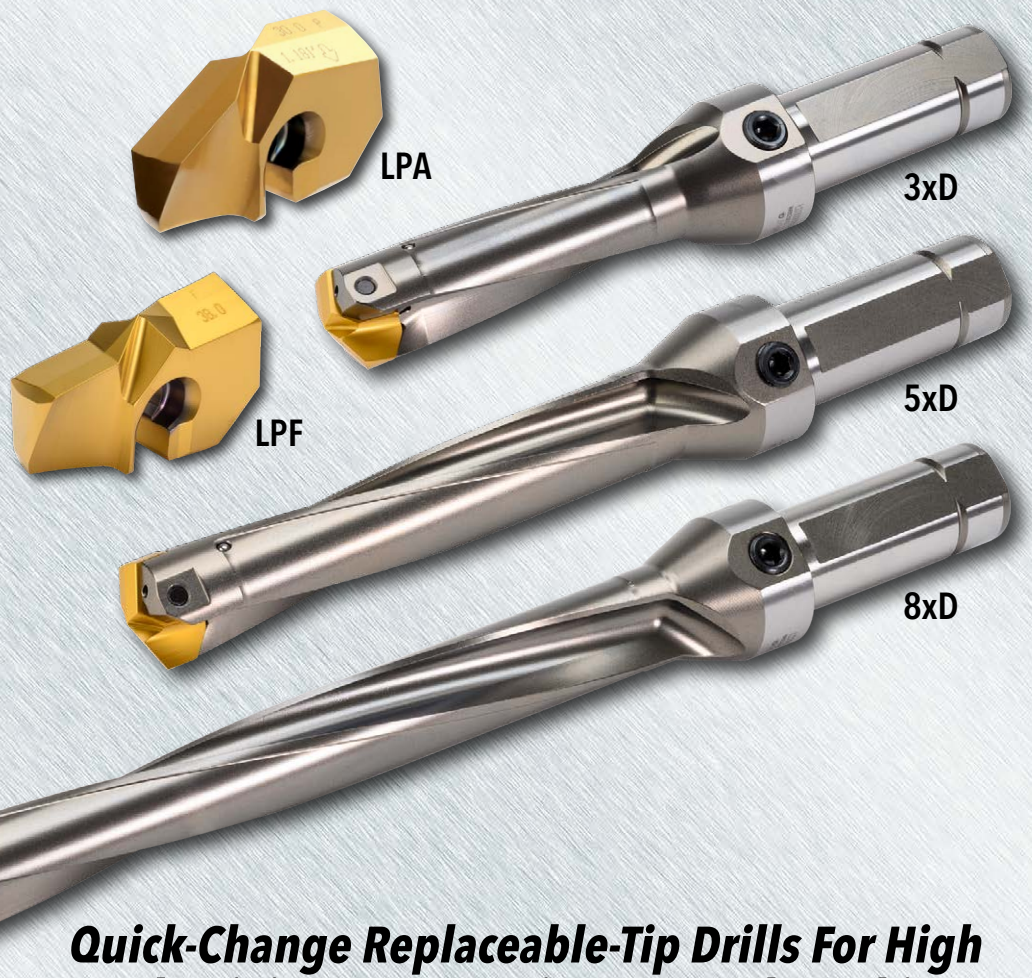
SPADE-TWIST™



Diameters:
Inch:
.787" - 1.625" NEW
Metric:
20.0mm - 41.3mm NEW

Bodies:
Universal Shank

Length to Diameter Ratio:
3xD
5xD
8xD NEW

Geometry:
LPA - Steel & General Purpose
LPF - Flat Bottom NEW

Grade:
IN2505

INDUSTRY 4.0 UPDATE PRODUCT ANNOUNCEMENT 2022

Quick-Change Replaceable-Tip Drills For High Productivity In Large-Diameter Hole Making

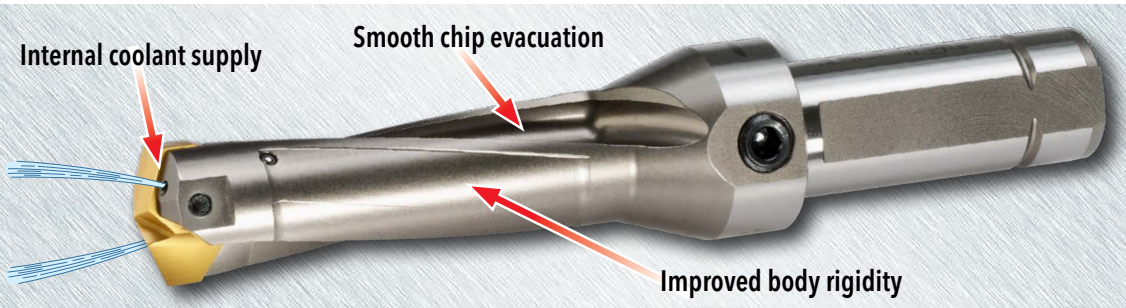
Spade-Twist, the big brother to the Gold-Twist, is a drilling line for large-diameter hole applications. It features an optimized cutting edge generating high productivity and excellent performance.

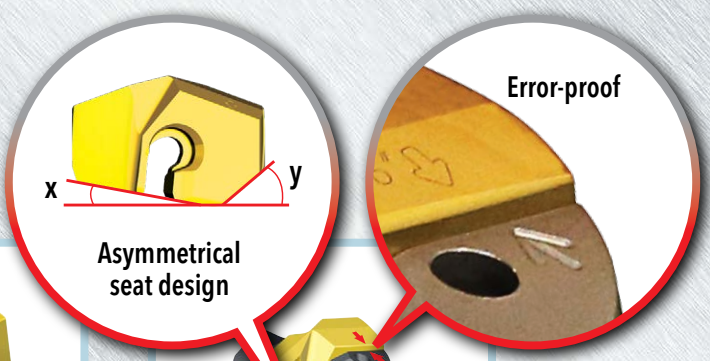
Features & Benefits:

- New products include smaller diameters, 8xD bodies and Flat Bottom Tips!
- Unique rigid, quick change clamping system! No need to remove the insert screw from the holder to change the head. Reduces tool setting time and machine downtime.
- Two-effective design generates higher productivity than a conventional, large diameter, indexable insert drill.
- Asymmetrical pocket design: provides error proof mounting, close tolerance, +.002/-.000 and excellent surface finish
- Also available in special L:Ds and combination drill/chamfer

