NEW

NACHI

BurrLess Series

AquaREVO Drills BurrLess
SG Spiral Taps BurrLess
AquaREVO Mills BurrLess

Better to have no burrs from the beginning

NEW

PRODUCT INFO

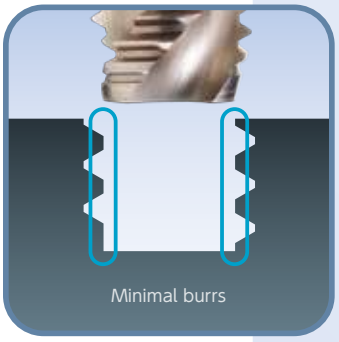
BurrLess Series

- **Analyse the burr generation mechanism to minimize the burr**
- **Fusing the AquaREVO ans SG technology consiste burr-free, high efficient and long tool life**
- **Lineup the drills, taps and end mills to reduce the whole deburring process at once**

Burrless series restrain and minimize the burr
Please adopt the tool after evaluation of performance

AquaREVO Drills Burrless

Reducing the burr at the exit of holes, and conical chips



SG Spiral Taps Burrless

Zero burrs at the internal diameter of internal thread

AquaREVO Mills Burrless

Suppresing the burrs at the upper side surface of side machining

Don't you think it's common sense to get burrs in machining?

Better to have no burrs from the beginning

Wasting time and cost on deburring and inspection process

Not easy deburring process, when shape of work piece complicated

Unstable quality when manual deburring

Processing examples of Burrless Series

Multipurpose Drill	AquaREVO Drills Burrless
	

Size: φ10

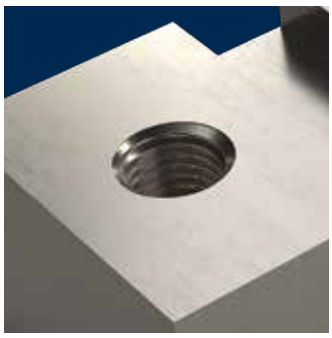
Work Material: S50C

Cutting Speed: 87.5m/min

Feed Speed: 1110mm/min

Cutting Fluid: Water-soluble

● The photo shows the exit of the hole



Multipurpose Tap	SG Spiral Taps Burrless
	

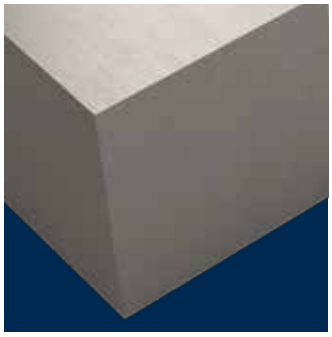
Size: M12x1.75

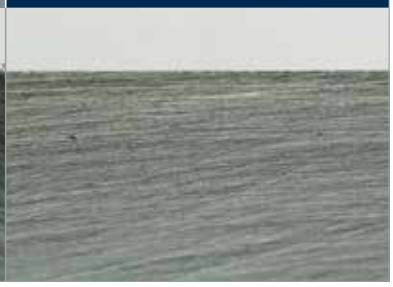
Work Material: S50C

Cutting Speed: 30m/min

Diameter of prepared hole: φ10.2

Cutting Fluid: Water-soluble



Multipurpose End Mill	AquaREVO Mills Burrless
	

Size: φ10

Work Material: SUS304

Cutting Speed: 80m/min

Feed Speed: 250m/min

Depth of Cut, Down cut: ap20mm ae0.05mm

Cutting Fluid: Water-soluble

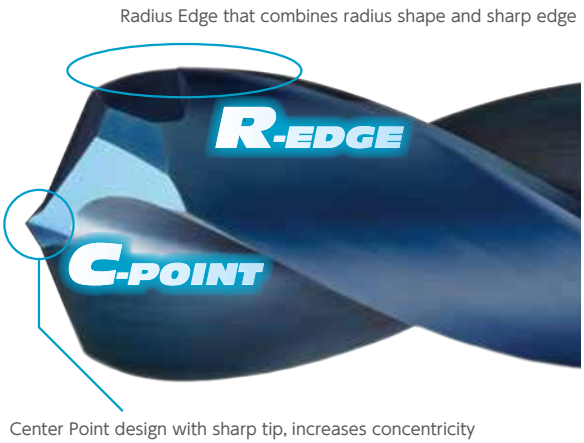
NEW

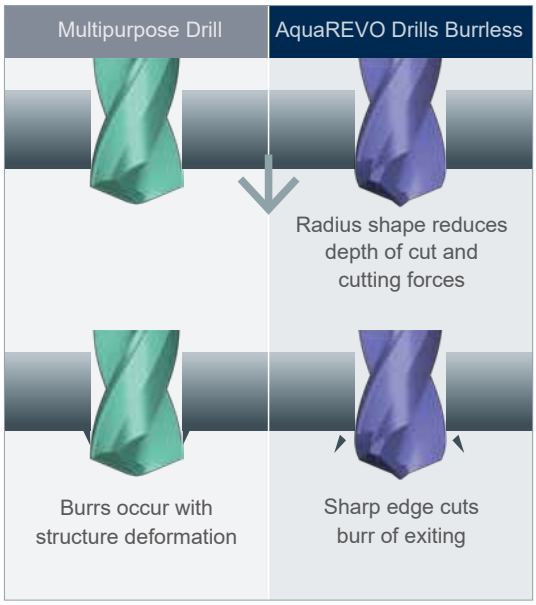
PRODUCT INFO

AquaREVO Drills BurrLess

Minimizing the burr, no JINGASA left PAT.P

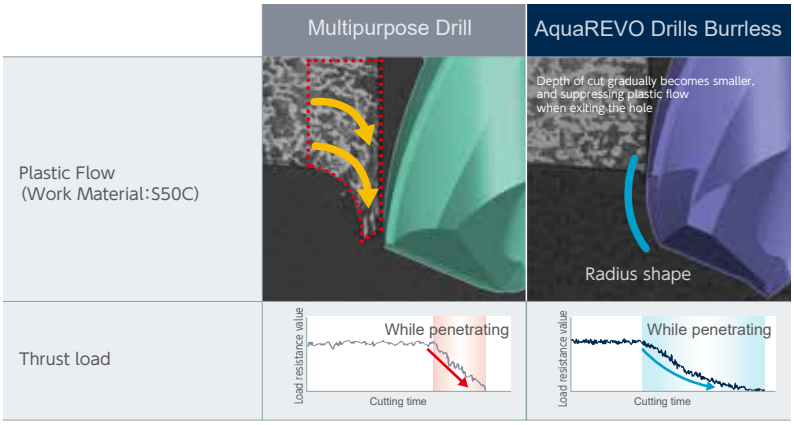
Realized burrless hole by Combination of Burrless R-edge and C-point

