

PUNCHES WITH KEY GROOVES

—WPC® TREATMENT·HW COATING—



Type	M H	Catalog No.		Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
		Shank dia. D _{m5}	Shank dia. D _{+0.005/0}			
WPC® treatment	RoHS	Equivalent to SKH11 60~63 HRC Surface 1000~1100HV	W-SK AW-SK			<p>The tip edges are very slightly rounded.</p>
		Equivalent to SKH51 61~64 HRC Surface 1000~1100HV	W-SHK AW-SHK			
HW coating		Powdered high-speed steel 64~67 HRC Surface 1000~1100HV	W-PK AW-PK			
		Equivalent to SKH51 61~64 HRC Surface 3000 HV	HW-SHK AHW-SHK			
		Powdered high-speed steel 64~67 HRC Surface 3000 HV	HW-PK AHW-PK			

Type	Tip shape	Tip length	D	L					0.01mm increments			0.1mm increments	B	U Key groove depth	
				3	4	5	6	8	A min. P	D R E G P-Kmax.	R P-Wmin.				T
WPC® treatment (D _{m5}) W-SK W-SHK W-PK	S	8	3	40	50	60	70	80	1.00~2.99	—	—	T > 5.0	0.5		
			4	40	50	60	70	80	1.00~3.99	3.97	1.00				
			5	40	50	60	70	80	2.00~4.99	4.97	1.20				
			6	40	50	60	70	80	2.00~5.99	5.97	1.50				
			8	(40)	50	60	70	80	90	100	3.00~7.99			7.97	2.00
			10	(40)	50	60	70	80	90	100	3.00~9.99			9.97	2.50
HW coating HW-SHK HW-PK	L	13	3	50	60	70	80	1.00~2.99	—	—	0.15 ≤ R < W/2	1.0			
			4	50	60	70	80	1.00~3.99	3.97	2.00					
			5	50	60	70	80	2.00~4.99	4.97	2.00					
			6	50	60	70	80	2.00~5.99	5.97	2.00					
			8	50	60	70	80	90	100	3.00~7.99			7.97	2.50	
			10	50	60	70	80	90	100	3.00~9.99			9.97	2.50	
WPC® treatment (D _{+0.005/0}) AW-SK AW-SHK AW-PK	R	19	3	50	60	70	80	1.20~2.99	—	—	T > 5.0	1.5			
			4	50	60	70	80	1.20~3.99	3.97	2.00					
			5	60	70	80	2.00~4.99	4.97	3.50						
			6	60	70	80	2.00~5.99	5.97	3.50						
			8	60	70	80	90	100	3.00~7.99	7.97			5.00		
			10	60	70	80	90	100	3.00~9.99	9.97			5.00		
HW coating AW-SHK AW-PK	E	25	3	60	70	80	2.00~4.99	4.97	3.50	T > 5.0	1.0				
			4	60	70	80	2.00~5.99	5.97	3.50						
			6	60	70	80	2.00~5.99	5.97	3.50						
			8	60	70	80	90	100	3.00~7.99			7.97	5.00		
			10	60	70	80	90	100	3.00~9.99			9.97	5.00		
			13	60	70	80	90	100	6.00~12.99			12.97	5.00		
WPC® treatment (D _{+0.005/0}) AW-SK AW-SHK AW-PK	G	30	3	60	70	80	2.00~4.99	4.97	3.50	T > 5.0	1.5				
			4	60	70	80	2.00~5.99	5.97	3.50						
			6	60	70	80	2.00~5.99	5.97	3.50						
			8	60	70	80	90	100	3.00~7.99			7.97	5.00		
			10	60	70	80	90	100	3.00~9.99			9.97	5.00		
			13	60	70	80	90	100	6.00~12.99			12.97	5.00		
HW coating AW-SHK AW-PK	X	40	3	60	70	80	2.00~4.99	4.97	3.50	T > 5.0	1.5				
			4	60	70	80	2.00~5.99	5.97	3.50						
			6	60	70	80	2.00~5.99	5.97	3.50						
			8	60	70	80	90	100	3.00~7.99			7.97	5.00		
			10	60	70	80	90	100	3.00~9.99			9.97	5.00		
			13	60	70	80	90	100	6.00~12.99			12.97	5.00		

Ⓛ (40) → B=8 If the full length is (40), the tip length is 8mm in all cases.
 Ⓛ If no key groove is required, select T dimension that is the same as the full length L.

Order Catalog No. — L — P — W — R (R only) — T
 AW-SKDL 13 — 80 — P10.50 — W7.34 — T20.1

Days to Ship **Quotation**

Alterations Catalog No. — L (LC-LCT) — P (PC) — W (WC) — R — T — (BC-KC-LKC, etc.)
 HW-SHKL 16 — LC68 — P12.00 — W6.00 — T20.5 — LKC

Alteration	Code	A	D R E G	1Code
Alterations to tip	PC WC	Tip dimension change PC ≥ P _{min} ≥ 1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC ≥ P _{min} ≥ 1.00 0.01 mm increments ⊗ Cannot be used for tip X.	Quotation
		P (PC) Bmax. 1.000~1.999 20 2.000~3.999 35 4.000~5.999 45 6.000~ 60	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 5.00~ 30	
	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments Ⓛ Full length L must be at least 25mm longer than tip length BC.	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments Ⓛ Full length L must be at least 30mm longer than tip length BC.		
	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments Ⓛ PRC ≤ (P-0.2)/2 ⊗ Cannot be combined with PCC.			
	Chamfering to tip side edge 0.3 ≤ PCC ≤ 1 0.1 mm increments Ⓛ PCC ≤ (P-0.2)/2 ⊗ Cannot be combined with PRC.			
PKC	Tip tolerance change P+0.01 ⇨ +0.005 0 ⇨ 0 Ⓛ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W ± 0.01 ⇨ ± 0.01 0 ⇨ 0		⊗ HW coating cannot be used for D16.

Price **Quotation**

Alteration	Code	A	D R E G	1Code
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 25mm or less, tip length is adjusted to (Full length - 25mm). (If combined with LKC, 0.01 mm 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 30mm or less, tip length is adjusted to (Full length - 30mm).	Quotation
	LCT	TKC T dimension tolerance change T+0.05 ⇨ 0 0 ⇨ -0.02	LC Full length tolerance change L+0.3 ⇨ +0.05 0 ⇨ 0	
	LKC	Full length tolerance change L+0.3 ⇨ +0.05 0 ⇨ 0		
Others	KC		Key flat position change 1° increments	Quotation
	NKC		No key flat	
	KD		Key groove position change 1° increments	
	WKD	Ⓛ Addition of double key grooves in parallel	Ⓛ Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change Ⓛ Cannot be used for D3.	D UK 4·5 0.7 6 1.2 8~16 1.7	
	TKC	T dimension tolerance change T+0.05 ⇨ 0 0 ⇨ -0.02		
SKC	Single key flat on shank Ⓛ D4~6 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 used for D3. ⊗ Cannot be combined with KC·KD·WKD.			



Fixing keys for punches with key grooves
 P.245