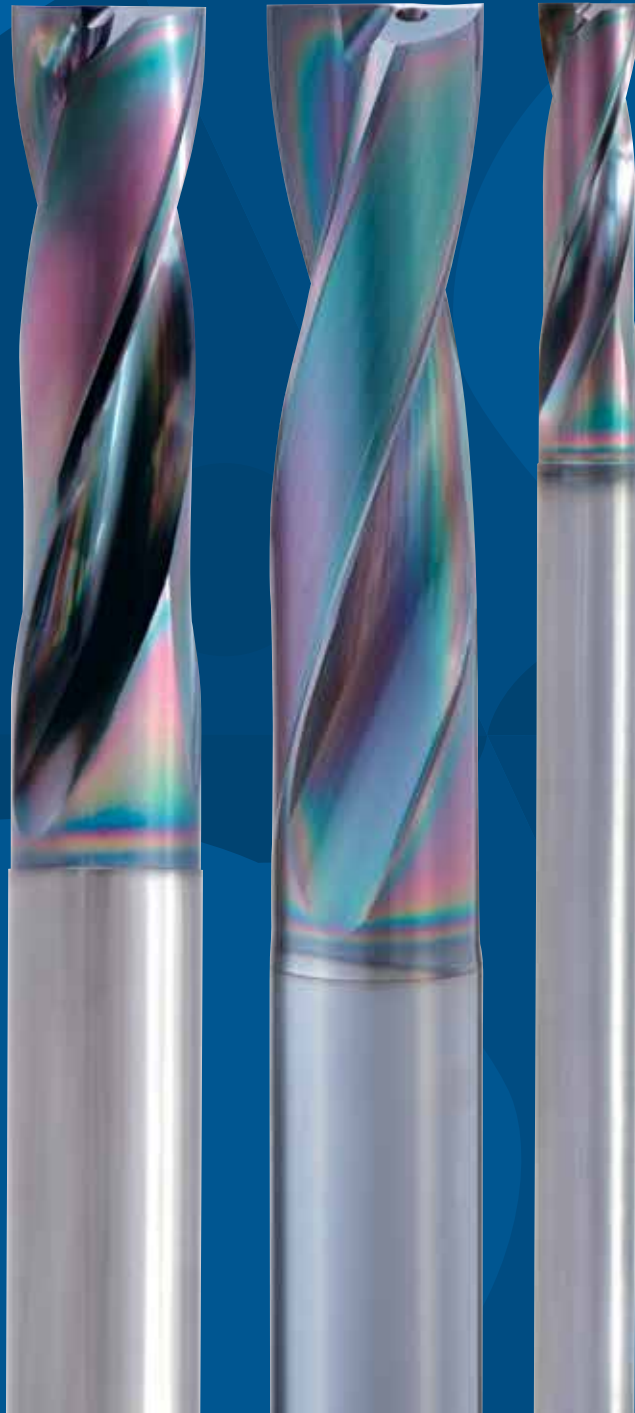




Carbide flat drills with/without internal coolant & for deep reach

ADF Series

Volume 3

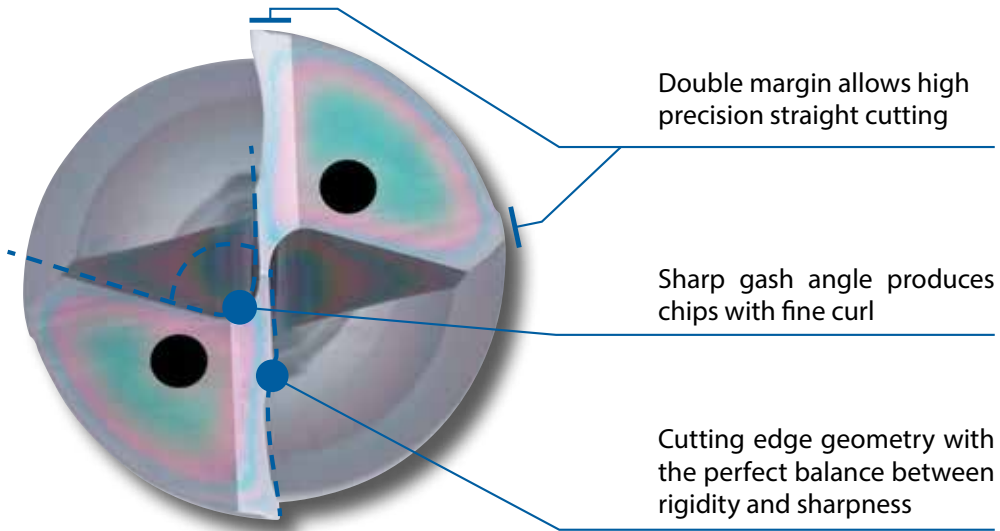


KEY FEATURES: ADF SERIES

- 
- 1** Carbide flat drill with or without internal coolant
 - 2** Designed for a wide variety of applications
 - 3** New EgiAs Coating: exceptional wear resistance & toughness
 - 4** Unique end cut geometry for stable cutting resistance
 - 5** 20° helical grooves with high rigidity
 - 6** ADFLS for deep reach flat drilling application



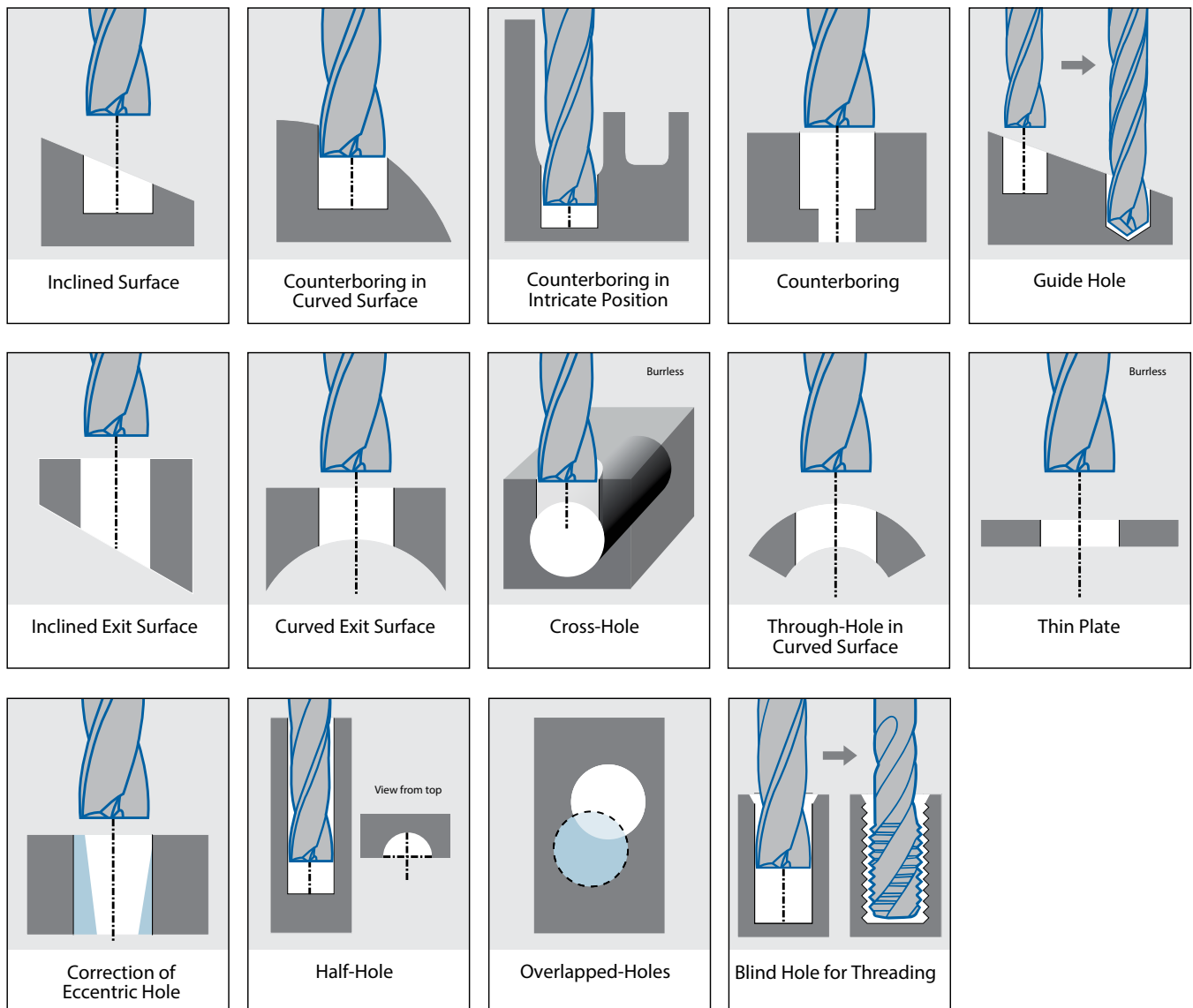
KEY FEATURES & BENEFITS



1 One drill does it all

Applicable for a multitude of drilling applications such as inclined surface, curved surface, flat-bottom hole, eccentric hole, and more.

■ Standard lineup for thread forming of pilot holes under M6



Radial cutting is not recommended.

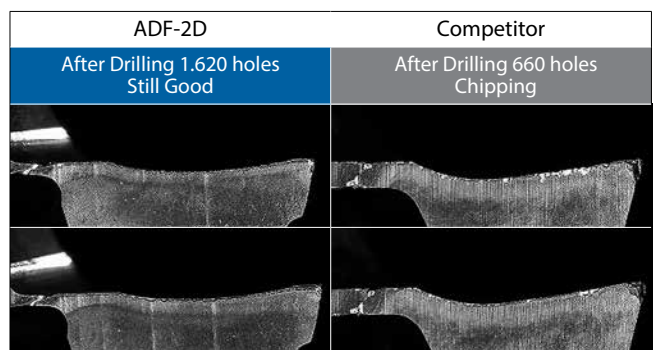
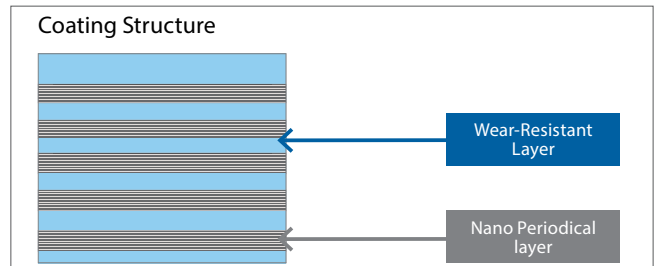
KEY FEATURES & BENEFITS

2 New coating: EgiAs

Exceptional wear resistance & toughness

Suppresses friction with the wear resistance layer; prevents breakage with the nano periodical layer.

| | |
|------------------|------------------------------------|
| Tool | ADF-2D Ø6 |
| Machined Surface | (30°) Angled Surface |
| Work Material | S50C |
| Cutting Speed | 75m/min (3.981 min ⁻¹) |
| Feed Rate | 239 mm/min (0,06 mm/rev) |
| Depth of Hole | 12 mm (Blind) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |



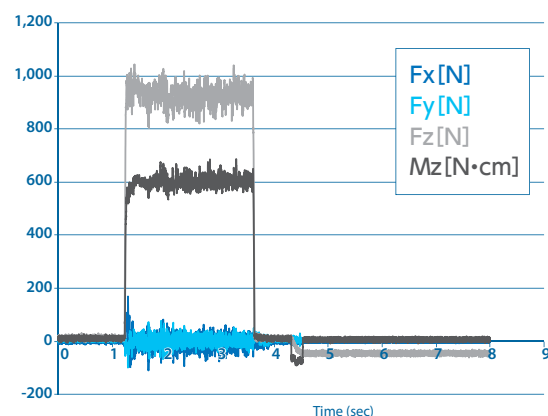
3 End cut geometry

Stable cutting resistance

Unique end cut geometry reduces cutting force to enable stable machining.

| | |
|------------------|------------------------------------|
| Tool | ADF-2D Ø10 |
| Machined Surface | Flat Surface |
| Work Material | S50C |
| Cutting Speed | 60m/min (1.911 min ⁻¹) |
| Feed Rate | 382 mm/min (0,2 mm/rev) |
| Depth of Hole | 20 mm (Blind) |
| Coolant | Water Soluble |
| Machine | Vertical Machining Center |

