IMPROVE EFFICIENCY THROUGH BURR ELIMINATION

- Evaluates the burr generation mechanism to eliminate the burr.
- Exclusive lineup of drills, taps, and end mills in multiple coating options to help eliminate the entire deburring process.

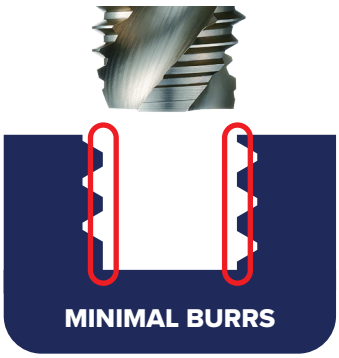
THE CUTTING EDGE

BURRLESS DRILLS

AquaRevo - Pages 4-7
DLC-Revo - Pages 8-9
Eliminates the burr and drill cap on exit of a through hole.

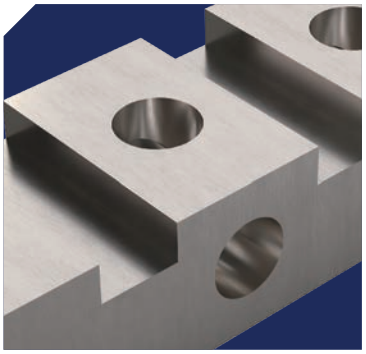
BURRLESS TAPS

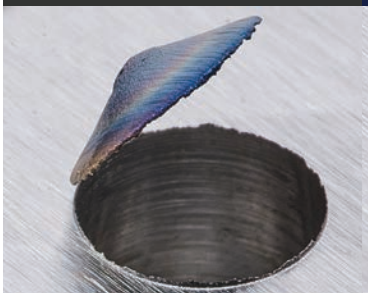
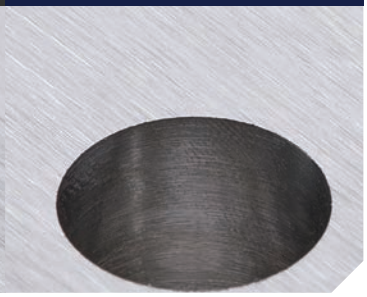
SG Spiral Taps - Pages 10-13
Zero burrs on the minor diameter of the thread profile.



BURRLESS MILLS

AquaRevo - Pages 14-17
DLC-Revo - Pages 18-19
Suppresses burrs on the top & bottom of the part when profile milling.



MULTIPURPOSE DRILL	BURRLESS DRILL
	

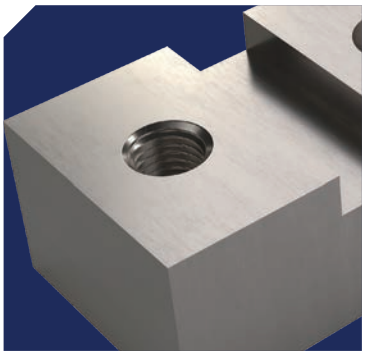
Size:
φ10

Work Material:
S50C

Cutting Speed:
287 SFM

Feed Speed:
43.7 IPM

Cutting Fluid:
Water-soluble



MULTIPURPOSE TAP	BURRLESS TAP
	

Size:
M12x1.75

Work Material:
S50C

Cutting Speed:
98 SFM

Prepared Diameter:
φ10.2

Cutting Fluid:
Water-soluble

MULTIPURPOSE END MILL	BURRLESS END MILL
	

Size:
φ10

Work Material:
SUS304

Cutting Speed:
262 SFM

Feed Speed:
9.8 IPM

Depth of Cut:
ap20mm ae0.05mm

Cutting Fluid:
Water-soluble

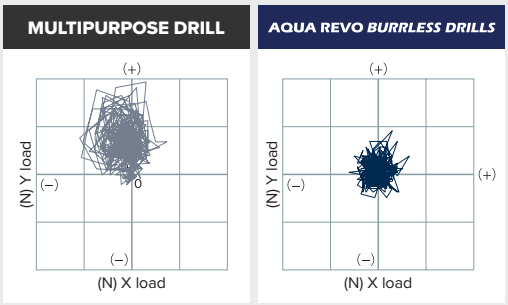
AQUA REVO DRILLS BURRLESS

Engineered to deliver a burr-free finish using REVOlutionary design techniques.

C-POINT

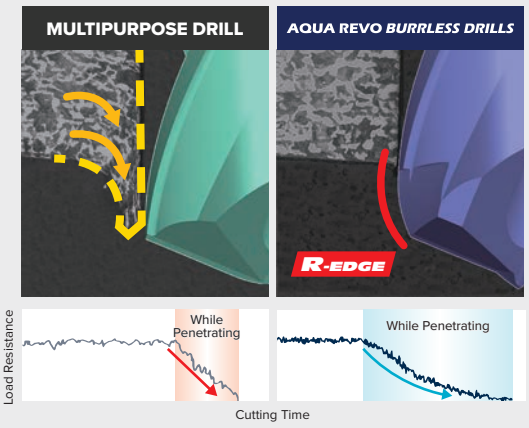
The C-Point angle improves location and size accuracy.

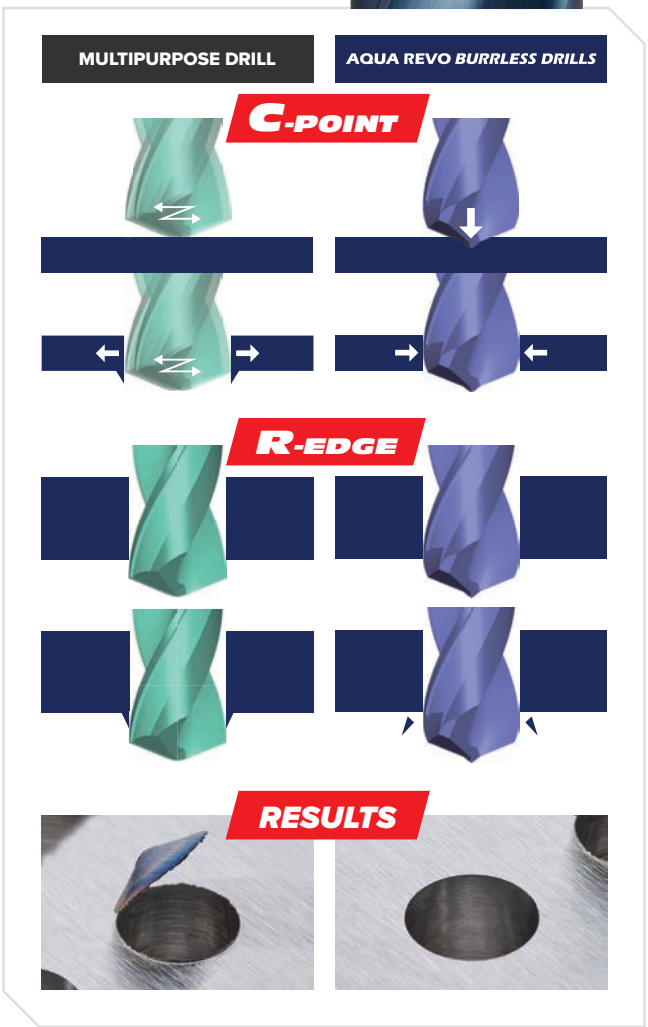
Helps prevent tool-walking during the drilling process by maintaining its position.



R-EDGE

The radius-edge changes the vertical cutting force of a traditional drill into a side/radial force similar to that of an end mill.
This eliminates the burr from being pushed down, and is instead, trimmed off in a radial direction during drill exit.

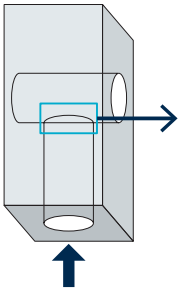


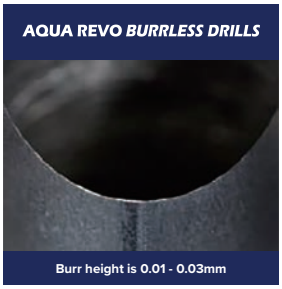


PERFORMANCE

Exceptional performance on flat surfaces, and cross-hole applications, eliminating the need for post-operation deburring processes.

BURR HEIGHT (SAME DIAMETER CROSS HOLE)





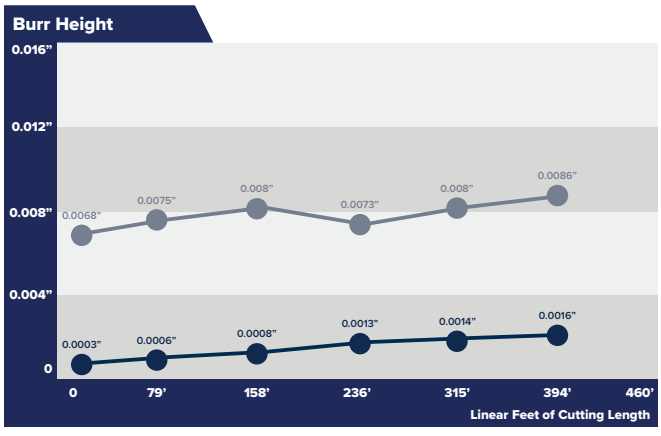
Size: φ6
Cutting Speed: 287 SFM
Depth of Hole: 12mm Through
Work Material: S50C
Feed Speed: 0.0094 IPR
Cutting Fluid: Water-soluble

DRILL CAP

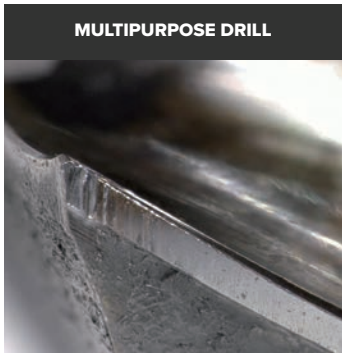
Size: φ6
Cutting Speed: 287 SFM
Depth of Hole: 13mm Through
Work Material: S50C
Feed Speed: 0.0094 IPR
Cutting Fluid: Water-soluble

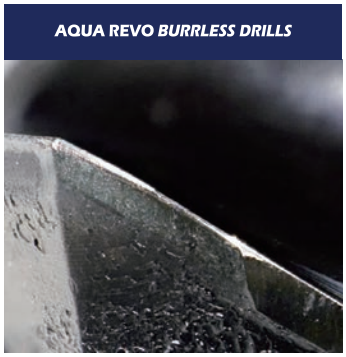
TOOL LIFE

Achieves a smaller burr even near the end of tool life. After 394 linear feet of use, Nachi Burrless Drills maintained a 0.0016” maximum burr height, compared to the 0.0068” starting burr height of a multipurpose drill.



