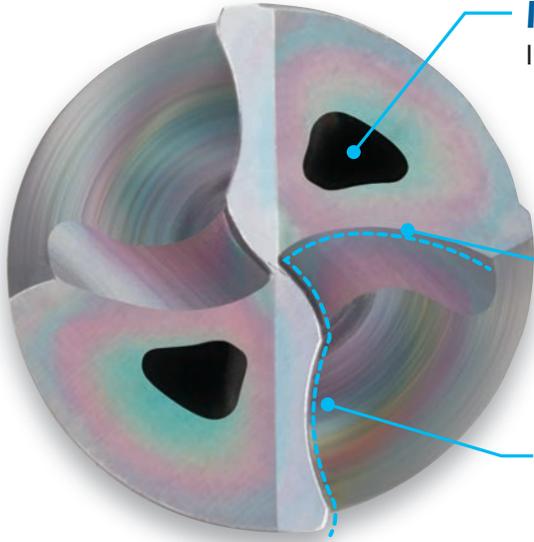


# A Brand ADOX

Cutting Data



## Mega Cooler PAT. in Japan

Innovative coolant hole geometry.

- Coolant hole design optimized to enhance R Gash performance.
- Maximizes coolant flow.

## EgiAs Coating

For exceptional wear resistance and toughness.

## R Gash PAT. in Japan

Unique R Gash geometry enables low cutting resistance and exceptional chip control.

## Wavy Point Form

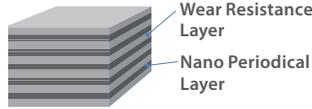
Facilitates stable chip evacuation.

- Long tool life is possible by low thrust resistance and stable torque.
- Breaks chips into small manageable pieces.

## EgiAs™ Coating Enables Long Tool Life

### Exceptional Wear Resistance & Toughness

Constructed with extreme toughness, high wear and heat resistance characteristics that ensure stable and consistent tool life. Suppresses friction with the wear-resistant layer; prevents breakage with the nano periodical layer.

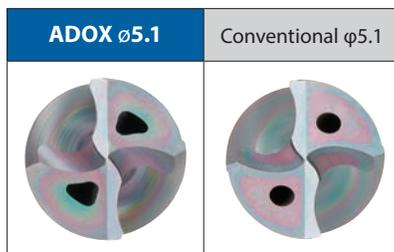


Coating Color	Coating Structure	Hardness (Hv)	Oxidation Temp. (°C)	Heat Resistance	Adhesion Strength	Wear Resistance	Welding Resistance	Toughness
Iridescent Color	Periodic Nano-layer and wear resistance layer	3,200	1,100	☉	☉	☉	☉	☉

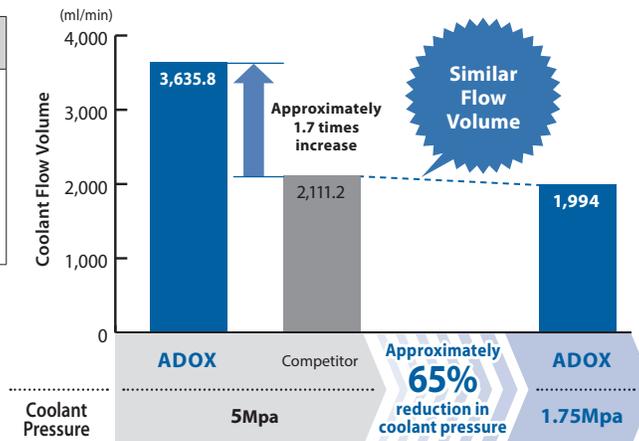
## Maximized Coolant Flow

### Coolant Hole Geometry for Increased Coolant Flow

- Increased coolant flow even at low pressure.
- Enables high-efficiency, long tool life machining even with high-viscosity oil-based cutting fluids.



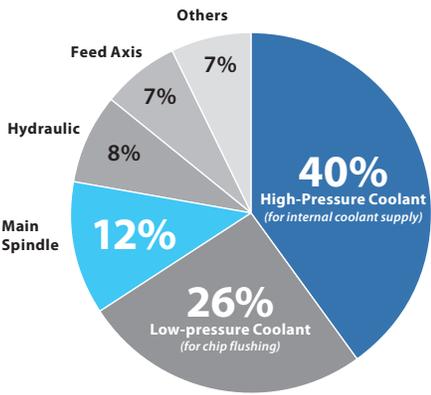
- Approximately **1.7 times flow volume** at the same coolant pressure.
- Approximately **65% reduction in coolant pressure** at the same flow rate.



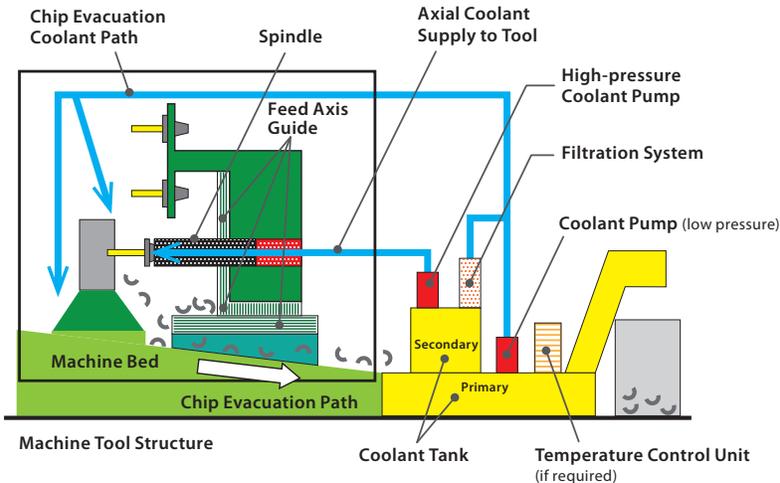
## Reduced Coolant Pressure leads to Lower Power Use

### Example of Power Consumption in Cutting Operations and Cooling System Impact

Innovative "MEGA COOLER" coolant hole geometry delivers high coolant output even at low pressure. High-pressure coolant pumps consume more energy than the spindle motors used in cutting operations. Therefore, reducing the energy consumption of high-pressure coolant pumps is essential for lowering overall power usage.



Coolant Power Consumption Details



Work Material	Aluminum Alloy
Machine	Horizontal Machining Center
Main Spindle Type	BT40
Speed	12,000 RPM
High-Pressure Coolant Pressure (for internal coolant supply)	2 MPa (290 psi)
Low-Pressure Coolant Pressure (for chip flushing)	0.3 MPa (43.5 psi)

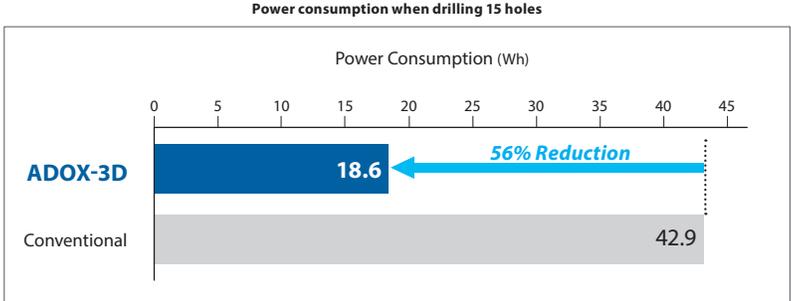
Source: Adapted from Juntsu Net 21, "Measures for Reducing Waste Oil and Liquid in MQL and Semi-Dry Machining," December 2006 (Lubrication Communications Co., Ltd.)

