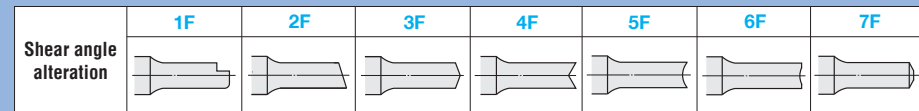


SHOULDER PUNCHES



The volume discount rate is also applicable to alteration cost. All price & lead time are to be quoted.

Type	Shank dia. D	Material	CatalogNo.			Select tip shape from Shape A~G shown below.
			Type	Shape	Blade length	
	D _{ms}	SKH51 61~64HRC	SP	A	S	<p>max35, ℓ (min3), $D -0.01$, -0.03, $R10$, $H -0.2$, $5 +0.3$, 0, $L +0.3$, 0, $B +0.3$, 0, 1.25</p>
			SH	D	L	
			PH	R	L	
			A-SP	E	X	
D ^{+0.005} ₀	SKH51 61~64HRC	Powdered high-speed steel 64~67HRC	A-SP	E	X	
			A-SH	E	X	
			A-PH	G	X	
			A-PH	G	X	

Alteration CatalogNo. - (L(LC·LCT·LMT)) - P(PC) - W(WC) - R - (BC·HC·etc.)
 SPDS10 - LC72 - PC2.80 - WC2.80 - BC8 - KC45

Type	Shape	Blade length	D	L									B	H	
				0.01mm increments			R	B	H						
				min.	Pmax.	P·Kmax.				P·Wmin.					
(D _{ms})	S	3	40	50	60	70	80	90	100	1.00	2.99	2.97	0.70(1.00)	8	5
		4	40	50	60	70	80	90	100	1.00	3.99	3.97	1.00		7
		5	40	50	60	70	80	90	100	2.00	4.99	4.97	1.20		8
		6	40	50	60	70	80	90	100	2.00	5.99	5.97	1.50		9
		8	(40)	50	60	70	80	90	100	3.00	7.99	7.97	2.00		11
		10	(40)	50	60	70	80	90	100	3.00	9.99	9.97	2.50		13
		13	(40)	50	60	70	80	90	100	6.00	12.99	12.97	3.00		16
		16	(40)	50	60	70	80	90	100	10.00	15.99	15.97	4.00		19
		20	(40)	50	60	70	80	90	100	13.00	19.99	19.97	5.00		23
		25	(40)	50	60	70	80	90	100	18.00	24.99	24.97	6.00		28
(D ^{+0.005})	L	3	50	60	70	80	90	100	1.00	2.99	2.97	0.70(1.00)	13	5	
		4	50	60	70	80	90	100	1.00	3.99	3.97	2.00		7	
		5	50	60	70	80	90	100	2.00	4.99	4.97	2.00		8	
		6	50	60	70	80	90	100	2.00	5.99	5.97	2.00		9	
		8	50	60	70	80	90	100	3.00	7.99	7.97	2.50		11	
		10	50	60	70	80	90	100	3.00	9.99	9.97	2.50		13	
		13	50	60	70	80	90	100	6.00	12.99	12.97	3.00		16	
		16	60	70	80	90	100	10.00	15.99	15.97	4.00	19			
		20	60	70	80	90	100	13.00	19.99	19.97	5.00	23			
		25	60	70	80	90	100	18.00	24.99	24.97	6.00	28			
	X	3	50	60	70	80	90	100	1.20	2.99	-	-	25	5	
		4	50	60	70	80	90	100	1.20	3.99	3.97	2.00		7	
		5	60	70	80	90	100	2.00	4.99	4.97	3.50	8			
		6	60	70	80	90	100	2.00	5.99	5.97	3.50	9			
		8	60	70	80	90	100	3.00	7.99	7.97	5.00	11			
		10	60	70	80	90	100	3.00	9.99	9.97	5.00	13			
		13	60	70	80	90	100	6.00	12.99	12.97	5.00	16			
		16	70	80	90	100	10.00	15.99	-	-	19				
		20	70	80	90	100	13.00	19.99	-	-	23				
		25	70	80	90	100	18.00	24.99	-	-	28				

Alterations	Code	A	D	R	E	G	Price
Tip	PC	WC	Changes dimension P.		Changes dimension P·W.		Quotation
			PC ≥ P _{min}	WC ≥ P·W _{min}	PC ≥ P·W _{min}	WC ≥ P·W _{min}	
	BC	BC	Changes blade length B.		Changes blade length B.		Quotation
			2 ≤ BC ≤ B _{max}	2 ≤ BC ≤ B _{max}	0.1mm increments	0.1mm increments	
	PRC	PRC	Adds Radius to blade tip.		Adds Radius to blade tip.		Quotation
			0.3 ≤ PRC ≤ 1	0.3 ≤ PRC ≤ 1	0.1mm increments	0.1mm increments	
	PCC	PCC	Adds Chamfering to blade tip.		Adds Chamfering to blade tip.		Quotation
			0.3 ≤ PCC ≤ 1	0.3 ≤ PCC ≤ 1	0.1mm increments	0.1mm increments	
	GC	GC	Changes to pointed tip.		Changes to pointed tip.		Quotation
			20° ≤ GC < 90°	20° ≤ GC < 90°	1° increments	1° increments	
PKC	PKC	Changes tolerance on P.		Changes tolerance on P(W).		Quotation	
		p + 0.01 ⇨ +0.005	p + 0.01 ⇨ +0.005	P·W ± 0.01 ⇨ +0.01	P·W ± 0.01 ⇨ +0.01		
Full length	LC	LC	Changes full length.		Changes full length.		Quotation
			25 + B(BC) ≤ LC < L	30 + B(BC) ≤ LC < L	0.1mm increments	0.1mm increments	
	LCT	LCT	Changes head thickness tolerance and full length in 1 code.		Changes full length tolerance.		Quotation
			TKC	LC	T + 0.3 ⇨ +0.02	L + 0.3 ⇨ +0.1	
	LMT	LMT	Changes head thickness tolerance and full length in 1 code.		Changes full length tolerance.		Quotation
			TKM	LC	T + 0.3 ⇨ -0.02	L + 0.3 ⇨ +0.1	
	LKC	LKC	Changes full length tolerance.		Changes full length tolerance.		Quotation
			L + 0.3 ⇨ +0.05	L + 0.3 ⇨ +0.05	L + 0.3 ⇨ +0.01	L + 0.3 ⇨ +0.01	

