

PUNCHES FOR HEAVY LOAD

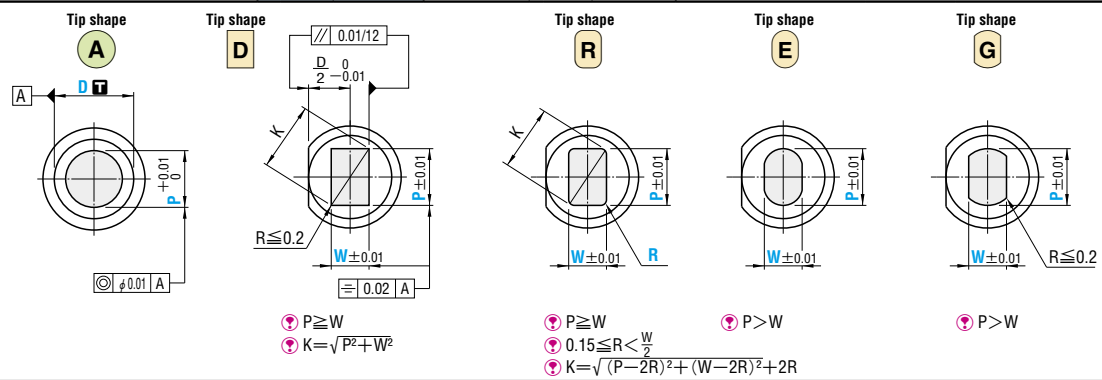
— FINISHED FOR RETAINERS · WPC® TREATMENT · HW COATING —



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	B Tip length	
—WPC® treatment— RoHS	Dm5		Equivalent to SKH51 61~64HRC Surface 1000~1100HV	W-AP	S D R E G	
			Powdered high-speed steel 64~67HRC Surface 1000~1100HV	W-APH		
			Equivalent to SKH51 61~64HRC Surface 3000HV	HW-AP		
			Powdered high-speed steel 64~67HRC Surface 3000HV	HW-APH		
—HW coating—	D+0.005/0		Equivalent to SKH51 61~64HRC Surface 1000~1100HV	AW-AP	L	
			Powdered high-speed steel 64~67HRC Surface 1000~1100HV	AW-APH		
			Equivalent to SKH51 61~64HRC Surface 3000HV	AHW-AP		
			Powdered high-speed steel 64~67HRC Surface 3000HV	AHW-APH		

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

Tip length (B) L > S. The tip edges are very slightly rounded.



Type	Tip shape	B Tip length	D	L						0.01mm increments			B	H				
										A	D	R			R			
				5	6	7	8	9	10	min. P	max. P	P-Kmax.						
—WPC® treatment— W-AP W-APH —HW coating— HW-AP HW-APH	A D R E G	S	5	50	60	70	80	90	100	2.00	4.99	4.97	1.20	0.15 ≤ R < W/2 (R only)	8	10		
			6	50	60	70	80	90	100	2.00	5.99	5.97	1.50		11			
			8	(50)	60	70	80	90	100	110	120	130	3.00		7.99	7.97	2.00	13
			10	(50)	60	70	80	90	100	110	120	130	3.00		9.99	9.97	2.50	15
			13	(50)	60	70	80	90	100	110	120	130	6.00		12.99	12.97	3.00	18
		L	5	60	70	80	90	100	2.00	4.99	4.97	1.20	13		10			
			6	60	70	80	90	100	2.00	5.99	5.97	1.50	13		11			
			8	60	70	80	90	100	110	120	130	3.00	7.99		7.97	2.00	13	
			10	60	70	80	90	100	110	120	130	3.00	9.99		9.97	2.50	15	
			13	60	70	80	90	100	110	120	130	6.00	12.99		12.97	3.00	18	
—WPC® treatment— AW-AP AW-APH —HW coating— AHW-AP AHW-APH	A D R E G	L	16	70	80	90	100	110	120	130	10.00	15.99	15.97	4.00	21			
			20	(50)	60	70	80	90	100	110	120	130	13.00	19.99	19.97	5.00	25	
			25	(50)	60	70	80	90	100	110	120	130	18.00	24.99	24.97	6.00	30	
			5	60	70	80	90	100	2.00	4.99	4.97	1.20	13	10				
			6	60	70	80	90	100	2.00	5.99	5.97	1.50	13	11				