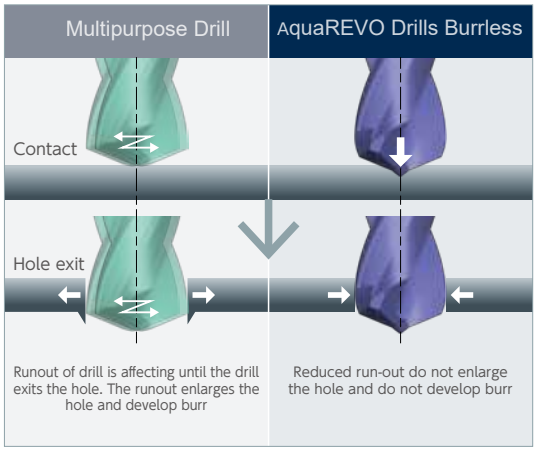




R-EDGE

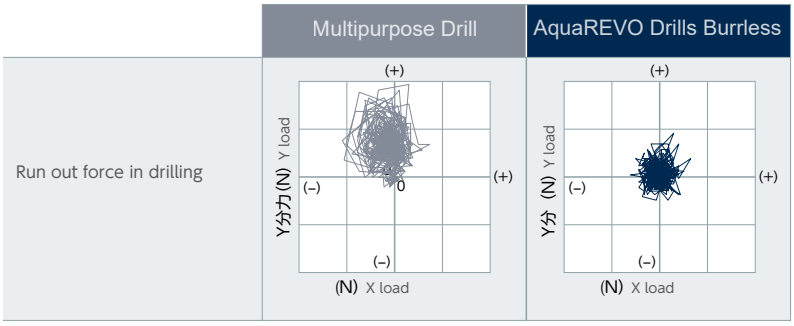
- Reduced thrust force at exit of hole reducing the structure deformation
- Sharp edge cuts without leaving burr





C-POINT

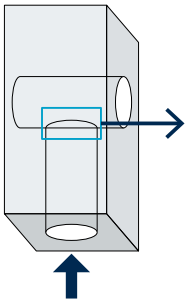
- Reducing the hole expansion and uncutten burr from run out of the drills



Burrless Performance

- Excellent burrless performance on not only for flat surface burr, but also on the cross hole which is difficult to deburring
- No need of next deburring process with no JINGASA left

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

ϕ6 Diameter	87.5m/min Cutting Speed	12mm Depth of Hole
S50C Work Material	0.24mm/rev Feed Rate	Cutting Fluid: Water-soluble

JINGASA left

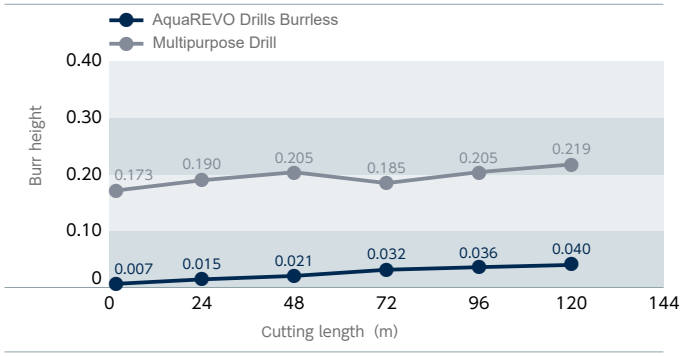
Multipurpose Drill	AquaREVO Drills Burrless
	
JINGASA left：５０～７５％	JINGASA left：０％

ϕ6 Diameter	87.5m/min Cutting Speed	13mm Depth of Hole
S50C Work Material	0.24mm/rev Feed Rate	Cutting Fluid: Water-soluble

Almost same tool life as multi-purpose Drill

- Reducing the burr even near of the end of tool life
- Realizes almost same tool life as multi-purpose drill even burrless

Cutting length and Burr height



Tool wear after 120m cutting length

Multipurpose Drill	AquaREVO Drills Burrless
	

ϕ6 Diameter	S50C Work Material	87.5m/min Cutting Speed	0.24mm/rev Feed Rate	24mm Depth of Hole	Cutting Fluid: Water-soluble	M/C (BT40) Machine: Vertical M/C

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								
	SS400	S10C	S45C S50C	SCM SCr	30～40 HRC	40～65 HRC	SUS304 SUS420	Ti-6Al-4V	FC FCD	AC ADC	Cu
AQRVDBL4D	◎	◎	◎	◎	○	–	–	–	○	–	–

◎:Excellent ○: Good –: Not recommended

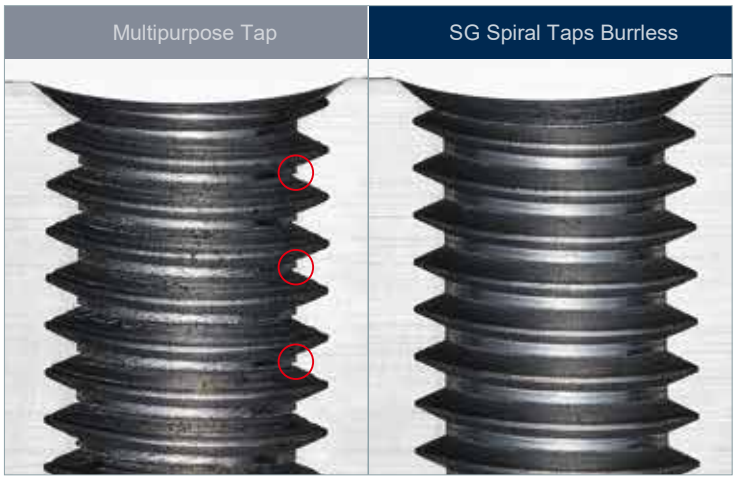
NEW

PRODUCT INFO

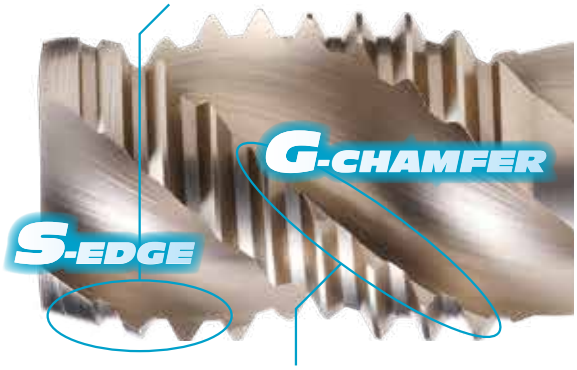
SG Spiral Taps BurrLess

Zero burr with cutting the internal diameter area on internal thread PAT.P

Zero burr leads completly smooth Go-plug gage check. And also internal diameter reach perfectly on required thread standard area



Shaving Edge with large minor diameter



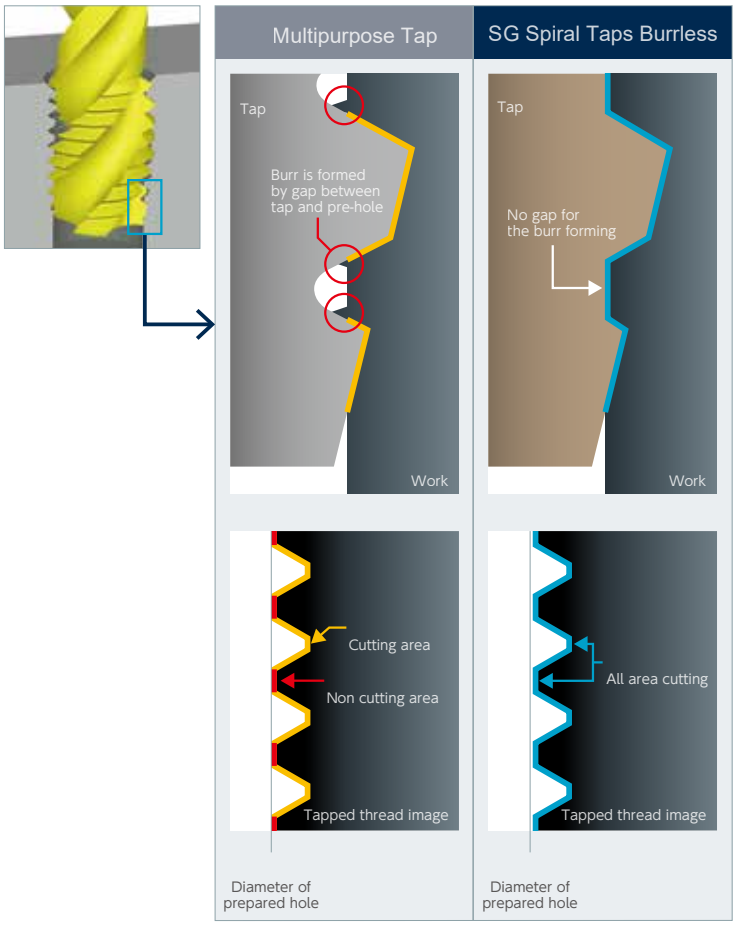
Guide Chamfer with chamfered full thread part

