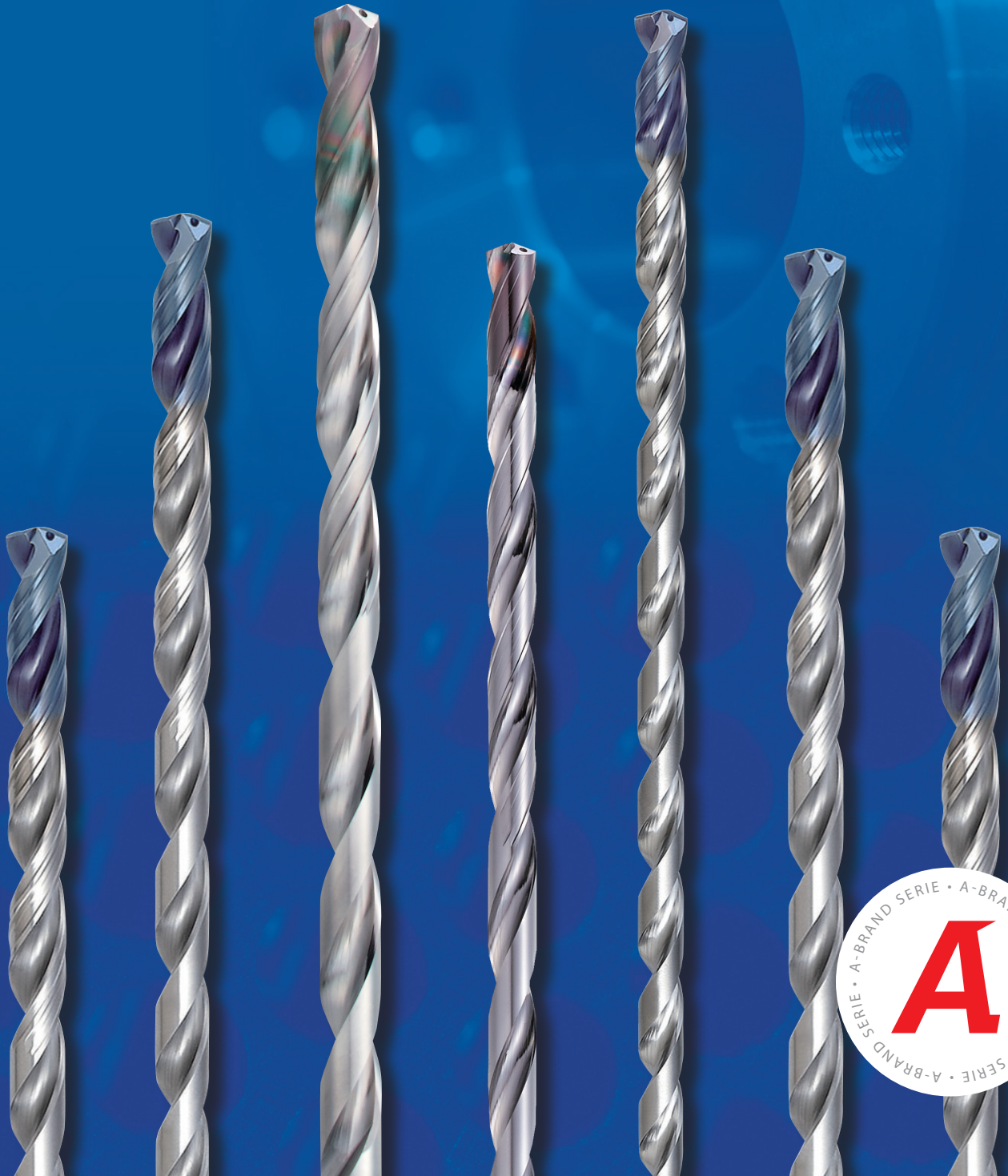




Carbide long drills with oil holes

DEEP HOLE DRILLS

Volume 1.1



INDEX

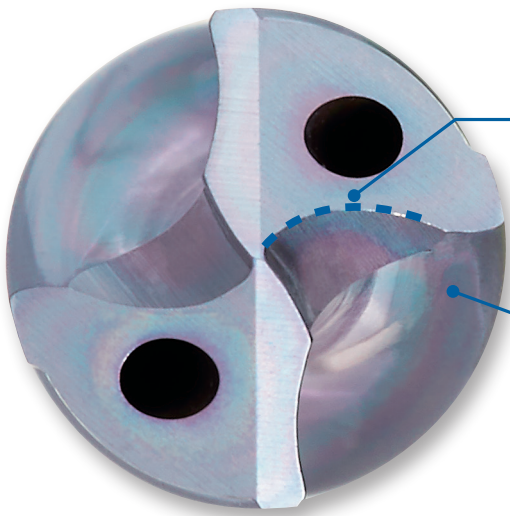
DEEP HOLE DRILLS

| | |
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TECHNICAL INFORMATION DEEP HOLE DRILLING

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ENTER THE WORLD OF ULTRA-EFFICIENT DEEP-HOLE 50XD DRILLING



R Gash

Unique R gash geometry enables super low cutting resistance and exceptional chip control

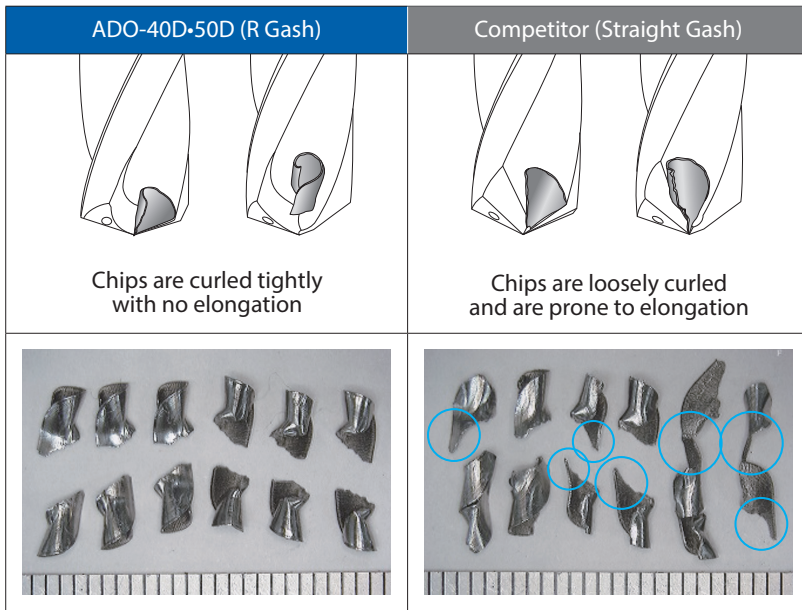
New flute specification

New flute specification with smooth chip evacuation and high tool rigidity qualities ideal for ultra-deep-hole applications

Highly rigid 25° helical flute

R Gash Geometry

Breaks chips into small and manageable pieces with superior chip evacuation capability



Work Material: SUS304

EgiAs Coating

EgiAs coating with high toughness and wear resistance characteristics

Constructed with extreme toughness, high wear and heat resistance characteristics to ensure stable and consistent tool life.

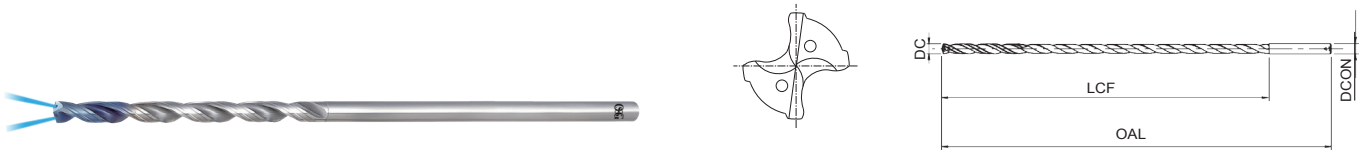
EgiAs



| Coating Color | Coating Structure | Hardness (GPa) | Oxidation Temperature (C°) | Heat Resistance | Adhesion Strength | Surface Roughness | Wear Resistance | Welding Resistance | Toughness |
|--------------------|-----------------------|----------------|----------------------------|-----------------|-------------------|-------------------|-----------------|--------------------|-----------|
| Interference Color | Periodic Nano-layered | 40 | 1.100 | ☉ | ☉ | ○ | ☉ | ☉ | ☉ |

ADO-10D

Drilling | Solid carbide | 10xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 10xD
- For general purpose steels and cast iron
- 102 sizes



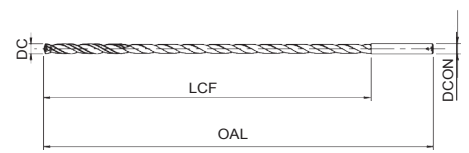
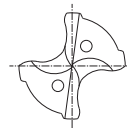
Drilling | Solid carbide