TOOL WEAR AFTER 394 FT OF USE





Size: φ6
Feed Speed: 0.0094 IPR
Machine: Vertical M/C(BT40)
Work Material: S50C
Depth of Hole: 24mm Through
Cutting Speed: 287 SFM
Cutting Fluid: Water-soluble

APPLICABLE WORK MATERIAL

STRUCTURAL STEEL	LOW-CARBON STEEL	HIGH-CARBON STEEL	ALLOY STEEL, HEAT TREATED STEEL	MOLD STEEL, PRE-HARDENED STEEL	HARDENED STEEL	STAINLESS STEEL	TITANIUM ALLOY, HEAT RESISTANT ALLOY	CAST IRON	ALUMINUM ALLOY	COPPER ALLOY
●	●	●	●	○	-	○	-	○	-	-

● Excellent ○ Good - Not Recommended

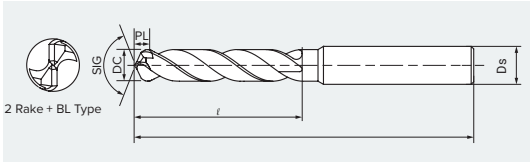
AQUA REVO DRILLS BURRLESS

Carbide | REVO D | 30° | 135°
Tool Material | Coating | Helix Angle | Point Angle

h7 | h6 | 4DC | 2.0-16.0
Dia. Tolerance | Shank Dia. Tolerance | Machining Hole Depth | Diameter Range

AQRVDBL4D
AQUA REVO DRILLS BURRLESS

FOR THROUGH HOLES 4D



LIST 9896 - Metric Series

Unit: mm

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
0798103	2.0	0.0787	15.0	49.0	3.0	0.9	1.2
0798110	2.1	0.0827	18.0	49.0	3.0	0.9	1.3
0798126	2.2	0.0866	18.0	49.0	3.0	1.0	1.3
0798132	2.3	0.0906	18.0	49.0	3.0	1.0	1.4
0798149	2.4	0.0945	18.0	49.0	3.0	1.1	1.4
0798155	2.5	0.0984	18.0	49.0	3.0	1.1	1.5
0798161	2.6	0.1024	20.0	49.0	3.0	1.2	1.6
0798178	2.7	0.1063	20.0	49.0	3.0	1.2	1.6
0798184	2.8	0.1102	20.0	49.0	3.0	1.3	1.7
0798190	2.9	0.1142	20.0	49.0	3.0	1.3	1.7
0798206	3.0	0.1181	20.0	49.0	3.0	1.4	1.8
0798212	3.1	0.1220	25.0	60.0	4.0	1.4	1.9
0798229	3.2	0.1260	25.0	60.0	4.0	1.4	1.9
0798235	3.3	0.1299	25.0	60.0	4.0	1.5	2.0
0798241	3.4	0.1339	25.0	60.0	4.0	1.5	2.0
0798258	3.5	0.1378	25.0	60.0	4.0	1.6	2.1
0798264	3.6	0.1417	28.0	60.0	4.0	1.6	2.2
0798270	3.7	0.1457	28.0	60.0	4.0	1.7	2.2
0798287	3.8	0.1496	28.0	60.0	4.0	1.7	2.3
0798293	3.9	0.1535	28.0	60.0	4.0	1.8	2.3
0798309	4.0	0.1575	28.0	60.0	4.0	1.8	2.4
0798315	4.1	0.1614	32.0	77.0	5.0	1.8	2.5
0798321	4.2	0.1654	32.0	77.0	5.0	1.9	2.5
0798338	4.3	0.1693	32.0	77.0	5.0	1.9	2.6
0798344	4.4	0.1732	32.0	77.0	5.0	2.0	2.6
0798350	4.5	0.1772	32.0	77.0	5.0	2.0	2.7
0798367	4.6	0.1811	39.0	77.0	5.0	2.1	2.8
0798373	4.7	0.1850	39.0	77.0	5.0	2.1	2.8
0798380	4.8	0.1890	39.0	77.0	5.0	2.2	2.9
0798396	4.9	0.1929	39.0	77.0	5.0	2.2	2.9
0798401	5.0	0.1969	39.0	77.0	5.0	2.3	3.0
0798418	5.1	0.2008	40.0	82.0	6.0	2.3	3.1
0798424	5.2	0.2047	40.0	82.0	6.0	2.3	3.1
0798430	5.3	0.2087	40.0	82.0	6.0	2.4	3.2
0798447	5.4	0.2126	40.0	82.0	6.0	2.4	3.2
0798453	5.5	0.2165	40.0	82.0	6.0	2.5	3.3
0798460	5.6	0.2205	42.0	82.0	6.0	2.5	3.4
0798476	5.7	0.2244	42.0	82.0	6.0	2.6	3.4
0798482	5.8	0.2283	42.0	82.0	6.0	2.6	3.5
0798499	5.9	0.2323	42.0	82.0	6.0	2.7	3.5
0798504	6.0	0.2362	42.0	82.0	6.0	2.7	3.6
0798510	6.1	0.2402	43.0	84.0	7.0	2.7	3.7
0798527	6.2	0.2441	43.0	84.0	7.0	2.8	3.7
0798533	6.3	0.2480	43.0	84.0	7.0	2.8	3.8
0798540	6.4	0.2520	43.0	84.0	7.0	2.9	3.8
0798556	6.5	0.2559	43.0	84.0	7.0	2.9	3.9
0798562	6.6	0.2598	44.0	84.0	7.0	3.0	4.0
0798579	6.7	0.2638	44.0	84.0	7.0	3.0	4.0
0798585	6.8	0.2677	44.0	84.0	7.0	3.1	4.1
0798591	6.9	0.2717	44.0	84.0	7.0	3.1	4.1
0798607	7.0	0.2756	44.0	84.0	7.0	3.2	4.2
0798613	7.1	0.2795	46.0	91.0	8.0	3.2	4.3
0798620	7.2	0.2835	46.0	91.0	8.0	3.2	4.3
0798636	7.3	0.2874	46.0	91.0	8.0	3.3	4.4
0798642	7.4	0.2913	46.0	91.0	8.0	3.3	4.4
0798659	7.5	0.2953	46.0	91.0	8.0	3.4	4.5
0798665	7.6	0.2992	47.0	91.0	8.0	3.4	4.6
0798671	7.7	0.3031	47.0	91.0	8.0	3.5	4.6
0798688	7.8	0.3071	47.0	91.0	8.0	3.5	4.7
0798694	7.9	0.3110	47.0	91.0	8.0	3.6	4.7
0798700	8.0	0.3150	47.0	91.0	8.0	3.6	4.8
0798716	8.1	0.3189	55.0	99.0	9.0	3.6	4.9

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
0798722	8.2	0.3228	55.0	99.0	9.0	3.7	4.9
0798739	8.3	0.3268	55.0	99.0	9.0	3.7	5.0
0798745	8.4	0.3307	55.0	99.0	9.0	3.8	5.0
0798751	8.5	0.3346	55.0	99.0	9.0	3.8	5.1
0798768	8.6	0.3386	57.0	99.0	9.0	3.9	5.2
0798774	8.7	0.3425	57.0	99.0	9.0	3.9	5.2
0798780	8.8	0.3465	57.0	99.0	9.0	4.0	5.3
0798797	8.9	0.3504	57.0	99.0	9.0	4.0	5.3
0798802	9.0	0.3543	57.0	99.0	9.0	4.1	5.4
0798819	9.1	0.3583	60.0	107.0	10.0	4.1	5.5
0798825	9.2	0.3622	60.0	107.0	10.0	4.1	5.5
0798831	9.3	0.3661	60.0	107.0	10.0	4.2	5.6
0798848	9.4	0.3701	60.0	107.0	10.0	4.2	5.6
0798854	9.5	0.3740	60.0	107.0	10.0	4.3	5.7
0798860	9.6	0.3780	62.0	107.0	10.0	4.3	5.8
0798877	9.7	0.3819	62.0	107.0	10.0	4.4	5.8
0798883	9.8	0.3858	62.0	107.0	10.0	4.4	5.9
0798890	9.9	0.3898	62.0	107.0	10.0	4.5	5.9
0798905	10.0	0.3937	62.0	107.0	10.0	4.5	6.0
0798911	10.1	0.3976	68.0	116.0	11.0	4.5	6.1
0798928	10.2	0.4016	68.0	116.0	11.0	4.6	6.1
0798934	10.3	0.4055	68.0	116.0	11.0	4.6	6.2
0798940	10.4	0.4094	68.0	116.0	11.0	4.7	6.2
0798957	10.5	0.4134	68.0	116.0	11.0	4.7	6.3
0798963	10.6	0.4173	70.0	116.0	11.0	4.8	6.4
0798970	10.7	0.4213	70.0	116.0	11.0	4.8	6.4
0798986	10.8	0.4252	70.0	116.0	11.0	4.9	6.5
0798992	10.9	0.4291	70.0	116.0	11.0	4.9	6.5
0799007	11.0	0.4331	70.0	116.0	11.0	5.0	6.6
0799013	11.1	0.4370	73.0	123.0	12.0	5.0	6.7
0799020	11.2	0.4409	73.0	123.0	12.0	5.0	6.7
0799036	11.3	0.4449	73.0	123.0	12.0	5.1	6.8
0799042	11.4	0.4488	73.0	123.0	12.0	5.1	6.8
0799059	11.5	0.4528	73.0	123.0	12.0	5.2	6.9
0799065	11.6	0.4567	76.0	123.0	12.0	5.2	7.0
0799071	11.7	0.4606	76.0	123.0	12.0	5.3	7.0
0799088	11.8	0.4646	76.0	123.0	12.0	5.3	7.1
0799094	11.9	0.4685	76.0	123.0	12.0	5.4	7.1
0799100	12.0	0.4724	76.0	123.0	12.0	5.4	7.2
0799116	12.1	0.4764	79.0	138.0	13.0	5.4	7.3
0799122	12.2	0.4803	79.0	138.0	13.0	5.5	7.3
0799139	12.3	0.4843	79.0	138.0	13.0	5.5	7.4
0799145	12.4	0.4882	79.0	138.0	13.0	5.6	7.4
0799151	12.5	0.4921	79.0	138.0	13.0	5.6	7.5
0799168	12.6	0.4961	81.0	138.0	13.0	5.7	7.6
0799174	12.7	0.5000	81.0	138.0	13.0	5.7	7.6
0799180	12.8	0.5039	81.0	138.0	13.0	5.8	7.7
0799197	12.9	0.5079	81.0	138.0	13.0	5.8	7.7
0799202	13.0	0.5118	81.0	138.0	13.0	5.9	7.8
0799219	13.1	0.5157	87.0	148.0	14.0	5.9	7.9
0799225	13.2	0.5197	87.0	148.0	14.0	5.9	7.9
0799231	13.3	0.5236	87.0	148.0	14.0	6.0	8.0
0799248	13.4	0.5276	87.0	148.0	14.0	6.0	8.0
0799254	13.5	0.5315	87.0	148.0	14.0	6.1	8.1
0799260	13.6	0.5354	90.0	148.0	14.0	6.1	8.2
0799277	13.7	0.5394	90.0	148.0	14.0	6.2	8.2
0799283	13.8	0.5433	90.0	148.0	14.0	6.2	8.3
0799290	13.9	0.5472	90.0	148.0	14.0	6.3	8.3
0799305	14.0	0.5512	90.0	148.0	14.0	6.3	8.4
0799311	14.1	0.5551	92.0	154.0	15.0	6.3	8.5
0799328	14.2	0.5591	92.0	154.0	15.0	6.4	8.5
0799334	14.3	0.5630	92.0	154.0	15.0	6.4	8.6

