

NPN

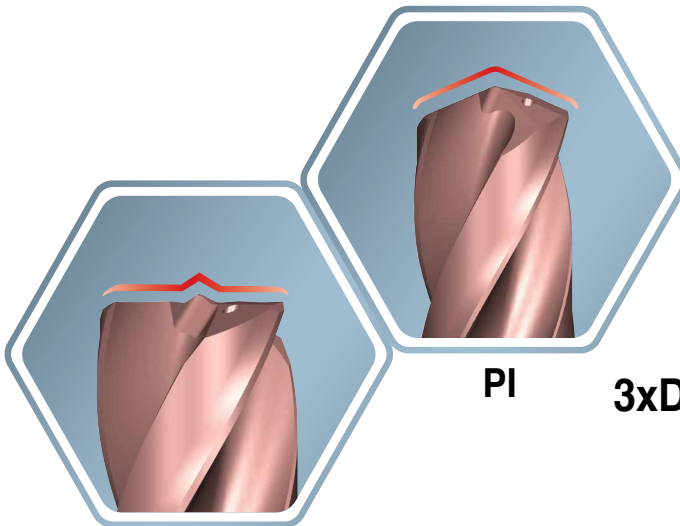
New Product News



SOLID 3 DRILL

3 FLUTE

8xD Drilling Depth and New Flat Bottom Geometry
Three Flute Solid Carbide Drills



FI

PI

3xD

5xD

8xD

KEY POINT

A flat bottom geometry and an 8xD drill for drilling deeper holes are now available in the extremely productive SOLID-3-DRILL range.

The SOLID-3-DRILL line now includes an 8xD drilling depth option for deeper hole drilling and a flat-bottom geometry type. With three flutes and a unique point design for self-centering, the line outperforms two effective edge drills in terms of productivity.

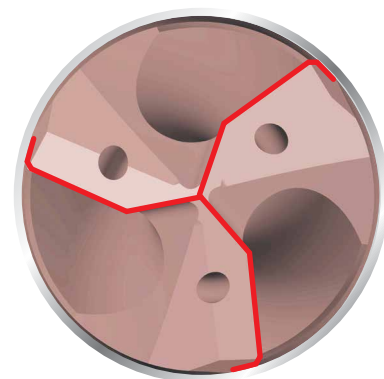
With the expansion to 8xD, following the current 3xD and 5xD depths, end-users can experience the same high tolerance hole precision at various drilling depths.

The new flat bottom design of the SOLID-3-DRILL is ideal for drilling cavities in bolts and ensures excellent performance in both cast iron and steel applications.

For further information, please contact the product manager.

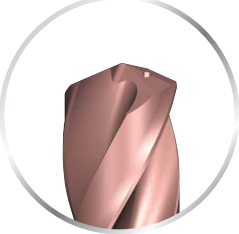


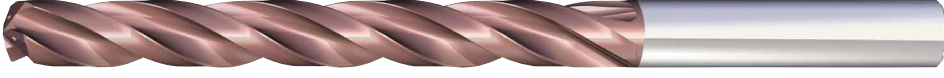
Features

- Drill range: Ø4.0-12.0 mm (0.5 mm increments)
- 3-flute design improves productivity
- Stable drilling under high cutting conditions
- Polished, optimal geometry flutes enable smooth chip evacuation
- Internal coolant through-type solid carbide drills



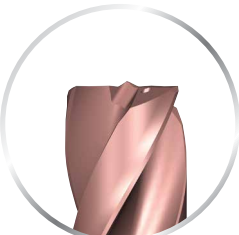
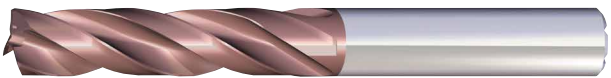

■ 3 flute solid carbide drill for deep hole drilling (3HD-PI8)

- Drilling depth: 3xD, 5xD and 8xD
- Symmetric point design enables drilling without a pre-hole

