

DRILLING

11-2024

APRIL 2024

METRIC

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New Product Announcement



High Productivity



No Setup Time



Machining a Wide Range of Materials



LOGIQ3CHAM
THREE FLUTE CHAMDRILL

Expanded Line with New Counterboring Heads

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Easy Chip
Evacuation

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LOGIQ-3CHAM
THREE FLUTE CHAMDRILL

Highlights

New LOGIQ-3-CHAM Geometry Assures Stable Performance and High Productivity on All Material Types

- The new **F3B** counterboring heads can be mounted on any LOGIQ-3-CHAM tool in the appropriate pocket size.
- 3 effective cutting edges, enable increased productivity.
- The new **F3B** design enables diverse counterboring applications with a wide ratio of pre-holes to required holes.
- Combines the productivity advantages of the LOGIQ-3-CHAM line with excellent counterboring capabilities while maintaining extremely good hole straightness even when machining non-centered pre-holes.
- Due to its unique design, LOGIQ-3-CHAM can be used on any type of machine regardless of its power, specifically on lathes and Swiss-Type machines.

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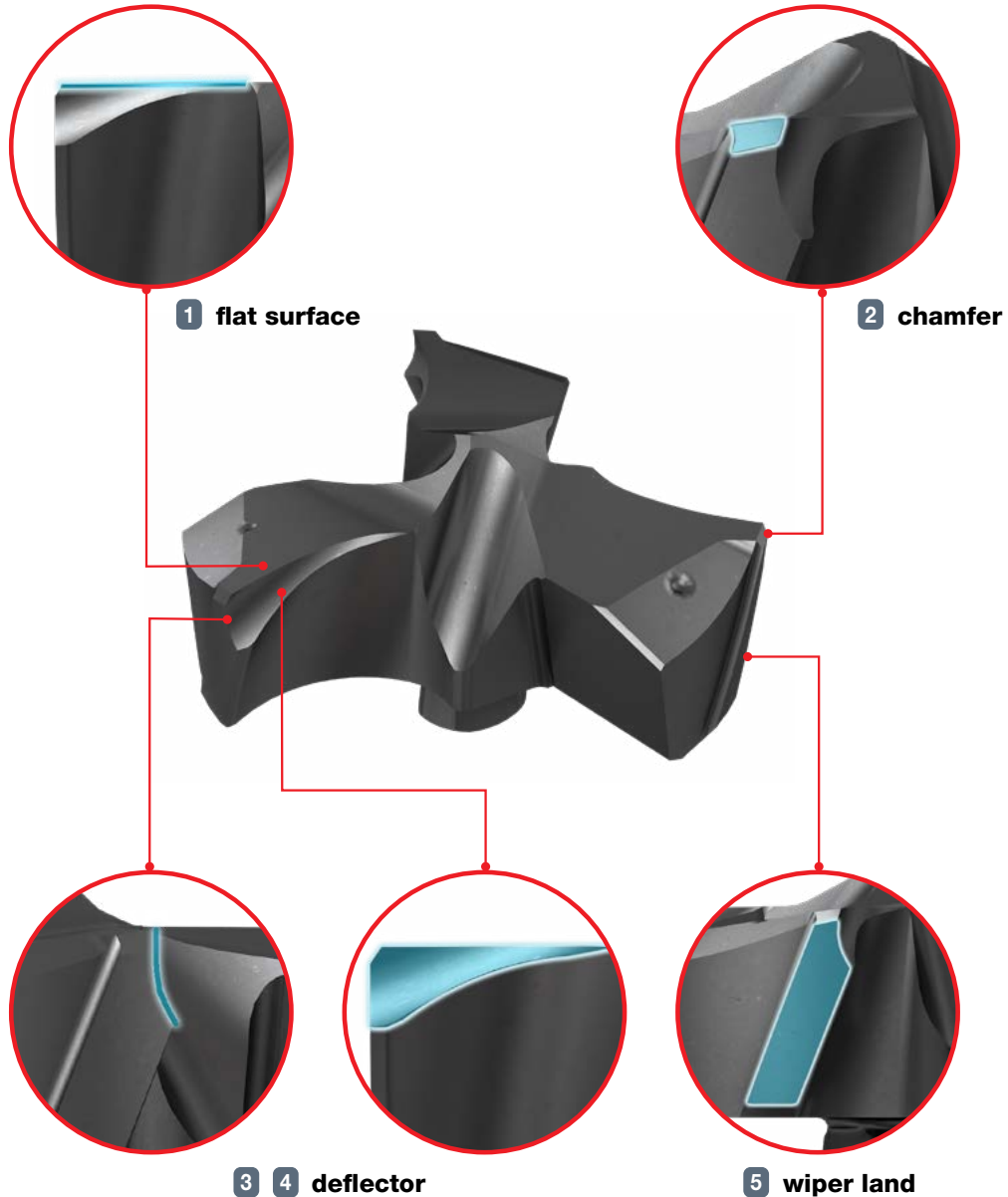
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F3B Counterboring Head Advantages

