NEW

AHB
TOOLING & MACHINERY

COMPLETE
METALWORKING
SOLUTIONS

NACHI

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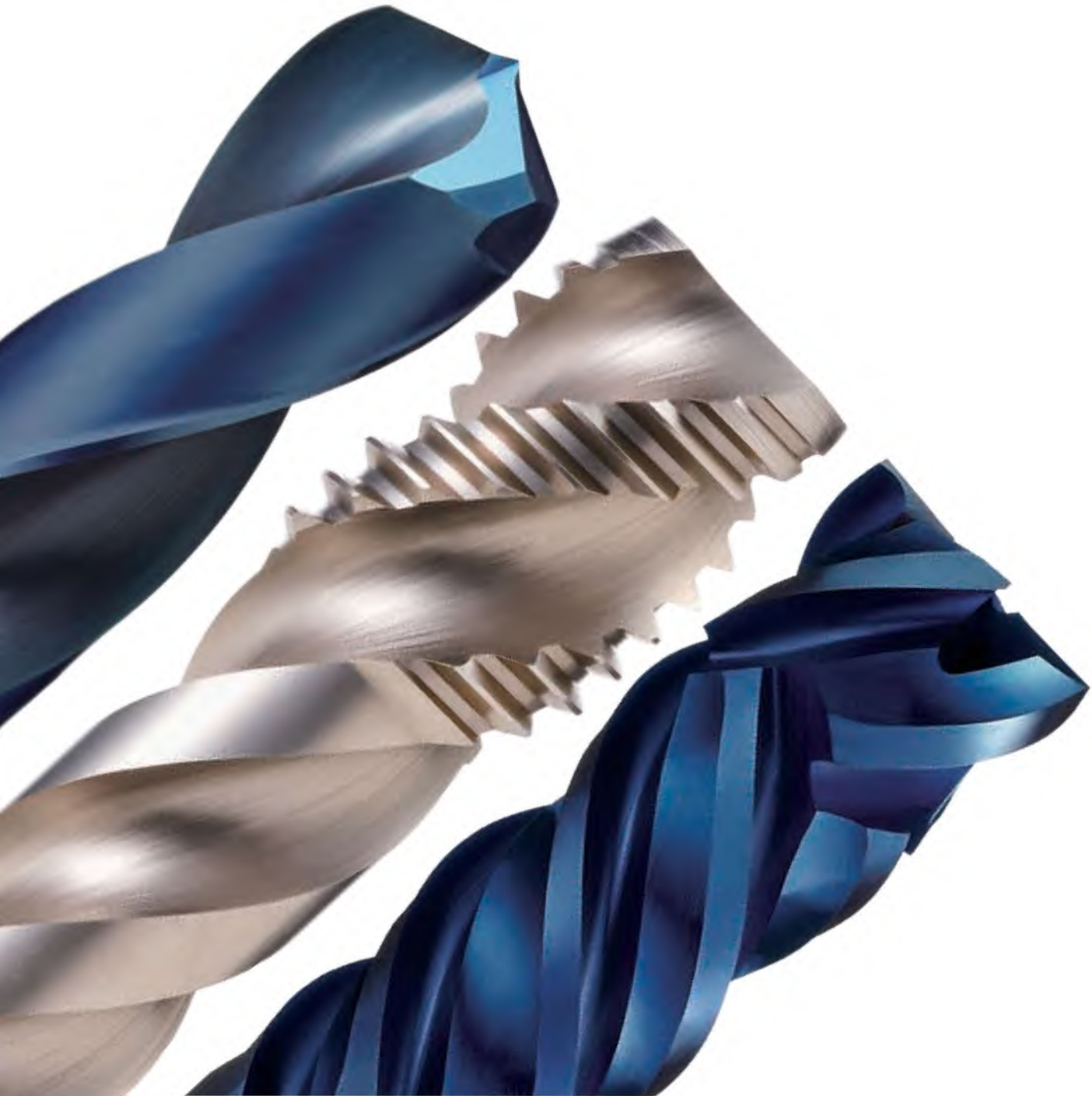
BURRLESS SERIES

Improve process efficiency through burr elimination.



NEW

PRODUCT INFO

BURRLESS SERIES

- Evaluates the burr generation mechanism to eliminate the burr
- Fuses the Aqua REVO and SG technology with the burr-free design to provide high efficiency and long tool life
- Lineup of drills, taps, and end mills that eliminate the entire deburring process

Burr generation has historically caused issues when machining

Eliminate your burr issue with Nachi Burrless series

Wasting time and money on the deburring and inspection process

Deburring processes can be difficult on complex work piece surfaces

Quality can be unstable when using a manual deburr process

AQUA REVO DRILLS BURRLESS

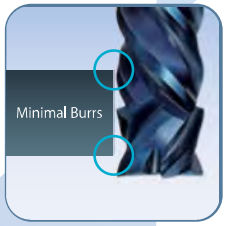
Eliminates the burr and drill cap at the exit of a through hole.

SG SPIRAL TAPS BURRLESS

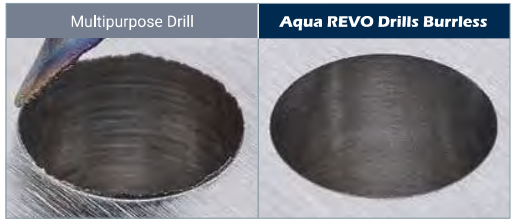
Zero burrs on the minor diameter of the thread profile

AQUA REVO MILLS BURRLESS

Suppresses burrs on the top and bottom of the part when profile milling

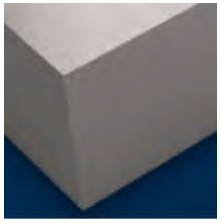


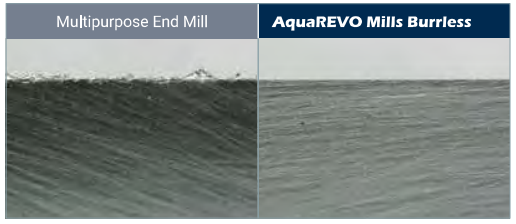
Processing examples of Burrless Series



Size: φ10
Work Material: S50C
Cutting Speed: 287 SFM
Feed Speed: 43.7 IPM
Cutting Fluid: Water-soluble

