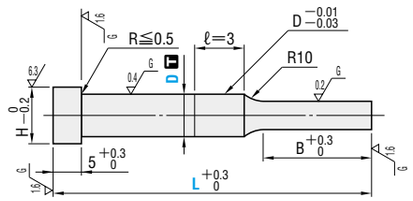
CARBIDE SHOULDER PUNCHES

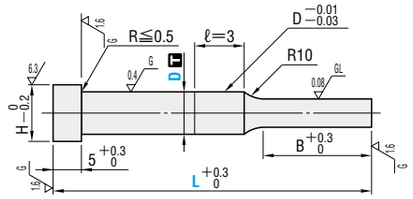
—NORMAL・LAPPING—

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

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

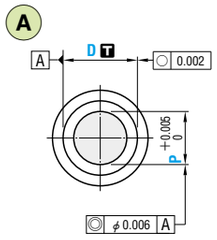


Although the marks of processing may remain in the center of a flange end face, it is satisfactory on a function.

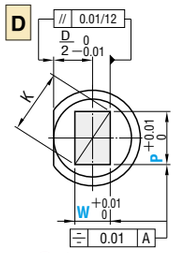


Although the marks of processing may remain in the center of a flange end face, it is satisfactory on a function.

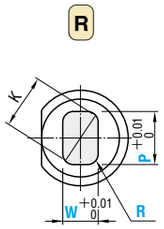
Tip shape (A)



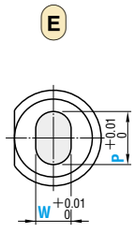
Tip shape (D)



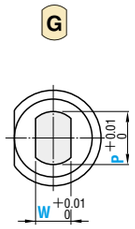
Tip shape (R)



Tip shape (E)



Tip shape (G)



(A) P≧W
$K=\sqrt{P^2+W^2}$

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

(E) P>W

(G) P>W

Catalog No. Type	Tip shape	B Tip length	D	L					0.001mm increments (A) min. P max.	0.01mm increments (D R E G) P・Kmax.	(D R E G) P・Wmin.	(R) R	B	H
(D_{m5}) WP, WXP (D3 ~ 6)	(A) (D) (R) (E) (G)	S	3	40	50	60	70		1.000 ~ 2.990	—	—	$0.15 \leqq R < \frac{W}{2}$ (R only)	8	5
			4	40	50	60	70		1.000 ~ 3.990	3.97	1.50			7
			5	40	50	60	70		2.000 ~ 4.990	4.97	1.50			8
			6	40	50	60	70		2.000 ~ 5.990	5.97	1.50			9
			8	(40)	50	60	70	80	3.000 ~ 7.990	7.97	2.00		13	11
			10	(40)	50	60	70	80	3.000 ~ 9.990	9.97	2.50			13
			13	(40)	50	60	70	80	6.000 ~ 12.990	12.97	3.00			16
			16	(40)	50	60	70	80	10.000 ~ 15.990	15.97	4.00		19	19
—Lapping— L—WP, L—WXP (D3 ~ 6); AL—WP, AL—WXP (D3 ~ 6)		L	3	40	50	60	70		1.000 ~ 2.990	—	—		13	5
			4		50	60	70		1.000 ~ 3.990	3.97	2.00			7
			5		50	60	70		2.000 ~ 4.990	4.97	2.00			8
			6		50	60	70		2.000 ~ 5.990	5.97	2.00			9
			8		50	60	70	80	3.000 ~ 7.990	7.97	2.50		19	11
			10		50	60	70	80	3.000 ~ 9.990	9.97	2.50			13
			13		50	60	70	80	6.000 ~ 12.990	12.97	3.00			16
			16			60	70	80	10.000 ~ 15.990	15.97	4.00		25	19
(D_{m5}) WP; ($D^{+0.005}_{0}$) A—WP	(A)	X	3		50	60	70		2.000 ~ 2.990	—	—	—	19	5
			4		50	60	70		2.000 ~ 3.990					7
			5		50	60	70		3.000 ~ 4.990				25	8
			6		50	60	70		3.000 ~ 5.990					9
			8			60	70	80	3.000 ~ 7.990				30	11
—Lapping— L—WP; AL—WP			10			60	70	80	3.000 ~ 9.990					13
			13			60	70	80	6.000 ~ 12.990					16
			16				70	80	10.000 ~ 15.990				40	19

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

Order

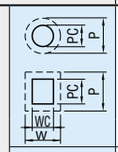
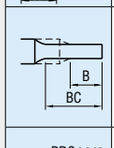
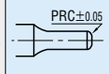
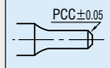
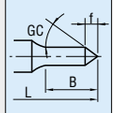
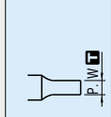
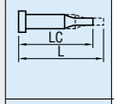
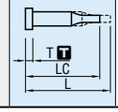
Catalog No.	L	P	W	R (R only)
WPAS 10	60	P7.770		
A—WPEL 4	50	P3.65	W2.80	

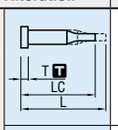
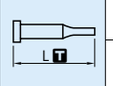
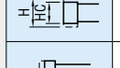
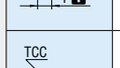
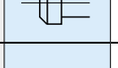
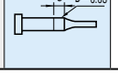
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	L (LC・LCT・LMT)	P (PC)	W (WC)	R	(BC・HC・TC, etc.)
WPAS 8	50	PC1.800			TKC

Alterations	Alteration	Code	(A)	(D R E G)	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2 0.001mm increments (⊗) Cannot be used for tip X. P (PC): 0.500 ~ 0.999: 4; 1.000 ~ 1.999: 13; 2.000 ~ 2.999: 19; 3.000 ~ 3.999: 30; 4.000 ~ 5.999: 40; 6.000 ~: 45	Tip dimension change PC/WC ≧Wmin.×ℓ/3 ≧1.00 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P (PC)・W (WC): 1.000 ~ 1.999: 8; 2.000 ~ 2.499: 13; 2.500 ~ 3.999: 19; 4.000 ~: 25	Quotation
		BC	Tip length change 2≦BC≦Bmax. 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.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments (PRC≦(P−0.2)/2 (⊗) Cannot be combined with PCC・GC.	—	
		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°) (With lapping, tip edges are rounded. (⊗) Cannot be used for P≦1.000. (⊗) Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	—	
		PKC	Tip tolerance change (P dimension can be selected in 0.001mm increments.) $P^{+0.005}_{0}$ ⇨ $^{+0.003}_{0}$	Tip tolerance change (P.W dimensions can be selected in 0.001mm increments.) $P・W^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$	
		PKV	Tip tolerance change $P^{+0.005}_{0}$ ⇨±0.002 (P dimension increment remains the same.	Tip tolerance change $P・W^{+0.01}_{0}$ ⇨±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).	Full length change 30+B(BC)≦LC<L 0.1 mm increments (If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
			(If combined with LKC・LKZ, 0.01mm increments can be selected.)		
		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 $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		

Alterations	Alteration	Code	(A)	(D R E G)	1Code
Alterations to full length		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 $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		
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.	
		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.	Quotation
		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		