Cutting resistance wave form

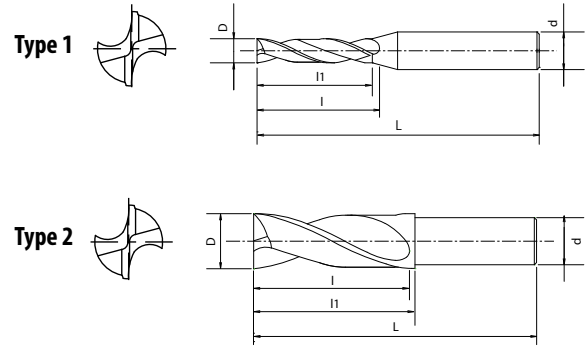


Oversize

Mouth **0,01mm** Depth of hole **0,01mm**

ADF-2D

Drilling | Solid carbide | Flat drills



- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- Flat drilling application
- 176 sizes

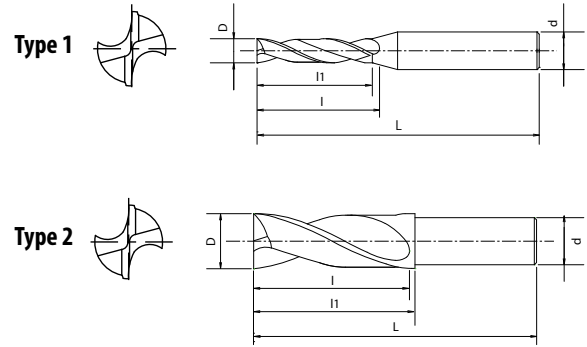


| EDP | D | L | l | l1 | d | Type | Price |
|---------|------|----|------|------|---|------|-------|
| 3330200 | 2 | 50 | 10,3 | 10 | 4 | 1 | |
| 3330210 | 2,1 | 50 | 10,5 | 10 | 4 | 1 | |
| 3330220 | 2,2 | 50 | 11 | 10,6 | 4 | 1 | |
| 3330230 | 2,3 | 50 | 11 | 10,8 | 4 | 1 | |
| 3330232 | 2,32 | 50 | 11 | 10,9 | 4 | 1 | |
| 3330240 | 2,4 | 50 | 12 | 11 | 4 | 1 | |
| 3330242 | 2,42 | 50 | 12 | 11,1 | 4 | 1 | |
| 3330250 | 2,5 | 50 | 12 | 11,2 | 4 | 1 | |
| 3330254 | 2,54 | 50 | 12 | 11,3 | 4 | 1 | |
| 3330258 | 2,58 | 50 | 12 | 11,4 | 4 | 1 | |
| 3330260 | 2,6 | 50 | 13 | 11,4 | 4 | 1 | |
| 3330270 | 2,7 | 50 | 13 | 11,6 | 4 | 1 | |
| 3330276 | 2,76 | 50 | 13 | 11,7 | 4 | 1 | |
| 3330278 | 2,78 | 50 | 13 | 11,7 | 4 | 1 | |
| 3330280 | 2,8 | 50 | 14 | 11,8 | 4 | 1 | |
| 3330290 | 2,9 | 50 | 14 | 11,9 | 4 | 1 | |
| 3330300 | 3 | 55 | 15 | 11,4 | 6 | 1 | |
| 3330303 | 3,03 | 55 | 15 | 11,5 | 6 | 1 | |
| 3330310 | 3,1 | 55 | 15 | 11,6 | 6 | 1 | |
| 3330315 | 3,15 | 55 | 15 | 11,7 | 6 | 1 | |
| 3330320 | 3,2 | 55 | 15 | 11,8 | 6 | 1 | |
| 3330330 | 3,3 | 55 | 15 | 12 | 6 | 1 | |
| 3330340 | 3,4 | 55 | 16 | 12,1 | 6 | 1 | |
| 3330350 | 3,5 | 55 | 16 | 12,3 | 6 | 1 | |
| 3330353 | 3,53 | 55 | 16 | 12,4 | 6 | 1 | |
| 3330360 | 3,6 | 55 | 16 | 12,5 | 6 | 1 | |
| 3330366 | 3,66 | 55 | 16 | 12,6 | 6 | 1 | |
| 3330368 | 3,68 | 55 | 16 | 12,7 | 6 | 1 | |
| 3330370 | 3,7 | 55 | 16 | 12,7 | 6 | 1 | |
| 3330380 | 3,8 | 60 | 19 | 17,9 | 6 | 1 | |
| 3330390 | 3,9 | 60 | 19 | 18,1 | 6 | 1 | |
| 3330400 | 4 | 60 | 19 | 18,3 | 6 | 1 | |
| 3330403 | 4,03 | 60 | 19 | 18,3 | 6 | 1 | |
| 3330410 | 4,1 | 60 | 19 | 18,5 | 6 | 1 | |
| 3330420 | 4,2 | 60 | 21 | 18,6 | 6 | 1 | |
| 3330430 | 4,3 | 60 | 21 | 18,8 | 6 | 1 | |
| 3330440 | 4,4 | 60 | 21 | 19 | 6 | 1 | |
| 3330450 | 4,5 | 60 | 21 | 19,2 | 6 | 1 | |
| 3330453 | 4,53 | 60 | 21 | 19,3 | 6 | 1 | |
| 3330460 | 4,6 | 60 | 21 | 19,4 | 6 | 1 | |
| 3330462 | 4,62 | 60 | 21 | 19,4 | 6 | 1 | |
| 3330464 | 4,64 | 60 | 21 | 19,5 | 6 | 1 | |
| 3330470 | 4,7 | 60 | 21 | 19,6 | 6 | 1 | |
| 3330480 | 4,8 | 65 | 24,8 | 24 | 6 | 1 | |
| 3330490 | 4,9 | 65 | 24,9 | 24 | 6 | 1 | |

| EDP | D | L | l | l1 | d | Type | Price |
|---------|------|----|------|------|---|------|-------|
| 3330500 | 5 | 65 | 25,1 | 24 | 6 | 1 | |
| 3330503 | 5,03 | 65 | 25,2 | 24 | 6 | 1 | |
| 3330510 | 5,1 | 65 | 25,3 | 24 | 6 | 1 | |
| 3330520 | 5,2 | 65 | 25,5 | 24 | 6 | 1 | |
| 3330530 | 5,3 | 65 | 25,7 | 24 | 6 | 1 | |
| 3330540 | 5,4 | 65 | 27 | 25,9 | 6 | 1 | |
| 3330550 | 5,5 | 65 | 27 | 26,1 | 6 | 1 | |
| 3330552 | 5,52 | 65 | 27 | 26,1 | 6 | 1 | |
| 3330554 | 5,54 | 65 | 27 | 26,1 | 6 | 1 | |
| 3330560 | 5,6 | 65 | 27 | 26,3 | 6 | 1 | |
| 3330570 | 5,7 | 65 | 27 | 26,4 | 6 | 1 | |
| 3330580 | 5,8 | 65 | 27 | 26,6 | 6 | 1 | |
| 3330590 | 5,9 | 65 | 27 | 26,8 | 6 | 1 | |
| 3330600 | 6 | 65 | 27 | 27 | 6 | 2 | |
| 3330603 | 6,03 | 70 | 30 | 32 | 6 | 2 | |
| 3330610 | 6,1 | 70 | 30 | 32 | 6 | 2 | |
| 3330620 | 6,2 | 70 | 30 | 32 | 6 | 2 | |
| 3330630 | 6,3 | 70 | 30 | 32 | 6 | 2 | |
| 3330640 | 6,4 | 70 | 30 | 32 | 6 | 2 | |
| 3330650 | 6,5 | 70 | 30 | 32 | 6 | 2 | |
| 3330653 | 6,53 | 70 | 30 | 32 | 6 | 2 | |
| 3330660 | 6,6 | 70 | 30 | 32 | 6 | 2 | |
| 3330670 | 6,7 | 70 | 30 | 32 | 6 | 2 | |
| 3330680 | 6,8 | 70 | 30 | 32 | 6 | 2 | |
| 3330690 | 6,9 | 70 | 30 | 32 | 6 | 2 | |
| 3330700 | 7 | 70 | 30 | 32 | 6 | 2 | |
| 3330703 | 7,03 | 75 | 34 | 36 | 6 | 2 | |
| 3330710 | 7,1 | 75 | 34 | 36 | 6 | 2 | |
| 3330720 | 7,2 | 75 | 34 | 36 | 6 | 2 | |
| 3330730 | 7,3 | 75 | 34 | 36 | 6 | 2 | |
| 3330740 | 7,4 | 75 | 34 | 36 | 6 | 2 | |
| 3330750 | 7,5 | 75 | 34 | 36 | 6 | 2 | |
| 3330760 | 7,6 | 75 | 34 | 36 | 6 | 2 | |
| 3330770 | 7,7 | 75 | 34 | 36 | 6 | 2 | |
| 3330780 | 7,8 | 75 | 34 | 36 | 6 | 2 | |
| 3330790 | 7,9 | 75 | 34 | 36 | 6 | 2 | |
| 3330800 | 8 | 75 | 34 | 36 | 8 | 2 | |
| 3330803 | 8,03 | 80 | 38 | 40 | 8 | 2 | |
| 3330810 | 8,1 | 80 | 38 | 40 | 8 | 2 | |
| 3330820 | 8,2 | 80 | 38 | 40 | 8 | 2 | |
| 3330830 | 8,3 | 80 | 38 | 40 | 8 | 2 | |
| 3330840 | 8,4 | 80 | 38 | 40 | 8 | 2 | |
| 3330850 | 8,5 | 80 | 38 | 40 | 8 | 2 | |
| 3330853 | 8,53 | 80 | 38 | 40 | 8 | 2 | |
| 3330860 | 8,6 | 80 | 38 | 40 | 8 | 2 | |

ADF-2D

Drilling | Solid carbide | Flat drills



- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- Flat drilling application
- 176 sizes



Drilling | Solid carbide

Flat drills

| EDP | D | L | l | l1 | d | Type | Price |
|---------|-------|-----|----|----|----|------|-------|
| 3330870 | 8,7 | 80 | 38 | 40 | 8 | 2 | |
| 3330880 | 8,8 | 80 | 38 | 40 | 8 | 2 | |
| 3330890 | 8,9 | 80 | 38 | 40 | 8 | 2 | |
| 3330900 | 9 | 80 | 38 | 40 | 8 | 2 | |
| 3330903 | 9,03 | 85 | 42 | 44 | 8 | 2 | |
| 3330910 | 9,1 | 85 | 42 | 44 | 8 | 2 | |
| 3330920 | 9,2 | 85 | 42 | 44 | 8 | 2 | |
| 3330930 | 9,3 | 85 | 42 | 44 | 8 | 2 | |
| 3330940 | 9,4 | 85 | 42 | 44 | 8 | 2 | |
| 3330950 | 9,5 | 85 | 42 | 44 | 8 | 2 | |
| 3330960 | 9,6 | 85 | 42 | 44 | 8 | 2 | |
| 3330970 | 9,7 | 85 | 42 | 44 | 8 | 2 | |
| 3330980 | 9,8 | 85 | 42 | 44 | 8 | 2 | |
| 3330990 | 9,9 | 85 | 42 | 44 | 8 | 2 | |
| 3331000 | 10 | 85 | 42 | 44 | 10 | 2 | |
| 3331003 | 10,03 | 90 | 46 | 48 | 10 | 2 | |
| 3331010 | 10,1 | 90 | 46 | 48 | 10 | 2 | |
| 3331020 | 10,2 | 90 | 46 | 48 | 10 | 2 | |
| 3331030 | 10,3 | 90 | 46 | 48 | 10 | 2 | |
| 3331040 | 10,4 | 90 | 46 | 48 | 10 | 2 | |
| 3331050 | 10,5 | 90 | 46 | 48 | 10 | 2 | |
| 3331060 | 10,6 | 90 | 46 | 48 | 10 | 2 | |
| 3331070 | 10,7 | 90 | 46 | 48 | 10 | 2 | |
| 3331080 | 10,8 | 90 | 46 | 48 | 10 | 2 | |
| 3331090 | 10,9 | 90 | 46 | 48 | 10 | 2 | |
| 3331100 | 11 | 90 | 46 | 48 | 10 | 2 | |
| 3331103 | 11,03 | 95 | 50 | 52 | 10 | 2 | |
| 3331110 | 11,1 | 95 | 50 | 52 | 10 | 2 | |
| 3331120 | 11,2 | 95 | 50 | 52 | 10 | 2 | |
| 3331130 | 11,3 | 95 | 50 | 52 | 10 | 2 | |
| 3331140 | 11,4 | 95 | 50 | 52 | 10 | 2 | |
| 3331150 | 11,5 | 95 | 50 | 52 | 10 | 2 | |
| 3331160 | 11,6 | 95 | 50 | 52 | 10 | 2 | |
| 3331170 | 11,7 | 95 | 50 | 52 | 10 | 2 | |
| 3331180 | 11,8 | 95 | 50 | 52 | 10 | 2 | |
| 3331190 | 11,9 | 95 | 50 | 52 | 10 | 2 | |
| 3331200 | 12 | 95 | 50 | 52 | 12 | 2 | |
| 3331203 | 12,03 | 100 | 56 | 58 | 12 | 2 | |
| 3331210 | 12,1 | 100 | 56 | 58 | 12 | 2 | |
| 3331220 | 12,2 | 100 | 56 | 58 | 12 | 2 | |
| 3331230 | 12,3 | 100 | 56 | 58 | 12 | 2 | |
| 3331240 | 12,4 | 100 | 56 | 58 | 12 | 2 | |
| 3331250 | 12,5 | 100 | 56 | 58 | 12 | 2 | |
| 3331260 | 12,6 | 100 | 56 | 58 | 12 | 2 | |
| 3331270 | 12,7 | 100 | 56 | 58 | 12 | 2 | |

