

CARBIDE

HSS



**COBALT & HSS
END MILLS**

E2039 SERIES

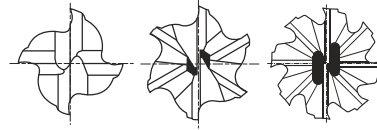
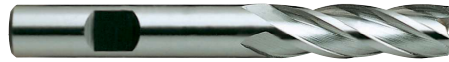
8% COBALT (M42)
FLAT SHANK

E2042 SERIES

8% COBALT (M42)
FLAT SHANK

HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING

► Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



HSS
Co8

4-8

30°

FLAT



P.883, 888, 892

E2039(4 FLUTE), E2042(6&8 FLUTE) Series

Unit : Inch

| EDP No. 8% COBALT (M42) | Mill Diameter | Shank Diameter | Length of Cut | Overall Length | No. of Flute |
|----------------------------|---------------|----------------|---------------|----------------|--------------|
| 07901 | 1 | 1 | 3 | 5-1/2 | 4 |
| 07902 | 1-1/4 | 1-1/4 | 3 | 5-1/2 | 4 |
| 07903 | 1-1/2 | 1-1/4 | 3 | 5-1/2 | 4 |
| 07094 | 1 | 1 | 3 | 5-1/2 | 6 |
| 07095 | 1-1/4 | 1-1/4 | 3 | 5-1/2 | 6 |
| 07096 | 1-1/2 | 1-1/4 | 3 | 5-1/2 | 6 |
| 07097 | 1-3/4 | 1-1/4 | 3 | 5-1/2 | 6 |
| 99098 | 2 | 1-1/4 | 3 | 5-1/2 | 8 |

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

| Mill Dia. Tolerance (inch) | |
|-------------------------------|--------------|
| 0~+.0010 | * * 0~+.0015 |

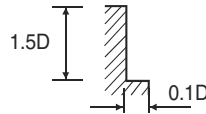
**The shank of end mills is the same diameter as the cutting portion.

| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Copper | Graphite | Cast Iron | Aluminum | Stainless Steels | Titanium | Inconel |
|---------------|--------------|--------------------|-----------------|----------|----------------------|--------|----------|-----------|----------|------------------|----------|---------|
| ~HRc20 | HRc20~30 | HRc30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | |
| ◎ | ◎ | ○ | | | | ○ | | | ○ | | | |

◎ : Excellent ○ : Good

HSSCo8 & HSS, MULTI FLUTE FINISH - SIDE CUTTING

| MATERIAL | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | ALUMINUM ALUMINUM ALLOYS | |
|----------|--|------|--|------|--|------|--|------|-----------------------------|------|
| HARDNESS | | | ~HRc20 | | HRc20~HRc30 | | HRc30~HRc40 | | | |
| STRENGTH | ~ 500N/mm ² | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| DIAMETER | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 1/8 | 3500 | 4.3 | 3200 | 3.1 | 2500 | 2.4 | 1600 | 1.2 | 11000 | 15.0 |
| 1/4 | 1800 | 7.1 | 1600 | 5.7 | 1200 | 3.5 | 800 | 2.4 | 5600 | 18.5 |
| 3/8 | 1100 | 7.9 | 900 | 6.3 | 800 | 4.7 | 450 | 2.6 | 3100 | 23.6 |
| 1/2 | 900 | 8.7 | 800 | 7.1 | 630 | 4.7 | 400 | 3.0 | 2500 | 22.4 |
| 5/8 | 700 | 8.7 | 560 | 6.3 | 450 | 4.1 | 280 | 2.6 | 2000 | 20.9 |
| 3/4 | 630 | 7.9 | 500 | 6.3 | 400 | 4.1 | 250 | 2.6 | 1800 | 20.9 |
| 13/16 | 500 | 7.9 | 450 | 6.3 | 350 | 4.1 | 220 | 2.6 | 1400 | 17.7 |
| 15/16 | 500 | 7.9 | 450 | 6.3 | 350 | 4.1 | 220 | 2.6 | 1400 | 17.7 |
| 1 | 450 | 7.1 | 400 | 5.7 | 310 | 3.5 | 180 | 2.0 | 1200 | 16.5 |
| 1-1/2 | 310 | 4.7 | 250 | 3.5 | 200 | 2.4 | 120 | 1.4 | 900 | 13.0 |
| 1-3/4 | 280 | 4.7 | 220 | 3.5 | 150 | 2.4 | 110 | 1.4 | 800 | 11.8 |
| 2 | 280 | 4.7 | 190 | 3.5 | 110 | 1.8 | 80 | 1.0 | 630 | 11.8 |

