● | - |
| 4048719 | UCDE375J5BRB | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | - | ● |
| 3899137 | UCDE375J5CRA | 3/8 | 3/8 | 1 | 3 | .015 | ● | - |
| 3899138 | UCDE375J5CRB | 3/8 | 3/8 | 1 | 3 | .030 | ● | - |
| 3580869 | UCDE500J5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● | - |
| 4048721 | UCDE500J5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | - | ● |
| 3580870 | UCDE500J5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● | - |
| 4048722 | UCDE500J5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | - | ● |
| 3899140 | UCDE500J5BRD | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● | - |
| 3580871 | UCDE500J5BRF | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● | - |
| 4048723 | UCDE500J5BRF | 1/2 | 1/2 | 1 1/4 | 3 | .120 | - | ● |
| 3899142 | UCDE562J5BRA | 9/16 | 5/8 | 1 1/4 | 3 1/2 | .015 | ● | - |
| 3899193 | UCDE562J5BRB | 9/16 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● | - |
| 3899194 | UCDE625J5BRA | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .015 | ● | - |
| 3580873 | UCDE625J5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● | - |
| 4048729 | UCDE625J5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | - | ● |
| 3899195 | UCDE625J5BRD | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .060 | ● | - |
| 3899196 | UCDE750J5BRA | 3/4 | 3/4 | 1 1/2 | 4 | .015 | ● | - |
| 3580875 | UCDE750J5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● | - |
| 4048733 | UCDE750J5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | - | ● |
| 3580876 | UCDE750J5BRD | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● | - |
| 4048734 | UCDE750J5BRD | 3/4 | 3/4 | 1 1/2 | 4 | .060 | - | ● |
| 3580878 | UCDE750J5BRF | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● | - |
| 4048736 | UCDE750J5BRF | 3/4 | 3/4 | 1 1/2 | 4 | .120 | - | ● |
| 3899198 | UCDE750J5CRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● | - |
| 3899199 | UCDE750J5CRD | 3/4 | 3/4 | 1 5/8 | 4 | .060 | ● | - |
| 3899201 | UCDE750J5CRF | 3/4 | 3/4 | 1 5/8 | 4 | .120 | ● | - |
| 3899202 | UCDE1000J5BRA | 1 | 1 | 1 3/4 | 4 1/2 | .015 | ● | - |
| 3580880 | UCDE1000J5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | ● | - |
| 4048661 | UCDE1000J5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | - | ● |
| 4048662 | UCDE1000J5BRD | 1 | 1 | 1 3/4 | 4 1/2 | .060 | - | ● |
| 3580883 | UCDE1000J5BRF | 1 | 1 | 1 3/4 | 4 1/2 | .120 | ● | - |



HARVI™ II • Radiused • 5 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



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|---|---|---|
| P | ● | ● |
| M | ● | ● |
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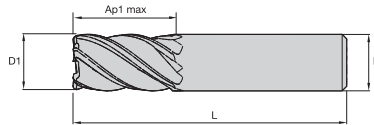
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|--------------|----------------|-----|-----|---------|-------|------|--------|--------|
| 3580770 | UCDE500K5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● | - |
| 4048725 | UCDE500K5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | - | ● |
| 3580771 | UCDE500K5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● | - |
| 4048726 | UCDE500K5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | - | ● |
| 3580772 | UCDE500K5BRF | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● | - |
| 4048727 | UCDE500K5BRF | 1/2 | 1/2 | 1 1/4 | 3 | .120 | - | ● |
| 3580784 | UCDE625K5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● | - |
| 4048731 | UCDE625K5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | - | ● |
| 3580786 | UCDE750K5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● | - |
| 4048738 | UCDE750K5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | - | ● |
| 3580787 | UCDE750K5BRF | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● | - |
| 3580789 | UCDE1000K5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | ● | - |
| 4048706 | UCDE1000K5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | - | ● |

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| 163-164 | 165 | 117-119 | 168 |



HARVI™ II • Square End • 5 Flutes • Plain Shank • Inch

- first choice
- alternate choice

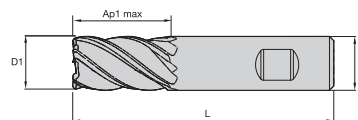


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| H | ○ | ○ | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KC643M | KCPM15 |
|--------------|----------------|-------|------|---------|-------|--------|--------|
| 3580836 | UCDE188J5BS | 3/16 | 3/16 | 5/8 | 2 1/4 | ● | - |
| 4048711 | UCDE188J5BS | 3/16 | 3/16 | 5/8 | 2 1/4 | - | ● |
| 3899134 | UCDE219J5BS | 7/32 | 1/4 | 5/8 | 2 1/2 | ● | - |
| 3580839 | UCDE250J5BS | 1/4 | 1/4 | 3/4 | 2 1/2 | ● | - |
| 4048714 | UCDE250J5BS | 1/4 | 1/4 | 3/4 | 2 1/2 | - | ● |
| 3899135 | UCDE281J5BS | 9/32 | 5/16 | 3/4 | 2 1/2 | ● | - |
| 3580842 | UCDE312J5BS | 5/16 | 5/16 | 3/4 | 2 1/2 | ● | - |
| 4048717 | UCDE312J5BS | 5/16 | 5/16 | 3/4 | 2 1/2 | - | ● |
| 3899136 | UCDE344J5BS | 11/32 | 3/8 | 1 | 2 1/2 | ● | - |
| 3580865 | UCDE375J5BS | 3/8 | 3/8 | 7/8 | 2 1/2 | ● | - |
| 4048720 | UCDE375J5BS | 3/8 | 3/8 | 7/8 | 2 1/2 | - | ● |
| 3899139 | UCDE438J5BS | 7/16 | 7/16 | 1 | 2 1/2 | ● | - |
| 3580868 | UCDE500J5BS | 1/2 | 1/2 | 1 1/4 | 3 | ● | - |
| 4048724 | UCDE500J5BS | 1/2 | 1/2 | 1 1/4 | 3 | - | ● |
| 3899141 | UCDE562J5BS | 9/16 | 5/8 | 1 1/4 | 3 1/2 | ● | - |
| 3580872 | UCDE625J5BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● | - |
| 4048730 | UCDE625J5BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | - | ● |
| 3580874 | UCDE750J5BS | 3/4 | 3/4 | 1 1/2 | 4 | ● | - |
| 4048737 | UCDE750J5BS | 3/4 | 3/4 | 1 1/2 | 4 | - | ● |
| 3899197 | UCDE750J5CS | 3/4 | 3/4 | 1 5/8 | 4 | ● | - |
| 4048705 | UCDE1000J5BS | 1 | 1 | 1 3/4 | 4 1/2 | - | ● |

HARVI II • Square End • 5 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



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|---|---|---|---|
| P | ● | ● | ● |
| M | ● | ● | ● |
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| N | ● | ● | ● |
| S | ● | ● | ● |
| H | ○ | ○ | ○ |

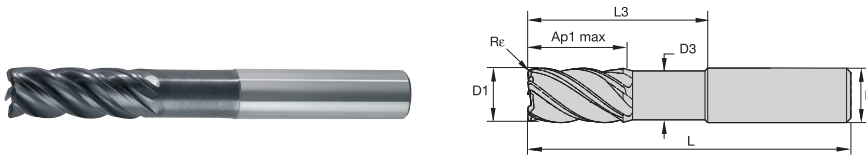
| order number | catalog number | D1 | D | Ap1 max | L | KC643M | KCPM15 |
|--------------|----------------|-----|-----|---------|-------|--------|--------|
| 3580769 | UCDE500K5BS | 1/2 | 1/2 | 1 1/4 | 3 | ● | - |
| 4048728 | UCDE500K5BS | 1/2 | 1/2 | 1 1/4 | 3 | - | ● |
| 3580783 | UCDE625K5BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● | - |
| 4048732 | UCDE625K5BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | - | ● |
| 3580785 | UCDE750K5BS | 3/4 | 3/4 | 1 1/2 | 4 | ● | - |
| 4048740 | UCDE750K5BS | 3/4 | 3/4 | 1 1/2 | 4 | - | ● |
| 3580788 | UCDE1000K5BS | 1 | 1 | 1 3/4 | 4 1/2 | ● | - |
| 4048708 | UCDE1000K5BS | 1 | 1 | 1 3/4 | 4 1/2 | - | ● |

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| 163-164 | 165 | 117-119 | 168 |



HARVI™ II • Radiused • 5 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice

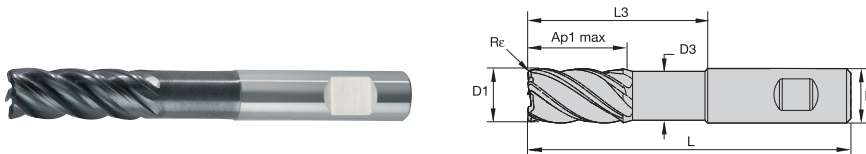


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| K | ● | ● | ● |
| N | ● | ● | ● |
| S | ● | ● | ● |
| H | ○ | ○ | ○ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | KC643M | KCPM15 |
|--------------|----------------|-----|-----|-------|---------|-------|---|------|--------|--------|
| 3580522 | UCDE250J5ARA | 1/4 | 1/4 | .2350 | 1/2 | 1 1/4 | 4 | .015 | ● | - |
| 4048742 | UCDE250J5ARA | 1/4 | 1/4 | .2350 | 1/2 | 1 1/4 | 4 | .015 | - | ● |
| 3580763 | UCDE375J5ARA | 3/8 | 3/8 | .3525 | 7/8 | 1 7/8 | 4 | .015 | ● | ● |
| 4048743 | UCDE375J5ARA | 3/8 | 3/8 | .3525 | 7/8 | 1 7/8 | 4 | .015 | - | ● |

HARVI II • Radiused • 5 Flutes • Necked • Weldon® Shank • Inch

- first choice
- alternate choice



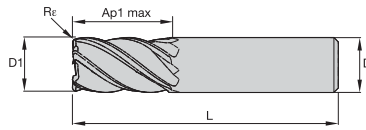
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|---|---|---|---|
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| M | ● | ● | ● |
| K | ● | ● | ● |
| N | ● | ● | ● |
| S | ● | ● | ● |
| H | ○ | ○ | ○ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | KC643M | KCPM15 |
|--------------|----------------|-----|-----|-------|---------|-------|-------|------|--------|--------|
| 3580764 | UCDE500K5ARB | 1/2 | 1/2 | .4720 | 1 1/4 | 2 1/4 | 4 | .030 | ● | - |
| 4048744 | UCDE500K5ARB | 1/2 | 1/2 | .4720 | 1 1/4 | 2 1/4 | 4 | .030 | - | ● |
| 3580765 | UCDE625K5ARB | 5/8 | 5/8 | .5900 | 1 1/4 | 2 1/4 | 4 | .030 | ● | - |
| 4048745 | UCDE625K5ARB | 5/8 | 5/8 | .5900 | 1 1/4 | 2 1/4 | 4 | .030 | - | ● |
| 3580766 | UCDE750K5ARB | 3/4 | 3/4 | .7040 | 1 1/2 | 3 1/4 | 5 1/2 | .030 | ● | - |
| 4048746 | UCDE750K5ARB | 3/4 | 3/4 | .7040 | 1 1/2 | 3 1/4 | 5 1/2 | .030 | - | ● |
| 3580767 | UCDE1000K5ARB | 1 | 1 | .9400 | 1 3/4 | 3 1/4 | 5 1/2 | .030 | ● | - |
| 4048741 | UCDE1000K5ARB | 1 | 1 | .9400 | 1 3/4 | 3 1/4 | 5 1/2 | .030 | - | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ II • Radiused • 5 Flutes • Plain Shank • Inch

- first choice
- alternate choice

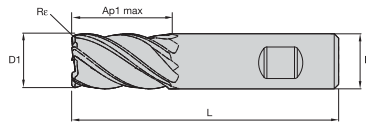


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| S | ● |
| H | ○ |
| | |

| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------|-----|-----|---------|-------|------|---|
| 3580792 | UDDE500J5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 3580803 | UDDE500J5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3580804 | UDDE500J5BRF | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 3580806 | UDDE625J5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 3580808 | UDDE750J5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 3580809 | UDDE750J5BRF | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 3580811 | UDDE1000J5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | ● |

HARVI II • Radiused • 5 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



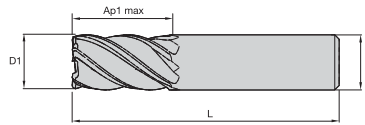
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| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |
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| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------|-----|-----|---------|-------|------|---|
| 3580814 | UDDE500K5BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 3580815 | UDDE500K5BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3580818 | UDDE625K5BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 3580820 | UDDE750K5BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 3580833 | UDDE1000K5BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | ● |
| 3580834 | UDDE1000K5BRF | 1 | 1 | 1 3/4 | 4 1/2 | .120 | ● |

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| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ II • Square End • 5 Flutes • Plain Shank • Inch

- first choice
- alternate choice



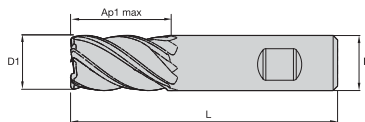
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| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

KC643M

| order number | catalog number | D1 | D | Ap1 max | L | |
|--------------|----------------|-----|-----|---------|-------|---|
| 3580791 | UDDE500J5BS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 3580807 | UDDE750J5BS | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 3580810 | UDDE1000J5BS | 1 | 1 | 1 3/4 | 4 1/2 | ● |

HARVI II • Square End • 5 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



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| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

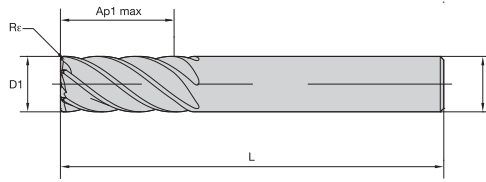
KC643M

| order number | catalog number | D1 | D | Ap1 max | L | |
|--------------|----------------|-----|-----|---------|---|---|
| 3580813 | UDDE500K5BS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 3580819 | UDDE750K5BS | 3/4 | 3/4 | 1 1/2 | 4 | ● |

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|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

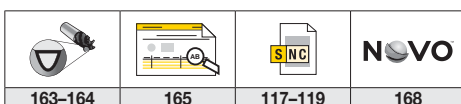
HARVI™ III • Radiused • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice



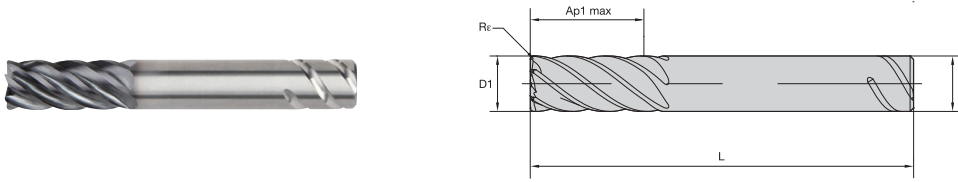
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| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------|--------|
| 5351811 | UJDE375J6CRA | 3/8 | 3/8 | 1 | 3 | .015 | ● |
| 5351812 | UJDE375J6CRB | 3/8 | 3/8 | 1 | 3 | .030 | ● |
| 5351814 | UJDE375J6CRC | 3/8 | 3/8 | 1 | 3 | .060 | ● |
| 5085676 | UJDE0500J6ARB | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 5106643 | UJDE0500J6ARC | 1/2 | 1/2 | 1 | 3 | .060 | ● |
| 5351817 | UJDE500J6BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 5351818 | UJDE500J6BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 5351819 | UJDE500J6BRC | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● |
| 5351820 | UJDE500J6BRE | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 5120433 | UJDE0500J6CRB | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 5185658 | UJDE0500J6CRE | 1/2 | 1/2 | 2 | 4 | .120 | ● |
| 5101798 | UJDE0625J6ARA | 5/8 | 5/8 | 1 | 3 1/2 | .015 | ● |
| 5351829 | UJDE625J6BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 5351830 | UJDE625J6BRC | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .060 | ● |
| 5030114 | UJDE0625J6CRB | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .030 | ● |
| 5415950 | UJDE0625J6CRC | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .060 | ● |
| 5415951 | UJDE0625J6CRD | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .090 | ● |
| 5374997 | UJDE0625J6CRE | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .120 | ● |
| 5415954 | UJDE0750J6ARB | 3/4 | 3/4 | 1 | 3 | .030 | ● |
| 5351838 | UJDE750J6BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 5351839 | UJDE750J6BRC | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 5351890 | UJDE750J6BRD | 3/4 | 3/4 | 1 1/2 | 4 | .090 | ● |
| 5351891 | UJDE750J6BRE | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 5367199 | UJDE0750J6BRH | 3/4 | 3/4 | 1 1/2 | 4 | .190 | ● |
| 5351899 | UJDE750J6CRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 5351900 | UJDE750J6CRC | 3/4 | 3/4 | 1 5/8 | 4 | .060 | ● |
| 5351901 | UJDE750J6CRD | 3/4 | 3/4 | 1 5/8 | 4 | .090 | ● |
| 5351902 | UJDE750J6CRE | 3/4 | 3/4 | 1 5/8 | 4 | .120 | ● |
| 5120466 | UJDE1000J6ARB | 1 | 1 | 1 1/2 | 4 | .030 | ● |
| 5415956 | UJDE1000J6ARC | 1 | 1 | 1 1/2 | 4 | .060 | ● |
| 5351930 | UJDE1000J6BRC | 1 | 1 | 1 3/4 | 4 1/2 | .060 | ● |
| 5351931 | UJDE1000J6BRE | 1 | 1 | 1 3/4 | 4 1/2 | .120 | ● |
| 5351932 | UJDE1000J6BRF | 1 | 1 | 1 3/4 | 4 1/2 | .250 | ● |
| 5415970 | UJDE1000J6CRB | 1 | 1 | 2 | 4 1/2 | .030 | ● |
| 5390731 | UJDE1000J6CRC | 1 | 1 | 2 | 4 1/2 | .060 | ● |
| 5394869 | UJDE1000J6CRD | 1 | 1 | 2 | 4 1/2 | .090 | ● |
| 5415971 | UJDE1000J6CRE | 1 | 1 | 2 | 4 1/2 | .120 | ● |
| 5390732 | UJDE1000J6CRH | 1 | 1 | 2 | 4 1/2 | .190 | ● |
| 5415936 | UJDE1000J6CRF | 1 | 1 | 2 | 4 1/2 | .250 | ● |
| 5120480 | UJDE1000J6DRB | 1 | 1 | 2 | 5 | .030 | ● |
| 5351940 | UJDE1250J6BRB | 1 1/4 | 1 1/4 | 2 1/4 | 5 | .030 | ● |



HARVI™ III • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

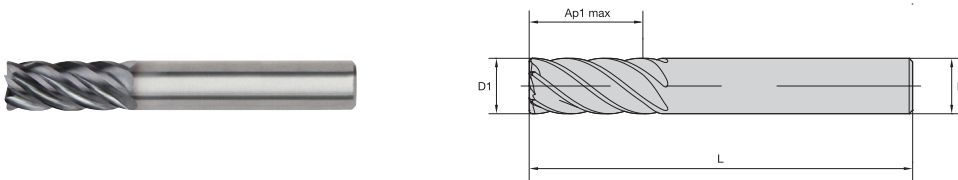


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| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------|--------|
| 5351823 | UJDE500N6BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 5351824 | UJDE500N6BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 5351825 | UJDE500N6BRC | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● |
| 5351826 | UJDE500N6BRE | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 5351832 | UJDE625N6BRB | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 5351833 | UJDE625N6BRC | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .060 | ● |
| 5351893 | UJDE750N6BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 5351894 | UJDE750N6BRC | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 5351896 | UJDE750N6BRE | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 5351904 | UJDE750N6CRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 5351905 | UJDE750N6CRC | 3/4 | 3/4 | 1 5/8 | 4 | .060 | ● |
| 5351906 | UJDE750N6CRD | 3/4 | 3/4 | 1 5/8 | 4 | .090 | ● |
| 5351907 | UJDE750N6CRE | 3/4 | 3/4 | 1 5/8 | 4 | .120 | ● |
| 5351934 | UJDE1000N6BRB | 1 | 1 | 1 3/4 | 4 1/2 | .030 | ● |
| 5351935 | UJDE1000N6BRC | 1 | 1 | 1 3/4 | 4 1/2 | .060 | ● |
| 5351936 | UJDE1000N6BRE | 1 | 1 | 1 3/4 | 4 1/2 | .120 | ● |
| 5351937 | UJDE1000N6BRF | 1 | 1 | 1 3/4 | 4 1/2 | .250 | ● |
| 5351942 | UJDE1250N6BRB | 1 1/4 | 1 1/4 | 2 1/4 | 5 | .030 | ● |
| 5351943 | UJDE1250N6BRE | 1 1/4 | 1 1/4 | 2 1/4 | 5 | .120 | ● |

HARVI III • Square End • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice



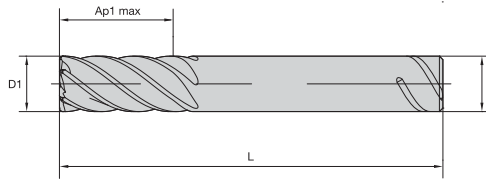
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| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KCSM15 |
|--------------|----------------|-----|-----|---------|-------|--------|
| 5351815 | UJDE375J6CS | 3/8 | 3/8 | 1 | 3 | ● |
| 5351821 | UJDE500J6BS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 5351831 | UJDE625J6BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 5351892 | UJDE750J6BS | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 5351903 | UJDE750J6CS | 3/4 | 3/4 | 1 5/8 | 4 | ● |
| 5415959 | UJDE1000J6AS | 1 | 1 | 1 1/2 | 4 | ● |
| 5351933 | UJDE1000J6BS | 1 | 1 | 1 3/4 | 4 1/2 | ● |
| 5415973 | UJDE1000J6CS | 1 | 1 | 2 | 4 1/2 | ● |
| 5390730 | UJDE1000J6DS | 1 | 1 | 2 1/4 | 5 | ● |

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| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ III • Square End • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice



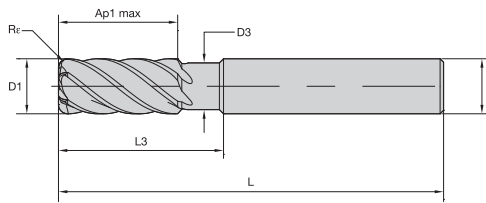
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| M | <input checked="" type="radio"/> |
| K | <input type="radio"/> |
| N | <input type="radio"/> |
| S | <input checked="" type="radio"/> |
| H | <input type="radio"/> |
| | <input type="radio"/> |

KCSM15

| order number | catalog number | D1 | D | Ap1 max | L | |
|--------------|----------------|-------|-------|---------|-------|---|
| 5351827 | UJDE500N6BS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 5351834 | UJDE625N6BS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 5351897 | UJDE750N6BS | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 5351908 | UJDE750N6CS | 3/4 | 3/4 | 1 5/8 | 4 | ● |
| 5351944 | UJDE1250N6BS | 1 1/4 | 1 1/4 | 2 1/4 | 5 | ● |

HARVI III • Radiused • 6 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice



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| K | <input type="radio"/> |
| N | <input type="radio"/> |
| S | <input checked="" type="radio"/> |
| H | <input type="radio"/> |
| | <input type="radio"/> |

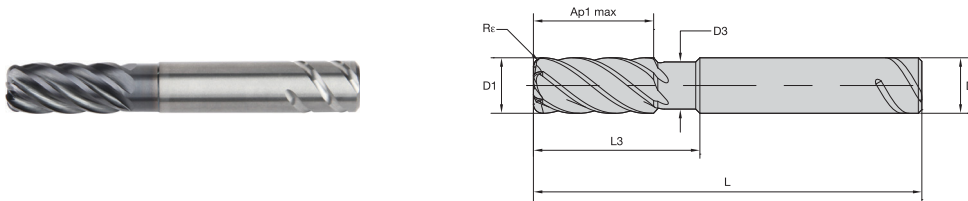
KCSM15

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re |
|--------------|----------------|-----|-----|-------|---------|-------|---|------|
| 5317764 | UJDE0375J6BQE | 3/8 | 3/8 | .3525 | 7/8 | 1 1/4 | 3 | .120 |
| 5351816 | UJDE375J6BQA | 3/8 | 3/8 | .3530 | 7/8 | 1 7/8 | 4 | .015 |
| 5415819 | UJDE0500J6DQB | 1/2 | 1/2 | .4700 | 3/4 | 2 1/4 | 6 | .030 |
| 5415953 | UJDE0625J6DQB | 5/8 | 5/8 | .5875 | 1 1/4 | 2 1/4 | 6 | .030 |

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|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ III • Radiused • 6 Flutes • Necked • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

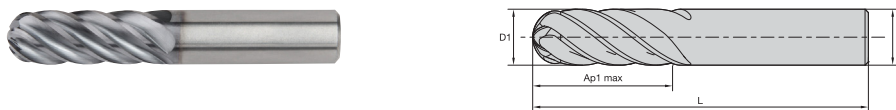


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| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | KCSM15 |
|--------------|----------------|-----|-----|-------|---------|-------|-------|------|--------|
| 5351828 | UJDE500N6BQB | 1/2 | 1/2 | .4700 | 1 1/4 | 2 1/4 | 4 | .030 | ● |
| 5351835 | UJDE625N6BQB | 5/8 | 5/8 | .5880 | 1 1/4 | 2 1/4 | 4 | .030 | ● |
| 5351898 | UJDE750N6BQB | 3/4 | 3/4 | .7050 | 1 1/2 | 3 1/4 | 5 1/2 | .030 | ● |
| 5351939 | UJDE1000N6BQB | 1 | 1 | .9400 | 1 3/4 | 3 1/4 | 5 1/2 | .030 | ● |

HARVI III • Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice

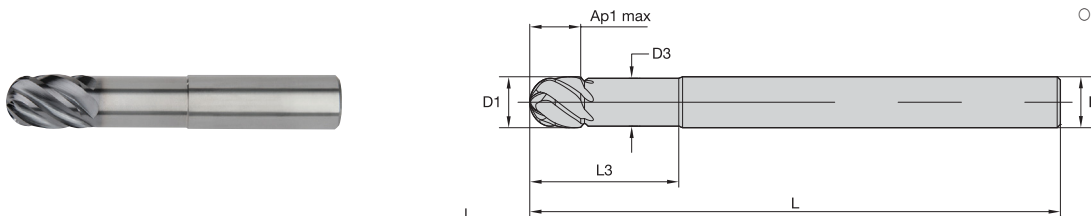


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| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KCSM15 |
|--------------|----------------|-----|-----|---------|-------|--------|
| 5607204 | UJBE0375J6B | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 5607205 | UJBE0500J6B | 1/2 | 1/2 | 1 | 3 | ● |
| 5607206 | UJBE0500J6C | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 5607207 | UJBE0625J6B | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 5607208 | UJBE0750J6B | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 5607209 | UJBE1000J6B | 1 | 1 | 1 1/2 | 4 | ● |

HARVI III • Ball Nose • 6 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice

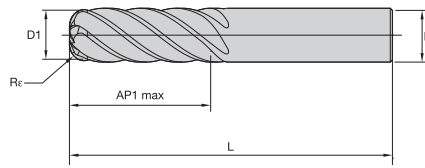


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| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | KCSM15 |
|--------------|----------------|-----|-----|------|---------|-------|---|--------|
| 5607300 | UJBE0375J6AL | 3/8 | 3/8 | .353 | 1/2 | 2.000 | 6 | ● |
| 5607301 | UJBE0500J6AL | 1/2 | 1/2 | .470 | 5/8 | 2.250 | 6 | ● |
| 5607302 | UJBE0625J6AL | 5/8 | 5/8 | .588 | 3/4 | 2.250 | 6 | ● |
| 5607304 | UJBE0750J6AL | 3/4 | 3/4 | .705 | 1 | 2.250 | 6 | ● |
| 5607305 | UJBE1000J6AL | 1 | 1 | .940 | 1 1/4 | 3.250 | 6 | ● |

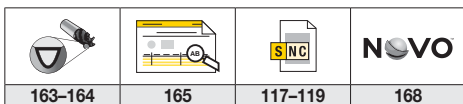
HARVI™ III Aero • Radiused • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice



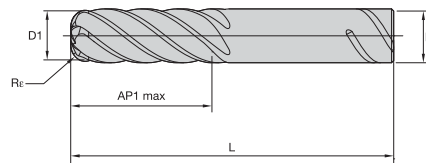
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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|----------------|-----|-----|---------|-------|------|--------|
| 6113069 | UJDE0500J6ABB | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 6113081 | UJDE0500J6ABC | 1/2 | 1/2 | 1 | 3 | .060 | ● |
| 6113082 | UJDE0500J6ABD | 1/2 | 1/2 | 1 | 3 | .090 | ● |
| 6113083 | UJDE0500J6ABE | 1/2 | 1/2 | 1 | 3 | .120 | ● |
| 6113084 | UJDE0500J6ABH | 1/2 | 1/2 | 1 | 3 | .190 | ● |
| 6113086 | UJDE0500J6ZBB | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 | ● |
| 6113088 | UJDE0500J6ZBC | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .060 | ● |
| 6113090 | UJDE0500J6ZBD | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .090 | ● |
| 6113102 | UJDE0500J6ZBE | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .120 | ● |
| 6113104 | UJDE0500J6ZBH | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .190 | ● |
| 6113106 | UJDE0500J6CBB | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 6113108 | UJDE0500J6CBC | 1/2 | 1/2 | 2 | 4 | .060 | ● |
| 6113109 | UJDE0500J6CBD | 1/2 | 1/2 | 2 | 4 | .090 | ● |
| 6113110 | UJDE0500J6CBE | 1/2 | 1/2 | 2 | 4 | .120 | ● |
| 6113134 | UJDE0500J6CBH | 1/2 | 1/2 | 2 | 4 | .190 | ● |
| 6113136 | UJDE0500J6DBB | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .030 | ● |
| 6113137 | UJDE0500J6DBC | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .060 | ● |
| 6113138 | UJDE0500J6DBD | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .090 | ● |
| 6113139 | UJDE0500J6DBE | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .120 | ● |
| 6113140 | UJDE0500J6DBH | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .190 | ● |
| 6113155 | UJDE0750J6ABB | 3/4 | 3/4 | 1 | 3 1/2 | .030 | ● |
| 6113156 | UJDE0750J6ABC | 3/4 | 3/4 | 1 | 3 1/2 | .060 | ● |
| 6113158 | UJDE0750J6ABE | 3/4 | 3/4 | 1 | 3 1/2 | .120 | ● |
| 6113201 | UJDE0750J6ABF | 3/4 | 3/4 | 1 | 3 1/2 | .250 | ● |
| 6113159 | UJDE0750J6ABH | 3/4 | 3/4 | 1 | 3 1/2 | .190 | ● |
| 6113205 | UJDE0750J6ZBB | 3/4 | 3/4 | 2 | 4 1/2 | .030 | ● |
| 6113206 | UJDE0750J6ZBC | 3/4 | 3/4 | 2 | 4 1/2 | .060 | ● |
| 6113207 | UJDE0750J6ZBD | 3/4 | 3/4 | 2 | 4 1/2 | .090 | ● |
| 6113208 | UJDE0750J6ZBE | 3/4 | 3/4 | 2 | 4 1/2 | .120 | ● |
| 6113210 | UJDE0750J6ZBF | 3/4 | 3/4 | 2 | 4 1/2 | .250 | ● |
| 6113209 | UJDE0750J6ZBH | 3/4 | 3/4 | 2 | 4 1/2 | .190 | ● |
| 6113262 | UJDE0750J6DBB | 3/4 | 3/4 | 3 | 5 1/2 | .030 | ● |
| 6113263 | UJDE0750J6DBC | 3/4 | 3/4 | 3 | 5 1/2 | .060 | ● |
| 6113265 | UJDE0750J6DBE | 3/4 | 3/4 | 3 | 5 1/2 | .120 | ● |
| 6113267 | UJDE0750J6DBF | 3/4 | 3/4 | 3 | 5 1/2 | .250 | ● |
| 6113266 | UJDE0750J6DBH | 3/4 | 3/4 | 3 | 5 1/2 | .190 | ● |
| 6113322 | UJDE0750J6EBB | 3/4 | 3/4 | 4 | 6 1/2 | .030 | ● |
| 6113323 | UJDE0750J6EBC | 3/4 | 3/4 | 4 | 6 1/2 | .060 | ● |
| 6113324 | UJDE0750J6EBD | 3/4 | 3/4 | 4 | 6 1/2 | .090 | ● |
| 6113325 | UJDE0750J6EBE | 3/4 | 3/4 | 4 | 6 1/2 | .120 | ● |
| 6113327 | UJDE0750J6EBF | 3/4 | 3/4 | 4 | 6 1/2 | .250 | ● |
| 6113326 | UJDE0750J6EBH | 3/4 | 3/4 | 4 | 6 1/2 | .190 | ● |



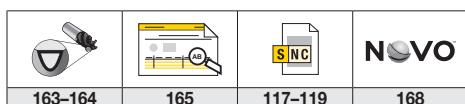
HARVI™ III Aero • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice



| | |
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| P | ● |
| M | ● |
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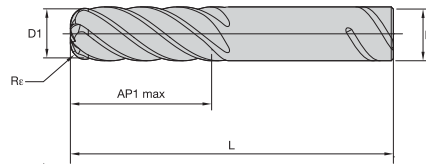
| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------|--------|
| 6113329 | UJDE1000N6XBB | 1 | 1 | 1 | 4 | .030 | ● |
| 6113330 | UJDE1000N6XBC | 1 | 1 | 1 | 4 | .060 | ● |
| 6113351 | UJDE1000N6XBD | 1 | 1 | 1 | 4 | .090 | ● |
| 6113352 | UJDE1000N6XBE | 1 | 1 | 1 | 4 | .120 | ● |
| 6113354 | UJDE1000N6XBF | 1 | 1 | 1 | 4 | .250 | ● |
| 6113355 | UJDE1000N6XBK | 1 | 1 | 1 | 4 | .375 | ● |
| 6113358 | UJDE1000N6ABC | 1 | 1 | 1 1/2 | 4 1/2 | .060 | ● |
| 6113359 | UJDE1000N6ABD | 1 | 1 | 1 1/2 | 4 1/2 | .090 | ● |
| 6113360 | UJDE1000N6ABE | 1 | 1 | 1 1/2 | 4 1/2 | .120 | ● |
| 6113405 | UJDE1000N6CBB | 1 | 1 | 2 | 5 | .030 | ● |
| 6113406 | UJDE1000N6CBC | 1 | 1 | 2 | 5 | .060 | ● |
| 6113407 | UJDE1000N6CBD | 1 | 1 | 2 | 5 | .090 | ● |
| 6113408 | UJDE1000N6CBE | 1 | 1 | 2 | 5 | .120 | ● |
| 6113410 | UJDE1000N6CBF | 1 | 1 | 2 | 5 | .250 | ● |
| 6113409 | UJDE1000N6CBH | 1 | 1 | 2 | 5 | .190 | ● |
| 6113511 | UJDE1000N6CBK | 1 | 1 | 2 | 5 | .375 | ● |
| 6113513 | UJDE1000N6ZBB | 1 | 1 | 2 1/2 | 5 1/2 | .030 | ● |
| 6113514 | UJDE1000N6ZBC | 1 | 1 | 2 1/2 | 5 1/2 | .060 | ● |
| 6113515 | UJDE1000N6ZBD | 1 | 1 | 2 1/2 | 5 1/2 | .090 | ● |
| 6113516 | UJDE1000N6ZBE | 1 | 1 | 2 1/2 | 5 1/2 | .120 | ● |
| 6113518 | UJDE1000N6ZBF | 1 | 1 | 2 1/2 | 5 1/2 | .250 | ● |
| 6113517 | UJDE1000N6ZBH | 1 | 1 | 2 1/2 | 5 1/2 | .190 | ● |
| 6113519 | UJDE1000N6ZBK | 1 | 1 | 2 1/2 | 5 1/2 | .375 | ● |
| 6113621 | UJDE1000N6FBB | 1 | 1 | 3 | 6 | .030 | ● |
| 6113622 | UJDE1000N6FBC | 1 | 1 | 3 | 6 | .060 | ● |
| 6113623 | UJDE1000N6FBD | 1 | 1 | 3 | 6 | .090 | ● |
| 6113624 | UJDE1000N6FBE | 1 | 1 | 3 | 6 | .120 | ● |
| 6113626 | UJDE1000N6FBF | 1 | 1 | 3 | 6 | .250 | ● |
| 6113627 | UJDE1000N6FBK | 1 | 1 | 3 | 6 | .375 | ● |
| 6113828 | UJDE1000N6GBB | 1 | 1 | 3 1/2 | 6 1/2 | .030 | ● |
| 6113829 | UJDE1000N6GBC | 1 | 1 | 3 1/2 | 6 1/2 | .060 | ● |
| 6113831 | UJDE1000N6GBE | 1 | 1 | 3 1/2 | 6 1/2 | .120 | ● |
| 6113834 | UJDE1000N6GBF | 1 | 1 | 3 1/2 | 6 1/2 | .250 | ● |
| 6113832 | UJDE1000N6GBH | 1 | 1 | 3 1/2 | 6 1/2 | .190 | ● |
| 6113835 | UJDE1000N6GBK | 1 | 1 | 3 1/2 | 6 1/2 | .375 | ● |
| 6113837 | UJDE1000N6DBB | 1 | 1 | 4 | 7 | .030 | ● |
| 6113838 | UJDE1000N6DBC | 1 | 1 | 4 | 7 | .060 | ● |
| 6113839 | UJDE1000N6DBD | 1 | 1 | 4 | 7 | .090 | ● |
| 6113840 | UJDE1000N6DBE | 1 | 1 | 4 | 7 | .120 | ● |
| 6113862 | UJDE1000N6DBF | 1 | 1 | 4 | 7 | .250 | ● |
| 6113861 | UJDE1000N6DBH | 1 | 1 | 4 | 7 | .190 | ● |
| 6113867 | UJDE1000N6HBB | 1 | 1 | 4 1/2 | 7 1/2 | .030 | ● |
| 6113869 | UJDE1000N6HBC | 1 | 1 | 4 1/2 | 7 1/2 | .060 | ● |
| 6113883 | UJDE1000N6HBF | 1 | 1 | 4 1/2 | 7 1/2 | .250 | ● |
| 6113888 | UJDE1000N6EBB | 1 | 1 | 5 | 8 | .030 | ● |
| 6113889 | UJDE1000N6EBC | 1 | 1 | 5 | 8 | .060 | ● |
| 6113921 | UJDE1000N6EBE | 1 | 1 | 5 | 8 | .120 | ● |
| 6113923 | UJDE1000N6EBF | 1 | 1 | 5 | 8 | .250 | ● |
| 6113924 | UJDE1000N6EBK | 1 | 1 | 5 | 8 | .375 | ● |
| 6113929 | UJDE1250N6ABE | 1 1/4 | 1 1/4 | 2 | 5 | .120 | ● |
| 6113965 | UJDE1250N6XBB | 1 1/4 | 1 1/4 | 2 1/2 | 5 1/2 | .030 | ● |
| 6113975 | UJDE1250N6ZBC | 1 1/4 | 1 1/4 | 3 | 6 | .060 | ● |
| 6114003 | UJDE1250N6ZBK | 1 1/4 | 1 1/4 | 3 | 6 | .500 | ● |
| 6114006 | UJDE1250N6CBB | 1 1/4 | 1 1/4 | 3 1/2 | 6 1/2 | .030 | ● |
| 6114007 | UJDE1250N6CBC | 1 1/4 | 1 1/4 | 3 1/2 | 6 1/2 | .060 | ● |
| 6114009 | UJDE1250N6CBE | 1 1/4 | 1 1/4 | 3 1/2 | 6 1/2 | .120 | ● |



HARVI™ III Aero • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

(continued)

- first choice
- alternate choice



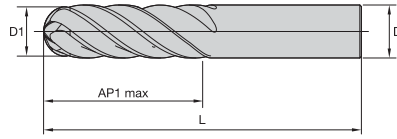
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| order number | catalog number | D1 | D | Ap1 max | L | Rε | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------|--------|
| 6114021 | UJDE1250N6CBF | 1 1/4 | 1 1/4 | 3 1/2 | 6 1/2 | .250 | ● |
| 6114025 | UJDE1250N6FBB | 1 1/4 | 1 1/4 | 4 | 7 | .030 | ● |
| 6114027 | UJDE1250N6FBD | 1 1/4 | 1 1/4 | 4 | 7 | .090 | ● |
| 6114028 | UJDE1250N6FBE | 1 1/4 | 1 1/4 | 4 | 7 | .120 | ● |
| 6114030 | UJDE1250N6FBF | 1 1/4 | 1 1/4 | 4 | 7 | .250 | ● |
| 6114029 | UJDE1250N6FBH | 1 1/4 | 1 1/4 | 4 | 7 | .190 | ● |
| 6114041 | UJDE1250N6FBJ | 1 1/4 | 1 1/4 | 4 | 7 | .375 | ● |
| 6114042 | UJDE1250N6FBK | 1 1/4 | 1 1/4 | 4 | 7 | .500 | ● |
| 6114033 | UJDE1250N6GBB | 1 1/4 | 1 1/4 | 4 1/2 | 7 1/2 | .030 | ● |
| 6114092 | UJDE1250N6GBE | 1 1/4 | 1 1/4 | 4 1/2 | 7 1/2 | .120 | ● |
| 6114094 | UJDE1250N6GBF | 1 1/4 | 1 1/4 | 4 1/2 | 7 1/2 | .250 | ● |
| 6114095 | UJDE1250N6GBJ | 1 1/4 | 1 1/4 | 4 1/2 | 7 1/2 | .375 | ● |
| 6114098 | UJDE1250N6DBB | 1 1/4 | 1 1/4 | 5 | 8 | .030 | ● |
| 6114099 | UJDE1250N6DBC | 1 1/4 | 1 1/4 | 5 | 8 | .060 | ● |
| 6114123 | UJDE1250N6DBF | 1 1/4 | 1 1/4 | 5 | 8 | .250 | ● |
| 6114125 | UJDE1250N6DBK | 1 1/4 | 1 1/4 | 5 | 8 | .500 | ● |
| 6114127 | UJDE1250N6HBB | 1 1/4 | 1 1/4 | 5 1/2 | 8 1/2 | .030 | ● |
| 6114055 | UJDE1250N6JBB | 1 1/4 | 1 1/4 | 6 | 9 | .030 | ● |
| 6114056 | UJDE1250N6JBC | 1 1/4 | 1 1/4 | 6 | 9 | .060 | ● |
| 6114057 | UJDE1250N6JBD | 1 1/4 | 1 1/4 | 6 | 9 | .090 | ● |
| 6114058 | UJDE1250N6JBE | 1 1/4 | 1 1/4 | 6 | 9 | .120 | ● |
| 6114060 | UJDE1250N6JBF | 1 1/4 | 1 1/4 | 6 | 9 | .250 | ● |
| 6114059 | UJDE1250N6JBH | 1 1/4 | 1 1/4 | 6 | 9 | .190 | ● |
| 6114181 | UJDE1250N6JBJ | 1 1/4 | 1 1/4 | 6 | 9 | .375 | ● |
| 6114184 | UJDE1250N6EBB | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .030 | ● |
| 6114185 | UJDE1250N6EBK | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .060 | ● |
| 6114186 | UJDE1250N6EBD | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .090 | ● |
| 6114187 | UJDE1250N6EBE | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .120 | ● |
| 6114189 | UJDE1250N6EBF | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .250 | ● |
| 6114190 | UJDE1250N6EBJ | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .375 | ● |
| 6114231 | UJDE1250N6EBK | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | .500 | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ III Aero • Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice

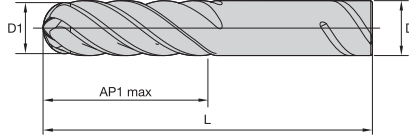


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| order number | catalog number | D1 | D | Ap1 max | L | KCSM15 |
|--------------|----------------|-----|-----|---------|-------|--------|
| 6113085 | UJBE0500J6BB | 1/2 | 1/2 | 1 | 3 | ● |
| 6113105 | UJBE0500J6ZB | 1/2 | 1/2 | 1 1/2 | 3 1/2 | ● |
| 6113135 | UJBE0500J6CB | 1/2 | 1/2 | 2 | 4 | ● |
| 6113152 | UJBE0500J6DB | 1/2 | 1/2 | 2 1/2 | 4 1/2 | ● |
| 6113202 | UJBE0750J6AB | 3/4 | 3/4 | 1 | 3 1/2 | ● |
| 6113261 | UJBE0750J6ZB | 3/4 | 3/4 | 2 | 4 1/2 | ● |
| 6113321 | UJBE0750J6DB | 3/4 | 3/4 | 3 | 5 1/2 | ● |
| 6113328 | UJBE0750J6EB | 3/4 | 3/4 | 4 | 6 1/2 | ● |

HARVI III Aero • Ball Nose • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice



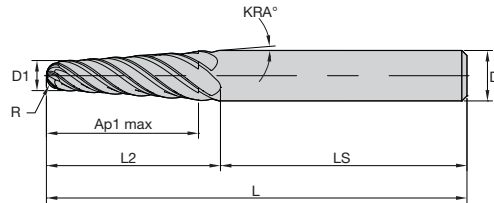
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| order number | catalog number | D1 | D | Ap1 max | L | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|--------|
| 6113404 | UJBE1000N6AB | 1 | 1 | 1 1/2 | 4 1/2 | ● |
| 6113512 | UJBE1000N6CB | 1 | 1 | 2 | 5 | ● |
| 6113520 | UJBE1000N6ZB | 1 | 1 | 2 1/2 | 5 1/2 | ● |
| 6113628 | UJBE1000N6FB | 1 | 1 | 3 | 6 | ● |
| 6113836 | UJBE1000N6GB | 1 | 1 | 3 1/2 | 6 1/2 | ● |
| 6113865 | UJBE1000N6DB | 1 | 1 | 4 | 7 | ● |
| 6113887 | UJBE1000N6HB | 1 | 1 | 4 1/2 | 7 1/2 | ● |
| 6113925 | UJBE1000N6EB | 1 | 1 | 5 | 8 | ● |
| 6114004 | UJBE1250N6ZB | 1 1/4 | 1 1/4 | 3 | 6 | ● |
| 6114054 | UJBE1250N6HB | 1 1/4 | 1 1/4 | 5 1/2 | 8 1/2 | ● |
| 6114232 | UJBE1250N6EB | 1 1/4 | 1 1/4 | 6 1/2 | 9 1/2 | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ III • Taper Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice



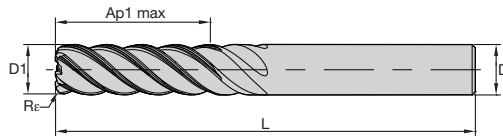
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| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | L2 | LS | R | KRA | KCSM15 |
|--------------|----------------|------|------|---------|-------|-------|-------|------|-----|--------|
| 5970222 | UJBE0125J6CP | 1/8 | 5/16 | 1 3/16 | 3 | 1.401 | 1.599 | .063 | 4 | ● |
| 5970223 | UJBE0125J6BP | 1/8 | 3/8 | 1 | 3 1/2 | 1.249 | 2.252 | .063 | 6 | ● |
| 5970224 | UJBE0188J6BP | 3/16 | 3/8 | 1 3/16 | 3 1/2 | 1.431 | 2.069 | .094 | 4 | ● |
| 5970225 | UJBE0188J6CP | 3/16 | 1/2 | 1 1/4 | 4 | 1.576 | 2.425 | .094 | 6 | ● |
| 5970226 | UJBE0250J6CP | 1/4 | 1/2 | 1 9/16 | 4 | 1.908 | 2.092 | .125 | 4 | ● |
| 5970227 | UJBE0250J6BP | 1/4 | 5/8 | 1 1/2 | 5 | 1.902 | 3.098 | .125 | 6 | ● |
| 5970229 | UJBE0312J6BP | 5/16 | 5/8 | 1 1/4 | 5 | 1.635 | 3.365 | .156 | 6 | ● |
| 5970228 | UJBE0312J6CP | 5/16 | 5/8 | 2 | 5 | 2.385 | 2.615 | .156 | 4 | ● |
| 5970231 | UJBE0375J6BP | 3/8 | 5/8 | 1 | 5 | 1.367 | 3.633 | .188 | 6 | ● |
| 5970230 | UJBE0375J6CP | 3/8 | 5/8 | 1 9/16 | 5 | 1.969 | 3.032 | .188 | 4 | ● |
| 5970233 | UJBE0438J6BP | 7/16 | 5/8 | 3/4 | 5 | 1.099 | 3.901 | .219 | 6 | ● |
| 5970232 | UJBE0438J6CP | 7/16 | 5/8 | 1 3/16 | 5 | 1.552 | 3.448 | .219 | 4 | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ II Long • Radiused • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice

