

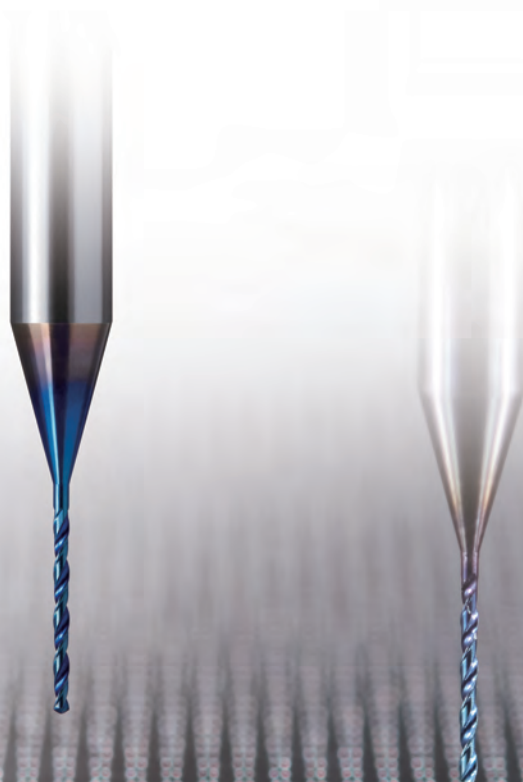
NEW!

NACHI

AQUA REVO DRILL MICRO

REVOlutionizing the World of Product Manufacturing

Aqua REVO Drill Micro 5D, 10D
LIST 9878, 9880



NEW!

AQUA REVO DRILL MICRO

AQRVDM 5D/10D

Product Info
Video



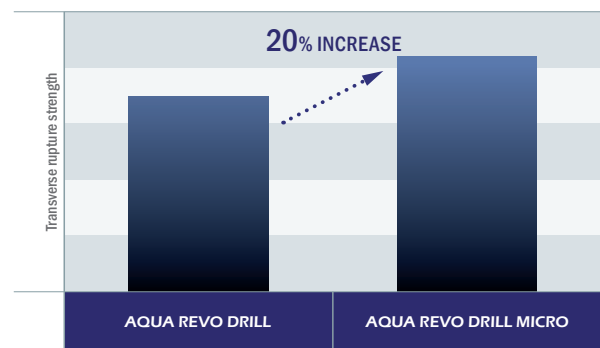
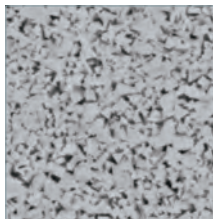
REVOLUTIONIZING THE WORLD OF MANUFACTURING

- New lineup of small diameter sizes for the AquaREVO Drill series
- Achieves "long tool life that is hard to break" and "stable cutting with little dispersion" required for small-diameter drills

MATERIAL

Newly developed carbide material for micro drill that is hard to break. Both hardness and toughness are improved by using ultra-fine particles carbide and original component design.

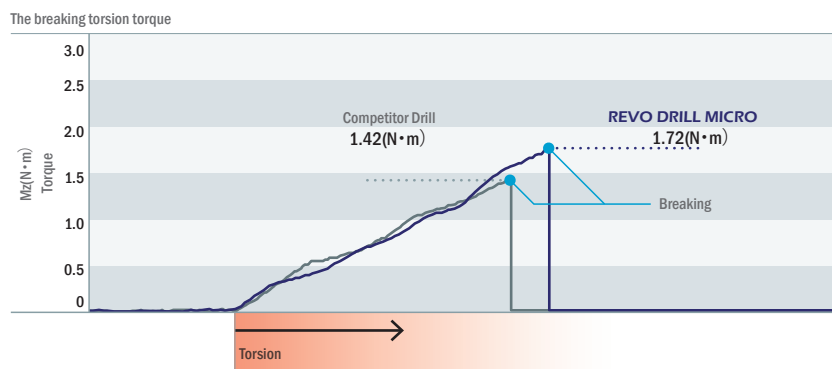
Microstructure
Material with ultra-fine particle type for micro drill



GEOMETRY

Achieves a drill that is hard to break with a flute shape that emphasizes rigidity and chip evacuation.

AquaREVO Drills Micro has 1.2 times the breaking torque of competitor's drill.

