

SPADE TWIST™

High Productivity, Quick Change, Tipped Drills for 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.

Diameters:

Metric:
26.0mm - 32.9mm
(.1mm increments)
33.0mm - 41.0mm
(.5mm increments)
Inch:
1.031" - 1.625"
(every 1/32")

Bodies:

Weldon Shank

Length to Diameter Ratio:

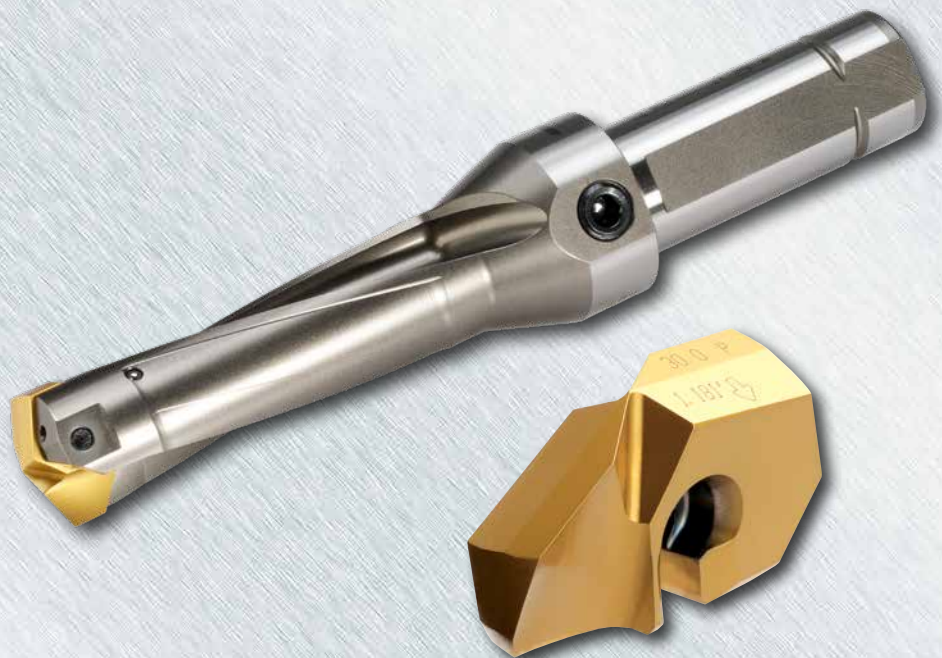
3xD and 5xD

Geometry:

P - Steel & General Purpose

Grade:

IN2505



Features & Benefits:

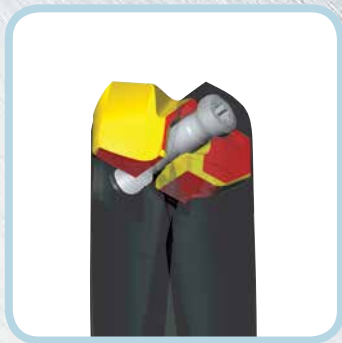
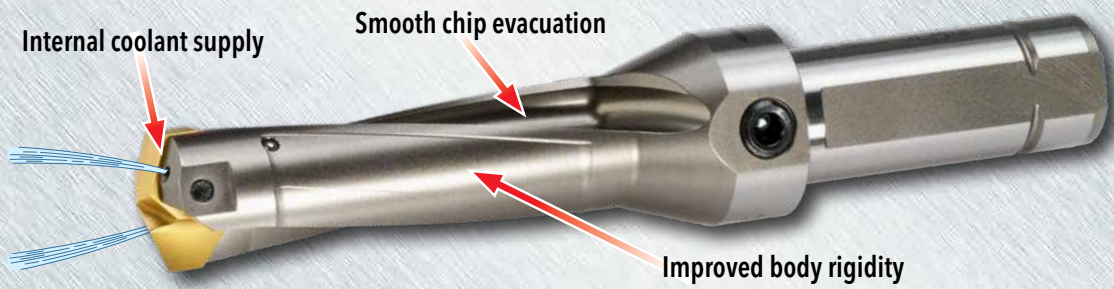
- Unique rigid, quick change clamping system
 - No need to remove the insert screw from the holder to change the head
 - Reduces tool setting time and machine downtime.
- Two effective design generates higher productivity than a conventional, large diameter, indexable insert drill.
- Asymmetrical pocket design:
 - Error proof mounting
 - Close tolerance, +.002/-.000
 - Excellent surface finish
- Also available in special L:Ds and combination drill/chamfer

