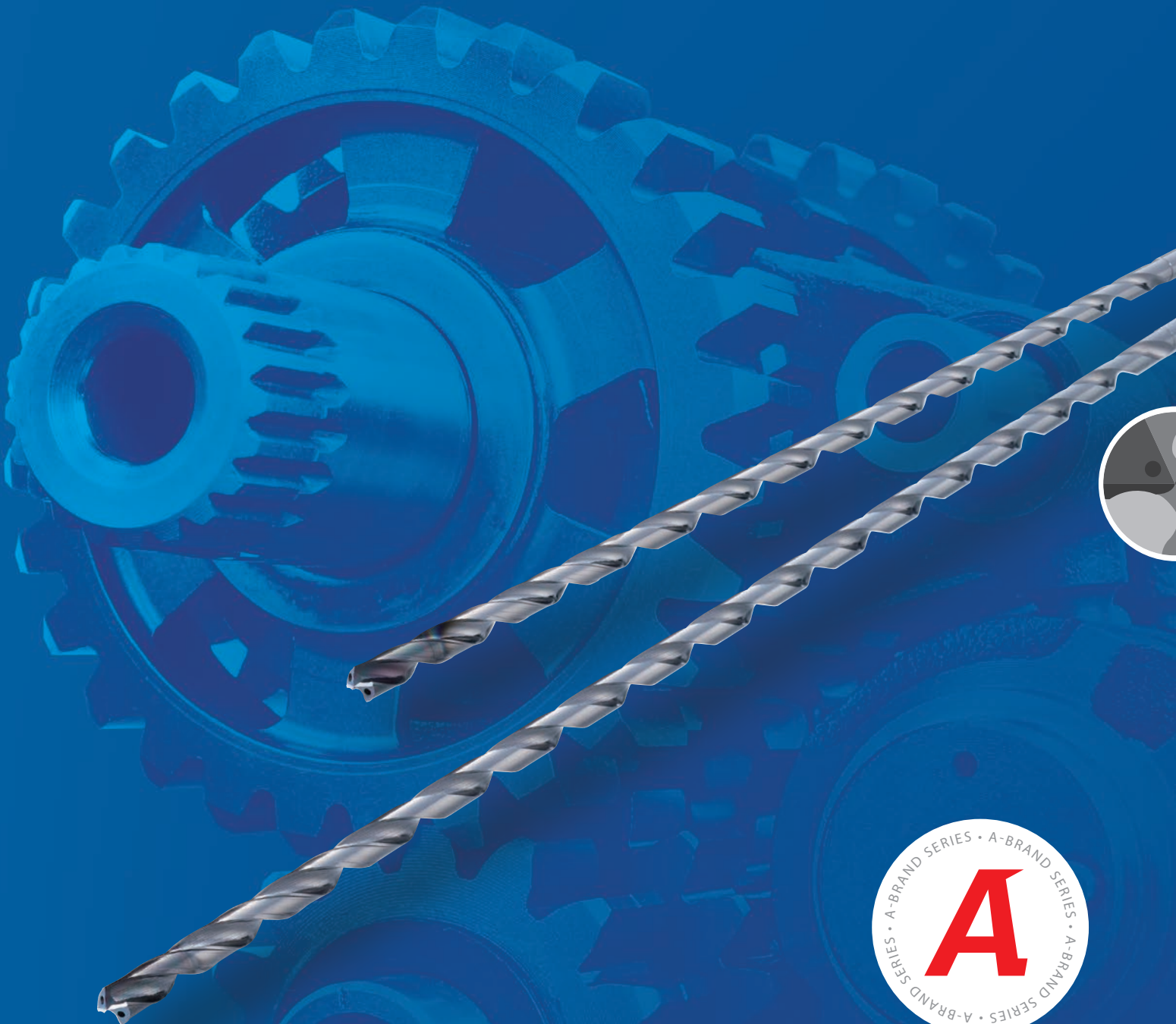




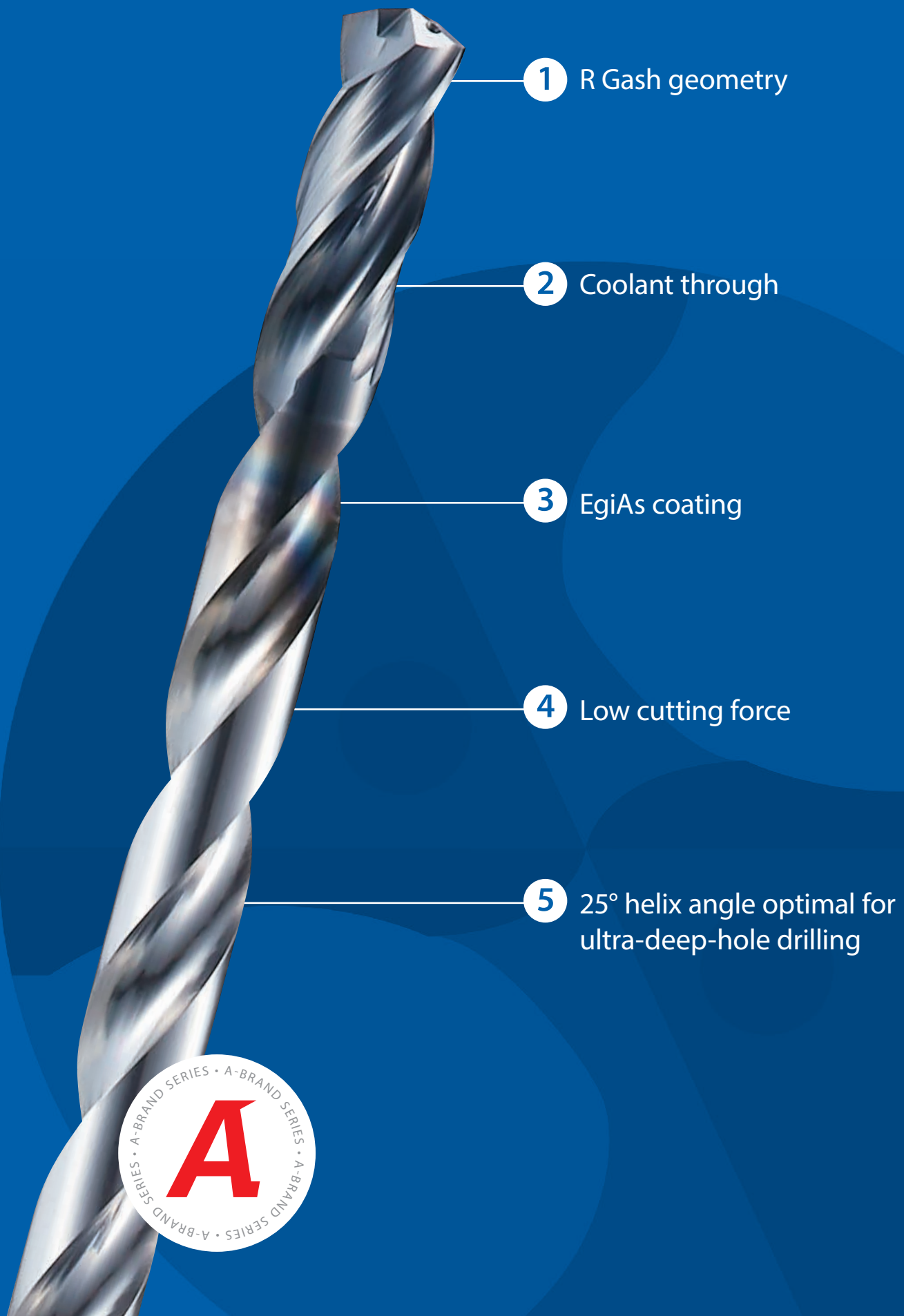
Carbide long drills with oil holes

ADO-40D•50D

Volume 1



KEY FEATURES: ADO-40D•50D



1 R Gash geometry

2 Coolant through

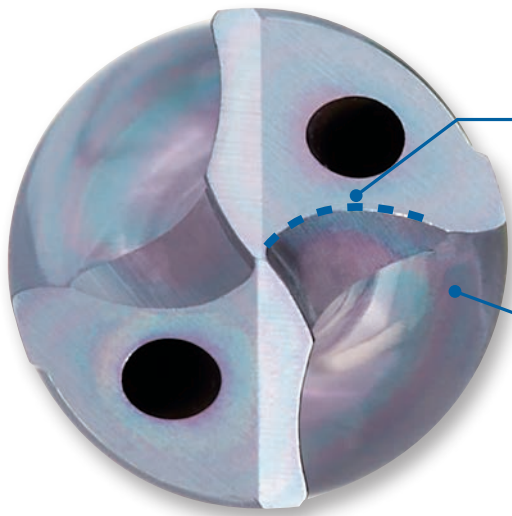
3 EgiAs coating

4 Low cutting force

5 25° helix angle optimal for ultra-deep-hole drilling