ADOX reduces power consumption of high-pressure coolant pumps.

Delivers same coolant output as conventional products, even at low coolant pressure

### Comparison of Power Consumption of High-Pressure Coolant Pumps at Different Coolant Pressures

Tool	ADOX-3D Ø5.1mm	Conventional Ø5.1mm
Work Material	303 Stainless	
Cutting Speed	230 SFM (4370 RPM)	
Feed Rate	30.1 IPM (0.007 IPR)	
Depth of Hole	15 mm (Blind)	
Coolant	Water-soluble (5%)	
Coolant Pressure	1.75 MPa (255 psi)	5 MPa (725 psi)
Machine	Horizontal Machining Center (HSK-A63)	



\*The above is an example; results may vary depending on tool size and actual machining environment.

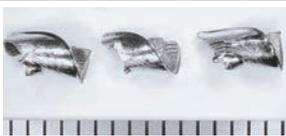
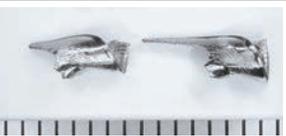
## Unparalleled Chip Stability and Machining Efficiency

1050

### Chip shape that contributes to stable machining

The combined effect of the R Gash and enhanced coolant flow ensures excellent chip evacuation and optimal chip shape, even under low coolant pressure.

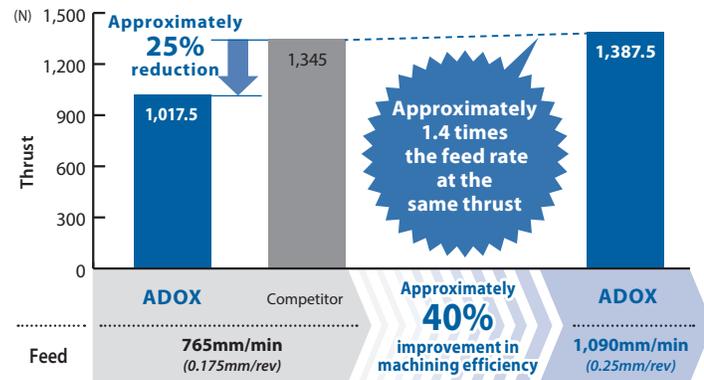
Tool	ADOX-30D
Drill Size	Ø6mm
Work Material	1050
Cutting Speed	295 SFM (4775 RPM)
Feed Rate	33.8 IPM (0.0071 IPR)

Coolant Pressure	ADOX-30D Ø6mm	Conventional Ø6mm
1Mpa (145 psi)	 <p>1,440ml/min Coolant Flow Volume</p>	 <p>660ml/min Coolant Flow Volume</p>
4Mpa (580 psi)	 <p>2,460ml/min Coolant Flow Volume</p>	 <p>1,080ml/min Coolant Flow Volume</p>

### Low thrust contributes to improved machining efficiency

Reduced thrust lowers load on spindle and workpiece, enabling high-efficiency machining.

Tool	ADOX-3D
Drill Size	Ø5.1mm
Work Material	304 SUS
Cutting Speed	31 SFM (1000 RPM)
Feed (Left)	30.1 IPM (0.007 IPR)
Feed (Right)	43 IPM (0.010 IPR)
Coolant	Water-soluble (5% • Internal)
Coolant Pressure	5 MPa (725 psi)



- Approximately 25% reduction in thrust at the same feed rate.
- Approximately 40% improvement in machining efficiency at the same thrust.

## Supports Tool Consolidation

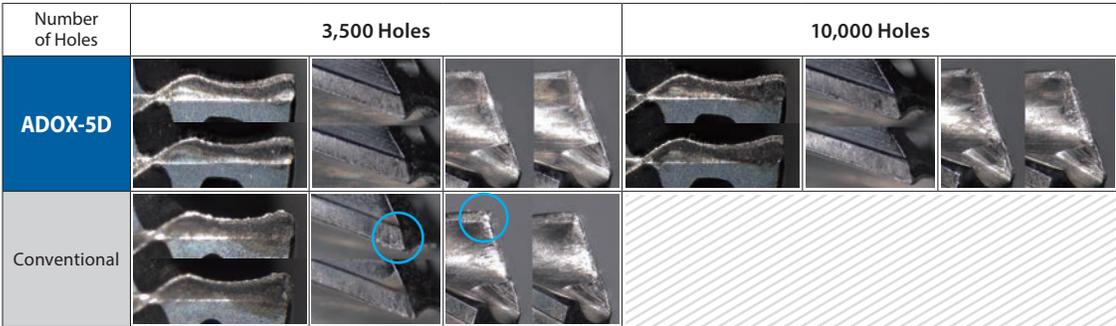
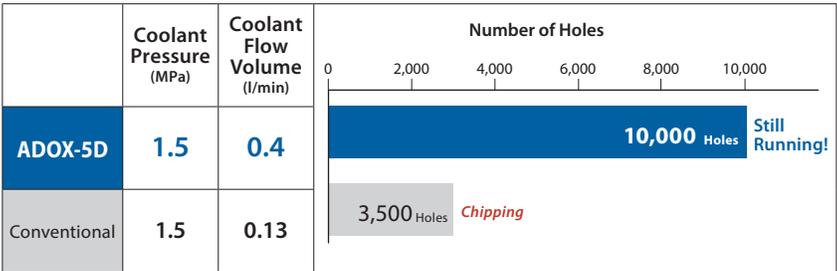
### Compatible with a Wide Range of Work Materials

Eliminates the need for separate tools per material. Compatible with a wide range of work materials, including carbon steel, alloy steel, stainless steel, and more.

## Long Tool Life Achieved with Low Pressure Coolant

304 SUS

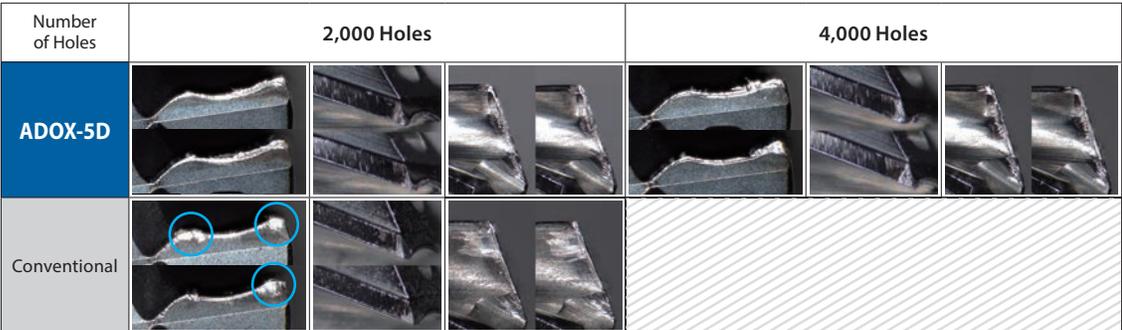
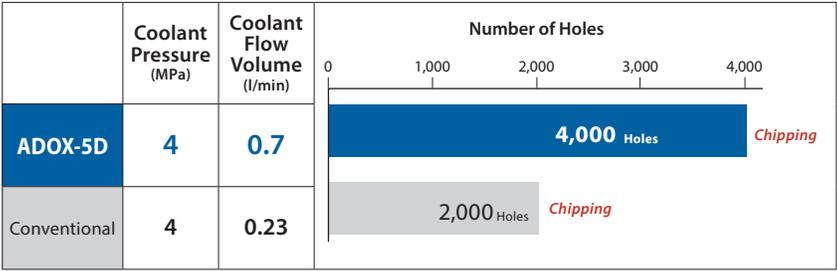
Tool	ADOX-5D
Drill Size	Ø2.7mm
Work Material	304 SUS
Cutting Speed	262 SFM (9435 RPM)
Feed Rate	30 IPM (0.0032 IPR)
Depth of Hole	13.5mm (Blind)
Coolant	Water-Soluble (5% • Internal)
Machine	Horizontal Machining Center (BT40)