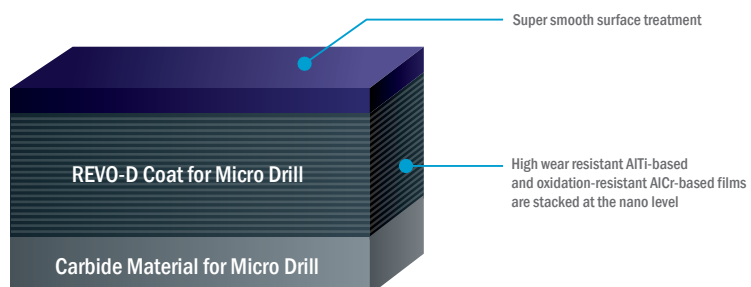


SHAPE

Stable tool life with accurate film thickness control - even with small diameter drills.

Super smooth surface treatment reduces resistance during cutting and improves smooth chip evacuation.

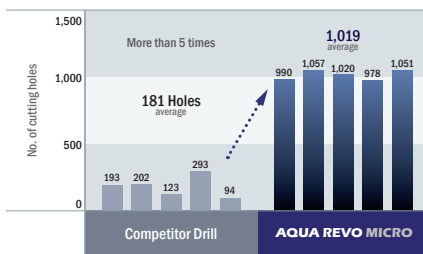
Cross-sectional structure of coating film for micro drill



LONG TOOL LIFE

Hard to break even when drilling small diameter holes

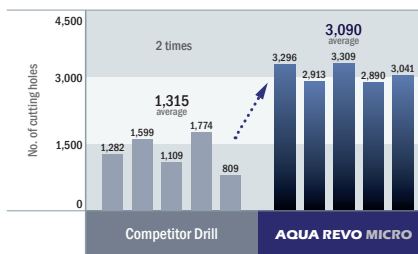
S50C



φ 0.5
Diameter
S50C (180HB)
Work Material
40m/min
Cutting Speed
0.03mm/rev
Feed Rate

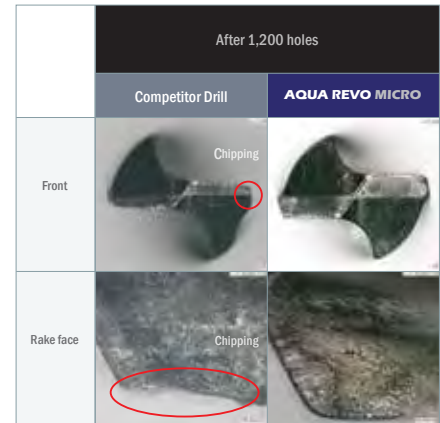
5mm (10DC)
Depth of Cutting: Blind hole
0.1mm (0.2DC)
Step feed
Cutting Fluid: Water-soluble
M/C
Machine: Vertical M/C

SUS304



0.5
Diameter
SUS304
Work Material
9m/min
Cutting Speed
0.02mm/rev
Feed Rate

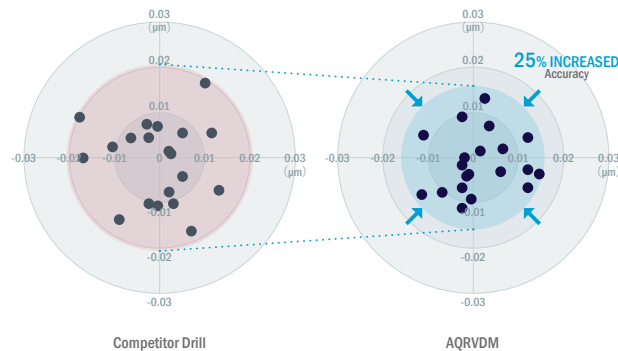
5mm (10DC)
Depth of Cutting: Blind hole
0.1mm (0.2DC)
Step feed
Cutting Fluid: Water-soluble
M/C
Machine: Vertical M/C



HIGH-PRECISION

Exceptional Hole Position Accuracy

AquaREVO Drill Micro is designed with optimized centripetal properties and tool rigidity to achieve hole position accuracy within 15 μm.