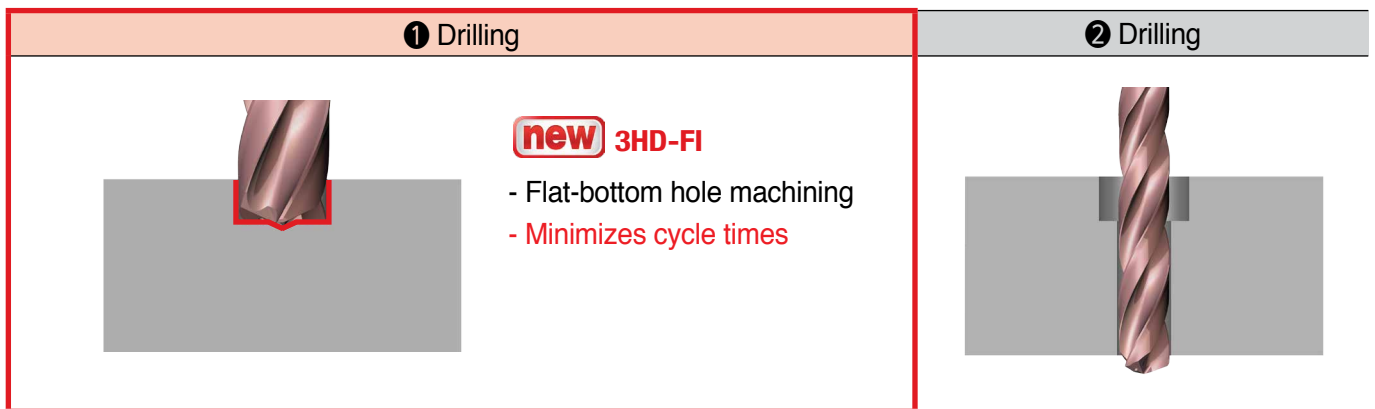
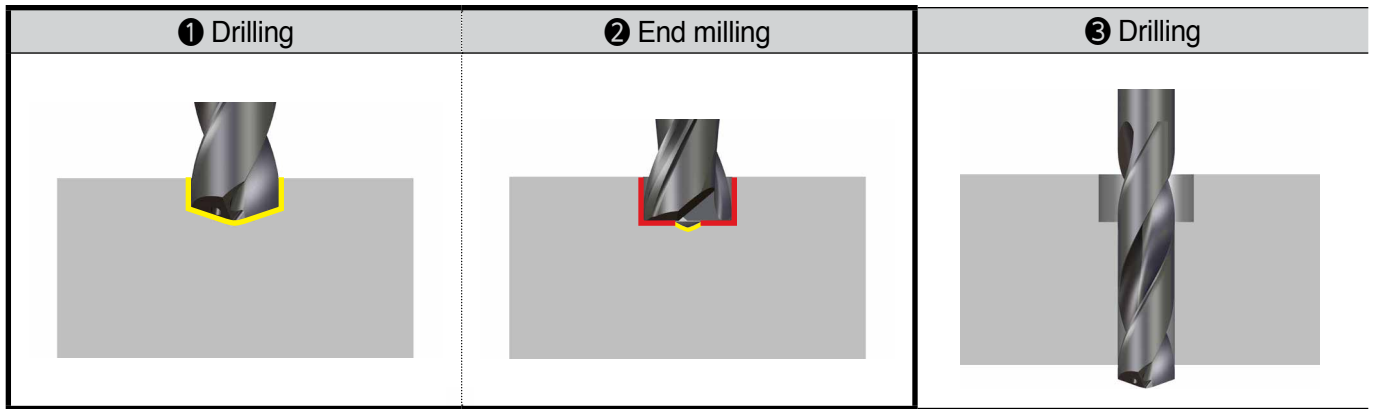
Head shape	Drill	
3HD-PI 	3xD	
	5xD	
	new 8xD	

■ 3 flute solid carbide drill for flat-bottom hole drilling (3HD-FI)

- Drilling depth: 3xD, 5xD
- Premium hole precision and excellent performance in flat bottom hole applications
- Reduced cycle time for improved productivity and cost reduction

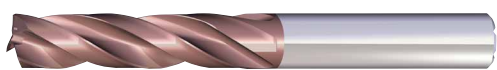
Head shape	Drill	
3HD-FI 	new 3xD	
	new 5xD	