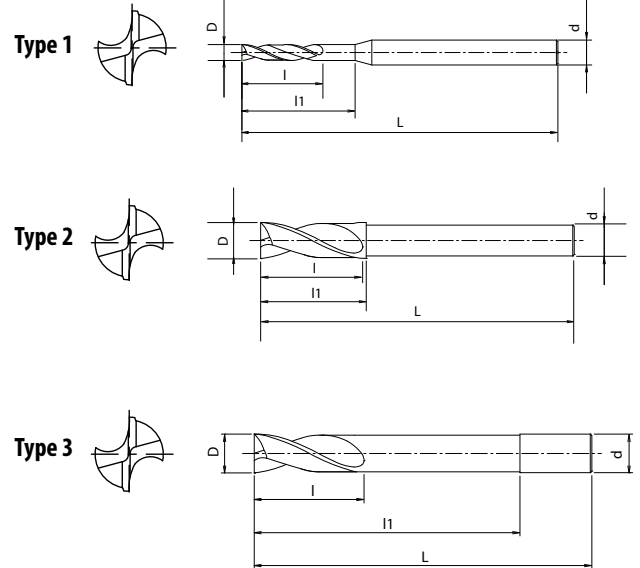
| EDP | D | L | l | l1 | d | Type | Price |
|---------|------|-----|----|----|----|------|-------|
| 3331280 | 12,8 | 100 | 56 | 58 | 12 | 2 | |
| 3331290 | 12,9 | 100 | 56 | 58 | 12 | 2 | |
| 3331300 | 13 | 100 | 56 | 58 | 12 | 2 | |
| 3331310 | 13,1 | 105 | 60 | 62 | 12 | 2 | |
| 3331320 | 13,2 | 105 | 60 | 62 | 12 | 2 | |
| 3331330 | 13,3 | 105 | 60 | 62 | 12 | 2 | |
| 3331340 | 13,4 | 105 | 60 | 62 | 12 | 2 | |
| 3331350 | 13,5 | 105 | 60 | 62 | 12 | 2 | |
| 3331360 | 13,6 | 105 | 60 | 62 | 12 | 2 | |
| 3331370 | 13,7 | 105 | 60 | 62 | 12 | 2 | |
| 3331380 | 13,8 | 105 | 60 | 62 | 12 | 2 | |
| 3331390 | 13,9 | 105 | 60 | 62 | 12 | 2 | |
| 3331400 | 14 | 105 | 60 | 62 | 12 | 2 | |
| 3331410 | 14,1 | 110 | 64 | 66 | 12 | 2 | |
| 3331420 | 14,2 | 110 | 64 | 66 | 12 | 2 | |
| 3331430 | 14,3 | 110 | 64 | 66 | 12 | 2 | |
| 3331440 | 14,4 | 110 | 64 | 66 | 12 | 2 | |
| 3331450 | 14,5 | 110 | 64 | 66 | 12 | 2 | |
| 3331460 | 14,6 | 110 | 64 | 66 | 12 | 2 | |
| 3331470 | 14,7 | 110 | 64 | 66 | 12 | 2 | |
| 3331480 | 14,8 | 110 | 64 | 66 | 12 | 2 | |
| 3331490 | 14,9 | 110 | 64 | 66 | 12 | 2 | |
| 3331500 | 15 | 110 | 64 | 66 | 12 | 2 | |
| 3331510 | 15,1 | 115 | 68 | 70 | 12 | 2 | |
| 3331520 | 15,2 | 115 | 68 | 70 | 12 | 2 | |
| 3331530 | 15,3 | 115 | 68 | 70 | 12 | 2 | |
| 3331540 | 15,4 | 115 | 68 | 70 | 12 | 2 | |
| 3331550 | 15,5 | 115 | 68 | 70 | 12 | 2 | |
| 3331560 | 15,6 | 115 | 68 | 70 | 12 | 2 | |
| 3331570 | 15,7 | 115 | 68 | 70 | 12 | 2 | |
| 3331580 | 15,8 | 115 | 68 | 70 | 12 | 2 | |
| 3331590 | 15,9 | 115 | 68 | 70 | 12 | 2 | |
| 3331600 | 16 | 115 | 68 | 70 | 16 | 2 | |
| 3331650 | 16,5 | 125 | 74 | 76 | 16 | 2 | |
| 3331700 | 17 | 125 | 74 | 76 | 16 | 2 | |
| 3331750 | 17,5 | 130 | 78 | 80 | 16 | 2 | |
| 3331800 | 18 | 130 | 78 | 80 | 16 | 2 | |
| 3331850 | 18,5 | 135 | 84 | 86 | 16 | 2 | |
| 3331900 | 19 | 135 | 84 | 86 | 16 | 2 | |
| 3331950 | 19,5 | 140 | 88 | 90 | 16 | 2 | |
| 3332000 | 20 | 140 | 88 | 90 | 20 | 2 | |

ADFLS-2D

Drilling | Solid carbide | Flat drills



- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- For deep reach flat drilling application
- 64 sizes



| | | | | | | | | |
|------------------------|----------------------------|-------------------------|-------------------|------------------|-------------------|------------------|-------------------------|-------------------------|
| P ○ C: ≤0,2% | P ○ C: 0,25-0,4% | P ○ C: ≥0,45% | P ○ SCM | K ○ GG | K ○ GGG | N ○ Al | H ○ 25-35 HRC | H ○ 35-45 HRC |
|------------------------|----------------------------|-------------------------|-------------------|------------------|-------------------|------------------|-------------------------|-------------------------|

| | | | | |
|----------|----------------|-----------|------------|-----------|
| A | CARBIDE | EG | 20° | h8 |
|----------|----------------|-----------|------------|-----------|

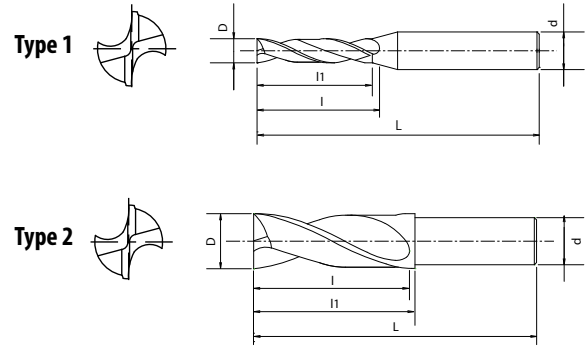
page 10

| EDP | D | L | l | l1 | d | Type | Price |
|---------|-----|-----|----|----|----|------|-------|
| 3332300 | 3 | 100 | 15 | 30 | 6 | 1 | |
| 3332310 | 3,1 | 100 | 15 | 31 | 6 | 1 | |
| 3332320 | 3,2 | 100 | 15 | 32 | 6 | 1 | |
| 3332330 | 3,3 | 100 | 15 | 33 | 6 | 1 | |
| 3332340 | 3,4 | 100 | 16 | 34 | 6 | 1 | |
| 3332350 | 3,5 | 100 | 16 | 35 | 6 | 1 | |
| 3332360 | 3,6 | 100 | 16 | 36 | 6 | 1 | |
| 3332370 | 3,7 | 100 | 16 | 37 | 6 | 1 | |
| 3332380 | 3,8 | 100 | 19 | 38 | 6 | 1 | |
| 3332390 | 3,9 | 100 | 19 | 39 | 6 | 1 | |
| 3332400 | 4 | 100 | 19 | 40 | 6 | 1 | |
| 3332410 | 4,1 | 100 | 19 | 41 | 6 | 1 | |
| 3332420 | 4,2 | 100 | 21 | 42 | 6 | 1 | |
| 3332430 | 4,3 | 100 | 21 | 43 | 6 | 1 | |
| 3332440 | 4,4 | 100 | 21 | 44 | 6 | 1 | |
| 3332450 | 4,5 | 100 | 21 | 45 | 6 | 1 | |
| 3332460 | 4,6 | 100 | 21 | 46 | 6 | 1 | |
| 3332470 | 4,7 | 100 | 21 | 47 | 6 | 1 | |
| 3332480 | 4,8 | 100 | 24 | 48 | 6 | 1 | |
| 3332490 | 4,9 | 100 | 24 | 49 | 6 | 1 | |
| 3332500 | 5 | 110 | 24 | 50 | 6 | 1 | |
| 3332510 | 5,1 | 110 | 24 | 51 | 6 | 1 | |
| 3332520 | 5,2 | 110 | 24 | 52 | 6 | 1 | |
| 3332530 | 5,3 | 110 | 24 | 53 | 6 | 1 | |
| 3332540 | 5,4 | 110 | 27 | 54 | 6 | 1 | |
| 3332550 | 5,5 | 110 | 27 | 55 | 6 | 1 | |
| 3332560 | 5,6 | 110 | 27 | 56 | 6 | 1 | |
| 3332570 | 5,7 | 110 | 27 | 57 | 6 | 1 | |
| 3332580 | 5,8 | 110 | 27 | 58 | 6 | 1 | |
| 3332590 | 5,9 | 110 | 27 | 59 | 6 | 1 | |
| 3332600 | 6 | 110 | 27 | 29 | 6 | 2 | |
| 3334060 | 6 | 110 | 27 | 60 | 6 | 3 | |
| 3332650 | 6,5 | 120 | 30 | 32 | 6 | 2 | |
| 3332680 | 6,8 | 120 | 30 | 32 | 6 | 2 | |
| 3332700 | 7 | 120 | 30 | 32 | 6 | 2 | |
| 3332750 | 7,5 | 130 | 34 | 36 | 6 | 2 | |
| 3332780 | 7,8 | 130 | 34 | 36 | 6 | 2 | |
| 3332800 | 8 | 130 | 34 | 36 | 8 | 2 | |
| 3334080 | 8 | 130 | 34 | 80 | 8 | 3 | |
| 3332850 | 8,5 | 140 | 38 | 40 | 8 | 2 | |
| 3332880 | 8,8 | 140 | 38 | 40 | 8 | 2 | |
| 3332900 | 9 | 140 | 38 | 40 | 8 | 2 | |
| 3332950 | 9,5 | 150 | 42 | 44 | 8 | 2 | |
| 3332980 | 9,8 | 150 | 42 | 44 | 8 | 2 | |
| 3333000 | 10 | 150 | 42 | 44 | 10 | 2 | |

| EDP | D | L | l | l1 | d | Type | Price |
|---------|------|-----|----|-----|----|------|-------|
| 3334100 | 10 | 150 | 42 | 100 | 10 | 3 | |
| 3333050 | 10,5 | 160 | 46 | 48 | 10 | 2 | |
| 3333080 | 10,8 | 160 | 46 | 48 | 10 | 2 | |
| 3333100 | 11 | 160 | 46 | 48 | 10 | 2 | |
| 3333180 | 11,8 | 170 | 50 | 52 | 10 | 2 | |
| 3333200 | 12 | 170 | 50 | 52 | 12 | 2 | |
| 3334120 | 12 | 170 | 50 | 120 | 12 | 3 | |
| 3333250 | 12,5 | 180 | 56 | 58 | 12 | 2 | |
| 3333300 | 13 | 180 | 56 | 58 | 12 | 2 | |
| 3333350 | 13,5 | 190 | 60 | 62 | 12 | 2 | |
| 3333400 | 14 | 190 | 60 | 62 | 12 | 2 | |
| 3333500 | 15 | 200 | 64 | 66 | 12 | 2 | |
| 3333600 | 16 | 210 | 68 | 70 | 16 | 2 | |
| 3334160 | 16 | 210 | 68 | 160 | 16 | 3 | |
| 3333700 | 17 | 220 | 74 | 76 | 16 | 2 | |
| 3333750 | 17,5 | 230 | 78 | 80 | 16 | 2 | |
| 3333800 | 18 | 230 | 78 | 80 | 16 | 2 | |
| 3334000 | 20 | 250 | 88 | 90 | 20 | 2 | |
| 3334200 | 20 | 250 | 88 | 200 | 20 | 3 | |