10xD

| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|---------|-----|-----|-----|------|---------|------|-----|-----|------|
| 8696200 | 2 | 26 | 75 | 3 | 8710660 | 6,6 | 87 | 140 | 8 |
| 8696210 | 2,1 | 33 | 75 | 3 | 8710670 | 6,7 | 87 | 140 | 8 |
| 8696220 | 2,2 | 33 | 75 | 3 | 8710680 | 6,8 | 90 | 140 | 8 |
| 8696230 | 2,3 | 33 | 75 | 3 | 8710690 | 6,9 | 90 | 140 | 8 |
| 8696240 | 2,4 | 33 | 75 | 3 | 8710700 | 7 | 90 | 140 | 8 |
| 8696250 | 2,5 | 33 | 75 | 3 | 8710710 | 7,1 | 100 | 155 | 8 |
| 8696260 | 2,6 | 40 | 90 | 3 | 8710720 | 7,2 | 100 | 155 | 8 |
| 8696270 | 2,7 | 40 | 90 | 3 | 8710730 | 7,3 | 100 | 155 | 8 |
| 8696280 | 2,8 | 40 | 90 | 3 | 8710740 | 7,4 | 100 | 155 | 8 |
| 8696290 | 2,9 | 40 | 90 | 3 | 8696750 | 7,5 | 100 | 155 | 8 |
| 8696300 | 3 | 40 | 90 | 3 | 8710760 | 7,6 | 105 | 155 | 8 |
| 8696310 | 3,1 | 45 | 100 | 4 | 8710770 | 7,7 | 105 | 155 | 8 |
| 8696320 | 3,2 | 45 | 100 | 4 | 8710780 | 7,8 | 105 | 155 | 8 |
| 8696330 | 3,3 | 45 | 100 | 4 | 8710790 | 7,9 | 105 | 155 | 8 |
| 8696340 | 3,4 | 50 | 100 | 4 | 8696800 | 8 | 105 | 155 | 8 |
| 8696350 | 3,5 | 50 | 100 | 4 | 8710810 | 8,1 | 110 | 165 | 10 |
| 8696360 | 3,6 | 50 | 100 | 4 | 8710820 | 8,2 | 110 | 165 | 10 |
| 8696370 | 3,7 | 50 | 100 | 4 | 8710830 | 8,3 | 110 | 165 | 10 |
| 8696380 | 3,8 | 50 | 100 | 4 | 8710840 | 8,4 | 110 | 165 | 10 |
| 8696390 | 3,9 | 50 | 100 | 4 | 8710850 | 8,5 | 110 | 165 | 10 |
| 8696400 | 4 | 50 | 100 | 4 | 8710860 | 8,6 | 115 | 165 | 10 |
| 8710410 | 4,1 | 55 | 115 | 6 | 8710870 | 8,7 | 115 | 165 | 10 |
| 8710420 | 4,2 | 55 | 115 | 6 | 8710880 | 8,8 | 115 | 165 | 10 |
| 8710430 | 4,3 | 60 | 115 | 6 | 8710890 | 8,9 | 115 | 165 | 10 |
| 8710440 | 4,4 | 60 | 115 | 6 | 8710900 | 9 | 115 | 165 | 10 |
| 8710450 | 4,5 | 60 | 115 | 6 | 8710910 | 9,1 | 125 | 190 | 10 |
| 8710460 | 4,6 | 60 | 115 | 6 | 8710920 | 9,2 | 125 | 190 | 10 |
| 8710470 | 4,7 | 65 | 115 | 6 | 8710930 | 9,3 | 125 | 190 | 10 |
| 8710480 | 4,8 | 65 | 115 | 6 | 8710940 | 9,4 | 125 | 190 | 10 |
| 8710490 | 4,9 | 65 | 115 | 6 | 8696950 | 9,5 | 125 | 190 | 10 |
| 8710500 | 5 | 65 | 115 | 6 | 8710960 | 9,6 | 130 | 190 | 10 |
| 8710510 | 5,1 | 70 | 128 | 6 | 8710970 | 9,7 | 130 | 190 | 10 |
| 8710520 | 5,2 | 70 | 128 | 6 | 8710980 | 9,8 | 130 | 190 | 10 |
| 8710530 | 5,3 | 70 | 128 | 6 | 8710990 | 9,9 | 130 | 190 | 10 |
| 8710540 | 5,4 | 78 | 128 | 6 | 8697000 | 10 | 130 | 190 | 10 |
| 8696550 | 5,5 | 78 | 128 | 6 | 8711010 | 10,1 | 140 | 205 | 12 |
| 8710560 | 5,6 | 78 | 128 | 6 | 8711020 | 10,2 | 140 | 205 | 12 |
| 8710570 | 5,7 | 78 | 128 | 6 | 8711030 | 10,3 | 140 | 205 | 12 |
| 8710580 | 5,8 | 78 | 128 | 6 | 8711040 | 10,4 | 140 | 205 | 12 |
| 8710590 | 5,9 | 78 | 128 | 6 | 8711050 | 10,5 | 140 | 205 | 12 |
| 8696600 | 6 | 78 | 128 | 6 | 8711060 | 10,6 | 140 | 205 | 12 |
| 8710610 | 6,1 | 87 | 140 | 8 | 8711070 | 10,7 | 140 | 205 | 12 |
| 8710620 | 6,2 | 87 | 140 | 8 | 8711080 | 10,8 | 145 | 205 | 12 |
| 8710630 | 6,3 | 87 | 140 | 8 | 8711090 | 10,9 | 145 | 205 | 12 |
| 8710640 | 6,4 | 87 | 140 | 8 | 8711100 | 11 | 145 | 205 | 12 |
| 8710650 | 6,5 | 87 | 140 | 8 | 8711110 | 11,1 | 155 | 215 | 12 |

ADO-15D NEW SIZES

Drilling | Solid carbide | 15xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 15xD
- For general purpose steels and cast iron
- 102 sizes

Solid carbide

| | | | | | | | |
|-------------------|-------------------------|--------------------|--------------|---------------|-------------|--------------|--------------------|
| P C < 0,2% | P 0,25 < C < 0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | H 25-35 HRC |
|-------------------|-------------------------|--------------------|--------------|---------------|-------------|--------------|--------------------|

| | | | | | | | |
|----------|----------------|--------------|------------|-------------------|--|-------------|-----------|
| A | CARBIDE | EgiAs | 30° | SHRINK FIT | | 140° | e8 |
|----------|----------------|--------------|------------|-------------------|--|-------------|-----------|

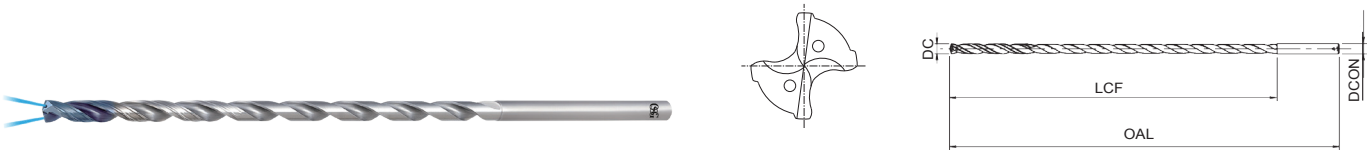
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Drilling | 15xD

| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|----------|-----|-----|-----|------|---------|------|-----|-----|------|
| 48338120 | 2 | 36 | 90 | 3 | 8712660 | 6,6 | 120 | 175 | 8 |
| 48338121 | 2,1 | 38 | 90 | 3 | 8712670 | 6,7 | 120 | 175 | 8 |
| 48338122 | 2,2 | 40 | 90 | 3 | 8712680 | 6,8 | 125 | 175 | 8 |
| 48338123 | 2,3 | 42 | 90 | 3 | 8712690 | 6,9 | 125 | 175 | 8 |
| 48338124 | 2,4 | 44 | 90 | 3 | 8712700 | 7 | 125 | 175 | 8 |
| 48338125 | 2,5 | 45 | 96 | 3 | 8712710 | 7,1 | 135 | 195 | 8 |
| 48338126 | 2,6 | 47 | 96 | 3 | 8712720 | 7,2 | 135 | 195 | 8 |
| 48338127 | 2,7 | 49 | 96 | 3 | 8712730 | 7,3 | 135 | 195 | 8 |
| 48338128 | 2,8 | 51 | 96 | 3 | 8712740 | 7,4 | 135 | 195 | 8 |
| 48338129 | 2,9 | 53 | 96 | 3 | 8698750 | 7,5 | 135 | 195 | 8 |
| 8698300 | 3 | 55 | 105 | 3 | 8712760 | 7,6 | 145 | 195 | 8 |
| 8698310 | 3,1 | 60 | 125 | 4 | 8712770 | 7,7 | 145 | 195 | 8 |
| 8698320 | 3,2 | 60 | 125 | 4 | 8712780 | 7,8 | 145 | 195 | 8 |
| 8698330 | 3,3 | 60 | 125 | 4 | 8712790 | 7,9 | 145 | 195 | 8 |
| 8698340 | 3,4 | 65 | 125 | 4 | 8698800 | 8 | 145 | 195 | 8 |
| 8698350 | 3,5 | 65 | 125 | 4 | 8712810 | 8,1 | 155 | 210 | 10 |
| 8698360 | 3,6 | 65 | 125 | 4 | 8712820 | 8,2 | 155 | 210 | 10 |
| 8698370 | 3,7 | 65 | 125 | 4 | 8712830 | 8,3 | 155 | 210 | 10 |
| 8698380 | 3,8 | 75 | 125 | 4 | 8712840 | 8,4 | 155 | 210 | 10 |
| 8698390 | 3,9 | 75 | 125 | 4 | 8712850 | 8,5 | 155 | 210 | 10 |
| 8698400 | 4 | 75 | 125 | 4 | 8712860 | 8,6 | 160 | 210 | 10 |
| 8712410 | 4,1 | 75 | 140 | 6 | 8712870 | 8,7 | 160 | 210 | 10 |
| 8712420 | 4,2 | 75 | 140 | 6 | 8712880 | 8,8 | 160 | 210 | 10 |
| 8712430 | 4,3 | 85 | 140 | 6 | 8712890 | 8,9 | 160 | 210 | 10 |
| 8712440 | 4,4 | 85 | 140 | 6 | 8712900 | 9 | 160 | 210 | 10 |
| 8712450 | 4,5 | 85 | 140 | 6 | 8712910 | 9,1 | 170 | 240 | 10 |
| 8712460 | 4,6 | 85 | 140 | 6 | 8712920 | 9,2 | 170 | 240 | 10 |
| 8712470 | 4,7 | 85 | 140 | 6 | 8712930 | 9,3 | 170 | 240 | 10 |
| 8712480 | 4,8 | 90 | 140 | 6 | 8712940 | 9,4 | 170 | 240 | 10 |
| 8712490 | 4,9 | 90 | 140 | 6 | 8698950 | 9,5 | 170 | 240 | 10 |
| 8712500 | 5 | 90 | 140 | 6 | 8712960 | 9,6 | 180 | 240 | 10 |
| 8712510 | 5,1 | 95 | 160 | 6 | 8712970 | 9,7 | 180 | 240 | 10 |
| 8712520 | 5,2 | 95 | 160 | 6 | 8712980 | 9,8 | 180 | 240 | 10 |
| 8712530 | 5,3 | 95 | 160 | 6 | 8712990 | 9,9 | 180 | 240 | 10 |
| 8712540 | 5,4 | 110 | 160 | 6 | 8699000 | 10 | 180 | 240 | 10 |
| 8698550 | 5,5 | 110 | 160 | 6 | 8713010 | 10,1 | 190 | 260 | 12 |
| 8712560 | 5,6 | 110 | 160 | 6 | 8713020 | 10,2 | 190 | 260 | 12 |
| 8712570 | 5,7 | 110 | 160 | 6 | 8713030 | 10,3 | 190 | 260 | 12 |
| 8712580 | 5,8 | 110 | 160 | 6 | 8713040 | 10,4 | 190 | 260 | 12 |
| 8712590 | 5,9 | 110 | 160 | 6 | 8713050 | 10,5 | 190 | 260 | 12 |
| 8698600 | 6 | 110 | 160 | 6 | 8713060 | 10,6 | 190 | 260 | 12 |
| 8712610 | 6,1 | 120 | 175 | 8 | 8713070 | 10,7 | 200 | 260 | 12 |
| 8712620 | 6,2 | 120 | 175 | 8 | 8713080 | 10,8 | 200 | 260 | 12 |
| 8712630 | 6,3 | 120 | 175 | 8 | 8713090 | 10,9 | 200 | 260 | 12 |
| 8712640 | 6,4 | 120 | 175 | 8 | 8713100 | 11 | 200 | 260 | 12 |
| 8712650 | 6,5 | 120 | 175 | 8 | 8713110 | 11,1 | 210 | 280 | 12 |

