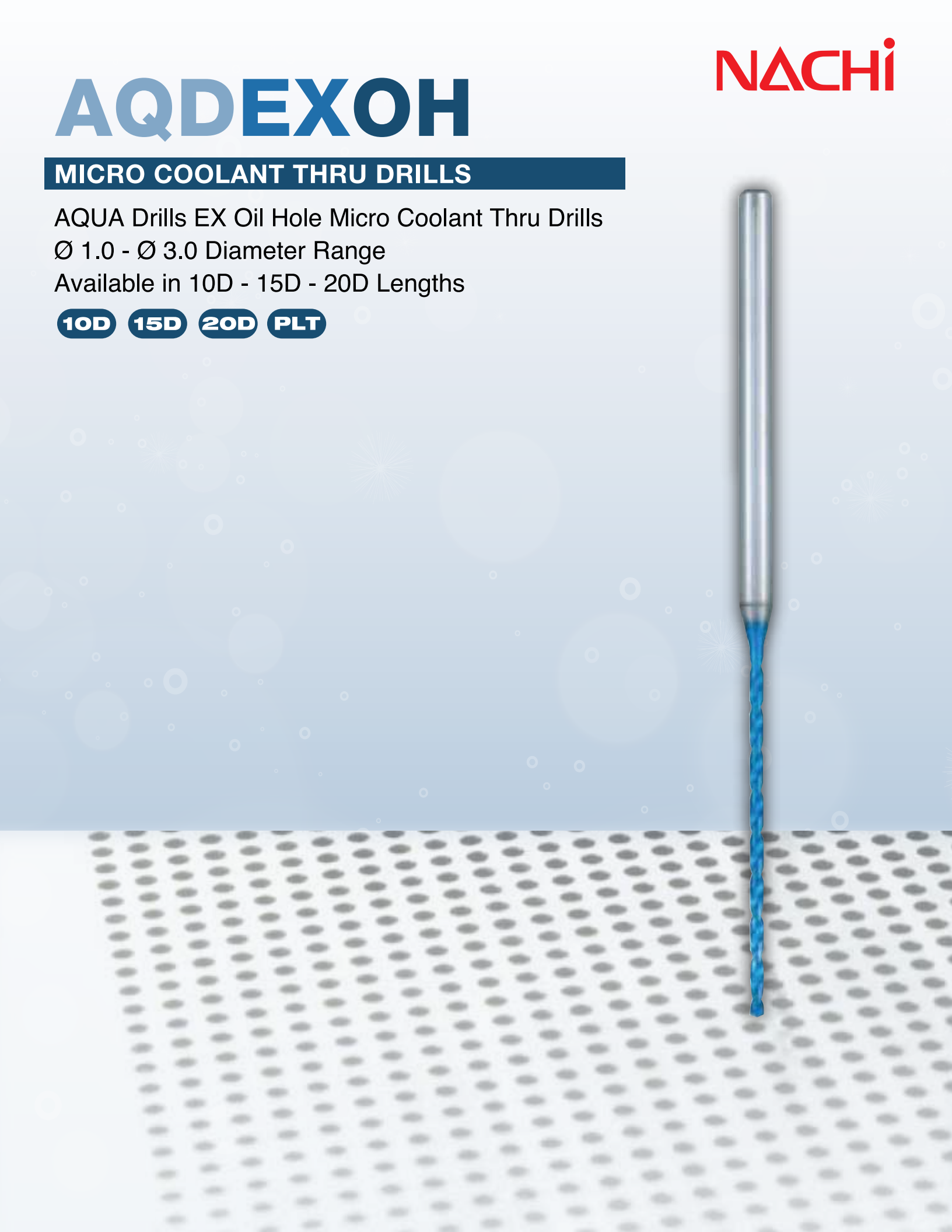
AQDEXOH

MICRO COOLANT THRU DRILLS

AQUA Drills EX Oil Hole Micro Coolant Thru Drills
Ø 1.0 - Ø 3.0 Diameter Range
Available in 10D - 15D - 20D Lengths

