

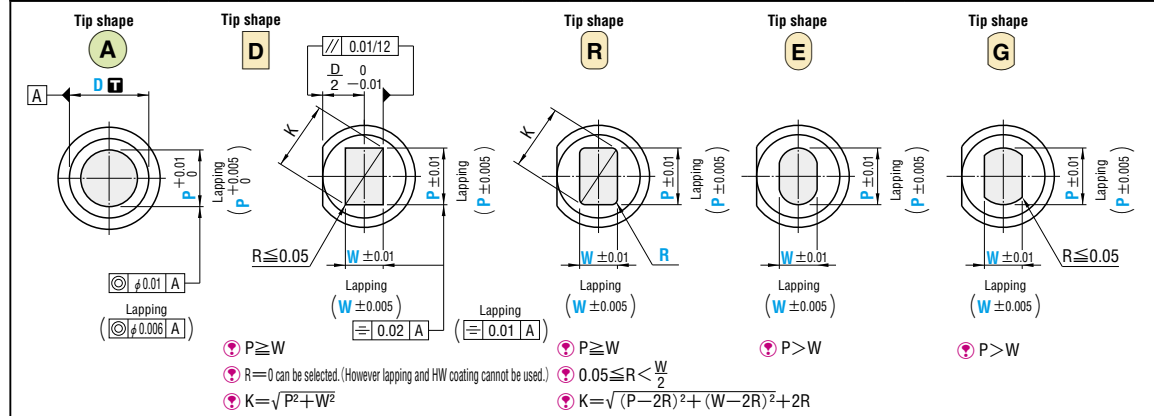
SHOULDER PUNCHES

—QUILL PUNCHES, NORMAL • TiCN COATING • LAPPING • HW COATING—

PRODUCTS DATA

P.1601-1604-1605

Type	Shank diameter D Tolerance	Catalog No.				The tip shape can be selected from Tip shape A~G in the figure below.
		Type	Type Head thickness 5mm	Tip shape	B Tip length	
—Normal— 	Dm5	Equivalent to SKH51 61~64HRC	SH Lapping L-SH	SHLT Lapping L-SHLT	A D R E G	S L
		Equivalent to SKH51 61~64HRC Surface 3000HV	TiCN coating H-SH HW-SH	TiCN coating H-SHLT HW-SHLT		
—Lapping— 	Dm5	Powdered high-speed steel 64~67HRC	PH Lapping L-PH	PHLT Lapping L-PHLT	A D R E G	S L
		Powdered high-speed steel 64~67HRC Surface 3000HV	TiCN coating H-PH HW-PH	TiCN coating H-PHLT HW-PHLT		
—TiCN coating— —HW coating— 	D+0.005 0	Equivalent to SKH51 61~64HRC	A-SH Lapping AL-SH	A-SHLT Lapping AL-SHLT	A D R E G	S L
		Equivalent to SKH51 61~64HRC Surface 3000HV	TiCN coating AH-SH AHW-SH	TiCN coating AH-SHLT AHW-SHLT		
		Powdered high-speed steel 64~67HRC	A-PH Lapping AL-PH	A-PHLT Lapping AL-PHLT	A D R E G	S L
		Powdered high-speed steel 64~67HRC Surface 3000HV	TiCN coating AH-PH AHW-PH	TiCN coating AH-PHLT AHW-PHLT		



Type	Tip shape	Tip length	D	L										H	T		
				0.01mm increments (0.001mm increments for lapping)					0.01mm								
				min.	P	max.	B	P	D	R	E	G	R				
(Dm5) (D+0.005 0)	A D R E G	S	1.6	(20)	(25)	30	35	40	50	60	0.30(1.00)~1.59	6	—	—	—	2.6	
			2.0	(20)	(25)	30	35	40	50	60	0.50(1.00)~1.99	8	1.97	0.30(1.00)	4	3.0	
			2.5	(20)	(25)	30	35	40	50	60	0.80(1.00)~2.49	—	2.47	0.50(1.00)	6	3.5	
		L	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	2.6
			2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0
			2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	3.5
(Dm5) (D+0.005 0)	A D R E G	S	1.6	(20)	(25)	30	35	40	50	60	0.30(1.00)~1.59	6	—	—	—	2.6	
			2.0	(20)	(25)	30	35	40	50	60	0.50(1.00)~1.99	8	1.97	0.30(1.00)	4	3.0	
			2.5	(20)	(25)	30	35	40	50	60	0.80(1.00)~2.49	—	2.47	0.50(1.00)	6	3.5	
		L	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	2.6
			2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0
			2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	3.5

Ⓛ (20)/(25) → B=4 If full length is (20) or (25), tip length is 4mm in all cases.
 Ⓜ: P > D - 0.03 → ℓ = 0 If P > D - 0.03 for a round punch, D - 0.01 (press-in lead) is not included.
 Ⓝ: P > K → D - 0.05 → ℓ = 0 If P > K → D - 0.05 for a shaped punch, D - 0.03 (press-in lead) is not included.
 Ⓟ: P · W (1.00) → For TiCN coating/HW coating, P · Wmin. is 1.00.