ADO-20D NEW SIZES

Drilling | Solid carbide | 20xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 20xD
- For general purpose steels and cast iron
- 102 sizes



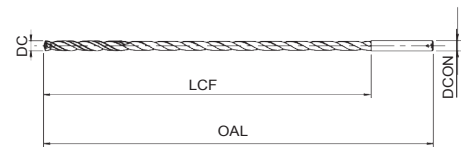
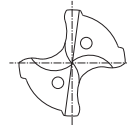
Drilling | Solid carbide

20xD

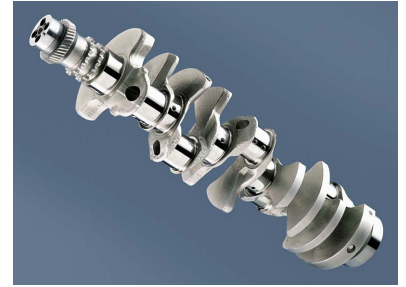
| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|----------|-----|-----|-----|------|---------|------|-----|-----|------|
| 48338220 | 2 | 46 | 100 | 3 | 8714660 | 6,6 | 155 | 210 | 8 |
| 48338221 | 2,1 | 49 | 100 | 3 | 8714670 | 6,7 | 155 | 210 | 8 |
| 48338222 | 2,2 | 51 | 100 | 3 | 8714680 | 6,8 | 160 | 210 | 8 |
| 48338223 | 2,3 | 53 | 100 | 3 | 8714690 | 6,9 | 160 | 210 | 8 |
| 48338224 | 2,4 | 56 | 100 | 3 | 8714700 | 7 | 160 | 210 | 8 |
| 48338225 | 2,5 | 58 | 109 | 3 | 8714710 | 7,1 | 170 | 230 | 8 |
| 48338226 | 2,6 | 60 | 109 | 3 | 8714720 | 7,2 | 170 | 230 | 8 |
| 48338227 | 2,7 | 63 | 109 | 3 | 8714730 | 7,3 | 170 | 230 | 8 |
| 48338228 | 2,8 | 65 | 109 | 3 | 8714740 | 7,4 | 170 | 230 | 8 |
| 48338229 | 2,9 | 67 | 109 | 3 | 8706750 | 7,5 | 170 | 230 | 8 |
| 8706300 | 3 | 70 | 120 | 3 | 8714760 | 7,6 | 180 | 230 | 8 |
| 8706310 | 3,1 | 80 | 140 | 4 | 8714770 | 7,7 | 180 | 230 | 8 |
| 8706320 | 3,2 | 80 | 140 | 4 | 8714780 | 7,8 | 180 | 230 | 8 |
| 8706330 | 3,3 | 80 | 140 | 4 | 8714790 | 7,9 | 180 | 230 | 8 |
| 8706340 | 3,4 | 85 | 140 | 4 | 8706800 | 8 | 180 | 230 | 8 |
| 8706350 | 3,5 | 85 | 140 | 4 | 8714810 | 8,1 | 195 | 260 | 10 |
| 8706360 | 3,6 | 85 | 140 | 4 | 8714820 | 8,2 | 195 | 260 | 10 |
| 8706370 | 3,7 | 85 | 140 | 4 | 8714830 | 8,3 | 195 | 260 | 10 |
| 8706380 | 3,8 | 90 | 140 | 4 | 8714840 | 8,4 | 195 | 260 | 10 |
| 8706390 | 3,9 | 90 | 140 | 4 | 8714850 | 8,5 | 195 | 260 | 10 |
| 8706400 | 4 | 90 | 140 | 4 | 8714860 | 8,6 | 210 | 260 | 10 |
| 8714410 | 4,1 | 100 | 165 | 6 | 8714870 | 8,7 | 210 | 260 | 10 |
| 8714420 | 4,2 | 100 | 165 | 6 | 8714880 | 8,8 | 210 | 260 | 10 |
| 8714430 | 4,3 | 110 | 165 | 6 | 8714890 | 8,9 | 210 | 260 | 10 |
| 8714440 | 4,4 | 110 | 165 | 6 | 8714900 | 9 | 210 | 260 | 10 |
| 8714450 | 4,5 | 110 | 165 | 6 | 8714910 | 9,1 | 220 | 290 | 10 |
| 8714460 | 4,6 | 110 | 165 | 6 | 8714920 | 9,2 | 220 | 290 | 10 |
| 8714470 | 4,7 | 110 | 165 | 6 | 8714930 | 9,3 | 220 | 290 | 10 |
| 8714480 | 4,8 | 115 | 165 | 6 | 8714940 | 9,4 | 220 | 290 | 10 |
| 8714490 | 4,9 | 115 | 165 | 6 | 8706950 | 9,5 | 220 | 290 | 10 |
| 8714500 | 5 | 115 | 165 | 6 | 8714960 | 9,6 | 230 | 290 | 10 |
| 8714510 | 5,1 | 120 | 190 | 6 | 8714970 | 9,7 | 230 | 290 | 10 |
| 8714520 | 5,2 | 120 | 190 | 6 | 8714980 | 9,8 | 230 | 290 | 10 |
| 8714530 | 5,3 | 120 | 190 | 6 | 8714990 | 9,9 | 230 | 290 | 10 |
| 8714540 | 5,4 | 140 | 190 | 6 | 8707000 | 10 | 230 | 290 | 10 |
| 8706550 | 5,5 | 140 | 190 | 6 | 8715010 | 10,1 | 250 | 310 | 12 |
| 8714560 | 5,6 | 140 | 190 | 6 | 8715020 | 10,2 | 250 | 310 | 12 |
| 8714570 | 5,7 | 140 | 190 | 6 | 8715030 | 10,3 | 250 | 310 | 12 |
| 8714580 | 5,8 | 140 | 190 | 6 | 8715040 | 10,4 | 250 | 310 | 12 |
| 8714590 | 5,9 | 140 | 190 | 6 | 8715050 | 10,5 | 250 | 310 | 12 |
| 8706600 | 6 | 140 | 190 | 6 | 8715060 | 10,6 | 250 | 310 | 12 |
| 8714610 | 6,1 | 155 | 210 | 8 | 8715070 | 10,7 | 250 | 310 | 12 |
| 8714620 | 6,2 | 155 | 210 | 8 | 8715080 | 10,8 | 250 | 310 | 12 |
| 8714630 | 6,3 | 155 | 210 | 8 | 8715090 | 10,9 | 250 | 310 | 12 |
| 8714640 | 6,4 | 155 | 210 | 8 | 8715100 | 11 | 250 | 310 | 12 |
| 8714650 | 6,5 | 155 | 210 | 8 | 8715110 | 11,1 | 270 | 330 | 12 |

ADO-25D

Drilling | Solid carbide | 25xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 25xD
- For general purpose steels and cast iron
- 92 sizes



