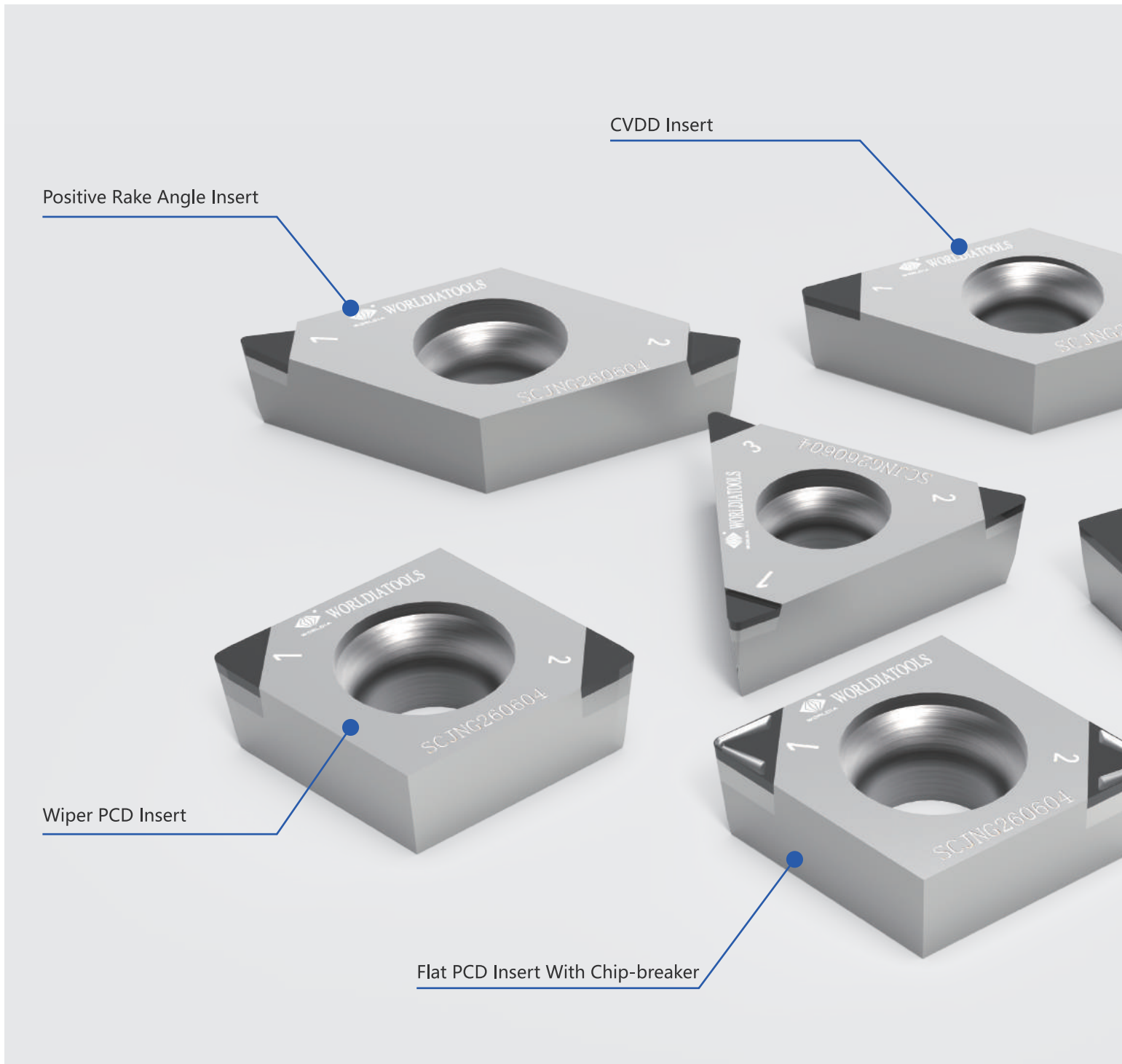


PCD/CVDD Inserts

北京沃尔德金刚石工具股份有限公司
BEIJING WORLDIA DIAMOND TOOLS CO.,LTD.



Main applications:

Flat PCD Insert: Suitable for a wide range of application from turning, milling to boring;

Positive Rake Angle Insert: sharp edge design which is for high roughness application requirements of turning, milling and boring;

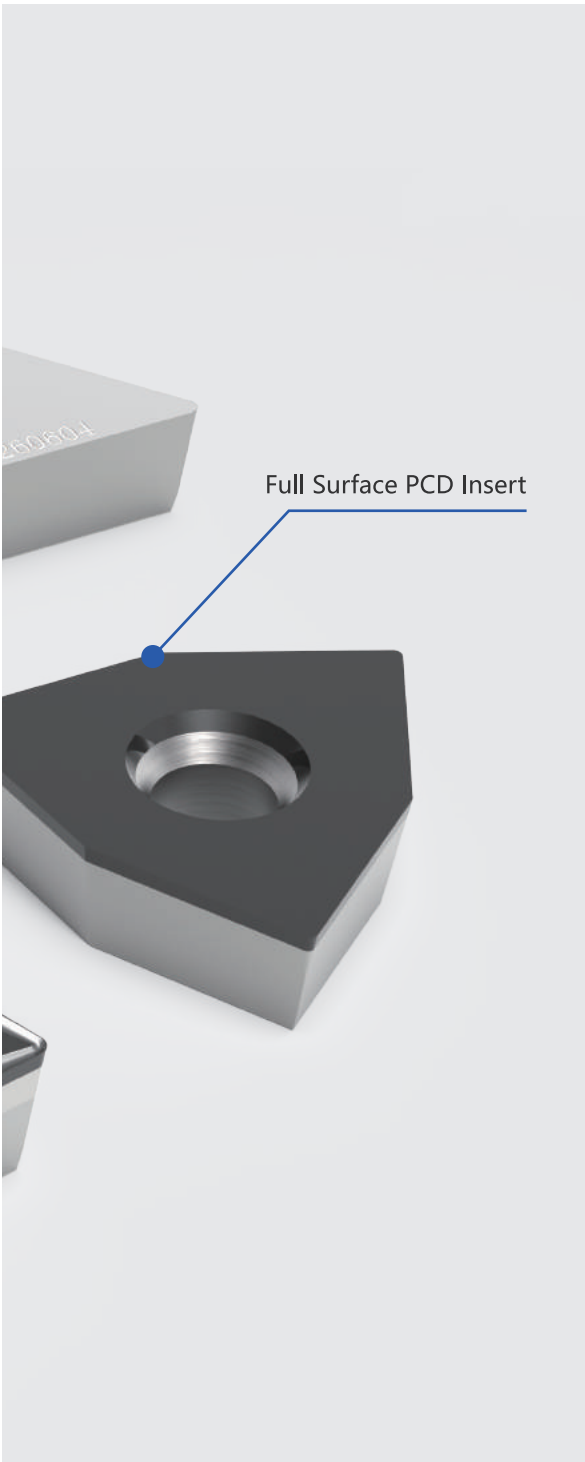
Full Length Edge Insert: Chamfering, flat surface and bulge part cutting;

Wiper PCD Insert: for excellent surface with high roughness and high efficiency machining;

CVDD Insert: for high abrasive resistance and high efficiency machining;

PCD Insert with chip-breaker: high surface roughness required, prevent chip breaker scratched, which influence the on-line monitoring of fully automatic production line, and the manipulator; clamping, prevent wrapped chips damage the cutting tools abnormally. So it is easy to remove the chip during boring without damaging the cutting tool, holder and workpiece.

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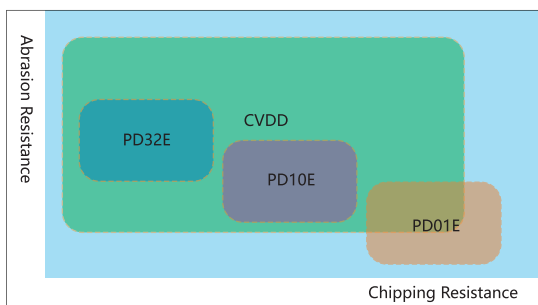
PCD Material Characteristics

According to grain size and features of diamond, four types of PCD material, i.e. PD 01E\PD10E\PD32E\CVDD are listed as below.

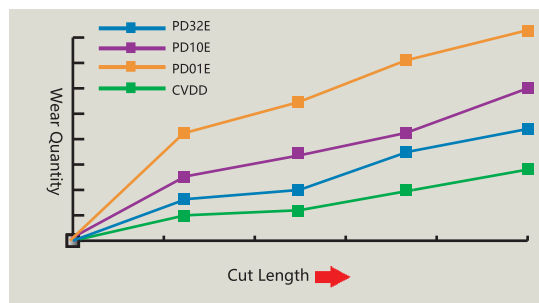
Introduction

Material	Grade size(μm)	Feature	Application
PD01E	1	PD01E fine grain size PCD material($1\mu\text{m}$) is suitable for mirror finishing applications. Its high impact resistance and high abrasive resistance are no less than that of rough grade of PCD.	PD01E has excellent chip resistance is suitable for the roughing and interrupt cutting aluminium alloys. This grade is also commonly used for non-ferrous finishing applications. Other successful applications include machining of wood, MDF.
PD10E	10	PD10E is the universal grade in the market. It's the first choice for many applications where a good balance of toughness and wear resistance are required.	This grade is commonly used for non-ferrous finishing applications. Other successful applications include machining of wood, MDF. The machining of low-medium content silicon aluminium alloys, carbide, hard rubber, graphite and so on.
PD32E	2~30	PD32E has a unique combination of wear resistance, edge strength and edge quality. It contains a carefully selected mix of micron diamond (between 2 - 30 μm). The combination of these particle sizes and a specifically developed high pressure sintering process produces a structure with extreme abrasion resistance and good thermal stability.	Application areas include the machining of abrasive workpieces such as MMC, high silicon aluminium alloys as well as for the machining of carbide and carbide, hard rubber, graphite and other applications.
CVDD	—	CVDD is a pure carbon material without binder with extreme abrasion resistance and good thermal suitability. Due to its Perfect cutting edge suitable for applications where mirror finishes are required.	Application areas include the machining of abrasive workpieces such as MMC, high silicon aluminium alloys as well as for the machining of carbide, hard rubber, graphite and other applications.

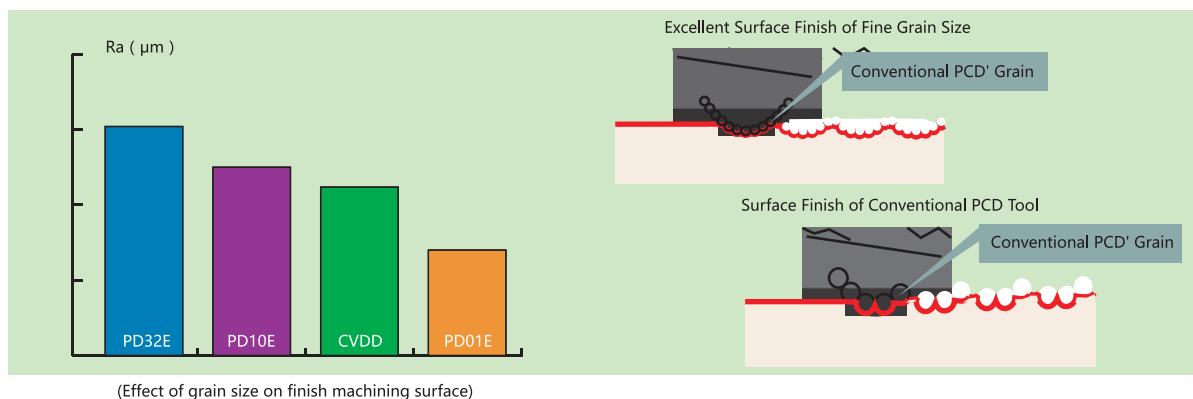
Micro-Structure of PCD Materials



Differences in Abrasive-resistance Among Various Grade of PCD Materials



PCD Grain Size Affects Roughness of Workpiece's Surface

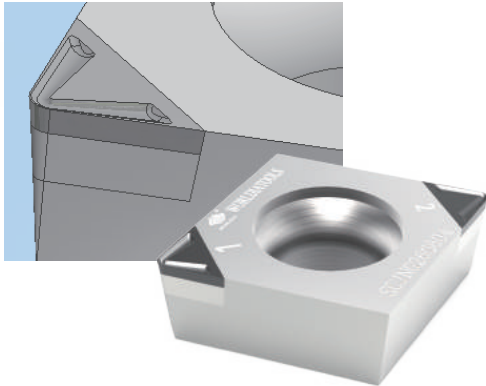


(Effect of grain size on finish machining surface)

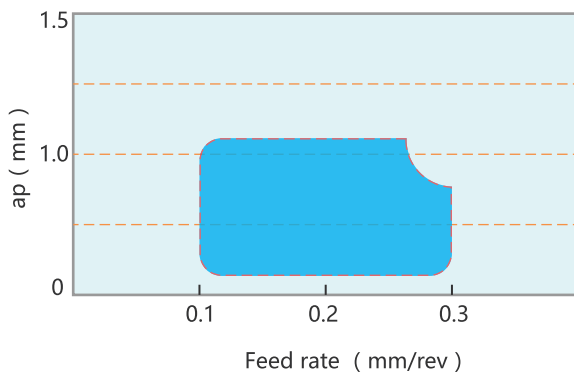
PCD Insert with Chip-breaker/ PCD Wiper Insert

■PCD Insert with chip-breaker(CBC1)

Excellent chip breaking in finishing machining



Scope of Application



Material : A6061

Cutting conditions : $V_c=400\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=0.2\text{mm}$

Insert type : CCGW09T308



Material : A6061

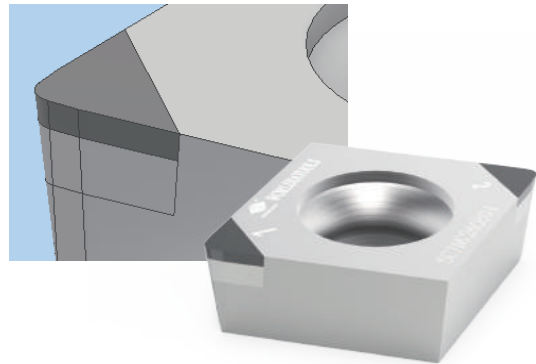
Cutting conditions : $V_c=400\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=0.5\text{mm}$

Insert type : CCGW09T308



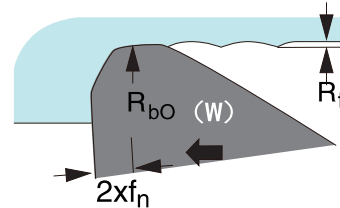
■PCD Wiper Insert(WG)

Improve the quality of workpiece surface or processing efficiency



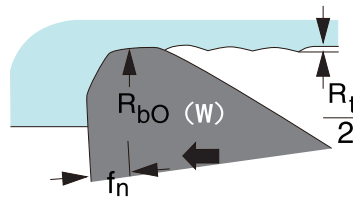
Effect of Wiper Insert

With the same R_t ,
Wiper inserts increase double feed rate($2xf_n$).



