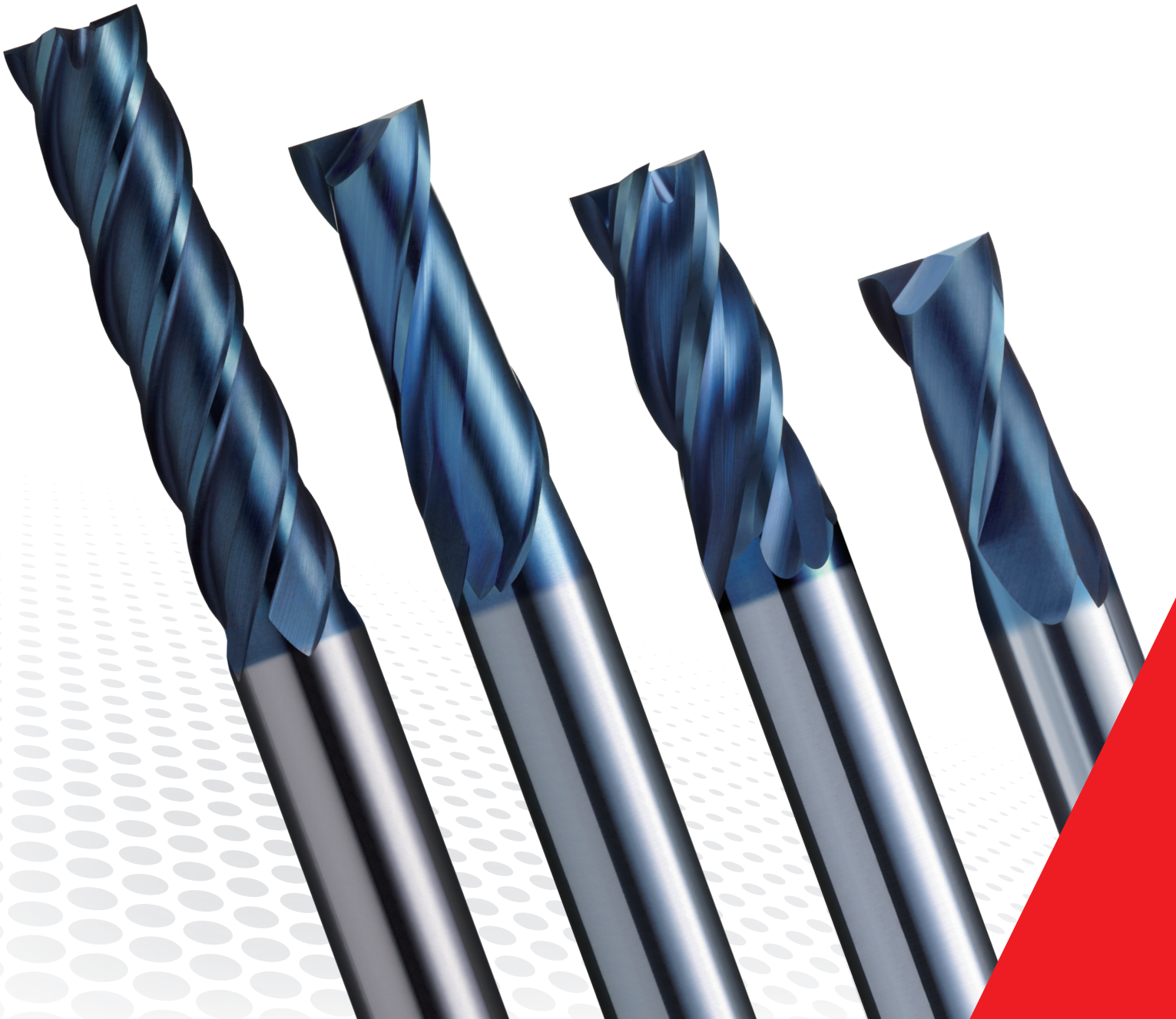
NACHI

AQUA REVO MILL
MICRO SERIES

Carbide 1.5D, 2.5D and 4D Micro End Mills



AQUA REVO MILL
MICRO SERIES

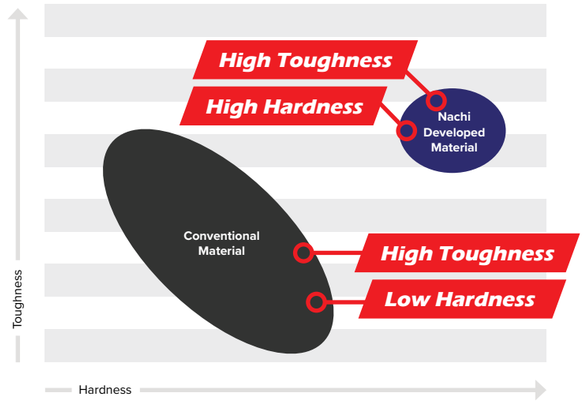
The Aqua REVO Mill Micro series delivers increased performance and durability, even in precision parts that require high detail and part quality