■ Two steps reduced to one

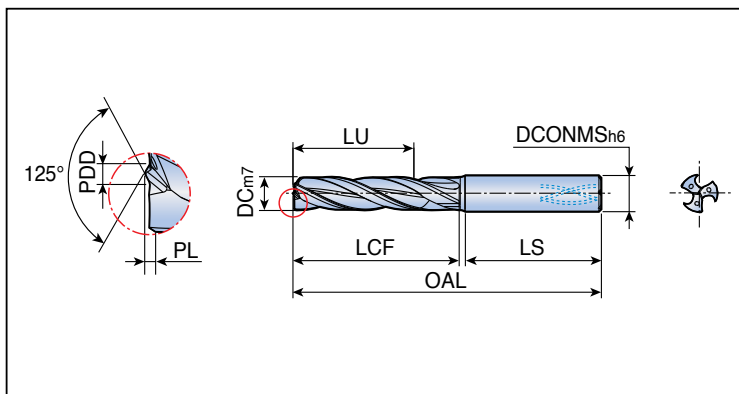


3HD...FI3

3 flute solid carbide drills for flat bottom holes



• Drilling depth: 3xDiameter



Designation	Dimension (mm)								Grade
	DC	DCONMS	OAL	LU	LCF	LS	PDD	PL	TT5130
3HD 040-017-06 FI3	4.0	6	66	17	25	35	0.77	0.43	●
045-017-06 FI3	4.5	6	66	17	25	35	0.86	0.45	●
050-020-06 FI3	5.0	6	66	20	29	36	0.97	0.47	●
055-020-06 FI3	5.5	6	66	20	29	36	1.08	0.58	●
060-020-06 FI3	6.0	6	66	20	29	36	1.08	0.58	●
065-024-08 FI3	6.5	8	79	24	35	36	1.26	0.62	●
070-024-08 FI3	7.0	8	79	24	35	36	1.26	0.62	●
075-029-08 FI3	7.5	8	79	29	42	36	1.44	0.66	●
080-029-08 FI3	8.0	8	79	29	42	36	1.44	0.66	●
085-035-10 FI3	8.5	10	89	35	48	40	1.62	0.79	●
090-035-10 FI3	9.0	10	89	35	48	40	1.62	0.79	●
095-035-10 FI3	9.5	10	89	35	48	40	1.80	0.82	●
100-035-10 FI3	10.0	10	89	35	48	40	1.80	0.82	●
105-040-12 FI3	10.5	12	102	40	55	45	1.98	0.95	●
110-040-12 FI3	11.0	12	102	40	55	45	1.98	0.95	●
115-040-12 FI3	11.5	12	102	40	56	45	2.16	0.98	●
120-040-12 FI3	12.0	12	102	40	56	45	2.16	0.98	●

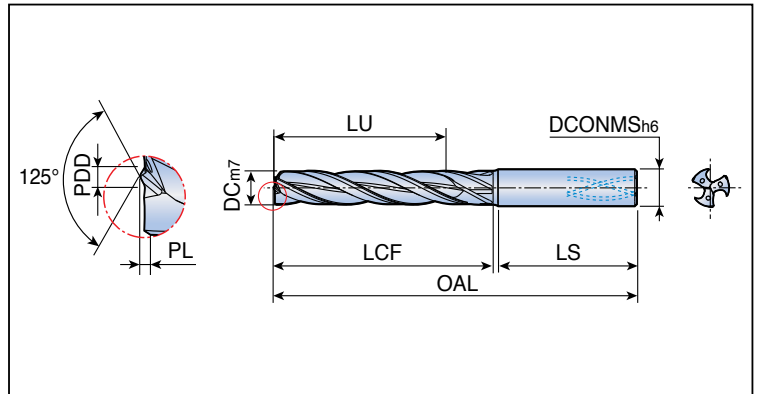
●: Standard items

3HD...FI5

3 flute solid carbide drills for flat bottom holes



- Drilling depth: 5xDiameter



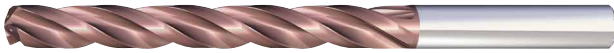
Designation	Dimension (mm)								Grade
	DC	DCONMS	OAL	LU	LCF	LS	PDD	PL	
3HD 040-029-06 FI5	4.0	6	74	29	37	35	0.77	0.43	●
045-029-06 FI5	4.5	6	74	29	37	35	0.86	0.45	●
050-035-06 FI5	5.0	6	82	35	45	36	0.97	0.47	●
055-035-06 FI5	5.5	6	82	35	45	36	1.08	0.58	●
060-035-06 FI5	6.0	6	82	35	45	36	1.08	0.58	●
065-043-08 FI5	6.5	8	91	43	54	36	1.26	0.62	●
070-043-08 FI5	7.0	8	91	43	54	36	1.26	0.62	●
075-043-08 FI5	7.5	8	91	43	54	36	1.44	0.66	●
080-043-08 FI5	8.0	8	91	43	54	36	1.44	0.66	●
085-049-10 FI5	8.5	10	103	49	62	40	1.62	0.79	●
090-049-10 FI5	9.0	10	103	49	62	40	1.62	0.79	●
095-049-10 FI5	9.5	10	103	49	62	40	1.80	0.82	●
100-049-10 FI5	10.0	10	103	49	62	40	1.80	0.82	●
105-056-12 FI5	10.5	12	118	56	71	45	1.98	0.95	●
110-056-12 FI5	11.0	12	118	56	71	45	1.98	0.95	●
115-056-12 FI5	11.5	12	118	56	72	45	2.16	0.98	●
120-056-12 FI5	12.0	12	118	56	72	45	2.16	0.98	●

