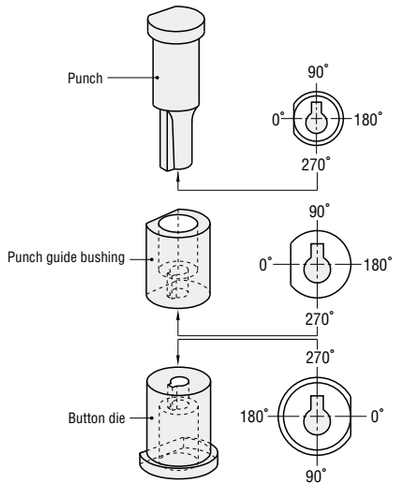
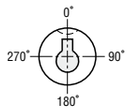
SPECIAL SHAPED PUNCHES & DIES

SPECIAL SHAPED PUNCHES&DIES			
Product name Catalog No.	SPECIAL SHAPED PUNCHES	SPECIAL SHAPED PUNCH GUIDE BUSHINGS & BUTTON DIES	SPECIAL SHAPED BLOCK DIES
Page	717 ~ 726	727	729

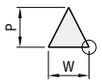
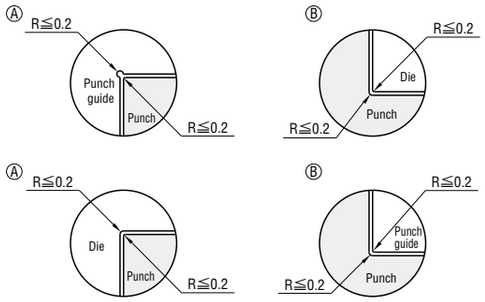
■Position of key flat



Location of ball in a ball-lock punch



■Fillets and sharp corners

Sharp corner 	●Generally, rounded to R≦0.2. 	R=0 can be selected. 
Fillets and sharp corners of punch・punches guide bushings・button dies 		

SPECIAL SHAPED PUNCHES & DIES —GUIDE—

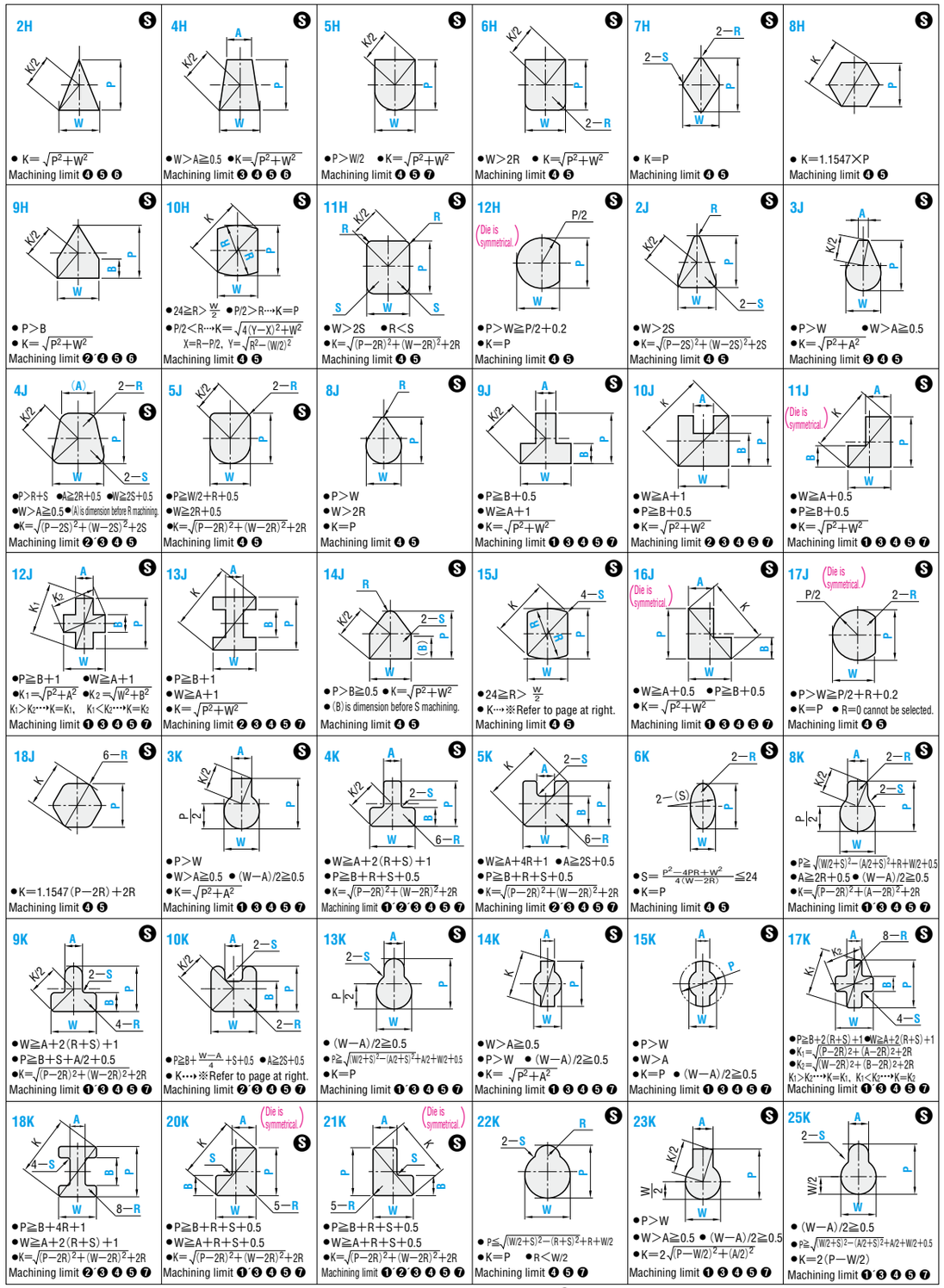
■SPECIAL SHAPED PUNCHES & DIES

Drawings of shapes	 51 variations							Page P.715
Type	Product		Normal	TiCN coating	WPC® treatment	HW coating	Shank	Full length	Page
Punches	・Shoulder punches	Equivalent to SKD11 Equivalent to SKH51 Powdered high-speed steel	SP SH PH	 H—SH H—PH	W—SP W—SH W—PH	 HW—SH HW—PH	D4 ~ 25 D4 ~ 25 D4 ~ 25	L40 ~ 100 L40 ~ 100 L40 ~ 100	P.717
	・Punches with locating dowel holes		SP—C	H—SP—C	W—SP—C	HW—SP—C	D10 ~ 45	L40 ~ 120	
	・Punches for heavy load	Equivalent to SKH51 Powdered high-speed steel	AP APH	H—AP H—APH	W—AP W—APH	HW—AP HW—APH	D5 ~ 25 D5 ~ 25	L50 ~ 100 L50 ~ 100	
	・Tapped punches		MP		W—MP		D5 ~ 25	L40 ~ 100	
	・Jector punches	Equivalent to SKD11 Powdered high-speed steel	SJ PJ	 H—PJ	W—SJ W—PJ	 HW—PJ	D5 ~ 25 D5 ~ 25	L40 ~ 100 L40 ~ 100	P.719
	・Jector punches with locating dowel holes		SJ—C	H—SJ—C	W—SJ—C	HW—SJ—C	D10 ~ 45	L60 ~ 120	
	・Ball-lock punches	Light load Heavy load	ELP KLP EBP KBP				D10 ~ 32 D10 ~ 32	L63 ~ 90 L71 ~ 100	P.721
	・Block punches (Straight・Tapped・With key groove / Single flange・Double flanges)	Equivalent to SKD11 Equivalent to SKH51 Powdered high-speed steel	H□ PH□	 H—HS□ H—PH□			V3 ~ 50 V3 ~ 30 V3 ~ 30	L40 ~ 80 L40 ~ 80 L40 ~ 80	P.723
	・Straight punches (Straight・Tapped・With key groove)	Equivalent to SKD11 Equivalent to SKH51 Powdered high-speed steel	H□C PH□C	 H—HS□C H—PH□C			P2.00 ~ 30.00 P2.00 ~ 30.00 P2.00 ~ 30.00	L40 ~ 80 L40 ~ 80 L40 ~ 80	P.725
Punch guide bushings	・Punch guide bushings	Headed Straight	HG SG				D8 ~ 16 D8 ~ 16	L10 ~ 25 L10 ~ 25	P.727
Button dies	・Button dies	Headed Straight Dowel slot	HD SD KD				D6 ~ 56 D8 ~ 56 D10 ~ 56	L16 ~ 35 L16 ~ 35 L16 ~ 35	
	・Tilting button dies	Headed Straight Dowel slot	HDS SDS KDS				D10 ~ 56 D10 ~ 56 D10 ~ 56	L40 L16 ~ 40 L16 ~ 40	
Block dies	・Straight	Equivalent to SKD11 Powdered high-speed steel	BL PBL				V・H6 ~ 25	L16 ~ 35	P.729
	・Single flange	Equivalent to SKD11 Powdered high-speed steel	BLF PBLF						
	・Configurable size type	Equivalent to SKD11 Powdered high-speed steel	FBL FPBL						

