


HOLEMAKING


57-2024


NOVEMBER 2024

METRIC



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Longer Tool Life
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Easy Chip Evacuation
- 

High Productivity



ISCARDEEPDRILL

Expansion of Brazed Drilling Heads



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Longer Tool Life

Easy Chip
Evacuation

High Productivity

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New Product Announcement

ISCAR DEEP DRILL

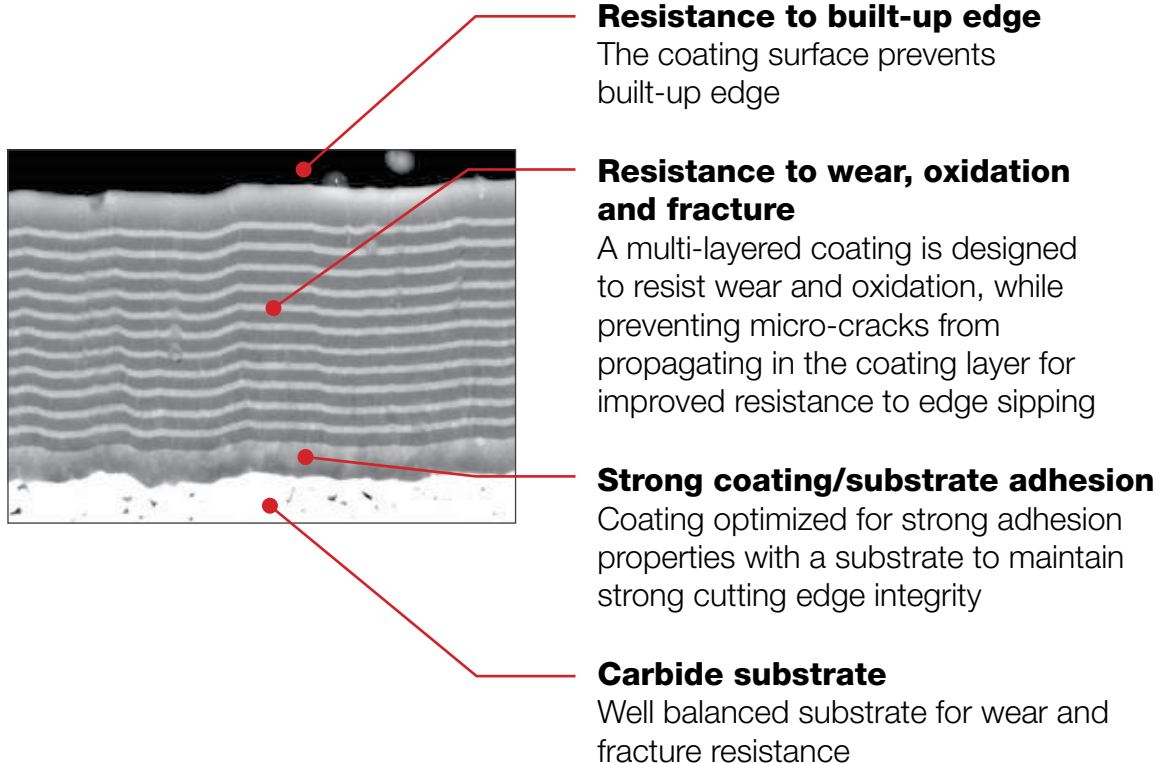
Highlights

ISCAR-UNITAC Introduce a New Line of Brazed Drill Heads for Improved Productivity when Machining Deep Holes

- The unique tip shape and new grade combination will significantly improve tool life, productivity, and stability in a wide range of cutting conditions.
- The new chipbreaker design enables superb chip control and the reduction of cutting forces by 15-20%.
- The drilling heads provide smoother chip flow with a large chip gateway when drilling deep and small-diameter holes.
- The drilling heads maintain high-precision deep hole drilling like other brazed drill lines.
- Available in the diameter range of 15.6 to 16.7 mm.

New IC948 Grade

To prolong tool life for machining ISO P and M materials



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Longer Tool Life



Easy Chip Evacuation

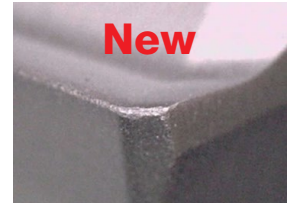
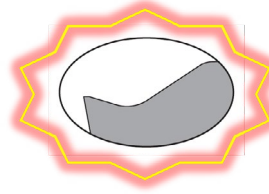


High Productivity

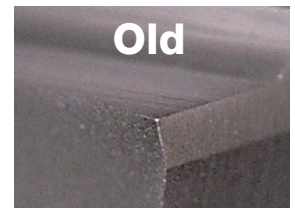
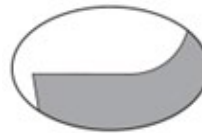
Longer Tool Life

The reduction of heat generated during the cutting by the raked chipbreaker, honed cutting edge, and chamfer on the corner, help to prevent fast chipping progression.