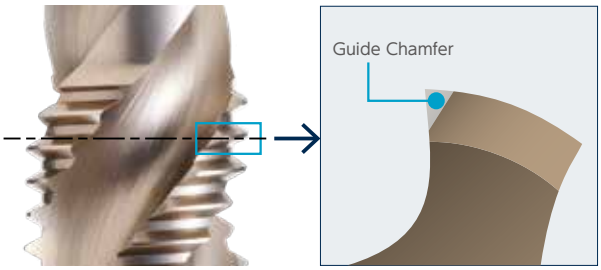
Shaving Edge

■ No gap between thread root area of tap and pre-hole design acheves Zero burr!

Guide Chamfer

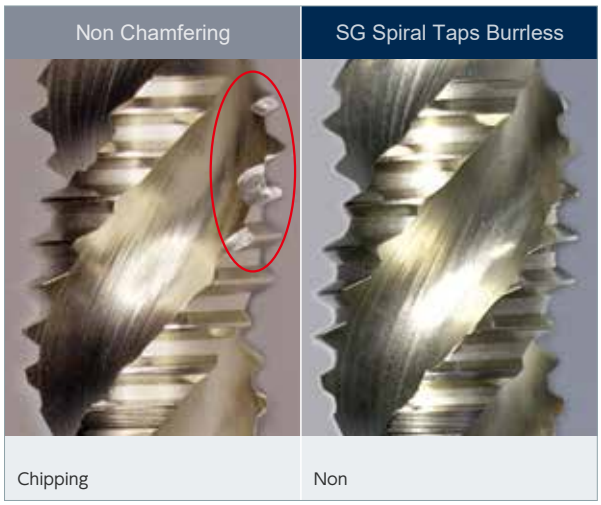
■ Chamfered rake face reduce the chipping of cutting edge by chip biting





Chamfering the acute angles on the thread edge to prevent chipping

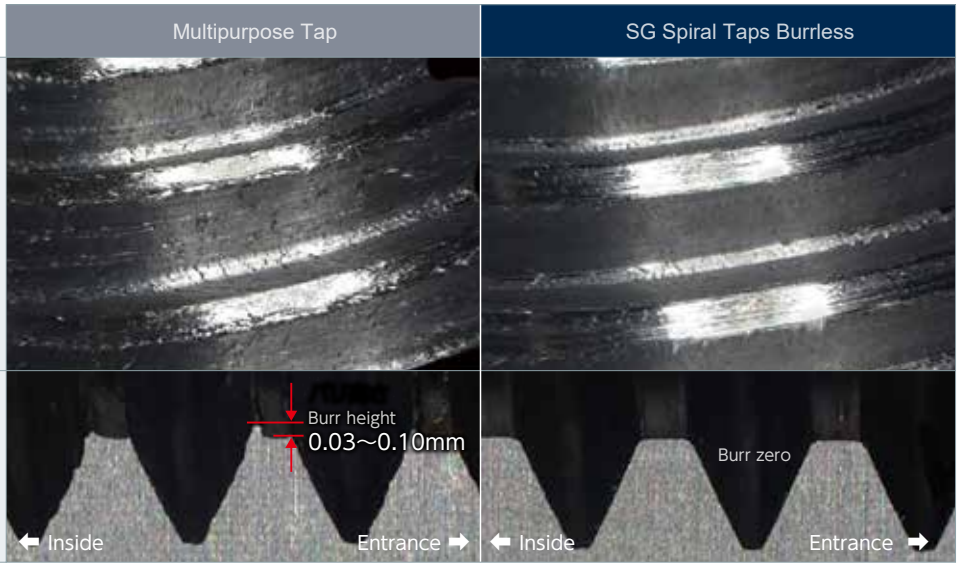
Chipping after constant cutting



Burrless Performance

■ Realized Burr zero on internal diameter of internal thread

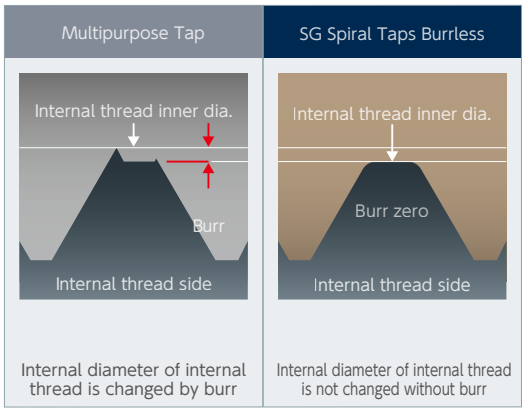
M6×1
Size
S50C
Work Material
30m/min
Cutting Speed
ϕ5.0
Diameter of prepared hole
2D
Effective thread length
Cutting Fluid: Water-soluble
M/C (BT30)
Machine: Vertical M/C



Long tool life as same as multipurpose Taps

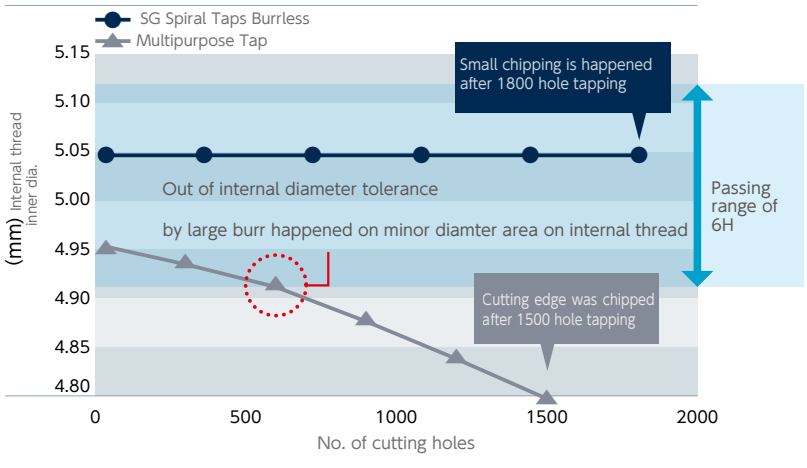
■ Stable internal diameter accuracy lead Burr zero performance, even near to the end of tool life

■ Reduces chipping and achieves same tool life equivalent to multipurpose taps



M6×1
Size
S50C
Work Material
30m/min
Cutting Speed
2D
Effective thread length
ϕ5.0
Diameter of prepared hole
Cutting Fluid: Water-soluble

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								
	SS400	S15C	S40C	S50C	SCM SCr	30~40 HRC	SUS	Ti-6Al-4V	FC	FCD	AC ADC	Cu
SGSPBL	○	○	◎	◎	○	-	○	-	-	○	○	○
SGSPBLL	○	○	◎	◎	○	-	○	-	-	○	○	○

● Please see page is 12.