Ideal for drilling oil channels in crankshafts



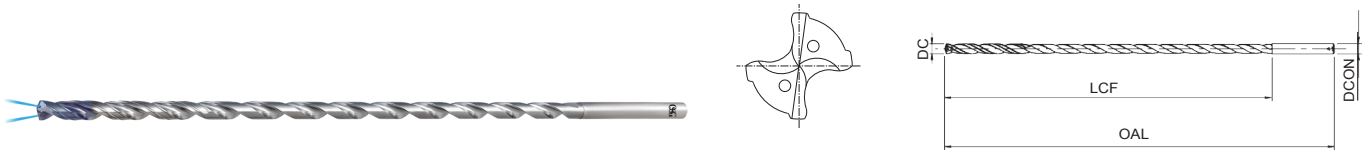
Drilling | Solid carbide

25xD

| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|----------|-----|-----|-----|------|---------|------|-----|-----|------|
| 48338325 | 2,5 | 70 | 121 | 3 | 8724750 | 7,5 | 210 | 275 | 8 |
| 8726300 | 3 | 85 | 135 | 3 | 8724760 | 7,6 | 225 | 275 | 8 |
| 8724310 | 3,1 | 95 | 165 | 4 | 8724770 | 7,7 | 225 | 275 | 8 |
| 8724320 | 3,2 | 95 | 165 | 4 | 8724780 | 7,8 | 225 | 275 | 8 |
| 8724330 | 3,3 | 95 | 165 | 4 | 8724790 | 7,9 | 225 | 275 | 8 |
| 8724340 | 3,4 | 105 | 165 | 4 | 8724800 | 8 | 225 | 275 | 8 |
| 8724350 | 3,5 | 105 | 165 | 4 | 8724810 | 8,1 | 240 | 305 | 10 |
| 8724360 | 3,6 | 105 | 165 | 4 | 8724820 | 8,2 | 240 | 305 | 10 |
| 8724370 | 3,7 | 105 | 165 | 4 | 8724830 | 8,3 | 240 | 305 | 10 |
| 8724380 | 3,8 | 115 | 165 | 4 | 8724840 | 8,4 | 240 | 305 | 10 |
| 8724390 | 3,9 | 115 | 165 | 4 | 8724850 | 8,5 | 240 | 305 | 10 |
| 8724400 | 4 | 115 | 165 | 4 | 8724860 | 8,6 | 255 | 305 | 10 |
| 8724410 | 4,1 | 120 | 190 | 6 | 8724870 | 8,7 | 255 | 305 | 10 |
| 8724420 | 4,2 | 120 | 190 | 6 | 8724880 | 8,8 | 255 | 305 | 10 |
| 8724430 | 4,3 | 135 | 190 | 6 | 8724890 | 8,9 | 255 | 305 | 10 |
| 8724440 | 4,4 | 135 | 190 | 6 | 8724900 | 9 | 255 | 305 | 10 |
| 8724450 | 4,5 | 135 | 190 | 6 | 8724910 | 9,1 | 270 | 340 | 10 |
| 8724460 | 4,6 | 135 | 190 | 6 | 8724920 | 9,2 | 270 | 340 | 10 |
| 8724470 | 4,7 | 135 | 190 | 6 | 8724930 | 9,3 | 270 | 340 | 10 |
| 8724480 | 4,8 | 140 | 190 | 6 | 8724940 | 9,4 | 270 | 340 | 10 |
| 8724490 | 4,9 | 140 | 190 | 6 | 8724950 | 9,5 | 270 | 340 | 10 |
| 8724500 | 5 | 140 | 190 | 6 | 8724960 | 9,6 | 280 | 340 | 10 |
| 8724510 | 5,1 | 150 | 220 | 6 | 8724970 | 9,7 | 280 | 340 | 10 |
| 8724520 | 5,2 | 150 | 220 | 6 | 8724980 | 9,8 | 280 | 340 | 10 |
| 8724530 | 5,3 | 150 | 220 | 6 | 8724990 | 9,9 | 280 | 340 | 10 |
| 8724540 | 5,4 | 170 | 220 | 6 | 8725000 | 10 | 280 | 340 | 10 |
| 8724550 | 5,5 | 170 | 220 | 6 | 8725010 | 10,1 | 310 | 370 | 12 |
| 8724560 | 5,6 | 170 | 220 | 6 | 8725020 | 10,2 | 310 | 370 | 12 |
| 8724570 | 5,7 | 170 | 220 | 6 | 8725030 | 10,3 | 310 | 370 | 12 |
| 8724580 | 5,8 | 170 | 220 | 6 | 8725040 | 10,4 | 310 | 370 | 12 |
| 8724590 | 5,9 | 170 | 220 | 6 | 8725050 | 10,5 | 310 | 370 | 12 |
| 8724600 | 6 | 170 | 220 | 6 | 8725060 | 10,6 | 310 | 370 | 12 |
| 8724610 | 6,1 | 190 | 250 | 8 | 8725070 | 10,7 | 310 | 370 | 12 |
| 8724620 | 6,2 | 190 | 250 | 8 | 8725080 | 10,8 | 310 | 370 | 12 |
| 8724630 | 6,3 | 190 | 250 | 8 | 8725090 | 10,9 | 310 | 370 | 12 |
| 8724640 | 6,4 | 190 | 250 | 8 | 8725100 | 11 | 310 | 370 | 12 |
| 8724650 | 6,5 | 190 | 250 | 8 | 8725110 | 11,1 | 340 | 400 | 12 |
| 8724660 | 6,6 | 190 | 250 | 8 | 8725120 | 11,2 | 340 | 400 | 12 |
| 8724670 | 6,7 | 190 | 250 | 8 | 8725130 | 11,3 | 340 | 400 | 12 |
| 8724680 | 6,8 | 200 | 250 | 8 | 8725140 | 11,4 | 340 | 400 | 12 |
| 8724690 | 6,9 | 200 | 250 | 8 | 8725150 | 11,5 | 340 | 400 | 12 |
| 8724700 | 7 | 200 | 250 | 8 | 8725160 | 11,6 | 340 | 400 | 12 |
| 8724710 | 7,1 | 210 | 275 | 8 | 8725170 | 11,7 | 340 | 400 | 12 |
| 8724720 | 7,2 | 210 | 275 | 8 | 8725180 | 11,8 | 340 | 400 | 12 |
| 8724730 | 7,3 | 210 | 275 | 8 | 8725190 | 11,9 | 340 | 400 | 12 |
| 8724740 | 7,4 | 210 | 275 | 8 | 8725200 | 12 | 340 | 400 | 12 |

ADO-30D NEW SIZES

Drilling | Solid carbide | 30xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 30xD
- For general purpose steels and cast iron
- 81 sizes



| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|----------|-----|-----|-----|------|---------|-----|-----|-----|------|
| 48338420 | 2 | 66 | 120 | 3 | 8716660 | 6,6 | 215 | 280 | 8 |
| 48338421 | 2,1 | 70 | 120 | 3 | 8716670 | 6,7 | 215 | 280 | 8 |
| 48338422 | 2,2 | 73 | 120 | 3 | 8716680 | 6,8 | 230 | 280 | 8 |
| 48338423 | 2,3 | 76 | 120 | 3 | 8716690 | 6,9 | 230 | 280 | 8 |
| 48338424 | 2,4 | 80 | 120 | 3 | 8716700 | 7 | 230 | 280 | 8 |
| 48338425 | 2,5 | 83 | 134 | 3 | 8716710 | 7,1 | 250 | 315 | 8 |
| 48338426 | 2,6 | 86 | 134 | 3 | 8716720 | 7,2 | 250 | 315 | 8 |
| 48338427 | 2,7 | 90 | 134 | 3 | 8716730 | 7,3 | 250 | 315 | 8 |
| 48338428 | 2,8 | 93 | 134 | 3 | 8716740 | 7,4 | 250 | 315 | 8 |
| 48338429 | 2,9 | 96 | 134 | 3 | 8708750 | 7,5 | 250 | 315 | 8 |
| 8708300 | 3 | 100 | 150 | 3 | 8716760 | 7,6 | 265 | 315 | 8 |
| 8708310 | 3,1 | 102 | 185 | 4 | 8716770 | 7,7 | 265 | 315 | 8 |
| 8708320 | 3,2 | 105 | 185 | 4 | 8716780 | 7,8 | 265 | 315 | 8 |
| 8708330 | 3,3 | 109 | 185 | 4 | 8716790 | 7,9 | 265 | 315 | 8 |
| 8708340 | 3,4 | 112 | 185 | 4 | 8708800 | 8 | 265 | 315 | 8 |
| 8708350 | 3,5 | 116 | 185 | 4 | 8716810 | 8,1 | 280 | 350 | 10 |
| 8708360 | 3,6 | 116 | 185 | 4 | 8716820 | 8,2 | 280 | 350 | 10 |
| 8708370 | 3,7 | 116 | 185 | 4 | 8716830 | 8,3 | 280 | 350 | 10 |
| 8708380 | 3,8 | 132 | 185 | 4 | 8716840 | 8,4 | 280 | 350 | 10 |
| 8708390 | 3,9 | 132 | 185 | 4 | 8716850 | 8,5 | 280 | 350 | 10 |
| 8708400 | 4 | 132 | 185 | 4 | 8716860 | 8,6 | 300 | 350 | 10 |
| 8716410 | 4,1 | 140 | 215 | 6 | 8716870 | 8,7 | 300 | 350 | 10 |
| 8716420 | 4,2 | 140 | 215 | 6 | 8716880 | 8,8 | 300 | 350 | 10 |
| 8716430 | 4,3 | 150 | 215 | 6 | 8716890 | 8,9 | 300 | 350 | 10 |
| 8716440 | 4,4 | 150 | 215 | 6 | 8716900 | 9 | 300 | 350 | 10 |
| 8716450 | 4,5 | 150 | 215 | 6 | 8716910 | 9,1 | 315 | 390 | 10 |
| 8716460 | 4,6 | 150 | 215 | 6 | 8716920 | 9,2 | 315 | 390 | 10 |
| 8716470 | 4,7 | 150 | 215 | 6 | 8716930 | 9,3 | 315 | 390 | 10 |
| 8716480 | 4,8 | 165 | 215 | 6 | 8716940 | 9,4 | 315 | 390 | 10 |
| 8716490 | 4,9 | 165 | 215 | 6 | 8708950 | 9,5 | 315 | 390 | 10 |
| 8716500 | 5 | 165 | 215 | 6 | 8716960 | 9,6 | 330 | 390 | 10 |
| 8716510 | 5,1 | 180 | 250 | 6 | 8716970 | 9,7 | 330 | 390 | 10 |
| 8716520 | 5,2 | 180 | 250 | 6 | 8716980 | 9,8 | 330 | 390 | 10 |
| 8716530 | 5,3 | 180 | 250 | 6 | 8716990 | 9,9 | 330 | 390 | 10 |
| 8716540 | 5,4 | 200 | 250 | 6 | 8709000 | 10 | 330 | 390 | 10 |
| 8708550 | 5,5 | 200 | 250 | 6 | | | | | |
| 8716560 | 5,6 | 200 | 250 | 6 | | | | | |
| 8716570 | 5,7 | 200 | 250 | 6 | | | | | |
| 8716580 | 5,8 | 200 | 250 | 6 | | | | | |
| 8716590 | 5,9 | 200 | 250 | 6 | | | | | |
| 8708600 | 6 | 200 | 250 | 6 | | | | | |
| 8716610 | 6,1 | 215 | 280 | 8 | | | | | |
| 8716620 | 6,2 | 215 | 280 | 8 | | | | | |
| 8716630 | 6,3 | 215 | 280 | 8 | | | | | |
| 8716640 | 6,4 | 215 | 280 | 8 | | | | | |
| 8716650 | 6,5 | 215 | 280 | 8 | | | | | |