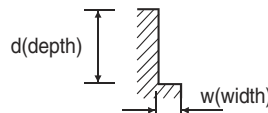


※ The Feed, in long & extra long types, should be reduced by around 50%.

 RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE 60° HELIX FINISH - SIDE CUTTING

| MATERIAL | | MILD STEELS | | ALLOY STEELS | | TOOL STEELS STAINLESS STEELS | | CAST IRON | |
|----------|-------------|-------------|------|--------------|------|---------------------------------|------|-----------|------|
| HARDNESS | | ~HRc13 | | HRc13~HRc32 | | HRc25~HRc35 | | ~HRc20 | |
| DIAMETER | w × d | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 1/4 | 0.02 × 0.35 | 1840 | 3.6 | 1250 | 2.2 | 980 | 1.8 | 2050 | 4.8 |
| 1/4 | 0.08 × 0.35 | 1600 | 3.6 | 650 | 2.2 | 510 | 1.6 | 1100 | 4.5 |
| 5/8 | 0.02 × 1 | 750 | 2.9 | 460 | 2.0 | 390 | 1.4 | 840 | 4.1 |
| 5/8 | 0.18 × 1 | 650 | 2.9 | 400 | 2.0 | 340 | 1.4 | 730 | 4.1 |
| 3/4 | 0.02 × 1.2 | 520 | 2.5 | 370 | 1.8 | 300 | 1.4 | 630 | 4.1 |
| 3/4 | 0.26 × 1.2 | 450 | 2.5 | 320 | 1.8 | 260 | 1.4 | 550 | 4.1 |
| 1 | 0.02 × 1.6 | 460 | 2.9 | 290 | 1.8 | 240 | 1.4 | 510 | 4.3 |
| 1 | 0.30 × 1.6 | 400 | 2.9 | 250 | 1.8 | 210 | 1.4 | 440 | 4.3 |
| 1-1/2 | 0.02 × 1.6 | 280 | 2.5 | 170 | 1.4 | 150 | 1.3 | 320 | 3.6 |
| 1-1/2 | 0.80 × 1.6 | 240 | 2.5 | 150 | 1.4 | 130 | 1.3 | 280 | 3.6 |
| 2 | 0.02 × 2 | 220 | 2.2 | 140 | 1.3 | 115 | 1.1 | 260 | 2.9 |
| 2 | 1.60 × 2 | 190 | 2.2 | 120 | 1.3 | 100 | 1.1 | 225 | 2.9 |



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 RPM = rev./min.
FEED = inch/min.

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

 TECHNICAL
DATA

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SIDE CUTTING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

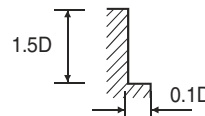
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