ADFO-3D NEW

Drilling | Solid carbide | Flat drills



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Flat drilling application
- 160 sizes

| | | | | | | | | | | |
|----------------------|--------------------------|-----------------------|-----------------|----------------|-----------------|----------------|--------------------|-----------------------|-----------------------|-----------------------|
| P C: ≤0,2% | P C: 0,25-0,4% | P C: ≥0,45% | P SCM | K GG | K GGG | N Al | N AC,ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC |
|----------------------|--------------------------|-----------------------|-----------------|----------------|-----------------|----------------|--------------------|-----------------------|-----------------------|-----------------------|

| | | | | | |
|----------|----------------|-----------|------------|-------------------|-----------|
| A | CARBIDE | EG | 20° | SHRINK FIT | h8 |
|----------|----------------|-----------|------------|-------------------|-----------|



Drilling | Solid carbide

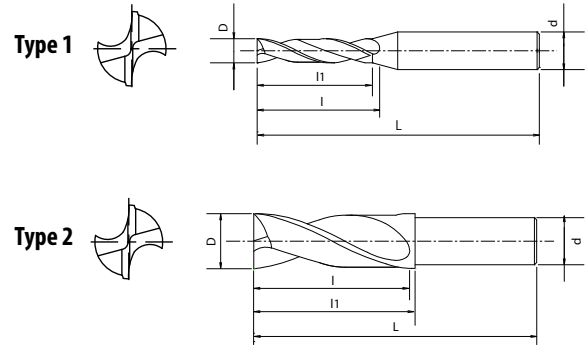
Flat drills

| EDP | D | L | l | l1 | d | Type | Price |
|---------|------|----|----|----|---|------|-------|
| 3334300 | 3 | 55 | 16 | 15 | 4 | 1 | |
| 3334301 | 3.03 | 55 | 16 | 15 | 4 | 1 | |
| 3334302 | 3.1 | 55 | 16 | 15 | 4 | 1 | |
| 3334303 | 3.15 | 55 | 16 | 15 | 4 | 1 | |
| 3334304 | 3.2 | 55 | 16 | 15 | 4 | 1 | |
| 3334305 | 3.3 | 55 | 16 | 15 | 4 | 1 | |
| 3334306 | 3.4 | 55 | 17 | 16 | 4 | 1 | |
| 3334307 | 3.5 | 55 | 17 | 16 | 4 | 1 | |
| 3334308 | 3.53 | 55 | 17 | 16 | 4 | 1 | |
| 3334309 | 3.6 | 55 | 17 | 16 | 4 | 1 | |
| 3334310 | 3.66 | 55 | 17 | 16 | 4 | 1 | |
| 3334311 | 3.68 | 55 | 17 | 16 | 4 | 1 | |
| 3334312 | 3.7 | 55 | 17 | 16 | 4 | 1 | |
| 3334313 | 3.8 | 60 | 20 | 19 | 4 | 1 | |
| 3334314 | 3.9 | 60 | 20 | 19 | 4 | 1 | |
| 3334315 | 4 | 60 | 20 | 19 | 4 | 2 | |
| 3334316 | 4.03 | 60 | 22 | 21 | 6 | 1 | |
| 3334317 | 4.1 | 60 | 22 | 21 | 6 | 1 | |
| 3334318 | 4.2 | 60 | 22 | 21 | 6 | 1 | |
| 3334319 | 4.3 | 60 | 22 | 21 | 6 | 1 | |
| 3334320 | 4.4 | 60 | 22 | 21 | 6 | 1 | |
| 3334321 | 4.5 | 60 | 22 | 21 | 6 | 1 | |
| 3334322 | 4.53 | 60 | 21 | 21 | 6 | 1 | |
| 3334323 | 4.6 | 60 | 21 | 21 | 6 | 1 | |
| 3334324 | 4.62 | 60 | 21 | 21 | 6 | 1 | |
| 3334325 | 4.64 | 60 | 21 | 21 | 6 | 1 | |
| 3334326 | 4.7 | 60 | 21 | 21 | 6 | 1 | |
| 3334327 | 4.8 | 65 | 24 | 24 | 6 | 1 | |
| 3334328 | 4.9 | 65 | 24 | 24 | 6 | 1 | |
| 3334329 | 5 | 65 | 24 | 24 | 6 | 1 | |
| 3334330 | 5.03 | 65 | 24 | 24 | 6 | 1 | |
| 3334331 | 5.1 | 65 | 24 | 24 | 6 | 1 | |
| 3334332 | 5.2 | 65 | 24 | 24 | 6 | 1 | |
| 3334333 | 5.3 | 65 | 24 | 24 | 6 | 1 | |
| 3334334 | 5.4 | 65 | 27 | 27 | 6 | 1 | |
| 3334335 | 5.5 | 65 | 27 | 27 | 6 | 1 | |
| 3334336 | 5.52 | 65 | 27 | 27 | 6 | 1 | |
| 3334337 | 5.54 | 65 | 27 | 27 | 6 | 1 | |
| 3334338 | 5.6 | 65 | 27 | 27 | 6 | 1 | |
| 3334339 | 5.7 | 65 | 27 | 27 | 6 | 1 | |
| 3334340 | 5.8 | 65 | 27 | 27 | 6 | 1 | |
| 3334341 | 5.9 | 65 | 27 | 27 | 6 | 1 | |
| 3334342 | 6 | 65 | 27 | 27 | 6 | 2 | |
| 3334343 | 6.03 | 70 | 30 | 30 | 8 | 1 | |
| 3334344 | 6,1 | 70 | 30 | 30 | 8 | 1 | |

| EDP | D | L | l | l1 | d | Type | Price |
|---------|-------|----|----|----|----|------|-------|
| 3334345 | 6.2 | 70 | 31 | 30 | 8 | 1 | |
| 3334346 | 6.3 | 70 | 31 | 30 | 8 | 1 | |
| 3334347 | 6.4 | 70 | 31 | 30 | 8 | 1 | |
| 3334348 | 6.5 | 70 | 31 | 30 | 8 | 1 | |
| 3334349 | 6.53 | 70 | 31 | 30 | 8 | 1 | |
| 3334350 | 6.6 | 70 | 31 | 30 | 8 | 1 | |
| 3334351 | 6.7 | 70 | 31 | 30 | 8 | 1 | |
| 3334352 | 6.8 | 70 | 31 | 30 | 8 | 1 | |
| 3334353 | 6.9 | 70 | 31 | 30 | 8 | 1 | |
| 3334354 | 7 | 70 | 31 | 30 | 8 | 1 | |
| 3334355 | 7.03 | 70 | 31 | 30 | 8 | 1 | |
| 3334356 | 7.1 | 75 | 35 | 34 | 8 | 1 | |
| 3334357 | 7.2 | 75 | 35 | 34 | 8 | 1 | |
| 3334358 | 7.3 | 75 | 35 | 34 | 8 | 1 | |
| 3334359 | 7.4 | 75 | 35 | 34 | 8 | 1 | |
| 3334360 | 7.5 | 75 | 35 | 34 | 8 | 1 | |
| 3334361 | 7.6 | 75 | 35 | 34 | 8 | 1 | |
| 3334362 | 7.7 | 75 | 35 | 34 | 8 | 1 | |
| 3334363 | 7.8 | 75 | 35 | 34 | 8 | 1 | |
| 3334364 | 7.9 | 75 | 35 | 34 | 8 | 1 | |
| 3334365 | 8 | 75 | 35 | 34 | 8 | 2 | |
| 3334366 | 8.03 | 80 | 39 | 38 | 10 | 1 | |
| 3334367 | 8.1 | 80 | 39 | 38 | 10 | 1 | |
| 3334368 | 8.2 | 80 | 39 | 38 | 10 | 1 | |
| 3334369 | 8.3 | 80 | 39 | 38 | 10 | 1 | |
| 3334370 | 8.4 | 80 | 39 | 38 | 10 | 1 | |
| 3334371 | 8.5 | 80 | 39 | 38 | 10 | 1 | |
| 3334372 | 8.53 | 80 | 39 | 38 | 10 | 1 | |
| 3334373 | 8.6 | 80 | 39 | 38 | 10 | 1 | |
| 3334374 | 8.7 | 80 | 39 | 38 | 10 | 1 | |
| 3334375 | 8.8 | 80 | 39 | 38 | 10 | 1 | |
| 3334376 | 8.9 | 80 | 39 | 38 | 10 | 1 | |
| 3334377 | 9 | 80 | 39 | 38 | 10 | 1 | |
| 3334378 | 9.03 | 80 | 39 | 38 | 10 | 1 | |
| 3334379 | 9.1 | 85 | 43 | 42 | 10 | 1 | |
| 3334380 | 9.2 | 85 | 43 | 42 | 10 | 1 | |
| 3334381 | 9.3 | 85 | 43 | 42 | 10 | 1 | |
| 3334382 | 9.4 | 85 | 43 | 42 | 10 | 1 | |
| 3334383 | 9.5 | 85 | 43 | 42 | 10 | 1 | |
| 3334384 | 9.6 | 85 | 43 | 42 | 10 | 1 | |
| 3334385 | 9.7 | 85 | 43 | 42 | 10 | 1 | |
| 3334386 | 9.8 | 85 | 43 | 42 | 10 | 1 | |
| 3334387 | 9.9 | 85 | 43 | 42 | 10 | 1 | |
| 3334388 | 10 | 85 | 43 | 42 | 10 | 2 | |
| 3334389 | 10.03 | 90 | 47 | 46 | 12 | 1 | |