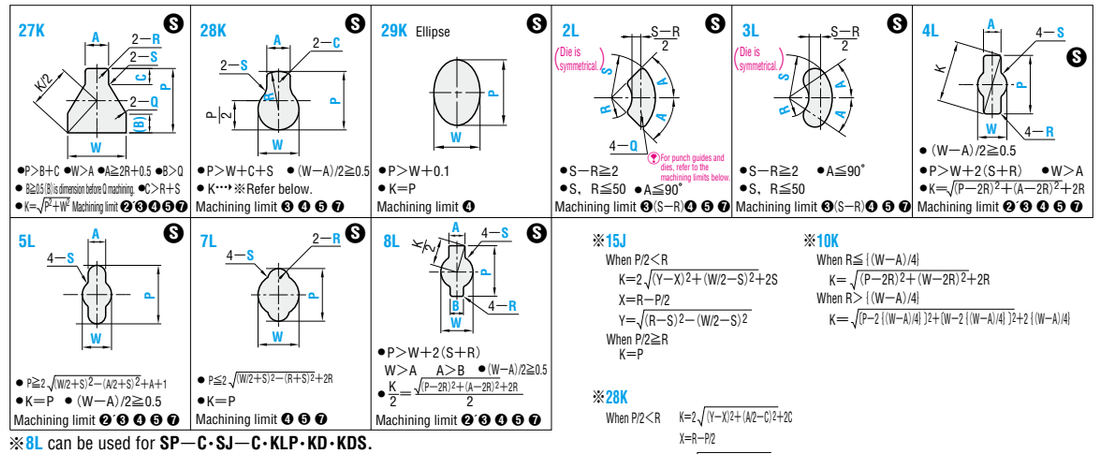
TiCN coating H—SP—C、H—SJ—C、are available for D10 ~ 25 only.
HW coating HW—SP—C、HW—SJ—C、are available for D10 ~ 25 only.

SHAPES OF SPECIAL SHAPED PUNCHES & DIES

The center of the tip or shaped hole is located at the point that divides P and W dimensions each into two equal lengths. It is not located at the shape center of gravity (except for shapes **12H・17J・23K・25K・2L・3L**).



TiCN coating, WPC® treatment, and HW coating can be used for the shapes marked with Ⓢ P.717～720, P.723～726



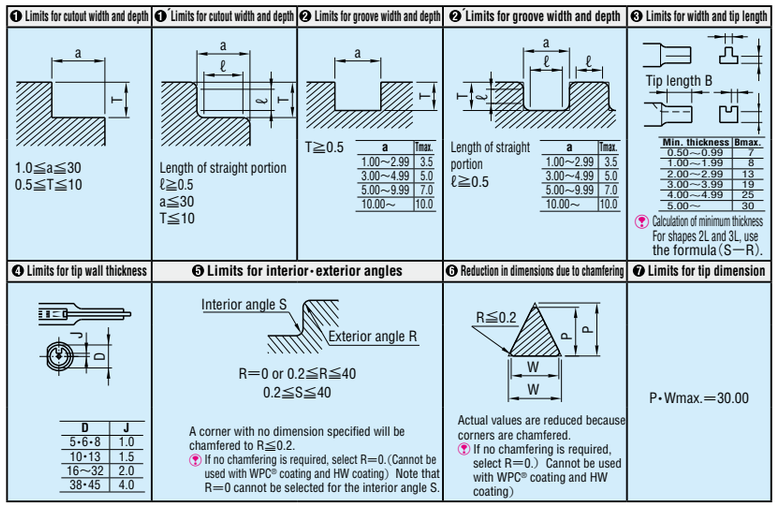
※**8L** can be used for **SP—C・SJ—C・KLP・KD・KDS.**
※**29K** cannot be used for straight punches.

※**15J**
When P/2<R
$K=2\sqrt{(Y-X)^2+(W/2-S)^2}+2S$
$X=R-P/2$
$Y=\sqrt{(R-S)^2-(W/2-S)^2}$
When P/2≧R
K=P

※**28K**
When P/2<R
$K=2\sqrt{(Y-X)^2+(A/2-C)^2}+2C$
$X=R-P/2$
$Y=\sqrt{(R-C)^2-(A/2-C)^2}$
When P/2≧R
K=P/2

※**10K**
When R≦{(W−A)/4}
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
When R>{(W−A)/4}
$K=\sqrt{(P-2\{(W-A)/4\})^2+(W-2\{(W-A)/4\})^2}+2\{(W-A)/4\}$

■Punch machining limit



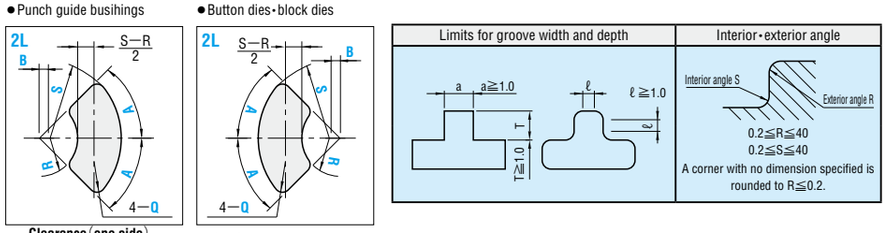
■Increment

Dimension T tolerance	Increment
W±0.01	0.01mm increments
P±0.01	0.01mm increments
A±0.01	0.01mm increments
B±0.01	0.01mm increments
C±0.01	0.01mm increments
Q	0.01mm increments
R	0.01mm increments
S	0.01mm increments
C(R)	0.01mm increments
A°(Angle)	0.1°increments

■Machining limits for punch guide bushings・button dies・block dies

For button dies and block dies, the shapes **12H・11J・16J・17J・20K・21K・2L・3L** are symmetrical.
For **2L**, specify the reference point B for angle A in order to achieve even clearance relative to the punch shape. (Refer to the figure below.)