Alterations	Code	A	D	R	E	G	Price
Head	KC	KC	Adds single key flat at head.		Changes the position of key flat.		Quotation
			90°	180°	1° increments	1° increments	
	WKC	WKC	Adds double key flats in parallel.		Adds double key flats in parallel.		Quotation
			KC applicable	KC applicable			
	KFC	KFC	Adds 1 key flat at 0° and the other on another angle.		Adds 1 key flat at 0° and the other on another angle.		Quotation
			1° increments	1° increments			
	NKC	NKC	No flats		No flats		Quotation
	HC	HC	Changes head diameter.		Changes head diameter.		Quotation
			D ≤ HC < H	D ≤ HC < H	0.1mm increments	0.1mm increments	
TC	TC	Changes head thickness		Changes head thickness		Quotation	
		2 ≤ TC < 5	2 ≤ TC < 5	0.1mm increments	0.1mm increments		
TKC	TKC	Changes head thickness tolerance.		Changes head thickness tolerance.		Quotation	
		T + 0.3 ⇨ +0.02	T + 0.3 ⇨ +0.02				
TKM	TKM	Changes head thickness tolerance.		Changes head thickness tolerance.		Quotation	
		T + 0.3 ⇨ -0.02	T + 0.3 ⇨ -0.02				
TCC	TCC	Adds Chamfering to head.		Adds Chamfering to head.		Quotation	
		Strengthen the punch head.	Strengthen the punch head.	0.1mm increments	0.1mm increments		
RC	RC	Reduces head thickness by -0.04~0 from retainer surface.		Reduces head thickness by -0.04~0 from retainer surface.		Quotation	
		Cannot be applied to the D ^{+0.005} type.	Cannot be applied to the D ^{+0.005} type.				
SRC	SRC	Modifies head to fit to select retainers (SLS).		Modifies head to fit to select retainers (SLS).		Quotation	
		For the details, refer to P.673	For the details, refer to P.673	Applicable to D10~25	Applicable to D10~25		
SKC	SKC	Adds key flat on shank.		Adds key flat on shank.		Quotation	
		D3~6	D3~6	P ≤ D - 1.2	P ≤ D - 1.2		
UC	UC	Modifies shank to fit to urethane stripper (USN).		Modifies shank to fit to urethane stripper (USN).		Quotation	
		Applicable to D10~25	Applicable to D10~25				
NDC	NDC	No press-in lead		No press-in lead		Free of Charge	
		ℓ ≥ 3 ⇨ = 0ℓ	ℓ ≥ 3 ⇨ = 0ℓ				

ⓐ: P > D - 0.03 → ℓ = 0, When P > D - 0.03 round punch, D = 0.01 (press-in lead) is not available.
 ⓑ: P · K > D - 0.05 → ℓ = 0, When P · K > D - 0.05 shaped punch, D = 0.01 (press-in lead) is not available.
 ⓓ: L(40) → B=8, When L(40), the blade length is fixed to 8mm.

Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	-	5%	10%	15%

Order: CatalogNo. - L - P - W - R (R only)
 A-PHDL13 - 80 - P10.50 - W7.34

Delivery: 5 Days Express T Express A P.i
 For area out of Singapore please refer to P.i.

5 Days Express T Express A P.i
 For area out of Singapore please refer to P.i.

SKD 11 or equivalent

D	SPAS	SPAX	SP _S	SP _O
3				
4				
5				
6				
8				
10				
13				
16				
20				
25				

Quotation

SKH51

D	SHAS	SHAX	SH _S	SH _O
3				
4				
5				
6				
8				
10				
13				
16				
20				
25				

Quotation

Powdered high-speed steel

D	PHAS	PHAX	PH _S	PH _O
3				
4				
5				
6				
8				
10				
13				
16				
20				
25				

Quotation

JECTOR PUNCHES

The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

Type	Shank dia. D	M	CatalogNo.			Select tip shape from Shape A~G shown below.
			Type	Shape	Blade length	
	Dm5		D4~63W51 61~64HRC	SJ SJV PJ PJV	A D R E G	S L X Blade Length (B) X>L>S
			D6~25 S1011 or equivalent 60~63HRC			
	D+0.005 0		D4~63W51 61~64HRC	A-SJ A-SJV A-PJ A-PJV		
			D6~25 S1011 or equivalent 60~63HRC			
			Powdered high-speed steel 64~67HRC			

