HOLEMAKING

57-2024

NOVEMBER 2024

METRIC

NPA

New Product Announcement

Longer Tool Life

Easy Chip Evacuation

High Productivity

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ISCAR

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Expansion of Brazed Drilling Heads

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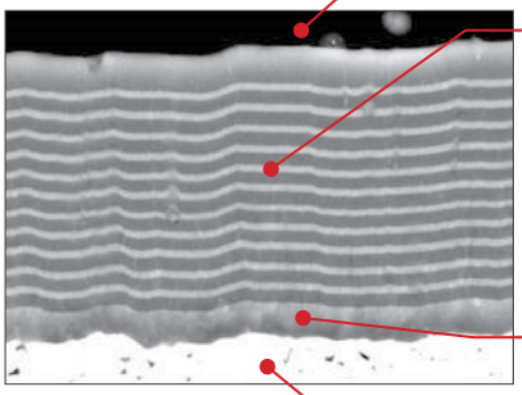
Highlights

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



Resistance to built-up edge
The coating surface prevents built-up edge

Resistance to wear, oxidation and fracture
A multi-layered coating is designed to resist wear and oxidation, while preventing micro-cracks from propagating in the coating layer for improved resistance to edge sipping

Strong coating/substrate adhesion
Coating optimized for strong adhesion properties with a substrate to maintain strong cutting edge integrity

Carbide substrate
Well balanced substrate for wear and fracture resistance

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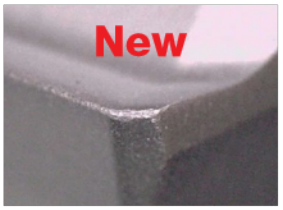
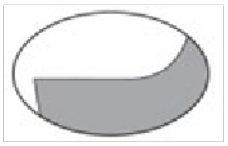
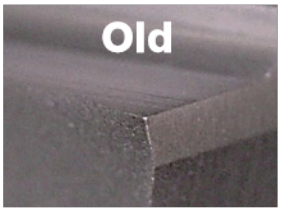
Longer Tool Life
The reduction of heat generated during the cutting by the raked chipbreaker, honed cutting edge, and chamfer on the corner, help to prevent fast chipping progression.

New DTH chipbreaker



Old DT chipbreaker



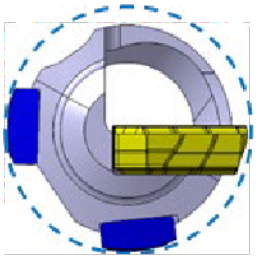


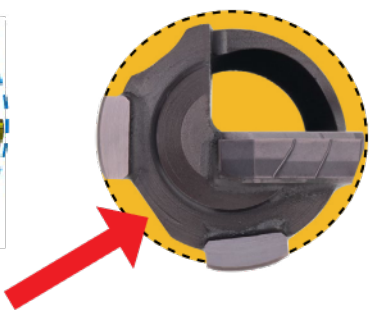
Good Chip Evacuation
The chip pocket is larger than the current tool and prevents chip clogging.

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 (CO_2 reduction).

Oil Pressure Reduction
35% or more





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Longer Tool Life

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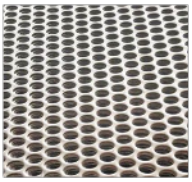
Sales Strategy

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

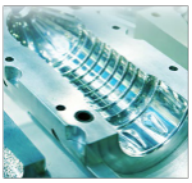


Heat Exchanger
- Low carbon steel
- Tube sheet
- Steam generator

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 shft
- Cylinder

Construction Machinery
- Breaker
- Track link
- Hydraulic cylinder

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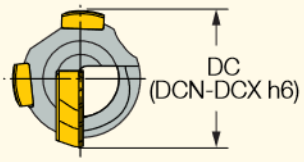
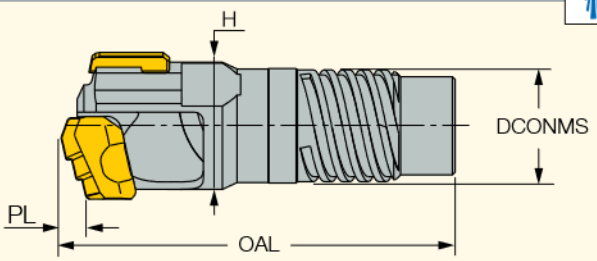
DSD-E1