Size: M12×1.75
Work Material: S50C
Cutting Speed: 98 SFM
Diameter of prepared hole:φ10.2
Cutting Fluid: Water-soluble





Size: φ10
Work Material: SUS304
Cutting Speed 262 SFM
Feed Speed: 9.8 IPM
Depth of Cut: ap20mm ae0.05mm
Cutting Fluid: Water-soluble

NEW

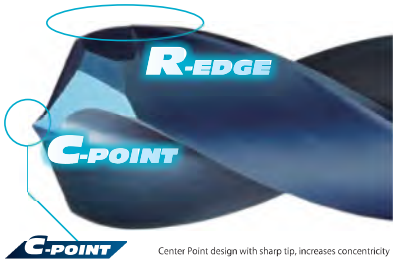
Eliminating the burr, no drill cap remaining

PRODUCT INFO

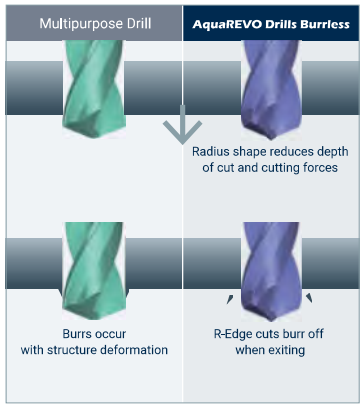
AQUA REVO DRILLS BURRLESS

Achieves a burrless exit by fusing the Burless R-Edge and C-Point design PAT.P

R-EDGE Radius Edge that combines radius shape and sharp edge

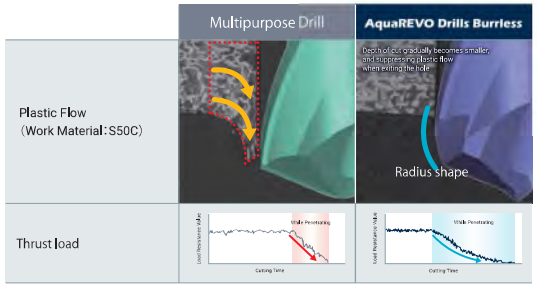


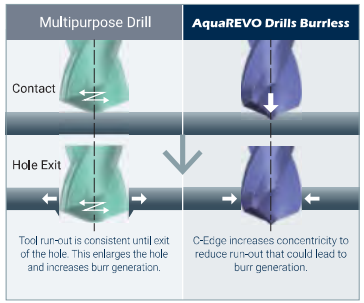
Center Point design with sharp tip, increases concentricity



R-EDGE Radius Edge

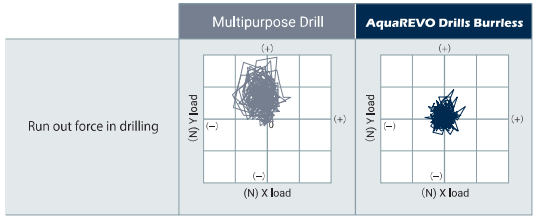
- Reduced thrust force at the exit of hole decreases the structure deformation
- Sharp edge cuts without leaving burr





C-POINT Center Point

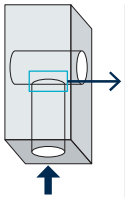
- Reduces hole expansion and eliminates burr through high accuracy concentricity

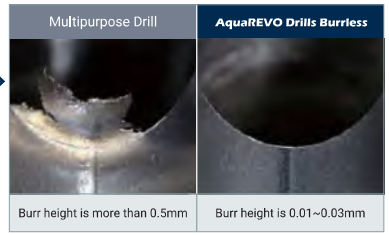


Burrless Performance

- Excellent burrless performance on flat surfaces, but also on cross-hole applications
- Eliminates the need for a secondary deburr process since there is no drill cap remaining

Burr height (Same diameter cross hole)





Multipurpose Drill	AquaREVO Drills Burrless
Burr height is more than 0.5mm	Burr height is 0.01~0.03mm

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

Drill Cap Remaining

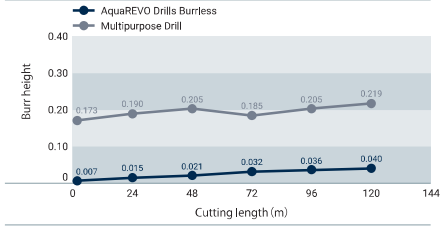
Multipurpose Drill	AquaREVO Drills Burrless
Drill Cap Remaining: 50~75%	Drill Cap Remaining: 0%

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

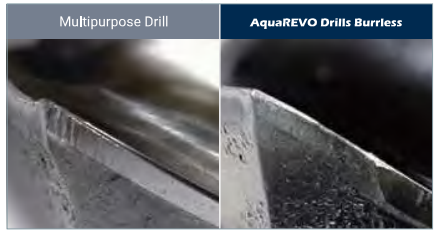
Achieves similar tool life as a standard drill

- Reduces the burr even near the end of tool life
- Achieves almost the same tool life as a standard drill, but does it without burr generation

Cutting length and Burr height



Tool wear after 120m cutting length



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

Applicable Work Materials

	Structural Steel	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
		Low-carbon Steel	High-carbon Steel								
AQRVDBL4D	◎	◎	◎	◎	○	–	–	–	○	–	–

◎: Excellent ○: Good –: Not recommended

NEW

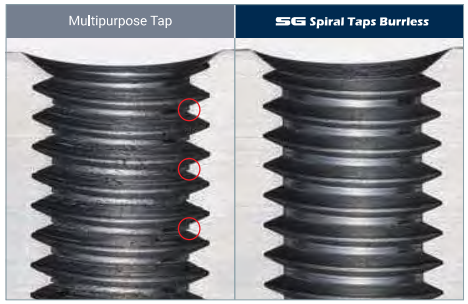
PRODUCT INFO

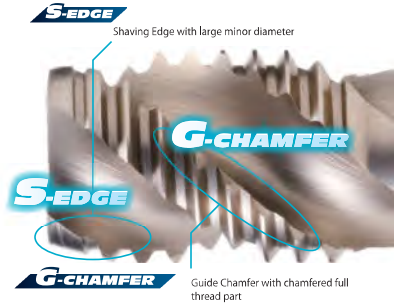
Achieve a burrless minor diameter

SG SPIRAL TAPS BURRLESS

Zero burr on the minor diameter of the thread ensures smooth go gauge checks and precise internal diameters.