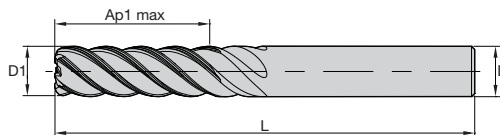


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| order number | catalog number | D1 | D | Ap1 max | L | Re | KC643M |
|--------------|----------------|------|------|---------|-------|------|--------|
| 5059455 | UGDE0250J5ARA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● |
| 5059457 | UGDE0250J5ARB | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 5059583 | UGDE0312J5ARA | 5/16 | 5/16 | 15/16 | 3 | .015 | ● |
| 5059623 | UGDE0375J5ARA | 3/8 | 3/8 | 1 1/8 | 4 | .015 | ● |
| 5059624 | UGDE0375J5ARB | 3/8 | 3/8 | 1 1/8 | 4 | .030 | ● |
| 5059625 | UGDE0375J5ARC | 3/8 | 3/8 | 1 1/8 | 4 | .060 | ● |
| 5059671 | UGDE0500J5ARA | 1/2 | 1/2 | 1 1/2 | 4 | .015 | ● |
| 5059672 | UGDE0500J5ARB | 1/2 | 1/2 | 1 1/2 | 4 | .030 | ● |
| 5059673 | UGDE0500J5ARC | 1/2 | 1/2 | 1 1/2 | 4 | .060 | ● |
| 5059697 | UGDE0625J5ARA | 5/8 | 5/8 | 1 7/8 | 5 | .015 | ● |
| 5059703 | UGDE0625J5ARB | 5/8 | 5/8 | 1 7/8 | 5 | .030 | ● |
| 5059704 | UGDE0625J5ARC | 5/8 | 5/8 | 1 7/8 | 5 | .060 | ● |
| 5059705 | UGDE0625J5ARD | 5/8 | 5/8 | 1 7/8 | 5 | .120 | ● |
| 5059743 | UGDE0750J5ARA | 3/4 | 3/4 | 2 1/4 | 5 | .015 | ● |
| 5059744 | UGDE0750J5ARB | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 5059745 | UGDE0750J5ARC | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 5059746 | UGDE0750J5ARD | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |
| 5059798 | UGDE1000J5ARA | 1 | 1 | 3 | 6 | .015 | ● |
| 5059799 | UGDE1000J5ARB | 1 | 1 | 3 | 6 | .030 | ● |
| 5060120 | UGDE1000J5ARC | 1 | 1 | 3 | 6 | .060 | ● |
| 5060121 | UGDE1000J5ARD | 1 | 1 | 3 | 6 | .120 | ● |

HARVI II Long • Square End • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice



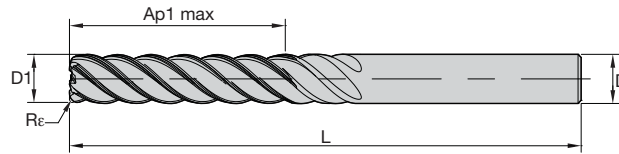
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| order number | catalog number | D1 | D | Ap1 max | L | KC643M |
|--------------|----------------|------|------|---------|-------|--------|
| 5059453 | UGDE0250J5AE | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 5059582 | UGDE0312J5AE | 5/16 | 5/16 | 15/16 | 3 | ● |
| 5059622 | UGDE0375J5AE | 3/8 | 3/8 | 1 1/8 | 4 | ● |
| 5059670 | UGDE0500J5AE | 1/2 | 1/2 | 1 1/2 | 4 | ● |
| 5059678 | UGDE0625J5AE | 5/8 | 5/8 | 1 7/8 | 5 | ● |
| 5059742 | UGDE0750J5AE | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 5059795 | UGDE1000J5AE | 1 | 1 | 3 | 6 | ● |

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| 163-164 | 165 | 117-119 | 168 |

HARVI™ II Long • Radiused • 5 Flutes • 5 x D • Plain Shank • Inch

● first choice
○ alternate choice

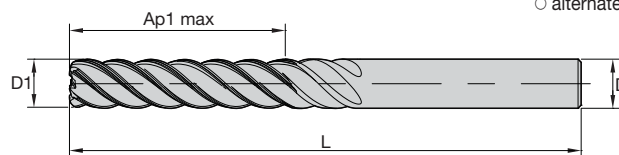


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | KC643M |
|--------------|----------------|------|------|---------|-------|------|--------|
| 5059459 | UGDE0250J5BRA | 1/4 | 1/4 | 1 1/4 | 3 | .015 | ● |
| 5059580 | UGDE0250J5BRB | 1/4 | 1/4 | 1 1/4 | 3 | .030 | ● |
| 5059589 | UGDE0312J5BRA | 5/16 | 5/16 | 1 1/4 | 3 1/2 | .015 | ● |
| 5059620 | UGDE0312J5BRB | 5/16 | 5/16 | 1 1/4 | 3 1/2 | .030 | ● |
| 5059627 | UGDE0375J5BRA | 3/8 | 3/8 | 1 7/8 | 4 | .015 | ● |
| 5059628 | UGDE0375J5BRB | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |
| 5059629 | UGDE0375J5BRC | 3/8 | 3/8 | 1 7/8 | 4 | .060 | ● |
| 5059675 | UGDE0500J5BRA | 1/2 | 1/2 | 2 1/2 | 5 | .015 | ● |
| 5059676 | UGDE0500J5BRB | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 5059677 | UGDE0500J5BRC | 1/2 | 1/2 | 2 1/2 | 5 | .060 | ● |
| 5059707 | UGDE0625J5BRA | 5/8 | 5/8 | 3 1/8 | 6 | .015 | ● |
| 5059709 | UGDE0625J5BRB | 5/8 | 5/8 | 3 1/8 | 6 | .030 | ● |
| 5059740 | UGDE0625J5BRC | 5/8 | 5/8 | 3 1/8 | 6 | .060 | ● |
| 5059741 | UGDE0625J5BRD | 5/8 | 5/8 | 3 1/8 | 6 | .120 | ● |
| 5059748 | UGDE0750J5BRA | 3/4 | 3/4 | 3 3/4 | 7 | .015 | ● |
| 5059749 | UGDE0750J5BRB | 3/4 | 3/4 | 3 3/4 | 7 | .030 | ● |
| 5059770 | UGDE0750J5BRC | 3/4 | 3/4 | 3 3/4 | 7 | .060 | ● |
| 5059771 | UGDE0750J5BRD | 3/4 | 3/4 | 3 3/4 | 7 | .120 | ● |
| 5060123 | UGDE1000J5BRA | 1 | 1 | 5 | 7 1/2 | .015 | ● |
| 5060124 | UGDE1000J5BRB | 1 | 1 | 5 | 7 1/2 | .030 | ● |
| 5060126 | UGDE1000J5BRC | 1 | 1 | 5 | 7 1/2 | .060 | ● |
| 5060127 | UGDE1000J5BRD | 1 | 1 | 5 | 7 1/2 | .120 | ● |

HARVI II Long • Square End • 5 Flutes • 5 x D • Plain Shank • Inch

● first choice
○ alternate choice



| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KC643M |
|--------------|----------------|------|------|---------|-------|--------|
| 5059458 | UGDE0250J5BE | 1/4 | 1/4 | 1 1/4 | 3 | ● |
| 5059585 | UGDE0312J5BE | 5/16 | 5/16 | 1 1/4 | 3 1/2 | ● |
| 5059626 | UGDE0375J5BE | 3/8 | 3/8 | 1 7/8 | 4 | ● |
| 5059674 | UGDE0500J5BE | 1/2 | 1/2 | 2 1/2 | 5 | ● |
| 5059706 | UGDE0625J5BE | 5/8 | 5/8 | 3 1/8 | 6 | ● |
| 5059747 | UGDE0750J5BE | 3/4 | 3/4 | 3 3/4 | 7 | ● |
| 5060122 | UGDE1000J5BE | 1 | 1 | 5 | 7 1/2 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

HARVI™ II • UCDE • Application Data • Inch



| Material Group | | | | | KC643M | | KCPM15 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|----|---------|---------|----------|---------------------------|-----|--------|-----|--|---------------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | | | frac. dec. | D1 – Diameter | | | | | |
| | ap | ae | ap | | min | max | min | max | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| P | 0 | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | 490 | 660 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 1 | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | 490 | 660 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 460 | 620 | 460 | 620 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 390 | 520 | 390 | 520 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 4 | 1.5 x D | 0.5 x D | 0.75 x D | 300 | 490 | 300 | 490 | IPT | .0014 | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 5 | 1.5 x D | 0.5 x D | 1 x D | 200 | 330 | 200 | 330 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| M | 1 | 1.5 x D | 0.5 x D | 1 x D | 300 | 380 | 300 | 380 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 200 | 260 | 200 | 260 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| K | 1 | 1.5 x D | 0.5 x D | 1 x D | 390 | 490 | 390 | 490 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 360 | 460 | 360 | 460 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| S | 1 | 1.5 x D | 0.5 x D | 1 x D | 360 | 430 | 360 | 430 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 160 | 300 | – | – | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | – | – | IPT | .0008 | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 3 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | – | – | IPT | .0008 | .0012 | .0015 | .0018 | .0021 | .0024 |
| H | 1 | 1.5 x D | 0.5 x D | 1 x D | 160 | 200 | – | – | IPT | .0011 | .0017 | .0021 | .0025 | .0028 | .0033 |
| H | 1 | 1.5 x D | 0.5 x D | 0.75 x D | 260 | 460 | 260 | 460 | IPT | .0014 | .0020 | .0026 | .0030 | .0034 | .0039 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI II • UCDE • With Neck • Application Data • Inch



| Material Group | | | | | KC643M | | KCPM15 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|----|----------|---------|----------|---------------------------|-----|--------|-----|--|---------------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | | | frac. dec. | D1 – Diameter | | | | | |
| | ap | ae | ap | | min | max | min | max | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| P | 0 | 0.75 x D | 0.5 x D | 0.75 x D | 490 | 660 | 490 | 660 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 490 | 660 | 490 | 660 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 0.75 x D | 0.5 x D | 0.75 x D | 460 | 620 | 460 | 620 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 3 | 0.75 x D | 0.5 x D | 0.75 x D | 390 | 520 | 390 | 520 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 4 | 0.75 x D | 0.5 x D | 0.5 x D | 300 | 490 | 300 | 490 | IPT | .0014 | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 5 | 0.75 x D | 0.5 x D | 0.75 x D | 200 | 330 | 200 | 330 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| M | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 160 | 250 | 160 | 250 | IPT | .0010 | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 300 | 380 | 300 | 380 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| K | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 200 | 260 | 200 | 260 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 3 | 0.75 x D | 0.5 x D | 0.75 x D | 200 | 230 | 200 | 230 | IPT | .0010 | .0015 | .0019 | .0022 | .0025 | .0028 |
| S | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 390 | 490 | 390 | 490 | IPT | .0018 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 0.75 x D | 0.5 x D | 0.75 x D | 360 | 460 | 360 | 460 | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| H | 1 | 0.75 x D | 0.5 x D | 0.75 x D | 360 | 430 | 360 | 430 | IPT | .0012 | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 1 | 0.75 x D | 0.3 x D | 0.3 x D | 160 | 300 | – | – | IPT | .0015 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 0.75 x D | 0.3 x D | 0.3 x D | 80 | 130 | – | – | IPT | .0008 | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 3 | 0.75 x D | 0.3 x D | 0.3 x D | 80 | 130 | – | – | IPT | .0008 | .0012 | .0015 | .0018 | .0021 | .0024 |
| H | 4 | 0.75 x D | 0.5 x D | 0.75 x D | 160 | 200 | – | – | IPT | .0011 | .0017 | .0021 | .0025 | .0028 | .0033 |
| H | 1 | 0.75 x D | 0.5 x D | 0.5 x D | 260 | 460 | 260 | 460 | IPT | .0014 | .0020 | .0026 | .0030 | .0034 | .0039 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
 Side milling applications – for longest reach (L3) tools, reduce ae by 30%.
 Slot milling applications – for longest reach (L3) tools, reduce ap by 30%.



HARVI™ II • UDDE • Application Data • Inch



| Material Group | | | | | KC643M | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | |
|----------------|----|----------|---------|----------|---------------------------|-----|--|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | D1 – Diameter | | | | |
| | ap | ae | ap | | min | max | frac. | 1/2 | 5/8 | 3/4 | 1 |
| P | 5 | 1.25 x D | 0.5 x D | 1 x D | 200 | 325 | IPT | .0023 | .0027 | .0003 | .0036 |
| | 6 | 1.25 x D | 0.5 x D | 0.75 x D | 150 | 225 | IPT | .0019 | .0022 | .0024 | .0028 |
| S | 2 | 1.0 x D | 0.3 x D | 0.3 x D | 70 | 130 | IPT | .0016 | .0018 | .0020 | .0025 |
| | 3 | 1.25 x D | 0.5 x D | 1 x D | 160 | 260 | IPT | .0023 | .0027 | .0030 | .0036 |
| | 4 | 1.25 x D | 0.5 x D | 1 x D | 150 | 210 | IPT | .0022 | .0025 | .0028 | .0033 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI II UCDE & UDDE • Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1–3.6 | 1.6–3 | 1.6–2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
 This can also be considered based on the machinability of the material, from difficult to free cutting.
 These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
 For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1", S4 material group
 (HARVI II UCDE in KC643M);
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 180 SFM;
 Fz = 0.0033 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.4; KFz = 1.67

Final cutting data recommendation:

Vc new = 180SFM * 1.4 = 252 SFM
 Fz new = .0033 IPT * 1.67 = .0055 IPT


HARVI™ III • UJDE • Application Data • Inch



With Neck



Without Neck

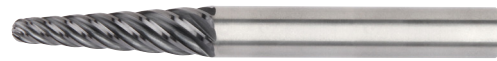
| Material Group |  | | KCSM15 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | |
|----------------|---|--------|--------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|
| | | | Cutting Speed – vc | | frac. | D1 – Diameter | | | | | | |
| | A | | SFM | | | dec. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 |
| | ap | ae | min | max | | | | | | | | |
| P | 4 | Ap max | 0.4 x D | 300 | 490 | IPT | .0020 | .0026 | .0030 | .0034 | .0039 | .0040 |
| | 5 | Ap max | 0.4 x D | 200 | 330 | IPT | .0018 | .0023 | .0027 | .0031 | .0036 | .0039 |
| M | 1 | Ap max | 0.4 x D | 300 | 380 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 | .0048 |
| | 2 | Ap max | 0.4 x D | 200 | 260 | IPT | .0018 | .0023 | .0027 | .0031 | .0036 | .0039 |
| | 3 | Ap max | 0.4 x D | 200 | 230 | IPT | .0015 | .0019 | .0022 | .0025 | .0028 | .0029 |
| S | 1 | Ap max | 0.4 x D | 160 | 300 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 | .0048 |
| | 2 | Ap max | 0.4 x D | 80 | 130 | IPT | .0012 | .0015 | .0018 | .0021 | .0024 | .0026 |
| | 3 | Ap max | 0.4 x D | 80 | 130 | IPT | .0012 | .0015 | .0018 | .0021 | .0024 | .0026 |
| | 4 | Ap max | 0.4 x D | 160 | 200 | IPT | .0017 | .0021 | .0025 | .0028 | .0033 | .0036 |
| H | 1 | Ap max | 0.4 x D | 260 | 460 | IPT | .0020 | .0026 | .0030 | .0034 | .0039 | .0040 |

NOTE: Those guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI™ III Ball Nose • UJBE • Application Data • Inch



Ball Nose



Taper Ball Nose

| Material Group | A | | KCSM15 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | | | | |
|----------------|----|--------|------------------------|-----|-----|--|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | Cutting Speed – vc SFM | | | frac. dec. | D1 – Diameter | | | | | | | | | |
| | ap | ae | min | – | max | | 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 0 | Ap max | 0.4 x D | 490 | – | 660 | IPT | .0009 | .0014 | .0018 | .0023 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 1 | Ap max | 0.4 x D | 490 | – | 660 | IPT | .0009 | .0014 | .0018 | .0023 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | Ap max | 0.4 x D | 460 | – | 620 | IPT | .0009 | .0014 | .0018 | .0023 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 3 | Ap max | 0.4 x D | 390 | – | 520 | IPT | .0008 | .0011 | .0015 | .0019 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 4 | Ap max | 0.4 x D | 300 | – | 490 | IPT | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 5 | Ap max | 0.4 x D | 200 | – | 330 | IPT | .0006 | .0009 | .0012 | .0015 | .0018 | .0023 | .0027 | .0031 | .0036 |
| M | 6 | Ap max | 0.4 x D | 160 | – | 250 | IPT | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 1 | Ap max | 0.4 x D | 300 | – | 380 | IPT | .0008 | .0011 | .0015 | .0019 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | Ap max | 0.4 x D | 200 | – | 260 | IPT | .0006 | .0009 | .0012 | .0015 | .0018 | .0023 | .0027 | .0031 | .0036 |
| S | 3 | Ap max | 0.4 x D | 200 | – | 230 | IPT | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 1 | Ap max | 0.4 x D | 160 | – | 300 | IPT | .0008 | .0011 | .0015 | .0019 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | Ap max | 0.4 x D | 80 | – | 130 | IPT | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 | .0018 | .0021 | .0024 |
| H | 3 | Ap max | 0.4 x D | 80 | – | 130 | IPT | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 4 | Ap max | 0.4 x D | 160 | – | 200 | IPT | .0006 | .0008 | .0011 | .0014 | .0017 | .0021 | .0025 | .0028 | .0033 |
| | 1 | Ap max | 0.4 x D | 260 | – | 460 | IPT | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 | .0030 | .0034 | .0039 |

NOTE: Those guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI III UJDE & UJBE • Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1–3.6 | 1.6–3 | 1.6–2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
 This can also be considered based on the machinability of the material, from difficult to free cutting.
 These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
 For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1"; S4 material group
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 180 SFM;
 Fz = 0.0033 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.4; KFz = 1.67

Final cutting data recommendation:

Vc new = 180SFM * 1.4 = 252 SFM
 Fz new = .0033 IPT * 1.67 = .0055 IPT

HARVI™ III • Application Data • Inch



UJBE • Ball Nose



UJDE

| Material Group | A | | KCSM15 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | |
|----------------|----|--------|--------------------|-----|---|--|-----|-------|-------|-------|-------|-------|-------|
| | ap | ae | Cutting Speed – vc | | | D1 – Diameter | | | | | | | |
| | | | min | SFM | | frac. dec. | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | 1 1/2 | |
| P | 4 | Ap max | 0.4 x D | 300 | – | 490 | IPT | .0026 | .0030 | .0033 | .0039 | .0043 | .0046 |
| | 5 | Ap max | 0.4 x D | 200 | – | 330 | IPT | .0023 | .0027 | .0030 | .0036 | .0041 | .0045 |
| M | 1 | Ap max | 0.4 x D | 300 | – | 380 | IPT | .0029 | .0034 | .0038 | .0046 | .0051 | .0056 |
| | 2 | Ap max | 0.4 x D | 200 | – | 260 | IPT | .0023 | .0027 | .0030 | .0036 | .0041 | .0045 |
| S | 3 | Ap max | 0.4 x D | 200 | – | 230 | IPT | .0019 | .0022 | .0024 | .0028 | .0031 | .0033 |
| | 1 | Ap max | 0.4 x D | 160 | – | 300 | IPT | .0029 | .0034 | .0038 | .0046 | .0051 | .0056 |
| | 2 | Ap max | 0.4 x D | 160 | – | 300 | IPT | .0029 | .0034 | .0038 | .0046 | .0051 | .0056 |
| H | 3 | Ap max | 0.4 x D | 80 | – | 130 | IPT | .0016 | .0018 | .0020 | .0025 | .0028 | .0031 |
| | 4 | Ap max | 0.4 x D | 150 | – | 200 | IPT | .0022 | .0025 | .0028 | .0033 | .0037 | .0041 |
| H | 1 | Ap max | 0.4 x D | 260 | – | 460 | IPT | .0026 | .0030 | .0033 | .0039 | .0043 | .0046 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly.

Adjustment Factor Table for Feed and Speed Calculation

| | Ae/D | 0.50% | 1.00% | 1.60% | 2.00% | 4.00% | 5.00% | 8.00% | 10.00% | 20.00% | 30.00% |
|--------------|------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Speed factor | Kv | 2.9 | 2.85 | 2.8 | 2 | 1.5 | 1.45 | 1.4 | 1.35 | 1.25 | 1.2 |
| Feed factor | KFz | 2.8 | 2.6 | 2.5 | 2.4 | 2.3 | 2.2 | 2 | 1.7 | 1.25 | 1.02 |

To calculate application specific cutting data, please use above Kv coefficient for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1"; S4 material group
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 175 SFM;
 Fz = 0.0033 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.35; KFz = 1.7

Final cutting data recommendation:

Vc new = 175 SFM * 1.35 = 236 SFM
 Fz new = .0033 IPT * 1.7 = .0056 IPT


HARVI™ II Long • UGDE • Application Data • Inch



3 x D Lengths of Cut



5 x D Lengths of Cut

| Material Group |  | | KC643M | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | | |
|----------------|---|--------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|-------|
| | | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | | | | |
| | ap | ae | min | max | | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 0 | Ap max | 0.05 x D | 980 | 1310 | IPT | .0022 | .0028 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 1 | Ap max | 0.05 x D | 980 | 1310 | IPT | .0022 | .0028 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 2 | Ap max | 0.05 x D | 920 | 1250 | IPT | .0022 | .0028 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 3 | Ap max | 0.05 x D | 790 | 1050 | IPT | .0018 | .0023 | .0027 | .0035 | .0041 | .0046 | .0054 |
| | 4 | Ap max | 0.05 x D | 590 | 980 | IPT | .0017 | .0021 | .0025 | .0031 | .0036 | .0040 | .0046 |
| | 5 | Ap max | 0.05 x D | 390 | 660 | IPT | .0015 | .0019 | .0022 | .0028 | .0033 | .0037 | .0043 |
| M | 6 | Ap max | 0.05 x D | 330 | 490 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 | .0034 |
| | 1 | Ap max | 0.05 x D | 590 | 750 | IPT | .0018 | .0023 | .0027 | .0035 | .0041 | .0046 | .0054 |
| K | 2 | Ap max | 0.05 x D | 390 | 520 | IPT | .0015 | .0019 | .0022 | .0028 | .0033 | .0037 | .0043 |
| | 3 | Ap max | 0.05 x D | 390 | 460 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 | .0034 |
| S | 1 | Ap max | 0.05 x D | 790 | 980 | IPT | .0022 | .0028 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 2 | Ap max | 0.05 x D | 720 | 920 | IPT | .0018 | .0023 | .0027 | .0035 | .0041 | .0046 | .0054 |
| | 3 | Ap max | 0.05 x D | 720 | 850 | IPT | .0015 | .0019 | .0022 | .0028 | .0033 | .0037 | .0043 |
| | 4 | Ap max | 0.05 x D | 330 | 590 | IPT | .0018 | .0023 | .0027 | .0035 | .0041 | .0046 | .0054 |
| H | 2 | Ap max | 0.05 x D | 160 | 260 | IPT | .0010 | .0012 | .0015 | .0018 | .0022 | .0025 | .0029 |
| | 3 | Ap max | 0.05 x D | 160 | 260 | IPT | .0010 | .0012 | .0015 | .0018 | .0022 | .0025 | .0029 |
| H | 4 | Ap max | 0.05 x D | 330 | 390 | IPT | .0013 | .0017 | .0020 | .0026 | .0030 | .0034 | .0040 |
| | 1 | Ap max | 0.05 x D | 520 | 920 | IPT | .0017 | .0021 | .0025 | .0031 | .0036 | .0040 | .0046 |
| H | 2 | Ap max | 0.05 x D | 460 | 790 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 | .0034 |

* For the above cutting data, do not exceed an overall ae of .031".

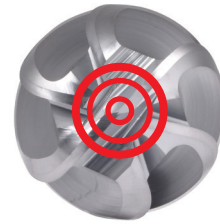
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Application Recommendation for Surface Profiling with HARVI™ III Ball Nose Series

Not all six cutting edges reach the center of the HARVI III series ball nose end mill. Due to this, certain tilt angles will engage different numbers of cutting edges and can alter the required cutting parameters. This will also be altered by the depths of cut, which will change the contact area and resulting number of edges engaged.



At the tip of the tool, only the center cutting edges exist.
The rotational velocity is zero in the center.

When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible. This is due to the fact that at the tip of the tool only the center cutting edges exist (two in the case of HARVI III series), and also the fact that the rotational velocity is zero in the center. Therefore, Kennametal recommends tilting the end mill to engage more cutting edges and avoid the zero-speed condition.

As the HARVI III series ball nose end mills do have two center cutting edges, it is possible to machine without tilting if the application requires this. Just factor in the reduced number of cutting edges into the cutting parameter calculations.



When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible.

HARVI III Ball Nose & HARVI III Taper Ball Nose



For tilt angles less than 15° and shallow profiling depths, only two cutting edges will be typically engaged. As the end mill is tilted above this, the next two edges will engage.



After reaching a tilt angle of at least 22°, then all six edges will at least be partially engaged.



For maximum profiling performance, a tilt angle of 40°-45° will result in full engagement of all edges with a wide range of cutting depths.

KOR™ Series

High-Performance Dynamic Milling



Materials



Applications



Ramping



Trochoidal Milling



Side Milling/Shoulder
Milling: Roughing



Side Milling/Shoulder
Milling: Finishing

KOR Series

Designed for dynamic milling with low radial engagement and full length of cut. Maximizes capabilities of 5-axis machines, using CAM tool path generation software.

KOR5^{DA} — Dynamic Rougher for Aluminum

With chip splitters for near-perfect chip management.

Safe-Lock™ shanks available for pullout protection.

With and without internal coolant.

NEW!

5 x D length of cut with internal-coolant for a broader application range.

KOR5™ DA



Proprietary flute forms reduce vibrations and improve tool life.

KOR5™ DS



Helix angles tailored to target material to minimize vibration and optimize tool life.

KOR6™ DT



Front end geometries for maximum tool life in helical and ramping operations.

KOR5^{DS} — Dynamic Rougher for Steel and Stainless Steel

With chip deformers for near-perfect chip management at high surface quality.

3 x D and 5 x D with plain and Weldon® shanks.

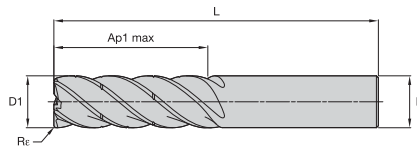
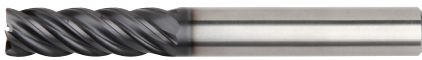
KOR6^{DT} — Dynamic Rougher for Titanium

With chip splitters for optimized chip management.

3 x D and 5 x D with Safe-Lock™ and Weldon shanks for pullout protection.

KOR5™ DS • Radiused • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice



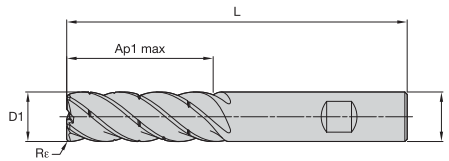
| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ● |
| H | ○ |

KC643M

| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------------|-----|-----|---------|-------|------|---|
| 6769720 | KOR5RA0250R075HAR030 | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 6769781 | KOR5RA0375R113HAR030 | 3/8 | 3/8 | 1 1/8 | 3 | .030 | ● |
| 6769782 | KOR5RA0500R150HAR030 | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 | ● |
| 6769783 | KOR5RA0625R188HAR030 | 5/8 | 5/8 | 1 7/8 | 4 | .030 | ● |
| 6769784 | KOR5RA0750R225HAR060 | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6769785 | KOR5RA1000R300HAR060 | 1 | 1 | 3 | 6 | .060 | ● |

KOR5 DS • Radiused • 5 Flutes • 3 x D • Weldon® Shank • Inch

- first choice
- alternate choice



| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ● |
| H | ○ |

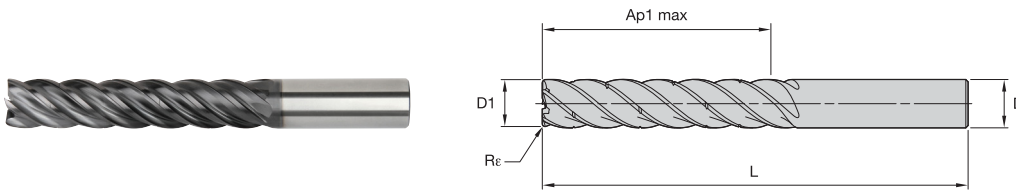
KC643M

| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------------|-----|-----|---------|-------|------|---|
| 6769786 | KOR5RA0250R075HBR030 | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 6769787 | KOR5RA0375R113HBR030 | 3/8 | 3/8 | 1 1/8 | 3 | .030 | ● |
| 6769789 | KOR5RA0500R150HBR030 | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 | ● |
| 6769790 | KOR5RA0625R188HBR030 | 5/8 | 5/8 | 1 7/8 | 4 | .030 | ● |
| 6769791 | KOR5RA0750R225HBR060 | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6769792 | KOR5RA1000R300HBR060 | 1 | 1 | 3 | 6 | .060 | ● |

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|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DS • Radiused • 5 Flutes • 5 x D • Plain Shank • Inch

- first choice
- alternate choice



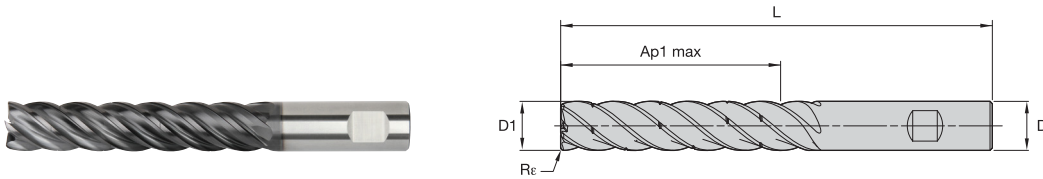
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| M | <input checked="" type="checkbox"/> |
| K | <input type="checkbox"/> |
| N | <input type="checkbox"/> |
| S | <input checked="" type="checkbox"/> |
| H | <input type="checkbox"/> |

KC643M

| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------------|-----|-----|---------|-------|------|---|
| 6764360 | KOR5RA0250L125HAR030 | 1/4 | 1/4 | 1 1/4 | 3 | .030 | ● |
| 6764471 | KOR5RA0375L188HAR030 | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |
| 6764472 | KOR5RA0500L250HAR030 | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 6764473 | KOR5RA0625L313HAR030 | 5/8 | 5/8 | 3 1/8 | 6 | .030 | ● |
| 6764474 | KOR5RA0750L375HAR060 | 3/4 | 3/4 | 3 3/4 | 7 | .060 | ● |
| 6764475 | KOR5RA1000L500HAR060 | 1 | 1 | 5 | 7 1/2 | .060 | ● |

KOR5 DS • Radiused • 5 Flutes • 5 x D • Weldon® Shank • Inch

- first choice
- alternate choice



| | |
|---|-------------------------------------|
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| K | <input type="checkbox"/> |
| N | <input type="checkbox"/> |
| S | <input checked="" type="checkbox"/> |
| H | <input type="checkbox"/> |

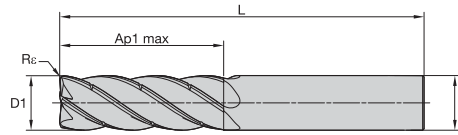
KC643M

| order number | catalog number | D1 | D | Ap1 max | L | Re | |
|--------------|----------------------|-----|-----|---------|-------|------|---|
| 6764476 | KOR5RA0250L125HBR030 | 1/4 | 1/4 | 1 1/4 | 3 | .030 | ● |
| 6764477 | KOR5RA0375L188HBR030 | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |
| 6764478 | KOR5RA0500L250HBR030 | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 6764479 | KOR5RA0625L313HBR030 | 5/8 | 5/8 | 3 1/8 | 6 | .030 | ● |
| 6764480 | KOR5RA0750L375HBR060 | 3/4 | 3/4 | 3 3/4 | 7 | .060 | ● |
| 6764491 | KOR5RA1000L500HBR060 | 1 | 1 | 5 | 7 1/2 | .060 | ● |

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|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DA • Radiused • 5 Flutes • 3 x D • Internal Coolant • Plain Shank • Inch

- first choice
- alternate choice

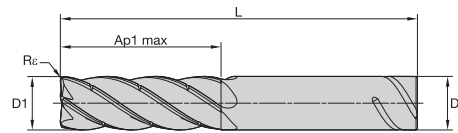


| | | |
|---|--------|---|
| P | Blue | |
| M | Yellow | |
| K | Red | |
| N | Green | ● |
| S | Orange | |
| H | Grey | |

| order number | catalog number | D1 | D | Ap1 max | L | Re | K600 |
|--------------|-----------------------|-----|-----|---------|---|------|------|
| 6754900 | KOR5RA0375R113HAR015I | 3/8 | 3/8 | 1 1/8 | 3 | .015 | ● |
| 6754921 | KOR5RA0375R113HAR030I | 3/8 | 3/8 | 1 1/8 | 3 | .030 | ● |
| 6754922 | KOR5RA0375R113HAR060I | 3/8 | 3/8 | 1 1/8 | 3 | .060 | ● |

KOR5 DA • Radiused • 5 Flutes • 3 x D • Internal Coolant • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

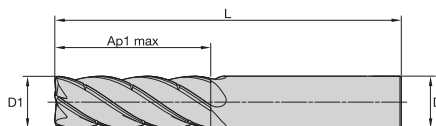


| | | |
|---|--------|---|
| P | Blue | |
| M | Yellow | |
| K | Red | |
| N | Green | ● |
| S | Orange | |
| H | Grey | |

| order number | catalog number | D1 | D | Ap1 max | L | Re | K600 |
|--------------|-----------------------|-----|-----|---------|-------|------|------|
| 6754924 | KOR5RA0500R150SLR015I | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .015 | ● |
| 6754925 | KOR5RA0500R150SLR030I | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 | ● |
| 6754926 | KOR5RA0500R150SLR060I | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .060 | ● |
| 6754928 | KOR5RA0625R188SLR030I | 5/8 | 5/8 | 1 7/8 | 4 | .030 | ● |
| 6754929 | KOR5RA0625R188SLR060I | 5/8 | 5/8 | 1 7/8 | 4 | .060 | ● |
| 6754930 | KOR5RA0625R188SLR090I | 5/8 | 5/8 | 1 7/8 | 4 | .090 | ● |
| 6754932 | KOR5RA0750R225SLR030I | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 6754933 | KOR5RA0750R225SLR060I | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6754934 | KOR5RA0750R225SLR090I | 3/4 | 3/4 | 2 1/4 | 5 | .090 | ● |
| 6754935 | KOR5RA0750R225SLR120I | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |
| 6754937 | KOR5RA1000R300SLR030I | 1 | 1 | 3 | 5 1/2 | .030 | ● |
| 6754938 | KOR5RA1000R300SLR060I | 1 | 1 | 3 | 5 1/2 | .060 | ● |
| 6754939 | KOR5RA1000R300SLR090I | 1 | 1 | 3 | 5 1/2 | .090 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DA • Square End • 5 Flutes • 3 x D • Internal Coolant • Plain Shank • Inch

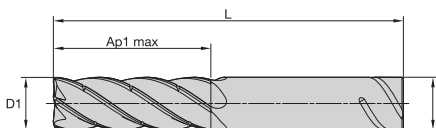


- first choice
- alternate choice

| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |
| | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|-----|---------|---|------|
| 6754899 | KOR5SE0375R113HAI | 3/8 | 3/8 | 1 1/8 | 3 | ● |

KOR5 DA • Square End • 5 Flutes • 3 x D • Internal Coolant • Safe-Lock™ Shank • Inch



- first choice
- alternate choice

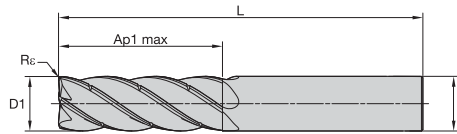
| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |
| | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|-----|---------|-------|------|
| 6754923 | KOR5SE0500R150SLI | 1/2 | 1/2 | 1 1/2 | 3 1/2 | ● |
| 6754927 | KOR5SE0625R188SLI | 5/8 | 5/8 | 1 7/8 | 4 | ● |
| 6754931 | KOR5SE0750R225SLI | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 6754936 | KOR5SE1000R300SLI | 1 | 1 | 3 | 5 1/2 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DA • Radiused • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice

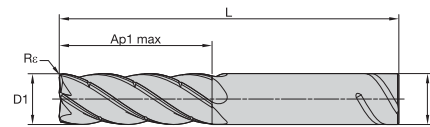


| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | Rc | K600 |
|--------------|-----------------------|-----|-----|---------|---|------|------|
| 6754952 | KOR5RA0375R113HAR015C | 3/8 | 3/8 | 1 1/8 | 3 | .015 | ● |
| 6754953 | KOR5RA0375R113HAR030C | 3/8 | 3/8 | 1 1/8 | 3 | .030 | ● |
| 6754954 | KOR5RA0375R113HAR060C | 3/8 | 3/8 | 1 1/8 | 3 | .060 | ● |

KOR5 DA • Radiused • 5 Flutes • 3 x D • Safe-Lock™ Shank • Inch

- first choice
- alternate choice



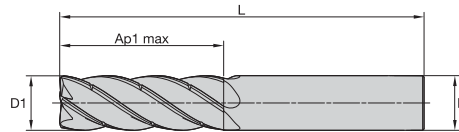
| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | Rc | K600 |
|--------------|-----------------------|-----|-----|---------|-------|------|------|
| 6754956 | KOR5RA0500R150SLR015C | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .015 | ● |
| 6754957 | KOR5RA0500R150SLR030C | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 | ● |
| 6754958 | KOR5RA0500R150SLR060C | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .060 | ● |
| 6754960 | KOR5RA0625R188SLR030C | 5/8 | 5/8 | 1 7/8 | 4 | .030 | ● |
| 6754961 | KOR5RA0625R188SLR060C | 5/8 | 5/8 | 1 7/8 | 4 | .060 | ● |
| 6754962 | KOR5RA0625R188SLR090C | 5/8 | 5/8 | 1 7/8 | 4 | .090 | ● |
| 6754964 | KOR5RA0750R225SLR030C | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 6754965 | KOR5RA0750R225SLR060C | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 6754966 | KOR5RA0750R225SLR090C | 3/4 | 3/4 | 2 1/4 | 5 | .090 | ● |
| 6754967 | KOR5RA0750R225SLR120C | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |
| 6754969 | KOR5RA1000R300SLR030C | 1 | 1 | 3 | 5 1/2 | .030 | ● |
| 6754970 | KOR5RA1000R300SLR060C | 1 | 1 | 3 | 5 1/2 | .060 | ● |
| 6754971 | KOR5RA1000R300SLR090C | 1 | 1 | 3 | 5 1/2 | .090 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DA • Square End • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice

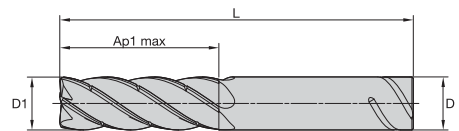


| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |
| | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|-----|---------|---|------|
| 6754951 | KOR5SE0375R113HAC | 3/8 | 3/8 | 1 1/8 | 3 | ● |

KOR5 DA • Square End • 5 Flutes • 3 x D • Safe-Lock™ Shank • Inch

- first choice
- alternate choice



| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |
| | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|-----|---------|-------|------|
| 6754955 | KOR5SE0500R150SLC | 1/2 | 1/2 | 1 1/2 | 3 1/2 | ● |
| 6754959 | KOR5SE0625R188SLC | 5/8 | 5/8 | 1 7/8 | 4 | ● |
| 6754963 | KOR5SE0750R225SLC | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 6754968 | KOR5SE1000R300SLC | 1 | 1 | 3 | 5 1/2 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR5™ DA • Radiused • 5 Flutes • 5 x D • Internal Coolant • Plain Shank • Inch

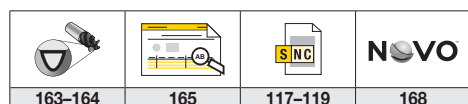
● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | Rc | K600 |
|--------------|-----------------------|-----|-----|---------|---|------|------|
| 6971843 | KOR5RA0375L188HAR015I | 3/8 | 3/8 | 1 7/8 | 4 | .015 | ● |
| 6971844 | KOR5RA0375L188HAR030I | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |
| 6971845 | KOR5RA0375L188HAR060I | 3/8 | 3/8 | 1 7/8 | 4 | .060 | ● |

KOR5 DA • Radiused • 5 Flutes • 5 x D • Internal Coolant • Safe-Lock™ Shank • Inch

● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | Rc | K600 |
|--------------|-----------------------|-----|-----|---------|-------|------|------|
| 6971847 | KOR5RA0500L250SLR015I | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .015 | ● |
| 6971848 | KOR5RA0500L250SLR030I | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .030 | ● |
| 6971849 | KOR5RA0500L250SLR060I | 1/2 | 1/2 | 2 1/2 | 4 1/2 | .060 | ● |
| 6971871 | KOR5RA0625L313SLR030I | 5/8 | 5/8 | 3 1/8 | 5 1/2 | .030 | ● |
| 6971872 | KOR5RA0625L313SLR060I | 5/8 | 5/8 | 3 1/8 | 5 1/2 | .060 | ● |
| 6971873 | KOR5RA0625L313SLR090I | 5/8 | 5/8 | 3 1/8 | 5 1/2 | .090 | ● |
| 6971875 | KOR5RA0750L375SLR030I | 3/4 | 3/4 | 3 3/4 | 6 1/4 | .030 | ● |
| 6971876 | KOR5RA0750L375SLR060I | 3/4 | 3/4 | 3 3/4 | 6 1/4 | .060 | ● |
| 6971877 | KOR5RA0750L375SLR090I | 3/4 | 3/4 | 3 3/4 | 6 1/4 | .090 | ● |
| 6971878 | KOR5RA0750L375SLR120I | 3/4 | 3/4 | 3 3/4 | 6 1/4 | .120 | ● |
| 6971880 | KOR5RA1000L500SLR030I | 1 | 1 | 5 | 8 | .030 | ● |
| 6971881 | KOR5RA1000L500SLR060I | 1 | 1 | 5 | 8 | .060 | ● |
| 6971882 | KOR5RA1000L500SLR090I | 1 | 1 | 5 | 8 | .090 | ● |



KOR5™ DA • Square End • 5 Flutes • 5 x D • Internal Coolant • Plain Shank • Inch

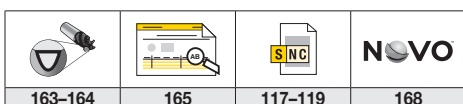
● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|------|---------|---|------|
| 6971846 | KOR5SE0375L188HAI | 3/8 | .375 | 1 7/8 | 4 | ● |

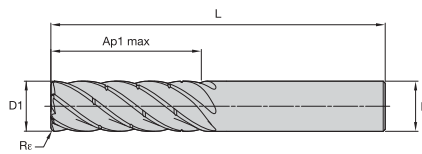
KOR5 DA • Square End • 5 Flutes • 5 x D • Internal Coolant • Safe-Lock™ Shank • Inch

● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|-------------------|-----|-------|---------|-------|------|
| 6971850 | KOR5SE0500L250SLI | 1/2 | .500 | 2 1/2 | 4 1/2 | ● |
| 6971874 | KOR5SE0625L313SLI | 5/8 | .625 | 3 1/8 | 5 1/2 | ● |
| 6971879 | KOR5SE0750L375SLI | 3/4 | .750 | 3 3/4 | 6 1/4 | ● |
| 6971883 | KOR5SE1000L500SLI | 1 | 1.000 | 5 | 8 | ● |



KOR6™ DT • Radiused • 6 Flutes • 3 x D • Plain Shank • Inch



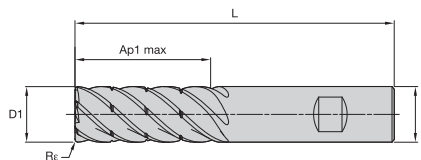
- first choice
- alternate choice

| | |
|---|-------------------------------------|
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| M | <input checked="" type="checkbox"/> |
| K | <input type="checkbox"/> |
| N | <input type="checkbox"/> |
| S | <input checked="" type="checkbox"/> |
| H | <input type="checkbox"/> |

KCSM15

| order number | catalog number | D1 | D | Ap1 max | L | Re |
|--------------|-----------------------|-----|-----|---------|---|------|
| 6767671 | KOR6RA0375R113HAR030C | 3/8 | 3/8 | 1 1/8 | 3 | .030 |

KOR6 DT • Radiused • 6 Flutes • 3 x D • Weldon® Shank • Inch



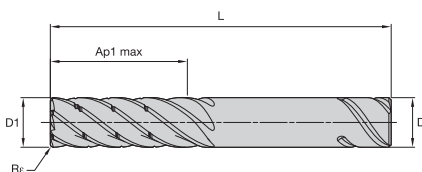
- first choice
- alternate choice

| | |
|---|-------------------------------------|
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| K | <input type="checkbox"/> |
| N | <input type="checkbox"/> |
| S | <input checked="" type="checkbox"/> |
| H | <input type="checkbox"/> |

KCSM15

| order number | catalog number | D1 | D | Ap1 max | L | Re |
|--------------|-----------------------|-----|-----|---------|-------|------|
| 6767676 | KOR6RA0375R113HBR030C | 3/8 | 3/8 | 1 1/8 | 3 | .030 |
| 6767677 | KOR6RA0500R150HBR030C | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 |
| 6767678 | KOR6RA0625R188HBR030C | 5/8 | 5/8 | 1 7/8 | 4 | .030 |
| 6767679 | KOR6RA0750R225HBR060C | 3/4 | 3/4 | 2 1/4 | 5 | .060 |
| 6767691 | KOR6RA1000R300HBR060C | 1 | 1 | 3 | 6 | .060 |

KOR6 DT • Radiused • 6 Flutes • 3 x D • Safe-Lock™ Shank • Inch



- first choice
- alternate choice

| | |
|---|-------------------------------------|
| P | <input type="checkbox"/> |
| M | <input checked="" type="checkbox"/> |
| K | <input type="checkbox"/> |
| N | <input type="checkbox"/> |
| S | <input checked="" type="checkbox"/> |
| H | <input type="checkbox"/> |

KCSM15

| order number | catalog number | D1 | D | Ap1 max | L | Re |
|--------------|-----------------------|-----|-----|---------|-------|------|
| 6767672 | KOR6RA0500R150SLR030C | 1/2 | 1/2 | 1 1/2 | 3 1/2 | .030 |
| 6767673 | KOR6RA0625R188SLR030C | 5/8 | 5/8 | 1 7/8 | 4 | .030 |
| 6767674 | KOR6RA0750R225SLR060C | 3/4 | 3/4 | 2 1/4 | 5 | .060 |
| 6767675 | KOR6RA1000R300SLR060C | 1 | 1 | 3 | 6 | .060 |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KOR6™ DT • Radiused • 6 Flutes • 5 x D • Plain Shank • Inch

● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|-----|-----|---------|---|------|--------|
| 6767706 | KOR6RA0375L188HAR030C | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |

KOR6 DT • Radiused • 6 Flutes • 5 x D • Weldon® Shank • Inch

● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|-----|-----|---------|-------|------|--------|
| 6767722 | KOR6RA0375L188HBR030C | 3/8 | 3/8 | 1 7/8 | 4 | .030 | ● |
| 6767727 | KOR6RA0500L250HBR030C | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 6767728 | KOR6RA0625L313HBR030C | 5/8 | 5/8 | 3 1/8 | 6 | .030 | ● |
| 6767729 | KOR6RA0750L375HBR060C | 3/4 | 3/4 | 3 3/4 | 7 | .060 | ● |
| 6767730 | KOR6RA1000L500HBR060C | 1 | 1 | 5 | 7 1/2 | .060 | ● |

KOR6 DT • Radiused • 6 Flutes • 5 x D • Safe-Lock™ Shank • Inch

● first choice
○ alternate choice

| order number | catalog number | D1 | D | Ap1 max | L | Re | KCSM15 |
|--------------|-----------------------|-----|-----|---------|-------|------|--------|
| 6767707 | KOR6RA0500L250SLR030C | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 6767708 | KOR6RA0625L313SLR030C | 5/8 | 5/8 | 3 1/8 | 6 | .030 | ● |
| 6767710 | KOR6RA0750L375SLR060C | 3/4 | 3/4 | 3 3/4 | 7 | .060 | ● |
| 6767721 | KOR6RA1000L500SLR060C | 1 | 1 | 5 | 7 1/2 | .060 | ● |