PRODUCT
ANNOUNCEMENT

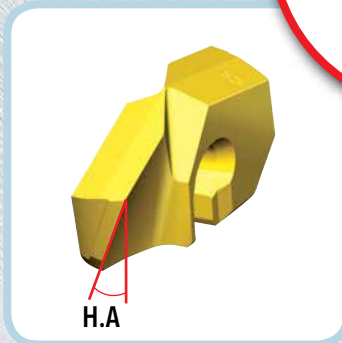
UPDATE

2018

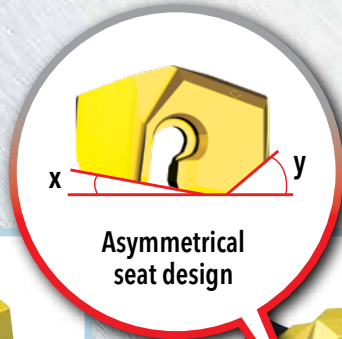
OVERVIEW



Wide contact area



Standard helix angle



Asymmetrical seat design



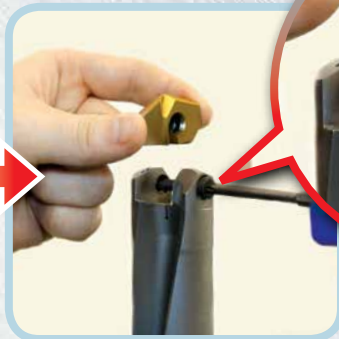
Error-proof



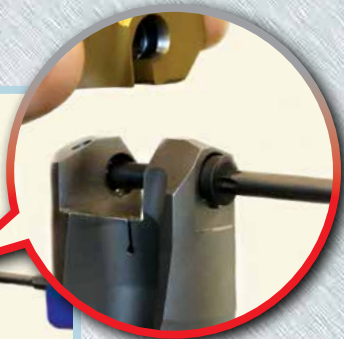
DRILL HEAD CHANGING INSTRUCTIONS



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

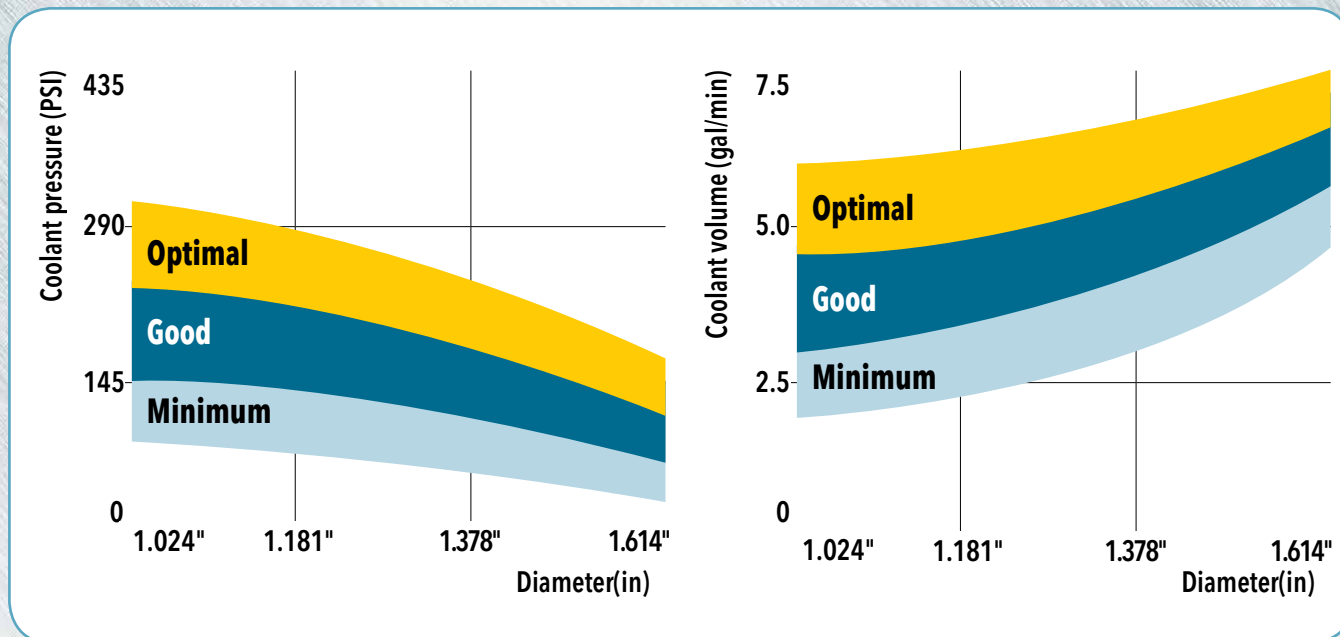


No need to remove the screw from the body



