

# SHOULDER PUNCHES

Punch tip shear angle alterations P.232	1F	2F	3F	4F	5F	6F	7F
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Type	Shank diameter D Tolerance	Material	Catalog No.		The tip shape can be selected from [Tip shape] A~G in the figure below.
			Type	Tip shape	
	Dm5	Equivalent to SKD11 60~63HRC Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC Equivalent to SKD11 60~63HRC Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	SP	A	
			SH	D	
			PH	R	
			A-SP	E	
	D +0.005/0		A-SH	G	
			A-PH	X	

For shank diameter tolerance D T, select either m5 or +0.005/0

Tip shape A: Tip shape D: Tip shape R: Tip shape E: Tip shape G:

Tip shape X:

$P \geq W$   
 $R=0$  can be selected.  
 $K = \sqrt{P^2 + W^2}$

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

$P > W$   
 $P > W$

Type	Tip shape	Tip length	D	0.01 mm increments																B	H
				L		D R E G				R											
				min.	P max.	P-Kmax.	P-Wmin.	P.87													
(Dm5)	S	3	40	50	60	70	80	90	100	1.00	2.99							5			
		4	40	50	60	70	80	90	100	1.00	3.99	3.97	1.00					7			
		5	40	50	60	70	80	90	100	2.00	4.99	4.97	1.20					8			
		6	40	50	60	70	80	90	100	2.00	5.99	5.97	1.50					9			
		8	40	50	60	70	80	90	100	3.00	7.99	7.97	2.00					11			
		10	40	50	60	70	80	90	100	3.00	9.99	9.97	2.50					13			
	A	L	3	50	60	70	80	90	100	1.00	2.99								5		
			4	50	60	70	80	90	100	1.00	3.99	3.97	2.00					7			
			5	50	60	70	80	90	100	2.00	4.99	4.97	2.00					8			
			6	50	60	70	80	90	100	2.00	5.99	5.97	2.00					9			
			8	50	60	70	80	90	100	3.00	7.99	7.97	2.50					11			
			10	50	60	70	80	90	100	3.00	9.99	9.97	2.50					13			
D	L	3	60	70	80	90	100	1.00	2.99									5			
		4	60	70	80	90	100	1.00	3.99	3.97	2.00						7				
		5	60	70	80	90	100	2.00	4.99	4.97	2.00						8				
		6	60	70	80	90	100	2.00	5.99	5.97	2.00						9				
		8	60	70	80	90	100	3.00	7.99	7.97	2.50						11				
		10	60	70	80	90	100	3.00	9.99	9.97	2.50						13				
R	L	3	60	70	80	90	100	1.00	2.99									5			
		4	60	70	80	90	100	1.00	3.99	3.97	2.00						7				
		5	60	70	80	90	100	2.00	4.99	4.97	2.00						8				
		6	60	70	80	90	100	2.00	5.99	5.97	2.00						9				
		8	60	70	80	90	100	3.00	7.99	7.97	2.50						11				
		10	60	70	80	90	100	3.00	9.99	9.97	2.50						13				
E	L	3	70	80	90	100	1.00	2.99										5			
		4	70	80	90	100	1.00	3.99	3.97	2.00							7				
		5	70	80	90	100	2.00	4.99	4.97	2.00							8				
		6	70	80	90	100	2.00	5.99	5.97	2.00							9				
		8	70	80	90	100	3.00	7.99	7.97	2.50							11				
		10	70	80	90	100	3.00	9.99	9.97	2.50							13				
G	L	3	80	90	100	1.00	2.99											5			
		4	80	90	100	1.00	3.99	3.97	2.00								7				
		5	80	90	100	2.00	4.99	4.97	2.00								8				
		6	80	90	100	2.00	5.99	5.97	2.00								9				
		8	80	90	100	3.00	7.99	7.97	2.50								11				
		10	80	90	100	3.00	9.99	9.97	2.50								13				
X	L	3	80	90	100	1.00	2.99											5			
		4	80	90	100	1.00	3.99	3.97	2.00								7				
		5	80	90	100	2.00	4.99	4.97	2.00								8				
		6	80	90	100	2.00	5.99	5.97	2.00								9				
		8	80	90	100	3.00	7.99	7.97	2.50								11				
		10	80	90	100	3.00	9.99	9.97	2.50								13				

A:  $P > D - 0.03 \rightarrow \ell = 0$  If  $P > D - 0.03$  for a round punch,  $D - 0.01$  (press-in lead) is not included. D (12) is order only in MISUMI India.  
 R E G:  $P \cdot K > (D - 0.05) \rightarrow \ell = 0$  If  $P \cdot K > D - 0.05$  for a shaped punch,  $D - 0.01$  (press-in lead) is not included.  
 L (40)  $\rightarrow$  B=8 If full length is (40), tip length is 8 mm in all cases.