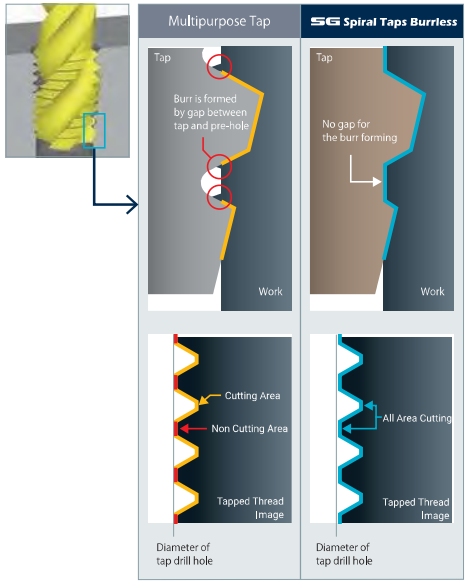
PAT.P





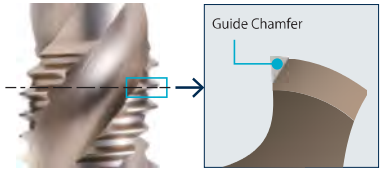
S-EDGE Shaving Edge

■ No gap between the taps thread root area and the pre-drill diameter achieves Zero burr!



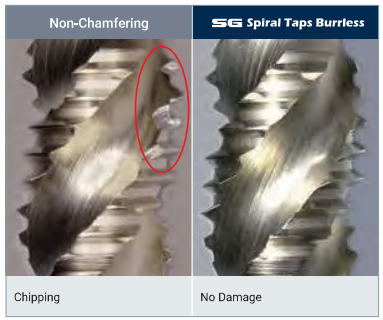
G-CHAMFER Guide Chamfer

■ Chamfered rake face reduces chipping of cutting edge due to chip jamming



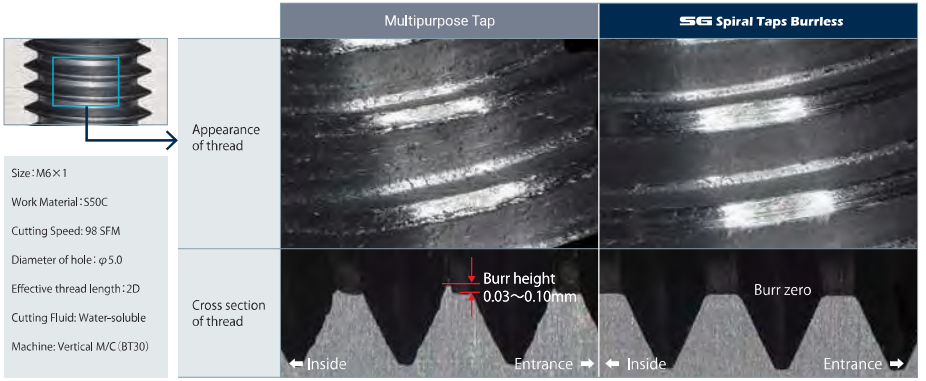
Chamfering the acute angles on the thread edge to prevent chipping

Chipping After Constant Cutting



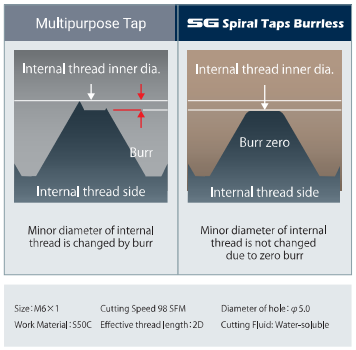
Burrless Performance

■ Achieves zero burr on the minor diameter of internal thread profile

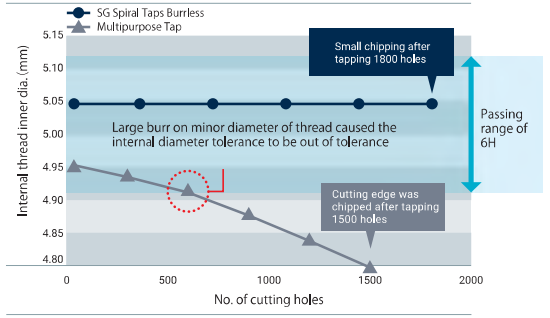


Achieves long tool life like multi-purpose tap

■ Stable minor diameter accuracy leads to zero burr generation, even when near to the end of tool life
■ Reduces chipping and achieves same tool life equivalent to multipurpose taps



No. of cutting holes and internal thread inner dia



Applicable Work Materials

	Structural Steel	Carbon Steel			Alloy Steel	Hardened Steel	Stainless Steel	Titanium Alloy	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy
		Low-carbon Steel	Medium-carbon Steel	High-carbon Steel								
SGSPBL(Blind Hole)	○	○	◎	◎	○	-	○	-	-	○	○	○
SGSPBLL(Through Hole)	○	○	◎	◎	○	-	○	-	-	○	○	○

● See page 12 for Pilot Hole Dimensions

◎: Excellent ○: Good —: Not recommended

NEW

PRODUCT INFO

Effectively prevent top-side burrs with side-surface machining

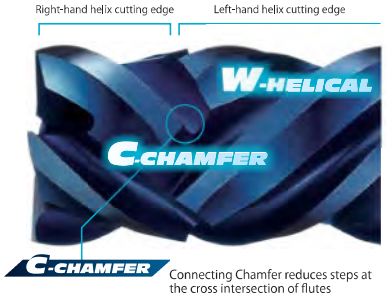
AQUA REVO MILLS BURRLESS

Double helix design knocks out burrs regardless of the workpiece material

PAT.P

W-HELICAL

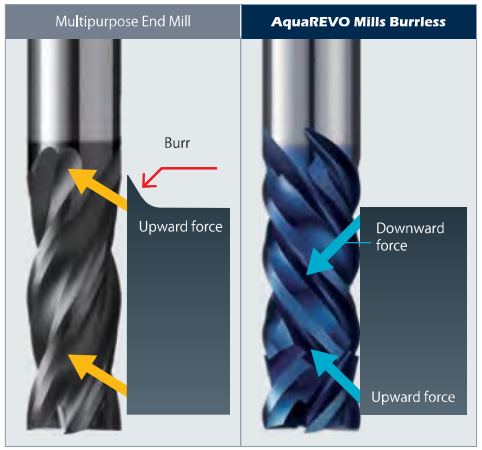
Double helix design provides good cutting balance while suppressing burrs on the top/bottom surfaces of the workpiece



