

KEY FLAT SHANK SHOULDER PUNCHES

—NORMAL · TiCN COATING—



Type	Shank diameter D tolerance	M H	Catalog No.			The tip shape can be selected from Tip shape A~G in the figure below.
			Type	Tip shape	Tip length	
—Normal— RoHS	D +0.005 0		Equivalent to SKD 11 60~63HRC	G—SP	A	<p>The tip end of a TiCN coating punch is ground before the coating is applied.</p>
			Equivalent to SKH51 61~64HRC	G—SH	D	
			Powdered high-speed steel 64~67HRC	G—PH	R	
			TiCN coating	GH—SH	E	
			TiCN coating	GH—PH	G	

Tip shape	Tip shape	Tip shape	Tip shape	Tip shape
A	D	R	E	G
<p>When D=3~6 D/2 -0.5 -0.01</p> <p>$R \leq 0.2$</p> <p>$\phi 0.01$ A</p>	<p>When D=3~6 D/2 -0.5 -0.01</p> <p>$R \leq 0.2$</p> <p>$W \pm 0.01$</p> <p>$\phi 0.02$ A</p>	<p>$R \leq 0.2$</p> <p>$P \pm 0.01$</p>	<p>$R \leq 0.2$</p> <p>$P \pm 0.01$</p>	<p>$R \leq 0.2$</p> <p>$P \pm 0.01$</p>
<ul style="list-style-type: none"> $P \geq W$ R=0 can be selected. $K = \sqrt{P^2 + W^2}$ 	<ul style="list-style-type: none"> $P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$ 	<ul style="list-style-type: none"> $P \geq W$ $W \pm 0.01$ 	<ul style="list-style-type: none"> $P > W$ 	<ul style="list-style-type: none"> $P > W$

Type	Tip shape	Tip length	D	L										B	H				
				0.01mm increments															
				A	D	R	E	G	R										
G—SP	S	3	40	50	60	70	80	90	100	1.00	~	1.80					5		
		4	40	50	60	70	80	90	100	1.00	~	2.80	3.97	2.80	1.00		7		
		5	40	50	60	70	80	90	100	2.00	~	3.80	4.97	3.80	1.20		8		
		6	40	50	60	70	80	90	100	2.00	~	4.80	5.97	4.80	1.50		8		
		8	(40)	50	60	70	80	90	100	3.00	~	5.80	7.97	5.80	2.00		9		
		10	(40)	50	60	70	80	90	100	3.00	~	7.80	9.97	7.80	2.50		11		
		13	(40)	50	60	70	80	90	100	6.00	~	10.80	12.97	10.80	3.00		13		
		16	(40)	50	60	70	80	90	100	10.00	~	13.80	15.97	13.80	4.00		13		
		20	(40)	50	60	70	80	90	100	13.00	~	17.80	19.97	17.80	5.00		16		
		25	(40)	50	60	70	80	90	100	18.00	~	22.80	24.97	22.80	6.00		19		
	G—SH	L	3	40	50	60	70	80	90	100	1.00	~	1.80					5	
			4	50	60	70	80	90	100	1.00	~	2.80	3.97	2.80	2.00		7		
			5	50	60	70	80	90	100	2.00	~	3.80	4.97	3.80	2.00		8		
			6	50	60	70	80	90	100	2.00	~	4.80	5.97	4.80	2.00		8		
			8	50	60	70	80	90	100	3.00	~	5.80	7.97	5.80	2.50		9		
			10	50	60	70	80	90	100	3.00	~	7.80	9.97	7.80	2.50		11		
			13	50	60	70	80	90	100	6.00	~	10.80	12.97	10.80	3.00		13		
			16	60	70	80	90	100	10.00	~	13.80	15.97	13.80	4.00		16			
			20	60	70	80	90	100	13.00	~	17.80	19.97	17.80	5.00		19			
			25	60	70	80	90	100	18.00	~	22.80	24.97	22.80	6.00		23			
			GH—SH	X	3	50	60	70	80	90	100	1.20	~	1.80					5
					4	50	60	70	80	90	100	1.20	~	2.80	3.97	2.80	2.00		7
					5	60	70	80	90	100	2.00	~	3.80	4.97	3.80	3.50		8	
					6	60	70	80	90	100	2.00	~	4.80	5.97	4.80	3.50		8	
					8	60	70	80	90	100	3.00	~	5.80	7.97	5.80	5.00		9	
10	60	70			80	90	100	3.00	~	7.80	9.97	7.80	5.00		11				
13	60	70			80	90	100	6.00	~	10.80	12.97	10.80	5.00		13				
16	70	80			90	100	10.00	~	13.80						16				
20	70	80			90	100	13.00	~	17.80						19				
25	70	80			90	100	18.00	~	22.80						23				