KOR5™ DS / KOR6™ DT • 3 x D • Application Data • Inch



KOR5 DS • 3 x D



KOR6 DT • 3 x D

| Material Group | A | | Cutting Speed – vc SFM | | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | |
|----------------|----|-------|------------------------|-----|------------|---------------|--|-------|-------|-------|--------|-------|-------|
| | ap | ae | min | max | frac. dec. | D1 – Diameter | | | | | | | |
| | | | | | | .2500 | .3750 | .5000 | .6250 | .7500 | 1.0000 | | |
| P | 0 | 3 x D | 0.1 x D | 500 | – | 1440 | IPT | .0022 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 1 | 3 x D | 0.1 x D | 500 | – | 1440 | IPT | .0022 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 2 | 3 x D | 0.1 x D | 460 | – | 1370 | IPT | .0022 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 3 | 3 x D | 0.1 x D | 400 | – | 1150 | IPT | .0018 | .0027 | .0035 | .0041 | .0046 | .0054 |
| | 4 | 3 x D | 0.1 x D | 300 | – | 1080 | IPT | .0017 | .0025 | .0031 | .0036 | .0040 | .0046 |
| | 5 | 3 x D | 0.1 x D | 200 | – | 720 | IPT | .0015 | .0022 | .0028 | .0033 | .0037 | .0043 |
| M | 6 | 3 x D | 0.1 x D | 170 | – | 540 | IPT | .0012 | .0018 | .0023 | .0027 | .0030 | .0034 |
| | 1 | 3 x D | 0.1 x D | 300 | – | 830 | IPT | .0018 | .0027 | .0035 | .0041 | .0046 | .0054 |
| | 2 | 3 x D | 0.1 x D | 200 | – | 580 | IPT | .0015 | .0022 | .0028 | .0033 | .0037 | .0043 |
| K | 3 | 3 x D | 0.1 x D | 200 | – | 510 | IPT | .0012 | .0018 | .0023 | .0027 | .0030 | .0034 |
| | 1 | 3 x D | 0.1 x D | 400 | – | 1080 | IPT | .0022 | .0033 | .0041 | .0047 | .0053 | .0059 |
| | 2 | 3 x D | 0.1 x D | 370 | – | 1010 | IPT | .0018 | .0027 | .0035 | .0041 | .0046 | .0054 |
| S | 3 | 3 x D | 0.1 x D | 370 | – | 940 | IPT | .0015 | .0022 | .0028 | .0033 | .0037 | .0043 |
| | 1 | 3 x D | 0.1 x D | 170 | – | 650 | IPT | .0018 | .0027 | .0035 | .0041 | .0046 | .0054 |
| | 2 | 3 x D | 0.1 x D | 80 | – | 580 | IPT | .0015 | .0022 | .0028 | .0033 | .0037 | .0043 |
| | 3 | 3 x D | 0.1 x D | 80 | – | 290 | IPT | .0010 | .0015 | .0018 | .0022 | .0025 | .0029 |
| H | 4 | 3 x D | 0.1 x D | 170 | – | 430 | IPT | .0013 | .0020 | .0026 | .0030 | .0034 | .0040 |
| | 1 | 3 x D | 0.1 x D | 270 | – | 1010 | IPT | .0017 | .0025 | .0031 | .0036 | .0040 | .0046 |
| | 2 | 3 x D | 0.1 x D | 230 | – | 870 | IPT | .0012 | .0018 | .0023 | .0027 | .0030 | .0034 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR5 DS / KOR6 DT • 5 x D • Application Data • Inch



KOR5 DS • 5 x D



KOR6 DT • 5 x D

| Material Group | A | | Cutting Speed – vc SFM | | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | |
|----------------|----|-------|------------------------|-----|------------|---------------|--|-------|-------|-------|--------|-------|-------|
| | ap | ae | min | max | frac. dec. | D1 – Diameter | | | | | | | |
| | | | | | | .2500 | .3750 | .5000 | .6250 | .7500 | 1.0000 | | |
| P | 0 | 5 x D | 0.05 x D | 500 | – | 1770 | IPT | .0029 | .0044 | .0054 | .0063 | .0070 | .0078 |
| | 1 | 5 x D | 0.05 x D | 500 | – | 1770 | IPT | .0029 | .0044 | .0054 | .0063 | .0070 | .0078 |
| | 2 | 5 x D | 0.05 x D | 460 | – | 1680 | IPT | .0029 | .0044 | .0054 | .0063 | .0070 | .0078 |
| | 3 | 5 x D | 0.05 x D | 400 | – | 1420 | IPT | .0024 | .0037 | .0046 | .0055 | .0062 | .0072 |
| | 4 | 5 x D | 0.05 x D | 300 | – | 1330 | IPT | .0022 | .0033 | .0041 | .0048 | .0054 | .0062 |
| | 5 | 5 x D | 0.05 x D | 200 | – | 890 | IPT | .0020 | .0029 | .0037 | .0044 | .0049 | .0058 |
| M | 6 | 5 x D | 0.05 x D | 170 | – | 660 | IPT | .0017 | .0024 | .0031 | .0036 | .0040 | .0045 |
| | 1 | 5 x D | 0.05 x D | 300 | – | 1020 | IPT | .0024 | .0037 | .0046 | .0055 | .0062 | .0072 |
| | 2 | 5 x D | 0.05 x D | 200 | – | 710 | IPT | .0020 | .0029 | .0037 | .0044 | .0049 | .0058 |
| K | 3 | 5 x D | 0.05 x D | 200 | – | 620 | IPT | .0017 | .0024 | .0031 | .0036 | .0040 | .0045 |
| | 1 | 5 x D | 0.05 x D | 400 | – | 1330 | IPT | .0029 | .0044 | .0054 | .0063 | .0070 | .0078 |
| | 2 | 5 x D | 0.05 x D | 370 | – | 1240 | IPT | .0024 | .0037 | .0046 | .0055 | .0062 | .0072 |
| S | 3 | 5 x D | 0.05 x D | 370 | – | 1150 | IPT | .0020 | .0029 | .0037 | .0044 | .0049 | .0058 |
| | 1 | 5 x D | 0.05 x D | 170 | – | 800 | IPT | .0024 | .0037 | .0046 | .0055 | .0062 | .0072 |
| | 2 | 5 x D | 0.05 x D | 80 | – | 710 | IPT | .0020 | .0029 | .0037 | .0044 | .0049 | .0058 |
| | 3 | 5 x D | 0.05 x D | 80 | – | 350 | IPT | .0013 | .0019 | .0025 | .0029 | .0033 | .0039 |
| H | 4 | 5 x D | 0.05 x D | 170 | – | 530 | IPT | .0017 | .0027 | .0034 | .0040 | .0045 | .0053 |
| | 1 | 5 x D | 0.05 x D | 270 | – | 1240 | IPT | .0022 | .0033 | .0041 | .0048 | .0054 | .0062 |
| | 2 | 5 x D | 0.05 x D | 230 | – | 1060 | IPT | .0017 | .0024 | .0031 | .0036 | .0040 | .0045 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR5™ DS / KOR6™ DT • 5 x D • Adjustment Factor Table for Feed Calculation • Inch

| | Ae/D1 | 0.50% | 1.00% | 1.50% | 2.00% | 4.00% | 5.00% |
|---------------------|-------|-------|-------|-------|-------|-------|-------|
| Speed factor | Kv | 2.00 | 1.97 | 1.93 | 1.38 | 1.03 | 1.00 |
| Feed factor | KFz | 1.27 | 1.18 | 1.14 | 1.09 | 1.05 | 1.00 |

To calculate application-specific cutting data, please use above Kv coefficient for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:

Application: D1 = 1", KOR5^{DS} / KOR6^{DT} 3 x D;
S4 material group;
Ae 0.05" (Ae = 5% D)
Cutting data recommendation: 500 SFM;
Fz = 0.0053 IPT
Adjustment coefficients: Ae = 0.02" equals 2.00%;
Kv = 1.38; KFz = 1.09

Final cutting data recommendation:

Vc new = 350 SFM * 1.38 = 483 SFM
Fz new = .0053 IPT * 1.09 = .0058 IPT

KOR5^{DA} • 5 Flutes • Application Data • Inch



| Material Group | | | | | K600 | | | Recommended feed per tooth (IPT = inch/th) | | | | | |
|----------------|----------|----------|-----------|-----|------------------------|------|-----|--|---------------|--------|--------|--------|--|
| | A | | B | | Cutting Speed – vc SFM | | | frac. dec. | D1 – Diameter | | | | |
| | ap | ae | ap | min | max | 3/8 | 1/2 | | 5/8 | 3/4 | 1 | | |
| 1 | 0.5 x D1 | 0.5 x D1 | 0.25 x D1 | 640 | – | 6560 | IPT | .3750 | .5000 | .6250 | .7500 | 1.0000 | |
| N | 0.5 x D1 | 0.5 x D1 | 0.25 x D1 | 640 | – | 4920 | IPT | 0.0030 | 0.0050 | 0.0060 | 0.0080 | 0.0090 | |
| 2 | 0.5 x D1 | 0.5 x D1 | 0.25 x D1 | 640 | – | 4920 | IPT | 0.0025 | 0.0045 | 0.0055 | 0.0070 | 0.0085 | |

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth. For cutting aluminum with high silicon, TiCN coating is recommended. Ap for milling machine with ceramic bearings spindle, multiply by 0.5. Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KOR5^{DA} • 5 Flutes • Adjustment Factor Table for Feed Calculation

| Ae/D1 | 2% | 5% | 10% | 20% | 30% | 40% | 50% | 100% |
|------------------------|---------|---------|---------|---------|--------|--------|---------|----------|
| Max Ap | Ap1 Max | Ap1 Max | Ap1 Max | Ap1 Max | 2 x D1 | 1 x D1 | .5 x D1 | .25 x D1 |
| Feed Multiplier | 3.60 | 2.30 | 1.70 | 1.25 | 1.09 | 1.02 | 1.00 | .90 |

To calculate application specific cutting data, please use coefficient table to the right for adaptation of feed.

Fz new = IPT * Feed Multiplier













Calculation example:

Application: D = 1";
N1 material group;
Ae 0.1"
Cutting data recommendation: 3600 SFM;
Fz = 0.0090 IPT
Adjustment coefficients: Ae = 0.1" equals 10.00%;
Feed Multiplier = 1.7

Final cutting data recommendation:















Fz new = .0090 IPT * 1.7 = .0153 IPT

Tool Selector

| ROUGHERS | | | |
|---|---|---|---|
| KenCut™ RR | | | |
| |  |  |  |
| Series | HPRSS | MDRHEC | HPRST |
| Page | 72 | 72-73 | 73-74 |
| Tool type | | | |
| <i>Rougher</i> | ● | ● | ● |
| <i>Finisher</i> | | | |
| <i>Chamfering</i> | | | |
| Main operations |  |  |  |
| Workpiece material | | | |
| <i>Primary</i> | P M K | P M K | M S H |
| <i>Secondary</i> | H | H | P K |
| Corner style |  |  |  |
| Corner radius [R _ε] | .020-.030" | — | .030-.050" |
| Corner chamfer width [BCH] | — | .012-.020" | — |
| Cutting diameter [D1] | 1/4-3/4" | 1/4-1" | 1/4-1" |
| Length of cut | 2.2-3 x D | 1.2-3 x D | 1.2-3 x D |
| Maximum cutting depth [A _{p1} max] | 3/4-1-5/8" | 3/8-1-1/2" | 3/8-1-1/2" |
| Flute helix angle | 35° | 20° | 45° |
| Number of flutes [ZU] | 3 | 3-5 | 3-6 |
| Center cutting | ✓ | ✓ | ✓ |
| Additional Operations |  |  |  |

- Primary
- Secondary

Tool Selector

| FINISHERS | | | |
|---|---|---|---|
| KenCut™ FF | | | |
| |  |  |  |
| Series | HPFSS | HPFT | FSDE Short |
| Page | kennametal.com | kennametal.com | kennametal.com |
| Tool type | | | |
| <i>Rougher</i> | | | |
| <i>Finisher</i> | ● | ● | ● |
| <i>Chamfering</i> | | | |
| Main operations |  |  |  |
| Workpiece material | | | |
| <i>Primary</i> | P M S | P M K S | M S |
| <i>Secondary</i> | K H | H | P H |
| Corner style |  |  |  |
| Corner radius [R_c] | — | — | .015–.120" |
| Corner chamfer width [BCH] | — | — | — |
| Cutting diameter [D1] | 1/8–1" | 1/4–1" | 3/8–1" |
| Length of cut | 1.2–5 x D | 1.3–4 x D | 2 x D |
| Maximum cutting depth [A_{p1} max] | 1/4–3-1/4" | 3/4–4" | 3/4–2" |
| Flute helix angle | 45° | 45° | 36° |
| Number of flutes [ZU] | 5 | 6 | 9–19 |
| Center cutting | ✓ | ✓ | |
| Additional Operations |   |   |  |

- Primary
- Secondary

KenCut™ RR

High-Performance Roughing



Materials



Applications



Ramping



Shoulder Milling



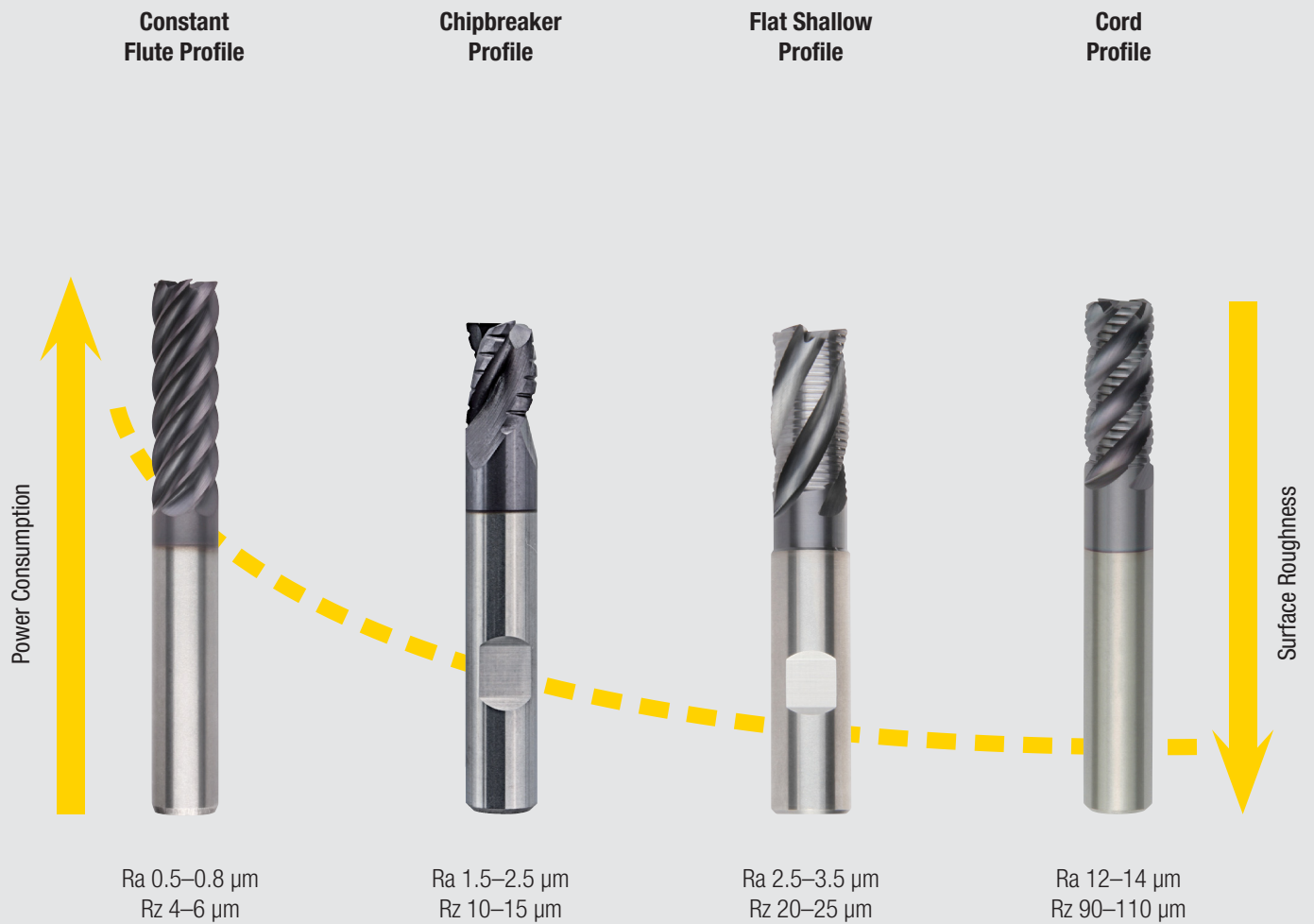
Slotting: Square End



Plunge Milling

Solid carbide end mill with roughing geometries for low cutting forces and low spindle power consumption even in unstable conditions.

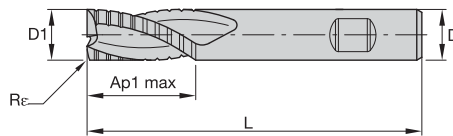
The KenCut RR solid carbide end mill series is designed for high metal removal rates in a wide range of workpiece materials such as steels, stainless steels, cast irons, high-temperature alloys, and in certain cases, hardened materials.



Tailored geometries for low cutting forces and low spindle power consumption.
 Center cutting for plunging, ramping, profiling, high-feed slotting, and side milling.
 Roughing and semi-finishing for fewer tool changes and less downtime.
 Internal coolant for improved chip evacuation and extended tool life.

KenCut™ RR • HPRSS • Radiused • 3 Flutes • Weldon® Shank • Inch

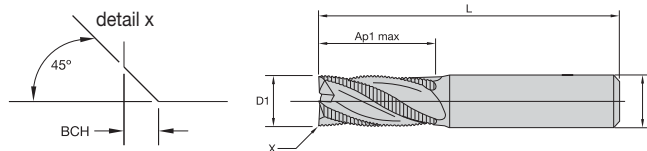
- first choice
- alternate choice



| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Rε | KCPM15 |
|--------------|----------------|-----|-----|---------|-------|------|--------|
| 4048683 | HPRSS250S3075 | 1/4 | 1/4 | 3/4 | 2 1/2 | .020 | ● |
| 4048684 | HPRSS375S3100 | 3/8 | 3/8 | 1 | 2 1/2 | .020 | ● |
| 4048685 | HPRSS500S3125 | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 4048686 | HPRSS625S3163 | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .030 | ● |
| 4048687 | HPRSS750S3163 | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |

KenCut RR • MDRHEC • Chamfered • 3-4 Flutes • Plain Shank • Inch

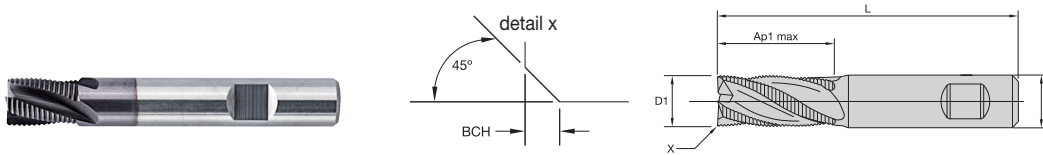


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | BCH | Z U | KCPM15 |
|--------------|----------------|------|------|---------|-------|------|-----|--------|
| 4048689 | MDRHEC250S4025 | 1/4 | 1/4 | 3/8 | 2 | .012 | 3 | ● |
| 4048690 | MDRHEC250S4075 | 1/4 | 1/4 | 3/4 | 2 1/2 | .012 | 3 | ● |
| 4048691 | MDRHEC312S4081 | 5/16 | 5/16 | 13/16 | 2 1/2 | .012 | 4 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KenCut™ RR • MDRHEC • Chamfered • 4-5 Flutes • Weldon® Shank • Inch

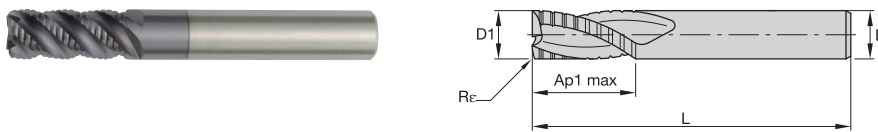


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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | BCH | Z U | KCPM15 |
|--------------|----------------|-----|-----|---------|-------|------|-----|--------|
| 4048692 | MDRHEC375S4038 | 3/8 | 3/8 | 1/2 | 2 | .020 | 4 | ● |
| 4048693 | MDRHEC375S4088 | 3/8 | 3/8 | 7/8 | 2 1/2 | .020 | 4 | ● |
| 4048694 | MDRHEC500S4050 | 1/2 | 1/2 | 5/8 | 2 1/2 | .020 | 4 | ● |
| 4048695 | MDRHEC500S4100 | 1/2 | 1/2 | 1 | 3 | .020 | 4 | ● |
| 4048696 | MDRHEC625S4063 | 5/8 | 5/8 | 3/4 | 3 | .020 | 4 | ● |
| 4048697 | MDRHEC625S4125 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .020 | 4 | ● |
| 4048698 | MDRHEC750S4075 | 3/4 | 3/4 | 7/8 | 3 1/2 | .020 | 4 | ● |
| 4048699 | MDRHEC750S4150 | 3/4 | 3/4 | 1 1/2 | 4 | .020 | 4 | ● |
| 4048688 | MDRHEC100S5150 | 1 | 1 | 1 1/2 | 4 | .020 | 5 | ● |

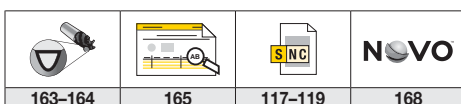
KenCut RR • HPRST • Radiused • 3-4 Flutes • Plain Shank • Inch

- first choice
- alternate choice



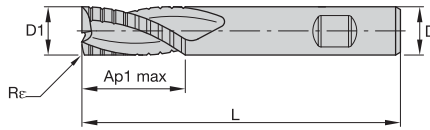
| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | Re | Z U | KC643M |
|--------------|----------------|-----|-----|---------|-------|------|-----|--------|
| 3331481 | HPRST250S4038 | 1/4 | 1/4 | 3/8 | 2 | .030 | 3 | ● |
| 3331482 | HPRST250S4075 | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | 4 | ● |
| 3331483 | HPRST375S4050 | 3/8 | 3/8 | 1/2 | 2 | .030 | 4 | ● |
| 3331484 | HPRST375S4088 | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | 4 | ● |



KenCut™ RR • HPRST • Radiused • 4-6 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |
| | |

| order number | catalog number | D1 | D | Ap1 max | L | Rε | Z U | KC643M |
|--------------|----------------|-----|-----|---------|-------|------|-----|--------|
| 3331485 | HPRST500S4063 | 1/2 | 1/2 | 5/8 | 2 1/2 | .040 | 4 | ● |
| 3331486 | HPRST500S4125 | 1/2 | 1/2 | 1 1/4 | 3 1/2 | .040 | 4 | ● |
| 3331487 | HPRST625S4075 | 5/8 | 5/8 | 3/4 | 3 | .040 | 4 | ● |
| 3331488 | HPRST625S4125 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .040 | 4 | ● |
| 3331489 | HPRST625S6125 | 5/8 | 5/8 | 1 1/4 | 3 1/2 | .040 | 6 | ● |
| 3331490 | HPRST750S4088 | 3/4 | 3/4 | 7/8 | 3 1/2 | .050 | 4 | ● |
| 3331491 | HPRST750S4150 | 3/4 | 3/4 | 1 1/2 | 4 | .050 | 4 | ● |
| 3331492 | HPRST750S6150 | 3/4 | 3/4 | 1 1/2 | 4 | .050 | 6 | ● |
| 3331493 | HPRST1000S4150 | 1 | 1 | 1 1/2 | 4 | .050 | 4 | ● |
| 3331494 | HPRST1000S6150 | 1 | 1 | 1 1/2 | 4 | .050 | 6 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KenCut™ RR • HPRSS • Application Data • Inch



| Material Group | | | | | KCPM15 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|----|-------|---------|----------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | | |
| | ap | ae | ap | | min | max | | .250 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 |
| P | 1 | 1 x D | 0.5 x D | 0.75 x D | 500 | 650 | fz | .0018 | .0023 | .0027 | .0035 | .0039 | .0043 |
| | 2 | 1 x D | 0.5 x D | 0.75 x D | 450 | 625 | fz | .0018 | .0023 | .0027 | .0035 | .0039 | .0043 |
| | 3 | 1 x D | 0.5 x D | 0.75 x D | 400 | 525 | fz | .0015 | .0020 | .0023 | .0029 | .0034 | .0038 |
| | 4 | 1 x D | 0.4 x D | 0.3 x D | 350 | 475 | fz | .0014 | .0018 | .0020 | .0026 | .0030 | .0033 |
| | 5 | 1 x D | 0.5 x D | 0.75 x D | 200 | 325 | fz | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 |
| | 6 | 1 x D | 0.4 x D | 0.3 x D | 150 | 225 | fz | .0010 | .0013 | .0015 | .0019 | .0022 | .0024 |
| M | 1 | 1 x D | 0.5 x D | 0.75 x D | 250 | 325 | fz | .0015 | .0020 | .0023 | .0029 | .0034 | .0038 |
| | 2 | 1 x D | 0.5 x D | 0.75 x D | 190 | 260 | fz | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 |
| K | 1 | 1 x D | 0.5 x D | 0.75 x D | 400 | 525 | fz | .0018 | .0023 | .0027 | .0035 | .0039 | .0043 |
| | 2 | 1 x D | 0.5 x D | 0.75 x D | 360 | 460 | fz | .0015 | .0020 | .0023 | .0029 | .0034 | .0038 |
| H | 1 | 1 x D | 0.5 x D | 0.75 x D | 330 | 430 | fz | .0012 | .0016 | .0018 | .0023 | .0027 | .0030 |
| | 1 | 1 x D | 0.4 x D | 0.3 x D | 300 | 450 | fz | .0014 | .0018 | .0020 | .0026 | .0030 | .0033 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KenCut RR • MDRHEC • Application Data • Inch



| Material Group | | | | | KCPM15 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|---------|---------|---------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | | | |
| | ap | ae | ap | | min | max | | .250 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| P | 0 | 1.0 x D | 0.5 x D | 0.5 x D | 490 | 660 | IPT | .0016 | .0020 | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 1 | 1.0 x D | 0.5 x D | 0.5 x D | 490 | 660 | IPT | .0016 | .0020 | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 2 | 1.0 x D | 0.4 x D | 0.5 x D | 460 | 620 | IPT | .0016 | .0020 | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 3 | 1.0 x D | 0.4 x D | 0.5 x D | 390 | 520 | IPT | .0013 | .0017 | .0019 | .0025 | .0029 | .0033 | .0038 |
| | 4 | 1.0 x D | 0.3 x D | 0.4 x D | 300 | 490 | IPT | .0012 | .0015 | .0017 | .0022 | .0026 | .0029 | .0033 |
| | 5 | 1.0 x D | 0.4 x D | 0.5 x D | 200 | 330 | IPT | .0010 | .0013 | .0016 | .0020 | .0023 | .0026 | .0031 |
| M | 1 | 1.0 x D | 0.4 x D | 0.5 x D | 300 | 380 | IPT | .0013 | .0017 | .0019 | .0025 | .0029 | .0033 | .0038 |
| | 2 | 1.0 x D | 0.4 x D | 0.5 x D | 200 | 260 | IPT | .0010 | .0013 | .0016 | .0020 | .0023 | .0026 | .0031 |
| K | 1 | 1.0 x D | 0.4 x D | 0.5 x D | 200 | 230 | IPT | .0009 | .0011 | .0013 | .0016 | .0019 | .0021 | .0024 |
| | 1 | 1.0 x D | 0.5 x D | 0.5 x D | 390 | 490 | IPT | .0016 | .0020 | .0023 | .0029 | .0034 | .0037 | .0042 |
| S | 2 | 1.0 x D | 0.4 x D | 0.5 x D | 360 | 460 | IPT | .0013 | .0017 | .0019 | .0025 | .0029 | .0033 | .0038 |
| | 3 | 1.0 x D | 0.4 x D | 0.5 x D | 360 | 430 | IPT | .0010 | .0013 | .0016 | .0020 | .0023 | .0026 | .0031 |
| H | 1 | 1.0 x D | 0.4 x D | 0.5 x D | - | - | IPT | .0013 | .0017 | .0019 | .0025 | .0029 | .0033 | .0038 |
| | 2 | 1.0 x D | 0.4 x D | 0.5 x D | - | - | IPT | .0007 | .0009 | .0010 | .0013 | .0015 | .0018 | .0021 |
| H | 1 | 1.0 x D | 0.3 x D | 0.4 x D | 260 | 460 | IPT | .0012 | .0015 | .0017 | .0022 | .0026 | .0029 | .0033 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KenCut™ RR • HPRST • Application Data • Inch



| Material Group | | | | | KC643M | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|---------|---------|--------------------|--------|---------------|--|-------|-------|-------|-------|-------|-------|-------|
| | A | | B | Cutting Speed – vc | | frac. dec. | D1 – Diameter | | | | | | | |
| | ap | ae | ap | min | max | | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 3 | 1.0 x D | 0.5 x D | 0.75 x D | 390 | 520 | IPT | .0015 | .0020 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 4 | 1.0 x D | 0.3 x D | 0.75 x D | 300 | 490 | IPT | .0014 | .0017 | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 5 | 1.0 x D | 0.5 x D | 0.75 x D | 200 | 330 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 6 | 1.0 x D | 0.3 x D | 0.3 x D | 160 | 250 | IPT | .0010 | .0013 | .0015 | .0019 | .0022 | .0025 | .0028 |
| M | 1 | 1.0 x D | 0.5 x D | 0.75 x D | 300 | 380 | IPT | .0015 | .0020 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.0 x D | 0.5 x D | 0.75 x D | 200 | 260 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 3 | 1.0 x D | 0.5 x D | 0.75 x D | 200 | 230 | IPT | .0010 | .0013 | .0015 | .0019 | .0022 | .0025 | .0028 |
| K | 1 | 1.0 x D | 0.5 x D | 1 x D | 390 | 490 | IPT | .0018 | .0023 | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 1.0 x D | 0.5 x D | 1 x D | 360 | 460 | IPT | .0015 | .0020 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 3 | 1.0 x D | 0.5 x D | 1 x D | 360 | 430 | IPT | .0012 | .0016 | .0018 | .0023 | .0027 | .0031 | .0036 |
| S | 1 | 1.0 x D | 0.3 x D | 0.75 x D | 160 | 300 | IPT | .0015 | .0020 | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.0 x D | 0.3 x D | 0.75 x D | 80 | 130 | IPT | .0008 | .0010 | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 3 | 1.0 x D | 0.3 x D | 0.75 x D | 80 | 130 | IPT | .0008 | .0010 | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 4 | 1.0 x D | 0.4 x D | 0.75 x D | 160 | 200 | IPT | .0011 | .0014 | .0017 | .0021 | .0025 | .0028 | .0033 |
| H | 1 | 1.0 x D | 0.3 x D | 0.3 x D | 260 | 460 | IPT | .0014 | .0017 | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 2 | 1.0 x D | 0.2 x D | 0.2 x D | 230 | 390 | IPT | .0010 | .0013 | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 3 | 1.0 x D | 0.2 x D | 0.2 x D | 200 | 300 | IPT | .0008 | .0010 | .0012 | .0015 | .0018 | .0021 | .0024 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Online Catalog

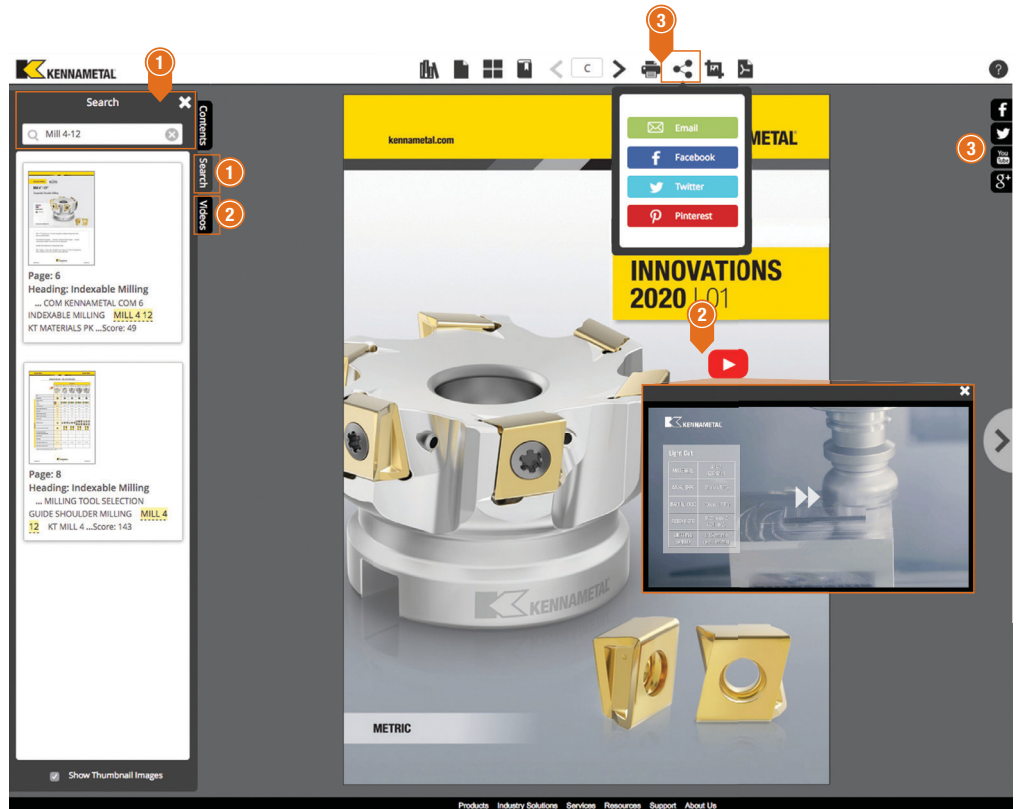
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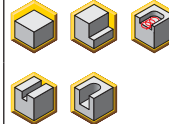
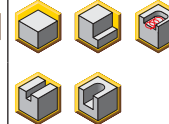


Tool Selector

| ALUMINUM MACHINING | | | | | | | |
|---------------------------------|---|---|---|--|---|---|---|
| | MaxiMet™ | | | | KenCut™ AL | | KenCut ALR |
| |  |  |  |  |  |  |  |
| Series | MaxiMet ABDF | MaxiMet ABDF Extended Neck | MaxiMet ABDE | MaxiMet ABDE Extended Neck | AADF | AADE | SFRHEC |
| Page | 82 | 83 | 84 | 85-86 | 86-87 | 88-90 | 90-91 |
| Tool type | | | | | | | |
| Rougher | ● | ● | ● | ● | ● | ● | ● |
| Finisher | ○ | ○ | ○ | ○ | ○ | ○ | |
| Chamfering | | | | | | | |
| Main operation |  |  |  |  |  |  |  |
| Workpiece material | | | | | | | |
| Primary | N | N | N | N | N | N | N |
| Secondary | | | | | | | |
| Corner style |  |  |  |  |  |  |  |
| Corner radius [Rε] | .015-.120" | .030-.120" | .015-.120" | .030-.120" | .015-.060" | .015-.120" | — |
| Corner chamfer width [BCH] | — | — | — | — | — | — | .24-.039" |
| Cutter diameter [D1] | 3/16-1" | 1/4-1" | 3/16-1" | 1/4-1" | 1/8-3/4" | 1/8-1" | 1/4-1" |
| Length of cut | 1.5-2.6 x D | 1.2-1.5 x D | 1.2-2.6 x D | 1.2-1.5 x D | 1.3-7.0 x D | 1.2-7.0 x D | 2-4 x D |
| Maximum cutting depth [Ap1 max] | 3/8-2" | 3/8-1-1/4" | 7/32-2" | 3/8-1-1/4" | 1/4-3-1/4" | 1/4-4-1/8" | 3/4-2-1/4" |
| Flute helix angle | 45° | 45° | 38° | 38° | 45° | 37° | 30° |
| Number of flutes [ZU] | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| Center cutting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional operations |  |  |  |  |  |  |  |

- Primary
- Secondary

Tool Selector

| ALUMINUM MACHINING | | | | | |
|---|---|---|---|--|---|
| KenCut™ AQ | | | | | |
| |  |  |  |  |  |
| Series | ALCB | ALCC | ALCR | ALSR | ALSB |
| Page | 91 | 92 | 92 | 93 | 93 |
| Tool type | | | | | |
| Rougher | ● | ● | ● | ● | ● |
| Finisher | ● | ● | ● | ● | ● |
| Main operations |  |  |  |  |  |
| Workpiece material | | | | | |
| Primary | N | N | N | N | N |
| Secondary | | | | | |
| Corner style |  |  |  |  |  |
| Corner radius [R _c] | .010-.015" | .010-.015" | .015" | .015" | .015" |
| Corner chamfer width [BCH] | — | — | — | — | — |
| Cutting diameter [D1] | 1/4-3/4" | 1/4-3/4" | 1/2-3/4" | 1-1-1/2" | 1-2" |
| Maximum cutting depth [A _{p1} max] | 1/4-3/4" | 3/8-1" | 1-1-1/2" | 1-1/4 - 2" | 5/8" |
| Axial rake angle | 3° | 3° | 9°-12° | 6° | 6° |
| Effective cutting edges [ZU] | 2 | 2 | 2 | 2-3 | 4-5 |
| Center cutting | | ✓ | ✓ | | |
| Additional operations |  |  |  |  |  |

- Primary
- Secondary

MaxiMet™ and KenCut™ A-Series

High-Performance Aluminum
Roughing and Finishing



Materials

N

Applications



Face Milling



Shoulder Milling



Trochoidal Milling



Slotting: Square End



Plunge Milling



Pocketing



Helical Milling



Plunge Milling:
Ball Nose



Ramping



Side/Shoulder Milling:
Slotting: Square End

Center-cutting design enables plunging, slotting, and profiling applications in any type of aluminum workpiece materials. Designed to deliver exceptional chip evacuation and generate the highest floor-to-wall straightness.

KenCut AL & ALR

Roughers with cord profile available.

Multiple corner radii and extended neck configurations available as standard.

KenCut AQ

Ideal for roughing and finishing operations, all tools are minimum quantity lubrication (MQL) ready.

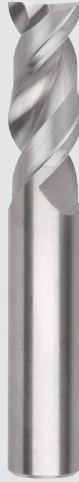
The sharp cutting edges and low-friction rake surfaces guarantee high-quality surface finishes.

KenCut™ AL & ALR



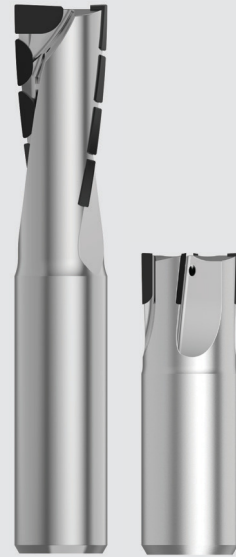
Two- and three-fluted roughers and finishers for a variety of aluminum applications.

MaxiMet™



The MaxiMet solid end mill series provides exceptional metal removal rates and combines roughing and finishing operations in any aluminum plunging, slotting, and profiling application.

KenCut AQ



PCD tools for high-speed aluminum machining reduce machining time drastically, providing up to 10 times higher productivity compared to solid carbide solutions.

MaxiMet

Unequal three-flute spacing reduces vibrations and provides chatter-free machining.

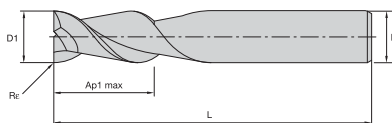
1 x D slotting capability and side milling capability up to 0.5 x D radial and 1.5 x D axial engagement result in fewer tool passes and increased productivity.

Suitable for MQL (minimum quantity lubrication).

Exceptional wall-to-floor perpendicularity in thin-wall applications.

MaxiMet™ • Radiused • 2 Flutes • Wiper Facet • Plain Shank • Inch

- first choice
- alternate choice

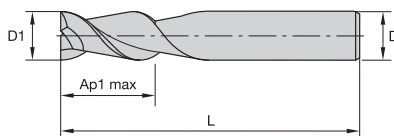


| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | Rε | K600 |
|--------------|----------------|------|------|---------|-------|------|------|
| 4041061 | ABDF0188J2ARA | 3/16 | 3/16 | 3/8 | 2 | .015 | ● |
| 4041062 | ABDF0250J2ARA | 1/4 | 1/4 | 1/2 | 2 1/2 | .015 | ● |
| 3660397 | ABDF0250J2ARB | 1/4 | 1/4 | 1/2 | 2 1/2 | .030 | ● |
| 3660398 | ABDF0312J2ARB | 5/16 | 5/16 | 5/8 | 2 1/2 | .030 | ● |
| 3660400 | ABDF0375J2ARB | 3/8 | 3/8 | 3/4 | 2 1/2 | .030 | ● |
| 3660427 | ABDF0500J2ARB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3660428 | ABDF0500J2ARC | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● |
| 4041075 | ABDF0500J2ARE | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 4041077 | ABDF0625J2BRB | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .030 | ● |
| 4041078 | ABDF0625J2BRC | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .060 | ● |
| 3660435 | ABDF0750J2ARC | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 3660436 | ABDF0750J2ARE | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 4041081 | ABDF0750J2BRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 4041082 | ABDF0750J2BRC | 3/4 | 3/4 | 1 5/8 | 4 | .060 | ● |
| 3660439 | ABDF1000J2ARC | 1 | 1 | 1 1/2 | 4 | .060 | ● |

MaxiMet • Square End • 2 Flutes • Wiper Facet • Plain Shank • Inch

- first choice
- alternate choice



| | |
|---|---|
| P | ■ |
| M | ■ |
| K | ■ |
| N | ● |
| S | ■ |
| H | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|----------------|------|------|---------|-------|------|
| 4041060 | ABDF0188J2AS | 3/16 | 3/16 | 3/8 | 2 | ● |
| 3660396 | ABDF0250J2AS | 1/4 | 1/4 | 1/2 | 2 1/2 | ● |
| 4041073 | ABDF0312J2AS | 5/16 | 5/16 | 5/8 | 2 1/2 | ● |
| 3660399 | ABDF0375J2AS | 3/8 | 3/8 | 3/4 | 2 1/2 | ● |
| 3660426 | ABDF0500J2AS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 3660432 | ABDF0625J2AS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 4041076 | ABDF0625J2BS | 5/8 | 5/8 | 1 5/8 | 3 1/2 | ● |
| 3660433 | ABDF0750J2AS | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 4041080 | ABDF0750J2BS | 3/4 | 3/4 | 1 5/8 | 4 | ● |
| 4041084 | ABDF1000J2BS | 1 | 1 | 2 | 5 | ● |

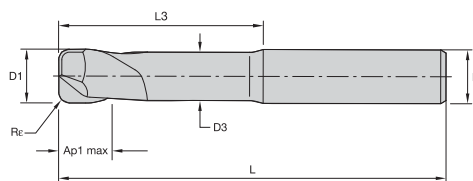
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| 163-164 | 165 | 117-119 | 168 |



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● first choice

○ alternate choice



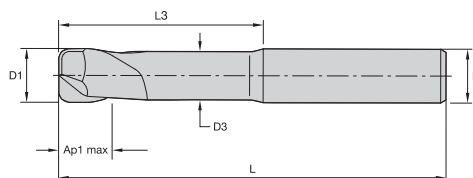
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| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Rε | K600 |
|--------------|----------------|------|------|-------|---------|-------|---|------|------|
| 3755865 | ABDF0250J2BQB | 1/4 | 1/4 | .2346 | 3/8 | 1 1/8 | 4 | .030 | ● |
| 3755867 | ABDF0250J2CQB | 1/4 | 1/4 | .2346 | 3/8 | 2 1/8 | 4 | .030 | ● |
| 3755868 | ABDF0312J2AQB | 5/16 | 5/16 | .2937 | 7/16 | 1 1/8 | 4 | .030 | ● |
| 3755872 | ABDF0375J2BQB | 3/8 | 3/8 | .3524 | 1/2 | 2 1/8 | 4 | .030 | ● |
| 3755874 | ABDF0500J2AQB | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | .030 | ● |
| 3755875 | ABDF0500J2AQE | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | .120 | ● |
| 3755877 | ABDF0500J2BQB | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .030 | ● |
| 3755878 | ABDF0500J2BQC | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .060 | ● |
| 3755879 | ABDF0500J2BQD | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .090 | ● |
| 3755880 | ABDF0500J2BQE | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .120 | ● |
| 3755882 | ABDF0500J2CQB | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .030 | ● |
| 3755883 | ABDF0500J2CQC | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .060 | ● |
| 3755885 | ABDF0500J2CQE | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .120 | ● |
| 3755846 | ABDF0750J2AQE | 3/4 | 3/4 | .7047 | 1 | 1 5/8 | 4 | .120 | ● |
| 3755848 | ABDF0750J2BQB | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .030 | ● |
| 3755849 | ABDF0750J2BQC | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .060 | ● |
| 3755851 | ABDF0750J2BQE | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .120 | ● |
| 3755853 | ABDF0750J2CQB | 3/4 | 3/4 | .7047 | 1 | 3 3/8 | 6 | .030 | ● |
| 3755858 | ABDF1000J2BQB | 1 | 1 | .9398 | 1 1/4 | 3 3/8 | 7 | .030 | ● |

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● first choice

○ alternate choice



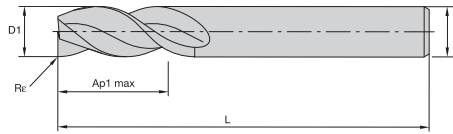
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| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | K600 |
|--------------|----------------|-----|-----|-------|---------|-------|---|------|
| 3755864 | ABDF0250J2BQ | 1/4 | 1/4 | .2346 | 3/8 | 1 1/8 | 4 | ● |
| 3755866 | ABDF0250J2CQ | 1/4 | 1/4 | .2346 | 3/8 | 2 1/8 | 4 | ● |
| 3755869 | ABDF0375J2AQ | 3/8 | 3/8 | .3524 | 1/2 | 1 1/8 | 4 | ● |
| 3755871 | ABDF0375J2BQ | 3/8 | 3/8 | .3524 | 1/2 | 2 1/8 | 4 | ● |
| 3755873 | ABDF0500J2AQ | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | ● |
| 3755876 | ABDF0500J2BQ | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | ● |
| 3755881 | ABDF0500J2CQ | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | ● |
| 3755847 | ABDF0750J2BQ | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | ● |

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| 163-164 | 165 | 117-119 | 168 |

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- first choice
- alternate choice

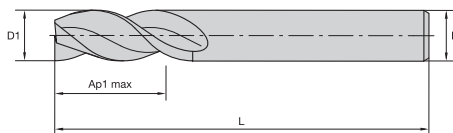


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| order number | catalog number | D1 | D | Ap1 max | L | Re | KG00 |
|--------------|----------------|------|------|---------|-------|------|------|
| 4041089 | ABDE0188J3ARA | 3/16 | 3/16 | 7/32 | 2 | .015 | ● |
| 3660402 | ABDE0250J3ARB | 1/4 | 1/4 | 1/2 | 2 1/2 | .030 | ● |
| 3660423 | ABDE0312J3ARB | 5/16 | 5/16 | 5/8 | 2 1/2 | .030 | ● |
| 3660425 | ABDE0375J3ARB | 3/8 | 3/8 | 3/4 | 2 1/2 | .030 | ● |
| 3660430 | ABDE0500J3ARB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3660431 | ABDE0500J3ARC | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● |
| 4041091 | ABDE0500J3ARE | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 4041093 | ABDE0625J3BRB | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .030 | ● |
| 3660443 | ABDE0750J3ARB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 3660444 | ABDE0750J3ARC | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 3660445 | ABDE0750J3ARE | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 4041095 | ABDE0750J3BRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 4041096 | ABDE0750J3BRC | 3/4 | 3/4 | 1 5/8 | 4 | .060 | ● |
| 4041097 | ABDE0750J3BRE | 3/4 | 3/4 | 1 5/8 | 4 | .120 | ● |
| 3660447 | ABDE1000J3ARB | 1 | 1 | 1 1/2 | 4 | .030 | ● |
| 3660448 | ABDE1000J3ARC | 1 | 1 | 1 1/2 | 4 | .060 | ● |
| 3660449 | ABDE1000J3ARE | 1 | 1 | 1 1/2 | 4 | .120 | ● |
| 4041099 | ABDE1000J3BRB | 1 | 1 | 2 | 5 | .030 | ● |
| 4041101 | ABDE1000J3BRE | 1 | 1 | 2 | 5 | .120 | ● |

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- first choice
- alternate choice



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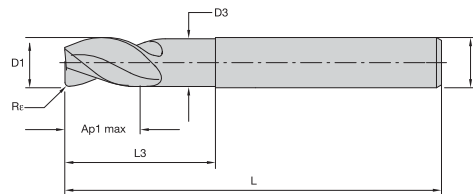
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|--------------|----------------|------|------|---------|-------|------|
| 4041088 | ABDE0188J3AS | 3/16 | 3/16 | 7/32 | 2 | ● |
| 3660401 | ABDE0250J3AS | 1/4 | 1/4 | 1/2 | 2 1/2 | ● |
| 4041090 | ABDE0312J3AS | 5/16 | 5/16 | 5/8 | 2 1/2 | ● |
| 3660424 | ABDE0375J3AS | 3/8 | 3/8 | 3/4 | 2 1/2 | ● |
| 3660429 | ABDE0500J3AS | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 3660441 | ABDE0625J3AS | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 4041092 | ABDE0625J3BS | 5/8 | 5/8 | 1 5/8 | 3 1/2 | ● |
| 3660442 | ABDE0750J3AS | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 4041094 | ABDE0750J3BS | 3/4 | 3/4 | 1 5/8 | 4 | ● |
| 3660446 | ABDE1000J3AS | 1 | 1 | 1 1/2 | 4 | ● |
| 4041098 | ABDE1000J3BS | 1 | 1 | 2 | 5 | ● |

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| 163-164 | 165 | 117-119 | 168 |



