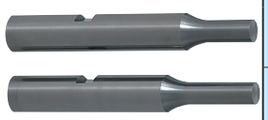
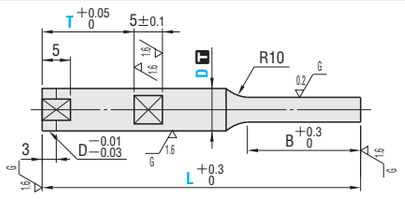
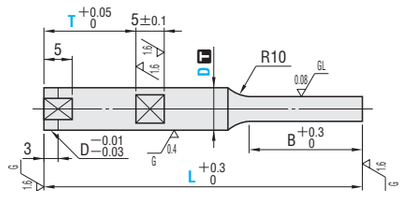
CARBIDE PUNCHES WITH KEY GROOVES

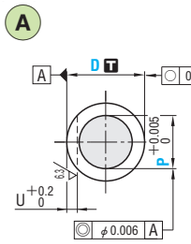
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	V30(HIP) 88 ～ 89HRA	WK	A D R E G	S
		Super fine grain (HIP) 90 ～ 92HRA	WXK (D3 ～ 6)		
	$D\ ^{+0.005}_{0}$	V30(HIP) 88 ～ 89HRA	A—WK		
		Super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

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

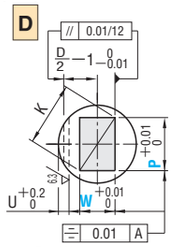




Tip shape **A**

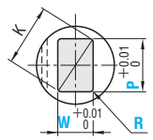


Tip shape **D**



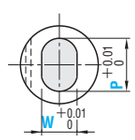
P≧W
K=$\sqrt{P^2+W^2}$

Tip shape **R**



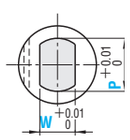
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape **E**



P>W

Tip shape **G**



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001mm increments Ⓐ min. P max.	0.01mm increments D R E G P·Kmax.	0.01mm increments D R E G P·Wmin.	R	0.1mm increments T	B	U Key groove depth
(D_{m5}) WK WXK (D3 ～ 6) ($D\ ^{+0.005}_{0}$) A—WK A—WXK (D3 ～ 6) —Lapping— L—WK L—WXK (D3 ～ 6) AL—WK AL—WXK (D3 ～ 6)	A D R E G	S	3	40 50 60	1.000 ～ 2.990	—	—	0.15≦R<$\frac{W}{2}$ (Ⓡ only)	T≧5.0	8	0.5
			4	40 50 60 70	1.000 ～ 3.990	3.97	1.50				1.0
			5	40 50 60 70	2.000 ～ 4.990	4.97	1.50			13	1.5
			6	40 50 60 70	2.000 ～ 5.990	5.97	1.50				
			8	(40) 50 60 70 80	3.000 ～ 7.990	7.97	2.00				
			10	(40) 50 60 70 80	3.000 ～ 9.990	9.97	2.50				
			13	(40) 50 60 70 80	6.000 ～ 12.990	12.97	3.00			19	
			16	(40) 50 60 70 80	10.000 ～ 15.990	15.97	4.00				
		L	3	50 60	1.000 ～ 2.990	—	—			13	0.5
			4	50 60 70	1.000 ～ 3.990	3.97	2.00				1.0
			5	50 60 70	2.000 ～ 4.990	4.97	2.00			19	1.5
			6	50 60 70	2.000 ～ 5.990	5.97	2.00				
			8	50 60 70 80	3.000 ～ 7.990	7.97	2.50				
			10	50 60 70 80	3.000 ～ 9.990	9.97	2.50				
			13	50 60 70 80	6.000 ～ 12.990	12.97	3.00				
			16	60 70 80	10.000 ～ 15.990	15.97	4.00			25	

Ⓨ L(40)⋯B=8 If full length is (40), tip length is 8mm in all cases.
Ⓨ If no key groove is required, select T=L.

Order

Catalog No.	L	P	W	R (Ⓡ only)	T
A—WKAS 8	70	P6.500			T20

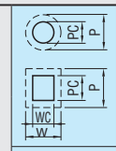
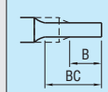
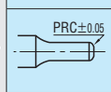
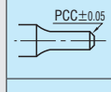
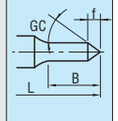
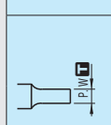
Ⓨ If no key groove is required, select T=L.