HIGHLIGHTS

- New Carbide Material
- New High-Performance Design
- REVO-M Coating For Increased Heat and Wear Resistance

MATERIAL

- Nachi developed carbide material is optimized for both hardness and toughness
- Improved alloy composition and grain size
- Excellent thermal shock resistance and strong wet processing



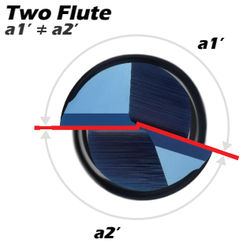
APPLICABLE WORK MATERIAL

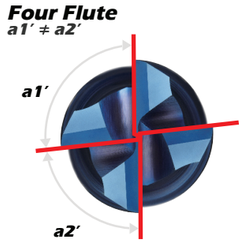
STRUCTURAL STEEL CARBON STEEL	ALLOY STEEL, HEAT TREATED STEEL 25-35 HRC	MOLD STEEL, HARDENED STEEL 35-45 HRC	STAINLESS STEEL	CAST IRON	ALUMINUM ALLOY, COPPER ALLOY	HIGH TEMP ALLOY, TITANIUM ALLOY	HARDENED STEEL 45-65 HRC
●	●	○	●	●	○	○	●

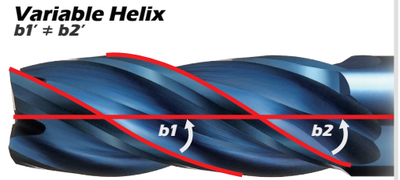
● Excellent ○ Good ━ Okay

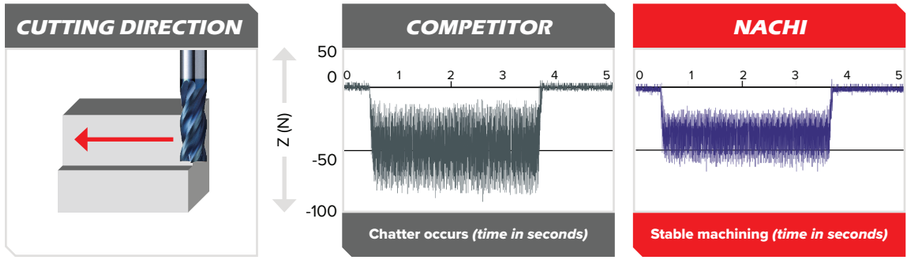
CUTTING GEOMETRY

- Variable Pitch and Variable Helix Design to suppress chatter
- Extreme stability and high efficient machining









End Mill:
2.5D, 4-Flute, Gash land

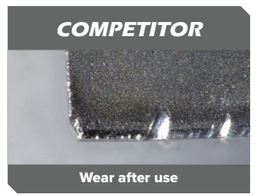
Work Material:
SUS 304

Cutting Fluid:
Water-soluble

Machine:
Vertical M/C

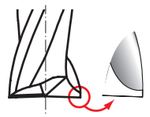
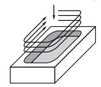
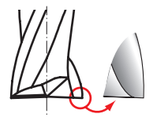
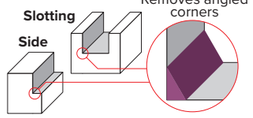
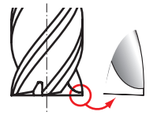
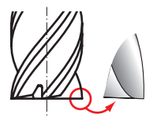
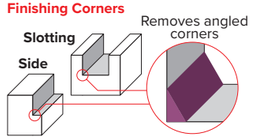
COATING

- New AlCrXN film provides high heat resistance (1,100 C) and excellent thermal shock resistance
- Wear resistance (HV3000) by optimized film formation conditions
- Super smooth surface treatment suppresses damage caused by chip adhesion, increasing overall wear resistance



RECOMMENDED
MACHINING METHODS

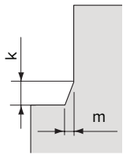
Excellent Good

	Cutting Edge Shape	Length of Cut 1.5D	2.5D	4D
2-Flute	**G Type** *(Gash land)*			
		**Side** **Finishing** 	**Slotting** **Finishing** Roughing 	**Pocket Milling** **Finishing Roughing** 
	S Type *(Sharp Corner)*			
			**Finishing Corners** Slotting Side Removes angled corners 	
	G Type *(Gash land)*			
4-Flute		**Side** **Finishing** 	**Slotting** **Finishing Roughing** 	**Pocket Milling** **Finishing Roughing**  **Facing** **Finishing** 	**Side** **Finishing Roughing** 	**Pocket Milling** **Finishing Roughing** 
	S Type *(Sharp Corner)*			
			**Finishing Corners** Slotting Side Removes angled corners 	

Gash land
Guideline of remaining corner of Gash land type

Unit: mm

DC	k	m
1	0.05	0.005
3	0.1	0.015
6	0.2	0.03
10	0.3	0.04
20	0.4	0.05



DC Tolerance

Unit: mm

DC		Tolerance
Above	Up to	
	3	0 ~ -0.015
3	12	0 ~ -0.02
12		0 ~ -0.03

CUSTOMER
SUCCESS CASE

THE CHALLENGE

A customer machining sintered iron components on a vertical BT30 machine faced limited tool life using a competitor's carbide end mill.

