



HSS NEXUS DRILL !

NEW DIMENSIONS

**NEXUS™
DRILL**

New coating, high speed, long tool life HSS drill !

NEVLUS™

New generation HSS drill series !

Utilizes the HSS-specific WDI™ Coating

The WDI™ Coating inhibits wear on the margin ! Achieves long tool life in high-speed machining !

	Coating Structure	(µm) Thickness	(HV) Surface Hardness	(°C) Oxidation Temperature
WDI™ coating	Multiple Layer	2,5	3.300	1.100
TiAlN coating	Dual Layer	4	2.700	800

A high helix and unique flute form design

The high helix (35°- 40°) and unique flute form design reduces machining heat and work hardening.



Unique flute form design

Chips are broken into small pieces

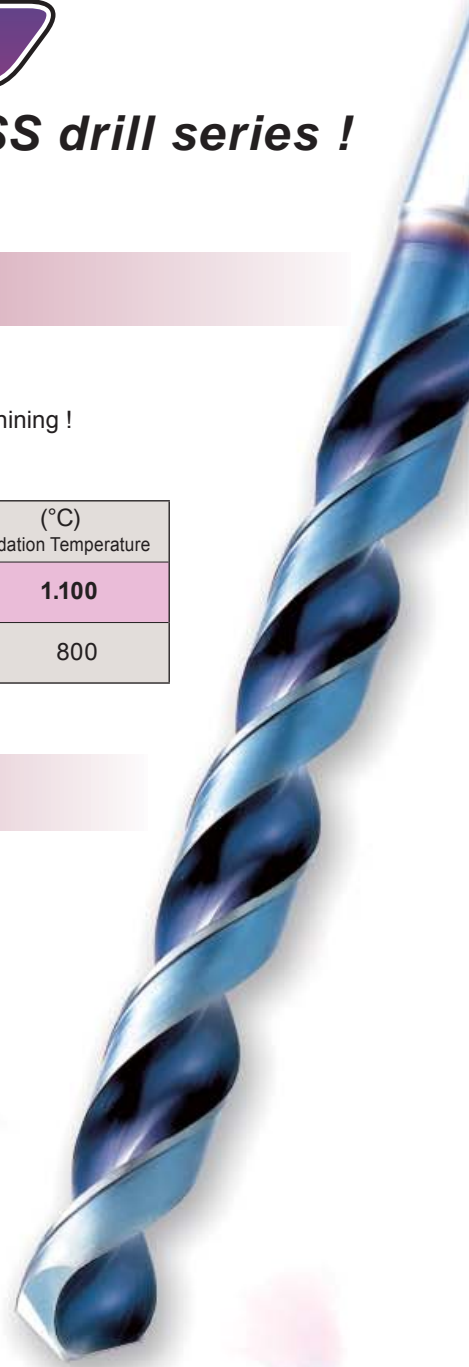
Chips are broken into small pieces even in stainless steels and copper alloys, making non-step drilling of 3-4 D holes possible.

Premium substrate

Using premium grade vanadium high speed steel as the substrate increases toughness, preventing chipping that is often associated with machining stainless steels.

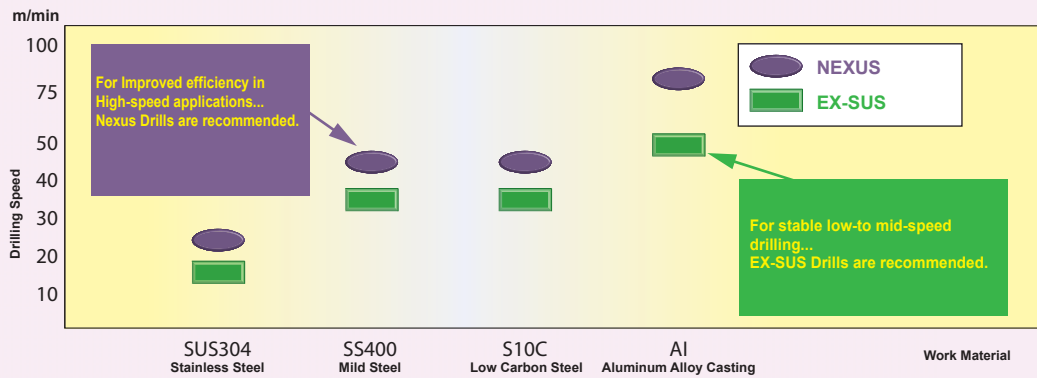
For a wide range of materials

The cutting edge is extremely sharp, providing outstanding performance in stainless steels, mild steels, copper alloys, and aluminum alloys.

