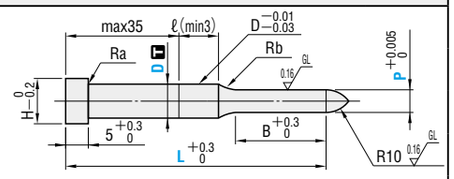
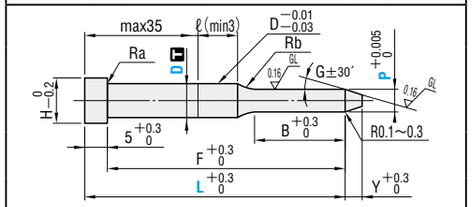
PILOT PUNCHES
—LAPPING—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. B tip length	Shape
—Tip R·Lapping— RoHS	D_{m5}	Equivalent to SKD 11 60～63HRC	L—STA (D3～25)	S / L / X	
		Equivalent to SKH51 61～64HRC	L—HSTA		
		Powdered high-speed steel 64～67HRC	L—PSTA		
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	AL—STA (D3～25)		
		Equivalent to SKH51 61～64HRC	AL—HSTA		
		Powdered high-speed steel 64～67HRC	AL—PSTA		
—Tapered tip·Lapping— RoHS	D_{m5}	Equivalent to SKD 11 60～63HRC	L—TPA (D3～25)		
		Equivalent to SKH51 61～64HRC	L—HTPA		
		Powdered high-speed steel 64～67HRC	L—PTPA		
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	AL—TPA (D3～25)		
		Equivalent to SKH51 61～64HRC	AL—HTPA		
		Powdered high-speed steel 64～67HRC	AL—PTPA		
—Sharp tip angle·Lapping— RoHS	D_{m5}	Equivalent to SKD 11 60～63HRC	L—ATA (D3～25)		
		Equivalent to SKH51 61～64HRC	L—HATA		
		Powdered high-speed steel 64～67HRC	L—PATA		
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	AL—ATA (D3～25)		
		Equivalent to SKH51 61～64HRC	AL—HATA		
		Powdered high-speed steel 64～67HRC	AL—PATA	Tip length (B) X>L>S	



