



# MASTER CATALOG **2018**

VOLUME TWO | **ROTATING TOOLS**



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

# Kenna Universal™ Drills

## Primary Application

Kenna Universal Drills (B96/B97\_ Series) are engineered to deliver superior performance in steel, cast iron, and stainless steel applications making it ideal for small- and medium-sized shops. The universal application profile reduces tool change times and the number of drills in inventory. Covering a large spectrum of off-the-shelf diameters and a broad range of applications makes Kenna Universal Drills an excellent alternative to other high-performance products.

The B976Z series is available from 2,383–3mm (.0938–.1181") making it the first standard offering in less than 3mm. This extended diameter offering covers all common tap drill sizes, including an expanded selection of wire, fractional, and letter sizes.

The new B967 series satisfies the demand for non-coolant drills up to 5 x D for applications with flood coolant or dry.

## Use as Pilot Drill

- Ideal point angle and tolerance make the Kenna Universal drill the preferred pilot drill for B27\_ series solid carbide deep-hole drills.

## Features and Benefits

### Kenna Universal Drill-Point Design

- Low thrust. Works well on a variety of machines.
- Excellent centering capabilities.
- Easy to regrind.

### Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment and stability in tough drilling applications — even when drilling through cross holes.

### KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables 30% higher cutting speeds and constant tool life.
- Surface finish ensures chip evacuation when drilling deep holes.

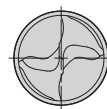
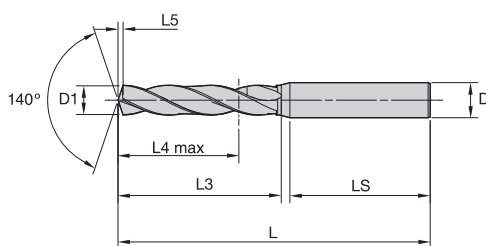
**Universal application profile,  
problem solver, and pilot drill.**



### **Customization**

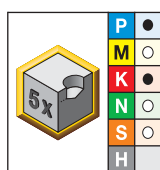
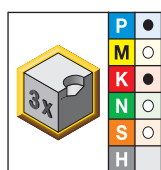
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.





For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

### ■ B966A/B967A • ~3 x D/~5 x D



● first choice

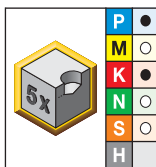
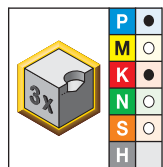
○ alternate choice

D1 diameter

| short • KC7315 | long • KC7315 | mm    | in    | fraction | wire size | L5  | LS | D |
|----------------|---------------|-------|-------|----------|-----------|-----|----|---|
| B966A03000     | B967A03000    | 3,000 | .1181 | —        | —         | 0,5 | 36 | 6 |
| B966A03100     | B967A03100    | 3,100 | .1220 | —        | —         | 0,5 | 36 | 6 |
| B966A03200     | B967A03200    | 3,200 | .1260 | —        | —         | 0,5 | 36 | 6 |
| B966A03300     | B967A03300    | 3,300 | .1299 | —        | —         | 0,5 | 36 | 6 |
| B966A03400     | —             | 3,400 | .1339 | —        | —         | 0,6 | 36 | 6 |
| B966A03500     | B967A03500    | 3,500 | .1378 | —        | —         | 0,6 | 36 | 6 |
| B966A03600     | —             | 3,600 | .1417 | —        | —         | 0,6 | 36 | 6 |
| B966A03700     | —             | 3,700 | .1457 | —        | —         | 0,6 | 36 | 6 |
| B966A03800     | B967A03800    | 3,800 | .1496 | —        | —         | 0,6 | 36 | 6 |
| B966A03900     | —             | 3,900 | .1535 | —        | —         | 0,6 | 36 | 6 |
| B966A03960     | —             | 3,960 | .1559 | —        | —         | 0,7 | 36 | 6 |
| B966A04000     | B967A04000    | 4,000 | .1575 | —        | —         | 0,7 | 36 | 6 |
| B966A04100     | —             | 4,100 | .1614 | —        | —         | 0,7 | 36 | 6 |
| B966A04200     | B967A04200    | 4,200 | .1654 | —        | —         | 0,7 | 36 | 6 |
| B966A04300     | B967A04300    | 4,300 | .1693 | —        | —         | 0,7 | 36 | 6 |
| B966A04400     | —             | 4,400 | .1732 | —        | —         | 0,7 | 36 | 6 |
| B966A04500     | B967A04500    | 4,500 | .1772 | —        | —         | 0,7 | 36 | 6 |
| B966A04600     | —             | 4,600 | .1811 | —        | —         | 0,8 | 36 | 6 |
| B966A04700     | —             | 4,700 | .1850 | —        | 13        | 0,8 | 36 | 6 |
| B966A04800     | B967A04800    | 4,800 | .1890 | —        | 12        | 0,8 | 36 | 6 |
| B966A04900     | —             | 4,900 | .1929 | —        | —         | 0,8 | 36 | 6 |
| B966A05000     | B967A05000    | 5,000 | .1969 | —        | —         | 0,8 | 36 | 6 |
| B966A05040     | —             | 5,040 | .1984 | —        | —         | 0,8 | 36 | 6 |
| B966A05100     | B967A05100    | 5,100 | .2008 | —        | —         | 0,8 | 36 | 6 |
| B966A05200     | B967A05200    | 5,200 | .2047 | —        | —         | 0,9 | 36 | 6 |
| B966A05300     | —             | 5,300 | .2087 | —        | —         | 0,9 | 36 | 6 |
| B966A05400     | —             | 5,400 | .2126 | —        | —         | 0,9 | 36 | 6 |
| B966A05500     | B967A05500    | 5,500 | .2165 | —        | —         | 0,9 | 36 | 6 |
| B966A05600     | —             | 5,600 | .2205 | —        | —         | 0,9 | 36 | 6 |
| B966A05700     | —             | 5,700 | .2244 | —        | —         | 1,0 | 36 | 6 |
| B966A05800     | B967A05800    | 5,800 | .2283 | —        | —         | 1,0 | 36 | 6 |
| B966A05900     | —             | 5,900 | .2323 | —        | —         | 1,0 | 36 | 6 |
| B966A06000     | B967A06000    | 6,000 | .2362 | —        | —         | 1,0 | 36 | 6 |
| B966A06050     | —             | 6,050 | .2382 | —        | —         | 1,0 | 36 | 8 |
| B966A06100     | B967A06100    | 6,100 | .2402 | —        | —         | 1,0 | 36 | 8 |
| B966A06200     | —             | 6,200 | .2441 | —        | —         | 1,0 | 36 | 8 |

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)



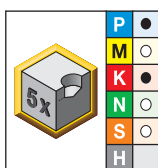
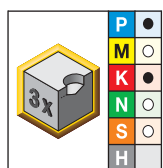
- first choice
- alternate choice

D1 diameter

| short • KC7315 | long • KC7315 | D1 diameter |       |     |   | wire size | L5  | LS | D  |
|----------------|---------------|-------------|-------|-----|---|-----------|-----|----|----|
| B966A06300     | —             | 6,300       | .2480 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06350     | —             | 6,350       | .2500 | 1/4 | — | —         | 1,1 | 36 | 8  |
| B966A06400     | —             | 6,400       | .2520 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06500     | B967A06500    | 6,500       | .2559 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06600     | B967A06600    | 6,600       | .2598 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06700     | B967A06700    | 6,700       | .2638 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06800     | B967A06800    | 6,800       | .2677 | —   | — | —         | 1,1 | 36 | 8  |
| B966A06900     | —             | 6,900       | .2717 | —   | — | —         | 1,2 | 36 | 8  |
| B966A07000     | B967A07000    | 7,000       | .2756 | —   | — | —         | 1,2 | 36 | 8  |
| B966A07100     | —             | 7,100       | .2795 | —   | — | —         | 1,2 | 36 | 8  |
| B966A07200     | —             | 7,200       | .2835 | —   | — | —         | 1,2 | 36 | 8  |
| B966A07300     | —             | 7,300       | .2874 | —   | — | —         | 1,2 | 36 | 8  |
| B966A07400     | B967A07400    | 7,400       | .2913 | —   | — | —         | 1,3 | 36 | 8  |
| B966A07500     | B967A07500    | 7,500       | .2953 | —   | — | —         | 1,3 | 36 | 8  |
| B966A07600     | —             | 7,600       | .2992 | —   | — | —         | 1,3 | 36 | 8  |
| B966A07700     | —             | 7,700       | .3031 | —   | — | —         | 1,3 | 36 | 8  |
| B966A07800     | B967A07800    | 7,800       | .3071 | —   | — | —         | 1,3 | 36 | 8  |
| B966A07900     | —             | 7,900       | .3110 | —   | — | —         | 1,3 | 36 | 8  |
| B966A08000     | B967A08000    | 8,000       | .3150 | —   | — | —         | 1,4 | 36 | 8  |
| B966A08100     | B967A08100    | 8,100       | .3189 | —   | — | —         | 1,4 | 40 | 10 |
| B966A08200     | —             | 8,200       | .3228 | —   | — | —         | 1,4 | 40 | 10 |
| B966A08300     | —             | 8,300       | .3268 | —   | — | —         | 1,4 | 40 | 10 |
| B966A08400     | —             | 8,400       | .3307 | —   | — | —         | 1,4 | 40 | 10 |
| B966A08500     | B967A08500    | 8,500       | .3346 | —   | — | —         | 1,4 | 40 | 10 |
| B966A08600     | B967A08600    | 8,600       | .3386 | —   | — | —         | 1,5 | 40 | 10 |
| B966A08700     | B967A08700    | 8,700       | .3425 | —   | — | —         | 1,5 | 40 | 10 |
| B966A08800     | B967A08800    | 8,800       | .3465 | —   | — | —         | 1,5 | 40 | 10 |
| B966A08900     | —             | 8,900       | .3504 | —   | — | —         | 1,5 | 40 | 10 |
| B966A09000     | B967A09000    | 9,000       | .3543 | —   | — | —         | 1,5 | 40 | 10 |
| B966A09100     | —             | 9,100       | .3583 | —   | — | —         | 1,5 | 40 | 10 |
| B966A09200     | —             | 9,200       | .3622 | —   | — | —         | 1,6 | 40 | 10 |
| B966A09300     | B967A09300    | 9,300       | .3661 | —   | — | —         | 1,6 | 40 | 10 |
| B966A09400     | —             | 9,400       | .3701 | —   | — | —         | 1,6 | 40 | 10 |
| B966A09500     | B967A09500    | 9,500       | .3740 | —   | — | —         | 1,6 | 40 | 10 |
| B966A09600     | —             | 9,600       | .3780 | —   | — | —         | 1,6 | 40 | 10 |
| B966A09700     | —             | 9,700       | .3819 | —   | — | —         | 1,7 | 40 | 10 |
| B966A09800     | B967A09800    | 9,800       | .3858 | —   | — | —         | 1,7 | 40 | 10 |
| B966A09900     | —             | 9,900       | .3898 | —   | — | —         | 1,7 | 40 | 10 |
| B966A10000     | B967A10000    | 10,000      | .3937 | —   | — | —         | 1,7 | 40 | 10 |
| B966A10100     | —             | 10,100      | .3976 | —   | — | —         | 1,7 | 45 | 12 |
| B966A10200     | B967A10200    | 10,200      | .4016 | —   | — | —         | 1,7 | 45 | 12 |
| B966A10300     | —             | 10,300      | .4055 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10400     | —             | 10,400      | .4094 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10500     | B967A10500    | 10,500      | .4134 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10600     | —             | 10,600      | .4173 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10700     | B967A10700    | 10,700      | .4213 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10800     | B967A10800    | 10,800      | .4252 | —   | — | —         | 1,8 | 45 | 12 |
| B966A10900     | —             | 10,900      | .4291 | —   | — | —         | 1,9 | 45 | 12 |
| B966A11000     | B967A11000    | 11,000      | .4331 | —   | — | —         | 1,9 | 45 | 12 |
| B966A11100     | —             | 11,100      | .4370 | —   | — | —         | 1,9 | 45 | 12 |
| B966A11200     | —             | 11,200      | .4409 | —   | — | —         | 1,9 | 45 | 12 |
| B966A11300     | B967A11300    | 11,300      | .4449 | —   | — | —         | 1,9 | 45 | 12 |

