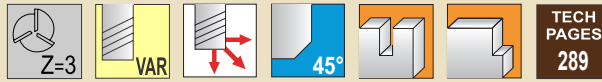


# Series ARC

.1575" - .3750"  
(4.000mm - 9.525mm)



| TOLERANCES |                                   |
|------------|-----------------------------------|
| d1         | +0.000" - .002" (+0.000 - .050mm) |
| d2         | h6                                |
| d3         | +0.000" - .005" (+0.000 - .127mm) |

Recommended for aluminum and non-ferrous materials

## Aluminum Knuckle Rougher / Ripper

Bright finish - Uncoated

Solid submicron grain carbide end mill - center cutting

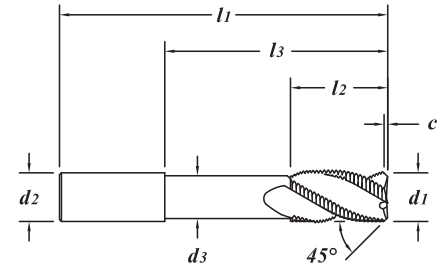
Wave knuckle design to break up chips

Each flute has individual helix angle to break up harmonics

Reduces tool pressure requiring less machine power

Designed for roughing Aluminum Alloys

Ideal for use in extruded Aluminum



MATERIAL HARDNESS (Rc) 70 35 0

| EDP#  | d1 † Diameter |        | d2 Shank Diameter | l1 Overall Length | l2 Flute Length | c Chamfer Length | l3 Reach Length | d3 Neck Diameter | 1-11  | 12-24 | 25-49 | 50-100 |       |
|-------|---------------|--------|-------------------|-------------------|-----------------|------------------|-----------------|------------------|-------|-------|-------|--------|-------|
|       | Decimal       | Metric |                   |                   |                 |                  |                 |                  |       |       |       |        |       |
| 46219 | .1575         | 4.000  | 6.0               | 50                | 8               | 0.30             | -               | -                | 32.86 | 31.43 | 30.00 | 28.57  |       |
| 46222 | .1575         | 4.000  | 6.0               | 50                | 12              | 0.30             | -               | -                | 32.86 | 31.43 | 30.00 | 28.57  |       |
| 46225 | .1575         | 4.000  | 6.0               | 65                | 10              | 0.30             | 30              | 3.2              | 37.61 | 35.97 | 34.34 | 32.70  |       |
| 46228 | .1575         | 4.000  | 6.0               | 75                | 15              | 0.30             | 40              | 3.2              | 49.50 | 47.34 | 45.19 | 43.04  |       |
| 46231 | .1875         | 3/16"  | 4.763             | 2"                | 5/16"           | .015"            | -               | -                | 27.88 | 26.66 | 25.45 | 24.24  |       |
| 46234 | .1875         | 3/16"  | 4.763             | 3/16"             | 2"              | 9/16"            | .015"           | -                | 27.88 | 26.66 | 25.45 | 24.24  |       |
| 46237 | .1875         | 3/16"  | 4.763             | 3/16"             | 3"              | 1"               | .015"           | -                | 39.01 | 37.31 | 35.62 | 33.92  |       |
| 46240 | .1875         | 3/16"  | 4.763             | 3/16"             | 3"              | 1/2"             | .015"           | 1-1/2"           | .160" | 42.45 | 40.60 | 38.76  | 36.91 |
| 46243 | .2362         | 6.000  | 6.0               | 50                | 12              | 0.50             | -               | -                | 32.60 | 31.19 | 29.77 | 28.35  |       |
| 46246 | .2362         | 6.000  | 6.0               | 65                | 19              | 0.50             | -               | -                | 35.31 | 33.77 | 32.24 | 30.70  |       |
| 46249 | .2362         | 6.000  | 6.0               | 100               | 20              | 0.50             | 60              | 5.2              | 50.07 | 47.89 | 45.72 | 43.54  |       |