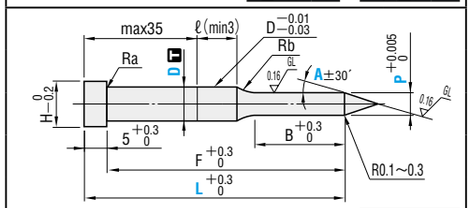
D	Ra	Rb
D≧3	≦0.5	10
D<3	≦0.2	2

For the length of tip R, refer to the products data "Punch R length". P.1592



P	G
P≦1.999	10°
P≧2.000	15°

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

Catalog No. Type	B tip length	D	L	0.001mm increments min. P max.	A	B	H	Y
		(D_{m5})						
M Equivalent to SKD11 (D3～25)	S	1.6	42 52 62	0.300～ 1.590		(6)	2.6	(1)
L—STA		2.0	42 52 62	0.500～ 1.990		8	3	
L—TPA		2.5	42 52 62	1.000～ 2.490			3.5	2
L—ATA		3	42 52 62 72 82 (92)	1.000～ 2.990	(10)	10	5	
M Equivalent to SKH51		4	42 52 62 72 82 (92)	1.000～ 3.990	(15)		7	3
L—HSTA		5	42 52 62 72 82 (92)	2.000～ 4.990	(20)		8	
L—HTPA		6	42 52 62 72 82 (92)	2.500～ 5.990			9	5
L—HATA		8	(42) 52 62 72 82 (92) (102)	3.000～ 7.990	25	15	11	
L—PSTA		10	(42) 52 62 72 82 (92) (102)	3.000～ 9.990			13	
M Powdered high-speed steel		13	(42) 52 62 72 82 (92) (102)	6.000～ 12.990	30		16	8
L—PTPA		16	(42) 52 62 72 82 (92) (102)	10.000～ 15.990		21	19	
L—PATA		20	(42) 52 62 72 82 (92) (102)	13.000～ 19.990			23	
		25	(42) 52 62 72 82 (92) (102)	18.000～ 24.990			28	
	L	1.6	42 52 62	0.500～ 1.590		8	2.6	(1)
		2.0	42 52 62	0.500～ 1.990		10	3	
		2.5	42 52 62	1.000～ 2.490		13	3.5	2
		3	52 62 72 82 (92)	1.000～ 2.990	(10)	15	5	
		4	52 62 72 82 (92)	1.000～ 3.990	(15)		7	3
		5	52 62 72 82 (92)	2.000～ 4.990	(20)		8	
		6	52 62 72 82 (92)	2.500～ 5.990			9	5
		8	52 62 72 82 (92) (102)	3.000～ 7.990	25	21	11	
($D^{+0.005}_{0}$)		10	52 62 72 82 (92) (102)	3.000～ 9.990			13	
M Equivalent to SKD11 (D3～25)		13	52 62 72 82 (92) (102)	6.000～ 12.990	30		16	8
AL—STA		16	62 72 82 (92) (102)	10.000～ 15.990		27	19	
AL—TPA		20	62 72 82 (92) (102)	13.000～ 19.990			23	
AL—ATA		25	62 72 82 (92) (102)	18.000～ 24.990			28	
AL—HSTA	X	3	52 62 72 82 (92)	1.200～ 2.990		21	5	2
M Equivalent to SKH51		4	52 62 72 82 (92)	1.200～ 3.990	(10)		7	
AL—HTPA		5	62 72 82 (92)	2.000～ 4.990	(15)	27	8	3
AL—HATA		6	62 72 82 (92)	2.500～ 5.990	(20)		9	
AL—PSTA		8	62 72 82 (92) (102)	3.000～ 7.990		32	11	5
M Powdered high-speed steel		10	62 72 82 (92) (102)	3.000～ 9.990			13	
AL—PTPA		13	62 72 82 (92) (102)	6.000～ 12.990	25		16	8
AL—PATA		16	72 82 (92) (102)	10.000～ 15.990	30	42	19	
		20	72 82 (92) (102)	13.000～ 19.990			23	
		25	72 82 (92) (102)	18.000～ 24.990			28	

L(42)⋯If full length L is (42), tip length B is 10mm in all cases.
L(92) (102)⋯L92 and 102 can be used for tip R types and tapered tip types only.
L(102)⋯L102 of D8 can be used for SKD11 with D_{m5} only.
P>D−0.03⋯ℓ=0 If P>D−0.03, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
B(6)⋯If P<0.5, tip length B is 2mm.
Y(1)⋯If P<0.5, Y dimension is 0.5mm.
A(10)⋯If P≧6.0, A10 cannot be selected.
A(15)⋯If P≧15.0, A15 cannot be selected.
A(20)⋯If P≧20.0, A20 cannot be selected.

Order Catalog No. — L — P — A

AL—STAS 6 — 72 — P5.020
L—PTPAS 6 — 52 — P4.970
L—ATAS 6 — 52 — P2.600 — A15

A Can be used for sharp tip angle types only.

Days to Ship Quotation

Alterations Catalog No. — L(LC·LCT·LMT) — P(PC) — A — (BC·HC·TC, etc.)

L—STAS 8 — LCT76 — 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≧Pmin./2 ≧0.3 0.01mm increments	Tip diameter change PC≧Pmin./2 ≧0.3 0.01mm increments Ymax.=YCmax.	Quotation
	BC	Tip diameter change PC≧Pmin./2 ≧0.3 0.01mm increments	Tip diameter change PC≧Pmin./2 ≧0.3 0.01mm increments Ymax.=YCmax.	
	RLC	Tip R is cut flat. 2≦RLC<Y<8 Y=√(P(10−P/4)) 0.1mm increments	—	
	YC	—	Tip taper length change ·P<2.0 1≦YC≦P×2.83−0.3 ·P≧2.0 1≦YC≦P×1.86−0.3≦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.	
Alterations to full length	LC	Full length change 25+B(BC)≦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 $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	

P(PC)	Bmax.
0.300～0.499	2
0.500～0.999	8
1.000～1.199	15
1.200～1.999	20
2.000～2.999	30
3.000～3.999	35
4.000～5.999	45
6.000～	60

Tip length change
2≦BC≦Bmax. 0.1mm increments
Full length L must be at least 25mm longer than tip length BC.

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 (P) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC Full length change		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increments, and notes (P) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC Full length change		
Alterations to head	KC	Addition of single key flat to head		
	WKC	Addition of double key flats in parallel		
	RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		Quotation
	HC	Head diameter change D≦HC<H 0.1mm increments		
	TC	Head thickness change 2≦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 $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
Alterations to shank	FKC	—	F dimension tolerance change $F^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$ ⊗ Cannot be combined with LKC.	
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

PILOT PUNCHES