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)



● first choice

○ alternate choice

D1 diameter

| short • KC7315 | long • KC7315 | mm     | in    | fraction | wire size | L5  | LS | D  |
|----------------|---------------|--------|-------|----------|-----------|-----|----|----|
| B966A11400     | —             | 11,400 | .4488 | —        | —         | 2,0 | 45 | 12 |
| B966A11500     | B967A11500    | 11,500 | .4528 | —        | —         | 2,0 | 45 | 12 |
| B966A11600     | —             | 11,600 | .4567 | —        | —         | 2,0 | 45 | 12 |
| B966A11700     | —             | 11,700 | .4606 | —        | —         | 2,0 | 45 | 12 |
| B966A11800     | B967A11800    | 11,800 | .4646 | —        | —         | 2,0 | 45 | 12 |
| B966A11900     | —             | 11,900 | .4685 | —        | —         | 2,0 | 45 | 12 |
| B966A12000     | B967A12000    | 12,000 | .4724 | —        | —         | 2,1 | 45 | 12 |
| B966A12100     | —             | 12,100 | .4764 | —        | —         | 2,1 | 45 | 14 |
| B966A12200     | —             | 12,200 | .4803 | —        | —         | 2,1 | 45 | 14 |
| B966A12300     | —             | 12,300 | .4843 | —        | —         | 2,1 | 45 | 14 |
| B966A12400     | —             | 12,400 | .4882 | —        | —         | 2,1 | 45 | 14 |
| B966A12500     | B967A12500    | 12,500 | .4921 | —        | —         | 2,1 | 45 | 14 |
| B966A12600     | —             | 12,600 | .4961 | —        | —         | 2,2 | 45 | 14 |
| B966A12700     | B967A12700    | 12,700 | .5000 | 1/2      | —         | 2,2 | 45 | 14 |
| B966A12800     | B967A12800    | 12,800 | .5039 | —        | —         | 2,2 | 45 | 14 |
| B966A12900     | —             | 12,900 | .5079 | —        | —         | 2,2 | 45 | 14 |
| B966A13000     | B967A13000    | 13,000 | .5118 | —        | —         | 2,2 | 45 | 14 |
| B966A13100     | —             | 13,100 | .5157 | —        | —         | 2,3 | 45 | 14 |
| B966A13200     | —             | 13,200 | .5197 | —        | —         | 2,3 | 45 | 14 |
| B966A13300     | —             | 13,300 | .5236 | —        | —         | 2,3 | 45 | 14 |
| B966A13400     | —             | 13,400 | .5276 | —        | —         | 2,3 | 45 | 14 |
| B966A13500     | B967A13500    | 13,500 | .5315 | —        | —         | 2,3 | 45 | 14 |
| B966A13700     | —             | 13,700 | .5394 | —        | —         | 2,4 | 45 | 14 |
| B966A14000     | B967A14000    | 14,000 | .5512 | —        | —         | 2,4 | 45 | 14 |
| B966A14200     | —             | 14,200 | .5591 | —        | —         | 2,5 | 48 | 16 |
| B966A14300     | —             | 14,300 | .5630 | —        | —         | 2,5 | 48 | 16 |
| B966A14500     | B967A14500    | 14,500 | .5709 | —        | —         | 2,5 | 48 | 16 |
| B966A14700     | —             | 14,700 | .5787 | —        | —         | 2,5 | 48 | 16 |
| B966A14800     | —             | 14,800 | .5827 | —        | —         | 2,6 | 48 | 16 |
| B966A15000     | B967A15000    | 15,000 | .5906 | —        | —         | 2,6 | 48 | 16 |
| —              | B967A15300    | 15,300 | .6024 | —        | —         | 2,6 | 48 | 16 |
| B966A15500     | B967A15500    | 15,500 | .6102 | —        | —         | 2,7 | 48 | 16 |
| B966A15700     | —             | 15,700 | .6181 | —        | —         | 2,7 | 48 | 16 |
| B966A16000     | B967A16000    | 16,000 | .6299 | —        | —         | 2,8 | 48 | 16 |
| B966A16500     | B967A16500    | 16,500 | .6496 | —        | —         | 2,9 | 48 | 18 |
| B966A17000     | —             | 17,000 | .6693 | —        | —         | 2,9 | 48 | 18 |
| B966A17500     | —             | 17,500 | .6890 | —        | —         | 3,0 | 48 | 18 |
| B966A18000     | —             | 18,000 | .7087 | —        | —         | 3,1 | 48 | 18 |
| B966A20000     | —             | 20,000 | .7874 | —        | —         | 3,5 | 50 | 20 |

## Tolerance • Metric

| nominal size range | D1 tolerance m7 | D tolerance h6 |
|--------------------|-----------------|----------------|
| >3–6               | 0,004/0,016     | 0,000/-0,008   |
| >6–10              | 0,006/0,021     | 0,000/-0,009   |
| >10–18             | 0,007/0,025     | 0,000/-0,011   |
| >18–25,4           | 0,008/0,029     | 0,000/-0,013   |

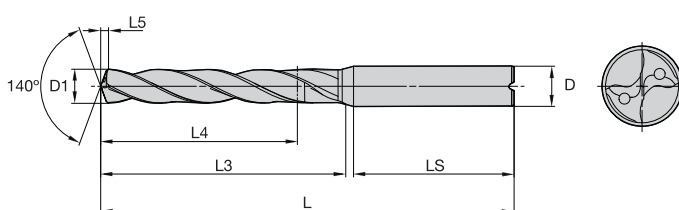
## Tolerance • Inch

| nominal size range | D1 tolerance m7 | D tolerance h6 |
|--------------------|-----------------|----------------|
| >.1181–.2362       | .0002/.0006     | .0000/-0.0003  |
| >.2362–.3937       | .0002/.0008     | .0000/-0.0004  |
| >.3937–.7087       | .0003/.0010     | .0000/-0.0004  |
| >.7087–1.0000      | .0003/.0011     | .0000/-0.0005  |

■ Kenna Universal™ Drills • B966, B967 Series • Grade KC7315™ • Flood Coolant •  
Drill Diameters 3–20mm (.1181–.7874")