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

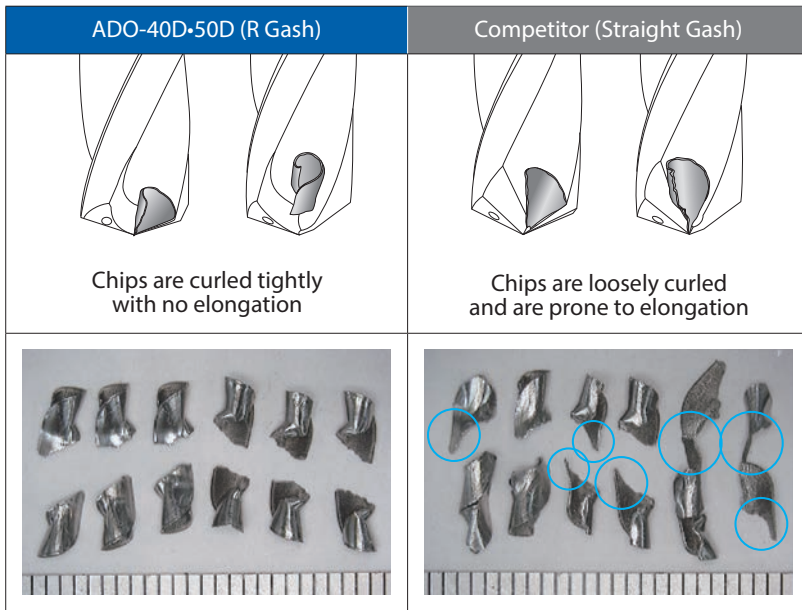
New flute specification

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

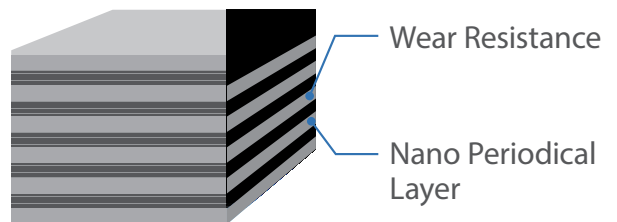


EgiAs Coating

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-50D NEW

Drilling | Solid carbide | 50xD