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 DTH	15.60	16.70	43.39	12.6	3.39	4	13	TS-I0	•

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) No. of thread starts
(4) Tube designation

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Brazed Drilling Heads

Single Tube System – External Thread

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.)

Grade of Brazed Heads

D	S	D	-	E	1	15.86	DTH/G	-	PX

D	deep drilling / counterboring
I	inch - deep drilling / counterboring
S	special - deep drilling / counterboring

drill diameter

chipbreaker brazed drill

DSD-E1**.**DTH-PX
DSD-E3 **.** DTG-PX

S	single tube
D	double tube

P	steel
M	stainless
K	cast iron
N	aluminum

grade

D	drill
C	counterbore with through hole
T	counterbore w/o through hole
TR	trepanning

0	uncoated
1	TiAlN coating
Z	TiCrAlN coating
X	multilayer TiAlN coating

E	external thread
I	internal thread

A	adjustable insert
C	cartridge
F	fast feed
0	brazed, 1 tip, 1 thread start (MBU type)
1	brazed, 1 tip (UTE type)
2	brazed, 2 tip (BTU type)
3	brazed, 3 tip (BTU, ETU type)

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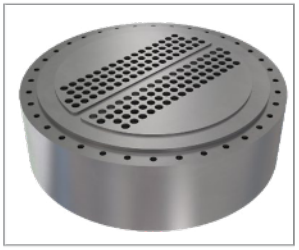
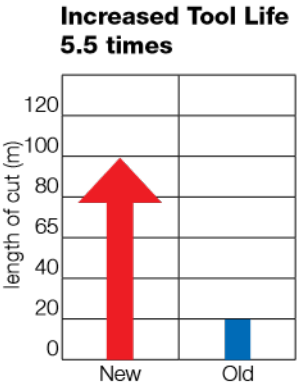
Test Report

Part name: Tube sheet
Material: Carbon Steel Forging + AISI 304 (Clad)
Application: Deep hole solid drilling
Machine: BTA
Coolant method: Internal / Oil

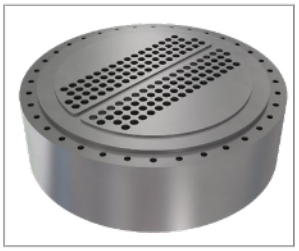


	New	Current
Drilling head	DSD-E1 16.15 DTH-PX	DSD-E1 16.15 DT-P0
Insert Grade	**IC948**	IC908
Cutting speed, Vc	68 m/min	68 m/min
Feed, f	0.07 (mm/rev)	0.07 (mm/rev)
Feed speed, Vf	94 (mm/min)	94 (mm/min)
Hole diameter, Dc	16.15 mm	16.15 mm
Tool life, m	**100 m**	18 m
Coolant	Oil	Oil

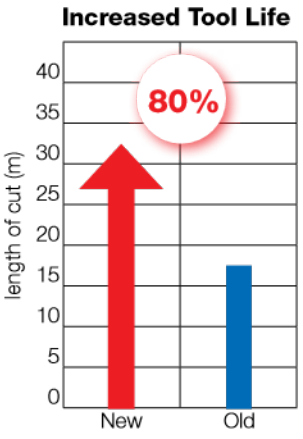


Test Report

Part name: Tube sheet
Material: 20MnMoIV + Low Carbom 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