10D 15D 20D PLT



Drills designed for high efficiency drilling of small diameter deep holes

AQDEXOH

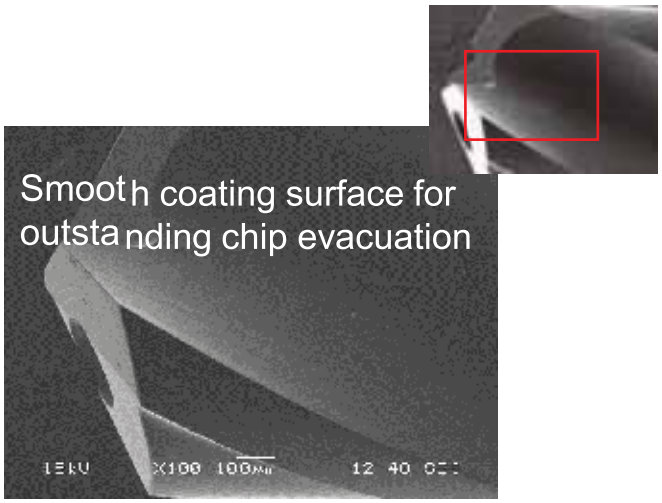
10D 15D 20D PLT

- Oil-Hole Drills for high efficiency Drilling of small diameter deep holes
- Stable Drilling of small diameter holes with new cutting edge geometry and large Oil Holes more efficient chip evacuation
- Suitable for wide work materials like Carbon Steels, Alloy Steels and Stainless Steels
- Multi-layered Aqua Ex Coating (TiALN+TiAlCr) plus anti-adhesive coating film for added lubrication

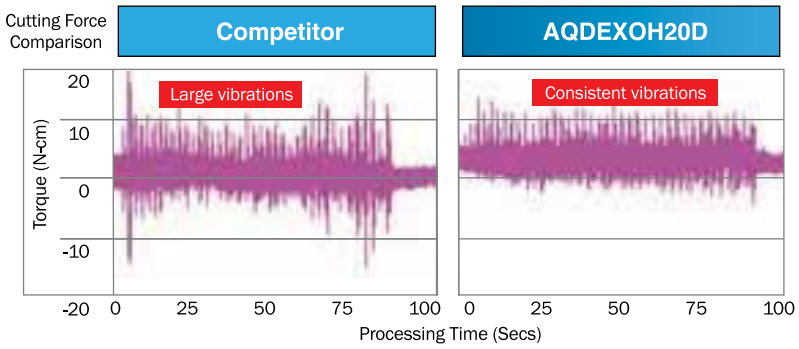
Stable & High Efficiency Drilling of small Diameter Holes with AQDEXOH Micro Coolant Thru Drills

- New Oil Hole Design delivers coolant directly to the cutting edges
- New Cutting edge geometry breakes chips effectively
- Extremely smooth Aqua EX coating evacuates chips smoothly