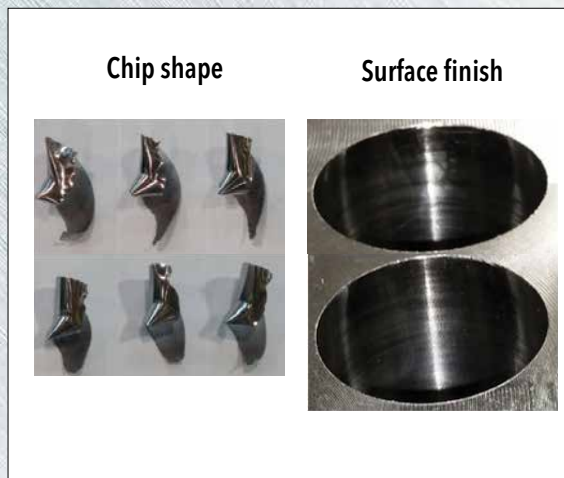
See page 5 for recommended torque.

RECOMMENDED COOLANT PRESSURE & VOLUME



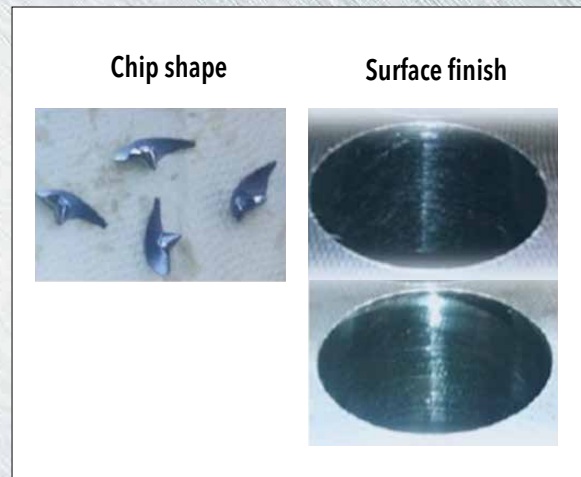
CASE STUDY 1

		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	



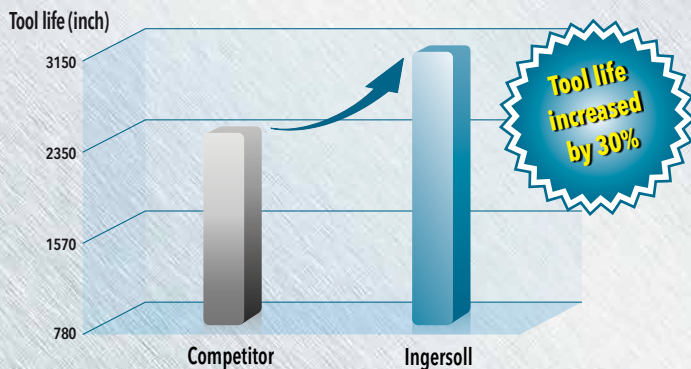
CASE STUDY 2

		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



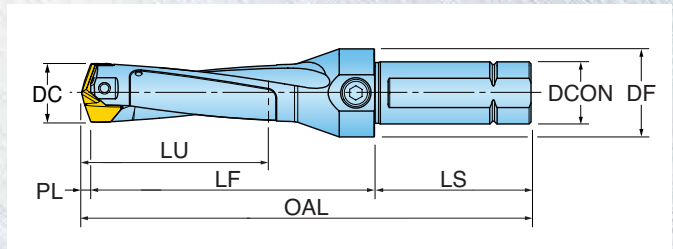
CASE STUDY 3

		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 - WELDON TYPE SHANK (INCH)