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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/mm²]	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
		≥0.55% C	annealed	750	220	4	70-130	0.1-0.16
			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
			quenched and tempered	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
			brass		90	27	65-130	0.05-0.16
			electrolitic copper		100	28	65-130	0.08-0.16
	non-metallic		duroplastics, fiber plastics			29		
			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		pure	400		36	30-60	0.05-0.12
			alpha+beta alloys hardened	1050		37	30-60	0.06-0.12
H	hardened steel		hardened		55 HRC	38		
			hardened		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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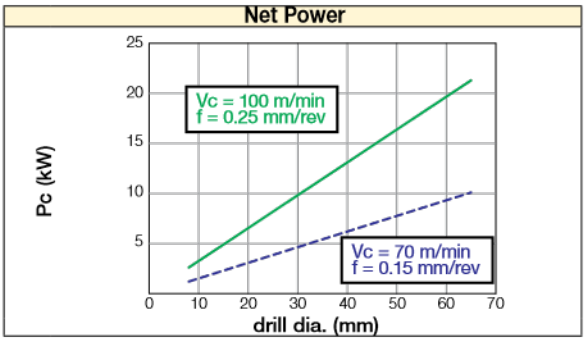
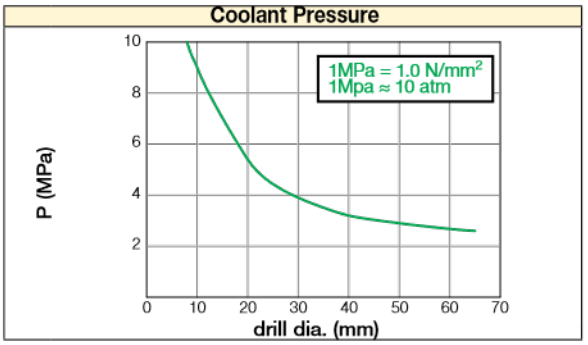
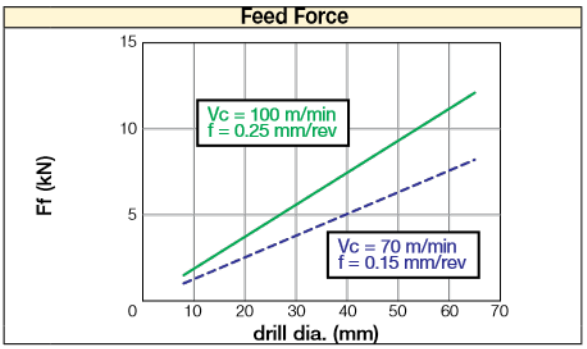
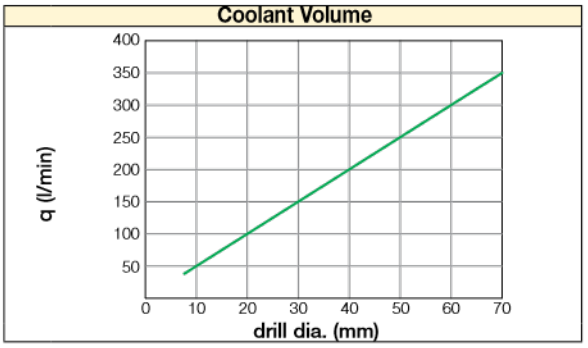
Technical Guide

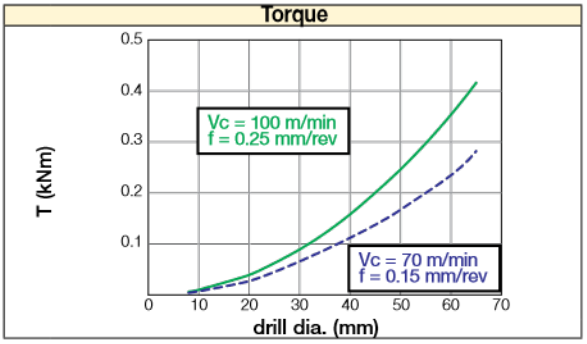
STS - Machine Setting for the Single Tube System











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