| Material Group |                    |  |                |     |  |           |           |           |           |           |           |           |           |
|----------------|--------------------|-----------------------------------------------------------------------------------|----------------|-----|------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                |                    | Cutting Speed — vc                                                                |                |     | Metric                                                                             |           |           |           |           |           |           |           |           |
|                |                    | Range — m/min                                                                     |                |     | Recommended Feed Rate (f) by Diameter                                              |           |           |           |           |           |           |           |           |
|                |                    | min                                                                               | Starting Value | max |                                                                                    | 3,0       | 4,0       | 6,0       | 8,0       | 10,0      | 12,0      | 16,0      | 20,0      |
| P              | 0                  | 70                                                                                | 90             | 115 | mm/r                                                                               | 0,05–0,11 | 0,08–0,14 | 0,09–0,19 | 0,11–0,22 | 0,13–0,26 | 0,15–0,30 | 0,19–0,36 | 0,24–0,46 |
|                | 1                  | 60                                                                                | 70             | 100 | mm/r                                                                               | 0,06–0,13 | 0,09–0,16 | 0,11–0,22 | 0,13–0,26 | 0,15–0,31 | 0,18–0,35 | 0,22–0,42 | 0,28–0,54 |
|                | 2                  | 80                                                                                | 90             | 100 | mm/r                                                                               | 0,06–0,13 | 0,08–0,16 | 0,12–0,22 | 0,14–0,26 | 0,17–0,31 | 0,20–0,35 | 0,24–0,42 | 0,31–0,53 |
|                | 3                  | 50                                                                                | 70             | 90  | mm/r                                                                               | 0,07–0,15 | 0,09–0,17 | 0,13–0,23 | 0,15–0,28 | 0,19–0,33 | 0,22–0,38 | 0,26–0,47 | 0,34–0,59 |
|                | 4                  | 50                                                                                | 70             | 100 | mm/r                                                                               | 0,06–0,15 | 0,08–0,17 | 0,12–0,23 | 0,14–0,28 | 0,17–0,33 | 0,19–0,38 | 0,23–0,47 | 0,29–0,59 |
|                | 5                  | 40                                                                                | 50             | 70  | mm/r                                                                               | 0,06–0,12 | 0,08–0,14 | 0,10–0,18 | 0,12–0,22 | 0,16–0,26 | 0,18–0,28 | 0,22–0,36 | 0,26–0,42 |
| M              | 6                  | 30                                                                                | 40             | 60  | mm/r                                                                               | 0,05–0,07 | 0,06–0,10 | 0,08–0,14 | 0,10–0,18 | 0,12–0,22 | 0,14–0,24 | 0,18–0,32 | 0,23–0,41 |
|                | 1                  | 30                                                                                | 40             | 50  | mm/r                                                                               | 0,04–0,07 | 0,05–0,09 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 | 0,16–0,20 |
|                | 2                  | 40                                                                                | 50             | 60  | mm/r                                                                               | 0,04–0,08 | 0,06–0,10 | 0,08–0,12 | 0,09–0,14 | 0,10–0,16 | 0,12–0,18 | 0,14–0,20 | 0,16–0,22 |
| K              | 3                  | 30                                                                                | 40             | 50  | mm/r                                                                               | 0,04–0,07 | 0,06–0,09 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 | 0,16–0,20 |
|                | 1                  | 80                                                                                | 130            | 170 | mm/r                                                                               | 0,11–0,22 | 0,12–0,24 | 0,16–0,31 | 0,20–0,38 | 0,23–0,44 | 0,25–0,49 | 0,31–0,66 | 0,38–0,67 |
|                | 2                  | 90                                                                                | 110            | 120 | mm/r                                                                               | 0,10–0,17 | 0,12–0,19 | 0,16–0,25 | 0,20–0,31 | 0,23–0,36 | 0,25–0,40 | 0,31–0,48 | 0,38–0,60 |
| N              | 3                  | 80                                                                                | 110            | 130 | mm/r                                                                               | 0,07–0,15 | 0,09–0,19 | 0,12–0,25 | 0,14–0,30 | 0,17–0,35 | 0,19–0,40 | 0,25–0,48 | 0,30–0,60 |
|                | 1                  | 90                                                                                | 230            | 270 | mm/r                                                                               | 0,08–0,14 | 0,10–0,16 | 0,12–0,20 | 0,16–0,24 | 0,20–0,28 | 0,24–0,32 | 0,28–0,40 | 0,32–0,48 |
|                | 2                  | 90                                                                                | 220            | 270 | mm/r                                                                               | 0,08–0,16 | 0,10–0,20 | 0,12–0,24 | 0,16–0,28 | 0,20–0,32 | 0,24–0,36 | 0,28–0,44 | 0,32–0,52 |
|                | 3                  | 90                                                                                | 180            | 225 | mm/r                                                                               | 0,12–0,14 | 0,13–0,16 | 0,14–0,20 | 0,16–0,24 | 0,20–0,28 | 0,24–0,32 | 0,28–0,40 | 0,32–0,44 |
| S              | 4                  | 90                                                                                | 130            | 270 | mm/r                                                                               | 0,08–0,16 | 0,10–0,20 | 0,12–0,24 | 0,16–0,28 | 0,20–0,32 | 0,24–0,36 | 0,28–0,40 | 0,32–0,48 |
|                | 1                  | 20                                                                                | 25             | 30  | mm/r                                                                               | 0,03–0,06 | 0,04–0,08 | 0,06–0,10 | 0,08–0,12 | 0,09–0,13 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 |
|                | 2                  | 10                                                                                | 20             | 30  | mm/r                                                                               | 0,02–0,04 | 0,03–0,06 | 0,05–0,08 | 0,07–0,10 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,11–0,16 |
|                | 3                  | 20                                                                                | 25             | 40  | mm/r                                                                               | 0,02–0,04 | 0,02–0,05 | 0,04–0,07 | 0,06–0,09 | 0,07–0,10 | 0,08–0,11 | 0,09–0,13 | 0,10–0,15 |
| S              | 4                  | 20                                                                                | 25             | 50  | mm/r                                                                               | 0,02–0,04 | 0,03–0,06 | 0,05–0,08 | 0,07–0,10 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,11–0,16 |
|                | Cutting Speed — vc |                                                                                   |                |     | Inch                                                                               |           |           |           |           |           |           |           |           |
|                | Range — SFM        |                                                                                   |                |     | Recommended Feed Rate (fz) by Diameter                                             |           |           |           |           |           |           |           |           |
|                | min                | Starting Value                                                                    | max            |     | 1/8 .125                                                                           | 3/16 .188 | 1/4 .250  | 5/16 .313 | 3/8 .375  | 1/2 .500  | 5/8 .625  | 3/4 .750  |           |
| P              | 0                  | 230                                                                               | 300            | 380 | IPR                                                                                | .002–.004 | .003–.005 | .004–.007 | .004–.009 | .005–.010 | .006–.012 | .007–.014 | .009–.018 |
|                | 1                  | 200                                                                               | 230            | 330 | IPR                                                                                | .002–.005 | .004–.006 | .004–.009 | .005–.010 | .006–.012 | .007–.014 | .009–.017 | .011–.021 |
|                | 2                  | 260                                                                               | 300            | 330 | IPR                                                                                | .002–.005 | .003–.006 | .005–.009 | .006–.010 | .007–.012 | .008–.014 | .009–.017 | .012–.021 |
|                | 3                  | 160                                                                               | 230            | 300 | IPR                                                                                | .003–.006 | .004–.007 | .005–.009 | .006–.011 | .008–.013 | .009–.015 | .010–.019 | .013–.023 |
|                | 4                  | 160                                                                               | 230            | 330 | IPR                                                                                | .002–.006 | .003–.007 | .005–.009 | .006–.011 | .007–.013 | .008–.015 | .009–.019 | .011–.023 |
|                | 5                  | 130                                                                               | 160            | 230 | IPR                                                                                | .002–.005 | .003–.006 | .004–.007 | .005–.009 | .006–.010 | .007–.011 | .009–.014 | .010–.017 |
| M              | 6                  | 100                                                                               | 130            | 200 | IPR                                                                                | .002–.003 | .002–.004 | .003–.006 | .004–.007 | .005–.009 | .006–.009 | .007–.013 | .009–.016 |
|                | 1                  | 100                                                                               | 130            | 160 | IPR                                                                                | .002–.003 | .002–.004 | .003–.004 | .004–.005 | .004–.006 | .005–.006 | .006–.007 | .006–.008 |
|                | 2                  | 130                                                                               | 160            | 200 | IPR                                                                                | .002–.003 | .002–.004 | .003–.005 | .004–.006 | .004–.006 | .005–.007 | .006–.008 | .006–.009 |
| K              | 3                  | 100                                                                               | 130            | 160 | IPR                                                                                | .002–.003 | .002–.004 | .003–.004 | .004–.005 | .004–.006 | .005–.006 | .006–.007 | .006–.008 |
|                | 1                  | 260                                                                               | 430            | 560 | IPR                                                                                | .004–.009 | .005–.009 | .006–.012 | .008–.015 | .009–.017 | .010–.019 | .012–.022 | .015–.019 |
|                | 2                  | 300                                                                               | 360            | 390 | IPR                                                                                | .004–.007 | .005–.008 | .006–.010 | .008–.012 | .009–.014 | .010–.016 | .012–.019 | .015–.024 |
| N              | 3                  | 260                                                                               | 360            | 430 | IPR                                                                                | .003–.006 | .004–.008 | .005–.010 | .006–.012 | .007–.014 | .008–.016 | .010–.019 | .012–.024 |
|                | 1                  | 300                                                                               | 750            | 890 | IPR                                                                                | .003–.006 | .004–.006 | .005–.008 | .006–.009 | .008–.011 | .009–.013 | .011–.016 | .013–.019 |
|                | 2                  | 300                                                                               | 720            | 890 | IPR                                                                                | .003–.006 | .004–.008 | .005–.009 | .006–.011 | .008–.013 | .009–.014 | .011–.017 | .013–.021 |
|                | 3                  | 300                                                                               | 590            | 740 | IPR                                                                                | .005–.006 | .005–.006 | .006–.008 | .006–.009 | .008–.011 | .009–.013 | .011–.016 | .013–.017 |
| S              | 4                  | 300                                                                               | 430            | 890 | IPR                                                                                | .003–.006 | .004–.008 | .005–.009 | .006–.011 | .008–.013 | .009–.014 | .011–.016 | .013–.019 |
|                | 1                  | 70                                                                                | 80             | 100 | IPR                                                                                | .001–.002 | .002–.003 | .002–.004 | .003–.005 | .004–.005 | .004–.006 | .005–.006 | .006–.007 |
|                | 2                  | 30                                                                                | 70             | 100 | IPR                                                                                | .001–.002 | .001–.002 | .002–.003 | .003–.004 | .003–.004 | .004–.005 | .004–.006 | .004–.006 |
|                | 3                  | 70                                                                                | 80             | 130 | IPR                                                                                | .001–.002 | .001–.002 | .002–.003 | .002–.004 | .003–.004 | .003–.004 | .004–.005 | .004–.006 |
| S              | 4                  | 70                                                                                | 80             | 160 | IPR                                                                                | .001–.002 | .001–.002 | .002–.003 | .003–.004 | .003–.004 | .004–.005 | .004–.006 | .004–.006 |

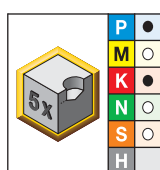
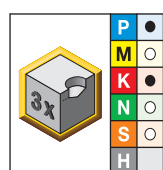




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.



### ■ B976A/B977A • ~3 x D/~5 x D



● first choice

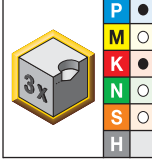
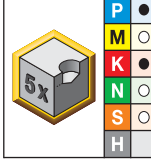
○ alternate choice

|                |               | D1 diameter |       |          |           | L5  | LS | D |
|----------------|---------------|-------------|-------|----------|-----------|-----|----|---|
| short • KC7315 | long • KC7315 | mm          | in    | fraction | wire size |     |    |   |
| B976Z02383     | —             | 2,383       | .0938 | 3/32     | —         | 0,4 | 28 | 3 |
| B976Z02400     | —             | 2,400       | .0945 | —        | —         | 0,4 | 28 | 3 |
| B976Z02439     | —             | 2,439       | .0960 | —        | 41        | 0,4 | 28 | 3 |
| B976Z02489     | —             | 2,489       | .0980 | —        | 40        | 0,4 | 28 | 3 |
| B976Z02500     | —             | 2,500       | .0984 | —        | —         | 0,4 | 28 | 3 |
| B976Z02578     | —             | 2,578       | .1015 | —        | 38        | 0,4 | 28 | 3 |
| B976Z02600     | —             | 2,600       | .1024 | —        | —         | 0,4 | 28 | 3 |
| B976Z02642     | —             | 2,642       | .1040 | —        | 37        | 0,4 | 28 | 3 |
| B976Z02705     | —             | 2,705       | .1065 | —        | 36        | 0,4 | 28 | 3 |
| B976Z02779     | —             | 2,779       | .1094 | 7/64     | —         | 0,4 | 28 | 3 |
| B976Z02800     | —             | 2,800       | .1102 | —        | —         | 0,5 | 28 | 3 |
| B976Z02820     | —             | 2,820       | .1110 | —        | 34        | 0,5 | 28 | 3 |
| B976Z02870     | —             | 2,870       | .1130 | —        | 33        | 0,5 | 28 | 3 |
| B976Z02900     | —             | 2,900       | .1142 | —        | —         | 0,5 | 28 | 3 |
| B976Z02947 *   | —             | 2,947       | .1160 | —        | 32        | 0,5 | 28 | 3 |
| B976A03000     | B977A03000    | 3,000       | .1181 | —        | —         | 0,5 | 36 | 6 |
| B976A03100     | B977A03100    | 3,100       | .1220 | —        | —         | 0,5 | 36 | 6 |
| B976A03175     | B977A03175    | 3,175       | .1250 | 1/8      | —         | 0,5 | 36 | 6 |
| B976A03180     | —             | 3,180       | .1252 | —        | —         | 0,5 | 36 | 6 |
| B976A03200     | B977A03200    | 3,200       | .1260 | —        | —         | 0,5 | 36 | 6 |
| —              | B977A03250    | 3,250       | .1280 | —        | —         | 0,5 | 36 | 6 |
| B976A03300     | B977A03300    | 3,300       | .1299 | —        | —         | 0,5 | 36 | 6 |
| —              | B977A03400    | 3,400       | .1339 | —        | —         | 0,6 | 36 | 6 |
| B976A03454     | B977A03454    | 3,454       | .1360 | —        | 29        | 0,6 | 36 | 6 |
| B976A03500     | B977A03500    | 3,500       | .1378 | —        | —         | 0,6 | 36 | 6 |
| B976A03600     | B977A03600    | 3,600       | .1417 | —        | —         | 0,6 | 36 | 6 |
| B976A03700     | B977A03700    | 3,700       | .1457 | —        | —         | 0,6 | 36 | 6 |
| B976A03734     | B977A03734    | 3,734       | .1470 | —        | 26        | 0,6 | 36 | 6 |
| B976A03797     | B977A03797    | 3,797       | .1495 | —        | 25        | 0,6 | 36 | 6 |
| B976A03800     | B977A03800    | 3,800       | .1496 | —        | —         | 0,6 | 36 | 6 |
| B976A03900     | B977A03900    | 3,900       | .1535 | —        | —         | 0,6 | 36 | 6 |
| B976A03970     | B977A03970    | 3,970       | .1563 | 5/32     | —         | 0,7 | 36 | 6 |
| B976A04000     | B977A04000    | 4,000       | .1575 | —        | —         | 0,7 | 36 | 6 |
| B976A04039     | B977A04039    | 4,039       | .1590 | —        | 21        | 0,7 | 36 | 6 |
| B976A04100     | B977A04100    | 4,100       | .1614 | —        | —         | 0,7 | 36 | 6 |
| B976A04200     | B977A04200    | 4,200       | .1654 | —        | —         | 0,7 | 36 | 6 |