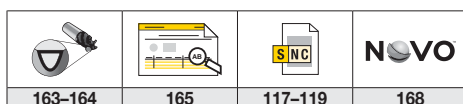
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- first choice
- alternate choice



| | | |
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| P | Blue | |
| M | Yellow | |
| K | Red | |
| N | Green | ● |
| S | Orange | |
| H | Grey | |
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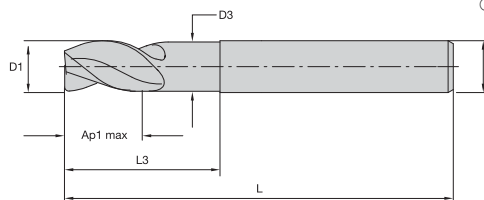
| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | R _ε | K600 |
|--------------|----------------|------|------|-------|---------|-------|---|----------------|------|
| 3755893 | ABDE0250J3AQB | 1/4 | 1/4 | .2342 | 3/8 | 3/4 | 4 | .030 | ● |
| 3755895 | ABDE0250J3BQB | 1/4 | 1/4 | .2342 | 3/8 | 1 1/8 | 4 | .030 | ● |
| 3755897 | ABDE0250J3CQB | 1/4 | 1/4 | .2342 | 3/8 | 2 1/8 | 4 | .030 | ● |
| 3755898 | ABDE0312J3AQB | 5/16 | 5/16 | .2930 | 7/16 | 1 1/8 | 4 | .030 | ● |
| 3755900 | ABDE0375J3AQB | 3/8 | 3/8 | .3512 | 1/2 | 1 1/8 | 4 | .030 | ● |
| 3755902 | ABDE0375J3BQB | 3/8 | 3/8 | .3512 | 1/2 | 2 1/8 | 4 | .030 | ● |
| 3755904 | ABDE0500J3AQB | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | .030 | ● |
| 3755905 | ABDE0500J3AQE | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | .120 | ● |
| 3755907 | ABDE0500J3BQB | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .030 | ● |
| 3755908 | ABDE0500J3BQC | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .060 | ● |
| 3755909 | ABDE0500J3BQD | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .090 | ● |
| 3755910 | ABDE0500J3BQE | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | .120 | ● |
| 3755912 | ABDE0500J3CQB | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .030 | ● |
| 3755913 | ABDE0500J3CQC | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .060 | ● |
| 3755915 | ABDE0500J3CQE | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | .120 | ● |
| 3755917 | ABDE0625J3AQB | 5/8 | 5/8 | .5854 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 3755919 | ABDE0625J3BQB | 5/8 | 5/8 | .5854 | 3/4 | 3 3/8 | 6 | .030 | ● |
| 3755920 | ABDE0625J3BQE | 5/8 | 5/8 | .5854 | 3/4 | 3 3/8 | 6 | .120 | ● |
| 3755922 | ABDE0750J3AQB | 3/4 | 3/4 | .7047 | 1 | 1 5/8 | 4 | .030 | ● |
| 3755925 | ABDE0750J3BQB | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .030 | ● |
| 3755926 | ABDE0750J3BQC | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .060 | ● |
| 3755927 | ABDE0750J3BQD | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .090 | ● |
| 3755928 | ABDE0750J3BQE | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | .120 | ● |
| 3755930 | ABDE0750J3CQB | 3/4 | 3/4 | .7047 | 1 | 3 3/8 | 6 | .030 | ● |
| 3755932 | ABDE1000J3AQB | 1 | 1 | .9398 | 1 1/4 | 2 3/8 | 5 | .030 | ● |
| 3755935 | ABDE1000J3BQB | 1 | 1 | .9398 | 1 1/4 | 3 3/8 | 7 | .030 | ● |
| 3755936 | ABDE1000J3BQE | 1 | 1 | .9398 | 1 1/4 | 3 3/8 | 7 | .120 | ● |



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● first choice

○ alternate choice



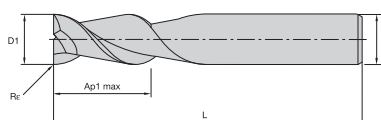
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| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | K600 |
|--------------|----------------|-----|-----|-------|---------|-------|---|------|
| 3755802 | ABDE0250J3AQ | 1/4 | 1/4 | .2342 | 3/8 | 3/4 | 4 | ● |
| 3755894 | ABDE0250J3BQ | 1/4 | 1/4 | .2342 | 3/8 | 1 1/8 | 4 | ● |
| 3755896 | ABDE0250J3CQ | 1/4 | 1/4 | .2342 | 3/8 | 2 1/8 | 4 | ● |
| 3755899 | ABDE0375J3AQ | 3/8 | 3/8 | .3512 | 1/2 | 1 1/8 | 4 | ● |
| 3755901 | ABDE0375J3BQ | 3/8 | 3/8 | .3512 | 1/2 | 2 1/8 | 4 | ● |
| 3755903 | ABDE0500J3AQ | 1/2 | 1/2 | .4685 | 5/8 | 1 3/8 | 4 | ● |
| 3755906 | ABDE0500J3BQ | 1/2 | 1/2 | .4685 | 5/8 | 2 1/4 | 4 | ● |
| 3755911 | ABDE0500J3CQ | 1/2 | 1/2 | .4685 | 5/8 | 3 3/8 | 6 | ● |
| 3755918 | ABDE0625J3BQ | 5/8 | 5/8 | .5854 | 3/4 | 3 3/8 | 6 | ● |
| 3755924 | ABDE0750J3BQ | 3/4 | 3/4 | .7047 | 1 | 2 1/2 | 6 | ● |
| 3755929 | ABDE0750J3CQ | 3/4 | 3/4 | .7047 | 1 | 3 3/8 | 6 | ● |
| 3755931 | ABDE1000J3AQ | 1 | 1 | .9398 | 1 1/4 | 2 3/8 | 5 | ● |
| 3755934 | ABDE1000J3BQ | 1 | 1 | .9398 | 1 1/4 | 3 3/8 | 7 | ● |
| 3755937 | ABDE1000J3CQ | 1 | 1 | .9398 | 1 1/4 | 4 3/8 | 7 | ● |

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○ alternate choice



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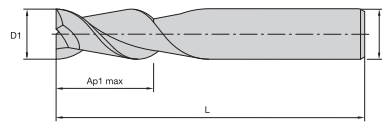
| order number | catalog number | D1 | D | Ap1 max | L | Rε | K600 |
|--------------|----------------|-----|-----|---------|-------|------|------|
| 3658881 | AADF0250J2BRA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● |
| 3658882 | AADF0250J2BRB | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 3876364 | AADF0250J2FRB | 1/4 | 1/4 | 1 | 3 | .030 | ● |
| 3876375 | AADF0375J2DRA | 3/8 | 3/8 | 1 | 3 | .015 | ● |
| 3876376 | AADF0375J2DRB | 3/8 | 3/8 | 1 | 3 | .030 | ● |
| 3658902 | AADF0375J2CRB | 3/8 | 3/8 | 1 1/2 | 4 | .030 | ● |
| 3658903 | AADF0375J2CRC | 3/8 | 3/8 | 1 1/2 | 4 | .060 | ● |
| 3876389 | AADF0500J2FRB | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 3876391 | AADF0500J2BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 3658907 | AADF0500J2BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3876393 | AADF0500J2GRA | 1/2 | 1/2 | 1 5/8 | 4 | .015 | ● |
| 3876394 | AADF0500J2GRB | 1/2 | 1/2 | 1 5/8 | 4 | .030 | ● |
| 3876395 | AADF0500J2GRC | 1/2 | 1/2 | 1 5/8 | 4 | .060 | ● |
| 3876396 | AADF0500J2CRA | 1/2 | 1/2 | 2 | 4 | .015 | ● |
| 3658911 | AADF0500J2CRB | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 3658912 | AADF0500J2CRC | 1/2 | 1/2 | 2 | 4 | .060 | ● |
| 3876620 | AADF0625J2BRB | 5/8 | 5/8 | 2 1/4 | 5 | .030 | ● |
| 3876623 | AADF0625J2FRB | 5/8 | 5/8 | 2 1/2 | 5 | .030 | ● |
| 3658920 | AADF0750J2BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 3876635 | AADF0750J2CRA | 3/4 | 3/4 | 2 1/4 | 5 | .015 | ● |
| 3658924 | AADF0750J2CRB | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 3876637 | AADF0750J2GRA | 3/4 | 3/4 | 3 1/4 | 6 | .015 | ● |

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- first choice
- alternate choice



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| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|----------------|------|------|---------|-------|------|
| 3658875 | AADF0125J2A | 1/8 | 1/8 | 1/4 | 2 | ● |
| 2402999 | AADF0125J2B | 1/8 | 1/8 | 1/2 | 2 | ● |
| 3658877 | AADF0188J2A | 3/16 | 3/16 | 5/16 | 2 | ● |
| 3876352 | AADF0188J2D | 3/16 | 3/16 | 9/16 | 2 1/2 | ● |
| 2403000 | AADF0188J2B | 3/16 | 3/16 | 5/8 | 2 | ● |
| 3658879 | AADF0250J2A | 1/4 | 1/4 | 3/8 | 2 | ● |
| 3876359 | AADF0250J2E | 1/4 | 1/4 | 5/8 | 2 1/2 | ● |
| 2403001 | AADF0250J2B | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 3876362 | AADF0250J2F | 1/4 | 1/4 | 1 | 3 | ● |
| 5058618 | AADF250J2I | 1/4 | 1/4 | 1 1/8 | 3 | ● |
| 3658893 | AADF0250J2C | 1/4 | 1/4 | 1 1/4 | 3 1/4 | ● |
| 3876365 | AADF0250J2G | 1/4 | 1/4 | 1 3/4 | 4 | ● |
| 2403013 | AADF0375J2B | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 3876374 | AADF0375J2D | 3/8 | 3/8 | 1 | 3 | ● |
| 5058633 | AADF375J2H | 3/8 | 3/8 | 1 1/8 | 3 | ● |
| 3876378 | AADF0375J2E | 3/8 | 3/8 | 1 1/4 | 3 1/2 | ● |
| 3658901 | AADF0375J2C | 3/8 | 3/8 | 1 1/2 | 4 | ● |
| 5058615 | AADF375J2G | 3/8 | 3/8 | 1 3/4 | 4 | ● |
| 3658904 | AADF0500J2A | 1/2 | 1/2 | 5/8 | 2 1/2 | ● |
| 3876383 | AADF0500J2E | 1/2 | 1/2 | 5/8 | 3 | ● |
| 3876387 | AADF0500J2F | 1/2 | 1/2 | 1 | 3 | ● |
| 5058612 | AADF500J2F | 1/2 | 1/2 | 1 | 3 | ● |
| 2403014 | AADF0500J2B | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 5058542 | AADF500J2B | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 3876392 | AADF0500J2G | 1/2 | 1/2 | 1 5/8 | 4 | ● |
| 3658910 | AADF0500J2C | 1/2 | 1/2 | 2 | 4 | ● |
| 3658913 | AADF0500J2D | 1/2 | 1/2 | 2 | 5 | ● |
| 3876629 | AADF0750J2F | 3/4 | 3/4 | 1 | 4 | ● |
| 2403016 | AADF0750J2B | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 3658923 | AADF0750J2C | 3/4 | 3/4 | 2 1/4 | 5 | ● |

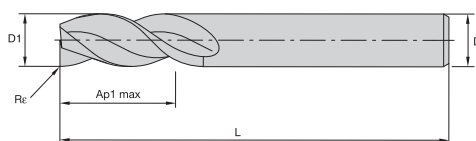
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| 163-164 | 165 | 117-119 | 168 |



KenCut™ AL • AADE • Radiused • 3 Flutes • Plain Shank • Inch

● first choice

○ alternate choice



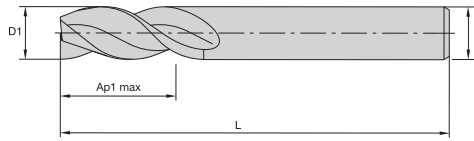
| | |
|---|--------|
| P | Blue |
| M | Yellow |
| K | Red |
| N | Green |
| S | Orange |
| H | Grey |

| order number | catalog number | D1 | D | Ap1 max | L | Re | K600 |
|--------------|----------------|------|------|---------|-------|------|------|
| 3658816 | AADE0250J3ARB | 1/4 | 1/4 | 3/8 | 2 | .030 | ● |
| 3658817 | AADE0250J3BRA | 1/4 | 1/4 | 3/4 | 2 1/2 | .015 | ● |
| 3658818 | AADE0250J3BRB | 1/4 | 1/4 | 3/4 | 2 1/2 | .030 | ● |
| 3870460 | AADE0250J3FRA | 1/4 | 1/4 | 1 | 3 | .015 | ● |
| 3658820 | AADE0250J3CRA | 1/4 | 1/4 | 1 1/4 | 3 1/4 | .015 | ● |
| 3658821 | AADE0250J3CRB | 1/4 | 1/4 | 1 1/4 | 3 1/4 | .030 | ● |
| 5051946 | AADE0312J3DRB | 5/16 | 5/16 | 1 1/4 | 3 1/4 | .030 | ● |
| 3658825 | AADE0375J3BRB | 3/8 | 3/8 | 7/8 | 2 1/2 | .030 | ● |
| 3658826 | AADE0375J3BRC | 3/8 | 3/8 | 7/8 | 2 1/2 | .060 | ● |
| 3870469 | AADE0375J3DRA | 3/8 | 3/8 | 1 | 3 | .015 | ● |
| 3870470 | AADE0375J3DRB | 3/8 | 3/8 | 1 | 3 | .030 | ● |
| 3870473 | AADE0375J3ERA | 3/8 | 3/8 | 1 1/4 | 3 1/2 | .015 | ● |
| 3870474 | AADE0375J3ERB | 3/8 | 3/8 | 1 1/4 | 3 1/2 | .030 | ● |
| 3870475 | AADE0375J3ERC | 3/8 | 3/8 | 1 1/4 | 3 1/2 | .060 | ● |
| 3658828 | AADE0375J3CRB | 3/8 | 3/8 | 1 1/2 | 4 | .030 | ● |
| 3658829 | AADE0375J3CRC | 3/8 | 3/8 | 1 1/2 | 4 | .060 | ● |
| 5051949 | AADE0375J3KRB | 3/8 | 3/8 | 2 1/2 | 4 | .030 | ● |
| 5052000 | AADE0375J3KRC | 3/8 | 3/8 | 2 1/2 | 4 | .060 | ● |
| 3866253 | AADE0500J3FRA | 1/2 | 1/2 | 1 | 3 | .015 | ● |
| 3866254 | AADE0500J3FRB | 1/2 | 1/2 | 1 | 3 | .030 | ● |
| 3866255 | AADE0500J3FRC | 1/2 | 1/2 | 1 | 3 | .060 | ● |
| 3866256 | AADE0500J3BRA | 1/2 | 1/2 | 1 1/4 | 3 | .015 | ● |
| 3658833 | AADE0500J3BRB | 1/2 | 1/2 | 1 1/4 | 3 | .030 | ● |
| 3658834 | AADE0500J3BRC | 1/2 | 1/2 | 1 1/4 | 3 | .060 | ● |
| 3658835 | AADE0500J3BRE | 1/2 | 1/2 | 1 1/4 | 3 | .120 | ● |
| 5052001 | AADE0500J3KRB | 1/2 | 1/2 | 1 1/2 | 4 | .030 | ● |
| 5052002 | AADE0500J3KRC | 1/2 | 1/2 | 1 1/2 | 4 | .060 | ● |
| 3866259 | AADE0500J3GRB | 1/2 | 1/2 | 1 5/8 | 4 | .030 | ● |
| 3866260 | AADE0500J3GRC | 1/2 | 1/2 | 1 5/8 | 4 | .060 | ● |
| 3866261 | AADE0500J3GRD | 1/2 | 1/2 | 1 5/8 | 4 | .090 | ● |
| 3866262 | AADE0500J3CRA | 1/2 | 1/2 | 2 | 4 | .015 | ● |
| 3658837 | AADE0500J3CRB | 1/2 | 1/2 | 2 | 4 | .030 | ● |
| 3658838 | AADE0500J3CRC | 1/2 | 1/2 | 2 | 4 | .060 | ● |
| 3658840 | AADE0500J3DRB | 1/2 | 1/2 | 2 1/2 | 5 | .030 | ● |
| 3658841 | AADE0500J3DRC | 1/2 | 1/2 | 2 1/2 | 5 | .060 | ● |
| 5052003 | AADE0500J3LRB | 1/2 | 1/2 | 3 | 5 | .030 | ● |
| 5052004 | AADE0500J3LRC | 1/2 | 1/2 | 3 | 5 | .060 | ● |
| 3866269 | AADE0625J3DRA | 5/8 | 5/8 | 1 5/8 | 3 1/2 | .015 | ● |
| 5052007 | AADE0625J3HRC | 5/8 | 5/8 | 3 | 5 1/4 | .060 | ● |
| 5052008 | AADE0750J3ARB | 3/4 | 3/4 | 7/8 | 3 | .030 | ● |
| 5052040 | AADE0750J3ARC | 3/4 | 3/4 | 7/8 | 3 | .060 | ● |
| 3658846 | AADE0750J3BRB | 3/4 | 3/4 | 1 1/2 | 4 | .030 | ● |
| 3658847 | AADE0750J3BRC | 3/4 | 3/4 | 1 1/2 | 4 | .060 | ● |
| 3658848 | AADE0750J3BRE | 3/4 | 3/4 | 1 1/2 | 4 | .120 | ● |
| 3866282 | AADE0750J3HRB | 3/4 | 3/4 | 1 5/8 | 4 | .030 | ● |
| 3866284 | AADE0750J3HRD | 3/4 | 3/4 | 1 5/8 | 4 | .090 | ● |
| 3866286 | AADE0750J3CRA | 3/4 | 3/4 | 2 1/4 | 5 | .015 | ● |
| 3658850 | AADE0750J3CRB | 3/4 | 3/4 | 2 1/4 | 5 | .030 | ● |
| 3658851 | AADE0750J3CRC | 3/4 | 3/4 | 2 1/4 | 5 | .060 | ● |
| 3866288 | AADE0750J3CRE | 3/4 | 3/4 | 2 1/4 | 5 | .120 | ● |
| 3658863 | AADE0750J3DRB | 3/4 | 3/4 | 3 | 5 1/4 | .030 | ● |
| 3658864 | AADE0750J3DRC | 3/4 | 3/4 | 3 | 5 1/4 | .060 | ● |
| 3866290 | AADE0750J3GRA | 3/4 | 3/4 | 3 1/4 | 6 | .015 | ● |
| 3866291 | AADE0750J3GRB | 3/4 | 3/4 | 3 1/4 | 6 | .030 | ● |
| 3866293 | AADE0750J3GRD | 3/4 | 3/4 | 3 1/4 | 6 | .090 | ● |
| 3866294 | AADE0750J3GRE | 3/4 | 3/4 | 3 1/4 | 6 | .120 | ● |
| 3658871 | AADE1000J3BRB | 1 | 1 | 2 1/4 | 5 | .060 | ● |
| 3866065 | AADE1000J3GRB | 1 | 1 | 2 5/8 | 6 | .030 | ● |
| 3658873 | AADE1000J3CRB | 1 | 1 | 3 | 5 1/2 | .030 | ● |
| 3866068 | AADE1000J3ERA | 1 | 1 | 3 1/4 | 6 | .015 | ● |
| 3866069 | AADE1000J3ERB | 1 | 1 | 3 1/4 | 6 | .030 | ● |
| 3866072 | AADE1000J3ERE | 1 | 1 | 3 1/4 | 6 | .120 | ● |
| 3866074 | AADE1000J3HRA | 1 | 1 | 4 1/8 | 7 | .015 | ● |

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| 163-164 | 165 | 117-119 | 168 |

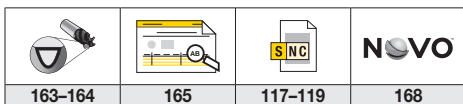
KenCut™ AL • AADE • Square End • 3 Flutes • Plain Shank • Inch

- first choice
- alternate choice



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| P | ■ |
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| K | ■ |
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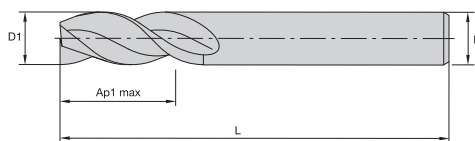
| order number | catalog number | D1 | D | Ap1 max | L | K600 |
|--------------|----------------|------|------|---------|-------|------|
| 5059218 | AADE125J3G | 1/8 | 1/8 | 1/4 | 1 1/2 | ● |
| 5059213 | AADE125J3F | 1/8 | 1/8 | 3/8 | 1 1/2 | ● |
| 3870444 | AADE0125J3D | 1/8 | 1/8 | 1/2 | 3 | ● |
| 3870446 | AADE0125J3E | 1/8 | 1/8 | 3/4 | 3 | ● |
| 3870448 | AADE0188J3C | 3/16 | 3/16 | 5/16 | 3 | ● |
| 5059209 | AADE188J3F | 3/16 | 3/16 | 9/16 | 2 | ● |
| 3870450 | AADE0188J3D | 3/16 | 3/16 | 9/16 | 3 | ● |
| 3870452 | AADE0188J3E | 3/16 | 3/16 | 3/4 | 3 | ● |
| 3658815 | AADE0250J3A | 1/4 | 1/4 | 3/8 | 2 | ● |
| 3870455 | AADE0250J3D | 1/4 | 1/4 | 1/2 | 2 1/2 | ● |
| 3870457 | AADE0250J3E | 1/4 | 1/4 | 5/8 | 2 1/2 | ● |
| 3854632 | AADE0250J3B | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 5059219 | AADE250J3B | 1/4 | 1/4 | 3/4 | 2 1/2 | ● |
| 3870459 | AADE0250J3F | 1/4 | 1/4 | 1 | 3 | ● |
| 5059206 | AADE250J3H | 1/4 | 1/4 | 1 1/4 | 3 | ● |
| 3658819 | AADE0250J3C | 1/4 | 1/4 | 1 1/4 | 3 1/4 | ● |
| 3870461 | AADE0250J3G | 1/4 | 1/4 | 1 3/4 | 4 | ● |
| 3854739 | AADE0312J3A | 5/16 | 5/16 | 13/16 | 2 1/2 | ● |
| 3870462 | AADE0312J3B | 5/16 | 5/16 | 1 | 3 | ● |
| 5051941 | AADE0312J3D | 5/16 | 5/16 | 1 1/4 | 3 1/4 | ● |
| 3658824 | AADE0375J3A | 3/8 | 3/8 | 1/2 | 2 | ● |
| 3870464 | AADE0375J3F | 3/8 | 3/8 | 1/2 | 3 | ● |
| 3870466 | AADE0375J3G | 3/8 | 3/8 | 3/4 | 2 1/2 | ● |
| 3854756 | AADE0375J3B | 3/8 | 3/8 | 7/8 | 2 1/2 | ● |
| 3870468 | AADE0375J3D | 3/8 | 3/8 | 1 | 3 | ● |
| 5059203 | AADE375J3I | 3/8 | 3/8 | 1 1/8 | 3 | ● |
| 3870472 | AADE0375J3E | 3/8 | 3/8 | 1 1/4 | 3 1/2 | ● |
| 3658827 | AADE0375J3C | 3/8 | 3/8 | 1 1/2 | 4 | ● |
| 3870476 | AADE0375J3H | 3/8 | 3/8 | 2 | 4 | ● |
| 5059202 | AADE438J3A | 7/16 | 7/16 | 9/16 | 2 1/2 | ● |
| 5051942 | AADE0438J3A | 7/16 | 7/16 | 7/8 | 2 1/2 | ● |
| 3658830 | AADE0500J3A | 1/2 | 1/2 | 5/8 | 2 1/2 | ● |
| 3866202 | AADE0500J3F | 1/2 | 1/2 | 1 | 3 | ● |
| 3854759 | AADE0500J3B | 1/2 | 1/2 | 1 1/4 | 3 | ● |
| 5051855 | AADE0500J3K | 1/2 | 1/2 | 1 1/2 | 4 | ● |
| 3866257 | AADE0500J3G | 1/2 | 1/2 | 1 5/8 | 4 | ● |
| 3658836 | AADE0500J3C | 1/2 | 1/2 | 2 | 4 | ● |
| 5059167 | AADE500J3H | 1/2 | 1/2 | 2 | 4 1/2 | ● |
| 3658839 | AADE0500J3D | 1/2 | 1/2 | 2 1/2 | 5 | ● |
| 5051858 | AADE0500J3L | 1/2 | 1/2 | 3 | 5 | ● |
| 3866263 | AADE0500J3H | 1/2 | 1/2 | 3 1/8 | 6 | ● |
| 3854761 | AADE0625J3A | 5/8 | 5/8 | 1 1/4 | 3 1/2 | ● |
| 3866268 | AADE0625J3D | 5/8 | 5/8 | 1 5/8 | 3 1/2 | ● |
| 3866273 | AADE0625J3E | 5/8 | 5/8 | 2 1/8 | 4 | ● |
| 3658843 | AADE0625J3B | 5/8 | 5/8 | 2 1/4 | 5 | ● |
| 5051857 | AADE0625J3H | 5/8 | 5/8 | 3 | 5 1/4 | ● |
| 3866276 | AADE0625J3G | 5/8 | 5/8 | 3 1/4 | 6 | ● |
| 3658845 | AADE0750J3A | 3/4 | 3/4 | 7/8 | 3 | ● |
| 5059165 | AADE0750J3K | 3/4 | 3/4 | 1 | 3 | ● |
| 3866277 | AADE0750J3F | 3/4 | 3/4 | 1 | 4 | ● |
| 3854762 | AADE0750J3B | 3/4 | 3/4 | 1 1/2 | 4 | ● |
| 3866280 | AADE0750J3H | 3/4 | 3/4 | 1 5/8 | 4 | ● |
| 3658849 | AADE0750J3C | 3/4 | 3/4 | 2 1/4 | 5 | ● |
| 3658852 | AADE0750J3D | 3/4 | 3/4 | 3 | 5 1/4 | ● |
| 3866289 | AADE0750J3G | 3/4 | 3/4 | 3 1/4 | 6 | ● |
| 5051852 | AADE0750J3K | 3/4 | 3/4 | 4 | 6 1/4 | ● |



KenCut™ AL • AADE • Square End • 3 Flutes • Plain Shank • Inch

(continued)

- first choice
- alternate choice

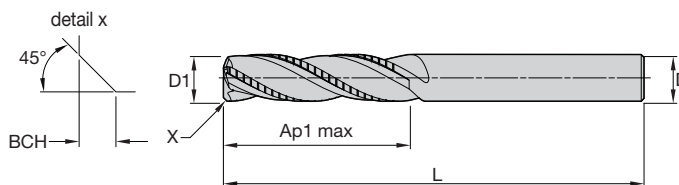


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| order number | catalog number | D1 | D | Ap1 max | L | KG00 |
|--------------|----------------|-----|-----|---------|-------|------|
| 5059163 | AADE750J3J | 3/4 | 3/4 | 4 | 6 1/2 | ● |
| 3658865 | AADE1000J3A | 1 | 1 | 1 1/2 | 4 | ● |
| 5051854 | AADE1000J3K | 1 | 1 | 2 | 4 1/2 | ● |
| 3866058 | AADE1000J3D | 1 | 1 | 2 | 5 | ● |
| 3658869 | AADE1000J3B | 1 | 1 | 2 1/4 | 5 | ● |
| 3658872 | AADE1000J3C | 1 | 1 | 3 | 5 1/2 | ● |
| 3866067 | AADE1000J3E | 1 | 1 | 3 1/4 | 6 | ● |
| 5051853 | AADE1000J3I | 1 | 1 | 4 | 7 | ● |
| 3866073 | AADE1000J3H | 1 | 1 | 4 1/8 | 7 | ● |

KenCut ALR • SFRHEC • Chamfered • 3 Flutes • Plain Shank • Inch

- first choice
- alternate choice



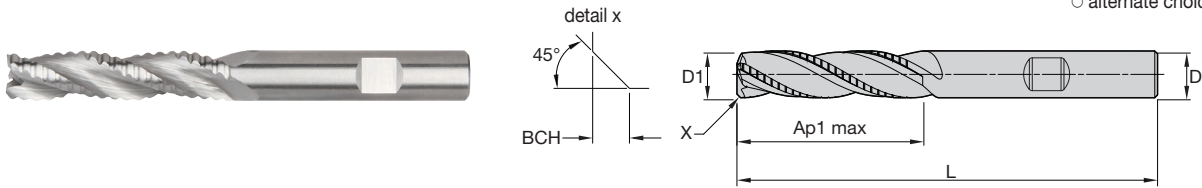
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| order number | catalog number | D1 | D | Ap1 max | L | BCH | KG00 |
|--------------|----------------|-----|-----|---------|-------|------|------|
| 2658352 | SFRHEC250S3075 | 1/4 | 1/4 | 3/4 | 2 1/2 | .024 | ● |

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| 163-164 | 165 | 117-119 | 168 |

KenCut™ ALR • SFRHEC • Chamfered • 3 Flutes • Weldon® Shank • Inch

● first choice
○ alternate choice

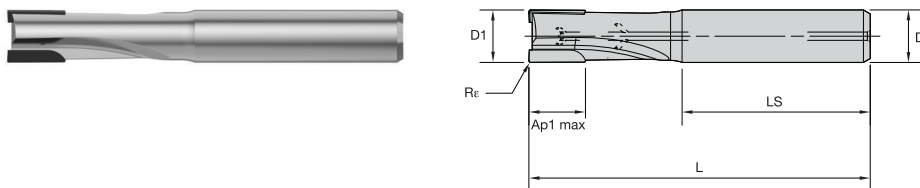


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| order number | catalog number | D1 | D | Ap1 max | L | BCH | K600 |
|--------------|----------------|-----|-----|---------|-------|------|------|
| 2658444 | SFRHEC375S3088 | 3/8 | 3/8 | 7/8 | 2 1/2 | .024 | ● |
| 2658445 | SFRHEC500S3100 | 1/2 | 1/2 | 1 | 3 | .039 | ● |
| 2658446 | SFRHEC500S3200 | 1/2 | 1/2 | 2 | 4 1/2 | .039 | ● |
| 2658448 | SFRHEC625S3225 | 5/8 | 5/8 | 2 1/4 | 5 | .039 | ● |
| 2658449 | SFRHEC750S3150 | 3/4 | 3/4 | 1 1/2 | 4 | .039 | ● |
| 2658450 | SFRHEC750S3225 | 3/4 | 3/4 | 2 1/4 | 5 | .039 | ● |
| 2658452 | SFRHEC100S3225 | 1 | 1 | 2 1/4 | 5 | .039 | ● |

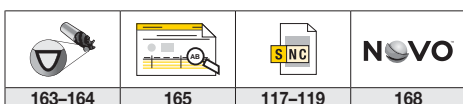
KenCut AQ • ALCB • Radiused • 2 Flutes • 1 x D • Internal Coolant • Plain Shank • Inch

● first choice
○ alternate choice



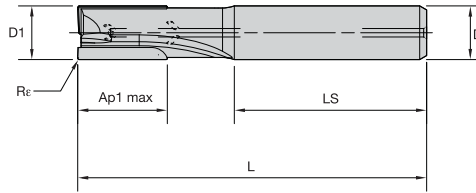
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| S | ■ | ■ |
| H | ■ | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | LS | Re | KD1410 |
|--------------|------------------------|------|------|---------|-------|-------|------|--------|
| 6752728 | ALCB2RA0250N025HAR010I | 1/4 | 1/4 | 1/4 | 2.250 | 1.437 | .010 | ● |
| 6752729 | ALCB2RA0313N031HAR010I | 5/16 | 5/16 | 5/16 | 2.500 | 1.516 | .010 | ● |
| 6752730 | ALCB2RA0375N038HAR010I | 3/8 | 3/8 | 3/8 | 3.000 | 1.575 | .010 | ● |
| 6752751 | ALCB2RA0500N050HAR015I | 1/2 | 1/2 | 1/2 | 3.250 | 1.791 | .015 | ● |
| 6752752 | ALCB2RA0625N063HAR015I | 5/8 | 5/8 | 5/8 | 3.750 | 1.909 | .015 | ● |
| 6752753 | ALCB2RA0750N075HAR015I | 3/4 | 3/4 | 3/4 | 4.250 | 1.988 | .015 | ● |



KenCut™ AQ • ALCC • Radiused • 2 Flutes • 1.5 x D • Internal Coolant • Plain Shank • Inch

- first choice
- alternate choice



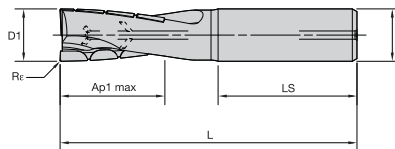
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| order number | catalog number | D1 | D | Ap1 max | L | LS | Rε | |
|--------------|------------------------|------|------|---------|-------|-------|------|---|
| 6752754 | ALCC2RA0250N038HAR010I | 1/4 | 1/4 | 3/8 | 2.250 | 1.437 | .010 | ● |
| 6752755 | ALCC2RA0313N063HAR010I | 5/16 | 5/16 | 5/8 | 2.500 | 1.516 | .010 | ● |
| 6752756 | ALCC2RA0375N063HAR010I | 3/8 | 3/8 | 5/8 | 3.000 | 1.575 | .010 | ● |
| 6752757 | ALCC2RA0500N075HAR015I | 1/2 | 1/2 | 3/4 | 3.250 | 1.791 | .015 | ● |
| 6752758 | ALCC2RA0625N100HAR015I | 5/8 | 5/8 | 1 | 3.750 | 1.909 | .015 | ● |
| 6752759 | ALCC2RA0750N113HAR015I | 3/4 | 3/4 | 1 | 4.250 | 1.988 | .015 | ● |

KD1410

KenCut AQ • ALCR • Radiused • 2 Flutes • 2 x D • Internal Coolant • Plain Shank • Inch

- first choice
- alternate choice



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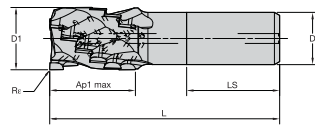
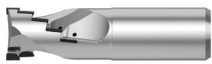
| order number | catalog number | D1 | D | Ap1 max | L | LS | Rε | |
|--------------|------------------------|-----|-----|---------|-------|-------|------|---|
| 6752761 | ALCR2RA0500N100HAR015I | 1/2 | 1/2 | 1 | 3.250 | 1.791 | .015 | ● |
| 6752762 | ALCR2RA0625N125HAR015I | 5/8 | 5/8 | 1 1/4 | 3.750 | 1.909 | .015 | ● |
| 6752763 | ALCR2RA0750N150HAR015I | 3/4 | 3/4 | 1 1/2 | 4.250 | 1.988 | .015 | ● |

KD1410

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| 163-164 | 165 | 117-119 | 168 |

KenCut™ AQ • ALSR • Radiused • 2-3 Flutes • 1.25 x D • Internal Coolant • Plain Shank • Inch

- first choice
- alternate choice

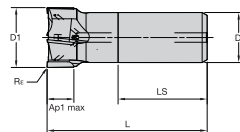


| | |
|---|--------|
| P | Blue |
| M | Yellow |
| K | Red |
| N | Green |
| S | Orange |
| H | Grey |
| | |

| order number | catalog number | D1 | D | Ap1 max | L | LS | R _ε | Z U | KD1410 |
|--------------|------------------------|-------|-------|---------|-------|-------|----------------|-----|--------|
| 6752768 | ALSR2RA1000N125HAR015I | 1 | 1 | 1 1/4 | 4.250 | 2.224 | .015 | 2 | ● |
| 6752769 | ALSR2RA1250N150HAR015I | 1 1/4 | 1 1/4 | 1 1/2 | 5.000 | 2.224 | .015 | 2 | ● |
| 6752770 | ALSR2RA1500N200HAR015I | 1 1/2 | 1 1/4 | 2 | 5.500 | 2.224 | .015 | 3 | ● |

KenCut AQ • ALSB • Radiused • 4-5 Flutes • Internal Coolant • Plain Shank • Inch

- first choice
- alternate choice



| | |
|---|--------|
| P | Blue |
| M | Yellow |
| K | Red |
| N | Green |
| S | Orange |
| H | Grey |
| | |

| order number | catalog number | D1 | D | Ap1 max | L | LS | R _ε | Z U | KD1410 |
|--------------|------------------------|-------|-------|---------|-------|-------|----------------|-----|--------|
| 6752764 | ALSB4RA1000N063HAR015I | 1 | 1 | 5/8 | 4.000 | 2.224 | .015 | 4 | ● |
| 6752765 | ALSB4RA1250N063HAR015I | 1 1/4 | 1 1/4 | 5/8 | 4.000 | 2.224 | .015 | 4 | ● |
| 6752766 | ALSB4RA1500N063HAR015I | 1 1/2 | 1 1/4 | 5/8 | 4.000 | 2.224 | .015 | 4 | ● |
| 6752767 | ALSB5RA2000N063HAR015I | 2 | 1 1/4 | 5/8 | 4.000 | 2.224 | .015 | 5 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

MaxiMet™ • ABDF • ABDE • Application Data • Inch



MaxiMet ABDE



MaxiMet ABDF

| Material Group | | | | | K600 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | |
|----------------|----|---------|---------|---------|---------------------------|------|--|---------------|-------|-------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | | | | |
| | ap | ae | ap | | min | max | | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| N | 1 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 6560 | IPT | .0017 | .0023 | .0028 | .0034 | .0045 | .0056 | .0068 | .0090 |
| | 2 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0014 | .0018 | .0023 | .0027 | .0036 | .0045 | .0054 | .0072 |
| | 3 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0012 | .0016 | .0020 | .0024 | .0032 | .0039 | .0047 | .0063 |
| | 4 | 1.5 x D | 0.5 x D | 1.0 x D | 1310 | 2460 | IPT | .0012 | .0016 | .0020 | .0024 | .0032 | .0039 | .0047 | .0063 |
| | 5 | 1.5 x D | 0.5 x D | 1.0 x D | 820 | 3280 | IPT | .0015 | .0020 | .0025 | .0030 | .0041 | .0051 | .0061 | .0081 |

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
 For cutting aluminum with high silicon, coating is recommended.
 Ap for spindle with ceramic bearings, multiply by 0.5.
 For better surface finish, reduce feed per tooth.
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach > 5 x D, reduce fz by 30%.
 For tools with reach > 10 x D, reduce vc and fz by 30%.

MaxiMet • ABDF • ABDE • Extended Neck • Application Data • Inch



MaxiMet ABDF — with Neck



MaxiMet ABDE — with Neck

| Material Group | | | | | K600 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|-------|---------|---------|---------------------------|------|--|---------------|-------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | | | |
| | ap | ae | ap | | min | max | | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| N | 1 | 1 x D | 0.5 x D | 1.0 x D | 1640 | 6560 | IPT | .0025 | .0031 | .0038 | .0050 | .0063 | .0075 | .0100 |
| | 2 | 1 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0020 | .0025 | .0030 | .0040 | .0050 | .0060 | .0080 |
| | 3 | 1 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0018 | .0022 | .0026 | .0035 | .0044 | .0053 | .0070 |
| | 4 | 1 x D | 0.5 x D | 1.0 x D | 1310 | 2460 | IPT | .0018 | .0022 | .0026 | .0035 | .0044 | .0053 | .0070 |
| | 5 | 1 x D | 0.5 x D | 1.0 x D | 820 | 3280 | IPT | .0023 | .0028 | .0034 | .0045 | .0056 | .0068 | .0090 |

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
 For cutting aluminum with high silicon, coating is recommended.
 Ap for spindle with ceramic bearings, multiply by 0.5.
 For better surface finish, reduce feed per tooth.
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach > 5 x D, reduce fz by 30%.
 For tools with reach > 10 x D, reduce vc and fz by 30%.

Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1–3.6 | 1.6–3 | 1.6–2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
 This can also be considered based on the machinability of the material, from difficult to free cutting.
 These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
 For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use Kv coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:
 Application: D1 = 1";
 N5 material group
 (ABDE/ABDF without neck)
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 2050 SFM;
 Fz = 0.0081 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.4; KFz = 1.67

Final cutting data recommendation:
 Vc new = 2050 SFM * 1.4 = 2870 SFM
 Fz new = .0081 IPT * 1.67 = .0135 IPT



KenCut™ AL • AADF • AADE • Application Data • Inch



KenCut AL — AADF



KenCut AL — AADE

| Material Group | A | | B | | K600 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | | |
|----------------|----|---------|---------|--------------------|------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | ap | ae | ap | Cutting Speed — vc | | frac. | D1 — Diameter | | | | | | | | | |
| | | | | min | max | | 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| N | 1 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 6560 | IPT | .0011 | .0017 | .0023 | .0028 | .0034 | .0045 | .0056 | .0068 | .0090 |
| | 2 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0009 | .0014 | .0018 | .0023 | .0027 | .0036 | .0045 | .0054 | .0072 |
| | 3 | 1.5 x D | 0.5 x D | 1.0 x D | 1640 | 4920 | IPT | .0008 | .0012 | .0016 | .0020 | .0024 | .0032 | .0039 | .0047 | .0063 |
| | 4 | 1.5 x D | 0.5 x D | 1.0 x D | 1310 | 2460 | IPT | .0008 | .0012 | .0016 | .0020 | .0024 | .0032 | .0039 | .0047 | .0063 |
| | 5 | 1.5 x D | 0.5 x D | 1.0 x D | 820 | 3280 | IPT | .0010 | .0015 | .0020 | .0025 | .0030 | .0041 | .0051 | .0061 | .0081 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KenCut ALR • SFRHEC • Application Data • Inch



| Material Group | A | | B | | K600/KC625M | | Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | |
|----------------|----|----------|---------|--------------------|-------------|-------|---|-------|-------|-------|-------|-------|-------|
| | ap | ae | ap | Cutting Speed — vc | | frac. | D1 — Diameter | | | | | | |
| | | | | min | max | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| N | 1 | 1.25 x D | 0.5 x D | 1 x D | 1650 | 6500 | fz | .0028 | .0041 | .0055 | .0070 | .0085 | .0110 |
| | 2 | 1.25 x D | 0.5 x D | 1 x D | 1650 | 5050 | fz | .0025 | .0037 | .0050 | .0060 | .0075 | .0010 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1—3.6 | 1.6—3 | 1.6—2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
 This can also be considered based on the machinability of the material, from difficult to free cutting.
 These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
 For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use Kv coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1";
 N5 material group
 (example AADF/AADE)
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 2050 SFM;
 fz = 0.0081 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.4; KFz = 1.67

Final cutting data recommendation:

Vc new = 2050 SFM * 1.4 = 2870 SFM
 Fz new = .0081 IPT * 1.67 = .0135 IPT

KenCut™ AQ • PCD End Mill • ALCB • Application Data • Inch



| Material Group | | | | | KD1410 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|----|-------|----------|---------|---------------------------|-----|------|---|---------------|--------|--------|--------|--------|--------|
| | A | | B | | Cutting Speed – vc SFM | | | frac. dec. | D1 – Diameter | | | | | |
| | ap | ae | ap | min | max | 1/4 | 5/16 | | 3/8 | 1/2 | 5/8 | 3/4 | | |
| N | 1 | 1 x D | 0.25 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0029 | 0.0031 | 0.0034 | 0.0058 | 0.0063 | 0.0060 |
| | 2 | 1 x D | 0.25 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0029 | 0.0031 | 0.0034 | 0.0058 | 0.0063 | 0.0060 |
| | 3 | 1 x D | 0.25 x D | 0.5 x D | 590 | – | 4590 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0050 | 0.0055 | 0.0053 |
| | 4 | 1 x D | 0.25 x D | 0.5 x D | 660 | – | 2620 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0042 | 0.0047 | 0.0045 |
| | 5 | 1 x D | 0.25 x D | 0.5 x D | 660 | – | 3280 | IPT | 0.0021 | 0.0023 | 0.0026 | 0.0038 | 0.0039 | 0.0038 |
| | 6 | 1 x D | 0.25 x D | 0.5 x D | 490 | – | 2620 | IPT | 0.0017 | 0.0020 | 0.0023 | 0.0025 | 0.0031 | 0.0030 |
| | 7 | 1 x D | 0.25 x D | 0.5 x D | 820 | – | 1640 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0050 | 0.0055 | 0.0053 |

KenCut AQ • PCD End Mill • ALCC • Application Data • Inch



| Material Group | | | | | KD1410 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | |
|----------------|----|---------|----------|---------|---------------------------|-----|------|---|---------------|--------|--------|--------|--------|
| | A | | B | | Cutting Speed – vc SFM | | | frac. dec. | D1 – Diameter | | | | |
| | ap | ae | ap | min | max | 1/4 | 5/16 | | 3/8 | 1/2 | 5/8 | | |
| N | 1 | 1.5 x D | 0.15 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0029 | 0.0031 | 0.0034 | 0.0058 | 0.0063 |
| | 2 | 1.5 x D | 0.15 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0029 | 0.0031 | 0.0034 | 0.0058 | 0.0063 |
| | 3 | 1.5 x D | 0.15 x D | 0.5 x D | 590 | – | 4590 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0050 | 0.0055 |
| | 4 | 1.5 x D | 0.15 x D | 0.5 x D | 660 | – | 2620 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0042 | 0.0047 |
| | 5 | 1.5 x D | 0.15 x D | 0.5 x D | 660 | – | 3280 | IPT | 0.0021 | 0.0023 | 0.0026 | 0.0038 | 0.0039 |
| | 6 | 1.5 x D | 0.15 x D | 0.5 x D | 490 | – | 2620 | IPT | 0.0017 | 0.0020 | 0.0023 | 0.0025 | 0.0031 |
| | 7 | 1.5 x D | 0.15 x D | 0.5 x D | 820 | – | 1640 | IPT | 0.0025 | 0.0027 | 0.0030 | 0.0050 | 0.0055 |

KenCut AQ • PCD Helical End Mill • ALCR • Application Data • Inch



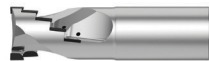
| Material Group | | | | | KD1410 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | |
|----------------|----|-------|---------|---------|---------------------------|-----|------|---|---------------|--------|--------|
| | A | | B | | Cutting Speed – vc SFM | | | frac. dec. | D1 – Diameter | | |
| | ap | ae | ap | min | max | 1/2 | 5/8 | | 3/4 | | |
| N | 1 | 2 x D | 0.2 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0058 | 0.0063 | 0.0060 |
| | 2 | 2 x D | 0.2 x D | 0.5 x D | 660 | – | 9840 | IPT | 0.0058 | 0.0063 | 0.0060 |
| | 3 | 2 x D | 0.2 x D | 0.5 x D | 590 | – | 4590 | IPT | 0.0050 | 0.0055 | 0.0053 |
| | 4 | 2 x D | 0.2 x D | 0.5 x D | 660 | – | 2620 | IPT | 0.0042 | 0.0047 | 0.0045 |
| | 5 | 2 x D | 0.2 x D | 0.5 x D | 660 | – | 3280 | IPT | 0.0038 | 0.0039 | 0.0038 |
| | 6 | 2 x D | 0.2 x D | 0.5 x D | 490 | – | 2620 | IPT | 0.0025 | 0.0031 | 0.0030 |
| | 7 | 2 x D | 0.2 x D | 0.5 x D | 820 | – | 1640 | IPT | 0.0050 | 0.0055 | 0.0053 |

KenCut™ AQ • PCD End Mill • ALSB • Application Data • Inch




























| Material Group | | | | | KD1410 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | |
|----------------|----|-----|----------|---------|---------------------------|------|------|---|---------------|--------|--------|
| | A | | B | | Cutting Speed – vc SFM | | | frac. | D1 – Diameter | | |
| | ap | ae | ap | min | max | dec. | 1 | 1 1/4 | 1 1/2 | | |
| N | 1 | L10 | 0.25 x D | 0.5*L10 | 660 | – | 9840 | IPT | 0.0072 | 0.0078 | 0.0078 |
| | 2 | L10 | 0.25 x D | 0.5*L10 | 660 | – | 9840 | IPT | 0.0072 | 0.0078 | 0.0078 |
| | 3 | L10 | 0.25 x D | 0.5*L10 | 590 | – | 4590 | IPT | 0.0064 | 0.0070 | 0.0070 |
| | 4 | L10 | 0.25 x D | 0.5*L10 | 660 | – | 2620 | IPT | 0.0056 | 0.0063 | 0.0063 |
| | 5 | L10 | 0.25 x D | 0.5*L10 | 660 | – | 3280 | IPT | 0.0048 | 0.0047 | 0.0047 |
| | 6 | L10 | 0.25 x D | 0.5*L10 | 490 | – | 2620 | IPT | 0.0040 | 0.0039 | 0.0039 |
| | 7 | L10 | 0.25 x D | 0.5*L10 | 820 | – | 1640 | IPT | 0.0064 | 0.0070 | 0.0070 |

KenCut AQ • PCD Helical End Mill • ALSR • Application Data • Inch












| Material Group | | | | | KD1410 | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | |
|----------------|----|----------|---------|----------|---------------------------|------|------|---|---------------|--------|--------|
| | A | | B | | Cutting Speed – vc SFM | | | frac. | D1 – Diameter | | |
| | ap | ae | ap | min | max | dec. | 1 | 1 1/4 | 1 1/2 | | |
| N | 1 | 1.25 x D | 0.2 x D | 0.25 x D | 660 | – | 9840 | IPT | 0.0072 | 0.0078 | 0.0078 |
| | 2 | 1.25 x D | 0.2 x D | 0.25 x D | 660 | – | 9840 | IPT | 0.0072 | 0.0078 | 0.0078 |
| | 3 | 1.25 x D | 0.2 x D | 0.25 x D | 590 | – | 4590 | IPT | 0.0064 | 0.0070 | 0.0070 |
| | 4 | 1.25 x D | 0.2 x D | 0.25 x D | 660 | – | 2620 | IPT | 0.0056 | 0.0063 | 0.0063 |
| | 5 | 1.25 x D | 0.2 x D | 0.25 x D | 660 | – | 3280 | IPT | 0.0048 | 0.0047 | 0.0047 |
| | 6 | 1.25 x D | 0.2 x D | 0.25 x D | 490 | – | 2620 | IPT | 0.0040 | 0.0039 | 0.0039 |
| | 7 | 1.25 x D | 0.2 x D | 0.25 x D | 820 | – | 1640 | IPT | 0.0064 | 0.0070 | 0.0070 |

Tool Selector

| | CFRP MACHINING | | | HIGH-TEMP MACHINING | |
|---------------------------------|---|---|---|--|--|
| | KenCut™ CF | | | KenCut HT | |
| |  |  |  |  |  |
| Series | CCNC | CDDC | CBDB | EADE | EADE |
| Page | kennametal.com | kennametal.com | kennametal.com | 101 | 101 |
| Tool type | | | | | |
| Rougher | | | | ● | ● |
| Finisher | ● | ● | ● | | |
| Chamfering | | | | | |
| Main operations |  |  |  |  |  |
| Workpiece material | | | | | |
| Primary | C | C | C | S | S |
| Secondary | | | | | |
| Corner style |  |  |  |  |  |
| Corner radius [Rε] | — | — | — | .023–.063" | .023–.063" |
| Corner chamfer width [BCH] | .0050" | .010" | .020–.045" | — | — |
| Cutting diameter [D1] | 1/4–1/2" | 1/4–1/2" | 1/4–1/2" | 3/16–1/2" | 3/16–1/2" |
| Length of cut | 1.5–3 x D | 1.5–6 x D | 1.5–6 x D | .7–8 x D | — |
| Maximum cutting depth [Ap1 max] | 3/4 | 3/4–1-1/2" | 3/4–1-1/2" | 9/64–3/8" | 9/64–3/8" |
| Flute helix angle | 25° | 25° | 15° | 40° | 40° |
| Number of flutes [ZU] | 3–4 | 6 | 12 | 4 | 6 |
| Center cutting | ✓ | ✓ | | | |
| Additional operations |  |   |   |   |    |

- Primary
- Secondary

Tool Selector

| HARD MACHINING | | |
|---|---|---|
| KenCut™ HM | | |
| |  |  |
| Series | HPRDM | HPBNDM |
| Page | kennametal.com | kennametal.com |
| Tool type | | |
| Rougher | ● | |
| Finisher | | ● |
| Chamfering | | |
| Main operations |  |  |
| Workpiece material | | |
| Primary | P H | P H |
| Secondary | M K S | |
| Corner style |  |  |
| Corner radius [R _ε] | .030-.040" | — |
| Corner chamfer width [BCH] | — | — |
| Cutting diameter [D1] | 3/16-1/2" | 1/8-5/8" |
| Length of cut | 1 x D | 1 x D |
| Maximum cutting depth [A _{p1} max] | 3/16-1/2 x D | 1/8-5/8" |
| Flute helix angle | 45° | 15° |
| Number of flutes [ZU] | 3-4 | 4 |
| Center cutting | ✓ | ✓ |
| Additional operations |   |  |

- Primary
- Secondary

KenCut™ HT

High-Performance
High-Temperature Alloys Machining

Materials

S

Applications



Face Milling



3D Profiling



Ramping



Shoulder Milling



Solid ceramic end mill for high-speed roughing of nickel-based high-temperature alloys.

