

BUTTON DIES

BUTTON DIES



Product name Catalog No.	BUTTON DIES HEADED TYPE (REGULAR)	BUTTON DIES HEADED TYPE (ECONOMY)	BUTTON DIES STRAIGHT TYPE (REGULAR)	BUTTON DIES STRAIGHT TYPE (ECONOMY)
Page	251	253	255	257



SCRAP RETENTION BUTTON DIES HEADED TYPE (REGULAR)	SCRAP RETENTION BUTTON DIES HEADED TYPE (ECONOMY)	SCRAP RETENTION BUTTON DIES STRAIGHT TYPE (REGULAR)	SCRAP RETENTION BUTTON DIES STRAIGHT TYPE (ECONOMY)
259	261	263	265



NON-CLOGGING BUTTON DIES HEADED TYPE	NON-CLOGGING BUTTON DIES STRAIGHT TYPE	ANGULAR BUTTON DIES HEADED TYPE	ANGULAR BUTTON DIES STRAIGHT TYPE	SCRAP RETENTION ANGULAR BUTTON DIES HEADED TYPE
267	269	271	273	



SCRAP RETENTION ANGULAR BUTTON DIES STRAIGHT TYPE	BUTTON DIES, DEEP HOLE TYPE HEADED TYPE	BUTTON DIES, DEEP HOLE TYPE STRAIGHT TYPE	BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE HEADED TYPE	BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE STRAIGHT TYPE	SCRAP RETENTION BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE HEADED TYPE	SCRAP RETENTION BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE STRAIGHT TYPE
275	277	279	281			



BUTTON DIES, CONFIGURABLE SIZE HEADED TYPE	BUTTON DIES, CONFIGURABLE SIZE STRAIGHT TYPE	SCRAP RETENTION BUTTON DIES, CONFIGURABLE SIZE HEADED TYPE	SCRAP RETENTION BUTTON DIES, CONFIGURABLE SIZE STRAIGHT TYPE	BUTTON DIES —DOWEL SLOT TYPE—	SCRAP RETENTION BUTTON DIES —DOWEL SLOT TYPE—
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TILTING BUTTON DIES —DOWEL SLOT TYPE—	BUTTON DIES FOR FLAME HARDENING —DOWEL SLOT TYPE—	SCRAP VACUUM UNITS	PRODUCT SHOOTERS
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SCRAP REMOVERS

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**BUTTON DIE BLANKS
HEADED TYPE STRAIGHT TYPE**

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**ANGULAR BUTTON DIE BLANKS
HEADED TYPE STRAIGHT TYPE**

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**SPACERS
—FOR ANGULAR BUTTON DIES—**

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**SPACERS
—FOR STRAIGHT BUTTON DIES WITH RELIEF HOLES—**

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COLLARS FOR HEADED BUTTON DIES

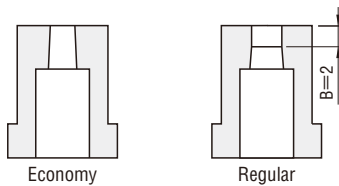
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BUTTON DIES LIST

Button die type			Type	Shank dia. tolerance	Normal			Scrap retention			Non-clogging	
					Round	Shaped	Page	Round	Shaped	Page	Round	Page
Headed		Equivalent to SKD11	Regular type	D_{m5} $D^{+0.005}_0$	MHD A—MHD	HD□ A—HD□	P.251	SR—MHD SRA—MHD	SR—HD□ SRA—HD□	P.259	SV—MHD	P.267
			Economy type	D_{m5} $D^{+0.005}_0$	EMHD A—EMHD	EHD□ A—EHD□	P.253	SR—EMHD SRA—EMHD	SR—EHD□ SRA—EHD□	P.261		
		Powdered high-speed steel	Regular type	D_{m5} $D^{+0.005}_0$	PMHD A—PMHD	PHD□ A—PHD□	P.251	SR—PMHD SRA—PMHD	SR—PHD□ SRA—PHD□	P.259	SV—PMHD	P.267
			Economy type	D_{m5} $D^{+0.005}_0$	EPMHD A—EPMHD	EPHD□ A—EPHD□	P.253	SR—EPMHD SRA—EPMHD	SR—EPHD□ SRA—EPHD□	P.261		
Straight		Equivalent to SKD11	Regular type	D_{n5} $D^{+0.005}_0$	MSD A—MSD	SD□ A—SD□	P.255	SR—MSD SRA—MSD	SR—SD□ SRA—SD□	P.263	SV—MSD	P.267
			Economy type	D_{n5} $D^{+0.005}_0$	EMSD A—EMSD	ESD□ A—ESD□	P.257	SR—EMSD SRA—EMSD	SR—ESD□ SRA—ESD□	P.265		
		Powdered high-speed steel	Regular type	D_{n5} $D^{+0.005}_0$	PMSD A—PMSD	PSD□ A—PSD□	P.255	SR—PMSD SRA—PMSD	SR—PSD□ SRA—PSD□	P.263	SV—PMSD	P.267
			Economy type	D_{n5} $D^{+0.005}_0$	EPMSD A—EPMSD	EPSD□ A—EPSD□	P.257	SR—EPMSD SRA—EPMSD	SR—EPSD□ SRA—EPSD□	P.265		
Angular, headed		Equivalent to SKD11	Regular type	D_{m5} $D^{+0.005}_0$	AHD A—AHD	AHD□ A—AHD□	P.269	SR—AHD SRA—AHD	SR—AHD□ SRA—AHD□	P.273		
		Powdered high-speed steel		D_{m5} $D^{+0.005}_0$	PAHD A—PAHD	PAHD□ A—PAHD□	P.269	SR—PAHD SRA—PAHD	SR—PAHD□ SRA—PAHD□	P.273		
Angular, straight		Equivalent to SKD11	Regular type	D_{n5} $D^{+0.005}_0$	ASD A—ASD	ASD□ A—ASD□	P.271	SR—ASD SRA—ASD	SR—ASD□ SRA—ASD□	P.275		
		Powdered high-speed steel		D_{n5} $D^{+0.005}_0$	PASD A—PASD	PASD□ A—PASD□	P.271	SR—PASD SRA—PASD	SR—PASD□ SRA—PASD□	P.275		
Long shaped hole, headed		Equivalent to SKD11	Regular type	D_{m5}	MHDS	HD□S	P.277					
Long shaped hole, straight		Equivalent to SKD11	Regular type	D_{n5}	MSDS	SD□S	P.277					
Configurable full length, headed		Equivalent to SKD11	Regular type	D_{m5}	S—MHD S—MHDS	S—HD□ S—HD□S	P.279	SRS—MHD SRS—MHDS	SRS—HD□ SRS—HD□S	P.281		
Configurable full length, straight		Equivalent to SKD11	Regular type	D_{n5}	S—MSD S—MSDS	S—SD□ S—SD□S	P.279	SRS—MSD SRS—MSDS	SRS—SD□ SRS—SD□S	P.281		
Configurable size; full length, shaped hole depth, and relief hole specified; headed		Equivalent to SKD11	Regular type	D_{m5}	FMHD FMHDS	FHD□ FHD□S	P.283	SR—FMHD SR—FMHDS	SR—FHD□ SR—FHD□S	P.285		
Configurable size; full length, shaped hole depth, and relief hole specified; straight		Equivalent to SKD11	Regular type	D_{n5}	FMSD FMSDS	FSD□ FSD□S	P.283	SR—FMSD SR—FMSDS	SR—FSD□ SR—FSD□S	P.285		
Dowel slot		Equivalent to SKD11	Economy type	D_{n5}	EKSD	EKD□	P.287	SR—EKSD	SR—EKD□	P.288		
		Regular type	KSD		KD□	SR—KSD		SR—KD□				
Tilting, dowel slot		Equivalent to SKD11	Regular type	D_{n5}	KSDS	KD□S	P.289					
For flame hardening, dowel slot		SX105V	Regular type	D_{n5}	HKSDS	HKD□S	P.290					