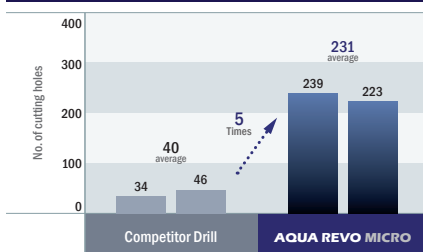


0.5
Diameter
SUS304
Work Material
9m/min
Cutting Speed
0.02mm/rev
Feed Rate
5mm (10DC)
Depth of Cutting: Blind hole
0.1mm (0.2DC)
Step feed
Cutting Fluid: Water-soluble
M/C
Machine: Vertical M/C

MULTI-PURPOSE

Compatible with a wide range of work materials

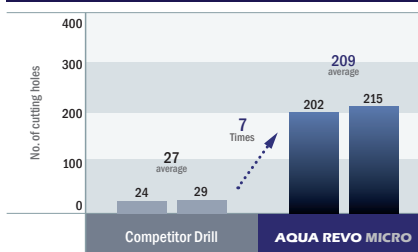
SCM440H (32HRC)



0.5
Diameter
SCM440H (32HRC)
Work Material
30m/min
Cutting Speed
0.02mm/rev
Feed Rate

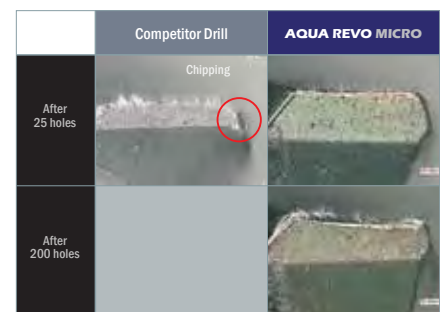
5mm (10DC)
Depth of Cutting: Blind hole
0.1mm (0.2DC)
Step feed
Cutting Fluid: Water-soluble
M/C
Machine: Vertical M/C

SKD61 (53HRC)



φ 0.5
Diameter
SKD61 (53HRC)
Work Material
20m/min
Cutting Speed
0.02mm/rev
Feed Rate

5mm (10DC)
Depth of Cutting: Blind hole
0.1mm (0.2DC)
Step feed
Cutting Fluid: Water-soluble
M/C
Machine: Vertical M/C



Applicable work Materials

Work Material	Structural Steel	Carbon Steel	Alloy Steel Heat treated Steel	Mold Steel Pre-Hardened Steel	Hardened Steel		Cast Iron	Stainless Steel			Aluminum Alloy
	SS400	S45C S50C	SCM SCr	30~40HRC	40~50HRC	50~55HRC	FC FCD	SUS304 SUS316	SUS420	SUS630	AC ADC
AQRVDM	◎	◎	◎	◎	◎	○	○	◎	◎	◎	○

◎: Excellent ○: Good

AQUA REVO DRILL MICRO 5D



NEW!

Carbide

REVO D

SEE FOOTNOTE AFTER TABLE

120°

135°

30°

h6

0.50-1.99

Material

Coating

*Dia. Tolerance

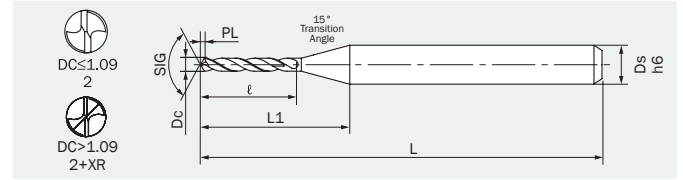
**Point Angle
Dc ≤ 1.09

**Point Angle
Dc > 1.09

Helix

Shank Dia. Tol.