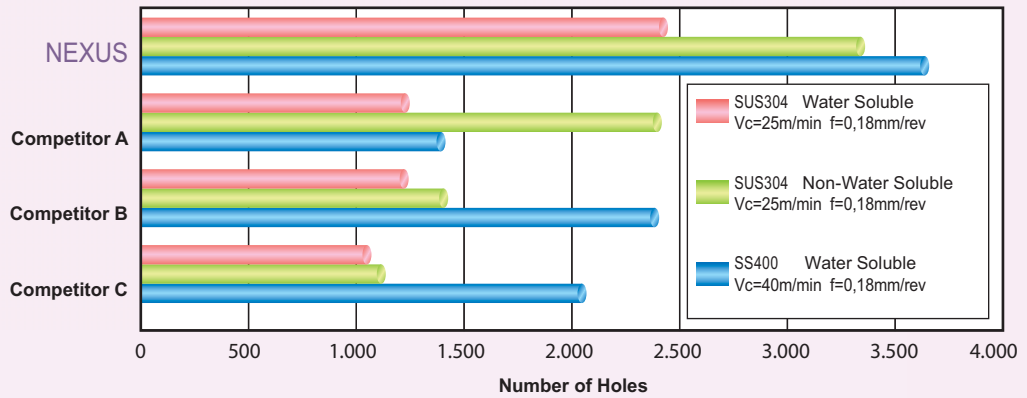


OSG's HSS drills are ideal for a wide range of machining applications. There are an abundance of sizes in inventory to meet with individual needs.

■ NEXUS Drills and EX-SUS Drills cutting conditions based on materials



A tool life comparison between the high-speed NEXUS Drill and a competitor (dia 6mm drill, 18 mm hole depth).



Eco-Friendly Commitment

Against competitors Less regrinding, less electric usage
Cut Co₂ by 771gCO₂ per 10000 holes

● Environmental evaluation

	NEXUS dia 6	Competitor A
Work Material	SUS304	
Tool Life	2.500	1.250
Times of regrinding per 10000 holes	3	7
Saved Co2 amount per 10000 holes (gCO2)*	771	--

In company test

■ NEXUS / EX-SUS - Range of stock sizes

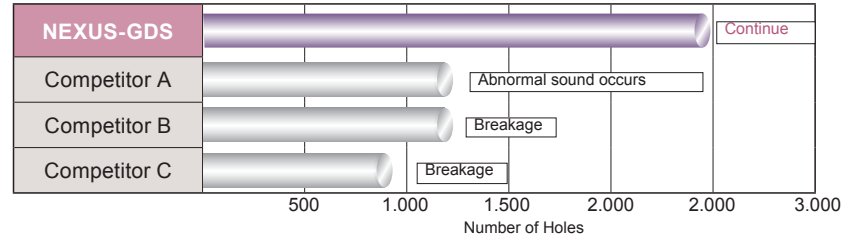


Processing Data

■ The HSS-specific WDI™ Coating inhibits wear on the margin !

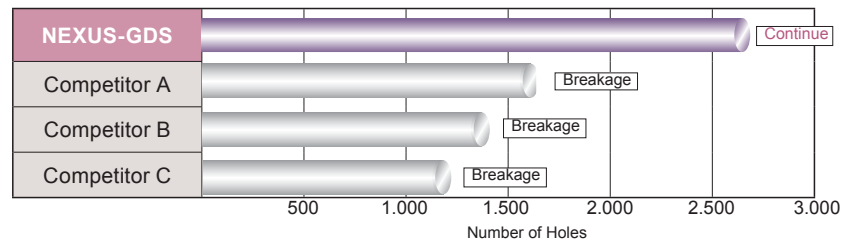
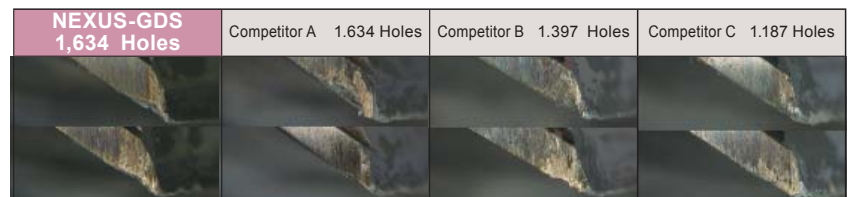
■ SUS304