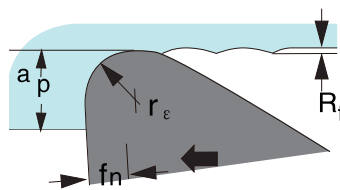
High Efficiency

Under the same f_n ,
Wiper inserts improve the surface quality($\frac{R_t}{2}$).



High Quality Surface

Standard corner radius



Rule of PCD Insert Code

ISO	C	C	G	W	09	T3	04	1	N	P	00	P	07	CB	ST	30	S
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰
ANSI	C	C	G	W	3	(2.5)	1	1	N	P	00	P	07	CB	ST	30	S
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰

1 Shape					
	H	120°		C	80°
	O	135°		D	55°
	P	108°		E	75°
	R			M	86°
	S	90°		V	35°
	T	60°		W	80°
				L	90°
				A	85°
				B	82°
				K	55°

3 Tolerance-ISO	Tolerance-ANSI							
	Code	inch(mm)			Code	inch		
		m	s	IC		m	ic	s
	C	±0.013	±0.025	±0.025	C	±.0005	±.001	±.001
	H	±0.013	±0.025	±0.013	H	±.0005	±.0005	±.001
	E	±0.025	±0.025	±0.025	E	±.001	±.001	±.001
	G	±0.025	±0.13	±0.025	G	±.001	±.001	±.005
	K	±0.013	±0.025	±0.05-±0.13	K	±.0005	±.002-.005	±.001
	M	±0.08-±0.18	±0.13	±0.05-±0.13	M	±.002-.005	±.002-.005	±.005
	U	±0.13-±0.38	±0.13	±0.08-±0.25	U	±.005-.012	±.005-.010	±.005

2 Clearance Angle					
	A		E		P
	B		F		O
	C		G		
	D		N		

5 Inscribed Circle Dia.									
ISO							ANSI		
C	D	R	S	T	V	W	mm	Code	IC Size
								inch	
S4	04	03	03	06	-	-	3.97	(1.2)	5/32
04	05	04	04	08	08	S3	4.76	(1.5)	3/16
05	06	05	05	09	09	03	5.56	(1.8)	7/32
-	-	06	-	-	-	-	6	-	-
06	07	06	06	11	11	04	6.35	2	1/4
08	09	07	07	13	13	05	7.94	(2.5)	5/16
-	-	08	-	-	-	-	8	-	-
09	11	09	09	16	16	06	9.525	3	3/8
-	-	10	-	-	-	-	10	-	-
-	-	12	-	-	-	-	12	-	-
12	15	12	12	22	22	08	12.7	4	1/2
16	19	15	15	27	27	10	15.875	5	5/8
-	-	16	-	-	-	-	16	-	-
19	23	19	19	33	33	13	19.05	6	3/4
-	-	20	-	-	-	-	20	-	-
22	27	22	22	38	38	15	22.225	7	7/8
-	-	25	-	-	-	-	25	-	-
25	31	25	25	44	44	17	25.4	8	1
32	38	31	31	54	54	21	31.75	10	1-1/4
-	-	32	-	-	-	-	32	-	-

6 Thickness			
ISO		ANSI	
Code	Size	Code	Size
S	mm	S	inch
01	1.59	1	1/16
02	2.38	(1.5)	3/32
T2	2.78	-	-
03	3.18	2	1/8
T3	3.97	(2.5)	5/32
04	4.76	3	3/16
05	5.56	(3.5)	7/32
06	6.35	4	1/4
07	7.94	5	5/16
09	9.525	6	3/8

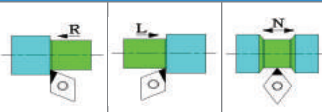
7 Nose radius			
ISO		ANSI	
Code	Size	Code	Size
R _e	mm	R _e	inch
00		00	.000
003	0.03	(0.1)	.001
01	0.1	(0.2)	.004
02	0.2	(0.5)	.008
04	0.4	1	1/64
08	0.8	2	1/32
12	1.2	3	3/64
16	1.6	4	1/16
20	2.0	5	5/64
24	2.4	6	3/32
28	2.8	7	7/64
32	3.2	8	1/8
M0		0	circular



4 Standard, Chipbreaker					
	N		G		B
	R		W		H
	F		T		C
	A		Q		J
	M		U	Other	X

Rule of PCD Insert Code



8 Edges						
Code	1	2	3	4	6	8
notes	1 edge	2 edges	3 edges	4 edges	6 edges	8 edges

9 Cutting Direction			
Code	R	L	N
notes	R	L	N





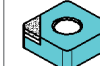



10 Positive Rake Description	
P	M
Positive Positive	Negative angle
	

11 Positive Rake Angle					
Code	α	00	03	05	10
Size	$^{\circ}$	0	3	5	10

12 Negative Clearance	
P	
Positive Clearance	
	
M	
Negative Clearance	
	

13 Clearance Angle													
Code	β	00	01	02	03	05	07	11	15	20	25	30	35
Size	$^{\circ}$	0	1	2	3	5	7	11	15	20	25	30	35

14 Insert type					
					
SF	SW	SL	SS	CB	CS
Full Face	Solid Tipped Corners	Solid Tipped Corner	Solid PCD	Standard Tipped Corners	Standard Full Edge

15 Cutting Edge Design				
ST	WG	WG00	CBC1	—
Nose Radius	Wiper	0°Wiper	C1 Chip Breaker	—

16 Cutting Edge Length						
Code	25	30	35	40	45	...
Nose Radius	2.8	3.0	3.5	4.0	4.5	...

17 Surface Treatment			
S	Uncoated		

Specifications of PCD/CVDD Insert with Chip-breaker

CC 80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la
	CCGT060202-1N P00P07	CBCBC125S	●	●	●		CCGT2(1,5)(0,5)-1N P00P07	CBCBC125S	6.35	2.8	2.38	0.2	2.5
	CCGT060204-1N P00P07		●	●	●		CCGT2(1,5)1-1N P00P07					0.4	
	CCGT060202-1N P00P07	SLCBC125S				●	CCGT2(1,5)(0,5)-1N P00P07	SLCBC125S	6.35	2.8	2.38	0.2	2.5
	CCGT060204-1N P00P07					●	CCGT2(1,5)1-1N P00P07					0.4	
	CCGT060202-2N P00P07	CBCBC125S	●	●	●		CCGT2(1,5)(0,5)-2N P00P07	CBCBC125S	6.35	2.8	2.38	0.2	2.5
	CCGT060204-2N P00P07		●	●	●		CCGT2(1,5)1-2N P00P07					0.4	
	CCGT060202-2N P00P07	SLCBC125S				●	CCGT2(1,5)(0,5)-2N P00P07	SLCBC125S	6.35	2.8	2.38	0.2	2.5
	CCGT060204-2N P00P07					●	CCGT2(1,5)1-2N P00P07					0.4	

CC 80° PCD Negative Inserts

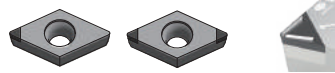


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la
	CCGT09T302-1N P00P07	CBCBC125S	●	●	●		CCGT3(2,5)(0,5)-1N P00P07	CBCBC125S	9.525	4.4	3.97	0.2	2.5
	CCGT09T304-1N P00P07		●	●	●		CCGT3(2,5)1-1N P00P07					0.4	
	CCGT09T308-1N P00P07		●	●	●		CCGT3(2,5)2-1N P00P07					0.8	
	CCGT09T302-1N P00P07	SLCBC125S				●	CCGT3(2,5)(0,5)-1N P00P07	SLCBC125S	9.525	4.4	3.97	0.2	2.5
	CCGT09T304-1N P00P07					●	CCGT3(2,5)1-1N P00P07					0.4	
	CCGT09T308-1N P00P07					●	CCGT3(2,5)2-1N P00P07					0.8	
	CCGT09T302-2N P00P07	CBCBC125S	●	●	●		CCGT3(2,5)(0,5)-2N P00P07	CBCBC125S	9.525	4.4	3.97	0.2	2.5
	CCGT09T304-2N P00P07		●	●	●		CCGT3(2,5)1-2N P00P07					0.4	
	CCGT09T308-2N P00P07		●	●	●		CCGT3(2,5)2-2N P00P07					0.8	

Examples: ISO: CCGT09T302-1NP00P07CBCBC125S PD01E
 ANSI: CCGT3(2,5)(0,5)-1NP00P07CBCBC125S PD01E

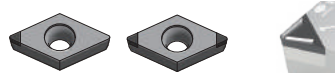
Specifications of PCD/CVDD Insert with Chip-breaker

DC 55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	DCGT070202-1N P00P07	CBCBC125S	●	●	●		DCGT2(1,5)(0,5)-1N P00P07	CBCBC125S	6.35	2.8	2.38	0.2	2.5
	DCGT070204-1N P00P07		●	●	●		DCGT2(1,5)1-1N P00P07					0.4	
	DCGT070202-1N P00P07	SLCBC125S				●	DCGT2(1,5)(0,5)-1N P00P07	SLCBC125S	6.35	2.8	2.38	0.2	2.5
	DCGT070204-1N P00P07					●	DCGT2(1,5)1-1N P00P07					0.4	
	DCGT070202-2N P00P07	CBCBC125S	●	●	●		DCGT2(1,5)(0,5)-2N P00P07	CBCBC125S	6.35	2.8	2.38	0.2	2.5
	DCGT070204-2N P00P07		●	●	●		DCGT2(1,5)1-2N P00P07					0.4	
	DCGT070202-2N P00P07	SLCBC125S				●	DCGT2(1,5)(0,5)-2N P00P07	SLCBC125S	6.35	2.8	2.38	0.2	2.5
	DCGT070204-2N P00P07					●	DCGT2(1,5)1-2N P00P07					0.4	

DC 55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	DCGT11T302-1N P00P07	CBCBC125S	●	●	●		DCGT3(2,5)(0,5)-1N P00P07	CBCBC125S	9.525	4.4	3.97	0.2	2.5
	DCGT11T304-1N P00P07		●	●	●		DCGT3(2,5)1-1N P00P07					0.4	
	DCGT11T308-1N P00P07		●	●	●		DCGT3(2,5)2-1N P00P07					0.8	
	DCGT11T302-1N P00P07	SLCBC125S				●	DCGT3(2,5)(0,5)-1N P00P07	SLCBC125S	9.525	4.4	3.97	0.2	2.5
	DCGT11T304-1N P00P07					●	DCGT3(2,5)1-1N P00P07					0.4	
	DCGT11T308-1N P00P07					●	DCGT3(2,5)2-1N P00P07					0.8	
	DCGT11T302-2N P00P07	CBCBC125S	●	●	●		DCGT3(2,5)(0,5)-2N P00P07	CBCBC125S	9.525	4.4	3.97	0.2	2.5
	DCGT11T304-2N P00P07		●	●	●		DCGT3(2,5)1-2N P00P07					0.4	
	DCGT11T308-2N P00P07		●	●	●		DCGT3(2,5)2-2N P00P07					0.8	

Examples: ISO: DCGT11T302-1N P00P07CBCBC125S PD01E
 ANSI: DCGT3(2,5)(0,5)-1N P00P07CBCBC125S PD01E

Specifications of PCD/CVDD Insert with Chip-breaker

TC 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la
	TCGT080202-1N P00P07	CBCBC125S	●	●	●		TCGT(1.5)(1.5)(0.5)-1N P00P07	CBCBC125S	4.76	2.4	2.38	0.2	2.5
	TCGT080204-1N P00P07		●	●	●		TCGT(1.5)(1.5)1-1N P00P07					0.4	
	TCGT080202-1N P00P07	SLCBC125S				●	TCGT(1.5)(1.5)(0.5)-1N P00P07	SLCBC125S	4.76	2.4	2.38	0.2	2.5
	TCGT080204-1N P00P07					●	TCGT(1.5)(1.5)1-1N P00P07					0.4	
	TCGT080202-3N P00P07	CBCBC125S	●	●	●		TCGT(1.5)(1.5)(0.5)-3N P00P07	CBCBC125S	4.76	2.4	2.38	0.2	2.5
	TCGT080204-3N P00P07		●	●	●		TCGT(1.5)(1.5)1-3N P00P07					0.4	
	TCGT080202-3N P00P07	SLCBC125S				●	TCGT(1.5)(1.5)(0.5)-3N P00P07	SLCBC125S	4.76	2.4	2.38	0.2	2.5
	TCGT080204-3N P00P07					●	TCGT(1.5)(1.5)1-3N P00P07					0.4	