Member IMC Group Ingersoll Cutting Tools

OVERVIEW

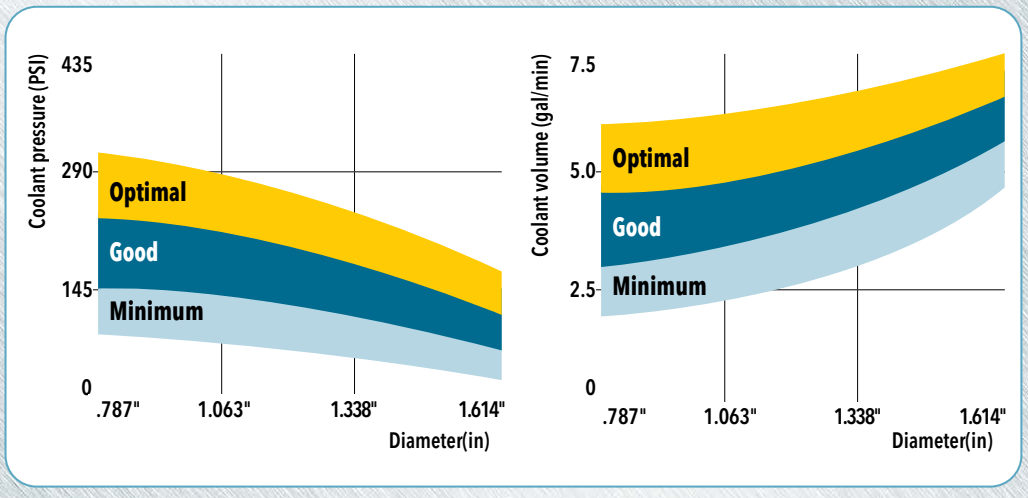




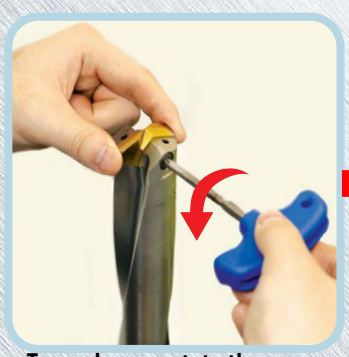
Wide contact area

Standard helix angle

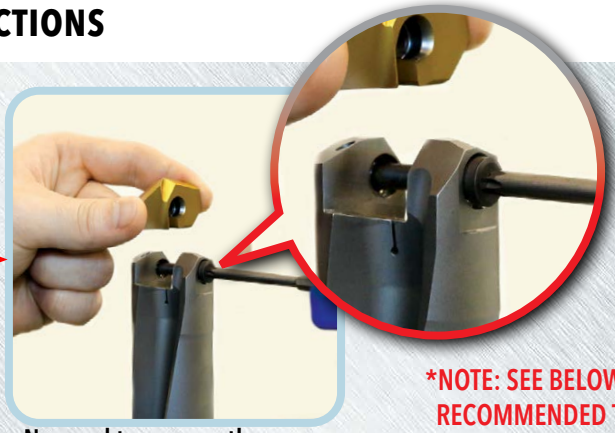
RECOMMEMDED COOLANT PRESSURE & VOLUME



DRILL HEAD CHANGING INSTRUCTIONS



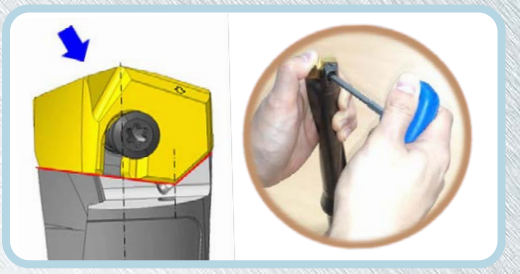
To unclamp, rotate the screw 3-5 times counter-clockwise



No need to remove the screw from the body

*NOTE: SEE BELOW FOR RECOMMENDED TORQUE.

CLAMPING GUIDE



For precise head clmaping, press the tip down when tightening the screw. (Refer to the direction of the blue arrow.)

*NOTE: REPLACE CLAMPING SCREW EVERY 10 INDEXES!

Apply Proper Torque

Torque Check

Spade Twist Locking Screw Torque Chart	
Diameter (mm)	Torque (lbsf-inch)
20.0 - 21.9	40
22.0 - 23.9	40
24.0 - 25.9	40
26.0 - 27.9	44
28.0 - 29.9	48
30.0 - 31.9	53
32.0 - 34.9	53
35.0 - 37.9	53
38.0 - 41.0	62

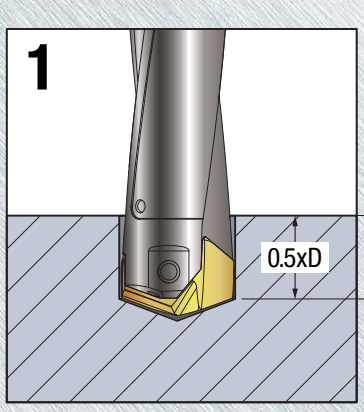
CASE STUDY 1

		Ingersoll
Machine		Vertical machining center (Spindle: BT50)
Coolant		Internal (145 PSI)
Material		Alloy steel (SAE 4340)
Drill		LD2600130N6R01
Head		LPA2600R01 IN2505
Cutting speed	V (SFM)	250
Feed rate	F (IPR)	0.011
Hole depth (inch)		5.12" (Through hole)
Hole size (inch)		1.0243" - 1.0246"
Surface roughness (Ra)		36 - 50

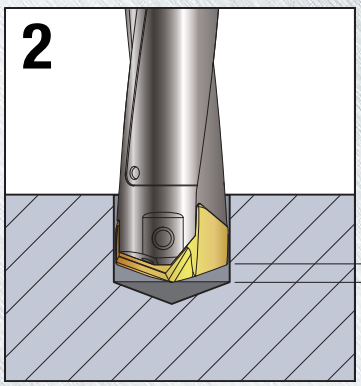
Chip shape

Surface finish

RECOMMENDED PROCEDURE FOR USING 8XD HOLDERS

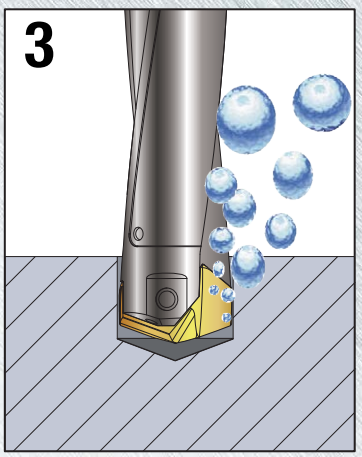


- Pre-hole drilling
  - Diameter (D) x 0.5 depth for 8xD
  - Using standard 3.0xD holder