(continued)

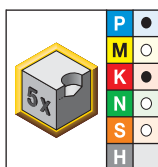
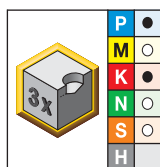


(B976A/B977A • ~3 x D/~5 x D — continued)

|   |               | D1 diameter |       |          |           | ● first choice<br>○ alternate choice |    |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------|----------|-----------|--------------------------------------|----|---|
| short • KC7315                                                                                                                                                      | long • KC7315 | mm          | in    | fraction | wire size | L5                                   | LS | D |
| B976A04300                                                                                                                                                          | B977A04300    | 4,300       | .1693 | —        | —         | 0,7                                  | 36 | 6 |
| B976A04366                                                                                                                                                          | B977A04366    | 4,366       | .1719 | 11/64    | —         | 0,7                                  | 36 | 6 |
| —                                                                                                                                                                   | B977A04400    | 4,400       | .1732 | —        | —         | 0,7                                  | 36 | 6 |
| B976A04496                                                                                                                                                          | B977A04496    | 4,496       | .1770 | —        | 16        | 0,7                                  | 36 | 6 |
| B976A04500                                                                                                                                                          | B977A04500    | 4,500       | .1772 | —        | —         | 0,7                                  | 36 | 6 |
| —                                                                                                                                                                   | B977A04580    | 4,580       | .1803 | —        | 15        | 0,8                                  | 36 | 6 |
| B976A04600                                                                                                                                                          | B977A04600    | 4,600       | .1811 | —        | —         | 0,8                                  | 36 | 6 |
| B976A04620                                                                                                                                                          | —             | 4,620       | .1819 | —        | —         | 0,8                                  | 36 | 6 |
| —                                                                                                                                                                   | B977A04623    | 4,623       | .1820 | —        | 14        | 0,8                                  | 36 | 6 |
| —                                                                                                                                                                   | B977A04650    | 4,650       | .1831 | —        | —         | 0,8                                  | 36 | 6 |
| B976A04700                                                                                                                                                          | B977A04700    | 4,700       | .1850 | —        | 13        | 0,8                                  | 36 | 6 |
| B976A04763                                                                                                                                                          | B977A04763    | 4,763       | .1875 | 3/16     | —         | 0,8                                  | 36 | 6 |
| B976A04800                                                                                                                                                          | B977A04800    | 4,800       | .1890 | —        | 12        | 0,8                                  | 36 | 6 |
| B976A04900                                                                                                                                                          | B977A04900    | 4,900       | .1929 | —        | —         | 0,8                                  | 36 | 6 |
| B976A05000                                                                                                                                                          | B977A05000    | 5,000       | .1969 | —        | —         | 0,8                                  | 36 | 6 |
| B976A05100                                                                                                                                                          | B977A05100    | 5,100       | .2008 | —        | —         | 0,8                                  | 36 | 6 |
| B976A05106                                                                                                                                                          | B977A05106    | 5,106       | .2010 | —        | 7         | 0,8                                  | 36 | 6 |
| B976A05200                                                                                                                                                          | B977A05200    | 5,200       | .2047 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05250                                                                                                                                                          | —             | 5,250       | .2067 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05300                                                                                                                                                          | B977A05300    | 5,300       | .2087 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05400                                                                                                                                                          | B977A05400    | 5,400       | .2126 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05410                                                                                                                                                          | B977A05410    | 5,410       | .2130 | —        | 3         | 0,9                                  | 36 | 6 |
| B976A05500                                                                                                                                                          | B977A05500    | 5,500       | .2165 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05530                                                                                                                                                          | —             | 5,530       | .2177 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05558                                                                                                                                                          | B977A05558    | 5,558       | .2188 | 7/32     | —         | 0,9                                  | 36 | 6 |
| B976A05575                                                                                                                                                          | —             | 5,575       | .2195 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05600                                                                                                                                                          | B977A05600    | 5,600       | .2205 | —        | —         | 0,9                                  | 36 | 6 |
| B976A05700                                                                                                                                                          | B977A05700    | 5,700       | .2244 | —        | —         | 1,0                                  | 36 | 6 |
| B976A05791                                                                                                                                                          | B977A05791    | 5,791       | .2280 | —        | 1         | 1,0                                  | 36 | 6 |
| B976A05800                                                                                                                                                          | B977A05800    | 5,800       | .2283 | —        | —         | 1,0                                  | 36 | 6 |
| —                                                                                                                                                                   | B977A05900    | 5,900       | .2323 | —        | —         | 1,0                                  | 36 | 6 |
| B976A05944                                                                                                                                                          | B977A05944    | 5,944       | .2340 | —        | —         | 1,0                                  | 36 | 6 |
| B976A06000                                                                                                                                                          | B977A06000    | 6,000       | .2362 | —        | —         | 1,0                                  | 36 | 6 |
| B976A06100                                                                                                                                                          | B977A06100    | 6,100       | .2402 | —        | —         | 1,0                                  | 36 | 8 |
| —                                                                                                                                                                   | B977A06150    | 6,150       | .2421 | —        | —         | 1,0                                  | 36 | 8 |
| B976A06200                                                                                                                                                          | B977A06200    | 6,200       | .2441 | —        | —         | 1,0                                  | 36 | 8 |
| —                                                                                                                                                                   | B977A06300    | 6,300       | .2480 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06350                                                                                                                                                          | B977A06350    | 6,350       | .2500 | 1/4      | —         | 1,1                                  | 36 | 8 |
| —                                                                                                                                                                   | B977A06400    | 6,400       | .2520 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06500                                                                                                                                                          | B977A06500    | 6,500       | .2559 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06528                                                                                                                                                          | B977A06528    | 6,528       | .2570 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06530                                                                                                                                                          | —             | 6,530       | .2571 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06600                                                                                                                                                          | B977A06600    | 6,600       | .2598 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06700                                                                                                                                                          | B977A06700    | 6,700       | .2638 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06746                                                                                                                                                          | —             | 6,746       | .2656 | 17/64    | —         | 1,1                                  | 36 | 8 |
| B976A06750                                                                                                                                                          | —             | 6,750       | .2657 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06800                                                                                                                                                          | B977A06800    | 6,800       | .2677 | —        | —         | 1,1                                  | 36 | 8 |
| B976A06900                                                                                                                                                          | B977A06900    | 6,900       | .2717 | —        | —         | 1,2                                  | 36 | 8 |
| B976A06909                                                                                                                                                          | B977A06909    | 6,909       | .2720 | —        | —         | 1,2                                  | 36 | 8 |
| B976A07000                                                                                                                                                          | B977A07000    | 7,000       | .2756 | —        | —         | 1,2                                  | 36 | 8 |
| B976A07100                                                                                                                                                          | B977A07100    | 7,100       | .2795 | —        | —         | 1,2                                  | 36 | 8 |
| B976A07145                                                                                                                                                          | B977A07145    | 7,145       | .2813 | 9/32     | —         | 1,2                                  | 36 | 8 |

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



● first choice

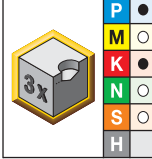
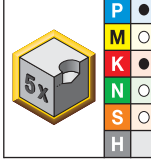
○ alternate choice