1. Nearly flat surface perfectly suitable for counterboring applications, where it is necessary to create seats for springs, sockets for screw heads or holes for washers.
2. A chamfer on the corner prevents fast chipping or wear progression.
- 3-4. Due to its special geometry, which includes a deflector, counterboring processes are made easy by breaking chips into very small segments when machining problematic materials such as sticky steel, stainless steel and other exotic materials (ISO M,N,S).
5. Unique margin design provides better support and guidance which improves hole straightness, concentricity and fine surface quality.



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Benefits:

The new LOGIQ-3-CHAM F3B counterboring head breaks chips into very small segments regardless of the material being machined, especially with problematic materials such as sticky steel, stainless steel and other exotic materials (ISO M,N,S).

Due to its special design it allows machining a wide range of applications:

- Suitable for both low-power machines and powerful machines.
- Suitable for cross holes, chamfers, inclined surfaces, and assures high hole quality.

Low Alloy Steel, 4340	Non-Alloy Steel, A51670
Stainless Steel, 316L	Aluminum, 7075
Titanium, 56400	Inconel, 718

[Click for Short Video](#)

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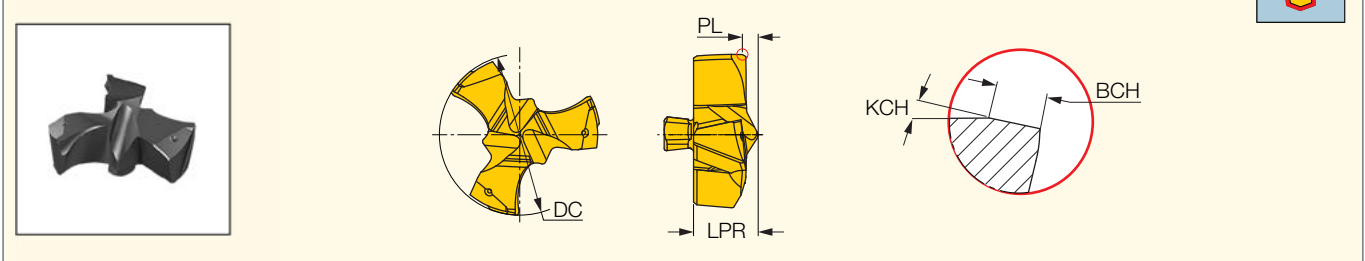
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F3B