Size Range



LIST 9878 Decimal Sizes

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0786515	0.50	0.0197	3.5	8.7	38	3
0786521	0.51	0.0201	3.8	8.9		
0786538	0.52	0.0205				
0786544	0.53	0.0209				
0786550	0.54	0.0213				
0786567	0.55	0.0217				
0786573	0.56	0.0220	4.2	9.2		
0786580	0.57	0.0224				
0786596	0.58	0.0228				
0786601	0.59	0.0232				
0786618	0.60	0.0236				
0786624	0.61	0.0240	4.5	9.4		
0786630	0.62	0.0244				
0786647	0.63	0.0248				
0786653	0.64	0.0252				
0786660	0.65	0.0256				
0786676	0.66	0.0260	4.9	9.7		
0786682	0.67	0.0264				
0786699	0.68	0.0268				
0786704	0.69	0.0272				
0786710	0.70	0.0276				
0786727	0.71	0.0280	5.2	9.9		
0786733	0.72	0.0283				
0786740	0.73	0.0287				
0786756	0.74	0.0291				
0786762	0.75	0.0295				
0786779	0.76	0.0299	5.6	10.2		
0786785	0.77	0.0303				
0786791	0.78	0.0307				
0786807	0.79	0.0311				
0786813	0.80	0.0315				
0786820	0.81	0.0319	5.9	10.4		
0786836	0.82	0.0323				
0786842	0.83	0.0327				
0786859	0.84	0.0331				
0786865	0.85	0.0335				
0786871	0.86	0.0339	6.3	10.7		
0786888	0.87	0.0343				
0786894	0.88	0.0346				
0786900	0.89	0.0350				
0786916	0.90	0.0354				

Unit: mm

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0786922	0.91	0.0358	6.6	10.9	38	3
0786939	0.92	0.0362				
0786945	0.93	0.0366				
0786951	0.94	0.0370				
0786968	0.95	0.0374				
0786974	0.96	0.0378	7.0	11.3		
0786980	0.97	0.0382				
0786997	0.98	0.0386				
0787001	0.99	0.0390		11.7		
0787018	1.00	0.0394				
0787024	1.01	0.0398	7.4	12		
0787030	1.02	0.0402				
0787047	1.03	0.0406				
0787053	1.04	0.0409				
0787060	1.05	0.0413				
0787076	1.06	0.0417	7.7	12.3		
0787082	1.07	0.0421				
0787099	1.08	0.0425				
0787104	1.09	0.0429		12.2		
0787110	1.10	0.0433				
0787127	1.11	0.0437	8.1	12.6		
0787133	1.12	0.0441				
0787140	1.13	0.0445				
0787156	1.14	0.0449				
0787162	1.15	0.0453				
0787179	1.16	0.0457	8.4	12.8		
0787185	1.17	0.0461				
0787191	1.18	0.0465				
0787207	1.19	0.0469				
0787213	1.20	0.0472				
0787220	1.21	0.0476	8.8	13.1		
0787236	1.22	0.0480				
0787242	1.23	0.0484				
0787259	1.24	0.0488				
0787265	1.25	0.0492				
0787271	1.26	0.0496	9.1	13.3		
0787288	1.27	0.0500				
0787294	1.28	0.0504				
0787300	1.29	0.0508				
0787316	1.30	0.0512				

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0787322	1.31	0.0516	9.5	13.6	38	3
0787339	1.32	0.0520				
0787345	1.33	0.0524				
0787351	1.34	0.0528				
0787368	1.35	0.0531				
0787374	1.36	0.0535	9.8	13.8		
0787380	1.37	0.0539				
0787397	1.38	0.0543				
0787402	1.39	0.0547				
0787419	1.40	0.0551				
0787425	1.41	0.0555	10.2	14.1		
0787431	1.42	0.0559				
0787448	1.43	0.0563				
0787454	1.44	0.0567				
0787460	1.45	0.0571				
0787477	1.46	0.0575	10.5	14.3		
0787483	1.47	0.0579				
0787490	1.48	0.0583				
0787505	1.49	0.0587				
0787511	1.50	0.0591				
0787528	1.51	0.0594	10.9	14.6		
0787534	1.52	0.0598				
0787540	1.53	0.0602				
0787557	1.54	0.0606				
0787563	1.55	0.0610				
0787570	1.56	0.0614	11.3	14.9		
0787586	1.57	0.0618				
0787592	1.58	0.0622				
0787608	1.59	0.0626				
0787614	1.60	0.0630				
0787620	1.61	0.0634	11.6	15.1	45	
0787637	1.62	0.0638				
0787643	1.63	0.0642				
0787650	1.64	0.0646				
0787666	1.65	0.0650				

*Tolerance of diameter is 0 to -0.009mm.

