



SOLIDDRILL³

HOLE-MAKING PRODUCTS

Diameters:
Metric: 4mm - 12mm
11 Common Inch Diameters

Lengths:
3xD
5xD

Shank Sizes:
6, 8, 10 & 12mm

Geometry:
3-Flute
Self-centering

Grade:
IN2205

Materials:
Steel
Cast Iron



New 3-Flute Solid Carbide Drill for 50% Higher Feed Rates!

As part of the new SFeedUP campaign, Ingersoll has introduced a 3-flute solid carbide drill capable of 50% higher feed rates compared to conventional 2-flute drills. Not only does this SolidDrill3 line improve productivity due to the increased number of teeth, it also features a unique edge design that improves machining stability needed for these more aggressive cutting conditions. SolidDrill3 is an ideal, high performance solution for high production drilling applications, especially in steel and cast iron machining.

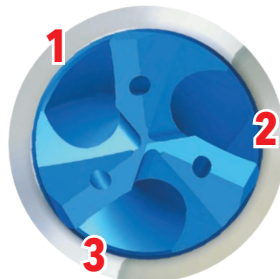
Features & Benefits:

- 3-flute geometry increases productivity by at least 50%
- Self-centering geometry provides precise and accurate holes
- Very high stability in the cut due to its specially designed edge geometry
 - Reinforced cutting edge
 - Side geometry that minimizes heat and reduces cutting forces
- 3 coolant outlet holes to maximum flow and evacuate chips
- New PVD-coated grade IN2205, blue in color for easy identification
- Suitable for steel and cast iron drilling

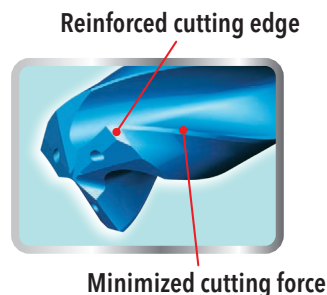
SOLIDDRILL³ FEATURES

Each 3-flute drill is designed with a need to balance core strength with flute depth, both of which are equally important with respect to high feed capability and optimum chip evacuation. Three coolant outlet holes increase the amount of coolant to the end of the drill and help to “push” the chips out of the drill body, even in vertical applications.

The unique drill geometry features a self-centering cutting edge that produces precision holes without a need for a pilot hole. Each drill also has a reinforced cutting edge at the full diameter and a less aggressive edge geometry up the flank, helping to reduce cutting forces in deeper holes.



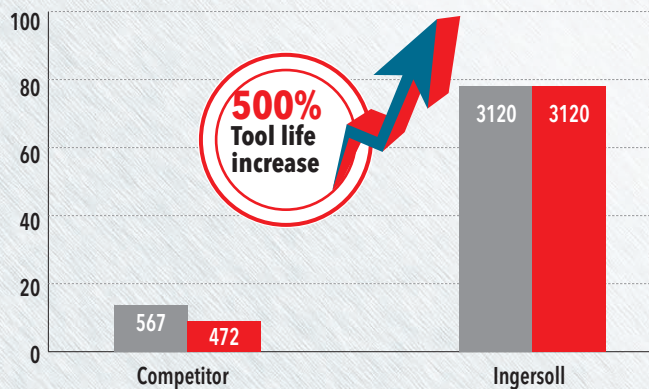
All drills are available in new standard grade TT2205 which features a sub-micron substrate for toughness and hardness, and a PVD-TiAlN multi-nano coating with an easily identifiable outer coating layer that provides the blue color. This grade is an excellent choice for steel and cast iron drilling.



SOLIDDRILL³ CASE STUDY 1

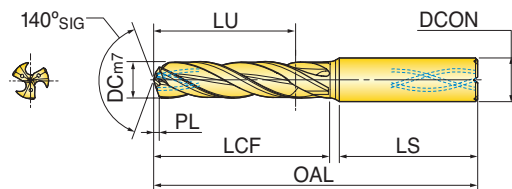
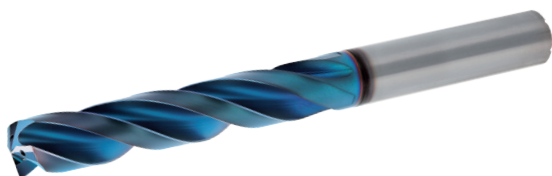
		Competitor	Ingersoll
Material		Alloy steel (AISI 4140, 42CrMo4)	
Drill		Ø6, 5xD	FR0600035T7R01 (Ø6)
Cutting speed	V (sfm)	330	330
Feed rate	f (ipr)	.016	.016
Tool life (inch)		567, 472	3120, 3120

Tool life (inch)



SOLID DRILL³™ SERIES FR (3XD)