Exchangeable 3 Flute Counterboring Heads*

<https://www.iscar.com/eCatalog/Family.aspx?num=5115&mapp=DR&GFSTYP=M&srch=1>



Designation	Dimensions						IC908
	DC	LPR	PL	BCH	KCH	SSC ⁽¹⁾	
F3B 120-IQ	12.00	4.90	0.850	0.40	30.0	12	●
F3B 125-IQ	12.50	4.90	0.850	0.40	30.0	12	●
F3B 130-IQ	13.00	5.00	1.000	0.40	30.0	13	●
F3B 135-IQ	13.50	5.00	1.000	0.40	30.0	13	●
F3B 140-IQ	14.00	5.74	1.440	0.40	30.0	14	●
F3B 145-IQ	14.50	5.74	1.440	0.40	30.0	14	●
F3B 150-IQ	15.00	6.01	1.440	0.40	30.0	15	●
F3B 155-IQ	15.50	6.01	1.440	0.40	30.0	15	●
F3B 160-IQ	16.00	6.43	1.580	0.40	30.0	16	●
F3B 165-IQ	16.50	6.43	1.580	0.40	30.0	16	●
F3B 170-IQ	17.00	6.95	1.630	0.40	30.0	17	●
F3B 175-IQ	17.50	6.95	1.630	0.40	30.0	17	●
F3B 180-IQ	18.00	7.30	1.610	0.40	30.0	18	●
F3B 185-IQ	18.50	7.30	1.610	0.40	30.0	18	●
F3B 190-IQ	19.00	7.58	1.600	0.40	30.0	19	●
F3B 195-IQ	19.50	7.58	1.600	0.40	30.0	19	●
F3B 200-IQ	20.00	7.52	1.760	0.40	30.0	20	●
F3B 205-IQ	20.50	7.52	1.760	0.40	30.0	20	●
F3B 210-IQ	21.00	7.98	1.740	0.40	30.0	21	●
F3B 215-IQ	21.50	7.98	1.740	0.40	30.0	21	●
F3B 220-IQ	22.00	8.67	1.830	0.40	30.0	22	●
F3B 225-IQ	22.50	8.67	1.830	0.40	30.0	22	●
F3B 230-IQ	23.00	8.78	1.960	0.40	30.0	23	●
F3B 235-IQ	23.50	8.78	1.960	0.40	30.0	23	●
F3B 240-IQ	24.00	8.91	1.800	0.40	30.0	24	●
F3B 245-IQ	24.50	8.91	1.800	0.40	30.0	24	●
F3B 250-IQ	25.00	9.87	1.970	0.40	30.0	25	●
F3B 255-IQ	25.50	9.87	1.970	0.40	30.0	25	●

* For counterboring operations ONLY

⁽¹⁾ Seat size code



Material Groups

ISO	Material	Condition	Tensile Strength [N/mm ²]	Hardness HB	Material Group No.	
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1
		≥0.25% C	annealed	650	190	2
		<0.55% C	quenched and tempered	850	250	3
		≥0.55% C	annealed	750	220	4
	quenched and tempered		1000	300	5	
	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	annealed	600	200	6
			930	275	7	
			1000	300	8	
	high alloyed steel, cast steel and tool steel	quenched and tempered	1200	350	9	
			annealed	680	200	10
	stainless steel and cast steel	quenched and tempered	1100	325	11	
			ferritic / martensitic	680	200	12
	stainless steel and cast steel	martensitic	820	240	13	
M			stainless steel and cast steel	austenitic, duplex	600	180
K	gray cast iron (GG)	ferritic / pearlitic		180	15	
		pearlitic / martensitic		260	16	
	nodular cast iron (GGG)	ferritic		160	17	
		pearlitic		250	18	
	malleable cast iron	ferritic		130	19	
		pearlitic		230	20	
N	aluminum-wrought alloys	not hardenable		60	21	
		hardenable		100	22	
	aluminum-cast alloys	≤12% Si	not hardenable		75	23
		hardenable		90	24	
	copper alloys	>12% Si	high temperature		130	25
		>1% Pb	free cutting		110	26
	non metallic	brass	brass		90	27
			electrolytic copper		100	28
S	high temperature alloys	Fe based	annealed		200	31
		hardened		280	32	
		Ni or Co based	annealed		250	33
			hardened		350	34
	titanium alloys	cast		320	35	
		pure	400	190	36	
		alpha+beta alloys, hardened	1050	310	37	
H	hardened steel	hardened		55 HRC	38	
		hardened		60 HRC	39	
	chilled cast iron	cast		400	40	
	cast iron	hardened		55 HRC	41	