**Point angle is 120° for diameters 0.50 to 1.09mm or less and 135° for diameters over 1.09 to 1.99mm.

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0787672	1.66	0.0654	12.0	15.4	45	3
0787689	1.67	0.0657				
0787695	1.68	0.0661				
0787700	1.69	0.0665				
0787717	1.70	0.0669				
0787723	1.71	0.0673	12.3	15.6		
0787730	1.72	0.0677				
0787746	1.73	0.0681				
0787752	1.74	0.0685				
0787769	1.75	0.0689				
0787775	1.76	0.0693	12.7	15.9		
0787781	1.77	0.0697				
0787798	1.78	0.0701				
0787803	1.79	0.0705				
0787810	1.80	0.0709				
0787826	1.81	0.0713	13.0	16.1		
0787832	1.82	0.0717				
0787849	1.83	0.0720				
0787855	1.84	0.0724				
0787861	1.85	0.0728				
0787878	1.86	0.0732	13.3	16.4		
0787884	1.87	0.0736				
0787890	1.88	0.0740				
0787906	1.89	0.0744				
0787912	1.90	0.0748				
0787929	1.91	0.0752	13.7	16.7		
0787935	1.92	0.0756				
0787941	1.93	0.0760				
0787958	1.94	0.0764				
0787964	1.95	0.0768				
0787970	1.96	0.0772	14.0	16.9		
0787987	1.97	0.0776				
0787993	1.98	0.0780				
0788008	1.99	0.0783				

LIST 9878 Standard Wet Cutting Conditions

Work Material	Carbon Steel, Cast Iron (200 HB)		Alloy Steel (20 - 30 HRC)		Mold Steel (30 - 40 HRC)		Hardened Steel (40 - 55 HRC)		Ductile Cast Iron		Stainless Steel		PH Stainless		Aluminum Alloy	
Drill Diam. mm	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
0.5	25500	0.0012	19100	0.0008	15900	0.0008	12750	0.0008	12600	0.0008	5600	0.0007	5600	0.0007	30000	0.0012
1	15000	0.0024	9900	0.0016	8500	0.0016	7500	0.0016	9900	0.0016	4200	0.0011	4200	0.0009	25000	0.0024
1.1	15000	0.0026	9900	0.0017	8500	0.0017	7500	0.0017	9900	0.0017	4100	0.0012	4100	0.0010	25000	0.0026
1.6	11940	0.0038	7900	0.0025	7000	0.0025	6000	0.0025	7900	0.0025	4000	0.0013	3200	0.0012	20000	0.0038
1.9	10050	0.0045	6700	0.0030	5900	0.0030	5030	0.0030	6700	0.0030	3350	0.0015	2700	0.0015	16760	0.0045

1. Adjust cutting condition according to the rigidity of the machine and work holding
2. If the machine you are using has rotation limitations, reduce the rotation and feed rate by the same ratio.
3. Wet condition refers to drilling with water soluble content.
4. In non-water soluble coolant, reduce the rotation and feed rate by 20%.
5. Please use pecking regardless of the hole depth.
6. Retract plane for pecking should return to the top of the hole.
7. Recommended peck increment is 0.2-0.5 x Dc.
8. Direct flood coolant along the work piece and not directly at the drill.

AQUA REVO DRILL MICRO 10D



NEW!

Carbide

REVO D

SEE FOOTNOTE AFTER TABLE

120°

135°

30°

h6

0.50-1.99

Material

Coating

*Dia. Tolerance

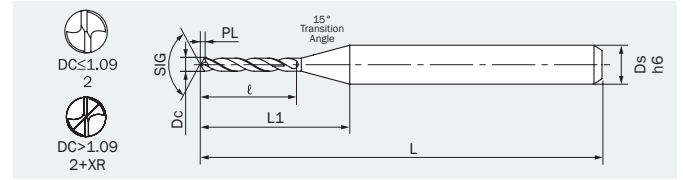
**Point Angle Dc ≤ 1.09

**Point Angle Dc > 1.09

Helix

Shank Dia. Tol.