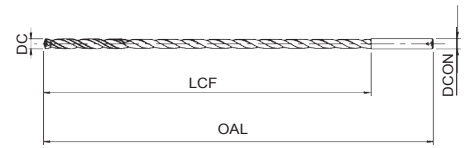
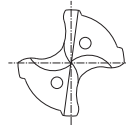
Drilling | Solid carbide 30xD



30xD

ADO-40D NEW SIZES

Drilling | Solid carbide | 40xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 40xD
- For general purpose steels and cast iron
- 23 sizes

| | | | | | | | |
|----------------------|---------------------------|--------------------------|--------------|---------------|-------------|--------------|--------------------|
| P $C < 0,2\%$ | P $0,25 < C < 0,4$ | P $C \geq 0,45\%$ | P SCM | M INOX | K GG | K GGG | H 25-35 HRC |
|----------------------|---------------------------|--------------------------|--------------|---------------|-------------|--------------|--------------------|

| | | | | | | | | |
|----------|----------------|--------------|----------------|-------------------|--|-------------|-----------------|----------------|
| A | CARBIDE | EgiAs | $\pm 25^\circ$ | SHRINK FIT | | 140° | e8 -0.01 | PAGE 15 |
|----------|----------------|--------------|----------------|-------------------|--|-------------|-----------------|----------------|

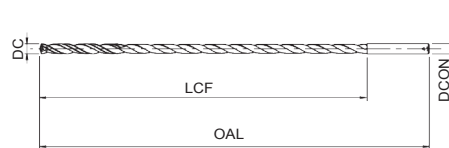
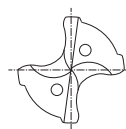
| EDP | DC | LCF | OAL | DCON |
|----------------------------|------|-----|-----|------|
| 8717300 | 3 | 129 | 179 | 3 |
| 8717320 <small>NEW</small> | 3,2 | 138 | 188 | 4 |
| 8717350 <small>NEW</small> | 3,5 | 151 | 210 | 4 |
| 8717400 | 4 | 172 | 222 | 4 |
| 8717450 <small>NEW</small> | 4,5 | 194 | 256 | 6 |
| 8717480 <small>NEW</small> | 4,8 | 207 | 265 | 6 |
| 8717500 | 5 | 215 | 265 | 5 |
| 8719501 <small>NEW</small> | 5 | 215 | 265 | 6 |
| 8717550 <small>NEW</small> | 5,5 | 237 | 296 | 6 |
| 8717600 | 6 | 258 | 308 | 6 |
| 8717630 <small>NEW</small> | 6,3 | 271 | 329 | 8 |
| 8717635 <small>NEW</small> | 6,35 | 274 | 329 | 8 |
| 8717650 <small>NEW</small> | 6,5 | 280 | 342 | 8 |
| 8717680 <small>NEW</small> | 6,8 | 293 | 351 | 8 |
| 8717700 <small>NEW</small> | 7 | 301 | 351 | 8 |
| 8717750 <small>NEW</small> | 7,5 | 323 | 382 | 8 |
| 8717790 <small>NEW</small> | 7,9 | 340 | 394 | 8 |
| 8717800 | 8 | 344 | 394 | 8 |
| 8717820 <small>NEW</small> | 8,2 | 353 | 408 | 10 |
| 8717830 <small>NEW</small> | 8,3 | 357 | 417 | 10 |
| 8717850 <small>NEW</small> | 8,5 | 366 | 430 | 10 |
| 8717900 <small>NEW</small> | 9 | 387 | 442 | 10 |
| 8718000 | 10 | 430 | 490 | 10 |

| EDP | DC | LCF | OAL | DCON |
|-----|----|-----|-----|------|
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Drilling | Solid carbide
40xD

ADO-50D NEW SIZES

Drilling | Solid carbide | 50xD



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 50xD
- For general purpose steels and cast iron
- 26 sizes

| | | | | | | | |
|----------------------|----------------------------|-----------------------|-----------------|------------------|----------------|-----------------|-----------------------|
| P C < 0,2% | P 0,25 < C < 0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | H 25-35 HRC |
|----------------------|----------------------------|-----------------------|-----------------|------------------|----------------|-----------------|-----------------------|

| | | | | | | | |
|----------|----------------|--------------|----------------|-------------------|--|-------------|-----------------|
| A | CARBIDE | EgiAs | $\pm 25^\circ$ | SHRINK FIT | | 140° | e8 -0.01 |
|----------|----------------|--------------|----------------|-------------------|--|-------------|-----------------|

| | |
|--|----------------|
| | PAGE 15 |
|--|----------------|

| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|---------|------------------|-----|-----|------|-----|----|-----|-----|------|
| 8718300 | 3 | 159 | 209 | 3 | | | | | |
| 8718301 | NEW 3,175 | 169 | 220 | 4 | | | | | |
| 8718320 | NEW 3,2 | 170 | 220 | 4 | | | | | |
| 8718350 | NEW 3,5 | 186 | 247 | 4 | | | | | |
| 8718400 | 4 | 212 | 262 | 4 | | | | | |
| 8718450 | NEW 4,5 | 239 | 303 | 6 | | | | | |
| 8718500 | 5 | 265 | 315 | 5 | | | | | |
| 8718501 | NEW 5 | 265 | 315 | 6 | | | | | |
| 8718540 | NEW 5,4 | 287 | 337 | 6 | | | | | |
| 8718550 | NEW 5,5 | 292 | 353 | 6 | | | | | |
| 8718570 | NEW 5,7 | 303 | 353 | 6 | | | | | |
| 8718600 | 6 | 318 | 368 | 6 | | | | | |
| 8718620 | NEW 6,2 | 329 | 382 | 8 | | | | | |
| 8718630 | NEW 6,3 | 334 | 393 | 8 | | | | | |
| 8718635 | NEW 6,35 | 337 | 393 | 8 | | | | | |
| 8718640 | NEW 6,4 | 340 | 393 | 8 | | | | | |
| 8718650 | NEW 6,5 | 345 | 409 | 8 | | | | | |
| 8718680 | NEW 6,8 | 361 | 421 | 8 | | | | | |
| 8718700 | NEW 7 | 371 | 421 | 8 | | | | | |
| 8718750 | NEW 7,5 | 398 | 459 | 8 | | | | | |
| 8718770 | NEW 7,7 | 409 | 459 | 8 | | | | | |
| 8718800 | 8 | 424 | 474 | 8 | | | | | |
| 8718820 | NEW 8,2 | 435 | 490 | 10 | | | | | |
| 8718830 | NEW 8,3 | 440 | 500 | 10 | | | | | |
| 8718840 | NEW 8,4 | 446 | 500 | 10 | | | | | |
| 8718850 | NEW 8,5 | 450 | 500 | 10 | | | | | |

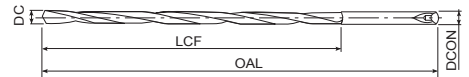
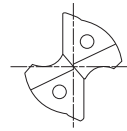
Drilling | Solid carbide