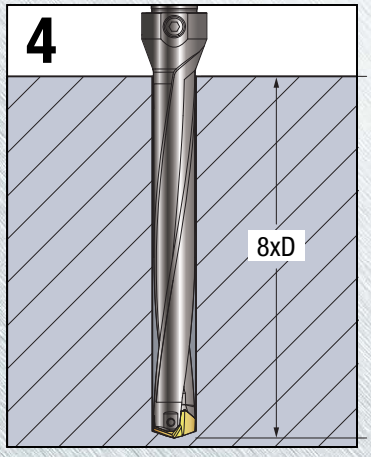


- Approach the pre-hole at reduced speed and feed

2-5mm from bottom of hole



- Activate the cooling system
  - Dwell for 2-3 seconds



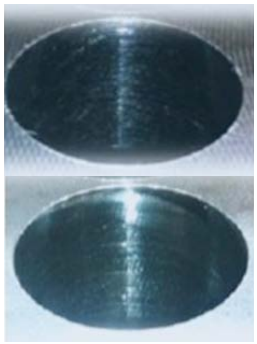
- After drilling, exit from hole at reduced speed and feed

CASE STUDY 2

		Ingersoll
Machine		Vertical machining center (Spindle : BT50)
Coolant		Internal (145 PSI)
Material		Alloy Steel (SAE 4340)
Drill		LD3800190N6R01
Head		LPA3800R01 IN2505
Cutting speed	V (SFM)	250
Feed rate	F (IPR)	0.016
Hole depth (inch)		5.12" (Through hole)
Hole size (inch)		1.4966" - 1.4972"
Surface roughness (Ra)		25 - 47

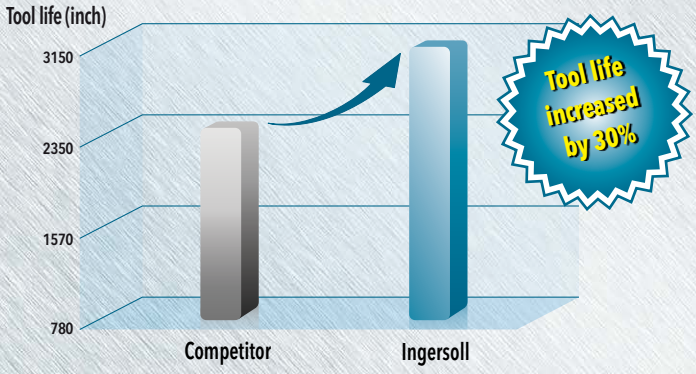
Chip shape

Surface finish



CASE STUDY 3

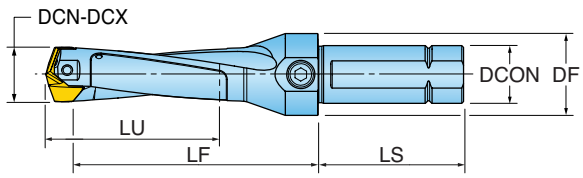
		Competitor	Ingersoll
Machine		Vertical machining center (Spindle : BT50)	
Coolant		Internal (145 PSI)	
Material		Alloy steel (SAE 4340)	
Drill		1.0236", 5xD	LD2600130N6R01
Head		1.0236", head type	LPA2600R01 IN2505
Cutting speed	V (SFM)	300	
Feed rate	F (IPR)	0.016	
Hole depth (inch)		5.12" (Through hole)	



3XD DRILL BODY - UNIVERSAL TYPE SHANK

REPLACEABLE TIPPED DRILL BODIES

Drilling Coolant



Part Number	DCN Cutting Dia. Min (Inch)	DCX Cutting Dia. Max (Inch)	DCN Cutting Dia. Min (Metric)	DCX Cutting Dia. Max (Metric)	SSC Insert Seat Size	LU Usuable Length	LF Functional Length	LS Shank Length	DCON Shank Dia.	DF Flange Dia
LD2000060N5R01	0.7874	0.8228	20 mm	20.9 mm	20	2.485	3.937	3.15	1.000	1.260
LD2100063N5R01	0.8268	0.8622	21 mm	21.9 mm	21	2.610	4.074	3.15	1.000	1.260
LD2200066N5R01	0.8661	0.9016	22 mm	22.9 mm	22	2.733	4.212	3.15	1.000	1.260
LD2300069N5R01	0.9055	0.9409	23 mm	23.9 mm	23	2.858	4.350	3.15	1.000	1.260
LD2400072N6R01	0.9449	0.9803	24 mm	24.9 mm	24	2.981	4.882	3.15	1.250	1.771
LD2500075N6R01	0.9843	1.0282	25 mm	25.9 mm	25	3.107	5.020	3.15	1.250	1.771
LD2600078N6R01	1.0236	1.0590	26 mm	26.9 mm	26	3.236	5.150	3.16	1.25	1.772
LD2700081N6R01	1.0630	1.0984	27 mm	27.9 mm	27	3.362	5.280	3.16	1.25	1.772
LD2800084N6R01	1.1024	1.1378	28 mm	28.9 mm	28	3.485	5.429	3.16	1.25	1.772
LD2900087N6R01	1.1417	1.1772	29 mm	29.9 mm	29	3.610	5.559	3.16	1.25	1.772
LD3000090N6R01	1.1811	1.2165	30 mm	30.9 mm	30	3.733	5.704	3.16	1.25	1.772
LD3100093N6R01	1.2205	1.2559	31 mm	31.9 mm	31	3.859	5.834	3.16	1.25	1.772
LD3200096N6R01	1.2598	1.2953	32 mm	32.9 mm	32	3.982	6.176	3.16	1.25	1.772
LD3300099N6R01	1.2992	1.3346	33 mm	33.9 mm	33	4.105	6.309	3.16	1.25	1.772
LD3400102N6R01	1.3386	1.3740	34 mm	34.9 mm	34	4.233	6.437	3.16	1.25	1.772
LD3500105N6R01	1.3780	1.4134	35 mm	35.9 mm	35	4.353	6.588	3.16	1.25	1.772
LD3600108N6R01	1.4173	1.4528	36 mm	36.9 mm	36	4.473	6.724	3.16	1.25	1.772
LD3700111N6R01	1.4567	1.4921	37 mm	37.9 mm	37	4.532	6.850	3.16	1.25	2.165
LD3800114N6R01	1.4961	1.5315	38 mm	38.9 mm	38	4.727	7.001	3.16	1.25	2.165
LD3900117N6R01	1.5354	1.5709	39 mm	39.9 mm	39	4.851	7.133	3.16	1.25	2.165
LD4000120N6R01	1.5748	1.6496	40 mm	41.9 mm	40-41	4.980	7.259	3.16	1.25	2.165

