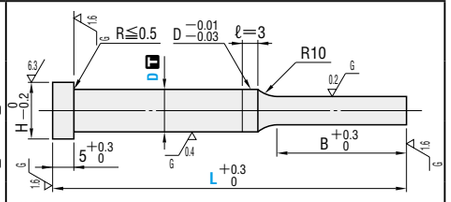
CARBIDE SHOULDER PUNCHES
—TiCN COATING—

PRODUCTS DATA P.1604

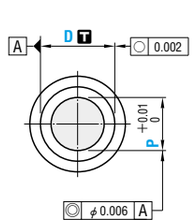
Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	V30 (HIP) 88 ～ 89HRA Surface 3000HV	H—WP	A D R E G	S L X
		Super fine grain (HIP) 90 ～ 92HRA Surface 3000HV	H—WXP (D3 ～ 6)		
	$D\ ^{+0.005}_{0}$	V30 (HIP) 88 ～ 89HRA Surface 3000HV	AH—WP		
		Super fine grain (HIP) 90 ～ 92HRA Surface 3000HV	AH—WXP (D3 ～ 6)		

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

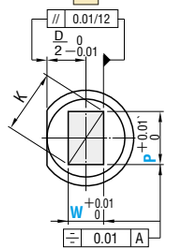


The tip end is ground before the coating is applied.
Although the marks of processing may remain in the center of a flange end face, it is satisfactory on a function.

Tip shape A

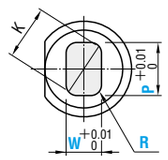


Tip shape D



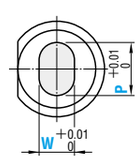
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape R



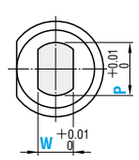
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	ⒹⓇⒺⒼ P・Kmax.	ⒹⓇⒺⒼ P・Wmin.	Ⓡ R	B	H
(D_{m5}) H—WP H—WXP (D3 ～ 6)	A D R E G	S	3	40 50 60 70	1.00 ～ 2.99	—	—	0.15≦R<$\frac{W}{2}$ (Ⓡ only)	8	5
			4	40 50 60 70	1.00 ～ 3.99	3.97	1.50			7
			5	40 50 60 70	2.00 ～ 4.99	4.97	1.50			8
			6	40 50 60 70	2.00 ～ 5.99	5.97	1.50			9
			8	(40) 50 60 70 80	3.00 ～ 7.99	7.97	2.00		13	11
			10	(40) 50 60 70 80	3.00 ～ 9.99	9.97	2.50			13
			13	(40) 50 60 70 80	6.00 ～ 12.99	12.97	3.00			16
			16	(40) 50 60 70 80	10.00 ～ 15.99	15.97	4.00		19	19
($D^{+0.005}_{0}$) AH—WP AH—WXP (D3 ～ 6)		L	3	40 50 60 70	1.00 ～ 2.99	—	—		13	5
			4	50 60 70	1.00 ～ 3.99	3.97	2.00			7
			5	50 60 70	2.00 ～ 4.99	4.97	2.00			8
			6	50 60 70	2.00 ～ 5.99	5.97	2.00			9
			8	50 60 70 80	3.00 ～ 7.99	7.97	2.50		19	11
			10	50 60 70 80	3.00 ～ 9.99	9.97	2.50			13
			13	50 60 70 80	6.00 ～ 12.99	12.97	3.00			16
			16	60 70 80	10.00 ～ 15.99	15.97	4.00		25	19
(D_{m5}) H—WP ($D^{+0.005}_{0}$) AH—WP	A	X	3	50 60 70	2.00 ～ 2.99	—	—	—	19	5
			4	50 60 70	2.00 ～ 3.99					7
			5	50 60 70	3.00 ～ 4.99				25	8
			6	50 60 70	3.00 ～ 5.99					9
			8	60 70 80	3.00 ～ 7.99				30	11
			10	60 70 80	3.00 ～ 9.99					13
			13	60 70 80	6.00 ～ 12.99					16
			16	70 80	10.00 ～ 15.99				40	19

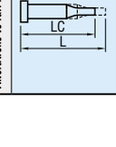
L(40)⋯B=8 If full length is (40), tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
ⒹⓇⒺⒼ: P・K>D−0.05⋯ℓ=0 If P・K>D−0.03 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

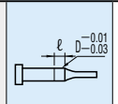
Order — Catalog No. — L — P — W — R (Ⓡ only)
H—WPAS 10 — 60 — P7.77

Days to Ship — Quotation

Price — Quotation

Alterations — Catalog No. — L(LC・LCT・LMT) — P(PC) — W(WC) — R — (BC・HC・TC, etc.)
H—WPAS 8 — 50 — PC1.95 — TKC

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2≧1.00 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) ⊗ Cannot be used for D3・4. ⊗ Cannot be used for tip X. P(PC) / Bmax.: 1.000～1.999 / 13; 2.000～2.999 / 19; 3.000～3.999 / 30; 4.000～ / 40	Tip dimension change $\frac{PC}{WC}\geqq\frac{P}{W}$ min.×$\frac{2}{3}$≧1.00 0.01mm increments P(PC)・W(WC) / Bmax.: 1.00～1.99 / 8; 2.00～2.49 / 13; 2.50～3.99 / 19; 4.00～ / 25	
		BC	Tip length change 2≦BC≦Bmax.≦L/2 0.1mm increments Ⓡ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1mm increments Ⓡ Full length L must be at least 30mm longer than tip length BC.	
		SC	Tip roughness change 0.2 G ⇨ 0.08 GL The base material is finished before the coating is applied.		
		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	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments Ⓡ PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	——	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Ⓡ If combined with SC, tip edges are rounded. ⊗ Cannot be used for P≦1.00. ⊗ Cannot be combined with LKC・LCT・LMT・PRC・PCC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ Ⓡ (P dimension can be selected in 0.001mm increments.) ⊗ Cannot be used for D16.	——	
		PKV	Tip tolerance change $P^{+0.01}_{0}$ ⇨ ±0.005 ⊗ P dimension increment remains the same.	——	
Alterations to full length		LC	Full length change 25+B(BC)≦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, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦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).	

Alteration		Code	Ⓐ	ⒹⓇⒺⒼ	1Code
Alterations to full length		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head ⊗ Cannot be combined with KFC.	Key flat position change 1° increments ⊗ Cannot be combined with KFC.	Quotation
		WKC	Addition of double key flats in parallel ⊗ Cannot be combined with KFC.	Double key flats in parallel Can be combined with KC. ⊗ Cannot be combined with KFC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1mm increments		
		TC	Head thickness change 2≦TC<5 0.1mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) Ⓡ Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 Ⓡ If H≦5, then TCC is 0.5.		
Shank		NDC	No press-in lead	ℓ=3 ⇨ ℓ=0	

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