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
0799340	14.4	0.5669	92.0	154.0	15.0	6.5	8.6
0799357	14.5	0.5709	92.0	154.0	15.0	6.5	8.7
0799363	14.6	0.5748	94.0	154.0	15.0	6.6	8.8
0799370	14.7	0.5787	94.0	154.0	15.0	6.6	8.8
0799386	14.8	0.5827	94.0	154.0	15.0	6.7	8.9
0799392	14.9	0.5866	94.0	154.0	15.0	6.7	8.9
0799408	15.0	0.5906	94.0	154.0	15.0	6.8	9.0
0799414	15.1	0.5945	97.0	162.0	16.0	6.8	9.1

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
0799420	15.2	0.5984	97.0	162.0	16.0	6.8	9.1
0799437	15.3	0.6024	97.0	162.0	16.0	6.9	9.2
0799443	15.4	0.6063	97.0	162.0	16.0	6.9	9.2
0799450	15.5	0.6102	97.0	162.0	16.0	7.0	9.3
0799466	15.6	0.6142	99.0	162.0	16.0	7.0	9.4
0799472	15.7	0.6181	99.0	162.0	16.0	7.1	9.4
0799489	15.8	0.6220	99.0	162.0	16.0	7.1	9.5
0799495	15.9	0.6260	99.0	162.0	16.0	7.2	9.5
0799500	16.0	0.6299	99.0	162.0	16.0	7.2	9.6

LIST 9897 - Fractional Series

Unit: mm

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
1584403	3/32	0.0937	18.0	49.0	3.0	1.1	1.4
1584730	7/64	0.1094	20.0	49.0	3.0	1.3	1.7
1584410	1/8	0.1250	25.0	60.0	4.0	1.4	1.9
1584426	9/64	0.1406	28.0	60.0	4.0	1.6	2.1
1584432	5/32	0.1562	28.0	60.0	4.0	1.8	2.4
1584747	#21	0.1590	32.0	77.0	6.0	1.8	2.4
1584753	#20	0.1610	32.0	77.0	6.0	1.8	2.5
1584760	11/64	0.1719	32.0	77.0	6.0	2.0	2.6
1584776	3/16	0.1875	39.0	77.0	6.0	2.1	2.9
1584782	#7	0.2010	40.0	82.0	6.0	2.3	3.1
1584799	13/64	0.2031	40.0	82.0	6.0	2.3	3.1
1584804	#3	0.2130	40.0	82.0	6.0	2.4	3.2
1584833	7/32	0.2187	42.0	82.0	6.0	2.5	3.3
1584810	#2	0.2210	42.0	82.0	6.0	2.5	3.4
1584827	15/64	0.2344	42.0	82.0	6.0	2.7	3.6
1584449	1/4	0.2500	43.0	84.0	8.0	2.9	3.8
1584455	F	0.2570	44.0	84.0	8.0	2.9	3.9
1584461	17/64	0.2656	44.0	84.0	8.0	3.0	4.0
1584478	I	0.2720	44.0	84.0	8.0	3.1	4.1
1584484	J	0.2770	46.0	91.0	8.0	3.2	4.2
1584490	9/32	0.2812	46.0	91.0	8.0	3.2	4.3
1584506	19/64	0.2969	47.0	91.0	8.0	3.4	4.5
1584512	5/16	0.3125	47.0	91.0	8.0	3.6	4.8
1584529	P	0.3230	55.0	99.0	10.0	3.7	4.9

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. (DS)	Point Length (PL)	Protrusion Length
1584535	21/64	0.3281	55.0	99.0	10.0	3.8	5.0
1584541	Q	0.3320	55.0	99.0	10.0	3.8	5.1
1584558	11/32	0.3437	57.0	99.0	10.0	3.9	5.2
1584564	23/64	0.3594	60.0	107.0	10.0	4.1	5.5
1584570	U	0.3680	60.0	107.0	10.0	4.2	5.6
1584587	3/8	0.3750	62.0	107.0	10.0	4.3	5.7
1584593	25/64	0.3906	62.0	107.0	10.0	4.5	6.0
1584609	13/32	0.4062	68.0	116.0	12.0	4.6	6.2
1584615	27/64	0.4219	70.0	116.0	12.0	4.8	6.4
1584621	7/16	0.4375	73.0	123.0	12.0	5.0	6.7
1584840	29/64	0.4531	76.0	123.0	12.0	5.2	6.9
1584856	15/32	0.4687	76.0	123.0	12.0	5.4	7.1
1584638	31/64	0.4844	79.0	138.0	14.0	5.5	7.4
1584644	1/2	0.5000	81.0	138.0	14.0	5.7	7.6
1584650	33/64	0.5156	87.0	148.0	14.0	5.9	7.9
1584667	17/32	0.5312	87.0	148.0	14.0	6.1	8.1
1584673	35/64	0.5469	90.0	148.0	14.0	6.3	8.3
1584680	9/16	0.5625	92.0	154.0	16.0	6.4	8.6
1584696	37/64	0.5781	94.0	154.0	16.0	6.6	8.8
1584701	19/32	0.5937	97.0	162.0	16.0	6.8	9.0
1584718	39/64	0.6094	97.0	162.0	16.0	7.0	9.3
1584724	5/8	0.6250	99.0	162.0	16.0	7.1	9.5

Standard Cutting Conditions

LIST 9896 AQRVDBL4D - Metric Series
LIST 9897 AQRVDBL4D - Fractional Series

Work Material		Structural Steel		Carbon Steel / Cast Iron		Alloy Steel, Heat Treated Steel		Mold Steel, Pre-Hardened Steel		Ductile Cast Iron		300 Series, 400 Series, PH Stainless	
		~200HB		~200HB		20~30HRC		30~40HRC					
Cutting Speed (SFM)		225 - 235		160 - 170		160 - 170		95 - 105		160 - 170			
Drill Dia.		RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
2.0 mm	0.07874”	11,200	0.0016	8,000	0.0024	8,000	0.0024	4,900	0.0016	8,000	0.0031		
3.0 mm	0.11811”	7,400	0.0023	5,300	0.0036	5,300	0.0036	3,200	0.0023	5,300	0.0048		
5.0 mm	0.19685”	4,500	0.0039	3,200	0.0059	3,200	0.0059	1,900	0.0039	3,200	0.0079		
6.0 mm	0.23622”	3,700	0.0048	2,700	0.0094	2,700	0.0094	1,600	0.0052	2,700	0.0094	Contact Nachi cutting tool engineers for 300 Series, 400 Series, and PH Stainless.	
8.0 mm	0.31496”	2,800	0.0063	2,000	0.0123	2,000	0.0123	1,200	0.0070	2,000	0.0123		
10.0 mm	0.3937”	2,200	0.0079	1,600	0.0157	1,600	0.0157	1,000	0.0086	1,600	0.0118		
12.0 mm	0.47244”	1,900	0.0094	1,300	0.0189	1,300	0.0189	800	0.0105	1,300	0.0143		
14.0 mm	0.55118”	1,600	0.0111	1,100	0.0165	1,100	0.0165	700	0.0112	1,100	0.0165		
16.0 mm	0.62992”	1,400	0.0127	1,000	0.0126	1,000	0.0126	600	0.0125	1,000	0.0189		

Cutting conditions:

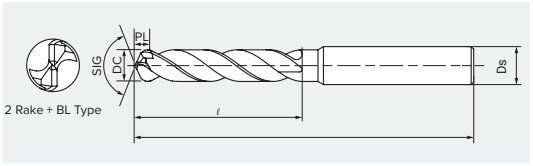
1. AQRVDBL is for through hole drilling usage. Drill should exit the hole at least 0.6DC.
2. Burrless drill will not perform on an inclined entry or exit. In that case, we recommend a flat-bottom drill.
3. In low rigidity applications, when chatter occurs, reduce the rotation and feed rate.
4. Wet conditions are for drilling with water soluble cutting fluid.
5. In non-water soluble cutting fluid, reduce the rotation and feed rate by 20%.
6. Drilling Aluminum Alloy, Hardened Stainless Steel, and Hardened Steel is not recommended.
7. Sparks, excessive heat, or hot chips increase the risk of fire. If this happens, please take fire prevention measures.
8. If struggling with chip control in certain materials, peck drilling may be required.
9. Retract plane should be set at the top of the hole when peck drilling.
10. Peck drilling increments should be 0.5-1.0xDC. Small diameter should be 0.2-0.5xDC.
11. Please ensure tool runout is held below 0.02mm. For small diameters, runout should be held below 0.01mm.

Carbide | DLC REVO | 38° | 135°
Tool Material | Coating | Helix Angle | Point Angle

h7 | h6 | 4DC | 2.0-16.0
Dia. Tolerance | Shank Dia. Tolerance | Machining Hole Depth | Diameter Range

DLCRVDBL4D
DLC-REVO DRILLS BURRLESS

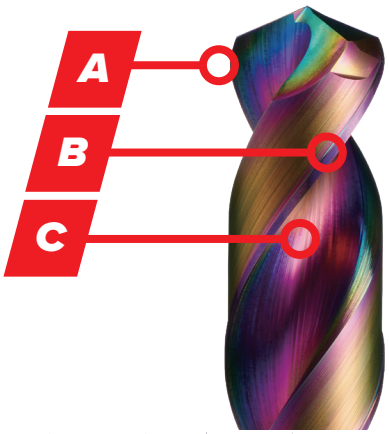
FOR THROUGH HOLES | 4D



(A) Enhanced Rake Angle: Optimized R-edge rake angle effectively removes burrs on non-ferrous metals.