- First choice in quality and performance
- 2 flute carbide drill with internal coolant, EgiAs coating
- Up to 50xD
- 5 sizes

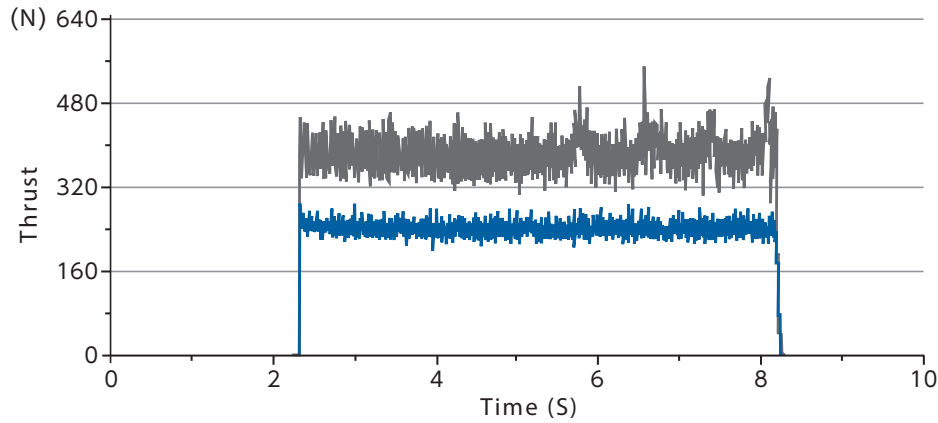


EDP	D	L	l1	l	PL	L1	d	Price
8718300	3	209	159	150	0,5	49	3	
8718400	4	262	212	200	0,7	49	4	
8718500	5	315	265	250	0,9	49	5	
8718600	6	368	318	300	1,1	49	6	
8718800	8	474	424	400	1,5	49	8	