NEW

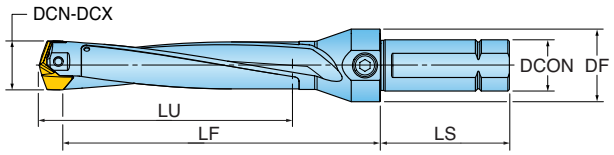
SPARE PARTS

Drill Body	Locking Screw	Torque Spec (inch-lbs)	Driver	Handle	Flange Plug	Brass Coolant Plug
LD 200-210-3D	TS 40178D25	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 220-230-3D	TS 40198D28	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 240-250-3D	TS 40210D3	40	BLD T20/S7	SW6-T Short	PP04-01	PF-0013
LD-260-270-3D	TS50230D3	44	BLD T20/S7	SW6-T Short	PP04-01	PF-0013
LD-280-290-3D	TS50250D35	48	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-300-310-3D	TS60265D4	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-320-340-3D	TS60285D42	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-350-370-3D	TS60320D5	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-380-400-3D	TS80340D6	62	BLD T25/S7	SW6-T Short	PP04-01	PF-0013

5XD DRILL BODY - UNIVERSAL TYPE SHANK

REPLACEABLE TIPPED DRILL BODIES

Drilling Coolant



Part Number	DCN Cutting Dia. Min (Inch)	DCX Cutting Dia. Max (Inch)	DCN Cutting Dia. Min (Metric)	DCX Cutting Dia. Max (Metric)	SSC Insert Seat Size	LU Usuable Length	LF Functional Length	LS Shank Length	DCON Shank Dia.	DF Flange Dia
LD2000100N5R01	0.7874	0.8228	20 mm	20.9 mm	20	4.059	5.512	3.15	1.000	1.260
LD2100105N5R01	0.8268	0.8622	21 mm	21.9 mm	21	4.263	5.728	3.15	1.000	1.260
LD2200110N5R01	0.8661	0.9016	22 mm	22.9 mm	22	4.465	5.945	3.15	1.000	1.260
LD2300115N5R01	0.9055	0.9409	23 mm	23.9 mm	23	4.669	6.161	3.15	1.000	1.260
LD2400120N6R01	0.9449	0.9803	24 mm	24.9 mm	24	4.871	6.771	3.15	1.250	1.771
LD2500125N6R01	0.9843	1.0282	25 mm	25.9 mm	25	5.075	6.988	3.15	1.250	1.771
LD2600130N6R01	1.0236	1.0590	26 mm	26.9 mm	26	5.283	7.197	3.16	1.25	1.772
LD2700135N6R01	1.0630	1.0984	27 mm	27.9 mm	27	5.488	7.406	3.16	1.25	1.772
LD2800140N6R01	1.1024	1.1378	28 mm	28.9 mm	28	5.690	7.633	3.16	1.25	1.772
LD2900145N6R01	1.1417	1.1772	29 mm	29.9 mm	29	5.894	7.843	3.16	1.25	1.772
LD3000150N6R01	1.1811	1.2165	30 mm	30.9 mm	30	6.096	8.066	3.16	1.25	1.772
LD3100155N6R01	1.2205	1.2559	31 mm	31.9 mm	31	6.300	8.275	3.16	1.25	1.772
LD3200160N6R01	1.2598	1.2953	32 mm	32.9 mm	32	6.501	8.695	3.16	1.25	1.772
LD3300165N6R01	1.2992	1.3346	33 mm	33.9 mm	33	6.703	8.908	3.16	1.25	1.772
LD3400170N6R01	1.3386	1.3740	34 mm	34.9 mm	34	6.910	9.114	3.16	1.25	1.772
LD3500175N6R01	1.3780	1.4134	35 mm	35.9 mm	35	7.109	9.344	3.16	1.25	1.772
LD3600180N6R01	1.4173	1.4528	36 mm	36.9 mm	36	7.308	9.558	3.16	1.25	1.772
LD3700185N6R01	1.4567	1.4921	37 mm	37.9 mm	37	7.515	9.764	3.16	1.25	2.165
LD3800190N6R01	1.4961	1.5315	38 mm	38.9 mm	38	7.719	9.993	3.16	1.25	2.165
LD3900195N6R01	1.5354	1.5709	39 mm	39.9 mm	39	7.922	10.204	3.16	1.25	2.165
LD4000200N6R01	1.5748	1.6496	40 mm	41.9 mm	40-41	8.130	10.409	3.16	1.25	2.165

NEW

SPARE PARTS

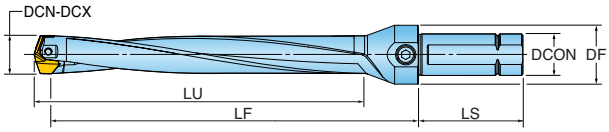
Drill Body	Locking Screw	Torque Spec (inch-lbs)	Driver	Handle	Flange Plug	Brass Coolant Plug
LD 200-210-5D	TS 40178D25	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 220-230-5D	TS 40198D28	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 240-250-5D	TS 40210D3	40	BLD T20/S7	SW6-T Short	PP04-01	PF-0013
LD-260-270-5D	TS50230D3	44	BLD T20/S7	SW6-T Short	PP04-01	PF-0013
LD-280-290-5D	TS50250D35	48	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-300-310-5D	TS60265D4	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-320-340-5D	TS60285D42	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-350-370-5D	TS60320D5	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD-380-400-5D	TS80340D6	62	BLD T25/S7	SW6-T Short	PP04-01	PF-0013