## Increased Coolant Output Leads to Extended Tool Life

4140 (82-90 HRB)

Tool	ADOX-5D
Drill Size	Ø2.7mm
Work Material	4140 (82-90 HRB)
Cutting Speed	262 SFM (9435 RPM)
Feed Rate	30 IPM (0.0032 IPR)
Depth of Hole	13.5mm (Blind)
Coolant	Water-Soluble (5% • Internal)
Machine	Horizontal Machining Center (BT40)

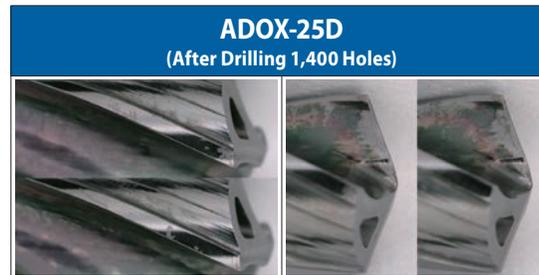
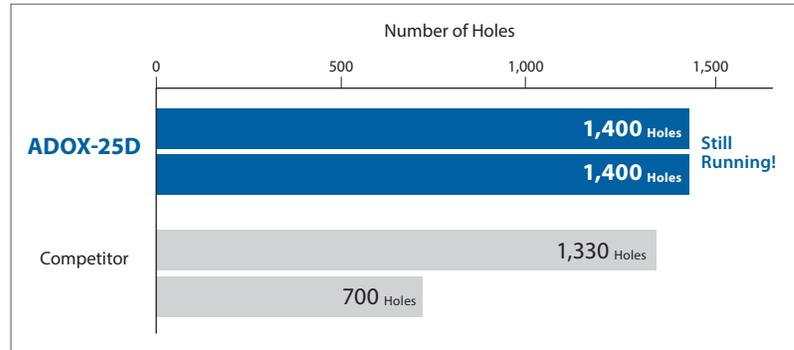


## Long Tool Life in Manganese-Chromium Steel

Manganese-Chromium Steel (800~1,200 N/mm)

ADOX achieves stable and long tool life with high feed rates.

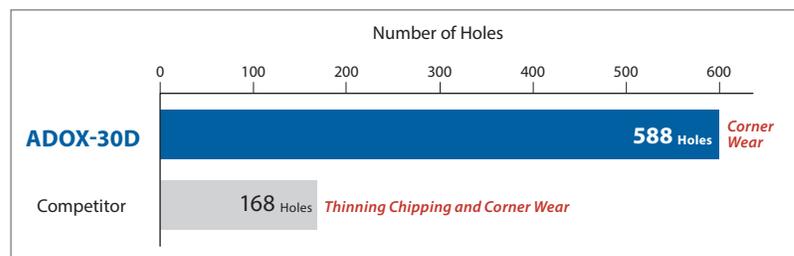
Tool	ADOX-25D	Competitor
Drill Size	Ø4.9mm	
Work Material	Manganese-Chromium Steel (800~1,200 N/mm)	
Cutting Speed	305 SFM (6000 RPM)	
Feed Rate	50 IPM (0.0083 IPR)	
Depth of Hole	90mm (Through)	
Coolant	Water-Soluble (Internal)	
Coolant Pressure	6 MPa (870 psi)	
Machine	Horizontal Machining Center	



## High Efficiency & Long Tool Life in 30D Deep Drilling

1050

Tool	ADOX-30D	Competitor
Drill Size	Ø5mm	
Work Material	1050	
Cutting Speed	295 SFM (5730 RPM)	
Feed Rate	45 IPM (0.0787 IPR)	23 IPM (0.0039 IPR)
Depth of Hole	23 IPM (0.0039 IPR)	
Coolant	Water-Soluble (Internal)	
Coolant Pressure	5 MPa (725 psi)	
Machine	Horizontal Machining Center (BT40)	

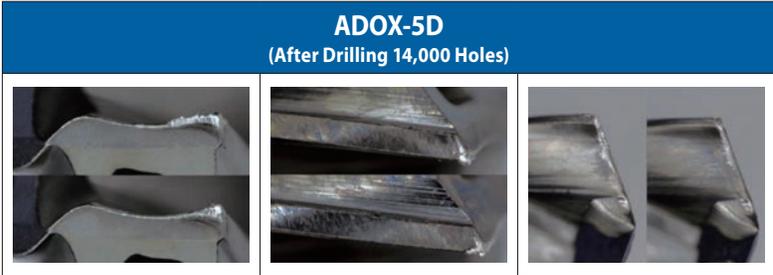


## High-Efficiency and Long Tool Life

### Machining Electromagnetic Stainless Steel

High-efficiency and long tool life with high-viscosity oil-based cutting fluid.

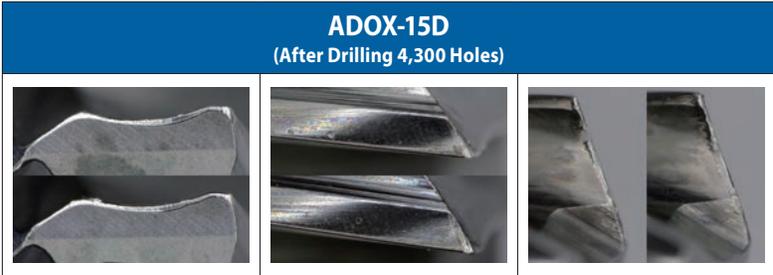
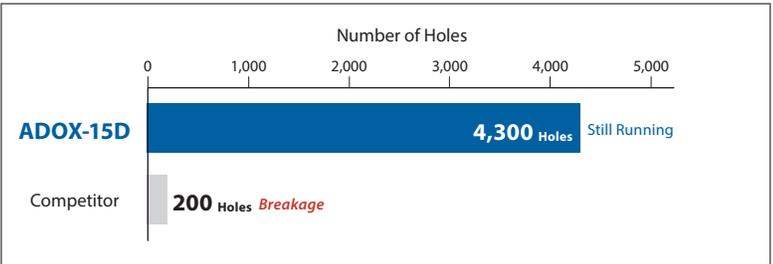
Tool	ADOX-5D	Competitor
Drill Size	Ø3.3mm	
Work Material	Electromagnetic Stainless Steel (400 Series SUS)	
Machining Method	Step Drilling (2mm Step)	Step Drilling (0.5mm Step)
Cutting Speed	170 SFM (5000 RPM)	
Feed Rate	13 IPM (0.0013 IPR)	10 IPM (0.001 IPR)
Depth of Hole	10.5mm (Blind)	
Coolant	Oil-based Coolant (Internal)	
Machine	CNC Sliding Head Lathe	