At 308 SFM and 0.0012 IPR in slotting applications, their existing tooling only produced **300 finished parts** per tool before needing to be replaced. This short tool life caused machine downtime, raised tooling costs, and reduced overall productivity of the operator.

THE SOLUTION

By switching to a Nachi Aqua REVO Mill Micro Series with REVO-M coating, they were able to significantly extend tool performance without changing machining conditions or setup.

The tool life doubled to **600 finished parts** per tool, reducing tooling costs, while limiting machine downtime, and boosting operator productivity.

THE RESULT

	COMPETITOR	NACHI
MATERIAL:	Sintered Iron	
MACHINE:	Vertical M/C (BT30)	
TOOL SIZE:	1.5 2FL	1.5 2FL
SPEED:	308 SFM	
FEED:	0.0012 IPR	
CUT TYPE:	Slotting	
CUT DEPTH:	0.0093" by 4 pass	
PC'S PER TOOL:	300	600

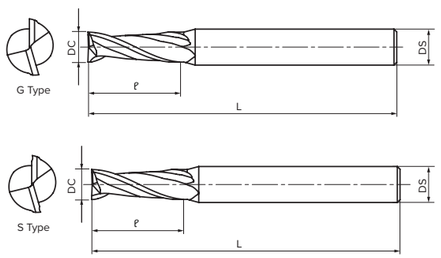
COMPETITOR
Chipped corners

NACHI
Limited wear

AQUA REVO MILL MICRO SERIES

SERIES SPECIFICATIONS

CARBIDE	REVO M	30° / 35°	H6
Tool Material	Coating	Helix Angle	Shank Dia. Tolerance



RVM2G-1.5D

GASH LAND **1.5D** 2 Flute

L9760 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592157	1.0	1.5	40.0	4.0
1592163	1.5	2.3	40.0	4.0
1592170	2.0	3.0	40.0	4.0
1592186	2.5	3.8	40.0	4.0

LIST 9761 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592192	3/64	1.8	40.0	4.0
1592208	1/16	2.4	40.0	4.0
1592214	5/64	3.0	40.0	4.0
1592220	3/32	3.6	40.0	4.0

RVM2G-2.5D

GASH LAND **2.5D** 2 Flute

L9762 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592237	1.0	2.5	40.0	4.0
1592243	1.5	3.8	40.0	4.0
1592250	2.0	5.0	40.0	4.0
1592266	2.5	6.3	40.0	4.0

LIST 9763 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592272	3/64	3.0	40.0	4.0
1592289	1/16	4.0	40.0	4.0
1592295	5/64	5.0	40.0	4.0
1592300	3/32	6.0	40.0	4.0

RVM2S-2.5D

SHARP CORNER **2.5D** 2 Flute

L9764 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592317	1.0	2.5	40.0	4.0
1592323	1.5	3.8	40.0	4.0
1592330	2.0	5.0	40.0	4.0
1592346	2.5	6.3	40.0	4.0

LIST 9765 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592352	3/64	3.0	40.0	4.0
1592369	1/16	4.0	40.0	4.0
1592375	5/64	5.0	40.0	4.0
1592381	3/32	6.0	40.0	4.0

⚠ **WARNING:** Cancer risk from exposure to cobalt. See www.P65Warnings.ca.gov.

P Steel | **M** Stainless | **K** Cast Iron | **N** Aluminum | **S** High Temp Alloys | **H** Hardened Steel

L9760 / L9761 1.5D 2 Flute Side Milling Parameters

Work Material	Structural Steel, Carbon Steel / Cast Iron		Alloy Steel, Heat Treated Steel		Heat Treated Steel, Hardened Steel		Hardened Steel		Hardened Steel	Stainless Steel		Aluminum Alloy, Copper Alloy		Nickel Alloy, Titanium Alloy	
	150~250HB		25~35HRC		35~45HRC		45~55HRC		55~60HRC						
Size:	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)		RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
1.0 mm	38,200	0.00056	31,850	0.00053	25,500	0.00037	19,000	0.00021		17,500	0.00018	31,700	0.00040	12,750	0.00009
3/64"	32,100	0.00067	26,750	0.00063	21,350	0.00044	15,900	0.00025		14,700	0.00021	26,600	0.00048	10,600	0.00011
1.5 mm	25,500	0.00083	21,200	0.00079	17,000	0.00056	13,250	0.00032		12,900	0.00034	21,100	0.00061	9,500	0.00016
1/16"	24,100	0.00089	20,000	0.00083	16,000	0.00059	12,500	0.00034		12,200	0.00035	19,900	0.00064	9,000	0.00016
5/64"	19,300	0.00110	16,000	0.00104	12,800	0.00074	10,400	0.00044		10,750	0.00049	15,950	0.00080	8,000	0.00022
2.0 mm	19,100	0.00110	15,900	0.00105	12,700	0.00074	10,400	0.00044		11,150	0.00049	15,850	0.00081	7,960	0.00022
3/32"	16,100	0.00133	13,350	0.00125	10,700	0.00088	8,750	0.00052		8,950	0.00059	13,300	0.00096	6,700	0.00026
2.5 mm	15,300	0.00138	12,750	0.00131	10,200	0.00093	8,300	0.00055		8,550	0.00062	12,650	0.00101	6,350	0.00028
(a_p)	1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø			1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø	
(a_e)	0.2 x Tool Ø		0.2 x Tool Ø		0.2 x Tool Ø		0.02 x Tool Ø			0.2 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø	