TC 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la
	TCGT110302-1N P00P07	CBCBC125S	●	●	●		TCGT22(0,5)-1N P00P07	CBCBC125S	6.35	2.8	3.18	0.2	2.5
	TCGT110304-1N P00P07		●	●	●		TCGT22 1-1N P00P07					0.4	
	TCGT110302-1N P00P07	SLCBC125S				●	TCGT22(0,5)-1N P00P07	SLCBC125S	6.35	2.8	3.18	0.2	2.5
	TCGT110304-1N P00P07					●	TCGT22 1-1N P00P07					0.4	
	TCGT110302-3N P00P07	CBCBC125S	●	●	●		TCGT22(0,5)-3N P00P07	CBCBC125S	6.35	2.8	3.18	0.2	2.5
	TCGT110304-3N P00P07		●	●	●		TCGT22 1-1N P00P07					0.4	
	TCGT110302-3N P00P07	SLCBC125S				●	TCGT22(0,5)-3N P00P07	SLCBC125S	6.35	2.8	3.18	0.2	2.5
	TCGT110304-3N P00P07					●	TCGT22 1-1N P00P07					0.4	

Examples: ISO: TCGT110302-1N P00P07CBCBC125S PD01E
 ANSI: TCGT22(0,5)-1N P00P07CBCBC125S PD01E

Specifications of PCD/CVDD Insert with Chip-breaker

TC 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la	
	TCGT160402-1N P00P07		●	●	●		TCGT33(0.5)-1N P00P07					0.2		
	TCGT160404-1N P00P07	CBCBC125S	●	●	●		TCGT331-1N P00P07	CBCBC125S	9.525	4.4	4.76	0.4	2.5	
	TCGT160408-1N P00P07		●	●	●		TCGT332-1N P00P07					0.8		
	TCGT160402-1N P00P07					●	TCGT33(0.5)-1N P00P07						0.2	
	TCGT160404-1N P00P07	SLCBC125S				●	TCGT331-1N P00P07	SLCBC125S	9.525	4.4	4.76	0.4	2.5	
	TCGT160408-1N P00P07					●	TCGT332-1N P00P07						0.8	
	TCGT160402-3N P00P07		●	●	●		TCGT33(0.5)-3N P00P07					0.2		
	TCGT160404-3N P00P07	CBCBC125S	●	●	●		TCGT331-3N P00P07	CBCBC125S	9.525	4.4	4.76	0.4	2.5	
	TCGT160408-3N P00P07		●	●	●		TCGT332-3N P00P07					0.8		

TP 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	r	la
	TPGT080202-1N P00P11		●	●	●		TPGT(1.5)(1.5)(0.5)-1N P00P11					0.2	
	TPGT080204-1N P00P11	CBCBC125S	●	●	●		TPGT(1.5)(1.5)1-1N P00P11	CBCBC125S	4.76	2.4	2.38	0.4	2.5
	TPGT080202-1N P00P11					●	TPGT(1.5)(1.5)(0.5)-1N P00P11					0.2	
	TPGT080204-1N P00P11	SLCBC125S				●	TPGT(1.5)(1.5)1-1N P00P11	SLCBC125S	4.76	2.4	2.38	0.4	2.5
	TPGT080202-3N P00P11		●	●	●		TPGT(1.5)(1.5)(0.5)-3N P00P11					0.2	
	TPGT080204-3N P00P11	CBCBC125S	●	●	●		TPGT(1.5)(1.5)1-3N P00P11	CBCBC125S	4.76	2.4	2.38	0.4	2.5

Examples: ISO: TPGT080202-1N P00P11CBCBC125S PD01E
 ANSI: TPGT(1.5)(1.5)(0.5)-1N P00P11CBCBC125S PD01E

Specifications of PCD/CVDD Insert with Chip-breaker

TP 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
				TPGT110302-1N P00P11	CBCBC125S	●			●	●		TPGT22(0.5)-1N P00P11	CBCBC125S
TPGT110304-1N P00P11	●	●	●			TPGT221-1N P00P11	0.4						
	TPGT110302-1N P00P11	SLCBC125S				●	TPGT22(0.5)-1N P00P11	SLCBC125S	6.35	3.3	3.18	0.2	2.5
	TPGT110304-1N P00P11					●						TPGT221-1N P00P11	
	TPGT110302-3N P00P11	CBCBC125S	●	●	●		TPGT22(0.5)-3N P00P11	CBCBC125S	6.35	3.3	3.18	0.2	2.5
	TPGT110304-3N P00P11		●	●	●							TPGT221-1N P00P11	

TP 60° PCD Negative Inserts

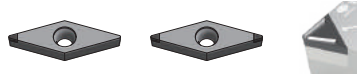


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la	
				TPGT160402-1N P00P11	CBCBC125S	●			●	●		TPGT33(0.5)-1N P00P11	CBCBC125S	9.525
	TPGT160404-1N P00P11	●	●	●			TPGT331-1N P00P11	0.4						
	TPGT160408-1N P00P11	●	●	●			TPGT332-1N P00P11	0.8						
	TPGT160402-1N P00P11	SLCBC125S				●	TPGT33(0.5)-1N P00P11	SLCBC125S	9.525	4.4	4.76	0.2	2.5	
	TPGT160404-1N P00P11					●						TPGT331-1N P00P11		0.4
	TPGT160408-1N P00P11					●						TPGT332-1N P00P11		0.8
	TPGT160402-3N P00P11	CBCBC125S	●	●	●		TPGT33(0.5)-3N P00P11	CBCBC125S	9.525	4.4	4.76	0.2	2.5	
	TPGT160404-3N P00P11		●	●	●							TPGT331-3N P00P11		0.4
	TPGT160408-3N P00P11		●	●	●							TPGT332-3N P00P11		0.8

Examples: ISO: TPGT160402-1N P00P11CBCBC125S PD01E
 ANSI: TPGT33(0.5)-1N P00P11CBCBC125S PD01E

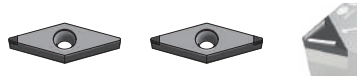
Specifications of PCD/CVDD Insert with Chip-breaker

VC 35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	VCGT110302-1N P00P07	CBCBC130S	●	●	●		VCGT22(0.5)-1N P00P07	CBCBC130S	6.35	3.3	3.18	0.2	3.0
	VCGT110304-1N P00P07		●	●	●		VCGT221-1N P00P07					0.4	
	VCGT110302-1N P00P07	SLCBC130S				●	VCGT22(0.5)-1N P00P07	SLCBC130S	6.35	3.3	3.18	0.2	3.0
	VCGT110304-1N P00P07					●	VCGT221-1N P00P07					0.4	
	VCGT110302-3N P00P07	CBCBC130S	●	●	●		VCGT22(0.5)-3N P00P07	CBCBC130S	6.35	3.3	3.18	0.2	3.0
	VCGT110304-3N P00P07		●	●	●		VCGT221-3N P00P07					0.4	
	VCGT110302-3N P00P07	SLCBC130S				●	VCGT22(0.5)-3N P00P07	SLCBC130S	6.35	3.3	3.18	0.2	3.0
	VCGT110304-3N P00P07					●	VCGT221-3N P00P07					0.4	

VC 35° PCD Negative Inserts

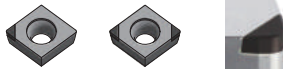


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	VCGT160402-1N P00P07	CBCBC130S	●	●	●		VCGT33(0.5)-1N P00P07	CBCBC130S	9.525	4.4	4.76	0.2	3.0
	VCGT160404-1N P00P07		●	●	●		VCGT331-1N P00P07					0.4	
	VCGT160408-1N P00P07		●	●	●		VCGT332-1N P00P07					0.8	
	VCGT160402-1N P00P07	SLCBC130S				●	VCGT33(0.5)-1N P00P07	SLCBC130S	9.525	4.4	4.76	0.2	3.0
	VCGT160404-1N P00P07					●	VCGT331-1N P00P07					0.4	
	VCGT160408-1N P00P07					●	VCGT332-1N P00P07					0.8	
	VCGT160402-3N P00P07	CBCBC130S	●	●	●		VCGT33(0.5)-3N P00P07	CBCBC130S	9.525	4.4	4.76	0.2	3.0
	VCGT160404-3N P00P07		●	●	●		VCGT331-3N P00P07					0.4	
	VCGT160408-3N P00P07		●	●	●		VCGT332-3N P00P07					0.8	

Examples: ISO: VCGT160402-1N P00P07CBCBC130S PD01E
 ANSI: VCGT33(0.5)-1N P00P07CBCBC130S PD01E

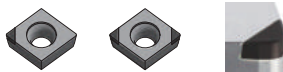
Specifications of PCD/CVDD Wiper Insert

CC 80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	CCGW060202-1N P00P07	CBWG25S	●	●	●		CCGW2(1.5)(0.5)-1N P00P07	CBWG25S	6.35	2.8	2.38	0.2	2.5
	CCGW060204-1N P00P07		●	●	●		CCGW2(1.5)1-1N P00P07					0.4	
	CCGW060202-1N P00P07	SLWG25S				●	CCGW2(1.5)(0.5)-1N P00P07	SLWG25S	6.35	2.8	2.38	0.2	2.5
	CCGW060204-1N P00P07					●	CCGW2(1.5)1-1N P00P07					0.4	
	CCGW060202-2N P00P07	CBWG25S	●	●	●		CCGW2(1.5)(0.5)-2N P00P07	CBWG25S	6.35	2.8	2.38	0.2	2.5
	CCGW060204-2N P00P07		●	●	●		CCGW2(1.5)1-2N P00P07					0.4	

CC 80° PCD Negative Inserts



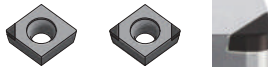
Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm				
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	r	la
	CCGW09T302-1N P00P07	CBWG25S	●	●	●		CCGW3(2.5)(0.5)-1N P00P07	CBWG25S	9.525	4.4	3.97	0.2	2.5
	CCGW09T304-1N P00P07		●	●	●		CCGW3(2.5)1-1N P00P07					0.4	
	CCGW09T308-1N P00P07		●	●	●		CCGW3(2.5)2-1N P00P07					0.8	
	CCGW09T302-1N P00P07	SLWG25S				●	CCGW3(2.5)(0.5)-1N P00P07	SLWG25S	9.525	4.4	3.97	0.2	2.5
CCGW09T304-1N P00P07					●	CCGW3(2.5)1-1N P00P07	0.4						
CCGW09T308-1N P00P07					●	CCGW3(2.5)2-1N P00P07	0.8						
	CCGW09T302-2N P00P07	CBWG25S	●	●	●		CCGW3(2.5)(0.5)-2N P00P07	CBWG25S	9.525	4.4	3.97	0.2	2.5
	CCGW09T304-2N P00P07		●	●	●		CCGW3(2.5)1-2N P00P07					0.4	
	CCGW09T308-2N P00P07		●	●	●		CCGW3(2.5)2-2N P00P07					0.8	

Examples: ISO: CCGW09T302-1N P00P07CBWG25S PD01E
 ANSI: CCGW3(2.5)(0.5)-1N P00P07CBWG25S PD01E

Specifications of PCD/CVDD Wiper Insert

CC

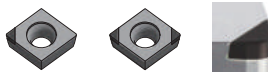
80° PCD Negative Inserts



Shape	ISO	Tip Shape	N			ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E			CVDD	ic	Ød	s	r	la
	CCGW120402-1N P00P07	CBWG25S	●	●	●		CCGW43(0.5)-1N P00P07	CBWG25S	12.7	5.5	4.76	0.2	2.5
	CCGW120404-1N P00P07		●	●	●		CCGW431-1N P00P07					0.4	
	CCGW120408-1N P00P07		●	●	●		CCGW432-1N P00P07					0.8	
	CCGW120402-1N P00P07	SLWG25S				●	CCGW43(0.5)-1N P00P07	SLWG25S	12.7	5.5	4.76	0.2	2.5
	CCGW120404-1N P00P07					●	CCGW431-1N P00P07					0.4	
	CCGW120408-1N P00P07					●	CCGW432-1N P00P07					0.8	
	CCGW120402-2N P00P07	CBWG25S	●	●	●		CCGW43(0.5)-2N P00P07	CBWG25S	12.7	5.5	4.76	0.2	2.5
	CCGW120404-2N P00P07		●	●	●		CCGW431-2N P00P07					0.4	
	CCGW120408-2N P00P07		●	●	●		CCGW432-2N P00P07					0.8	

CN

80° PCD Negative Inserts



Shape	ISO	Tip Shape	N			ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E			CVDD	ic	Ød	s	r	la
	CNGA120402-1N P00P00	CBWG25S	●	●	●		CNGA43(0.5)-1N P00P00	CBWG25S	12.7	5.16	4.76	0.2	2.5
	CNGA120404-1N P00P00		●	●	●		CNGA431-1N P00P00					0.4	
	CNGA120408-1N P00P00		●	●	●		CNGA432-1N P00P00					0.8	
	CNGA120402-1N P00P00	SLWG25S				●	CNGA43(0.5)-1N P00P00	SLWG25S	12.7	5.16	4.76	0.2	2.5
	CNGA120404-1N P00P00					●	CNGA431-1N P00P00					0.4	
	CNGA120408-1N P00P00					●	CNGA432-1N P00P00					0.8	
	CNGA120402-2N P00P00	CBWG25S	●	●	●		CNGA43(0.5)-2N P00P00	CBWG25S	12.7	5.16	4.76	0.2	2.5
	CNGA120404-2N P00P00		●	●	●		CNGA431-2N P00P00					0.4	
	CNGA120408-2N P00P00		●	●	●		CNGA432-2N P00P00					0.8	