## Machining High Carbon Chromium Bearing Steel

### High-Carbon Chromium Bearing Steel (52100)

Tool	ADOX-15D
Drill Size	Ø3mm
Cutting Speed	62 SFM (2000 RPM)
Feed Rate	4 IPM (0.002 IPR)
Depth of Hole	42.2mm (Through)
Coolant	Non-Water-Soluble (Internal)
Machine	8-Axis Automatic Lathe



# A Brand ADOX

High Performance Coolant-Through Carbide Drills

## List 6703

A BRAND ADOX-3D



NEW

SPEED FEED  
50

CARBIDE

EgiAs



2 FLUTE

STUB

30°

SHANK  
h6

PACKED  
1 PIECE

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007



EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8733200	●	-	-	-	2.000	0.078740	12.000	66.000	-	3.000
8733230	●	-	-	-	2.300	0.090551	14.000	66.000	-	3.000
670309375	●	3/32	-	-	2.381	0.093750	15.000	66.000	-	3.000
8733250	●	-	-	-	2.500	0.098425	15.000	66.000	-	3.000
8733260	●	-	-	-	2.600	0.102362	16.000	66.000	-	3.000
8733276	●	-	-	-	2.760	0.108661	17.000	66.000	-	3.000
670310938	●	7/64	-	-	2.778	0.109375	17.000	66.000	-	3.000
8733278	●	-	-	-	2.780	0.109449	17.000	66.000	-	3.000
8733280	●	-	-	-	2.800	0.110236	17.000	66.000	-	3.000
8733290	●	-	-	-	2.900	0.114173	18.000	66.000	-	3.000
8733300	●	-	-	-	3.000	0.118110	18.000	66.000	-	3.000
670312500	●	1/8	-	-	3.175	0.125000	20.000	74.000	0.125	-
8733320	●	-	-	-	3.200	0.125984	20.000	74.000	-	4.000
8733330	●	-	-	-	3.300	0.129921	20.000	74.000	-	4.000
8733340	●	-	-	-	3.400	0.133858	21.000	74.000	-	4.000
8733350	●	-	-	-	3.500	0.137795	21.000	74.000	-	4.000
670314063	●	9/64	-	-	3.572	0.140625	22.000	74.000	-	4.000
8733360	●	-	-	-	3.600	0.141732	22.000	74.000	-	4.000
8733366	●	-	-	-	3.660	0.144094	22.000	74.000	-	4.000
8733368	●	-	-	-	3.680	0.144882	23.000	74.000	-	4.000
8733370	●	-	-	-	3.700	0.145669	23.000	74.000	-	4.000
8733375	●	-	-	-	3.750	0.147638	23.000	74.000	-	4.000
8733390	●	-	-	-	3.900	0.153543	24.000	74.000	-	4.000
670315625	●	5/32	-	-	3.969	0.156250	24.000	74.000	0.188	-
8733420	●	-	-	-	4.200	0.165354	26.000	80.000	-	6.000
8733430	●	-	-	-	4.300	0.169291	26.000	80.000	-	6.000
670317188	●	11/64	-	-	4.366	0.171875	27.000	80.000	0.188	-
8733450	●	-	-	-	4.500	0.177165	27.000	80.000	-	6.000
8733460	●	-	-	-	4.600	0.181102	28.000	80.000	-	6.000
8733462	●	-	-	-	4.620	0.181890	28.000	80.000	-	6.000
8733464	●	-	-	-	4.640	0.182677	28.000	80.000	-	6.000
670318750	●	3/16	-	-	4.763	0.187500	29.000	80.000	0.188	-
8733490	●	-	-	-	4.900	0.192913	30.000	80.000	-	6.000
8733500	●	-	-	-	5.000	0.196850	25.000	80.000	-	6.000
8733510	●	-	-	-	5.100	0.200787	26.000	82.000	-	6.000
8733520	●	-	-	-	5.200	0.204724	26.000	82.000	-	6.000
8733525	●	-	-	-	5.250	0.206693	27.000	82.000	-	6.000
8733552	●	-	-	-	5.520	0.217323	28.000	82.000	-	6.000
8733554	●	-	-	-	5.540	0.218110	28.000	82.000	-	6.000
8733560	●	-	-	-	5.600	0.220472	28.000	82.000	-	6.000
8733600	●	-	-	-	6.000	0.236220	30.000	82.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium				
Low	Medium	High							6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1010	1035	1065	4140	4340	○	○	○	○				○	○			
1018	1045				○	○	○	○								

○ Good ○ Best



# A Brand ADOX

High Performance Coolant-Through Carbide Drills

## List 6705

A BRAND ADOX-5D



NEW

SPEED FEED  
50

CARBIDE

EgiAs



2 FLUTE

JOBBER

30°

SHANK  
h6

PACKED  
1 PIECE



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007

EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8734200	●	-	-	-	2.000	0.078740	18.000	70.000	-	3.000
8734230	●	-	-	-	2.300	0.090551	21.000	70.000	-	3.000
670509375	●	3/32	-	-	2.381	0.093750	22.000	70.000	-	3.000
8734250	●	-	-	-	2.500	0.098425	23.000	70.000	-	3.000
8734260	●	-	-	-	2.600	0.102362	24.000	78.000	-	3.000
8734270	●	-	-	-	2.700	0.106299	25.000	78.000	-	3.000
670510938	●	7/64	-	-	2.778	0.109375	26.000	78.000	-	3.000
8734280	●	-	-	-	2.800	0.110236	26.000	78.000	-	3.000
8734290	●	-	-	-	2.900	0.114173	27.000	78.000	-	3.000
8734300	●	-	-	-	3.000	0.118110	27.000	78.000	-	3.000
670512500	●	1/8	-	-	3.175	0.125000	29.000	86.000	0.125	-
8734320	●	-	-	-	3.200	0.125984	29.000	86.000	-	4.000
8734330	●	-	-	-	3.300	0.129921	30.000	86.000	-	4.000
8734340	●	-	-	-	3.400	0.133858	31.000	86.000	-	4.000
8734350	●	-	-	-	3.500	0.137795	32.000	86.000	-	4.000
670514063	●	9/64	-	-	3.572	0.140625	33.000	86.000	-	4.000
8734360	●	-	-	-	3.600	0.141732	33.000	86.000	-	4.000
8734380	●	-	-	-	3.800	0.149606	35.000	86.000	-	4.000
8734390	●	-	-	-	3.900	0.153543	36.000	86.000	-	4.000
670515625	●	5/32	-	-	3.969	0.156250	36.000	86.000	0.188	-
8734400	●	-	-	-	4.000	0.157480	36.000	86.000	-	4.000
8734410	●	-	-	-	4.100	0.161417	37.000	95.000	-	6.000
8734420	●	-	-	-	4.200	0.165354	38.000	95.000	-	6.000
8734430	●	-	-	-	4.300	0.169291	39.000	95.000	-	6.000
670517188	●	11/64	-	-	4.366	0.171875	40.000	95.000	0.188	-
8734450	●	-	-	-	4.500	0.177165	41.000	95.000	-	6.000
8734460	●	-	-	-	4.600	0.181102	42.000	95.000	-	6.000
670518750	●	3/16	-	-	4.763	0.187500	44.000	95.000	0.188	-
8734480	●	-	-	-	4.800	0.188976	44.000	95.000	-	6.000
8734490	●	-	-	-	4.900	0.192913	45.000	95.000	-	6.000
8734500	●	-	-	-	5.000	0.196850	45.000	95.000	-	6.000
8734510	●	-	-	-	5.100	0.200787	41.000	100.000	-	6.000
8734520	●	-	-	-	5.200	0.204724	42.000	100.000	-	6.000
8734530	●	-	-	-	5.300	0.208661	43.000	100.000	-	6.000
8734550	●	-	-	-	5.500	0.216535	44.000	100.000	-	6.000
8734560	●	-	-	-	5.600	0.220472	45.000	100.000	-	6.000
8734580	●	-	-	-	5.800	0.228346	47.000	100.000	-	6.000
8734600	●	-	-	-	6.000	0.236220	48.000	100.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium				
Low	Medium	High							6061	7075			Casting	Inconel	6Al4V (30 HRC)	~35 HRC
1010	1035	1065	4140	4340	○	○	○	○					○	○		
1018	1045															