Order Catalog No. — L — P — W — R (R only)
 SHAS 1.6 — 30 — P1.31
 L-PHDL 2.0 — 40 — P1.240 — W0.830

Days to Ship **Quotation**

Alterations Catalog No. — L(LC-LCT-LMT) — P — W — R — (BC-HC-TC, etc.)
 PHDL 2.0 — LC42 — P1.24 — W0.83 — HC2.8

Alteration	Code	A	D R E G	1Code
Alterations to tip	BC	Tip length change 2 ≤ BC < B 0.1mm increments		
	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 Ⓝ corners. Ⓧ Can be used for TiCN coating types only.		
	PRC	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1mm increments Ⓟ PRC ≤ (P-0.2)/2 Ⓟ For HW coating, the tolerance is PRC ± 0.1 Ⓧ Cannot be combined with PCC-GC.		
	PCC	Chamfering to tip side edge. 0.3 ≤ PCC ≤ 1 0.1mm increments Ⓟ PCC ≤ (P-0.2)/2 Ⓟ For HW coating, the tolerance is PCC ± 0.1 Ⓧ Cannot be combined with PRC-GC.		
	GC	20° ≤ GC < 90° 1° increments Tip length B ≥ f + 2 f = P/2 × tan(90° - GC°) Ⓟ When combined with SC, tip edges are rounded. Ⓧ Cannot be used for P < 1.0. Ⓧ Cannot be combined with LKC-LKZ-LCT-LMT-PRC-PCC. Ⓧ Cannot be used with HW coating.		
	PKC	Tip tolerance change P + 0.01 → +0.005 Ⓟ (P dimension can be selected in 0.001mm increments.) Ⓧ Cannot be used with Lapping.	Tip tolerance change P · W ± 0.01 → +0	
Alterations to full length	LC	Full length change Can be changed within the following range. 0.1mm increments D S 1.6~2.5 20 < LC < 60 30 < LC < 60 3 36 < LC < 80 50 < LC < 80 Ⓟ If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC-LKZ, 0.01mm 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 Full length tolerance change +0.3 → +0.02 + Full length change + L + 0.3 → +0.1 0 → 0 0 → 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 Full length tolerance change +0.3 → -0.02 + Full length change + L + 0.3 → +0.1 0 → 0 0 → 0		

Price **Quotation**

Alteration	Code	A	D R E G	1Code
Alterations to full length	LKC	Full length tolerance change L + 0.3 → +0.05 0 → 0		
	LKZ	Full length tolerance change L + 0.3 → +0.01 0 → 0 Ⓧ Cannot be used with TiCN-HW coating.		
Alterations to head	KC	Addition of single key flat to head 90° 180° 270° Key flat position change 1° increments		
	WKC	Addition of double key flats in parallel 90° 180° 270° Double key flats in parallel Can be combined with KC.		
	KFC	Double key flats at 0° and a selected angle 1° increments 90° 180° 270° Double key flats at 0° and a selected angle 1° increments Ⓧ Cannot be combined with KC-WKC.		
	NKC	No key flat		
	HC	Head diameter change D ≤ HC < H 0.1mm increments		
	TC	Head thickness change 2 ≤ TC < T 0.1mm increments (If combined with TKC/TKM/LCT/LMT, 0.01mm increments can be selected.) Ⓟ Full length L is shortened by (T-TC). If combined with LC-LCT-LMT, full length remains as specified.		
Alterations to shank	TKC	Head thickness tolerance change T + 0.3 → +0.02 0 → 0		
	TKM	Head thickness tolerance change T + 0.3 → 0 0 → -0.02		
	TCC	Chamfering of head (C0.5) This improves the strength of the punch head. Ⓟ P.1611 [Ordering method] TCC 0.5 Ⓧ Cannot be used for H < 2.6.		
Alterations to shank	SKC	Single key flat on shank D3 W ≤ D - 1.2 (Machining width 0.5) Ⓟ Only D3 can be used. Ⓧ Cannot be combined with KC-WC-KFC. Ⓧ HW coating cannot be used.		
	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		

PUNCHES

Quotation