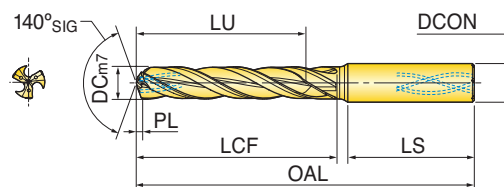
3-FLUTE SOLID CARBIDE DRILLS WITH COOLANT HOLES



Part Number	DC Cutting Dia. (mm)	DC Cutting Dia. (inch)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Diameter (mm)	Grade	IN2205
FR0397017T7R01	3.97	0.1563	5/32"	0.80	17	25	35	66	6	•	•
FR0400017T7R01	4.00	0.1575	-	0.82	17	25	35	66	6	•	•
FR0450017T7R01	4.50	0.1772	-	0.88	17	25	35	66	6	•	•
FR0476017T7R01	4.76	0.1875	3/16"	0.90	17	25	35	66	6	•	•
FR0500020T7R01	5.00	0.1969	-	0.96	20	29	36	66	6	•	•
FR0510020T7R01	5.10	0.2008	-	0.98	20	29	36	66	6	•	•
FR0550020T7R01	5.50	0.2165	-	1.08	20	29	36	66	6	•	•
FR0556020T7R01	5.56	0.2188	7/32"	1.09	20	29	36	66	6	•	•
FR0600020T7R01	6.00	0.2362	-	1.17	20	29	36	66	6	•	•
FR0635024TOR01	6.35	0.2500	1/4"	1.20	24	35	36	79	8	•	•
FR0650024TOR01	6.50	0.2559	-	1.26	24	35	36	79	8	•	•
FR0680024TOR01	6.80	0.2677	-	1.29	24	35	36	79	8	•	•
FR0700024TOR01	7.00	0.2756	-	1.35	24	35	36	79	8	•	•
FR0714029TOR01	7.14	0.2813	9/32"	1.38	29	42	36	79	8	•	•
FR0750029TOR01	7.50	0.2953	-	1.40	29	42	36	79	8	•	•
FR0794029TOR01	7.94	0.3126	5/16"	1.48	29	42	36	79	8	•	•
FR0800029TOR01	8.00	0.3150	-	1.49	29	42	36	79	8	•	•
FR0850035T1R01	8.50	0.3346	-	1.63	35	48	40	89	10	•	•
FR0860035T1R01	8.60	0.3386	-	1.64	35	48	40	89	10	•	•
FR0873035T1R01	8.73	0.3438	11/32"	1.65	35	48	40	89	10	•	•
FR0900035T1R01	9.00	0.3543	-	1.72	35	48	40	89	10	•	•
FR0950035T1R01	9.50	0.3740	-	1.75	35	48	40	89	10	•	•
FR0953035T1R01	9.53	0.3752	3/8"	1.76	35	48	40	89	10	•	•
FR1000035T1R01	10.00	0.3937	-	1.85	35	48	40	89	10	•	•
FR1030040T2R01	10.30	0.4063	13/32"	1.88	40	55	45	102	12	•	•
FR1050040T2R01	10.50	0.4134	-	1.98	40	55	45	102	12	•	•
FR1100040T2R01	11.00	0.4331	-	2.07	40	55	45	102	12	•	•
FR1111040T2R01	11.11	0.4375	7/16"	2.08	40	56	45	102	12	•	•
FR1150040T2R01	11.50	0.4528	-	2.12	40	56	45	102	12	•	•
FR1191040T2R01	11.91	0.4688	15/32"	2.20	40	56	45	102	12	•	•
FR1200040T2R01	12.00	0.4724	-	2.21	40	56	45	102	12	•	•

SOLID DRILL³™ SERIES FR (5XD)

