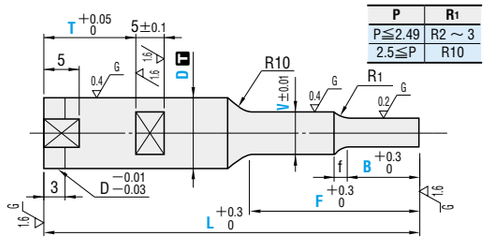
CARBIDE DOUBLE-STEPPED PUNCHES WITH KEY GROOVES

—NORMAL・TiCN COATING—

PRODUCTS DATA P.1604

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Catalog No. Tip shape
RoHS	Dm5	V30 (HIP) 88 ~ 89HRA	WKTW TiCN coating H—WKTW	A D R E G
		Super fine grain (HIP) 90 ~ 92HRA (D3 ~ 6)	WXKTW TiCN coating H—WXKTW	
—TiCN coating—	$D^{+0.005}_{0}$	V30 (HIP) 88 ~ 89HRA	A—WKTW TiCN coating AH—WKTW	
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.		Super fine grain (HIP) 90 ~ 92HRA (D3 ~ 6)	A—WXKTW TiCN coating AH—WXKTW	

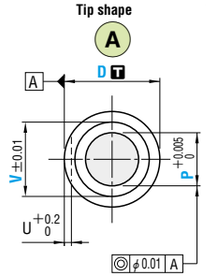
The tip shape can be selected from tip shapes A ~ G in the figure below.



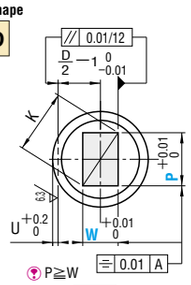
P	R1
P≦2.49	R2 ~ 3
2.5≦P	R10

The tip end of a TiCN coating punch is ground before the coating is applied.
Although the marks of processing may remain in the center of a flange end face, it is satisfactory on a function.

Tip shape A

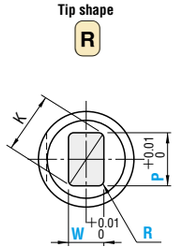


Tip shape D



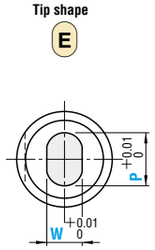
P≧W
$K=\sqrt{P^2+W^2}$

Tip shape R



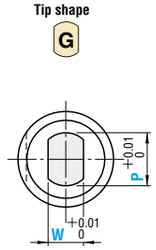
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	D	L (Selection)	0.001mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P・W	R R	0.1mm increments D R E G B	0.01mm increments V	0.1mm increments F	T	U
(Dm5) WKTW WXKTW (D3 ~ 6) — Coating TiCN coating — H—WKTW H—WXKTW (D3 ~ 6) ($D^{+0.005}_{0}$) A—WKTW A—WXKTW (D3 ~ 6) — Coating TiCN coating — AH—WKTW AH—WXKTW (D3 ~ 6)	A D R E G	3	40・50・60	0.500 ~ 0.749	2.0 ~ 5.0	2.96	1.00 ~ 1.99	0.15≦R<W/2 (Ⓡ only)	2.0 ~ 8.0	Round: D>V>P+0.01 V≧1.00 Shaped: D>V>(P,W)+0.03 V≧1.00	Round: B+f+2<F≦Fmax. Shaped: B+f+3.5<F≦Fmax. & Round: F≦L−25 Shaped: F≦L−30	T≧5	0.5
				0.750 ~ 0.999	2.0 ~ 8.0								
				1.000 ~ 1.999	2.0 ~ 13.0		2.00 ~ 2.49		2.0 ~ 13.0				
				2.000 ~ 2.980	2.0 ~ 19.0		2.50 ~ 2.96		2.0 ~ 19.0				
		4	40・50・60・70	0.500 ~ 0.749	2.0 ~ 5.0	3.96	1.00 ~ 1.99		2.0 ~ 8.0				
				0.750 ~ 0.999	2.0 ~ 8.0								
				1.000 ~ 1.999	2.0 ~ 13.0		2.00 ~ 2.49		2.0 ~ 13.0				
				2.000 ~ 2.999	2.0 ~ 19.0		2.50 ~ 3.96		2.0 ~ 19.0				
				3.000 ~ 3.980	2.0 ~ 30.0		2.50 ~ 3.96		2.0 ~ 19.0				
		5	40・50・60・70	1.000 ~ 1.999	2.0 ~ 13.0	4.96	1.00 ~ 1.99		2.0 ~ 8.0				
				2.000 ~ 2.999	2.0 ~ 19.0		2.00 ~ 2.49		2.0 ~ 13.0				
				3.000 ~ 3.999	2.0 ~ 30.0		2.50 ~ 3.99		2.0 ~ 19.0				
				4.000 ~ 4.980	2.0 ~ 40.0		4.00 ~ 4.96		2.0 ~ 25.0				
		6	40・50・60・70	1.000 ~ 1.999	2.0 ~ 13.0	5.96	1.00 ~ 1.99		2.0 ~ 8.0				1.0
				2.000 ~ 2.999	2.0 ~ 19.0		2.00 ~ 2.49		2.0 ~ 13.0				
				3.000 ~ 3.999	2.0 ~ 30.0		2.50 ~ 3.99		2.0 ~ 19.0				
				4.000 ~ 5.980	2.0 ~ 40.0		4.00 ~ 5.96		2.0 ~ 25.0				
		8	40・50・60・70・80	1.500 ~ 1.999	2.0 ~ 13.0	7.96	1.40 ~ 1.99		2.0 ~ 8.0				
				2.000 ~ 2.999	2.0 ~ 19.0		2.00 ~ 2.49		2.0 ~ 13.0				
				3.000 ~ 3.999	2.0 ~ 30.0		2.50 ~ 3.99		2.0 ~ 19.0				
				4.000 ~ 5.999	2.0 ~ 40.0		4.00 ~ 7.96		2.0 ~ 25.0				
				6.000 ~ 7.980	2.0 ~ 45.0		4.00 ~ 7.96		2.0 ~ 25.0				
		10	40・50・60・70・80	1.500 ~ 1.999	2.0 ~ 13.0	9.96	1.70 ~ 1.99		2.0 ~ 8.0				1.5
				2.000 ~ 2.999	2.0 ~ 19.0		2.00 ~ 2.49		2.0 ~ 13.0				
				3.000 ~ 3.999	2.0 ~ 30.0		2.50 ~ 3.99		2.0 ~ 19.0				
				4.000 ~ 5.999	2.0 ~ 40.0		4.00 ~ 9.96		2.0 ~ 25.0				
				6.000 ~ 9.980	2.0 ~ 45.0		4.00 ~ 9.96		2.0 ~ 25.0				
		13	40・50・60・70・80	3.000 ~ 3.999	2.0 ~ 30.0	12.96	2.00 ~ 2.49		2.0 ~ 13.0				
				4.000 ~ 5.999	2.0 ~ 40.0		2.50 ~ 3.99		2.0 ~ 19.0				
				6.000 ~ 12.980	2.0 ~ 45.0		4.00 ~ 12.96		2.0 ~ 25.0				
		16	40・50・60・70・80	4.000 ~ 5.999	2.0 ~ 40.0	15.96	2.70 ~ 3.99		2.0 ~ 19.0				
				6.000 ~ 15.980	2.0 ~ 45.0		4.00 ~ 15.96		2.0 ~ 25.0				