(B) Optimized Helix Angle: High helix design sharpens the cutting edge and eliminates burrs.

(C) Wider Flute Width: Expansive flute width prevents chip packing and minimizes cutting edge wear.



LIST 9910 - Metric Series

Unit: mm

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. DS)	Point Length (PL)	Protrusion Length
0800592	2.0	0.0787	15.0	49.0	3.0	0.9	1.2
0800608	2.1	0.0827	18.0	49.0	3.0	0.9	1.3
0800614	2.2	0.0866	18.0	49.0	3.0	1.0	1.3
0800620	2.3	0.0906	18.0	49.0	3.0	1.0	1.4
0800637	2.4	0.0945	18.0	49.0	3.0	1.1	1.4
0800643	2.5	0.0984	18.0	49.0	3.0	1.1	1.5
0800650	2.6	0.1024	20.0	49.0	3.0	1.2	1.6
0800666	2.7	0.1063	20.0	49.0	3.0	1.2	1.6
0800672	2.8	0.1102	20.0	49.0	3.0	1.3	1.7
0800689	2.9	0.1142	20.0	49.0	3.0	1.3	1.7
0800695	3.0	0.1181	20.0	49.0	3.0	1.4	1.8
0800700	3.1	0.1220	25.0	60.0	4.0	1.4	1.9
0800717	3.2	0.1260	25.0	60.0	4.0	1.4	1.9
0800723	3.3	0.1299	25.0	60.0	4.0	1.5	2.0
0800730	3.4	0.1339	25.0	60.0	4.0	1.5	2.0
0800746	3.5	0.1378	25.0	60.0	4.0	1.6	2.1
0800752	3.6	0.1417	28.0	60.0	4.0	1.6	2.2
0800769	3.7	0.1457	28.0	60.0	4.0	1.7	2.2
0800775	3.8	0.1496	28.0	60.0	4.0	1.7	2.3
0800781	3.9	0.1535	28.0	60.0	4.0	1.8	2.3
0800798	4.0	0.1575	28.0	60.0	4.0	1.8	2.4
0800803	4.1	0.1614	32.0	77.0	5.0	1.8	2.5
0800810	4.2	0.1654	32.0	77.0	5.0	1.9	2.5
0800826	4.3	0.1693	32.0	77.0	5.0	1.9	2.6
0800832	4.4	0.1732	32.0	77.0	5.0	2.0	2.6
0800849	4.5	0.1772	32.0	77.0	5.0	2.0	2.7
0800855	4.6	0.1811	39.0	77.0	5.0	2.1	2.8
0800861	4.7	0.1850	39.0	77.0	5.0	2.1	2.8
0800878	4.8	0.1890	39.0	77.0	5.0	2.2	2.9
0800884	4.9	0.1929	39.0	77.0	5.0	2.2	2.9
0800890	5.0	0.1969	39.0	77.0	5.0	2.3	3.0
0800906	5.1	0.2008	40.0	82.0	6.0	2.3	3.1
0800912	5.2	0.2047	40.0	82.0	6.0	2.3	3.1
0800929	5.3	0.2087	40.0	82.0	6.0	2.4	3.2
0800935	5.4	0.2126	40.0	82.0	6.0	2.4	3.2
0800941	5.5	0.2165	40.0	82.0	6.0	2.5	3.3

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. DS)	Point Length (PL)	Protrusion Length
0800958	5.6	0.2205	42.0	82.0	6.0	2.5	3.4
0800964	5.7	0.2244	42.0	82.0	6.0	2.6	3.4
0800970	5.8	0.2283	42.0	82.0	6.0	2.6	3.5
0800987	5.9	0.2323	42.0	82.0	6.0	2.7	3.5
0800993	6.0	0.2362	42.0	82.0	6.0	2.7	3.6
0801008	6.1	0.2402	43.0	84.0	7.0	2.7	3.7
0801014	6.2	0.2441	43.0	84.0	7.0	2.8	3.7
0801020	6.3	0.2480	43.0	84.0	7.0	2.8	3.8
0801037	6.4	0.2520	43.0	84.0	7.0	2.9	3.8
0801043	6.5	0.2559	43.0	84.0	7.0	2.9	3.9
0801050	6.6	0.2598	44.0	84.0	7.0	6.0	4.0
0801066	6.7	0.2638	44.0	84.0	7.0	3.0	4.0
0801072	6.8	0.2677	44.0	84.0	7.0	3.1	4.1
0801089	6.9	0.2717	44.0	84.0	7.0	3.1	4.1
0801095	7.0	0.2756	44.0	84.0	7.0	3.2	4.2
0801100	7.1	0.2795	46.0	91.0	8.0	3.2	4.3
0801117	7.2	0.2835	46.0	91.0	8.0	3.2	4.3
0801123	7.3	0.2874	46.0	91.0	8.0	3.3	4.4
0801130	7.4	0.2913	46.0	91.0	8.0	3.3	4.4
0801146	7.5	0.2953	46.0	91.0	8.0	3.4	4.5
0801152	7.6	0.2992	47.0	91.0	8.0	3.4	4.6
0801169	7.7	0.3031	47.0	91.0	8.0	3.5	4.6
0801175	7.8	0.3071	47.0	91.0	8.0	3.5	4.7
0801181	7.9	0.3110	47.0	91.0	8.0	3.6	4.7
0801198	8.0	0.3150	47.0	91.0	8.0	3.6	4.8
0801203	8.1	0.3189	55.0	99.0	9.0	3.6	4.9
0801210	8.2	0.3228	55.0	99.0	9.0	3.7	4.9
0801226	8.3	0.3268	55.0	99.0	9.0	3.7	5.0
0801232	8.4	0.3307	55.0	99.0	9.0	3.8	5.0
0801249	8.5	0.3346	55.0	99.0	9.0	3.8	5.1
0801255	8.6	0.3386	57.0	99.0	9.0	3.9	5.2
0801261	8.7	0.3425	57.0	99.0	9.0	3.9	5.2
0801278	8.8	0.3465	57.0	99.0	9.0	4.0	5.3
0801284	8.9	0.3504	57.0	99.0	9.0	4.0	5.3
0801290	9.0	0.3543	57.0	99.0	9.0	4.1	5.4
0801306	9.1	0.3583	60.0	107.0	10.0	4.1	5.5

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. DS)	Point Length (PL)	Protrusion Length
0801312	9.2	0.3622	60.0	107.0	10.0	4.1	5.5
0801329	9.3	0.3661	60.0	107.0	10.0	4.2	5.6
0801335	9.4	0.3701	60.0	107.0	10.0	4.2	5.6
0801341	9.5	0.3740	60.0	107.0	10.0	4.3	5.7
0801358	9.6	0.3780	62.0	107.0	10.0	4.3	5.8
0801364	9.7	0.3819	62.0	107.0	10.0	4.4	5.8
0801370	9.8	0.3858	62.0	107.0	10.0	4.4	5.9
0801387	9.9	0.3898	62.0	107.0	10.0	4.5	5.9
0801393	10.0	0.3937	62.0	107.0	10.0	4.5	6.0
0801409	10.1	0.3976	68.0	116.0	11.0	4.5	6.1
0801415	10.2	0.4016	68.0	116.0	11.0	4.6	6.1
0801421	10.3	0.4055	68.0	116.0	11.0	4.6	6.2
0801438	10.4	0.4094	68.0	116.0	11.0	4.7	6.2
0801444	10.5	0.4134	68.0	116.0	11.0	4.7	6.3
0801450	10.6	0.4173	70.0	116.0	11.0	4.8	6.4
0801467	10.7	0.4213	70.0	116.0	11.0	4.8	6.4
0801473	10.8	0.4252	70.0	116.0	11.0	4.9	6.5
0801480	10.9	0.4291	70.0	116.0	11.0	4.9	6.5
0801496	11.0	0.4331	70.0	116.0	11.0	5.0	6.6
0801501	11.1	0.4370	73.0	123.0	12.0	5.0	6.7
0801518	11.2	0.4409	73.0	123.0	12.0	5.0	6.7
0801524	11.3	0.4449	73.0	123.0	12.0	5.1	6.8
0801530	11.4	0.4488	73.0	123.0	12.0	5.1	6.8
0801547	11.5	0.4528	73.0	123.0	12.0	5.2	6.9
0801553	11.6	0.4567	76.0	123.0	12.0	5.2	7.0
0801560	11.7	0.4606	76.0	123.0	12.0	5.3	7.0
0801576	11.8	0.4646	76.0	123.0	12.0	5.3	7.1
0801582	11.9	0.4685	76.0	123.0	12.0	5.4	7.1
0801599	12.0	0.4724	76.0	123.0	12.0	5.4	7.2
0801604	12.1	0.4764	79.0	138.0	13.0	5.4	7.3
0801610	12.2	0.4803	79.0	138.0	13.0	5.5	7.3
0801627	12.3	0.4843	79.0	138.0	13.0	5.5	7.4
0801633	12.4	0.4882	79.0	138.0	13.0	5.6	7.4
0801640	12.5	0.4921	79.0	138.0	13.0	5.6	7.5