Examples: ISO: CNGA120402-1N P00P00CBWG25S PD01E
ANSI: CNGA43(0.5)-1N P00P00CBWG25S PD01E

Specifications of Standard PCD/CVDD Insert



80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	CCGW060202-1N P00P07	CBST25S	●	●	●	●	CCGW2(1.5)(0.5)-1N P00P07	CBST25S	6.35	2.8	2.38	0°	0.2	2.5
	CCGT060202-1N P05P07		●	●	●	●	CCGT2(1.5)(0.5)-1N P05P07					5°	0.2	
	CCGT060202-1N P10P07		●	●	●	●	CCGT2(1.5)(0.5)-1N P10P07					10°	0.2	
	CCGW060204-1N P00P07		●	●	●	●	CCGW2(1.5)1-1N P00P07					0°	0.4	
	CCGT060204-1N P05P07		●	●	●	●	CCGT2(1.5)1-1N P05P07					5°	0.4	
	CCGT060204-1N P10P07		●	●	●	●	CCGT2(1.5)1-1N P10P07					10°	0.4	
	CCGW060202-1N P00P07	SLST25S				●	CCGW2(1.5)(0.5)-1N P00P07	SLST25S	6.35	2.8	2.38	0°	0.2	2.5
	CCGT060202-1N P05P07					●	CCGT2(1.5)(0.5)-1N P05P07					5°	0.2	
	CCGT060202-1N P10P07					●	CCGT2(1.5)(0.5)-1N P10P07					10°	0.2	
	CCGW060204-1N P00P07					●	CCGW2(1.5)1-1N P00P07					0°	0.4	
CCGT060204-1N P05P07					●	CCGT2(1.5)1-1N P05P07	5°					0.4		
CCGT060204-1N P10P07					●	CCGT2(1.5)1-1N P10P07	10°					0.4		
	CCGW060202-2N P00P07	CBST25S	●	●	●	●	CCGW2(1.5)(0.5)-2N P00P07	CBST25S	6.35	2.8	2.38	0°	0.2	2.5
	CCGT060202-2N P05P07		●	●	●	●	CCGT2(1.5)(0.5)-2N P05P07					5°	0.2	
	CCGT060202-2N P10P07		●	●	●	●	CCGT2(1.5)(0.5)-2N P10P07					10°	0.2	
	CCGW060204-2N P00P07		●	●	●	●	CCGW2(1.5)1-2N P00P07					0°	0.4	
	CCGT060204-2N P05P07		●	●	●	●	CCGT2(1.5)1-2N P05P07					5°	0.4	
	CCGT060204-2N P10P07		●	●	●	●	CCGT2(1.5)1-2N P10P07					10°	0.4	



80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	CCGW09T302-1N P00P07	CBST25S	●	●	●	●	CCGW2(1.5)(0.5)-1N P00P07	CBST25S	9.525	4.4	3.97	0°	0.2	2.5
	CCGT09T302-1N P05P07		●	●	●	●	CCGT2(1.5)(0.5)-1N P05P07					5°	0.2	
	CCGT09T302-1N P10P07		●	●	●	●	CCGT2(1.5)(0.5)-1N P10P07					10°	0.2	
	CCGW09T304-1N P00P07		●	●	●	●	CCGW2(1.5)1-1N P00P07					0°	0.4	
	CCGT09T304-1N P05P07		●	●	●	●	CCGT2(1.5)1-1N P05P07					5°	0.4	
	CCGT09T304-1N P10P07		●	●	●	●	CCGT2(1.5)1-1N P10P07					10°	0.4	
	CCGW09T302-1N P00P07	SLST25S				●	CCGW2(1.5)(0.5)-1N P00P07	SLST25S	9.525	4.4	3.97	0°	0.2	2.5
	CCGT09T302-1N P05P07					●	CCGT2(1.5)(0.5)-1N P05P07					5°	0.2	
	CCGT09T302-1N P10P07					●	CCGT2(1.5)(0.5)-1N P10P07					10°	0.2	
	CCGW09T304-1N P00P07					●	CCGW2(1.5)1-1N P00P07					0°	0.4	
CCGT09T304-1N P05P07					●	CCGT2(1.5)1-1N P05P07	5°					0.4		
CCGT09T304-1N P10P07					●	CCGT2(1.5)1-1N P10P07	10°					0.4		
	CCGW09T302-2N P00P07	CBST25S	●	●	●	●	CCGW2(1.5)(0.5)-2N P00P07	CBST25S	9.525	4.4	3.97	0°	0.2	2.5
	CCGT09T302-2N P05P07		●	●	●	●	CCGT2(1.5)(0.5)-2N P05P07					5°	0.2	
	CCGT09T302-2N P10P07		●	●	●	●	CCGT2(1.5)(0.5)-2N P10P07					10°	0.2	
	CCGW09T304-2N P00P07		●	●	●	●	CCGW2(1.5)1-2N P00P07					0°	0.4	
	CCGT09T304-2N P05P07		●	●	●	●	CCGT2(1.5)1-2N P05P07					5°	0.4	
	CCGT09T304-2N P10P07		●	●	●	●	CCGT2(1.5)1-2N P10P07					10°	0.4	

Examples: ISO: CCGT09T302-1NP00P07CBCBC125S PD01E
 ANSI: CCGT3(2.5)(0.5)-1NP00P07CBCBC125S PD01E

Specifications of Standard PCD/CVDD Insert



80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	CCGW09T308-1N P00P07	CBST25S	●	●	●		CCGW2(1.5)2-1N P00P07	CBST25S	9.525	4.4	3.97	0°	0.8	2.5
	CCGT09T308-1N P05P07		●	●	●		CCGT2(1.5)2-1N P05P07					5°	0.8	
	CCGT09T308-1N P10P07		●	●	●		CCGT2(1.5)2-1N P10P07					10°	0.8	
	CCGW09T308-1N P00P07	SLST25S				●	CCGW2(1.5)2-1N P00P07	SLST25S	9.525	4.4	3.97	0°	0.8	2.5
	CCGT09T308-1N P05P07					●	CCGT2(1.5)2-1N P05P07					5°	0.8	
	CCGT09T308-1N P10P07					●	CCGT2(1.5)2-1N P10P07					10°	0.8	
	CCGW09T308-2N P00P07	CBST25S	●	●	●		CCGW2(1.5)2-2N P00P07	CBST25S	9.525	4.4	3.97	0°	0.8	2.5
	CCGT09T308-2N P05P07		●	●	●		CCGT2(1.5)2-2N P05P07					5°	0.8	
	CCGT09T308-2N P10P07		●	●	●		CCGT2(1.5)2-2N P10P07					10°	0.8	



80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	CCGW120402-1N P00P07	CBST25S	●	●	●		CCGW43(0.5)-1N P00P07	CBST25S	12.7	5.5	4.76	0°	0.2	2.5
	CCGT120402-1N P05P07		●	●	●		CCGT43(0.5)-1N P05P07					5°	0.2	
	CCGT120402-1N P10P07		●	●	●		CCGT43(0.5)-1N P10P07					10°	0.2	
	CCGW120404-1N P00P07	SLST25S				●	CCGW431-1N P00P07	SLST25S	12.7	5.5	4.76	0°	0.4	2.5
	CCGT120404-1N P05P07					●	CCGT431-1N P05P07					5°	0.4	
	CCGT120404-1N P10P07					●	CCGT431-1N P10P07					10°	0.4	
	CCGW120402-2N P00P07	CBST25S	●	●	●		CCGW43(0.5)-2N P00P07	CBST25S	12.7	5.5	4.76	0°	0.2	2.5
	CCGT120402-2N P05P07		●	●	●		CCGT43(0.5)-2N P05P07					5°	0.2	
	CCGT120402-2N P10P07		●	●	●		CCGT43(0.5)-2N P10P07					10°	0.2	
	CCGW120404-2N P00P07	SLST25S				●	CCGW431-2N P00P07	SLST25S	12.7	5.5	4.76	0°	0.4	2.5
	CCGT120404-2N P05P07					●	CCGT431-2N P05P07					5°	0.4	
	CCGT120404-2N P10P07					●	CCGT431-2N P10P07					10°	0.4	

Examples: ISO: CCGW120402-1N P00P07CBST25S PD01E
ANSI: CCGW43(0.5)-1N P00P07CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

CC

80° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	CCGW120408-1N P00P07	CBST25S	●	●	●		CCGW432-1N P00P07	CBST25S	12.7	5.5	4.76	0°	0.8	2.5
	CCGT120408-1N P05P07		●	●	●		CCGT432-1N P05P07					5°	0.8	
	CCGT120408-1N P10P07		●	●	●		CCGT432-1N P10P07					10°	0.8	
	CCGW120408-1N P00P07	SLST25S				●	CCGW432-1N P00P07	SLST25S	12.7	5.5	4.76	0°	0.8	2.5
	CCGT120408-1N P05P07					●	CCGT432-1N P05P07					5°	0.8	
	CCGT120408-1N P10P07					●	CCGT432-1N P10P07					10°	0.8	
	CCGW120408-2N P00P07	CBST25S	●	●	●		CCGW432-2N P00P07	CBST25S	12.7	5.5	4.76	0°	0.8	2.5
	CCGT120408-2N P05P07		●	●	●		CCGT432-2N P05P07					5°	0.8	
	CCGT120408-2N P10P07		●	●	●		CCGT432-2N P10P07					10°	0.8	

DC

55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	DCGW070202-1N P00P07	CBST25S	●	●	●		DCGW2(1.5)(0.5)-1N P00P07	CBST25S	6.35	2.8	2.38	0°	0.2	2.5
	DCGT070202-1N P05P07		●	●	●		DCGT2(1.5)(0.5)-1N P05P07					5°	0.2	
	DCGT070202-1N P10P07		●	●	●		DCGT2(1.5)(0.5)-1N P10P07					10°	0.2	
	DCGW070204-1N P00P07	SLST25S				●	DCGW2(1.5)1-1N P00P07	SLST25S	6.35	2.8	2.38	0°	0.4	2.5
	DCGT070204-1N P05P07					●	DCGT2(1.5)1-1N P05P07					5°	0.4	
	DCGT070204-1N P10P07					●	DCGT2(1.5)1-1N P10P07					10°	0.4	
	DCGW070202-2N P00P07	CBST25S	●	●	●		DCGW2(1.5)(0.5)-2N P00P07	CBST25S	6.35	2.8	2.38	0°	0.2	2.5
	DCGT070202-2N P05P07		●	●	●		DCGT2(1.5)(0.5)-2N P05P07					5°	0.2	
	DCGT070202-2N P10P07		●	●	●		DCGT2(1.5)(0.5)-2N P10P07					10°	0.2	
	DCGW070204-2N P00P07	CBST25S				●	DCGW2(1.5)1-2N P00P07	CBST25S	6.35	2.8	2.38	0°	0.4	2.5
	DCGT070204-2N P05P07					●	DCGT2(1.5)1-2N P05P07					5°	0.4	
	DCGT070204-2N P10P07					●	DCGT2(1.5)1-2N P10P07					10°	0.4	

Examples: ISO: DCGW070202-1N P00P07CBST25S PD01E
ANSI: DCGW2(1.5)(0.5)-1N P00P07CBST25S PD01E

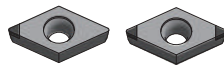
Specifications of Standard PCD/CVDD Insert

DC 55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	DCGW070208-1N P00P07	CBST25S	●	●	●		DCGW2(1.5)2-1N P00P07	CBST25S	6.35	2.8	2.38	0°	0.8	2.5
	DCGT070208-1N P05P07		●	●	●		DCGT2(1.5)2-1N P05P07					5°	0.8	
	DCGT070208-1N P10P07		●	●	●		DCGT2(1.5)2-1N P10P07					10°	0.8	
	DCGW070208-1N P00P07	SLST25S				●	DCGW2(1.5)2-1N P00P07	SLST25S	6.35	2.8	2.38	0°	0.8	2.5
	DCGT070208-1N P05P07					●	DCGT2(1.5)2-1N P05P07					5°	0.8	
	DCGT070208-1N P10P07					●	DCGT2(1.5)2-1N P10P07					10°	0.8	
	DCGW070208-2N P00P07	CBST25S	●	●	●		DCGW2(1.5)2-2N P00P07	CBST25S	6.35	2.8	2.38	0°	0.8	2.5
	DCGT070208-2N P05P07		●	●	●		DCGT2(1.5)2-2N P05P07					5°	0.8	
	DCGT070208-2N P10P07		●	●	●		DCGT2(1.5)2-2N P10P07					10°	0.8	

DC 55° PCD Negative Inserts

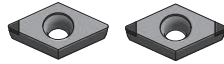


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	DCGW11T302-1N P00P07	CBST25S	●	●	●		DCGW3(2.5)(0.5)-1N P00P07	CBST25S	9.525	4.4	3.97	0°	0.2	2.5
	DCGT11T302-1N P05P07		●	●	●		DCGT3(2.5)(0.5)-1N P05P07					5°	0.2	
	DCGT11T302-1N P10P07		●	●	●		DCGT3(2.5)(0.5)-1N P10P07					10°	0.2	
	DCGW11T304-1N P00P07	SLST25S				●	DCGW3(2.5)1-1N P00P07	SLST25S	9.525	4.4	3.97	0°	0.4	2.5
	DCGT11T304-1N P05P07					●	DCGT3(2.5)1-1N P05P07					5°	0.4	
	DCGT11T304-1N P10P07					●	DCGT3(2.5)1-1N P10P07					10°	0.4	
	DCGW11T302-2N P00P07	CBST25S	●	●	●		DCGW3(2.5)(0.5)-2N P00P07	CBST25S	9.525	4.4	3.97	0°	0.2	2.5
	DCGT11T302-2N P05P07		●	●	●		DCGT3(2.5)(0.5)-2N P05P07					5°	0.2	
	DCGT11T302-2N P10P07		●	●	●		DCGT3(2.5)(0.5)-2N P10P07					10°	0.2	
	DCGW11T304-2N P00P07	CBST25S				●	DCGW3(2.5)1-2N P00P07	CBST25S	9.525	4.4	3.97	0°	0.4	2.5
	DCGT11T304-2N P05P07					●	DCGT3(2.5)1-2N P05P07					5°	0.4	
	DCGT11T304-2N P10P07					●	DCGT3(2.5)1-2N P10P07					10°	0.4	