| 46252 | .2500         | 1/4"   | 6.350             | 1/4"              | 2"              | 3/8"             | .020"           | -                | 31.17 | 29.81 | 28.46 | 27.10  |       |
| 46255 | .2500         | 1/4"   | 6.350             | 1/4"              | 2-1/2"          | 3/4"             | .020"           | -                | 34.88 | 33.36 | 31.85 | 30.33  |       |
| 46258 | .2500         | 1/4"   | 6.350             | 1/4"              | 4"              | 1-1/2"           | .020"           | -                | 45.02 | 43.07 | 41.11 | 39.15  |       |
| 46261 | .2500         | 1/4"   | 6.350             | 1/4"              | 4"              | 1"               | .020"           | 2"               | .220" | 48.47 | 46.37 | 44.26  | 42.15 |
| 46264 | .3125         | 5/16"  | 7.938             | 5/16"             | 2"              | 7/16"            | .020"           | -                | 37.19 | 35.57 | 33.96 | 32.34  |       |
| 46267 | .3125         | 5/16"  | 7.938             | 5/16"             | 2-1/2"          | 13/16"           | .020"           | -                | 38.61 | 36.93 | 35.25 | 33.57  |       |
| 46270 | .3125         | 5/16"  | 7.938             | 5/16"             | 4"              | 1-1/2"           | .020"           | -                | 55.30 | 52.90 | 50.49 | 48.09  |       |
| 46273 | .3125         | 5/16"  | 7.938             | 5/16"             | 4"              | 1"               | .020"           | 2"               | .285" | 58.74 | 56.19 | 53.63  | 51.08 |
| 46276 | .3150         | 8.000  | 8.0               | 50                | 12              | 0.50             | -               | -                | 38.09 | 36.43 | 34.78 | 33.12  |       |
| 46279 | .3150         | 8.000  | 8.0               | 65                | 22              | 0.50             | -               | -                | 39.57 | 37.85 | 36.13 | 34.41  |       |
| 46282 | .3150         | 8.000  | 8.0               | 100               | 40              | 0.50             | -               | -                | 57.25 | 54.76 | 52.27 | 49.78  |       |
| 46285 | .3150         | 8.000  | 8.0               | 100               | 20              | 0.50             | 60              | 7.2              | 60.69 | 58.05 | 55.41 | 52.77  |       |
| 46288 | .3150         | 8.000  | 8.0               | 150               | 40              | 0.50             | 100             | 7.2              | 80.55 | 77.04 | 73.54 | 70.04  |       |
| 46291 | .3750         | 3/8"   | 9.525             | 3/8"              | 2"              | 1/2"             | .025"           | -                | 43.40 | 41.51 | 39.63 | 37.74  |       |
| 46294 | .3750         | 3/8"   | 9.525             | 3/8"              | 2-1/2"          | 7/8"             | .025"           | -                | 48.22 | 46.12 | 44.03 | 41.93  |       |
| 46297 | .3750         | 3/8"   | 9.525             | 3/8"              | 3"              | 1-1/4"           | .025"           | -                | 56.35 | 53.90 | 51.45 | 49.00  |       |
| 46300 | .3750         | 3/8"   | 9.525             | 3/8"              | 4"              | 1-5/8"           | .025"           | -                | 60.58 | 57.95 | 55.31 | 52.68  |       |
| 46303 | .3750         | 3/8"   | 9.525             | 3/8"              | 4"              | 1"               | .025"           | 2"               | .345" | 64.02 | 61.24 | 58.45  | 55.67 |
| 46306 | .3750         | 3/8"   | 9.525             | 3/8"              | 6"              | 1-1/2"           | .025"           | 4"               | .345" | 82.21 | 78.64 | 75.06  | 71.49 |