Drilling | Solid carbide
50xD

CUTTING DATA

Low Cutting Force



— (40D) Competitor
— ADO-40D

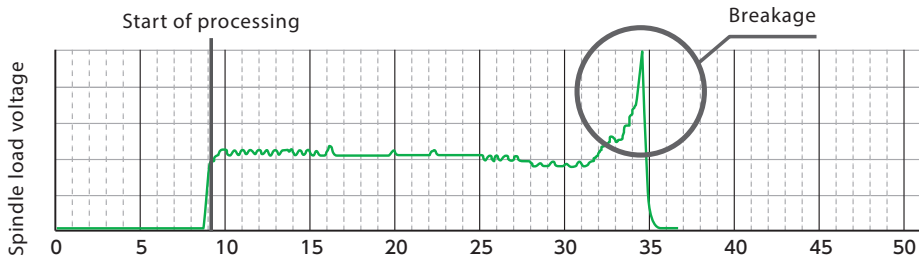
Size: $\varnothing 3$
 Work Material: SCM440 (82~90HRB)
 Cutting speed: 80m/min (8493min⁻¹)
 Feed: 1.188mm/min (0,14mm/rev)

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

Drilling | Solid carbide

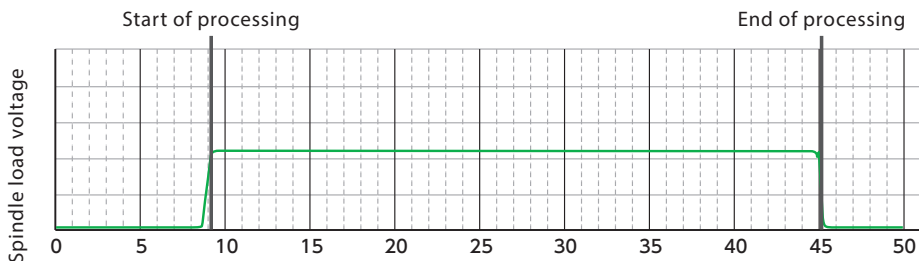


Cutting Data



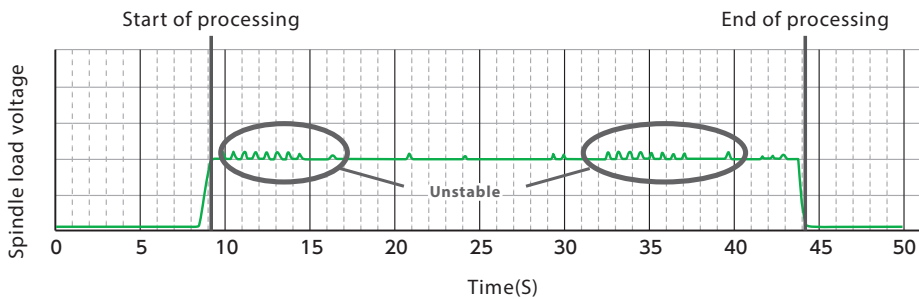
Helix Angle 20°

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

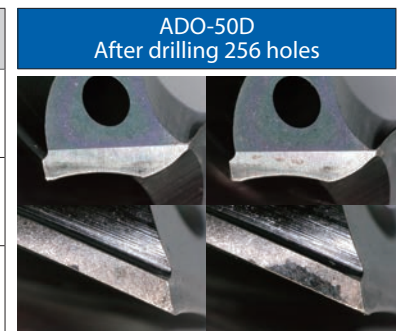
Long tool life even in ultra-deep-hole drilling applications

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)

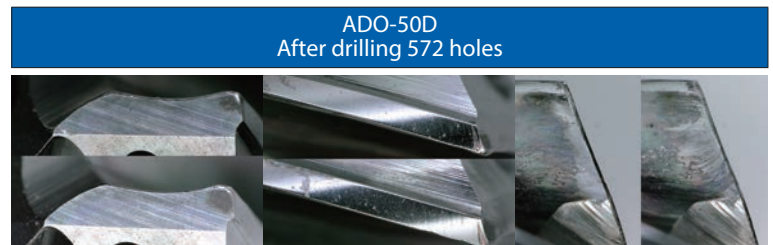
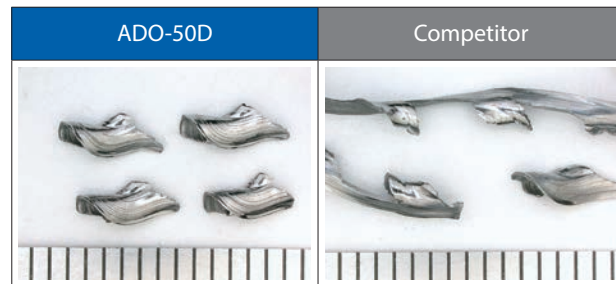
First Step: pilot hole at depth of 40mm