Tool	NEXUS-GDS dia 6
Work Material	SUS304
Drilling Speed	25m/min 1.327min ⁻¹
Feed	239mm/min 0,18mm/rev
Depth of Holes	18mm 3D (Blind)
Coolant	Water Soluble



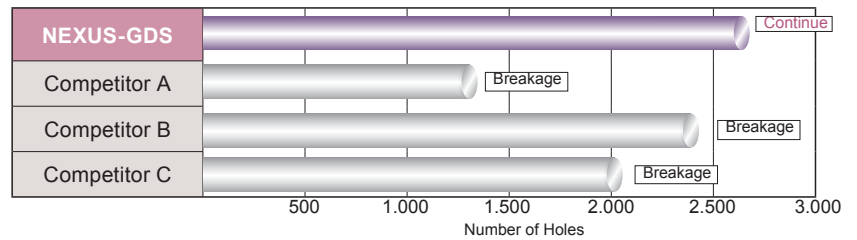
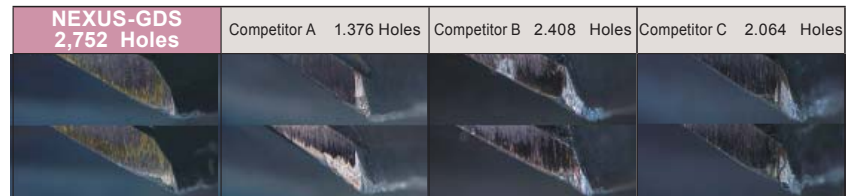
■ SUS304

Tool	NEXUS-GDS dia 6
Work Material	SUS304
Drilling Speed	25m/min 1.327min ⁻¹
Feed	239mm/min 0,18mm/rev
Depth of Holes	18mm 3D (Blind)
Coolant	Non-Water Soluble



■ SS400

Tool	NEXUS-GDS dia 6
Work Material	SS400
Drilling Speed	40m/min 2.123min ⁻¹
Feed	382mm/min 0,18mm/rev
Depth of Holes	18mm 3D (Blind)
Coolant	Water Soluble



■ S10C


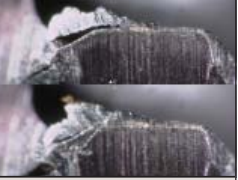


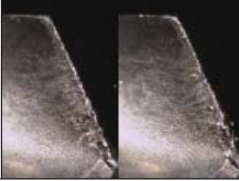
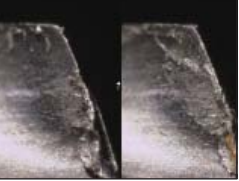
Tool	NEXUS-GDS dia 6
Work Material	S10C
Drilling Speed	40m/min 2.123min ⁻¹
Feed	382mm/min 0,18mm/rev
Depth of Holes	18mm 3D (Blind)
Coolant	Non-Water Soluble
Number of Holes	1,230 (Holes)

Tool	Wear Amount
NEXUS-GDS	0,093mm
Competitor A	(Finished at 820 holes)
Competitor B	0,113mm
Competitor C	0,179mm

■ The flank wear on the NEXUS Drill was minimal, making it possible to continue drilling ! Margin wear was approximately half that of the competitor's drill !


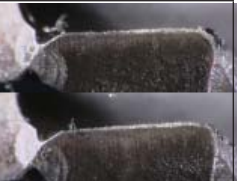


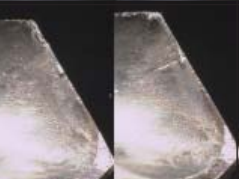
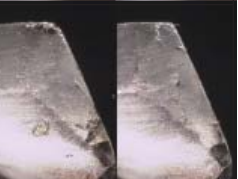
■ SUS304L

Tool	NEXUS-GDR dia 2,7
Work Material	SUS304L
Drilling Speed	16,9m/min 1.993min ⁻¹
Feed	100mm/min 0,05mm/rev
Depth of Holes	7mm 2,6D (Blind)
Coolant	Water Soluble
Number of Holes	1.000 (Holes)
Machine	Horizontal Machine