REPLACEABLE TIPPED DRILL BODIES



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	PL Point Length	LU Usuable Length	LF Functional Length	LS Shank Length	OAL Overall Length	DCON Shank Dia.	DF Flange Dia
LD2600078N6R01	1.0236	1.0590	26 mm	26.9 mm	26	0.166	3.236	5.150	3.16	8.625	1.25	1.772
LD2700081N6R01	1.0630	1.0984	27 mm	27.9 mm	27	0.173	3.362	5.280	3.16	8.603	1.25	1.772
LD2800084N6R01	1.1024	1.1378	28 mm	28.9 mm	28	0.178	3.485	5.429	3.16	8.756	1.25	1.772
LD2900087N6R01	1.1417	1.1772	29 mm	29.9 mm	29	0.185	3.610	5.559	3.16	8.894	1.25	1.772
LD3000090N6R01	1.1811	1.2165	30 mm	30.9 mm	30	0.190	3.733	5.704	3.16	9.044	1.25	1.772
LD3100093N6R01	1.2205	1.2559	31 mm	31.9 mm	31	0.197	3.859	5.834	3.16	9.182	1.25	1.772
LD3200096N6R01	1.2598	1.2953	32 mm	32.9 mm	32	0.203	3.982	6.176	3.16	9.528	1.25	1.772
LD3300099N6R01	1.2992	1.3346	33 mm	33.9 mm	33	0.207	4.105	6.309	3.16	9.666	1.25	1.772
LD3400102N6R01	1.3386	1.3740	34 mm	34.9 mm	34	0.217	4.233	6.437	3.16	9.804	1.25	1.772
LD3500105N6R01	1.3780	1.4134	35 mm	35.9 mm	35	0.219	4.353	6.588	3.16	9.957	1.25	1.772
LD3600108N6R01	1.4173	1.4528	36 mm	36.9 mm	36	0.225	4.473	6.724	3.16	10.095	1.25	1.772
LD3700111N6R01	1.4567	1.4921	37 mm	37.9 mm	37	0.232	4.532	6.850	3.16	10.233	1.25	2.165
LD3800114N6R01	1.4961	1.5315	38 mm	38.9 mm	38	0.239	4.727	7.001	3.16	10.390	1.25	2.165
LD3900117N6R01	1.5354	1.5709	39 mm	39.9 mm	39	0.245	4.851	7.133	3.16	10.528	1.25	2.165
LD4000120N6R01	1.5748	1.6496	40 mm	41.9 mm	40-41	0.256	4.980	7.259	3.16	10.666	1.25	2.165

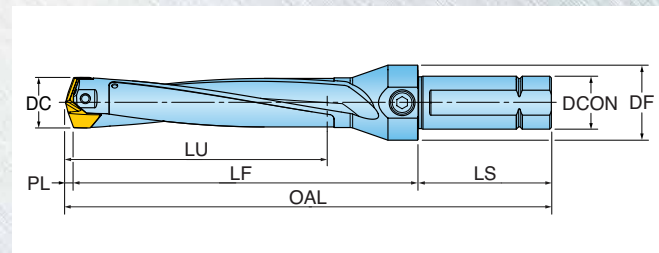
*Note: OAL and PL dimensions are based off the largest diameter tip for each body.

SPARE PARTS

Drill Body	Locking Screw	Torque Spec (in-lbs)	Driver	Handle	Coolant Plug
LD-260-270-3D	TS50230D3	44	BLD T20/S7	SW6-T Short	PF-0013
LD-280-290-3D	TS50250D35	48	BLD T25/S7	SW6-T Short	PF-0013
LD-300-310-3D	TS60265D4	53	BLD T25/S7	SW6-T Short	PF-0013
LD-320-340-3D	TS60285D42	53	BLD T25/S7	SW6-T Short	PF-0013
LD-350-370-3D	TS60320D5	53	BLD T25/S7	SW6-T Short	PF-0013
LD-380-400-3D	TS80340D6	62	BLD T25/S7	SW6-T Short	PF-0013