RVM4G-1.5D Please use series L9768 / L9769 (Four Flute, 1.5D G Type Gashland)

L9760 / L9761 1.5D 2 Flute Slotting Parameters

1.0 mm	31,850	0.00033	25,500	0.00025	20,700	0.00024	7,500	0.00014		12,740	0.00009	19,000	0.00016	6,370	0.00006
3/64"	26,700	0.00039	21,350	0.00030	17,350	0.00028	6,300	0.00017		10,670	0.00011	15,900	0.00019	5,350	0.00007
1.5 mm	21,200	0.00049	16,950	0.00038	13,750	0.00036	5,450	0.00023		9,540	0.00015	12,600	0.00023	4,800	0.00009
1/16"	20,000	0.00052	16,000	0.00041	13,000	0.00038	5,200	0.00024		9,000	0.00016	11,900	0.00025	4,500	0.00010
5/64"	16,000	0.00065	12,800	0.00051	10,350	0.00047	4,500	0.00031		8,000	0.00021	9,500	0.00031	4,000	0.00013
2.0 mm	15,900	0.00066	12,730	0.00051	10,350	0.00048	4,500	0.00031		7,960	0.00021	9,500	0.00031	3,980	0.00013
3/32"	13,350	0.00078	10,650	0.00061	8,700	0.00057	3,750	0.00037		6,700	0.00025	7,950	0.00037	3,300	0.00016
2.5 mm	12,700	0.00082	10,200	0.00064	8,250	0.00060	3,550	0.00039		6,350	0.00026	7,600	0.00039	3,150	0.00017
(a_p)	1 x Tool Ø		1 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø			0.5 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø	

Not Recommended

L9762 / L9763 / L9764 / L9765 2.5D 2 Flute Side Milling Parameters

1.0 mm	38,200	0.00039	31,850	0.00033	25,500	0.00025	17,500	0.00015		17,500	0.00008	31,700	0.00040	12,750	0.00008
3/64"	32,100	0.00046	26,750	0.00040	21,350	0.00030	14,650	0.00017		14,700	0.00009	26,600	0.00048	10,600	0.00009
1.5 mm	25,500	0.00058	21,200	0.00050	17,000	0.00037	12,150	0.00023		12,900	0.00017	21,100	0.00061	9,500	0.00013
1/16"	24,100	0.00061	20,000	0.00053	16,000	0.00039	11,500	0.00024		12,200	0.00018	19,900	0.00064	9,000	0.00014
5/64"	19,300	0.00076	16,000	0.00066	12,800	0.00049	9,550	0.00031		10,750	0.00027	15,950	0.00080	8,000	0.00020
2.0 mm	19,100	0.00077	15,900	0.00067	12,700	0.00050	9,550	0.00031		11,150	0.00026	15,850	0.00081	7,960	0.00020
3/32"	16,100	0.00092	13,350	0.00080	10,700	0.00059	8,000	0.00037		8,950	0.00033	13,300	0.00096	6,700	0.00024
2.5 mm	15,300	0.00096	12,750	0.00083	10,200	0.00062	7,600	0.00039		8,550	0.00035	12,650	0.00101	6,350	0.00025
Roughing (a_p)	2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		2 x Tool Ø			2 x Tool Ø		2 x Tool Ø		2 x Tool Ø	
Roughing (a_e)	0.1 x Tool Ø		0.1 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø			0.1 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø	
Finishing (a_p)	2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		2 x Tool Ø			2 x Tool Ø		2 x Tool Ø		2 x Tool Ø	
Finishing (a_e)	0.05 x Tool Ø		0.05 x Tool Ø		0.05 x Tool Ø		0.01 x Tool Ø			0.05 x Tool Ø		0.1 x Tool Ø		0.01 x Tool Ø	

RVM4G-2.5D Please use series L9772 / L9773 (Four Flute, 2.5D G Type Gashland)

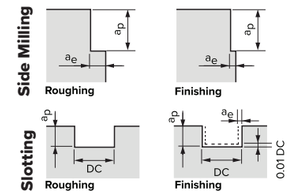
L9762 / L9763 / L9764 / L9765 2.5D 2 Flute Slotting Parameters