Ⓜ L (40) → B=8 If full length is (40), tip length is 8mm in all cases. Ⓜ D=3~6 → a=0.5 When D dimension is 3~6, a dimension is 0.5mm. Ⓜ P, D, R, E, G: P·K>D-0.05 → t=0 If P·K>D-0.05 for a shaped punch, D=0.01 (press-in lead) is not included. Ⓜ a D=3~6 → a=0.5 When D dimension is 3~6, a dimension is 0.5mm. D=8~25 → a=1 When D dimension is 8~25, a dimension is 1mm.

Alteration	Code	A	D R E G			1Code
			D	R	E	
Alterations to tip	PC WC	Tip dimension change $PC \geq \frac{P \cdot \min.}{2}$ 0.01mm increments For TiCN coating, PC> Pmin./2>1.00 (If combined with PKC, 0.001mm increments can be selected.)	Tip dimension change $PC \geq P \cdot W \cdot \min. \geq 0.80$ 0.01mm increments For TiCN coating type: $PC \geq P \cdot W \cdot \min. \geq 1.00$ WC Cannot be used for tip X.			
		Tip length change $2 \leq BC \leq B \cdot \max.$ 0.1mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change $2 \leq BC \leq B \cdot \max.$ 0.1mm increments Full length L must be at least 30mm longer than tip length BC.			
	Lapping of tip P dimension tolerance and increment are the same. With TiCN coating. The base material is finished before the coating is applied. R=0 cannot be selected for the tip shape D corners.					
	Rounding of tip side edge $0.3 \leq PRC \leq 1$ 0.1mm increments Cannot be combined with PCC-GC.					
	Alterations to head	PCC	Chamfering to tip side edge $0.3 \leq PCC \leq 1$ 0.1mm increments $PCC \leq (P-0.2)/2$ Cannot be combined with PRC-GC.			
			Chamfering to tip side edge $20^\circ \leq GC < 90^\circ$ 1° increments Tip length $B \geq f+2$ $f = P/2 \cdot \tan(90^\circ - GC)$ If combined with SC, tip edges are rounded. Cannot be combined with LKC-LKZ-LCT- LMT-PRC-PCC.			
	Alterations to shank	PKC	Tip tolerance change $P + 0.01 \rightarrow +0.005$ 0 0 (P dimension can be selected in 0.001mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0		

Alteration	Code	A	D R E G			1Code
			D	R	E	
Alterations to full length	LC	Full length change $25+B(BC) \leq LC < L$ 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 $30+B(BC) \leq LC < L$ 0.1mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length-30mm).			
		Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0 0	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0 0			
	LCT	TKC	Full length tolerance change $T + 0.3 \rightarrow +0.02$ 0 0	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0 0		
			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.			
	LMT	TKM	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0 0	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0 0		
			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.			
	LKC	LKZ	Full length tolerance change $L + 0.3 \rightarrow +0.05$ 0 0	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0 0	Cannot be used with TiCN coating.	
	Alterations to head	WKC	Addition of double key flats in parallel			
			Head diameter change $D \leq HC < H$ 0.1mm increments			
TC		TKC	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0 0	Full length L is shortened by (5-TC). If combined with LC-LCT-LMT, full length remains as specified.		
			Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0 0			
TCC		TKC	Chamfering of head This improves the strength of the punch head. Ⓜ P.1611 0.1mm increments $0.5 \leq TCC \leq (H-D)/2$ If $H \leq 5$, then TCC is 0.5.			
Alterations to shank	SKF	Single key flat on shank, configurable size with LKC-LKZ-LCT-LMT-PRC-PCC. $SKF - 0.01$ $P \leq 2(SKF-0.1)$ $W \leq 2(SKF-0.1)$ 0.1mm increments $0.3D \leq SKF \leq D/2 - 0.1$ Cannot be combined with WKC.				
		No press-in lead $\ell \geq 3 \rightarrow \ell = 0$				

P Price **Quotation**

Order Catalog No. — L — P — W — R (Ⓜ only)
G—PHDL 13 — 80 — P10.50 — W7.34

Days to Ship **Quotation**