Cutting Parameters

Material Group No.	Diameter range [mm]	DC - Counterboring Head Diameter									
		DC = 12-14.99		DC = 15-17.99		DC = 18-20.99		DC = 21-23.99		DC = 24-25.99	
	Pre-hole diameter range	Dmin	Dmax	Dmin	Dmax	Dmin	Dmax	Dmin	Dmax	Dmin	Dmax
		DC*0.7 ⁽¹⁾	DC-2 ⁽²⁾	DC*0.7 ⁽¹⁾	DC-2 ⁽²⁾	DC*0.7 ⁽¹⁾	DC-2 ⁽²⁾	DC*0.7 ⁽¹⁾	DC-2 ⁽²⁾	DC*0.7 ⁽¹⁾	DC-2 ⁽²⁾
V _c [m/min]	f _r [mm/rev]										
1											
2	80-100-120	0.30	0.33	0.35	0.39	0.43	0.48	0.49	0.54	0.51	0.57
3		0.35	0.39	0.41	0.45	0.49	0.54	0.54	0.60	0.57	0.63
4		0.41	0.45	0.46	0.51	0.54	0.60	0.59	0.66	0.62	0.69
5	50-65-80										
6	70-90-110										
7	70-85-100	0.27	0.30	0.32	0.36	0.41	0.45	0.46	0.51	0.49	0.54
8	50-65-80	0.32	0.36	0.38	0.42	0.46	0.51	0.51	0.57	0.54	0.60
9	40-50-60	0.38	0.42	0.43	0.48	0.51	0.57	0.57	0.63	0.59	0.66
10	50-70-90	0.22	0.24	0.24	0.27	0.30	0.33	0.35	0.39	0.38	0.42
11	40-60-80	0.27	0.30	0.30	0.33	0.32	0.36	0.38	0.42	0.41	0.45
12		0.32	0.36	0.35	0.39	0.41	0.45	0.41	0.45	0.43	0.48
13	40-55-70	0.16	0.18	0.19	0.21	0.22	0.24	0.27	0.30	0.27	0.30
		0.19	0.21	0.22	0.24	0.24	0.27	0.30	0.33	0.30	0.33
		0.22	0.24	0.24	0.27	0.27	0.30	0.32	0.36	0.32	0.36
14	30-50-70	0.16	0.18	0.19	0.21	0.22	0.24	0.27	0.30	0.27	0.30
		0.19	0.21	0.22	0.24	0.24	0.27	0.30	0.33	0.30	0.33
		0.22	0.24	0.24	0.27	0.27	0.30	0.32	0.36	0.32	0.36
15	90-125-160										
16	80-110-140										
17	90-135-180	0.42	0.42	0.51	0.51	0.63	0.63	0.72	0.72	0.81	0.81
18	80-110-140	0.60	0.72	0.69	0.81	0.81	0.90	0.96	0.96	1.02	1.02
19	90-125-160	0.81	1.05	0.9	1.11	0.99	1.17	1.23	1.23	1.32	1.32
20	80-110-140										
21											
22	90-155-220										
23											
24		0.41	0.45	0.43	0.48	0.49	0.54	0.59	0.66	0.68	0.75
25	80-120-160	0.49	0.54	0.51	0.57	0.57	0.63	0.68	0.75	0.76	0.84
26		0.59	0.66	0.62	0.69	0.68	0.75	0.78	0.87	0.86	0.96
27	90-155-220										
28											
29											
30											
31	30-45-60										
32											
33	20-35-50	0.14	0.15	0.14	0.15	0.16	0.18	0.19	0.21	0.22	0.24
34		0.16	0.18	0.16	0.18	0.19	0.21	0.22	0.24	0.24	0.27
35		0.19	0.21	0.19	0.21	0.22	0.24	0.24	0.27	0.27	0.3
36	20-35-50										
37											
38	20-35-50		0.15		0.15		0.18		0.21		0.24
39			0.18		0.18		0.21		0.24		0.27
40		25-42-60		0.21		0.21		0.24		0.27	
41	20-35-50										

■ Recommended cutting data
 In counterboring in unfavorable conditions (through cross holes, inclined entry/exit, chambers, etc.), the cutting parameters should be reduced by 30-50% respectively.

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User Guide Lines and Recommendations

- When counterboring with F3B heads, the diameter of the hole being counterbored shall meet the following requirements:
 1. The MINIMUM hole diameter must not be less than 70% of the selected F3B head diameter
An example: Final hole - 16 mm
Calculation: $16 * 0.7 = 11.2$
As result, for required counterboring diameter 16 mm the smallest possible pre-hole diameter is - 11.2 mm.
 2. The MAXIMUM hole diameter should be smaller by 2 mm than the F3B head diameter (1 mm on each side). An example: Final hole - 16 mm
Calculation: $16 - 2 = 14$
As a result, for required counterboring diameter 16 mm the biggest possible pre-hole diameter is - 14 mm.
- Therefore, the pre-hole diameter range for further counterboring operations with a diameter of 16 mm can vary from 11.2 mm to 14 mm.
- For long-reach operations that require applying tools with a cutting depth exceeding $5 \times D$, it is recommended to machine the hole using the same F3B head mounted on a tool with a shorter cutting depth (up to $3 \times D$) to create a pilot hole with a depth of at least $1 \times D$. Next, the machining can be continued using the long-reach tool.

Drilling Head Mounting Procedure

Coolant Recommendations

Dry machining X

Up to $2 \times D$ ✓