Examples: ISO: DCGW11T302-1N P00P07CBST25S PD01E
 ANSI: DCGW3(2.5)(0.5)-1N P00P07CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

DC 55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	DCGW11T308-1N P00P07	CBST25S	●	●	●		DCGW3(2.5)2-1N P00P07	CBST25S	9.525	4.4	3.97	0°	0.8	2.5
	DCGT11T308-1N P05P07		●	●	●		DCGT3(2.5)2-1N P05P07					5°	0.8	
	DCGT11T308-1N P10P07		●	●	●		DCGT3(2.5)2-1N P10P07					10°	0.8	
	DCGW11T308-1N P00P07	SLST25S				●	DCGW3(2.5)2-1N P00P07	SLST25S	9.525	4.4	3.97	0°	0.8	2.5
	DCGT11T308-1N P05P07					●	DCGT3(2.5)2-1N P05P07					5°	0.8	
	DCGT11T308-1N P10P07					●	DCGT3(2.5)2-1N P10P07					10°	0.8	
	DCGW11T308-2N P00P07	CBST25S	●	●	●		DCGW3(2.5)2-2N P00P07	CBST25S	9.525	4.4	3.97	0°	0.8	2.5
	DCGT11T308-2N P05P07		●	●	●		DCGT3(2.5)2-2N P05P07					5°	0.8	
	DCGT11T308-2N P10P07		●	●	●		DCGT3(2.5)2-2N P10P07					10°	0.8	

TC 60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TCGW080202-1N P00P07	CBST25S	●	●	●		TCGW(1.5)(1.5)(0.5)-1N P00P07	CBST25S	4.76	2.4	2.38	0°	0.2	2.5
	TCGT080202-1N P05P07		●	●	●		TCGT(1.5)(1.5)(0.5)-1N P05P07					5°	0.2	
	TCGT080202-1N P10P07		●	●	●		TCGT(1.5)(1.5)(0.5)-1N P10P07					10°	0.2	
	TCGW080204-1N P00P07	SLST25S				●	TCGW(1.5)(1.5)1-1N P00P07	SLST25S	4.76	2.4	2.38	0°	0.4	2.5
	TCGT080204-1N P05P07					●	TCGT(1.5)(1.5)1-1N P05P07					5°	0.4	
	TCGT080204-1N P10P07					●	TCGT(1.5)(1.5)1-1N P10P07					10°	0.4	
	TCGW080202-3N P00P07	CBST25S	●	●	●		TCGW(1.5)(1.5)(0.5)-3N P00P07	CBST25S	4.76	2.4	2.38	0°	0.2	2.5
	TCGT080202-3N P05P07		●	●	●		TCGT(1.5)(1.5)(0.5)-3N P05P07					5°	0.2	
	TCGT080202-3N P10P07		●	●	●		TCGT(1.5)(1.5)(0.5)-3N P10P07					10°	0.2	
	TCGW080204-3N P00P07	CBST25S				●	TCGW(1.5)(1.5)1-3N P00P07	CBST25S	4.76	2.4	2.38	0°	0.4	2.5
	TCGT080204-3N P05P07					●	TCGT(1.5)(1.5)1-3N P05P07					5°	0.4	
	TCGT080204-3N P10P07					●	TCGT(1.5)(1.5)1-3N P10P07					10°	0.4	

Examples: ISO: TCGW080202-1N P00P07CBST25S PD01E

ANSI: TCGW(1.5)(1.5)(0.5)-1N P00P07CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TC

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TCGW080208-1N P00P07	CBST25S	●	●	●		TCGW(1.5)(1.5)2-1N P00P07	CBST25S	4.76	2.4	2.38	0°	0.8	2.5
	TCGT080208-1N P05P07		●	●	●		TCGT(1.5)(1.5)2-1N P05P07					5°	0.8	
	TCGT080208-1N P10P07		●	●	●		TCGT(1.5)(1.5)2-1N P10P07					10°	0.8	
	TCGW080208-1N P00P07	SLST25S				●	TCGW(1.5)(1.5)2-1N P00P07	SLST25S	4.76	2.4	2.38	0°	0.8	2.5
	TCGT080208-1N P05P07					●	TCGT(1.5)(1.5)2-1N P05P07					5°	0.8	
	TCGT080208-1N P10P07					●	TCGT(1.5)(1.5)2-1N P10P07					10°	0.8	
	TCGW080208-2N P00P07	CBST25S	●	●	●		TCGW(1.5)(1.5)2-3N P00P07	CBST25S	4.76	2.4	2.38	0°	0.8	2.5
	TCGT080208-2N P05P07		●	●	●		TCGT(1.5)(1.5)2-3N P05P07					5°	0.8	
	TCGT080208-2N P10P07		●	●	●		TCGT(1.5)(1.5)2-3N P10P07					10°	0.8	

TC

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TCGW110302-1N P00P07	CBST25S	●	●	●		TCGW22(0.5)-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.2	2.5
	TCGT110302-1N P05P07		●	●	●		TCGT22(0.5)-1N P05P07					5°	0.2	
	TCGT110302-1N P10P07		●	●	●		TCGT22(0.5)-1N P10P07					10°	0.4	
	TCGW110304-1N P00P07	SLST25S				●	TCGW22(0.5)-1N P00P07	SLST25S	6.35	2.8	3.18	0°	0.2	2.5
	TCGT110302-1N P05P07					●	TCGT22(0.5)-1N P05P07					5°	0.2	
	TCGT110302-1N P10P07					●	TCGT22(0.5)-1N P10P07					10°	0.4	
TCGW110304-1N P00P07	CBST25S				●	TCGW22(0.5)-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.4	2.5	
TCGT110304-1N P05P07					●	TCGT22(0.5)-1N P05P07					5°	0.4		
TCGT110304-1N P10P07					●	TCGT22(0.5)-1N P10P07					10°	0.4		
	TCGW110302-3N P00P07	CBST25S	●	●	●		TCGW22(0.5)-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.2	2.5
	TCGT110302-3N P05P07		●	●	●		TCGT22(0.5)-1N P05P07					5°	0.2	
	TCGT110302-3N P10P07		●	●	●		TCGT22(0.5)-1N P10P07					10°	0.2	
	TCGW110304-3N P00P07	CBST25S				●	TCGW22(0.5)-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.4	2.5
	TCGT110304-3N P05P07					●	TCGT22(0.5)-1N P05P07					5°	0.4	
	TCGT110304-3N P10P07					●	TCGT22(0.5)-1N P10P07					10°	0.4	

Examples: ISO: TCGW110302-1N P00P07CBST25S PD01E
 ANSI: TCGW22(0.5)-1N P00P07CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TC

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	TCGW110308-1N P00P07	CBST25S	●	●	●		TCGW222-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.8	2.5
	TCGT110308-1N P05P07		●	●	●		TCGT222-1N P05P07					5°	0.8	
	TCGT110308-1N P10P07		●	●	●		TCGT222-1N P10P07					10°	0.8	
	TCGW110308-1N P00P07	SLST25S				●	TCGW222-1N P00P07	SLST25S	6.35	2.8	3.18	0°	0.8	2.5
	TCGT110308-1N P05P07					●	TCGT222-1N P05P07					5°	0.8	
	TCGT110308-1N P10P07					●	TCGT222-1N P10P07					10°	0.8	
	TCGW110308-3N P00P07	CBST25S	●	●	●		TCGW222-1N P00P07	CBST25S	6.35	2.8	3.18	0°	0.8	2.5
	TCGT110308-3N P05P07		●	●	●		TCGT222-1N P05P07					5°	0.8	
	TCGT110308-3N P10P07		●	●	●		TCGT222-1N P10P07					10°	0.8	

TC

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	∅d	s	α	r	la
	TCGW160402-1N P00P07	CBST25S	●	●	●		TCGW33(0.5)-1N P00P07	CBST25S	9.525	4.4	4.76	0°	0.2	2.5
	TCGT160402-1N P05P07		●	●	●		TCGT33(0.5)-1N P05P07					5°	0.2	
	TCGT160402-1N P10P07		●	●	●		TCGT33(0.5)-1N P10P07					10°	0.2	
	TCGW160404-1N P00P07		●	●	●		TCGW33(0.5)-1N P00P07					0°	0.4	
	TCGT160404-1N P05P07		●	●	●		TCGT33(0.5)-1N P05P07					5°	0.4	
	TCGT160404-1N P10P07		●	●	●		TCGT33(0.5)-1N P10P07					10°	0.4	
	TCGW160402-1N P00P07	SLST25S				●	TCGW33(0.5)-1N P00P07	SLST25S	9.525	4.4	4.76	0°	0.2	2.5
	TCGT160402-1N P05P07					●	TCGT33(0.5)-1N P05P07					5°	0.2	
	TCGT160402-1N P10P07					●	TCGT33(0.5)-1N P10P07					10°	0.2	
	TCGW160404-1N P00P07					●	TCGW33(0.5)-1N P00P07					0°	0.4	
	TCGT160404-1N P05P07					●	TCGT33(0.5)-1N P05P07					5°	0.4	
	TCGT160404-1N P10P07					●	TCGT33(0.5)-1N P10P07					10°	0.4	
	TCGW160402-3N P00P07	CBST25S	●	●	●		TCGW33(0.5)-3N P00P07	CBST25S	9.525	4.4	4.76	0°	0.2	2.5
	TCGT160402-3N P05P07		●	●	●		TCGT33(0.5)-3N P05P07					5°	0.2	
	TCGT160402-3N P10P07		●	●	●		TCGT33(0.5)-3N P10P07					10°	0.2	
	TCGW160404-3N P00P07		●	●	●		TCGW33(0.5)-3N P00P07					0°	0.4	
	TCGT160404-3N P05P07		●	●	●		TCGT33(0.5)-3N P05P07					5°	0.4	
	TCGT160404-3N P10P07		●	●	●		TCGT33(0.5)-3N P10P07					10°	0.4	

Examples: ISO: TCGW160402-1N P00P07CBST25S PD01E
 ANSI: TCGW33(0.5)-1N P00P07CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TC

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TCGW160408-1N P00P07	CBST25S	●	●	●		TCGW332-1N P00P07	CBST25S	9.525	4.4	4.76	0°	0.8	2.5
	TCGT160408-1N P05P07		●	●	●		TCGT332-1N P05P07					5°	0.8	
	TCGT160408-1N P10P07		●	●	●		TCGT332-1N P10P07					10°	0.8	
	TCGW160408-1N P00P07	SLST25S				●	TCGW332-1N P00P07	SLST25S	9.525	4.4	4.76	0°	0.8	2.5
	TCGT160408-1N P05P07					●	TCGT332-1N P05P07					5°	0.8	
	TCGT160408-1N P10P07					●	TCGT332-1N P10P07					10°	0.8	
	TCGW160408-3N P00P07	CBST25S	●	●	●		TCGW332-3N P00P07	CBST25S	9.525	4.4	4.76	0°	0.8	2.5
	TCGT160408-3N P05P07		●	●	●		TCGT332-3N P05P07					5°	0.8	
	TCGT160408-3N P10P07		●	●	●		TCGT332-3N P10P07					10°	0.8	

TP

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TPGW080202-1N P00P11	CBST25S	●	●	●		TPGW(1.5)(1.5)(0.5)-1N P00P11	CBST25S	4.76	2.4	2.38	0°	0.2	2.5
	TPGT080202-1N P05P11		●	●	●		TPGT(1.5)(1.5)(0.5)-1N P05P11					5°	0.2	
	TPGT080202-1N P10P11		●	●	●		TPGT(1.5)(1.5)(0.5)-1N P10P11					10°	0.2	
	TPGW080204-1N P00P11	SLST25S				●	TPGW(1.5)(1.5)1-1N P00P11	SLST25S	4.76	2.4	2.38	0°	0.4	2.5
	TPGT080204-1N P05P11					●	TPGT(1.5)(1.5)1-1N P05P11					5°	0.4	
	TPGT080204-1N P10P11					●	TPGT(1.5)(1.5)1-1N P10P11					10°	0.4	
	TPGW080202-3N P00P11	CBST25S	●	●	●		TPGW(1.5)(1.5)(0.5)-3N P00P11	CBST25S	4.76	2.4	2.38	0°	0.2	2.5
	TPGT080202-3N P05P11		●	●	●		TPGT(1.5)(1.5)(0.5)-3N P05P11					5°	0.2	
	TPGT080202-3N P10P11		●	●	●		TPGT(1.5)(1.5)(0.5)-3N P10P11					10°	0.2	
	TPGW080204-3N P00P11	CBST25S				●	TPGW(1.5)(1.5)1-3N P00P11	CBST25S	4.76	2.4	2.38	0°	0.4	2.5
	TPGT080204-3N P05P11					●	TPGT(1.5)(1.5)1-3N P05P11					5°	0.4	
	TPGT080204-3N P10P11					●	TPGT(1.5)(1.5)1-3N P10P11					10°	0.4	

Examples: ISO: TPGW080202-1N P00P11CBST25S PD01E

ANSI: TPGW(1.5)(1.5)(0.5)-1N P00P11CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TP