◎:Excellent ○: Good −: Not recommended

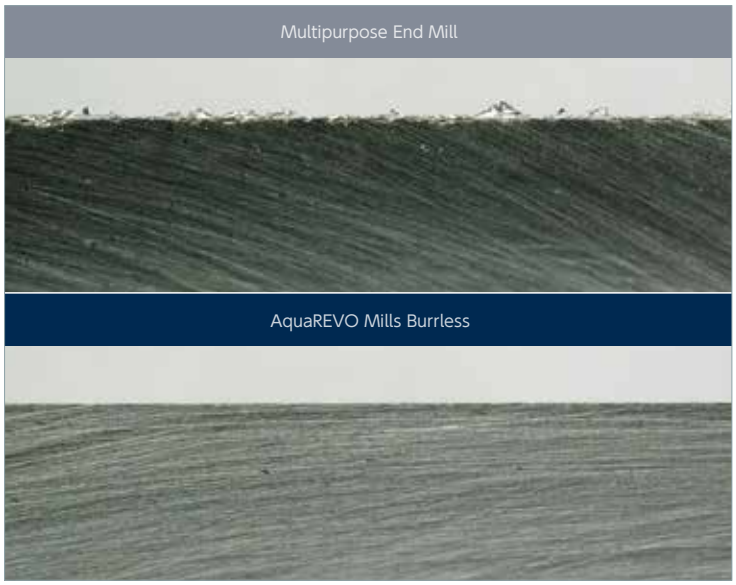
NEW

PRODUCT INFO

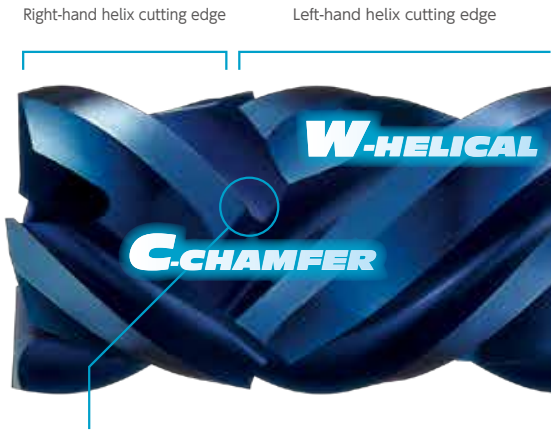
AquaREVO Mills BurrLess

Suppression of top-side burrs by overwhelmingly using side-surface machining! PAT.P

Double helical design knock-out the burr on no choice of work material



Double Helical shape reduces burrs on the top/bottom surface and reduces incrining during cutting



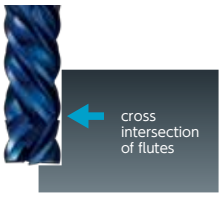
Connecting Chamfer reduces steps at the cross intersection of flutes

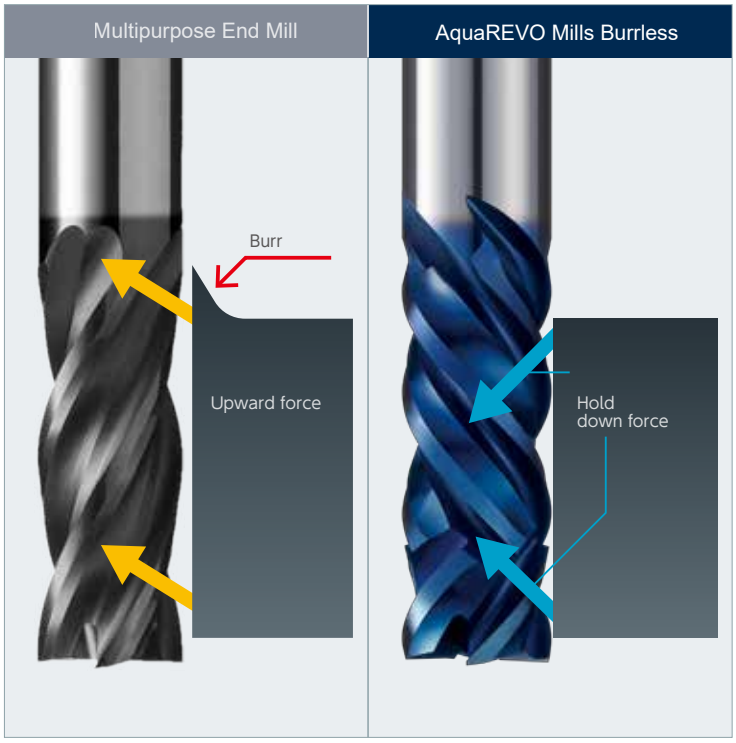
Double Helical

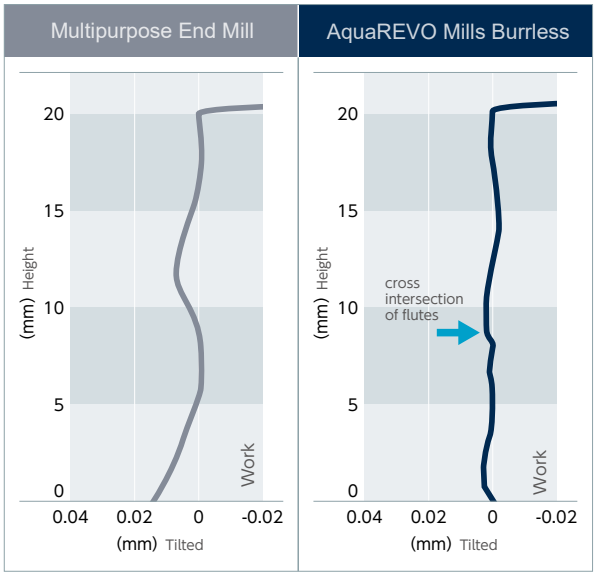
- The left helical cutting edge reduce the burrs on the upper surface of the workpiece
- The incliness is lower than conventional product

Connecting Chamfer

- Reducing the steps at the cross intersection of flutes





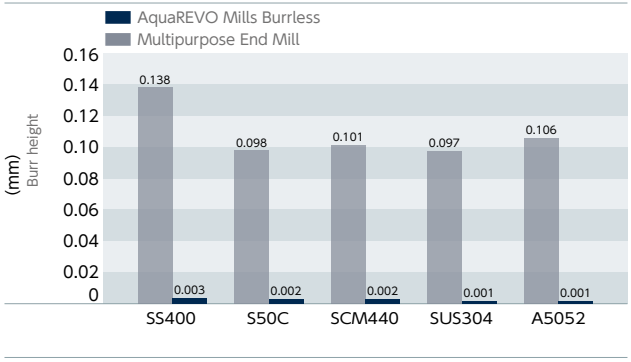


ϕ10 Diameter	80m/min Cutting Speed	M/C Machine: Vertical M/C
SUS304 Work Material	350mm/min Feed Speed	Cutting Fluid: Water-soluble
Cutting method: Side milling	ap20mm ae0.3mm Depth of Cut	

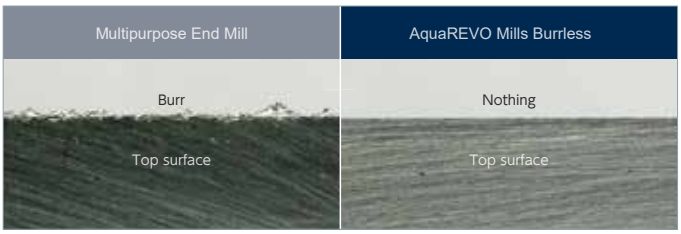
Burrless Performance

- Realizing the Burr less on top surface of workpiece at side milling
- Applicable to wide range work material, even it is stainless steel or aluminum materials