● Punch guide busihings ● Button dies・block dies



$B=\frac{\text{Clearance (one side)}}{\sin A}$ 0≦B≦2.00 0.01mm increments

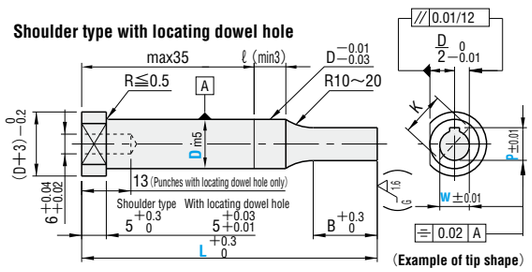
■Increment

Dimension T tolerance	Increment
W±0.01	0.01mm increments
P±0.01	0.01mm increments
A±0.01	0.01mm increments
B±0.01	0.01mm increments
C±0.01	0.01mm increments
Q	0.01mm increments
R	0.01mm increments
S	0.01mm increments
C(R)	0.01mm increments
A°(Angle)	0.1°increments

SPECIAL SHAPED PUNCHES

RoHS Type	Applicable shank diameter	M	H	Catalog No. Normal	TiCN coating Surface hardness 3000HV	WPC® treatment Surface hardness 1000~1100HV	HW coating Surface hardness 3000HV
Shoulder type	4~25	Equivalent to SKD11	60~63HRC	SP	—	W—SP	—
		Equivalent to SKH51	61~64HRC	SH	H—SH	W—SH	HW—SH
		Powdered high-speed steel	64~67HRC	PH	H—PH	W—PH	HW—PH
With locating dowel hole	10~45	Equivalent to SKD11	60~63HRC	SP—C	(D10~25) H—SP—C	W—SP—C	(D10~25) HW—SP—C
Heavy-load punches	5~25	Equivalent to SKH51	61~64HRC	AP	H—AP	W—AP	HW—AP
		Powdered high-speed steel	64~67HRC	APH	H—APH	W—APH	HW—APH
Tapped	5~25	Equivalent to SKD11	60~63HRC	MP	—	W—MP	—

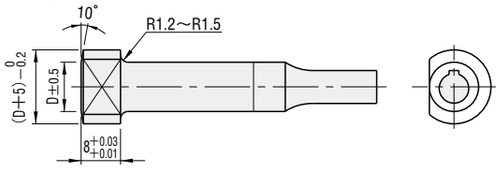
Shoulder type with locating dowel hole



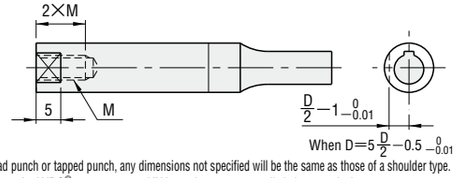
A Dowel pin MS6—25 (with locating dowel hole only)

Tip shape
Select from the shapes shown on P.715.

Heavy-load punches



Tapped



For a heavy-load punch or tapped punch, any dimensions not specified will be the same as those of a shoulder type.
The tip edges of a WPC® treatment or HW coating type are slightly rounded.
The tip end of a TiCN coating punch is ground before the coating is applied.

Catalog No. Type					Shape	D	L	P·K max.	P·W min.	B	Tapped M
	—Normal—	—TiCN coating—	—WPC® treatment—	—HW coating—							
					2H~12H	4	(40) 50 60 70 80	3.90	2.00	8	—
						5		4.90	2.00		3
						6		5.90	2.00		
D 4~25	SP		W—SP		2J~18J	8	(40) (50) 60 70 80 90 100	7.90	2.00	13	4
D 4~25	SH	H—SH	W—SH	HW—SH	3K~29K	10		9.90	2.50		5
D 4~25	PH	H—PH	W—PH	HW—PH	2L~7L	13		12.90	3.00		6
D10~45	SP—C		W—SP—C		8L (With locating dowel hole only)	16		15.90	4.00	19	
D10~25		H—SP—C		HW—SP—C		20		19.90	5.00		
D 5~25	AP	H—AP	W—AP	HW—AP	Tip shape: Select from the shapes shown on P.715.	25		24.90	6.00		
D 5~25	APH	H—APH	W—APH	HW—APH		32	70 80 90 100 110 120	31.90	7.00		—
D 5~25	MP		W—MP			38	80 90 100 110 120	37.90	8.00		
						45		44.90	9.00		

L (40) ···· For heavy-load punches, full length (40) cannot be selected.
· If full length is (40) for punches other than heavy-load punches, tip length is 6mm in all cases.
L (50) ···· If full length is (50) for heavy-load punches, tip length is 8mm in all cases.
· If full length is (50) for punches other than heavy-load punches, tip length is 13mm in all cases.
For TiCN coating, WPC® treatment, and HW coating types, **10J·13J·5K·10K·18K** cannot be used.

Order

Catalog No.	—	L	—	P·W·A·B·C·Q·R·S···0.01mm increments
SP3K 25	—	80	—	P18.00—W16.00—A8.00
W—SP29K 10	—	80	—	P7.00 —W5.00

Days to Ship Quotation

Alterations

Catalog No.	—	L (LC)	—	P·W·A·B·C·Q···	—	(HC·TC, etc.)
SP3K 25	—	LC75	—	P18.00—W16.00—A8.00	—	BC13—KFC225

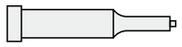
	Alteration	Code	Spec.	1Code
Alterations to tip		BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length L must be at least 37mm (or 42mm for heavy load type) longer than tip length BC. If D≧32 for shapes 9J~13J·16J·K·L, tip length B is as indicated in the table at right. P·W: 2.00~2.99 / 3.00~3.99 / 4.00~4.99 / 5.00~ — Bmax.: 13 / 19 / 25 / 30 L (LC): 50.0~59.9 / 60.0~69.9 / 70.0~79.9 / 80.0~ — Bmax. D32: 6 / 13 / 19 / 19; D38·45: — / 4 / 11 / 19	Quotation
		PKC	Tip tolerance change P·W±0.01 ⇨ +0.01 0 Cannot be used for D≧32. Can be used for normal types only.	
Alterations to full length		LC	Full length change 37+B (BC) ≦LC<L 0.1mm increments If difference between full length and tip length is 37mm or less, tip length is adjusted to (Full length—37mm). If D≧32 for 9J~13J·16J·K·L, tip length B is as indicated in the table below. L (LC): 50.0~59.9 / 60.0~69.9 / 70.0~79.9 / 80.0~ — Bmax. D32: 6 / 13 / 19 / 19; D38·45: — / 4 / 11 / 19	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 Cannot be used for D>25. Can be used for normal types only.	
Alterations to head		HC	Head diameter change D≦HC<D+3 0.1mm increments Cannot be used for heavy-load punches.	
		TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC. Cannot be used for heavy-load punches.	
		KC	Key flat position change 1° increments Cannot be used for MP types with D=5.	