D1 diameter

| short • KC7315 | long • KC7315 | mm     | in    | fraction | wire size | L5  | LS | D  |
|----------------|---------------|--------|-------|----------|-----------|-----|----|----|
| B976A07200     | B977A07200    | 7,200  | .2835 | —        | —         | 1,2 | 36 | 8  |
| B976A07300     | B977A07300    | 7,300  | .2874 | —        | —         | 1,2 | 36 | 8  |
| B976A07366     | B977A07366    | 7,366  | .2900 | —        | —         | 1,2 | 36 | 8  |
| B976A07400     | B977A07400    | 7,400  | .2913 | —        | —         | 1,3 | 36 | 8  |
| B976A07500     | B977A07500    | 7,500  | .2953 | —        | —         | 1,3 | 36 | 8  |
| B976A07541     | B977A07541    | 7,541  | .2969 | 19/64    | —         | 1,3 | 36 | 8  |
| B976A07600     | B977A07600    | 7,600  | .2992 | —        | —         | 1,3 | 36 | 8  |
| B976A07700     | B977A07700    | 7,700  | .3031 | —        | —         | 1,3 | 36 | 8  |
| B976A07800     | B977A07800    | 7,800  | .3071 | —        | —         | 1,3 | 36 | 8  |
| B976A07900     | B977A07900    | 7,900  | .3110 | —        | —         | 1,3 | 36 | 8  |
| B976A07938     | B977A07938    | 7,938  | .3125 | 5/16     | —         | 1,3 | 36 | 8  |
| B976A08000     | B977A08000    | 8,000  | .3150 | —        | —         | 1,4 | 36 | 8  |
| B976A08020     | B977A08020    | 8,020  | .3157 | —        | —         | 1,4 | 40 | 10 |
| B976A08100     | B977A08100    | 8,100  | .3189 | —        | —         | 1,4 | 40 | 10 |
| B976A08200     | B977A08200    | 8,200  | .3228 | —        | —         | 1,4 | 40 | 10 |
| B976A08300     | B977A08300    | 8,300  | .3268 | —        | —         | 1,4 | 40 | 10 |
| B976A08334     | B977A08334    | 8,334  | .3281 | 21/64    | —         | 1,4 | 40 | 10 |
| —              | B977A08400    | 8,400  | .3307 | —        | —         | 1,4 | 40 | 10 |
| B976A08430     | —             | 8,430  | .3319 | —        | —         | 1,4 | 40 | 10 |
| B976A08433     | B977A08433    | 8,433  | .3320 | —        | —         | 1,4 | 40 | 10 |
| B976A08500     | B977A08500    | 8,500  | .3346 | —        | —         | 1,4 | 40 | 10 |
| B976A08600     | B977A08600    | 8,600  | .3386 | —        | —         | 1,5 | 40 | 10 |
| B976A08700     | B977A08700    | 8,700  | .3425 | —        | —         | 1,5 | 40 | 10 |
| B976A08733     | B977A08733    | 8,733  | .3438 | 11/32    | —         | 1,5 | 40 | 10 |
| B976A08800     | B977A08800    | 8,800  | .3465 | —        | —         | 1,5 | 40 | 10 |
| B976A08839     | B977A08839    | 8,839  | .3480 | —        | —         | 1,5 | 40 | 10 |
| —              | B977A08900    | 8,900  | .3504 | —        | —         | 1,5 | 40 | 10 |
| B976A09000     | B977A09000    | 9,000  | .3543 | —        | —         | 1,5 | 40 | 10 |
| B976A09093     | B977A09093    | 9,093  | .3580 | —        | —         | 1,5 | 40 | 10 |
| B976A09100     | B977A09100    | 9,100  | .3583 | —        | —         | 1,5 | 40 | 10 |
| B976A09129     | B977A09129    | 9,129  | .3594 | 23/64    | —         | 1,6 | 40 | 10 |
| B976A09200     | B977A09200    | 9,200  | .3622 | —        | —         | 1,6 | 40 | 10 |
| B976A09300     | B977A09300    | 9,300  | .3661 | —        | —         | 1,6 | 40 | 10 |
| —              | B977A09347    | 9,347  | .3680 | —        | —         | 1,6 | 40 | 10 |
| B976A09400     | B977A09400    | 9,400  | .3701 | —        | —         | 1,6 | 40 | 10 |
| B976A09500     | B977A09500    | 9,500  | .3740 | —        | —         | 1,6 | 40 | 10 |
| B976A09525     | B977A09525    | 9,525  | .3750 | 3/8      | —         | 1,6 | 40 | 10 |
| B976A09600     | B977A09600    | 9,600  | .3780 | —        | —         | 1,6 | 40 | 10 |
| B976A09700     | B977A09700    | 9,700  | .3819 | —        | —         | 1,7 | 40 | 10 |
| —              | B977A09746    | 9,746  | .3837 | —        | —         | 1,7 | 40 | 10 |
| B976A09750     | —             | 9,750  | .3839 | —        | —         | 1,7 | 40 | 10 |
| B976A09800     | B977A09800    | 9,800  | .3858 | —        | —         | 1,7 | 40 | 10 |
| —              | B977A09900    | 9,900  | .3898 | —        | —         | 1,7 | 40 | 10 |
| B976A09921     | B977A09921    | 9,921  | .3906 | 25/64    | —         | 1,7 | 40 | 10 |
| B976A10000     | B977A10000    | 10,000 | .3937 | —        | —         | 1,7 | 40 | 10 |
| —              | B977A10100    | 10,100 | .3976 | —        | —         | 1,7 | 45 | 12 |
| B976A10200     | B977A10200    | 10,200 | .4016 | —        | —         | 1,7 | 45 | 12 |
| B976A10262     | B977A10262    | 10,262 | .4040 | —        | —         | 1,8 | 45 | 12 |
| B976A10300     | B977A10300    | 10,300 | .4055 | —        | —         | 1,8 | 45 | 12 |
| B976A10320     | B977A10320    | 10,320 | .4063 | 13/32    | —         | 1,8 | 45 | 12 |
| B976A10400     | B977A10400    | 10,400 | .4094 | —        | —         | 1,8 | 45 | 12 |
| B976A10500     | B977A10500    | 10,500 | .4134 | —        | —         | 1,8 | 45 | 12 |

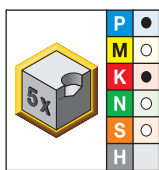
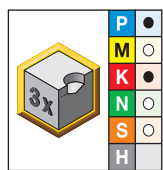
(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)

|   |               | D1 diameter |       |          |           |     |    |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------|----------|-----------|-----|----|----|
| short • KC7315                                                                                                                                                      | long • KC7315 | mm          | in    | fraction | wire size | L5  | LS | D  |
| B976A10600                                                                                                                                                          | B977A10600    | 10,600      | .4173 | —        | —         | 1,8 | 45 | 12 |
| B976A10700                                                                                                                                                          | B977A10700    | 10,700      | .4213 | —        | —         | 1,8 | 45 | 12 |
| B976A10716                                                                                                                                                          | B977A10716    | 10,716      | .4219 | 27/64    | —         | 1,8 | 45 | 12 |
| B976A10800                                                                                                                                                          | B977A10800    | 10,800      | .4252 | —        | —         | 1,8 | 45 | 12 |
| —                                                                                                                                                                   | B977A10900    | 10,900      | .4291 | —        | —         | 1,9 | 45 | 12 |
| B976A11000                                                                                                                                                          | B977A11000    | 11,000      | .4331 | —        | —         | 1,9 | 45 | 12 |
| —                                                                                                                                                                   | B977A11100    | 11,100      | .4370 | —        | —         | 1,9 | 45 | 12 |
| B976A11113                                                                                                                                                          | B977A11113    | 11,113      | .4375 | 7/16     | —         | 1,9 | 45 | 12 |
| B976A11200                                                                                                                                                          | B977A11200    | 11,200      | .4409 | —        | —         | 1,9 | 45 | 12 |
| B976A11300                                                                                                                                                          | B977A11300    | 11,300      | .4449 | —        | —         | 1,9 | 45 | 12 |
| —                                                                                                                                                                   | B977A11400    | 11,400      | .4488 | —        | —         | 2,0 | 45 | 12 |
| B976A11500                                                                                                                                                          | B977A11500    | 11,500      | .4528 | —        | —         | 2,0 | 45 | 12 |
| B976A11509                                                                                                                                                          | B977A11509    | 11,509      | .4531 | 29/64    | —         | 2,0 | 45 | 12 |
| B976A11600                                                                                                                                                          | B977A11600    | 11,600      | .4567 | —        | —         | 2,0 | 45 | 12 |
| B976A11700                                                                                                                                                          | B977A11700    | 11,700      | .4606 | —        | —         | 2,0 | 45 | 12 |
| B976A11800                                                                                                                                                          | B977A11800    | 11,800      | .4646 | —        | —         | 2,0 | 45 | 12 |
| —                                                                                                                                                                   | B977A11900    | 11,900      | .4685 | —        | —         | 2,0 | 45 | 12 |
| B976A11908                                                                                                                                                          | B977A11908    | 11,908      | .4688 | 15/32    | —         | 2,0 | 45 | 12 |
| B976A12000                                                                                                                                                          | B977A12000    | 12,000      | .4724 | —        | —         | 2,1 | 45 | 12 |
| —                                                                                                                                                                   | B977A12100    | 12,100      | .4764 | —        | —         | 2,1 | 45 | 14 |
| —                                                                                                                                                                   | B977A12200    | 12,200      | .4803 | —        | —         | 2,1 | 45 | 14 |
| B976A12300                                                                                                                                                          | B977A12300    | 12,300      | .4843 | —        | —         | 2,1 | 45 | 14 |
| B976A12304                                                                                                                                                          | B977A12304    | 12,304      | .4844 | 31/64    | —         | 2,1 | 45 | 14 |
| —                                                                                                                                                                   | B977A12400    | 12,400      | .4882 | —        | —         | 2,1 | 45 | 14 |
| B976A12500                                                                                                                                                          | B977A12500    | 12,500      | .4921 | —        | —         | 2,1 | 45 | 14 |
| —                                                                                                                                                                   | B977A12600    | 12,600      | .4961 | —        | —         | 2,2 | 45 | 14 |
| B976A12700                                                                                                                                                          | B977A12700    | 12,700      | .5000 | 1/2      | —         | 2,2 | 45 | 14 |
| B976A12800                                                                                                                                                          | B977A12800    | 12,800      | .5039 | —        | —         | 2,2 | 45 | 14 |
| —                                                                                                                                                                   | B977A12900    | 12,900      | .5079 | —        | —         | 2,2 | 45 | 14 |
| B976A13000                                                                                                                                                          | B977A13000    | 13,000      | .5118 | —        | —         | 2,2 | 45 | 14 |
| —                                                                                                                                                                   | B977A13096    | 13,096      | .5156 | 33/64    | —         | 2,3 | 45 | 14 |
| —                                                                                                                                                                   | B977A13100    | 13,100      | .5157 | —        | —         | 2,3 | 45 | 14 |
| —                                                                                                                                                                   | B977A13200    | 13,200      | .5197 | —        | —         | 2,3 | 45 | 14 |
| B976A13300                                                                                                                                                          | B977A13300    | 13,300      | .5236 | —        | —         | 2,3 | 45 | 14 |
| B976A13495                                                                                                                                                          | B977A13495    | 13,495      | .5313 | 17/32    | —         | 2,3 | 45 | 14 |
| B976A13500                                                                                                                                                          | B977A13500    | 13,500      | .5315 | —        | —         | 2,3 | 45 | 14 |
| B976A13700                                                                                                                                                          | B977A13700    | 13,700      | .5394 | —        | —         | 2,4 | 45 | 14 |
| —                                                                                                                                                                   | B977A13800    | 13,800      | .5433 | —        | —         | 2,4 | 45 | 14 |
| B976A14000                                                                                                                                                          | B977A14000    | 14,000      | .5512 | —        | —         | 2,4 | 45 | 14 |
| B976A14100                                                                                                                                                          | B977A14100    | 14,100      | .5551 | —        | —         | 2,4 | 48 | 16 |
| B976A14200                                                                                                                                                          | B977A14200    | 14,200      | .5591 | —        | —         | 2,5 | 48 | 16 |
| B976A14288                                                                                                                                                          | B977A14288    | 14,288      | .5625 | 9/16     | —         | 2,5 | 48 | 16 |
| B976A14500                                                                                                                                                          | B977A14500    | 14,500      | .5709 | —        | —         | 2,5 | 48 | 16 |
| —                                                                                                                                                                   | B977A14600    | 14,600      | .5748 | —        | —         | 2,5 | 48 | 16 |
| B976A14700                                                                                                                                                          | B977A14700    | 14,700      | .5787 | —        | —         | 2,5 | 48 | 16 |
| —                                                                                                                                                                   | B977A14900    | 14,900      | .5866 | —        | —         | 2,6 | 48 | 16 |
| B976A15000                                                                                                                                                          | B977A15000    | 15,000      | .5906 | —        | —         | 2,6 | 48 | 16 |
| —                                                                                                                                                                   | B977A15100    | 15,100      | .5945 | —        | —         | 2,6 | 48 | 16 |
| —                                                                                                                                                                   | B977A15200    | 15,200      | .5984 | —        | —         | 2,6 | 48 | 16 |
| —                                                                                                                                                                   | B977A15300    | 15,300      | .6024 | —        | —         | 2,6 | 48 | 16 |
| B976A15500                                                                                                                                                          | B977A15500    | 15,500      | .6102 | —        | —         | 2,7 | 48 | 16 |
| —                                                                                                                                                                   | B977A15700    | 15,700      | .6181 | —        | —         | 2,7 | 48 | 16 |

