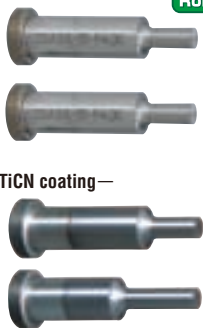
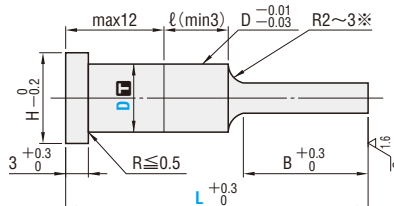
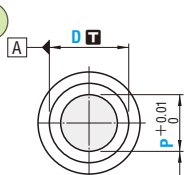
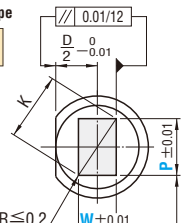
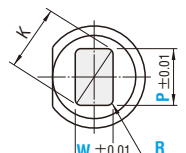
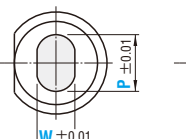
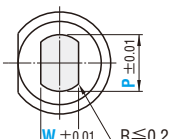


SHOULDER PUNCHES

—SHORT TYPE, NORMAL·TiCN 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	Tip length B				
RoHS  —TiCN coating—	Dm5		Equivalent to SKD11 60~63HRC	SS	A D R E G S L				
			SKH51 61~64HRC	SSH					
			SKH51 61~64HRC Surface 3000HV	H-SSH					
			Powdered high-speed steel 64~67HRC	SSP					
			Powdered high-speed steel 64~67HRC Surface 3000HV	H-SSP					
	D+0.005/0		Equivalent to SKD11 60~63HRC	A-SS					
	SKH51 61~64HRC		A-SSH						
	SKH51 61~64HRC Surface 3000HV		AH-SSH						
	Powdered high-speed steel 64~67HRC		A-SSP						
	Powdered high-speed steel 64~67HRC Surface 3000HV		AH-SSP						
For shank diameter tolerance D T, select either m5 or +0.005/0.									
Tip shape A  Tip shape D  Tip shape R  Tip shape E  Tip shape G  $P \geq W$ $R=0$ can be selected. $K = \sqrt{P^2 + W^2}$ $P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$ $P \geq W$ $P > W$ $P \geq W$ $P > W$ ※ If W < 3 for shapes R, E, R13 is selected. ※ The tip end of a TiCN coating punch is ground before the coating is applied.									

Catalog No.				L				0.01mm increments				B	H	
Type	Tip shape	Tip length ^B	D					A		D R E G				R
								min.	P max.	P-Kmax.	P-Wmin.			
(D _{m5}) (D ^{+0.005} ₀) SS A—SS SSH A—SSH SSP A—SSP	A D R E G	S 	3	25	30	35	40	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					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	
		—TiCN coating— H—SSH AH—SSH H—SSP AH—SSP	L 	3	30	35	40	1.00~2.99	2.95	1.00		13	5	
				4				2.00~3.99	3.95	1.20			7	
				5				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							

</

Order	Catalog No.	L	P	W	R (R only)
	SSDS 4	30	P2.00	W1.20	
	A-SSAL 5	40	P3.65		
	H-SSHDS 4	30	P2.00	W1.20	



Alterations	Catalog No.	L (LC·LCT·LMT)	P (PC)	W	R	(BC·HC·TC, etc.)
	SSAS 4	LC28	P3.02			BC10

Alteration	Code	(A)	D R E G	1Code
Alterations to tip	PC	Tip dimension change PC ≤ Pmin./2 ❗ TiCN coating cannot be used for D3. 0.01mm increments (If combined with PCC, 0.001mm increments can be selected.) P (PC) Bmax. 0.500~0.999 10 1.000~ 20 Tip length change 2 ≤ BC ≤ Bmax. 0.1 mm increments ❗ Full length L must be at least 15mm longer than tip length BC.		
	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	
	SC	Lapping of tip ❗ P dimension tolerance and increment are the same. ❗ Cannot be used with TiCN coating. ❗ 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 ≥ f+2 f = P/2 × tan(90° - GC°) ❗ Cannot be used for P < 1.0. ❗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.		
	PKC	Tip tolerance change P + 0.01 → +0.005/0 ❗ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W ± 0.01 → +0.01	
	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 Full length tolerance change T + 0.3 → +0.02 + Full length change + L + 0.3 → +0.1	
	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 Full length tolerance change T + 0.3 → -0.02 + Full length change + L + 0.3 → +0.1	
Alterations to full length	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 Full length tolerance change T + 0.3 → +0.02 + Full length change + L + 0.3 → +0.1	
	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 Full length tolerance change T + 0.3 → -0.02 + Full length change + L + 0.3 → +0.1	



Alteration	Code	(A)	D R E G	1Code
Alterations to full length	LKC	Full length tolerance change L + 0.3 → +0.05/0		
	LKZ	Full length tolerance change L + 0.3 → +0.01/0 ❗ Cannot be used with TiCN coating.		
Alterations to shank	KC	Addition of single key flat to head ❗ Key flat position change 1° increments	90° 180° 270°	
	WKC	Addition of double key flats in parallel ❗ Double key flats in parallel Can be combined with KC.	90° 180° 270°	
	KFC	Double key flats at 0° and a selected angle ❗ Cannot be combined with KC·WKC.	90° 180° 270°	
	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 → -0.02/0		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5 ≤ TCC ≤ (H-D)/2 ❗ If H ≤ 5, then TCC is 0.5.		
	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.		
Alterations to head	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		