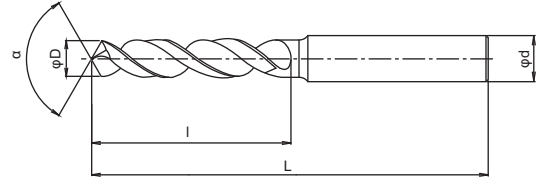
	NEXUS-GDR	Competitor
Flank		
Wear Amount (mm)	0,120	0,154
Margin		
Flute Face		

■ SUS304L

Tool	NEXUS-GDR dia 5,6
Work Material	SUS304L
Drilling Speed	15,8m/min 898min ⁻¹
Feed	144mm/min 0,16mm/rev
Depth of Holes	14,6mm 2,6D (Blind)
Coolant	Water Soluble
Number of Holes	1.000 (Holes)
Machine	Horizontal Machine

	NEXUS-GDR	Competitor
Flank		
Wear Amount (mm)	0,187	0,405
Margin		
Flute Face		

NEXUS-GDS



- Tool Material HSSE
- Surface treatment WDI™ Coating
- Drill Diameter Tolerance h8 The drill diameter tolerance is 0 - 0,015 is for sizes of 0,01mm increments.

Unité:mm

EDP NO.	D	α	L	l	d	€
8650100	1,00	140	38	6	3	
NEW 8650110	1,10	140	39	7	3	
NEW 8650120	1,20	140	40	8	3	
NEW 8650130	1,30	140	40	8	3	
NEW 8650140	1,40	140	41	9	3	
8650150	1,50	140	41	9	3	
NEW 8650160	1,60	140	42	10	3	
NEW 8650170	1,70	140	42	10	3	
8650180	1,80	140	43	11	3	
8650181	1,81	140	43	11	3	
8650183	1,83	140	43	11	3	
NEW 8650190	1,90	140	43	11	3	
8650200	2,00	130	44	12	3	
NEW 8650210	2,10	130	44	12	3	
8650211	2,11	130	44	12	3	
8650213	2,13	130	45	13	3	
NEW 8650220	2,20	130	45	13	3	
8650228	2,28	130	45	13	3	
8650230	2,30	130	45	13	3	
8650238	2,38	130	46	14	3	
8650240	2,40	130	46	14	3	
8650250	2,50	130	46	14	3	
8650260	2,60	130	46	14	3	
NEW 8650270	2,70	130	48	16	3	
8650276	2,76	130	48	16	3	
8650278	2,78	130	48	16	3	
8650280	2,80	130	48	16	3	
NEW 8650290	2,90	130	48	16	3	
8650300	3,00	130	48	16	3	
NEW 8650310	3,10	130	50	18	4	
8650320	3,20	130	50	18	4	
8650325	3,25	130	50	18	4	
8650330	3,30	130	50	18	4	
8650340	3,40	130	52	20	4	

EDP NO.	D	α	L	l	d	€
8650350	3,50	130	52	20	4	
NEW 8650360	3,60	130	52	20	4	
8650365	3,65	130	52	20	4	
8650367	3,67	130	52	20	4	
NEW 8650370	3,70	130	52	20	4	
NEW 8650380	3,80	130	54	22	4	
NEW 8650390	3,90	130	54	22	4	
8650400	4,00	130	54	22	4	
NEW 8650410	4,10	120	66	22	6	
8650420	4,20	120	66	22	6	
8650430	4,30	120	68	24	6	
NEW 8650440	4,40	120	68	24	6	
8650450	4,50	120	68	24	6	
8650459	4,59	120	68	24	6	
NEW 8650460	4,60	120	68	24	6	
8650463	4,63	120	68	24	6	
NEW 8650470	4,70	120	68	24	6	
NEW 8650480	4,80	120	70	26	6	
NEW 8650490	4,90	120	70	26	6	
8650500	5,00	120	70	26	6	
8650510	5,10	120	70	26	6	
8650520	5,20	120	70	26	6	
NEW 8650530	5,30	120	70	26	6	
NEW 8650540	5,40	120	72	28	6	
8650548	5,48	120	72	28	6	
8650550	5,50	120	72	28	6	
NEW 8650560	5,60	120	72	28	6	
NEW 8650570	5,70	120	72	28	6	
NEW 8650580	5,80	120	72	28	6	
NEW 8650590	5,90	120	72	28	6	
8650600	6,00	120	72	28	6	
NEW 8650610	6,10	120	75	28	6	
NEW 8650620	6,20	120	75	31	6	
NEW 8650630	6,30	120	75	31	6	

Different diameters and lengths are available as specials.

