
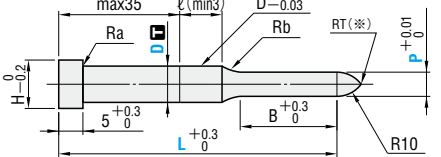

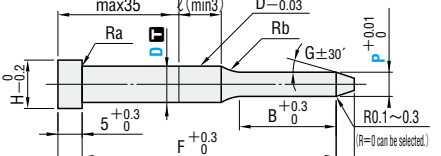

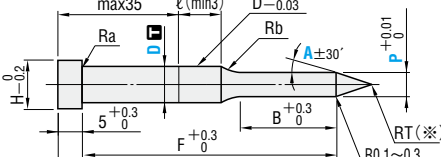


# PILOT PUNCHES

Type	Shank diameter D tolerance	M H	Catalog No.		Shape														
			Type	B tip length															
—Tip R type—  RoHS	Dm5	Equivalent to SKD11 60~63HRC Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	STA (D3~25)	 <p>RT(*) → If P &lt; 8, tip is rounded for safety. To keep the sharp tip (no rounding), specify RT=0. (If P ≥ 8, tip end is flat. <b>P.1592</b>) For the length of tip R, refer to the products data "Punch R length". <b>P.1592</b></p> <table border="1"> <tr><td>D</td><td>Ra</td><td>Rb</td></tr> <tr><td>D ≥ 3</td><td>≤ 0.5</td><td>10</td></tr> <tr><td>D &lt; 3</td><td>≤ 0.2</td><td>2</td></tr> </table>	D	Ra	Rb	D ≥ 3	≤ 0.5	10	D < 3	≤ 0.2	2						
			D		Ra	Rb													
			D ≥ 3		≤ 0.5	10													
	D < 3	≤ 0.2	2																
	HSTA																		
	PSTA																		
D <sup>+0.005</sup> <sub>0</sub>	A—STA (D3~25)																		
	A—HSTA																		
	A—PSTA																		
—Tapered tip type—  RoHS	Dm5	Equivalent to SKD11 60~63HRC Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	TPA (D3~25)	 <p>Tip length (B) X &gt; L &gt; S</p> <table border="1"> <tr><td>P</td><td>G</td><td>D</td><td>Ra</td><td>Rb</td></tr> <tr><td>P ≤ 1.999</td><td>10</td><td>D ≥ 3</td><td>≤ 0.5</td><td>10</td></tr> <tr><td>P ≥ 2.000</td><td>15</td><td>D &lt; 3</td><td>≤ 0.2</td><td>2</td></tr> </table>	P	G	D	Ra	Rb	P ≤ 1.999	10	D ≥ 3	≤ 0.5	10	P ≥ 2.000	15	D < 3	≤ 0.2	2
			P		G	D	Ra	Rb											
			P ≤ 1.999		10	D ≥ 3	≤ 0.5	10											
	P ≥ 2.000	15	D < 3		≤ 0.2	2													
	HTPA																		
	PTPA																		
D <sup>+0.005</sup> <sub>0</sub>	A—TPA (D3~25)																		
	A—HTPA																		
	A—PTPA																		
—Sharp tip angle type—  RoHS	Dm5	Equivalent to SKD11 60~63HRC Equivalent to SKH51 61~64HRC Powdered high-speed steel 64~67HRC	ATA (D3~25)	 <p>RT(*) → The tip is rounded for safety. To keep the sharp tip (no rounding), specify RT=0.</p> <table border="1"> <tr><td>D</td><td>Ra</td><td>Rb</td></tr> <tr><td>D ≥ 3</td><td>≤ 0.5</td><td>10</td></tr> <tr><td>D &lt; 3</td><td>≤ 0.2</td><td>2</td></tr> </table>	D	Ra	Rb	D ≥ 3	≤ 0.5	10	D < 3	≤ 0.2	2						
			D		Ra	Rb													
			D ≥ 3		≤ 0.5	10													
	D < 3	≤ 0.2	2																
	HATA																		
	PATA																		
D <sup>+0.005</sup> <sub>0</sub>	A—ATA (D3~25)																		
	A—HATA																		
	A—PATA																		

Type	Shank diameter D tolerance	L	0.01mm increments		A	B	H	Y					
			min.	max.									
(Dm5) Equivalent to SKD11 (D3~25) STA TPA ATA Equivalent to SKH51 HSTA HTPA HATA PSTA PTPA PATA Powdered high-speed steel	S	1.6	42	52	62	(10)	6	2.6	(1)				
		2.0	42	52	62		8	3					
		2.5	42	52	62		10	3.5					
		3	42	52	62		72	82	(92)	5	2		
		4	42	52	62		72	82	(92)	7			
		5	42	52	62		72	82	(92)	8	3		
		6	42	52	62		72	82	(92)	9			
		8	42	52	62		72	82	(92) (102) (112)	11	5		
		10	42	52	62		72	82	(92) (102) (*)	13			
		13	42	52	62		72	82	(92) (102) (*)	16	8		
		16	42	52	62		72	82	(92) (102) (*)	19			
		20	42	52	62		72	82	(92) (102) (*)	23	8		
		25	42	52	62		72	82	(92) (102) (*)	28			
		(D <sup>+0.005</sup> <sub>0</sub> ) Equivalent to SKD11 (D3~25) A—STA A—TPA A—ATA Equivalent to SKH51 A—HSTA A—HTPA A—HATA A—PSTA A—PTPA A—PATA Powdered high-speed steel	L	1.6	42		52	62	(10)	8	2.6	(1)	
				2.0	42		52	62		10	3		
				2.5	42		52	62		13	3.5		
				3	52		62	72		82	(92)	5	2
				4	52		62	72		82	(92)	7	
				5	52		62	72		82	(92)	8	3
				6	52		62	72		82	(92)	9	
				8	52		62	72		82	(92) (102) (112)	11	5
				10	52		62	72		82	(92) (102) (*)	13	
				13	52		62	72		82	(92) (102) (*)	16	8
				16	62		72	82		92	(102) (*)	19	
				20	62		72	82		92	(102) (*)	23	8
25	62			72	82	92	(102) (*)	28					
Equivalent to SKH51 A—HSTA A—HTPA A—HATA A—PSTA A—PTPA A—PATA Powdered high-speed steel	X			3	52	62	72	82		(92)	21	5	2
				4	52	62	72	82		(92)	7		
				5	62	72	82	92		(10)	8	3	
				6	62	72	82	92		(15)	9		
				8	62	72	82	92		(102) (112)	11	5	
				10	62	72	82	92		(102) (*)	13		
				13	62	72	82	92		(102) (*)	16	8	
				16	72	82	92	102		(15)	19		
				20	72	82	92	102		(20)	23	8	
				25	72	82	92	102		(25)	28		