Smooth Drill Flute Surface



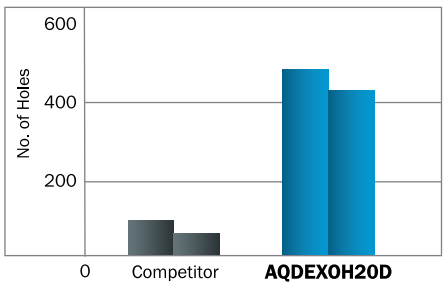
Stable Drilling of Deep Holes

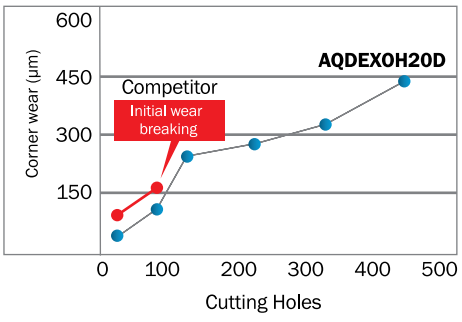


Cutting Condition

Tool Ø	Ø1.8	Coolant Type	Water Soluble - Coolant Thru
Cutting Speed	150 SFM (45m/min)	Hole Depth	38.1 mm (1.5") (20D) Blind Hole
Feed	0.003 IPR (310mm/min)	Step Feed Interval	0.17" (0.45 mm) / 0.25D
Work Material	Carbon Steel (S50C)	Guide Hole	AQDEXOHPLT01815 for 1.8 mm hole

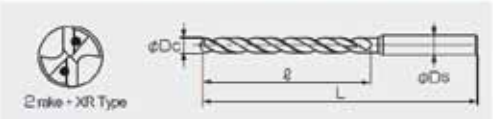
Long Tool Life





Cutting Condition

Tool Ø	Ø2.0
Cutting Speed	150 SFM (45m/min)
Feed/Speed	0.003 IPR (310mm/min)
Hole Depth	38.1 mm (1.5") (20D) Blind Hole
Step Feed Interval	0.17" (0.45 mm) / 0.25D
Coolant Type	Water Soluble - Coolant Thru
Guide Hole	AQDEXOHPLT02015 for 2.0 mm hole



AQDEXOH10D 10D

LIST 9612

Unit = mm

EDP No.	Dc	l	L	Ds	Stock
0733673	1.0	13	61	3	•
0733680	1.1	14	63	3	•
0733696	1.2	16	63	3	•
0733701	1.3	17	63	3	•
0733718	1.4	18	63	3	•
0733724	1.5	20	63	3	•
0733730	1.6	21	70	3	•
0733747	1.7	22	70	3	•
0733753	1.8	23	70	3	•
0733760	1.9	25	70	3	•

EDP No.	Dc	l	L	Ds	Stock
0733776	2.0	26	70	3	•
0733782	2.1	27	80	3	•
0733799	2.2	29	80	3	•
0733804	2.3	30	80	3	•
0733810	2.4	31	80	3	•
0733827	2.5	33	80	3	•
0733833	2.6	34	89	3	•
0733840	2.7	35	89	3	•
0733856	2.8	36	89	3	•
0733862	2.9	38	89	3	•
0726519	3.0	36	89	3	•

AQDEXOH15D 15D

LIST 9614

Unit = mm

EDP No.	Dc	l	L	Ds	Stock
0733879	1.0	18	66	3	•
0733885	1.1	20	71	3	•
0733891	1.2	22	71	3	•
0733907	1.3	23	71	3	•
0733913	1.4	25	71	3	•
0733920	1.5	27	71	3	•
0733936	1.6	29	80	3	•
0733942	1.7	31	80	3	•
0733959	1.8	32	80	3	•
0733965	1.9	34	80	3	•

EDP No.	Dc	l	L	Ds	Stock
0733971	2.0	36	80	3	•
0733988	2.1	38	93	3	•
0733994	2.2	40	93	3	•
0734009	2.3	41	93	3	•
0734015	2.4	43	93	3	•
0734021	2.5	45	93	3	•
0734038	2.6	47	104	3	•
0734044	2.7	49	104	3	•
0734050	2.8	50	104	3	•
0734067	2.9	52	104	3	•
0726708	3.0	52	104	3	•

AQDEXOH15D 15D

LIST 9616

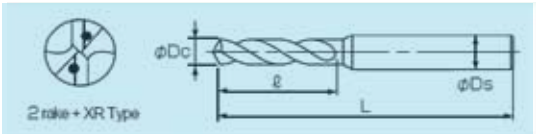
Unit = mm

EDP No.	Dc	l	L	Ds	Stock
0734073	1.0	23	71	3	•
0734080	1.1	25	78	3	•
0734096	1.2	28	78	3	•
0734101	1.3	30	78	3	•
0734118	1.4	32	78	3	•
0734124	1.5	35	78	3	•
0734130	1.6	37	90	3	•
0734147	1.7	39	90	3	•
0734153	1.8	41	90	3	•
0734160	1.9	44	90	3	•