EDP NO.	D	α	L	l	d	€
NEW 8650640	6,40	120	75	31	8	
NEW 8650650	6,50	120	75	31	8	
NEW 8650660	6,60	120	75	31	8	
8650680	6,80	120	78	34	8	
8650690	6,90	120	78	34	8	
8650700	7,00	120	78	34	8	
8650734	7,34	120	78	34	8	
8650738	7,38	120	78	34	8	
NEW 8650740	7,40	120	78	34	8	
NEW 8650750	7,50	120	78	34	8	
NEW 8650780	7,80	120	81	37	8	
NEW 8650790	7,90	120	81	37	8	
8650800	8,00	120	81	37	8	
NEW 8650810	8,10	120	87	37	10	
NEW 8650820	8,20	120	87	37	10	
NEW 8650830	8,30	120	87	37	10	
NEW 8650840	8,40	120	87	37	10	
8650850	8,50	120	87	37	10	
8650860	8,60	120	90	40	10	

EDP NO.	D	α	L	l	d	€
NEW 8650870	8,70	120	90	40	10	
8650880	8,80	120	90	40	10	
8650900	9,00	120	90	40	10	
8650918	9,18	120	90	40	10	
8650920	9,20	120	90	40	10	
8650924	9,24	120	90	40	10	
8650934	9,34	120	90	40	10	
8650936	9,36	120	90	40	10	
NEW 8650950	9,50	120	90	40	10	
NEW 8650980	9,80	120	93	43	10	
8651000	10,00	120	93	43	10	
NEW 8651020	10,20	120	100	43	12	
8651030	10,30	120	100	43	12	
8651040	10,40	120	100	43	12	
8651050	10,50	120	100	43	12	
8651100	11,00	120	104	47	12	
NEW 8651120	11,20	120	100	43	12	
NEW 8651150	11,50	120	104	47	12	
8651200	12,00	120	108	51	12	

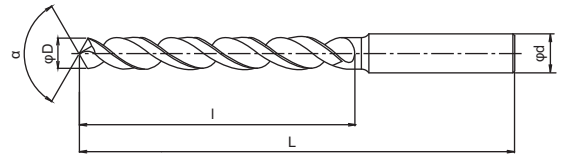
Regular Type

Available from Mars 2009

NEXUS-GDR



S thinning



- Tool Material HSSE
- Surface Treatment WDI™ Coating
- Drill Diameter Tolerance h8

Unité:mm

EDP NO.	D	α	L	l	d	€
8655200	2,00	130	56	24	3	
8655230	2,30	130	59	27	3	
8655250	2,50	130	62	30	3	
8655260	2,60	130	62	30	3	
8655280	2,80	130	65	33	3	
8655300	3,00	130	65	33	3	
8655330	3,30	130	68	36	4	
8655340	3,40	130	71	39	4	
8655350	3,50	130	71	39	4	
8655400	4,00	130	75	43	4	
8655420	4,20	120	87	43	6	
8655430	4,30	120	91	47	6	
8655450	4,50	120	91	47	6	
8655500	5,00	120	96	52	6	
8655510	5,10	120	96	52	6	
8655520	5,20	120	96	52	6	

EDP NO.	D	α	L	l	d	€
8655550	5,50	120	101	57	6	
8655600	6,00	120	101	57	6	
8655680	6,80	120	113	69	8	
8655690	6,90	120	113	69	8	
8655700	7,00	120	113	69	8	
8655800	8,00	120	119	75	8	
8655850	8,50	120	125	75	10	
8655860	8,60	120	131	81	10	
8655880	8,80	120	131	81	10	
8655900	9,00	120	131	81	10	
8656000	10,00	120	137	87	10	
8656030	10,30	120	144	87	12	
8656040	10,40	120	144	87	12	
8656050	10,50	120	144	87	12	
8656100	11,00	120	151	94	12	
8656200	12,00	120	158	101	12	

Different diameters and lengths are available as specials.