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)

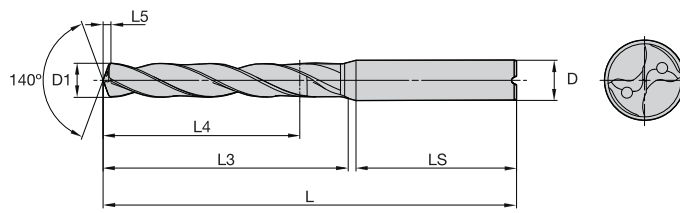


● first choice

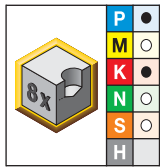
○ alternate choice

|                |               | D1 diameter |       |          |           |     |    |    |
|----------------|---------------|-------------|-------|----------|-----------|-----|----|----|
| short • KC7315 | long • KC7315 | mm          | in    | fraction | wire size | L5  | LS | D  |
| —              | B977A15800    | 15,800      | .6220 | —        | —         | 2,7 | 48 | 16 |
| B976A15875     | B977A15875    | 15,875      | .6250 | 5/8      | —         | 2,7 | 48 | 16 |
| —              | B977A15900    | 15,900      | .6260 | —        | —         | 2,8 | 48 | 16 |
| B976A16000     | B977A16000    | 16,000      | .6299 | —        | —         | 2,8 | 48 | 16 |
| —              | B977A16078    | 16,078      | .6330 | —        | —         | 2,8 | 48 | 18 |
| B976A16200     | B977A16200    | 16,200      | .6378 | —        | —         | 2,8 | 48 | 18 |
| —              | B977A16300    | 16,300      | .6417 | —        | —         | 2,8 | 48 | 18 |
| —              | B977A16400    | 16,400      | .6457 | —        | —         | 2,8 | 48 | 18 |
| B976A16500     | B977A16500    | 16,500      | .6496 | —        | —         | 2,9 | 48 | 18 |
| —              | B977A16600    | 16,600      | .6535 | —        | —         | 2,9 | 48 | 18 |
| B976A16670     | B977A16670    | 16,670      | .6563 | 21/32    | —         | 2,9 | 48 | 18 |
| —              | B977A16700    | 16,700      | .6575 | —        | —         | 2,9 | 48 | 18 |
| B976A16800     | —             | 16,800      | .6614 | —        | —         | 2,9 | 48 | 18 |
| B976A17000     | B977A17000    | 17,000      | .6693 | —        | —         | 2,9 | 48 | 18 |
| B976A17100     | —             | 17,100      | .6732 | —        | —         | 3,0 | 48 | 18 |
| B976A17463     | B977A17463    | 17,463      | .6875 | 11/16    | —         | 3,0 | 48 | 18 |
| B976A17500     | B977A17500    | 17,500      | .6890 | —        | —         | 3,0 | 48 | 18 |
| —              | B977A17700    | 17,700      | .6969 | —        | —         | 3,1 | 48 | 18 |
| B976A18000     | B977A18000    | 18,000      | .7087 | —        | —         | 3,1 | 48 | 18 |
| —              | B977A18400    | 18,400      | .7244 | —        | —         | 3,2 | 50 | 20 |
| B976A18500     | B977A18500    | 18,500      | .7283 | —        | —         | 3,2 | 50 | 20 |
| —              | B977A18600    | 18,600      | .7323 | —        | —         | 3,2 | 50 | 20 |
| —              | B977A18800    | 18,800      | .7402 | —        | —         | 3,3 | 50 | 20 |
| B976A19000     | B977A19000    | 19,000      | .7480 | —        | —         | 3,3 | 50 | 20 |
| B976A19050     | B977A19050    | 19,050      | .7500 | 3/4      | —         | 3,3 | 50 | 20 |
| —              | B977A19200    | 19,200      | .7559 | —        | —         | 3,3 | 50 | 20 |
| —              | B977A19253    | 19,253      | .7580 | —        | —         | 3,3 | 50 | 20 |
| —              | B977A19446    | 19,446      | .7656 | 49/64    | —         | 3,4 | 50 | 20 |
| B976A19500     | B977A19500    | 19,500      | .7677 | —        | —         | 3,4 | 50 | 20 |
| B976A19700     | B977A19700    | 19,700      | .7756 | —        | —         | 3,4 | 50 | 20 |
| B976A19840 *   | B977A19840    | 19,840      | .7811 | —        | —         | 3,5 | 50 | 20 |
| B976A20000     | B977A20000    | 20,000      | .7874 | —        | —         | 3,5 | 50 | 20 |
| —              | B977A21000    | 21,000      | .8268 | —        | —         | 3,7 | 50 | 20 |

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



## ■ B978A • ~8 x D



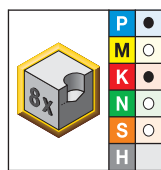
D1 diameter

- first choice
- alternate choice

| extra long • KC7315 | mm    | in    | fraction | wire size | L   | L3 | L4 max | L5  | LS | D |
|---------------------|-------|-------|----------|-----------|-----|----|--------|-----|----|---|
| B978A03000          | 3,000 | .1181 | —        | —         | 78  | 40 | 33     | 0,6 | 36 | 6 |
| B978A03300          | 3,300 | .1299 | —        | —         | 78  | 40 | 33     | 0,7 | 36 | 6 |
| B978A03400          | 3,400 | .1339 | —        | —         | 78  | 40 | 33     | 0,7 | 36 | 6 |
| B978A03600          | 3,600 | .1417 | —        | —         | 78  | 40 | 33     | 0,7 | 36 | 6 |
| B978A03700          | 3,700 | .1457 | —        | —         | 78  | 40 | 33     | 0,8 | 36 | 6 |
| B978A03800          | 3,800 | .1496 | —        | —         | 87  | 49 | 41     | 0,8 | 36 | 6 |
| B978A03970          | 3,970 | .1563 | 5/32     | —         | 87  | 49 | 41     | 0,8 | 36 | 6 |
| B978A04000          | 4,000 | .1575 | —        | —         | 87  | 49 | 41     | 0,8 | 36 | 6 |
| B978A04200          | 4,200 | .1654 | —        | —         | 87  | 49 | 41     | 0,9 | 36 | 6 |
| B978A04500          | 4,500 | .1772 | —        | —         | 87  | 49 | 41     | 0,9 | 36 | 6 |
| B978A04600          | 4,600 | .1811 | —        | —         | 87  | 49 | 41     | 0,9 | 36 | 6 |
| B978A04763          | 4,763 | .1875 | 3/16     | —         | 94  | 56 | 48     | 1,0 | 36 | 6 |
| B978A04800          | 4,800 | .1890 | —        | 12        | 94  | 56 | 48     | 1,0 | 36 | 6 |
| B978A05000          | 5,000 | .1969 | —        | —         | 94  | 56 | 48     | 1,0 | 36 | 6 |
| B978A05100          | 5,100 | .2008 | —        | —         | 94  | 56 | 48     | 1,1 | 36 | 6 |
| B978A05200          | 5,200 | .2047 | —        | —         | 94  | 56 | 48     | 1,1 | 36 | 6 |
| B978A05300          | 5,300 | .2087 | —        | —         | 94  | 56 | 48     | 1,1 | 36 | 6 |
| B978A05500          | 5,500 | .2165 | —        | —         | 94  | 56 | 48     | 1,1 | 36 | 6 |
| B978A05558          | 5,558 | .2188 | 7/32     | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A05600          | 5,600 | .2205 | —        | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A05700          | 5,700 | .2244 | —        | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A05800          | 5,800 | .2283 | —        | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A05900          | 5,900 | .2323 | —        | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A06000          | 6,000 | .2362 | —        | —         | 94  | 56 | 48     | 1,2 | 36 | 6 |
| B978A06100          | 6,100 | .2402 | —        | —         | 105 | 67 | 57     | 1,3 | 36 | 8 |
| B978A06200          | 6,200 | .2441 | —        | —         | 105 | 67 | 57     | 1,3 | 36 | 8 |
| B978A06300          | 6,300 | .2480 | —        | —         | 105 | 67 | 57     | 1,3 | 36 | 8 |
| B978A06350          | 6,350 | .2500 | 1/4      | —         | 105 | 67 | 57     | 1,3 | 36 | 8 |
| B978A06400          | 6,400 | .2520 | —        | —         | 105 | 67 | 57     | 1,3 | 36 | 8 |
| B978A06500          | 6,500 | .2559 | —        | —         | 105 | 67 | 57     | 1,4 | 36 | 8 |
| B978A06600          | 6,600 | .2598 | —        | —         | 105 | 67 | 57     | 1,4 | 36 | 8 |
| B978A06700          | 6,700 | .2638 | —        | —         | 105 | 67 | 57     | 1,4 | 36 | 8 |
| B978A06746          | 6,746 | .2656 | 17/64    | —         | 105 | 67 | 57     | 1,4 | 36 | 8 |
| B978A06800          | 6,800 | .2677 | —        | —         | 105 | 67 | 57     | 1,4 | 36 | 8 |
| B978A07000          | 7,000 | .2756 | —        | —         | 105 | 67 | 57     | 1,5 | 36 | 8 |
| B978A07145          | 7,145 | .2813 | 9/32     | —         | 110 | 72 | 61     | 1,5 | 36 | 8 |

(continued)

(B978A • ~8 x D — continued)