EDP No.	Dc	l	L	Ds	Stock
0734176	2.0	46	90	3	•
0734182	2.1	48	105	3	•
0734199	2.2	51	105	3	•
0734204	2.3	53	105	3	•
0734210	2.4	55	105	3	•
0734227	2.5	58	105	3	•
0734233	2.6	60	119	3	•
0734240	2.7	62	119	3	•
0734256	2.8	64	119	3	•
0734262	2.9	67	119	3	•
0726898	3.0	69	119	3	•

AQDEXOH10D 10D

Precision Guide Hole Drills for Aqua Micro Coolant Thru Drills



LIST 9622

Unit = mm

EDP No.	Dc	l	L	Ds	Stock
0734279	1.015	3.3	54	3	•
0734285	1.115	3.6	56	3	•
0734291	1.215	3.9	56	3	•
0734307	1.315	4.2	56	3	•
0734313	1.415	4.6	56	3	•
0734320	1.515	4.9	56	3	•
0734336	1.615	5.2	60	3	•
0734342	1.715	5.5	60	3	•
0734359	1.815	5.8	60	3	•
0734365	1.915	6.2	60	3	•

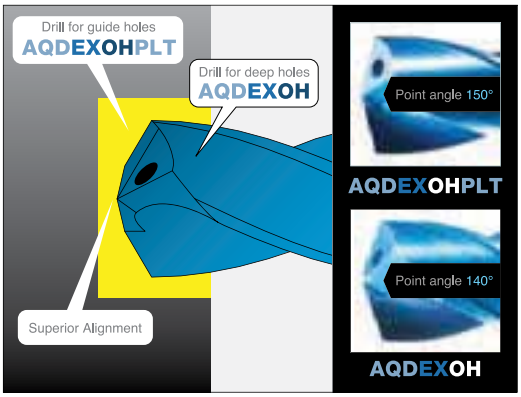
EDP No.	Dc	l	L	Ds	Stock
0734371	2.015	9	60	3	•
0734388	2.115	11	63	3	•
0734394	2.215	11	63	3	•
0734400	2.315	11	63	3	•
0734416	2.415	12	63	3	•
0734422	2.515	12	63	3	•
0734439	2.615	12	68	3	•
0734445	2.715	14	68	3	•
0734451	2.815	14	68	3	•
0734468	2.915	14	68	3	•
0727624	3.030	14	68	3	•

Aqua Drills EX Oil Hole Pilot

AQDEXOHPLT PLT

Precision Guide Hole Drills for Aqua Micro Coolant Thru Drills

- Coolant Thru guide hole drills for Micro long drills
- Provides high precision holes improving tool life of deep hole drills



Applicable Work Materials: 10D - 15D - 20D - Pilot Drills

Structural Steels	Carbon Steels	Pre-Hardened Steels Alloy Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
SS400	S45C/S50C	SCR/NAK	30~40HRC	40~50HRC	50~65HRC	SUS304/SUS316	SUS420		FCD/FC	AC/ADC	Cu
○	○	○	○	●		○	○	●	○		