Burr height by work material



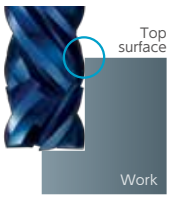
Burr height on top surface



ϕ10 Diameter	ap20mm、ae0.05mm Cutting method: Side milling	250mm/min Feed Speed
SUS304 Work Material	80m/min Cutting Speed	Cutting Fluid: Water-soluble

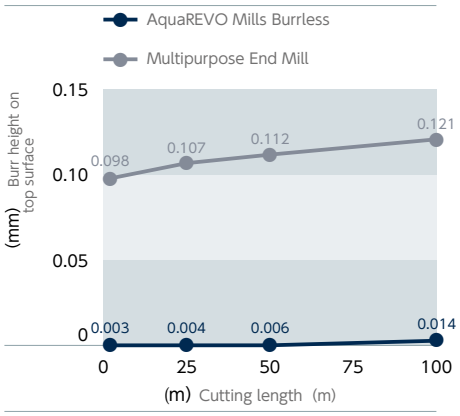
Work Material	(mm) Diameter	(m/min) Cutting Speed	(mm/min) Feed Speed	(mm) Depth of Cut	Cutting Method	Cutting Fluid
SS400	ϕ10	120	840	ap20 (2.0DC) ae0.05 (0.005DC)	Side milling Down cut	Water-soluble
S50C						
SCM440		100	680			
SUS304		80	250			
A5052		100	910			

Long tool life equivalent to general-purpose End Mills

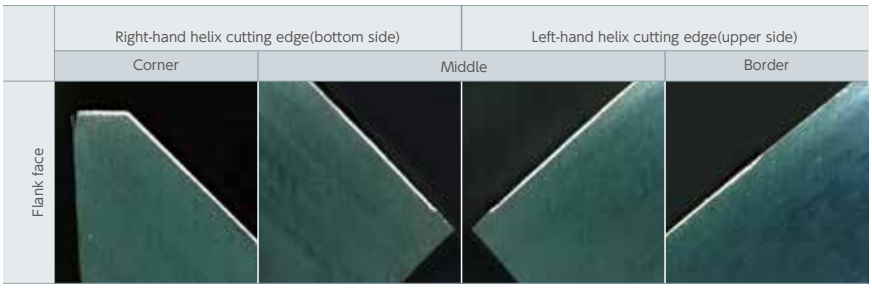


- Keep burr zero performance on top surface after achieving long cutting length
- Long tool life equivalent to multipurpose End Mill

Cutting length and burr height



Tool wear after 100m cutting length



ϕ10 Diameter	120m/min Cutting Speed	840mm/min Feed Rate	Cutting Fluid: Water-soluble
S50C Work Material	ap20mm ae0.05mm Depth of Cut	Cutting method : Side milling, Down cut	M/C (HSK63) Machine: Vertical M/C

■ Specialized for side finish milling. Not recommended for grooving and drilling

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
	SS400	S45C S50C	SCM SCr	30~40 HRC	40~55 HRC	55~60 HRC	60~66 HRC	SUS304 SUS316	Ti-6Al-4V	FC FCD	AC ADC	Cu
RVMBL4G-2.5D	◎	◎	◎	◎	◎	○	–	◎	○	◎	○	○

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

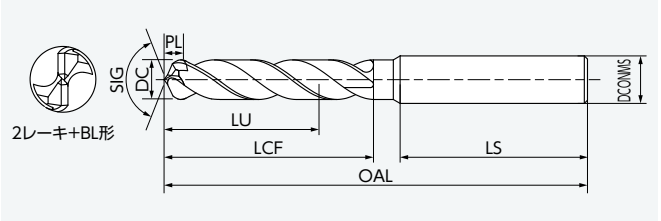
◎: Excellent ○: Good –: Not recommended

NEW

超硬 REVO D h7 135° 30° h6 4DC 2.0-16.0

AQRVDBL4D

AquaREVO Drills Burrless 4D



LIST 9896 Order Code

(Unit) : mm

Code	DC	LU	LCF	LS	OAL	DCONMS	PL	Stock
AQRVDBL4D0200	2.0	12.0	15	32.1	49	3	0.9	●
AQRVDBL4D0210	2.1	14.9	18	29.2	49	3	0.9	●
AQRVDBL4D0220	2.2	14.7	18	29.3	49	3	1.0	●
AQRVDBL4D0230	2.3	14.6	18	29.4	49	3	1.0	●
AQRVDBL4D0240	2.4	14.4	18	29.5	49	3	1.1	●
AQRVDBL4D0250	2.5	14.3	18	29.6	49	3	1.1	●
AQRVDBL4D0260	2.6	16.1	20	27.7	49	3	1.2	●
AQRVDBL4D0270	2.7	16.0	20	27.7	49	3	1.2	●
AQRVDBL4D0280	2.8	15.8	20	27.8	49	3	1.3	●
AQRVDBL4D0290	2.9	15.7	20	27.9	49	3	1.3	●
AQRVDBL4D0300	3.0	15.5	20	28.0	49	3	1.4	●
AQRVDBL4D0310	3.1	20.4	25	33.2	60	4	1.4	●
AQRVDBL4D0320	3.2	20.2	25	33.3	60	4	1.4	●
AQRVDBL4D0330	3.3	20.1	25	33.4	60	4	1.5	●
AQRVDBL4D0340	3.4	19.9	25	33.5	60	4	1.5	●
AQRVDBL4D0350	3.5	19.8	25	33.6	60	4	1.6	●
AQRVDBL4D0360	3.6	22.6	28	30.7	60	4	1.6	●
AQRVDBL4D0370	3.7	22.5	28	30.7	60	4	1.7	●
AQRVDBL4D0380	3.8	22.3	28	30.8	60	4	1.7	●
AQRVDBL4D0390	3.9	22.2	28	30.9	60	4	1.8	●
AQRVDBL4D0400	4.0	22.0	28	31.0	60	4	1.8	●
AQRVDBL4D0410	4.1	25.9	32	43.2	77	5	1.8	●
AQRVDBL4D0420	4.2	25.7	32	43.3	77	5	1.9	●
AQRVDBL4D0430	4.3	25.6	32	43.4	77	5	1.9	●
AQRVDBL4D0440	4.4	25.4	32	43.5	77	5	2.0	●
AQRVDBL4D0450	4.5	25.3	32	43.6	77	5	2.0	●
AQRVDBL4D0460	4.6	32.1	39	36.7	77	5	2.1	●
AQRVDBL4D0470	4.7	32.0	39	36.7	77	5	2.1	●
AQRVDBL4D0480	4.8	31.8	39	36.8	77	5	2.2	●
AQRVDBL4D0490	4.9	31.7	39	36.9	77	5	2.2	●
AQRVDBL4D0500	5.0	31.5	39	37.0	77	5	2.3	●
AQRVDBL4D0510	5.1	32.4	40	40.2	82	6	2.3	●
AQRVDBL4D0520	5.2	32.2	40	40.3	82	6	2.3	●
AQRVDBL4D0530	5.3	32.1	40	40.4	82	6	2.4	●
AQRVDBL4D0540	5.4	31.9	40	40.5	82	6	2.4	●
AQRVDBL4D0550	5.5	31.8	40	40.6	82	6	2.5	●
AQRVDBL4D0560	5.6	33.6	42	38.7	82	6	2.5	●
AQRVDBL4D0570	5.7	33.5	42	38.7	82	6	2.6	●
AQRVDBL4D0580	5.8	33.3	42	38.8	82	6	2.6	●
AQRVDBL4D0590	5.9	33.2	42	38.9	82	6	2.7	●
AQRVDBL4D0600	6.0	33.0	42	39.0	82	6	2.7	●
AQRVDBL4D0610	6.1	33.9	43	39.2	84	7	2.7	●
AQRVDBL4D0620	6.2	33.7	43	39.3	84	7	2.8	●
AQRVDBL4D0630	6.3	33.6	43	39.4	84	7	2.8	●
AQRVDBL4D0640	6.4	33.4	43	39.5	84	7	2.9	●
AQRVDBL4D0650	6.5	33.3	43	39.6	84	7	2.9	●
AQRVDBL4D0660	6.6	34.1	44	38.7	84	7	3.0	●
AQRVDBL4D0670	6.7	34.0	44	38.7	84	7	3.0	●
AQRVDBL4D0680	6.8	33.8	44	38.8	84	7	3.1	●
AQRVDBL4D0690	6.9	33.7	44	38.9	84	7	3.1	●
AQRVDBL4D0700	7.0	33.5	44	39.0	84	7	3.2	●
AQRVDBL4D0710	7.1	35.4	46	43.2	91	8	3.2	●
AQRVDBL4D0720	7.2	35.2	46	43.3	91	8	3.2	●
AQRVDBL4D0730	7.3	35.1	46	43.4	91	8	3.3	●
AQRVDBL4D0740	7.4	34.9	46	43.5	91	8	3.3	●