(L(42) → If full length L is (42), tip length B is 10mm in all cases. (B(6) → If P < 0.5, tip length B is at 2mm. (A(10) → If P ≥ 6.0, A10 cannot be selected.  
 (L(92) (102) (112) → L92, L102 and L112 can be used for tip R types and tapered tip types only. (Y(1) → If P < 0.5, Y dimension is 0.5mm. (A(15) → If P ≥ 15.0, A15 cannot be selected.  
 (L(102) (112) → L102 and L112 of D8 can be used for SKD11 with Dm5 only. (A(20) → If P ≥ 20.0, A20 cannot be selected.  
 P > D - 0.03 → ℓ = 0 If P > D - 0.03, D = 0.01 (press-in lead) is not included.  
 (\*) For D10~25 types with L exceeding 102, refer to Pilot Punches with Locating Dowel Holes on P.203. (Can be used for SKD11 with Dm5 only.)



**Catalog No.** — L — P — A —  $\left(\frac{RT=0}{R=0}\right)$   
 A—STAS 6 — 72 — P5.02 — RT0  
 PTPAS 6 — 52 — P4.97  
 ATAS 6 — 52 — P2.60 — A15 — R0



**Catalog No.** — L(LC-LCT-LMT) — P(PC) — A —  $\left(\frac{RT=0}{R=0}\right)$  — (BC-HC-TC, etc.)  
 A—STAS 8 — LC76 — PC1.50 — HC10.0

Alteration	Code	Tip R type	Tapered tip and sharp tip angle types	1Code
Alterations to tip	PC	Tip diameter change $PC \geq \frac{P_{min}}{2} \geq 0.3$ 0.01mm increments (if combined with PKC, 0.001mm increments can be selected.)	Tip diameter change $PC \geq \frac{P_{min}}{2} \geq 0.3$ 0.01mm increments (if combined with PKC, 0.001mm increments can be selected.) * Ymax = YCmax.	Quotation
	BC	Tip length change $2 \leq BC \leq B_{max}$ . * Full length L must be at least 25mm longer than tip length BC.	0.1mm increments	
	RLC	Tip R is cut flat. $2 \leq RLC < Y < 8$ $Y = \sqrt{P(10-P/4)}$ 0.1mm increments		
	YC		Tip taper length change * P < 2.0 $1 \leq YC \leq P \times 2.83 - 0.3$ * P ≥ 2.0 $1 \leq YC \leq P \times 1.86 - 0.3 \leq 18$ L(LC) + YC ≤ Lmax + 8 0.1mm increments * Cannot be used for sharp tip angle types. * Cannot be used for P0.300~0.499.	
	PKC	Tip diameter tolerance change $P + 0.01 \rightarrow +0.005$ 0 * (P dimension can be selected in 0.001 mm increments.)		
	Alterations to full length	LC	Full length change $25 + B(BC) \leq LC < L$ 0.1mm increments * If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length - 25mm).	
LKC			Full length tolerance change $L + 0.3 \rightarrow +0.05$ 0	



Price Quotation

Alteration	Code	Tip R type	Tapered tip and sharp tip angle types	1Code
Alterations to full length	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increments, and notes (*) are the same as for LC. TKC Head thickness tolerance change + Full length change $T + 0.3 \rightarrow +0.02$ 0		Quotation
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increments, and notes (*) are the same as for LC. TKM Head thickness tolerance change + Full length change $T + 0.3 \rightarrow 0$ 0		
	KC	Addition of single key flat to head		
Alterations to head	WKC	Addition of double key flats in parallel		Quotation
	RC	Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. * Cannot be used for D <sub>0</sub> <sup>+0.005</sup> types.		
	HC	Head diameter change $D \leq HC < H$ 0.1mm increments		
	TC	Head thickness change $2 \leq TC < 5$ 0.1mm increments (if combined with LCT, LMT, TKC, and TKM, 0.01mm increments can be selected.) * Full length L is shortened by (5 - TC). If combined with LC, full length is equal to LC.		
	TKC	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0		
	TKM	Head thickness tolerance change $T + 0.3 \rightarrow 0$ 0		
Alterations to shank	FKC		F dimension tolerance change $F + 0.3 \rightarrow +0.05$ 0 * Cannot be combined with LKC.	
	NDC	No press-in lead $\ell \geq 3 \rightarrow \ell = 0$		

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