Economical carbide coated solid drill

Win Drill

KORLOY TECH-NEWS

- Better cutting performance with an improved thinning shape which lessens cutting load
- High rigidity and good chip evacuation from the optimal designed flute
- Excellent cutting performance in stainless machining

KORLOY

TECH-NEWS

Economical carbide coated solid drill

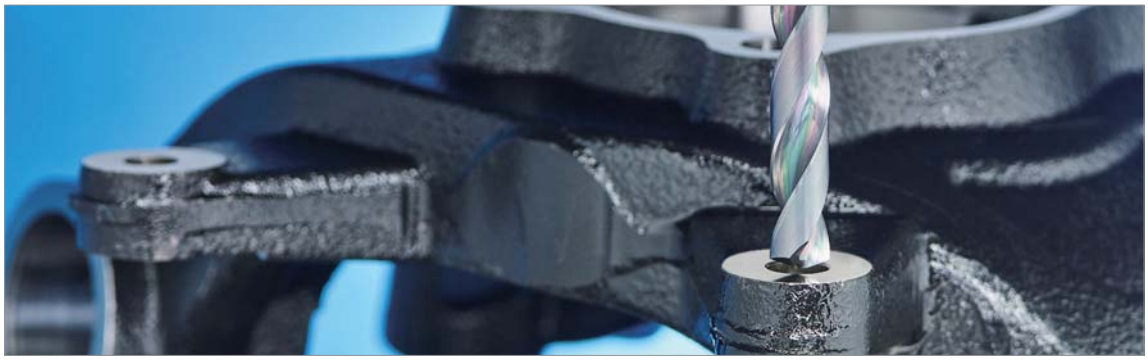
Win Drill

Drilling is applied to various industries in numerous ways. In addition, various workpieces including carbon steel, cast iron, alloy steel, stainless steel etc. are applied in drilling. Higher cutting performance and reduced machining time are required for efficient cutting.

Win Drill is designed for general use with enhanced stability and efficiency, and it has been designed for good chip control with reduced flute radius. Also the Drill's improved surface finish shows better chip evacuation.

The exclusive coating, PC320W based on AlCrN coating increases tool life by higher wear resistance and lubrication with higher welding resistance.

Win Drill is used for various types of cutting due to stable and excellent performance in wide cutting range, from low to high conditions.



Stable tool life

- For automotive line, enhanced productivity

Various standard line-up

- Provided customized service

Increased cutting performance, stable chip evacuation

- Reduced cutting load on the cutting edge and better surface finish

Applied to various workpieces

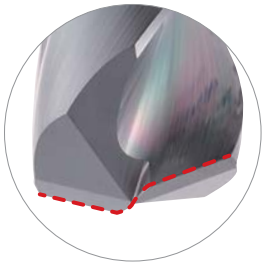
- P, M, K

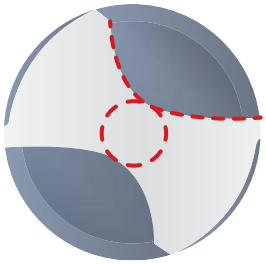
Code system

Special type

WSDP	040	-	5D	-	100L	-	5S
Win Solid Drill Plus	Drill dia. 040: Ø4.0		Aspect ratio (L/D) 5D, 7D		Overall length 100L: 100mm		Shank dia. 5S: Ø5

Features





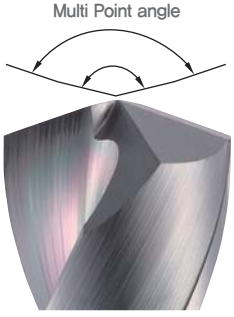
SECTION A-A'

Optimal flute

- Good chip evacuation due to applying the larger chip pocket

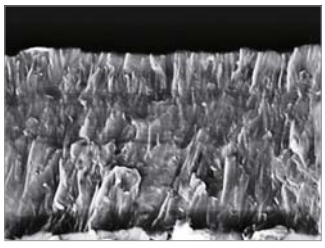
XR Thinning shape

- Reduced cutting load on the cutting edge with a streamlined thinning
- Improved chip breaking



Multi Point angle

- Separated cutting load by optimal point angle
- Streamlined 1st point angle



New AlCrN coating

- Improved chip evacuation with enhanced flute lubrication
- Enhanced wear resistance and oxidation resistance by multi-layer coating