The solid ceramic end mills offer extremely high tool life even at cutting speeds up to 1000m/min.

SiAlON solid ceramic grade for exceptionally high metal removal rates in nickel-based high-temperature alloy machining.

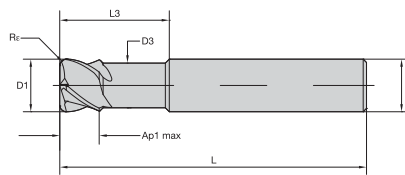
Up to five times higher tool life compared to solid carbide end mills, resulting in fewer tool changes and less downtime.

Highest cutting speed capability for drastically reduced machining time.

Four-flute version for pocketing and slotting, six-flute version for face milling and profiling.

KenCut™ HT • EADE • Radiused • 4 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice

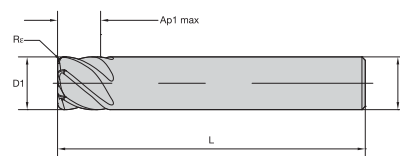


| | | |
|---|---|---|
| P | ■ | ■ |
| M | ■ | ■ |
| K | ■ | ■ |
| N | ■ | ■ |
| S | ■ | ● |
| H | ■ | ■ |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Rε | KYS40 |
|--------------|----------------|------|-----|-------|---------|-----|-------|------|-------|
| 5352350 | EADE0188J4AQX | 3/16 | 1/4 | .1800 | 9/64 | 3/8 | 2 | .023 | ● |
| 5352352 | EADE0250J4AQB | 1/4 | 1/4 | .2400 | 3/16 | 1/2 | 2 | .031 | ● |
| 5352356 | EADE0375J4AQX | 3/8 | 3/8 | .3600 | 9/32 | 3/4 | 2 1/2 | .047 | ● |
| 5352358 | EADE0500J4AQC | 1/2 | 1/2 | .4800 | 3/8 | 1 | 2 3/4 | .063 | ● |

KenCut HT • EADE • Radiused • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice





| | | |
|---|---|---|
| P | ■ | ■ |
| M | ■ | ■ |
| K | ■ | ■ |
| N | ■ | ■ |
| S | ■ | ● |
| H | ■ | ■ |

| order number | catalog number | D1 | D | Ap1 max | L | Rε | KYS40 |
|--------------|----------------|------|------|---------|-------|------|-------|
| 5352359 | EADE0188J6ARX | 3/16 | 3/16 | 9/64 | 2 | .023 | ● |
| 5352360 | EADE0250J6ARB | 1/4 | 1/4 | 3/16 | 2 | .031 | ● |
| 5352361 | EADE0313J6ARX | 5/16 | 5/16 | 15/64 | 2 1/4 | .039 | ● |
| 5352362 | EADE0375J6ARX | 3/8 | 3/8 | 9/32 | 2 1/2 | .047 | ● |
| 5352363 | EADE0500J6ARC | 1/2 | 1/2 | 3/8 | 2 3/4 | .063 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |

KenCut HT™ • EADE • 4 Flutes • Application Data • Inch





| Material Group |  | |  | | KYS40 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | |
|----------------|---|----------|---|--|---------------------------|------|--|---------------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | |
| | ap | ae | ap | | min | max | | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 |
| S 3 | Ap1 max | 0.1 x D* | 0.5 x D* | | 825 | 3300 | IPT | .0094 | .0100 | .0109 | .0113 | .0133 |

NOTE: *For above cutting data, do not exceed an overall ae of .039".
Use ap of .039" as starting condition.

KenCut HT • EADE • 6 Flutes • Application Data • Inch



| Material Group |  | |  | | KYS40 | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | |
|----------------|---|----------|---|--|---------------------------|------|--|---------------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed – vc SFM | | frac. dec. | D1 – Diameter | | | | |
| | ap | ae | ap | | min | max | | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 |
| S 3 | Ap1 max* | 0.1 x D* | | | 825 | 3300 | IPT | .0094 | .0100 | .0109 | .0113 | .0133 |

NOTE: *For above cutting data, do not exceed an overall ae of .039".
Use ap of .039" as starting condition.

KenCut™ HT Application Recommendation

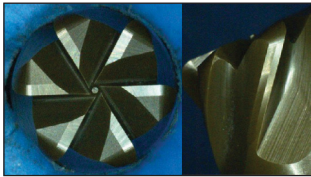


| Materials to cut | Cutting speed | Coolant |
|---|---|--|
| <ul style="list-style-type: none"> Nickel-based high-temperature alloys. Cobalt-based alloys after consulting technical assistance. P6 and M1-3 stainless steels after consulting technical assistance. Do not apply on iron-based high-temperature alloys. | <ul style="list-style-type: none"> Maximum RPM machine can provide recommended cutting speed: 1,300–3,300 SFM. Highly dynamic machines recommended. Use of spindle speeders applicable (no wet coolant). | <ul style="list-style-type: none"> Power cool nozzle preferred to flush chips away. Pressurized air applicable. Minimal quantity lubrication (MQL) and dry applicable. No coolant with emulsion or oil due to thermal shock. |

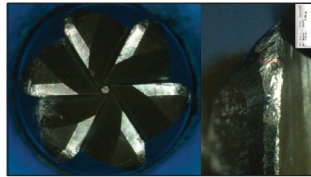
| Adaptation | Milling strategy | Reconditioning service |
|--|--|------------------------|
| <ul style="list-style-type: none"> Hydraulic chuck with or without sleeve preferred. Collet or milling power chucks applicable. Balancing at 25,000 RPM (2,5G) preferred. | <ul style="list-style-type: none"> Conventional milling preferred at lower speeds. Climb milling preferred at higher speeds. | Not applicable. |

Wear Indication

New

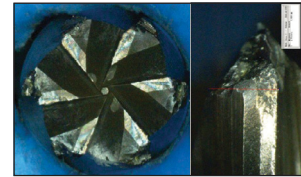


Used



Wear rate 0,48mm. Still good to use.

End of Tool Life



Wear rate 1,4mm. End of tool life reached.

Chip Formation

Carbide



Regular curled chips. Shape and length depend on end mill geometry and cutting data.

Ceramic











Chips are nearly like dust. Pressurized air coolant recommended to blow away chips.

KenCut™ HT Application Recommendation

| Problem | Cause | Remedy |
|-------------------------|---|--|
| Excessive bur formation | <ul style="list-style-type: none"> Softness of material to cut. Excessive wear on radii. | <ul style="list-style-type: none"> Use undersize end mills that leave stock for finishing operation. Replace tool as end of tool life reached. Check tool runout. |
| Sudden breakage | <ul style="list-style-type: none"> Vibration of the workpiece. Unstable tool clamping. Use of 6-flute tooling in slotting. | <ul style="list-style-type: none"> Check workpiece and tool clamping. Use of 4-flute EADE recommended. |
| Chips sticking | <ul style="list-style-type: none"> Lack of cutting speed. | <ul style="list-style-type: none"> Increase cutting speed. |
| Chipping | <ul style="list-style-type: none"> Unstable tool and/or workpiece clamping. Initial cutting speed too high. | <ul style="list-style-type: none"> Check workpiece and tool clamping. Reduce cutting speed during initial cut and increase as cutting continues. |
| Thermal cracks | <ul style="list-style-type: none"> Wet coolant. | <ul style="list-style-type: none"> Do not use wet coolant. |

Tool Selector

| HIGH-FEED MACHINING | | |
|---|---|---|
| KenFeed™ | | |
| |  |  |
| Series | KHDA | KMDA |
| Page | 107 | 108 |
| Tool type | | |
| Rougher | | |
| Finisher | ● | ● |
| Chamfering | | |
| Main operations |  |  |
| Workpiece material | | |
| Primary | H | H |
| Secondary | | P |
| Corner style |  |  |
| Corner radius [R _c] | .016-.040" | .016-.047" |
| Corner chamfer width [BCH] | — | — |
| Cutting diameter [D1] | 1/4-3/4" | 1/4-3/4" |
| Length of cut | .03 x D | .05 x D |
| Maximum cutting depth [A _{p1} max] | 8/977-1/40" | 1/75-1/25" |
| Flute helix angle | 20° | 20° |
| Number of flutes [ZU] | 6 | 6 |
| Center cutting | | |
| Additional operations |  |  |

- Primary
- Secondary

KenFeed™

High-Feed Machining



Materials



Applications



Slotting: Square End



3D Profiling



Shoulder Milling:



Ramping



Plunge Milling:
Ball Nose

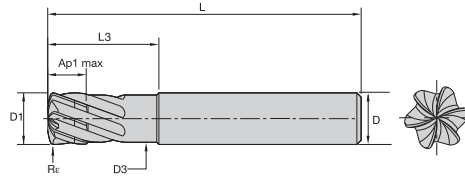
KenFeed

The KenFeed solid carbide end mill series is designed for maximum metal removal rates in heat-treated steels up to 67 HRC by taking very shallow-depth cuts at extremely high feed rates. During face milling, the proprietary front-end geometry is entirely in contact with the workpiece, providing up to 55% engagement compared to regular ball nose-type tooling with only 5–10%.

The 3 x D neck and the extended-reach design is ideal for multiple applications like ramping, circular interpolation, 3D profiling, face milling, and pocketing.

Six-flute design for increased metal removal rates and higher productivity.

KenFeed™ • Torus • KHDA • 6 Flutes • Plain Shank • Inch



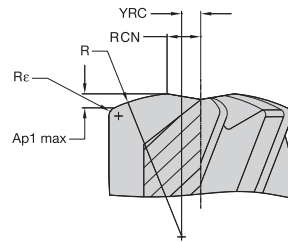
- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | ○ |
| S | ● |
| H | ○ |

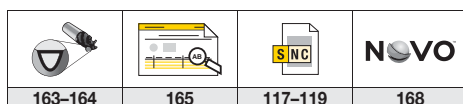
KC639M

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | |
|--------------|----------------|------|------|-------|---------|-------|-------|------|---|
| 3352730 | KHDA0250J6ANA | 1/4 | 1/4 | .2110 | .008 | 3/4 | 2 1/2 | .016 | ● |
| 3352731 | KHDA0312J6ANA | 5/16 | 5/16 | .2730 | .010 | 1 | 3 | .020 | ● |
| 3352732 | KHDA0375J6ANA | 3/8 | 3/8 | .3360 | .012 | 1 1/4 | 3 1/2 | .020 | ● |
| 3352773 | KHDA0500J6ANA | 1/2 | 1/2 | .4610 | .016 | 1 1/2 | 4 | .023 | ● |
| 3352774 | KHDA0625J6ANA | 5/8 | 5/8 | .5860 | .021 | 2 | 4 1/2 | .032 | ● |
| 3352775 | KHDA0750J6ANA | 3/4 | 3/4 | .7110 | .025 | 2 1/2 | 5 | .040 | ● |

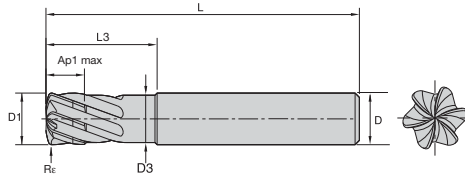
KenFeed • KHDA • Torus • 6 Flutes • Programming Data



| Geometrical Parameters | | | | | | | | Ramping Guide for Circular and Linear Ramping | | | | | | |
|--|------|---------|-------|--------|--------|--------|----------|--|-------|----------------------------------|-------|-------|-------|--|
| | | | | | | | | Circular Interpolation | | Linear Ramping | | | | |
| | | | | | | | | Optimal Range of Circle Diameter for a Single Pass | | Calculated Length per Ramp Angle | | | | |
| catalog number | D1 | Ap1 max | R | Re | YRC | RCN | Smallest | Largest | 1° | 2° | 3° | 4° | 5° | |
| KHDA0250J6ANA | 1/4 | 0.0082 | 0.375 | 0.0160 | 0.0313 | 0.0550 | 0.360 | 0.500 | 0.470 | 0.235 | 0.157 | 0.117 | 0.094 | |
| KHDA0312J6ANA | 5/16 | 0.0103 | 0.469 | 0.0200 | 0.0391 | 0.0688 | 0.450 | 0.625 | 0.588 | 0.294 | 0.196 | 0.147 | 0.117 | |
| KHDA0375J6ANA | 3/8 | 0.0123 | 0.563 | 0.0240 | 0.0469 | 0.0825 | 0.540 | 0.750 | 0.706 | 0.353 | 0.235 | 0.176 | 0.141 | |
| KHDA0500J6ANA | 1/2 | 0.0164 | 0.750 | 0.0320 | 0.0625 | 0.1100 | 0.720 | 1.000 | 0.941 | 0.470 | 0.313 | 0.235 | 0.188 | |
| KHDA0625J6ANA | 5/8 | 0.0205 | 0.938 | 0.0400 | 0.0781 | 0.1375 | 0.900 | 1.250 | 1.176 | 0.588 | 0.392 | 0.294 | 0.235 | |
| KHDA0750J6ANA | 3/4 | 0.0246 | 1.125 | 0.0470 | 0.0938 | 0.1650 | 1.080 | 1.500 | 1.411 | 0.705 | 0.470 | 0.352 | 0.282 | |
| recommended % of programmed feed rate to use while ramping | | | | | | | | | 100% | 70% | 50% | 30% | 10% | |



KenFeed™ • Torus • KMDA • 6 Flutes • Plain Shank • Inch

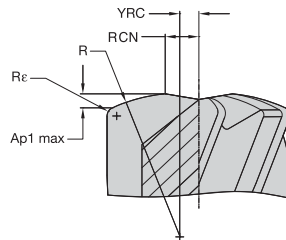


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ● |

| order number | catalog number | D1 | D | D3 | Ap1 max | L3 | L | Re | KC639M |
|--------------|----------------|------|------|-------|---------|-------|-------|------|--------|
| 3352573 | KMDA0250J6ANA | 1/4 | 1/4 | .2110 | .013 | 3/4 | 2 1/2 | .016 | ● |
| 3352574 | KMDA0312J6ANA | 5/16 | 5/16 | .2730 | .017 | 1 | 3 | .020 | ● |
| 3352575 | KMDA0375J6ANA | 3/8 | 3/8 | .3360 | .023 | 1 1/4 | 3 1/2 | .023 | ● |
| 3352576 | KMDA0500J6ANA | 1/2 | 1/2 | .4610 | .027 | 1 1/2 | 4 | .032 | ● |
| 3352577 | KMDA0625J6ANA | 5/8 | 5/8 | .5860 | .033 | 2 | 5 | .040 | ● |
| 3352578 | KMDA0750J6ANA | 3/4 | 3/4 | .7110 | .040 | 2 1/2 | 5 | .047 | ● |

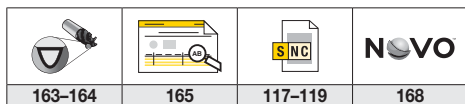
KenFeed • KMDA • Torus • 6 Flutes • Programming Data



| Geometrical Parameters | | | | | | | | Ramping Guide for Circular and Linear Ramping | | | | | |
|--|------|----------------------------------|-------|--------|--------|--------|----------|---|-------|----------------|-------|-------|-------|
| | | | | | | | | Circular Interpolation | | Linear Ramping | | | |
| Optimal Range of Circle Diameter for a Single Pass | | Calculated Length per Ramp Angle | | | | | | | | | | | |
| catalog number | D1 | Ap1 max | R | Re | YRC | RCN | Smallest | Largest | 1° | 2° | 3° | 4° | 5° |
| KMDA0250J6ANA | 1/4 | 0.0133 | 0.250 | 0.0160 | 0.0313 | 0.0525 | 0.355 | 0.500 | 0.762 | 0.381 | 0.254 | 0.190 | 0.152 |
| KMDA0312J6ANA | 5/16 | 0.0166 | 0.313 | 0.0200 | 0.0391 | 0.0656 | 0.444 | 0.625 | 0.953 | 0.476 | 0.317 | 0.238 | 0.190 |
| KMDA0375J6ANA | 3/8 | 0.0200 | 0.375 | 0.0235 | 0.0469 | 0.0788 | 0.533 | 0.750 | 1.143 | 0.572 | 0.381 | 0.285 | 0.228 |
| KMDA0500J6ANA | 1/2 | 0.0266 | 0.500 | 0.0320 | 0.0625 | 0.1050 | 0.710 | 1.000 | 1.525 | 0.762 | 0.508 | 0.381 | 0.304 |
| KMDA0625J6ANA | 5/8 | 0.0333 | 0.625 | 0.0400 | 0.0781 | 0.1313 | 0.888 | 1.250 | 1.906 | 0.953 | 0.635 | 0.476 | 0.380 |
| KMDA0750J6ANA | 3/4 | 0.0399 | 0.750 | 0.0470 | 0.0938 | 0.1575 | 1.065 | 1.500 | 2.287 | 1.143 | 0.762 | 0.571 | 0.456 |


recommended % of programmed feed rate to use while ramping

| | | | | |
|------|-----|-----|-----|-----|
| 100% | 70% | 50% | 30% | 10% |
|------|-----|-----|-----|-----|



KenFeed™ • KHDA • Application Data • Inch



| Material Group |  | | KC639M | | frac. | D1 – Diameter | | | | | | |
|----------------|---|----------|------------------------|-----|-------|---------------|-------|-------|-------|-------|-------|-------|
| | 3D Milling/Profiling | | Cutting Speed – vc SFM | | | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | min | max | | dec. | 0.250 | 0.313 | 0.375 | 0.500 | 0.625 | 0.750 |
| H | 2 | 0.03 x D | 0.55 x D | 330 | 396 | fz | .0080 | .0090 | .0110 | .0150 | .0190 | .0230 |
| | 3 | 0.03 x D | 0.55 x D | 265 | 330 | fz | .0080 | .0090 | .0110 | .0150 | .0190 | .0230 |
| | 4 | 0.03 x D | 0.55 x D | 165 | 230 | fz | .0060 | .0080 | .0090 | .0130 | .0160 | .0190 |

NOTE: These guidelines may require variations to achieve optimum results.


Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KenFeed • KMDA • Application Data • Inch



| Material Group |  | | KC639M | | frac. | D1 – Diameter | | | | | | |
|----------------|--|----------|------------------------|-----|-------|---------------|-------|-------|-------|-------|-------|-------|
| | 3D Milling/Profiling | | Cutting Speed – vc SFM | | | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | min | max | | dec. | 0.250 | 0.313 | 0.375 | 0.500 | 0.625 | 0.750 |
| P | 4 | 0.05 x D | 0.55 x D | 528 | 594 | fz | .0130 | .0160 | .0190 | .0250 | .0260 | .0280 |
| H | 1 | 0.05 x D | 0.55 x D | 462 | 528 | fz | .0130 | .0160 | .0190 | .0250 | .0260 | .0280 |
| | 2 | 0.05 x D | 0.55 x D | 330 | 396 | fz | .0080 | .0090 | .0110 | .0150 | .0190 | .0230 |
























NOTE: These guidelines may require variations to achieve optimum results.

Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Tool Selector

| ROUGHING AND FINISHING | | | | |
|---|---|--|--|--|
| GOmill™ | | | | |
| |  |  |  |  |
| Series | GOmill UEBD 2FL | GOmill UEDE 3FL | GOmill UEBD 3FL | GOmill UEDE 4FL |
| Page | 113 | 113 | 114 | 114-115 |
| Tool type | | | | |
| Rougher | ● | ● | ● | ● |
| Finisher | ○ | ○ | ○ | ○ |
| Chamfering | | | | |
| Main operations |  |  |  |  |
| Workpiece material | | | | |
| Primary | P K | P M K S | P K | P M K S |
| Secondary | M S H | H | M S H | H |
| Corner style |  |  |  |  |
| Corner radius [R _ε] | — | — | — | — |
| Corner chamfer width [BCH] | — | — | — | .0157" |
| Cutting diameter [D1] | 5/64–1/2" | 5/64–1/2" | 5/64–1/2" | 12/77–1/2" |
| Length of cut | 1.3–2 x D | 1.3–2 x D | 1.3–2 x D | 1.3–1.7 x D |
| Maximum cutting depth [A _{p1} max] | 5/32–5/8" | 5/32–5/8" | 5/32–5/8" | 21/79–1/2" |
| Flute helix angle | 30° | 38° | 38° | 38° |
| Number of flutes [ZU] | 2 | 3 | 3 | 4 |
| Center cutting | ✓ | ✓ | ✓ | ✓ |
| Additional operations |   |    |    |    |

- Primary
- Secondary

Tool Selector

| GENERAL PURPOSE ROUGHING AND FINISHING | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| GOMill™ GP | | | | | | | |
| | | | | | | | |
| Series | 2CH..I..S-X.. | 2SE..I..S-X.. | 2BN..I..S-X.. | 3SE..I..S-X.. | 4CH..I..S-X.. | 4SE..I..S-X.. | 4BN..I..S-X.. |
| Page | kennametal.com | kennametal.com | kennametal.com | kennametal.com | kennametal.com | kennametal.com | kennametal.com |
| Tool type | | | | | | | |
| <i>Rougher</i> | ● | ● | | | | | |
| <i>Finisher</i> | ○ | ○ | | | | | |
| <i>Chamfering</i> | | | | | | | |
| Main operations | | | | | | | |
| Workpiece material | | | | | | | |
| <i>Primary</i> | P M K | P M K | P M K | P M K | P M K | P M K | P M K |
| <i>Secondary</i> | N | N | N | N | N | N | N |
| Corner style | | | | | | | |
| Corner radius [Rε] | — | — | — | — | — | — | — |
| Corner chamfer width [BCH] | .010–.020" | — | — | — | — | — | — |
| Cutting diameter [D1] | 1/8–1" | 1/64–1" | 1/32–1" | 1/32–1" | 1/8–1" | 1/64–1" | 1/32–1" |
| Length of cut | 1.5–6 x D | 1.2–8 x D | 1.3–8 x D | 1.2–6 x D | 1.2–8 x D | 1.2–8 x D | 1.5–6 x D |
| Maximum cutting depth [Ap1 max] | 1/4–4" | 1/32–4" | 5/64–3" | 5/64–2-1/4" | 1/4–4" | 1/32–4" | 5/64–3" |
| Flute helix angle | 30° | 30° | 30° | 30° | 30° | 30° | 30° |
| Number of flutes [ZU] | 2 | 2 | 2 | 3 | 4 | 4 | 4 |
| Center cutting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional operations | | | | | | | |

- Primary
- Secondary

GOmill™

Economic Roughing and Finishing

Materials



Applications



Ramping



Slotting: Square End



Shoulder Milling



Short length of cut end mills

Economic, short length-of-cut solid carbide end mills for roughing and finishing in multiple materials.

The GOmill solid carbide end mill series provides extremely stable cutting conditions.

Short overall length and a soft cutting geometry makes this line also a perfect fit for mill-turn machines and driven units in lathes. Works with any adapter; clamping sleeve in hydraulic chucks are recommended.

Unequally spaced three- and four-flute versions minimize vibrations and provide high tool life and superior surface quality.

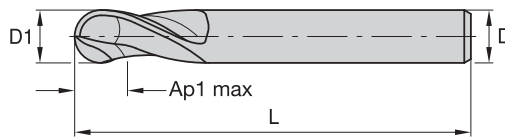
Economic solution due to shorter-than-regular shanks, reducing overall tooling cost.

Short length and high-performance geometry enable chatter-free, 1 x D full slot machining in multiple materials.

Center cutting for plunging and ramping.

G0mill™ • Ball Nose • 2 Flutes • Plain Shank • Inch

- first choice
- alternate choice

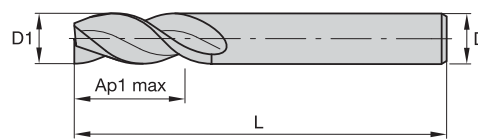
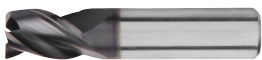


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KC643M |
|--------------|----------------|------|-----|---------|-------|--------|
| 4173826 | UEBD0078J2A | 5/64 | 1/4 | 5/32 | 1 1/2 | ● |
| 4173827 | UEBD0094J2A | 3/32 | 1/4 | 5/32 | 1 1/2 | ● |
| 4173828 | UEBD0125J2A | 1/8 | 1/4 | 13/64 | 1 1/2 | ● |
| 4173830 | UEBD0188J2A | 3/16 | 1/4 | 19/64 | 1 1/2 | ● |
| 4173831 | UEBD0250J2A | 1/4 | 1/4 | 21/64 | 1 1/2 | ● |
| 4173913 | UEBD0375J2A | 3/8 | 3/8 | 31/64 | 2 | ● |
| 4173915 | UEBD0500J2A | 1/2 | 1/2 | 5/8 | 3 | ● |

G0mill • Square End • 3 Flutes • Sharp Edge • Plain Shank • Inch

- first choice
- alternate choice



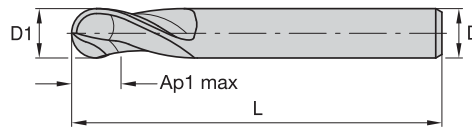
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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | KC643M |
|--------------|----------------|------|------|---------|--------|--------|
| 4169351 | UEDE0078J3AS | 5/64 | 1/4 | 5/32 | 1 1/2 | ● |
| 4169352 | UEDE0094J3AS | 3/32 | 1/4 | 5/32 | 1 1/2 | ● |
| 4169513 | UEDE0125J3AS | 1/8 | 1/4 | 13/64 | 1 1/2 | ● |
| 4169514 | UEDE0156J3AS | 5/32 | 1/4 | 17/64 | 1 1/2 | ● |
| 4169515 | UEDE0188J3AS | 3/16 | 1/4 | 19/64 | 1 1/2 | ● |
| 4169516 | UEDE0250J3AS | 1/4 | 1/4 | 21/64 | 1 1/2 | ● |
| 4169517 | UEDE0312J3AS | 5/16 | 5/16 | 27/64 | 1 3/4 | ● |
| 4169518 | UEDE0375J3AS | 3/8 | 3/8 | 31/64 | 2 | ● |
| 4169519 | UEDE0437J3AS | 7/16 | 7/16 | 9/16 | 2 5/32 | ● |
| 4169520 | UEDE0500J3AS | 1/2 | 1/2 | 5/8 | 2 5/32 | ● |

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| | | | |
| 163-164 | 165 | 117-119 | 168 |

G0mill™ • Ball Nose • 3 Flutes • Plain Shank • Inch

- first choice
- alternate choice

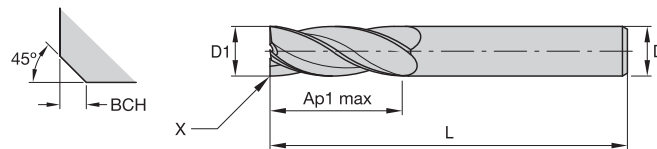
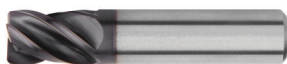


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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | | KC643M |
|--------------|----------------|------|------|---------|--------|---|--------|
| 4169660 | UEBD0078J3A | 5/64 | 1/4 | 5/32 | 1 1/2 | ● | ● |
| 4169661 | UEBD0094J3A | 3/32 | 1/4 | 5/32 | 1 1/2 | ● | ● |
| 4169662 | UEBD0125J3A | 1/8 | 1/4 | 13/64 | 1 1/2 | ● | ● |
| 4169833 | UEBD0156J3A | 5/32 | 1/4 | 17/64 | 1 1/2 | ● | ● |
| 4169834 | UEBD0188J3A | 3/16 | 1/4 | 19/64 | 1 1/2 | ● | ● |
| 4169835 | UEBD0250J3A | 1/4 | 1/4 | 21/64 | 1 1/2 | ● | ● |
| 4169836 | UEBD0312J3A | 5/16 | 5/16 | 27/64 | 1 3/4 | ● | ● |
| 4169837 | UEBD0375J3A | 3/8 | 3/8 | 31/64 | 2 | ● | ● |
| 4169838 | UEBD0437J3A | 7/16 | 7/16 | 9/16 | 2 5/32 | ● | ● |
| 4169839 | UEBD0500J3A | 1/2 | 1/2 | 5/8 | 2 5/32 | ● | ● |

G0mill • Chamfered • 4 Flutes • Plain Shank • Inch

- first choice
- alternate choice



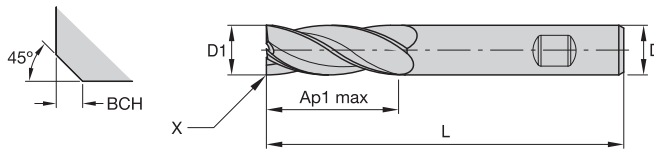
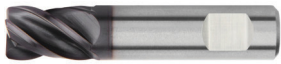
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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L | BCH | | KC643M |
|--------------|----------------|------|------|---------|--------|------|---|--------|
| 4169805 | UEDE0156J4AH | 5/32 | 1/4 | 17/64 | 1 1/2 | .016 | ● | ● |
| 4169806 | UEDE0188J4AH | 3/16 | 1/4 | 19/64 | 1 1/2 | .016 | ● | ● |
| 4169807 | UEDE0250J4AH | 1/4 | 1/4 | 21/64 | 1 1/2 | .016 | ● | ● |
| 4169808 | UEDE0312J4AH | 5/16 | 5/16 | 27/64 | 1 3/4 | .016 | ● | ● |
| 4169809 | UEDE0375J4AH | 3/8 | 3/8 | 31/64 | 2 | .016 | ● | ● |
| 4169810 | UEDE0437J4AH | 7/16 | 7/16 | 9/16 | 2 5/32 | .016 | ● | ● |
| 4169811 | UEDE0500J4AH | 1/2 | 1/2 | 5/8 | 2 5/32 | .016 | ● | ● |

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| 163-164 | 165 | 117-119 | 168 |

G0mill™ • Chamfered • 4 Flutes • Weldon® Shank • Inch

- first choice
- alternate choice



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|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

KC643M

| order number | catalog number | D1 | D | Ap1 max | L | BCH | |
|--------------|----------------|-----|-----|---------|--------|------|---|
| 4169826 | UEDE0375K4AH | 3/8 | 3/8 | 31/64 | 2 | .016 | ● |
| 4169828 | UEDE0500K4AH | 1/2 | 1/2 | 5/8 | 2 5/32 | .016 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 117-119 | 168 |



GOmill™ • Application Data • Inch



GOmill - 2 Flutes - UEBD





GOmill - 3 Flutes - UEBD



GOmill - 3 Flutes - UEDE



GOmill - 4 Flutes - UEDE

| Material Group |  | |  | | KC643M | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | |
|----------------|---|---------|---|----------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|-------|
| | A | | B | | Cutting Speed - vc SFM | | frac. dec. | D1 - Diameter | | | | | | | |
| | ap | ae | ap | | min | max | | 5/64 | 1/8 | 5/32 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 |
| P | 0 | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | IPT | .0005 | .0009 | .0011 | .0013 | .0018 | .0023 | .0027 | .0034 |
| | 1 | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | IPT | .0005 | .0009 | .0011 | .0013 | .0018 | .0023 | .0027 | .0034 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 460 | 620 | IPT | .0005 | .0009 | .0011 | .0013 | .0018 | .0023 | .0027 | .0034 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 390 | 520 | IPT | .0004 | .0007 | .0009 | .0011 | .0015 | .0020 | .0023 | .0029 |
| | 4 | 1.5 x D | 0.5 x D | 0.75 x D | 300 | 490 | IPT | .0004 | .0007 | .0008 | .0010 | .0014 | .0017 | .0020 | .0026 |
| | 5 | 1.5 x D | 0.5 x D | 1 x D | 200 | 330 | IPT | .0004 | .0006 | .0007 | .0009 | .0012 | .0016 | .0018 | .0023 |
| M | 1 | 1.5 x D | 0.5 x D | 1 x D | 300 | 380 | IPT | .0004 | .0007 | .0009 | .0011 | .0015 | .0020 | .0023 | .0029 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 200 | 260 | IPT | .0004 | .0006 | .0007 | .0009 | .0012 | .0016 | .0018 | .0023 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 200 | 230 | IPT | .0003 | .0005 | .0006 | .0008 | .0010 | .0013 | .0015 | .0019 |
| K | 1 | 1.5 x D | 0.5 x D | 1 x D | 390 | 490 | IPT | .0005 | .0009 | .0011 | .0013 | .0018 | .0023 | .0027 | .0034 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 360 | 460 | IPT | .0004 | .0007 | .0009 | .0011 | .0015 | .0020 | .0023 | .0029 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 360 | 430 | IPT | .0004 | .0006 | .0007 | .0009 | .0012 | .0016 | .0018 | .0023 |
| S | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 160 | 300 | IPT | .0004 | .0007 | .0009 | .0011 | .0015 | .0020 | .0023 | .0029 |
| | 2 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | IPT | .0002 | .0004 | .0005 | .0006 | .0008 | .0010 | .0012 | .0015 |
| | 3 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | IPT | .0002 | .0004 | .0005 | .0006 | .0008 | .0010 | .0012 | .0015 |
| | 4 | 1.5 x D | 0.5 x D | 1 x D | 160 | 200 | IPT | .0003 | .0005 | .0006 | .0008 | .0011 | .0014 | .0017 | .0021 |
| H | 1 | 1.5 x D | 0.5 x D | 0.75 x D | 260 | 460 | IPT | .0004 | .0007 | .0008 | .0010 | .0014 | .0017 | .0020 | .0026 |

NOTE: Those guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 For better surface finish, reduce feed per tooth.

Adjustment Factor for Feed and Speed Calculation • Inch

| | Ae/D | 2% | 4% | 5% | 8% | 10% | 12% | 20% | 30% | 40% | 50% | 100% |
|--------------|------|---------|-------|---------|------|------|------|------|------|------|-----|------|
| Speed factor | Kv | 2.1-3.6 | 1.6-3 | 1.6-2.5 | 1.6 | 1.4 | 1.38 | 1.3 | 1.2 | 1.1 | 1 | 0.9 |
| Feed factor | KFz | 3.58 | 2.56 | 2.3 | 1.84 | 1.67 | 1.54 | 1.25 | 1.09 | 1.02 | 1 | 1 |

NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.
 This can also be considered based on the machinability of the material, from difficult to free cutting.
 These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.
 For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

To calculate application specific cutting data, please use Kv coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

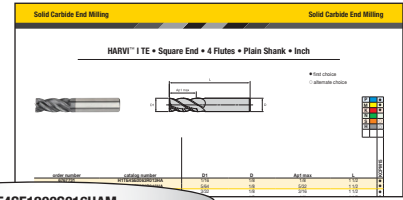
Application: D1 = 1/2";
 P5 material group;
 Ae 0.05" (Ae = 10% D)
 Cutting data recommendation: 265 SFM;
 Fz = 0.0023 IPT
 Adjustment coefficients: Ae = 0.1" equals 10%;
 Kv = 1.4; KFz = 1.67

Final cutting data recommendation:

Vc new = 265 SFM * 1.4 = 371 SFM
 Fz new = .0023 IPT * 1.67 = .0038 IPT

HARVI™ I TE • KOR™ • PCD • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

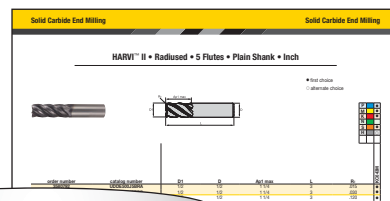


H1TE4SE1200S016HAM

| H1TE | 4 | SE | 1200 | S | 016 | HA | | | M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|---|--|---|---|---------------|---|---|--|-------------|---------|-------------|---------|-------------|----------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|----------|-------------|---------|-------------|---------|-------------|---------|-------------|----------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|--|--|-------------|---------|--|--|-------------|---------|--|--|-------------|---------|--|--|--|
| Series | Number of Flutes | Front End Style | Cutting Diameter D1 | Flute Section Style | Length of Cut Ap1 max | Shank Style | Radius | Specific Features | Standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>H1TE = HARVI I TE</p> <p>KOR = KOR</p> <p>ALCB = Basic PCD end mill with carbide body</p> <p>ALCC = Complex PCD end mill carbide body</p> <p>ALCR = Roughing PCD end mill with carbide body</p> <p>ALSB = Basic PCD end mill with steel body</p> <p>ALSR = Basic PCD end mill with steel body</p> | <p>1 = 1-Flute</p> <p>2 = 2-Flute</p> <p>3 = 3-Flute</p> <p>4 = 4-Flute</p> <p>5 = 5-Flute</p> <p>6 = 6-Flute</p> <p>7 = 7-Flute</p> <p>8 = 8-Flute</p> <p>9 = 9-Flute</p> <p>M = Multi-flute</p> | <p>SE = Sharp Edge</p> <p>CH = Chamfer</p> <p>RA = Radius</p> <p>BN = Ball Nose</p> <p>TB = Taper Ball Nose</p> <p>TO = Torroid</p> | <p>Metric = D1 in mm</p> <p>Inch = D1 in decimal inch</p> | <p>N = Neck</p> <p>E = Extended Neck</p> <p>S = Short Without Neck</p> <p>R = Regular Without Neck</p> <p>L = Long Without Neck</p> <p>X = Extra Long Without Neck</p> | <p>Metric = Ap1 Max in mm</p> <p>Inch = Ap1 Max in decimal inch</p> | <p>HA = Plain</p> <p>HB = Weldon®</p> <p>SL = Safe-Lock™</p> <p>DL = DUO-LOCK™</p> | | <p>C = Chip Splitter</p> <p>I = Internal Coolant</p> <p>O = Coolant Grooves in Shank</p> <p>P = Polished Flutes</p> | <p>M = Metric</p> <p>Blank = Inch</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | <table border="1"> <thead> <tr> <th colspan="2">Radius Metric</th> <th colspan="2">Radius Inch</th> </tr> </thead> <tbody> <tr><td>R020</td><td>= 0,2mm</td><td>R010</td><td>= .010"</td></tr> <tr><td>R025</td><td>= 0,25mm</td><td>R015</td><td>= .015"</td></tr> <tr><td>R030</td><td>= 0,3mm</td><td>R030</td><td>= .030"</td></tr> <tr><td>R040</td><td>= 0,4mm</td><td>R060</td><td>= .060"</td></tr> <tr><td>R050</td><td>= 0,5mm</td><td>R090</td><td>= .090"</td></tr> <tr><td>R075</td><td>= 0,75mm</td><td>R120</td><td>= .120"</td></tr> <tr><td>R100</td><td>= 1,0mm</td><td>R160</td><td>= .160"</td></tr> <tr><td>R125</td><td>= 1,25mm</td><td>R250</td><td>= .250"</td></tr> <tr><td>R150</td><td>= 1,5mm</td><td>R190</td><td>= .190"</td></tr> <tr><td>R200</td><td>= 2,0mm</td><td>R375</td><td>= .375"</td></tr> <tr><td>R250</td><td>= 2,5mm</td><td>R045</td><td>= .045"</td></tr> <tr><td>R300</td><td>= 3,0mm</td><td></td><td></td></tr> <tr><td>R400</td><td>= 4,0mm</td><td></td><td></td></tr> <tr><td>R500</td><td>= 5,0mm</td><td></td><td></td></tr> <tr><td>R600</td><td>= 6,0mm</td><td></td><td></td></tr> </tbody> </table> | Radius Metric | | Radius Inch | | R020 | = 0,2mm | R010 | = .010" | R025 | = 0,25mm | R015 | = .015" | R030 | = 0,3mm | R030 | = .030" | R040 | = 0,4mm | R060 | = .060" | R050 | = 0,5mm | R090 | = .090" | R075 | = 0,75mm | R120 | = .120" | R100 | = 1,0mm | R160 | = .160" | R125 | = 1,25mm | R250 | = .250" | R150 | = 1,5mm | R190 | = .190" | R200 | = 2,0mm | R375 | = .375" | R250 | = 2,5mm | R045 | = .045" | R300 | = 3,0mm | | | R400 | = 4,0mm | | | R500 | = 5,0mm | | | R600 | = 6,0mm | | | |
| Radius Metric | | Radius Inch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R020 | = 0,2mm | R010 | = .010" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R025 | = 0,25mm | R015 | = .015" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R030 | = 0,3mm | R030 | = .030" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R040 | = 0,4mm | R060 | = .060" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R050 | = 0,5mm | R090 | = .090" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R075 | = 0,75mm | R120 | = .120" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R100 | = 1,0mm | R160 | = .160" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R125 | = 1,25mm | R250 | = .250" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R150 | = 1,5mm | R190 | = .190" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R200 | = 2,0mm | R375 | = .375" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R250 | = 2,5mm | R045 | = .045" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R300 | = 3,0mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R400 | = 4,0mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R500 | = 5,0mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R600 | = 6,0mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

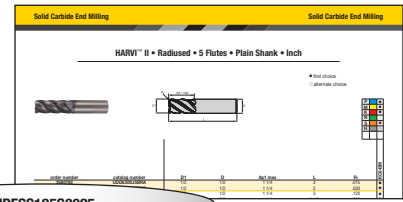


UDDE1000A5ARA

| UD | D | E | 1000 | A | 5 | A | R | A |
|--|--|--|--|--|--|--|---|--|
| Series | Front End Style | Helix Angle | Cutting Diameter D1 | Shank Style | Number of Flutes | Length of Cut Ap1 Max | Specific Features | Radius |
| AA = Aluminum AB = MaxiMet™ CB = CFRP Burr CC = CFRP Compression CD = CFRP Downcutter CR = CFRP Ball GA = General Application KH = KenFeed™ (Hard Steels) KM = KenFeed (Medium Steels) RU = Rougher (Flat Shallow Profile) UC = HARVI II™ (Material Group M) UD = HARVI II (Material Group S) UG = HARVI II Long (3 x D & 5 x D) UJ = HARVI III Center Cut & Eccentric Relief UE = GOMill™ FS = RSM II Multiflute (Material Group S) EA = Ceramic End Mill (Nickel-Based Alloys) | B = Ballnose RH D = Square End RH | A = 0-10 B = 11-20 C = 21-30 D = 31-35 E = 36-40 F = 41-45 G = 46-60 V = Variable Helix | Metric = D1 in mm Inch = D1 in decimal inch | Metric A = Plain B = Weldon® C = Whistle Notch D = Weldon & Whistle Notch E = Plain & Safe-Lock™ X = DUO-LOCK™ Inch J = Plain K = Weldon N = Safe-Lock Y = DUO-LOCK | 1 2 3 4 5 6 7 8 9 A = 10 B = 11 C = 12 D = 13 E = 14 F = 15 G = 16 H = 17 I = 18 J = 19 M = multi | A = Regular B = Long C = Extra Long D = XX Long | B = HARVI III Aero C = Coolant H = Chamfer K = Extended Reach + Neck + Radius L = Extended Reach + Neck + Chamfer M = Extended Reach + Neck + Sharp Edge N = Necked P = Tapered Q = Necked + Radius R = Radius S = Square (Sharp Edge) T = Toroid U = Necked + Sharp Edge V = Necked + Chamfer Y = Necked + Radius + Coolant | Metric A = 0,20 B = 0,25 C = 0,30 D = 0,40 E = 0,50 F = 0,75 G = 1,00 H = 1,25 J = 1,50 K = 2,00 L = 2,50 M = 3,00 N = 4,00 P = 6,00 Q = 5,00 S = Sharp Edge X = Custom Inch A = .015 B = .030 C = .060 D = .090 E = .120 F = .250 H = .190 J = .375 K = .500 |

Catalog Numbering System

















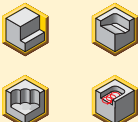

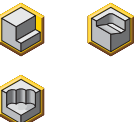
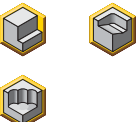

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



HPFSS125S3025






























| HPFSS | 125 | S3 | 025 |
|--|---|---|--------------------------------|
| <p>Tool Type Series</p> | <p>Cutting Diameter D1</p> | <p>Number of Flutes</p> | <p>Length of Cut</p> |
| <p>HPBNDM = Ball Nose for Steels, Hardened Materials</p> <p>HPFDM = Finisher Steels, Hardened Materials</p> <p>HPFSS = Finisher Steel, Stainless, HTA</p> <p>HPFT = Finisher Steels</p> <p>HPRSS = Chip Breaker Style Rougher</p> <p>HPRST = Flat Shallow Style Rougher</p> <p>MDRHEC = Cord Style Rougher</p> <p>SFRHEC = Aluminum Cord Style Rougher</p> | <p>Metric = D1 in mm</p> <p>Inch = D1 in decimal inch</p> | <p>S3 = 3 Flutes</p> <p>S4 = 4 Flutes</p> <p>S5 = 5 Flutes</p> <p>S6 = 6 Flutes</p> | <p>Ap1 max in decimal inch</p> |

Tool Selector

| HIGH-PERFORMANCE ROUGHING & FINISHING | | | | | |
|---------------------------------------|---|---|---|--|---|
| | HARVI™ ITE | | HARVI I | | |
| | NEW! | NEW! | | | |
| |  |  |  |  |  |
| Series | H1TE4RA..R | H1TE4SE..R | UKDV | ULDV | UKBV |
| Page | 126 | 126 | 127, 128 | 127 | 128 |
| Tool type | | | | | |
| Rougher | ● | ● | ● | ● | ● |
| Finisher | ○ | ○ | ○ | ○ | ○ |
| Chamfering | | | | | |
| Main operation |  |  |  |  |  |
| Workpiece material | | | | | |
| Primary | P M K S | P M K | P M | S | P M |
| Secondary | H | S H | K S | P M H | K S H |
| Corner style |  |  |   |  |  |
| Corner radius [Rε] | 0.015–0.06" | — | — | .015–.250" | — |
| Corner chamfer width [BCH] | — | — | .020" | — | — |
| Cutter diameter [D1] | 0.375–1.0" | 0.375–1.5" | 3/8–1-1/4" | 3/8–1-1/4" | 3/8–1" |
| Length of cut | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D |
| Maximum cutting depth [Ap1 max] | 0.5625–1.5" | 0.5625–1.875" | 9/16–1-7/8" | 9/16–1-7/8" | 9/16–1-1/2" |
| Flute helix angle | 36°/39° | 36°/39° | 37°/39° | 37°/39° | 37°/39° |
| Number of flutes [ZU] | 4 | 4 | 4 | 4 | 4 |
| Center cutting | ✓ | ✓ | ✓ | ✓ | ✓ |
| Additional operations |  |  |  |  |  |
























- Primary
- Secondary

Tool Selector

| | HIGH-PERFORMANCE ROUGHING & FINISHING | | HP ROUGHING & FINISHING | | ROUGHER | |
|---------------------------------|---|---|---|--|---|---|
| | HARVI II | | HARVI™ III | | KenCut™ RR | |
| |  |  |  |  |  |  |
| Series | UCDV | UDDV | UJDV | UJBV | RQDB | RKDF |
| Page | 129, 130 | 129 | 130 | 131 | 137 | 137 |
| Tool type | | | | | | |
| Rougher | ○ | ○ | | | ● | ● |
| Finisher | ● | ● | ● | ● | | |
| Chamfering | | | | | | |
| Main operation |  |  |  |  |  |  |
| Workpiece material | | | | | | |
| Primary | P M | S | S | P M | P M | S |
| Secondary | K S H | P H | P M H | K S H | K S H | P M K H |
| Corner style |   |  |  |  |  |  |
| Corner radius [Rε] | — | .015–.250" | .015–.250" | — | — | .015–.030" |
| Corner chamfer width [BCH] | .020" | — | — | — | .020" | — |
| Cutter diameter [D1] | 3/8–1-1/4" | 3/8–1-1/4" | 3/8–1-1/4" | 3/8–1" | 3/8–1" | 3/8–1" |
| Length of cut | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D |
| Maximum cutting depth [Ap1 max] | 9/16–1-7/8" | 9/16–1-7/8" | 9/16–1-7/8" | 9/16–1-1/2" | 9/16–1-1/2" | 9/16–1-1/2" |
| Flute helix angle | 37°/39° | 37°/39° | 37°/39° | 37°/39° | 20° | 45° |
| Number of flutes [ZU] | 5 | 5 | 6 | 6 | 4 & 5 | 4 & 6 |
| Center cutting | — | — | ✓ | ✓ | — | ✓ |
| Additional operations |   |   |  |  |   |   |

























- Primary
- Secondary

Tool Selector

| | FINISHER | | ALUMINUM MACHINING | | |
|---------------------------------|---|---|---|--|---|
| | KenCut FF | RSM II™ | MaxiMet™ | | |
| |  |  |  |  |  |
| Series | FMDf | FSDE | ABDF | ABDE | ABBE |
| Page | 139 | 139 | 141 | 141 | 142 |
| Tool type | | | | | |
| Rougher | | | ● | ● | ● |
| Finisher | ● | ● | ○ | ● | ● |
| Chamfering | | | | | |
| Main operation |  |  |  |  |  |
| Workpiece material | | | | | |
| Primary | P M | S | N | N | N |
| Secondary | K S H | P M H | | | |
| Corner style |  |  |  |  |  |
| Corner radius [Rε] | .015-.030" | .015-.250" | — | .015-.250" | — |
| Corner chamfer width [BCH] | — | — | — | — | — |
| Cutter diameter [D1] | 3/8-1" | 3/8-1" | 3/8-3/4" | 3/8-1" | 3/8-1" |
| Length of cut | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D | 1.5 x D |
| Maximum cutting depth [Ap1 max] | 9/16-1-1/2" | 9/16-1-1/2" | 9/16-1-1/8" | 9/16-1-1/2" | 9/16-1-1/2" |
| Flute helix angle | 45° | 36° | 45° | 38° | 38° |
| Number of flutes [ZU] | 6 | 9, 11, 15, & 19 | 2 | 3 | 3 |
| Center cutting | ✓ | — | ✓ | ✓ | ✓ |
| Additional operations | | |   |   |   |
| | | |  |  | |

- Primary
- Secondary

Tool Selector

| | HIGH-FEED | | DRIVEN TOOLING | | CHAMFERER | |
|---------------------------------|---|---|--|--|---|---|
| | KenFeed™ | | KenCut™ RR | KenCut FF | KenCut CM | |
| |  |  |  |  |  |  |
| Series | KMDA | KSDB | RFDD | FGDF | XADA | XRDA |
| Page | 144 | 145 | 147 | 147 | 149 | 149 |
| Tool type | | | | | | |
| Rougher | ● | ● | ● | ● | | |
| Finisher | ● | ● | | ○ | | |
| Chamfering | | | | | ● | ● |
| Main operation |  |  |  |  |  |  |
| Workpiece material | | | | | | |
| Primary | H | S | P M | P M | P M | P M |
| Secondary | P | P M | K H | K S H | K N S H | K N S H |
| Corner style |  |  |  |  | — | — |
| Corner radius [Rε] | .020-.040" | .020-.040" | .015" | .015-.030" | — | — |
| Corner chamfer width [BCH] | — | — | — | — | — | — |
| Cutter diameter [D1] | 3/8-3/4" | 3/8-3/4" | 3/8-3/4" | 3/8-3/4" | 3/8-5/8" | 3/8-5/8" |
| Length of cut | — | — | 0.75 x D | 0.75 x D | .075-.178" | .030-.120" |
| Maximum cutting depth [Ap1 max] | .023-.040" | .023-.040" | 9/32-3/4" | 9/32-3/4" | .075-.178" | .030-.120" |
| Flute helix angle | 20° | 20° | 35° | 42°/45°/48° | 0° | 0° |
| Number of flutes [ZU] | 6 | 6 | 3 | 3 | 4, 5, & 6 | 4, 5, & 6 |
| Center cutting | — | — | ✓ | ✓ | — | — |
| Additional operations |  |  |    |    | | |

- Primary
- Secondary

Modular End Milling



DUO-LOCK™

Modular End Milling



NEW!