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	TPGW080208-1N P00P11	CBST25S	●	●	●		TPGW(1.5)(1.5)2-1N P00P11	CBST25S	4.76	2.4	2.38	0°	0.8	2.5
	TPGT080208-1N P05P11		●	●	●		TPGT(1.5)(1.5)2-1N P05P11					5°	0.8	
	TPGT080208-1N P10P11		●	●	●		TPGT(1.5)(1.5)2-1N P10P11					10°	0.8	
	TPGW080208-1N P00P11	SLST25S				●	TPGW(1.5)(1.5)2-1N P00P11	SLST25S	4.76	2.4	2.38	0°	0.8	2.5
	TPGT080208-1N P05P11					●	TPGT(1.5)(1.5)2-1N P05P11					5°	0.8	
	TPGT080208-1N P10P11					●	TPGT(1.5)(1.5)2-1N P10P11					10°	0.8	
	TPGW080208-3N P00P11	CBST25S	●	●	●		TPGW(1.5)(1.5)2-3N P00P11	CBST25S	4.76	2.4	2.38	0°	0.8	2.5
	TPGT080208-3N P05P11		●	●	●		TPGT(1.5)(1.5)2-3N P05P11					5°	0.8	
	TPGT080208-3N P10P11		●	●	●		TPGT(1.5)(1.5)2-3N P10P11					10°	0.8	

TP

60° PCD Negative Inserts

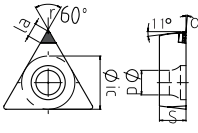
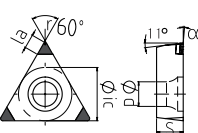


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	TPGW110302-1N P00P11	CBST25S	●	●	●		TPGW22(0.5)-1N P00P11	CBST25S	6.35	3.3	3.18	0°	0.2	2.5
	TPGT110302-1N P05P11		●	●	●		TPGT22(0.5)-1N P05P11					5°	0.2	
	TPGT110302-1N P10P11		●	●	●		TPGT22(0.5)-1N P10P11					10°	0.2	
	TPGW110304-1N P00P11	SLST25S				●	TPGW221-1N P00P11	SLST25S	6.35	3.3	3.18	0°	0.4	2.5
	TPGT110304-1N P05P11					●	TPGT221-1N P05P11					5°	0.4	
	TPGT110304-1N P10P11					●	TPGT221-1N P10P11					10°	0.4	
	TPGW110302-3N P00P11	CBST25S	●	●	●		TPGW22(0.5)-3N P00P11	CBST25S	6.35	3.3	3.18	0°	0.2	2.5
	TPGT110302-3N P05P11		●	●	●		TPGT22(0.5)-3N P05P11					5°	0.2	
	TPGT110302-3N P10P11		●	●	●		TPGT22(0.5)-3N P10P11					10°	0.2	
	TPGW110304-3N P00P11	CBST25S				●	TPGW221-3N P00P11	CBST25S	6.35	3.3	3.18	0°	0.4	2.5
	TPGT110304-3N P05P11					●	TPGT221-3N P05P11					5°	0.4	
	TPGT110304-3N P10P11					●	TPGT221-3N P10P11					10°	0.4	

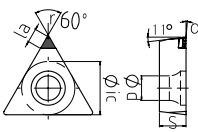
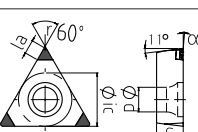
Examples: ISO: TPGW110302-1N P00P11CBST25S PD01E
 ANSI: TPGW22(0.5)-1N P00P11CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TP 60° PCD Negative Inserts 

Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TPGW110308-1N P00P11	CBST25S	●	●	●		TPGW222-1N P00P11	CBST25S	6.35	3.3	3.18	0°	0.8	2.5
	TPGT110308-1N P05P11		●	●	●		TPGT222-1N P05P11					5°	0.8	
	TPGT110308-1N P10P11		●	●	●		TPGT222-1N P10P11					10°	0.8	
	TPGW110308-1N P00P11	SLST25S				●	TPGW222-1N P00P11	SLST25S	6.35	3.3	3.18	0°	0.8	2.5
	TPGT110308-1N P05P11					●	TPGT222-1N P05P11					5°	0.8	
	TPGT110308-1N P10P11					●	TPGT222-1N P10P11					10°	0.8	
	TPGW110308-3N P00P11	CBST25S	●	●	●		TPGW222-3N P00P11	CBST25S	6.35	3.3	3.18	0°	0.8	2.5
	TPGT110308-3N P05P11		●	●	●		TPGT222-3N P05P11					5°	0.8	
	TPGT110308-3N P10P11		●	●	●		TPGT222-3N P10P11					10°	0.8	

TP 60° PCD Negative Inserts 

Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TPGW160302-1N P00P11	CBST25S	●	●	●		TPGW32(0.5)-1N P00P11	CBST25S	9.525	4.4	3.18	0°	0.2	2.5
	TPGT160302-1N P05P11		●	●	●		TPGT32(0.5)-1N P05P11					5°	0.2	
	TPGT160302-1N P10P11		●	●	●		TPGT32(0.5)-1N P10P11					10°	0.2	
	TPGW160304-1N P00P11	SLST25S				●	TPGW321-1N P00P11	SLST25S	9.525	4.4	3.18	0°	0.4	2.5
	TPGT160304-1N P05P11					●	TPGT321-1N P05P11					5°	0.4	
	TPGT160304-1N P10P11					●	TPGT321-1N P10P11					10°	0.4	
	TPGW160302-3N P00P11	CBST25S	●	●	●		TPGW32(0.5)-3N P00P11	CBST25S	9.525	4.4	3.18	0°	0.2	2.5
	TPGT160302-3N P05P11		●	●	●		TPGT32(0.5)-3N P05P11					5°	0.2	
	TPGT160302-3N P10P11		●	●	●		TPGT32(0.5)-3N P10P11					10°	0.2	
	TPGW160304-3N P00P11	CBST25S				●	TPGW321-3N P00P11	CBST25S	9.525	4.4	3.18	0°	0.4	2.5
	TPGT160304-3N P05P11					●	TPGT321-3N P05P11					5°	0.4	
	TPGT160304-3N P10P11					●	TPGT321-3N P10P11					10°	0.4	

Examples: ISO: TPGW160302-1N P00P11CBST25S PD01E
 ANSI: TPGW32(0.5)-1N P00P11CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TP

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TPGW160308-1N P00P11	CBST25S	●	●	●		TPGW322-1N P00P11	CBST25S	9.525	4.4	3.18	0°	0.8	2.5
	TPGT160308-1N P05P11		●	●	●		TPGT322-1N P05P11					5°	0.8	
	TPGT160308-1N P10P11		●	●	●		TPGT322-1N P10P11					10°	0.8	
	TPGW160308-1N P00P11	SLST25S				●	TPGW322-1N P00P11	SLST25S	9.525	4.4	3.18	0°	0.8	2.5
	TPGT160308-1N P05P11					●	TPGT322-1N P05P11					5°	0.8	
	TPGT160308-1N P10P11					●	TPGT322-1N P10P11					10°	0.8	
	TPGW160308-3N P00P11	CBST25S	●	●	●		TPGW322-3N P00P11	CBST25S	9.525	4.4	3.18	0°	0.8	2.5
	TPGT160308-3N P05P11		●	●	●		TPGT322-3N P05P11					5°	0.8	
	TPGT160308-3N P10P11		●	●	●		TPGT322-3N P10P11					10°	0.8	

TP

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	TPGW160402-1N P00P11	CBST25S	●	●	●		TPGW33(0.5)-1N P00P11	CBST25S	9.525	4.4	4.76	0°	0.2	2.5
	TPGT160402-1N P05P11		●	●	●		TPGT33(0.5)-1N P05P11					5°	0.2	
	TPGT160402-1N P10P11		●	●	●		TPGT33(0.5)-1N P10P11					10°	0.2	
	TPGW160404-1N P00P11	SLST25S				●	TPGW331-1N P00P11	SLST25S	9.525	4.4	4.76	0°	0.4	2.5
	TPGT160404-1N P05P11					●	TPGT331-1N P05P11					5°	0.4	
	TPGT160404-1N P10P11					●	TPGT331-1N P10P11					10°	0.4	
	TPGW160402-3N P00P11	CBST25S	●	●	●		TPGW33(0.5)-3N P00P11	CBST25S	9.525	4.4	4.76	0°	0.2	2.5
	TPGT160402-3N P05P11		●	●	●		TPGT33(0.5)-3N P05P11					5°	0.2	
	TPGT160402-3N P10P11		●	●	●		TPGT33(0.5)-3N P10P11					10°	0.2	
	TPGW160404-3N P00P11	CBST25S				●	TPGW331-3N P00P11	CBST25S	9.525	4.4	4.76	0°	0.4	2.5
	TPGT160404-3N P05P11					●	TPGT331-3N P05P11					5°	0.4	
	TPGT160404-3N P10P11					●	TPGT331-3N P10P11					10°	0.4	

Examples: ISO: TPGW160402-1N P00P11CBST25S PD01E
 ANSI: TPGW33(0.5)-1N P00P11CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

TP

60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	TPGW160408-1N P00P11	CBST25S	●	●	●		TPGW332-1N P00P11	CBST25S	9.525	4.4	4.76	0°	0.8	2.5
	TPGT160408-1N P05P11		●	●	●		TPGT332-1N P05P11					5°	0.8	
	TPGT160408-1N P10P11		●	●	●		TPGT332-1N P10P11					10°	0.8	
	TPGW160408-1N P00P11	SLST25S				●	TPGW332-1N P00P11	SLST25S	9.525	4.4	4.76	0°	0.8	2.5
	TPGT160408-1N P05P11					●	TPGT332-1N P05P11					5°	0.8	
	TPGT160408-1N P10P11					●	TPGT332-1N P10P11					10°	0.8	
	TPGW160408-3N P00P11	CBST25S	●	●	●		TPGW332-3N P00P11	CBST25S	9.525	4.4	4.76	0°	0.8	2.5
	TPGT160408-3N P05P11		●	●	●		TPGT332-3N P05P11					5°	0.8	
	TPGT160408-3N P10P11		●	●	●		TPGT332-3N P10P11					10°	0.8	

VB

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VBGW110302-1N P00P05	CBST30S	●	●	●		VBGW22(0.5)-1N P00P05	CBST30S	6.35	2.8	3.18	0°	0.2	3.0
	VBGT110302-1N P05P05		●	●	●		VBGT22(0.5)-1N P05P05					5°	0.2	
	VBGT110302-1N P10P05		●	●	●		VBGT22(0.5)-1N P10P05					10°	0.2	
	VBGW110304-1N P00P05	SLST30S				●	VBGW221-1N P00P05	SLST30S	6.35	2.8	3.18	0°	0.4	3.0
	VBGT110304-1N P05P05					●	VBGT221-1N P05P05					5°	0.4	
	VBGT110304-1N P10P05					●	VBGT221-1N P10P05					10°	0.4	
	VBGW110302-2N P00P05	CBST30S	●	●	●		VBGW22(0.5)-3N P00P05	CBST30S	6.35	2.8	3.18	0°	0.2	3.0
	VBGT110302-2N P05P05		●	●	●		VBGT22(0.5)-3N P05P05					5°	0.2	
	VBGT110302-2N P10P05		●	●	●		VBGT22(0.5)-3N P10P05					10°	0.2	
	VBGW110304-2N P00P05	CBST30S				●	VBGW221-3N P00P05	CBST30S	6.35	2.8	3.18	0°	0.4	3.0
	VBGT110304-2N P05P05					●	VBGT221-3N P05P05					5°	0.4	
	VBGT110304-2N P10P05					●	VBGT221-3N P10P05					10°	0.4	

Examples: ISO: VBGW110302-1N P00P05CBST30S PD01E
 ANSI: VBGW22(0.5)-1N P00P05CBST30S PD01E

Specifications of Standard PCD/CVDD Insert

VB

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	VBGW110308-1N P00P05	CBST30S	●	●	●		VBGW222-1N P00P05	CBST30S	6.35	2.8	3.18	0°	0.8	3.0
	VBGT110308-1N P05P05		●	●	●		VBGT222-1N P05P05					5°	0.8	
	VBGT110308-1N P10P05		●	●	●		VBGT222-1N P10P05					10°	0.8	
	VBGW110308-1N P00P05	SLST30S				●	VBGW222-1N P00P05	SLST30S	6.35	2.8	3.18	0°	0.8	3.0
	VBGT110308-1N P05P05					●	VBGT222-1N P05P05					5°	0.8	
	VBGT110308-1N P10P05					●	VBGT222-1N P10P05					10°	0.8	
	VBGW110308-2N P00P05	CBST30S	●	●	●		VBGW222-3N P00P05	CBST30S	6.35	2.8	3.18	0°	0.8	3.0
	VBGT110308-2N P05P05		●	●	●		VBGT222-3N P05P05					5°	0.8	
	VBGT110308-2N P10P05		●	●	●		VBGT222-3N P10P05					10°	0.8	