5XD DRILL BODY - WELDON TYPE SHANK (INCH)

REPLACEABLE TIPPED DRILL BODIES



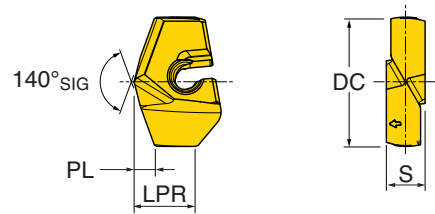
Part Number	DCN Cutting Dia. Min (Inch)	DCX Cutting Dia. Max (Inch)	DCN Cutting Dia. Min (Metric)	DCX Cutting Dia. Max (Metric)	SSC Insert Seat Size	PL Point Length	LU Usuable Length	LF Functional Length	LS Shank Length	OAL Overall Length	DCON Shank Dia.	DF Flange Dia
LD2600130N6R01	1.0236	1.0590	26 mm	26.9 mm	26	0.166	5.283	7.197	3.16	10.672	1.25	1.772
LD2700135N6R01	1.0630	1.0984	27 mm	27.9 mm	27	0.173	5.488	7.406	3.16	10.729	1.25	1.772
LD2800140N6R01	1.1024	1.1378	28 mm	28.9 mm	28	0.178	5.690	7.633	3.16	10.961	1.25	1.772
LD2900145N6R01	1.1417	1.1772	29 mm	29.9 mm	29	0.185	5.894	7.843	3.16	11.178	1.25	1.772
LD3000150N6R01	1.1811	1.2165	30 mm	30.9 mm	30	0.190	6.096	8.066	3.16	11.406	1.25	1.772
LD3100155N6R01	1.2205	1.2559	31 mm	31.9 mm	31	0.197	6.300	8.275	3.16	11.622	1.25	1.772
LD3200160N6R01	1.2598	1.2953	32 mm	32.9 mm	32	0.203	6.501	8.695	3.16	12.048	1.25	1.772
LD3300165N6R01	1.2992	1.3346	33 mm	33.9 mm	33	0.207	6.703	8.908	3.16	12.264	1.25	1.772
LD3400170N6R01	1.3386	1.3740	34 mm	34.9 mm	34	0.217	6.910	9.114	3.16	12.481	1.25	1.772
LD3500175N6R01	1.3780	1.4134	35 mm	35.9 mm	35	0.219	7.109	9.344	3.16	12.713	1.25	1.772
LD3600180N6R01	1.4173	1.4528	36 mm	36.9 mm	36	0.225	7.308	9.558	3.16	12.930	1.25	1.772
LD3700185N6R01	1.4567	1.4921	37 mm	37.9 mm	37	0.232	7.515	9.764	3.16	13.146	1.25	2.165
LD3800190N6R01	1.4961	1.5315	38 mm	38.9 mm	38	0.239	7.719	9.993	3.16	13.382	1.25	2.165
LD3900195N6R01	1.5354	1.5709	39 mm	39.9 mm	39	0.245	7.922	10.204	3.16	13.599	1.25	2.165
LD4000200N6R01	1.5748	1.6496	40 mm	41.9 mm	40-41	0.256	8.130	10.409	3.16	13.815	1.25	2.165

*Note: OAL and PL dimensions are based off the largest diameter tip for each body.

SPARE PARTS

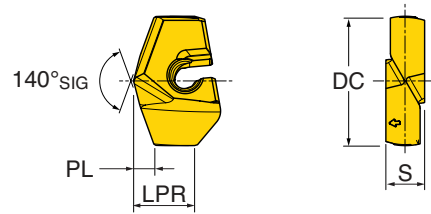
Drill Body	Locking Screw	Torque Spec (in-lbs)	Driver	Handle	Coolant Plug
LD-260-270-5D	TS50230D3	44	BLD T20/S7	SW6-T Short	PF-0013
LD-280-290-5D	TS50250D35	48	BLD T25/S7	SW6-T Short	PF-0013
LD-300-310-5D	TS60265D4	53	BLD T25/S7	SW6-T Short	PF-0013
LD-320-340-5D	TS60285D42	53	BLD T25/S7	SW6-T Short	PF-0013
LD-350-370-5D	TS60320D5	53	BLD T25/S7	SW6-T Short	PF-0013
LD-380-400-5D	TS80340D6	62	BLD T25/S7	SW6-T Short	PF-0013