Connecting Chamfer reduces steps at the cross intersection of flutes

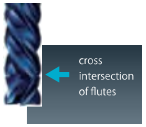
W-HELICAL Double Helical

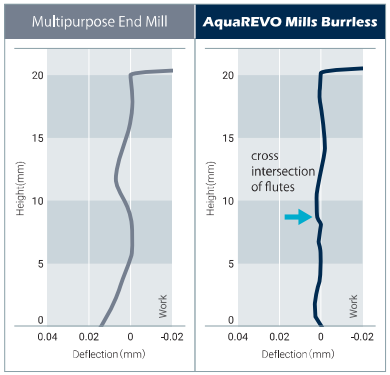
- The left-hand helix cutting edge reduces the burrs on the upper surface of the workpiece
- The right-hand helix cutting edge reduces the burr on the bottom surface of the workpiece



C-CHAMFER Connecting Chamfer

- Reduces the steps at the cross intersection of flutes

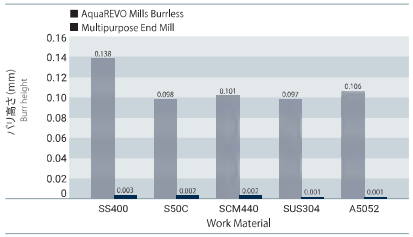




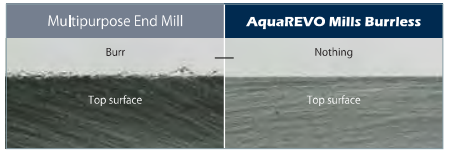
Diameter: φ10	Cutting Speed: 262 SFM	Machine: Vertical M/C
Work Material: SUS304	Feed Speed: 13.8 IPM	Cutting Fluid: Water-soluble
Cutting method: Side milling	Depth of Cut: ap20mm ae0.3mm	

- Achieves zero burr on the top surface when profile milling
- Applicable to wide range work material, even stainless steel or aluminum materials

Burr height by work material



Burr height on top surface



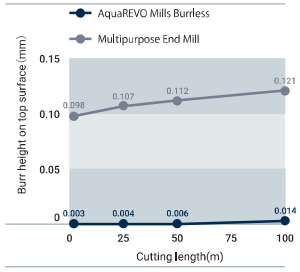
Diameter: φ10	Cutting method: Side milling ap 20mm, ae .05mm	Feed Speed: 9.8 IPM
Work Material: SUS304	Cutting Speed: 262 SFM	Cutting Fluid: Water-soluble

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						
SCM440		328	26.8			
SUS304		262	9.8			
A5052		328	35.8			

Long tool life equivalent to general-purpose End Mills

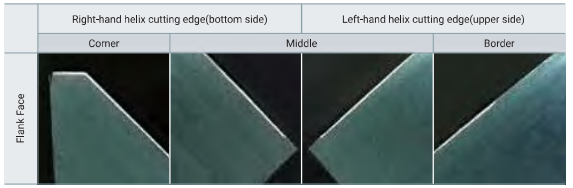
- Still generates zero burr even after long cutting lengths
- Long tool life equivalent to multipurpose end mill

Cutting length and burr height



■ Not recommended for slotting or plunging applications

Tool wear after 100m 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.	Cutting method: Side milling, Down cut	Machine: Vertical M/C

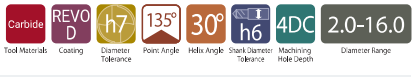
Applicable Work Materials

	Structural Steel	Carbon Steel	Alloy Steel	Heat Treated Steel Mold Steel	Hardened Steel			Stainless Steel	Titanium Alloy Heat Resistant Alloy	Cast Iron	Aluminum Alloy	Copper Alloy
RVMBL4G-2.5D	◎	◎	◎	◎	◎	○	–	◎	○	◎	○	○

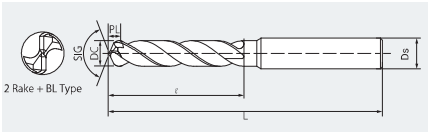
● There are conditions under which performance can be demonstrated. Please see page 15.

