NPA

NEW

Member IMC Group Ingersoll Cutting Tools

New Product Announcement

HOLEMAKING

Diameter Range

0.4724-1.0197"
12.0-25.9 mm

Geometries

FPF (Flat Bottom)

Grade

IN2205

Materials

- Steel
- Cast Iron

TWISTSFEED™

3-Flute Geometry for Flat Bottom Drilling Applications

- Improved productivity and cost reduction by reducing a two-step process to one
- Phenomenal hole accuracy and surface finish
- Reduced cycle times with the 3-effective design
- Can be used with existing TwistSFeed bodies (3xD, 5xD, and 8xD)

See it in action! »

WINSFEED™ ADVANCED MACHINING

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New Tip Improves Productivity and Reduces Cycle Times

Ingersoll's new FPF (flat-bottom) geometry, for the **TwistSFeed** product family, is designed to improve productivity and reduce costs by reducing the normal two-step process down to one step.

FPF is especially suited for drilling cavities for socket head cap screws and guarantees excellent performance in steel and cast iron applications.

Features & Benefits

- Phenomenal hole accuracy and surface finish for all flat-bottom applications
- Improved productivity and cost reduction by reducing a two-step process to one
- Reduced cycle times with the 3-effective design
- Can be used with existing **TwistSFeed** bodies (3xD, 5xD, and 8xD)
- Centering point geometry for high tolerance hole precision
- IN2205 multi-layer coating provides high wear and chipping resistance equaling increased tool life