50xD



CAO-GDXL

Drilling | Solid carbide | 15xD / 20xD / 30xD



- Carbide drill with internal coolant, bright finish
- Up to 15xD, 20xD and 30xD
- For aluminium and cast aluminium
- 23 sizes



| EDP | DC | LCF | OAL | DCON | EDP | DC | LCF | OAL | DCON |
|---------|-----|-----|-----|------|-----|----|-----|-----|------|
| 8567130 | 3 | 55 | 105 | 3 | | | | | |
| 8567140 | 4 | 75 | 125 | 4 | | | | | |
| 8567150 | 5 | 90 | 140 | 5 | | | | | |
| 8567160 | 6 | 110 | 160 | 6 | | | | | |
| 8567165 | 6,5 | 120 | 175 | 7 | | | | | |
| 8567170 | 7 | 125 | 175 | 7 | | | | | |
| 8567180 | 8 | 145 | 195 | 8 | | | | | |
| 8567190 | 9 | 160 | 210 | 9 | | | | | |
| 8567200 | 10 | 180 | 240 | 10 | | | | | |
| 8567340 | 4 | 90 | 140 | 4 | | | | | |
| 8567345 | 4,5 | 110 | 165 | 5 | | | | | |
| 8567350 | 5 | 115 | 165 | 5 | | | | | |
| 8567355 | 5,5 | 140 | 190 | 6 | | | | | |
| 8567360 | 6 | 140 | 190 | 6 | | | | | |
| 8567370 | 7 | 160 | 210 | 7 | | | | | |
| 8567380 | 8 | 180 | 230 | 8 | | | | | |
| 8567390 | 9 | 210 | 260 | 9 | | | | | |
| 8567400 | 10 | 230 | 290 | 10 | | | | | |
| 8567450 | 5 | 165 | 215 | 5 | | | | | |
| 8567455 | 5,5 | 200 | 250 | 6 | | | | | |
| 8567460 | 6 | 200 | 250 | 6 | | | | | |
| 8567470 | 7 | 230 | 280 | 7 | | | | | |
| 8567480 | 8 | 265 | 315 | 8 | | | | | |
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CUTTING CONDITIONS

Drilling | Solid | Cutting conditions

ADO-10D/15D/20D/25D/30D

| Vc | Mild Steel - Low Carbon Steel SS400 · S10C ~150HB ~500 N/mm ² | | Carbon Steel S35C · S50C ~210HB ~710 N/mm ² | | Alloys Steel SCM · SCr · SNCM 16~28HRC 710~900 N/mm ² | | Cast Iron FC250 ~350 N/mm ² | | Ductile Cast Iron FCD450 · FCD600 400~600 N/mm ² | | Stainless Steel SUS400 400 ~ 800 N/mm ² | |
|----------------|--|-------------|--|-------------|---|-------------|--|-------------|---|-------------|--|-------------|
| | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) |
| 60 ~ 125 m/min | | | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 50 ~ 80 m/min | | 40 ~ 80 m/min | |
| 2 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 8.000 | 0,04 ~ 0,08 |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 |
| 4 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 | 5.000 | 0,08 ~ 0,16 |
| 5 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 |
| 6 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 3.800 | 0,12 ~ 0,24 | 3.800 | 0,12 ~ 0,24 |
| 8 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 |
| 10 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.300 | 0,20 ~ 0,35 | 2.300 | 0,20 ~ 0,35 |
| 12 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 1.900 | 0,24 ~ 0,42 | 1.900 | 0,24 ~ 0,42 |

ADO-40D/50D

| Vc | Mild Steel - Low Carbon Steel SS400 · S10C ~150HB ~500 N/mm ² | | Carbon Steel S35C · S50C ~210HB ~710 N/mm ² | | Alloy Steel SCM · SCr · sncm 16~28HRC 710 ~ 900 N/mm ² | | Alloy Steel (C ≥ 0,3%) SCM440 28~35HRC 900~1,060N/mm ² | |
|------------|--|-------------|--|-------------|--|-------------|---|-------------|
| | S (min ⁻¹) | f (mm/rev.) | S (min ⁻¹) | f (mm/rev.) | S (min ⁻¹) | f (mm/rev.) | S (min ⁻¹) | f (mm/rev.) |
| 60~90m/min | | | 60~90m/min | | 50~80m/min | | 40~70m/min | |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 6.400 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 |
| 4 | 5.600 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 | 4.800 | 0,08 ~ 0,16 | 4.000 | 0,08 ~ 0,16 |
| 5 | 4.500 | 0,1 ~ 0,2 | 4.500 | 0,1 ~ 0,2 | 3.800 | 0,1 ~ 0,2 | 3.200 | 0,1 ~ 0,2 |
| 6 | 3.700 | 0,12 ~ 0,24 | 3.700 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.700 | 0,12 ~ 0,24 |
| 8 | 2.800 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 | 2.400 | 0,16 ~ 0,28 | 2.000 | 0,16 ~ 0,28 |
| 10 | 2.300 | 0,2 ~ 0,35 | 2.300 | 0,2 ~ 0,35 | 1.900 | 0,2 ~ 0,35 | 1.600 | 0,2 ~ 0,35 |

| Vc | Cast Iron FC250 ~350N/mm ² | | Ductile Cast Iron FCD450 - FCD600 400 ~ 600 N/mm ² | | Stainless Steel SUS300/400 480 ~ 800 N/mm ² | |
|------------|---|-------------|---|-------------|--|-------------|
| | S (min ⁻¹) | f (mm/rev.) | S (min ⁻¹) | f (mm/rev.) | S (min ⁻¹) | f (mm/rev.) |
| 60~90m/min | | | 50~80m/min | | 40~60m/min | |
| 3 | 7.500 | 0,06 ~ 0,12 | 6.400 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 |
| 4 | 5.600 | 0,08 ~ 0,16 | 4.800 | 0,08 ~ 0,16 | 4.000 | 0,08 ~ 0,16 |
| 5 | 4.500 | 0,1 ~ 0,2 | 3.800 | 0,1 ~ 0,2 | 3.200 | 0,1 ~ 0,2 |
| 6 | 3.700 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.700 | 0,12 ~ 0,24 |
| 8 | 2.800 | 0,16 ~ 0,28 | 2.400 | 0,16 ~ 0,28 | 2.000 | 0,16 ~ 0,28 |
| 10 | 2.300 | 0,2 ~ 0,35 | 1.900 | 0,2 ~ 0,35 | 1.600 | 0,2 ~ 0,35 |

- The indicated speeds and feeds are for drilling with water-soluble coolant or MQL (mist drilling in stainless steels is not recommended).
- Water-soluble high density coolant (20-30 times dilution) is recommended.
- When using non-water-soluble coolant, set the cutting speed between 70-100% of the lowest limit.
- Make a pilot hole before using in accordance with the recommended operation.
- A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.
- Peck drilling of 1D - 2D is strongly recommended.

*If it is difficult to process or if the straightness of the hole needed to be improved, use the coolant-through carbide drill ADO-20/30D after drilling a pilot hole, then process with the ADO-40/50D. When processing with 3 tools, the ADO-40/50D may be used at a more aggressive cutting condition than those listed above.

CAO-GDXL

Standard drilling

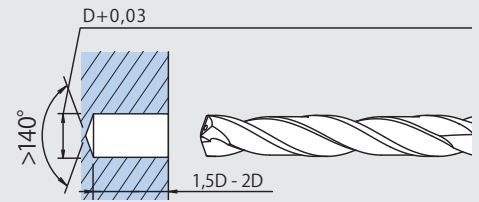
| Vc | AC ADC · AC | | Al A20... · A70... | | Al A50... · A60... | | Cu C1020 · C1100 | | Cu CrCu | |
|----------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|
| | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) | S (min ⁻¹) | F (mm/rev.) |
| 80 ~ 200 m/min | | | 60 ~ 120 m/min | | 80 ~ 200 m/min | | 80 ~ 200 m/min | | 60 ~ 120 m/min | |
| 3 | 12.800 | 0,09~0,15 | 10.700 | 0,09~0,15 | 12.800 | 0,06~0,12 | 12.800 | 0,06~0,12 | 10.700 | 0,05~0,09 |
| 4 | 9.600 | 0,12~0,20 | 8.000 | 0,12~0,20 | 9.600 | 0,08~0,16 | 9.600 | 0,08~0,16 | 8.000 | 0,06~0,10 |
| 5 | 7.700 | 0,15~0,25 | 6.400 | 0,15~0,25 | 7.700 | 0,10~0,20 | 7.700 | 0,10~0,20 | 6.400 | 0,06~0,10 |
| 6 | 6.400 | 0,18~0,30 | 5.400 | 0,18~0,30 | 6.400 | 0,12~0,20 | 6.400 | 0,12~0,20 | 5.400 | 0,06~0,10 |
| 8 | 4.800 | 0,20~0,40 | 4.000 | 0,20~0,40 | 4.800 | 0,12~0,25 | 4.800 | 0,12~0,25 | 4.000 | 0,08~0,15 |
| 10 | 3.900 | 0,25~0,50 | 3.200 | 0,25~0,50 | 3.900 | 0,15~0,25 | 3.900 | 0,15~0,25 | 3.200 | 0,08~0,15 |

Strategy

10xD / 30xD applications

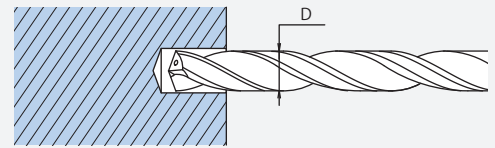
Drill pilot hole

- $\varnothing +0,03$ mm
- Point angle $>140^\circ$

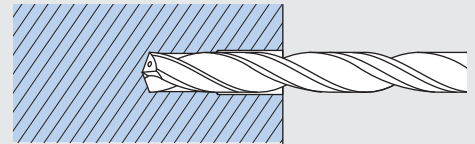


Insert ADO deep hole drill until 0,2 mm above hole bottom

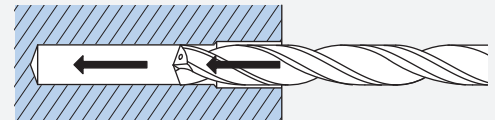
- $S = 500$ rev/min-1
- $V_f = 500$ mm/min
- Without coolant pressure



Launch coolant and machining RPM

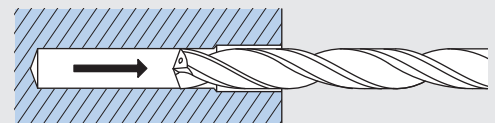


Feed rate 100% until final drilling depth



When reaching final drilling depth, lower the RPM to 500 rev/min. Reverse drill out of the hole with high feed (e.g. $V_f = 6.000$ mm/min).