○ Good ○ Best



# A Brand ADOX

High Performance Coolant-Through Carbide Drills

## List 6708

A BRAND ADOX-8D



NEW

SPEED FEED  
50

CARBIDE

EgiAs



2 FLUTE

TAPER

30°

SHANK  
h6

PACKED  
1 PIECE

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007



EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8735200	●	-	-	-	2.000	0.078740	22.000	75.000	-	3.000
8735210	●	-	-	-	2.100	0.082677	24.000	75.000	-	3.000
8735220	●	-	-	-	2.200	0.086614	25.000	75.000	-	3.000
8735230	●	-	-	-	2.300	0.090551	26.000	75.000	-	3.000
670809375	●	3/32	-	-	2.381	0.093750	27.000	75.000	-	3.000
670810938	●	7/64	-	-	2.778	0.109375	31.000	80.000	-	3.000
8735280	●	-	-	-	2.800	0.110236	31.000	80.000	-	3.000
8735300	●	-	-	-	3.000	0.118110	33.000	80.000	-	3.000
670812500	●	1/8	-	-	3.175	0.125000	35.000	95.000	0.125	-
8735330	●	-	-	-	3.300	0.129921	36.000	95.000	-	4.000
8735340	●	-	-	-	3.400	0.133858	37.000	95.000	-	4.000
670814063	●	9/64	-	-	3.572	0.140625	40.000	95.000	-	4.000
8735380	●	-	-	-	3.800	0.149606	42.000	95.000	-	4.000
670815625	●	5/32	-	-	3.969	0.156250	44.000	95.000	0.188	-
670816102	●	-	20	-	4.090	0.161024	45.000	105.000	-	6.000
670817188	●	11/64	-	-	4.366	0.171875	47.000	105.000	0.188	-
670818750	●	3/16	-	-	4.763	0.187500	52.000	105.000	0.188	-
8735500	●	-	-	-	5.000	0.196850	55.000	105.000	-	6.000
8735540	●	-	-	-	5.400	0.212598	59.000	115.000	-	6.000
670821299	●	-	3	-	5.410	0.212992	60.000	115.000	-	6.000
8735550	●	-	-	-	5.500	0.216535	61.000	115.000	-	6.000
8735600	●	-	-	-	6.000	0.236220	66.000	115.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium				
Low	Medium	High							6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1010	1035	1065	4140	4340	300	400	17-4 PH	6061	7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
○	○	○	○	○	○	○	○	○					○	○		

○ Good ○ Best



### List 6710

A BRAND ADOX-10D



**NEW** SPEED FEED 51 CARBIDE EgiAs 2 FLUTE TAPER 30° SHANK h6 PACKED 1 PIECE



R Thinning  
R Gash

Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015

EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8736200	●	-	-	-	2.000	0.078740	26.000	75.000	-	3.000
671009375	●	3/32	-	-	2.381	0.093750	33.000	75.000	-	3.000
8736240	●	-	-	-	2.400	0.094488	33.000	75.000	-	3.000
8736250	●	-	-	-	2.500	0.098425	33.000	75.000	-	3.000
8736260	●	-	-	-	2.600	0.102362	40.000	90.000	-	3.000
671010938	●	7/64	-	-	2.778	0.109375	40.000	90.000	-	3.000
8736280	●	-	-	-	2.800	0.110236	40.000	90.000	-	3.000
8736290	●	-	-	-	2.900	0.114173	40.000	90.000	-	3.000
8736300	●	-	-	-	3.000	0.118110	40.000	90.000	-	3.000
8736310	●	-	-	-	3.100	0.122047	45.000	100.000	-	4.000
671012500	●	1/8	-	-	3.175	0.125000	45.000	100.000	0.125	-
8736320	●	-	-	-	3.200	0.125984	45.000	100.000	-	4.000
8736330	●	-	-	-	3.300	0.129921	45.000	100.000	-	4.000
8736340	●	-	-	-	3.400	0.133858	50.000	100.000	-	4.000
671014063	●	9/64	-	-	3.572	0.140625	50.000	100.000	-	4.000
8736370	●	-	-	-	3.700	0.145669	50.000	100.000	-	4.000
8736380	●	-	-	-	3.800	0.149606	50.000	100.000	-	4.000
671015625	●	5/32	-	-	3.969	0.156250	50.000	100.000	0.188	-
8736400	●	-	-	-	4.000	0.157480	50.000	100.000	-	4.000
671016102	●	-	20	-	4.090	0.161024	55.000	115.000	-	6.000
8736420	●	-	-	-	4.200	0.165354	55.000	115.000	-	6.000
8736430	●	-	-	-	4.300	0.169291	60.000	115.000	-	6.000
8736440	●	-	-	-	4.400	0.173228	60.000	115.000	-	6.000
8736470	●	-	-	-	4.700	0.185039	65.000	115.000	-	6.000
671018750	●	3/16	-	-	4.763	0.187500	65.000	115.000	0.188	-
8736480	●	-	-	-	4.800	0.188976	65.000	115.000	-	6.000
8736500	●	-	-	-	5.000	0.196850	65.000	115.000	-	6.000
8736530	●	-	-	-	5.300	0.208661	70.000	128.000	-	6.000
671021299	●	-	3	-	5.410	0.212992	78.000	128.000	-	6.000
8736560	●	-	-	-	5.600	0.220472	78.000	128.000	-	6.000
8736600	●	-	-	-	6.000	0.236220	78.000	128.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



The ADOX-3D/5D or ADO-3D/5D can also be used as pilot drills for the ADOX-10D to 30D long drills.

• ADOX-3D (ø2 - ø6)



• ADOX-5D (ø2 - ø6)



P					M			K	N		S		H						
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel						
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium							
Low	Medium	High							6061	7075			Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1010	1035	1045	1065	4140	4340														
1018	1045																		