○ Great ● Good

Drills Designed for high efficiency drilling of small diameter deep holes

AQDEXOH

10D 15D 20D PLT

AQDEXOH 10D, 15D, 20D - Standard Drilling Conditions

LIST 9612 AQDEXOH10D / LIST AQDEXOH15D / LIST 9616 AQDEXOH20D

Work Material / Speed (SFM) / Drilling Diameter			Structural Steels Carbon Steels		Alloy Steels/Pre-Hardened (20-30 HRC)		Mold Steels/Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys Titanium Alloys	
			145-180 SFM		130-165 SFM		115-150 SFM		65-80 SFM		115-150 SFM		80-100 SFM		30-40 SFM	
	Metric	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
Drill Dia. (mm/inches)	1	0.039	14,300	0.0010	12,700	0.0008	11,150	0.0006	6,350	0.0004	11,150	0.0008	7,650	0.0004	3,150	0.0004
	1.5	0.059	9,550	0.0010	8,500	0.0012	7,400	0.0009	4,250	0.0006	7,400	0.0012	5,300	0.0006	2,100	0.0006
	2	0.079	7,150	0.0020	6,350	0.0016	5,550	0.0012	3,200	0.0008	5,550	0.0016	4,000	0.0008	1,600	0.0007
	2.5	0.098	7,000	0.0030	6,350	0.0022	5,700	0.0019	3,200	0.0012	5,700	0.0024	3,800	0.0015	1,650	0.0012
	2.9	0.114	6,050	0.0030	5,500	0.0026	4,950	0.0022	2,750	0.0014	4,950	0.0028	3,300	0.0017	1,400	0.0014

Note:

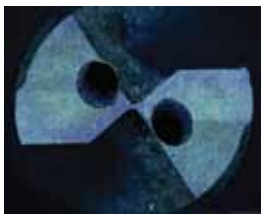
1) Guide hole is required. It is recommended to use AQDEXOHPLT (Guide hole). Hole Depth (1D-2D).
2) It is recommended to use Guide hole drill 0.015mm larger in diameter than deep-hole drill.
3) Utilize the standard drilling conditions shown in catalogs just as general guide, when starting operation.
4) Adjust drilling conditions when unusual vibration or unusual sound occurs when cutting.
5) The above table is for water-soluble cutting fluid. If using non-water soluble cutting fluid, reduce feeds & speeds by 30%.
6) Min. Coolant pressure requirement = 300 psi or 2.0 Mpa.
7) To prevent coolant holes from being blocked use a fine mesh filter. (Recommended filteration efficiency 5μm).
8) Use Step Feed drilling cycle for hole depth over 10D. (Step Feed interval = 0.1D-0.5D).
9) When drilling Stainless Steel always use Step Feed Drilling Cycle.