◎: Excellent ○: Good –: Not recommended

NEW



AQRVDBL4D
AQUA REVO DRILLS BURRLESS 4D



LIST 9896 - Metric Series

Unit:mm

EDP#	Size	Decimal Equiv.	Flute Length	Overall Length	Shank Diameter	Point Length	Protrusion Length
Code	Dc		ℓ	L	Ds	PL	
0798103	2.000	0.0787	15	49	3	0.9	1.2
0798110	2.100	0.0827	18	49	3	0.9	1.3
0798126	2.200	0.0866	18	49	3	1.0	1.3
0798132	2.300	0.0906	18	49	3	1.0	1.4
0798149	2.400	0.0945	18	49	3	1.1	1.4
0798155	2.500	0.0984	18	49	3	1.1	1.5
0798161	2.600	0.1024	20	49	3	1.2	1.6
0798178	2.700	0.1063	20	49	3	1.2	1.6
0798184	2.800	0.1102	20	49	3	1.3	1.7
0798190	2.900	0.1142	20	49	3	1.3	1.7
0798206	3.000	0.1181	20	49	3	1.4	1.8
0798212	3.100	0.1220	25	60	4	1.4	1.9
0798229	3.200	0.1260	25	60	4	1.4	1.9
0798235	3.300	0.1299	25	60	4	1.5	2.0
0798241	3.400	0.1339	25	60	4	1.5	2.0
0798258	3.500	0.1378	25	60	4	1.6	2.1
0798264	3.600	0.1417	28	60	4	1.6	2.2
0798270	3.700	0.1457	28	60	4	1.7	2.2
0798287	3.800	0.1496	28	60	4	1.7	2.3
0798293	3.900	0.1535	28	60	4	1.8	2.3
0798309	4.000	0.1575	28	60	4	1.8	2.4
0798315	4.100	0.1614	32	77	5	1.8	2.5
0798321	4.200	0.1654	32	77	5	1.9	2.5
0798338	4.300	0.1693	32	77	5	1.9	2.6
0798344	4.400	0.1732	32	77	5	2.0	2.6
0798350	4.500	0.1772	32	77	5	2.0	2.7
0798367	4.600	0.1811	39	77	5	2.1	2.8
0798373	4.700	0.1850	39	77	5	2.1	2.8
0798380	4.800	0.1890	39	77	5	2.2	2.9
0798396	4.900	0.1929	39	77	5	2.2	2.9
0798401	5.000	0.1969	39	77	5	2.3	3.0
0798418	5.100	0.2008	40	82	6	2.3	3.1
0798424	5.200	0.2047	40	82	6	2.3	3.1
0798430	5.300	0.2087	40	82	6	2.4	3.2
0798447	5.400	0.2126	40	82	6	2.4	3.2
0798453	5.500	0.2165	40	82	6	2.5	3.3
0798460	5.600	0.2205	42	82	6	2.5	3.4
0798476	5.700	0.2244	42	82	6	2.6	3.4
0798482	5.800	0.2283	42	82	6	2.6	3.5
0798499	5.900	0.2323	42	82	6	2.7	3.5
0798504	6.000	0.2362	42	82	6	2.7	3.6
0798510	6.100	0.2402	43	84	7	2.7	3.7
0798527	6.200	0.2441	43	84	7	2.8	3.7
0798533	6.300	0.2480	43	84	7	2.8	3.8
0798540	6.400	0.2520	43	84	7	2.9	3.8
0798556	6.500	0.2559	43	84	7	2.9	3.9
0798562	6.600	0.2598	44	84	7	3.0	4.0
0798579	6.700	0.2638	44	84	7	3.0	4.0
0798585	6.800	0.2677	44	84	7	3.1	4.1
0798591	6.900	0.2717	44	84	7	3.1	4.1
0798607	7.000	0.2756	44	84	7	3.2	4.2
0798613	7.100	0.2795	46	91	8	3.2	4.3
0798620	7.200	0.2835	46	91	8	3.2	4.3
0798636	7.300	0.2874	46	91	8	3.3	4.4
0798642	7.400	0.2913	46	91	8	3.3	4.4
0798659	7.500	0.2953	46	91	8	3.4	4.5
0798665	7.600	0.2992	47	91	8	3.4	4.6
0798671	7.700	0.3031	47	91	8	3.5	4.6
0798688	7.800	0.3071	47	91	8	3.5	4.7
0798694	7.900	0.3110	47	91	8	3.6	4.7
0798700	8.000	0.3150	47	91	8	3.6	4.8
0798716	8.100	0.3189	55	99	9	3.6	4.9
0798722	8.200	0.3228	55	99	9	3.7	4.9
0798739	8.300	0.3268	55	99	9	3.7	5.0
0798745	8.400	0.3307	55	99	9	3.8	5.0
0798751	8.500	0.3346	55	99	9	3.8	5.1
0798768	8.600	0.3386	57	99	9	3.9	5.2
0798774	8.700	0.3425	57	99	9	3.9	5.2
0798780	8.800	0.3465	57	99	9	4.0	5.3
0798797	8.900	0.3504	57	99	9	4.0	5.3
0798802	9.000	0.3543	57	99	9	4.1	5.4
0798819	9.100	0.3583	60	107	10	4.1	5.5
0798825	9.200	0.3622	60	107	10	4.1	5.5
0798831	9.300	0.3661	60	107	10	4.2	5.6
0798848	9.400	0.3701	60	107	10	4.2	5.6
0798854	9.500	0.3740	60	107	10	4.3	5.7
0798860	9.600	0.3780	62	107	10	4.3	5.8
0798877	9.700	0.3819	62	107	10	4.4	5.8
0798883	9.800	0.3858	62	107	10	4.4	5.9
0798890	9.900	0.3898	62	107	10	4.5	5.9
0798905	10.000	0.3937	62	107	10	4.5	6.0
0798911	10.100	0.3976	68	116	11	4.5	6.1
0798928	10.200	0.4016	68	116	11	4.6	6.1
0798934	10.300	0.4055	68	116	11	4.6	6.2
0798940	10.400	0.4094	68	116	11	4.7	6.2
0798957	10.500	0.4134	68	116	11	4.7	6.3
0798963	10.600	0.4173	70	116	11	4.8	6.4
0798970	10.700	0.4213	70	116	11	4.8	6.4
0798986	10.800	0.4252	70	116	11	4.9	6.5
0798992	10.900	0.4291	70	116	11	4.9	6.5
0799007	11.000	0.4331	70	116	11	5.0	6.6
0799013	11.100	0.4370	73	123	12	5.0	6.7
0799020	11.200	0.4409	73	123	12	5.0	6.7
0799036	11.300	0.4449	73	123	12	5.1	6.8
0799042	11.400	0.4488	73	123	12	5.1	6.8
0799059	11.500	0.4528	73	123	12	5.2	6.9
0799065	11.600	0.4567	76	123	12	5.2	7.0
0799071	11.700	0.4606	76	123	12	5.3	7.0
0799088	11.800	0.4646	76	123	12	5.3	7.1
0799094	11.900	0.4685	76	123	12	5.4	7.1
0799100	12.000	0.4724	76	123	12	5.4	7.2
0799116	12.100	0.4764	79	138	13	5.4	7.3
0799122	12.200	0.4803	79	138	13	5.5	7.3
0799139	12.300	0.4843	79	138	13	5.5	7.4
0799145	12.400	0.4882	79	138	13	5.6	7.4
0799151	12.500	0.4921	79	138	13	5.6	7.5
0799168	12.600	0.4961	81	138	13	5.7	7.6
0799174	12.700	0.5000	81	138	13	5.7	7.6
0799180	12.800	0.5039	81	138	13	5.8	7.7
0799197	12.900	0.5079	81	138	13	5.8	7.7
0799202	13.000	0.5118	81	138	13	5.9	7.8
0799219	13.100	0.5157	87	148	14	5.9	7.9
0799225	13.200	0.5197	87	148	14	5.9	7.9
0799231	13.300	0.5236	87	148	14	6.0	8.0
0799248	13.400	0.5276	87	148	14	6.0	8.0
0799254	13.500	0.5315	87	148	14	6.1	8.1
0799260	13.600	0.5354	90	148	14	6.1	8.2
0799277	13.700	0.5394	90	148	14	6.2	8.2
0799283	13.800	0.5433	90	148	14	6.2	8.3
0799290	13.900	0.5472	90	148	14	6.3	8.3
0799305	14.000	0.5512	90	148	14	6.3	8.4
0799311	14.100	0.5551	92	154	15	6.3	8.5
0799328	14.200	0.5591	92	154	15	6.4	8.5
0799334	14.300	0.5630	92	154	15	6.4	8.6