Ⓛ (50) → B=8 If the full length is (50), the tip length is 8mm in all cases.
 Ⓜ: P > D - 0.03 → ℓ = 0 If P > D - 0.03 for a round punch, D - 0.01 (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 (press-in lead) is not included.

Order Catalog No. — L — P — W — R (R only)
 W-APAS 20 — 80 — P15.00
 HW-APAS 20 — 80 — P16.50

Days to Ship **Quotation**

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC-KC, etc.)
 W-APAS 20 — LC82 — PC12.00 — BC13

Alteration	Code	A	D R E G	1Code																				
Alterations to tip	PC WC	Tip dimension change PC $\geq \frac{P_{min}}{2}$ Ⓜ For D5-6, PC ≥ 1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip dimension change PC $\geq \frac{P-W_{min}}{2}$ Ⓜ For 5-6, PC ≥ 1.00 0.01 mm increments	Quotation																				
		<table border="1"> <tr><th>P(PC)</th><th>Bmax.</th></tr> <tr><td>1,500~1,999</td><td>20</td></tr> <tr><td>2,000~3,999</td><td>35</td></tr> <tr><td>4,000~5,999</td><td>45</td></tr> <tr><td>6,000~</td><td>60</td></tr> </table>	P(PC)		Bmax.	1,500~1,999	20	2,000~3,999	35	4,000~5,999	45	6,000~	60	<table border="1"> <tr><th>P(PC) · W(WC)</th><th>Bmax.</th></tr> <tr><td>1,00~1,49</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.	1,00~1,49	8	1,50~1,99	13	2,00~3,49	19	3,50~4,99	25
	P(PC)	Bmax.																						
	1,500~1,999	20																						
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3,50~4,99	25																							
5,00~	30																							
BC	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments	Ⓜ Full length L must be at least 35mm longer than tip length BC.	Ⓜ Full length L must be at least 40mm longer than tip length BC.																				
	PRC ± 0.1	Rounding of tip side edge 0.3 ≤ PRC ≤ 1.0mm increments Ⓜ PRC ≤ (P - 0.2) / 2 Ⓧ Cannot be combined with PCC																						
PCC ± 0.1	Chamfering to tip side edge 0.3 ≤ PCC ≤ 1.0mm increments Ⓜ PCC ≤ (P - 0.2) / 2 Ⓧ Cannot be combined with PRC.																							
PKC	Tip tolerance change P + 0.01 → +0.005 Ⓜ (P dimension can be selected in 0.001 mm increments.) Ⓧ HW coating cannot be used for D > 13	Tip tolerance change P - W ± 0.01 → +0.01 Ⓜ																						

Price **Quotation**

Alteration	Code	A	D R E G	1Code
Alterations to full length	LC	Full length change 35+B(BC) ≤ LC < L 0.1 mm increments Ⓜ If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length - 35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC) ≤ LC < L 0.1 mm increments Ⓜ If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length - 40mm).	
	LKC	Full length tolerance change L + 0.3 → +0.05 Ⓜ		
Alterations to head	KC	Addition of single key flat to head	90° 180° 270° Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	90° 180° 270° Double key flats in parallel Can be combined with KC.	Quotation
	KFC	Double key flats at 180° 0° and a selected angle 1° increments	90° 180° 270° Double key flats at 180° 0° and a selected angle 1° increments	
	KFC	Ⓧ Cannot be combined with KC · WKC.	Ⓧ Cannot be combined with KC · WKC.	
	NKC		No key flat	
Alterations to shank	SKC	Single key flat on shank Ⓜ D5-6 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.	A D R E G Ⓜ	
	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		