Days to Ship Quotation

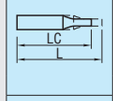
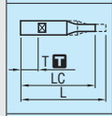
Alterations

Catalog No. — L (LC·LCT) — P (PC) — W (WC) — R — T — (BC·KC·KD, etc.)
A—WKAS 8 — LC65.5 — P6.500 — T20 — PKC

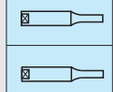
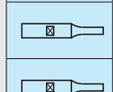
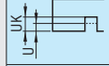
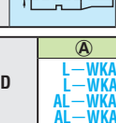
Alterations to tip

Alteration	Code	Ⓐ	D R E G	$/Code
	PC WC	Tip dimension change PC≧Pmin./2 0.001mm increments P(PC) | Bmax. 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 $\frac{PC}{WC}\geqq\frac{P}{W}$ min.$\times\frac{4}{3}\geqq1.00$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC)·W(WC) | Bmax. 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·PRC·PCC.	——	
	PKC PKV	PKC: Tip tolerance change P $^{+0.005}_{0}$ ⇨ $^{+0.003}_{0}$ PKV: Tip tolerance change P $^{+0.005}_{0}$ ⇨ ±0.002 Ⓨ P dimension increment remains the same.	PKC: 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·W $^{+0.01}_{0}$ ⇨ ±0.005 Ⓨ P dimension increment remains the same.	

Alterations to full length

Alteration	Code	Ⓐ	D R E G	$/Code
	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 0.1mm increments Ⓨ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
		(If combined with LKC·LKZ, 0.01mm increments can be selected.)		
	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 + L $^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$ Full length tolerance change		
	LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

Others

Alteration	Code	Ⓐ	D R E G	$/Code
	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.	
	TKC	T dimension tolerance change T $^{+0.05}_{0}$ ⇨ $^{0}_{-0.02}$		
	UK	Key groove depth change D | UK 4·5 | 0.7 6 | 1.2 8 ～ 16 | 1.7 ⊗ Cannot be used for D3.		
	SKC	Single key flat on shank ·D3 ～ 6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8 ～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·KD·WKD.	Ⓐ D R E G	

Price Quotation

■Base unit price

D	Ⓐ WKAS WKAL A—WKAS A—WKAL	D WKDS WKDL A—WKDS A—WKDL	R WKRS WKRL A—WKRS A—WKRL	E WKES WKEL A—WKES A—WKEL	G WKGS WKGL A—WKGS A—WKGL
3					
4					
5					
6					
8					
10					
13					
16					

Quotation

D	Ⓐ L—WKAS L—WKAL AL—WKAS AL—WKAL	D L—WKDS L—WKDL AL—WKDS AL—WKDL	R L—WKRS L—WKRL AL—WKRS AL—WKRL	E L—WKES L—WKEL AL—WKES AL—WKEL	G L—WKGS L—WKGL AL—WKGS AL—WKGL
3					
4					
5					
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8					
10					
13					
16					

Quotation

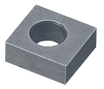
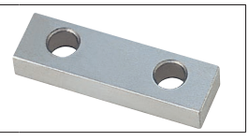
D	Ⓐ WXKAS WXKAL A—WXKAS A—WXKAL	D WXKDS WXKDL A—WXKDS A—WXKDL	R WXKRS WXKRL A—WXKRS A—WXKRL	E WXKES WXKEL A—WXKES A—WXKEL	G WXKGS WXKGL A—WXKGS A—WXKGL
3					
4					
5					
6					

Quotation

D	Ⓐ L—WXKAS L—WXKAL AL—WXKAS AL—WXKAL	D L—WXKDS L—WXKDL AL—WXKDS AL—WXKDL	R L—WXKRS L—WXKRL AL—WXKRS AL—WXKRL	E L—WXKES L—WXKEL AL—WXKES AL—WXKEL	G L—WXKGS L—WXKGL AL—WXKGS AL—WXKGL
3					
4					
5					
6					

Quotation

■Fixing keys for punches with key grooves P.197

PSKB PSKBH  PSKS PSKJ  PSK PSKP PSKH  PSKW 

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