Application range

◎: 1st recommendation ○: 2nd recommendation

P					M	K
Carbon steel	Alloy steel	Pre-hardened steel	Heat-treated steel		Stainless steel	Cast iron
			STD61(~HRC55)	STD11(HRC55~63)		
◎	◎	○	-	-	◎	○

Recommended cutting conditions

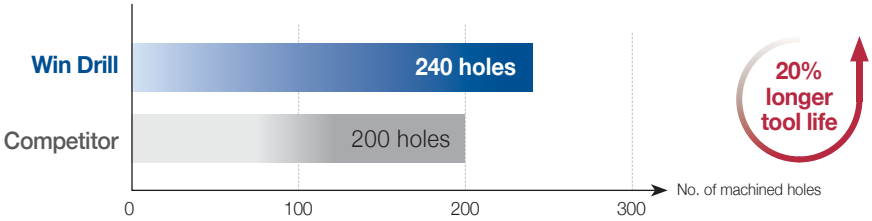
Workpiece				Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)				
ISO		Workpiece	Hardness (HB)			Ø2.5-4.0	Ø4.1-8.0	Ø8.1-12.0	Ø12.1-16.0	Ø16.1-20.0
P	Carbon steel	Low carbon steel	80-120	PC320W	**72** (64-120)	0.08-0.12	0.13-0.19	0.16-0.24	0.20-0.29	0.24-0.32
		High carbon steel	Over 250	PC320W	**40** (32-64)	0.06-0.16	0.06-0.16	0.08-0.20	0.12-0.20	0.12-0.24
	Alloy steel	Low alloy steel	140-260	PC320W	**72** (64-120)	0.08-0.12	0.13-0.19	0.16-0.24	0.20-0.29	0.24-0.32
		Heat-treated low alloy steel	200-400	PC320W	**48** (40-80)	0.08-0.12	0.13-0.19	0.16-0.24	0.20-0.29	0.24-0.32
		High alloy steel	50-260	PC320W	**40** (32-64)	0.06-0.16	0.06-0.16	0.08-0.20	0.12-0.20	0.12-0.24
		Heat-treated high alloy steel	Over 250	PC320W	**40** (32-64)	0.06-0.16	0.06-0.16	0.08-0.20	0.12-0.20	0.12-0.24
M	Stainless steel	Austenite series	135-275	PC320W	**36** (20-64)	0.04-0.16	0.04-0.16	0.08-0.20	0.08-0.20	0.12-0.24
		Ferrite series Martensite series	135-275	PC320W	**40** (24-64)	0.04-0.16	0.04-0.16	0.08-0.20	0.08-0.20	0.12-0.24
K	Cast iron	Gray cast iron	150-230	PC320W	**80** (64-120)	0.08-0.12	0.13-0.19	0.16-0.24	0.20-0.29	0.24-0.32
		Ductile cast iron	160-260	PC320W	**72** (56-112)	0.08-0.12	0.13-0.19	0.16-0.24	0.20-0.29	0.24-0.32

※ Cutting conditions above are for the case of less than 5D depth of cut and through coolant system applied.

Application examples

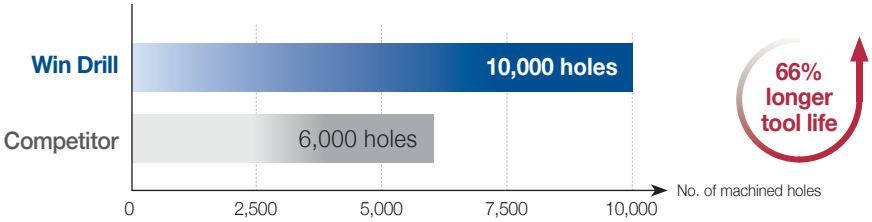
Heat-resisting stainless steel [1.4848 (DIN)]

- **Workpiece** Automotive engine components
- **Cutting conditions** vc (m/min) = 27.3 , fn (mm/rev) = 0.13 , ap (mm) = 15, wet
- **Tool** WSDP130-5D (PC320W)