●: Standard items

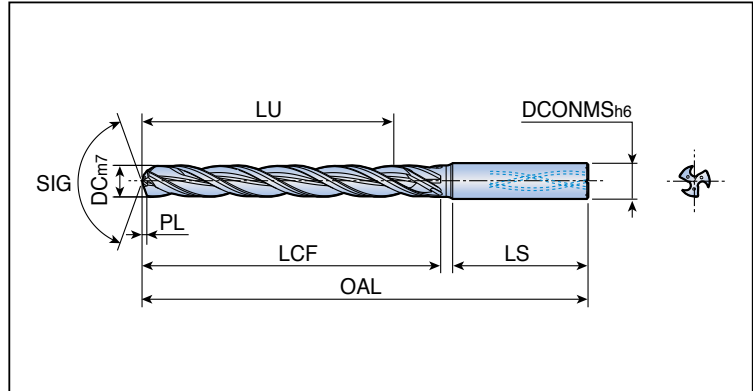
3HD...PI8



3 flute solid carbide drills with oil holes



• Drilling depth: 8xDiameter



Designation	Dimension (mm)								Grade
	DC	DCONMS	OAL	SIG	LU	LCF	LS	PL	
3HD 040-036-06 PI8	4.0	6	81	140	36	43	35	0.82	●
045-036-06 PI8	4.5	6	81	140	36	43	35	0.88	●
050-048-06 PI8	5.0	6	95	140	48	57	36	0.96	●
055-048-06 PI8	5.5	6	95	140	48	57	36	1.08	●
060-048-06 PI8	6.0	6	95	140	48	57	36	1.17	●
065-064-08 PI8	6.5	8	114	140	64	76	36	1.26	●
070-064-08 PI8	7.0	8	114	140	64	76	36	1.35	●
075-064-08 PI8	7.5	8	114	140	64	76	36	1.40	●
080-064-08 PI8	8.0	8	114	140	64	76	36	1.49	●
085-080-10 PI8	8.5	10	142	130	80	95	40	2.04	●
090-080-10 PI8	9.0	10	142	130	80	95	40	2.16	●
095-080-10 PI8	9.5	10	142	130	80	95	40	2.29	●
100-080-10 PI8	10.0	10	142	130	80	95	40	2.33	●
105-096-12 PI8	10.5	12	162	130	96	113	45	2.50	●
110-096-12 PI8	11.0	12	162	130	96	113	45	2.61	●
115-096-12 PI8	11.5	12	162	130	96	113	45	2.67	●
120-096-12 PI8	12.0	12	162	130	96	113	45	2.80	●

●: Standard items

Recommended Cutting Conditions



ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc(m/min)	Feed (mm/rev) vs. drill diameter				
							Ø4 - Ø5	Ø5.1 - Ø6	Ø6.1 - Ø8	Ø8.1 - Ø10	Ø10.1 - Ø12
P	Non-alloy steel, <0.25%C	Annealed	420	125	1	80-140	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
		>=0.25%C Annealed	650	190	2	80-130	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
	cast steel, free cutting steel	<0.55%C Quenched and tempered	850	250	3	80-120	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
		>=0.55%C Annealed	750	220	4	70-110	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	1000	300	5	50-90	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
			600	200	6	80-120	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.50	0.35-0.55
		Annealed	930	275	7	70-110	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.50	0.35-0.55
			1000	300	8	50-90	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.50	0.35-0.55
	High alloy steel, cast steel and tool steel	Quenched and tempered	1200	350	9	40-70	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.50	0.35-0.55
			680	200	10	50-90	0.15-0.20	0.20-0.30	0.25-0.35	0.30-0.45	0.35-0.50
	K	Gray cast iron (GG)	Ferritic		160	15	80-140	0.20-0.30	0.25-0.45	0.35-0.55	0.40-0.60
Pearlitic				250	16	70-120	0.20-0.30	0.25-0.45	0.35-0.55	0.40-0.60	0.45-0.65
Cast iron nodular (GGG)		Ferritic		180	17	80-120	0.20-0.30	0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60
		Pearlitic		260	18	70-110	0.20-0.30	0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60
Malleable cast iron		Ferritic		130	19	80-120	0.20-0.30	0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60
		Pearlitic		230	20	70-110	0.20-0.30	0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60

■ Steel ■ Cast iron