EDP#	Size (DC)	Decimal	Flute Length (ℓ)	OAL (L)	Shank Dia. DS)	Point Length (PL)	Protrusion Length
0801656	12.6	0.4961	81.0	138.0	13.0	5.7	7.6
0801662	12.7	0.5000	81.0	138.0	13.0	5.7	7.6
0801679	12.8	0.5039	81.0	138.0	13.0	5.8	7.7
0801685	12.9	0.5079	81.0	138.0	13.0	5.8	7.7
0801691	13.0	0.5118	81.0	138.0	13.0	5.9	7.8
0801707	13.1	0.5157	87.0	148.0	14.0	5.9	7.9
0801713	13.2	0.5197	87.0	148.0	14.0	5.9	7.9
0801720	13.3	0.5236	87.0	148.0	14.0	6.0	8.0
0801736	13.4	0.5276	87.0	148.0	14.0	6.0	8.0
0801742	13.5	0.5315	87.0	148.0	14.0	6.1	8.1
0801759	13.6	0.5354	90.0	148.0	14.0	6.1	8.2
0801765	13.7	0.5394	90.0	148.0	14.0	6.2	8.2
0801771	13.8	0.5433	90.0	148.0	14.0	6.2	8.3
0801788	13.9	0.5472	90.0	148.0	14.0	6.3	8.3
0801794	14.0	0.5512	90.0	148.0	14.0	6.3	8.4
0801800	14.1	0.5551	92.0	154.0	15.0	6.3	8.5
0801816	14.2	0.5591	92.0	154.0	15.0	6.4	8.5
0801822	14.3	0.5630	92.0	154.0	15.0	6.4	8.6
0801839	14.4	0.5669	92.0	154.0	15.0	6.5	8.6
0801845	14.5	0.5709	92.0	154.0	15.0	6.5	8.7
0801851	14.6	0.5748	94.0	154.0	15.0	6.6	8.8
0801868	14.7	0.5787	94.0	154.0	15.0	6.6	8.8
0801874	14.8	0.5827	94.0	154.0	15.0	6.7	8.9
0801880	14.9	0.5866	94.0	154.0	15.0	6.7	8.9
0801897	15.0	0.5906	94.0	154.0	15.0	6.8	9.0
0801902	15.1	0.5945	97.0	162.0	16.0	6.8	9.1
0801919	15.2	0.5984	97.0	162.0	16.0	6.8	9.1
0801925	15.3	0.6024	97.0	162.0	16.0	6.9	9.2
0801931	15.4	0.6063	97.0	162.0	16.0	6.9	9.2
0801948	15.5	0.6102	97.0	162.0	16.0	7.0	9.3
0801954	15.6	0.6142	99.0	162.0	16.0	7.0	9.4
0801960	15.7	0.6181	99.0	162.0	16.0	7.1	9.4
0801977	15.8	0.6220	99.0	162.0	16.0	7.1	9.5
0801983	15.9	0.6260	99.0	162.0	16.0	7.2	9.5
0801990	16.0	0.6299	99.0	162.0	16.0	7.2	9.6

Standard Cutting Conditions

LIST 9910 DLCRVDBL4D - Metric Series

Work Material		Aluminum		Aluminum Alloy (Si, Mg-Si)		Aluminum Alloy (Mg, Zn-Mg)		Aluminum Casting		Copper Alloy		Magnesium Alloy		Thermoplastic Resin	
		A1070		A430, A6061		A5052, A7075		AC, ADC		C1100		AZ91		PA, PVC	
Cutting Speed (SFM)		330		330		410		330		330		330		330	
Drill Dia. (mm)		RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
2.0	0.0787	15,900	0.0018	15,900	0.0031	20,000	0.0031	15,900	0.0035	15,900	0.0016	15,900	0.0031	15,900	0.0024
3.0	0.1181	10,600	0.0027	10,600	0.0047	13,300	0.0047	10,600	0.0053	10,600	0.0024	10,600	0.0047	10,600	0.0035
5.0	0.1969	6,400	0.0044	6,400	0.0078	8,000	0.0079	6,400	0.0088	6,400	0.0039	6,400	0.0078	6,400	0.0058
6.0	0.2362	5,300	0.0053	5,300	0.0094	6,600	0.0095	5,300	0.0106	5,300	0.0048	5,300	0.0094	5,300	0.0071
8.0	0.3150	4,000	0.0071	4,000	0.0125	5,000	0.0126	4,000	0.0141	4,000	0.0063	4,000	0.0125	4,000	0.0094
10.0	0.3937	3,200	0.0089	3,200	0.0156	4,000	0.0157	3,200	0.0176	3,200	0.0079	3,200	0.0156	3,200	0.0117
12.0	0.4724	2,650	0.0107	2,650	0.0189	3,300	0.0191	2,650	0.0212	2,650	0.0095	2,650	0.0189	2,650	0.0141
14.0	0.5512	2,300	0.0123	2,300	0.0217	2,850	0.0221	2,300	0.0245	2,300	0.0110	2,300	0.0217	2,300	0.0163
16.0	0.6299	2,000	0.0142	2,000	0.0250	2,500	0.0252	2,000	0.0281	2,000	0.0126	2,000	0.0250	2,000	0.0187

Cutting conditions:

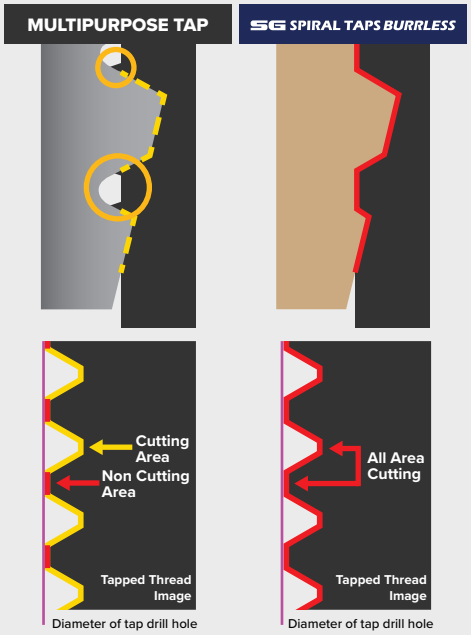
1. DLCRVDBL is for through hole drilling usage. Drill should exit the hole at least 0.6×DC.
2. Burrless drill will not perform in if the entrance or exit of hole is on an inclined surface. In that case, we recommend a flat drill.
3. Adjust cutting condition according to the situation, such as rigidity of machine, work clamp, and shape of workpiece.
4. Wet conditions are for drilling with water soluble cutting fluid.
5. A work material and cutting condition to chip removal may be worse. In that case, please step feed.
6. Retraction of the step feed is to be returned to the top of the hole.
7. Step feed is recommended to 0.5~1.0×DC. Small diameter less than 3mm is to 0.2 ~0.5×DC.
8. Please use the fixture to control the amplitude of the drill bit below 0.02mm, for small diameter, high-speed cutting control amplitude of the drill bit 0.01mm or less.
9. Magnesium alloys may catch fire, so be sure to use a special cutting fluid and manage chips.

SG SPIRAL TAPS BURRLESS

Engineered to deliver a burr-free finish.

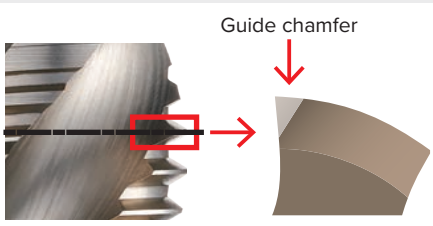
S-EDGE

The S-Edge is designed to leave no gap between the tap's thread root area and the pre-drilled hole to achieve a burr-free finish.

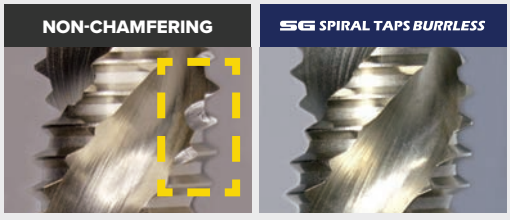


G-CHAMFER

The chamfered rake face releases the chips from the cutting edge, preventing chip jamming.

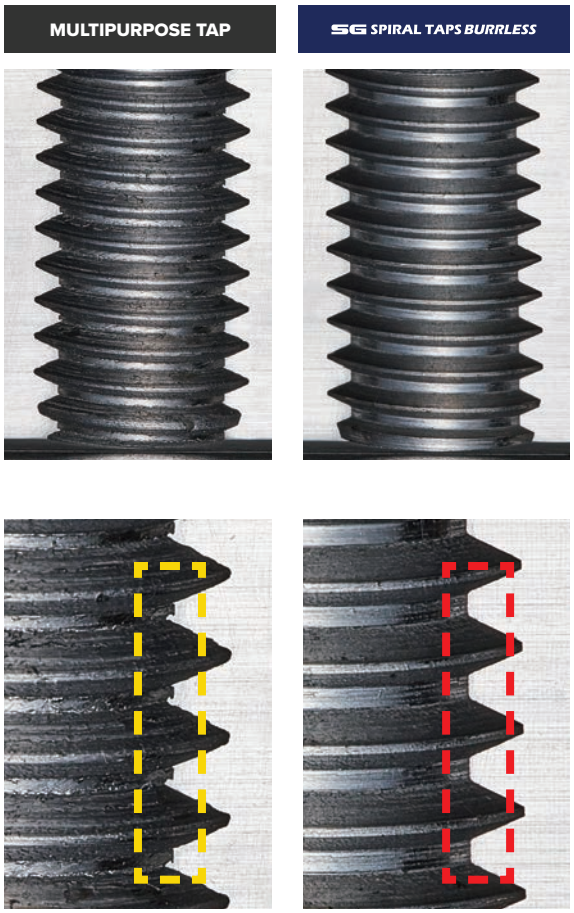


Chamfering the acute angles on the thread edge to prevent chipping



Chipping

No damage



Detailed view with burrs along threads

Detailed view of burr-free finish

PERFORMANCE

Achieve a burr-free finish on the minor diameter of internal thread profiles.

Size:
M6x1

Work Material:
S50C

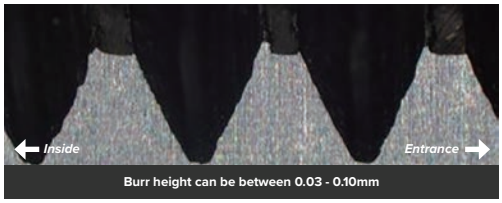
Cutting Speed:
98 SFM

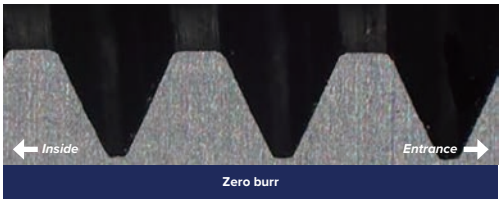
Diamter of Hole:
φ5.0

Effective Thread Length:
2D

Cutting Fluid:
Water-soluble

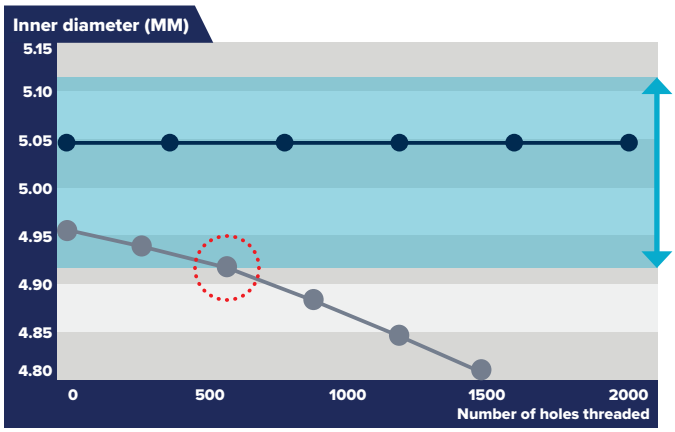
Machine:
Vertical M/C (BT30)





TOOL LIFE

Stabilized minor diameter accuracy and reduced chipping ensures a burr-free finish, even after extended use. This graph shows small chipping on the Burrless Tap at 1800 holes, compared to 1500 holes for the multipurpose tap.