		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		

CUTTING CONDITIONS

Drilling | Solid | Cutting conditions

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	
	60~90m/min		60~90m/min		50~80m/min		40~70m/min	
Ø	S (min ⁻¹)	f (mm/rev.)	S (min ⁻¹)	f (mm/rev.)	S (min ⁻¹)	f (mm/rev.)	S (min ⁻¹)	f (mm/rev.)
3	7.500	0,06 ~ 0,12	7.500	0,06 ~ 0,12	6.400	0,06 ~ 0,12	5.300	0,06 ~ 0,11
4	5.600	0,08 ~ 0,16	5.600	0,08 ~ 0,16	4.800	0,08 ~ 0,16	4.000	0,08 ~ 0,14
5	4.500	0,1 ~ 0,2	4.500	0,1 ~ 0,2	3.800	0,1 ~ 0,2	3.200	0,1 ~ 0,17
6	3.700	0,12 ~ 0,24	3.700	0,12 ~ 0,24	3.200	0,12 ~ 0,24	2.700	0,12 ~ 0,21
8	2.800	0,16 ~ 0,28	2.800	0,16 ~ 0,28	2.400	0,16 ~ 0,28	2.000	0,16 ~ 0,24
10	2.300	0,2 ~ 0,35	2.300	0,2 ~ 0,35	1.900	0,2 ~ 0,35	1.600	0,2 ~ 0,3

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	
	60~90m/min		50~80m/min		40~60m/min	
Ø	S (min ⁻¹)	f (mm/rev.)	S (min ⁻¹)	f (mm/rev.)	S (min ⁻¹)	f (mm/rev.)
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.

OPERATIONAL GUIDELINE

ADO-40D/50D

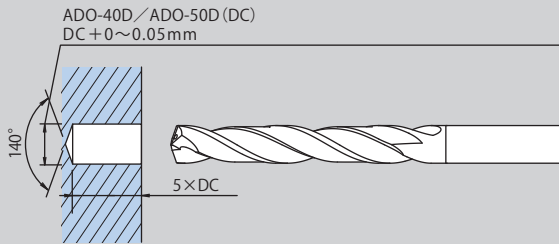
① ADO-5D/ADO-TRS-5D

Make a pilot hole with the ADO-5D or ADO-TRS-5D.

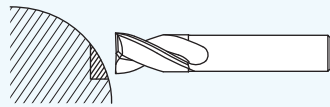
ADO-40D/ADO-50D

ADO-5D/ADO-TRS-5D(140°)

The ADO-5D and ADO-TRS-5D (140° point angle) are the recommended pilot hole drills of the ADO-40D/50D.



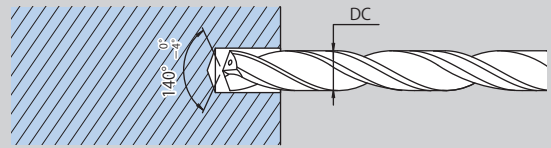
* When working on a curved surface, use the ADF (carbide flat drill) to counterbore a flat surface before drilling a pilot hole.



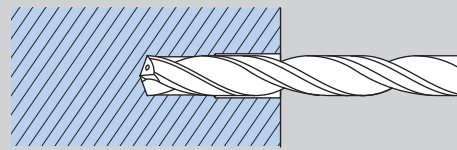
If it is difficult to process or if the straightness of the hole needed to be improved, use the coolant-through carbide drill ADO-20/30D after drilling a pilot hole, then process with the ADO-40/50D. When processing with 3 tools, the ADO-40/50D may be used at a more aggressive cutting condition than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

② (n)300~500min⁻¹

Insert the long drill into the pilot hole with a low speed reverse (revolution of about 300 to 500 min⁻¹ (n)).

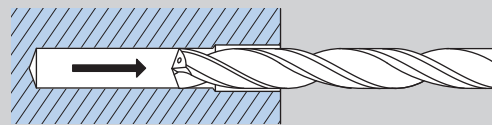


③ Increase the revolution to the designated speed and start drilling.



④ (n)300~500min⁻¹

After drilling, move the drill away from the bottom of the hole, then reduce its speed to 300 to 500 min⁻¹ (n) while pulling it out of the hole.



Make sure to use internal coolant supply when drilling.

Manufacturable Range of Special Sizes

Diameter range	Maximum overall length	Maximum flute length	Maximum drilling depth of hole												
			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

The above chart indicates the maximum overall length and maximum flute length of each range's maximum diameter. For sizes and lengths outside of the above parameters, please consult with your OSG sales representative.

Manufacturable range

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shaping your dreams

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