	Alteration	Code	Spec.	1Code
Alterations to head		WKC	Double key flats in parallel Can be combined with KC. Cannot be used for MP types with D=5.	Quotation
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC. Cannot be used for MP types.	
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5. Cannot be combined with SRC. Cannot be used for heavy-load punches.	
		RC	Head thickness is machined to a tolerance of —0.04~0 relative to the retainer surface. Can be used for shoulder punches only.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 Can be used for shoulder punches only.	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 Can be used for shoulder punches only.	
Alterations to shank		SKC	Single key flat on shank · D4~6: D/2 −0.5 0 −0.01 Can be used for normal types only. Cannot be used for D>25. Cannot be used for MP types with D=5. Cannot be used for 2L, 3L. Cannot be combined with KC·WKC·KFC. (However this restriction does not apply to 8H, 12H, 18J, 2L, 3L..) D4~6 (Machining width 0.5) W≦D—1.2 D8~ (Machining width 1) W≦D—2.2 · D8~: D/2 −1 0 −0.01 8H, 12H, 18J D4~6 (Machining width 0.5) P·K≦D—1.2 D8~ (Machining width 1) P·K≦D—2.2	

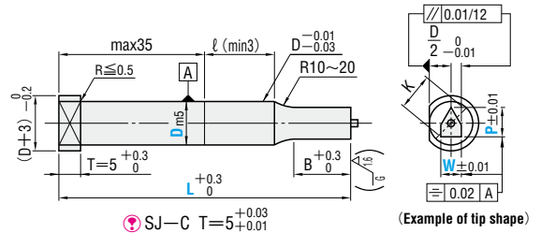
Price Quotation

SPECIAL SHAPED PUNCHES & DIES

SPECIAL SHAPED JECTOR PUNCHES

RoHS Type	Applicable shank diameter	M	H	Catalog No. Normal	TiCN coating Surface hardness 3000HV	WPC® treatment Surface hardness 1000~1100HV	HW coating Surface hardness 3000HV
Shoulder type 	5～25	(D5～6) Equivalent to SKH51 (D8～25) Equivalent to SKD11	(D5～6) 61～64HRC (D8～25) 60～63HRC	SJ	—	W—SJ	—
		Powdered high-speed steel	64～67HRC	PJ	H—PJ	W—PJ	HW—PJ
With locating dowel hole 	10～45 (L≧60)	Equivalent to SKD11	60～63HRC	SJ—C	(D10～25) H—SJ—C	W—SJ—C	(D10～25) HW—SJ—C

Tip shape Select from the shapes shown on P.715.



SJ—C T=5 +0.03 +0.01

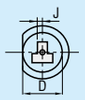
(Example of tip shape)

A Dowel pin MS6—25 (with locating dowel hole only)
The tip edges of a WPC® treatment or HW coating type are slightly rounded.
The tip end of a TiCN coating punch is ground before the coating is applied.

Catalog No. Type	Shape	D	L	P·K max.	P·W min.	B
—Normal— —TiCN coating— —WPC® treatment— —HW coating—						
D5～25 SJ / W—SJ	2H～12H	5	(40) 50 60 70 80	4.90	2.00	8
		6		5.90	2.00	
D5～25 PJ / H—PJ / W—PJ / HW—PJ	2J～18J	8	(40) (50) (60) 70 80 90 100	7.90	3.00	13
	3K～29K	10		9.90	3.00	
		13		12.90	6.00	
D10～45 SJ—C / W—SJ—C	2L～ 7L	16		15.90	6.00	19
	8L (With locating dowel hole only)	20		19.90	6.00	
D10～25 L≧60 H—SJ—C / HW—SJ—C		25		24.90	6.00	
		32	70 80 90 100 110 120	31.90	7.00	
		38	80 90 100 110 120	37.90	8.00	
		45		44.90	9.00	

Tip shape Select from the shapes shown on P.715.

L(40)···→B=6 If full length is (40), tip length is 6mm in all cases.
L(50)···→B=13 If full length is (50), tip length is 13mm in all cases.
SJ—C···→L≧60 Specifications with L<60 are not available. If full length is (60), tip length is 13mm in all cases.
Jector hole and machining limit



D	J
5～8	1.0
10·13	1.5
16～32	2.0
38·45	4.0

For TiCN coating, WPC® treatment, and HW coating types, **10J·13J·5K·10K·18K** cannot be used.

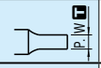
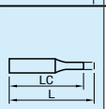
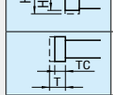
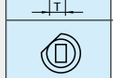
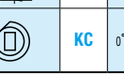
Order

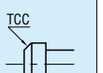
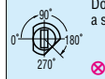
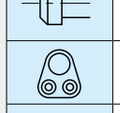
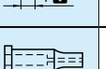
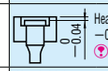
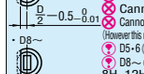
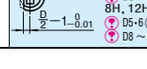
Catalog No.	—	L	—	P·W·A·B·C·Q·R·S···0.01mm increments
SJ3K 25	—	80	—	P18.00—W16.00—A8.00
W—SJ29K10	—	80	—	P 7.00—W 5.00

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P·W·A·B·C·Q···	—	(BC·HC·TC, etc.)
SJ3K 25	—	LC75	—	P18.00—W16.00—A8.00	—	BC13—KFC225

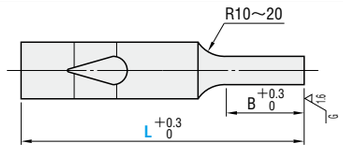
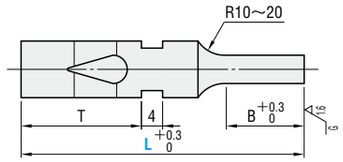
	Alteration	Code	Spec.	1Code
Alterations to tip		BC	Tip length change 2≦BC<B 0.1mm increments If D≧32 for shapes 9J～13J·16J·K·L, tip length B is as indicated in the table below. L / Bmax. D32 / D38·45 50.0～59.9 / 6 / — 60.0～69.9 / 13 / 4 70.0～79.9 / 19 / 11 80.0～ / 19 / 19	
		PKC	Tip tolerance change P·W±0.01 ⇨ +0.01 0 Cannot be used for D≧32. Can be used for normal types only.	
Alterations to full length		LC	Full length change LC<L 0.1mm increments Tip length B is shortened by (L—LC). If D≧32 for 9J～13J·16J·K·L, tip length B is as indicated in the table below. L / Bmax. D32 / D38·45 50.0～59.9 / 6 / — 60.0～69.9 / 13 / 4 70.0～79.9 / 19 / 11 80.0～ / 19 / 19	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 Cannot be used for D>25. Can be used for normal types only.	
Alterations to head		HC	Head diameter change D≦HC<D+3 0.1mm increments	
		TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.	
		KC	 Key flat position change 1° increments	

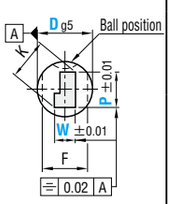
	Alteration	Code	Spec.	1Code
Alterations to head		WKC	 Addition of double key flats in parallel	
		KFC	 Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
		TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H-D)/2 If H≦5, then TCC is 0.5. Cannot be combined with SRC.	
		RC	 Head thickness is machined to a tolerance of −0.04 ～ 0 relative to the retainer surface. Can be used for shoulder punches only.	Quotation
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 Can be used for shoulder punches only.	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 Can be used for shoulder punches only.	
Others		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside.	
		NC	 The jector pin is removed. Cannot be combined with AC.	
Alterations to shank		SKC	Single key flat on shank Can be used for normal types only. Cannot be used for D>25. Cannot be used for 2L, 3L. Cannot be combined with KC·WKC·KFC. (However this restriction does not apply to 8H, 12H, 18J, 2L, 3L.) D5·6 (Machining width 0.5) W≦D—1.2 D8～ (Machining width 1) W≦D—2.2 8H, 12H, 18J D5·6 (Machining width 0.5) P·K≦D—1.2 D8～ (Machining width 1) P·K≦D—2.2	

Price Quotation

SPECIAL SHAPED PUNCHES & DIES

SPECIAL SHAPED BALL-LOCK PUNCHES

Type	Applicable shank diameter	M	H	Type	Tip shape (Tip shape) Select from the shapes shown on P.715. RoHS
	Light load	Equivalent to SKD11	60～63HRC	ELP	
	Heavy load	Equivalent to SKH51	61～64HRC	EBP	
—With wrench flat— 	Light load	Equivalent to SKD11	60～63HRC	KLP	
	Heavy load	Equivalent to SKH51	61～64HRC	KBP	