EDP#	Size	Decimal Equiv.	Flute Length	Overall Length	Shank Diameter	Point Length	Protrusion Length
Code	DC		ℓ		Ds	PL	
0799340	14.400	0.5669	92	154	15	6.5	8.6
0799357	14.500	0.5709	92	154	15	6.5	8.7
0799363	14.600	0.5748	94	154	15	6.6	8.8
0799370	14.700	0.5787	94	154	15	6.6	8.8
0799386	14.800	0.5827	94	154	15	6.7	8.9
0799392	14.900	0.5866	94	154	15	6.7	8.9
0799408	15.000	0.5906	94	154	15	6.8	9.0
0799414	15.100	0.5945	97	162	16	6.8	9.1
0799420	15.200	0.5984	97	162	16	6.8	9.1
0799437	15.300	0.6024	97	162	16	6.9	9.2
0799443	15.400	0.6063	97	162	16	6.9	9.2
0799450	15.500	0.6102	97	162	16	7.0	9.3
0799466	15.600	0.6142	99	162	16	7.0	9.4
0799472	15.700	0.6181	99	162	16	7.1	9.4
0799489	15.800	0.6220	99	162	16	7.1	9.5
0799495	15.900	0.6260	99	162	16	7.2	9.5
0799500	16.000	0.6299	99	162	16	7.2	9.6

LIST 9896 - Fractional Series

EDP#	Size	Decimal Equiv.	Flute Length	Overall Length	Shank Diameter	Point Length	Protrusion Length
Code	DC		ℓ		Ds	PL	
1584403	3/32	0.0937	18	49	3	1.1	1.4
1584730	7/64	0.1094	20	49	3	1.3	1.7
1584410	1/8	0.1250	25	60	4	1.4	1.9
1584426	9/64	0.1406	28	60	4	1.6	2.1
1584432	5/32	0.1562	28	60	4	1.8	2.4
1584747	#21	0.1590	32	77	6	1.8	2.4
1584753	#20	0.1610	32	77	6	1.8	2.5
1584760	11/64	0.1719	32	77	6	2.0	2.6
1584776	3/16	0.1875	39	77	6	2.1	2.9
1584782	#7	0.2010	40	82	6	2.3	3.1
1584799	13/64	0.2031	40	82	6	2.3	3.1
1584804	#3	0.2130	40	82	6	2.4	3.2
1584833	7/32	0.2187	42	82	6	2.5	3.3
1584810	#2	0.2210	42	82	6	2.5	3.4
1584827	15/64	0.2344	42	82	6	2.7	3.6
1584449	1/4	0.2500	43	84	8	2.9	3.8
1584455	F	0.2570	44	84	8	2.9	3.9
1584461	17/64	0.2656	44	84	8	3.0	4.0
1584478	I	0.2720	44	84	8	3.1	4.1
1584484	J	0.2770	46	91	8	3.2	4.2
1584490	9/32	0.2812	46	91	8	3.2	4.3
1584506	19/64	0.2969	47	91	8	3.4	4.5
1584512	5/16	0.3125	47	91	8	3.6	4.8
1584529	P	0.3230	55	99	10	3.7	4.9
1584535	21/64	0.3281	55	99	10	3.8	5.0
1584541	Q	0.3320	55	99	10	3.8	5.1
1584558	11/32	0.3437	57	99	10	3.9	5.2
1584564	23/64	0.3594	60	107	10	4.1	5.5
1584570	U	0.3680	60	107	10	4.2	5.6
1584587	3/8	0.3750	62	107	10	4.3	5.7
1584593	25/64	0.3906	62	107	10	4.5	6.0
1584609	13/32	0.4062	68	116	12	4.6	6.2
1584615	27/64	0.4219	70	116	12	4.8	6.4
1584621	7/16	0.4375	73	123	12	5.0	6.7
1584840	29/64	0.4531	76	123	12	5.2	6.9
1584856	15/32	0.4687	76	123	12	5.4	7.1
1584638	31/64	0.4844	79	138	14	5.5	7.4
1584644	1/2	0.5000	81	138	14	5.7	7.6
1584650	33/64	0.5156	87	148	14	5.9	7.9
1584667	17/32	0.5312	87	148	14	6.1	8.1
1584673	35/64	0.5469	90	148	14	6.3	8.3
1584680	9/16	0.5625	92	154	16	6.4	8.6
1584696	37/64	0.5781	94	154	16	6.6	8.8
1584701	19/32	0.5937	97	162	16	6.8	9.0
1584718	39/64	0.6094	97	162	16	7.0	9.3
1584724	5/8	0.6250	99	162	16	7.1	9.5

Expected to be released on December 21, 2023

Standard Cutting Conditions

AQRVDBL 4D AquaREVO Drills Burrless 4D

■ AQRVDBL is for through hole drilling usage. Please use AquaREVO Drills for the blind hole.