New DT^H chipbreaker



Old DT chipbreaker



Good Chip Evacuation

The chip pocket is larger than the current tool and prevents chip clogging.

High Productivity

The rake angle added on the chipbreaker reduces cutting resistance by **15-20%**.

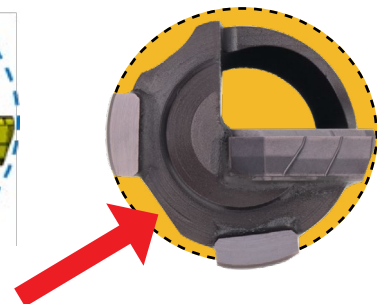
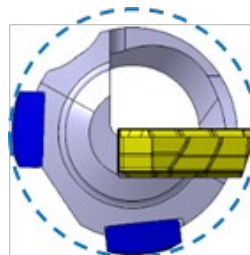


Low Power Consumption

In addition to improved efficiency due to reduced cutting resistance, the design decreases coolant pressure and lowers power consumption (CO2 reduction).

Oil Pressure Reduction

35% or more



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Longer Tool Life



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Sales Strategy

A starting range from 15.61 to 16.70 mm based on the expected high demand in the Heat Exchangers Industry.



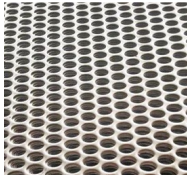
Steel

- Duplex stainless steel
- Billet



Aerospace

- Precipitation hardening stainless steels
- Turbine shaft
- Actuator



Heat Exchanger

- Low carbon steel
- Tube sheet
- Steam generator



Automotive

- Carbon steel
- Camshaft
- Gear shaft



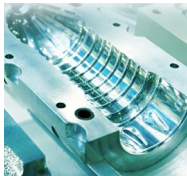
Oil & Gas

- Nonmagnetic steel
- Drill collar
- Drill bit (Rock bit)



Farming Machinery

- Gear shaft
- Hydraulic cylinder



Die & Mold

- Injection mold
- Coolant hole



General Engineering

- Spindle shaft
- Cylinder



Construction Machinery

- Breaker
- Track link
- Hydraulic cylinder

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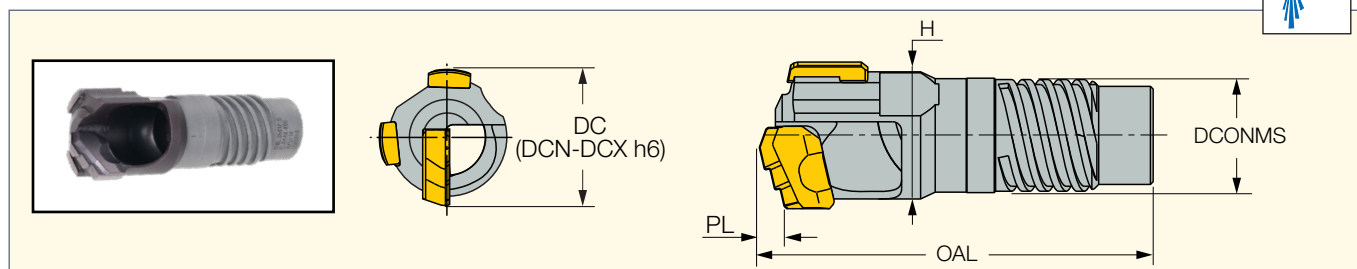
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DSD-E1

Deep Single Tube Drills with External 4 Start Thread Connections and a Single Brazed Tip (15.6-16.7mm dia.)