(Example of tip shape)

Catalog No. Type	Shape	D	L	P·K max.	P·W min.	B	T	F
Light load ELP / With wrench flat KLP	2H～12H, 2J～18J, 3K～29K, 2L～7L	10	63 71 74 80 90	9.90	2.50	13	27	8
		13		12.90	3.00			10
		16		15.90	4.00	19		13
		20		19.90	5.00			17
		25		24.90	6.00			22
		32		31.90	7.00			29
Heavy load EBP / With wrench flat KBP	8L (KLP only) Tip shape Select from the shapes shown on P.715.	10	71 80 90 100	9.90	2.50	13	36	8
		13		12.90	3.00			10
		16		15.90	4.00	19		13
		20		19.90	5.00			17
		25		24.90	6.00			22
		32		31.90	7.00			29

The wrench flat is used to check that the punch is correctly locked in place. P.796

Order

Catalog No.	—	L	—	P·W·A·B·C·Q·R·S···0.01mm increments
ELP3K 25	—	80	—	P18.00—W16.00—A8.00

Days to Ship Quotation

Alterations

Catalog No.	—	L (LC)	—	P·W·A·B·C·Q···	—	(BC·KC, etc.)
ELP3K 25	—	LC73	—	P18.00—W16.00—A8.00	—	BC13

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change 50+B(BC)≦LC<L 0.1mm increments If difference between full length and tip length is 50mm or less, tip length is adjusted to (Full length—50mm) (or to (Full length—45mm) for light load punches). If D=32 for shapes 9J～13J·16J·K·L, tip length B is as indicated in the table at right. L(LC) / Bmax. D32: 50.0～59.9 / 6; 60.0～69.9 / 13; 70.0～79.9 / 19; 80.0～ / 19	Quotation
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	

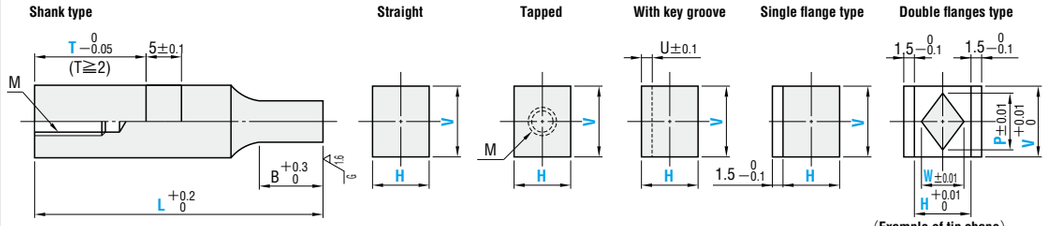
	Alteration	Code	Spec.	1Code
Alterations to tip		BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length L must be at least 50mm (45mm for light load punches) longer than tip length BC. P·W / Bmax.: 2.50～2.99 / 13; 3.00～3.99 / 19; 4.00～4.99 / 25; 5.00～ / 30	Quotation
		PKC	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D=32.	
Others		KC	 Ball position change 1° increments	

Price Quotation

SPECIAL SHAPED BLOCK PUNCHES

RoHS

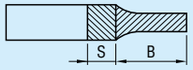
M	H	S	Type: Straight	Tapped	With key groove	Single flange	Double flanges
H3～5 Equivalent to SKH51 H6～30 Equivalent to SKD11	H3～5 61～64HRC H6～30 60～63HRC	—	HP	HM	HK	HF	HW
Powdered high-speed steel	64～67HRC	—	PHP	PHM	PHK	PHF	PHW
Equivalent to SKH51	61～64HRC	TiCN surface hardness 3000HV	H—HSP	H—HSM	H—HSK	H—HSF	H—HSW
Powdered high-speed steel	64～67HRC	TiCN surface hardness 3000HV	H—PHP	H—PHM	H—PHK	H—PHF	H—PHW



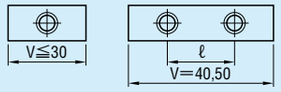
For single flange and double flanges types, the flange thickness is $5^{+0.2}_{0}$ mm.

Catalog No. Type	Shape	H \ V (P min. / W min.)	3 (1.5)	4 (2.0)	5 (2.5)	6 (3.0)	8 (3.0)	10 (4.0)	13 (5.0)	16 (7.0)	20 (8.0)	22 (9.0)	25 (10.0)	28 (12.0)	30 (12.0)	40 (16.0)	50 (20.0)	L	B	M	U
V3～V50 HP HM HK HF HW / V3～V30 PHP PHM PHK PHF PHW	2～12H 2～18J 3～29K 2～7L	(3) 1.0	○	○	○	○	○	○	○	○	○	○						(40) 50 60 70 80	8	—	1.0
		(4) 1.0		○	○	○	○	○	○	○	○	○									
		5 1.2			○	○	○	○	○	○	○	○	○	○	○					3	
		6 1.5				○	○	○	○	○	○	○	○	○	○					4	
		8 2.0					○	○	○	○	○	○	○	○	○	○				5	1.5
		10 2.5						○	○	○	○	○	○	○	○	○	○		13	6	
		13 3.0							○	○	○	○	○	○	○	○	○			8	
V3～V30 H—HSP H—HSM H—HSK H—HSF H—HSW / V3～V30 H—PHP H—PHM H—PHK H—PHF H—PHW	Tip shape Select from the shapes shown on P.715.	16 4.0								○	○	○	○	○	○	○	○		(19)		
		20 5.0									○	○	○	○	○	○	○				
		22 6.0										○	○	○	○	○	○				
		25 6.5											○	○	○	○	○				
		28 7.0												○	○	○	○				
		30 7.5													○	○	○				

H=(3), (4)···L=40～70 If H dimension is (3) or (4), full length L is within a range of 40～70.L80 is not available.
H=10～30, L=(40)···B=8 If H dimension is 10～30 and L dimension is 40, tip length B is 8mm in all cases.
9J～13J·16J·K·L Type···Pmax.=30.00
For **29K**, 13≦H·V≦25, P≦V—0.4, W≦H—0.4, tip length B=13
For coating punches, **10J·13J·5K·10K·18K·29K** cannot be used.
Although the effective range of coating is part B, an extremely thin coating film is formed also on part S to a length of approximately 10mm.



Tap M of HM·PHM·H—HSM·H—PHM



V	40	50
ℓ	20	24

Details of key groove

Details of flange

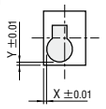
Order

H	No.
3～10	1
13～22	2
25～30	3

(1)

	Catalog No.	—	No.	—	Catalog No.	V	H	—	L	—	0.01mm increments / P·W·A·B·C·R·S·····	— (T·K·F·WF)
•In case of H3～10	HP 4J	—	1	—	HP 4J	06	05	—	50	—	P5.25—W3.83—A3.50—R1.50	— S1.50
•In case of H13～22	HP 4J	—	2	—	HP 4J	20	16	—	60	—	P16.32—W14.23—A8.00—R3.50	— S4.00
•In case of H25～30	HP 4J	—	3	—	HP 4J	40	30	—	70	—	P35.88 —W28.45 —A8.00 —R3.90	— S6.50

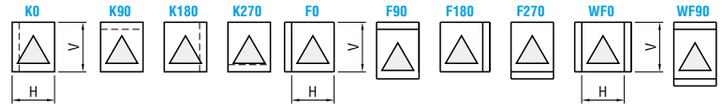
(2)



Catalog No.	—	No.	—	Catalog No.	V	H	—	L	—	0.01mm increments / P·W·A·B·C·R·S·····	— (T·K·F·WF)
HP 4J	—	2	—	HP 4J	13	13	—	70	—	P8.44—W6.23—A2.50—R1.22 — X1.00—Y1.00	— S2.10

(X and Y dimensions must be set either to 0 or to 0.02 or more. Tolerance ±0.01)
For 29K, X and Y cannot be selected.