Shape A

Shape D

Shape R

Shape E

Shape G

Type	Shape	Blade length	D	0.01mm increments										B	H	
				L												
				(A)	(D)	(R)	(E)	(G)	(R)							
Spring reinforced type	S		(4)	40	50	60	70	80	1.00~	3.99	3.97	1.00	8	7		
			(5)	40	50	60	70	80	2.00~	4.99	4.97	2.00		8		
			(6)	40	50	60	70	80	2.00~	5.99	5.97	2.00		9		
			8	(40)	50	60	70	80	90	100	3.00~	7.99		7.97	3.00	11
			10	(40)	50	60	70	80	90	100	3.00~	9.99		9.97	3.00	13
			13	(40)	50	60	70	80	90	100	6.00~	12.99		12.97	6.00	16
			16	(40)	(50)	60	70	80	90	100	10.00~	15.99		15.97	6.00	19
			20	(40)	(50)	60	70	80	90	100	13.00~	19.99		19.97	6.00	23
			25	(40)	(50)	60	70	80	90	100	18.00~	24.99		24.97	6.00	28
			Spring reinforced type	L		(4)	50	60	70	80	1.00~	3.99		3.97	1.00	13
(5)	50	60				70	80	2.00~	4.99	4.97	2.00	8				
(6)	50	60				70	80	2.00~	5.99	5.97	2.00	9				
8	50	60				70	80	90	100	3.00~	7.99	7.97	3.00	11		
10	50	60				70	80	90	100	3.00~	9.99	9.97	3.00	13		
13	50	60				70	80	90	100	6.00~	12.99	12.97	6.00	16		
16	60	70				80	90	100	10.00~	15.99	15.97	6.00	19			
20	60	70				80	90	100	13.00~	19.99	19.97	6.00	23			
25	60	70				80	90	100	18.00~	24.99	24.97	6.00	28			
Spring reinforced type	X					(5)	60	70	80	2.00~	4.99	4.97	3.50	25	8	
			(6)	60	70	80	2.00~	5.99	5.97	3.50	9					
			8	70	80	90	100	3.00~	7.99	7.97	5.00	11				
			10	70	80	90	100	3.00~	9.99	9.97	6.00	13				
			13	70	80	90	100	6.00~	12.99	12.97	6.00	16				
			16	80	90	100	10.00~	15.99	15.97	6.00	19					
			20	80	90	100	13.00~	19.99	19.97	6.00	23					
			25	80	90	100	18.00~	24.99	24.97	6.00	28					

- The spring constant of SJV, PJV, A-SJV and A-PJV is as twice as that of SJ, PJ, A-SJ and A-PJ.
- L (40) → B = 6, When L (40), the blade length is fixed to 6mm.
- L (50) → B = 13, When L (50), the blade length is fixed to 13mm.
- (A) : P > D - 0.03 → ℓ = 0, When P > D - 0.03 round punch, D = 0.03 (press-in lead) is not available.
- (D) (R) (E) (G) : P · K > D - 0.05 → ℓ = 0, When P · K > D - 0.05 shaped punch, D = 0.03 (press-in lead) is not available.
- D (4), (5), (6) are applicable for SJ, PJ, A-SJ and A-PJ only.

Order CatalogNo. - L - P - W - R (R only)

Delivery SJDS6 - 60 - P3.00 - W2.80

A-SJEL10 - 70 - P8.50 - W4.25

• (A) 5 Days Express Express A P.i

• (D) (R) (E) (G) 5 Days Express Express A P.i

For area out of Singapore please refer to P.i.

Benefit of Reinforced spring
It is twice the spring constant of standard type Jector punch. Due to the spring's larger load, more effective scrap removal can be expected.

Alterations	Code	CatalogNo.		Price																				
		(A)	(D) (R) (E) (G)																					
Tip	PC WC	Changes dimension P. PC ≥ PCmin 0.01mm increments (Combination with PKC → 0.001mm increments)		Changes dimension P · W. PC · WC ≥ PC · Wmin 0.01mm increments ⊗ D4 : Not available. ⊗ Blade length X: Not applicable increments																				
		<table border="1"> <tr><th>D</th><th>PCmin</th></tr> <tr><td>4</td><td>0.900</td></tr> <tr><td>5</td><td>1.800</td></tr> <tr><td>6</td><td>1.800</td></tr> <tr><td>8</td><td>2.800</td></tr> <tr><td>10</td><td>2.800</td></tr> <tr><td>13</td><td>5.000</td></tr> <tr><td>16</td><td>8.000</td></tr> <tr><td>20</td><td>9.000</td></tr> <tr><td>25</td><td>9.000</td></tr> </table>			D	PCmin	4	0.900	5	1.800	6	1.800	8	2.800	10	2.800	13	5.000	16	8.000	20	9.000	25	9.000
		D	PCmin																					
		4	0.900																					
		5	1.800																					
	6	1.800																						
	8	2.800																						
	10	2.800																						
	13	5.000																						
	16	8.000																						
20	9.000																							
25	9.000																							
<table border="1"> <tr><th>D</th><th>PC · Wmin</th></tr> <tr><td>5</td><td>1.80</td></tr> <tr><td>6</td><td>1.80</td></tr> <tr><td>8</td><td>2.50</td></tr> <tr><td>10</td><td>2.80</td></tr> <tr><td>16</td><td>5.00</td></tr> <tr><td>20</td><td>5.00</td></tr> <tr><td>25</td><td>5.00</td></tr> </table>		D	PC · Wmin	5	1.80	6	1.80	8	2.50	10	2.80	16	5.00	20	5.00	25	5.00							
D	PC · Wmin																							
5	1.80																							
6	1.80																							
8	2.50																							
10	2.80																							
16	5.00																							
20	5.00																							
25	5.00																							
Changes blade length B. (Shorter than standard) 2 ≤ BC < B 0.1mm increments For SJAX, A-SJAX with dimension D of 5.6																								
<table border="1"> <tr><th>PC</th><th>Bmax</th></tr> <tr><td>1.80~1.99</td><td>20</td></tr> </table>		PC	Bmax	1.80~1.99	20																			
PC	Bmax																							
1.80~1.99	20																							
Full length	PRC	Adds Radius to blade tip. 0.3 ≤ PRC ≤ 1 0.1mm increments		Quotation																				
		⊗ PRC ≤ (P - d) / 2 ⊗ PRC: Not applicable																						
	PCC	Adds Chamfering to blade tip. 0.3 ≤ PCC ≤ 1 0.1mm increments																						
		⊗ PCC ≤ (P - d) / 2 ⊗ PRC: Not applicable																						
	PKC	Changes tolerance on P. P = 0.01 → +0.005 (P : 0.001mm incr.)																						
Head	BC	Changes head diameter. D ≤ HC < H 0.1mm increments		Quotation																				
		⊗ Punch & retainer set not available.																						
	TC	Changes head thickness 3.5 ≤ TC < 5 0.1mm incr. (Comb. with TKC·TKM·LCT·LMT → 0.01mm incr.)																						
		⊗ L is shortened by (5 - TC). When used with LC, LCT, LMT, L remains the same as specified. ⊗ Punch & retainer set not available.																						
	TKC	Changes head thickness tolerance. T +0.3 0 → +0.02 0																						
		⊗ TKC: Not applicable																						
	TKM	Changes head thickness tolerance. T +0.3 0 → -0.02 0																						
		⊗ TKM: Not applicable																						
	TCC	Adds Chamfering to head. Strengthen the punch head. 0.1mm increments																						
		0.5 ≤ TCC ≤ (H - D) / 2 ⊗ H ≤ 5 : TCC 0.5 ⊗ SRC: Not applicable																						
RC	Reduces head thickness by -0.04 ~ 0 from retainer surface.																							
	⊗ Not applicable D + 0.005 type. ⊗ Punch & retainer set not available.																							
SRC	Modifies head to fit to select retainers (SLS).																							
	⊗ For details, refer to P.673. ⊗ D10 ~ 25 : Applicable ⊗ Not applicable to the D + 0.005 type. ⊗ Punch & retainer set not available.																							
Shank	SKC	Adds key flat on shank.																						
		⊗ D4~6 P ≤ D - 1.2 W ≤ D - 1.2 (Machining with 0.5) ⊗ D8~ P ≤ D - 2.2 W ≤ D - 2.2 (Machining with 1) ⊗ KC·WKC·KFC : Not applicable ⊗ Punch & retainer set not available.																						
	AC	Removes jector pin and plug up the side vent with ring type resin (ABS) from inside to make the jector hole for through air hole.																						
		⊗ AC : Not applicable Reduce Charge																						
	NC	Removes the jector pin.																						
		⊗ AC : Not applicable Reduce Charge																						
NDC	No press-in lead ℓ ≥ 3 → = 0 ℓ																							
	⊗ Punch & retainer set not available. Free of Charge																							

Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	-	5%	10%	15%

SKH51, SKD11 or equivalent

D	(A)		(D) (R) (E) (G)	
	SJAS SJAL SJVAS SJVJAL	SJAX SJVAX	SJXS SJVXS SJVXS	SJXX SJVXX
4				
5				
6				
8				
10				
13				
16				
20				
25				

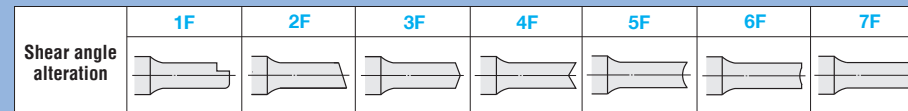
Quotation

Powdered high-speed steel

D	(A)		(D) (R) (E) (G)	
	PJAS PJAL PJVAS PJVJAL	PJXS PJVXS PJVXS	PJXX PJVXX	PJXX PJVXX
4				
5				
6				
8				
10				
13				
16				
20				
25				

Quotation

PUNCHES WITH DOWEL FINISHED FOR RETAINERS



The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

Type	A	Shank dia. D	M	CatalogNo.				Select tip shape from shape A~G shown below.
				Type	Shape	Blade length B	With dowel	
With dowel	Dowel pin MS6-25	Dm5	SKD 11 or equivalent 60~63HRC	SP	S L X		-C	<p>Blade length (B) X>L>S</p>

Shape A

Shape D

Shape R

Shape E

Shape G

CatalogNo.	Type	D	L																	B	H		
			0.01mm increments																				
			A	D R E G	R																		
			min.Pmax.	P-Kmax.	P-Wmin.	R																	
S	SPAS-C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00~9.99	9.97	2.50																13	13
	SPDS-C	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00~12.99	12.97	3.00																19	16
	SPRS-C	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00~15.99	15.97	4.00																23	19
	SPES-C	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00~19.99	19.97	5.00																28	23
	SPGS-C	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00~24.99	24.97	6.00																35	28
		32	(40) (50) 60 70 80 90 100 110 120 130 140 150	20.00~31.99	31.97	7.00																41	35
		38	(40) (50) 60 70 80 90 100 110 120 130 140 150	28.00~37.99	37.97	8.00																48	41
		45	(40) (50) 60 70 80 90 100 110 120 130 140 150	35.00~44.99	44.97	9.00																48	48
L	SPAL-C	10	50 60 70 80 90 100 110 120 130 140 150	3.00~9.99	9.97	2.50																13	13
	SPDL-C	13	50 60 70 80 90 100 110 120 130 140 150	6.00~12.99	12.97	3.00																19	16
	SPRL-C	16	60 70 80 90 100 110 120 130 140 150	10.00~15.99	15.97	4.00																23	19
	SPGL-C	20	60 70 80 90 100 110 120 130 140 150	13.00~19.99	19.97	5.00																28	23
		25	60 70 80 90 100 110 120 130 140 150	18.00~24.99	24.97	6.00																35	28
		32	60 70 80 90 100 110 120 130 140 150	20.00~31.99	31.97	7.00																41	35
		38	60 70 80 90 100 110 120 130 140 150	28.00~37.99	37.97	8.00																48	41
		45	60 70 80 90 100 110 120 130 140 150	35.00~44.99	44.97	9.00																48	48
X	SPAX-C	10	70 80 90 100 110 120 130 140 150	6.00~9.99	9.97	5.00																30	13
	SPDX-C	13	70 80 90 100 110 120 130 140 150	6.00~12.99	12.97	5.00																19	16
	SPRX-C	16	80 90 100 110 120 130 140 150	10.00~15.99	15.97	5.00																23	19
	SPGX-C	20	80 90 100 110 120 130 140 150	13.00~19.99	19.97	5.00																28	23
		25	80 90 100 110 120 130 140 150	18.00~24.99	24.97	6.00																35	28
		32	80 90 100 110 120 130 140 150	20.00~31.99	31.97	7.00																41	35
		38	80 90 100 110 120 130 140 150	28.00~37.99	37.97	8.00																48	41
		45	80 90 100 110 120 130 140 150	35.00~44.99	44.97	9.00																48	48