● first choice

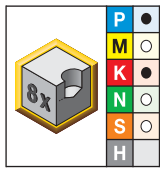
○ alternate choice

D1 diameter

| extra long • KC7315 | mm     | in    | fraction | wire size | L   | L3  | L4 max | L5  | LS | D  |
|---------------------|--------|-------|----------|-----------|-----|-----|--------|-----|----|----|
| B978A07400          | 7,400  | .2913 | —        | —         | 110 | 72  | 61     | 1,6 | 36 | 8  |
| B978A07500          | 7,500  | .2953 | —        | —         | 110 | 72  | 61     | 1,6 | 36 | 8  |
| B978A07541          | 7,541  | .2969 | 19/64    | —         | 110 | 72  | 61     | 1,6 | 36 | 8  |
| B978A07700          | 7,700  | .3031 | —        | —         | 110 | 72  | 61     | 1,6 | 36 | 8  |
| B978A07800          | 7,800  | .3071 | —        | —         | 110 | 72  | 61     | 1,6 | 36 | 8  |
| B978A07938          | 7,938  | .3125 | 5/16     | —         | 110 | 72  | 61     | 1,7 | 36 | 8  |
| B978A08000          | 8,000  | .3150 | —        | —         | 110 | 72  | 61     | 1,7 | 36 | 8  |
| B978A08100          | 8,100  | .3189 | —        | —         | 122 | 80  | 68     | 1,7 | 40 | 10 |
| B978A08200          | 8,200  | .3228 | —        | —         | 122 | 80  | 68     | 1,7 | 40 | 10 |
| B978A08334          | 8,334  | .3281 | 21/64    | —         | 122 | 80  | 68     | 1,8 | 40 | 10 |
| B978A08500          | 8,500  | .3346 | —        | —         | 122 | 80  | 68     | 1,8 | 40 | 10 |
| B978A08600          | 8,600  | .3386 | —        | —         | 122 | 80  | 68     | 1,8 | 40 | 10 |
| B978A08700          | 8,700  | .3425 | —        | —         | 122 | 80  | 68     | 1,8 | 40 | 10 |
| B978A08733          | 8,733  | .3438 | 11/32    | —         | 122 | 80  | 68     | 1,8 | 40 | 10 |
| B978A08800          | 8,800  | .3465 | —        | —         | 122 | 80  | 68     | 1,9 | 40 | 10 |
| B978A09000          | 9,000  | .3543 | —        | —         | 122 | 80  | 68     | 1,9 | 40 | 10 |
| B978A09100          | 9,100  | .3583 | —        | —         | 122 | 80  | 68     | 1,9 | 40 | 10 |
| B978A09129          | 9,129  | .3594 | 23/64    | —         | 122 | 80  | 68     | 1,9 | 40 | 10 |
| B978A09300          | 9,300  | .3661 | —        | —         | 122 | 80  | 68     | 2,0 | 40 | 10 |
| B978A09500          | 9,500  | .3740 | —        | —         | 122 | 80  | 68     | 2,0 | 40 | 10 |
| B978A09525          | 9,525  | .3750 | 3/8      | —         | 122 | 80  | 68     | 2,0 | 40 | 10 |
| B978A09700          | 9,700  | .3819 | —        | —         | 122 | 80  | 68     | 2,0 | 40 | 10 |
| B978A09750          | 9,750  | .3839 | —        | —         | 122 | 80  | 68     | 2,1 | 40 | 10 |
| B978A09800          | 9,800  | .3858 | —        | —         | 122 | 80  | 68     | 2,1 | 40 | 10 |
| B978A09900          | 9,900  | .3898 | —        | —         | 122 | 80  | 68     | 2,1 | 40 | 10 |
| B978A09921          | 9,921  | .3906 | 25/64    | —         | 122 | 80  | 68     | 2,1 | 40 | 10 |
| B978A10000          | 10,000 | .3937 | —        | —         | 122 | 80  | 68     | 2,1 | 40 | 10 |
| B978A10100          | 10,100 | .3976 | —        | —         | 141 | 94  | 79     | 2,1 | 45 | 12 |
| B978A10200          | 10,200 | .4016 | —        | —         | 141 | 94  | 79     | 2,2 | 45 | 12 |
| B978A10300          | 10,300 | .4055 | —        | —         | 141 | 94  | 79     | 2,2 | 45 | 12 |
| B978A10320          | 10,320 | .4063 | 13/32    | —         | 141 | 94  | 79     | 2,2 | 45 | 12 |
| B978A10500          | 10,500 | .4134 | —        | —         | 141 | 94  | 79     | 2,2 | 45 | 12 |
| B978A10716          | 10,716 | .4219 | 27/64    | —         | 141 | 94  | 79     | 2,3 | 45 | 12 |
| B978A10800          | 10,800 | .4252 | —        | —         | 141 | 94  | 79     | 2,3 | 45 | 12 |
| B978A11000          | 11,000 | .4331 | —        | —         | 141 | 94  | 79     | 2,3 | 45 | 12 |
| B978A11113          | 11,113 | .4375 | 7/16     | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11200          | 11,200 | .4409 | —        | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11300          | 11,300 | .4449 | —        | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11400          | 11,400 | .4488 | —        | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11500          | 11,500 | .4528 | —        | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11509          | 11,509 | .4531 | 29/64    | —         | 141 | 94  | 79     | 2,4 | 45 | 12 |
| B978A11700          | 11,700 | .4606 | —        | —         | 141 | 94  | 79     | 2,5 | 45 | 12 |
| B978A11800          | 11,800 | .4646 | —        | —         | 141 | 94  | 79     | 2,5 | 45 | 12 |
| B978A11908          | 11,908 | .4688 | 15/32    | —         | 141 | 94  | 79     | 2,5 | 45 | 12 |
| B978A12000          | 12,000 | .4724 | —        | —         | 141 | 94  | 79     | 2,5 | 45 | 12 |
| B978A12304 *        | 12,304 | .4844 | 31/64    | —         | 155 | 108 | 91     | 2,6 | 45 | 14 |
| B978A12500          | 12,500 | .4921 | —        | —         | 155 | 108 | 91     | 2,7 | 45 | 14 |
| B978A12700          | 12,700 | .5000 | 1/2      | —         | 155 | 108 | 91     | 2,7 | 45 | 14 |
| B978A12800          | 12,800 | .5039 | —        | —         | 155 | 108 | 91     | 2,7 | 45 | 14 |
| B978A13000          | 13,000 | .5118 | —        | —         | 155 | 108 | 91     | 2,8 | 45 | 14 |
| B978A13100          | 13,100 | .5157 | —        | —         | 155 | 108 | 91     | 2,8 | 45 | 14 |
| B978A13500          | 13,500 | .5315 | —        | —         | 155 | 108 | 91     | 2,9 | 45 | 14 |

(continued)

(B978A • ~8 x D — continued)



● first choice  
○ alternate choice

| extra long • KC7315 | D1 diameter |       |          |           | L   | L3  | L4 max | L5  | LS | D  |
|---------------------|-------------|-------|----------|-----------|-----|-----|--------|-----|----|----|
|                     | mm          | in    | fraction | wire size |     |     |        |     |    |    |
| B978A14000          | 14,000      | .5512 | —        | —         | 155 | 108 | 91     | 3,0 | 45 | 14 |
| B978A14288          | 14,288      | .5625 | 9/16     | —         | 171 | 121 | 101    | 3,0 | 48 | 16 |
| B978A14500          | 14,500      | .5709 | —        | —         | 171 | 121 | 101    | 3,1 | 48 | 16 |
| B978A15000          | 15,000      | .5906 | —        | —         | 171 | 121 | 101    | 3,2 | 48 | 16 |
| B978A15100          | 15,100      | .5945 | —        | —         | 171 | 121 | 101    | 3,2 | 48 | 16 |
| B978A15200          | 15,200      | .5984 | —        | —         | 171 | 121 | 101    | 3,2 | 48 | 16 |
| B978A15300          | 15,300      | .6024 | —        | —         | 171 | 121 | 101    | 3,3 | 48 | 16 |
| B978A15500          | 15,500      | .6102 | —        | —         | 171 | 121 | 101    | 3,3 | 48 | 16 |
| B978A15800          | 15,800      | .6220 | —        | —         | 171 | 121 | 101    | 3,4 | 48 | 16 |
| B978A15875          | 15,875      | .6250 | 5/8      | —         | 171 | 121 | 101    | 3,4 | 48 | 16 |
| B978A16000          | 16,000      | .6299 | —        | —         | 171 | 121 | 101    | 3,4 | 48 | 16 |
| B978A16078          | 16,078      | .6330 | —        | —         | 185 | 135 | 113    | 3,4 | 48 | 18 |
| B978A16200          | 16,200      | .6378 | —        | —         | 185 | 135 | 113    | 3,5 | 48 | 18 |
| B978A16500          | 16,500      | .6496 | —        | —         | 185 | 135 | 113    | 3,5 | 48 | 18 |
| B978A17000          | 17,000      | .6693 | —        | —         | 185 | 135 | 113    | 3,6 | 48 | 18 |
| B978A17463          | 17,463      | .6875 | 11/16    | —         | 185 | 135 | 113    | 3,7 | 48 | 18 |
| B978A17500          | 17,500      | .6890 | —        | —         | 185 | 135 | 113    | 3,7 | 48 | 18 |
| B978A18000          | 18,000      | .7087 | —        | —         | 185 | 135 | 113    | 3,9 | 48 | 18 |
| B978A18500          | 18,500      | .7283 | —        | —         | 200 | 148 | 124    | 4,0 | 50 | 20 |
| B978A19000          | 19,000      | .7480 | —        | —         | 200 | 148 | 124    | 4,1 | 50 | 20 |
| B978A19050 *        | 19,050      | .7500 | 3/4      | —         | 200 | 148 | 124    | 4,1 | 50 | 20 |
| B978A19253 *        | 19,253      | .7580 | —        | —         | 200 | 148 | 124    | 4,1 | 50 | 20 |
| B978A19500 *        | 19,500      | .7677 | —        | —         | 200 | 148 | 124    | 4,2 | 50 | 20 |
| B978A19800          | 19,800      | .7795 | —        | —         | 200 | 148 | 124    | 4,2 | 50 | 20 |
| B978A19840          | 19,840      | .7811 | —        | —         | 200 | 148 | 124    | 4,3 | 50 | 20 |
| B978A20000          | 20,000      | .7874 | —        | —         | 200 | 148 | 124    | 4,3 | 50 | 20 |

NOTE: The point angle on B978 series is 132°.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

| Tolerance • Metric |                 |                |
|--------------------|-----------------|----------------|
| nominal size range | D1 tolerance m7 | D tolerance h6 |
| >3–6               | 0,004/0,016     | 0,000/-0,008   |
| >6–10              | 0,006/0,021     | 0,000/-0,009   |
| >10–18             | 0,007/0,025     | 0,000/-0,011   |
| >18–25,4           | 0,008/0,029     | 0,000/-0,013   |

| Tolerance • Inch   |                 |                |
|--------------------|-----------------|----------------|
| nominal size range | D1 tolerance m7 | D tolerance h6 |
| >.1181–.2362       | .0002/.0006     | .0000/-0.0003  |
| >.2362–.3937       | .0002/.0008     | .0000/-0.0004  |
| >.3937–.7087       | .0003/.0010     | .0000/-0.0004  |
| >.7087–1.0000      | .0003/.0011     | .0000/-0.0005  |



■ Kenna Universal™ Drills • B97\_Series • Grade KC7315™ • Through Coolant •  
Drill Diameters 2–20mm (.0787–.7874")