DRILL TIPS



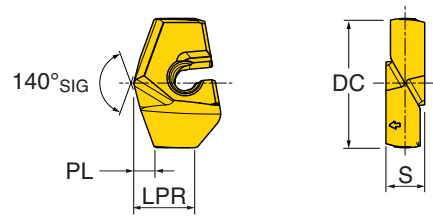
Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	S Thickness
	Metric	Inch				
LPA2600R01	26.0 mm	1.0236	26	0.159	0.457	0.315
LPA2610R01	26.1 mm	1.0275	26	0.160	0.457	0.315
LPA2620R01	26.2 mm	1.0310	26	0.160	0.457	0.315
LPA2630R01	26.3 mm	1.0354	26	0.161	0.457	0.315
LPA2640R01	26.4 mm	1.0394	26	0.162	0.457	0.315
LPA2650R01	26.5 mm	1.0433	26	0.163	0.457	0.315
LPA2660R01	26.6 mm	1.0472	26	0.163	0.457	0.315
LPA2670R01	26.7 mm	1.0512	26	0.164	0.457	0.315
LPA2680R01	26.8 mm	1.0511	26	0.165	0.457	0.315
LPA2690R01	26.9 mm	1.0591	26	0.166	0.457	0.315
LPA2700R01	27.0 mm	1.0630	27	0.166	0.437	0.315
LPA2710R01	27.1 mm	1.0669	27	0.167	0.437	0.315
LPA2720R01	27.2 mm	1.0709	27	0.168	0.437	0.315
LPA2730R01	27.3 mm	1.0748	27	0.168	0.437	0.315
LPA2740R01	27.4 mm	1.0787	27	0.169	0.437	0.315
LPA2750R01	27.5 mm	1.0827	27	0.170	0.437	0.315
LPA2760R01	27.6 mm	1.0866	27	0.171	0.437	0.315
LPA2770R01	27.7 mm	1.0906	27	0.171	0.437	0.315
LPA2780R01	27.8 mm	1.0940	27	0.172	0.437	0.315
LPA2790R01	27.9 mm	1.0984	27	0.173	0.437	0.315
LPA2800R01	28.0 mm	1.1024	28	0.171	0.461	0.335
LPA2810R01	28.1 mm	1.1063	28	0.172	0.461	0.335
LPA2820R01	28.2 mm	1.1102	28	0.173	0.461	0.335
LPA2830R01	28.3 mm	1.1142	28	0.173	0.461	0.335
LPA2840R01	28.4 mm	1.1181	28	0.174	0.461	0.335
LPA2850R01	28.5 mm	1.1220	28	0.175	0.461	0.335
LPA2860R01	28.6 mm	1.1250	28	0.176	0.461	0.335
LPA2870R01	28.7 mm	1.1299	28	0.176	0.461	0.335
LPA2880R01	28.8 mm	1.1339	28	0.177	0.461	0.335
LPA2890R01	28.9 mm	1.1378	28	0.178	0.461	0.335
LPA2900R01	29.0 mm	1.1417	29	0.178	0.445	0.335
LPA2910R01	29.1 mm	1.1457	29	0.179	0.445	0.335
LPA2920R01	29.2 mm	1.1496	29	0.180	0.445	0.335
LPA2930R01	29.3 mm	1.1535	29	0.181	0.445	0.335
LPA2940R01	29.4 mm	1.1570	29	0.181	0.445	0.335
LPA2950R01	29.5 mm	1.1614	29	0.182	0.445	0.335
LPA2960R01	29.6 mm	1.1654	29	0.183	0.445	0.335
LPA2970R01	29.7 mm	1.1693	29	0.183	0.445	0.335
LPA2980R01	29.8 mm	1.1732	29	0.184	0.445	0.335