| MATERIAL | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | ALUMINUM ALUMINUM ALLOYS | |
|----------|--|------|--|------|--|------|--|------|-----------------------------|------|
| | ~ 500N/mm ² | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| HARDNESS | | | ~HRc20 | | HRc20~HRc30 | | HRc30~HRc40 | | | |
| STRENGTH | | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| DIAMETER | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 3/32 | 6720 | 2.9 | 5400 | 1.9 | 4800 | 1.7 | 2640 | 0.7 | 14400 | 8.5 |
| 1/8 | 4200 | 3.7 | 3840 | 2.9 | 3000 | 2.2 | 1920 | 1.0 | 13200 | 13.2 |
| 1/4 | 2160 | 6.4 | 1920 | 5.2 | 1440 | 3.1 | 960 | 2.2 | 6720 | 16.6 |
| 3/8 | 1320 | 7.2 | 1080 | 5.6 | 960 | 4.2 | 540 | 2.4 | 3720 | 21.2 |
| 1/2 | 1080 | 7.8 | 960 | 6.4 | 756 | 4.2 | 480 | 2.6 | 3000 | 20.3 |
| 9/16 | 960 | 7.8 | 840 | 5.6 | 672 | 4.2 | 420 | 2.6 | 2640 | 19.0 |
| 5/8 | 840 | 7.8 | 672 | 5.6 | 540 | 3.7 | 336 | 2.4 | 2400 | 19.0 |
| 11/16 | 756 | 7.2 | 600 | 5.6 | 480 | 3.7 | 300 | 2.4 | 2160 | 19.0 |
| 7/8 | 600 | 7.2 | 540 | 5.6 | 420 | 3.7 | 264 | 2.4 | 1680 | 16.1 |
| 1 | 540 | 6.4 | 480 | 5.2 | 372 | 3.1 | 216 | 1.7 | 1440 | 15.1 |
| 1-1/8 | 430 | 5.6 | 420 | 4.4 | 336 | 2.9 | 192 | 1.4 | 1320 | 14.2 |

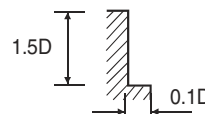


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiN-COATED - SIDE CUTTING

| MATERIAL | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | ALUMINUM ALUMINUM ALLOYS | |
|----------|--|------|--|------|--|------|--|------|-----------------------------|------|
| | ~ 500N/mm ² | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| HARDNESS | | | ~HRc20 | | HRc20~HRc30 | | HRc30~HRc40 | | | |
| STRENGTH | | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| DIAMETER | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 1/8 | 4200 | 5.2 | 3840 | 3.7 | 3000 | 2.9 | 1920 | 1.4 | 13200 | 18.0 |
| 1/4 | 2640 | 8.5 | 1920 | 6.8 | 1440 | 4.2 | 960 | 2.9 | 6720 | 22.2 |
| 3/8 | 1320 | 9.5 | 1080 | 7.6 | 960 | 5.6 | 540 | 3.1 | 3700 | 28.3 |
| 1/2 | 1080 | 10.4 | 960 | 8.5 | 756 | 5.6 | 480 | 3.6 | 3000 | 26.9 |
| 5/8 | 840 | 10.4 | 672 | 7.6 | 540 | 4.9 | 336 | 3.1 | 2400 | 25.1 |
| 3/4 | 756 | 9.5 | 600 | 7.6 | 480 | 4.9 | 300 | 3.1 | 2160 | 25.1 |
| 7/8 | 600 | 9.5 | 540 | 7.6 | 420 | 4.9 | 264 | 3.1 | 1680 | 21.2 |
| 15/16 | 600 | 9.5 | 540 | 7.6 | 420 | 4.9 | 264 | 3.1 | 1680 | 21.2 |
| 1 | 540 | 8.5 | 480 | 6.8 | 372 | 4.2 | 216 | 2.4 | 1440 | 19.8 |
| 1-1/2 | 372 | 5.6 | 300 | 4.2 | 240 | 2.9 | 144 | 1.7 | 1080 | 15.6 |
| 1-3/4 | 336 | 5.6 | 264 | 4.2 | 216 | 2.9 | 132 | 1.7 | 960 | 14.2 |
| 2 | 336 | 5.6 | 264 | 4.2 | 168 | 2.2 | 96 | 1.2 | 960 | 14.2 |



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RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 3 FLUTE FINISH TiCN-COATED - SIDE CUTTING

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

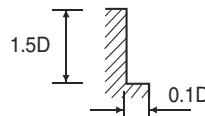
STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

