

# SHOULDER PUNCHES

—TiCN COATING—

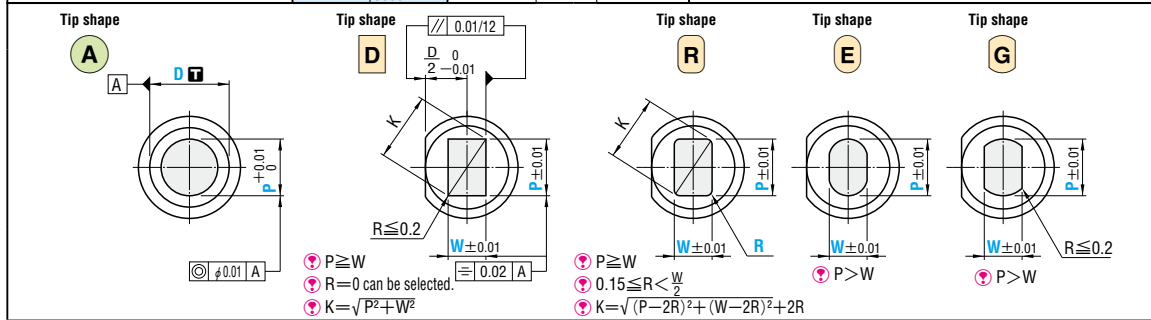
PRODUCTS DATA

P.1601-1604

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	
	D <sub>m5</sub>	Equivalent to SKH51 61~64HRC Surface 3000HV Powdered high-speed steel 64~67HRC Surface 3000HV	H-SH	A	
			H-PH	D	
	D <sup>+0.005</sup> <sub>0</sub>	Equivalent to SKH51 61~64HRC Surface 3000HV Powdered high-speed steel 64~67HRC Surface 3000HV	AH-SH	E	
			AH-PH	G	

For shank diameter tolerance D, select either m5 or <sup>+0.005</sup><sub>0</sub>.

The tip end is ground before the coating is applied.



Type	Tip shape	B Tip length	D	L							0.01 mm increments			B	H
											A	D R E G	R		
				min.	P	max.	P·Kmax.	P·Wmin.	R						
(D <sub>m5</sub> ) H-SH H-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	
		13	(40)	50	60	70	80	90	100	6.00~	12.99	12.97	3.00	16	
		16	(40)	50	60	70	80	90	100	10.00~	15.99	15.97	4.00	19	
		20	(40)	50	60	70	80	90	100	13.00~	19.99	19.97	5.00	23	
		25	(40)	50	60	70	80	90	100	18.00~	24.99	24.97	6.00	28	
(D <sup>+0.005</sup> ) AH-SH AH-PH	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		
		13	50	60	70	80	90	100	6.00~	12.99	12.97	3.00	16		
		16	60	70	80	90	100	10.00~	15.99	15.97	4.00	19			
		20	60	70	80	90	100	13.00~	19.99	19.97	5.00	23			
		25	60	70	80	90	100	18.00~	24.99	24.97	6.00	28			
	X	3	50	60	70	80	90	100	1.20~	2.99	—	—	5		
		4	50	60	70	80	90	100	1.20~	3.99	3.97	2.00	7		
		5	60	70	80	90	100	2.00~	4.99	4.97	3.50	8			
		6	60	70	80	90	100	2.00~	5.99	5.97	3.50	9			
		8	60	70	80	90	100	3.00~	7.99	7.97	5.00	11			
		10	60	70	80	90	100	3.00~	9.99	9.97	5.00	13			
		13	60	70	80	90	100	6.00~	12.99	12.97	5.00	16			
		16	70	80	90	100	10.00~	15.99	—	—	19				
		20	70	80	90	100	13.00~	19.99	—	—	23				
		25	70	80	90	100	18.00~	24.99	—	—	28				

0.15 ≤ R < W/2 (R only)

ⓐ: 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.  
 Ⓛ (40) → B = 8 If full length is (40), tip length is 8 mm in all cases.

Alterations Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — (BC·HC·TC, etc.)  
 H—SHAL 10 — LC72 — PC2.80 — BC8

Alteration	Code	A	D R E G	1Code	
Alterations to tip	PC WC	Tip dimension change PC ≥ P <sub>min</sub> ≥ 1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC = P · W <sub>min</sub> ≥ 1.00 0.01 mm increments ⊗ Cannot be used for tip X.	1Code	
		P(PC) Bmax. 1.000~1.999 20 2.000~3.999 35 4.000~4.999 45 5.000~5.999 50 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		
	BC	Tip length change 2 ≤ BC ≤ Bmax. ≤ L/2 0.1 mm increments Ⓢ Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2 ≤ BC ≤ Bmax. ≤ L/2 0.1 mm increments Ⓢ Full length L must be at least 30 mm longer than tip length BC.		
	SC	Lapping of tip Ⓢ P dimension tolerance and increment are the same. The base material is finished before the coating is applied. ⊗ R=0 cannot be selected for the tip shape D corners.			
	PRC	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments Ⓢ PRC ≤ (P-0.2)/2 ⊗ Cannot be combined with PCC-GC.			
	PCC	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 ≥ 1+2 ℓ = P/2 × tan(90° - GC°) Ⓢ If combined with SC, tip edges are rounded. ⊗ Cannot be used for P < 1.0. ⊗ Cannot be combined with LKC·LCT·LMT·PRC·PCC.			Quotation
		PKC	Tip tolerance change P +0.01 / -0.005 → +0.005 / 0 Ⓢ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D > 13.	Tip tolerance change P · W ± 0.01 → +0.01 / 0 ⊗ Cannot be used for D > 13.	
	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, 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 30 mm or less, tip length is adjusted to (Full length - 30 mm). (If combined with LKC, 0.01 mm increments can be selected.)	
		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.	TKC LC Head thickness tolerance change T +0.3 / 0 → +0.02 / 0 + Full length change + L +0.3 / 0 → +0.1 / 0	
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.	TKM LC Head thickness tolerance change T +0.3 / 0 → 0 / -0.02 + Full length change + L +0.3 / 0 → +0.1 / 0		
LKC		Full length tolerance change L +0.3 / 0 → +0.05 / 0			

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head	Key flat 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 0° and a selected angle 1° increments	Double key flats at 0° and a selected angle 1° increments	
	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 → +0.02 / 0		
	TKM	Head thickness tolerance change T +0.3 / 0 → -0.02 / 0		
	TCC	Chamfering of head This improves the strength of the punch head. Ⓢ P.1611 0.1 mm increments 0.5 ≤ TCC ≤ (H-D)/2 Ⓢ If H ≤ 5, then TCC is 0.5.		
	RC	Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. ⊗ Cannot be used for D <sup>+0.005</sup> <sub>0</sub> types.		
Alterations to shank	SKC	Single key flat on shank Ⓢ D3-6 P ≤ D-1.2 W ≤ D-1.2 (Machining width 0.5) Ⓢ D8 and larger 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 Ⓢ P.750 Ⓢ Can be used for D10~25.		
	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		

Price **Quotation**

Order **Catalog No.** — L — P — W — R (R only)  
 AH-SHEL16 — 70 — P12.00 — W6.00

Days to Ship **Quotation**

PUNCHES