DRILL TIPS



Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	S Thickness
	Metric	Inch				
LPA2990R01	29.9 mm	1.1772	29	0.185	0.445	0.335
LPA3000R01	30.0 mm	1.1811	30	0.184	0.555	0.354
LPA3010R01	30.1 mm	1.1850	30	0.185	0.555	0.354
LPA3020R01	30.2 mm	1.1870	30	0.185	0.555	0.354
LPA3030R01	30.3 mm	1.1929	30	0.186	0.555	0.354
LPA3040R01	30.4 mm	1.1969	30	0.187	0.555	0.354
LPA3050R01	30.5 mm	1.2008	30	0.187	0.555	0.354
LPA3060R01	30.6 mm	1.2047	30	0.188	0.555	0.354
LPA3070R01	30.7 mm	1.2087	30	0.189	0.555	0.354
LPA3080R01	30.8 mm	1.2126	30	0.190	0.555	0.354
LPA3090R01	30.9 mm	1.2165	30	0.190	0.555	0.354
LPA3100R01	31.0 mm	1.2205	31	0.191	0.539	0.354
LPA3110R01	31.1 mm	1.2244	31	0.192	0.539	0.354
LPA3120R01	31.2 mm	1.2283	31	0.192	0.539	0.354
LPA3130R01	31.3 mm	1.2323	31	0.193	0.539	0.354
LPA3140R01	31.4 mm	1.2362	31	0.194	0.539	0.354
LPA3150R01	31.5 mm	1.2402	31	0.195	0.539	0.354
LPA3160R01	31.6 mm	1.2441	31	0.195	0.539	0.354
LPA3170R01	31.7 mm	1.2480	31	0.196	0.539	0.354
LPA3180R01	31.8 mm	1.2500	31	0.197	0.539	0.354
LPA3190R01	31.9 mm	1.2559	31	0.197	0.539	0.354
LPA3200R01	32.0 mm	1.2598	32	0.196	0.571	0.374
LPA3210R01	32.1 mm	1.2638	32	0.197	0.571	0.374
LPA3220R01	32.2 mm	1.2677	32	0.197	0.571	0.374
LPA3230R01	32.3 mm	1.2717	32	0.198	0.571	0.374
LPA3240R01	32.4 mm	1.2756	32	0.199	0.571	0.374
LPA3250R01	32.5 mm	1.2795	32	0.200	0.571	0.374
LPA3260R01	32.6 mm	1.2835	32	0.200	0.571	0.374
LPA3270R01	32.7 mm	1.2874	32	0.201	0.571	0.374
LPA3280R01	32.8 mm	1.2913	32	0.202	0.571	0.374
LPA3290R01	32.9 mm	1.2953	32	0.203	0.571	0.374
LPA3300R01	33.0 mm	1.2992	33	0.203	0.555	0.374
LPA3330R01	33.3 mm	1.3120	33	0.205	0.555	0.374
LPA3350R01	33.5 mm	1.3189	33	0.207	0.555	0.374
LPA3400R01	34.0 mm	1.3386	34	0.210	0.539	0.374
LPA3410R01	34.1 mm	1.3430	34	0.211	0.539	0.374
LPA3450R01	34.5 mm	1.3583	34	0.214	0.539	0.374
LPA3490R01	34.9 mm	1.3750	34	0.217	0.539	0.374
LPA3500R01	35.0 mm	1.3780	35	0.214	0.654	0.413

DRILL TIPS



Part Number	DC Cutting Diameter		SSC Insert Seat Size	PL Point Length	LPR Protruding Length	S Thickness
	Metric	Inch				
LPA3550R01	35.5 mm	1.3976	35	0.218	0.654	0.413
LPA3570R01	35.7 mm	1.4060	35	0.219	0.654	0.413
LPA3600R01	36.0 mm	1.4173	36	0.221	0.634	0.413
LPA3650R01	36.5 mm	1.4370	36	0.225	0.634	0.413
LPA3700R01	37.0 mm	1.4567	36	0.229	0.618	0.413
LPA3730R01	37.3 mm	1.4680	37	0.231	0.618	0.413
LPA3750R01	37.5 mm	1.4764	36	0.232	0.618	0.413
LPA3800R01	38.0 mm	1.4961	38	0.233	0.669	0.433
LPA3810R01	38.1 mm	1.5000	38	0.233	0.669	0.433
LPA3850R01	38.5 mm	1.5157	38	0.236	0.669	0.433
LPA3890R01	38.9 mm	1.5310	38	0.239	0.669	0.433
LPA3900R01	39.0 mm	1.5354	39	0.240	0.654	0.433
LPA3950R01	39.5 mm	1.5550	39	0.243	0.654	0.433
LPA3970R01	39.7 mm	1.4173	39	0.245	0.654	0.433
LPA4000R01	40.0 mm	1.5748	40-41	0.247	0.638	0.433
LPA4050R01	40.0 mm	1.5945	40-41	0.251	0.638	0.433
LPA4100R01	41.0 mm	1.6142	40-41	0.254	0.638	0.433
LPA4130R01	41.3 mm	1.6259	40-41	0.256	0.638	0.433