NEW

8XD DRILL BODY - UNIVERSAL TYPE SHANK

REPLACEABLE TIPPED DRILL BODIES

Drilling | Coolant

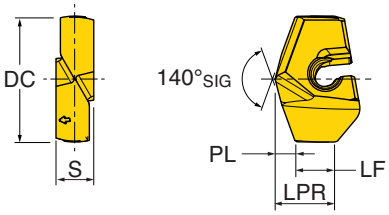


Part Number	DCN Cutting Dia. Min (Inch)	DCX Cutting Dia. Max (Inch)	DCN Cutting Dia. Min (Metric)	DCX Cutting Dia. Max (Metric)	SSC Insert Seat Size	LU Usable Length	LF Functional Length	LS Shank Length	DCON Shank Dia.	DF Flange Dia
LD2000160N5R01	0.7874	0.8228	20 mm	20.9 mm	20	6.422	7.875	3.15	1.000	1.260
LD2100168N5R01	0.8268	0.8622	21 mm	21.9 mm	21	6.744	8.208	3.15	1.000	1.260
LD2200176N5R01	0.8661	0.9016	22 mm	22.9 mm	22	7.064	8.543	3.15	1.000	1.260
LD2300184N5R01	0.9055	0.9409	23 mm	23.9 mm	23	7.386	8.878	3.15	1.000	1.260
LD2400192N6R01	0.9449	0.9803	24 mm	24.9 mm	24	7.706	9.606	3.15	1.250	1.772
LD2500200N6R01	0.9843	1.0282	25 mm	25.9 mm	25	8.028	9.941	3.15	1.250	1.772
LD2600208N6R01	1.0236	1.0590	26 mm	26.9 mm	26	8.348	10.276	3.15	1.250	1.772
LD2700216N6R01	1.0630	1.0984	27 mm	27.9 mm	27	8.670	10.61	3.15	1.250	1.772
LD2800224N6R01	1.1024	1.1378	28 mm	28.9 mm	28	8.990	10.945	3.15	1.250	1.772
LD2900232N6R01	1.1417	1.1772	29 mm	29.9 mm	29	9.312	11.287	3.15	1.250	1.772
LD3000240N6R01	1.1811	1.2165	30 mm	30.9 mm	30	9.633	11.614	3.15	1.250	1.772
LD3100248N6R01	1.2205	1.2559	31 mm	31.9 mm	31	9.955	11.949	3.15	1.250	1.772
LD3200256N6R01	1.2598	1.2953	32 mm	32.9 mm	32	10.275	12.284	3.15	1.250	1.772
LD3300264N6R01	1.2992	1.3346	33 mm	33.9 mm	33	10.597	12.718	3.15	1.250	1.772
LD3400272N6R01	1.3386	1.374	34 mm	34.9 mm	34	10.919	12.953	3.15	1.250	1.772
LD3500280N6R01	1.3780	1.4134	35 mm	35.9 mm	35	11.238	13.288	3.15	1.250	1.772
LD3600288N6R01	1.4173	1.4528	36 mm	36.9 mm	36	11.560	13.622	3.15	1.250	1.772
LD3700296N6R01	1.4567	1.4921	37 mm	37.9 mm	37	11.882	14.153	3.15	1.250	2.165
LD3800304N6R01	1.4961	1.5315	38 mm	38.9 mm	38	12.201	14.488	3.15	1.250	2.165
LD3900312N6R01	1.5354	1.5709	39 mm	39.9 mm	39	12.523	14.823	3.15	1.250	2.165
LD4000320N6R01	1.5748	1.6496	40 mm	41.0 mm	40	12.845	15.157	3.15	1.250	2.165

SPARE PARTS

Drill Body	Locking Screw	Torque Spec (inch-lbs)	Driver	Handle	Flange Plug	Coolant Plug
LD 200-210-8D	TS 40178D25	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 220-230-8D	TS 40198D28	40	BLD T20/S7	SW6-T Short	PP02-01	PF-0012
LD 240-250-8D	TS 40210D3	40	BLD T20/S7	SW6-T Short	PP04-01	PF-0013
LD 260-270-8D	TS 50230D3	44	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD 280-290-8D	TS 50250D35	48	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD 300-310-8D	TS 60265D4	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD 320-340-8D	TS 60285D42	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD 350-370-8D	TS 60320D5	53	BLD T25/S7	SW6-T Short	PP04-01	PF-0013
LD 380-400-8D	TS 80340D6	62	BLD T25/S7	SW6-T Short	PP04-01	PF-0013

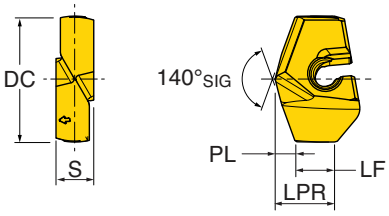
DRILL TIPS



Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	LF Functional Length	S Thickness	Grade
	Inch	Metric						IN2505
LPA2000R01	0.7874	20.00 mm	20	0.122	0.380	0.257	0.236	•
LPA2040R01	0.8031	20.40 mm	20	0.125	0.380	0.255	0.236	•
LPA2050R01	0.8071	20.50 mm	20	0.126	0.380	0.254	0.236	•
LPA2064R01	0.8126	20.60 mm	20	0.127	0.380	0.253	0.236	•
LPA2100R01	0.8268	21.00 mm	21	0.130	0.380	0.250	0.236	•
LPA2150R01	0.8465	21.50 mm	21	0.133	0.380	0.247	0.236	•
LPA2200R01	0.8661	22.00 mm	22	0.135	0.415	0.280	0.256	•
LPA2222R01	0.8748	22.20 mm	22	0.136	0.415	0.279	0.256	•
LPA2250R01	0.8858	22.50 mm	22	0.138	0.415	0.277	0.256	•
LPA2300R01	0.9055	23.00 mm	23	0.142	0.415	0.273	0.256	•
LPA2350R01	0.9252	23.50 mm	23	0.145	0.415	0.270	0.256	•
LPA2380R01	0.9370	23.80 mm	23	0.147	0.415	0.267	0.256	•
LPA2400R01	0.9449	24.00 mm	24	0.147	0.424	0.277	0.276	•
LPA2450R01	0.9646	24.50 mm	24	0.150	0.424	0.273	0.276	•
LPA2460R01	0.9685	24.60 mm	24	0.151	0.424	0.272	0.276	•
LPA2500R01	0.9843	25.00 mm	25	0.154	0.424	0.270	0.276	•
LPA2540R01	1.0000	25.40 mm	25	0.156	0.424	0.267	0.276	•
LPA2550R01	1.0039	25.50 mm	25	0.158	0.424	0.266	0.276	•
LPA2570R01	1.0118	25.70 mm	25	0.159	0.424	0.265	0.276	•
LPA2590R01	1.0197	25.90 mm	25	0.161	0.424	0.263	0.276	•
LPA2600R01	1.0236	26.00 mm	26	0.159	0.455	0.296	0.315	•
LPA2610R01	1.0276	26.10 mm	26	0.160	0.455	0.295	0.315	•
LPA2620R01	1.0315	26.20 mm	26	0.160	0.455	0.294	0.315	•
LPA2630R01	1.0354	26.30 mm	26	0.161	0.455	0.294	0.315	•
LPA2640R01	1.0394	26.40 mm	26	0.162	0.455	0.293	0.315	•
LPA2650R01	1.0433	26.50 mm	26	0.163	0.455	0.292	0.315	•
LPA2660R01	1.0472	26.60 mm	26	0.163	0.455	0.291	0.315	•
LPA2670R01	1.0512	26.70 mm	26	0.164	0.455	0.291	0.315	•
LPA2680R01	1.0511	26.80 mm	26	0.165	0.455	0.290	0.315	•
LPA2690R01	1.0591	26.90 mm	26	0.166	0.455	0.289	0.315	•
LPA2700R01	1.0630	27.00 mm	27	0.166	0.455	0.289	0.315	•
LPA2710R01	1.0669	27.10 mm	27	0.167	0.455	0.288	0.315	•
LPA2720R01	1.0709	27.20 mm	27	0.168	0.455	0.287	0.315	•
LPA2730R01	1.0748	27.30 mm	27	0.168	0.455	0.286	0.315	•
LPA2740R01	1.0787	27.40 mm	27	0.169	0.455	0.286	0.315	•
LPA2750R01	1.0827	27.50 mm	27	0.170	0.455	0.285	0.315	•
LPA2760R01	1.0866	27.60 mm	27	0.171	0.455	0.284	0.315	•
LPA2770R01	1.0906	27.70 mm	27	0.171	0.455	0.283	0.315	•
LPA2780R01	1.0945	27.80 mm	27	0.172	0.455	0.283	0.315	•