<https://www.iscar.com/eCatalog/Family.aspx?fnum=2504&mapp=DR&GFSTYP=M&srch=1>



Item Description	DCN ⁽¹⁾	DCX ⁽²⁾	OAL	DCONMS	PL	Threads ⁽³⁾	H	Ts ⁽⁴⁾	IC948
DSD-E1 15.60-16.70 DT	15.60	16.70	43.39	12.6	3.39	4	13	TS-10	•

⁽¹⁾ Cutting diameter minimum

⁽²⁾ Cutting diameter maximum

⁽³⁾ No. of thread starts

⁽⁴⁾ Tube designation

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Brazed Drilling Heads



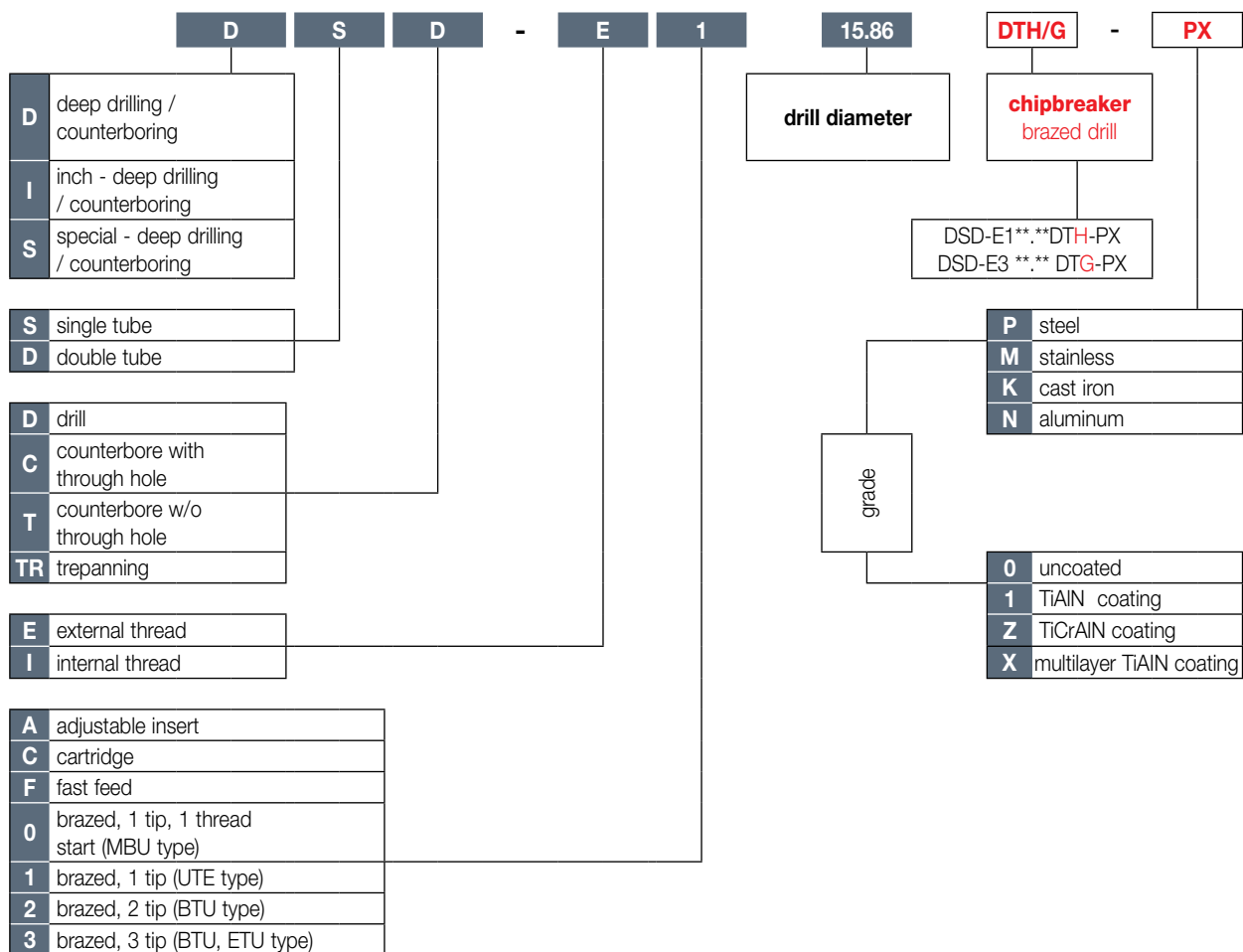
DSD-E0 - Deep single tube drills with an external single thread connection and a brazed single tip (8-14.8 dia.)
 DSD-E1 - Deep single tube drills with external 2 and 4 start thread connections and a single brazed tip (12.6-20 dia.)
 DSD-E2/E3 - Deep single tube drills with external 2 and 4 start thread connections and 2 or 3 brazed tips (12.6-65 dia.)

Double Tube System:

DDD-E3 - Deep double tube drills with external 4 start thread connection and brazed tips (18.4-65 dia.)