Work Material	Structural Steel		Carbon Steel/Cast Iron		Alloy Steel Heat Treated Steel		Mold Steel Pre-Hardened Steel		Ductile Cast Iron	
	~200HB				20~30HRC		30~40HRC			
Cutting Speed (SFM)	225 - 235		160 - 170		160 - 170		95 - 105		160 - 170	
Drill Dia. (mm)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
2.0	11100	0.0016	8000	0.0024	8000	0.0024	4800	0.0016	8000	0.0031
3.0	7400	0.0023	5300	0.0036	5300	0.0036	3200	0.0023	5300	0.0048
5.0	4500	0.0039	3200	0.0059	3200	0.0059	1900	0.0039	3200	0.0079
6.0	5300	0.0048	4200	0.0094	4200	0.0094	2400	0.0052	4200	0.0094
8.0	4000	0.0063	3200	0.0123	3200	0.0123	1800	0.0070	3200	0.0123
10.0	2550	0.0079	1900	0.0157	1900	0.0157	1100	0.0086	1900	0.0118
12.0	2100	0.0094	1600	0.0189	1600	0.0189	900	0.0105	1600	0.0143
14.0	1600	0.0111	1100	0.0165	1100	0.0165	700	0.0112	1100	0.0165
16.0	1400	0.0127	1000	0.0126	1000	0.0126	600	0.0125	1000	0.0189

Attention on using the cutting condition tables

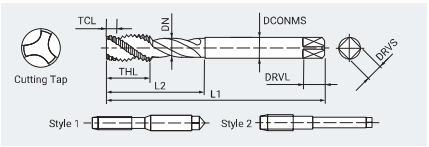
1) AQRVDBL is for through hole drilling usage. Drill should exit the hole more than 0.6DC.
2) Burrless drill will not perform on an inclined entry or exit. In that case, we recommend a flat-bottom drill.
3) In low rigidity applications, when chatter occurs, reduce the rotation and feed rate.
4) Wet condition 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, Stainless Steel, Hardened Steel are 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.

NEW

FAX Tool Materials | SG Coating | 45° Helix Angle | For Blind Holes

SGSPBL
SG SPIRAL TAPS BURRLESS

For Blind Holes



LIST 7966 Order SGSPBL Code

Unit:mm

EDP#	Size	Thread Limit	TCL(P)	No. of Flutes	Overall Length	Length of Thread	Under Neck Length	Shank Dia.	Style
Code	Thread Size		TCL(P)	NOF	L1	THL	L2	DCONMS	
0799575	M3×0.5	P2	2.5P	3F	46	3.5	18.0	4.0	1
0799581	M4×0.7	P3	2.5P	3F	52	4.9	20.0	5.0	1
0799598	M5×0.8	P3	2.5P	3F	60	5.6	22.0	5.5	1
0799603	M6×1	P3	2.5P	3F	62	7.0	24.0	6.0	1
0799610	M6×0.75	P2	2.5P	3F	62	7.0	24.0	6.0	1
0799626	M8×1.25	P3	2.5P	3F	70	8.8	29.8	6.2	2
0799632	M8×1	P3	2.5P	3F	70	8.8	29.8	6.2	2
0799649	M10×1.5	P3	2.5P	3F	75	10.5	31.4	7.0	2
0799655	M10×1.25	P3	2.5P	3F	75	10.5	31.4	7.0	2
0799661	M10×1	P3	2.5P	3F	75	10.5	31.4	7.0	2
0799678	M12×1.75	P4	2.5P	3F	82	12.3	36.2	8.5	2
0799684	M12×1.5	P3	2.5P	3F	82	12.3	36.2	8.5	2
0799690	M12×1.25	P3	2.5P	3F	82	12.3	36.2	8.5	2

- 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, burr less performance will not be achieved.

Recommended Drill dia.

Unit:mm

Thread size	SG Spiral Taps Burrless		JIS 6H	
	Recommended drill dia.	Target value of finished internal thread inner dia.	Minimum internal thread inner dia.	Maximum internal thread inner 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

Square portion size of shank

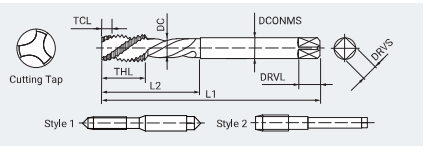
Unit:mm

Shank dia.	Square Portion of shank	
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

FAX Tool Materials | SG Coating | 21° Helix Angle | Through Hole Only

SGSPBLL
SG SPIRAL TAPS BURRLESS Left Hand Helix

For Through Hole



LIST 7968 Order SGSPBLL Code

Unit:mm

EDP#	Size	Thread Limit	TCL(P)	No. of Flutes	Overall Length	Length of Thread	Under Neck Length	Shank Dia.	Style
Code	Thread Size		TCL(P)	NOF	L1	THL	L2	DCONMS	
0799793	M3×0.5	P3	5P	3F	46	11.0	18.0	4.0	1
0799809	M4×0.7	P3	5P	3F	52	13.0	21.0	5.0	1
0799815	M5×0.8	P3	5P	3F	60	16.0	25.0	5.5	1
0799821	M6×1	P3	5P	3F	62	19.0	30.0	6.0	1
0799838	M6×0.75	P3	5P	3F	62	19.0	30.0	6.0	1
0799844	M8×1.25	P3	5P	3F	70	22.0	-	6.2	2
0799850	M8×1	P3	5P	3F	70	22.0	-	6.2	2
0799867	M10×1.5	P4	5P	3F	75	24.0	-	7.0	2
0799873	M10×1.25	P3	5P	3F	75	24.0	-	7.0	2
0799880	M10×1	P3	5P	3F	75	24.0	-	7.0	2
0799896	M12×1.75	P4	5P	3F	82	29.0	-	8.5	2
0799901	M12×1.5	P4	5P	3F	82	29.0	-	8.5	2
0799918	M12×1.25	P4	5P	3F	82	29.0	-	8.5	2

- 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, burr less performance will not be achieved.

Recommended Cutting Speed & Cutting fluids

SGSPBL SG Spiral Taps Burrless
SGSPBLL SG Spiral Taps Burrless Left Hand Helix

Work Material	Recommended Cutting Speed (SFM)								
	Structual 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	

Attention on using the cutting condition tables

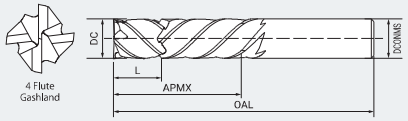
1) These are general Cutting condition, and may be altered by your conditions.
2) These conditions are for thread depth of 2×DC.
3) Recommend non water soluble cutting fluid for Stainless Steel.