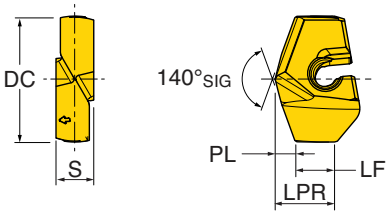
NEW

DRILL TIPS



Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	LF Functional Length	S Thickness	Grade
	Inch	Metric						IN2505
LPA2790R01	1.0984	27.90 mm	27	0.173	0.455	0.282	0.315	•
LPA2800R01	1.1024	28.00 mm	28	0.171	0.462	0.291	0.335	•
LPA2810R01	1.1063	28.10 mm	28	0.172	0.462	0.290	0.335	•
LPA2820R01	1.1102	28.20 mm	28	0.173	0.462	0.290	0.335	•
LPA2830R01	1.1142	28.30 mm	28	0.173	0.462	0.289	0.335	•
LPA2840R01	1.1181	28.40 mm	28	0.174	0.462	0.288	0.335	•
LPA2850R01	1.1220	28.50 mm	28	0.175	0.462	0.287	0.335	•
LPA2860R01	1.1250	28.60 mm	28	0.176	0.462	0.287	0.335	•
LPA2870R01	1.1299	28.70 mm	28	0.176	0.462	0.286	0.335	•
LPA2880R01	1.1339	28.80 mm	28	0.177	0.462	0.285	0.335	•
LPA2890R01	1.1378	28.90 mm	28	0.178	0.462	0.284	0.335	•
LPA2900R01	1.1417	29.00 mm	29	0.178	0.462	0.284	0.335	•
LPA2910R01	1.1457	29.10 mm	29	0.179	0.462	0.283	0.335	•
LPA2920R01	1.1496	29.20 mm	29	0.180	0.462	0.282	0.335	•
LPA2930R01	1.1535	29.30 mm	29	0.181	0.462	0.282	0.335	•
LPA2940R01	1.1575	29.40 mm	29	0.181	0.462	0.281	0.335	•
LPA2950R01	1.1614	29.50 mm	29	0.182	0.462	0.280	0.335	•
LPA2970R01	1.1693	29.70 mm	29	0.183	0.462	0.279	0.335	•
LPA2980R01	1.1732	29.80 mm	29	0.184	0.462	0.278	0.335	•
LPA2990R01	1.1772	29.90 mm	29	0.185	0.462	0.277	0.335	•
LPA3000R01	1.1811	30.00 mm	30	0.184	0.557	0.373	0.354	•
LPA3010R01	1.1850	30.10 mm	30	0.185	0.557	0.372	0.354	•
LPA3020R01	1.1890	30.20 mm	30	0.185	0.557	0.371	0.354	•
LPA3030R01	1.1929	30.30 mm	30	0.186	0.557	0.371	0.354	•
LPA3040R01	1.1969	30.40 mm	30	0.187	0.557	0.370	0.354	•
LPA3050R01	1.2008	30.50 mm	30	0.187	0.557	0.369	0.354	•
LPA3060R01	1.2047	30.60 mm	30	0.188	0.557	0.369	0.354	•
LPA3070R01	1.2087	30.70 mm	30	0.189	0.557	0.368	0.354	•
LPA3080R01	1.2126	30.08 mm	30	0.190	0.557	0.367	0.354	•
LPA3090R01	1.2165	30.90 mm	30	0.190	0.557	0.366	0.354	•
LPA3100R01	1.2205	31.00 mm	31	0.191	0.557	0.366	0.354	•
LPA3110R01	1.2244	31.10 mm	31	0.192	0.557	0.365	0.354	•
LPA3120R01	1.2283	31.20 mm	31	0.192	0.557	0.364	0.354	•
LPA3130R01	1.2323	31.30 mm	31	0.193	0.557	0.364	0.354	•
LPA3140R01	1.2362	31.40 mm	31	0.194	0.557	0.363	0.354	•
LPA3150R01	1.2402	31.50 mm	31	0.195	0.557	0.362	0.354	•
LPA3160R01	1.2441	31.60 mm	31	0.195	0.557	0.361	0.354	•
LPA3170R01	1.2480	31.70 mm	31	0.196	0.557	0.361	0.354	*

