
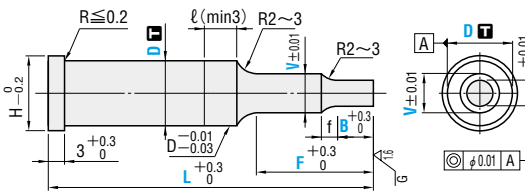


DOUBLE-STEPPED SHOULDER PUNCHES

—QUILL TYPE—

Type	Shank diameter D tolerance	Material	Catalog No.		Shape
			Type	Tip shape	
 RoHS	D _{m5}	Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	SHTW		
			PHTW		
	D ^{+0.005} ₀	Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	A-SHTW		
			A-PHTW		

Catalog No.			L	0.01mm increments		0.1mm increments		V	0.01mm increments		0.1mm increments		H							
Type	Tip shape	D		P	A	B	F		V	Fmax.										
(D _{m5}) SHTW PHTW	A	1.6	20 25 30 35 40 50 60	0.30~0.49	1.0~3.0	D>V>P+0.01	B+f+1<F≤Fmax. F<L-12 <table border="1"> <tr><th>V</th><th>Fmax.</th></tr> <tr><td>0.31~0.49</td><td>6</td></tr> <tr><td>0.50~0.79</td><td>8</td></tr> <tr><td>0.80~0.99</td><td>10</td></tr> <tr><td>1.00~1.99</td><td>20</td></tr> <tr><td>2.00~</td><td>35</td></tr> </table> For dimension f, refer to the punch R length in [Products data] on P.1592 and verify that (V-P)/2=X.	V	Fmax.	0.31~0.49	6	0.50~0.79	8	0.80~0.99	10	1.00~1.99	20	2.00~	35	2.6
				V	Fmax.															
				0.31~0.49	6															
0.50~0.79	8																			
0.80~0.99	10																			
1.00~1.99	20																			
2.00~	35																			
0.50~0.79	1.0~5.0																			
0.80~0.99	1.0~8.0																			
1.00~1.56	1.0~10.0																			
0.50~0.79	1.0~5.0																			
0.80~0.99	1.0~8.0																			
1.00~1.96	1.0~10.0																			
0.80~0.99	1.0~8.0																			
1.00~2.46	1.0~10.0																			
(D ^{+0.005}) ₀	A	2.0	20 25 30 35 40 50 60	0.50~0.79	1.0~5.0	D>V>P+0.01	B+f+1<F≤Fmax. F<L-12 <table border="1"> <tr><th>V</th><th>Fmax.</th></tr> <tr><td>0.31~0.49</td><td>6</td></tr> <tr><td>0.50~0.79</td><td>8</td></tr> <tr><td>0.80~0.99</td><td>10</td></tr> <tr><td>1.00~1.99</td><td>20</td></tr> <tr><td>2.00~</td><td>35</td></tr> </table> For dimension f, refer to the punch R length in [Products data] on P.1592 and verify that (V-P)/2=X.	V	Fmax.	0.31~0.49	6	0.50~0.79	8	0.80~0.99	10	1.00~1.99	20	2.00~	35	3.0
V				Fmax.																
0.31~0.49				6																
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1.00~2.46	1.0~10.0																			
(D ^{+0.005}) ₀	A	2.5		20 25 30 35 40 50 60	0.50~0.79			1.0~5.0	D>V>P+0.01	B+f+1<F≤Fmax. F<L-12 <table border="1"> <tr><th>V</th><th>Fmax.</th></tr> <tr><td>0.31~0.49</td><td>6</td></tr> <tr><td>0.50~0.79</td><td>8</td></tr> <tr><td>0.80~0.99</td><td>10</td></tr> <tr><td>1.00~1.99</td><td>20</td></tr> <tr><td>2.00~</td><td>35</td></tr> </table> For dimension f, refer to the punch R length in [Products data] on P.1592 and verify that (V-P)/2=X.	V	Fmax.	0.31~0.49	6	0.50~0.79	8	0.80~0.99	10	1.00~1.99	
V			Fmax.																	
0.31~0.49			6																	
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1.00~2.46	1.0~10.0																			

⊕ If V>D-0.03...ℓ=0 If V>D-0.03, D^{-0.01}_{-0.03} (press-in lead) is not included.

Order **Catalog No.** — **L** — **P** — **B** — **V** — **F**
 A-SHTWA2.0 — 40 — P0.85 — B2 — V1.50 — F10

Days to Ship **Quotation**

Alterations **Catalog No.** — **L(LC·LCT·LMT)** — **P** — **B** — **V** — **F** — (HC·TC·KC, etc.)
 A-SHTWA2.0 — LC45 — P0.76 — B3 — V1.2 — F10 — HC2.8

Alteration	Code	(A)	1Code
Alterations to tip	SC	Lapping of tip ⊕ P dimension tolerance and increment are the same.	
	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≥g+2 g=P/2×tan(90°-GC°) ⊗ Cannot be used for P<1.0. ⊕ When combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC-LKZ-LCT-LMT-PRC-PCC.	
	PKC	Tip tolerance change p+0.01 ↗ +0.005 ↘ (P dimension can be selected in 0.001 mm increments.)	
Alterations to full length	LC	Full length change Can be changed within the following range. 0.1 mm increments D LC 1.6~2.5 20<LC<60 ⊕ 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.)	Quotation
		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.	
	LCT	TKC LC Full length tolerance change Head thickness tolerance change T+0.3 ↗ +0.02 ↘ + Full length change + L+0.3 ↗ +0.1 ↘	
	LMT	TKM LC Full length tolerance change Head thickness tolerance change T+0.3 ↗ -0.02 ↘ + Full length change + L+0.3 ↗ +0.1 ↘	
	LKC	Full length tolerance change L+0.3 ↗ +0.05 ↘	
LKZ	Full length tolerance change L+0.3 ↗ +0.01 ↘		

Alteration	Code	(A)	1Code
Alterations to head	KC	Addition of single key flat to head	
	WKC	Addition of double key flats in parallel	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC-WKC.	
	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.	Quotation
TKC	Head thickness tolerance change T+0.3 ↗ +0.02 ↘		
TKM	Head thickness tolerance change T+0.3 ↗ 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.		
Shank	NDC	No press-in lead ℓ≥3 ↗ ℓ=0	

Price **Quotation**

PUNCHES