AQDEXOH

Drills Designed for high efficiency drilling of small diameter deep holes

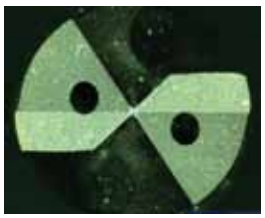
10D 15D 20D PLT

Tip Geometry



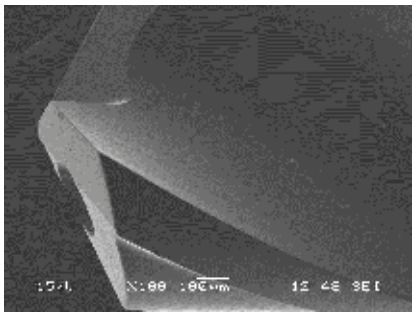
Oil Hole Dia.: Φ0.22
AQDEXOH20D

Φ1.3mm

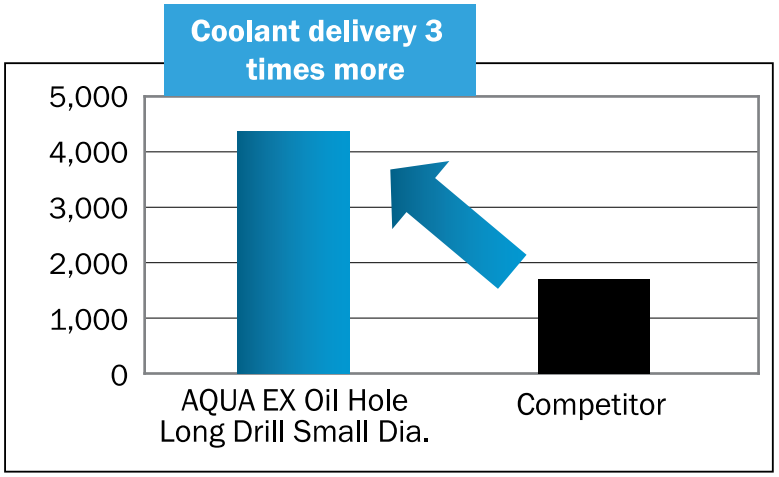


Oil Hole Dia.: Φ0.15
Competitor

Surface condition

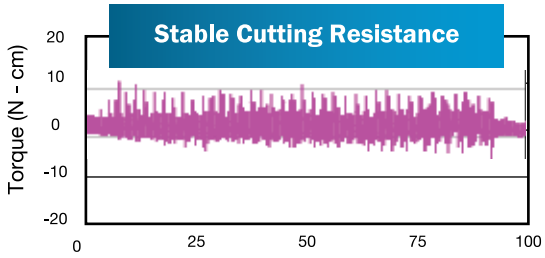


Smooth coating surface for outstanding chip evacuation

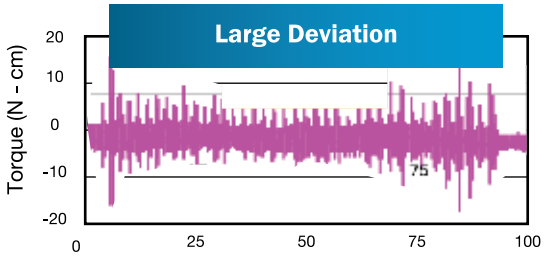


Optimized web geometry and balanced design = rigidity, excellent chip evacuation and optimum performance

Comparison Cutting Resistance



AQDEXOH
Dia.：φ1.3
Speed：40m/min
Feed：245mm/min（0.025mm/rev）
Material：S50C（180HB）



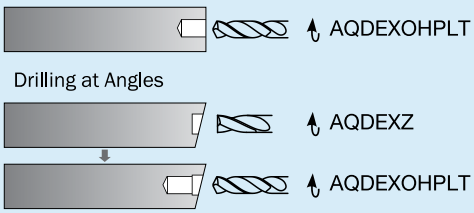
Competitor
Coolant：Water-soluble （Coolant fed）
Depth of hole：26mm （20D） Blind
Pecking：0.325mm （0.25D）
Pilot hole：AQDEXOHPLT depth1.3mmm
Competitor's pilot hole drill depth1.3mm

Drills Designed for high efficiency drilling of small diameter deep holes

AQDEXOH 10D 15D 20D PLT

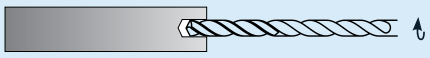
Small Diameter Deep Hole Drill Cutting Conditions:

1. Use Guide Hole Drill (AQDEXOHPLT)



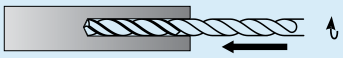
- We recommend pre-drilling with guide hole drill. Hole depth 1D - 2D
- We recommend using AQEXOHPLT for guide hole drilling. Select one with a diameter 0.015mm larger than deep hole drill
- If drilling at an angle use Aqua EX flat drill (AQDEXZ) to create a flat surface and then use Pilot Drill

2 . Deep Hole Drilling into guide Hole



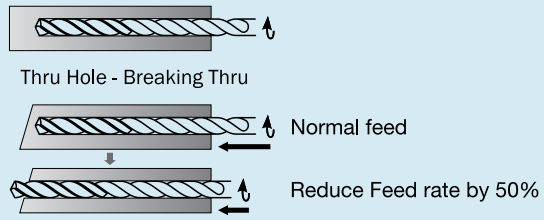
- Penetrate into the guide hole at 50% lower RPM until 0.5-1.0mm (0.02"-0.04")from depth of guide