○ Good ● Best



# A Brand ADOX

High Performance Coolant-Through Carbide Drills

## List 6715

A BRAND ADOX-15D



NEW

SPEED FEED  
51

CARBIDE

EgiAs

2 FLUTE

EXTRA LONG

30°

SHANK  
h6

PACKED  
1 PIECE

Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015



EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8737200	●	-	-	-	2.000	0.078740	36.000	90.000	-	3.000
8737210	●	-	-	-	2.100	0.082677	38.000	90.000	-	3.000
8737220	●	-	-	-	2.200	0.086614	40.000	90.000	-	3.000
8737230	●	-	-	-	2.300	0.090551	42.000	90.000	-	3.000
671509375	●	3/32	-	-	2.381	0.093750	43.000	90.000	-	3.000
8737240	●	-	-	-	2.400	0.094488	44.000	90.000	-	3.000
8737250	●	-	-	-	2.500	0.098425	45.000	96.000	-	3.000
8737260	●	-	-	-	2.600	0.102362	47.000	96.000	-	3.000
8737270	●	-	-	-	2.700	0.106299	49.000	96.000	-	3.000
671510938	●	7/64	-	-	2.778	0.109375	51.000	96.000	-	3.000
8737280	●	-	-	-	2.800	0.110236	51.000	96.000	-	3.000
8737290	●	-	-	-	2.900	0.114173	53.000	96.000	-	3.000
8737300	●	-	-	-	3.000	0.118110	55.000	105.000	-	3.000
8737310	●	-	-	-	3.100	0.122047	60.000	125.000	-	4.000
671512500	●	1/8	-	-	3.175	0.125000	60.000	125.000	0.125	-
8737320	●	-	-	-	3.200	0.125984	60.000	125.000	-	4.000
8737330	●	-	-	-	3.300	0.129921	60.000	125.000	-	4.000
8737350	●	-	-	-	3.500	0.137795	65.000	125.000	-	4.000
671514063	●	9/64	-	-	3.572	0.140625	65.000	125.000	-	4.000
8737360	●	-	-	-	3.600	0.141732	65.000	125.000	-	4.000
671515625	●	5/32	-	-	3.969	0.156250	75.000	125.000	0.188	-
8737400	●	-	-	-	4.000	0.157480	75.000	125.000	-	4.000
8737420	●	-	-	-	4.200	0.165354	75.000	140.000	-	6.000
8737430	●	-	-	-	4.300	0.169291	85.000	140.000	-	6.000
671517188	●	11/64	-	-	4.366	0.171875	85.000	140.000	0.188	-
8737470	●	-	-	-	4.700	0.185039	85.000	140.000	-	6.000
671518750	●	3/16	-	-	4.763	0.187500	90.000	140.000	0.188	-
8737480	●	-	-	-	4.800	0.188976	90.000	140.000	-	6.000
8737490	●	-	-	-	4.900	0.192913	90.000	140.000	-	6.000
8737510	●	-	-	-	5.100	0.200787	95.000	160.000	-	6.000
8737520	●	-	-	-	5.200	0.204724	95.000	160.000	-	6.000
671521299	●	-	3	-	5.410	0.212992	110.000	160.000	-	6.000
8737550	●	-	-	-	5.500	0.216535	110.000	160.000	-	6.000
8737580	●	-	-	-	5.800	0.228346	110.000	160.000	-	6.000
8737600	●	-	-	-	6.000	0.236220	110.000	160.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details

ADR

The ADOX-3D/5D or ADO-3D/5D can also be used as pilot drills for the ADOX-10D to 30D long drills.

• ADOX-3D (ø2 - ø6)



• ADOX-5D (ø2 - ø6)



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
Low	Medium	High							6061	Casting						
1010	1035	1065	4140	4340	300	400	17-4 PH	6061	7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
○	○	○	○	○	○	○	○	○					○	○		

○ Good ○ Best



### List 6720

A BRAND ADOX-20D



NEW

SPEED FEED  
51

CARBIDE

EgiAs

2 FLUTE

EXTRA LONG

30°

SHANK  
h6

PACKED  
1 PIECE

Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015



EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8738200	●	-	-	-	2.000	0.078740	46.000	100.000	-	3.000
8738210	●	-	-	-	2.100	0.082677	49.000	100.000	-	3.000
8738220	●	-	-	-	2.200	0.086614	51.000	100.000	-	3.000
8738230	●	-	-	-	2.300	0.090551	53.000	100.000	-	3.000
672009375	●	3/32	-	-	2.381	0.093750	55.000	100.000	-	3.000
8738240	●	-	-	-	2.400	0.094488	56.000	100.000	-	3.000
8738250	●	-	-	-	2.500	0.098425	58.000	109.000	-	3.000
8738260	●	-	-	-	2.600	0.102362	60.000	109.000	-	3.000
8738270	●	-	-	-	2.700	0.106299	63.000	109.000	-	3.000
672010938	●	7/64	-	-	2.778	0.109375	64.000	109.000	-	3.000
8738280	●	-	-	-	2.800	0.110236	65.000	109.000	-	3.000
8738290	●	-	-	-	2.900	0.114173	67.000	109.000	-	3.000
8738300	●	-	-	-	3.000	0.118110	70.000	120.000	-	3.000
8738310	●	-	-	-	3.100	0.122047	80.000	140.000	-	4.000
672012500	●	1/8	-	-	3.175	0.125000	80.000	140.000	0.125	-
8738320	●	-	-	-	3.200	0.125984	80.000	140.000	-	4.000
8738330	●	-	-	-	3.300	0.129921	80.000	140.000	-	4.000
8738340	●	-	-	-	3.400	0.133858	85.000	140.000	-	4.000
8738350	●	-	-	-	3.500	0.137795	85.000	140.000	-	4.000
672014063	●	9/64	-	-	3.572	0.140625	90.000	140.000	-	4.000
672015625	●	5/32	-	-	3.969	0.156250	90.000	140.000	0.188	-
8738400	●	-	-	-	4.000	0.157480	90.000	140.000	-	4.000
8738420	●	-	-	-	4.200	0.165354	100.000	165.000	-	6.000
672017188	●	11/64	-	-	4.366	0.171875	110.000	165.000	0.188	-
8738450	●	-	-	-	4.500	0.177165	110.000	165.000	-	6.000
672018750	●	3/16	-	-	4.763	0.187500	110.000	165.000	0.188	-
8738480	●	-	-	-	4.800	0.188976	115.000	165.000	-	6.000
8738500	●	-	-	-	5.000	0.196850	115.000	165.000	-	6.000
8738510	●	-	-	-	5.100	0.200787	120.000	190.000	-	6.000
672021299	●	-	3	-	5.410	0.212992	140.000	190.000	-	6.000
8738560	●	-	-	-	5.600	0.220472	140.000	190.000	-	6.000
8738570	●	-	-	-	5.700	0.224409	140.000	190.000	-	6.000
8738600	●	-	-	-	6.000	0.236220	140.000	190.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



The ADOX-3D/5D or ADO-3D/5D can also be used as pilot drills for the ADOX-10D to 30D long drills.

• ADOX-3D (ø2 - ø6)



• ADOX-5D (ø2 - ø6)



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium				
Low	Medium	High						6061	7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1010	1035	1065	4140	4340	○	○	○	○					○	○		
1018	1045	1065	4140	4340	○	○	○	○					○	○		