3-FLUTE SOLID CARBIDE DRILLS WITH COOLANT HOLES



Part Number	DC Cutting Dia. (mm)	DC Cutting Dia. (inch)	DC Cutting Dia. (fraction)	PL Point Length (mm)	LU Usable Length (mm)	LCF Chip Flute Length (mm)	LS Shank Length (mm)	OAL Overall Length (mm)	DCON Shank Diameter (mm)	Grade IN2205
FR0397029T7R01	3.97	0.1563	5/32"	0.80	29	37	35	74	6	•
FR0400029T7R01	4.00	0.1575	-	0.82	29	37	35	74	6	•
FR0450029T7R01	4.50	0.1772	-	0.88	29	37	35	74	6	•
FR0476029T7R01	4.76	0.1875	3/16"	0.90	29	37	35	74	6	•
FR0500035T7R01	5.00	0.1969	-	0.96	35	45	36	82	6	•
FR0510035T7R01	5.10	0.2008	-	0.98	35	45	36	82	6	•
FR0550035T7R01	5.50	0.2165	-	1.08	35	45	36	82	6	•
FR0556035T7R01	5.56	0.2188	7/32"	1.09	35	45	36	82	6	•
FR0600035T7R01	6.00	0.2362	-	1.17	35	45	36	82	6	•
FR0635043TOR01	6.35	0.2500	1/4"	1.20	43	54	36	91	8	•
FR0650043TOR01	6.50	0.2559	-	1.26	43	54	36	91	8	•
FR0680043TOR01	6.80	0.2677	-	1.29	43	54	36	91	8	•
FR0700043TOR01	7.00	0.2756	-	1.35	43	54	36	91	8	•
FR0714043TOR01	7.14	0.2813	9/32"	1.38	43	54	36	91	8	•
FR0750043TOR01	7.50	0.2953	-	1.40	43	54	36	91	8	•
FR0794043TOR01	7.94	0.3126	5/16"	1.48	43	54	36	91	8	•
FR0800043TOR01	8.00	0.3150	-	1.49	43	54	36	91	8	•
FR0850049T1R01	8.50	0.3346	-	1.63	49	62	40	103	10	•
FR0860049T1R01	8.60	0.3386	-	1.64	49	62	40	103	10	•
FR0873049T1R01	8.73	0.3438	11/32"	1.65	49	62	40	103	10	•
FR0900049T1R01	9.00	0.3543	-	1.72	49	62	40	103	10	•
FR0950049T1R01	9.50	0.3740	-	1.75	49	62	40	103	10	•
FR0953049T1R01	9.53	0.3752	3/8"	1.76	49	62	40	103	10	•
FR1000049T1R01	10.00	0.3937	-	1.85	49	62	40	103	10	•
FR1030056T2R01	10.30	0.4063	13/32"	1.88	56	71	45	118	12	•
FR1050056T2R01	10.50	0.4134	-	1.98	56	71	45	118	12	•
FR1100056T2R01	11.00	0.4331	-	2.07	56	71	45	118	12	•
FR1111056T2R01	11.11	0.4375	7/16"	2.08	56	72	45	118	12	•
FR1150056T2R01	11.50	0.4528	-	2.12	56	72	45	118	12	•
FR1191056T2R01	11.91	0.4688	15/32"	2.20	56	72	45	118	12	•
FR1200056T2R01	12.00	0.4724	-	2.21	56	72	45	118	12	•

SOLID DRILL³ OPERATING GUIDELINES

ISO	Material		Condition	Tensile Strength (N/mm ²)	Hardness HB	Material Group No	Cutting Speed Vc (sfm)	Feed vs. Drill Diameter (ipr)				
								Ø4-5mm	Ø5.1-6mm	Ø6.1-8mm	Ø8.1-10mm	Ø10.1-12mm
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	260-460	0.006-0.010	0.008-0.014	0.010-0.018	0.012-0.022	0.014-0.024
		>=0.25%C	Annealed	650	190	2	260-430	0.006-0.010	0.008-0.014	0.010-0.018	0.012-0.022	0.014-0.024
		<0.55%C	Quenched and tempered	850	250	3	260-395	0.006-0.010	0.008-0.014	0.010-0.018	0.012-0.022	0.014-0.024
		>=0.55%C	Annealed	750	220	4	225-365	0.006-0.010	0.008-0.014	0.010-0.018	0.012-0.022	0.014-0.024
			Quenched and tempered	1000	300	5	160-300	0.006-0.010	0.008-0.014	0.010-0.018	0.012-0.022	0.014-0.024
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	260-395	0.006-0.010	0.008-0.014	0.010-0.016	0.012-0.020	0.014-0.022
				930	275	7	225-365	0.006-0.010	0.008-0.014	0.010-0.016	0.012-0.020	0.014-0.022
			Quenched and tempered	1000	300	8	160-300	0.006-0.010	0.008-0.014	0.010-0.016	0.012-0.020	0.014-0.022
				1200	350	9	130-230	0.006-0.010	0.008-0.014	0.010-0.016	0.012-0.020	0.014-0.022
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	160-300	0.006-0.008	0.008-0.012	0.010-0.014	0.012-0.018	0.014-0.020
			Quenched and tempered	1100	325	11	130-265	0.006-0.008	0.008-0.012	0.010-0.014	0.012-0.018	0.014-0.020
K	Gray cast iron (GG)		Ferritic/pearlitic		180	15	260-460	0.008-0.012	0.010-0.018	0.014-0.022	0.016-0.024	0.018-0.026
			Pearlitic		260	16	225-395	0.008-0.012	0.010-0.018	0.014-0.022	0.016-0.024	0.018-0.026
	Cast iron nodular (GGG)		Ferritic		160	17	260-395	0.008-0.012	0.008-0.016	0.012-0.020	0.014-0.022	0.016-0.024
			Pearlitic		250	18	225-365	0.008-0.012	0.008-0.016	0.012-0.020	0.014-0.022	0.016-0.024
	Malleable cast iron		Ferritic		130	19	260-395	0.008-0.012	0.008-0.016	0.012-0.020	0.014-0.022	0.016-0.024
			Pearlitic		230	20	225-365	0.008-0.012	0.008-0.016	0.012-0.020	0.014-0.022	0.016-0.024

Steel Cast iron