Ⓛ (40), D10~25→B=8, When L (40) and D (10~25), the blade length is fixed to 8 mm.
 Ⓛ (40), D32~45→B=6, When L (40) and D (32~45), the blade length is fixed to 6 mm.
 Ⓛ (50)→B=13, When L (50), the blade length is fixed to 13mm.
 ⓐ : P>D-0.03→ℓ=0, When P>D-0.03 round punch, D=0.01 (press-in lead) is not available.
 ⓓ Ⓡ ⓔ ⓖ : P·K>D-0.05→ℓ=0, When P·K>D-0.05 shaped punch, D=0.03 (press-in lead) is not available.

Order **CatalogNo.** - L - P - W - R (R only)
 SPAS-C25 - 100 - P18.05

Example Punch with dowel is, Mainly used for dies of body of automobile with retainer which hold punch. Different from indirect positioning by retainer's dowel hole, it allows direct positioning by the dowel hole coaxially machined to punch, and improves the die precision. It is effective when used for die machining by NC process. It can also be used for dies of exterior panels of electrical appliances by setting with retainer or for attaching to punch plate of progressive die.



- Delivery**
- φ D 10~32 ⓐ **5** Days Express T P.i
 - φ D 10~32 ⓓ Ⓡ ⓔ ⓖ **5** Days Express T P.i
 - φ D 38-45 ⓐ ⓓ Ⓡ ⓔ ⓖ **5** Days Express T P.i
- ⓐ For area out of Singapore please refer to P.i.

Alteration **CatalogNo.** - L(LC) - P(PC) - W(WC) - R - (BC·HC·TC...etc.)
 SPAS-C25 - LC95 - P18.05 - BC30

Alterations	Code	A	D R E G	Price
Tip	PC	Changes dimension P. P ≥ P _{min.} 0.01mm increments (Combination with PKC→0.01mm increments)	Changes dimension P·W. PC ≥ P·W _{min.} 2 0.01mm increments	Quotation
	WC	Changes blade length B. 2 ≤ BC ≤ Bmax 0.1mm increments	Changes blade length B. 2 ≤ BC ≤ Bmax 0.1mm increments	
Full length	BC	Changes blade length B. 2 ≤ BC ≤ Bmax 0.1mm increments	Changes blade length B. 2 ≤ BC ≤ Bmax 0.1mm increments	Quotation
	SC	Finishes blade with lapping. Dimension P tolerance and the specification unit remain the same. D shape is not applicable with a corner radius of 0.		
Shank	PRC	Adds Radius to blade tip. 0.3 ≤ PRC ≤ 1 0.1mm increments		Quotation
	PCC	Adds Chamfering to blade tip. 0.3 ≤ PCC ≤ 1 0.1mm increments		
Head	GC	20° ≤ GC < 90° 1° increments Blade length B ≥ f+2 f = P/2 × tan(90° - GC)		Quotation
	PKC	Changes tolerance on P. P +0.01 → +0.005 0 (P : 0.001mm incr.)	Changes tolerance on P(W). P·W ± 0.01 → ± 0.01	
Full length	LC	Changes full length. 25+B(BC) ≤ LC < L 0.1mm increments	Changes full length. 30+B(BC) ≤ LC < L 0.1mm increments	Quotation
	LKC	Changes full length tolerance. L +0.3 → +0.05 0		
Head	LKZ	Changes full length tolerance. L +0.3 → +0.01 0		Quotation
	KC	Adds single key flat at head.	Changes the position of key flat.	
Head	WKC	Adds double key flats in parallel.	Adds double key flats in parallel. To change angle, add KC.	Quotation

Alterations	Code	A	D R E G	Price
Head	KFC	Adds 1 key flat at 0° and the other on another angle. 1° increments	Adds 1 key flat at 0° and the other on another angle. 1° increments	Free of Charge
	NKC	No key flat. Punch & retainer set not available.		
Head	HC	Changes head diameter. D ≤ HC < H 0.1mm increments		Free of Charge
	TC	Changes head thickness 2 ≤ TC < 5 L is shortened by (5 - TC). When LC is combined, L = LC.		
Tip	TCC	Adds Chamfering to head. Strengthen the punch head. 0.5 ≤ TCC ≤ (H - D) / 2		Quotation
	SRC	Modifies head to fit to select retainers (SLS). D10~32 : Applicable		
Shank	UC	Modifies shank to fit to urethane stripper (USN). Code U L Applicable USN		Quotation
	TPC	Replaces dowel pin. Attached MS6-25 to MSTP6-25 (tapped type). D38-45: Not applicable		
Shank	NDC	No press-in lead ℓ ≥ 3 → ℓ = 0		Free of Charge

Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	-	5%	10%	15%

SKD 11 or equivalent



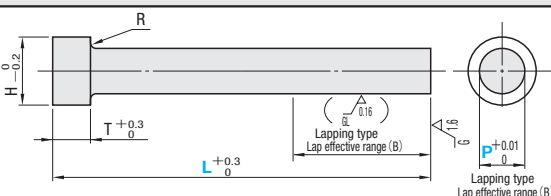
D	SPAS-C	SPAL-C	SPAX-C	SPDS-C	SPDL-C	SPRX-C	SPGX-C
10							
13							
16							
20							
25							
32							
38							
45							

Quotation

STRAIGHT PUNCHES

— STANDARD TYPE / LAPPING TYPE —

The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

Type	M H	Catalog No.	Shape
 — Lapping type — 	RoHS	SKD 11 or equivalent 60~63HRC	
	SPC	Lapping type L-SPC	
	SKH51 61~64HRC	Lapping type L-SHC	
		Powdered high-speed steel 64~67HRC	Lapping type L-PHC