○ Good ○ Best



# A Brand ADOX

High Performance Coolant-Through Carbide Drills

## List 6725

A BRAND ADOX-25D



NEW

SPEED FEED  
51

CARBIDE

EgiAs



2 FLUTE

EXTRA LONG

30°

SHANK  
h6

PACKED  
1 PIECE

Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015



EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8739200	●	-	-	-	2.000	0.078740	56.000	110.000	-	3.000
8739210	●	-	-	-	2.100	0.082677	59.000	110.000	-	3.000
8739220	●	-	-	-	2.200	0.086614	62.000	110.000	-	3.000
8739230	●	-	-	-	2.300	0.090551	65.000	110.000	-	3.000
672509375	●	3/32	-	-	2.381	0.093750	67.000	110.000	-	3.000
8739240	●	-	-	-	2.400	0.094488	68.000	110.000	-	3.000
8739250	●	-	-	-	2.500	0.098425	70.000	122.000	-	3.000
8739260	●	-	-	-	2.600	0.102362	73.000	122.000	-	3.000
8739270	●	-	-	-	2.700	0.106299	76.000	122.000	-	3.000
672510938	●	7/64	-	-	2.778	0.109375	78.000	122.000	-	3.000
8739280	●	-	-	-	2.800	0.110236	79.000	122.000	-	3.000
8739290	●	-	-	-	2.900	0.114173	82.000	122.000	-	3.000
8739300	●	-	-	-	3.000	0.118110	85.000	135.000	-	3.000
672512500	●	1/8	-	-	3.175	0.125000	95.000	165.000	0.125	-
8739340	●	-	-	-	3.400	0.133858	105.000	165.000	-	4.000
672514063	●	9/64	-	-	3.572	0.140625	105.000	165.000	-	4.000
672515625	●	5/32	-	-	3.969	0.156250	115.000	165.000	0.188	-
672517188	●	11/64	-	-	4.366	0.171875	135.000	190.000	0.188	-
672518750	●	3/16	-	-	4.763	0.187500	140.000	190.000	0.188	-
8739500	●	-	-	-	5.000	0.196850	140.000	190.000	-	6.000
672521299	●	-	3	-	5.410	0.212992	170.000	220.000	-	6.000
8739600	●	-	-	-	6.000	0.236220	170.000	220.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



The ADOX-3D/5D or ADO-3D/5D can also be used as pilot drills for the ADOX-10D to 30D long drills.

• ADOX-3D (ø2 - ø6)



• ADOX-5D (ø2 - ø6)



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
Low	Medium	High							6061	7075						
1010	1035	1045	1065	4140	4340	○	○	○	○	○	○	○	○	○	○	○
1018	1045	1065	4140	4340	○	○	○	○	○	○	○	○	○	○	○	○

○ Good ○ Best



### List 6730

A BRAND ADOX-30D



**NEW** SPEED FEED 51 CARBIDE EgiAs 2 FLUTE EXTRA LONG 30° SHANK h6 PACKED 1 PIECE



Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015

EDP Number		Diameter (D)					Flute Length	Overall Length	Shank Diameter	
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL (mm)	L (mm)	d (in)	d (mm)
8740200	●	-	-	-	2.000	0.078740	66.000	120.000	-	3.000
8740210	●	-	-	-	2.100	0.082677	70.000	120.000	-	3.000
8740220	●	-	-	-	2.200	0.086614	73.000	120.000	-	3.000
8740230	●	-	-	-	2.300	0.090551	76.000	120.000	-	3.000
673009375	●	3/32	-	-	2.381	0.093750	79.000	120.000	-	3.000
8740240	●	-	-	-	2.400	0.094488	80.000	120.000	-	3.000
8740250	●	-	-	-	2.500	0.098425	83.000	134.000	-	3.000
8740260	●	-	-	-	2.600	0.102362	86.000	134.000	-	3.000
8740270	●	-	-	-	2.700	0.106299	90.000	134.000	-	3.000
673010938	●	7/64	-	-	2.778	0.109375	92.000	134.000	-	3.000
8740280	●	-	-	-	2.800	0.110236	93.000	134.000	-	3.000
8740290	●	-	-	-	2.900	0.114173	96.000	134.000	-	3.000
8740300	●	-	-	-	3.000	0.118110	100.000	150.000	-	3.000
8740310	●	-	-	-	3.100	0.122047	102.000	185.000	-	4.000
673012500	●	1/8	-	-	3.175	0.125000	105.000	185.000	0.125	-
8740320	●	-	-	-	3.200	0.125984	105.000	185.000	-	4.000
8740350	●	-	-	-	3.500	0.137795	116.000	185.000	-	4.000
673014063	●	9/64	-	-	3.572	0.140625	116.000	185.000	-	4.000
8740370	●	-	-	-	3.700	0.145669	116.000	185.000	-	4.000
673015625	●	5/32	-	-	3.969	0.156250	132.000	185.000	0.188	-
8740400	●	-	-	-	4.000	0.157480	132.000	185.000	-	4.000
8740420	●	-	-	-	4.200	0.165354	140.000	215.000	-	6.000
673017188	●	11/64	-	-	4.366	0.171875	150.000	215.000	0.188	-
673018750	●	3/16	-	-	4.763	0.187500	155.000	210.000	0.188	-
8740480	●	-	-	-	4.800	0.188976	165.000	215.000	-	6.000
8740500	●	-	-	-	5.000	0.196850	165.000	215.000	-	6.000
673021299	●	-	3	-	5.410	0.212992	200.000	250.000	-	6.000
8740600	●	-	-	-	6.000	0.236220	200.000	250.000	-	6.000

● Stocked ▲ Globally Stocked ○ Made to Order; contact an OSG representative for details



The ADOX-3D/5D or ADO-3D/5D can also be used as pilot drills for the ADOX-10D to 30D long drills.

• ADOX-3D (ø2 - ø6)



• ADOX-5D (ø2 - ø6)



P					M			K	N		S		H			
Steel					Stainless Steel			Cast Iron	Non-Ferrous		HRSA		Hardened Steel			
Carbon Steel			Alloy Steel	Die Steel	300	400	17-4 PH		Aluminum		Nickel Alloy	Titanium				
Low	Medium	High							6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1010	1035	1065	4140					○	○	○	○	○	7075			○
1018	1045	1065	4340													

○ Good ○ Best



List 6703 - A Brand ADOX: **3D**

List 6705 - A Brand ADOX: **5D**

List 6708 - A Brand ADOX: **8D**

## General Drilling Operations

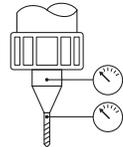
Work Material	Mild Steel Low Carbon Steel Rolled Steel 1010		Carbon Steel 1035, 1050		Alloy Steel (16-28 HRC) 4140, 4130		Alloy Steel (28-35 HRC) 4140, 4130	
Drilling Speed	262-394 SFM		262-525 SFM		262-394 SFM		197-295 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2	12,700	0.0016-0.0031	12,700	0.0016-0.0031	12,700	0.0016-0.0031	11,100	0.0016-0.0031
3	10,600	0.0024-0.0047	10,600	0.0024-0.0047	10,600	0.0024-0.0047	7,400	0.0024-0.0047
4	8,000	0.0031-0.0063	8,000	0.0031-0.0063	8,000	0.0031-0.0063	5,600	0.0031-0.0063
5	6,400	0.0039-0.0079	6,400	0.0039-0.0079	6,400	0.0039-0.0079	4,500	0.0039-0.0079
6	5,300	0.0047-0.0094	5,300	0.0047-0.0094	5,300	0.0047-0.0094	3,700	0.0047-0.0094

## General Drilling Operations

Work Material	Special Alloy Steel Hardened Steel Prehardened Steel (34-40 HRC)		Stainless Steel 300 Series SUS 400 Series SUS		Cast Iron		Ductile Cast Iron	
Drilling Speed	98-197 SFM		131-262 SFM		262-394 SFM		197-328 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2	7,200	0.0016-0.0024	9,500	0.0016-0.0031	12,700	0.0016-0.0031	12,700	0.0016-0.0031
3	4,800	0.0024-0.0035	6,400	0.0024-0.0047	10,600	0.0024-0.0047	8,500	0.0024-0.0047
4	3,600	0.0031-0.0047	4,800	0.0031-0.0063	8,000	0.0031-0.0063	6,400	0.0031-0.0063
5	2,900	0.0039-0.0059	3,800	0.0039-0.0079	6,400	0.0039-0.0079	5,100	0.0039-0.0079
6	2,400	0.0047-0.0071	3,200	0.0047-0.0094	5,300	0.0047-0.0094	4,200	0.0047-0.0094

**Note:**

1. The indicated speeds and feeds are for drilling with [water-soluble coolant](#) or [MQL](#).
2. Water-soluble high density coolant (less than 20 times dilution) is recommended.
3. When using non-water-soluble or water-soluble coolant (over 20 times dilution), reduce cutting speed by 30%.
4. These conditions are for [drilling depth less than 8 times the drill diameter](#).
5. Equip the drill with a scratch- and dust-free collet and minimize drill deflection to [less than 0.02mm](#).
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
8. 1D - 2D step feeding may be required for drilling high hardened steels and mid-range (8D) work.
9. Depending on actual operation environment, high speed cutting parameters listed above may not be applicable.