■Key groove and flange position selection



Days to Ship **Quotation**

Alterations

Catalog No.	—	No.	—	Catalog No.	V	H	—	L(LC)	—	P(PC)·W(WC)·A···	— (T·K·F·WF)	— (BC·HC, etc.)
H—HSP 7H	—	1	—	H—HSP 7H	13	10	—	LC65.0	—	P10.00—WC2.00—R0.50	— S2.00	— BC8.00

Alteration	Code	Spec.	1Code
Alterations to tip: PC, WC	PC WC	Tip dimension change 1.00≦V×0.3≦PC 0.50≦H×0.15≦WC ⊗ Cannot be used for 29K.	Quotation
Alterations to tip: BC	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments. Full length L must be at least 30mm longer than tip length BC. The requirements of machining limit ❸ take priority. P.716. 29K···2≦BC≦Bmax.≦13 (P(PC)·W(WC) / Bmax.: 0.50～0.99 / 7; 1.00～1.99 / 8; 2.00～2.99 / 13; 3.00～3.99 / 19; 4.00～4.99 / 25; 5.00～ / 30)	Quotation
Alterations to tip: PKC	PKC	Tip tolerance P·W±0.01⇨$^{+0.01}_{0}$ change ⊗ Cannot be used with TiCN coating. ⊗ Cannot be used for 29K.	

Alteration	Code	Spec.	1Code
Alterations to full length	LC	Full length change 30+B(BC)≦LC<L 0.1mm increments. If difference between full length (LC) and tip length (B) is 30mm or less, tip length is adjusted to (Full length—30).	Quotation
Alterations to full length	LKC	Full length tolerance change $L^{+0.2}_{0}$ ⇨ $^{+0.05}_{0}$	
Alterations to full length	LKZ	Full length tolerance change $L^{+0.2}_{0}$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating.	
Alterations to key groove	RTC	Key groove position tolerance change $T^{0}_{-0.05}$ ⇨ $^{+0.05}_{0}$	
Alterations to key groove	TKC	Key groove position tolerance change $T^{0}_{-0.05}$ ⇨ $^{0}_{-0.02}$	
Alterations to flange	HC	Flange width change 0≦HC<1.5 0.1mm increments	
Alterations to flange	TC	Flange thickness change 2≦TC<5 0.1mm increments. Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.	
Alterations to flange	TKC	Flange thickness tolerance change $T^{+0.2}_{0}$ ⇨ $^{+0.02}_{0}$	
Alterations to flange	TKM	Flange thickness tolerance change $T^{+0.2}_{0}$ ⇨ $^{0}_{-0.02}$	

Price **Quotation**

SPECIAL SHAPED PUNCHES & DIES

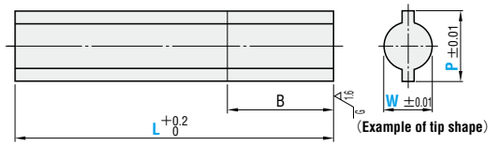
SPECIAL SHAPED STRAIGHT PUNCHES

Note) For types HPC・HMC・HKC, if the tip shape does not include a W dimension specification, (such as shapes **2L and 3L**), the material is determined by the maximum width of the shape.

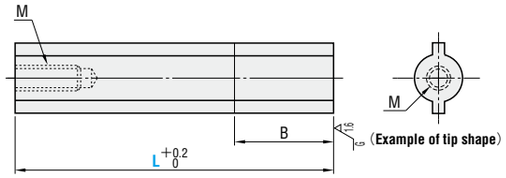
RoHS

M	H	S	Type: Straight	Type: Tapped	Type: With key groove
W2.00～5.00 (Note) Equivalent to SKH51	61～64HRC	—	HPC	HMC	HKC
W5.01～30.00 (Note) Equivalent to SKD11	60～63HRC				
Powdered high-speed steel	64～67HRC	—	PHPC	PHMC	PHKC
Equivalent to SKH51	61～64HRC	TiCN surface hardness 3000HV	H—HSPC	H—HSMC	H—HSKC
Powdered high-speed steel	64～67HRC	TiCN surface hardness 3000HV	H—PHPC	H—PHMC	H—PHKC

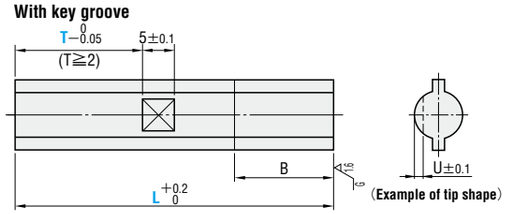
Straight



Tapped



With key groove



Catalog No. Type			Shape	L	W \ P	2.00～5.00	5.01～10.00	10.01～15.00	15.01～20.00	20.01～25.00	25.01～30.00	M	U	B
Straight	Tapped	With key groove	2～12H	40	2.00～3.00	○	○	○				—	1.0	15
HPC	HMC	HKC	2～18J	50	3.01～4.00	○	○	○	○					
					4.01～5.00	○	○	○	○	○	○	3		
PHPC	PHMC	PHKC	3～28K	60	5.01～6.00		○	○	○	○	○	4		
					6.01～8.00		○	○	○	○	○	5		
H—HSPC	H—HSMC	H—HSKC	2～7L	70	8.01～10.00		○	○	○	○	○	6	1.5	
					10.01～15.00			○	○	○	○	8		
H—PHPC	H—PHMC	H—PHKC	Tip shape Select from the shapes shown on P.715.	80	15.01～20.00				○	○	○			
					20.01～25.00					○	○			
					25.01～30.00						○			

Equivalent to SKH51 (W2.00～5.00) Equivalent to SKD11 (W5.01～30.00)

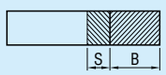
Powdered high-speed steel

Equivalent to SKH51 Coating

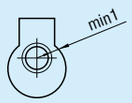
Powdered high-speed steel Coating

For coating punches, **10J・13J・5K・10K・18K** cannot be used.

Although the effective range of coating is part B, an extremely thin coating film is formed also on part S to a length of approximately 10mm.
The dimension of the uncoated part is reduced by an amount equivalent to the coating thickness (6～10 μm).



Machining limit for **HMC・PHMC・H—HSMC・H—PHMC**
① Shapes **23K・25K** cannot be manufactured. ② Machining limit for tapping and tip



③ P・W dimensions and tap M

	P(W)	M
P≦W (P>W)	4.01～5.00	3
	5.01～6.00	4
	6.01～8.00	5
	8.01～10.00	6
	10.01～30.00	8

P or W<8…L≦50 If P or W dimension is smaller than 8.00, full length is within a range of 40～50.

Details of key groove

Tap M is based on either P or W dimension, whichever is shorter.
Tap M for shapes **8H・18J** is based on P dimension.
P size of 8H.18J should specify that K size does not exceed an edge-of-a-blade size limit.
The center of tap M is at the same position as the center of each tip shape (except for shapes **2L・3L**).
The center of tap M for shapes **2L・3L** is the midpoint at the maximum lateral width of the tip.