Single Tube System – External Thread

Grade of Brazed Heads



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Test Report

Part name: Tube sheet

Material: Carbon Steel Forging + AISI 304 (Clad)

Application: Deep hole solid drilling

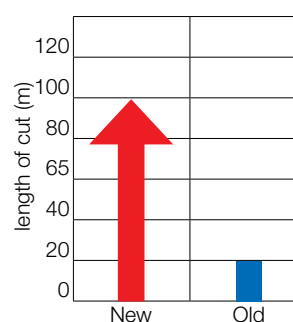
Machine: BTA

Coolant method: Internal / Oil



	New	Current
Drilling head	DSD-E1 16.15 DTH-PX	DSD-E1 16.15 DT-P0
Insert Grade	IC948	IC908
Cutting speed, Vc	68 m/min	68 m/min
Feed, f	0.07 (mm/rev)	0.07 (mm/rev)
Feed speed, Vf	94 (mm/min)	94 (mm/min)
Hole diameter, Dc	16.15 mm	16.15 mm
Tool life, m	100 m	18 m
Coolant	Oil	Oil

Increased Tool Life 5.5 times



Test Report

Part name: Tube sheet

Material: 20MnMoV + Low Carbon Steel

Application: Deep hole solid drilling

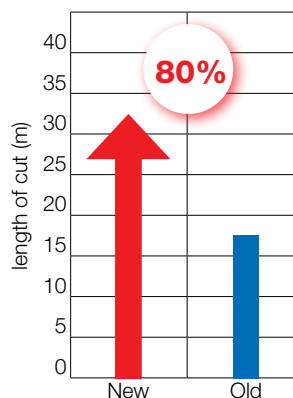
Machine: BTA

Coolant method: Internal / Oil



	New	Current
Drilling head	DSD-E1 16.25 DTH-PX	DSD-E1 16.25 DT-P1
Insert Grade	IC948	IC908
Cutting speed, Vc	80 m/min	80 m/min
Feed, f	0.05 (mm/rev)	0.05 (mm/rev)
Feed speed, Vf	79 (mm/min)	79 (mm/min)
Hole diameter, Dc	16.25 mm	16.25 mm
Tool life, m	33 m	18 m
Coolant	Oil	Oil

Increased Tool Life



ISCAR DEEP DRILL

Machining Recommendations

Ground Brazed Solid Drill Heads DSD-E0, DSD-E1, DSD-E1 DTH							Dia. Range 15.6-16.70	
ISO	Material	Condition	Tensile Strength [N/mm ²]	Hardness HB	Material Group No. ⁽¹⁾	Cutting Speed Vc [m/min]	Feed Rate f (mm/rev)	
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	70-130	0.1-0.16
		≥0.25% C	annealed	650	190	2	70-130	0.1-0.16
		<0.55% C	quenched and tempered	850	250	3	70-130	0.1-0.16
			annealed	750	220	4	70-130	0.1-0.16
		≥0.55% C	quenched and tempered	1000	300	5	70-130	0.1-0.12
	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6	70-110	0.1-0.16	
			930	275	7	60-110	0.1-0.12	
			1000	300	8	60-110	0.1-0.12	
			1200	350	9	60-110	0.1-0.12	
	high alloyed steel, cast steel and tool steel	annealed	680	200	10	70-130	0.1-0.16	
		quenched and tempered	1100	325	11	70-130	0.1-0.12	
	stainless steel and cast steel	ferritic/martensitic	680	200	12	40-110	0.04-0.16	
		martensitic	820	240	13	40-110	0.04-0.16	
M	stainless steel and cast steel	austenitic, duplex	600	180	14	40-110	0.04-0.14	
K	grey cast iron (GG)	ferritic/pearlitic		180	15	50-110	0.05-0.16	
		pearlitic/martensitic		260	16	50-110	0.05-0.16	
	nodular cast iron (GGG)	ferritic		160	17	60-110	0.06-0.16	
		pearlitic		250	18	60-110	0.05-0.16	
	malleable cast iron	ferritic		130	19	70-110	0.05-0.10	
pearlitic			230	20	70-110	0.05-0.16		
N	aluminum-wrought alloys	not hardenable		60	21	65-130	0.08-0.16	
		hardenable		100	22	65-100	0.08-0.16	
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	65-130	0.05-0.10
			hardenable		90	24	65-130	0.08-0.16
		>12% Si	high temperature		130	25	65-130	0.05-0.10
	copper alloys	>1% Pb	free cutting		110	26	65-130	0.08-0.16
		non-metallic	duroplastics, fiber plastics					
	hard rubber					30		
S	high temp. alloys	Fe based	annealed		200	31	20-50	0.05-0.14
			hardened		280	32	20-50	0.06-0.14
		Ni or Co based	annealed		250	33	20-50	0.05-0.14
			hardened		350	34	20-50	0.06-0.14
			cast		320	35	20-50	0.05-0.14
	titanium alloys	alpha+beta alloys	pure	400		36	30-60	0.05-0.12
			hardened	1050		37	30-60	0.06-0.12
H	hardened steel	hardened		55 HRC	38			
				60 HRC	39			
	chilled cast iron	cast		400	40			
	cast iron	hardened		55 HRC	41			

