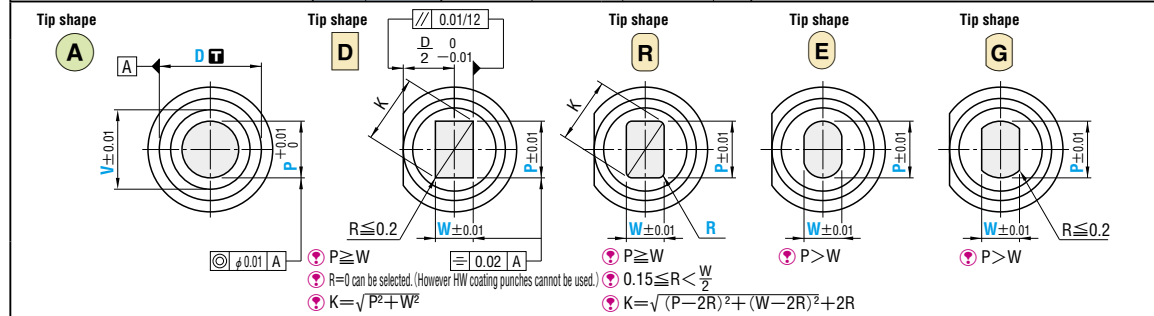


DOUBLE-STEPPED SHOULDER PUNCHES

—NORMAL·TiCN COATING·HW COATING—



Type	Shank diameter D _{m5} tolerance	M H	Catalog No.			Tip shape	The tip shape can be selected from Tip shape A~G in the figure below.
			Normal	TiCN coating Surface 3000HV	HW coating Surface 3000HV		
—Normal—	D _{m5}	Equivalent to SKD11 60~63 HRC Equivalent to SKH51 61~64 HRC Powdered high-speed steel 64~67 HRC	SPTW	—	—		<p>① The tip end of a punch is ground before the coating is applied. ② The tip edge of an HW coating punch is very slightly rounded. ③ P-W min is 1.00 for coating punches.</p>
			SHTW	H-SHTW	HW-SHTW		
			PHTW	H-PHTW	HW-PHTW		
—TiCN coating—	D _{m5}	Equivalent to SKD11 60~63 HRC Equivalent to SKH51 61~64 HRC Powdered high-speed steel 64~67 HRC	A-SPTW	—	—		<p>① The tip end of a punch is ground before the coating is applied. ② The tip edge of an HW coating punch is very slightly rounded. ③ P-W min is 1.00 for coating punches.</p>
			A-SHTW	AH-SHTW	AHW-SHTW		
			A-PHTW	AH-PHTW	AHW-PHTW		



Type	Tip shape	D	L (Selection)	0.01mm increments 0.1mm increments		Diagonal Kmax.	0.01mm increments		D	R	V	F	H
				P	B		P-W	R					
(D _{m5}) SPTW SHTW PHTW	A	3	40-50-60-70-80	0.50~0.999	2.0~10.0	2.96	0.70(1.00)~1.49	2.0~8.0	0.15 ≤ R < W/2 (R only)	—	—	—	5
				1.00~1.999	2.0~20.0		1.50~1.99	2.0~13.0					
				2.00~2.98	2.0~35.0		2.00~2.96	2.0~19.0					
—TiCN coating— H-SHTW H-PHTW	D	4	40-50-60-70-80	0.50~0.999	2.0~10.0	3.96	0.80(1.00)~1.49	2.0~8.0	—	—	—	—	7
				1.00~1.999	2.0~20.0		1.50~1.99	2.0~13.0					
				2.00~3.98	2.0~35.0		2.00~3.49	2.0~19.0					
—HW coating— HW-SHTW HW-PHTW	E	5	40-50-60-70-80	1.00~1.999	2.0~20.0	4.96	0.80(1.00)~1.49	2.0~8.0	—	—	—	—	8
				2.00~3.999	2.0~35.0		1.50~1.99	2.0~13.0					
				4.00~4.98	2.0~45.0		2.00~3.49	2.0~19.0					
—TiCN coating— AH-SHTW AH-PHTW	R	6	40-50-60-70-80	1.00~1.999	2.0~20.0	5.96	0.80(1.00)~1.49	2.0~8.0	—	—	—	—	9
				2.00~3.999	2.0~35.0		1.50~1.99	2.0~13.0					
				4.00~5.98	2.0~45.0		2.00~3.49	2.0~19.0					
—HW coating— AHW-SHTW AHW-PHTW	G	8	40-50-60-70-80-90-100	1.00~1.999	2.0~20.0	7.96	1.00~1.49	2.0~8.0	—	—	—	—	11
				2.00~3.999	2.0~35.0		1.50~1.99	2.0~13.0					
				4.00~5.999	2.0~45.0		2.00~3.49	2.0~19.0					
(D _{+0.005}) A-SPTW A-SHTW A-PHTW	A	10	40-50-60-70-80-90-100	1.50~1.999	2.0~20.0	9.96	1.25~1.49	2.0~8.0	—	—	—	—	13
				2.00~3.999	2.0~35.0		1.50~1.99	2.0~13.0					
				4.00~5.999	2.0~45.0		2.00~3.49	2.0~19.0					
—TiCN coating— AH-SHTW AH-PHTW	D	13	40-50-60-70-80-90-100	3.00~3.999	2.0~35.0	12.96	1.50~1.99	2.0~13.0	—	—	—	—	16
				4.00~5.999	2.0~45.0		2.00~3.49	2.0~19.0					
				6.00~12.98	2.0~60.0		3.50~4.99	2.0~25.0					
—HW coating— AHW-SHTW AHW-PHTW	E	16	40-50-60-70-80-90-100	5.00~5.999	2.0~45.0	15.96	2.00~3.49	2.0~19.0	—	—	—	—	19
				6.00~15.98	2.0~60.0		3.50~4.99	2.0~25.0					
				6.00~15.98	2.0~60.0		5.00~15.96	2.0~30.0					
(D _{+0.005}) A-SPTW A-SHTW A-PHTW	A	20	40-50-60-70-80-90-100	6.50~19.98	2.0~60.0	19.96	2.50~3.49	2.0~19.0	—	—	—	—	23
				6.50~19.98	2.0~60.0		3.50~4.99	2.0~25.0					
				6.50~19.98	2.0~60.0		5.00~19.96	2.0~30.0					
—TiCN coating— AH-SHTW AH-PHTW	D	25	40-50-60-70-80-90-100	9.00~24.98	2.0~60.0	24.96	3.00~3.49	2.0~19.0	—	—	—	—	28
				9.00~24.98	2.0~60.0		3.50~4.99	2.0~25.0					
				9.00~24.98	2.0~60.0		5.00~24.96	2.0~30.0					