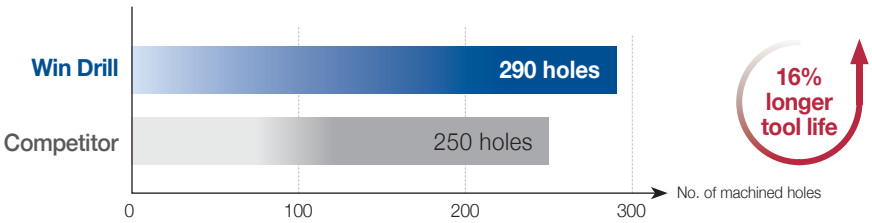
Ductile cast iron (400-18)

- **Workpiece** Bed plate
- **Cutting conditions** vc (m/min) = 84, fn (mm/rev) = 0.15, ap (mm) = 60, wet
- **Tool** WSDP121-7D (PC320W)

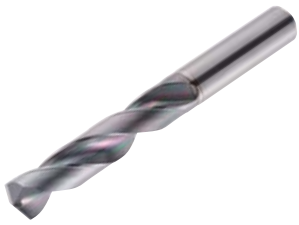


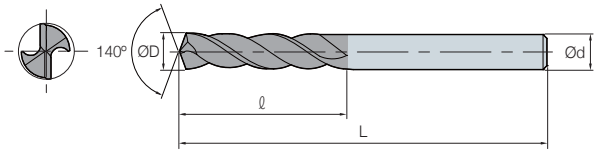
Ductile cast iron (HiSiMo)

- **Workpiece** Automotive engine components
- **Cutting conditions** vc (m/min) = 57, fn (mm/rev) = 0.12, ap (mm) = 15, wet
- **Tool** WSDP114-5D (PC320W)



WSDP-□D





Specification	P	M	K
Grade	PC320W		
Tolerance (drill Dia.)	h7		
Tolerance (shank Dia.)	h6		
Point angle (θ°)	140°		
Twist angle	Streamlined		
Thinning	XR type		
Coolant	External system		

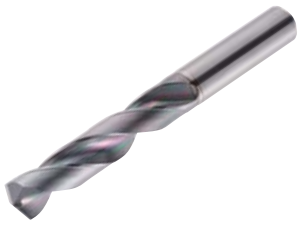
P Steel M Stainless steel K Cast iron

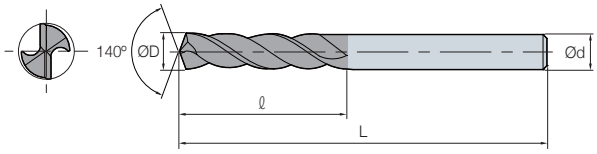
(mm)

Designation		Stock		ØD	Ød	5D		7D	
		5D	7D			ℓ	L	ℓ	L
WSDP	010-□D	●		1.0	3	8	38	12	60
	011-□D	●		1.1	3	9	42	12	60
	012-□D	●		1.2	3	10	42	12	60
	013-□D	●		1.3	3	10	42	15	60
	014-□D	●		1.4	3	11	42	15	60
	015-□D	●		1.5	3	11	42	15	60
	016-□D	●		1.6	3	12	42	20	60
	017-□D	●		1.7	3	12	42	20	60
	018-□D	●		1.8	3	13	42	20	60
	019-□D	●		1.9	3	13	42	20	60
	020-□D	●		2.0	3	18	50	25	66
	021-□D	●		2.1	3	18	50	25	66
	022-□D	●		2.2	3	18	50	25	66
	023-□D	●		2.3	3	18	50	25	66
	024-□D	●		2.4	3	18	50	30	66
	025-□D	●		2.5	3	18	50	30	66
	026-□D	●		2.6	3	18	50	30	66
	027-□D	●		2.7	3	18	50	30	66
	028-□D	●		2.8	3	18	50	30	66
	029-□D	●		2.9	3	18	50	30	66
	030-□D	●	●	3.0	3	20	55	45	80
	031-□D	●	●	3.1	4	20	55	45	80
	032-□D	●	●	3.2	4	20	55	45	80
	033-□D	●	●	3.3	4	20	55	45	80
	034-□D	●	●	3.4	4	20	55	45	80
	035-□D	●	●	3.5	4	20	55	45	80
	036-□D	●	●	3.6	4	25	55	45	80
	037-□D	●	●	3.7	4	25	55	45	80
	038-□D	●	●	3.8	4	25	55	45	80
	039-□D	●	●	3.9	4	25	55	45	80
	040-□D	●	●	4.0	4	25	55	45	80
	041-□D	●	●	4.1	5	25	55	45	80
	042-□D	●	●	4.2	5	33	63	45	80
	043-□D	●	●	4.3	5	33	63	45	80
	044-□D	●	●	4.4	5	33	63	45	80
	045-□D	●	●	4.5	5	33	63	45	80
	046-□D	●	●	4.6	5	33	63	45	80
	047-□D	●	●	4.7	5	33	63	45	80
	048-□D	●	●	4.8	5	33	63	45	80
	049-□D	●	●	4.9	5	33	63	45	80