VB

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	VBGW160402-1N P00P05	CBST30S	●	●	●		VBGW33(0.5)-1N P00P05	CBST30S	9.525	4.4	4.76	0°	0.2	3.0
	VBGT160402-1N P05P05		●	●	●		VBGT33(0.5)-1N P05P05					5°	0.2	
	VBGT160402-1N P10P05		●	●	●		VBGT33(0.5)-1N P10P05					10°	0.2	
	VBGW160404-1N P00P05		●	●	●		VBGW331-1N P00P05					0°	0.4	
	VBGT160404-1N P05P05		●	●	●		VBGT331-1N P05P05					5°	0.4	
	VBGT160404-1N P10P05		●	●	●		VBGT331-1N P10P05					10°	0.4	
	VBGW160402-1N P00P05	SLST30S				●	VBGW33(0.5)-1N P00P05	SLST30S	9.525	4.4	4.76	0°	0.2	3.0
	VBGT160402-1N P05P05					●	VBGT33(0.5)-1N P05P05					5°	0.2	
	VBGT160402-1N P10P05					●	VBGT33(0.5)-1N P10P05					10°	0.2	
	VBGW160404-1N P00P05					●	VBGW331-1N P00P05					0°	0.4	
	VBGT160404-1N P05P05					●	VBGT331-1N P05P05					5°	0.4	
	VBGT160404-1N P10P05					●	VBGT331-1N P10P05					10°	0.4	
	VBGW160402-2N P00P05	CBST30S	●	●	●		VBGW33(0.5)-2N P00P05	CBST30S	9.525	4.4	4.76	0°	0.2	3.0
	VBGT160402-2N P05P05		●	●	●		VBGT33(0.5)-2N P05P05					5°	0.2	
	VBGT160402-2N P10P05		●	●	●		VBGT33(0.5)-2N P10P05					10°	0.2	
	VBGW160404-2N P00P05		●	●	●		VBGW331-2N P00P05					0°	0.4	
	VBGT160404-2N P05P05		●	●	●		VBGT331-2N P05P05					5°	0.4	
	VBGT160404-2N P10P05		●	●	●		VBGT331-2N P10P05					10°	0.4	

Examples: ISO: VBGW160402-1N P00P05CBST30S PD01E
 ANSI: VBGW33(0.5)-1N P00P05CBST30S PD01E

Specifications of Standard PCD/CVDD Insert

VB

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VBGW160408-1N P00P05	CBST30S	●	●	●		VBGW332-1N P00P05	CBST30S	9.525	4.4	4.76	0°	0.8	3.0
	VBGT160408-1N P05P05		●	●	●		VBGT332-1N P05P05					5°	0.8	
	VBGT160408-1N P10P05		●	●	●		VBGT332-1N P10P05					10°	0.8	
	VBGW160408-1N P00P05	SLST30S				●	VBGW332-1N P00P05	SLST30S	9.525	4.4	4.76	0°	0.8	3.0
	VBGT160408-1N P05P05					●	VBGT332-1N P05P05					5°	0.8	
	VBGT160408-1N P10P05					●	VBGT332-1N P10P05					10°	0.8	
	VBGW160408-2N P00P05	CBST30S	●	●	●		VBGW332-2N P00P05	CBST30S	9.525	4.4	4.76	0°	0.8	3.0
	VBGT160408-2N P05P05		●	●	●		VBGT332-2N P05P05					5°	0.8	
	VBGT160408-2N P10P05		●	●	●		VBGT332-2N P10P05					10°	0.8	

VC

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VCGW110302-1N P00P07	CBST30S	●	●	●		VCGW22(0.5)-1N P00P07	CBST30S	6.35	2.8	3.18	0°	0.2	3.0
	VCGT110302-1N P05P07		●	●	●		VCGT22(0.5)-1N P05P07					5°	0.2	
	VCGT110302-1N P10P07		●	●	●		VCGT22(0.5)-1N P10P07					10°	0.2	
	VCGW110304-1N P00P07	SLST30S				●	VCGW221-1N P00P07	SLST30S	6.35	2.8	3.18	0°	0.4	3.0
	VCGT110304-1N P05P07					●	VCGT221-1N P05P07					5°	0.4	
	VCGT110304-1N P10P07					●	VCGT221-1N P10P07					10°	0.4	
	VCGW110302-2N P00P07	CBST30S	●	●	●		VCGW22(0.5)-2N P00P07	CBST30S	6.35	2.8	3.18	0°	0.2	3.0
	VCGT110302-2N P05P07		●	●	●		VCGT22(0.5)-2N P05P07					5°	0.2	
	VCGT110302-2N P10P07		●	●	●		VCGT22(0.5)-2N P10P07					10°	0.2	
	VCGW110304-2N P00P07	SLST30S				●	VCGW221-2N P00P07	SLST30S	6.35	2.8	3.18	0°	0.4	3.0
	VCGT110304-2N P05P07					●	VCGT221-2N P05P07					5°	0.4	
	VCGT110304-2N P10P07					●	VCGT221-2N P10P07					10°	0.4	

Examples: ISO: VCGW110302-1N P00P07CBST30S PD01E
 ANSI: VCGW22(0.5)-1N P00P07CBST30S PD01E

Specifications of Standard PCD/CVDD Insert

VC

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VCGW110308-1N P00P07	CBST30S	●	●	●		VCGW222-1N P00P07	CBST30S	6.35	2.8	3.18	0°	0.8	3.0
	VCGT110308-1N P05P07		●	●	●		VCGT222-1N P05P07					5°	0.8	
	VCGT110308-1N P10P07		●	●	●		VCGT222-1N P10P07					10°	0.8	
	VCGW110308-1N P00P07	SLST30S				●	VCGW222-1N P00P07	SLST30S	6.35	2.8	3.18	0°	0.8	3.0
	VCGT110308-1N P05P07					●	VCGT222-1N P05P07					5°	0.8	
	VCGT110308-1N P10P07					●	VCGT222-1N P10P07					10°	0.8	
	VCGW110308-2N P00P07	CBST30S	●	●	●		VCGW222-2N P00P07	CBST30S	6.35	2.8	3.18	0°	0.8	3.0
	VCGT110308-2N P05P07		●	●	●		VCGT222-2N P05P07					5°	0.8	
	VCGT110308-2N P10P07		●	●	●		VCGT222-2N P10P07					10°	0.8	

VC

35° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VCGW160402-1N P00P07	CBST30S	●	●	●		VCGW33(0.5)-1N P00P07	CBST30S	9.525	4.4	4.76	0°	0.2	3.0
	VCGT160402-1N P05P07		●	●	●		VCGT33(0.5)-1N P05P07					5°	0.2	
	VCGT160402-1N P10P07		●	●	●		VCGT33(0.5)-1N P10P07					10°	0.2	
	VCGW160404-1N P00P07	SLST30S				●	VCGW331-1N P00P07	SLST30S	9.525	4.4	4.76	0°	0.4	3.0
	VCGT160404-1N P05P07					●	VCGT331-1N P05P07					5°	0.4	
	VCGT160404-1N P10P07					●	VCGT331-1N P10P07					10°	0.4	
	VCGW160402-2N P00P07	CBST30S	●	●	●		VCGW33(0.5)-2N P00P07	CBST30S	9.525	4.4	4.76	0°	0.2	3.0
	VCGT160402-2N P05P07		●	●	●		VCGT33(0.5)-2N P05P07					5°	0.2	
	VCGT160402-2N P10P07		●	●	●		VCGT33(0.5)-2N P10P07					10°	0.2	

Examples: ISO: VCGW160402-1N P00P07CBST30S PD01E
 ANSI: VCGW33(0.5)-1N P00P07CBST30S PD01E

Specifications of Standard PCD/CVDD Insert

VC

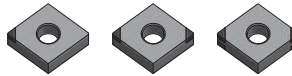
60° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	VCGW160408-1N P00P07	CBST30S	●	●	●		VCGW332-1N P00P07	CBST30S	9.525	4.4	4.76	0°	0.8	3.0
	VCGT160408-1N P05P07		●	●	●		VCGT332-1N P05P07					5°	0.8	
	VCGT160408-1N P10P07		●	●	●		VCGT332-1N P10P07					10°	0.8	
	VCGW160408-1N P00P07	SLST30S				●	VCGW332-1N P00P07	SLST30S	9.525	4.4	4.76	0°	0.8	3.0
	VCGT160408-1N P05P07					●	VCGT332-1N P05P07					5°	0.8	
	VCGT160408-1N P10P07					●	VCGT332-1N P10P07					10°	0.8	
	VCGW160408-2N P00P07	CBST30S	●	●	●		VCGW332-2N P00P07	CBST30S	9.525	4.4	4.76	0°	0.8	3.0
	VCGT160408-2N P05P07		●	●	●		VCGT332-2N P05P07					5°	0.8	
	VCGT160408-2N P10P07		●	●	●		VCGT332-2N P10P07					10°	0.8	

CN

80° PCD Negative Inserts



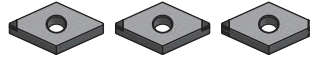
Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	CNGA120402-1N P00P00	CBST25S	●	●	●		CNGA43(0.5)-1N P00P00	CBST25S	12.7	5.16	4.76	0°	0.2	2.5
	CNGM120402-1N P10P00		●	●	●		CNGM43(0.5)-1N P10P00					10°	0.2	
	CNGA120404-1N P00P00		●	●	●		CNGA431-1N P00P00					0°	0.4	
	CNGM120404-1N P10P00	SLST25S				●	CNGM431-1N P10P00	SLST25S	12.7	5.16	4.76	10°	0.4	2.5
	CNGA120408-1N P00P00					●	CNGA432-1N P00P00					0°	0.8	
	CNGM120408-1N P10P00					●	CNGM432-1N P10P00					10°	0.8	
	CNGA120402-1N P00P00	CBST25S	●	●	●		CNGA43(0.5)-1N P00P00	CBST25S	12.7	5.16	4.76	0°	0.2	2.5
	CNGM120402-2N P10P00		●	●	●		CNGM43(0.5)-2N P10P00					10°	0.2	
	CNGA120404-2N P00P00		●	●	●		CNGA431-2N P00P00					0°	0.4	
	CNGM120404-2N P10P00	CBST25S				●	CNGM431-2N P10P00	CBST25S	12.7	5.16	4.76	10°	0.4	2.5
	CNGA120408-2N P00P00					●	CNGA432-2N P00P00					0°	0.8	
	CNGM120408-2N P10P00					●	CNGM432-2N P10P00					10°	0.8	

Examples: ISO: CNGA120402-1N P00P00CBST25S PD01E
ANSI: CNGA43(0.5)-1N P00P00CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

DN

55° PCD Negative Inserts



Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	DNGA150402-1N P00P00	CBST25S	●	●	●		DNGA43(0.5)-1N P00P00	CBST25S	12.7	5.16	4.76	0°	0.2	2.5
	DNGM150402-1N P10P00		●	●	●		DNGM43(0.5)-1N P10P00					10°	0.2	
	DNGA150404-1N P00P00		●	●	●		DNGA431-1N P00P00					0°	0.4	
	DNGM150404-1N P10P00		●	●	●		DNGM431-1N P10P00					10°	0.4	
	DNGA150408-1N P00P00		●	●	●		DNGA432-1N P00P00					0°	0.8	
	DNGM150408-1N P10P00		●	●	●		DNGM432-1N P10P00					10°	0.8	
	DNGA150402-1N P00P00	SLST25S				●	DNGA43(0.5)-1N P00P00	SLST25S	12.7	5.16	4.76	0°	0.2	2.5
	DNGM150402-1N P10P00					●	DNGM43(0.5)-1N P10P00					10°	0.2	
	DNGA150404-1N P00P00					●	DNGA431-1N P00P00					0°	0.4	
	DNGM150404-1N P10P00					●	DNGM431-1N P10P00					10°	0.4	
DNGA150408-1N P00P00				●	DNGA432-1N P00P00	0°	0.8	2.5						
DNGM150408-1N P10P00				●	DNGM432-1N P10P00	10°	0.8							
	DNGA150402-2N P00P00	CBST25S	●	●	●		DNGA43(0.5)-2N P00P00	CBST25S	12.7	5.16	4.76	0°	0.2	2.5
	DNGM150402-2N P10P00		●	●	●		DNGM43(0.5)-2N P10P00					10°	0.2	
	DNGA150404-2N P00P00		●	●	●		DNGA431-2N P00P00					0°	0.4	
	DNGM150404-2N P10P00		●	●	●		DNGM431-2N P10P00					10°	0.4	
	DNGA150408-2N P00P00		●	●	●		DNGA432-2N P00P00					0°	0.8	
	DNGM150408-2N P10P00		●	●	●		DNGM432-2N P10P00					10°	0.8	

TN

60° PCD Negative Inserts



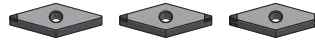
Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	ød	s	α	r	la
	TNGA160402-1N P00P00	CBST25S	●	●	●		TNGA33(0.5)-1N P00P00	CBST25S	9.525	3.81	4.76	0°	0.2	2.5
	TNGM160402-1N P10P00		●	●	●		TNGM33(0.5)-1N P10P00					10°	0.2	
	TNGA160404-1N P00P00		●	●	●		TNGA331-1N P00P00					0°	0.4	
	TNGM160404-1N P10P00		●	●	●		TNGM331-1N P10P00					10°	0.4	
	TNGA160408-1N P00P00		●	●	●		TNGA332-1N P00P00					0°	0.8	
	TNGM160408-1N P10P00		●	●	●		TNGM332-1N P10P00					10°	0.8	
	TNGA160402-1N P00P00	SLST25S				●	TNGA33(0.5)-1N P00P00	SLST25S	9.525	3.81	4.76	0°	0.2	2.5
	TNGM160402-1N P10P00					●	TNGM33(0.5)-1N P10P00					10°	0.2	
	TNGA160404-1N P00P00					●	TNGA331-1N P00P00					0°	0.4	
	TNGM160404-1N P10P00					●	TNGM331-1N P10P00					10°	0.4	
TNGA160408-1N P00P00				●	TNGA332-1N P00P00	0°	0.8	2.5						
TNGM160408-1N P10P00				●	TNGM332-1N P10P00	10°	0.8							
	TNGA160402-3N P00P00	CBST25S	●	●	●		TNGA33(0.5)-3N P00P00	CBST25S	9.525	3.81	4.76	0°	0.2	2.5
	TNGM160402-3N P10P00		●	●	●		TNGM33(0.5)-3N P10P00					10°	0.2	
	TNGA160404-3N P00P00		●	●	●		TNGA331-3N P00P00					0°	0.4	
	TNGM160404-3N P10P00		●	●	●		TNGM331-3N P10P00					10°	0.4	
	TNGA160408-3N P00P00		●	●	●		TNGA332-3N P00P00					0°	0.8	
	TNGM160408-3N P10P00		●	●	●		TNGM332-3N P10P00					10°	0.8	