① If V > D - 0.03 → ℓ = 0. If V > D - 0.03, D_{0.01} (press-in lead) is not included. ② P-W (1.00) → For TiCN coating/HW coating, P-W min. is 1.00.

Order	Catalog No.	L	P	W	B	V	F	R (R only)
	SPTWA 10	80	P9.50	—	B30	V9.80	F45	—
	A-PHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship **Quotation**

Alterations **Quotation**

Catalog No. — L(LC-LCT-LMT) — P — W — B — V — F — R(R only) — (HC-TC-KC, etc.)

SPTWA 10 — LC72 — P4.80 — B10 — V6.80 — F40 — HC12

Alteration	Code	A	D R E G	1Code
SC	SC	Lapping of tip ① P dimension tolerance and increment are the same. ② With TiCN coating, the base material is finished before coating is applied. ③ R=0 cannot be selected for tip shape D corners. ④ Cannot be used with HW coating.	—	—
PRC	PRC	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments ① PRC ≤ (P-0.2)/2 ② For HW coating, the tolerance is PRC ± 0.1 ③ Cannot be combined with PCC-GC.	—	—
PCC	PCC	Chamfering of tip side edge 0.3 ≤ PCC ≤ 1 0.1 mm increments ① PCC ≤ (P-0.2)/2 ② For HW coating, the tolerance is PCC ± 0.1 ③ Cannot be combined with PRC-GC.	—	—
GC	GC	20' ≤ GC < 90' 1" increments Tip length B ≥ g + 2 g = P/2 × tan(90' - GC) ① When combined with SC, tip edges are rounded. ② Cannot be used for P < 1.0. ③ Cannot be combined with LKC-LKZ-LCT-LMT-PRC-PCC. ④ Cannot be used with TiCN-HW coating.	—	—
PKC	PKC	Tip tolerance change P ± 0.01 → +0.005 ① P dimension can be selected in 0.01 mm increments. ② When D > 13, cannot be used with TiCN-HW coating.	Tip tolerance change P-W ± 0.01 → +0.01	—
VKC	VKC	Tip tolerance change V ± 0.01 → +0.005 ① V dimension can be selected in 0.01 mm increments. ② When D > 13, cannot be used with TiCN-HW coating.	Tip tolerance change V ± 0.01 → +0.01	—
LC	LC	Full length change 25 + F ≤ LC < L 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.)	Full length change 30 + F ≤ LC < L 0.1 mm increments	—
LCT	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 (①) 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	Full length tolerance change L + 0.3 → +0.1
LMT	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 (①) are the same as for LC.	TKM LC Head thickness tolerance change T + 0.3 → 0 + Full length change + L + 0.3 → +0.1	Full length tolerance change L + 0.3 → +0.1
LKC	LKC	Full length tolerance change L + 0.3 → +0.05	—	—
LKZ	LKZ	Full length tolerance change L + 0.3 → +0.01 ① Cannot be used with TiCN-HW coating.	—	—

Price **Quotation**

Alteration	Code	A	D R E G	1Code
KC	KC	Addition of single key flat to head ① Key flat ② 90' 180' position change ③ 1" increments	—	—
WKC	WKC	Addition of double key flats in parallel ① Double key flats in parallel ② Can be combined with KC.	—	—
KFC	KFC	Double key flats at 0' and a selected angle 1" increments ① Double key flats at 0' and a selected angle 1" increments ② Cannot be combined with KC-WKC.	—	—
NKC	NKC	No key flat ① Double key flats at 0' and a selected angle 1" increments ② Cannot be combined with KC-WKC.	—	—
HC	HC	Head diameter change D ≤ HC < H 0.1 mm increments	—	—
TC	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.) ① Full length L is shortened by (5-TC). ② If combined with LC-LCT-LMT, full length remains as specified.	—	—
TKC	TKC	Head thickness tolerance change T + 0.3 → +0.02	—	—
TKM	TKM	Head thickness tolerance change T + 0.3 → -0.02	—	—
TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.5 ≤ TCC ≤ (H-D)/2 ① If H ≤ 5, then TCC is 0.5.	—	—
RC	RC	Head thickness is machined to a tolerance of -0.04 ~ 0 relative to the retainer surface. ① Cannot be used for D _{+0.005} types.	—	—
SKC	SKC	Single key flat on shank • D3~6 V ≤ D-1.2 (Machining width 0.5) • D8~ V ≤ D-2.2 (Machining width 1) ① Cannot be combined with KC-WKC-KFC.	—	—
NDC	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0	—	—

PUNCHES

Quotation