●: Stock item

WSDP-□D





Specification	P	M	K
Grade	PC320W		
Tolerance (drill Dia.)	h7		
Tolerance (shank Dia.)	h6		
Point angle (θ°)	140°		
Twist angle	Streamlined		
Thinning	XR type		
Coolant	External system		

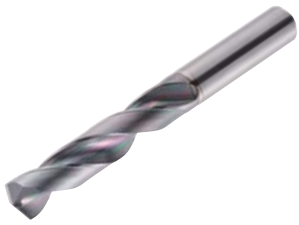
P Steel M Stainless steel K Cast iron

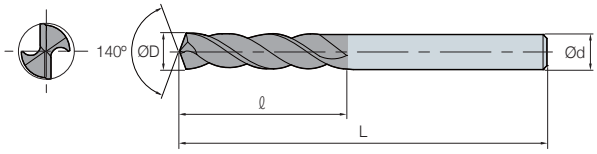
(mm)

Designation		Stock		ØD	Ød	5D		7D	
		5D	7D			ℓ	L	ℓ	L
WSDP	050-□D	●	●	5.0	5	33	63	45	80
	051-□D	●	●	5.1	6	33	63	45	80
	052-□D	●	●	5.2	6	36	66	50	83
	053-□D	●	●	5.3	6	36	66	50	83
	054-□D	●	●	5.4	6	36	66	50	83
	055-□D	●	●	5.5	6	36	66	50	83
	056-□D	●	●	5.6	6	36	66	50	83
	057-□D	●	●	5.7	6	36	66	50	83
	058-□D	●	●	5.8	6	36	66	50	83
	059-□D	●	●	5.9	6	36	66	50	83
	060-□D	●	●	6.0	6	36	66	50	83
	061-□D	●	●	6.1	7	36	66	50	83
	062-□D	●	●	6.2	7	42	75	53	85
	063-□D	●	●	6.3	7	42	75	53	85
	064-□D	●	●	6.4	7	42	75	53	85
	065-□D	●	●	6.5	7	42	75	53	85
	066-□D	●	●	6.6	7	42	75	53	85
	067-□D	●	●	6.7	7	42	75	53	85
	068-□D	●	●	6.8	7	42	75	53	85
	069-□D	●	●	6.9	7	42	75	53	85
	070-□D	●	●	7.0	7	42	75	53	85
	071-□D	●	●	7.1	8	42	75	53	85
	072-□D	●	●	7.2	8	46	80	58	90
	073-□D	●	●	7.3	8	46	80	58	90
	074-□D	●	●	7.4	8	46	80	58	90
	075-□D	●	●	7.5	8	46	80	58	90
	076-□D	●	●	7.6	8	46	80	58	90
	077-□D	●	●	7.7	8	46	80	58	90
	078-□D	●	●	7.8	8	46	80	58	90
	079-□D	●	●	7.9	8	46	80	58	90
	080-□D	●	●	8.0	8	46	80	58	90
	081-□D	●	●	8.1	9	46	80	58	90
	082-□D	●	●	8.2	9	50	85	64	98
	083-□D	●	●	8.3	9	50	85	64	98
	084-□D	●	●	8.4	9	50	85	64	98
	085-□D	●	●	8.5	9	50	85	64	98
	086-□D	●	●	8.6	9	50	85	64	98
	087-□D	●	●	8.7	9	50	85	64	98
	088-□D	●	●	8.8	9	50	85	64	98
	089-□D	●	●	8.9	9	50	85	64	98