OPERATING PARAMETERS

ISO	Material	Condition	Tensile Strength RM (N/mm2)	Hardness (HB)	Matl No.	Cutting Speed VC (SFM)	Feed vs. Drill Diameter					
							Ø26-29.9mm (1.0236"-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 steel <0.55% C > = 0.55% C	Annealed	420	125	1	260-360-460	.012 .016 .020	.012 .016 .020	.014 .018 .022			
		Annealed	650	190	2	260-345-430						
		Quenched & Tempered	850	250	3	260-330-400						
		Annealed	750	220	4	230-295-360						
		Quenched & Tempered	1000	300	5	165-230-300						
	Low alloy steel & cast steel (less than 5% alloying elements)	Annealed	600	200	6	260-330-400	.010 .014 .018	.010 .014 .018	.012 .016 .020			
		Quenched & Tempered	930	275	7	230-295-360						
			1000	300	8	165-230-300						
			1200	350	9	135-180-230						
	High alloy steel, cast steel & tool steel	Annealed	680	200	10	165-230-300	.010 .012 .014	.010 .012 .014	.012 .014 .016			
Quenched & Tempered		1100	325	11	130-200-265							
M	Stainless stl & cast stainless stl	Ferritic/martensitic	680	200	12	130-180-230	.006 .009 .012	.006 .009 .012	.008 .011 .014			
		Martensitic	820	240	13	130-180-230						
		Austenitic	600	180	14	100-165-230						
K	GreyCast Iron (GG)	Ferritic	-	160	15	300-425-600	.014 .018 .022	.014 .018 .022	.016 .020 .024			
		Pearlitic	-	250	16	265-360-460						
	Cast Iron Nodular (GGG)	Ferritic	-	180	17	300-450-600						
		Pearlitic	-	260	18	265-360-460						
	Malleable Cast Iron	Ferritic	-	130	19	300-410-525						
N	Aluminum - wrought alloy	Not cureable	-	60	21	300-510-725	.016 .020 .024	.016 .020 .024	.020 .024 .028			
		Cured	-	100	22	300-510-725						
	Aluminum - <=12% Si cast, alloyed >12% Si	Not cureable	-	75	23	300-510-725						
		Cured	-	90	24	300-510-725						
		High temperature	-	130	25	265-400-525						
	> 1% Pb Copper alloys	Free cutting	-	110	26	300-510-725						
		Brass	-	90	27	300-510-725						
		Electrolitic copper	-	100	28	300-510-725						
	Non-metallic	Duro & fiber plastics	-	-	29	-				-	-	-
		Hard rubber	-	-	30	-				-	-	-
S	Fe based High temp.alloys Ni or Co based	Annealed	-	200	31	100-150-200	.004 .006 .008	.006 .008 .010	.006 .008 .010			
		Cured	-	280	32	70-115-165						
		Annealed	-	250	33	70-115-165						
		Cured	-	350	34	70-115-165						
		Cast	-	320	35	70-115-165						
	Titanium, Ti alloys	-	Rm 400	-	36	70-115-165	.004 .006 .008	.006 .008 .010	.006 .008 .010			
		Alpha+beta alloys cured	Rm 1050	-	37	70-115-165						
H	Hardened steel	Hardened	-	55 HRC	38	70-115-165	.004 .006 .008	.006 .008 .010	.006 .008 .010			
		Hardened	-	60 HRC	39	70-115-165						
	Chilled cast iron	Cast	-	400	40	-				-	-	
	Cast iron nodular	Hardened	-	55 HRC	41	-				-	-	

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