ADFO-3D NEW

Drilling | Solid carbide | Flat drills



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Flat drilling application
- 160 sizes

| | | | | | | | | | | |
|-------------------|-----------------------|--------------------|--------------|-------------|--------------|-------------|-----------------|--------------------|--------------------|--------------------|
| P C: ≤0,2% | P C: 0,25-0,4% | P C: ≥0,45% | P SCM | K GG | K GGG | N AI | N AC,ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC |
|-------------------|-----------------------|--------------------|--------------|-------------|--------------|-------------|-----------------|--------------------|--------------------|--------------------|

| | | | | | | |
|----------|----------------|-----------|------------|-------------------|--|-----------|
| A | CARBIDE | EG | 20° | SHRINK FIT | | h8 |
|----------|----------------|-----------|------------|-------------------|--|-----------|

page 11

| EDP | D | L | I | l1 | d | Type | Price |
|---------|-------|-----|----|----|----|------|-------|
| 3334390 | 10.1 | 90 | 47 | 46 | 12 | 1 | |
| 3334391 | 10.2 | 90 | 47 | 46 | 12 | 1 | |
| 3334392 | 10.3 | 90 | 47 | 46 | 12 | 1 | |
| 3334393 | 10.4 | 90 | 47 | 46 | 12 | 1 | |
| 3334394 | 10.5 | 90 | 47 | 46 | 12 | 1 | |
| 3334395 | 10.6 | 90 | 47 | 46 | 12 | 1 | |
| 3334396 | 10.7 | 90 | 47 | 46 | 12 | 1 | |
| 3334397 | 10.8 | 90 | 47 | 46 | 12 | 1 | |
| 3334398 | 10.9 | 90 | 47 | 46 | 12 | 1 | |
| 3334399 | 11 | 90 | 47 | 46 | 12 | 1 | |
| 3334400 | 11.03 | 90 | 47 | 46 | 12 | 1 | |
| 3334401 | 11.1 | 95 | 51 | 50 | 12 | 1 | |
| 3334402 | 11.2 | 95 | 51 | 50 | 12 | 1 | |
| 3334403 | 11.3 | 95 | 51 | 50 | 12 | 1 | |
| 3334404 | 11.4 | 95 | 51 | 50 | 12 | 1 | |
| 3334405 | 11.5 | 95 | 51 | 50 | 12 | 1 | |
| 3334406 | 11.6 | 95 | 51 | 50 | 12 | 1 | |
| 3334407 | 11.7 | 95 | 51 | 50 | 12 | 1 | |
| 3334408 | 11.8 | 95 | 51 | 50 | 12 | 1 | |
| 3334409 | 11.9 | 95 | 51 | 50 | 12 | 1 | |
| 3334410 | 12 | 95 | 51 | 50 | 12 | 2 | |
| 3334411 | 12.03 | 100 | 57 | 56 | 14 | 1 | |
| 3334412 | 12.1 | 100 | 57 | 56 | 14 | 1 | |
| 3334413 | 12.2 | 100 | 57 | 56 | 14 | 1 | |
| 3334414 | 12.3 | 100 | 57 | 56 | 14 | 1 | |
| 3334415 | 12.4 | 100 | 57 | 56 | 14 | 1 | |
| 3334416 | 12.5 | 100 | 57 | 56 | 14 | 1 | |
| 3334417 | 12.6 | 100 | 57 | 56 | 14 | 1 | |
| 3334418 | 12.7 | 100 | 57 | 56 | 14 | 1 | |
| 3334419 | 12.8 | 100 | 57 | 56 | 14 | 1 | |
| 3334420 | 12.9 | 100 | 57 | 56 | 14 | 1 | |
| 3334421 | 13 | 100 | 57 | 56 | 14 | 1 | |
| 3334422 | 13.1 | 105 | 61 | 60 | 14 | 1 | |
| 3334423 | 13.2 | 105 | 61 | 60 | 14 | 1 | |
| 3334424 | 13.3 | 105 | 61 | 60 | 14 | 1 | |
| 3334425 | 13.4 | 105 | 61 | 60 | 14 | 1 | |
| 3334426 | 13.5 | 105 | 61 | 60 | 14 | 1 | |
| 3334427 | 13.6 | 105 | 61 | 60 | 14 | 1 | |
| 3334428 | 13.7 | 105 | 61 | 60 | 14 | 1 | |
| 3334429 | 13.8 | 105 | 61 | 60 | 14 | 1 | |
| 3334430 | 13.9 | 105 | 61 | 60 | 14 | 1 | |
| 3334431 | 14 | 105 | 61 | 60 | 14 | 2 | |
| 3334432 | 14.1 | 110 | 65 | 64 | 16 | 1 | |
| 3334433 | 14.2 | 110 | 65 | 64 | 16 | 1 | |
| 3334434 | 14.3 | 110 | 65 | 64 | 16 | 1 | |

| EDP | D | L | I | l1 | d | Type | Price |
|---------|------|-----|----|----|----|------|-------|
| 3334435 | 14.4 | 110 | 65 | 64 | 16 | 1 | |
| 3334436 | 14.5 | 110 | 65 | 64 | 16 | 1 | |
| 3334437 | 14.6 | 110 | 65 | 65 | 16 | 1 | |
| 3334438 | 14.7 | 110 | 65 | 65 | 16 | 1 | |
| 3334439 | 14.8 | 110 | 65 | 65 | 16 | 1 | |
| 3334440 | 14.9 | 110 | 65 | 65 | 16 | 1 | |
| 3334441 | 15 | 110 | 65 | 65 | 16 | 1 | |
| 3334442 | 15.1 | 115 | 69 | 69 | 16 | 1 | |
| 3334443 | 15.2 | 115 | 69 | 69 | 16 | 1 | |
| 3334444 | 15.3 | 115 | 69 | 69 | 16 | 1 | |
| 3334445 | 15.4 | 115 | 69 | 69 | 16 | 1 | |
| 3334446 | 15.5 | 115 | 69 | 69 | 16 | 1 | |
| 3334447 | 15.6 | 115 | 69 | 69 | 16 | 1 | |
| 3334448 | 15.7 | 115 | 69 | 69 | 16 | 1 | |
| 3334449 | 15.8 | 115 | 69 | 69 | 16 | 1 | |
| 3334450 | 15.9 | 115 | 69 | 69 | 16 | 1 | |
| 3334451 | 16 | 115 | 69 | 69 | 16 | 2 | |
| 3334452 | 16.5 | 125 | 75 | 75 | 18 | 1 | |
| 3334453 | 17 | 125 | 75 | 75 | 18 | 1 | |
| 3334454 | 17.5 | 130 | 79 | 79 | 18 | 1 | |
| 3334455 | 18 | 130 | 79 | 79 | 18 | 2 | |
| 3334456 | 18.5 | 135 | 85 | 85 | 20 | 1 | |
| 3334457 | 19 | 135 | 85 | 85 | 20 | 1 | |
| 3334458 | 19.5 | 140 | 89 | 88 | 20 | 1 | |
| 3334459 | 20 | 140 | 89 | 88 | 20 | 2 | |

CUTTING CONDITIONS

Drilling | Solid | Cutting conditions

ADF-2D

| Vc | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm ² | | Carbon Steel S35C • S50C ~210HB ~710N/mm ² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm ² | | Plastic Mold Steel NAK80 ~40HRC | | Special Alloy Steel-Hardened Steel-Pre-hardened steel SKD61 ~50HRC | |
|----|---|---------------------|--|---------------------|---|---------------------|---------------------------------------|---------------------|--|---------------------|
| | 60~100m/min | | 60~100m/min | | 30~90m/min | | 20~40m/min | | 20~30m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 2 | 12.700 | 0,01 ~ 0,06 | 12.700 | 0,01 ~ 0,06 | 9.550 | 0,01 ~ 0,06 | 4.750 | 0,01 ~ 0,04 | 4.000 | 0,01 ~ 0,03 |
| 3 | 8.500 | 0,015 ~ 0,09 | 8.500 | 0,015 ~ 0,09 | 6.350 | 0,015 ~ 0,09 | 3.200 | 0,015 ~ 0,06 | 2.650 | 0,015 ~ 0,045 |
| 4 | 6.350 | 0,02 ~ 0,12 | 6.350 | 0,02 ~ 0,12 | 4.750 | 0,02 ~ 0,12 | 2.400 | 0,02 ~ 0,08 | 2.000 | 0,02 ~ 0,06 |
| 6 | 4.250 | 0,03 ~ 0,18 | 4.250 | 0,03 ~ 0,18 | 3.200 | 0,03 ~ 0,18 | 1.600 | 0,03 ~ 0,12 | 1.350 | 0,03 ~ 0,09 |
| 8 | 3.200 | 0,04 ~ 0,24 | 3.200 | 0,04 ~ 0,24 | 2.400 | 0,04 ~ 0,24 | 1.200 | 0,04 ~ 0,16 | 1.000 | 0,04 ~ 0,12 |
| 10 | 2.550 | 0,05 ~ 0,3 | 2.550 | 0,05 ~ 0,3 | 1.900 | 0,05 ~ 0,3 | 950 | 0,05 ~ 0,2 | 800 | 0,05 ~ 0,15 |
| 12 | 2.100 | 0,06 ~ 0,3 | 2.100 | 0,06 ~ 0,3 | 1.600 | 0,06 ~ 0,3 | 800 | 0,06 ~ 0,24 | 650 | 0,06 ~ 0,18 |
| 14 | 1.800 | 0,07 ~ 0,35 | 1.800 | 0,07 ~ 0,35 | 1.350 | 0,07 ~ 0,35 | 700 | 0,07 ~ 0,28 | 550 | 0,07 ~ 0,21 |
| 16 | 1.600 | 0,08 ~ 0,36 | 1.600 | 0,08 ~ 0,36 | 1.200 | 0,08 ~ 0,36 | 600 | 0,08 ~ 0,32 | 500 | 0,08 ~ 0,24 |
| 18 | 1.400 | 0,09 ~ 0,38 | 1.400 | 0,09 ~ 0,38 | 1.050 | 0,09 ~ 0,38 | 550 | 0,09 ~ 0,36 | 450 | 0,09 ~ 0,27 |
| 20 | 1.250 | 0,1 ~ 0,4 | 1.250 | 0,1 ~ 0,4 | 950 | 0,1 ~ 0,4 | 500 | 0,1 ~ 0,4 | 400 | 0,1 ~ 0,3 |

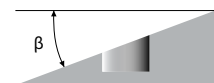
| Vc | Cast Iron FC250 ~350N/mm ² | | Ductile Cast Iron FCD600 400~600N/mm ² | | Aluminium A5052 • A7075 ~350N/mm ² | | Aluminium Alloy AC4C • ADC 400~600N/mm ² | |
|----|---|---------------------|---|---------------------|---|---------------------|---|---------------------|
| | 60~120m/min | | 50~80m/min | | 80~200m/min | | 80~200m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 2 | 14.300 | 0,01 ~ 0,06 | 10.350 | 0,01 ~ 0,06 | 22.300 | 0,01 ~ 0,06 | 22.300 | 0,01 ~ 0,06 |
| 3 | 9.550 | 0,015 ~ 0,09 | 6.900 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 |
| 4 | 7.150 | 0,02 ~ 0,12 | 5.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 |
| 6 | 4.750 | 0,03 ~ 0,18 | 3.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 |
| 8 | 3.600 | 0,04 ~ 0,24 | 2.600 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 |
| 10 | 2.850 | 0,05 ~ 0,3 | 2.050 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 |
| 12 | 2.400 | 0,06 ~ 0,3 | 1.700 | 0,06 ~ 0,3 | 3.700 | 0,06 ~ 0,36 | 3.700 | 0,06 ~ 0,36 |
| 14 | 2.050 | 0,07 ~ 0,35 | 1.500 | 0,07 ~ 0,35 | 3.200 | 0,07 ~ 0,42 | 3.200 | 0,07 ~ 0,42 |
| 16 | 1.800 | 0,08 ~ 0,36 | 1.300 | 0,08 ~ 0,36 | 2.800 | 0,08 ~ 0,48 | 2.800 | 0,08 ~ 0,48 |
| 18 | 1.600 | 0,09 ~ 0,38 | 1.150 | 0,09 ~ 0,38 | 2.500 | 0,09 ~ 0,54 | 2.500 | 0,09 ~ 0,54 |
| 20 | 1.450 | 0,1 ~ 0,4 | 1.050 | 0,1 ~ 0,4 | 2.250 | 0,1 ~ 0,6 | 2.250 | 0,1 ~ 0,6 |