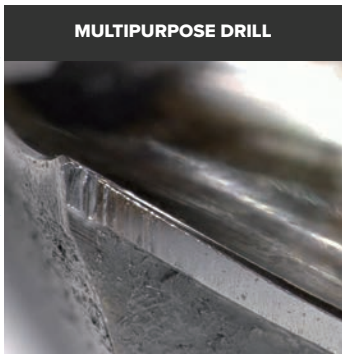


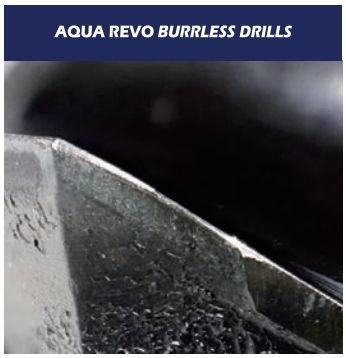
SG Spiral Taps Burrless

Multipurpose Tap

Passing range of 6H

Large burrs occurred on minor diameter of thread caused by the internal diameter tolerance being out of tolerance.





Size:
M6x1

Cutting Speed:
98 SFM

Diameter of hole:
φ5

Work Material:
S50C

Effective Thread Length:
2D

Cutting Fluid:
Water-soluble

APPLICABLE WORK MATERIAL

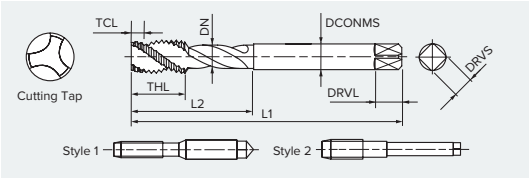
	STRUCTURAL STEEL	LOW CARBON STEEL	MEDIUM CARBON STEEL	HIGH CARBON STEEL	ALLOY STEEL	STAINLESS STEEL	DUCTILE CAST IRON	ALUMINUM ALLOY	COPPER ALLOY
Blind Hole	○	○	●	●	○	○	○	○	○
Through Hole	○	○	●	●	○	○	○	○	○

● Excellent ○ Good

SGSPBL
SG SPIRAL TAPS *BURRLESS*

FOR BLIND HOLES

FAX Tool Material | SG Coating | 45° Helix Angle | Blind Hole



LIST 7966

Unit: mm

EDP#	Thread Size	Thread Limit	TCL(P)	No. of Flutes	OAL (L1)	Length of Thread (THL)	Under Neck Length (L2)	Shank Dia. (DCONMS)	Style
0799575	M3×0.5	D3 (P2)	2.5P	3F	46.0	3.5	18.0	4.0	1
0799581	M4×0.7	D4 (P3)	2.5P	3F	52.0	4.9	20.0	5.0	1
0799598	M5×0.8	D4 (P3)	2.5P	3F	60.0	5.6	22.0	5.5	1
0799603	M6×1	D5 (P3)	2.5P	3F	62.0	7.0	24.0	6.0	1
0799610	M6×0.75	D4 (P2)	2.5P	3F	62.0	7.0	24.0	6.0	1
0799626	M8×1.25	D5 (P3)	2.5P	3F	70.0	8.8	29.8	6.2	2
0799632	M8×1	D5 (P3)	2.5P	3F	70.0	8.8	29.8	6.2	2
0799649	M10×1.5	D6 (P3)	2.5P	3F	75.0	10.5	31.4	7.0	2
0799655	M10×1.25	D5 (P3)	2.5P	3F	75.0	10.5	31.4	7.0	2
0799661	M10×1	D5 (P3)	2.5P	3F	75.0	10.5	31.4	7.0	2
0799678	M12×1.75	D6 (P4)	2.5P	3F	82.0	12.3	36.2	8.5	2
0799684	M12×1.5	D5 (P3)	2.5P	3F	82.0	12.3	36.2	8.5	2
0799690	M12×1.25	D5 (P3)	2.5P	3F	82.0	12.3	36.2	8.5	2

Recommended Drill Diameter

Unit: mm

Thread Size	SG SPIRAL TAPS BURRLESS		JIS 6H	
	Drill Dia.	Intended Internal thread dia.	Min internal thread dia.	Max internal thread dia.
M3x0.5	2.5	2.55	2.459	2.599
M4x0.7	3.3	3.35	3.242	3.422
M5x0.8	4.2	4.25	4.134	4.334
M6x1	5.0	5.05	4.917	5.153
M6x0.75	5.25	5.30	5.188	5.378
M8x1.25	6.8	6.85	6.647	6.912
M8x1	7.0	7.05	6.917	7.153
M10x1.5	8.5	8.60	8.376	8.676
M10x1.25	8.8	8.85	8.647	8.912
M10x1	9.0	9.05	8.917	9.153
M12x1.75	10.2	10.30	10.106	10.441
M12x1.5	10.5	10.60	10.376	10.676
M12x1.25	10.8	10.85	10.647	10.912

Shank Square end size

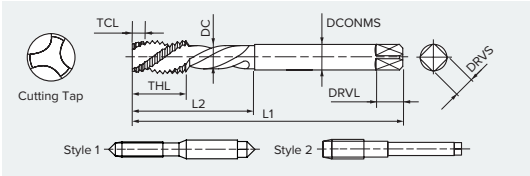
Unit: mm

Shank Dia.	Square end	
DCONMS	DRVS	DRVL
4.0	3.2	6
5.0	4,0	7
5.5	4.5	7
6.0	4.5	7
6.2	5.0	8
7.0	5.5	8
8.5	6.5	9

SGSPBLL
SG SPIRAL TAPS *BURRLESS*

FOR THROUGH HOLES **LEFT HAND HELIX**

FAX Tool Material | SG Coating | 21° Helix Angle | Through Hole



LIST 7968

Unit: mm

EDP#	Thread Size	Thread Limit	TCL(P)	No. of Flutes	OAL (L1)	Length of Thread (THL)	Under Neck Length (L2)	Shank Dia. (DCONMS)	Style
0799793	M3×0.5	D3 (P3)	5P	3F	46.0	11.0	18.0	4.0	1
0799809	M4×0.7	D4 (P3)	5P	3F	52.0	13.0	21.0	5.0	1
0799815	M5×0.8	D4 (P3)	5P	3F	60.0	16.0	25.0	5.5	1
0799821	M6×1	D5 (P3)	5P	3F	62.0	19.0	30.0	6.0	1
0799838	M6×0.75	D4 (P3)	5P	3F	62.0	19.0	30.0	6.0	1
0799844	M8×1.25	D5 (P3)	5P	3F	70.0	22.0	-	6.2	2
0799850	M8×1	D5 (P3)	5P	3F	70.0	22.0	-	6.2	2
0799867	M10×1.5	D6 (P4)	5P	3F	75.0	24.0	-	7.0	2
0799873	M10×1.25	D5 (P3)	5P	3F	75.0	24.0	-	7.0	2
0799880	M10×1	D5 (P3)	5P	3F	75.0	24.0	-	7.0	2
0799896	M12×1.75	D6 (P4)	5P	3F	82.0	29.0	-	8.5	2
0799901	M12×1.5	D5 (P4)	5P	3F	82.0	29.0	-	8.5	2
0799918	M12×1.25	D5 (P4)	5P	3F	82.0	29.0	-	8.5	2

Standard Cutting Conditions

LIST 7966 SGSPBL - SG Spiral Taps Burrless
LIST 7968 SGSBLL - SG Spiral Taps Burrless Left Hand Helix

Work Material	Structural Steel	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel		Stainless Steel	Ductile Cast Iron	Aluminum Alloy
	~200HB	~200HB	~200HB	~200HB	~200HB	20~30HRC			
SGSPBL	80~100	80~100	80~100	80~100	80~100	25~45	10~20	80~100	90~110
SGSPBLL	90~110	90~110	90~110	90~110	90~110	45~65	15~30	80~100	90~110
Cutting Fluids	High pressure non-water soluble / Water soluble							Water soluble	

Cutting conditions:

- These are general cutting conditions, and may be altered by your conditions.
- These conditions are for thread depth of 2xDC.
- Recommend non water soluble cutting fluid for Stainless Steel.

L7966 & L7968 Notes:

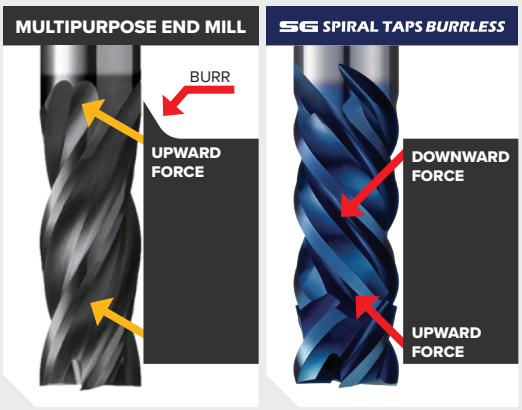
- This tap cuts the internal diameter of the internal thread relative to the pilot hole diameter.
- Please use the recommended drill diameter for pilot hole drilling.
- Please note that if the pilot hole diameter is larger than the finished internal diameter of the internal thread, burrless performance will not be achieved.

AQUA REVO MILLS BURRLESS

Eliminates burrs with side-surface machining.

W-HELICAL

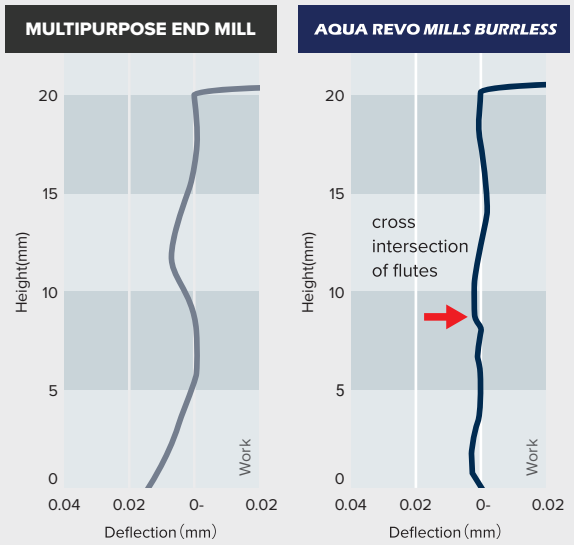
The double helix design incorporates cutting balance while eliminating burrs on the top and bottom surfaces of the workpiece.