Portfolio Materials



Portfolio Applications



Plunge Milling



3D Milling/Profiling



Ramping



Chamfer Milling



Slotting



Side Milling/Shoulder
Milling: Radius



Side Milling/
Shoulder Milling

DUO-LOCK®
by HAIMER® and Kennametal

DUO-LOCK is a new revolutionary coupling for solid carbide end milling applications. This replaceable head design combines a high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface.

The **ONLY** modular system with the performance of a solid carbide end mill.

To adapt DUO-LOCK perfectly to your spindle, a vast array of adapters and extensions is available.

- Standard-length extensions with Safe-Lock™, cylindrical and conical.
- Cut-to-size extensions, cylindrical and conical.
- Integral adapters with HSK, PSC, DV, and BT back ends.

Intermediate diameters are available upon request as custom solutions.

Reconditioning will maximize tool life and your investment.

Double cone eliminates expensive presetting processes by providing an axial $10\mu\text{m}$ repeatability. Length repeatability from insert tip-to-tip within $50\mu\text{m}$.

3rd contact surface delivers high stiffness and highest accuracy below $5\mu\text{m}$ runout.

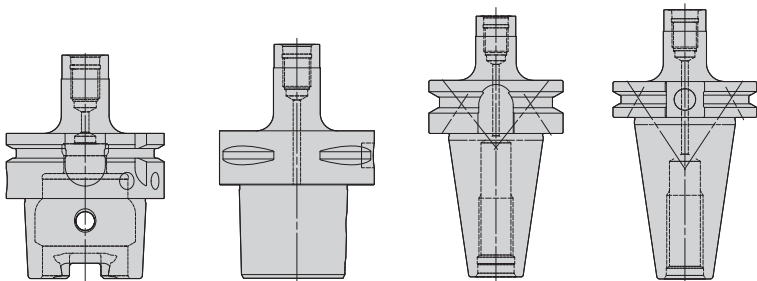


Vast array of roughing, finishing, profiling, and chamfering tools, and blanks available, covering all end milling applications.

Intelligent thread ensures stress level to remain below critical values, allowing $>25\%$ higher transmittable torque.

With a DUO-LOCK™ wrench, the tool change becomes easy and can be done in a few seconds.

Adapters



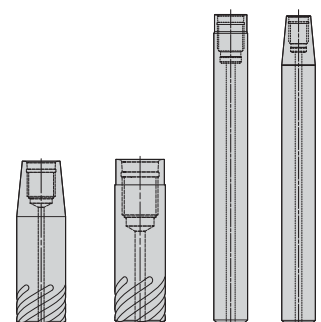
HSK

PSC

BT

CV

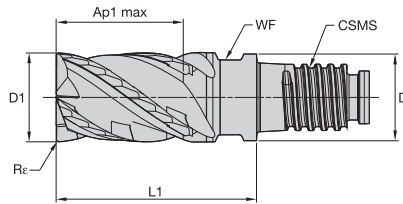
Extensions



SAFE-LOCK®
by HAIMER®

Cut-to-length

DUO-LOCK™ • HARVI™ I TE • Radiused • 4 Flutes • Inch

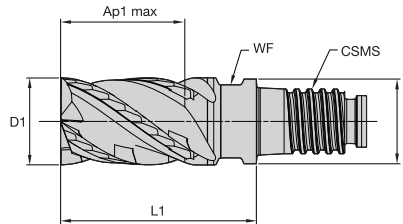


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KCSM15 |
|--------------|-----------------------|-----|------|---------|-------|------------------|------|------|--------|
| 6953292 | H1TE4RA0375R056DLR015 | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | ● |
| 6953293 | H1TE4RA0500R075DLR030 | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6953294 | H1TE4RA0500R075DLR060 | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6953295 | H1TE4RA0625R094DLR030 | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6953296 | H1TE4RA0750R113DLR030 | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6953297 | H1TE4RA1000R150DLR030 | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |
| 6953298 | H1TE4RA1000R150DLR060 | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | ● |

DUO-LOCK • HARVI I TE • Square End • 4 Flutes • Inch



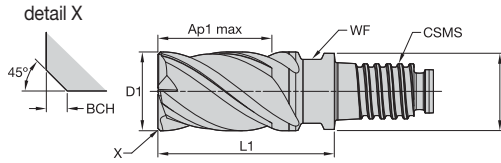
- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | KCPM15 |
|--------------|-------------------|-------|-------|---------|-------|------------------|-------|--------|
| 6953266 | H1TE4SE0375R056DL | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● |
| 6953267 | H1TE4SE0500R075DL | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● |
| 6953268 | H1TE4SE0625R094DL | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● |
| 6953269 | H1TE4SE0750R113DL | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● |
| 6953270 | H1TE4SE1000R150DL | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | ● |
| 6953291 | H1TE4SE1250R188DL | 1 1/4 | 1.211 | 1 7/8 | 2.815 | DL32 | 1.102 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • HARVI™ I • Chamfered • 4 Flutes • Inch

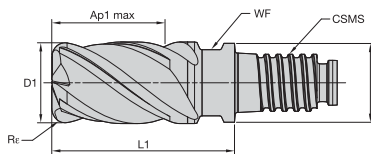


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | BCH | KCPM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|------|--------|
| 6072340 | UKDV0375Y4CV | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .020 | ● |
| 6072342 | UKDV0500Y4CV | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .020 | ● |
| 6072343 | UKDV0625Y4CV | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .020 | ● |
| 6072344 | UKDV0750Y4CV | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .020 | ● |
| 6072345 | UKDV1000Y4CV | 1 | .961 | 1 1/2 | 2.264 | DL25 | .827 | .020 | ● |
| 6072346 | UKDV1250Y4CV | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .020 | ● |

DUO-LOCK • HARVI I • Radiused • 4 Flutes • Inch



- first choice
- alternate choice

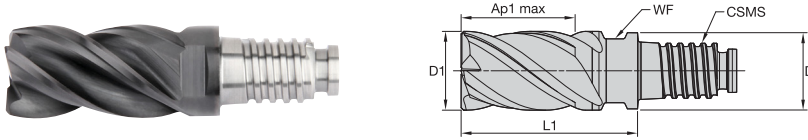
| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Rc | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|------|--------|
| 6072347 | ULDV0375Y4CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | ● |
| 6072348 | ULDV0375Y4CQB | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .030 | ● |
| 6072349 | ULDV0375Y4CQC | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .060 | ● |
| 6072350 | ULDV0375Y4CQD | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .090 | ● |
| 6072351 | ULDV0500Y4CQA | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .015 | ● |
| 6072352 | ULDV0500Y4CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6072353 | ULDV0500Y4CQC | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6072354 | ULDV0500Y4CQD | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .090 | ● |
| 6072355 | ULDV0500Y4CQE | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .120 | ● |
| 6072356 | ULDV0625Y4CQA | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .015 | ● |
| 6072357 | ULDV0625Y4CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6072358 | ULDV0625Y4CQC | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .060 | ● |
| 6072359 | ULDV0625Y4CQD | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .090 | ● |
| 6072360 | ULDV0625Y4CQE | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .120 | ● |
| 6072361 | ULDV0750Y4CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6072362 | ULDV0750Y4CQC | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .060 | ● |
| 6072363 | ULDV0750Y4CQD | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .090 | ● |
| 6072364 | ULDV0750Y4CQE | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .120 | ● |
| 6072365 | ULDV1000Y4CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |
| 6072366 | ULDV1000Y4CQC | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | ● |
| 6072367 | ULDV1000Y4CQD | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .090 | ● |
| 6072368 | ULDV1000Y4CQE | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .120 | ● |
| 6072369 | ULDV1000Y4CQF | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .250 | ● |
| 6072370 | ULDV1250Y4CQD | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .090 | ● |
| 6072381 | ULDV1250Y4CQF | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .250 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • HARVI™ I • Square End • 4 Flutes • Inch

- first choice
- alternate choice

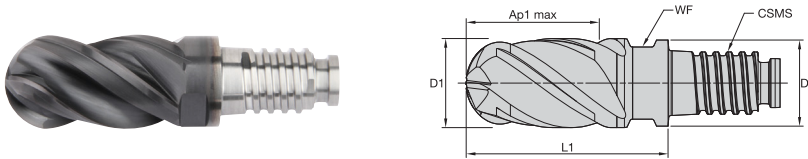


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | KCPM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|--------|
| 6072333 | UKDV0375Y4CU | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● |
| 6072334 | UKDV0500Y4CU | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● |
| 6072335 | UKDV0625Y4CU | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● |
| 6072337 | UKDV0750Y4CU | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● |
| 6072338 | UKDV1000Y4CU | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | ● |
| 6072339 | UKDV1250Y4CU | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | ● |

DUO-LOCK • HARVI I • Ball Nose • 4 Flutes • Inch

- first choice
- alternate choice



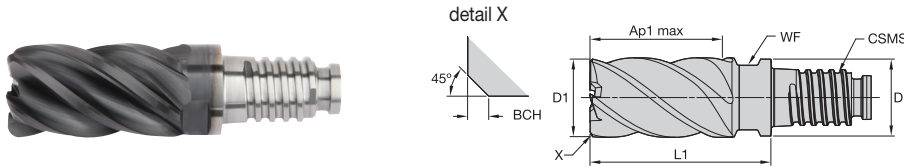
| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|--------|
| 6070991 | UKBV0375Y4CN | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● |
| 6070992 | UKBV0500Y4CN | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● |
| 6070993 | UKBV0625Y4CN | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● |
| 6070994 | UKBV0750Y4CN | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● |
| 6070995 | UKBV1000Y4CN | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • HARVI™ II • Chamfered • 5 Flutes • Inch

- first choice
- alternate choice

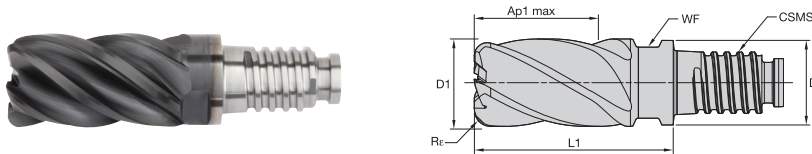


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | BCH | KCPM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|------|--------|
| 6072205 | UCDV0375Y5CV | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .020 | ● |
| 6072206 | UCDV0500Y5CV | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .020 | ● |
| 6072207 | UCDV0625Y5CV | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .020 | ● |
| 6072208 | UCDV0750Y5CV | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .020 | ● |
| 6072209 | UCDV1000Y5CV | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .020 | ● |
| 6072210 | UCDV1250Y5CV | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .020 | ● |

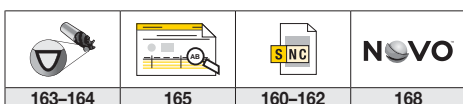
DUO-LOCK • HARVI II • Radiused • 5 Flutes • Inch

- first choice
- alternate choice



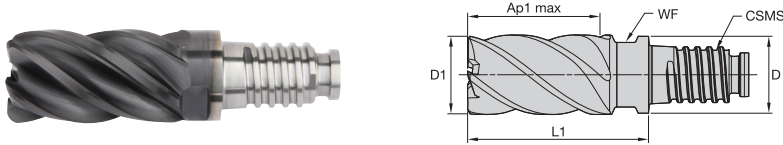
| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KC643M |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|------|--------|
| 6072231 | UDDV0375Y5CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | ● |
| 6072232 | UDDV0375Y5CQB | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .030 | ● |
| 6072235 | UDDV0500Y5CQA | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .015 | ● |
| 6072236 | UDDV0500Y5CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6072237 | UDDV0500Y5CQC | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6072238 | UDDV0500Y5CQD | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .090 | ● |
| 6072239 | UDDV0500Y5CQE | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .120 | ● |
| 6072240 | UDDV0625Y5CQA | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .015 | ● |
| 6072251 | UDDV0625Y5CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6072252 | UDDV0625Y5CQC | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .060 | ● |
| 6072255 | UDDV0750Y5CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6072256 | UDDV0750Y5CQC | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .060 | ● |
| 6072257 | UDDV0750Y5CQD | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .090 | ● |
| 6072258 | UDDV0750Y5CQE | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .120 | ● |
| 6072259 | UDDV1000Y5CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |
| 6072260 | UDDV1000Y5CQC | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | ● |
| 6072272 | UDDV1000Y5CQE | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .120 | ● |
| 6072273 | UDDV1000Y5CQF | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .250 | ● |
| 6072275 | UDDV1250Y5CQF | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .250 | ● |



DUO-LOCK™ • HARVI™ II • Square End • 5 Flutes • Inch

- first choice
- alternate choice

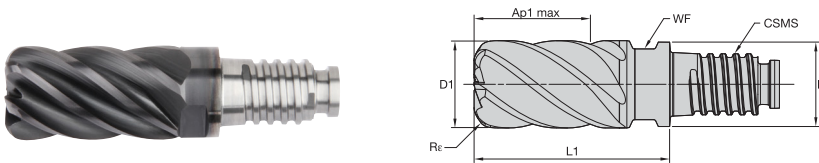


| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | | KCPM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|---|--------|
| 6072178 | UCDV0375Y5CU | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● | ● |
| 6072180 | UCDV0500Y5CU | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● | ● |
| 6072201 | UCDV0625Y5CU | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● | ● |
| 6072202 | UCDV0750Y5CU | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● | ● |
| 6072203 | UCDV1000Y5CU | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | ● | ● |
| 6072204 | UCDV1250Y5CU | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | ● | ● |

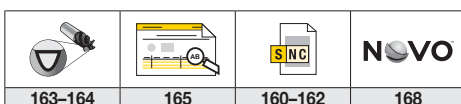
DUO-LOCK • HARVI III • Radiused • 6 Flutes • Inch

- first choice
- alternate choice



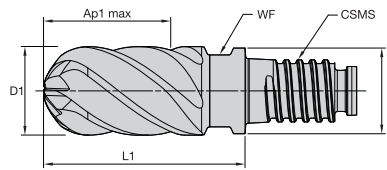
| | |
|---|---|
| P | ○ |
| M | ● |
| K | ○ |
| N | ○ |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KCSM15 |
|--------------|----------------|-------|-------|---------|-------|------------------|-------|------|--------|
| 6072211 | UJDV0375Y6CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | ● |
| 6072212 | UJDV0375Y6CQB | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .030 | ● |
| 6072213 | UJDV0375Y6CQC | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .060 | ● |
| 6072214 | UJDV0375Y6CQD | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .090 | ● |
| 6072215 | UJDV0500Y6CQA | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .015 | ● |
| 6072216 | UJDV0500Y6CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6072217 | UJDV0500Y6CQC | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6072218 | UJDV0500Y6CQD | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .090 | ● |
| 6072219 | UJDV0500Y6CQE | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .120 | ● |
| 6072220 | UJDV0625Y6CQA | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .015 | ● |
| 6072241 | UJDV0625Y6CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6072242 | UJDV0625Y6CQC | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .060 | ● |
| 6072243 | UJDV0625Y6CQD | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .090 | ● |
| 6072244 | UJDV0625Y6CQE | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .120 | ● |
| 6072245 | UJDV0750Y6CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6072246 | UJDV0750Y6CQC | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .060 | ● |
| 6072247 | UJDV0750Y6CQD | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .090 | ● |
| 6072248 | UJDV0750Y6CQE | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .120 | ● |
| 6072262 | UJDV1000Y6CQE | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .120 | ● |
| 6072261 | UJDV1000Y6CQD | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .090 | ● |
| 6072249 | UJDV1000Y6CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |
| 6072250 | UJDV1000Y6CQC | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | ● |
| 6072263 | UJDV1000Y6CQF | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .250 | ● |
| 6072264 | UJDV1250Y6CQD | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .090 | ● |
| 6072265 | UJDV1250Y6CQF | 1 1/4 | 1.211 | 1 7/8 | 2.803 | DL32 | 1.102 | .250 | ● |



DUO-LOCK™ • HARVI™ III • Ball Nose • 6 Flutes • Inch

- first choice
- alternate choice



| | | |
|---|---|---|
| P | ● | ○ |
| M | ● | ○ |
| K | ● | ○ |
| N | ● | ○ |
| S | ● | ○ |
| H | ● | ○ |
| | ● | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | KCSMT15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|---------|
| 6072144 | UJBV0375Y6CN | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● |
| 6072145 | UJBV0500Y6CN | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● |
| 6072147 | UJBV0625Y6CN | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● |
| 6072149 | UJBV0750Y6CN | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● |
| 6072150 | UJBV1000Y6CN | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • HARVI™ I TE • Side Milling/Slotting • Application Data • Inch



| Material Group | | | | | short | | medium | | long | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | | |
|----------------|----|---------|---------|----------|------------------------|---|------------------------|-----|------------------------|-----|---|-----|-----|-----|--------|--------|--------|--------|--------|--------|
| | A | | B | | adapter reach | | | | | | D1 – Diameter | | | | | | | | | |
| | | | | | KCPM15 | | KCPM15 | | KCPM15 | | | | | | | | | | | |
| | ap | | ae | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | | | |
| | 0 | 1.5 x D | 0.5 x D | 1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0027 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0049 |
| P | 1 | 1.5 x D | 0.5 x D | 1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0027 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0049 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | 0.0027 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0049 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0039 | 0.0045 | 0.0048 |
| | 4 | 1.5 x D | 0.5 x D | 0.75 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | 0.0020 | 0.0026 | 0.0030 | 0.0034 | 0.0039 | 0.0040 |
| | 5 | 1.5 x D | 0.5 x D | 1 x D | 200 | – | 330 | 170 | – | 281 | 160 | – | 264 | IPT | 0.0018 | 0.0023 | 0.0027 | 0.0031 | 0.0036 | 0.0039 |
| | 6 | 1.5 x D | 0.5 x D | 0.75 x D | 160 | – | 250 | 136 | – | 213 | 128 | – | 200 | IPT | 0.0015 | 0.0019 | 0.0022 | 0.0025 | 0.0028 | 0.0029 |
| M | 1 | 1.5 x D | 0.5 x D | 1 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0039 | 0.0045 | 0.0048 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | 0.0018 | 0.0023 | 0.0027 | 0.0031 | 0.0036 | 0.0039 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | 0.0015 | 0.0019 | 0.0022 | 0.0025 | 0.0028 | 0.0029 |
| K | 1 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | 0.0027 | 0.0034 | 0.0039 | 0.0044 | 0.0049 | 0.0049 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0039 | 0.0045 | 0.0048 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | 0.0018 | 0.0023 | 0.0027 | 0.0031 | 0.0036 | 0.0039 |
| S | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0039 | 0.0045 | 0.0048 |
| | 2 | 1.5 x D | 0.3 x D | 0.3 x D | 160 | – | 260 | 128 | – | 208 | 96 | – | 156 | IPT | 0.0018 | 0.0023 | 0.0027 | 0.0031 | 0.0036 | 0.0039 |
| | 3 | 1.5 x D | 0.5 x D | 1 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | 0.0012 | 0.0015 | 0.0018 | 0.0021 | 0.0024 | 0.0026 |
| | 4 | 1.5 x D | 0.5 x D | 1 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | 0.0017 | 0.0021 | 0.0025 | 0.0028 | 0.0033 | 0.0036 |
| H | 1 | 1.5 x D | 0.5 x D | 0.75 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | 0.0020 | 0.0026 | 0.0030 | 0.0034 | 0.0039 | 0.0040 |
| | 2 | 1.5 x D | 0.2 x D | 0.5 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | 0.0015 | 0.0019 | 0.0022 | 0.0025 | 0.0028 | 0.0029 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.
 For side milling with Ap larger than 1 x D, reduce Fz by 20%.
 Cylindrical shanks not recommended for full slotting.

DUO-LOCK • HARVI I TE • Ramping 0°-15° • Application Data • Inch



| Material Group | Max Depth | | | | | Recommended feed per tooth (fz = IPT) for Helical Interpolation and Ramping – z _{eff} = 2 | | | | | | |
|----------------|-----------|------------------------|-------|-----|-------|--|--------|--------|--------|--------|--------|--------|
| | | KCPM15-KCSM15 | | | | Diameter – D1 [Ømin–Ømax] for helical interpolation | | | | | | |
| | | Cutting Speed – Vc SFM | | | | | | | | | | |
| | | min | Start | max | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | |
| P | 0 | 1 x D | 410 | 490 | 580 | IPT | 0.0022 | 0.0026 | 0.003 | 0.0034 | 0.0037 | 0.0041 |
| | 1 | 1 x D | 410 | 490 | 580 | IPT | 0.0022 | 0.0026 | 0.003 | 0.0034 | 0.0037 | 0.0041 |
| | 2 | 1 x D | 410 | 490 | 580 | IPT | 0.0022 | 0.0026 | 0.003 | 0.0034 | 0.0037 | 0.0041 |
| | 3 | 1 x D | 360 | 430 | 490 | IPT | 0.0019 | 0.0021 | 0.0026 | 0.0031 | 0.0035 | 0.0037 |
| | 4 | 1 x D | 250 | 360 | 460 | IPT | 0.0016 | 0.0019 | 0.0023 | 0.0027 | 0.003 | 0.0032 |
| | 5 | 0.75 x D | 160 | 230 | 300 | IPT | 0.0015 | 0.0017 | 0.0021 | 0.0024 | 0.0028 | 0.003 |
| M | 6 | 0.75 x D | 130 | 180 | 230 | IPT | 0.0012 | 0.0014 | 0.0017 | 0.002 | 0.0022 | 0.0024 |
| | 1 | 0.75 x D | 250 | 300 | 330 | IPT | 0.0019 | 0.0021 | 0.0026 | 0.0031 | 0.0035 | 0.0037 |
| | 2 | 0.75 x D | 150 | 180 | 220 | IPT | 0.0015 | 0.0017 | 0.0021 | 0.0024 | 0.0028 | 0.003 |
| K | 3 | 0.5 x D | 130 | 160 | 210 | IPT | 0.0012 | 0.0014 | 0.0017 | 0.002 | 0.0022 | 0.0024 |
| | 1 | 1 x D | 360 | 400 | 460 | IPT | 0.0022 | 0.0026 | 0.003 | 0.0034 | 0.0037 | 0.0041 |
| | 2 | 1 x D | 330 | 380 | 430 | IPT | 0.0019 | 0.0021 | 0.0026 | 0.0031 | 0.0035 | 0.0037 |
| S | 3 | 0.75 x D | 300 | 340 | 390 | IPT | 0.0015 | 0.0017 | 0.0021 | 0.0024 | 0.0028 | 0.003 |
| | 1 | 0.5 x D | 130 | 190 | 260 | IPT | 0.0019 | 0.0021 | 0.0026 | 0.0031 | 0.0035 | 0.0037 |
| | 2 | 0.5 x D | 130 | 180 | 230 | IPT | 0.0015 | 0.0017 | 0.0021 | 0.0024 | 0.0028 | 0.003 |
| | 3 | 0.3 x D | 60 | 80 | 110 | IPT | 0.0009 | 0.0011 | 0.0014 | 0.0016 | 0.0019 | 0.002 |
| H | 4 | 0.75 x D | 130 | 150 | 160 | IPT | 0.0013 | 0.0016 | 0.002 | 0.0022 | 0.0025 | 0.0028 |
| | 1 | 0.75 x D | 230 | 320 | 390 | IPT | 0.0016 | 0.0019 | 0.0023 | 0.0027 | 0.003 | 0.0032 |
| | 2 | 0.75 x D | 185 | 255 | 315 | IPT | 0.0011 | 0.0013 | 0.0016 | 0.0019 | 0.0021 | 0.0022 |

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



DUO-LOCK™ • HARVI™ I TE • Plunging/Drilling • Application Data • Inch



| Material Group | | | | KCPM15-KCSM15 | | | Recommended feed per revolution (fn =mm/rev) for plunging and drilling | | | | | | | |
|----------------|-----------|------------|---------|-----------------------------|-------|-----|--|-----|--------|--------|--------|--------|--------|--------|
| | Max Depth | Applicable | Coolant | Cutting Speed – vc m/min | | | D1 – Diameter | | | | | | | |
| | | | | min | Start | max | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1-1/4 | |
| P | 0 | 1 x D | ● | Preferred | 360 | 430 | 490 | IPR | 0.0022 | 0.0026 | 0.0033 | 0.0044 | 0.0051 | 0.006 |
| | 1 | 1 x D | ● | Required | 360 | 430 | 490 | IPR | 0.0022 | 0.0026 | 0.0033 | 0.0044 | 0.0051 | 0.006 |
| | 2 | 1 x D | ● | Required | 360 | 430 | 490 | IPR | 0.0022 | 0.0026 | 0.0033 | 0.0044 | 0.0051 | 0.006 |
| | 3 | 1 x D | ● | Required | 330 | 350 | 390 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 4 | 1 x D | ● | Required | 220 | 280 | 330 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 5 | 0.75 x D | ○ | Required | 150 | 160 | 210 | IPR | 0.0011 | 0.0014 | 0.0018 | 0.0024 | 0.0028 | 0.003 |
| M | 1 | 0.75 x D | ● | Required | 190 | 220 | 260 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 2 | 0.75 x D | ○ | Required | 130 | 150 | 190 | IPR | 0.0011 | 0.0014 | 0.0018 | 0.0024 | 0.0028 | 0.003 |
| | 3 | 0.5 x D | ○ | Required | 110 | 130 | 160 | IPR | 0.0011 | 0.0014 | 0.0018 | 0.0024 | 0.0028 | 0.003 |
| K | 1 | 1 x D | ● | Preferred | 330 | 360 | 390 | IPR | 0.0022 | 0.0026 | 0.0033 | 0.0044 | 0.0051 | 0.006 |
| | 2 | 1 x D | ● | Required | 300 | 330 | 360 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 3 | 0.75 x D | ○ | Required | 250 | 280 | 330 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| S | 1 | 0.5 x D | ○ | Required | 100 | 130 | 180 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 2 | 0.5 x D | ○ | Required | 100 | 120 | 150 | IPR | 0.0011 | 0.0014 | 0.0018 | 0.0024 | 0.0028 | 0.003 |
| | 3 | 0.3 x D | ○ | Required | 50 | 60 | 90 | IPR | 0.0007 | 0.0009 | 0.0012 | 0.0017 | 0.0019 | 0.0023 |
| | 4 | 0.75 x D | ○ | Required | 100 | 110 | 130 | IPR | 0.0011 | 0.0014 | 0.0018 | 0.0024 | 0.0028 | 0.003 |
| H | 1 | 0.75 x D | ○ | Required | 190 | 220 | 260 | IPR | 0.0017 | 0.0019 | 0.003 | 0.0035 | 0.0041 | 0.0053 |
| | 2 | 0.75 x D | ○ | Required | 150 | 175 | 210 | IPR | 0.0012 | 0.0013 | 0.0021 | 0.0025 | 0.0029 | 0.0037 |

NOTE: Other available diameters are not recommended for plunging applications.

DUO-LOCK • HARVI • Application Data • Inch



UKDV



ULDV

| Material Group | | | short | medium | long | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | | | | | | | | |
|----------------|------|------|---------|---------|----------|---|--------|-----|---------------|-----|-------|------|-------|-------|-------|-------|--------|--------|-------|-------|-------|
| | A | B | | | | adapter reach | | | D1 – Diameter | | | | | | | | | | | | |
| | | | KCSM15 | | KCSM15 | | KCSM15 | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | | | | | | |
| | UKDV | ULDV | ap | ae | ap | min | max | min | max | min | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | 1.2500 | | | |
| P | 0 | 0 | 1.5 x D | 0.5 x D | 1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 1 | 1 | 1.5 x D | 0.5 x D | 1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 2 | 2 | 1.5 x D | 0.5 x D | 1 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 3 | 3 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 4 | 4 | 1.5 x D | 0.4 x D | 0.75 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| | 5 | 5 | 1.5 x D | 0.4 x D | 1 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| M | 1 | 1 | 1.5 x D | 0.4 x D | 1 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 2 | 2 | 1.5 x D | 0.4 x D | 1 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| | 3 | 3 | 1.5 x D | 0.4 x D | 1 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |
| K | – | 1 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | – | 2 | 1.5 x D | 0.5 x D | 1 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | – | 3 | 1.5 x D | 0.5 x D | 1 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| S | 1 | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 2 | 2 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| | 3 | 3 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| | 4 | 4 | 1.5 x D | 0.4 x D | 1 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0030 | .0030 |
| H | – | 1 | 1.5 x D | 0.4 x D | 0.75 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| | – | 2 | 1.5 x D | 0.2 x D | 0.5 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |

NOTE: Those guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
 For side milling with ap larger than 1 x D, reduce fz by 20%!
 Cylindrical shanks not recommended for full slotting.



DUO-LOCK™ • HARVI™ I Ball Nose • Application Data • Inch



| Material Group | | | | | short | | medium | | long | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | | |
|----------------|----|----------|---------|----------|--------------------|-----|--------------------|-------|--------------------|-----|---|-------|-------|-------|-------|-------|--------|--------|--|
| | A | | B | | adapter reach | | | | | | D1 – Diameter | | | | | | | | |
| | | | | | KCPM15 | | KCPM15 | | KCPM15 | | | | | | | | | | |
| | ap | | ae | | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | | |
| | | | | min | max | min | max | min | max | min | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | 1.2500 | |
| P | 0 | 1.25 x D | 0.5 x D | 1 x D | 490 | 660 | 441 | 594 | 441 | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 | | |
| | 1 | 1.25 x D | 0.5 x D | 1 x D | 490 | 660 | 441 | 594 | 441 | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 | | |
| | 2 | 1.25 x D | 0.5 x D | 1 x D | 460 | 620 | 414 | 558 | 414 | 558 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 | | |
| | 3 | 1.25 x D | 0.5 x D | 1 x D | 390 | 520 | 351 | 468 | 351 | 468 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 | | |
| | 4 | 1.25 x D | 0.4 x D | 0.75 x D | 300 | 490 | 270 | 441 | 270 | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 | | |
| | 5 | 1.25 x D | 0.4 x D | 1 x D | 200 | 330 | 170 | 280.5 | 160 | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 | | |
| M | 1 | 1.25 x D | 0.4 x D | 1 x D | 300 | 380 | 240 | 304 | 210 | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 | | |
| | 2 | 1.25 x D | 0.4 x D | 1 x D | 200 | 260 | 160 | 208 | 140 | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 | | |
| | 3 | 1.25 x D | 0.4 x D | 1 x D | 200 | 230 | 160 | 184 | 140 | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 | | |
| K | 1 | 1.25 x D | 0.5 x D | 1 x D | 390 | 490 | 351 | 441 | 351 | 441 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 | | |
| | 2 | 1.25 x D | 0.5 x D | 1 x D | 360 | 460 | 324 | 414 | 324 | 414 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 | | |
| | 3 | 1.25 x D | 0.5 x D | 1 x D | 360 | 430 | 324 | 387 | 324 | 387 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 | | |
| S | 1 | 1 x D | 0.3 x D | 0.3 x D | 160 | 300 | 128 | 240 | 96 | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 | | |
| | 2 | 1 x D | 0.3 x D | 0.3 x D | 80 | 130 | 64 | 104 | 48 | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 | | |
| | 3 | 1.25 x D | 0.3 x D | 0.3 x D | 80 | 130 | 64 | 104 | 48 | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 | | |
| | 4 | 1.25 x D | 0.4 x D | 1 x D | 160 | 200 | 128 | 160 | 96 | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0030 | .0030 | | |
| H | 1 | 1.25 x D | 0.4 x D | 0.75 x D | 260 | 460 | 208 | 368 | 156 | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 | | |
| | 2 | 1.25 x D | 0.2 x D | 0.5 x D | 230 | 390 | 184 | 312 | 138 | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 | | |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-LOCK • HARVI II • Application Data • Inch



UCDV



UDDV

| Material Group | | | | | short | | medium | | long | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|---|---------|---------|--------------------|-----|--------------------|-----|--------------------|-----|---|------|-------|-------|-------|-------|--------|--------|
| | A | | B | | adapter reach | | | | | | D1 – Diameter | | | | | | | |
| | | | | | KCPM15 | | KCPM15 | | KCPM15 | | | | | | | | | |
| | ap | | ae | | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | |
| | | | | min | max | min | max | min | max | min | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | 1.2500 |
| P | 0 | – | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | 441 | 594 | 441 | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 1 | – | 1.5 x D | 0.5 x D | 1 x D | 490 | 660 | 441 | 594 | 441 | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 2 | – | 1.5 x D | 0.5 x D | 1 x D | 460 | 620 | 414 | 558 | 414 | 558 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 3 | – | 1.5 x D | 0.5 x D | 1 x D | 390 | 520 | 351 | 468 | 351 | 468 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 4 | – | 1.5 x D | 0.4 x D | 0.75 x D | 300 | 490 | 270 | 441 | 270 | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| | 5 | 5 | 1.5 x D | 0.4 x D | 1 x D | 200 | 330 | 170 | 280.5 | 160 | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| M | 1 | – | 1.5 x D | 0.4 x D | 1 x D | 300 | 380 | 240 | 304 | 210 | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 2 | – | 1.5 x D | 0.4 x D | 1 x D | 200 | 260 | 160 | 208 | 140 | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| | 3 | – | 1.5 x D | 0.4 x D | 1 x D | 200 | 230 | 160 | 184 | 140 | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |
| K | 1 | – | 1.5 x D | 0.5 x D | 1 x D | 390 | 490 | 351 | 441 | 351 | 441 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 | .0042 |
| | 2 | – | 1.5 x D | 0.5 x D | 1 x D | 360 | 460 | 324 | 414 | 324 | 414 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 3 | – | 1.5 x D | 0.5 x D | 1 x D | 360 | 430 | 324 | 387 | 324 | 387 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| S | 1 | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 160 | 300 | 128 | 240 | 96 | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 2 | 2 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | 64 | 104 | 48 | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| | 3 | 3 | 1.5 x D | 0.3 x D | 0.3 x D | 80 | 130 | 64 | 104 | 48 | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| | 4 | 4 | 1.5 x D | 0.4 x D | 1 x D | 160 | 200 | 128 | 160 | 96 | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0030 | .0030 |
| H | 1 | 1 | 1.5 x D | 0.4 x D | 0.75 x D | 260 | 460 | 208 | 368 | 156 | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| | 2 | 2 | 1.5 x D | 0.2 x D | 0.5 x D | 230 | 390 | 184 | 312 | 138 | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce Fz by 20%!
Cylindrical shanks not recommended for full slotting.



DUO-LOCK™ • HARVI™ III • Application Data • Inch



Roughing

| Material Group | | | short | | | medium | | | long | | | Roughing – Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | |
|----------------|----|--------|------------------------|-----|-----|------------------------|-----|-----|------------------------|-----|------|---|-------|-------|-------|--------|--------|-------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | | | |
| | A | | KCSM15 | | | KCSM15 | | | KCSM15 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | 1.2500 | | |
| P | 4 | Ap max | 0.4 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| | 5 | Ap max | 0.4 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| M | 1 | Ap max | 0.4 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| | 2 | Ap max | 0.4 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 | .0033 |
| S | 3 | Ap max | 0.4 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |
| | 1 | Ap max | 0.4 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 | .0041 |
| H | 2 | Ap max | 0.4 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| | 3 | Ap max | 0.4 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 | .0022 |
| H | 4 | Ap max | 0.4 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0030 | .0030 |
| | 1 | Ap max | 0.4 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 | .0034 |
| H | 2 | Ap max | 0.4 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 | .0024 |

Finishing

| Material Group | | | short | | | medium | | | long | | | Finishing – Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | | |
|----------------|----|--------|------------------------|-----|-----|------------------------|-------|-----|------------------------|-----|------|--|-------|-------|-------|--------|--------|-------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | | | |
| | A | | KCSM15 | | | KCSM15 | | | KCSM15 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1 1/4 | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | 1.2500 | | |
| P | 4 | Ap max | 0.6 x D | 560 | – | 940 | 504 | – | 846 | 504 | – | 846 | IPT | .0021 | .0026 | .0031 | .0034 | .0041 | .0041 |
| | 5 | Ap max | 0.6 x D | 370 | – | 620 | 314.5 | – | 527 | 296 | – | 496 | IPT | .0019 | .0024 | .0028 | .0031 | .0040 | .0040 |
| M | 1 | Ap max | 0.6 x D | 560 | – | 720 | 448 | – | 576 | 392 | – | 504 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 | .0049 |
| | 2 | Ap max | 0.6 x D | 370 | – | 500 | 296 | – | 400 | 259 | – | 350 | IPT | .0019 | .0024 | .0028 | .0031 | .0040 | .0040 |
| S | 3 | Ap max | 0.6 x D | 370 | – | 440 | 296 | – | 352 | 259 | – | 308 | IPT | .0016 | .0020 | .0023 | .0025 | .0029 | .0029 |
| | 1 | Ap max | 0.6 x D | 310 | – | 560 | 248 | – | 448 | 186 | – | 336 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 | .0049 |
| H | 2 | Ap max | 0.6 x D | 160 | – | 250 | 128 | – | 200 | 96 | – | 150 | IPT | .0012 | .0016 | .0019 | .0021 | .0027 | .0027 |
| | 3 | Ap max | 0.6 x D | 160 | – | 250 | 128 | – | 200 | 96 | – | 150 | IPT | .0012 | .0016 | .0019 | .0021 | .0027 | .0027 |
| H | 4 | Ap max | 0.6 x D | 310 | – | 370 | 248 | – | 296 | 186 | – | 222 | IPT | .0017 | .0022 | .0026 | .0029 | .0036 | .0036 |
| | 1 | Ap max | 0.6 x D | 500 | – | 870 | 400 | – | 696 | 300 | – | 522 | IPT | .0021 | .0026 | .0031 | .0034 | .0041 | .0041 |
| H | 2 | Ap max | 0.6 x D | 440 | – | 750 | 352 | – | 600 | 264 | – | 450 | IPT | .0016 | .0020 | .0023 | .0025 | .0029 | .0029 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap bigger than 1 x D, reduce fz by 20%! Cylindrical shanks not recommended for full slotting.

DUO-LOCK™ • HARVI™ III Ball Nose • Application Data • Inch



Roughing

| Material Group | | | short | | | medium | | | long | | | Roughing – Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | |
|----------------|----|----------------|------------------------|-----|-----|------------------------|-----|-------|------------------------|-----|------|---|-------|-------|-------|--------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | |
| | A | | KCSM15 | | | KCSM15 | | | KCSM15 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | |
| P | 0 | Ap max 0.4 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 1 | Ap max 0.4 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 2 | Ap max 0.4 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 3 | Ap max 0.4 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 |
| | 4 | Ap max 0.4 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 |
| | 5 | Ap max 0.4 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 |
| M | 6 | Ap max 0.4 x D | 160 | – | 250 | 136 | – | 212.5 | 128 | – | 200 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 |
| | 1 | Ap max 0.4 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 |
| | 2 | Ap max 0.4 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 |
| K | 3 | Ap max 0.4 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 |
| | 1 | Ap max 0.4 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | .0023 | .0029 | .0034 | .0037 | .0042 |
| | 2 | Ap max 0.4 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 |
| S | 3 | Ap max 0.4 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | .0016 | .0020 | .0023 | .0026 | .0033 |
| | 1 | Ap max 0.4 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0041 |
| | 2 | Ap max 0.4 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 |
| | 3 | Ap max 0.4 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0022 |
| H | 4 | Ap max 0.4 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0030 |
| | 1 | Ap max 0.4 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0034 |
| | 2 | Ap max 0.4 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0024 |

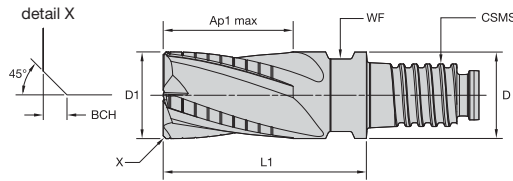
Finishing

| Material Group | | | short | | | medium | | | long | | | Finishing – Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | |
|----------------|----|-----------------|------------------------|-----|------|------------------------|-----|-------|------------------------|-----|------|--|-------|-------|-------|--------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | |
| | A | | KCSM15 | | | KCSM15 | | | KCSM15 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .3750 | .5000 | .6250 | .7500 | 1.2500 | |
| P | 0 | Ap max 0.06 x D | 940 | – | 1250 | 846 | – | 1125 | 846 | – | 1125 | IPT | .0028 | .0035 | .0040 | .0045 | .0050 |
| | 1 | Ap max 0.06 x D | 940 | – | 1250 | 846 | – | 1125 | 846 | – | 1125 | IPT | .0028 | .0035 | .0040 | .0045 | .0050 |
| | 2 | Ap max 0.06 x D | 870 | – | 1180 | 783 | – | 1062 | 783 | – | 1062 | IPT | .0028 | .0035 | .0040 | .0045 | .0050 |
| | 3 | Ap max 0.06 x D | 750 | – | 1000 | 675 | – | 900 | 675 | – | 900 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 |
| | 4 | Ap max 0.06 x D | 560 | – | 940 | 504 | – | 846 | 504 | – | 846 | IPT | .0021 | .0026 | .0031 | .0034 | .0041 |
| | 5 | Ap max 0.06 x D | 370 | – | 620 | 314.5 | – | 527 | 296 | – | 496 | IPT | .0019 | .0024 | .0028 | .0031 | .0040 |
| M | 6 | Ap max 0.06 x D | 310 | – | 470 | 263.5 | – | 399.5 | 248 | – | 376 | IPT | .0016 | .0020 | .0023 | .0025 | .0029 |
| | 1 | Ap max 0.06 x D | 560 | – | 720 | 448 | – | 576 | 392 | – | 504 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 |
| | 2 | Ap max 0.06 x D | 370 | – | 500 | 296 | – | 400 | 259 | – | 350 | IPT | .0019 | .0024 | .0028 | .0031 | .0040 |
| K | 3 | Ap max 0.06 x D | 370 | – | 440 | 296 | – | 352 | 259 | – | 308 | IPT | .0016 | .0020 | .0023 | .0025 | .0029 |
| | 1 | Ap max 0.06 x D | 750 | – | 940 | 675 | – | 846 | 675 | – | 846 | IPT | .0028 | .0035 | .0040 | .0045 | .0050 |
| | 2 | Ap max 0.06 x D | 690 | – | 870 | 621 | – | 783 | 621 | – | 783 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 |
| S | 3 | Ap max 0.06 x D | 690 | – | 810 | 621 | – | 729 | 621 | – | 729 | IPT | .0019 | .0024 | .0028 | .0031 | .0040 |
| | 1 | Ap max 0.06 x D | 310 | – | 560 | 248 | – | 448 | 186 | – | 336 | IPT | .0023 | .0029 | .0035 | .0039 | .0049 |
| | 2 | Ap max 0.06 x D | 160 | – | 250 | 128 | – | 200 | 96 | – | 150 | IPT | .0012 | .0016 | .0019 | .0021 | .0027 |
| | 3 | Ap max 0.06 x D | 160 | – | 250 | 128 | – | 200 | 96 | – | 150 | IPT | .0012 | .0016 | .0019 | .0021 | .0027 |
| H | 4 | Ap max 0.06 x D | 310 | – | 370 | 248 | – | 296 | 186 | – | 222 | IPT | .0017 | .0022 | .0026 | .0029 | .0036 |
| | 1 | Ap max 0.06 x D | 500 | – | 870 | 400 | – | 696 | 300 | – | 522 | IPT | .0021 | .0026 | .0031 | .0034 | .0041 |
| | 2 | Ap max 0.06 x D | 440 | – | 750 | 352 | – | 600 | 264 | – | 450 | IPT | .0016 | .0020 | .0023 | .0025 | .0029 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
 For side milling with Ap bigger than 1 x D, reduce fz by 20%!
 Cylindrical shanks not recommended for full slotting.