Code	DC	LU	LCF	LS	OAL	DCONMS	PL	Stock
AQRVDBL4D0750	7.5	34.8	46	43.6	91	8	3.4	●
AQRVDBL4D0760	7.6	35.6	47	42.7	91	8	3.4	●
AQRVDBL4D0770	7.7	35.5	47	42.7	91	8	3.5	●
AQRVDBL4D0780	7.8	35.3	47	42.8	91	8	3.5	●
AQRVDBL4D0790	7.9	35.2	47	42.9	91	8	3.6	●
AQRVDBL4D0800	8.0	35.0	47	43.0	91	8	3.6	●
AQRVDBL4D0810	8.1	42.9	55	42.2	99	9	3.6	●
AQRVDBL4D0820	8.2	42.7	55	42.3	99	9	3.7	●
AQRVDBL4D0830	8.3	42.6	55	42.4	99	9	3.7	●
AQRVDBL4D0840	8.4	42.4	55	42.5	99	9	3.8	●
AQRVDBL4D0850	8.5	42.3	55	42.6	99	9	3.8	●
AQRVDBL4D0860	8.6	44.1	57	40.7	99	9	3.9	●
AQRVDBL4D0870	8.7	44.0	57	40.7	99	9	3.9	●
AQRVDBL4D0880	8.8	43.8	57	40.8	99	9	4.0	●
AQRVDBL4D0890	8.9	43.7	57	40.9	99	9	4.0	●
AQRVDBL4D0900	9.0	43.5	57	41.0	99	9	4.1	●
AQRVDBL4D0910	9.1	46.4	60	45.2	107	10	4.1	●
AQRVDBL4D0920	9.2	46.2	60	45.3	107	10	4.1	●
AQRVDBL4D0930	9.3	46.1	60	45.4	107	10	4.2	●
AQRVDBL4D0940	9.4	45.9	60	45.5	107	10	4.2	●
AQRVDBL4D0950	9.5	45.8	60	45.6	107	10	4.3	●
AQRVDBL4D0960	9.6	47.6	62	43.7	107	10	4.3	●
AQRVDBL4D0970	9.7	47.5	62	43.7	107	10	4.4	●
AQRVDBL4D0980	9.8	47.3	62	43.8	107	10	4.4	●
AQRVDBL4D0990	9.9	47.2	62	43.9	107	10	4.5	●
AQRVDBL4D1000	10.0	47.0	62	44.0	107	10	4.5	●
AQRVDBL4D1010	10.1	52.9	68	46.2	116	11	4.5	●
AQRVDBL4D1020	10.2	52.7	68	46.3	116	11	4.6	●
AQRVDBL4D1030	10.3	52.6	68	46.4	116	11	4.6	●
AQRVDBL4D1040	10.4	52.4	68	46.5	116	11	4.7	●
AQRVDBL4D1050	10.5	52.3	68	46.6	116	11	4.7	●
AQRVDBL4D1060	10.6	54.1	70	44.7	116	11	4.8	●
AQRVDBL4D1070	10.7	54.0	70	44.7	116	11	4.8	●
AQRVDBL4D1080	10.8	53.8	70	44.8	116	11	4.9	●
AQRVDBL4D1090	10.9	53.7	70	44.9	116	11	4.9	●
AQRVDBL4D1100	11.0	53.5	70	45.0	116	11	5.0	●
AQRVDBL4D1110	11.1	56.4	73	48.2	123	12	5.0	●
AQRVDBL4D1120	11.2	56.2	73	48.3	123	12	5.0	●
AQRVDBL4D1130	11.3	56.1	73	48.4	123	12	5.1	●
AQRVDBL4D1140	11.4	55.9	73	48.5	123	12	5.1	●
AQRVDBL4D1150	11.5	55.8	73	48.6	123	12	5.2	●
AQRVDBL4D1160	11.6	58.6	76	45.7	123	12	5.2	●
AQRVDBL4D1170	11.7	58.5	76	45.7	123	12	5.3	●
AQRVDBL4D1180	11.8	58.3	76	45.8	123	12	5.3	●
AQRVDBL4D1190	11.9	58.2	76	45.9	123	12	5.4	●
AQRVDBL4D1200	12.0	58.0	76	46.0	123	12	5.4	●
AQRVDBL4D1210	12.1	60.9	79	57.2	138	13	5.4	●
AQRVDBL4D1220	12.2	60.7	79	57.3	138	13	5.5	●
AQRVDBL4D1230	12.3	60.6	79	57.4	138	13	5.5	●
AQRVDBL4D1240	12.4	60.4	79	57.5	138	13	5.6	●
AQRVDBL4D1250	12.5	60.3	79	57.6	138	13	5.6	●
AQRVDBL4D1260	12.6	62.1	81	55.7	138	13	5.7	●
AQRVDBL4D1270	12.7	62.0	81	55.7	138	13	5.7	●
AQRVDBL4D1280	12.8	61.8	81	55.8	138	13	5.8	●
AQRVDBL4D1290	12.9	61.7	81	55.9	138	13	5.8	●

(Unit) : mm

Code	DC	LU	LCF	LS	OAL	DCONMS	PL	Stock
AQRVDBL4D1300	13.0	61.5	81	56.0	138	13	5.9	●
AQRVDBL4D1310	13.1	67.4	87	59.2	148	14	5.9	●
AQRVDBL4D1320	13.2	67.2	87	59.3	148	14	5.9	●
AQRVDBL4D1330	13.3	67.1	87	59.4	148	14	6.0	●
AQRVDBL4D1340	13.4	66.9	87	59.5	148	14	6.0	●
AQRVDBL4D1350	13.5	66.8	87	59.6	148	14	6.1	●
AQRVDBL4D1360	13.6	69.6	90	56.7	148	14	6.1	●
AQRVDBL4D1370	13.7	69.5	90	56.7	148	14	6.2	●
AQRVDBL4D1380	13.8	69.3	90	56.8	148	14	6.2	●
AQRVDBL4D1390	13.9	69.2	90	56.9	148	14	6.3	●
AQRVDBL4D1400	14.0	69.0	90	57.0	148	14	6.3	●
AQRVDBL4D1410	14.1	70.9	92	60.2	154	15	6.3	●
AQRVDBL4D1420	14.2	70.7	92	60.3	154	15	6.4	●
AQRVDBL4D1430	14.3	70.6	92	60.4	154	15	6.4	●
AQRVDBL4D1440	14.4	70.4	92	60.5	154	15	6.5	●
AQRVDBL4D1450	14.5	70.3	92	60.6	154	15	6.5	●