1.0 mm	31,850	0.00033	25,500	0.00025	20,700	0.00024	7,500	0.00014		12,740	0.00009	19,000	0.00016	6,370	0.00006
3/64"	26,700	0.00039	21,350	0.00030	17,350	0.00028	6,300	0.00017		10,670	0.00011	15,900	0.00019	5,350	0.00007
1.5 mm	21,200	0.00049	16,950	0.00038	13,750	0.00036	5,450	0.00023		9,540	0.00015	12,600	0.00023	4,800	0.00009
1/16"	20,000	0.00052	16,000	0.00041	13,000	0.00038	5,200	0.00024		9,000	0.00016	11,900	0.00025	4,500	0.00010
5/64"	16,000	0.00065	12,800	0.00051	10,350	0.00048	4,500	0.00031		8,000	0.00021	9,500	0.00031	4,000	0.00013
2.0 mm	15,900	0.00066	12,730	0.00051	10,350	0.00048	4,500	0.00031		7,960	0.00021	9,500	0.00031	3,980	0.00013
3/32"	13,350	0.00078	10,650	0.00061	8,700	0.00057	3,750	0.00037		6,700	0.00025	7,950	0.00037	3,300	0.00016
2.5 mm	12,700	0.00082	10,200	0.00064	8,250	0.00060	3,550	0.00039		6,350	0.00026	7,600	0.00039	3,150	0.00017
Roughing (a_p)	1 x Tool Ø		1 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø			0.5 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø	
Finishing (a_p)	1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø			1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø	
Finishing (a_e)	0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø			0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø	

Not Recommended

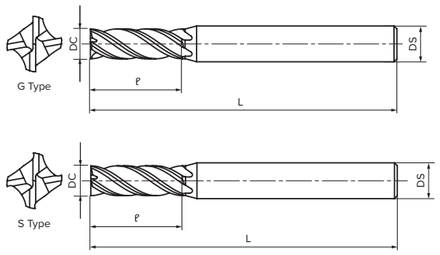
Standard Cutting Conditions

1. Use highly rigid machining center and holder.
2. For dry machining, use air blow only.
3. When processing hardened steel (45 to 55 HRC), use an air blow for dry process.
4. 2-Flute is not recommended for processing hardened steel (55 to 60 HRC).
5. For 55 to 60 HRC, use RVM4G-1.5D (Four Flutes G type Gash land).
6. Use in wet condition in case of Stainless, Nickel Alloy, Titanium Alloy.
7. When chattering occurs, reduce the rotation and feed rate, or reduce the depth of cut.



SERIES SPECIFICATIONS

CARBIDE	REVO M	30°/35°	H6
Tool Material	Coating	Helix Angle	Shank Dia. Tolerance



RVM4G-1.5D

GASH LAND | 1.5D | 4 Flute

L9768 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592398	1.0	1.5	40.0	4.0
1592403	1.5	2.3	40.0	4.0
1592410	2.0	3.0	40.0	4.0
1592426	2.5	3.8	40.0	4.0

LIST 9769 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592432	3/64	1.8	40.0	4.0
1592449	1/16	2.4	40.0	4.0
1592455	5/64	3.0	40.0	4.0
1592461	3/32	3.6	40.0	4.0

RVM4G-2.5D

GASH LAND | 2.5D | 4 Flute

L9770 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592478	1.0	2.5	40.0	4.0
1592484	1.5	3.8	40.0	4.0
1592490	2.0	5.0	40.0	4.0
1592506	2.5	6.3	40.0	4.0

LIST 9771 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592512	3/64	3.0	40.0	4.0
1592529	1/16	4.0	40.0	4.0
1592535	5/64	5.0	40.0	4.0
1592541	3/32	6.0	40.0	4.0

RVM4G-2.5D

SHARP CORNER | 2.5D | 4 Flute

L9772 - Metric Series

Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592558	1.0	2.5	40.0	4.0
1592564	1.5	3.8	40.0	4.0
1592570	2.0	5.0	40.0	4.0
1592587	2.5	6.3	40.0	4.0

LIST 9773 - Fractional Series

Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592593	3/64	3.0	40.0	4.0
1592609	1/16	4.0	40.0	4.0
1592615	5/64	5.0	40.0	4.0
1592621	3/32	6.0	40.0	4.0

⚠ **WARNING:** Cancer risk from exposure to cobalt. See www.P65Warnings.ca.gov.

P Steel | M Stainless | K Cast Iron | N Aluminum | S High Temp Alloys | H Hardened Steel