| EDP#  | $d1$ †<br>Diameter |        | $d2$<br>Shank<br>Diameter | $l1$<br>Overall<br>Length | $l2$<br>Flute<br>Length | $c$<br>Chamfer<br>Length | $l3$<br>Reach<br>Length | $d3$<br>Neck<br>Diameter | 1-11   | 12-24  | 25-49  | 50-100 |        |
|-------|--------------------|--------|---------------------------|---------------------------|-------------------------|--------------------------|-------------------------|--------------------------|--------|--------|--------|--------|--------|
|       | Decimal            | Metric |                           |                           |                         |                          |                         |                          |        |        |        |        |        |
| 46309 | .3937              | 10.000 | 10.0                      | 50                        | 16                      | 0.50                     | -                       | -                        | 53.66  | 51.33  | 48.99  | 46.66  |        |
| 46312 | .3937              | 10.000 | 10.0                      | 70                        | 22                      | 0.50                     | -                       | -                        | 56.58  | 54.12  | 51.66  | 49.20  |        |
| 46315 | .3937              | 10.000 | 10.0                      | 100                       | 40                      | 0.50                     | -                       | -                        | 70.48  | 67.42  | 64.35  | 61.29  |        |
| 46318 | .3937              | 10.000 | 10.0                      | 100                       | 20                      | 0.50                     | 60                      | 9.2                      | 73.92  | 70.71  | 67.49  | 64.28  |        |
| 46321 | .3937              | 10.000 | 10.0                      | 150                       | 40                      | 0.50                     | 100                     | 9.2                      | 92.71  | 88.68  | 84.65  | 80.62  |        |
| 46324 | .4724              | 12.000 | 12.0                      | 65                        | 19                      | 0.80                     | -                       | -                        | 61.69  | 59.00  | 56.32  | 53.64  |        |
| 46327 | .4724              | 12.000 | 12.0                      | 75                        | 32                      | 0.80                     | -                       | -                        | 69.75  | 66.72  | 63.68  | 60.65  |        |
| 46330 | .4724              | 12.000 | 12.0                      | 100                       | 50                      | 0.80                     | -                       | -                        | 81.77  | 78.21  | 74.66  | 71.10  |        |
| 46333 | .4724              | 12.000 | 12.0                      | 100                       | 25                      | 0.80                     | 60                      | 11.2                     | 85.20  | 81.50  | 77.79  | 74.09  |        |
| 46336 | .4724              | 12.000 | 12.0                      | 150                       | 40                      | 0.80                     | 100                     | 11.2                     | 115.40 | 110.39 | 105.37 | 100.35 |        |
| 46339 | .5000              | 1/2"   | 12.700                    | 1/2"                      | 2-1/2"                  | 5/8"                     | .030"                   | -                        | -      | 58.72  | 56.17  | 53.61  | 51.06  |
| 46342 | .5000              | 1/2"   | 12.700                    | 1/2"                      | 3"                      | 1-1/4"                   | .030"                   | -                        | -      | 66.55  | 63.66  | 60.76  | 57.87  |
| 46345 | .5000              | 1/2"   | 12.700                    | 1/2"                      | 4"                      | 2"                       | .030"                   | -                        | -      | 77.81  | 74.43  | 71.04  | 67.66  |
| 46348 | .5000              | 1/2"   | 12.700                    | 1/2"                      | 4"                      | 1"                       | .030"                   | 2"                       | .470"  | 81.25  | 77.72  | 74.18  | 70.65  |
| 46351 | .5000              | 1/2"   | 12.700                    | 1/2"                      | 6"                      | 1-1/2"                   | .030"                   | 4"                       | .470"  | 113.63 | 108.69 | 103.75 | 98.81  |
| 46354 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 3"                      | 3/4"                     | .035"                   | -                        | -      | 104.17 | 99.64  | 95.11  | 90.58  |
| 46357 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 3-1/2"                  | 1-1/4"                   | .035"                   | -                        | -      | 107.23 | 102.56 | 97.90  | 93.24  |
| 46360 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 4"                      | 1-5/8"                   | .035"                   | -                        | -      | 113.59 | 108.65 | 103.71 | 98.77  |