Code	DC	LU	LCF	LS	OAL	DCONMS	PL	Stock
AQRVDBL4D1460	14.6	72.1	94	58.7	154	15	6.6	●
AQRVDBL4D1470	14.7	72.0	94	58.7	154	15	6.6	●
AQRVDBL4D1480	14.8	71.8	94	58.8	154	15	6.7	●
AQRVDBL4D1490	14.9	71.7	94	58.9	154	15	6.7	●
AQRVDBL4D1500	15.0	71.5	94	59.0	154	15	6.8	●
AQRVDBL4D1510	15.1	74.4	97	63.2	162	16	6.8	●
AQRVDBL4D1520	15.2	74.2	97	63.3	162	16	6.8	●
AQRVDBL4D1530	15.3	74.1	97	63.4	162	16	6.9	●
AQRVDBL4D1540	15.4	73.9	97	63.5	162	16	6.9	●
AQRVDBL4D1550	15.5	73.8	97	63.6	162	16	7.0	●
AQRVDBL4D1560	15.6	75.6	99	61.7	162	16	7.0	●
AQRVDBL4D1570	15.7	75.5	99	61.7	162	16	7.1	●
AQRVDBL4D1580	15.8	75.3	99	61.8	162	16	7.1	●
AQRVDBL4D1590	15.9	75.2	99	61.9	162	16	7.2	●
AQRVDBL4D1600	16.0	75.0	99	62.0	162	16	7.2	●

Expected to be released on December 21, 2023

Standard Cutting Conditions

AQRVDBL 4D AquaREVO Drills Burrless 4D

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

Work Material	SS400 Structural Steel ~200HB		S50C/FC250 Carbon Steel/Cast Iron		SCM440 Alloy Steel Heat Treated Steel 20~30HRC		SKD61 NAK HPM Mold Steel Pre-Hardened Steel 30~40HRC		FCD400 Ductile Cast Iron	
Drill Dia. (mm)	Rotation (min^{-1})	Feed (mm/min)	Rotation (min^{-1})	Feed (mm/min)	Rotation (min^{-1})	Feed (mm/min)	Rotation (min^{-1})	Feed (mm/min)	Rotation (min^{-1})	Feed (mm/min)
2.0	11100	440	8000	480	8000	480	4800	190	8000	640
3.0	7400	440	5300	480	5300	480	3200	190	5300	640
5.0	4500	450	3200	480	3200	480	1900	190	3200	640
6.0	5300	640	4200	1000	4200	1000	2400	320	4200	1000
8.0	4000	640	3200	1000	3200	1000	1800	320	3200	1000
10.0	2550	510	1900	760	1900	760	1100	240	1900	570
12.0	2100	500	1600	770	1600	770	900	240	1600	580
14.0	1600	450	1100	460	1100	460	700	200	1100	460
16.0	1400	450	1000	320	1000	320	600	190	1000	480

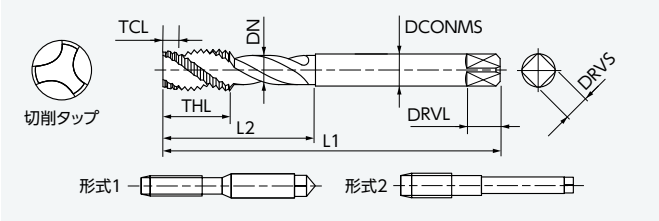
Attention on using the cutting condition tables

1) AQRVDBL is for through hole drilling usage. Drill should exit the hole more than 0.6DC.
2) Burr less is not perform in if the entrance or exit of hole is on an inclined surface. In that case, we recommend a flat drill.
3) In machine or installation of machining step, when there is no rigidity of machine or chattering 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, Light Material, Stainless Steel, Hardened Steel are not recommended.
7) By sparks during cutting, or heat by breakage, or hot chip, there is danger of fire. Take fire prevention measures.
8) A work material and cutting condition to chip removal may be worse. In that case, please step feed.
9) Retraction of the step feed is to be returned to the top of the hole.
10) Step feed is recommended to 0.5~1.0×DC. Small diameter is to 0.2~0.5×DC.
11) 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.

NEW

SGSPBL

SG Spiral Taps Burrless



LIST 7966 Order SGSPBL Code

(Unit) :mm

Code	Thread Size	TAP Limit		TCL(P)	L1	THL	NOF	DCONMS	L2	DN	Type			Stock	
3M0.5R	M3×0.5	REG	P2	2.5P	46	3.5	3	4.0	18.0	2.35	1	2.5	2.55	●	
4M0.7R	M4×0.7	REG	P3	2.5P	52	4.9	3	5.0	20.0	3.15	1	3.3	3.35	●	
5M0.8R	M5×0.8	REG	P3	2.5P	60	5.6	3	5.5	22.0	4.05	1	4.2	4.25	●	
6M1R	M6×1	REG	P3	2.5P	62	7.0	3	6.0	24.0	4.75	1	5.0	5.05	●	
6M0.75R	M6×0.75	REG	P2	2.5P	62	7.0	3	6.0	24.0	5.05	1	5.25	5.30	●	
8M1.25R	M8×1.25	REG	P3	2.5P	70	8.8	3	6.2	29.8	6.55	2	6.8	6.85	●	
8M1R	M8×1	REG	P3	2.5P	70	8.8	3	6.2	29.8	6.75	2	7.0	7.05	●	
10M1.5R	M10×1.5	REG	P3	2.5P	75	10.5	3	7.0	31.4	8.25	2	8.5	8.60	●	
10M1.25R	M10×1.25	REG	P3	2.5P	75	10.5	3	7.0	31.4	8.55	2	8.8	8.85	●	
10M1R	M10×1	REG	P3	2.5P	75	10.5	3	7.0	31.4	8.75	2	9.0	9.05	●	
12M1.75R	M12×1.75	REG	P4	2.5P	82	12.3	3	8.5	36.2	9.95	2	10.2	10.30	●	
12M1.5R	M12×1.5	REG	P3	2.5P	82	12.3	3	8.5	36.2	10.25	2	10.5	10.60	●	
12M1.25R	M12×1.25	REG	P3	2.5P	82	12.3	3	8.5	36.2	10.55	2	10.8	10.85	●	

Expected to be released on December 21, 2023

- 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.

Recommeended drill dia.