DUO-LOCK™ • KenCut™ RR • Chamfered • 4-5 Flutes • Inch

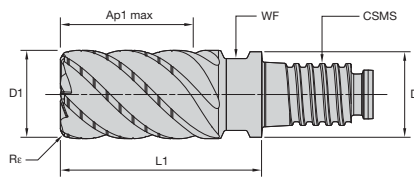


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |
| | |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | BCH | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|--------|
| 6127415 | RQDB0375Y4CV | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .020 | ● |
| 6127416 | RQDB0500Y4CV | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .020 | ● |
| 6127417 | RQDB0625Y4CV | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .020 | ● |
| 6127418 | RQDB0750Y4CV | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .020 | ● |
| 6127419 | RQDB1000Y5CV | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .020 | ● |

DUO-LOCK • KenCut RR • Radiused • 4 & 6 Flutes • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ○ |
| M | ● |
| K | ○ |
| N | ○ |
| S | ● |
| H | ○ |
| | |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | Z U | KCSM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|-----|--------|
| 6126918 | RKDF0375Y4CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | 4 | ● |
| 6126919 | RKDF0500Y4CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | 4 | ● |
| 6126920 | RKDF0625Y4CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | 4 | ● |
| 6127051 | RKDF0750Y6CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | 6 | ● |
| 6127052 | RKDF1000Y6CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | 6 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • KenCut™ RR • RQDB • Application Data • Inch



| Material Group | | | | | short | | medium | | | long | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|---------|---------|----------|---------------------------|-----|---------------------------|-----|-----|---------------------------|-----|---|---------------|-----|-------|-------|-------|-------|-------|
| | A | | B | | adapter reach | | | | | | | | | | | | | | |
| | | | | | KCPM15 | | KCPM15 | | | KCPM15 | | | D1 – Diameter | | | | | | |
| | ap | | ae | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 0 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0020 | .0025 | .0029 | .0032 | .0036 |
| | 1 | 1.5 x D | 0.5 x D | 1 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0020 | .0025 | .0029 | .0032 | .0036 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 370 | – | 500 | 333 | – | 450 | 333 | – | 450 | IPT | .0020 | .0025 | .0029 | .0032 | .0036 |
| | 3 | 1.5 x D | 0.4 x D | 0.75 x D | 310 | – | 420 | 279 | – | 378 | 279 | – | 378 | IPT | .0017 | .0021 | .0025 | .0028 | .0035 |
| | 4 | 1.5 x D | 0.3 x D | 0.3 x D | 240 | – | 390 | 216 | – | 351 | 216 | – | 351 | IPT | .0015 | .0019 | .0022 | .0024 | .0029 |
| | 5 | 1.5 x D | 0.4 x D | 0.75 x D | 160 | – | 260 | 136 | – | 221 | 128 | – | 208 | IPT | .0013 | .0017 | .0020 | .0022 | .0028 |
| M | 1 | 1.5 x D | 0.4 x D | 0.75 x D | 240 | – | 300 | 192 | – | 240 | 168 | – | 210 | IPT | .0017 | .0021 | .0025 | .0028 | .0035 |
| | 2 | 1.5 x D | 0.4 x D | 0.75 x D | 160 | – | 210 | 128 | – | 168 | 112 | – | 147 | IPT | .0013 | .0017 | .0020 | .0022 | .0028 |
| | 3 | 1.5 x D | 0.4 x D | 0.75 x D | 160 | – | 180 | 128 | – | 144 | 112 | – | 126 | IPT | .0011 | .0014 | .0016 | .0018 | .0021 |
| K | 1 | 1.5 x D | 0.5 x D | 1 x D | 310 | – | 390 | 279 | – | 351 | 279 | – | 351 | IPT | .0020 | .0025 | .0029 | .0032 | .0036 |
| | 2 | 1.5 x D | 0.4 x D | 1 x D | 290 | – | 370 | 261 | – | 333 | 261 | – | 333 | IPT | .0017 | .0021 | .0025 | .0028 | .0035 |
| | 3 | 1.5 x D | 0.4 x D | 1 x D | 290 | – | 340 | 261 | – | 306 | 261 | – | 306 | IPT | .0013 | .0017 | .0020 | .0022 | .0028 |
| S | 1 | 1.5 x D | 0.4 x D | 0.75 x D | 130 | – | 240 | 104 | – | 192 | 78 | – | 144 | IPT | .0017 | .0021 | .0025 | .0028 | .0035 |
| | 3 | 1.5 x D | 0.4 x D | 0.75 x D | 70 | – | 100 | 56 | – | 80 | 42 | – | 60 | IPT | .0009 | .0011 | .0013 | .0015 | .0019 |
| | H | 1 | 1.5 x D | 0.3 x D | 0.3 x D | 210 | – | 370 | 168 | – | 296 | 126 | – | 222 | IPT | .0015 | .0019 | .0022 | .0024 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-LOCK • KenCut RR • RKDF • Application Data • Inch

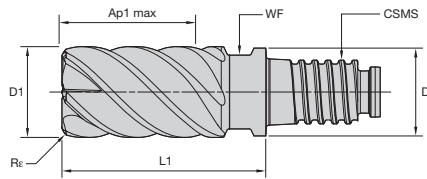


| Material Group | | | | | short | | medium | | | long | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | | |
|----------------|----|---------|---------|----------|---------------------------|---|---------------------------|-----|---|---------------------------|-----|---|---------------|-----|-------|-------|-------|-------|-------|
| | A | | B | | adapter reach | | | | | | | | | | | | | | |
| | | | | | KCSM15 | | KCSM15 | | | KCSM15 | | | D1 – Diameter | | | | | | |
| | ap | | ae | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | 3 | 1.0 x D | 0.5 x D | 0.75 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0019 | .0025 | .0029 | .0033 | .0033 |
| | 4 | 1.0 x D | 0.3 x D | 0.75 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0017 | .0022 | .0026 | .0029 | .0028 |
| | 5 | 1.0 x D | 0.4 x D | 0.75 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0016 | .0020 | .0023 | .0026 | .0026 |
| | 6 | 1.0 x D | 0.3 x D | 0.3 x D | 160 | – | 250 | 136 | – | 212.5 | 128 | – | 200 | IPT | .0013 | .0016 | .0019 | .0021 | .0020 |
| M | 1 | 1.0 x D | 0.4 x D | 0.75 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0019 | .0025 | .0029 | .0033 | .0033 |
| | 2 | 1.0 x D | 0.4 x D | 0.75 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0016 | .0020 | .0023 | .0026 | .0026 |
| | 3 | 1.0 x D | 0.4 x D | 0.75 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0013 | .0016 | .0019 | .0021 | .0020 |
| K | 1 | 1.0 x D | 0.5 x D | 1 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | .0023 | .0029 | .0034 | .0037 | .0035 |
| | 2 | 1.0 x D | 0.5 x D | 1 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | .0019 | .0025 | .0029 | .0033 | .0033 |
| | 3 | 1.0 x D | 0.5 x D | 1 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | .0016 | .0020 | .0023 | .0026 | .0026 |
| S | 1 | 1.0 x D | 0.3 x D | 0.75 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0019 | .0025 | .0029 | .0033 | .0033 |
| | 2 | 1.0 x D | 0.3 x D | 0.75 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0018 |
| | 3 | 1.0 x D | 0.3 x D | 0.75 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0013 | .0015 | .0018 | .0018 |
| | 4 | 1.0 x D | 0.4 x D | 0.75 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0014 | .0018 | .0021 | .0024 | .0024 |
| H | 1 | 1.0 x D | 0.3 x D | 0.3 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0017 | .0022 | .0026 | .0029 | .0028 |
| | 2 | 1.0 x D | 0.2 x D | 0.2 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | .0013 | .0016 | .0019 | .0021 | .0020 |
| | 3 | 1.0 x D | 0.2 x D | 0.2 x D | 200 | – | 300 | 160 | – | 240 | 120 | – | 180 | IPT | .0010 | .0013 | .0015 | .0018 | .0018 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.



DUO-LOCK™ • KenCut™ FF • Radiused • 6 Flutes • Inch

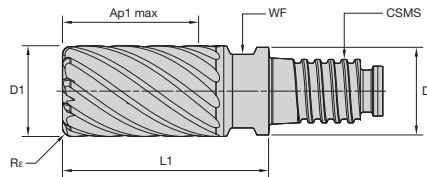


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|--------|
| 6127558 | FMDFO375Y6CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | ● |
| 6127559 | FMDFO500Y6CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6127560 | FMDFO625Y6CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6127581 | FMDFO750Y6CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6127582 | FMDFO1000Y6CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |

DUO-LOCK • RSM II™ • Radiused • Multi-Flute • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ○ |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | Z U | KC643M |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|-----|--------|
| 6127058 | FSDE0375Y9CQA | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .015 | 9 | ● |
| 6127059 | FSDE0375Y9CQB | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .030 | 9 | ● |
| 6127060 | FSDE0375Y9CQC | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .060 | 9 | ● |
| 6127212 | FSDE0500Y9CQA | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .015 | 9 | ● |
| 6127214 | FSDE0500Y9CQC | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | 9 | ● |
| 6127216 | FSDE0500Y9CQE | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .120 | 9 | ● |
| 6127217 | FSDE0625Y11CQA | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .015 | 11 | ● |
| 6127218 | FSDE0625Y11CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | 11 | ● |
| 6127219 | FSDE0625Y11CQC | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .060 | 11 | ● |
| 6127232 | FSDE0750Y15CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | 15 | ● |
| 6127234 | FSDE0750Y15CQD | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .090 | 15 | ● |
| 6127235 | FSDE0750Y15CQE | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .120 | 15 | ● |
| 6127236 | FSDE1000Y19CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | 19 | ● |
| 6127237 | FSDE1000Y19CQC | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | 19 | ● |
| 6127238 | FSDE1000Y19CQD | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .090 | 19 | ● |
| 6127239 | FSDE1000Y19CQE | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .120 | 19 | ● |
| 6127240 | FSDE1000Y19CQF | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .250 | 19 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |



DUO-LOCK™ • KenCut™ FF • F MDF • Application Data • Inch



| Material Group | | | short | | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | |
|----------------|----|---------|---------------------------|-----|-----|---------------------------|-----|-----|---------------------------|-----|------|---|------|-------|-------|-------|-------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | | |
| | A | | KCPM15 | | | KCPM15 | | | KCPM15 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .375 | .500 | .625 | .750 | 1.000 | | |
| P | 0 | 1.5 x D | 0.1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 1 | 1.5 x D | 0.1 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 1.5 x D | 0.1 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 3 | 1.5 x D | 0.1 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 4 | 1.5 x D | 0.1 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 5 | 1.5 x D | 0.1 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0018 | .0023 | .0027 | .0031 | .0036 |
| M | 6 | 1.5 x D | 0.1 x D | 160 | – | 250 | 136 | – | 212.5 | 128 | – | 200 | IPT | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 1 | 1.5 x D | 0.1 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.5 x D | 0.1 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0018 | .0023 | .0027 | .0031 | .0036 |
| K | 3 | 1.5 x D | 0.1 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0015 | .0019 | .0022 | .0025 | .0028 |
| | 1 | 1.5 x D | 0.1 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | .0027 | .0034 | .0039 | .0044 | .0049 |
| | 2 | 1.5 x D | 0.1 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 |
| S | 3 | 1.5 x D | 0.1 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | .0018 | .0023 | .0027 | .0031 | .0036 |
| | 1 | 1.5 x D | 0.1 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0023 | .0029 | .0034 | .0039 | .0045 |
| | 2 | 1.5 x D | 0.1 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0012 | .0015 | .0018 | .0021 | .0024 |
| | 3 | 1.5 x D | 0.1 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0012 | .0015 | .0018 | .0021 | .0024 |
| H | 4 | 1.5 x D | 0.15 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0017 | .0021 | .0025 | .0028 | .0033 |
| | 1 | 1.5 x D | 0.1 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0020 | .0026 | .0030 | .0034 | .0039 |
| | 2 | 1.5 x D | 0.1 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | .0015 | .0019 | .0022 | .0025 | .0028 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
 For side milling with Ap bigger than 1 x D, reduce fz by 20%!
 Cylindrical shanks not recommended for full slotting.

DUO-LOCK • RSM II™ • FSDE • Application Data • Inch



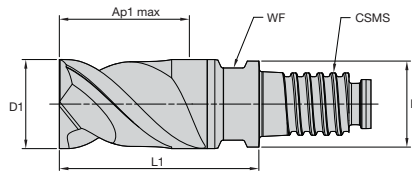
| Material Group | | | short | | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | | |
|----------------|----|--------|---------------------------|-----|-----|---------------------------|-----|-----|---------------------------|-----|------|---|------|-------|-------|-------|-------|-------|
| | | | adapter reach | | | | | | | | | D1 – Diameter | | | | | | |
| | A | | KC643M | | | KC643M | | | KC643M | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | | | | | | | |
| ap | ae | min | – | max | min | – | max | min | – | max | dec. | .375 | .500 | .625 | .750 | 1.000 | | |
| P | 4 | Ap max | 0.008–0.012" | 445 | – | 1628 | 401 | – | 1465 | 401 | – | 1465 | IPT | .0045 | .0053 | .0058 | .0061 | .0066 |
| | 5 | Ap max | 0.008–0.012" | 295 | – | 1078 | 251 | – | 916 | 236 | – | 862 | IPT | .0040 | .0048 | .0052 | .0056 | .0061 |
| M | 1 | Ap max | 0.008–0.012" | 445 | – | 1243 | 356 | – | 994 | 312 | – | 870 | IPT | .0050 | .0060 | .0066 | .0070 | .0077 |
| | 2 | Ap max | 0.008–0.012" | 295 | – | 869 | 236 | – | 695 | 207 | – | 608 | IPT | .0040 | .0048 | .0052 | .0056 | .0061 |
| S | 3 | Ap max | 0.008–0.012" | 295 | – | 759 | 236 | – | 607 | 207 | – | 531 | IPT | .0033 | .0040 | .0043 | .0045 | .0048 |
| | 1 | Ap max | 0.008–0.012" | 245 | – | 979 | 196 | – | 783 | 147 | – | 587 | IPT | .0050 | .0060 | .0066 | .0070 | .0077 |
| | 2 | Ap max | 0.008–0.012" | 125 | – | 429 | 100 | – | 343 | 75 | – | 257 | IPT | .0026 | .0032 | .0035 | .0037 | .0041 |
| | 3 | Ap max | 0.008–0.012" | 125 | – | 429 | 100 | – | 343 | 75 | – | 257 | IPT | .0026 | .0032 | .0035 | .0037 | .0041 |
| H | 4 | Ap max | 0.008–0.012" | 245 | – | 649 | 196 | – | 519 | 147 | – | 389 | IPT | .0037 | .0044 | .0048 | .0051 | .0056 |
| | 1 | Ap max | 0.008–0.012" | 395 | – | 1518 | 316 | – | 1214 | 237 | – | 911 | IPT | .0045 | .0053 | .0058 | .0061 | .0066 |
| | 2 | Ap max | 0.008–0.012" | 345 | – | 1298 | 276 | – | 1038 | 207 | – | 779 | IPT | .0033 | .0040 | .0043 | .0045 | .0048 |

NOTE: For better surface, finish reduce feed per tooth.
 For side milling with Ap bigger than 1 x D, reduce fz by 20%!
 Cylindrical shanks not recommended for full slotting.



DUO-LOCK™ • MaxiMet™ • Square End • 2 Flutes • Inch

- first choice
- alternate choice

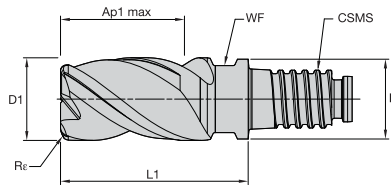


| | | |
|---|--------|---|
| P | Blue | |
| M | Yellow | |
| K | Red | |
| N | Green | ● |
| S | Orange | |
| H | Grey | |
| | | |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | K600 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|
| 6151112 | ABDF0375Y2CU | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | ● |
| 6151113 | ABDF0500Y2CU | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | ● |
| 6151114 | ABDF0625Y2CU | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | ● |
| 6151115 | ABDF0750Y2CU | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | ● |

DUO-LOCK • MaxiMet • Radiused • 3 Flutes • Inch

- first choice
- alternate choice



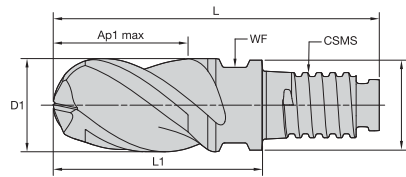
| | | |
|---|--------|---|
| P | Blue | |
| M | Yellow | |
| K | Red | |
| N | Green | ● |
| S | Orange | |
| H | Grey | |
| | | |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | K600 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|------|
| 6153950 | ABDE0375Y3CQC | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .060 | ● |
| 6153951 | ABDE0375Y3CQD | 3/8 | .359 | 9/16 | .843 | DL10 | .315 | .090 | ● |
| 6153952 | ABDE0500Y3CQA | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6153953 | ABDE0500Y3CQB | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .030 | ● |
| 6153954 | ABDE0500Y3CQC | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .060 | ● |
| 6153955 | ABDE0500Y3CQD | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .090 | ● |
| 6153956 | ABDE0500Y3CQE | 1/2 | .480 | 3/4 | 1.126 | DL12 | .374 | .120 | ● |
| 6153957 | ABDE0625Y3CQA | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .015 | ● |
| 6153958 | ABDE0625Y3CQB | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .030 | ● |
| 6153959 | ABDE0625Y3CQC | 5/8 | .605 | 15/16 | 1.406 | DL16 | .512 | .060 | ● |
| 6153963 | ABDE0750Y3CQB | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .030 | ● |
| 6153964 | ABDE0750Y3CQC | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .060 | ● |
| 6153965 | ABDE0750Y3CQD | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .090 | ● |
| 6153966 | ABDE0750Y3CQE | 3/4 | .730 | 1 1/8 | 1.689 | DL20 | .630 | .120 | ● |
| 6153967 | ABDE1000Y3CQB | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .030 | ● |
| 6153968 | ABDE1000Y3CQC | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .060 | ● |
| 6153970 | ABDE1000Y3CQE | 1 | .961 | 1 1/2 | 2.252 | DL25 | .827 | .120 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |



DUO-LOCK™ • MaxiMet™ • Ball Nose • 3 Flutes • Inch



- first choice
- alternate choice

| | | |
|---|---|---|
| P | ■ | |
| M | ■ | |
| K | ■ | |
| N | ■ | ● |
| S | ■ | |
| H | ■ | |
| | | |

| order number | catalog number | D1 | D | Ap1 max | L | L1 | CSMS system size | WF | K600 |
|--------------|----------------|-----|------|---------|-------|-------|------------------|------|------|
| 6626767 | ABBE0375Y3CN | 3/8 | .359 | 9/16 | 1.335 | .843 | DL10 | .315 | ● |
| 6626768 | ABBE0500Y3CN | 1/2 | .480 | 3/4 | 1.717 | 1.126 | DL12 | .374 | ● |
| 6626769 | ABBE0625Y3CN | 5/8 | .605 | 15/16 | 2.193 | 1.406 | DL16 | .512 | ● |
| 6626770 | ABBE0750Y3CN | 3/4 | .730 | 1 1/8 | 2.630 | 1.689 | DL20 | .630 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • MaxiMet™ • ABDF & ABDE • Application Data • Inch



MaxiMet ABDF



MaxiMet ABDE

| Material Group | | | | | short | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|-----|---------|---------|---------|------------------------|-----|------------------------|------|-----|------------------------|-----|-----|---|-------|---------------|-------|-------|-------|--|
| | A | | B | | adapter reach | | | | | | | | | | D1 – Diameter | | | | |
| | | | | | K600 | | K600 | | | K600 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | | |
| | ap | ae | ap | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | dec. | .3750 | .5000 | .6250 | .7500 | | |
| | min | max | min | max | min | max | min | max | min | max | min | max | | | | | | | |
| N | 1 | 1.5 x D | 0.3 x D | 1.0 x D | 1640 | – | 6560 | 1312 | – | 3936 | 984 | – | 3936 | IPT | .0029 | .0038 | .0048 | .0057 | |
| | 2 | 1.5 x D | 0.3 x D | 1.0 x D | 1640 | – | 4920 | 1312 | – | 2952 | 984 | – | 2952 | IPT | .0023 | .0031 | .0038 | .0046 | |
| | 3 | 1.5 x D | 0.3 x D | 1.0 x D | 1640 | – | 4920 | 1312 | – | 2952 | 984 | – | 2952 | IPT | .0020 | .0027 | .0033 | .0040 | |
| | 4 | 1.5 x D | 0.3 x D | 1.0 x D | 1310 | – | 2460 | 1048 | – | 1476 | 786 | – | 1476 | IPT | .0020 | .0027 | .0033 | .0040 | |
| | 5 | 1.5 x D | 0.3 x D | 1.0 x D | 820 | – | 3280 | 656 | – | 1968 | 492 | – | 1968 | IPT | .0026 | .0034 | .0043 | .0052 | |

NOTE: Ap for spindle with ceramic bearings multiply by 0.5.
 For better surface finish reduce feed per tooth.
 Above parameters are based on ideal conditions.
 Please adjust parameters according to system stability.
 For side milling with Ap bigger than 1 x D reduce Fz by 20%!
 Cylindrical shanks not recommended for full slotting.

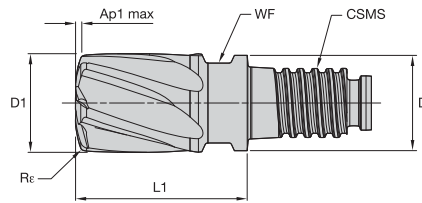
DUO-LOCK • MaxiMet • ABBE • Application Data • Inch



| Material Group | | | | | short | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | | |
|----------------|-----|---------|---------|---------|------------------------|-----|------------------------|------|-----|------------------------|-----|-----|---|-------|---------------|-------|-------|-------|--|
| | A | | B | | adapter reach | | | | | | | | | | D1 – Diameter | | | | |
| | | | | | K600 | | K600 | | | K600 | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | | |
| | ap | ae | ap | | Cutting Speed – vc SFM | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | dec. | .3750 | .5000 | .6250 | .7500 | | |
| | min | max | min | max | min | max | min | max | min | max | min | max | | | | | | | |
| N | 1 | 1.0 x D | 0.5 x D | 1.0 x D | 1640 | – | 6560 | 1312 | – | 5248 | 984 | – | 3936 | IPT | .0028 | .0038 | .0047 | .0056 | |
| | 2 | 1.0 x D | 0.5 x D | 1.0 x D | 1640 | – | 4920 | 1312 | – | 3936 | 984 | – | 2952 | IPT | .0023 | .0030 | .0038 | .0045 | |
| | 3 | 1.0 x D | 0.5 x D | 1.0 x D | 1640 | – | 4920 | 1312 | – | 3936 | 984 | – | 2952 | IPT | .0020 | .0026 | .0033 | .0039 | |
| | 4 | 1.0 x D | 0.5 x D | 1.0 x D | 1310 | – | 2460 | 1048 | – | 1968 | 786 | – | 1476 | IPT | .0020 | .0026 | .0033 | .0039 | |
| | 5 | 1.0 x D | 0.5 x D | 1.0 x D | 820 | – | 3280 | 656 | – | 2624 | 492 | – | 1968 | IPT | .0025 | .0034 | .0042 | .0051 | |
| | 6 | 1.0 x D | 0.5 x D | 1.0 x D | 330 | – | 2460 | 264 | – | 1968 | 198 | – | 1476 | IPT | .0028 | .0038 | .0047 | .0056 | |
| | 7 | 1.0 x D | 0.5 x D | 1.0 x D | 330 | – | 2460 | 264 | – | 1968 | 198 | – | 1476 | IPT | .0020 | .0026 | .0033 | .0039 | |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".
 For better surface finish, reduce feed per tooth.

DUO-LOCK™ • KenFeed™ • KMDA • Radiused • 6 Flutes • Inch

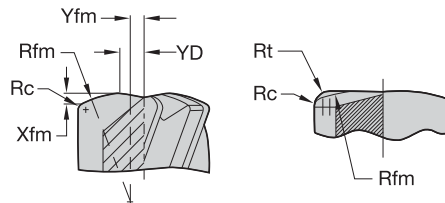


- first choice
- alternate choice

| | | |
|---|---|---|
| P | ■ | ○ |
| M | ■ | ○ |
| K | ■ | ○ |
| N | ■ | ○ |
| S | ■ | ○ |
| H | ■ | ○ |
| | ■ | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KC639M |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|--------|
| 6197711 | KMDA0375Y6BQX | 3/8 | .359 | 0.0201 | .655 | DL10 | .315 | .023 | ● |
| 6197713 | KMDA0500Y6BQX | 1/2 | .480 | 0.0268 | .876 | DL12 | .374 | .031 | ● |
| 6197714 | KMDA0625Y6BQX | 5/8 | .605 | 0.0335 | 1.093 | DL16 | .512 | .039 | ● |
| 6197715 | KMDA0750Y6BQX | 3/4 | .730 | 0.0399 | 1.314 | DL20 | .630 | .047 | ● |

DUO-LOCK • KenFeed • 6 Flutes • Programming Data



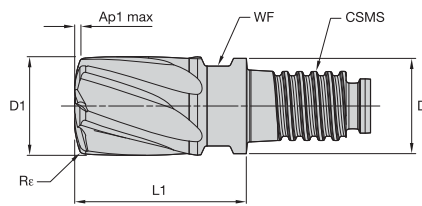
| Geometrical Parameters | | | | | | | Ramping Guide for Circular and Linear Ramping | | | | | | |
|--|-----|---------|-------|--------|--------|--------|--|---------|----------------------------------|-------|-------|-------|-------|
| | | | | | | | Circular Interpolation | | Linear Ramping | | | | |
| | | | | | | | Optimal Range of Circle Diameter for a Single Pass | | Calculated Length per Ramp Angle | | | | |
| catalog number | D1 | Ap1 max | R | Re | YRC | RCN | Smallest | Largest | 1° | 2° | 3° | 4° | 5° |
| KMDA0375Y6BQX | 3/8 | 0.0123 | 0.375 | 0.0240 | 0.0469 | 0.0825 | 0.540 | 0.750 | 0.706 | 0.353 | 0.235 | 0.176 | 0.141 |
| KMDA0500Y6BQX | 1/2 | 0.0164 | 0.500 | 0.0320 | 0.0625 | 0.1100 | 0.720 | 1.000 | 0.941 | 0.470 | 0.313 | 0.235 | 0.188 |
| KMDA0625Y6BQX | 5/8 | 0.0205 | 0.625 | 0.0400 | 0.0781 | 0.1375 | 0.900 | 1.250 | 1.176 | 0.588 | 0.392 | 0.294 | 0.235 |
| KMDA0750Y6BQX | 3/4 | 0.0246 | 0.750 | 0.0470 | 0.0938 | 0.1650 | 1.080 | 1.500 | 1.411 | 0.705 | 0.470 | 0.352 | 0.282 |
| recommended % of programmed feed rate to use while ramping | | | | | | | | | 100% | 70% | 50% | 30% | 10% |

NOTE: YRC = distance from centerline to the crown of the R radius.
 RCN = distance from centerline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
 R = the head radius size.
 Rc = the shoulder radius or radius at the corner of the cutter.

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |



DUO-LOCK™ • KenFeed™ • KSDB • Radiused • 6 Flutes • Inch



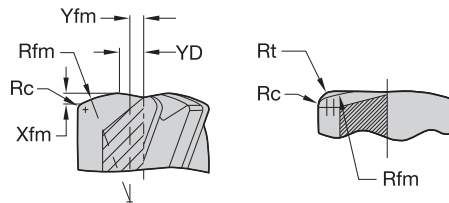
- first choice
- alternate choice

| | | |
|---|--------|---|
| P | Blue | ○ |
| M | Yellow | ○ |
| K | Red | ○ |
| N | Green | ○ |
| S | Orange | ● |
| H | Grey | ○ |

KC643M

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|---|
| 6626700 | KSDB0375Y6BQX | 3/8 | .359 | 0.0201 | .655 | DL10 | .315 | .023 | ● |
| 6626761 | KSDB0500Y6BQX | 1/2 | .480 | 0.0268 | 1.126 | DL12 | .374 | .031 | ● |
| 6626763 | KSDB0625Y6BQX | 5/8 | .605 | 0.0335 | 1.093 | DL16 | .512 | .039 | ● |
| 6626764 | KSDB0750Y6BQX | 3/4 | .730 | 0.0398 | 1.314 | DL20 | .630 | .047 | ● |
| 6531738 | KSDB1000Y6BQX | 1 | .961 | 0.5000 | 1.752 | DL25 | .827 | .063 | ● |

DUO-LOCK • KenFeed • 6 Flutes • Programming Data




| Geometrical Parameters | | | | | | | | | | | ramping guide for circular and linear interpolation | | | | | |
|---|-----|---------|-----|-------|-------|-------|-------|-------|------------------|----------|---|------|----------------------|-----|-----|-----|
| | | | | | | | | | | | Circular Interpolation | | linear interpolation | | | |
| allowed range of hole diameter | | | | | | | | | | | Calculated Length per Ramp Angle | | | | | |
| catalog number | D1 | Ap1 max | Rfm | Rt | Rc | Xfm | Yfm | YD | number of flutes | Smallest | Largest | 1° | 2° | 3° | 4° | 5° |
| KSDB0375Y6BQX | 3/8 | .020 | 3/8 | .0399 | .0235 | .0200 | .0469 | .0788 | 6 | .5325 | .75 | 1.14 | .57 | .38 | .29 | .23 |
| KSDB0500Y6BQX | 1/2 | .027 | 1/2 | .0538 | .0320 | .0266 | .0625 | .1050 | 6 | .7100 | 1.00 | 1.52 | .76 | .51 | .38 | .30 |
| KSDB0625Y6BQX | 5/8 | .034 | 5/8 | .0672 | .0400 | .0333 | .0781 | .1313 | 6 | .8875 | 1.25 | 1.91 | .95 | .63 | .48 | .38 |
| KSDB0750Y6BQX | 3/4 | .040 | 3/4 | .0798 | .0470 | .0399 | .0938 | .1575 | 6 | 1.0650 | 1.50 | 2.29 | 1.14 | .76 | .57 | .46 |
| recommended degree of programmed feed rate to use while ramping | | | | | | | | | | | 100% | 70% | 50% | 30% | 10% | |

NOTE: YRC = distance from centerline to the crown of the R radius.
 RCN = distance from centerline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
 R = the head radius size.
 Rc = the shoulder radius or radius at the corner of the cutter.

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • KenFeed™ • KMDA • Application Data • Inch




| Material Group |  | | straight short | | | conical medium | | | conical long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | |
|----------------|---|----------|------------------------|-----|-----|------------------------|-----|-----|------------------------|-----|------|--|--------|--------|--------|--------|--------|
| | A | | KC639M | | | KC639M | | | KC639M | | | D1 – Diameter | | | | | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | min | max | min | max | min | max | min | max | dec. | 0.3750 | 0.5000 | 0.6250 | 0.7500 | | |
| P | 3 | 0.05 x D | 0.55 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | 0.0160 | 0.0202 | 0.0239 | 0.0270 |
| | 4 | 0.05 x D | 0.55 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | 0.0143 | 0.0180 | 0.0211 | 0.0236 |
| H | 1 | 0.05 x D | 0.55 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | 0.0143 | 0.0180 | 0.0211 | 0.0236 |
| | 2 | 0.05 x D | 0.55 x D | 230 | – | 390 | 184 | – | 312 | 138 | – | 234 | IPT | 0.0107 | 0.0134 | 0.0156 | 0.0174 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For better surface finish, reduce feed per tooth.
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach >5 x D, reduce fz by 30%.
 For tools with reach >10 x D, reduce vc and fz by 30%.

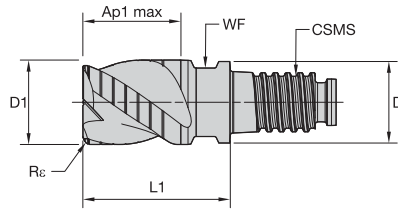
DUO-LOCK • KenFeed • KSDB • Application Data • Inch



| Material Group |  | | short | | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | | |
|----------------|---|----------|------------------------|-----|-----|------------------------|-----|-----|------------------------|-----|------|--|-------|-------|-------|-------|-------|
| | A | | KC643M | | | KC643M | | | KC643M | | | D1 – Diameter | | | | | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | min | max | min | max | min | max | min | max | dec. | .3750 | .5000 | .6250 | .7500 | | |
| P | 5 | 0.05 x D | 0.55 x D | 200 | – | 330 | 170 | – | 281 | 160 | – | 264 | IPT | .0110 | .0139 | .0164 | .0185 |
| | 6 | 0.05 x D | 0.55 x D | 160 | – | 250 | 136 | – | 213 | 128 | – | 200 | IPT | .0092 | .0115 | .0134 | .0149 |
| M | 1 | 0.05 x D | 0.55 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0137 | .0173 | .0205 | .0232 |
| | 2 | 0.05 x D | 0.55 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0110 | .0139 | .0164 | .0185 |
| S | 3 | 0.05 x D | 0.55 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0092 | .0115 | .0134 | .0149 |
| | 1 | 0.05 x D | 0.55 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0137 | .0173 | .0205 | .0232 |
| | 2 | 0.05 x D | 0.55 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0073 | .0092 | .0109 | .0124 |
| | 3 | 0.05 x D | 0.55 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0073 | .0092 | .0109 | .0124 |
| | 4 | 0.05 x D | 0.55 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0101 | .0128 | .0151 | .0170 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".
 For cutting aluminum, with high silicon TiCN coating is recommended.
 For better surface finish, reduce feed per tooth.
 For tools with reach >3 x D, reduce fz by 20%.
 For tools with reach >5 x D, reduce fz by 30%.
 For tools with reach >10 x D, reduce Vc and fz by 30%.

DUO-LOCK™ • KenCut RR • Radiused • 3 Flutes • Inch



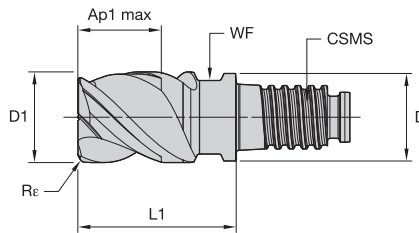
- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

KCPM15

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|--------|
| 6441025 | RFDD0375Y3AQA | 3/8 | .359 | 9/32 | .655 | DL10 | .315 | .015 | ● |
| 6441026 | RFDD0500Y3AQA | 1/2 | .480 | 3/8 | .876 | DL12 | .374 | .015 | ● |
| 6441027 | RFDD0625Y3AQA | 5/8 | .605 | 15/32 | 1.093 | DL16 | .512 | .015 | ● |
| 6441028 | RFDD0750Y3AQA | 3/4 | .730 | 9/16 | 1.314 | DL20 | .630 | .015 | ● |

DUO-LOCK • KenCut™ FF • Radiused • 3 Flutes • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

KCPM15

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS | WF | Re | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------|------|------|--------|
| 6440977 | FGDF0375Y3AQA | 3/8 | .359 | 9/32 | .655 | DL10 | .315 | .015 | ● |
| 6441021 | FGDF0375Y3AQB | 3/8 | .359 | 9/32 | .655 | DL10 | .315 | .030 | ● |
| 6440978 | FGDF0500Y3AQA | 1/2 | .480 | 3/8 | .876 | DL12 | .374 | .015 | ● |
| 6441022 | FGDF0500Y3AQB | 1/2 | .480 | 3/8 | .876 | DL12 | .374 | .030 | ● |
| 6440979 | FGDF0625Y3AQA | 5/8 | .605 | 15/32 | 1.093 | DL16 | .512 | .015 | ● |
| 6441023 | FGDF0625Y3AQB | 5/8 | .605 | 15/32 | 1.093 | DL16 | .512 | .030 | ● |
| 6440980 | FGDF0750Y3AQA | 3/4 | .730 | 9/16 | 1.314 | DL20 | .630 | .015 | ● |
| 6441024 | FGDF0750Y3AQB | 3/4 | .730 | 9/16 | 1.314 | DL20 | .630 | .030 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • KenCut™ RR • Application Data • Inch



| Material Group | | | | | straight short | | conical medium | | | conical long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | |
|----------------|--------------------|----------|--------------------|---------|--------------------|-----|--------------------|-----|-----|--------------------|-----|-----|---|--------|--------|--------|--------|--------|
| | A | | B | | KCPM15 | | KCPM15 | | | KCPM15 | | | D1 – Diameter | | | | | |
| | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | | Cutting Speed – vc | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | ap | ap | min | max | min | max | max | min | max | max | dec. | 0.3750 | 0.5000 | 0.6250 | 0.7500 | |
| P | 0 | 0.75 x D | 0.5 x D | 0.5 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 1 | 0.75 x D | 0.5 x D | 0.5 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 2 | 0.75 x D | 0.5 x D | 0.5 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 3 | 0.75 x D | 0.5 x D | 0.5 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| | 4 | 0.75 x D | 0.4 x D | 0.5 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | 0.0017 | 0.0022 | 0.0026 | 0.0029 |
| | 5 | 0.75 x D | 0.5 x D | 0.5 x D | 200 | – | 330 | 170 | – | 281 | 160 | – | 264 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| M | 6 | 0.75 x D | 0.4 x D | 0.5 x D | 160 | – | 250 | 136 | – | 213 | 128 | – | 200 | IPT | 0.0013 | 0.0016 | 0.0019 | 0.0021 |
| | 1 | 0.75 x D | 0.4 x D | 0.5 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| | 2 | 0.75 x D | 0.4 x D | 0.5 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| K | 3 | 0.75 x D | 0.4 x D | 0.5 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | 0.0013 | 0.0016 | 0.0019 | 0.0021 |
| | 1 | 0.75 x D | 0.5 x D | 0.5 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 2 | 0.75 x D | 0.5 x D | 0.5 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| H | 3 | 0.75 x D | 0.4 x D | 0.5 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| | 1 | 0.75 x D | 0.2 x D | 0.3 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | 0.0017 | 0.0022 | 0.0026 | 0.0029 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach >5 x D, reduce fz by 30%.
 For tools with reach >10 x D, reduce Vc and fz by 30%.

DUO-LOCK • KenCut FF • Application Data • Inch

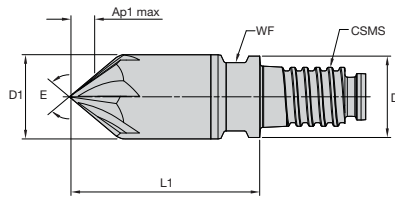


| Material Group | | | | | straight short | | conical medium | | | conical long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. | | | | | |
|----------------|--------------------|----------|--------------------|---------|--------------------|-----|--------------------|-----|-----|--------------------|-----|-----|---|--------|--------|--------|--------|--------|
| | A | | B | | KCPM15 | | KCPM15 | | | KCPM15 | | | D1 – Diameter | | | | | |
| | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | Cutting Speed – vc | | | Cutting Speed – vc | | | frac. | 3/8 | 1/2 | 5/8 | 3/4 | |
| | ap | ae | ap | ap | min | max | min | max | max | min | max | max | dec. | 0.3750 | 0.5000 | 0.6250 | 0.7500 | |
| P | 0 | 0.75 x D | 0.5 x D | 0.5 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 1 | 0.75 x D | 0.5 x D | 0.5 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 2 | 0.75 x D | 0.5 x D | 0.5 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 3 | 0.75 x D | 0.4 x D | 0.5 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| | 4 | 0.75 x D | 0.3 x D | 0.5 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | 0.0017 | 0.0022 | 0.0026 | 0.0029 |
| | 5 | 0.75 x D | 0.4 x D | 0.5 x D | 200 | – | 330 | 170 | – | 281 | 160 | – | 264 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| M | 6 | 0.75 x D | 0.3 x D | 0.5 x D | 160 | – | 250 | 136 | – | 213 | 128 | – | 200 | IPT | 0.0013 | 0.0016 | 0.0019 | 0.0021 |
| | 1 | 0.75 x D | 0.4 x D | 0.5 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| | 2 | 0.75 x D | 0.4 x D | 0.5 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| K | 3 | 0.75 x D | 0.4 x D | 0.5 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | 0.0013 | 0.0016 | 0.0019 | 0.0021 |
| | 1 | 0.75 x D | 0.5 x D | 0.5 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | 0.0023 | 0.0029 | 0.0034 | 0.0037 |
| | 2 | 0.75 x D | 0.5 x D | 0.5 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| S | 3 | 0.75 x D | 0.4 x D | 0.5 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | 0.0016 | 0.0020 | 0.0023 | 0.0026 |
| | 1 | 0.3 x D | 0.3 x D | 0.5 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | 0.0019 | 0.0025 | 0.0029 | 0.0033 |
| | 2 | 0.3 x D | 0.3 x D | 0.5 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | 0.0010 | 0.0013 | 0.0015 | 0.0018 |
| | 3 | 0.75 x D | 0.3 x D | 0.5 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | 0.0010 | 0.0013 | 0.0015 | 0.0018 |
| H | 4 | 0.75 x D | 0.3 x D | 0.5 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | 0.0014 | 0.0018 | 0.0021 | 0.0024 |
| | 1 | 0.75 x D | 0.2 x D | 0.3 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | 0.0017 | 0.0022 | 0.0026 | 0.0029 |

NOTE: These guidelines may require variations to achieve optimum results.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach >5 x D, reduce fz by 30%.
 For tools with reach >10 x D, reduce Vc and fz by 30%.



DUO-LOCK™ • KenCut™ CM • Multi-Flute • Inch

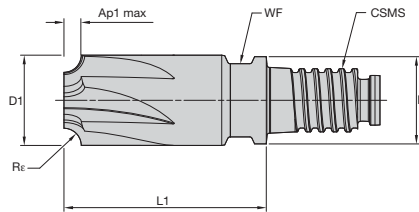


- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | E | Z U | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|----|-----|--------|
| 6127351 | XADA0375Y4CU45 | 3/8 | .359 | .075 | .847 | DL10 | .315 | 90 | 4 | ● |
| 6408092 | XADA0375Y4CU60 | 3/8 | .359 | .075 | .847 | DL10 | .315 | 60 | 4 | ● |
| 6127352 | XADA0500Y5CU45 | 1/2 | .480 | .100 | 1.130 | DL12 | .374 | 90 | 5 | ● |
| 6408093 | XADA0500Y5CU60 | 1/2 | .480 | .100 | 1.130 | DL12 | .374 | 60 | 5 | ● |
| 6127353 | XADA0625Y6CU45 | 5/8 | .605 | .125 | 1.402 | DL16 | .512 | 90 | 6 | ● |
| 6408094 | XADA0625Y6CU60 | 5/8 | .605 | .125 | 1.402 | DL16 | .512 | 60 | 6 | ● |

DUO-LOCK • KenCut CM • Multi-Flute • Inch



- first choice
- alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |

| order number | catalog number | D1 | D | Ap1 max | L1 | CSMS system size | WF | Re | Z U | KCPM15 |
|--------------|----------------|-----|------|---------|-------|------------------|------|------|-----|--------|
| 6127709 | XRDA0375Y4CUC | 3/8 | .359 | .060 | .847 | DL10 | .315 | .060 | 4 | ● |
| 6127710 | XRDA0375Y4CUE | 3/8 | .359 | .120 | .852 | DL10 | .315 | .120 | 4 | ● |
| 6127711 | XRDA0500Y5CUB | 1/2 | .480 | .030 | 1.132 | DL12 | .374 | .030 | 5 | ● |
| 6127712 | XRDA0500Y5CUC | 1/2 | .480 | .060 | 1.131 | DL12 | .374 | .060 | 5 | ● |
| 6127713 | XRDA0500Y5CUE | 1/2 | .480 | .120 | 1.136 | DL12 | .374 | .120 | 5 | ● |
| 6127714 | XRDA0625Y6CUC | 5/8 | .605 | .060 | 1.410 | DL16 | .512 | .060 | 6 | ● |

| | | | |
|---------|-----|---------|-----|
| | | | |
| 163-164 | 165 | 160-162 | 168 |

DUO-LOCK™ • Corner Machining • Application Data • Inch



KenCut™ CM – XADA



KenCut CM – XRDA

| Material Group | | | short | | | medium | | | long | | | Recommended feed per tooth (IPT = inch/th) for side milling (A). | | | | |
|----------------|----|----------|------------------------|------|-----|------------------------|------|-----|------------------------|-----|-----|--|------|-------|-------|-------|
| | A | | adapter reach | | | | | | | | | D1 – Diameter | | | | |
| | | | KCPM15 | | | KCPM15 | | | KCPM15 | | | frac. | 3/8 | 1/2 | 5/8 | |
| | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | Cutting Speed – vc SFM | | | dec. | .375 | .500 | .625 | |
| | ap | ae | min | – | max | min | – | max | min | – | max | | | | | |
| P | 0 | 0.35 x D | 0.35 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0022 | .0027 | .0032 |
| | 1 | 0.35 x D | 0.35 x D | 490 | – | 660 | 441 | – | 594 | 441 | – | 594 | IPT | .0022 | .0027 | .0032 |
| | 2 | 0.35 x D | 0.35 x D | 460 | – | 620 | 414 | – | 558 | 414 | – | 558 | IPT | .0022 | .0027 | .0032 |
| | 3 | 0.35 x D | 0.35 x D | 390 | – | 520 | 351 | – | 468 | 351 | – | 468 | IPT | .0018 | .0023 | .0027 |
| | 4 | 0.35 x D | 0.35 x D | 300 | – | 490 | 270 | – | 441 | 270 | – | 441 | IPT | .0016 | .0021 | .0024 |
| | 5 | 0.35 x D | 0.35 x D | 200 | – | 330 | 170 | – | 280.5 | 160 | – | 264 | IPT | .0015 | .0018 | .0022 |
| M | 6 | 0.35 x D | 0.35 x D | 160 | – | 250 | 136 | – | 212.5 | 128 | – | 200 | IPT | .0012 | .0015 | .0018 |
| | 1 | 0.35 x D | 0.35 x D | 300 | – | 380 | 240 | – | 304 | 210 | – | 266 | IPT | .0018 | .0023 | .0027 |
| | 2 | 0.35 x D | 0.35 x D | 200 | – | 260 | 160 | – | 208 | 140 | – | 182 | IPT | .0015 | .0018 | .0022 |
| K | 3 | 0.35 x D | 0.35 x D | 200 | – | 230 | 160 | – | 184 | 140 | – | 161 | IPT | .0012 | .0015 | .0018 |
| | 1 | 0.35 x D | 0.35 x D | 390 | – | 490 | 351 | – | 441 | 351 | – | 441 | IPT | .0022 | .0027 | .0032 |
| | 2 | 0.35 x D | 0.35 x D | 360 | – | 460 | 324 | – | 414 | 324 | – | 414 | IPT | .0018 | .0023 | .0027 |
| N | 3 | 0.35 x D | 0.35 x D | 360 | – | 430 | 324 | – | 387 | 324 | – | 387 | IPT | .0015 | .0018 | .0022 |
| | 1 | 0.35 x D | 0.35 x D | 1640 | – | 6560 | 1312 | – | 5248 | 984 | – | 3936 | IPT | .0030 | .0040 | .0050 |
| | 2 | 0.35 x D | 0.35 x D | 1640 | – | 4920 | 1312 | – | 3936 | 984 | – | 2952 | IPT | .0024 | .0032 | .0040 |
| | 3 | 0.35 x D | 0.35 x D | 1640 | – | 4920 | 1312 | – | 3936 | 984 | – | 2952 | IPT | .0021 | .0028 | .0035 |
| | 4 | 0.35 x D | 0.35 x D | 1310 | – | 2460 | 1048 | – | 1968 | 786 | – | 1476 | IPT | .0021 | .0028 | .0035 |
| | 5 | 0.35 x D | 0.35 x D | 820 | – | 3280 | 656 | – | 2624 | 492 | – | 1968 | IPT | .0027 | .0036 | .0045 |
| | 6 | 0.35 x D | 0.35 x D | 330 | – | 2460 | 264 | – | 1968 | 198 | – | 1476 | IPT | .0030 | .0040 | .0050 |
| S | 7 | 0.35 x D | 0.35 x D | 330 | – | 2460 | 264 | – | 1968 | 198 | – | 1476 | IPT | .0021 | .0028 | .0035 |
| | 1 | 0.35 x D | 0.35 x D | 160 | – | 300 | 128 | – | 240 | 96 | – | 180 | IPT | .0018 | .0023 | .0027 |
| | 2 | 0.35 x D | 0.35 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0012 | .0015 |
| | 3 | 0.35 x D | 0.35 x D | 80 | – | 130 | 64 | – | 104 | 48 | – | 78 | IPT | .0010 | .0012 | .0015 |
| H | 4 | 0.35 x D | 0.35 x D | 160 | – | 200 | 128 | – | 160 | 96 | – | 120 | IPT | .0013 | .0017 | .0020 |
| | 1 | 0.35 x D | 0.35 x D | 260 | – | 460 | 208 | – | 368 | 156 | – | 276 | IPT | .0016 | .0021 | .0024 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

DUO-LOCK™ • Intelligent Thread

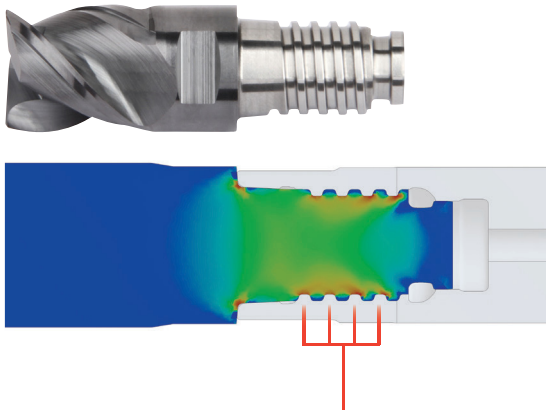
The DUO-LOCK Intelligent Thread eliminates the force peaks all regular threads have in the first groove.

3 golden rules to success:

1. Clean both sides of the coupling. Thread needs to be free of any lubricant, such as oil, anti seize, grease, etc.
2. Apply recommended torque values.
3. When using DUO-LOCK cylindrical extensions, never clamp on the coupling.