Ⓢ Lap effective range

No.	R	P	L	(B)	P	L	(B)
1.0~2.5	≦0.2	0.500~0.999	20≦L≦30	8	3.000~9.999	25≦L≦40	L-20
3~25	≦0.5	1.000~2.499	20≦L≦80	13	10.000~	L≦40	19
		2.500~2.999	L≦23	L-10		L≦25	5
			L≧23	13		L≧40	25

Catalog No. Type	No.	L								0.01mm increments (lapping type 0.001mm increments)		H	T
		min. P max.								min. P max.			
— Lapping type — SHC L-SHC PHC L-PHC	1.0	20	25	30	35	40	50	60	0.50	1.00	2.0	3	
	1.6	20	25	30	35	40	50	60	1.00	1.60	2.6		
	2.0	20	25	30	35	40	50	60	1.60	2.00	3.0		
	2.5	20	25	30	35	40	50	60	2.00	2.50	3.5		
	3	40	50	60	70	80	2.00	3.00	5				
— Lapping type — SPC SHC PHC L-SPC L-SHC L-PHC	4	40	50	60	70	80	3.00	4.00	7	5			
	5	40	50	60	70	80	4.00	5.00	8				
	6	40	50	60	70	80	5.00	6.00	9				
	8	40	50	60	70	80	6.00	8.00	11				
	10	40	50	60	70	80	8.00	10.00	13				
	13	40	50	60	70	80	90	100	16				
	16	40	50	60	70	80	90	100	110		120	19	
	20	40	50	60	70	80	90	100	110		120	23	
	25	40	50	60	70	80	90	100	110		120	28	

Order Catalog No. — L — P
 PHC 6 — 40 — P5.50
 L-PHC 6 — 40 — P5.50

Delivery 5 Days Express A P.i
 •No.1.0~2.5 •No.13~25
 Ⓢ For area out of Singapore please refer to P.i.
 •No.3~10
 5 Days Express T Express A P.i
 Ⓢ For area out of Singapore please refer to P.i.

Alteration Catalog No. — L(LC·LCT·LMT) — P — (HC·TC·GC...etc.)
 SPC 6 — LC45 — P5.50 — PKC — LKC

■ Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	—	5%	10%	15%

No.	SPC	SHC	PHC	L-SPC	L-SHC	L-PHC
1.0	—	—	—	—	—	—
1.6	—	—	—	—	—	—
2.0	—	—	—	—	—	—
2.5	—	—	—	—	—	—
3	—	—	—	—	—	—
4	—	—	—	—	—	—
5	—	—	—	—	—	—
6	—	—	—	—	—	—
8	—	—	—	—	—	—
10	—	—	—	—	—	—
13	—	—	—	—	—	—
16	—	—	—	—	—	—
20	—	—	—	—	—	—
25	—	—	—	—	—	—

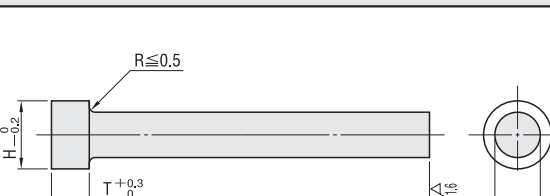
Alterations	Code	Spec.	Price
Tip	PRC ±0.05	Adds Radius to blade tip. 0.3≦PRC≦1 0.1mm increments Ⓢ PRC≦(P-0.2)/2 Ⓢ PCC·GC:Not applicable	Quotation
	PCC ±0.05	Adds Chamfering to blade tip. 0.3≦PCC≦1 0.1mm increments Ⓢ PCC≦(P-0.2)/2 Ⓢ PRC·GC:Not applicable	
	GC	Changes to pointed tip. 20° ≦GC < 90° 1° increments Ⓢ LKC·LKT·LCT·LMT·PRC·PCC:Not applicable Ⓢ The edge of lapping type is rounded.	
	PKC	Changes tolerance P +0.01 → +0.005 on P. (P: 0.001mm incr.) Ⓢ Lapping: Not applicable	
Full length	LC	Changes full length. 20≦LC<L 0.1mm increments (Combination with LKC·LKT→0.01mm increments)	Quotation
	LCT	Changes dimension T tolerance and the full length in one code. Specifiable range, unit, remarks are the same as LC. Changes full length tolerance. TKC + LC + length tolerance. T +0.3 → +0.02 + L +0.3 → +0.1	
	LMT	Changes dimension T tolerance and the full length in one code. Specifiable range, unit, remarks are the same as LC. Changes full length tolerance. TKM + LC + length tolerance. T +0.3 → -0.02 + L +0.3 → +0.1	
	LKC	Changes full length tolerance. L +0.3 → +0.05 Ⓢ GC:Not applicable	

Alterations	Code	Spec.	Price
Full length	LKC	Changes full length tolerance. L +0.3 → +0.05	Quotation
	LKT	Changes full length tolerance. L +0.3 → +0.01	
Head	KC	Adds single key flat at head. Ⓢ Applicable for No.3 or higher	Quotation
	WKC	Adds double key flats in parallel. Ⓢ Applicable for No.3 or higher	
	KFC	Adds 1 key flat at 0° and the other on another angle. 1° increments Ⓢ Available for No.3 or higher Ⓢ KC·WKC:Not applicable	
	HC	Changes head diameter. P≦HC<H 0.1mm increments	
	TC	Changes head thickness 2≦TC<T 0.1mm increments (Combination with TKC·TKM·LCT·LMT→0.01mm increments.) Ⓢ L is shortened by (T-TC). When LC·LCT·LMT is combined, L=LC.	
	TKC	Changes head thickness tolerance. T +0.3 → +0.02	
	TKM	Changes head thickness tolerance. T +0.3 → -0.02	
	TCC	Adds Chamfering to head. Strengthen the punch head. 0.5≦TCC≦(H-D)/2 0.1mm increments Ⓢ H≦5: TCC 0.5 Ⓢ H<2.6:Not applicable	

STRAIGHT PUNCHES

— TiCN COATING TYPE —

The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

Type	M H	Catalog No.	Shape
— TiCN coating type — RoHS	SKH51 61~64HRC Surface 3000HV	H-SHC	
	Powdered high-speed steel 64~67HRC Surface 3000HV	H-PHC	

Ⓢ Blade surface and blade tip diameter (P) are coated but no coating on head.
 Ⓢ The tip surface is ground before coating.