- List 6710 - A Brand ADOX: **10D**
- List 6715 - A Brand ADOX: **15D**
- List 6720 - A Brand ADOX: **20D**
- List 6725 - A Brand ADOX: **25D**
- List 6730 - A Brand ADOX: **30D**

## General Drilling Operations

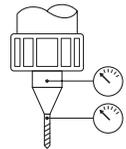
Work Material	Mild Steel Low Carbon Steel Rolled Steel 1010		Carbon Steel 1035, 1050		Alloy Steel (16-28 HRC) 4140, 4130		Alloy Steel (28-35 HRC) 4140, 4130	
Drilling Speed	197-410 SFM		197-410 SFM		197-410 SFM		164-230 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2.5	8,900	0.002-0.0039	8,900	0.002-0.0039	8,900	0.002-0.0039	7,600	0.002-0.0031
3	7,500	0.0024-0.0047	7,500	0.0024-0.0047	7,500	0.0024-0.0047	6,300	0.0031-0.0043
4	6,400	0.0031-0.0063	6,400	0.0031-0.0063	6,400	0.0031-0.0063	4,700	0.0039-0.0059
5	5,800	0.0039-0.0079	5,800	0.0039-0.0079	5,800	0.0039-0.0079	3,800	0.0047-0.0071
6	4,800	0.0047-0.0094	4,800	0.0047-0.0094	4,800	0.0047-0.0094	3,100	0.0055-0.0079

## General Drilling Operations

Work Material	Special Alloy Steel Hardened Steel Prehardened Steel (34-40 HRC)		Stainless Steel 300 Series SUS 400 Series SUS		Cast Iron		Ductile Cast Iron	
Drilling Speed	98-164 SFM		131-262 SFM		197-410 SFM		164-262 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2.5	5,000	0.002-0.0031	6,400	0.002-0.0039	8,900	0.002-0.0039	8,900	0.002-0.0039
3	4,200	0.0031-0.0043	5,300	0.0024-0.0047	7,500	0.0024-0.0047	7,500	0.0024-0.0047
4	3,100	0.0039-0.0059	4,400	0.0031-0.0063	6,400	0.0031-0.0063	5,600	0.0031-0.0063
5	2,500	0.0047-0.0071	3,800	0.0039-0.0079	5,800	0.0039-0.0079	4,500	0.0039-0.0079
6	2,100	0.0055-0.0079	3,200	0.0047-0.0094	4,800	0.0047-0.0094	3,800	0.0047-0.0094

### Note:

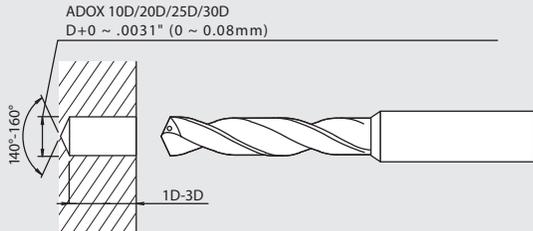
- The indicated speeds and feeds are for drilling with **water-soluble coolant or MQL** (mist drilling in stainless steels is not recommended).
- Water-soluble high density coolant (20-30 times dilution) is recommended.
- When using non-water-soluble coolant, set the cutting speed between 70-100% of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



## Deep Hole Operational Guidelines

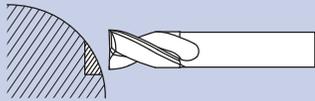
### 1. Make a pilot hole with ADOX-3D/5D or ADO-3D/5D.

For a pilot hole, select a pilot drill  $0 \sim .0031''$  ( $0 \sim 0.08\text{mm}$ ) larger than ADOX-10D/20D/25D/30D.

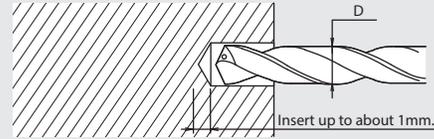


#### Drilling a Curved Surface

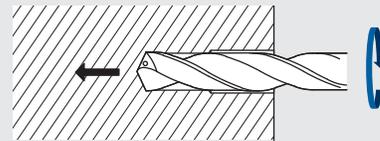
When working on a curved surface, we recommend using A Brand ADF flat drill.



### 2. Insert the long drill at a speed of $(n) = 300$ to $500 \text{ min}^{-1}$ and a feed rate of $(Vf) = 300$ to $500 \text{ mm/min}$ .

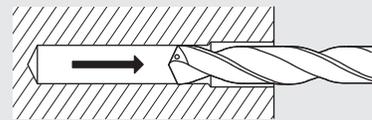


### 3. Increase the revolution to the designated speed and start drilling.



When drilling through holes, reduce the feed rate to  $(f) 0.05$  to  $0.1 \text{ mm/rev}$ .

### 4. After drilling, reduce the speed to $(n) = 300$ to $500 \text{ min}^{-1}$ and a feed rate of $(Vf) = 1,000$ to $3,000 \text{ mm/min}$ and pull the drill out of the hole.

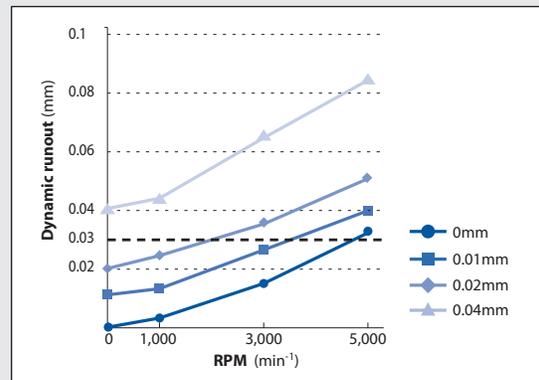


Make sure to use an internal coolant supply when deep drilling.

## Stable Drilling with Long Drills

The runout of a gripped cutting tool increases with the speed. The graph on the right indicates this increase. To ensure a higher level of work stability, OSG recommends "making  $+0 - 0.08\text{mm}$  pilot holes" and "inserting long drills stopped or at low speed."

The reason for this is made evident in the graph on the right: increasing the speed increases the dynamic runout, posing a higher risk of the drill not fitting properly in the pilot hole. Therefore, this is effective not only for inhibiting static runout, but is also the recommended drilling method for long drills.



Static runout RPM (min <sup>-1</sup> )	0mm	0.01mm	0.02mm	0.04mm
1,000	0.003	0.013	0.024	0.046
3,000	0.014	0.026	0.036	0.066
5,000	0.033	0.04	0.049	0.087

Tool:  $\varnothing 6 \times 30\text{D}$