(Unit) :mm

Thread size	SG Spiral Taps Burrless		JIS 6H	
	Recommeended 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

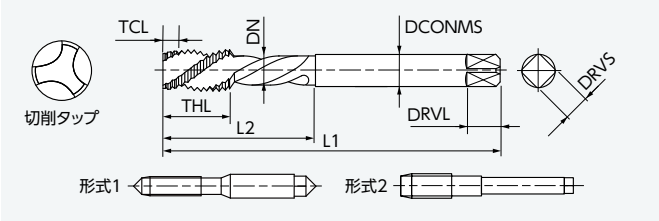
(Unit) :mm

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 SG 左ねじれ 21°

SGSPBLL

SG Spiral Taps Burrless Left Hand Helix



LIST 7968 Order SGSPBLL Code

(Unit) :mm

Code	Thread Size	TAP Limit		TCL(P)	L1	THL	NOF	DCONMS	L2	DN	Type			Stock	
3M0.5R	M3×0.5	REG	P3	5P	46	11.0	3	4.0	18.0	2.3	1	2.5	2.55	●	
4M0.7R	M4×0.7	REG	P3	5P	52	13.0	3	5.0	21.0	3.1	1	3.3	3.35	●	
5M0.8R	M5×0.8	REG	P3	5P	60	16.0	3	5.5	25.0	3.9	1	4.2	4.25	●	
6M1R	M6×1	REG	P3	5P	62	19.0	3	6.0	30.0	4.7	1	5.0	5.05	●	
6M0.75R	M6×0.75	REG	P3	5P	62	19.0	3	6.0	30.0	4.7	1	5.25	5.30	●	
8M1.25R	M8×1.25	REG	P3	5P	70	22.0	3	6.2	-	-	2	6.8	6.85	●	
8M1R	M8×1	REG	P3	5P	70	22.0	3	6.2	-	-	2	7.0	7.05	●	
10M1.5R	M10×1.5	REG	P4	5P	75	24.0	3	7.0	-	-	2	8.5	8.60	●	
10M1.25R	M10×1.25	REG	P3	5P	75	24.0	3	7.0	-	-	2	8.8	8.85	●	
10M1R	M10×1	REG	P3	5P	75	24.0	3	7.0	-	-	2	9.0	9.05	●	
12M1.75R	M12×1.75	REG	P4	5P	82	29.0	3	8.5	-	-	2	10.2	10.30	●	
12M1.5R	M12×1.5	REG	P4	5P	82	29.0	3	8.5	-	-	2	10.5	10.60	●	
12M1.25R	M12×1.25	REG	P4	5P	82	29.0	3	8.5	-	-	2	10.8	10.85	●	

■ 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.

Expected to be released on December 21, 2023

P= Pitch

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.

Recommeended Cutting Speed & Cutting fluids

SGSPBL SG Spiral Taps Burrless

SGSPBLL SG Spiral Taps Burrless Left Hand Helix

(m/min)
Recommended Cutting Speed

	SS Structual Steel	S15C Low Carbon Steel	S40C Medium Carbon Steel	S50C High Carbon Steel	SCM/SCr Alloy Steel		Hardened Steel	SUS Stainless Steel	FC Cast Iron	FCD Ductile Cast Iron	AC/ADC Aluminum Alloy	Ti Titanium Alloy
	~200HB	~200HB	~200HB	~200HB	~200HB	20~30HRC	30~40HRC					
SGSPBL	15~30	15~30	10~50	10~50	15~50	8~15	-	3~7	-	10~30	15~50	-
SGSPBLL	20~50	20~50	15~50	10~50	15~50	10~30	-	5~10	-	15~30	15~50	-
Cutting Fluids	Extreme pressure property 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.

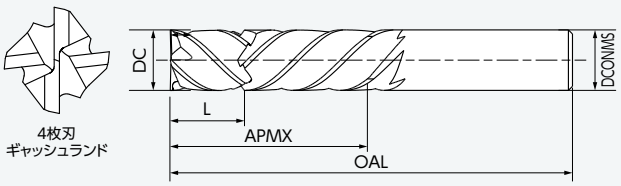
NEW

超硬 REVO M 右45°/47° 左45°/47° G h6 6-20

RVMBL4G-2.5D

AquaREVO Mills BurrLess Four Flutes 2.5D G type

4 2.5D G



LIST 9722 Order Code

(Unit) : mm

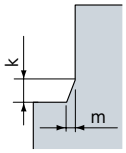
Code	DC	APMX	L	OAL	DCONMS	Stock	
RVMBL4060G-2.5D	6	15	4.5	50	6	●	
RVMBL4080G-2.5D	8	20	6.0	60	8	●	
RVMBL4100G-2.5D	10	25	7.5	70	10	●	
RVMBL4120G-2.5D	12	30	9.0	75	12	●	
RVMBL4160G-2.5D	16	40	12.0	90	16	●	
RVMBL4200G-2.5D	20	50	15.0	100	20	●	

Expected to be released on December 21, 2023

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

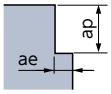
DC		Tolerance
Above	Up to	
	12	0~−0.02
12		0~−0.03

Standard Cutting Conditions

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

- Specialized for side finish milling. Not recommended for grooving and drilling
- If the burrs of roughing cannot be removed, increase the finishing

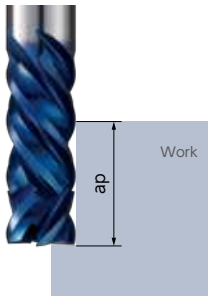
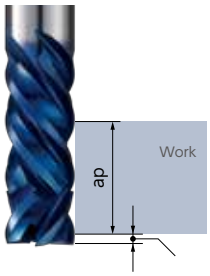
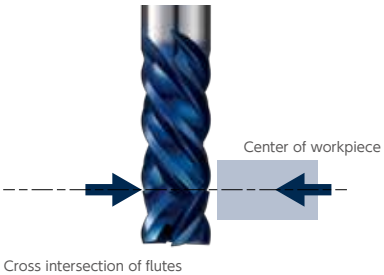
	Work Material		SS/S-C/FC Structural Steel Carbon Steel Cast Iron 150~250HB		SCM Alloy Steel Heat Treated Steel 25~35HRC		NAK/HPM Heat Treated Steel Hardened Steel 35~45HRC		SKD61 Hardened Steel 45~55HRC		SKD11 Hardened Steel 55~60HRC		SUS304/SUS316 Stainless Steel		Ti-6Al-4V Nickel Alloy Titanium Alloy		Aluminum Alloy	
	Dia. of Mill mm		Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)	Rotation (min-1)	Feed (mm/min)
Side Milling Roughing	6		6370	1500	5300	1080	4240	640	4000	530	4000	70	4240	350	3180	240	5300	1300
	8		4800	1500	3980	1080	3180	640	2980	530	2980	70	3180	350	2390	240	3980	1300
	10		3820	1200	3180	960	2550	640	2390	450	2390	60	2550	350	1910	240	3180	1300
	12		3180	1140	2650	840	2120	560	1990	380	1990	50	2120	350	1320	180	2650	1300
	16		1790	800	1790	600	1190	400	1390	350	1390	45	1590	300	800	120	1980	1300
	20		1430	600	1430	460	960	320	1110	280	1110	35	1110	220	630	110	1590	1300
	Depth of Cut	ap	2.5DC															
		ae	0.2DC (MAX 1.0mm)						φ16未満 0.03DC φ16以上 0.01DC		0.01DC		0.2DC (MAX 1.0mm)		0.02DC		0.1DC	
Side Milling Finishing	6		6370	1050	5300	760	4240	520	4000	480	4000	70	4240	250	3180	150	5300	910
	8		4800	1050	3980	760	3180	520	2980	480	2980	70	3180	250	2390	150	3980	910
	10		3820	840	3180	680	2550	520	2390	410	2390	60	2550	250	1910	150	3180	910
	12		3180	800	2650	590	2120	450	1990	350	1990	50	2120	250	1320	110	2650	910
	16		1790	560	1790	420	1190	320	1390	320	1390	45	1590	210	800	80	1980	910
	20		1430	420	1430	330	960	260	1110	260	1110	35	1110	160	630	70	1590	910
	Depth of Cut	ap	2.5DC															
		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			

(mm) Diameter	ap(mm) Range of ap			△(mm) End Mill head through length	ap(mm) Range of ap			ap(mm) Range of ap		
	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

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