L9768 / L9769 — 1.5D — 4 Flute — Side Milling Parameters

Work Material	Structural Steel, Carbon Steel / Cast Iron		Alloy Steel, Heat Treated Steel		Heat Treated Steel, Hardened Steel		Hardened Steel		Hardened Steel		Stainless Steel		Aluminum Alloy, Copper Alloy		Nickel Alloy, Titanium Alloy	
	150~250HB		25~35HRC		35~45HRC		45~55HRC		55~60HRC							
Size:	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
1.0 mm	38,200	0.00056	31,850	0.00049	25,500	0.00042	19,000	0.00026	17,500	0.00003	20,000	0.00022	31,700	0.00040	12,750	0.00009
3/64"	32,100	0.00067	26,750	0.00059	21,350	0.00051	15,900	0.00031	14,650	0.00003	16,800	0.00026	26,600	0.00048	10,600	0.00011
1.5 mm	25,500	0.00083	21,200	0.00074	17,000	0.00064	13,250	0.00041	12,200	0.00004	14,100	0.00033	21,100	0.00061	9,500	0.00016
1/16"	24,100	0.00089	20,000	0.00079	16,000	0.00068	12,500	0.00043	11,500	0.00004	13,300	0.00035	19,900	0.00064	9,000	0.00016
5/64"	19,300	0.00110	16,000	0.00098	12,800	0.00085	10,400	0.00057	9,550	0.00005	11,250	0.00044	15,950	0.00080	8,000	0.00022
2.0 mm	19,100	0.00110	15,900	0.00099	12,700	0.00085	10,400	0.00057	9,550	0.00005	11,150	0.00044	15,850	0.00081	7,960	0.00022
3/32"	16,100	0.00133	13,350	0.00118	10,700	0.00101	8,750	0.00067	8,000	0.00006	9,400	0.00052	13,300	0.00096	6,700	0.00026
2.5 mm	15,300	0.00138	12,750	0.00124	10,200	0.00106	8,300	0.00071	7,600	0.00006	8,900	0.00055	12,650	0.00101	6,350	0.00028
(a_p)	1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø	
(a_e)	0.2 x Tool Ø		0.2 x Tool Ø		0.2 x Tool Ø		0.03 x Tool Ø		0.01 x Tool Ø		0.2 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø	

L9768 / L9769 — 1.5D — 4 Flute — Slotting Parameters

1.0 mm	31,850	0.00033	25,500	0.00025	20,700	0.00024	7,500	0.00014	Not Recommended		12,740	0.00009	25,500	0.00015	6,370	0.00005
3/64"	26,700	0.00039	21,350	0.00030	17,350	0.00028	6,300	0.00017			10,670	0.00011	21,250	0.00019	5,350	0.00006
1.5 mm	21,200	0.00049	16,950	0.00038	13,750	0.00036	5,450	0.00022			9,540	0.00015	16,850	0.00023	4,800	0.00008
1/16"	20,000	0.00052	16,000	0.00041	13,000	0.00038	5,200	0.00024			9,000	0.00016	15,950	0.00025	4,500	0.00009
5/64"	16,000	0.00065	12,800	0.00051	10,350	0.00047	4,500	0.00031			8,000	0.00021	12,750	0.00031	4,000	0.00012
2.0 mm	15,900	0.00066	12,730	0.00051	10,350	0.00048	4,500	0.00031			7,960	0.00021	12,700	0.00031	3,980	0.00012
3/32"	13,350	0.00078	10,650	0.00061	8,700	0.00057	3,750	0.00037			6,700	0.00026	10,650	0.00037	3,300	0.00015
2.5 mm	12,700	0.00082	10,200	0.00064	8,250	0.00060	3,550	0.00039			6,350	0.00028	10,150	0.00039	3,150	0.00016
(a_p)	1 x Tool Ø		1 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø				0.5 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø	

L9770 / L9771 / L9772 / L9773 — 2.5D — 4 Flute — Side Milling Parameters

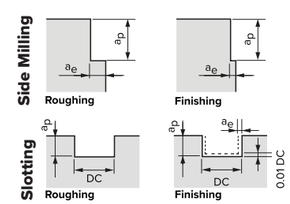
1.0 mm	38,200	0.00038	31,850	0.00033	25,500	0.00025	17,500	0.00019	17,500	0.00003	17,500	0.00005	31,700	0.00040	12,750	0.00008
3/64"	32,100	0.00045	26,750	0.00039	21,350	0.00030	14,650	0.00023	14,650	0.00004	14,700	0.00006	26,600	0.00048	10,600	0.00010
1.5 mm	25,500	0.00057	21,200	0.00050	17,000	0.00038	12,200	0.00029	12,200	0.00005	12,900	0.00008	21,100	0.00060	9,500	0.00012
1/16"	24,100	0.00060	20,000	0.00052	16,000	0.00040	11,500	0.00030	11,500	0.00005	12,200	0.00008	19,900	0.00064	9,000	0.00013
5/64"	19,300	0.00075	16,000	0.00065	12,800	0.00050	9,550	0.00038	9,550	0.00006	10,750	0.00010	15,950	0.00079	8,000	0.00016
2.0 mm	19,100	0.00077	15,900	0.00066	12,700	0.00050	9,550	0.00038	9,550	0.00006	11,150	0.00010	15,850	0.00080	7,960	0.00016
3/32"	16,100	0.00090	13,350	0.00079	10,700	0.00060	8,000	0.00045	8,000	0.00007	8,950	0.00012	13,300	0.00095	6,700	0.00019
2.5 mm	15,300	0.00095	12,750	0.00083	10,200	0.00063	7,600	0.00048	7,600	0.00008	8,550	0.00013	12,650	0.00100	6,350	0.00020
Roughing (a_p)	2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		1.5 x Tool Ø		2 x Tool Ø		1.5 x Tool Ø		2 x Tool Ø	
Roughing (a_e)	0.2 x Tool Ø		0.2 x Tool Ø		0.2 x Tool Ø		0.03 x Tool Ø		0.01 x Tool Ø		0.2 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø	
Finishing (a_p)	2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		2 x Tool Ø		Not Recommended		2 x Tool Ø		1.5 x Tool Ø		2 x Tool Ø	
Finishing (a_e)	0.05 x Tool Ø		0.05 x Tool Ø		0.05 x Tool Ø		0.01 x Tool Ø				0.05 x Tool Ø		0.1 x Tool Ø		0.01 x Tool Ø	