Examples: ISO: TNGA160402-1N P00P00CBST25S PD01E
ANSI: TNGA33(0.5)-1N P00P00CBST25S PD01E

Specifications of Standard PCD/CVDD Insert

VN

35° PCD Negative Inserts

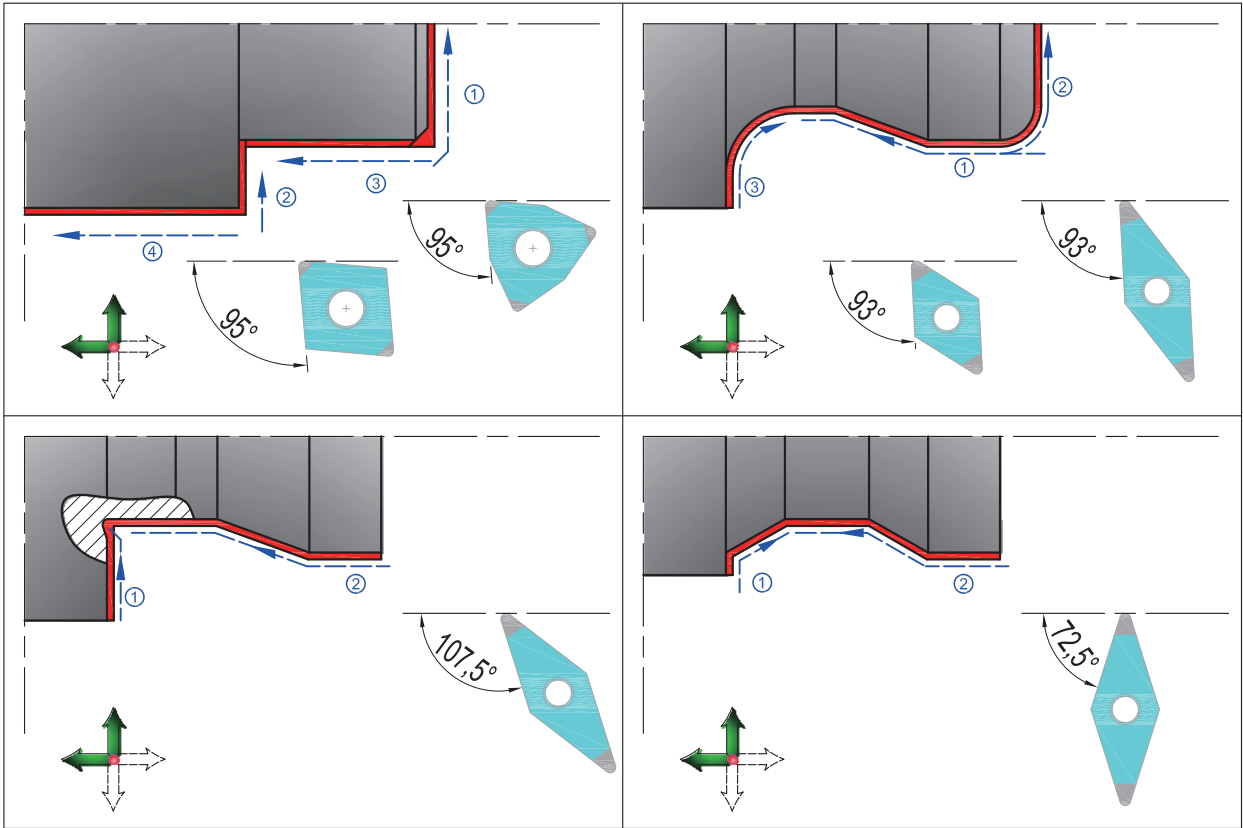


Shape	ISO	Tip Shape	N				ANSI	Tip Shape	Dimensions in mm					
			PD01E	PD10E	PD32E	CVDD			ic	Ød	s	α	r	la
	VNGA160402-1N P00P00	CBST30S	●	●	●		VNGA33(0.5)-1N P00P00	CBST30S	9.525	3.81	4.76	0°	0.2	3.0
	VNGM160402-1N P10P00		●	●	●		VNGM33(0.5)-1N P10P00					10°	0.2	
	VNGA160404-1N P00P00		●	●	●		VNGA331-1N P00P00					0°	0.4	
	VNGM160404-1N P10P00		●	●	●		VNGM33431-1N P10P00					10°	0.4	
	VNGA160408-1N P00P00		●	●	●		VNGA332-1N P00P00					0°	0.8	
	VNGM160408-1N P10P00		●	●	●		VNGM332-1N P10P00					10°	0.8	
	VNGA160402-1N P00P00	SLST30S				●	VNGA33(0.5)-1N P00P00	SLST30S	9.525	3.81	4.76	0°	0.2	3.0
	VNGM160402-1N P10P00					●	VNGM33(0.5)-1N P10P00					10°	0.2	
	VNGA160404-1N P00P00					●	VNGA331-1N P00P00					0°	0.4	
	VNGM160404-1N P10P00					●	VNGM331-1N P10P00					10°	0.4	
VNGA160408-1N P00P00					●	VNGA332-1N P00P00	0°					0.8		
VNGM160408-1N P10P00				●	VNGM332-1N P10P00	10°	0.8							
	VNGA160402-2N P00P00	CBST30S	●	●	●		VNGA33(0.5)-2N P00P00	CBST30S	9.525	3.81	4.76	0°	0.2	3.0
	VNGM160402-2N P10P00		●	●	●		VNGM33(0.5)-2N P10P00					10°	0.2	
	VNGA160404-2N P00P00		●	●	●		VNGA331-2N P00P00					0°	0.4	
	VNGM160404-2N P10P00		●	●	●		VNGM331-2N P10P00					10°	0.4	
	VNGA160408-2N P00P00		●	●	●		VNGA332-2N P00P00					0°	0.8	
	VNGM160408-2N P10P00		●	●	●		VNGM332-2N P10P00					10°	0.8	

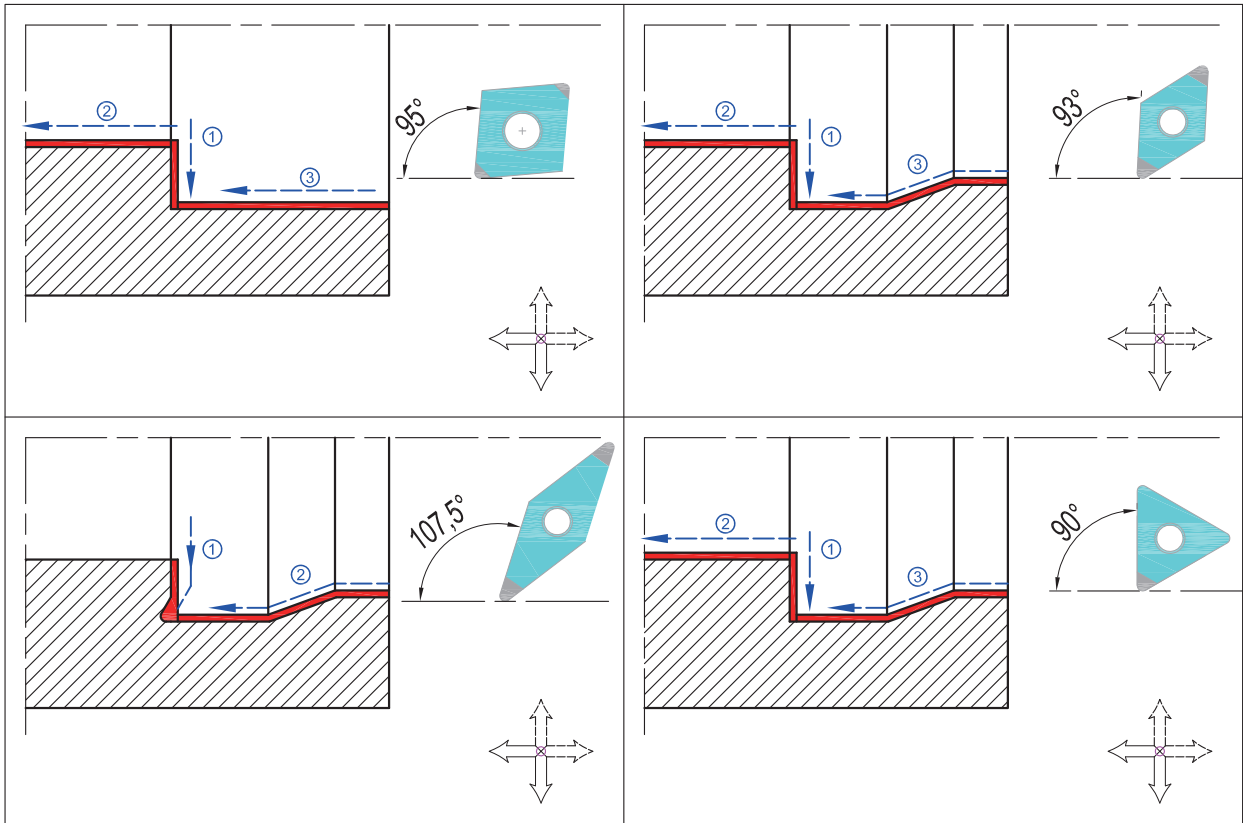
Examples : ISO : VNGA160402-1N P00P00CBST30S PD01E
 ANSI : VNGA33(0.5)-1N P00P00CBST30S PD01E

Cutting Direction Recommendation

External machining



Internal machining



Nose radius, Feed Rate Against Surface Finish Spindle Speed Recommendation

■ Influence of nose radius and feed rate on the surface finish.

The table below gives recommended maximum feed rates to achieve a special Ra. Value.

$$h = r\epsilon - (r\epsilon^2 - (0.5 \times f)^2) / 0.5$$

$$f_{\max} = (Ra \times r\epsilon / 50)^{\frac{1}{2}}$$

Nose radius (mm)	Surface finish Ra value(μm)					
	0.2	0.4	0.8	1.6	3.2	6.4
	feed (mm/rev) rate ≡					
0.2	0.028	0.040	0.057	0.080	0.113	0.160
0.4	0.040	0.057	0.080	0.113	0.160	0.226
0.8	0.057	0.080	0.113	0.160	0.226	0.320
1.2	0.069	0.098	0.139	0.196	0.277	0.392
1.6	0.080	0.113	0.160	0.226	0.320	0.453
2.4	0.098	0.139	0.196	0.277	0.392	0.554

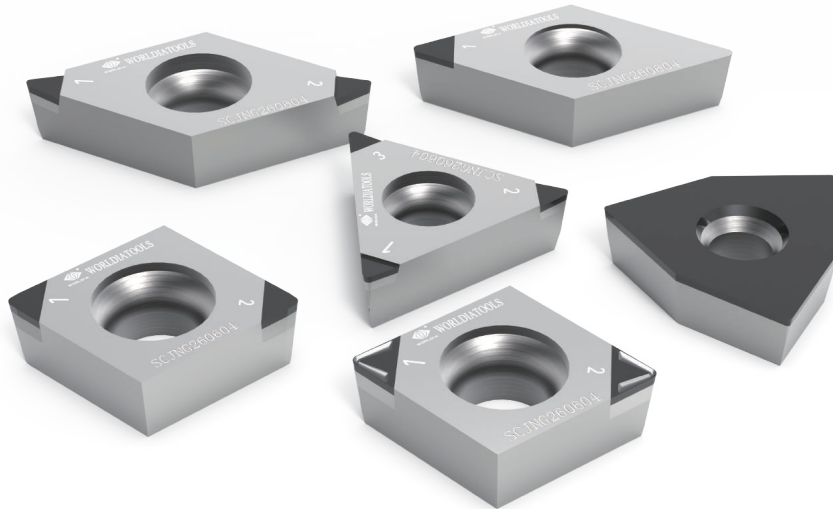
■ Spindle speed recommendation

Speed (m/min)	Workpiece/Tool Holer Diameter (mm)													
	12	16	20	25	32	50	63	80	100	125	160	175	200	250
80	2123	1592	1274	1019	796	510	404	318	255	204	159	146	127	102
90	2389	1791	1433	1146	896	573	455	358	287	229	179	164	143	115
100	2654	1990	1592	1274	995	637	506	398	318	255	199	182	159	127
110	2919	2189	1752	1401	1095	701	556	438	350	280	219	200	175	140
120	3185	2389	1911	1529	1194	764	607	478	382	306	239	218	191	153
140	3715	2787	2229	1783	1393	892	708	557	446	357	279	255	223	178
160	4246	3185	2548	2038	1592	1019	809	637	510	408	318	291	255	204
180	4777	3583	2866	2293	1791	1146	910	717	573	459	358	328	287	229
200	5308	3981	3185	2548	1990	1274	1011	796	637	510	398	364	318	255
220	5839	4379	3503	2803	2189	1401	1112	876	701	561	438	400	350	280
240	6369	4777	3822	3057	2389	1529	1213	955	764	611	478	437	382	306
260	6900	5175	4140	3312	2588	1656	1314	1035	828	662	518	473	414	331
280	7431	5573	4459	3567	2787	1783	1415	1115	892	713	557	510	446	357
300		5971	4777	3822	2986	1911	1517	1194	955	764	597	546	478	382
400						2548	2022	1592	1274	1019	796	728	637	510
600						3822	3033	2389	1911	1529	1194	1092	955	764
800						5096	4044	3185	2548	2038	1592	1456	1274	1019
1000						6369	5055	3981	3185	2548	1990	1820	1592	1274



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