Catalog No. Type	No.	L								0.01mm increments		H	T	U/Price Q'ty:1~9 H-SHC H-PHC
		min. P max.								min. P max.				
H-SHC H-PHC	4	40	50	60	70	80	3.00	4.00	7	5	Quotation			
	5	40	50	60	70	80	4.00	5.00	8					
	6	40	50	60	70	80	5.00	6.00	9					
	8	40	50	60	70	80	6.00	8.00	11					
	10	40	50	60	70	80	8.00	10.00	13					
	13	40	50	60	70	80	90	100	16					
	16	40	50	60	70	80	90	100	110			120	19	
	20	40	50	60	70	80	90	100	110			120	23	
	25	40	50	60	70	80	90	100	110			120	28	

Order Catalog No. — L — P
 H-SHC 6 — 40 — P5.50
 H-PHC 8 — 70 — P6.30

Alteration Catalog No. — L(LC·LCT·LMT) — P — (TC·KC...etc.)
 H-SHC 6 — LC45 — P5.50 — LKC

Delivery 5 Days
 Ⓢ For area out of Singapore please refer to P.i.

■ Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	—	5%	10%	15%

Alterations	Code	Spec.	Price
Tip	PRC ±0.05	Adds Radius to blade tip. 0.3≦PRC≦1 0.1mm increments Ⓢ PRC≦(P-0.2)/2 Ⓢ PCC·GC:Not applicable	Quotation
	PCC ±0.05	Adds Chamfering to blade tip. 0.3≦PCC≦1 0.1mm increments Ⓢ PCC≦(P-0.2)/2 Ⓢ PRC·GC:Not applicable	
	GC	Changes to pointed tip. 20° ≦GC < 90° 1° increments Ⓢ LKC·LCT·LMT·PRC·PCC:Not applicable	
Full length	LC	Changes full length. 20≦LC<L 0.1mm increments (Combination with LKC→0.01mm increments)	Quotation
	LCT	Changes dimension T tolerance and the full length in one code. Specifiable range, unit, remarks are the same as LC. Changes full length tolerance. TKC + LC + length tolerance. T +0.3 → +0.02 + L +0.3 → +0.1	
	LMT	Changes dimension T tolerance and the full length in one code. Specifiable range, unit, remarks are the same as LC. Changes full length tolerance. TKM + LC + length tolerance. T +0.3 → -0.02 + L +0.3 → +0.1	
	LKC	Changes full length tolerance. L +0.3 → +0.05 Ⓢ GC:Not applicable	

Alterations	Code	Spec.	Price
Head	KC	Adds single key flat at head.	Quotation
	WKC	Adds double key flats in parallel.	
	KFC	Adds 1 key flat at 0° and the other on another angle. 1° increments Ⓢ KC·WKC:Not applicable	
	TC	Changes head thickness 4.0≦TC<T 0.1mm increments (Combination with TKC·TKM·LCT·LMT→0.01mm incr.) Ⓢ L is shortened by (T-TC). When LC·LCT·LMT is combined, L=LC.	
	TKC	Changes head thickness tolerance. T +0.3 → +0.02	
	TKM	Changes head thickness tolerance. T +0.3 → -0.02	
TCC	Adds Chamfering to head. Strengthen the punch head. 0.1mm increments 0.5≦TCC≦(H-D)/2 Ⓢ H≦5: TCC 0.5		

PUNCH BLANKS



Printed in Red

The volume discount rate is also applicable to alteration cost. All price & lead time are to be quoted.

Punch blanks RoHS

D	R
1.0~2.5	R ₀ ≤0.2
3~25	R ₀ ≤0.5

Catalog No.	T	M	H	Applicable dim. D
SPB	D m5	SKD 11 or equivalent	60~63HRC	D3 ~25
PHB	D m5	Powdered high-speed steel	64~67HRC	D1.6~25
A-SPB	D +0.005	SKD 11 or equivalent	60~63HRC	D3 ~25
A-PHB	D +0.005	Powdered high-speed steel	64~67HRC	D1.6~25

H	T	Catalog No. Type	D	10mm increments L	U/Price Q'ty : 1~9	SPB	PHB	A-SPB	A-PHB
2.6	3	(D _{m5}) SPB	1.6	30 ~ 40	Quotation				
3.0			2.0						
3.5			2.5						
5			3						
7	5	(D ₀ +0.005) A-SPB A-PHB	4	40 50 60 70 80 90 100 40 50 60 70 80 90 100	Quotation				
8			5						
9			6						
11			8						
13			10						
16			13*						
19			16*						
23			20*						
28	25*								

*Stock sizes for D13-25 with L100 are available

Punch blanks -With dowel-
SPB-C RoHS

H	Catalog No. Type	D	10mm increments L	U/Price Q'ty : 1~9
13	SPB-C	10	40~150	Quotation
16		13		
19		16		
23		20		
28		25		
35		32		
41		38		
48		45		

M SKD 11 or equivalent
H 60~63HRC
MS6-25

H	Catalog No. Type	D	10mm increments L	U/Price Q'ty : 1~9
13	SPB-C	10	40~150	Quotation
16		13		
19		16		
23		20		
28		25		
35		32		
41		38		
48		45		