L9770 / L9771 / L9772 / L9773 — 2.5D — 4 Flute — Slotting Parameters

1.0 mm	31,850	0.00033	25,500	0.00025	20,700	0.00024	7,500	0.00014	Not Recommended		12,740	0.00009	25,500	0.00015	6,370	0.00005
3/64"	26,700	0.00039	21,350	0.00030	17,350	0.00028	6,300	0.00017			10,670	0.00011	21,350	0.00018	5,350	0.00006
1.5 mm	21,200	0.00050	16,950	0.00038	13,750	0.00036	5,450	0.00022			9,540	0.00014	16,950	0.00023	4,800	0.00008
1/16"	20,000	0.00052	16,000	0.00040	13,000	0.00038	5,200	0.00023			9,000	0.00015	16,000	0.00024	4,500	0.00008
5/64"	16,000	0.00065	12,800	0.00050	10,350	0.00047	4,500	0.00029			8,000	0.00018	12,800	0.00031	4,000	0.00011
2.0 mm	15,900	0.00066	12,730	0.00050	10,350	0.00048	4,500	0.00029			7,960	0.00019	12,730	0.00031	3,980	0.00012
3/32"	13,350	0.00079	10,650	0.00060	8,700	0.00057	3,750	0.00034			6,700	0.00022	10,650	0.00037	3,300	0.00014
2.5 mm	12,700	0.00083	10,200	0.00063	8,250	0.00060	3,550	0.00036			6,350	0.00023	10,200	0.00039	3,150	0.00015
Roughing (a_p)	1 x Tool Ø		1 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø				0.5 x Tool Ø		1 x Tool Ø		0.2 x Tool Ø	
Finishing (a_p)	1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø				1.5 x Tool Ø		1.5 x Tool Ø		1.5 x Tool Ø	
Finishing (a_e)	0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø				0.02 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø	

Standard Cutting Conditions

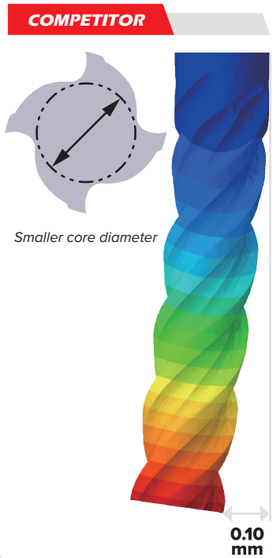
1. Use highly rigid machining center and holder.
2. For dry machining, use air blow only.
3. When processing hardened steel (45 to 60 HRC), use an air blow for dry process.
4. Use in wet condition in case of Stainless, Nickel Alloy, Titanium Alloy.
5. When chattering occurs, reduce the rotation and feed rate, or reduce the depth of cut.

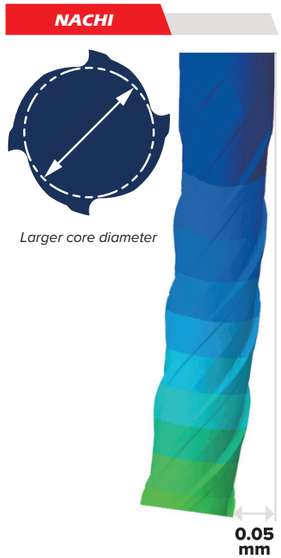


AQUA REVO MILL 4F4D
MICRO SERIES

FLUTE DESIGN

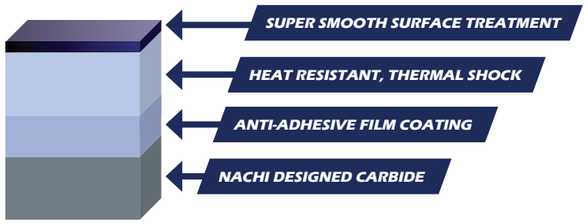
Shallow flute depth increases the core diameter, enhancing rigidity and strength while reducing deflection.



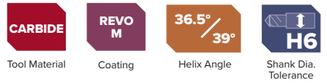


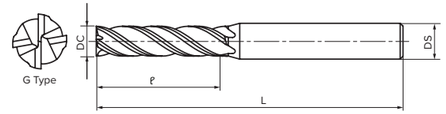
MATERIAL & COATING

- Nachi developed carbide material is optimized for both hardness and toughness.
- Excellent thermal shock resistance and strong wet processing.