●: Stock item

WSDP-□D





Specification	P	M	K
Grade	PC320W		
Tolerance (drill Dia.)	h7		
Tolerance (shank Dia.)	h6		
Point angle (θ°)	140°		
Twist angle	Streamlined		
Thinning	XR type		
Coolant	External system		

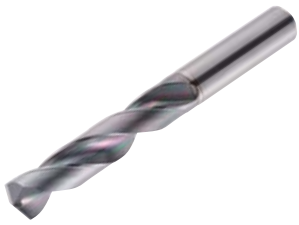
P Steel M Stainless steel K Cast iron

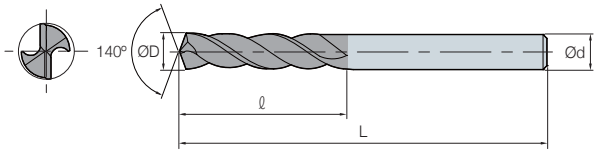
(mm)

Designation		Stock		ØD	Ød	5D		7D	
		5D	7D			ℓ	L	ℓ	L
WSDP	090-□D	●	●	9.0	9	50	85	64	98
	091-□D	●	●	9.1	10	50	85	64	98
	092-□D	●	●	9.2	10	55	90	68	105
	093-□D	●	●	9.3	10	55	90	68	105
	094-□D	●	●	9.4	10	55	90	68	105
	095-□D	●	●	9.5	10	55	90	68	105
	096-□D	●	●	9.6	10	55	90	68	105
	097-□D	●	●	9.7	10	55	90	68	105
	098-□D	●	●	9.8	10	55	90	68	105
	099-□D	●	●	9.9	10	55	90	68	105
	100-□D	●	●	10.0	10	55	90	68	105
	101-□D	●	●	10.1	11	55	90	68	105
	102-□D	●		10.2	11	57	95	73	110
	103-□D	●	●	10.3	11	57	95	73	110
	104-□D	●	●	10.4	11	57	95	73	110
	105-□D	●	●	10.5	11	57	95	73	110
	106-□D	●		10.6	11	57	95	73	110
	107-□D	●		10.7	11	57	95	73	110
	108-□D	●	●	10.8	11	57	95	73	110
	109-□D	●	●	10.9	11	57	95	73	110
	110-□D	●	●	11.0	11	57	95	73	110
	111-□D	●	●	11.1	12	57	95	73	110
	112-□D	●	●	11.2	12	63	102	80	120
	113-□D	●		11.3	12	63	102	80	120
	114-□D	●		11.4	12	63	102	80	120
	115-□D	●	●	11.5	12	63	102	80	120
	116-□D	●		11.6	12	63	102	80	120
	117-□D	●	●	11.7	12	63	102	80	120
	118-□D	●	●	11.8	12	63	102	80	120
	119-□D	●		11.9	12	63	102	80	120
	120-□D	●	●	12.0	12	63	102	80	120
	121-□D	●		12.1	13	63	102	80	120
	122-□D	●	●	12.2	13	63	102	90	137
	123-□D	●		12.3	13	63	102	90	137
	124-□D	●		12.4	13	63	102	90	137
	125-□D	●	●	12.5	13	63	102	90	137
	126-□D	●		12.6	13	63	102	90	137
	127-□D	●		12.7	13	63	102	90	137
	128-□D	●		12.8	13	63	102	90	137
	129-□D			12.9	13	63	102	90	137

●: Stock item

WSDP-□D





Specification	P	M	K
Grade	PC320W		
Tolerance (drill Dia.)	h7		
Tolerance (shank Dia.)	h6		
Point angle (θ°)	140°		
Twist angle	Streamlined		
Thinning	XR type		
Coolant	External system		

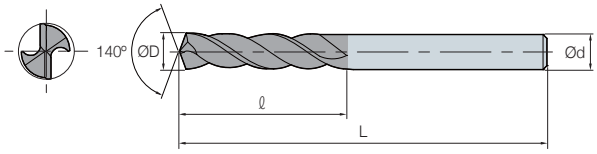
P Steel M Stainless steel K Cast iron

(mm)