V	Fmax.
1.00 ~ 1.99	19
2.00 ~ 2.99	30
3.00 ~ 3.99	40
4.00 ~ 5.99	45
6.00 ~	45

For f, refer to the punch R length in [Products Data] on P.1592 and verify the following.
Round punch: (V−P)/2=X
Shaped punch: (V−W)/2=X

For TiCN coating, P min. is 1.00mm.
P dimension increments···With TiCN coating, increments are 0.01mm. (If used with PKC alteration, 0.001mm increments can be selected.)

Order

Catalog No.	L	P	W	B	V	F	R (Ⓡ only)	T
WKTWA 10	80	P9.500		B25	V9.80	F40		T20
A—WKTWR13	80	P10.50	W7.34	B10	V12.00	F30	R0.5	T25

If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	L (LC・LCT・LMT)	P	W	B	V	F	R	T	(HC・TC・KC, etc.)
WKTWA 10	LC72	P4.800		B10	V6.80	F40		T20	

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	——	Quotation
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	——	
	GC f B L	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) When combined with SC, tip edges are rounded. ⊗ Cannot be used for P≦1.000. ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	——	
	0.08 GL	SC	Tip roughness change 0.2 G ⇨ 0.08 GL		
	P・W T	PKC	Tip tolerance change Normal $P^{+0.005}_{0}$ ⇨ $^{+0.003}_{0}$ Coating $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ⊗ Coating cannot be used for D16.	Tip tolerance change (P・W dimensions can be selected in 0.001mm increments.) $P・W^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ⊗ Cannot be used with coating.	
		PKV	Tip tolerance change Normal $P^{+0.005}_{0}$ ⇨ ±0.002 Coating $P^{+0.01}_{0}$ ⇨ ±0.005 P dimension increment remains the same.	Tip tolerance change $P・W^{+0.01}_{0}$ ⇨ ±0.005 ⊗ Cannot be used with coating P dimension increment remains the same.	
	V T	VKC	V dimension tolerance change $V^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ V dimension can be selected in 0.001mm increments. ⊗ Cannot be used with TiCN coating.	V dimension tolerance change V±0.01⇨±0.005	

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length	LC L	LC	Full length change 25+F≦LC<L 0.1mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+F≦LC<L 0.1mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
	T T LC L	LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC T dimension tolerance change $T^{+0.05}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	L T	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$	⊗ Cannot be used with TiCN coating.	
Others		KC	——	90° 0° 180° 270° Key flat position change 1° increments	Quotation
		NKC	——	No key flat	
		KD	——	90° 0° 180° 270° Key groove position change 1° increments	
		WKD	Addition of double key grooves in parallel	Double key grooves in parallel Can be combined with KD.	
	T T	TKC	T dimension tolerance change $T^{+0.05}_{0}$ ⇨ $^{0}_{-0.02}$		
	UK U	UK	Key groove depth change ⊗ Cannot be used for D3.	D / UK: 4・5 / 0.7; 6 / 1.2; 8 ~ 16 / 1.7	
	0.5 1	SKC	$\frac{D}{2}-0.5\ ^{0}_{-0.01}$ $\frac{D}{2}-1\ ^{0}_{-0.01}$	Single key flat on shank ・D3 ~ 6 V≦D−1.2 (Machining width 0.5) ・D8 ~ V≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・KD・WKD.	

Price Quotation

CARBIDE PUNCHES