SERIES SPECIFICATIONS





RVM4G-4D

GASH LAND | 4D | 4 Flute

L9776 - Metric Series — Unit: mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592638	1.0	4.0	40.0	4.0
1592644	1.5	6.0	40.0	4.0
1592650	2.0	8.0	40.0	4.0
1592667	2.5	10.0	40.0	4.0

LIST 9777 - Fractional Series — Unit: inch & mm

EDP#	Size (DC)	Flute Length (ℓ)	OAL (L)	Shank Size (Ds)
1592673	3/64	4.8	40.0	4.0
1592680	1/16	6.4	40.0	4.0
1592696	5/64	8.0	40.0	4.0
1592701	3/32	9.6	40.0	4.0

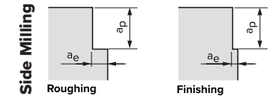
P Steel | M Stainless | K Cast Iron | N Aluminum | S High Temp Alloys | H Hardened Steel

L9776 / L9777 4D | 4 Flute — **Side Milling Parameters**

Work Material	Structural Steel, Carbon Steel / Cast Iron		Alloy Steel, Heat Treated Steel		Heat Treated Steel, Hardened Steel		Hardened Steel		Hardened Steel		Stainless Steel		Aluminum Alloy, Copper Alloy		Nickel Alloy, Titanium Alloy	
	150~250HB		25~35HRC		35~45HRC		45~55HRC		55~60HRC							
Size:	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)	RPM	Feed (IPT)
1.0 mm	25,500	0.00015	22,300	0.00008	19,100	0.00004	12,730	0.00009	12,730	0.00003	19,100	0.00006	31,700	0.00040	12,700	0.00005
3/64"	21,450	0.00018	18,750	0.00009	16,050	0.00005	10,700	0.00010	10,700	0.00003	16,050	0.00007	26,650	0.00048	10,650	0.00006
1.5 mm	19,100	0.00023	16,800	0.00012	14,850	0.00006	9,050	0.00014	9,050	0.00005	14,850	0.00010	21,150	0.00060	8,500	0.00007
1/16"	18,050	0.00025	15,850	0.00013	14,050	0.00006	8,550	0.00014	8,550	0.00005	14,050	0.00010	20,000	0.00064	8,000	0.00007
5/64"	16,050	0.00031	14,400	0.00016	12,800	0.00008	7,200	0.00019	7,200	0.00007	12,800	0.00014	16,000	0.00080	6,400	0.00009
2.0 mm	15,900	0.00031	14,300	0.00016	12,730	0.00008	7,160	0.00019	7,160	0.00007	12,730	0.00014	15,900	0.00080	6,370	0.00009
3/32"	13,350	0.00037	12,000	0.00019	10,700	0.00009	6,000	0.00023	6,000	0.00008	10,700	0.00017	13,300	0.00096	5,350	0.00011
2.5 mm	12,700	0.00039	11,500	0.00020	10,200	0.00010	5,750	0.00024	5,750	0.00009	10,200	0.00017	12,700	0.00101	5,050	0.00012
Roughing (a_p)	4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø	
Roughing (a_e)	0.1 x Tool Ø		0.1 x Tool Ø		0.1 x Tool Ø		0.02 x Tool Ø		0.02 x Tool Ø		0.1 x Tool Ø		0.1 x Tool Ø		Not Recommended	
Finishing (a_p)	4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø		4 x Tool Ø	
Finishing (a_e)	0.03 x Tool Ø		0.03 x Tool Ø		0.03 x Tool Ø		0.01 x Tool Ø		0.01 x Tool Ø		0.02 x Tool Ø		0.05 x Tool Ø		0.01 x Tool Ø	

Standard Cutting Conditions

1. Use highly rigid machining center and holder.
2. For dry machining, use air blow only.
3. When processing hardened steel (45 to 60 HRC), use an air blow for dry process.
4. Use in wet condition in case of Stainless, Nickel Alloy, Titanium Alloy.
5. When chattering occurs, reduce the rotation and feed rate, or reduce the depth of cut.



⚠ **WARNING:** Cancer risk from exposure to cobalt. See www.P65Warnings.ca.gov.

NACHI AMERICA INC.

Founded in 1962 and based in Greenwood, Indiana, Nachi America Inc. serves as the North American headquarters of Nachi-Fujikoshi Corp.

Fusing the world-class engineering expertise of Nachi-Fujikoshi with American innovation, we proudly manufacture cutting tools for many applications and industries at our facility outside of Indianapolis, Indiana. Starting with patented Nachi-made carbide and steel, utilizing Nachi-built machines and robotics for precision grinding, and finishing with advanced Nachi-developed coatings, every step reflects our dedication and passion for performance and quality, to you, and our mission: *Contributing to the Progress of the World of Product Manufacture.*

We are passionate about enhancing your processes with products and machines designed for every stage of manufacturing, and we are looking forward to working with you and your team.

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Concord, ON K0G 1X0

⚠ **WARNING:** This product can expose you to chemicals including cobalt, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov