
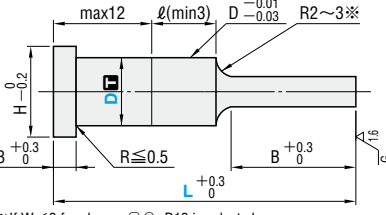




# SHOULDER PUNCHES

—SHORT TYPE·TiCN COATING·HW COATING·DLC COATING—



Type	Shank diameter D Tolerance	M H	Type			Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
			TiCN coating Surface 3000HV	HW coating Surface 3000HV	DLC coating Surface 3000HV			
—TiCN coating— 	Dm5	Equivalent to SKH51 61~64HRC	H—SSH	HW—SSH	N—SSH —WPC® treatment	A D R E G	S L	
—HW coating— 			H—SSP	HW—SSP	N—SSP —WPC® treatment			
—DLC coating— 	D +0.005/0	Equivalent to SKH51 61~64HRC	AH—SSH	AHW—SSH	AN—SSH —WPC® treatment	A D R E G	S L	<p>※ If W &lt; 3 for shapes R, E, R13 is selected.                      Ⓢ The tip end is ground before the coating is applied.                      Ⓢ The tip edges of a RW coating or DLC foundation WPC® are slightly rounded.</p>
			AH—SSP	AHW—SSP	AN—SSP —WPC® treatment			

Type	Tip shape	Tip length	D	L				0.01mm increments				B	H
				25	30	35	40	min. P max.	P-Kmax.	P-Wmin.	R		
(Dm5) (D +0.005/0) —TiCN coating— H—SSH AH—SSH H—SSP AH—SSP —HW coating— HW—SSH AHW—SSH HW—SSP AHW—SSP —DLC coating— N—SSH AN—SSH N—SSP AN—SSP —DLC foundation WPC®— NW—SSH ANW—SSH NW—SSP ANW—SSP	A D R E G	S	3				1.00~2.99	2.95	1.00	0.15 ≤ R < W/2 (R only)	8	5	
			4				2.00~3.99	3.95	1.20			7	
			5	25	30	35	40	2.00~4.99	4.95			1.20	8
			6				2.50~5.99	5.95	1.50			9	
			8				5.00~7.99	7.95	2.00			11	
		L	3				1.00~2.99	2.95	1.00			5	
			4				2.00~3.99	3.95	1.20			7	
			5	30	35	40	2.00~4.99	4.95	1.20			8	
			6				2.50~5.99	5.95	1.50			9	
			8				5.00~7.99	7.95	2.00			11	
10				7.00~9.99	9.95	2.50	13						

Ⓢ: 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.

Order	Catalog No.	L	P	W	R (R only)
	H—SSHDS 4	30	P2.00	W1.20	
	NW—SSHAL 5	40	P3.65		

**Effects of DLC coating**  
 Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P. 1609

Days to Ship **Quotation**

Alterations  Catalog No. — L(LC-LCT-LMT) — P(PC) — W — R — (BC-HC-TC...etc.)  
 H—SSHAS 4 — LC28 — P3.02 — BC10

Alteration	Code	(A)	D R E G	1Code
Alterations to tip	PC	Tip dimension change PC ≥ Pmin. ≥ 1.00 Ⓢ TiCN coating cannot be used for D3. 0.01mm increments (If combined with PCC, 0.001mm increments can be selected.)		
	BC	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments Ⓢ Full length L must be at least 15mm longer than tip length BC.	P-W Bmax. 1.00~1.19 15 1.20~ 20	Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments Ⓢ Full length L must be at least 15mm longer than tip length BC.
	SC	Lapping of tip Ⓢ P dimension tolerance and increment are the same. Ⓢ With TiCN coating, the base material is finished before the coating is applied. Ⓢ Cannot be used with TiCN coating·DLC foundation WPC® Ⓢ 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. Ⓢ For HW coating and DLC foundation WPC®, the tolerance is PRC±0.1.		
	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. Ⓢ HW coating·DLC foundation WPC® cannot be used.		
	GC	20° ≤ GC < 90° 1° increments Tip length B ≥ f+2 f = P/2 × tan(90° - GC°) Ⓢ Cannot be used for P < 1.0. Ⓢ Cannot be combined with LC-LCT-LMT-PRC-PCC. Ⓢ HW coating·DLC foundation WPC® cannot be used.		
	PKC	Tip tolerance change P ± 0.01 → +0.005/0 Ⓢ (P dimension can be selected in 0.001 mm increments.) Ⓢ When D > 13, cannot be used with TiCN coating and HW coating.		Tip tolerance change P-W ± 0.01 → +0.01/0
	LC	15 + B(BC) ≤ LC < L 0.1 mm increments Ⓢ If difference between full length and tip length is 15mm or less, tip length is adjusted to (Full length - 15mm). (If combined with LKC-LKZ, 0.01 mm increments can be selected for LC.)		
	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 → +0.02 + Full length change + L +0.3 → +0.1/0	Full length tolerance change L +0.3 → +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 + Full length change + L +0.3 → +0.1/0	Full length tolerance change L +0.3 → +0.1/0

Alteration	Code	(A)	D R E G	1Code	
Alterations to full length	LKC	Full length tolerance change L +0.3 → +0.05/0			
	KC	Addition of single key flat to head Ⓢ Key flat 90° 180° position change 1° increments			
Alterations to shank	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 180° 1° increments Ⓢ Cannot be combined with KC-WKC.		Double key flats at 0° and a selected angle 180° 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 < 3 0.1 mm increments (If combined with TKC·TKM·LCT-LMT, 0.01 mm increments can be selected.) Ⓢ Full length L is shortened by (3-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			
	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.5 ≤ TCC ≤ (H-D)/2 Ⓢ If H ≤ 5, then TCC is 0.5.			
	Alterations to head	SKC	Single key flat on shank Ⓢ D3~6 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.		
		NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		

Price **Quotation**