The left-hand helix cuts the burr on the upper surface, while the right-hand helix eliminates burrs along the bottom surface.

C-CHAMFER

Connecting Chamfer reduces steps at the cross intersection of flutes.



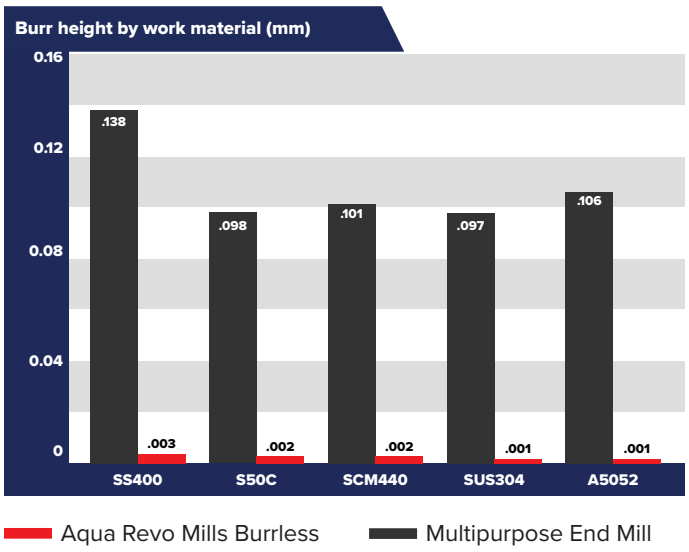
Size:	Cutting Method:	Feed Speed:	Machine:
φ10	Side milling	13.8 IPM	Vertical M/C
Work Material:	**Cutting Speed:**	**Depth of Cut:**	**Cutting Fluid:**
SUS304	262 SFM	ap20mm ae0.3mm	Water-soluble

Double helix design is engineered to eliminate burrs.

Patent pending

PERFORMANCE

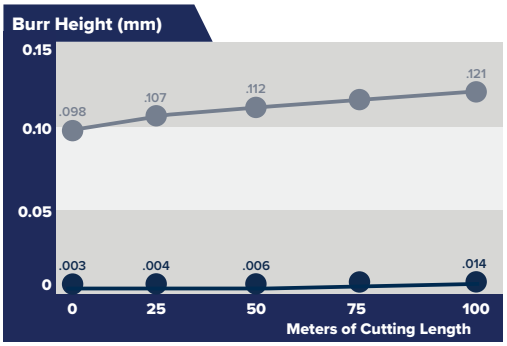
Achieves strong performance on a wide range of materials, including stainless steel and aluminum.

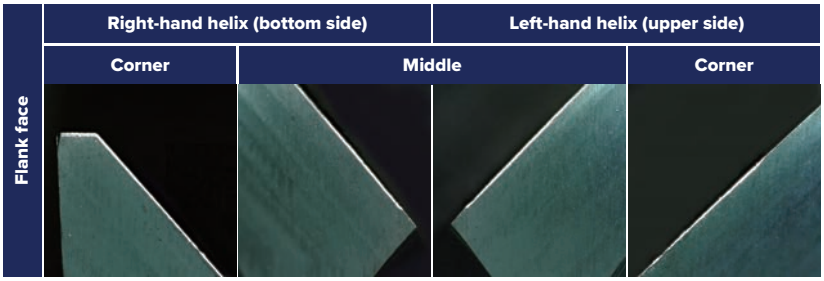


Work Material	Diameter (mm)	Cutting Speed (SFM)	Feed Speed (IPM)	Depth of Cut (mm)	Cutting Method	Cutting Fluid
SS400	φ10	394	33.1	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling, down cut	Water-soluble
S50C	φ10	394	33.1	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling, down cut	Water-soluble
SCM440	φ10	328	26.8	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling, down cut	Water-soluble
SUS304	φ10	262	9.8	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling, down cut	Water-soluble
A5052	φ10	328	35.8	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling, down cut	Water-soluble

TOOL LIFE

This graph shows the burr height after 100 meters of cutting length.





Diameter: φ10
Cutting Speed: 394 SFM
Feed Speed: 33.1 IPM
Cutting Fluid: Water-soluble
Work Material: S50C
Depth of Cut: ap20mm, ae 0.05
Cutting Method: Side milling, down cut
Machine: Vertical M/C

APPLICABLE WORK MATERIAL

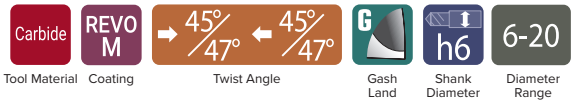
STRUCTURAL STEEL	CARBON STEEL	ALLOY STEEL	HEAD TREATED STEEL	MOLD STEEL	HARDENED STEEL			STAINLESS STEEL	TITANIUM ALLOY, HEAT RESISTANT ALLOY	CAST IRON	ALUMINUM ALLOY	COPPER ALLOY
					40-50 HRC	55-60 HRC	60-66 HRC					
●	●	●	●	●	●	○	-	●	○	●	○	○

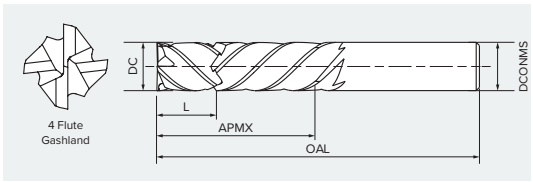
These are conditions under which performance can be demonstrated. Please see page 16.
Not recommended for slotting or plunging applications.

● Excellent ○ Good

RVMBL4G-2.5D
AQUA REVO MILLS BURRLESS

GASHLAND | 2.5D G TYPE | 4 FLUTES





LIST 9722J

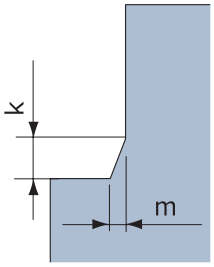
Unit: mm

EDP#	Cutting Diameter (DC)	Length of Cut (APMX)	Flute Intersection (L)	Overall Length (OAL)	Shank (DCONMS)
0799517	6.0	15	4.5	50	6
0799523	8.0	20	6.0	60	8
0799530	10.0	25	7.5	70	10
0799546	12.0	30	9.0	75	12
0799552	16.0	40	12.0	90	16
0799569	20.0	50	15.0	100	20

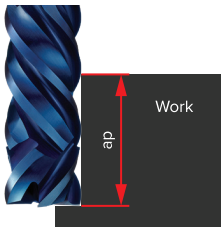
GUIDELINES OF REMAINING CORNER OF G TYPE (GASHLAND)

Unit: mm

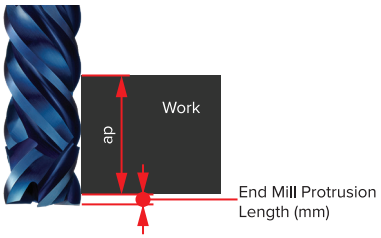
DC	k	m
6.0	0.2	0.03
10.0	0.3	0.04
20.0	0.4	0.05



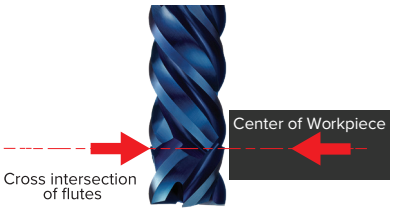
CUTTING DEPTH AP PARAMETER TABLE



Pattern 1



Pattern 2



Pattern 3

Dia.	Range of ap (mm)	Protrusion Length (mm)	Range of ap (mm)	Range of ap (mm)
	Min / Max		Min / Max	Min / Max
6.0	4.8 ~ 15.0	0.5	4.3 ~ 14.5	2.0 ~ 8.0
8.0	6.4 ~ 20.0	1	5.9 ~ 19.5	2.0 ~ 11.0
10.0	8.0 ~ 25.0	1	7.0 ~ 24.0	2.0 ~ 13.0
12.0	9.6 ~ 30.0	1	8.6 ~ 29.0	2.0 ~ 16.0
16.0	12.8 ~ 40.0	1	11.8 ~ 39.0	3.0 ~ 22.0
20.0	16.0 ~ 50.0	1	15.0 ~ 49.0	3.0 ~ 28.0

DC TOLERANCE

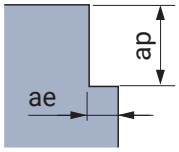
Unit: mm

DC		Tolerance
Above	Up to	
	12.0	0 - 0.02
12.0		0 - 0.03

Standard Cutting Conditions

LIST 9722J RVMBL4G-2.5D Aqua REVO Mills Burrless four flutes 2.5D G type

- Not recommended for slotting or plunging applications.
- If burrs from roughing remain, try slightly increasing the finishing depth to remove them.



Roughing

Work Material		Structural Steel, Carbon Steel, Cast Iron		Alloy Steel, Heat Treated Steel		Heat Treated Steel, Hardened Steel		Hardened Steel		Hardened Steel		Stainless Steel		Nickel Alloy, Titanium Alloy		Aluminum Alloy	
		150~250HB		25~35HRC		35~45HRC		45~55HRC		55~60HRC							
Cutting Speed (SFM)		290 - 400		290 - 330		195 - 265		225 - 250		225 - 250		225 - 265		125 - 200		325 - 335	
Diameter (mm)		RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
6.0		6,370	0.0023	5,300	0.0020	4,240	0.0015	4,000	0.0013	4,000	0.0002	4,240	0.0008	3,180	0.0007	5,300	0.0024
8.0		4,800	0.0031	3,980	0.0027	3,180	0.0020	2,980	0.0018	2,980	0.0002	3,180	0.0011	2,390	0.0010	3,980	0.0032
10.0		3,820	0.0031	3,180	0.0030	2,550	0.0025	2,390	0.0019	2,390	0.0002	2,550	0.0014	1,910	0.0012	3,180	0.0040
12.0		3,180	0.0035	2,650	0.0031	2,120	0.0026	1,990	0.0019	1,990	0.0002	2,120	0.0016	1,320	0.0013	2,650	0.0048
16.0		1,790	0.0044	1,790	0.0033	1,190	0.0033	1,390	0.0025	1,390	0.0003	1,590	0.0019	800	0.0015	1,980	0.0065
20.0		1,430	0.0041	1,430	0.0032	960	0.0033	1,110	0.0025	1,110	0.0003	1,110	0.0020	630	0.0017	1,590	0.0080
Depth of Cut	ap	2.5 DC															
	ae	0.2 DC (MAX 1.0mm)						Up to φ6 0.03DC Over φ16 0.01DC		0.01DC		0.2DC (MAX 1.0mm)		0.02DC		0.1DC	