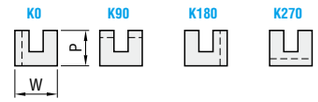
Order

W	No.
2.00～10.00	1
10.01～20.00	2
20.01～30.00	3

Catalog No. — No. — Catalog No. — L — 0.01mm increments / P・W・A・B・C・R・S··· — (T・K)

- In case of W2.00～10.00: HPC 8J — 1 — HPC 8J — 50 — P10.55—W8.85—R2.50
- In case of W10.01～20.00: HPC 8J — 2 — HPC 8J — 60 — P19.62—W16.35— R4.50
- In case of W20.01～30.00: HPC 8J — 3 — HPC 8J — 70 — P28.25—W25.68—R6.20

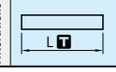
■Key groove position selection



Days to Ship Quotation

Alterations

Catalog No. — No. — Catalog No. — L(LC) — P・W・A・B··· — (PKC・LC・LKC・TKC・RTC)
H—HSPC 8J — 1 — H—HSPC 8J — LC58.0 — P12.40 — W10.00 — R2.00 — LKC

	Alteration	Code	Spec.	1Code
Tip		PKC	Tip tolerance change P・W±0.01 ⇨ +0.01 0 ⊗ Cannot be used with TiCN coating.	Quotation
Alterations to full length		LC	Full length change 30≦LC<L 0.1mm increments	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	

	Alteration	Code	Spec.	1Code
Alterations to key groove		TKC	Key groove position tolerance change T 0 −0.05 ⇨ 0 −0.02	Quotation
		RTC	Key groove position tolerance change T 0 −0.05 ⇨ +0.05 0	

Price Quotation

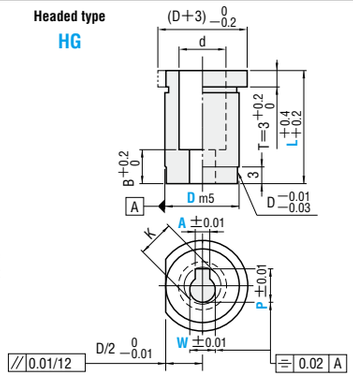
SPECIAL SHAPED PUNCHES & DIES

SPECIAL SHAPED PUNCH GUIDE BUSHINGS & BUTTON DIES

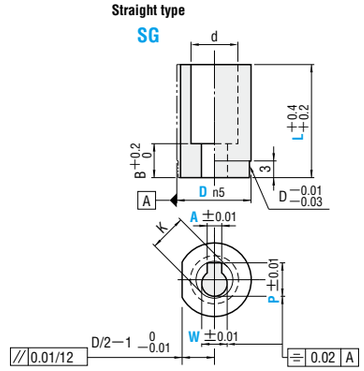
Punch guide bushings

RoHS

Headed type HG



Straight type SG



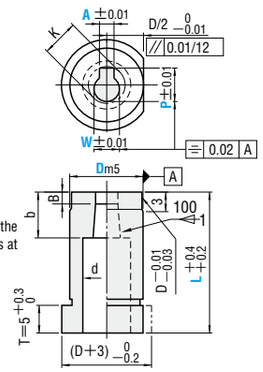
The shapes shown in the specification drawings at right are examples.

M Equivalent to SKD11
H 60～63HRC

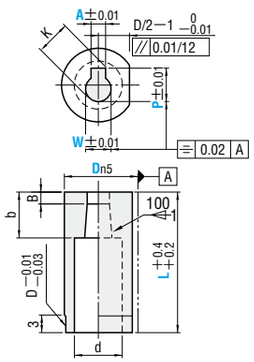
Button dies

RoHS

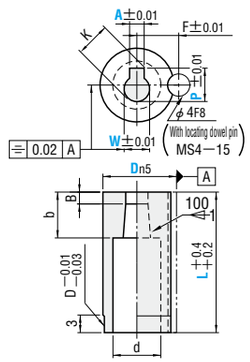
Headed type HD (L=16～35)
HDS (L=40 only)



Straight type SD (L=16～35)
SDS (L=16～40)



Dowel slot type KD (L=16～35)
KDS (L=16～40)



The shapes shown in the specification drawings at right are examples.

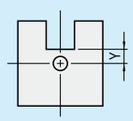
M Equivalent to SKD11
H 60～63HRC

Catalog No. Type		Shape	D	L	P·K max.	P·W min.	Punch guide HG·SG B	Button dies HD·SD·KD b	Button dies HD·SD·KD B	Tilting button dies HDS·SDS·KDS b	Tilting button dies HDS·SDS·KDS B	d	F
Punch guide	HG SG	2H～12H	8	10	4.00	2.00	4	—		—		4.4	—
		2J～18J	10	13	6.00	2.00						6.4	
		3K～29K	13	16	8.00	3.00	6					8.4	
		2L～ 7L	16	20 22 25	10.00	3.00						10.6	
Button dies	HD	2H～12H 2J～18J 3K～29K 2L～ 7L 8L (KD·KDS only) Hole shape Select from the shapes shown on P.715.	6	(16) 20 22 25 30 35 (40)	3.00	2.00	—	3	2	—	—	3.4	—
	HD·SD		8		4.00	2.00		4				4.4	
	HD HDS SD SDS KD KDS		10		6.00	2.00		6		10	6	6.4	6
			13		8.00	2.00		8				8.4	7.5
			16		10.00	2.50						10.6	8
			20		12.00	3.00				12	8	12.6	10
			25		16.00	4.00						16.6	12.5
			32		20.00	5.00				15	10	20.6	16
			38		26.00	6.00						26.6	19
			45		35.00	6.00				20	14	36.0	22.5
			50		40.00	7.00						41.0	25
			56		45.00	8.00						46.0	28

If L=(16)・(40), the applicable types and D dimensions are as shown at right.

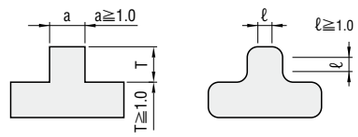
L	D	Type
(16)	6 ～ 38	HD SD SDS KD KDS
(40)	10 ～ 56	HDS SDS KDS

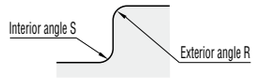
If Y dimension is smaller than min.Y, button die blanks with pilot holes (prepared holes for machining) cannot be used, and therefore express are not available.



D	min.Y
6～16	0.7
20	0.8
25	1.2
32～56	1.7

Machining limit





0.2≦R≦40
0.2≦S≦40
Corners with no dimension specified are rounded to R≦0.2.

Increment

Dimension T tolerance	Increment
W±0.01	0.01mm increments
P±0.01	0.01mm increments
A±0.01	0.01mm increments
B±0.01	0.01mm increments
C±0.01	0.01mm increments
Q	0.01mm increments
R	0.01mm increments
S	0.01mm increments
C(R)	0.01mm increments
A° (Angle)	0.1° increments

Order

Catalog No.	—	L	—	P·W·A·B·C·Q·R·S···0.01mm increments
HD8J 25	—	25	—	P14.00—W11.00—R4.00

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)·W(WC)·A·B·C·Q·R·S	—	(BC·HC·TC, etc.)
HD8J 25	—	25	—	P14.00—W11.00—R4.00	—	BC4—KFC225

Alteration	Code	Spec.	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: P/W > PC/WC ≧ (P·Wmin./2) ≧1.00 0.01mm increments max.: P/W < PC/WC ≦ P·Kmax.+0.2 0.01mm increments	Quotation
	BC	Shaped hole depth change 1≦BC≦b 0.1mm increments ⊗ Cannot be used for HG·SG.	
Alterations to full length	LC	Full length change (reduction in shaped hole depth) 0.1mm increments Punch guide bushing 10≦L−(B−1)≦LC<L (B dimension and press-in lead are shortened by (L−LC). Button die 10≦L−(b−1)≦LC<L (Dimension b and press-in lead are shortened by (L−LC).	
		Full length change 10≦LC<L 0.1mm increments	
	LKC	Full length tolerance change L +0.4 +0.2 ⇨ +0.05 0	
	LKZ	Full length tolerance change L +0.4 +0.2 ⇨ +0.01 0 ⊗ Cannot be used for L<16. ⊗ Cannot be used for D>25.	