Order Catalog No. — L — P — W — R (R only) For a smaller diameter than listed: Shoulder Punches — Quill — P.87  
 A—PHDL13 — 80 — P10.50 — W7.34 For a shorter L dimension: Shoulder Punches — Short Type — P.89

Days to Ship **Quotation**

Alterations Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — (BC·HC, etc.)  
 SPDS10 — LC72 — PC1.9 — WC1.9 — BC8—KC45

Alteration	Code	A	D R E G	1Code																	
Alterations to tip	PC WC	Tip dimension change $PC \geq \frac{P}{2}$ 0.1 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	<table border="1"> <tr> <th>P(PC)</th> <th>Bmax.</th> </tr> <tr> <td>0.500~0.799</td> <td>10</td> </tr> <tr> <td>0.800~0.999</td> <td>13</td> </tr> <tr> <td>1.000~1.999</td> <td>20</td> </tr> <tr> <td>2.000~3.999</td> <td>35</td> </tr> <tr> <td>4.000~4.999</td> <td>45</td> </tr> <tr> <td>5.000~5.999</td> <td>50</td> </tr> <tr> <td>6.000~</td> <td>60</td> </tr> </table>	P(PC)	Bmax.	0.500~0.799	10	0.800~0.999	13	1.000~1.999	20	2.000~3.999	35	4.000~4.999	45	5.000~5.999	50	6.000~	60	Tip dimension change $PC \geq P - W_{min.} \geq 0.80$ 0.01 mm increments * Cannot be used for tip X.	
		P(PC)	Bmax.																		
	0.500~0.799	10																			
	0.800~0.999	13																			
	1.000~1.999	20																			
	2.000~3.999	35																			
	4.000~4.999	45																			
	5.000~5.999	50																			
	6.000~	60																			
	BC	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments * Full length L must be at least 25 mm longer than tip length BC.	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments * Full length L must be at least 30 mm longer than tip length BC.																		
PRC	Rounding of tip side edge $0.3 \leq PRC \leq 1$ 0.1 mm increments * $PRC \leq (P - 0.2)/2$ * Cannot be combined with PCC-GC.																				
PCC	Chamfering to tip side edge $0.3 \leq PCC \leq 1$ 0.1 mm increments * $PCC \leq (P - 0.2)/2$ * Cannot be combined with PRC-GC.																				
GC	$20^\circ \leq GC < 90^\circ$ 1° increments Tip length $B \geq 2$ $f = P/2 \times \tan(90^\circ - GC^\circ)$ * Cannot be used for $P < 1.0$ . * Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.			Quotation																	
		PKC	Tip tolerance change $P + 0.01 \rightarrow +0.005$ 0 * (P dimension can be selected in 0.001 mm increments.)		Tip tolerance change $P - W \pm 0.01 \rightarrow +0.01$ 0																
Alterations to full length	LC	Full length change $25 + B(BC) \leq LC < L$ 0.1 mm increments * If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length - 25 mm). (If combined with LKC·LKZ, 0.01mm increments can be selected.)	Full length change $30 + B(BC) \leq LC < L$ 0.1 mm increments * If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length - 30 mm).																		
				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.																
	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.	TKC	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0																
			TKM	Head thickness tolerance change $T + 0.3 \rightarrow 0$ -0.02	Full length tolerance change $L + 0.3 \rightarrow +0.1$ 0																
	LKC	Full length tolerance change $L + 0.3 \rightarrow +0.05$ 0																			
	LKZ	Full length tolerance change $L + 0.3 \rightarrow +0.01$ 0																			

Alteration	Code	A	D R E G	1Code	
Alterations to head	KC	Addition of single key flat to head	$90^\circ$ Key flat 180° position change 1° increments		
				WKC	Addition of double key flats in parallel
	KFC	Double key flats at O' and a selected angle	$90^\circ$ Double key flats at O' and a selected angle 1° increments	$90^\circ$ Double key flats at O' and a selected angle 1° increments	
					NKC
	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments			
	TKC	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0	$2 \leq TC < 5$ 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) * Full length L is shortened by (5-TC). If combined with LC/LCT/LMT, full length remains as specified.		
					TKM
	TCC	Chamfering of head This improves the strength of the punch head.  0.1 mm increments $0.5 \leq TCC \leq (H - D)/2$ * If $H \leq 5$ , then TCC is 0.5.			
					RC
	Alterations to shank	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·WKC·KFC.		
UC					Modification for urethane stripper (USN) installation * For details . * Can be used for D10~25.
NDC		No press-in lead $\ell \geq 3 \rightarrow \ell = 0$			

Price **Quotation**