| MATERIAL | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | ALUMINUM ALUMINUM ALLOYS | |
|----------|--|------|--|------|--|------|--|------|-----------------------------|------|
| | ~ 500N/mm ² | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| HARDNESS | | | ~HRc20 | | HRc20~HRc30 | | HRc30~HRc40 | | | |
| STRENGTH | | | | | | | | | | |
| DIAMETER | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 3/32 | 7280 | 3.1 | 5850 | 2.1 | 5200 | 1.8 | 2860 | 0.8 | 15600 | 9.2 |
| 1/8 | 4550 | 4.0 | 4160 | 3.1 | 3250 | 2.3 | 2080 | 1.0 | 14300 | 14.3 |
| 1/4 | 2240 | 6.9 | 2080 | 5.6 | 1560 | 3.4 | 1040 | 2.3 | 7280 | 17.9 |
| 5/16 | 1820 | 7.8 | 1430 | 5.1 | 1170 | 4.0 | 728 | 2.6 | 5200 | 22.5 |
| 1/2 | 1170 | 8.5 | 1040 | 6.9 | 819 | 4.6 | 520 | 2.9 | 3250 | 22.0 |
| 9/16 | 1040 | 8.5 | 910 | 6.1 | 728 | 4.6 | 455 | 2.9 | 2860 | 20.5 |
| 5/8 | 910 | 8.5 | 728 | 6.1 | 585 | 4.6 | 364 | 2.6 | 2600 | 20.5 |
| 11/16 | 819 | 7.8 | 650 | 6.1 | 520 | 4.0 | 325 | 2.6 | 2340 | 20.5 |
| 7/8 | 650 | 7.8 | 585 | 6.1 | 455 | 4.0 | 286 | 2.6 | 1820 | 17.4 |
| 1 | 585 | 6.9 | 520 | 5.6 | 403 | 3.4 | 234 | 1.8 | 1560 | 16.4 |
| 1-1/8 | 520 | 6.1 | 455 | 4.8 | 362 | 3.1 | 208 | 1.6 | 1430 | 15.3 |

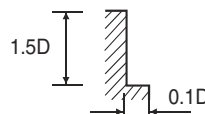


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RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiCN-COATED - SIDE CUTTING

| MATERIAL | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | CARBON STEELS ALLOY STEELS TOOL STEELS | | ALUMINUM ALUMINUM ALLOYS | |
|----------|--|------|--|------|--|------|--|------|-----------------------------|------|
| | ~ 500N/mm ² | | 500~800N/mm ² | | 800~1000N/mm ² | | 1000~1300N/mm ² | | | |
| HARDNESS | | | ~HRc20 | | HRc20~HRc30 | | HRc30~HRc40 | | | |
| STRENGTH | | | | | | | | | | |
| DIAMETER | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED | RPM | FEED |
| 1/8 | 4550 | 5.6 | 4160 | 4.0 | 3250 | 3.1 | 22080 | 1.6 | 14300 | 19.5 |
| 1/4 | 2340 | 9.2 | 2090 | 8.4 | 1560 | 4.6 | 1040 | 3.1 | 7280 | 24.1 |
| 3/8 | 1430 | 10.3 | 1170 | 8.2 | 1040 | 6.1 | 585 | 3.4 | 4030 | 30.7 |
| 1/2 | 1170 | 11.3 | 1040 | 9.2 | 818 | 6.1 | 520 | 3.9 | 3250 | 29.1 |
| 5/8 | 910 | 11.3 | 728 | 8.2 | 585 | 5.3 | 364 | 3.4 | 2600 | 27.2 |
| 3/4 | 819 | 10.3 | 650 | 8.2 | 520 | 5.3 | 325 | 3.4 | 2340 | 27.2 |
| 7/8 | 650 | 10.3 | 585 | 8.2 | 455 | 5.3 | 286 | 3.4 | 1820 | 23.0 |
| 15/16 | 650 | 10.3 | 585 | 8.2 | 455 | 5.3 | 234 | 3.4 | 1820 | 23.0 |
| 1 | 585 | 9.2 | 520 | 8.4 | 403 | 4.6 | 208 | 2.6 | 1560 | 21.9 |
| 1-1/2 | 403 | 6.1 | 325 | 4.6 | 260 | 3.1 | 156 | 1.8 | 1170 | 16.9 |
| 1-3/4 | 364 | 6.1 | 286 | 4.6 | 234 | 3.1 | 143 | 1.8 | 1040 | 15.3 |
| 2 | 364 | 6.1 | 286 | 4.6 | 182 | 2.3 | 104 | 1.3 | 1040 | 15.3 |



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