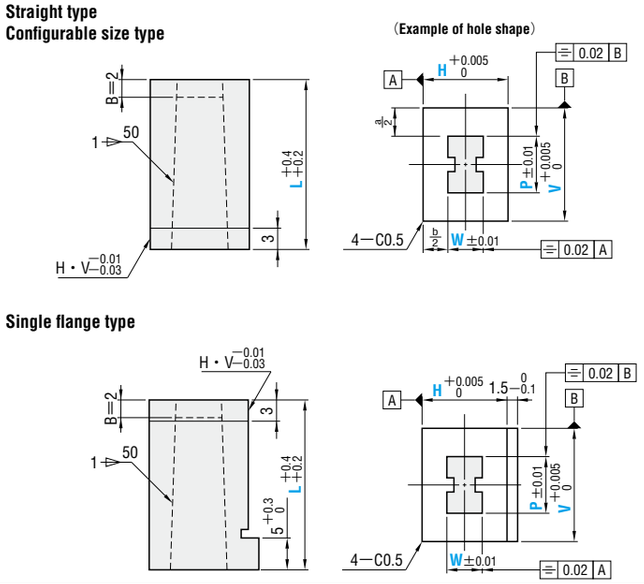
Price Quotation

Alteration	Code	Spec.	1Code
Alterations to head	HC	Head diameter change D≦HC<D+3 0.1mm increments	
	TC	Head thickness change 2≦TC<T 0.1mm increments Full length is shortened by (T−TC). If combined with LC, full length is equal to LC.	
	KC	Guide 90° 0° 180° 270°; Die 270° 180° 0° 90°; Key flat position change 1° increments	
	WKC	Double key flats in parallel Can be combined with KC.	Quotation
	KFC	Guide: Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC. ⊗ Cannot be used for D>25. Die: Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC. ⊗ Cannot be used for D>25.	
	RC	Head thickness is machined to a tolerance of 0 −0.04 ~0 relative to the retainer surface. ⊗ Cannot be used for L<30.	
	TKC	Head thickness tolerance change T +0.2 0 ⇨ +0.02 0 ⊗ Cannot be used for L<16.	
	TKM	Head thickness tolerance change T +0.2 0 ⇨ 0 −0.02 ⊗ Cannot be used for L<16.	

SPECIAL SHAPED PUNCHES & DIES

SPECIAL SHAPED BLOCK DIES

Type	V・H dimensions	M H	Catalog No.	Shape RoHS
Straight type 	Standard blank size	Equivalent to SKD11 60～63HRC	BL	Straight type Configurable size type
		Powdered high-speed steel 64～67HRC	PBL	
Single flange type 		Equivalent to SKD11 60～63HRC	BLF	Single flange type
		Powdered high-speed steel 64～67HRC	PBLF	
Configurable-size・straight type 	V・H dimensions 6.0～25.0 Configurable type	Equivalent to SKD11 60～63HRC	FBL	
		Powdered high-speed steel 64～67HRC	FPBL	

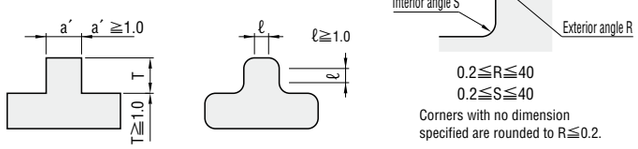


Catalog No. Type	Shape	H	W	V / P	6 1.00～3.00	8 1.00～4.00	10 1.00～6.00	13 1.00～8.00	16 1.00～10.00	20 1.50～12.00	25 1.50～16.00	L
Straight type BL PBL Single flange type BLF PBLF	2H～12H 2J～18J 3K～29K 2L～ 7L Hole shape Select from the shapes shown on P.715.	6	1.00～ 3.00		○	○	○	○	○	○	○	16
		8	1.00～ 4.00			○	○	○	○	○	○	20
		10	1.00～ 6.00				○	○	○	○	○	22
		13	1.00～ 8.00					○	○	○	○	25
		16	1.00～ 10.00						○	○	○	30
		20	1.50～ 12.00							○	○	35
		25	1.50～ 16.00								○	35

Catalog No. Type	Shape	H	W	b \ a	V / P	6.0～8.0 1.00～4.00 4	8.1～10.0 1.00～6.00 4	10.1～13.0 1.00～8.00 5	13.1～16.0 1.00～10.00 6	16.1～20.0 1.50～12.00 8	20.1～25.0 1.50～16.00 9	L
Configurable size type Straight type FBL FPBL	2H～12H 2J～18J 3K～29K 2L～ 7L Hole shape Select from the shapes shown on P.715.	6.0～ 8.0	1.00～ 4.00	4		○	○	○	○	○	○	16
		8.1～ 10.0	1.00～ 6.00	4			○	○	○	○	○	20
		10.1～ 13.0	1.00～ 8.00	5				○	○	○	○	22
		13.1～ 16.0	1.00～ 10.00	6					○	○	○	25
		16.1～ 20.0	1.50～ 12.00	8						○	○	30
		20.1～ 25.0	1.50～ 16.00	9							○	35

V・H…0.1mm increments　V−P≧a　H−W≧b

■Machining limit



0.2≦R≦40
0.2≦S≦40
Corners with no dimension specified are rounded to R≦0.2.

■Increment

Dimension T tolerance	Increment
W±0.01	0.01mm increments
P±0.01	0.01mm increments
A±0.01	0.01mm increments
B±0.01	0.01mm increments
C±0.01	0.01mm increments
Q	0.01mm increments
R	0.01mm increments
S	0.01mm increments
C (R)	0.01mm increments
A° (Angle)	0.1° increments

Order

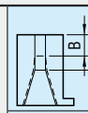
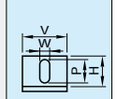
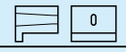
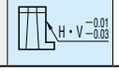
Catalog No.	V	H	L	P・W・A・B・C・Q・R・S…0.01mm increments
BL 4J	13	10	20	P8.00—W6.00—A4.50—R1.00—S2.00
FBL 5J	V14.6	H13.1	20	P9.00—W7.00—R1.00

Days to Ship Quotation

Alterations

Catalog No.	V	H	L(LC)	P・W・A・B・C・Q・R・S…	(BC・HC・TC, etc.)
BL4J	13	10	20	P8.00—W6.00—A5.5—R2.00—S2.00	BC4

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change 10≦LC<L 0.1mm increments For flange types, if LC≦12 then press-in lead is not included.	Quotation
		LKC	Full length tolerance change L +0.4 +0.2 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.4 +0.2 ⇨ +0.01 0	
Alterations to flange		HC	Flange width change 0≦HC<1.5 0.1mm increments	
		TC	Flange thickness change 2≦TC<5 0.1mm increments 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	

	Alteration	Code	Spec.	1Code
Alterations to shaped hole		BC	Shaped hole depth change 0≦BC≦4 0.1mm increments	Quotation
		PKC	Shaped hole diameter tolerance change P・W±0.01⇨ +0.01 0	
		HVC	H and V are reversed relative to shaped hole.P dimension is machined in direction H and W dimension is machined in direction V. P→min W max. P dimension must be within the range for W dimension that is listed in the specification table. The flange position for BLF・PBLF is as shown below. 	
Others		NDC	No press-in lead	

Price Quotation