

SHOULDER PUNCHES

Punch tip shear angle alterations P.176	1F	2F	3F	4F	5F	6F	7F

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	
 RoHS	D _{m5}	Equivalent to SKD11 60~63HRC	SP	A	S	
			SH	D	L	
			PH	R	X	
			A-SP	E	Tip length (B) X>L>S	
D ^{+0.005} ₀	Equivalent to SKD11 60~63HRC	Powdered high-speed steel 64~67HRC	A-SH	G		
			A-SH			
			A-SH			
			A-PH			

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.	R								
(D _{m5}) SP SH PH	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 D R E G	L	3	50	60	70	80	90	100	1.00	2.99				7	
			4	50	60	70	80	90	100	1.00	3.99	3.97	2.00	8		
			5	50	60	70	80	90	100	2.00	4.99	4.97	2.00	9		
			6	50	60	70	80	90	100	2.00	5.99	5.97	2.00	11		
			8	50	60	70	80	90	100	3.00	7.99	7.97	2.50	13		
			10	50	60	70	80	90	100	3.00	9.99	9.97	2.50	16		
(D ^{+0.005}) ₀ A-SP A-SH A-PH	X	3	50	60	70	80	90	100	1.20	2.99				7		
		4	50	60	70	80	90	100	1.20	3.99	3.97	2.00	8			
		5	60	70	80	90	100	2.00	4.99	4.97	3.50	9				
		6	60	70	80	90	100	2.00	5.99	5.97	3.50	11				
		8	60	70	80	90	100	3.00	7.99	7.97	5.00	13				
		10	60	70	80	90	100	3.00	9.99	9.97	5.00	16				
		13	60	70	80	90	100	6.00	12.99	12.97	5.00	19				
		16	70	80	90	100	10.00	15.99			23					
		20	70	80	90	100	13.00	19.99			28					
		25	70	80	90	100	18.00	24.99			40					

Ⓐ: 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-0.05 for a shaped punch, D^{-0.01}_{-0.03} (press-in lead) is not included.
 Ⓖ L(40)→B=8 If full length is (40), tip length is 8 mm in all cases.

Order **Catalog No.** — L — P — W — R (B only) For a smaller diameter than listed: Shoulder Punches —Quill— P.71
 A-PHDL13 — 80 — P10.50 — W7.34 For a shorter L dimension: Shoulder Punches —Short Type— P.73

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 ≥ P _{min.} WC ≥ W _{min.} ≥ 0.80 0.1 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC ≥ P _{min.} ≥ 0.80 WC ≥ W _{min.} ≥ 0.80 0.01 mm increments ⊗ Cannot be used for tip X.	1Code																										
		<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	<table border="1"> <tr> <th>P(PC)·W(WC)</th> <th>Bmax</th> </tr> <tr> <td>0.80~1.49</td> <td>8</td> </tr> <tr> <td>1.50~1.99</td> <td>13</td> </tr> <tr> <td>2.00~3.49</td> <td>19</td> </tr> <tr> <td>3.50~4.99</td> <td>25</td> </tr> <tr> <td>5.00~</td> <td>30</td> </tr> </table>	P(PC)·W(WC)	Bmax	0.80~1.49	8	1.50~1.99	13	2.00~3.49	19	3.50~4.99	25
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BC	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments ⊗ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments ⊗ Full length L must be at least 30 mm longer than tip length BC.																												
PRC ± 0.05	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments ⊗ Cannot be combined with PCC-GC.																													
PCC ± 0.05	Chamfering to tip side edge 0.3 ≤ PCC ≤ 1 0.1 mm increments ⊗ PCC ≤ (P-0.2)/2 ⊗ Cannot be combined with PRC-GC.																													
GC	20° ≤ GC < 90° 1° increments Tip length B ≥ ℓ + 2 ℓ = P/2 × tan(90° - GC) ⊗ 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 → +0.005 0 ⊗ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W ± 0.01 → +0.01 0																												
Alterations to full length	LC	Full length change 25+B(BC) ≤ 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) ≤ 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.	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.	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	Full length tolerance change L +0.3 → +0.05 0	Full length tolerance change L +0.3 → +0.1 0																											
	LKZ	Full length tolerance change L +0.3 → +0.01 0	Full length tolerance change L +0.3 → +0.1 0																											

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat 90° position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at O' and a selected angle ⊗ Cannot be combined with KC·WKC.	Double key flats at O' and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	No key flat		
	HC	Head diameter change D ≤ HC < H 0.1 mm increments		
	TC	Head thickness change 2 ≤ 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.		
	TKC	Head thickness tolerance change T +0.3 → +0.02 0		
	TKM	Head thickness tolerance change T +0.3 → 0 -0.02		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5 ≤ TCC ≤ (H-D)/2 ⊗ If H ≤ 5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		Quotation
	RC	Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 types.		
Alterations to shank	SRC	Modification of head for use with select retainers (SLS) ⊗ For details, refer to P.627. ⊗ Can be used for D10~25. ⊗ Cannot be used for D +0.005 types.		
	SKC	Single key flat on shank ⊗ For details, refer to P.627. ⊗ Can be used for D10~25. ⊗ Cannot be combined with KC·WKC·KFC.		
	UC	Modification for urethane stripper (USN) installation ⊗ For details, refer to P.630. ⊗ Can be used for D10~25.		
	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		

P Price **Quotation**