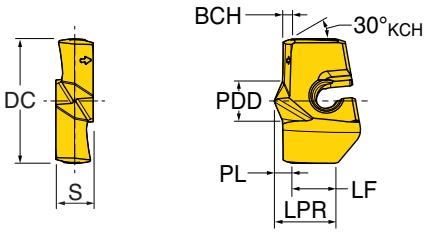
DRILL TIPS



Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	LF Functional Length	S Thickness	Grade
	Inch	Metric						IN2505
LPA3180R01	1.2500	31.80 mm	31	0.197	0.557	0.360	0.354	•
LPA3190R01	1.2559	31.90 mm	31	0.197	0.557	0.359	0.354	•
LPA3200R01	1.2598	32.00 mm	32	0.196	0.572	0.376	0.374	•
LPA3210R01	1.2638	32.10 mm	32	0.197	0.572	0.375	0.374	•
LPA3220R01	1.2677	32.20 mm	32	0.197	0.572	0.375	0.374	•
LPA3230R01	1.2717	32.30 mm	32	0.198	0.572	0.374	0.374	•
LPA3240R01	1.2756	32.40 mm	32	0.199	0.572	0.373	0.374	•
LPA3250R01	1.2795	32.50 mm	32	0.200	0.572	0.372	0.374	•
LPA3260R01	1.2835	32.60 mm	32	0.200	0.572	0.372	0.374	•
LPA3270R01	1.2874	32.70 mm	32	0.201	0.572	0.371	0.374	•
LPA3280R01	1.2913	32.80 mm	32	0.202	0.572	0.370	0.374	•
LPA3290R01	1.2953	32.90 mm	32	0.203	0.572	0.370	0.374	•
LPA3300R01	1.2992	33.00 mm	33	0.203	0.572	0.369	0.374	•
LPA3330R01	1.3120	33.30 mm	33	0.205	0.572	0.367	0.374	•
LPA3350R01	1.3189	33.50 mm	33	0.207	0.572	0.365	0.374	•
LPA3400R01	1.3386	34.00 mm	34	0.210	0.572	0.362	0.374	•
LPA3410R01	1.3425	34.10 mm	34	0.211	0.572	0.361	0.374	•
LPA3450R01	1.3583	34.50 mm	34	0.214	0.572	0.358	0.374	•
LPA3490R01	1.3750	34.90 mm	34	0.217	0.572	0.355	0.374	•
LPA3500R01	1.3780	35.00 mm	35	0.214	0.652	0.438	0.413	•
LPA3550R01	1.3976	35.50 mm	35	0.218	0.652	0.434	0.413	•
LPA3570R01	1.4055	35.70 mm	35	0.219	0.652	0.433	0.413	•
LPA3600R01	1.4173	36.00 mm	36	0.221	0.652	0.431	0.413	•
LPA3650R01	1.4370	36.50 mm	36	0.225	0.652	0.427	0.413	•
LPA3700R01	1.4567	37.00 mm	36	0.229	0.652	0.423	0.413	•
LPA3730R01	1.4685	37.30 mm	37	0.231	0.652	0.421	0.413	•
LPA3750R01	1.4764	37.50 mm	36	0.232	0.652	0.420	0.413	•
LPA3800R01	1.4961	38.00 mm	38	0.233	0.669	0.437	0.433	•
LPA3810R01	1.5000	38.10 mm	38	0.233	0.669	0.436	0.433	•
LPA3850R01	1.5157	38.50 mm	38	0.236	0.669	0.433	0.433	•
LPA3890R01	1.5315	38.90 mm	38	0.239	0.669	0.430	0.433	•
LPA3900R01	1.5354	39.00 mm	39	0.240	0.669	0.429	0.433	•
LPA3950R01	1.5551	39.50 mm	39	0.243	0.669	0.426	0.433	•
LPA3970R01	1.4173	39.70 mm	39	0.245	0.669	0.424	0.433	•
LPA4000R01	1.5748	40.00 mm	40	0.247	0.669	0.422	0.433	•
LPA4050R01	1.5945	40.00 mm	40	0.251	0.669	0.419	0.433	•
LPA4100R01	1.6142	41.00 mm	41	0.254	0.669	0.415	0.433	•
LPA4130R01	1.6259	41.30 mm	41	0.256	0.669	0.413	0.433	•

NEW

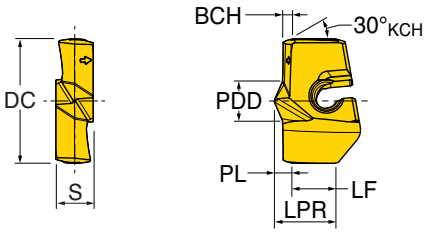
DRILL TIPS - FLAT BOTTOM



Part Number	DC Cutting Dia.		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	LF Functional Length	BCH Chamfer Length	PDD Drill Point Diameter	S Thickness	Grade
	Inch	Metric								IN2505
LPF2000R01	0.7874	20.00 mm	20	0.083	0.397	0.314	0.027	0.236	0.236	•
LPF2050R01	0.8071	20.50 mm	20	0.083	0.397	0.314	0.027	0.236	0.236	•
LPF2064R01	0.8125	20.64 mm	20	0.083	0.397	0.314	0.027	0.236	0.236	•
LPF2100R01	0.8267	21.00 mm	20	0.083	0.397	0.314	0.027	0.236	0.236	•
LPF2150R01	0.8465	21.50 mm	20	0.083	0.397	0.314	0.027	0.236	0.236	•
LPF2200R01	0.8661	22.00 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2222R01	0.8750	22.22 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2250R01	0.8858	22.50 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2300R01	0.9055	23.00 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2350R01	0.9252	23.50 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2381R01	0.9370	23.81 mm	22	0.089	0.419	0.330	0.027	0.260	0.256	•
LPF2400R01	0.9449	24.00 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2450R01	0.9645	24.50 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2500R01	0.9842	25.00 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2540R01	1.0000	25.40 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2550R01	1.0039	25.50 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2570R01	1.0118	25.70 mm	24	0.096	0.422	0.326	0.027	0.283	0.275	•
LPF2600R01	1.0236	26.00 mm	26	0.098	0.494	0.396	0.027	0.307	0.315	•
LPF2650R01	1.0433	26.50 mm	26	0.098	0.494	0.396	0.027	0.307	0.315	•
LPF2700R01	1.0630	27.00 mm	26	0.098	0.494	0.396	0.027	0.307	0.315	•
LPF2750R01	1.0827	27.50 mm	26	0.098	0.494	0.396	0.027	0.307	0.315	•
LPF2800R01	1.1024	28.00 mm	28	0.105	0.487	0.382	0.027	0.331	0.334	•
LPF2850R01	1.1220	28.50 mm	28	0.105	0.487	0.382	0.027	0.331	0.334	•
LPF2900R01	1.1417	29.00 mm	28	0.105	0.487	0.382	0.027	0.331	0.334	•
LPF2950R01	1.1614	29.50 mm	28	0.105	0.487	0.382	0.027	0.331	0.334	•
LPF3000R01	1.1811	30.00 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3016R01	1.1875	30.16 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3050R01	1.2008	30.50 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3100R01	1.2205	31.00 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3150R01	1.2402	31.50 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3175R01	1.2500	31.75 mm	30	0.111	0.573	0.462	0.027	0.354	0.354	•
LPF3200R01	1.2598	32.00 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3250R01	1.2795	32.50 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3300R01	1.2992	33.00 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3350R01	1.3189	33.50 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3400R01	1.3386	34.00 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3450R01	1.3583	34.50 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•
LPF3492R01	1.3748	34.92 mm	32	0.117	0.584	0.467	0.027	0.378	0.374	•