Do not reverse with max. feed!



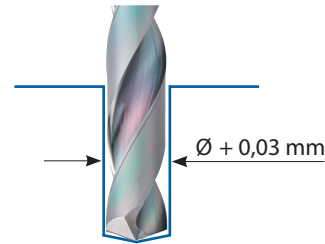
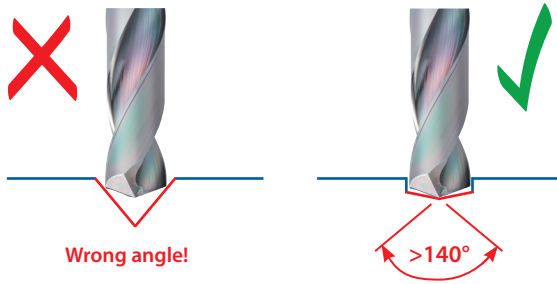
Drilling pilot hole

The point angle is important. It must always be larger than that of the following tool so that the point of the deep hole drill hits the center of the of the pilot hole exactly!

The diameter should be slightly larger than that of the following tool!

- Position accuracy
- Runout

- Friction
- Wear

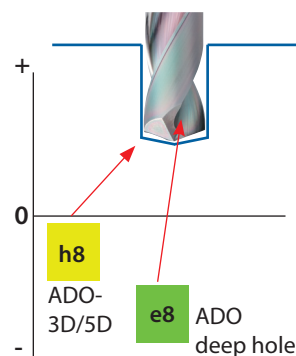
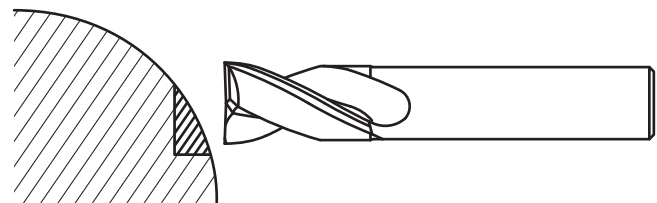
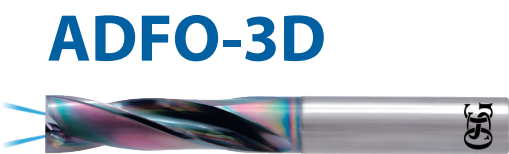


Possible pilot drills for ADO-10D to 50D

- ADO-3D/5D are manufactured with outer diameter tolerance h8 and point angle $>140^\circ$.
- ADO deep hole drills are manufactured with outer diameter tolerance e8 and point angle $<140^\circ$.
- ADO-PLT, point angle 160° , outer diameter $+ 0,03 \text{ mm}$

Pilot drilling on round / inclined surfaces

- The ADF(O) series drills are suitable for pilot drilling on round / inclined surfaces.



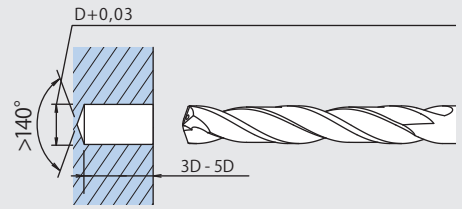
| Reference dimension (mm) | | Dimensional tolerance for shafts, frequently used fits | | | | | | | | | | | | | | | |
|--------------------------|----|--|-------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|---------|----------|----------|----------|
| | | Tolerance limit class | | | | | | | | | | | | | | | |
| | | b9 | c9 | d8 | d9 | e7 | e8 | e9 | f6 | f7 | f8 | g5 | g6 | h5 | h6 | h7 | h8 |
| - | 3 | -140 -165 | -60 -85 | -20 -34 | -20 -45 | -14 -24 | -14 -28 | -14 -39 | -6 -12 | -6 -16 | -6 -20 | -2 -6 | -2 -8 | 0 -4 | 0 -6 | 0 -10 | 0 -14 |
| 3 | 6 | -140 -170 | -70 -100 | -30 -48 | -30 -60 | -20 -32 | -20 -38 | -20 -50 | -10 -18 | -10 -22 | -10 -28 | -4 -9 | -4 -12 | 0 -5 | 0 -8 | 0 -12 | 0 -18 |
| 6 | 10 | -150 -186 | -80 -116 | -40 -62 | -40 -76 | -25 -40 | -25 -47 | -25 -61 | -13 -22 | -13 -28 | -13 -35 | -5 -11 | -5 -14 | 0 -6 | 0 -9 | 0 -15 | 0 -22 |
| 10 | 14 | -150 -193 | -95 -138 | -50 -77 | -50 -93 | -32 -50 | -32 -59 | -32 -75 | -16 -27 | -16 -34 | -16 -43 | -6 -14 | -6 -17 | 0 -8 | 0 -11 | 0 -18 | 0 -27 |

Optimizing 40D / 50D drilling depths

The following measures are helpful for reliable implementation of drilling depths of up to 50xD!

Set deeper pilot hole (e.g. ADO-5D)

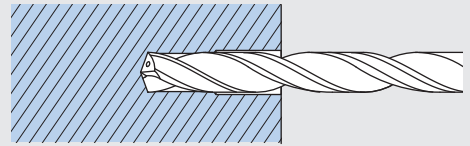
- Better guidance



Optional (recommended)

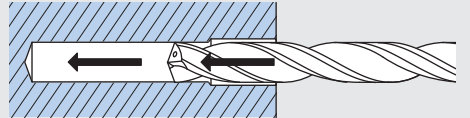
Use additional deep hole drill
(e.g. ADO-20D, ADO-30D)

- Less runout
- Possibly faster and therefore more economical



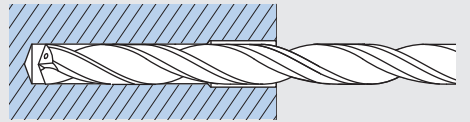
Insert ADO-40D/50D into pre-drilled hole
(keep approx. 0,2mm safety distance from hole bottom)

- Rotation **left**
- $S = 300-500$ rev/min
- Without coolant pressure



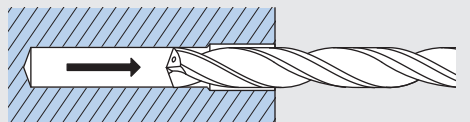
Finishing the deep hole with ADO-40D/50D

- Turn on coolant and machining rotation
- Feed rate 100% until final drilling depth



When reaching final drilling depth, lower the RPM
to 300-500 rev/min. Reverse drill out of the hole with
high feed (e.g. $V_f = 6.000$ mm/min).

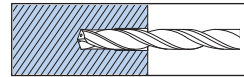
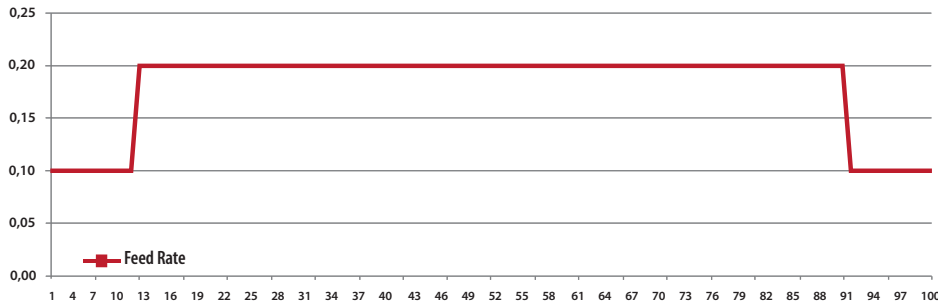
Do not reverse with max. feed!



Optimizing tool life

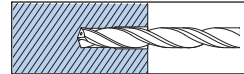
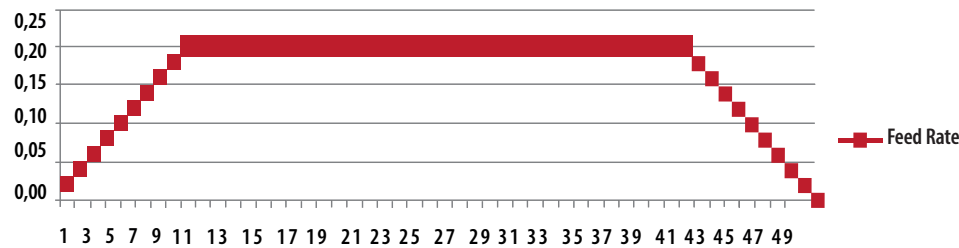
Strategies for optimizing the tool life

Pre-drilling with reduced feed rate



- Reduce feed rate to 50% until drill has reached 1xD drilling depth
- Reduce feed rate to 50% before drill exits hole

Pre-drilling with „FLIN“ (Siemens - Sinumerik)



- Linear increase of feed rate from 50% to 100% until drill reaches 1xD depth
- Linear decrease of feed rate to 50% before drill exits the hole