ADFLS-2D

| Vc | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm ² | | Carbon Steel S35C • S50C ~210HB ~710N/mm ² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm ² | | Plastic Mold Steel NAK80 ~40HRC | | Special Alloy Steel-Hardened Steel-Pre-hardened steel SKD61 ~50HRC | |
|----|---|---------------------|--|---------------------|---|---------------------|---------------------------------------|---------------------|--|---------------------|
| | 60~100m/min | | 60~100m/min | | 30~90m/min | | 20~40m/min | | 20~30m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 3 | 8.500 | 0,045 ~ 0,075 | 8.500 | 0,045 ~ 0,075 | 6.350 | 0,045 ~ 0,075 | 3.200 | 0,045 ~ 0,06 | 2.650 | 0,03 ~ 0,06 |
| 4 | 6.350 | 0,06 ~ 0,1 | 6.350 | 0,06 ~ 0,1 | 4.750 | 0,06 ~ 0,1 | 2.400 | 0,06 ~ 0,08 | 2.000 | 0,04 ~ 0,08 |
| 6 | 4.250 | 0,09 ~ 0,15 | 4.250 | 0,09 ~ 0,15 | 3.200 | 0,09 ~ 0,15 | 1.600 | 0,09 ~ 0,12 | 1.350 | 0,06 ~ 0,12 |
| 8 | 3.200 | 0,12 ~ 0,2 | 3.200 | 0,12 ~ 0,2 | 2.400 | 0,12 ~ 0,2 | 1.200 | 0,12 ~ 0,16 | 1.000 | 0,08 ~ 0,16 |
| 10 | 2.550 | 0,15 ~ 0,25 | 2.550 | 0,15 ~ 0,25 | 1.900 | 0,15 ~ 0,25 | 950 | 0,15 ~ 0,2 | 800 | 0,1 ~ 0,2 |
| 12 | 2.100 | 0,18 ~ 0,3 | 2.100 | 0,18 ~ 0,3 | 1.600 | 0,18 ~ 0,3 | 800 | 0,18 ~ 0,24 | 650 | 0,12 ~ 0,24 |
| 14 | 1.800 | 0,21 ~ 0,35 | 1.800 | 0,21 ~ 0,35 | 900 | 0,21 ~ 0,35 | 700 | 0,21 ~ 0,28 | 550 | 0,14 ~ 0,28 |
| 16 | 1.600 | 0,24 ~ 0,4 | 1.600 | 0,24 ~ 0,4 | 800 | 0,24 ~ 0,4 | 600 | 0,24 ~ 0,32 | 500 | 0,16 ~ 0,32 |
| 18 | 1.400 | 0,27 ~ 0,45 | 1.400 | 0,27 ~ 0,45 | 700 | 0,27 ~ 0,45 | 550 | 0,27 ~ 0,36 | 450 | 0,18 ~ 0,36 |
| 20 | 1.250 | 0,3 ~ 0,5 | 1.250 | 0,3 ~ 0,5 | 650 | 0,3 ~ 0,5 | 500 | 0,3 ~ 0,4 | 400 | 0,2 ~ 0,4 |

| Vc | Cast Iron FC250 ~350N/mm ² | | Ductile Cast Iron FCD600 400~600N/mm ² | | Aluminium A5052 • A7075 ~350N/mm ² | | Aluminium Alloy AC4C • ADC 400~600N/mm ² | |
|----|---|---------------------|---|---------------------|---|---------------------|---|---------------------|
| | 60~120m/min | | 50~80m/min | | 80~200m/min | | 80~200m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 3 | 9.550 | 0,06 ~ 0,09 | 6.900 | 0,06 ~ 0,09 | 14.850 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 |
| 4 | 7.150 | 0,08 ~ 0,12 | 5.150 | 0,08 ~ 0,12 | 11.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 |
| 6 | 4.750 | 0,12 ~ 0,18 | 3.450 | 0,12 ~ 0,18 | 7.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 |
| 8 | 3.600 | 0,16 ~ 0,24 | 2.600 | 0,16 ~ 0,24 | 5.550 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 |
| 10 | 2.850 | 0,2 ~ 0,3 | 2.050 | 0,2 ~ 0,3 | 4.450 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 |
| 12 | 2.400 | 0,24 ~ 0,36 | 1.700 | 0,24 ~ 0,36 | 3.700 | 0,06 ~ 0,36 | 3.700 | 0,06 ~ 0,36 |
| 14 | 2.050 | 0,28 ~ 0,42 | 1.500 | 0,28 ~ 0,42 | 3.200 | 0,07 ~ 0,42 | 3.200 | 0,07 ~ 0,42 |
| 16 | 1.800 | 0,32 ~ 0,48 | 1.300 | 0,32 ~ 0,48 | 2.800 | 0,08 ~ 0,48 | 2.800 | 0,08 ~ 0,48 |
| 18 | 1.600 | 0,36 ~ 0,54 | 1.150 | 0,36 ~ 0,54 | 2.500 | 0,09 ~ 0,54 | 2.500 | 0,09 ~ 0,54 |
| 20 | 1.450 | 0,4 ~ 0,6 | 1.050 | 0,4 ~ 0,6 | 2.250 | 0,1 ~ 0,6 | 2.250 | 0,1 ~ 0,6 |

- To process flat surfaces, prior Centre-drilling with a larger diameter is required.
- Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
- When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
- Use a rigid and precise machine and holder.
- Please minimize tool hang over as much as possible during machining.
- Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.01 mm.
- When machining an inclined plane, adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
 - When the machining incline angle(β) is less than 30°, please reduce the feed to 40~60%.
 - When the machining incline angle(β) is over 30°, please reduce the speed to 60~80%, the feed to 20~40%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).



Drilling | Solid carbide

Cutting conditions

CUTTING CONDITIONS

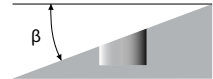
Drilling | Solid | Cutting conditions

ADFO-3D

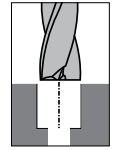
| Vc | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm ² | | Carbon Steel S35C • S50C ~210HB ~710N/mm ² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm ² | | Plastic Mold Steel NAK80 ~40HRC | | Stainless Steel SUS304 480~800N/mm ² | |
|----|---|---------------------|--|---------------------|---|---------------------|---------------------------------------|---------------------|---|---------------------|
| | 80~120m/min | | 80~120m/min | | 50~90m/min | | 20~40m/min | | 40~60m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 3 | 10.600 | 0,045 ~ 0,09 | 10.600 | 0,045 ~ 0,09 | 7.450 | 0,045 ~ 0,09 | 3.200 | 0,045 ~ 0,09 | 5.300 | 0,045 ~ 0,09 |
| 4 | 8.000 | 0,045 ~ 0,12 | 8.000 | 0,045 ~ 0,12 | 5.550 | 0,045 ~ 0,12 | 2.400 | 0,045 ~ 0,12 | 4.000 | 0,045 ~ 0,12 |
| 6 | 5.300 | 0,06 ~ 0,18 | 5.300 | 0,06 ~ 0,18 | 3.700 | 0,06 ~ 0,18 | 1.600 | 0,06 ~ 0,18 | 2.650 | 0,06 ~ 0,18 |
| 8 | 4.000 | 0,08 ~ 0,24 | 4.000 | 0,08 ~ 0,24 | 2.800 | 0,08 ~ 0,24 | 1.200 | 0,08 ~ 0,24 | 2.000 | 0,08 ~ 0,24 |
| 10 | 3.200 | 0,10 ~ 0,30 | 3.200 | 0,10 ~ 0,30 | 2.250 | 0,10 ~ 0,30 | 950 | 0,10 ~ 0,30 | 1.600 | 0,10 ~ 0,30 |
| 12 | 2.650 | 0,12 ~ 0,36 | 2.650 | 0,12 ~ 0,36 | 1.850 | 0,12 ~ 0,36 | 800 | 0,12 ~ 0,36 | 1.350 | 0,12 ~ 0,36 |
| 14 | 2.250 | 0,14 ~ 0,42 | 2.250 | 0,14 ~ 0,42 | 1.600 | 0,14 ~ 0,42 | 700 | 0,14 ~ 0,42 | 1.150 | 0,14 ~ 0,42 |
| 16 | 2.000 | 0,16 ~ 0,48 | 2.000 | 0,16 ~ 0,48 | 1.400 | 0,16 ~ 0,48 | 600 | 0,16 ~ 0,48 | 1.000 | 0,16 ~ 0,48 |
| 18 | 1.750 | 0,18 ~ 0,54 | 1.750 | 0,18 ~ 0,54 | 1.250 | 0,18 ~ 0,54 | 550 | 0,18 ~ 0,54 | 900 | 0,18 ~ 0,54 |
| 20 | 1.600 | 0,20 ~ 0,60 | 1.600 | 0,20 ~ 0,60 | 1.100 | 0,20 ~ 0,60 | 500 | 0,20 ~ 0,60 | 800 | 0,20 ~ 0,60 |

| Vc | Cast Iron FC250 ~350N/mm ² | | Ductile Cast Iron FCD600 400 ~600N/mm ² | | Aluminium A5052 • A7075 ~350N/mm ² | | Aluminium Alloy AC4C • ADC 400~600N/mm ² | |
|----|---|---------------------|--|---------------------|---|---------------------|---|---------------------|
| | 80~120m/min | | 60~100m/min | | 120~200m/min | | 120~200m/min | |
| Ø | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) | Speed (min ⁻¹) | Feed Rate (mm/rev.) |
| 3 | 10.600 | 0,045 ~ 0,09 | 8.500 | 0,045 ~ 0,09 | 17.000 | 0,045 ~ 0,09 | 17.000 | 0,045 ~ 0,09 |
| 4 | 8.000 | 0,045 ~ 0,12 | 6.350 | 0,045 ~ 0,12 | 12.750 | 0,045 ~ 0,12 | 12.750 | 0,045 ~ 0,12 |
| 6 | 5.300 | 0,06 ~ 0,18 | 4.250 | 0,06 ~ 0,18 | 8.500 | 0,06 ~ 0,18 | 8.500 | 0,06 ~ 0,18 |
| 8 | 4.000 | 0,08 ~ 0,24 | 3.200 | 0,08 ~ 0,24 | 6.350 | 0,08 ~ 0,24 | 6.350 | 0,08 ~ 0,24 |
| 10 | 3.200 | 0,10 ~ 0,30 | 2.550 | 0,10 ~ 0,30 | 5.100 | 0,10 ~ 0,30 | 5.100 | 0,10 ~ 0,30 |
| 12 | 2.650 | 0,12 ~ 0,36 | 2.100 | 0,12 ~ 0,36 | 4.250 | 0,12 ~ 0,36 | 4.250 | 0,12 ~ 0,36 |
| 14 | 2.250 | 0,14 ~ 0,42 | 1.800 | 0,14 ~ 0,42 | 3.650 | 0,14 ~ 0,42 | 3.650 | 0,14 ~ 0,42 |
| 16 | 2.000 | 0,16 ~ 0,48 | 1.600 | 0,16 ~ 0,48 | 3.200 | 0,16 ~ 0,48 | 3.200 | 0,16 ~ 0,48 |
| 18 | 1.750 | 0,18 ~ 0,54 | 1.400 | 0,18 ~ 0,54 | 2.850 | 0,18 ~ 0,54 | 2.850 | 0,18 ~ 0,54 |
| 20 | 1.600 | 0,20 ~ 0,60 | 1.250 | 0,20 ~ 0,60 | 2.550 | 0,20 ~ 0,60 | 2.550 | 0,20 ~ 0,60 |

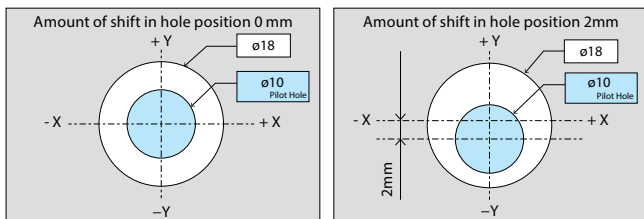
- Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
- Use a rigid and precise machine and holder.
- Please minimize overhang length as much as possible during machining.
- Adjust the rotational speed and the feed in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.02 mm.
- Please select a cutting fluid that is most suitable for the work material with minimal smoke formation.
- In the case of dry machining, please use air blow to remove chips to prevent clogging.
Please do not machine stainless steel dry.
- When machining an inclined plane, adjust the rotational speed and the feed in accordance with the angle of the incline (β).
When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
When the machining incline angle (β) is over 30°, please reduce the speed to 60-80%, the feed to 20-40%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed as indicated above (in accordance with the machining precision requirement).
- Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.