3 . Deep Hole Drilling



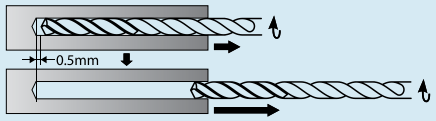
- Start Drilling at recommended feeds & Speeds

4. Deep Hole Drilling (Breaking thru or blind hole)



- When breaking thru for a thru hole reduce feed rate by 50% to prevent drill from breaking

5. Retracting Drill from the Hole



- After drilling is complete, decrease RPM and pull the drill back through the hole
- About RPM = 500, Feed = 2000 mm/min (IPR=0.157 IPM=79)

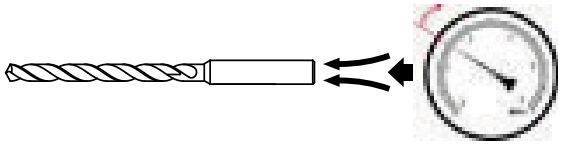
Precautions for Small Diameter Drills

1. Handling of Cutting Fluid

- To prevent Coolant holes from being blocked use a fine mesh filter. (Recommended Filtration efficiency 5μm)
- Water Soluble cutting fluid is recommended

2. Min. Coolant pressure requirement

- Min. Coolant pressure requirement = 300 psi or 2.0 Mpa
- Above recommended pressure will enable stable machining
- If using non-water soluble cutting oils, higher pressure might be required



Min.Coolant Pressure = 300 psi or 2.0 MPa

3. ATC

- To reduce shock and vibration reduce ATC feed if required

The Ultimate High Performance Carbide Drill

NEW

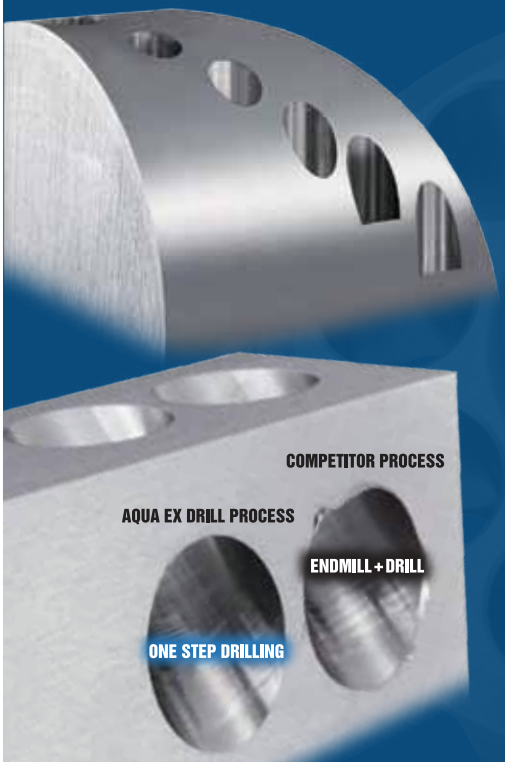
✓ Ideally suited for flat bottom applications in the oil and gas, automotive and general industries.

- ✓ One drill does it all - Eliminates the need to use a “center drill” or “end mill” on inclined or curved surfaces.
- ✓ True 180° flat cutting edges creates minimal exit burr in tubing & thin plates.
- ✓ “Double Margin” for stable and precision drilling.

NACHI

AQUA Drill EX Flat

#1 Selling Flat Bottom Drill



ONE STEP DRILLING with MINIMAL BURR

AQDEXZLS
Extended Length up to10D Reach

AQDEXZOH5D
Coolant Thru 5D Flat Drill

AQDEXZR
Non-Coolant Thru Jobber Length Drill

AQDEXZOH3D
Coolant Thru 3D Flat Drill

AQDEXZ
Non-Coolant Thru Stub Length Drill

NACHI