NEW

DRILL TIPS - FLAT BOTTOM



Part Number	DC Cutting Dia.		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	LF Functional Length	BCH Chamfer Length	PDD Drill Point Diameter	S Thickness	Grade
	Inch	Metric								IN2505
LPF3500R01	1.3780	35.00 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3550R01	1.3976	35.50 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3600R01	1.4173	36.00 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3650R01	1.4370	36.50 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3700R01	1.4567	37.00 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3750R01	1.4764	37.50 mm	35	0.126	0.663	0.537	0.027	0.413	0.413	•
LPF3800R01	1.4961	38.00 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF3810R01	1.5000	38.10 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF3850R01	1.5157	38.50 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF3900R01	1.5354	39.00 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF3950R01	1.5550	39.50 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF4000R01	1.5748	40.00 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF4050R01	1.5945	40.50 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•
LPF4100R01	1.6142	41.00 mm	38	0.135	0.672	0.537	0.027	0.449	0.433	•

OPERATING PARAMETERS - LPA TIPS

ISO	Material	Condition	Tensile Strength RM (N/mm2)	Hardness (HB)	Matl No.	Cutting Speed VC (SFM)	Feed vs. Drill Diameter		
							Ø20-29.9mm (.7874"-1.1772")	Ø30-34.9mm (1.1811"-1.3740")	Ø35-41.9mm (1.3800"-1.6496")
							IPR (inches/rev)		
P	Non-alloy steel <0.25% C & cast steel, > = 0.25% C free cutting <0.55% C steel > = 0.55% C	Annealed	420	125	1	260-460	.012 - .020	.012 - .020	.014 - .022
		Annealed	650	190	2	260-430			
		Quenched & Tempered	850	250	3	260-400			
		Annealed	750	220	4	230-360			
		Quenched & Tempered	1000	300	5	165-300			
	Low alloy steel & cast steel (less than 5% alloying elements)	Annealed	600	200	6	260-400	.010 - .018	.010 - .018	.012 - .020
		Quenched & Tempered	930	275	7	230-360			
			1000	300	8	165-300			
			1200	350	9	135-230			
	High alloy steel, cast steel & tool steel	Annealed	680	200	10	165-300	.010 - .014	.010 - .014	.012 - .016
		Quenched & Tempered	1100	325	11	130-265			
M	Stainless steel & cast stainless steel	Ferritic/martensitic	680	200	12	130-230	.006 - .012	.006 - .012	.008 - .014
		Martensitic	820	240	13	130-230			
		Austenitic	600	180	14	100-230			
K	GreyCast Iron (GG)	Ferritic	-	160	15	300-600	.014 - .022	.014 - .022	.016 - .024
		Pearlitic	-	250	16	265-460			
	Cast Iron Nodular (GGG)	Ferritic	-	180	17	300-600			
		Pearlitic	-	260	18	265-460			
	Malleable Cast Iron	Ferritic	-	130	19	300-525			
		Pearlitic	-	230	20	265-460			
N	Aluminum - wrought alloy	Not cureable	-	60	21	300-725	.016 - .024	.016 - .024	.020 - .028
		Cured	-	100	22	300-725			
	Aluminum - cast, alloyed <=12% Si	Not cureable	-	75	23	300-725			
		Cured	-	90	24	300-725			
	>12% Si	High temperature	-	130	25	265-525			
	> 1% Pb Copper alloys	Free cutting	-	110	26	300-725			
		Brass	-	90	27	300-725			
		Electrolitic copper	-	100	28	300-725			
	Non-metallic	Duro & fiber plastics	-	-	29	-	-	-	-
		Hard rubber	-	-	30	-	-	-	-
S	Fe based High temp.alloys Ni or Co based	Annealed	-	200	31	100-200	.004 - .008	.006 - .010	.006 - .010
		Cured	-	280	32	70-165			
		Annealed	-	250	33	70-165			
		Cured	-	350	34	70-165			
		Cast	-	320	35	70-165			
	Titanium, Ti alloys	-	Rm 400	-	36	70-165	.004 - .008	.006 - .010	.006 - .010
		Alpha+beta alloys cured	Rm 1050	-	37	70-165			
H	Hardened steel	Hardened	-	55 HRC	38	70-165	.004 - .008	.006 - .010	.006 - .010
		Hardened	-	60 HRC	39	70-165			
	Chilled cast iron	Cast	-	400	40	-	-	-	-
	Cast iron nodular	Hardened	-	55 HRC	41	-	-	-	-

* Feed Rates are Based on Two Effective - DO NOT DOUBLE

OPERATING PARAMETERS - LPF TIPS

ISO	Material	Condition	Tensile Strength RM (N/mm2)	Hardness (HB)	Matl No.	Cutting Speed VC (SFM)	Feed vs. Drill Diameter		
							Ø20-29.9mm (.7874"-1.1772")	Ø30-34.9mm (1.1811"-1.3740")	Ø35-41.9mm (1.3800"-1.6496")
							IPR (inches/rev)		
P	Non-alloy steel <0.25% C & cast steel, > = 0.25% C free cutting <0.55% C steel > = 0.55% C	Annealed	420	125	1	260-460	.012 - .020	.012 - .020	.014 - .022
		Annealed	650	190	2	260-430			
		Quenched & Tempered	850	250	3	260-400			
		Annealed	750	220	4	230-360			
		Quenched & Tempered	1000	300	5	165-300			
	Low alloy steel & cast steel (less than 5% alloying elements)	Annealed	600	200	6	260-400	.010 - .018	.010 - .018	.012 - .020
		Quenched & Tempered	930	275	7	230-360			
			1000	300	8	165-300			
			1200	350	9	135-230			
	High alloy steel, cast steel & tool steel	Annealed	680	200	10	165-300	.010 - .014	.010 - .014	.012 - .016
		Quenched & Tempered	1100	325	11	130-265			
K	GreyCast Iron (GG)	Ferritic	-	160	15	300-600	.014 - .022	.014 - .022	.016 - .024
		Pearlitic	-	250	16	265-460			
	Cast Iron Nodular (GGG)	Ferritic	-	180	17	300-600			
		Pearlitic	-	260	18	265-460			
	Malleable Cast Iron	Ferritic	-	130	19	300-525			
		Pearlitic	-	230	20	265-460			

* Feed Rates are Based on Two Effective - DO NOT DOUBLE