| 46363 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 4"                      | 1"                       | .035"                   | 2"                       | .595"  | 117.04 | 111.95 | 106.86 | 101.77 |
| 46366 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 6"                      | 1-1/2"                   | .035"                   | 3"                       | .595"  | 164.39 | 157.25 | 150.10 | 142.95 |
| 46369 | .6250              | 5/8"   | 15.875                    | 5/8"                      | 6"                      | 1-1/2"                   | .035"                   | 4"                       | .595"  | 164.39 | 157.25 | 150.10 | 142.95 |
| 46372 | .6299              | 16.000 | 16.0                      | 75                        | 19                      | 1.00                     | -                       | -                        | 109.63 | 104.86 | 100.10 | 95.33  |        |
| 46375 | .6299              | 16.000 | 16.0                      | 88                        | 32                      | 1.00                     | -                       | -                        | 112.46 | 107.57 | 102.68 | 97.79  |        |
| 46378 | .6299              | 16.000 | 16.0                      | 100                       | 50                      | 1.00                     | -                       | -                        | 120.39 | 115.16 | 109.92 | 104.69 |        |
| 46381 | .6299              | 16.000 | 16.0                      | 100                       | 20                      | 1.00                     | 50                      | 15.2                     | 123.83 | 118.45 | 113.06 | 107.68 |        |
| 46384 | .6299              | 16.000 | 16.0                      | 150                       | 40                      | 1.00                     | 100                     | 15.2                     | 166.15 | 158.93 | 151.70 | 144.48 |        |
| 46387 | .7500              | 3/4"   | 19.050                    | 3/4"                      | 4"                      | 1-5/8"                   | .040"                   | -                        | -      | 156.81 | 150.00 | 143.18 | 136.36 |
| 46390 | .7500              | 3/4"   | 19.050                    | 3/4"                      | 5"                      | 2-1/4"                   | .040"                   | -                        | -      | 219.75 | 210.20 | 200.64 | 191.09 |
| 46393 | .7500              | 3/4"   | 19.050                    | 3/4"                      | 4"                      | 7/8"                     | .040"                   | 2"                       | .720"  | 160.26 | 153.30 | 146.33 | 139.36 |
| 46396 | .7500              | 3/4"   | 19.050                    | 3/4"                      | 6"                      | 1-1/2"                   | .040"                   | 3"                       | .720"  | 264.58 | 253.08 | 241.57 | 230.07 |
| 46399 | .7500              | 3/4"   | 19.050                    | 3/4"                      | 6"                      | 1-1/2"                   | .040"                   | 4"                       | .720"  | 264.58 | 253.08 | 241.57 | 230.07 |
| 46402 | .7874              | 20.000 | 20.0                      | 100                       | 22                      | 1.00                     | -                       | -                        | 221.26 | 211.64 | 202.02 | 192.40 |        |
| 46405 | .7874              | 20.000 | 20.0                      | 100                       | 40                      | 1.00                     | -                       | -                        | 221.26 | 211.64 | 202.02 | 192.40 |        |
| 46408 | .7874              | 20.000 | 20.0                      | 100                       | 30                      | 1.00                     | 50                      | 19.2                     | 224.70 | 214.93 | 205.16 | 195.39 |        |
| 46411 | .7874              | 20.000 | 20.0                      | 150                       | 40                      | 1.00                     | 100                     | 19.2                     | 274.45 | 262.52 | 250.58 | 238.65 |        |
| 46414 | 1.000              | 1"     | 25.400                    | 1"                        | 4"                      | 1-1/2"                   | .040"                   | -                        | -      | 266.27 | 254.69 | 243.12 | 231.54 |
| 46417 | 1.000              | 1"     | 25.400                    | 1"                        | 5"                      | 2"                       | .040"                   | -                        | -      | 329.49 | 315.16 | 300.84 | 286.51 |
| 46420 | 1.000              | 1"     | 25.400                    | 1"                        | 6"                      | 2"                       | .040"                   | 3-1/2"                   | .970"  | 442.73 | 423.48 | 404.23 | 384.98 |
| 46423 | 1.000              | 1"     | 25.400                    | 1"                        | 7"                      | 2"                       | .040"                   | 4-1/2"                   | .970"  | 582.21 | 556.90 | 531.58 | 506.27 |

70

MATERIAL HARDNESS (Rc)

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