Finite Element Analysis FEA

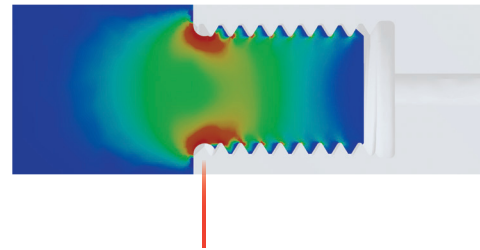
DUO-LOCK Intelligent Thread



DUO-LOCK Intelligent Thread at maximum load.

The DUO-LOCK Intelligent Thread evenly distributes the forces across the entire length of the thread. This allows a greater than 25% torque transmission than known competitors.

Regular threads



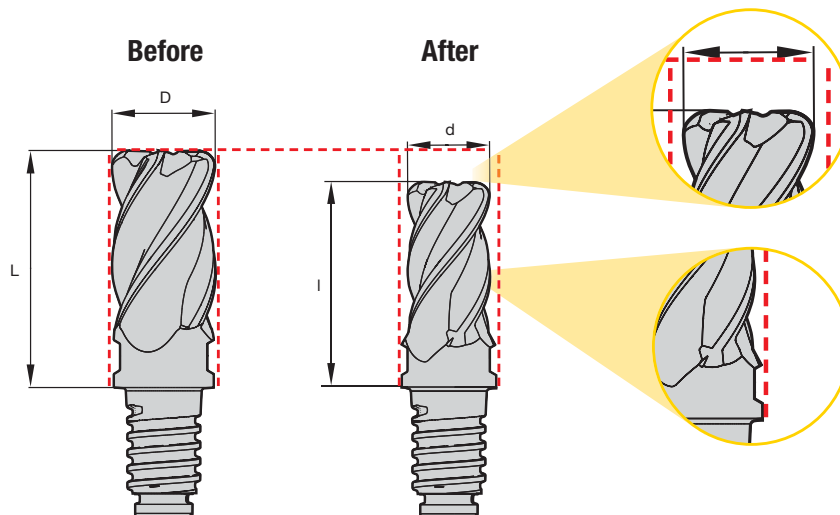
Typical for any regular thread at maximum load.

High force peak in the first groove, limiting the performance of the connection.

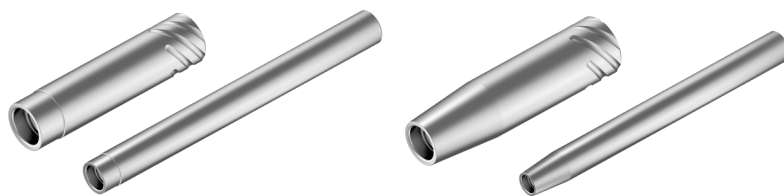
DUO-LOCK • Reconditioning

Wear and/or chipping determines to what extent and how often DUO-LOCK tips can be reconditioned. To ensure integrity of the wrench flats, the neck portion cannot be modified.

NOTE: The cutting diameter of reconditioned DUO-LOCK tips might be smaller than the neck diameter, and therefore may not have a clearance anymore. To prevent collisions, precautions need to be taken.



DUO-LOCK™ • Tool Clamping



| DUO-LOCK Extension Shank Diameter [D2] | | 10 | 12 | 16 | 20 | 25 | 32 | 12 | 16 | 20 | 25 | 32 | 40 | 50 |
|--|--|----|----|----|----|----|----|----|----|----|----|----|----|----|
| HydroForce™ | | – | – | – | ● | – | ● | – | – | ● | – | ● | – | ● |
| HydroForce with Sleeve | | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | – | ● | – |
| HydroForce with Safe-Lock™ Sleeve * | | – | ● | ● | ● | ● | – | ● | ● | ● | ● | – | – | – |
| Shrink Fit | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Safe-Lock Shrink Fit * | | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Milling Chuck | | – | – | – | ● | – | ● | – | – | ● | – | ● | – | – |
| Milling Chuck with Sleeve | | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | – | – | – |
| ER Collet Chuck | | ■ | ■ | ○ | ○ | ○ | – | ■ | ■ | ○ | ○ | – | – | – |
| TG Collet Chuck | | ■ | ■ | ■ | ○ | ○ | – | ■ | ■ | ■ | ○ | – | – | – |

* Features Safe-Lock pullout protection

● Recommended

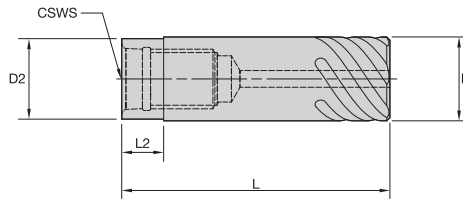
○ Not recommended

■ Suitable with limitations

– Not available

NOTE: DUO-LOCK steel extensions require high power shrinking units greater than 10kW. All Safe-Lock extensions can be clamped in a cylindrical shank adapter.

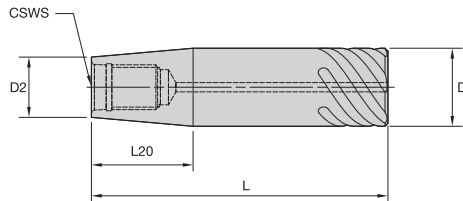
DUO-LOCK™ • Steel Extension • Cylindrical • Safe-Lock™ • Inch



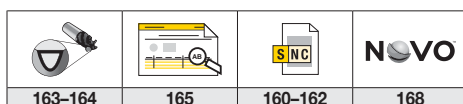
| order number | catalog number | CSWS system size | D | D2 | L | L2 | ft. lbs. |
|--------------|-----------------|------------------|------|------|------|-----|----------|
| 6136800 | SS038SLDL100225 | DL10 | .38 | .36 | 2.25 | .19 | 18.40 |
| 6136868 | SS050SLDL120250 | DL12 | .50 | .48 | 2.50 | .25 | 22.10 |
| 6136874 | SS062SLDL160275 | DL16 | .63 | .61 | 2.75 | .33 | 44.20 |
| 6136880 | SS075SLDL200300 | DL20 | .75 | .73 | 3.00 | .39 | 59.00 |
| 6136884 | SS100SLDL250350 | DL25 | 1.00 | .96 | 3.50 | .52 | 73.80 |
| 6136888 | SS125SLDL320400 | DL32 | 1.25 | 1.21 | 4.00 | .64 | 95.90 |

NOTE: Cylindrical shanks not recommended for full slotting.

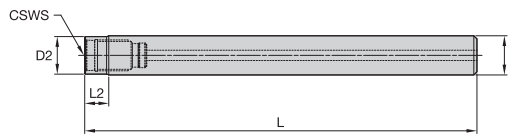
DUO-LOCK • Steel Extension • Conical • Safe-Lock • Inch



| order number | catalog number | CSWS system size | D | D2 | L | L20 | lbs |
|--------------|-----------------|------------------|------|------|------|------|------|
| 6136862 | SS050SLDL100250 | DL10 | .50 | .36 | 2.50 | .80 | .11 |
| 6136864 | SS062SLDL100350 | DL10 | .63 | .36 | 3.50 | 1.52 | .24 |
| 6136866 | SS075SLDL100450 | DL10 | .75 | .36 | 4.50 | 2.23 | .42 |
| 6136870 | SS062SLDL120325 | DL12 | .63 | .48 | 3.25 | .82 | .24 |
| 6136872 | SS075SLDL120425 | DL12 | .75 | .48 | 4.25 | 1.53 | .45 |
| 6136876 | SS075SLDL160325 | DL16 | .75 | .61 | 3.25 | .82 | .34 |
| 6136878 | SS100SLDL160450 | DL16 | 1.00 | .61 | 4.50 | 2.25 | .78 |
| 6136882 | SS100SLDL200375 | DL20 | 1.00 | .73 | 3.75 | 1.53 | .67 |
| 6136886 | SS125SLDL250425 | DL25 | 1.25 | .96 | 4.25 | 1.64 | 1.19 |
| 6136890 | SS150SLDL320550 | DL32 | 1.50 | 1.21 | 5.50 | 1.64 | 2.29 |
| 6136892 | SS200SLDL320750 | DL32 | 2.00 | 1.21 | 7.50 | 4.50 | 4.92 |



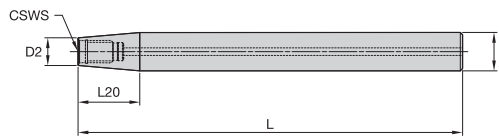
DUO-LOCK™ • Steel Extension • Cylindrical • Straight Shank • Inch



| order number | catalog number | CSWS system size | D | D2 | L | L2 | ft. lbs. |
|--------------|----------------|------------------|------|------|-------|-----|----------|
| 6136861 | SS038DL100375 | DL10 | .38 | .36 | 3.75 | .19 | 18.40 |
| 6136869 | SS050DL120500 | DL12 | .50 | .48 | 5.00 | .25 | 22.10 |
| 6136875 | SS062DL160625 | DL16 | .63 | .61 | 6.25 | .31 | 44.20 |
| 6136881 | SS075DL200750 | DL20 | .75 | .73 | 7.50 | .38 | 59.00 |
| 6136885 | SS100DL251000 | DL25 | 1.00 | .96 | 10.00 | .50 | 73.80 |
| 6136889 | SS125DL321000 | DL32 | 1.25 | 1.21 | 10.00 | .63 | 95.90 |

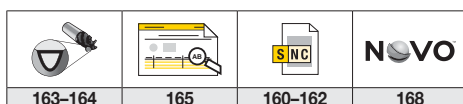
NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.

DUO-LOCK • Steel Extension • Conical • Straight Shank • Inch

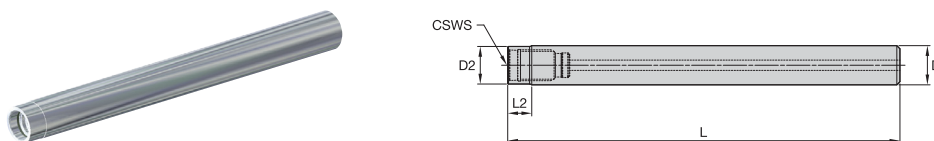


| order number | catalog number | CSWS system size | D | D2 | L | L20 | lbs |
|--------------|----------------|------------------|------|------|-------|------|------|
| 6136863 | SS050DL100500 | DL10 | .50 | .36 | 5.00 | .80 | .25 |
| 6136865 | SS062DL100625 | DL10 | .63 | .36 | 6.25 | 1.52 | .47 |
| 6136867 | SS075DL100750 | DL10 | .75 | .36 | 7.50 | 2.23 | .79 |
| 6136871 | SS062DL120625 | DL12 | .63 | .48 | 6.25 | .82 | .50 |
| 6136873 | SS075DL120750 | DL12 | .75 | .48 | 7.50 | 1.53 | .85 |
| 6136877 | SS075DL160750 | DL16 | .75 | .61 | 7.50 | .82 | .86 |
| 6136879 | SS100DL161000 | DL16 | 1.00 | .61 | 10.00 | 2.25 | 1.99 |
| 6136883 | SS100DL201000 | DL20 | 1.00 | .73 | 10.00 | 1.53 | 2.04 |
| 6136887 | SS125DL251000 | DL25 | 1.25 | .96 | 10.00 | 1.64 | 3.14 |
| 6136891 | SS150DL321000 | DL32 | 1.50 | 1.21 | 10.00 | 1.64 | 4.51 |
| 6136893 | SS200DL321000 | DL32 | 2.00 | 1.21 | 10.00 | 4.50 | 7.18 |

NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.

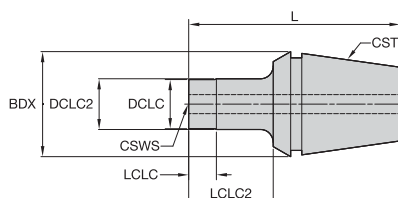


DUO-LOCK™ • Heavy Metal Extension • Cylindrical • Straight Shank • Inch



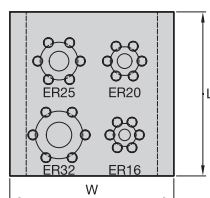
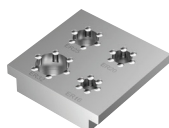
| order number | catalog number | CSWS system size | D | D2 | L | L2 | ft. lbs. |
|--------------|-------------------|------------------|------|------|------|------|----------|
| 6933530 | HS050DL12N0950325 | DL12 | .50 | .48 | 3.25 | .95 | 18.44 |
| 6933536 | HS050DL12N1950425 | DL12 | .50 | .48 | 4.25 | 1.95 | 18.44 |
| 6933531 | HS062DL16N1170350 | DL16 | .63 | .61 | 3.50 | 1.17 | 29.50 |
| 6933537 | HS062DL16N2420475 | DL16 | .63 | .61 | 4.75 | 2.42 | 29.50 |
| 6933532 | HS075DL20N1390375 | DL20 | .75 | .73 | 3.75 | 1.39 | 44.25 |
| 6933538 | HS075DL20N2890525 | DL20 | .75 | .73 | 5.25 | 2.89 | 44.25 |
| 6933533 | HS100DL25N1830450 | DL25 | 1.00 | .96 | 4.50 | 1.83 | 66.38 |
| 6933539 | HS100DL25N3830650 | DL25 | 1.00 | .96 | 6.50 | 3.83 | 66.38 |
| 6933534 | HS125DL32N2280500 | DL32 | 1.25 | 1.21 | 5.00 | 2.28 | 95.88 |
| 6933540 | HS125DL32N4780750 | DL32 | 1.25 | 1.21 | 7.50 | 4.78 | 95.88 |

DUO-LOCK • ER Solid Collets

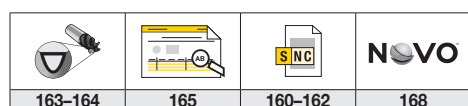


| order number | catalog number | CST | CSWS | BDX | L | DCLC | DCLC2 | LCLC | LCLC2 | kg | Nm |
|--------------|----------------|------|------|-----|------|------|-------|------|-------|------|----|
| 6612283 | 16ERDL10 | ER16 | DL10 | 17 | 32,8 | 9,6 | — | 5,3 | — | 0,03 | 20 |
| 6612284 | 20ERDL10 | ER20 | DL10 | 21 | 37,0 | 9,6 | — | 5,5 | — | 0,06 | 20 |
| 6612285 | 20ERDL12 | ER20 | DL12 | 21 | 38,0 | 11,5 | — | 6,5 | — | 0,06 | 30 |
| 6612286 | 25ERDL10 | ER25 | DL10 | 26 | 39,5 | 9,6 | — | 5,5 | — | 0,10 | 20 |
| 6612287 | 25ERDL12 | ER25 | DL12 | 26 | 40,5 | 11,5 | — | 6,5 | — | 0,10 | 30 |
| 6612288 | 25ERDL16 | ER25 | DL16 | 26 | 39,5 | 15,5 | — | 5,5 | — | 0,10 | 60 |
| 6612289 | 32ERDL10 | ER32 | DL10 | 33 | 66,5 | 9,6 | 10 | 5,0 | 26,5 | 0,21 | 20 |
| 6612290 | 32ERDL12 | ER32 | DL12 | 33 | 67,5 | 11,5 | 12 | 6,0 | 27,5 | 0,21 | 30 |
| 6612331 | 32ERDL16 | ER32 | DL16 | 33 | 66,5 | 15,5 | 16 | 8,0 | 26,5 | 0,22 | 60 |
| 6612332 | 32ERDL20 | ER32 | DL20 | 33 | 66,5 | 19,3 | 20 | 10,0 | 26,5 | 0,23 | 80 |

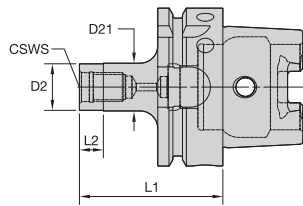
DUO-LOCK • ER Solid Collet Mounting Plate



| order number | catalog number | L | W | kg |
|--------------|----------------|-----|-----|------|
| 6612333 | DLCCDER | 100 | 100 | 0,57 |

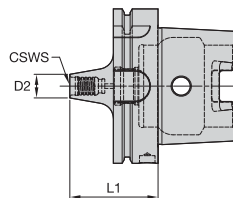
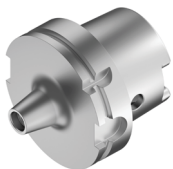


DUO-LOCK™ • Adapter • HSK63 Form A • Inch



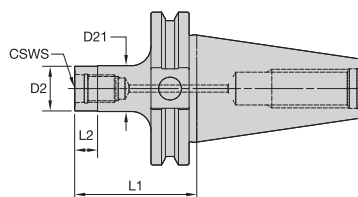
| order number | catalog number | CSWS system size | D2 | D21 | L1 | L2 | ft. lbs. |
|--------------|----------------|------------------|-----|------|------|-----|----------|
| 6136895 | HSK63ADL10200 | DL10 | .36 | .38 | 2.00 | .19 | 18.40 |
| 6136896 | HSK63ADL12225 | DL12 | .48 | .50 | 2.25 | .25 | 21.10 |
| 6136897 | HSK63ADL16225 | DL16 | .61 | .63 | 2.25 | .31 | 44.20 |
| 6136898 | HSK63ADL20225 | DL20 | .73 | .75 | 2.25 | .37 | 59.00 |
| 6136899 | HSK63ADL25250 | DL25 | .96 | 1.00 | 2.50 | .49 | 73.80 |

DUO-LOCK • Adapter • HSK100 Form A • Inch

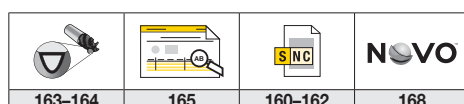


| order number | catalog number | CSWS | D2 | L1 | lbs |
|--------------|----------------|------|------|------|------|
| 6478868 | HSK100ADL16225 | DL16 | .61 | 2.25 | 4.56 |
| 6478869 | HSK100ADL20225 | DL20 | .73 | 2.25 | 4.62 |
| 6478870 | HSK100ADL25250 | DL25 | .96 | 2.50 | 4.79 |
| 6478871 | HSK100ADL32300 | DL32 | 1.21 | 3.00 | 5.32 |

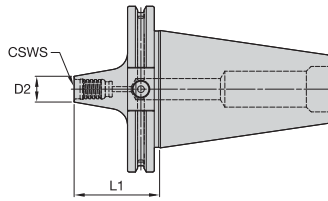
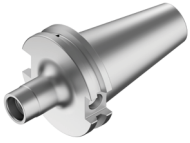
DUO-LOCK • Adapter • CV40 • Inch



| order number | catalog number | CSWS system size | D2 | D21 | L1 | L2 | lbs |
|--------------|----------------|------------------|-----|------|------|-----|------|
| 6136937 | CV40BDL10162 | DL10 | .36 | .38 | 1.62 | .19 | 1.77 |
| 6136938 | CV40BDL12162 | DL12 | .48 | .50 | 1.62 | .25 | 1.78 |
| 6136939 | CV40BDL16200 | DL16 | .61 | .63 | 2.00 | .31 | 1.82 |
| 6136940 | CV40BDL20200 | DL20 | .73 | .75 | 2.00 | .37 | 1.84 |
| 6136941 | CV40BDL25225 | DL25 | .96 | 1.00 | 2.25 | .49 | 1.94 |

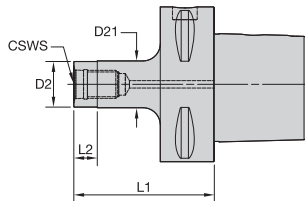


DUO-LOCK™ • Adapter • CV50 • Inch

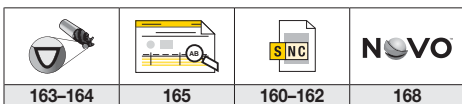


| order number | catalog number | CSWS | D2 | L1 | lbs |
|--------------|----------------|------|------|------|------|
| 6478863 | CV50BDL16200 | DL16 | .61 | 2.00 | 5.95 |
| 6478864 | CV50BDL20200 | DL20 | .73 | 2.00 | 6.02 |
| 6478865 | CV50BDL25225 | DL25 | .96 | 2.25 | 6.19 |
| 6478867 | CV50BDL32250 | DL32 | 1.21 | 2.50 | 6.59 |

DUO-LOCK • Adapter • PSC63 • Inch



| order number | catalog number | CSWS | | D2 | D21 | L1 | L2 | lbs |
|--------------|----------------|-------------|-----|------|------|-----|------|-----|
| | | system size | | | | | | |
| 6136931 | PSC63DL10200 | DL10 | .36 | .37 | 2.00 | .19 | 1.69 | |
| 6136932 | PSC63DL12200 | DL12 | .48 | .50 | 2.00 | .25 | 1.70 | |
| 6136933 | PSC63DL16225 | DL16 | .61 | .63 | 2.25 | .31 | 1.73 | |
| 6136934 | PSC63DL20225 | DL20 | .73 | .75 | 2.25 | .37 | 1.75 | |
| 6136935 | PSC63DL25238 | DL25 | .96 | 1.00 | 2.38 | .49 | 1.84 | |



DUO-LOCK™ • Double-Handed Torque Wrench



| order number | catalog number | Description |
|--------------|----------------|--------------------------------|
| 6135413 | TWDLTM | BASIC DUO LOCK WRENCH |
| 6135414 | TWTMINsertDL10 | TORQUE WRENCH INSERT DL10 |
| 6135415 | TWTMINsertDL12 | TORQUE WRENCH INSERT DL12 |
| 6135416 | TWTMINsertDL16 | TORQUE WRENCH INSERT DL16 |
| 6135417 | TWTMINsertDL20 | TORQUE WRENCH INSERT DL20 |
| 6135418 | TWTMINsertDL25 | TORQUE WRENCH INSERT DL25 |
| 6135419 | TWTMINsertDL32 | TORQUE WRENCH INSERT DL32 |
| 6135422 | TWTMEXT | TORQUE WRENCH EXTENSION HANDLE |
| 6135423 | TWTMBC | TORQUE WRENCH BOLT SET |

NOTE: Combine basic DUO-LOCK wrench with selected torque wrench inserts needed.

DUO-LOCK • Torque Wrench • Double-Handed • Kit

1 ERICKSON™ Torque Master Wrench

2 Insert

3 Extension Handle



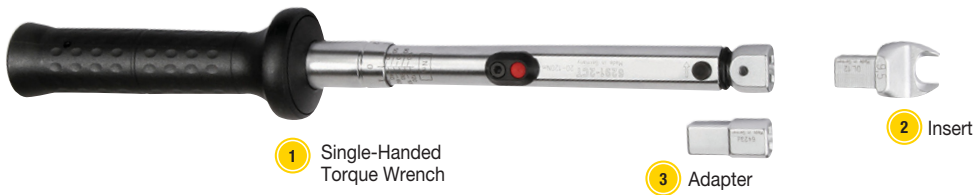
Order this

Get that

| order number | catalog number | Kit Description | DUO-LOCK Size | torque (Nm) |
|--------------|----------------|---|---------------|-------------|
| 6342967 | TWDL10TM | D-L WRENCH WITH DL10 INSERT AND HANDLES | DL 10 | 20 |
| 6342968 | TWDL12TM | D-L WRENCH WITH DL12 INSERT AND HANDLES | DL 12 | 30 |
| 6342969 | TWDL16TM | D-L WRENCH WITH DL16 INSERT AND HANDLES | DL 16 | 60 |
| 6342970 | TWDL20TM | D-L WRENCH WITH DL20 INSERT AND HANDLES | DL 20 | 80 |
| 6343061 | TWDL25TM | D-L WRENCH WITH DL25 INSERT AND HANDLES | DL 25 | 100 |
| 6343062 | TWDL32TM | D-L WRENCH WITH DL32 INSERT AND HANDLES | DL 32 | 130 |

1+2+3

DUO-LOCK™ • Single-Handed Torque Wrench • Wrench



1

| order number | catalogue number | description | DUO-LOCK Size | torque (Nm) |
|--------------|------------------|-------------------------------|---------------|-------------|
| 6411155 | TWDL9X12 | D-L SINGLE HAND TORQUE WRENCH | – | – |

DUO-LOCK • Single-Handed Torque Wrench • Insert

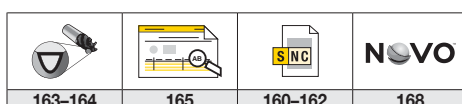
2

| order number | catalogue number | description | DUO-LOCK Size | torque (Nm) |
|--------------|--------------------|-----------------------------|---------------|-------------|
| 6410950 | TWSH9X12INSERTDL10 | D-L TORQUE WRENCH SH INSERT | DL10 | 20 |
| 6411151 | TWSH9X12INSERTDL12 | D-L TORQUE WRENCH SH INSERT | DL12 | 30 |
| 6411152 | TWSH9X12INSERTDL16 | D-L TORQUE WRENCH SH INSERT | DL16 | 60 |
| 6411153 | TWSH9X12INSERTDL20 | D-L TORQUE WRENCH SH INSERT | DL20 | 80 |

DUO-LOCK • Single-Handed Torque Wrench • Adapter

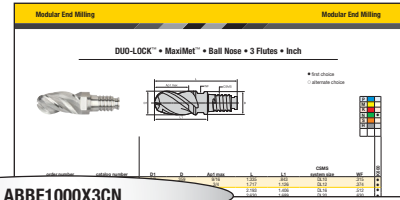
3

| order number | catalogue number | description | DUO-LOCK Size | torque (Nm) |
|--------------|------------------|---------------------------|---------------|-------------|
| 6411154 | TWDL9X12CA14X18 | D-L ADAPTER 9X12 TO 14X18 | – | – |



DUO-LOCK™ • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



ABBE1000X3CN

| AB | B | E | 1000 | X | 3 | C | N | |
|---|---|---|----------|---|---|---|--|--|
| Series | End Mill Shape | Helix Angle | Diameter | Shank Style | Number of Flutes | Length-of-Cut | Shape/Feature | Corner Configuration |
| AB = MaxiMet™ – Non-ferrous metals FG = Finisher general applications – Steels FM = Finisher multi-flute – Steels FS = RSM II™ multi-flute – High-temperature alloys KM = KenFeed™ – Medium steels RF = Rougher – Chipbreaker design RK = Rougher – Fine-pitch profile design RQ = Rougher – Coarse-pitch profile design UC = HARVI™ II – Stainless steels UD = HARVI II – High-temperature alloys UJ = HARVI III center cut & eccentric cut – High-temperature alloys UK = HARVI I asymmetric fluting – Stainless steels UL = HARVI I asymmetric fluting – High-temperature alloys XA = Chamfering tool XR = Corner rounding tool | B = Ball Nose D = Square End | A = 0–10 B = 11–20 D = 31–35 E = 36–40 F = 41–45 V = 37/39° variable | | X = Metric – DUO-LOCK™ Y = Inch – DUO-LOCK | 2 3 4 5 6 9 B = 11 F = 15 J = 19 | A = 0,75 x D B = 1,0 x D C = 1,5 x D | H = Chamfer N = Necked Q = Necked & Radius R = Radius U = Necked + Sharp V = Necked + Chamfer | Metric D = Metric – 0,4mm E = Metric – 0,5mm F = Metric – 0,75mm H = Metric – 1,25mm J = Metric – 1,5mm N = Metric – 4,0mm S = Sharp X = Custom Inch A = Inch – .015" B = Inch – .030" C = Inch – .060" D = Inch – .090" E = Inch – .120" F = Inch – .250" S = Sharp X = Custom |

HARVI™ I TE DUO-LOCK • Catalog Numbering System

H1TE4SE1200S016HAM

| H1TE | 4 | SE | 1200 | S | 016 | HA | | M |
|--------------------------|--------------------|---|--|---------------------------------|--|----------------------|--------|--|
| Series | Number of Flutes | Front End Style | Cutting Diameter D1 | Flute Section Style | Length of Cut Ap1 max | Shank Style | Radius | Standard |
| H1TE = HARVI I TE | 4 = 4-Flute | SE = Sharp Edge CH = Chamfer RA = Radius | Metric = D1 in mm Inch = D1 in decimal inch | R = Regular Without Neck | Metric = Ap1 Max in mm Inch = Ap1 Max in decimal inch | DL = DUO-LOCK | | M = Metric Blank = Inch |



DUO-LOCK™ Extensions • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

| Item Number | Shank Diameter | Tool Length | CSMS | CSWS | S | Material | Coating | Price |
|----------------|----------------|-------------|------|------|----|----------|---------|--------|
| SS10SLDL10055M | 10 | 55 | SS | DL10 | SL | Steel | None | 100.00 |
| SS10SLDL10055M | 10 | 55 | SS | DL10 | SL | Steel | AlTiN | 120.00 |
| SS10SLDL10055M | 10 | 55 | SS | DL10 | SL | Steel | AlTiN | 140.00 |
| SS10SLDL10055M | 10 | 55 | SS | DL10 | SL | Steel | AlTiN | 160.00 |

SS10SLDL10055M

SS

Connection Style
Machine Side
(CSMS)

SS = Straight Shank

10

Shank
Diameter D

Metric = D in mm
Inch = D in decimal inch

SL

Shank Style

SL = Safe-Lock™
Blank = Plain

DL10

Connection Style
Workpiece Side (CSWS)
System Size

DL10 = DUO-LOCK size 10

055

Tool Length

Metric = L in mm
Inch = L in decimal inch

M

Value

Metric

DUO-LOCK Solid ER Collet • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

| Item Number | Collet Size | CSMS | CSWS | S | Material | Coating | Price |
|-------------|-------------|------|------|----|----------|---------|--------|
| 32ERDL16 | 32 | DL10 | DL16 | ER | Steel | None | 100.00 |
| 32ERDL16 | 32 | DL10 | DL16 | ER | Steel | AlTiN | 120.00 |
| 32ERDL16 | 32 | DL10 | DL16 | ER | Steel | AlTiN | 140.00 |
| 32ERDL16 | 32 | DL10 | DL16 | ER | Steel | AlTiN | 160.00 |

32ERDL16

32

Collet
Size

16 = ER16
20 = ER20
25 = ER25
32 = ER32

ER

Collet
Type

ER

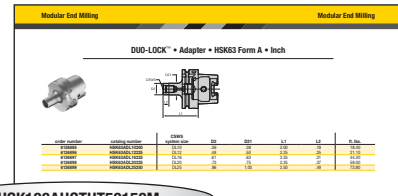
DL16

DUO-LOCK
Coupling Size

DL10
DL12
DL16
DL20

DUO-LOCK™ Adapters • Catalog Numbering System

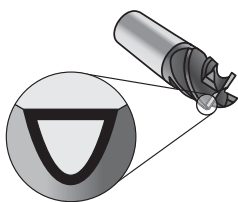
Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



HSK100AHCHT50150M

| HSK | 100 | A | HCTHT | 50 | 150 | M |
|--|--|--|---|-------------------------|----------------------------|--|
| Connection Style Machine Side (CSMS) | Connection Size | System Flange Form | Hydraulic Chuck Type | Clamping Diameter | Tool Length | Value |
| KM™ KM4X™ HSK DV CV BT PSC | 30 32 40 50 63 80 100 125 | A = Form A C = Form C B = Coolant | HCTHT = HydroForce™ HCSL = Slim Line HCSLT = Slim Line T HC = High Performance DL = DUO-LOCK | 50 = 50mm 075 = 3/4" | 150 = 150mm 413 = 4.13" | M = Metric Blank = Inch |

Grades and Grade Descriptions



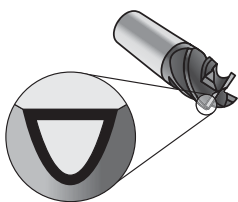
Coatings provide high-speed capability and are engineered for roughing to finishing.

| | |
|---|--------------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous |
| S | High-Temp Alloys |
| H | Hardened Materials |
| C | CFRP Materials |

wear resistance ← → toughness

| Grade | Coating | Grade Description | Material Groups | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|---|-----------------|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | | | | | | | | | | | | |
| KC600 | | Composition: Uncoated, highly wear-resistant submicron grain carbide. Application: Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp edges. First choice for milling of non-ferrous materials. | | | | | | | | | | | | | | | | | | | | | | |
| | | | N | | | | | | | | | | | | | | | | | | | | | |
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| KC633M | | Composition: Multilayered PVD TiN/TiAlN-coated submicron grain carbide. Application: This multi-purpose grade offers highest versatility and best reliability across recommended material groups at intermediate cutting conditions. | P | | | | | | | | | | | | | | | | | | | | | |
| | | | M | | | | | | | | | | | | | | | | | | | | | |
| | | | K | | | | | | | | | | | | | | | | | | | | | |
| | | | S | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| KC643M | | Composition: Monolayer PVD AlTiN-coated submicron grain carbide. Application: This grade offers high hardness and excellent wear resistance for general application in steel, stainless steel, cast iron, and high-temperature alloys. | P | | | | | | | | | | | | | | | | | | | | | |
| | | | M | | | | | | | | | | | | | | | | | | | | | |
| | | | K | | | | | | | | | | | | | | | | | | | | | |
| | | | S | | | | | | | | | | | | | | | | | | | | | |
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| KCPM15 | | Composition: Monolayer PVD AlTiN-coated submicron grain carbide with smooth coating surface. Application: Proprietary coating with best-in-class tool life as well as performance consistency optimized for applications in steel, stainless steel, cast iron, and hard materials. | P | | | | | | | | | | | | | | | | | | | | | |
| | | | M | | | | | | | | | | | | | | | | | | | | | |
| | | | K | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| KCSM15 | | Composition: Monolayer PVD AlTiN-coated submicron grain carbide with smooth coating surface. Application: Proprietary coating with best-in-class tool life as well as performance consistency optimized for application in stainless steel and high-temperature alloys. | M | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | S | | | | | | | | | | | | | | | | | | | | | |
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Grades and Grade Descriptions



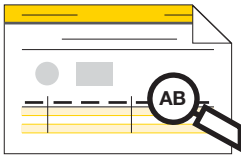
Coatings provide high-speed capability and are engineered for roughing to finishing.

| | |
|----------|--------------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous |
| S | High-Temp Alloys |
| H | Hardened Materials |
| C | CFRP Materials |

wear resistance ← → toughness

| Grade | Coating | Grade Description | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|---|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | | | | | | | | | | | | | |
| KC639M | | Composition: Monolayer PVD AlTiN-coated, ultra-fine grain carbide. Application: First choice for hardened steels > 55 HRC. | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
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| KCN05 | | Composition: CVD diamond-coated, fine-grain carbide. Application: First choice for machining carbon-fiber reinforced polymers (CFRP). The crystalline diamond-coated grade offers the highest degree of abrasive wear resistance. | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | |
| KD1410 | | Composition: A polycrystalline diamond (PCD) tip brazed onto a carbide substrate. Application: Engineered for good abrasion resistance combined with excellent edge strength for demanding applications. An ideal choice for aluminum with high silicon content as well as CFRP. | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | |
| KYS40 | | Composition: SiAlON solid ceramic. Application: SiAlON ceramic end mills take dry machining of nickel-based high-temperature alloys to a new level. The increased heat resistance of SiAlON ceramics enables cutting at highest velocities leading to best metal removal rates and productivity. | | | | | | | | | | | | | | | | | | | | | | |
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Key to Product Table Column Headings



You may notice a slight change in the appearance of our product tables and specification charts. In this catalog, Kennametal introduces a set of short-name codes to improve the readability of tables and drawings. These codes replace full-text descriptions. The full list of codes and their definitions can be found below.

| Short-Name Code | Full Text Description |
|-----------------|---------------------------------|
| Ap1 max | Maximum Cutting Depth |
| BCH | Corner Chamfer Width |
| BDX | Maximum Body Diameter |
| CSMS | Connection Style Machine Side |
| CST | Collet Series |
| CSWS | Connection Style Workpiece Side |
| D | Adapter/Shank Diameter |
| D1 | Milling: Cutter Diameter |
| D2 | Body Diameter 1 Workpiece Side |
| D21 | Body Diameter 2 Workpiece Side |
| D3 | Neck Diameter |
| DCLC | Boss Diameter |
| DCLC2 | Boss Diameter 2 |
| E | Profile Angle |
| ft. lbs. | Torque Foot Pounds |
| kg | Weight Kilograms |
| KRA | Lead Angle |
| L | Overall Length |
| L1 | Milling: Gage Length |
| L1 | Toolholder: Gage Length |
| L2 | Milling: Head Length |
| L20 | Beta Taper End Length |
| L3 | Milling: Maximum Depth |
| lbs | Weight Pounds |
| LCLC | Boss Length |
| LCLC2 | Boss Length 2 |
| LS | Shank Length |
| Nm | Torque Newton Meters |
| R | Profile or Ball Nose Radii |
| R _c | Corner Radius |
| W | Overall Width |
| WF | Milling: Width of Flat |
| Z U | Number of Flutes |

| | |
|----------|-----------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |

| | |
|----------|------------------|
| N | Non-Ferrous |
| S | High-Temp Alloys |

| | |
|----------|--------------------|
| H | Hardened Materials |
| C | CFRP Materials |

| material group | description | content | tensile strength RM (MPa)* | hardness (HB) | hardness (HRC) | material number |
|----------------|---|-----------|----------------------------|---------------|----------------|--|
| P0 | Low-Carbon Steels, Long Chipping | C <0.25% | <530 | <125 | - | A36, 1008, 1010, 1018 through 1029; 1108, 1117 |
| P1 | Low-Carbon Steels, Short Chipping, Free Machining | C <0.25% | <530 | <125 | - | 10L18, 1200 Series, 1213, 12L14 |
| P2 | Medium- and High-Carbon Steels | C >0.25% | >530 | <220 | <25 | 1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572 |
| P3 | Alloy Steels and Tool Steels | C >0.25% | 600-850 | <330 | <35 | 1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T |
| P4 | Alloy Steels and Tool Steels | C >0.25% | 850-1400 | 340-450 | 35-48 | 1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T |
| P5 | Ferritic, Martensitic, and PH Stainless Steels | - | 600-900 | <330 | <35 | 15-5 PH, 13-8 PH, 17-4 PH, 400 and 500 Series |
| P6 | High-Strength Ferritic, Martensitic, and PH Stainless Steels | - | 900-1350 | 350-450 | 35-48 | 15-5 PH, 13-8 PH, 17-4 PH, 400 and 500 Series |
| M1 | Austenitic Stainless Steel | - | <600 | 130-200 | - | 200 Series, 301, 302, 304, 304L, 309 |
| M2 | High-Strength Austenitic Stainless and Cast Stainless Steels | - | 600-800 | 150-230 | <25 | 310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21 |
| M3 | Duplex Stainless Steel | - | <800 | 135-275 | <30 | 323, 329, F55, 2205, S329000 |
| K1 | Gray Cast Iron | - | 125-500 | 120-290 | <32 | Class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000 |
| K2 | Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI) | - | <600 | 130-260 | <28 | 60-40-18, 65-45-12, 80-55-06; SAE J434: D4018, D4512, D5506; ASTM A47: Grade 32510, 35018; SAE J158: Grade M3210, M4504, M5003, M5503, M7002; ASTM A842: Grade 250, 300, 350, 400, 450 |
| K3 | High-Strength Ductile Irons and Austempered Ductile Iron (ADI) | - | >600 | 180-350 | <43 | ASTM A536:100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185 |
| N1 | Wrought Aluminum | - | - | - | - | 2025, 5050, 7050, 1000, 2017 |
| N2 | Low-Silicon Aluminum Alloys and Magnesium Alloys | Si <12.2% | - | - | - | 2024, 6061, 7075 |
| N3 | High-Silicon Aluminum Alloys and Magnesium Alloys | Si >12.2% | - | - | - | - |
| N4 | Copper-, Brass-, Zinc-Based on Machinability Index Range of 70-100 | - | - | - | - | C81500 |
| N5 | Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass | - | - | - | - | - |
| N6 | Carbon, Graphite Composites, CFRP | - | - | - | - | Graphite, CFK, CFRP |
| N7 | Metal Matrix Composites (MMC) | - | - | - | - | C63000 |
| S1 | Iron-Based, Heat-Resistant Alloys | - | 500-1200 | 160-260 | 25-48 | A-286, INCOLOY® 800 Series, A608, A567, Discaloy, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608 |
| S2 | Cobalt-Based, Heat-Resistant Alloys | - | 1000-1450 | 250-450 | 25-48 | Haynes® 25 (L605), Haynes 188, J-1570, Stellite™, AiResist 213; Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52 |
| S3 | Nickel-Based, Heat-Resistant Alloys | - | 600-1700 | 160-450 | <48 | Astrolloy™, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy®, MONEL®, K-500, MAR-M20, NIMONIC®, UDIMET® |
| S4 | Titanium and Titanium Alloys | - | 900-1600 | 300-400 | 33-48 | Pure: Ti 98.8, Ti 98.9, Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al |
| H1 | Hardened Materials | - | - | - | 44-48 | Tool Steel H10, H11, H13, D2, D3, 4340, P20 |
| H2 | Hardened Materials | - | - | - | 48-55 | Tool Steel H10, H11, H13, D2, D3, 4340, P20 |
| H3 | Hardened Materials | - | - | - | 56-60 | Tool Steel H10, H11, H13, D2, D3, 4340, P20 |
| H4 | Hardened Materials | - | - | - | >60 | Tool Steel H10, H11, H13, D2, D3, 4340, P20 |
| C1 | CFRP, CFRP/CFRP | - | - | - | - | - |
| C2 | CFRP/Non-Ferrous | - | - | - | - | - |
| C3 | CFRP/High-Temp | - | - | - | - | - |
| C4 | CFRP/Stainless Steel | - | - | - | - | - |
| C5 | CFRP/Non-Ferrous/High-Temp | - | - | - | - | - |

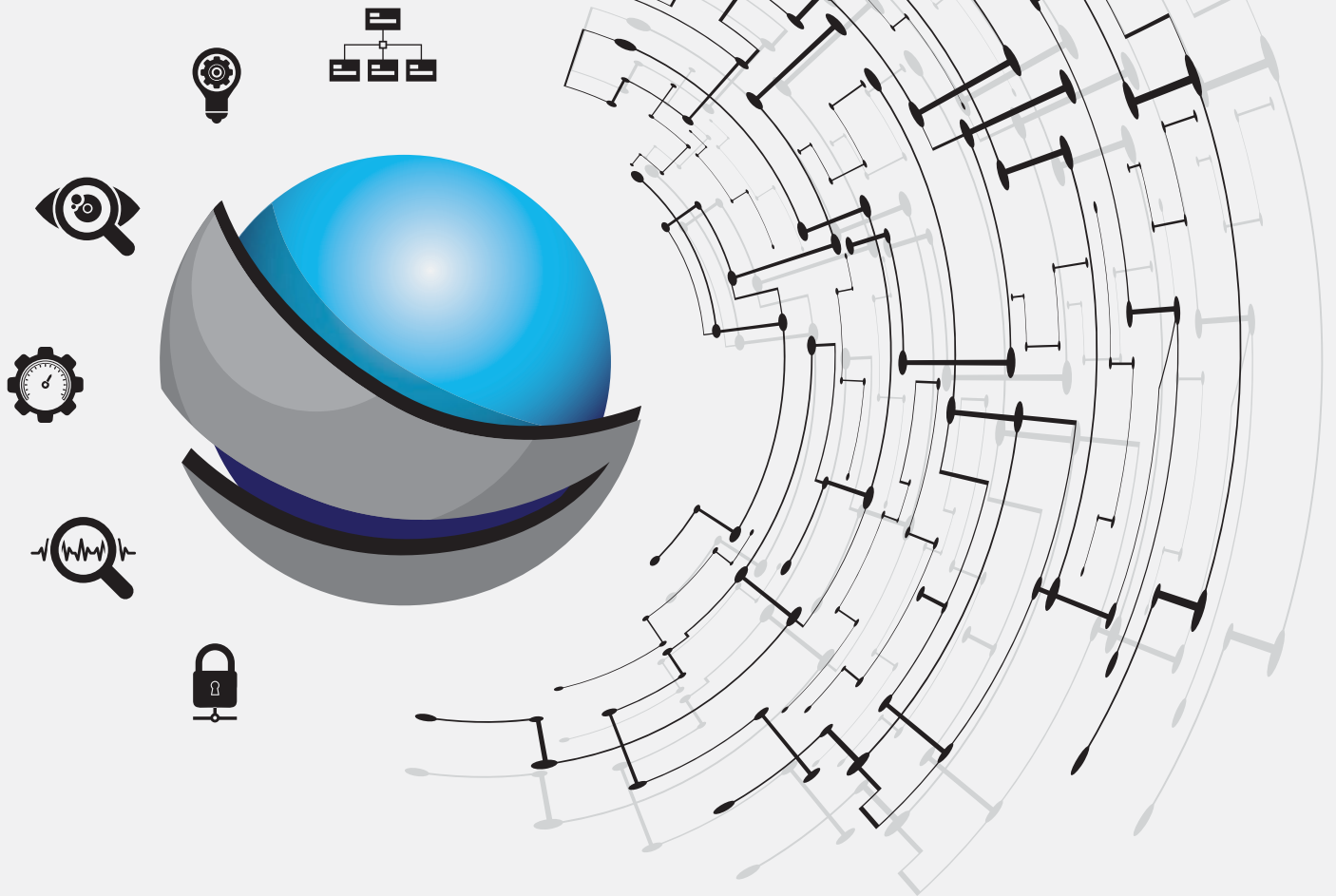
| | |
|----------|-----------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |

| | |
|----------|------------------|
| N | Non-Ferrous |
| S | High-Temp Alloys |

| | |
|----------|--------------------|
| H | Hardened Materials |
| C | CFRP Materials |

| material group | description | content | tensile strength RM (MPa)* | hardness (HB) | hardness (HRC) | material number |
|----------------|---|-----------|----------------------------|---------------|----------------|---|
| P0 | Low-Carbon Steels, Long Chipping | C <0.25% | <530 | <125 | - | - |
| P1 | Low-Carbon Steels, Short Chipping, Free Machining | C <0.25% | <530 | <125 | - | C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38 |
| P2 | Medium- and High-Carbon Steels | C >0.25% | >530 | <220 | <25 | ST52, S355JR, C35, GS60, Cf53 |
| P3 | Alloy Steels and Tool Steels | C >0.25% | 600-850 | <330 | <35 | 16MnCr5, Ck45, 21CrMoV5-7, 38SMn28 |
| P4 | Alloy Steels and Tool Steels | C >0.25% | 850-1400 | 340-450 | 35-48 | 100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12 |
| P5 | Ferritic, Martensitic, and PH Stainless Steels | - | 600-900 | <330 | <35 | 100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12 |
| P6 | High-Strength Ferritic, Martensitic, and PH Stainless Steels | - | 900-1350 | 350-450 | 35-48 | X102CrMo17, G-X120Cr29 |
| M1 | Austenitic Stainless Steel | - | <600 | 130-200 | - | X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12 |
| M2 | High-Strength Austenitic Stainless and Cast Stainless Steels | - | 600-800 | 150-230 | <25 | X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20 |
| M3 | Duplex Stainless Steel | - | <800 | 135-275 | <30 | X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4 |
| K1 | Gray Cast Iron | - | 125-500 | 120-290 | <32 | GG15, GG25, GG30, GG40, GTW40 |
| K2 | Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI) | - | <600 | 130-260 | <28 | GGG40, GTS35 |
| K3 | High-Strength Ductile Irons and Austempered Ductile Iron (ADI) | - | >600 | 180-350 | <43 | GGG60, GTW55, GTS65 |
| N1 | Wrought Aluminum | - | - | - | - | AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb |
| N2 | Low-Silicon Aluminum Alloys and Magnesium Alloys | Si <12.2% | - | - | - | GAISiCu4, GDAISI10Mg |
| N3 | High-Silicon Aluminum Alloys and Magnesium Alloys | Si >12.2% | - | - | - | G-ALSi12, G-ALSi17Cu4, G-ALSi21CuNiMg |
| N4 | Copper-, Brass-, Zinc-Based on Machinability Index Range of 70-100 | - | - | - | - | CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn |
| N5 | Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass | - | - | - | - | LEXAN®, Hostalen™, Polystyrol®, MAKROLON® |
| N6 | Carbon, Graphite Composites, CFRP | - | - | - | - | CFK, GFK |
| N7 | Metal Matrix Composites (MMC) | - | - | - | - | - |
| S1 | Iron-Based, Heat-Resistant Alloys | - | 500-1200 | 160-260 | 25-48 | X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20 |
| S2 | Cobalt-Based, Heat-Resistant Alloys | - | 1000-1450 | 250-450 | 25-48 | Haynes® 188, Stellite™ 6,21,31 |
| S3 | Nickel-Based, Heat-Resistant Alloys | - | 600-1700 | 160-450 | <48 | INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75 |
| S4 | Titanium and Titanium Alloys | - | 900-1600 | 300-400 | 33-48 | Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2 |
| H1 | Hardened Materials | - | - | - | 44-48 | GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400 |
| H2 | Hardened Materials | - | - | - | 48-55 | - |
| H3 | Hardened Materials | - | - | - | 56-60 | - |
| H4 | Hardened Materials | - | - | - | >60 | - |
| C1 | CFRP, CFRP/CFRP | - | - | - | - | - |
| C2 | CFRP/Non-Ferrous | - | - | - | - | - |
| C3 | CFRP/High-Temp | - | - | - | - | - |
| C4 | CFRP/Stainless Steel | - | - | - | - | - |
| C5 | CFRP/Non-Ferrous/High-Temp | - | - | - | - | - |

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**Digitally access and leverage product data and knowledge
to connect systems and processes throughout
the entire manufacturing lifecycle.**

VISIT KENNAMETAL.COM/NOVO.

METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalogue!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation. For more information, consult the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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