M SKD 11 or equivalent
H 60~63HRC
MS6-25

Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	-	5%	10%	15%

Alteration Catalog No. - L(LC) - (HC·TC...etc.)
SPB3 - LC65

Punch blanks other than jector

Alterations	Code	Spec.	Price
Full length	LC	• SPB · A-SPB → 15≤LC<L • SPB-C → 20≤LC<L • PHB · A-PHB → 30≤LC<L 0.1mm increments (Combination with LKC · LKZ→0.01mm increments)	Quotation
	LKC	Changes full length tolerance. L +0.3 → +0.05	
	LKZ	Changes full length tolerance. L +0.3 → +0.01 ⊗D>25:Not applicable, L(LC)<16:Not applicable	
Head	KC	Adds single key flat at head.	Quotation
	WKC	Adds double key flats in parallel.	
	HC	Changes head diameter. D≤HC<H 0.1mm increments	
	TC	2≤TC<T 0.1mm increments (Combination with TKC · TKM→0.01mm incr.) ⊗L is shortened by (T-TC). ⊗When LC, L=LC.	
	TKC	Changes head thickness T +0.3 → +0.02 tolerance.	
TKM	Changes head thickness T +0.3 → 0 tolerance.		

Jector punch blanks

Alterations	Code	Spec.	Price
Full length	LC	• SJB · PJB · SJFB • A-SJB · A-PJB → 30≤LC<L • SJXB · SJB-C · SJBL • A-SJXB · A-PJBL · A-SJBL → 40≤LC<L 0.1mm increments ⊗S is shortened accordingly. (Combination with LKC · LKZ→0.01mm increments)	Quotation
	LKC	Changes full length tolerance. L +0.3 → +0.05	
	LKZ	Changes full length tolerance. L +0.3 → +0.01 ⊗D>25:Not applicable	
Head	KC	Adds single key flat at head.	Quotation
	WKC	Adds double key flats in parallel.	
	HC	Changes head diameter. D≤HC<H 0.1mm increments	
	TC	3.5≤TC<5 0.1mm increments (Combination with TKC · TKM→0.01mm incr.) ⊗L is shortened by (5-TC). ⊗When LC, L=LC.	
	TKC	Changes head thickness T +0.3 → +0.02 tolerance.	
TKM	Changes head thickness T +0.3 → 0 tolerance.		
Shank	AC	Removes jector pin and plug up the side vent with ring type resin (ABS) from inside to make the jector hole for through air hole.	Reduce Charge
	NC	Removes the jector pin. ⊗AC : Not applicable.	Reduce Charge

Stocks Availability Subjected to Prior Sales.

Punch blanks RoHS

D	R
1.0~2.5	R ₀ ≤0.2
3~25	R ₀ ≤0.5

Catalog No.	T	M	H	Applicable dim. D
SHB	D m5	SKH51	61~64HRC	D1.0~25
A-SHB	D +0.005	SKH51	61~64HRC	D1.0~25

H	T	Catalog No. Type	D	10mm increments L	U/Price Q'ty : 1~9	SHB	A-SHB
2.0	3	(D _{m5}) SHB	1.0	30 ~ 50	Quotation		
2.6			1.6				
3.0			2.0				
3.5			2.5				
5	5	(D ₀ +0.005) A-SHB	3	40 50 60 70 80 90 100 40 50 60 70 80 90 100	Quotation		
7			4				
8			5				
9			6				
11			8				
13			10				
16			13*				
19			16*				
23	20*						
28	25*						

*Stock sizes for D13-25 with L100 are available

Delivery
SGP Stock
5 Days

⊗For area out of Singapore please refer to P.i.

Volume discount rate

Quantity	1~9	10~29	30~99	100~200
Rate	-	5%	10%	15%

Alteration Catalog No. - L(LC) - (HC·TC...etc.)
SHB 3 - LC65

Punch blanks other than jector

Alterations	Code	Spec.	Price
Full length	LC	• SHB · A-SHB → 15≤LC<L 0.1mm increments (Combination with LKC · LKZ→0.01mm increments)	Quotation
	LKC	Changes full length tolerance. L +0.3 → +0.05	
	LKZ	Changes full length tolerance. L +0.3 → +0.01 ⊗D>25:Not applicable, L(LC)<16:Not applicable	
Head	KC	Adds single key flat at head.	Quotation
	WKC	Adds double key flats in parallel.	
	HC	Changes head diameter. D≤HC<H 0.1mm increments	
	TC	2≤TC<T 0.1mm increments (Combination with TKC · TKM→0.01mm incr.) ⊗L is shortened by (T-TC). ⊗When LC, L=LC.	
	TKC	Changes head thickness T +0.3 → +0.02 tolerance.	
TKM	Changes head thickness T +0.3 → 0 tolerance.		

Jector punch blanks

Alterations	Code	Spec.	Price
Full length	LC	• SJB · PJB · SJFB • A-SJB · A-PJB → 30≤LC<L • SJXB · SJB-C · SJBL • A-SJXB · A-PJBL · A-SJBL → 40≤LC<L 0.1mm increments ⊗S is shortened accordingly. (Combination with LKC · LKZ→0.01mm increments)	Quotation
	LKC	Changes full length tolerance. L +0.3 → +0.05	
	LKZ	Changes full length tolerance. L +0.3 → +0.01 ⊗D>25:Not applicable	
Head	KC	Adds single key flat at head.	Quotation
	WKC	Adds double key flats in parallel.	
	HC	Changes head diameter. D≤HC<H 0.1mm increments	
	TC	3.5≤TC<5 0.1mm increments (Combination with TKC · TKM→0.01mm incr.) ⊗L is shortened by (5-TC). ⊗When LC, L=LC.	
	TKC	Changes head thickness T +0.3 → +0.02 tolerance.	
TKM	Changes head thickness T +0.3 → 0 tolerance.		
Shank	AC	Removes jector pin and plug up the side vent with ring type resin (ABS) from inside to make the jector hole for through air hole.	Reduce Charge
	NC	Removes the jector pin. ⊗AC : Not applicable.	Reduce Charge

Stocks Availability Subjected to Prior Sales.