

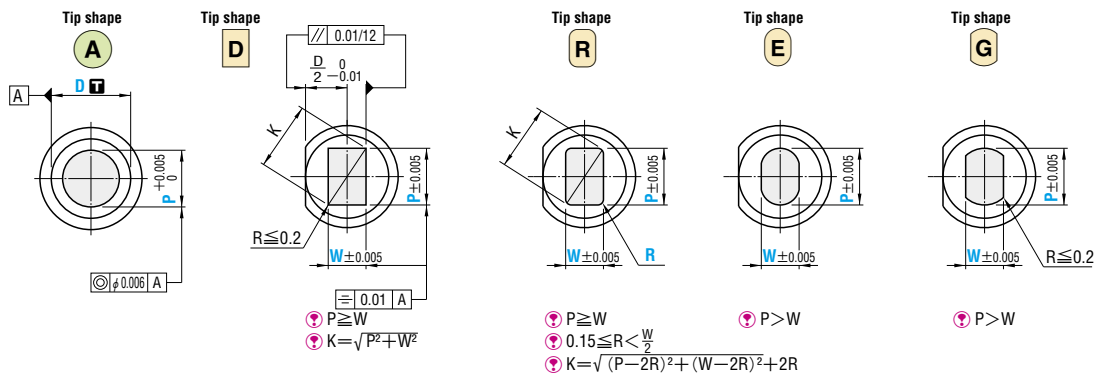
PUNCHES FOR HEAVY LOAD

— FINISHED FOR RETAINERS · LAPPING —



Type	Shank diameter D Tolerance	M F	Catalog No.			The tip shape can be selected from Tip shape A~G in the figure below.
			Type	Tip shape	Tip length B	
	Dm5	Equivalent to SKH51 61~64HRC	L-AP	A	S	
			L-APH	D		
	D +0.005/0	Equivalent to SKH51 61~64HRC	AL-AP	E	L	
			AL-APH	G		

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



Type	Tip shape	Tip length	D	0.001 mm increments										B	H			
				L														
				min. P max.		P · Kmax.		P · Wmin.		R		R						
(Dm5) L-AP L-APH	S	5	50	60	70	80	90	100	2.000	4.990	4.970	1.200	0.15 ≤ R < W/2 (R only)	8	10			
		6	50	60	70	80	90	100	2.000	5.990	5.970	1.500						
		8	(50)	60	70	80	90	100	110	120	130	3.000				7.990	7.970	2.000
		10	(50)	60	70	80	90	100	110	120	130	3.000				9.990	9.970	2.500
		13	(50)	60	70	80	90	100	110	120	130	6.000				12.990	12.970	3.000
	L	16	(50)	60	70	80	90	100	110	120	130	10.000				15.990	15.970	4.000
		20	(50)	60	70	80	90	100	110	120	130	13.000				19.990	19.970	5.000
		25	(50)	60	70	80	90	100	110	120	130	18.000				24.990	24.970	6.000
		5	60	70	80	90	100	2.000	4.990	4.970	1.200	13				15		
		6	60	70	80	90	100	2.000	5.990	5.970	1.500							
8	60	70	80	90	100	110	120	130	3.000	7.990	7.970		2.000					
10	60	70	80	90	100	110	120	130	3.000	9.990	9.970		2.500					
13	60	70	80	90	100	110	120	130	6.000	12.990	12.970		3.000					
(D +0.005/0) AL-AP AL-APH	L	16	70	80	90	100	110	120	130	10.000	15.990	15.970	4.000	19	21			
		20	70	80	90	100	110	120	130	13.000	19.990	19.970	5.000					
		25	70	80	90	100	110	120	130	18.000	24.990	24.970	6.000					
		5	60	70	80	90	100	2.000	4.990	4.970	1.200	25	30					
6	60	70	80	90	100	2.000	5.990	5.970	1.500									
8	60	70	80	90	100	110	120	130	3.000	7.990	7.970			2.000				
10	60	70	80	90	100	110	120	130	3.000	9.990	9.970			2.500				
	L	13	60	70	80	90	100	110	120	130	6.000	12.990	12.970	3.000	19	15		
		16	70	80	90	100	110	120	130	10.000	15.990	15.970	4.000					
		20	70	80	90	100	110	120	130	13.000	19.990	19.970	5.000					
		25	70	80	90	100	110	120	130	18.000	24.990	24.970	6.000					

⊙ L (50) → B=8 If the full length is (50), the tip length is 8mm in all cases.
 ⊙ A: 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.
 ⊙ D R E G: 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.

Order Catalog No. — L — P — W — R (R only)
 AL-APDS25 — 80 — P18.000 — W10.000

Days to Ship **Quotation**

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC-KC, etc.)
 L-APAS 20 — LC82 — PC12.000 — BC13

Alteration	Code	A	D R E G	1Code																				
Alterations to tip	PC	Tip dimension change PC ≥ Pmin. ⊙ For D5-6, PC ≥ 1.500 0.001mm increments	Tip dimension change PC ≥ P · Wmin. ⊙ For D5-6, WC ≥ 1.000 0.001mm 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>1.000~1.499</td><td>8</td></tr> <tr><td>1.500~1.999</td><td>13</td></tr> <tr><td>2.000~3.499</td><td>19</td></tr> <tr><td>3.500~4.999</td><td>25</td></tr> <tr><td>5.000~</td><td>30</td></tr> </table>	P(PC) · W(WC)	Bmax.	1.000~1.499	8	1.500~1.999	13	2.000~3.499	19	3.500~4.999	25
	P (PC)	Bmax.																						
	1.500~1.999	20																						
	2.000~3.999	35																						
4.000~5.999	45																							
6.000~	60																							
P(PC) · W(WC)	Bmax.																							
1.000~1.499	8																							
1.500~1.999	13																							
2.000~3.499	19																							
3.500~4.999	25																							
5.000~	30																							
BC	Tip length change 2 ≤ BC ≤ Bmax. ⊙ Full length L must be at least 35mm longer than tip length BC.	Tip length change 2 ≤ BC ≤ Bmax. ⊙ Full length L must be at least 40mm longer than tip length BC.	Quotation																					
	0.1 mm increments	0.1 mm increments																						
PRC	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments ⊙ PRC ≤ (P - 0.2) / 2 ⊙ Cannot be combined with PCC.	—	Quotation																					
	Chamfering to tip side edge 0.3 ≤ PCC ≤ 1 0.1 mm increments ⊙ PCC ≤ (P - 0.2) / 2 ⊙ Cannot be combined with PRC.	—																						

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).	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).	Quotation
	LKC	Full length tolerance change L +0.3/0 → +0.05/0	Full length tolerance change L +0.3/0 → +0.01/0	
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊙ Cannot be combined with KC-WKC.	Double key flats at 0° and a selected angle 1° increments ⊙ Cannot be combined with KC-WKC.	
	NKC	—	No key flat	
Alterations to shank	SKC	Single key flat on shank D/2 - 0.5 - 0.01 ⊙ 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.	—	Quotation
	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0	—	

P Price **Quotation**