Reduce a Two-Step Process to One

1. DRILLING

2. END MILLING

3. DRILLING

1. DRILLING

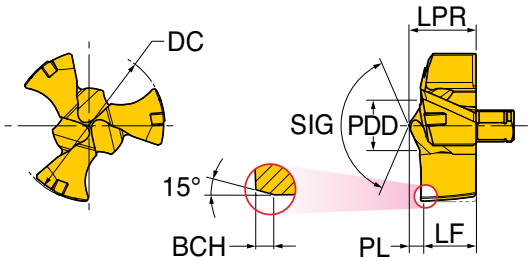
FPF GEOMETRY

- Flat bottom hole machining
- **Minimize cycle time**

2. DRILLING

Series FPF

3-FLUTE DRILL TIPS • FLAT BOTTOM



Part Number	DC Cutting Diameter INCH (MM)	SSC Seat Size Code	PL Point Length	LPR Projection Length	LF Functional Length	BCH Chamfer Length	PDD Drill Point Dia.	SIG Point Angle	Grade IN2205
FPF1200R01	0.4724 (12.00 mm)	12	0.046	0.202	0.156	0.016	0.133	133	•
FPF1250R01	0.4921 (12.50 mm)	12.5	0.047	0.202	0.155	0.016	0.133	133	•
FPF1270R01	0.5000 (12.70 mm)	12.5	0.047	0.202	0.155	0.016	0.133	133	•
FPF1300R01	0.5118 (13.00 mm)	13	0.048	0.221	0.173	0.016	0.141	132	•
FPF1350R01	0.5315 (13.50 mm)	13.5	0.049	0.221	0.172	0.016	0.141	132	•
FPF1400R01	0.5512 (14.00 mm)	14	0.050	0.237	0.186	0.016	0.158	133	•
FPF1429R01	0.5625 (14.29 mm)	14	0.050	0.237	0.186	0.016	0.158	133	•
FPF1450R01	0.5709 (14.50 mm)	14.5	0.051	0.237	0.185	0.016	0.158	133	•
FPF1500R01	0.5906 (15.00 mm)	15	0.052	0.251	0.199	0.016	0.164	133	•
FPF1550R01	0.6102 (15.50 mm)	15	0.053	0.251	0.198	0.016	0.164	133	•
FPF1588R01	0.6250 (15.88 mm)	15	0.053	0.251	0.198	0.016	0.164	133	•
FPF1600R01	0.6299 (16.00 mm)	16	0.054	0.270	0.216	0.016	0.178	134	•
FPF1650R01	0.6496 (16.50 mm)	16	0.055	0.270	0.215	0.016	0.178	134	•
FPF1670R01	0.6575 (16.70 mm)	16	0.055	0.270	0.215	0.016	0.178	134	•
FPF1700R01	0.6693 (17.00 mm)	17	0.057	0.284	0.227	0.016	0.189	134	•
FPF1746R01	0.6875 (17.46 mm)	17	0.057	0.284	0.227	0.016	0.189	134	•
FPF1750R01	0.6890 (17.50 mm)	17	0.058	0.284	0.226	0.016	0.189	134	•
FPF1800R01	0.7087 (18.00 mm)	18	0.069	0.312	0.243	0.016	0.235	133	•
FPF1830R01	0.7205 (18.30 mm)	18	0.069	0.312	0.243	0.016	0.235	133	•
FPF1850R01	0.7283 (18.50 mm)	18	0.070	0.312	0.243	0.016	0.235	133	•
FPF1900R01	0.7480 (19.00 mm)	19	0.072	0.331	0.259	0.016	0.249	133	•
FPF1905R01	0.7500 (19.05 mm)	19	0.072	0.331	0.259	0.016	0.249	133	•
FPF1930R01	0.7598 (19.30 mm)	19	0.072	0.331	0.259	0.016	0.249	133	•
FPF1950R01	0.7677 (19.50 mm)	19	0.073	0.331	0.258	0.016	0.249	133	•
FPF2000R01	0.7874 (20.00 mm)	20	0.075	0.350	0.275	0.016	0.260	133	•
FPF2050R01	0.8071 (20.50 mm)	20	0.076	0.350	0.274	0.016	0.260	133	•
FPF2060R01	0.8110 (20.60 mm)	20	0.076	0.350	0.274	0.016	0.260	133	•
FPF2064R01	0.8125 (20.64 mm)	20	0.076	0.350	0.274	0.016	0.260	133	•
FPF2100R01	0.8268 (21.00 mm)	21	0.078	0.361	0.283	0.016	0.276	133	•
FPF2150R01	0.8465 (21.50 mm)	21	0.079	0.361	0.282	0.016	0.276	133	•
FPF2200R01	0.8661 (22.00 mm)	22	0.083	0.383	0.300	0.016	0.287	133	•
FPF2222R01	0.8750 (22.22 mm)	22	0.083	0.383	0.300	0.016	0.287	133	•
FPF2250R01	0.8858 (22.50 mm)	22	0.083	0.383	0.299	0.016	0.287	133	•
FPF2300R01	0.9055 (23.00 mm)	23	0.086	0.392	0.306	0.016	0.295	132	•
FPF2350R01	0.9252 (23.50 mm)	23	0.087	0.392	0.306	0.016	0.295	132	•
FPF2381R01	0.9375 (23.81 mm)	23	0.087	0.392	0.306	0.016	0.295	132	•
FPF2400R01	0.9449 (24.00 mm)	24	0.088	0.412	0.324	0.016	0.307	132	•
FPF2450R01	0.9645 (24.50 mm)	24	0.089	0.412	0.323	0.016	0.307	132	•
FPF2490R01	0.9803 (24.90 mm)	24	0.089	0.412	0.323	0.016	0.307	132	•
FPF2500R01	0.9843 (25.00 mm)	25	0.091	0.434	0.343	0.016	0.321	132	•
FPF2540R01	1.0000 (25.40 mm)	25	0.091	0.434	0.343	0.016	0.321	132	•
FPF2550R01	1.0039 (25.50 mm)	25	0.092	0.434	0.343	0.016	0.321	132	•

Operating Guidelines

ISO	Material		Condition	Tensile Strength (N/mm2)	Hardness HB	Material Group No.	Cutting Speed Vc (SFM)	Feed vs. Drill Diameter (inches/rev)			
								Ø12–Ø13.9 (.472–.547)	Ø14–Ø15.9 (.551–.626)	Ø16–Ø19.9 (.630–.783)	Ø20–Ø25.9 (.787–1.019)
								IPR (inches/rev)			
P	Non-alloy steel and cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	260–460	.010–.018	.012–.020	.014–.022	.016–.024
		≥0.25%C	Annealed	650	190	2	260–430				
		<0.55%C	Quenched and tempered	850	250	3	260–400				
		≥0.55%C	Annealed	750	220	4	230–360				
			Quenched and tempered	1000	300	5	165–300				
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6	230–400	.008–.016	.010–.018	.012–.020	.014–.022
			Quenched and tempered	930	275	7	230–360				
				1000	300	8	165–300				
				1200	350	9	130–230				
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	165–300	.008–.014	.010–.016	.012–.018	.014–.020
			Quenched and tempered	1100	325	11	130–260				
K	Grey cast iron (GG)		Ferritic	–	160	15	300–530	.014–.020	.016–.024	.018–.026	.020–.028
			Pearlitic	–	250	16	260–460				
	Cast iron nodular (GGG)		Ferritic	–	180	17	300–595	.012–.018	.014–.022	.016–.024	.018–.026
			Pearlitic	–	260	18	260–460				
	Malleable cast iron		Ferritic	–	130	19	300–530				
			Pearlitic	–	230	20	260–460				

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.