⁽¹⁾ Based on ISO 513 and VDI 3323 standards

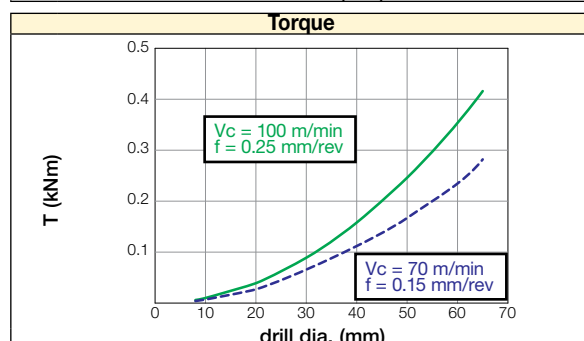
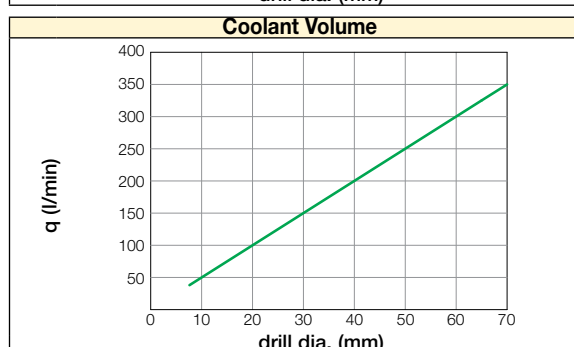
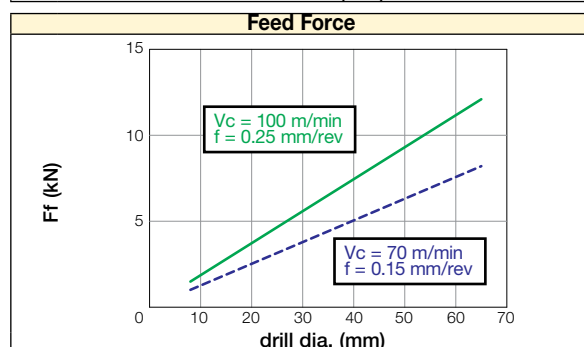
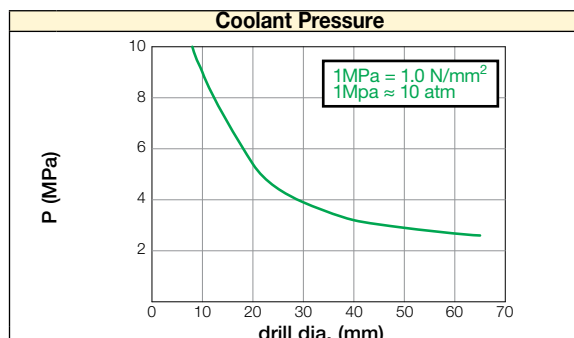
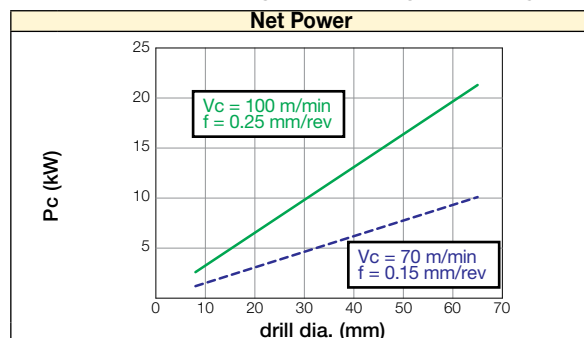
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Technical Guide

STS - Machine Setting for the Single Tube System



The above values should not be used as the exact recommendations. They may need modification depending on the machining conditions, materials, etc.