Finishing

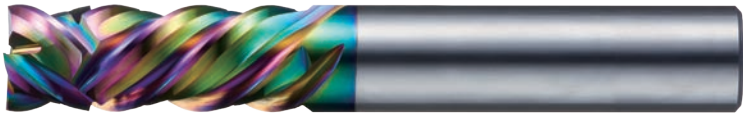
Cutting Speed (SFM)		290 - 400		290 - 330		195 - 265		225 - 250		225 - 250		225 - 265		125 - 200		325 - 335	
Diameter (mm)		RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
6.0		6,370	0.0016	5,300	0.0014	4,240	0.0012	4,000	0.0012	4,000	0.0002	4,240	0.0006	3,180	0.0005	5,300	0.0017
8.0		4,800	0.0022	3,980	0.0019	3,180	0.0016	2,980	0.0016	2,980	0.0002	3,180	0.0008	2,390	0.0006	3,980	0.0023
10.0		3,820	0.0022	3,180	0.0021	2,550	0.0020	2,390	0.0017	2,390	0.0002	2,550	0.0010	1,910	0.0008	3,180	0.0028
12.0		3,180	0.0025	2,650	0.0022	2,120	0.0021	1,990	0.0017	1,990	0.0002	2,120	0.0012	1,320	0.0008	2,650	0.0034
16.0		1,790	0.0031	1,790	0.0023	1,190	0.0026	1,390	0.0023	1,390	0.0003	1,590	0.0013	800	0.0010	1,980	0.0045
20.0		1,430	0.0029	1,430	0.0023	960	0.0027	1,110	0.0023	1,110	0.0003	1,110	0.0014	630	0.0011	1,590	0.0056
Depth of Cut	ap	2.5DC															
	ae	0.005DC (MAX 0.05mm)															

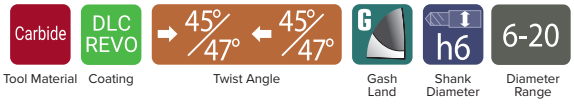
Cutting conditions:

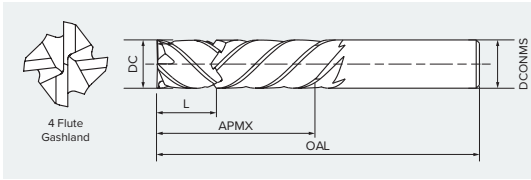
1. Use highly rigid machining center and holder.
2. Use an air blow for dry process.
3. When processing hardened steel (45 to 55HRC), use an air blow for dry process.
4. Use in wet condition in case of Stainless Steel, Nickel Alloy, Titanium Alloy.
5. When chattering occurs, reduce the rotation and feed rate, or reduce the depth of cut.

DLCRVMBL4G-2.5D
DLC-REVO MILLS BURRLESS

GASHLAND | **2.5D G TYPE** | **4 FLUTES**



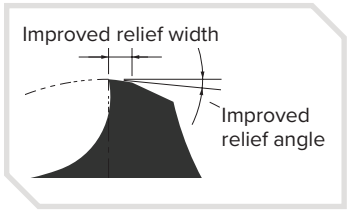




(A) Optimized Form Relief: Features a narrow relief width and shallow relief angle to enhance the cutting edge in Non-Ferrous metals while providing a burr-free finish.

Improved Vibration Control: The precise relief design minimizes vibrations during machining.

New DLC-REVO coating: Newly developed DLC-REVO coating helps to reduce welding.

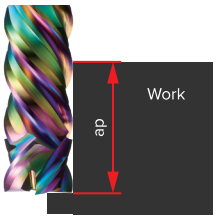


LIST 9728

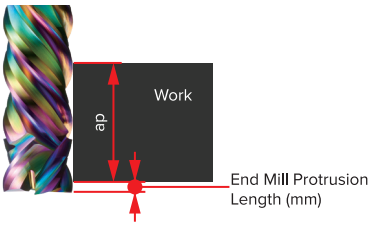
Unit: mm

EDP#	Cutting Diameter (DC)	Length of Cut (APMX)	Flute Intersection (L)	Overall Length (OAL)	Shank (DCONMS)
0802004	6.0	15.0	4.5	50.0	6.0
0802010	8.0	20.0	6.0	60.0	8.0
0802027	10.0	25.0	7.5	70.0	10.0
0802033	12.0	30.0	9.0	75.0	12.0
0802040	16.0	40.0	12.0	90.0	16.0
0802056	20.0	50.0	15.0	100.0	20.0

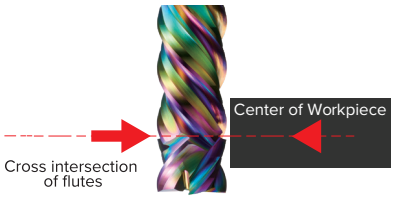
CUTTING DEPTH AP PARAMETER TABLE



Pattern 1



Pattern 2



Pattern 3

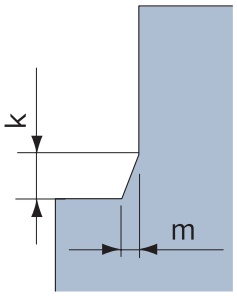
Dia.	Range of ap (mm)	Protrusion Length (mm)	Range of ap (mm)	Range of ap (mm)
	Min / Max		Min / Max	Min / Max
6.0	4.8 ~ 15.0	0.5	4.3 ~ 14.5	2.0 ~ 8.0
8.0	6.4 ~ 20.0	1	5.9 ~ 19.5	2.0 ~ 11.0
10.0	8.0 ~ 25.0	1	7.0 ~ 24.0	2.0 ~ 13.0
12.0	9.6 ~ 30.0	1	8.6 ~ 29.0	2.0 ~ 16.0
16.0	12.8 ~ 40.0	1	11.8 ~ 39.0	3.0 ~ 22.0
20.0	16.0 ~ 50.0	1	15.0 ~ 49.0	3.0 ~ 28.0

GUIDELINES

Guidelines of remaining corner of G type (Gashland)

Unit: mm

DC	k	m
6.0	0.2	0.03
10.0	0.3	0.04
20.0	0.4	0.05



DC TOLERANCE

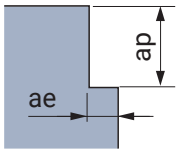
Unit: mm

DC		Tolerance
Above	Up to	
	12.0	0 - 0.02
12.0		0 - 0.03

Standard Cutting Conditions

LIST 9728 DLCRVMBL4G-2.5D DLC-REVO Mills Burrless four flutes 2.5D G type

- Not recommended for slotting or plunging applications.
- If burrs generated from roughing are not removed, slightly increase the finishing depth.



Roughing

Work Material		Aluminum		Aluminum Alloy (Si, Mg-Si)		Aluminum Alloy (Mg, Zn-Mg)		Aluminum Casting		Copper Alloy		Magnesium Alloy		Thermoplastic Resin	
		A1070		A430, A6061		A5052, A7075		AC, ADC		C1100		AZ91		PA, PVC	
Cutting Speed (SFM)		1280 - 1320		990		990		865 - 890		390 - 400		990		330	
Diameter		RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
6mm	0.2362	21,000	0.0023	16,000	0.0024	16,000	0.0024	14,000	0.0025	6,400	0.0018	16,000	0.0024	5,310	0.0027
8mm	0.3150	16,000	0.0031	12,000	0.0031	12,000	0.0031	10,700	0.0032	4,800	0.0024	12,000	0.0031	3,980	0.0036
10mm	0.3937	12,700	0.0039	9,600	0.0039	9,600	0.0039	8,600	0.0040	3,820	0.0030	9,600	0.0039	3,180	0.0045
12mm	0.4724	10,600	0.0043	8,000	0.0043	8,000	0.0043	7,200	0.0043	3,180	0.0033	8,000	0.0043	2,650	0.0050
16mm	0.6299	7,800	0.0050	6,000	0.0050	6,000	0.0050	5,400	0.0050	2,390	0.0039	6,000	0.0050	1,990	0.0057
20mm	0.7874	6,200	0.0056	4,800	0.0055	4,800	0.0055	4,300	0.0056	1,910	0.0044	4,800	0.0055	1,590	0.0064
Depth of Cut	ap	2.5 DC													
	ae	0.1 DC													

Finishing

Cutting Speed (SFM)		1280 - 1320		990		990		865 - 890		390 - 400		990		330	
Diameter		RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
6mm	0.2362	21,000	0.0017	16,000	0.0017	16,000	0.0017	14,000	0.0017	6,400	0.0013	16,000	0.0017	5,310	0.0019
8mm	0.3150	16,000	0.0022	12,000	0.0023	12,000	0.0023	10,700	0.0023	4,800	0.0017	12,000	0.0023	3,980	0.0025
10mm	0.3937	12,700	0.0028	9,600	0.0028	9,600	0.0028	8,600	0.0028	3,820	0.0021	9,600	0.0028	3,180	0.0032
12mm	0.4724	10,600	0.0030	8,000	0.0030	8,000	0.0030	7,200	0.0030	3,180	0.0023	8,000	0.0030	2,650	0.0035
16mm	0.6299	7,800	0.0035	6,000	0.0035	6,000	0.0035	5,400	0.0035	2,390	0.0028	6,000	0.0035	1,990	0.0040
20mm	0.7874	6,210	0.0039	4,800	0.0039	4,800	0.0039	4,300	0.0039	1,910	0.0031	4,800	0.0039	1,590	0.0045
Depth of Cut	ap	2.5DC													
	ae	0.01DC (MAX 0.1mm)													

Cutting conditions:

1. Not recommeded for slotting or plunging
2. Remove this point and sync consecutive numbers
3. If the burrs from the roughing cycle cannot be removed with standard finishing conditions, please increase finishing width of cut.
4. Use highly rigid machining center and holder.
5. Use an air blow for dry process.
6. When chattering occurs, reduce the rotation and feed rate, or reduce the depth of cut.
7. Magnesium alloys may catch fire, so be sure to use a special cutting fluid and manage chips.

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Nachi America Inc.
Greenwood, IN

877-622-4487

ml-nai.tools@nachi.com

NachiAmerica.com

Nachi America Inc.
715 Pushville Road
Greenwood, In 46143

Nachi America Inc.
Cerritos, CA

562-802-0055

ml-nai.toolsla@nachi.com

NachiAmerica.com

Nachi America Inc.
12652 Alondra Blvd.
Cerritos, CA 90703

Nachi Canada Inc.
Ontario, Canada

905-660-0088

ml-nci.sales@nachi.com

NachiAmerica.com

2-89 Courtland Ave.
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