NEW

Carbide (Tool Material) | REVO M (Coating) | 45°/47° ← 45°/47° (Twist Angle) | G (Gash Land) | h6 (Shank Diameter) | 6-20 (Diameter Range)

RVMBL4G-2.5D
AQUA REVO MILLS BURRLESS

Gashland: 4 Flutes | 2.5D G type



LIST 9722J Order Code

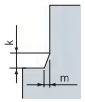
Unit : mm

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

Guideline of remaining corner of G type (Gashland)

Unit : mm

DC	k	m
6	0.2	0.03
10	0.3	0.04
20	0.4	0.05



DC Tolerance

Unit : mm

DC		Tolerance
Above	Up to	
	12	0~-0.02
12		0~-0.03

Standard Cutting Conditions

RVMBL4G-2.5D AquaREVO Mills BurrLess Four Flutes 2.5D G type

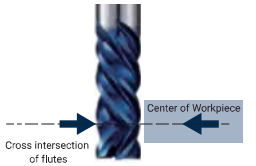
- Not recommended for slotting or plunge milling
- If burrs generated from roughing are not removed, increase the finishing depth slightly

	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	
Side Milling Roughing	Dia. of Mill (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	6370	0.0023	5300	0.0020	4240	0.0015	4000	0.0013	4000	0.0002	4240	0.0008	3180	0.0007	5300	0.0024
	8	4800	0.0031	3980	0.0027	3180	0.0020	2980	0.0018	2980	0.0002	3180	0.0011	2390	0.0010	3980	0.0032
	10	3820	0.0031	3180	0.0030	2550	0.0025	2390	0.0019	2390	0.0002	2550	0.0014	1910	0.0012	3180	0.0040
	12	3180	0.0035	2650	0.0031	2120	0.0026	1990	0.0019	1990	0.0002	2120	0.0016	1320	0.0013	2650	0.0048
	16	1790	0.0044	1790	0.0033	1190	0.0033	1390	0.0025	1390	0.0003	1590	0.0019	800	0.0015	1980	0.0065
	20	1430	0.0041	1430	0.0032	960	0.0033	1110	0.0025	1110	0.0003	1110	0.0020	630	0.0017	1590	0.0080
	Depth of Cut ap	2.5DC															
	Depth of Cut ae	0.2DC (MAX 1.0mm)						Up to φ16 0.03DC Over φ16 0.01DC		0.01DC		0.2DC (MAX 1.0mm)		0.02DC		0.1DC	
	Cutting Speed (SFM)	290 - 400		290 - 330		195 - 265		225 - 250		225 - 250		225 - 265		125 - 200		325 - 335	
Side Milling Finishing	Dia. of Mill (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	6370	0.0016	5300	0.0014	4240	0.0012	4000	0.0012	4000	0.0002	4240	0.0006	3180	0.0005	5300	0.0017
	8	4800	0.0022	3980	0.0019	3180	0.0016	2980	0.0016	2980	0.0002	3180	0.0008	2390	0.0006	3980	0.0023
	10	3820	0.0022	3180	0.0021	2550	0.0020	2390	0.0017	2390	0.0002	2550	0.0010	1910	0.0008	3180	0.0028
	12	3180	0.0025	2650	0.0022	2120	0.0021	1990	0.0017	1990	0.0002	2120	0.0012	1320	0.0008	2650	0.0034
	16	1790	0.0031	1790	0.0023	1190	0.0026	1390	0.0023	1390	0.0003	1590	0.0013	800	0.0010	1980	0.0045
	20	1430	0.0029	1430	0.0023	960	0.0027	1110	0.0023	1110	0.0003	1110	0.0014	630	0.0011	1590	0.0056
	Depth of Cut ap	2.5DC															
	Depth of Cut ae	0.005DC(MAX 0.05mm)															

Attention on using the cutting condition tables

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.

Cutting depth ap parameter table

	Pattern 1	Pattern 2	Pattern 3
Side cutting pattern			

Diameter(mm)	Range of ap(mm)			End Mill Protusion Length(mm)	Range of ap(mm)			Range of ap(mm)		
	min	~	max		min	~	max	min	~	max
6	4.8	~	15.0	0.5	4.3	~	14.5	2.0	~	8.0
8	6.4	~	20.0		5.9	~	19.5	2.0	~	11.0
10	8.0	~	25.0	1	7.0	~	24.0	2.0	~	13.0
12	9.6	~	30.0		8.6	~	29.0	2.0	~	16.0
16	12.8	~	40.0		11.8	~	39.0	3.0	~	22.0
20	16.0	~	50.0		15.0	~	49.0	3.0	~	28.0

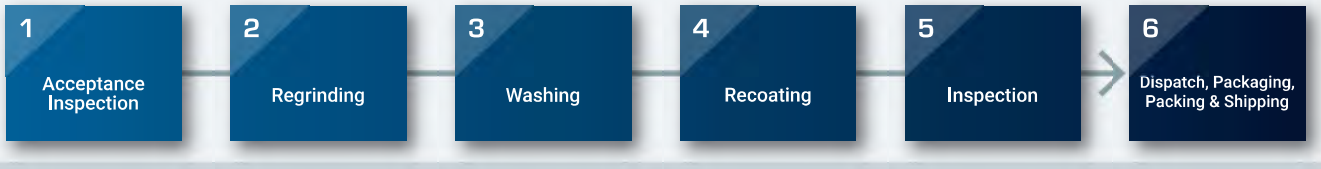
Regrinding & Recoating of Burrless Series

Nachi utilizes the know-how and equipment unique to tool manufacturing to recondition the Aqua REVO Burrless drill and end mill series back to brand new.

- Regrinds are held to the same specification as the new tool to restore the same burr-free performance.
- Recoated with the same specifications and inspection standards as the new tool to provide the same tool life.
- Each tool is etched with a specific serial number that allows us to track the reconditioning history of each tool.

Regrinding / Recoating Process

● This is an example of a general-purpose drill.



To order regrinding or recoating, please contact the distributor the tool was purchased from.

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