Size Range



LIST 9880 Decimal Sizes

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0788014	0.50	0.0197	6.0	11.2	38	3
0788020	0.51	0.0201	6.6	11.7		
0788037	0.52	0.0205				
0788043	0.53	0.0209				
0788050	0.54	0.0213				
0788066	0.55	0.0217				
0788072	0.56	0.0220	7.2	12.2		
0788089	0.57	0.0224				
0788095	0.58	0.0228				
0788100	0.59	0.0232				
0788117	0.60	0.0236				
0788123	0.61	0.0240	7.8	12.7		
0788130	0.62	0.0244				
0788146	0.63	0.0248				
0788152	0.64	0.0252				
0788169	0.65	0.0256				
0788175	0.66	0.0260	8.4	13.2		
0788181	0.67	0.0264				
0788198	0.68	0.0268				
0788203	0.69	0.0272				
0788210	0.70	0.0276				
0788226	0.71	0.0280	9.0	13.7		
0788232	0.72	0.0283				
0788249	0.73	0.0287				
0788255	0.74	0.0291				
0788261	0.75	0.0295				
0788278	0.76	0.0299	9.6	14.2		
0788284	0.77	0.0303				
0788290	0.78	0.0307				
0788306	0.79	0.0311				
0788312	0.80	0.0315				
0788329	0.81	0.0319	10.2	14.7	45	
0788335	0.82	0.0323				
0788341	0.83	0.0327				
0788358	0.84	0.0331				
0788364	0.85	0.0335				
0788370	0.86	0.0339	10.8	15.2		
0788387	0.87	0.0343				
0788393	0.88	0.0346				
0788409	0.89	0.0350				
0788415	0.90	0.0354				

Unit: mm

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0788421	0.91	0.0358	11.4	15.7	45	3
0788438	0.92	0.0362				
0788444	0.93	0.0366				
0788450	0.94	0.0370				
0788467	0.95	0.0374				
0788473	0.96	0.0378	12.0	16.3		
0788480	0.97	0.0382				
0788496	0.98	0.0386				
0788501	0.99	0.0390		16.7		
0788518	1.00	0.0394				
0788524	1.01	0.0398	12.6	17.2		
0788530	1.02	0.0402				
0788547	1.03	0.0406				
0788553	1.04	0.0409				
0788560	1.05	0.0413				
0788576	1.06	0.0417	13.2	17.8		
0788582	1.07	0.0421				
0788599	1.08	0.0425				
0788604	1.09	0.0429		17.7		
0788610	1.10	0.0433				
0788627	1.11	0.0437	13.8	18.3		
0788633	1.12	0.0441				
0788640	1.13	0.0445				
0788656	1.14	0.0449				
0788662	1.15	0.0453				
0788679	1.16	0.0457	14.4	18.8		
0788685	1.17	0.0461				
0788691	1.18	0.0465				
0788707	1.19	0.0469				
0788713	1.20	0.0472				
0788720	1.21	0.0476	15.0	19.3		
0788736	1.22	0.0480				
0788742	1.23	0.0484				
0788759	1.24	0.0488				
0788765	1.25	0.0492				
0788771	1.26	0.0496	15.6	19.8		
0788788	1.27	0.0500				
0788794	1.28	0.0504				
0788800	1.29	0.0508				
0788816	1.30	0.0512				

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0788822	1.31	0.0516	16.2	20.3	45	3
0788839	1.32	0.0520				
0788845	1.33	0.0524				
0788851	1.34	0.0528				
0788868	1.35	0.0531	16.8	20.8		
0788874	1.36	0.0535				
0788880	1.37	0.0539				
0788897	1.38	0.0543				
0788902	1.39	0.0547	17.4	21.3		
0788919	1.40	0.0551				
0788925	1.41	0.0555				
0788931	1.42	0.0559				
0788948	1.43	0.0563	18.0	21.8		
0788954	1.44	0.0567				
0788960	1.45	0.0571				
0788977	1.46	0.0575				
0788983	1.47	0.0579	18.6	22.3	50	
0788990	1.48	0.0583				
0789004	1.49	0.0587				
0789010	1.50	0.0591				
0789027	1.51	0.0594	19.2	22.8		
0789033	1.52	0.0598				
0789040	1.53	0.0602				
0789056	1.54	0.0606				
0789062	1.55	0.0610	19.8	23.3		
0789079	1.56	0.0614				
0789085	1.57	0.0618				
0789091	1.58	0.0622				
0789107	1.59	0.0626	19.8	23.3		
0789113	1.60	0.0630				
0789120	1.61	0.0634				
0789136	1.62	0.0638				
0789142	1.63	0.0642	19.8	23.3		
0789159	1.64	0.0646				
0789165	1.65	0.0650				