Solid Carbide Drills

| Material Group |   |  |                |      |  |           |           |           |           |           |           |           |           |           |
|----------------|---|-----------------------------------------------------------------------------------|----------------|------|------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                |   | Cutting Speed — vc                                                                |                |      | Metric                                                                             |           |           |           |           |           |           |           |           |           |
|                |   | Range — m/min                                                                     |                |      | Recommended Feed Rate (f) by Diameter                                              |           |           |           |           |           |           |           |           |           |
|                |   | min                                                                               | Starting Value | max  |                                                                                    | 2,0       | 3,0       | 4,0       | 6,0       | 8,0       | 10,0      | 12,0      | 16,0      | 20,0      |
| P              | 0 | 80                                                                                | 120            | 160  | mm/r                                                                               | 0,04–0,10 | 0,06–0,12 | 0,07–0,14 | 0,09–0,19 | 0,11–0,22 | 0,13–0,26 | 0,15–0,30 | 0,19–0,36 | 0,24–0,46 |
|                | 1 | 70                                                                                | 100            | 140  | mm/r                                                                               | 0,05–0,12 | 0,07–0,14 | 0,08–0,16 | 0,11–0,22 | 0,13–0,26 | 0,15–0,31 | 0,18–0,35 | 0,22–0,42 | 0,28–0,54 |
|                | 2 | 90                                                                                | 120            | 140  | mm/r                                                                               | 0,05–0,12 | 0,07–0,14 | 0,08–0,16 | 0,12–0,22 | 0,14–0,26 | 0,17–0,31 | 0,20–0,35 | 0,24–0,42 | 0,31–0,53 |
|                | 3 | 60                                                                                | 80             | 100  | mm/r                                                                               | 0,06–0,13 | 0,08–0,15 | 0,09–0,17 | 0,13–0,23 | 0,15–0,28 | 0,19–0,33 | 0,22–0,38 | 0,26–0,47 | 0,34–0,59 |
|                | 4 | 50                                                                                | 80             | 100  | mm/r                                                                               | 0,06–0,13 | 0,07–0,15 | 0,08–0,17 | 0,12–0,23 | 0,14–0,28 | 0,17–0,33 | 0,19–0,38 | 0,23–0,47 | 0,29–0,59 |
|                | 5 | 50                                                                                | 60             | 80   | mm/r                                                                               | 0,06–0,12 | 0,08–0,13 | 0,10–0,15 | 0,12–0,19 | 0,16–0,24 | 0,20–0,27 | 0,24–0,30 | 0,28–0,38 | 0,32–0,44 |
| M              | 6 | 40                                                                                | 50             | 70   | mm/r                                                                               | 0,04–0,06 | 0,05–0,08 | 0,06–0,10 | 0,08–0,14 | 0,10–0,18 | 0,13–0,22 | 0,14–0,24 | 0,18–0,32 | 0,23–0,41 |
|                | 1 | 30                                                                                | 40             | 50   | mm/r                                                                               | 0,03–0,06 | 0,04–0,07 | 0,05–0,09 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 | 0,16–0,20 |
|                | 2 | 40                                                                                | 50             | 60   | mm/r                                                                               | 0,03–0,07 | 0,04–0,08 | 0,06–0,10 | 0,08–0,12 | 0,09–0,14 | 0,10–0,16 | 0,12–0,18 | 0,14–0,20 | 0,16–0,22 |
| K              | 3 | 30                                                                                | 40             | 50   | mm/r                                                                               | 0,03–0,06 | 0,04–0,07 | 0,05–0,09 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 | 0,16–0,20 |
|                | 1 | 80                                                                                | 120            | 170  | mm/r                                                                               | 0,09–0,17 | 0,11–0,22 | 0,12–0,24 | 0,16–0,31 | 0,20–0,38 | 0,23–0,44 | 0,25–0,49 | 0,31–0,60 | 0,38–0,74 |
|                | 2 | 80                                                                                | 110            | 140  | mm/r                                                                               | 0,11–0,15 | 0,12–0,16 | 0,13–0,19 | 0,16–0,25 | 0,20–0,31 | 0,23–0,36 | 0,25–0,40 | 0,31–0,48 | 0,38–0,60 |
| N              | 3 | 80                                                                                | 100            | 130  | mm/r                                                                               | 0,07–0,15 | 0,08–0,17 | 0,09–0,19 | 0,12–0,25 | 0,14–0,30 | 0,17–0,35 | 0,19–0,40 | 0,24–0,48 | 0,30–0,60 |
|                | 1 | 90                                                                                | 230            | 315  | mm/r                                                                               | 0,06–0,13 | 0,08–0,14 | 0,10–0,16 | 0,12–0,20 | 0,16–0,24 | 0,20–0,28 | 0,24–0,32 | 0,28–0,40 | 0,32–0,48 |
|                | 2 | 90                                                                                | 225            | 270  | mm/r                                                                               | 0,06–0,12 | 0,08–0,16 | 0,10–0,20 | 0,12–0,24 | 0,16–0,28 | 0,20–0,32 | 0,24–0,36 | 0,28–0,44 | 0,32–0,52 |
|                | 3 | 90                                                                                | 180            | 270  | mm/r                                                                               | 0,11–0,14 | 0,12–0,14 | 0,13–0,16 | 0,14–0,20 | 0,16–0,24 | 0,20–0,28 | 0,24–0,32 | 0,28–0,40 | 0,32–0,44 |
| S              | 4 | 90                                                                                | 135            | 180  | mm/r                                                                               | 0,06–0,12 | 0,08–0,16 | 0,01–0,20 | 0,12–0,24 | 0,16–0,28 | 0,20–0,32 | 0,24–0,36 | 0,28–0,40 | 0,32–0,48 |
|                | 1 | 10                                                                                | 25             | 30   | mm/r                                                                               | 0,02–0,05 | 0,03–0,06 | 0,04–0,08 | 0,06–0,10 | 0,08–0,12 | 0,09–0,13 | 0,10–0,14 | 0,12–0,16 | 0,14–0,18 |
|                | 2 | 10                                                                                | 20             | 25   | mm/r                                                                               | 0,02–0,03 | 0,02–0,04 | 0,03–0,06 | 0,05–0,08 | 0,07–0,10 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,11–0,16 |
|                | 3 | 10                                                                                | 25             | 30   | mm/r                                                                               | 0,02–0,03 | 0,02–0,04 | 0,02–0,05 | 0,04–0,07 | 0,06–0,09 | 0,07–0,10 | 0,08–0,11 | 0,09–0,13 | 0,10–0,15 |
|                | 4 | 10                                                                                | 25             | 40   | mm/r                                                                               | 0,02–0,03 | 0,02–0,04 | 0,03–0,06 | 0,05–0,08 | 0,07–0,10 | 0,08–0,11 | 0,09–0,12 | 0,10–0,14 | 0,11–0,16 |
| Material Group |   | Cutting Speed — vc                                                                |                |      | Inch                                                                               |           |           |           |           |           |           |           |           |           |
|                |   | Range — SFM                                                                       |                |      | Recommended Feed Rate (f) by Diameter                                              |           |           |           |           |           |           |           |           |           |
|                |   | min                                                                               | Starting Value | max  |                                                                                    | 5/64 .078 | 1/8 .125  | 3/16 .188 | 1/4 .250  | 5/16 .313 | 3/8 .375  | 1/2 .500  | 5/8 .625  | 3/4 .750  |
| P              | 0 | 260                                                                               | 390            | 520  | IPR                                                                                | .002-.004 | .002-.005 | .003-.005 | .004-.007 | .004-.009 | .005-.010 | .006-.012 | .007-.014 | .009-.018 |
|                | 1 | 230                                                                               | 330            | 460  | IPR                                                                                | .002-.005 | .003-.006 | .003-.006 | .004-.009 | .005-.010 | .006-.012 | .007-.014 | .009-.017 | .011-.022 |
|                | 2 | 300                                                                               | 390            | 460  | IPR                                                                                | .002-.005 | .003-.006 | .003-.006 | .005-.009 | .006-.010 | .007-.012 | .008-.014 | .009-.017 | .012-.021 |
|                | 3 | 200                                                                               | 260            | 330  | IPR                                                                                | .002-.005 | .003-.006 | .004-.007 | .005-.009 | .006-.011 | .008-.013 | .009-.015 | .010-.019 | .013-.023 |
|                | 4 | 160                                                                               | 260            | 330  | IPR                                                                                | .002-.005 | .003-.006 | .003-.007 | .005-.009 | .006-.011 | .007-.013 | .008-.015 | .009-.019 | .011-.023 |
|                | 5 | 160                                                                               | 200            | 260  | IPR                                                                                | .002-.005 | .003-.005 | .004-.006 | .005-.008 | .006-.009 | .008-.011 | .009-.012 | .011-.015 | .013-.017 |
| M              | 6 | 130                                                                               | 160            | 230  | IPR                                                                                | .002-.002 | .002-.003 | .002-.004 | .003-.006 | .004-.007 | .005-.009 | .006-.009 | .007-.013 | .009-.016 |
|                | 1 | 100                                                                               | 130            | 160  | IPR                                                                                | .001-.002 | .002-.003 | .002-.004 | .003-.004 | .004-.005 | .004-.006 | .005-.006 | .006-.007 | .006-.008 |
|                | 2 | 130                                                                               | 160            | 200  | IPR                                                                                | .001-.003 | .002-.003 | .002-.004 | .003-.005 | .004-.006 | .004-.006 | .005-.007 | .006-.008 | .006-.009 |
| K              | 3 | 100                                                                               | 130            | 160  | IPR                                                                                | .001-.002 | .002-.003 | .002-.004 | .003-.004 | .004-.005 | .004-.006 | .005-.006 | .006-.007 | .006-.008 |
|                | 1 | 260                                                                               | 390            | 560  | IPR                                                                                | .004-.007 | .004-.009 | .005-.009 | .006-.012 | .008-.015 | .009-.017 | .010-.019 | .012-.024 | .015-.029 |
|                | 2 | 260                                                                               | 360            | 460  | IPR                                                                                | .004-.006 | .005-.006 | .005-.008 | .006-.010 | .008-.012 | .009-.014 | .010-.016 | .012-.019 | .015-.024 |
| N              | 3 | 260                                                                               | 330            | 430  | IPR                                                                                | .003-.006 | .003-.007 | .004-.008 | .005-.010 | .006-.012 | .007-.014 | .008-.016 | .009-.019 | .012-.024 |
|                | 1 | 300                                                                               | 750            | 1030 | IPR                                                                                | .002-.005 | .003-.006 | .004-.006 | .005-.008 | .006-.009 | .008-.011 | .009-.013 | .011-.016 | .013-.019 |
|                | 2 | 300                                                                               | 740            | 890  | IPR                                                                                | .002-.005 | .003-.006 | .004-.008 | .005-.009 | .006-.011 | .008-.013 | .009-.014 | .011-.017 | .013-.021 |
|                | 3 | 300                                                                               | 590            | 890  | IPR                                                                                | .004-.006 | .005-.006 | .005-.006 | .006-.008 | .006-.009 | .008-.011 | .009-.013 | .011-.016 | .013-.017 |
| S              | 4 | 300                                                                               | 440            | 590  | IPR                                                                                | .002-.005 | .003-.006 | .000-.008 | .005-.009 | .006-.011 | .008-.013 | .009-.014 | .011-.016 | .013-.019 |
|                | 1 | 30                                                                                | 80             | 100  | IPR                                                                                | .001-.002 | .001-.002 | .002-.003 | .002-.004 | .003-.005 | .004-.005 | .004-.006 | .005-.006 | .006-.007 |
|                | 2 | 30                                                                                | 70             | 80   | IPR                                                                                | .001-.002 | .001-.002 | .001-.002 | .002-.003 | .003-.004 | .003-.004 | .004-.005 | .004-.006 | .004-.006 |
|                | 3 | 30                                                                                | 80             | 100  | IPR                                                                                | .001-.001 | .001-.002 | .001-.002 | .002-.003 | .002-.004 | .003-.004 | .003-.004 | .004-.005 | .004-.006 |
|                | 4 | 30                                                                                | 80             | 130  | IPR                                                                                | .001-.001 | .001-.002 | .001-.002 | .002-.003 | .003-.004 | .003-.004 | .004-.005 | .004-.006 | .004-.006 |