Recommended Drilling Conditions

NEXUS-GDS - NEXUS-GDR

WORK MATERIAL	STAINLESS STEELS								ALUMINUM A5052 - 7075	ALUMINUM ALLOY CASTINGS AC4C-ADC	COPPER COPPER ALLOY C1020-2600	LOW CARBON STEELS MILD STEELS S15C SS400 ~ 500N/mm ²				
	AUSTENITIC SUS304 - 200		MARTENSITIC SUS420 - 440		FERRITIC SUS430 - 405		PRECIPITATION SUS630 - 631									
DRILLING SPEED	15 ~ 30 m/min		15 ~ 30 m/min		15 ~ 30 m/min		10 ~ 20 m/min		32 ~ 63 m/min		63 ~ 100 m/min		40 ~ 60 m/min		35 ~ 50 m/min	
DRILL DIA. (mm)	SPEED min ⁻¹	FEED RATE mm/rev	SPEED min ⁻¹	FEED RATE mm/rev	SPEED min ⁻¹	FEED RATE mm/rev	FEED 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
1	7.950	0,02 ~ 0,04	7.950	0,02 ~ 0,04	7.950	0,01 ~ 0,03	4.750	0,01 ~ 0,03	15.000	0,02 ~ 0,06	25.000	0,02 ~ 0,06	16.000	0,01 ~ 0,03	13.000	0,02 ~ 0,05
2	4.000	0,05 ~ 0,07	4.000	0,05 ~ 0,07	4.000	0,03 ~ 0,05	2.400	0,03 ~ 0,05	8.000	0,04 ~ 0,12	10.000	0,04 ~ 0,12	7.950	0,04 ~ 0,06	6.350	0,06 ~ 0,09
3	2.650	0,06 ~ 0,09	2.650	0,06 ~ 0,09	2.650	0,04 ~ 0,06	1.600	0,04 ~ 0,06	5.300	0,06 ~ 0,18	6.700	0,06 ~ 0,18	5.300	0,06 ~ 0,09	4.250	0,1 ~ 0,13
4	2.000	0,08 ~ 0,12	2.000	0,08 ~ 0,12	2.000	0,06 ~ 0,08	1.200	0,06 ~ 0,08	4.000	0,08 ~ 0,24	6.400	0,08 ~ 0,24	4.000	0,08 ~ 0,11	3.200	0,11 ~ 0,15
5	1.600	0,1 ~ 0,15	1.600	0,12 ~ 0,15	1.600	0,08 ~ 0,1	950	0,08 ~ 0,1	3.200	0,1 ~ 0,3	5.000	0,1 ~ 0,3	3.200	0,1 ~ 0,13	2.550	0,12 ~ 0,18
6	1.350	0,12 ~ 0,18	1.350	0,15 ~ 0,18	1.350	0,09 ~ 0,12	800	0,09 ~ 0,12	2.700	0,12 ~ 0,36	4.200	0,12 ~ 0,36	2.650	0,12 ~ 0,15	2.100	0,13 ~ 0,19
8	990	0,16 ~ 0,24	990	0,2 ~ 0,24	990	0,12 ~ 0,16	600	0,12 ~ 0,16	2.000	0,16 ~ 0,45	3.200	0,16 ~ 0,45	2.000	0,16 ~ 0,2	1.600	0,17 ~ 0,24
10	800	0,2 ~ 0,28	800	0,25 ~ 0,3	800	0,15 ~ 0,2	480	0,15 ~ 0,2	1.600	0,2 ~ 0,55	2.500	0,2 ~ 0,55	1.600	0,2 ~ 0,25	1.250	0,2 ~ 0,28
12	660	0,24 ~ 0,34	660	0,3 ~ 0,36	660	0,18 ~ 0,24	400	0,18 ~ 0,24	1.350	0,24 ~ 0,66	2.100	0,24 ~ 0,66	1.350	0,24 ~ 0,3	1.050	0,24 ~ 0,34

- The indicated speeds and feeds are for drilling with **water soluble coolant**.
- The most suitable cutting fluid is water-emulsifiable high density oil (less than 10 times dilution)
- When drilling cast surface and black (ie.not ground surface), reduce drilling speed by 20%.
- For drilling depth>3D.reduce drilling speed (using the table below).
- Step feeding is required for drilling depth>4D.
- When using non-water soluble coolant or water-emulsifiable (over 10 times dilution), reduce the drilling speed by 20%.

D = drill dia

Drilling depth	≤4D	≤5D	≤6D
Coefficient for reducing speed	×0.9	×0.8	×0.8

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Tool specifications subject to change without notice

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