EDP #	Size mm	Decimal Equivalent	Flute Length	Neck Length	Overall Length	Shank Diameter
		Dc	ℓ	L1	L	Ds
0789171	1.66	0.0654	20.4	23.8	50	3
0789188	1.67	0.0657				
0789194	1.68	0.0661				
0789200	1.69	0.0665				
0789216	1.70	0.0669	21.0	24.3		
0789222	1.71	0.0673				
0789239	1.72	0.0677				
0789245	1.73	0.0681				
0789251	1.74	0.0685	21.6	24.8		
0789268	1.75	0.0689				
0789274	1.76	0.0693				
0789280	1.77	0.0697				
0789297	1.78	0.0701	22.2	25.3		
0789302	1.79	0.0705				
0789319	1.80	0.0709				
0789325	1.81	0.0713				
0789331	1.82	0.0717	22.8	25.9		
0789348	1.83	0.0720				
0789354	1.84	0.0724				
0789360	1.85	0.0728				
0789377	1.86	0.0732	23.4	26.4		
0789383	1.87	0.0736				
0789390	1.88	0.0740				
0789405	1.89	0.0744				
0789411	1.90	0.0748	23.9	26.8		
0789428	1.91	0.0752				
0789434	1.92	0.0756				
0789440	1.93	0.0760				
0789457	1.94	0.0764	23.9	26.8		
0789463	1.95	0.0768				
0789470	1.96	0.0772				
0789486	1.97	0.0776				
0789492	1.98	0.0780	23.9	26.8		
0789508	1.99	0.0783				

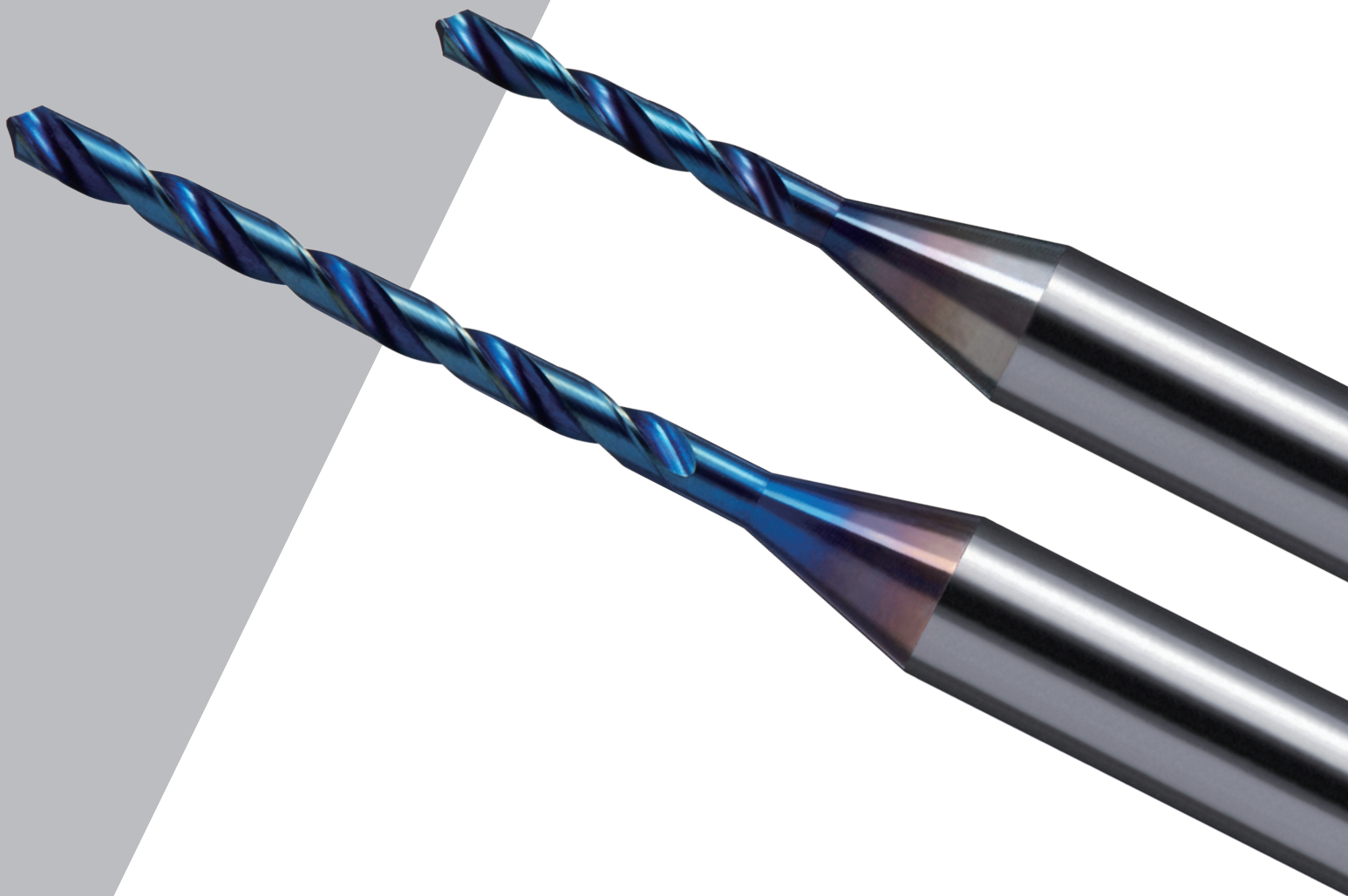
*Tolerance of diameter is 0 to -0.009mm.