Designation		Stock		ØD	Ød	5D		7D	
		5D	7D			ℓ	L	ℓ	L
WSDP	130-□D	●	●	13.0	13	63	102	90	137
	131-□D	●		13.1	14	63	102	90	137
	132-□D	●		13.2	14	65	107	96	147
	133-□D			13.3	14	65	107	96	147
	134-□D	●		13.4	14	65	107	96	147
	135-□D	●	●	13.5	14	65	107	96	147
	136-□D			13.6	14	65	107	96	147
	137-□D			13.7	14	65	107	96	147
	138-□D	●	●	13.8	14	65	107	96	147
	139-□D		●	13.9	14	65	107	96	147
	140-□D	●	●	14.0	14	65	107	96	147
	141-□D	●		14.1	15	65	107	96	147
	142-□D	●	●	14.2	15	67	111	100	153
	143-□D	●		14.3	15	67	111	100	153
	144-□D	●		14.4	15	67	111	100	153
	145-□D	●		14.5	15	67	111	100	153
	146-□D			14.6	15	67	111	100	153
	147-□D	●		14.7	15	67	111	100	153
	148-□D			14.8	15	67	111	100	153
	149-□D	●	●	14.9	15	67	111	100	153
	150-□D	●	●	15.0	15	67	111	100	153
	151-□D	●		15.1	16	67	111	100	153
	152-□D	●		15.2	16	69	115	112	160
	153-□D	●		15.3	16	69	115	112	160
	154-□D	●		15.4	16	69	115	112	160
	155-□D			15.5	16	69	115	112	160
	156-□D	●		15.6	16	69	115	112	160
	157-□D	●	●	15.7	16	69	115	112	160
	158-□D	●	●	15.8	16	69	115	112	160
	159-□D			15.9	16	69	115	112	160
	160-□D	●	●	16.0	16	69	115	112	160
	161-□D	●		16.1	17	69	115	112	160
	162-□D			16.2	17	71	119	112	160
	163-□D	●		16.3	17	71	119	112	160
	164-□D			16.4	17	71	119	112	160
	165-□D	●	●	16.5	17	71	119	112	160
	166-□D			16.6	17	71	119	112	160
	167-□D			16.7	17	71	119	112	160
	168-□D			16.8	17	71	119	112	160
	169-□D			16.9	17	71	119	112	160

●: Stock item

WSDP-□D



Specification	P	M	K
Grade	PC320W		
Tolerance (drill Dia.)	h7		
Tolerance (shank Dia.)	h6		
Point angle (θ°)	140°		
Twist angle	Streamlined		
Thinning	XR type		
Coolant	External system		

P Steel M Stainless steel K Cast iron

(mm)

Designation		Stock		ØD	Ød	5D		7D	
		5D	7D			ℓ	L	ℓ	L
WSDP	170-□D	●		17.0	17	71	119	112	160
	171-□D	●		17.1	18	71	119	112	160
	172-□D			17.2	18	74	123	112	160
	173-□D			17.3	18	74	123	112	160
	174-□D			17.4	18	74	123	112	160
	175-□D	●	●	17.5	18	74	123	112	160
	176-□D			17.6	18	74	123	112	160
	177-□D			17.7	18	74	123	112	160
	178-□D	●	●	17.8	18	74	123	112	160
	179-□D			17.9	18	74	123	112	160
	180-□D	●	●	18.0	18	74	123	112	160
	181-□D	●		18.1	19	74	123	112	160
	182-□D	●		18.2	19	76	127	112	160
	183-□D			18.3	19	76	127	112	160
	184-□D			18.4	19	76	127	112	160
	185-□D	●		18.5	19	76	127	112	160
	186-□D			18.6	19	76	127	112	160
	187-□D			18.7	19	76	127	112	160
	188-□D			18.8	19	76	127	112	160
	189-□D			18.9	19	76	127	112	160
	190-□D	●	●	19.0	19	76	127	112	160
	191-□D			19.1	20	76	127	112	160
	192-□D			19.2	20	80	131	112	160
	193-□D			19.3	20	80	131	112	160
	194-□D			19.4	20	80	131	112	160
	195-□D	●		19.5	20	80	131	112	160
	196-□D			19.6	20	80	131	112	160
	197-□D			19.7	20	80	131	112	160
	198-□D			19.8	20	80	131	112	160
	199-□D			19.9	20	80	131	112	160
	200-□D			20.0	20	80	131	112	160

●: Stock item

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