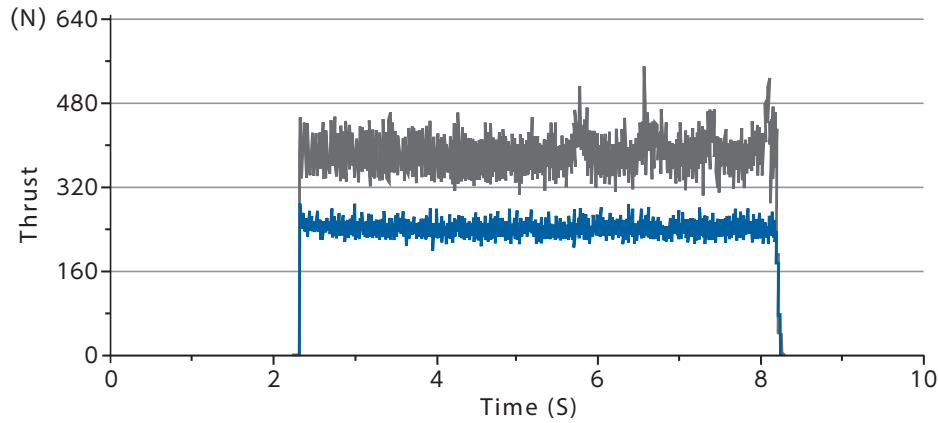
Manufacturable range as special items

| Ø | Max. OAL | Max. flute length | Max. drilling depth | | | | | | | "Unit (mm)" | | | | | | | | |
|-----|----------|-------------------|---------------------|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | | | | | | | |
| 3 | 209 | 159 | | | 150 | | | | | | | | | | | | | |
| ~4 | 262 | 212 | | | | 200 | | | | | | | | | | | | |
| ~5 | 315 | 265 | | | | | 250 | | | | | | | | | | | |
| ~6 | 428 | 378 | | | | | | 360 | | | | | | | | | | |
| ~7 | 456 | 406 | | | | | | | 380 | | | | | | | | | |
| ~8 | 500 | 450 | | | | | | | | 430 | | | | | | | | |
| ~9 | 500 | 450 | | | | | | | | | 420 | | | | | | | |
| ~10 | 500 | 450 | | | | | | | | | | 420 | | | | | | |
| ~11 | 500 | 450 | | | | | | | | | | | 420 | | | | | |
| ~12 | 500 | 450 | | | | | | | | | | | | 420 | | | | |
| ~13 | 500 | 450 | | | | | | | | | | | | | 410 | | | |
| ~14 | 500 | 450 | | | | | | | | | | | | | | 410 | | |
| ~15 | 500 | 450 | | | | | | | | | | | | | | | 410 | |
| ~16 | 500 | 450 | | | | | | | | | | | | | | | | 400 |

Manufacturable range

CUTTING DATA

Low Cutting Force



— (40D) Competitor
— ADO-40D

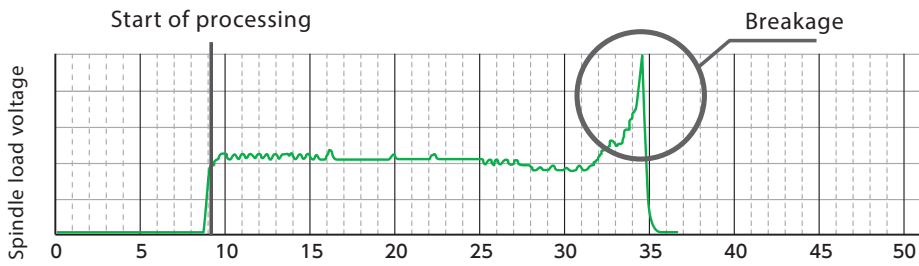
Size: $\varnothing 3$
 Work Material: SCM440 (82~90HRB)
 Cutting speed: 80m/min (8493min⁻¹)
 Feed: 1.188mm/min (0,14mm/rev)

25° Helix Angle Optimal for Ultra-Deep-Hole Drilling

Drilling | Solid carbide

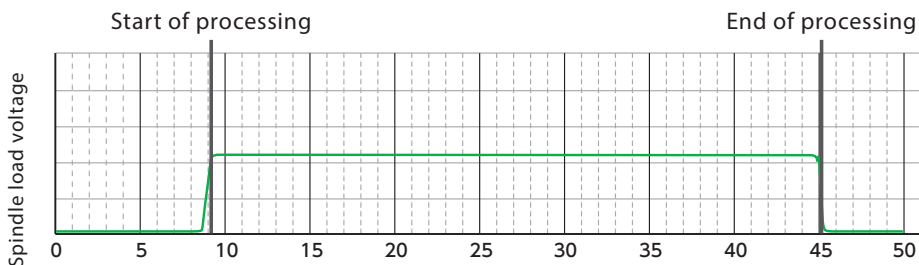


Cutting Data



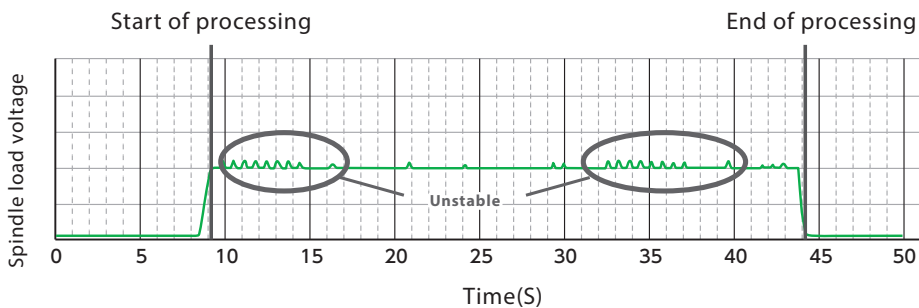
Helix Angle 20°

Insufficient helix angle causes clogging of chips and tool breakage



Helix Angle 25°

Stable performance



Helix Angle 30°

Low rigidity leads to unstable processing

Size: $\varnothing 6 \times 50D$ Work Material: SCM440 (82~90HRB) Depth of Hole: 300mm

CUTTING DATA

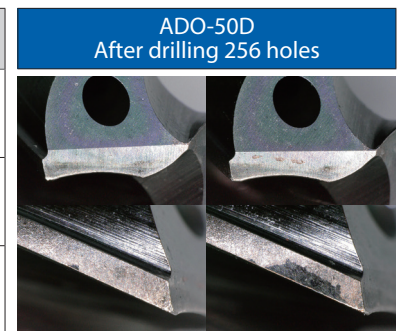
Long tool life even in ultra-deep-hole drilling applications

| | |
|---------------|-----------------------------|
| Size | Ø8 |
| Work Material | SCM440 (Raw material) |
| Depth of Cut | 391mm |
| Coolant | Water Soluble |
| Machine | Horizontal machining center |

| | | | |
|---------------|-------------------------------------|-----------------------------------|-----------------------------------|
| Tool | Second Step | | |
| | 1 | 2 | 3 |
| | ADO-50D | Competitor | Gun Drill |
| Cutting Speed | 62.8m/min (2,500min ⁻¹) | 70m/min (2,787min ⁻¹) | 60m/min (2,389min ⁻¹) |
| Feed | 750mm/min (0.3mm/rev) | 418mm/min (0.15mm/rev) | 143mm/min (0.06mm/rev) |

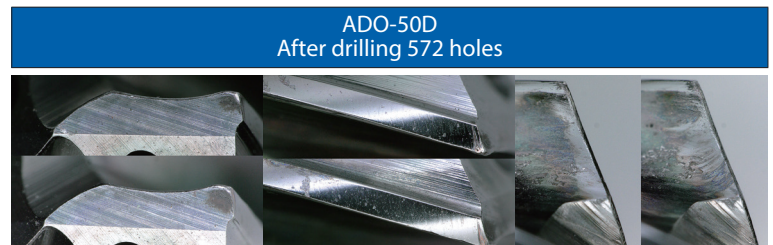
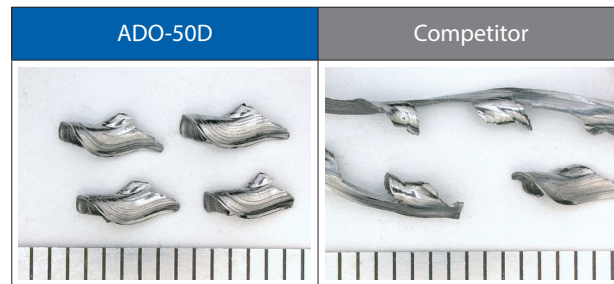
First Step: pilot hole at depth of 40mm

| | | Number of Holes | | Cutting Time |
|---|------------|-------------------------|----------------------|--------------|
| | | 100 | 200 | |
| 1 | ADO-50D | 265 Holes Still Running | | 1'4" |
| 2 | Competitor | 60 Holes | Breakage | 1'29" |
| 3 | Gun Drill | 65 Holes | Wear and replacement | 3'17" |



Effectively breaks chips into small and manageable pieces even in sticky work material

| | | |
|---------------|------------------------------------|------------------------------------|
| Tool | ADO-50D | Competitor 50D |
| Size | Ø5 | |
| Work Material | SCM420H | |
| Cutting Speed | 60m/min (3.822 min ⁻¹) | 50m/min (3.185 min ⁻¹) |
| Feed | 955m/min (0,25 mm/rev) | 636m/min (0,2 mm/rev) |
| Depth of Hole | 250mm (Blind) | |
| Coolant | Water-Soluble | |
| Machine | Multifunction Lathe | |



| | Number of Holes | | | | | |
|------------|--------------------------------|-----|-----|----------|-----|-----|
| | 100 | 200 | 300 | 400 | 500 | 600 |
| ADO-50D | 572 Holes Wear and replacement | | | | | |
| Competitor | 360 Holes | | | Breakage | | |

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