**Point angle is 120° for diameters 0.50 to 1.09mm or less and 135° for diameters over 1.09 to 1.99mm.

LIST 9880 Standard Wet Cutting Conditions

Work Material	Carbon Steel, Cast Iron (200 HB)		Alloy Steel (20 - 30 HRC)		Mold Steel (30 - 40 HRC)		Hardened Steel (40 - 55 HRC)		Ductile Cast Iron		Stainless Steel		PH Stainless		Aluminum Alloy	
Drill Diam. mm	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
0.5	25500	0.0012	19100	0.0008	15900	0.0008	12750	0.0008	12600	0.0008	5600	0.0007	5600	0.0007	30000	0.0012
1	15000	0.0024	9900	0.0016	8500	0.0016	7500	0.0016	9900	0.0016	4200	0.0011	4200	0.0009	25000	0.0024
1.1	15000	0.0026	9900	0.0017	8500	0.0017	7500	0.0017	9900	0.0017	4100	0.0012	4100	0.0010	25000	0.0026
1.6	11940	0.0038	7900	0.0025	7000	0.0025	6000	0.0025	7900	0.0025	4000	0.0013	3200	0.0012	20000	0.0038
1.9	10050	0.0045	6700	0.0030	5900	0.0030	5030	0.0030	6700	0.0030	3350	0.0015	2700	0.0015	16760	0.0045

1. Adjust cutting condition according to the rigidity of the machine and work holding
2. If the machine you are using has rotation limitations, reduce the rotation and feed rate by the same ratio.
3. Wet condition refers to drilling with water soluble content.
4. In non-water coluble coolant, reduce the rotation and feed rate by 20%.
5. Please use pecking regardless of the hole depth.
6. Retract plane for pecking should return to the top of the hole.
7. Recommended peck increment is 0.2-0.5 x Dc.
8. Direct flood coolant along the work piece and not directly at the drill.



NACHI

NACHI AMERICA INC.

HEADQUARTERS & MAIN WAREHOUSE

715 Pushville Road, Greenwood, Indiana 46143, U.S.A.
Phone (317) 530-1003 Toll Free (888) 340-8665
Fax (317) 530-1013 Toll Free Fax (888) 383-8665

WEST COAST BRANCH

12652 E. Alondra Blvd. Cerritos, California 90703, U.S.A.
Phone: 562-802-0055 Toll Free Phone: 1-800-548-3903
Fax: 562-802-2455

LATIN AMERICA BRANCH

2315 NW 107th Ave., Miami, Florida, 33172
Phone: 305-591-0054
Fax: 305-591-3110

NACHIAMERICA.com

2022.2.EB

- The designs, specifications and/or dimensions are subject to change without notice.
- Unauthorized reproduction of catalog contents is strictly prohibited.



WARNING: This product can expose you to chemicals including cobalt, which is known to the State of California to cause cancer. For more information, visit www.P65warnings.ca.gov