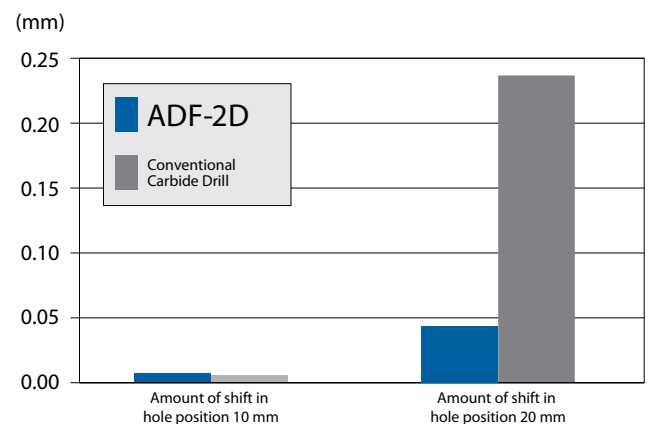
Counterboring



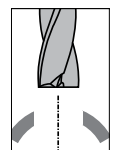
| | |
|------------------|------------------------------------|
| Tool | ADF-2D Ø18 |
| Machined Surface | Flat Surface |
| Work Material | FC250 |
| Cutting Speed | 75m/min (1.327 min ⁻¹) |
| Feed Rate | 133 mm/min (0,1 mm/rev) |
| Depth of Hole | 34 mm (blind) |
| Coolant | Water soluble |
| Machine | Horizontal Machining Center |



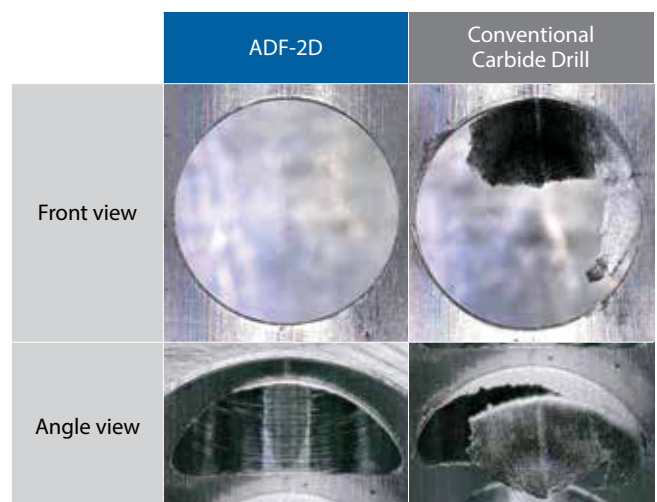
■ Shift length in hole position



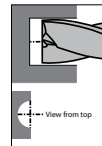
Through-hole in curved surface



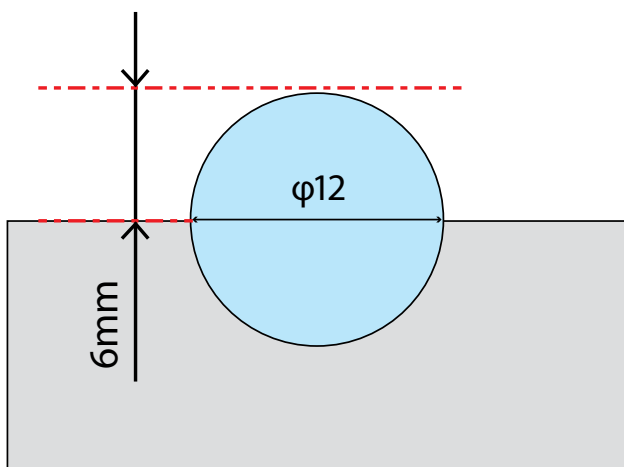
| | |
|------------------|------------------------------------|
| Tool | ADF-2D Ø6 |
| Machined Surface | Flat Surface - Curved Surface |
| Work Material | S50C |
| Cutting Speed | 75m/min (3.981 min ⁻¹) |
| Feed Rate | 398 mm/min (0,1 mm/rev) |
| Depth of Hole | 15 mm (Through) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |



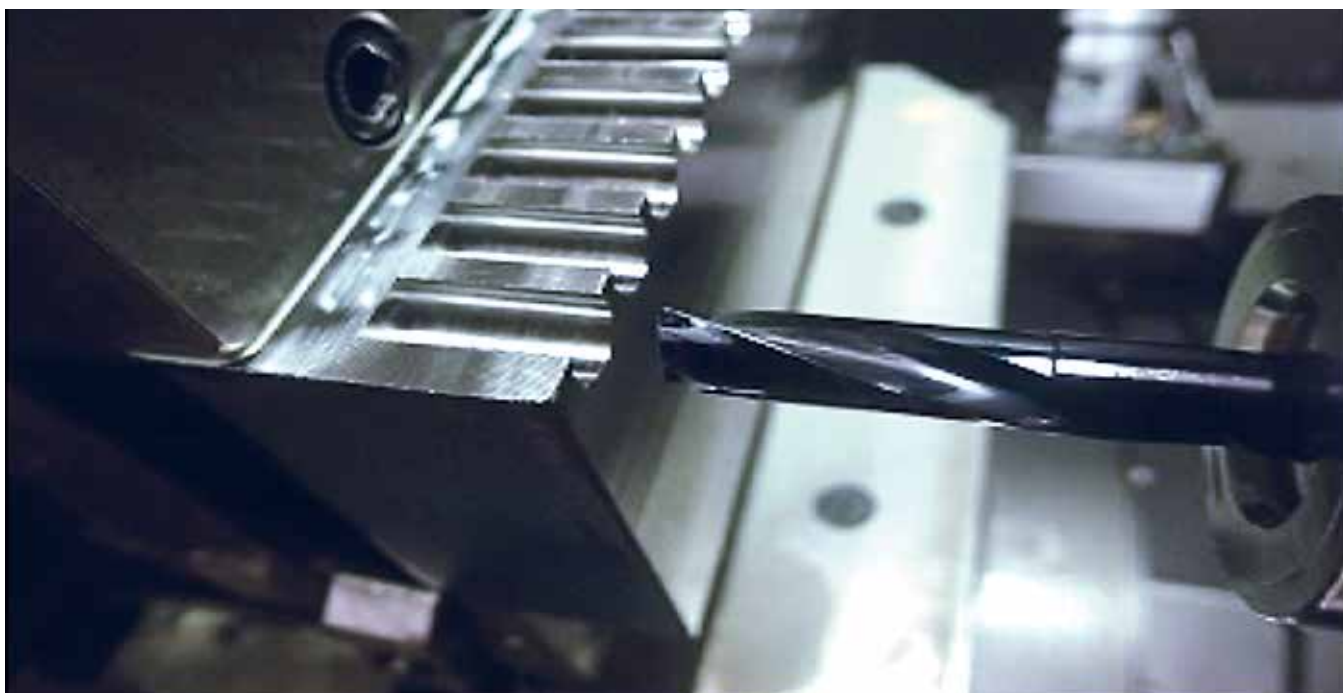
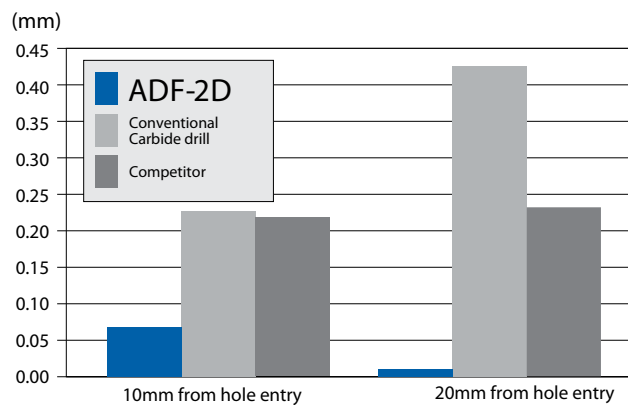
Half-hole



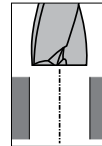
| | |
|------------------|----------------------------------|
| Tool | ADF-2D Ø12 |
| Machined surface | Flat Surface |
| Work Material | S50C |
| Cutting Speed | 37m/min (982 min ⁻¹) |
| Feed Rate | 157 mm/min (0,16 mm/rev) |
| Depth of Hole | 24 mm (Blind) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |



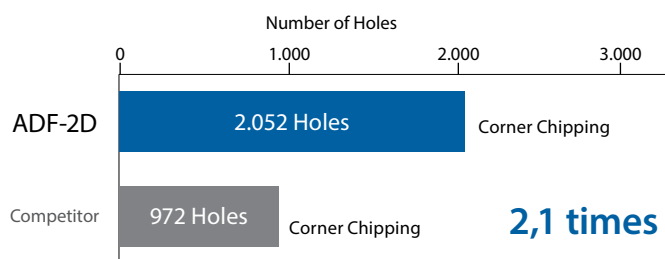
■ Fallen amount (based on the value of 1mm for hole entry)



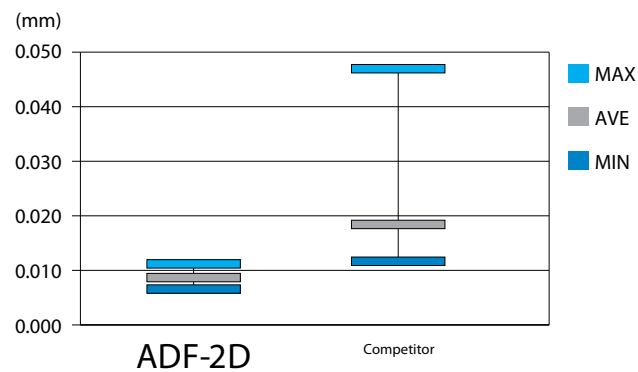
Flat surface



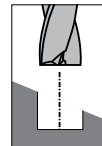
| | |
|-------------------------|------------------------------------|
| Tool | ADF-2D Ø10 |
| Machined Surface | Flat Surface |
| Work Material | S50C |
| Cutting Speed | 75m/min (2.387 min ⁻¹) |
| Feed Rate | 430 mm/min (0,18 mm/rev) |
| Depth of Hole | 20 mm (Through) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |



■ Oversize

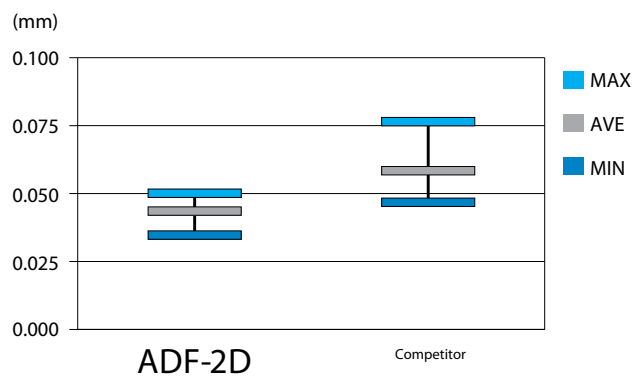
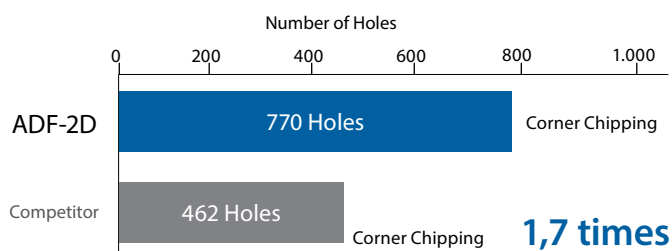


Inclined Surface

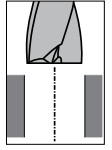


| | |
|-------------------------|------------------------------------|
| Tool | ADF-2D Ø10 |
| Machined Surface | Angled Surface |
| Work Material | SCM440(30HRC) |
| Cutting Speed | 60m/min (1.910 min ⁻¹) |
| Feed Rate | 191 mm/min (0,1 mm/rev) |
| Depth of Hole | 20 mm (Blind) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |

■ Shift length in hole position



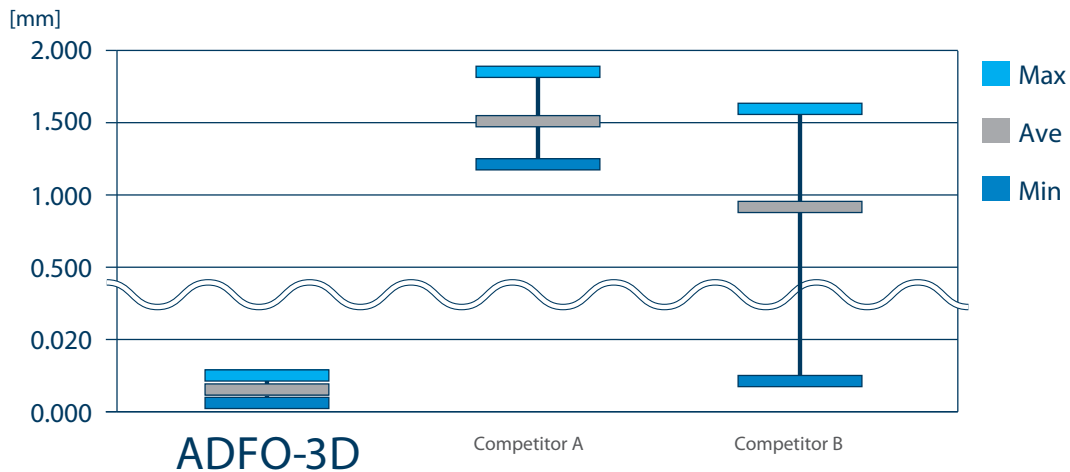
Superior performance even in stainless steel



| | |
|-------------------------|------------------------------------|
| Tool | ADFO-3D Ø10 |
| Machined Surface | Flat Surface |
| Work Material | SUS304 |
| Cutting Speed | 50m/min (1.592 min ⁻¹) |
| Feed Rate | 239 mm/min (0,15 mm/rev) |
| Depth of Hole | 30 mm (Through) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |

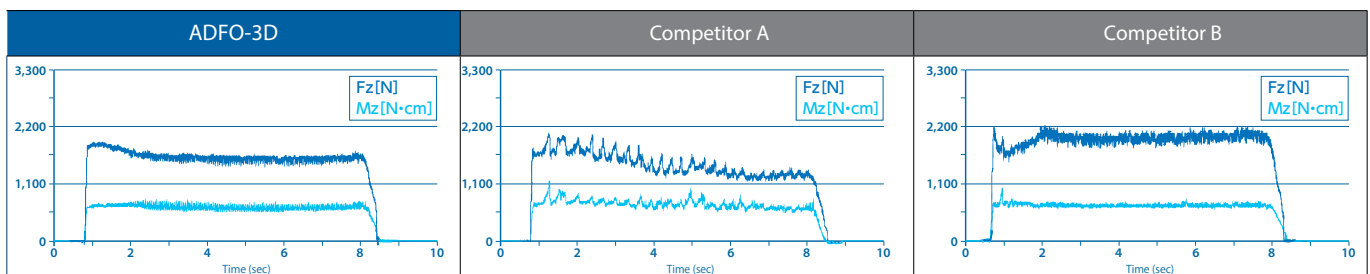
■ Hole expansion comparison

ADFO-3D with minimal hole expansion variation



■ Cutting Resistance Waveform

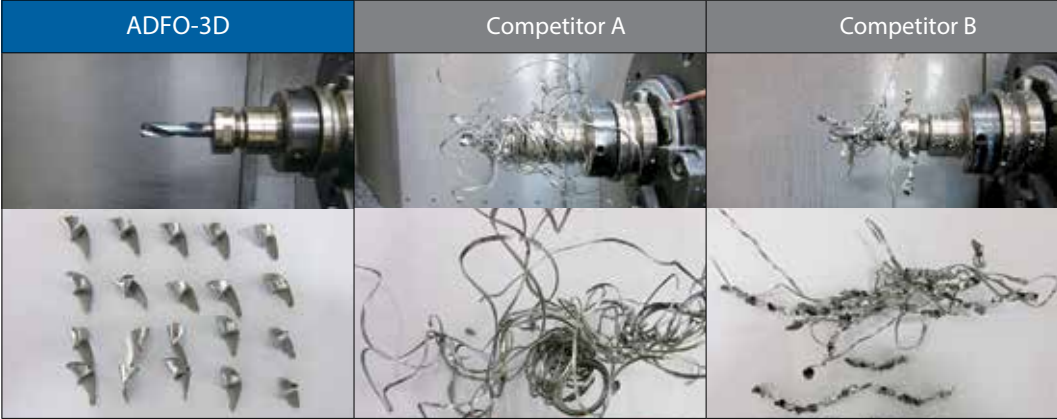
Stable thrust and torque (rigidity supported by the 20° helical grooves). Good chip evacuation (with no clogging of chips inside hole)



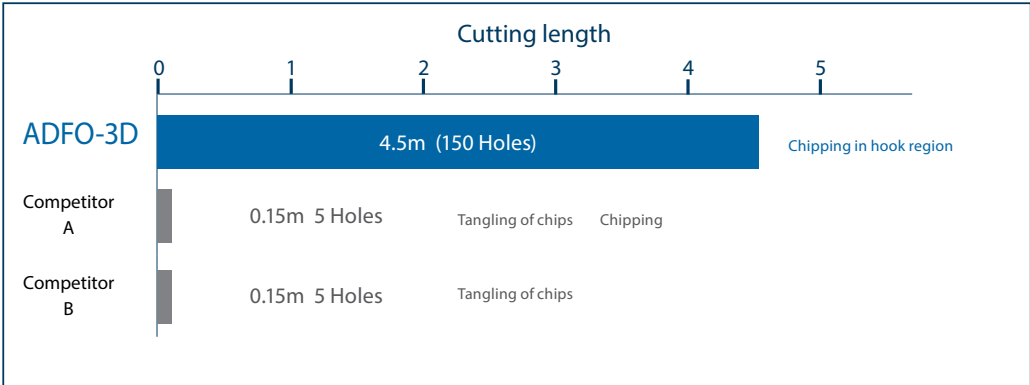
MACHINING DATA

■ Chips

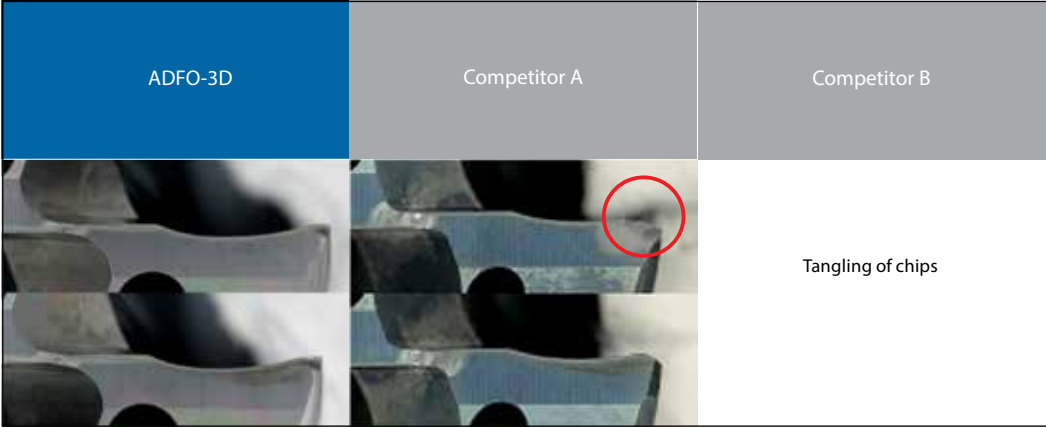
Only the ADFO-3D was capable of breaking chips into small, manageable pieces



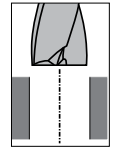
■ Durability



Only the ADFO-3D demonstrated durability over 100 holes

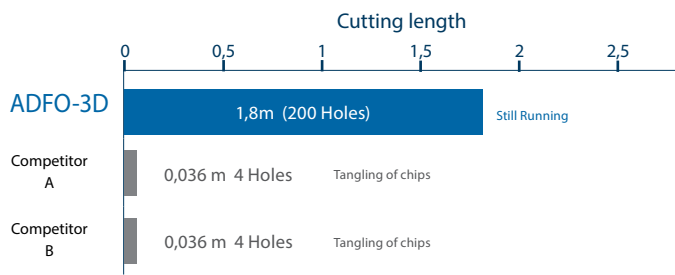


Stable processing of stainless steel even in small diameter

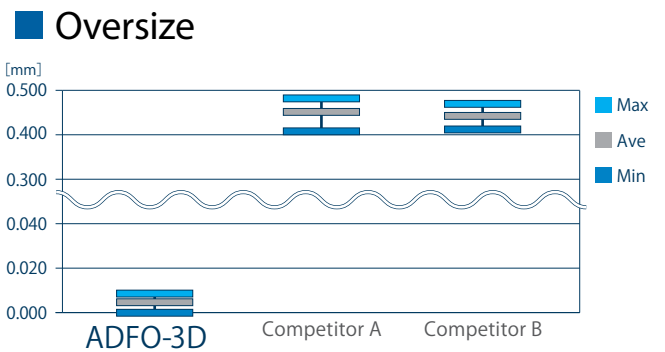


| | |
|-------------------------|------------------------------------|
| Tool | ADFO-3D Ø3 |
| Machined Surface | Flat Surface |
| Work Material | SUS304 |
| Cutting Speed | 50m/min (5.305 min ⁻¹) |
| Feed Rate | 239 mm/min (0,045 mm/rev) |
| Depth of Hole | 9 mm (Through) |
| Coolant | Water Soluble |
| Machine | Horizontal Machining Center |

ADFO-3D demonstrated controlled hole expansion and good durability



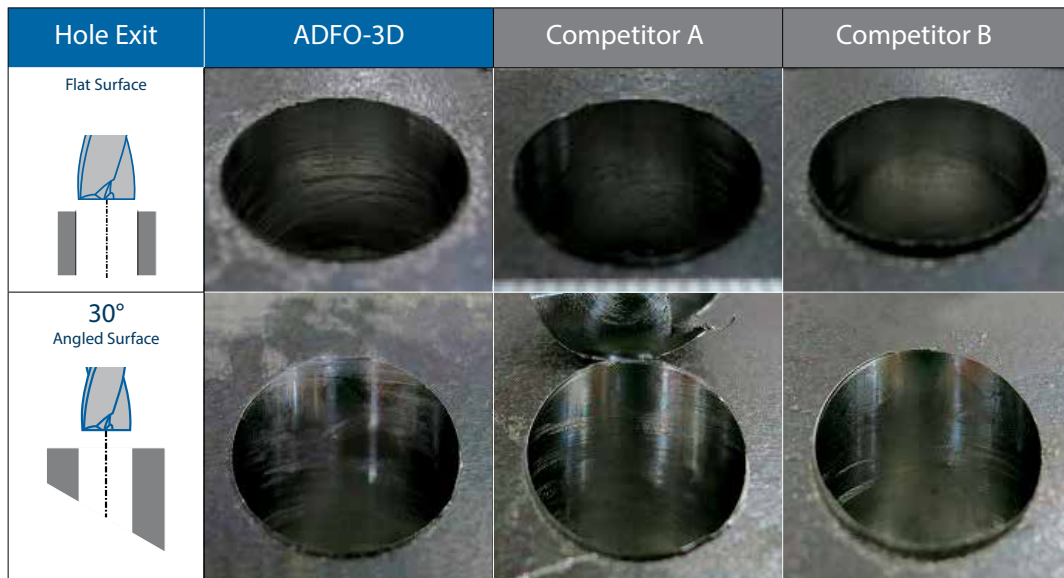
Only the ADFO-3D demonstrated durability over 100 holes



Burrs suppressed by proprietary cutting edge geometry

| | | |
|------------------|-------------------------------------|-----------------------------|
| Tool | ADFO-3D Ø16 | |
| Machined Surface | Flat Surface | |
| Work Material | SS400 | |
| Cutting Speed | 100m/min (1.989 min ⁻¹) | |
| Feed Rate | 636 mm/min (0,32 mm/rev) | 318 mm/min (0,16 mm/rev) |
| Depth of Hole | 10 mm (Through) | 16,5 mm (Through) |
| Coolant | Water Soluble | |
| Machine | Horizontal Machining Center | |

■ Comparison of exit burrs





shaping your dreams

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