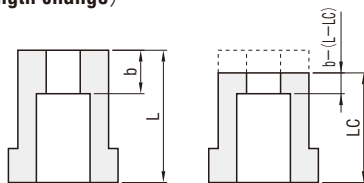
MACHINING GUIDE FOR BUTTON DIES

■ Difference between economy type and regular type

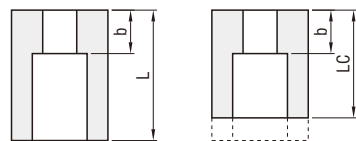


- The regular type includes the straight shaped hole section B (2 mm), while the economy type does not. For this reason, alteration PKC (shaped hole diameter tolerance change) cannot be used for the economy type.

■ Concerning shaped hole depth b and alteration LC (full length change)

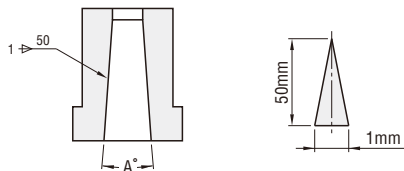


- With headed types, because a head thickness is set, LC machining is performed from the button die shaped hole, reducing the shaped hole depth b. With a regular type, the straight section B remains 2 mm, however if $b - (L - LC) < 2$ then $B = b - (L - LC)$. In this case, the tapered part $1 \begin{smallmatrix} \nearrow 50 \end{smallmatrix}$ disappears.



- With a straight type, because LC machining is performed from the relief hole direction, shaped hole depth b remains unchanged. (The same applies to alterations CKC and MKC.)

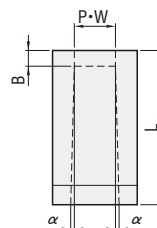
■ Indication of button die relief angles



$1 \begin{smallmatrix} \nearrow 50 \end{smallmatrix}$ indicates a taper in which the diameter increases by 1 mm over 50 mm of length.

Taper	1/50	1/100	1/150
Angle (A°)	1.146°	0.573°	0.382°

■ Button die L dimension and P·W spread



($\alpha \times 2$) part dimension: Spread of P·W (when $B=2$). Values in the table below are values for the α part on each side.

L	Taper	1/50	1/100	1/150
16		0.28	0.14	0.09
20		0.36	0.18	0.12
22		0.40	0.20	0.13
25		0.46	0.23	0.15
30		0.56	0.28	0.19
35		0.66	0.33	0.22
40		0.76	0.38	0.25

⚠ When LC or similar alteration is used, then $2\alpha = \frac{LC-B}{\text{(taper denominator)}}$.

■ Scrap retention button dies (For details, see P.1103)

With scrap retention button dies, 2 or more slanted grooves are machined on the inner surface of the die. The scrap initially punched out during the punching process forms small projections along the slanted grooves in the die. When the punching process pushes this scrap farther down to the bottom, the projections become compressed by the sides of the die ("ironing" effect), preventing scrap lifting from occurring.

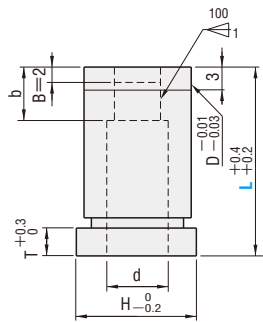
- Applicable range
 1. Hole diameter: $\phi 1.0 \sim \phi 16$
 2. Workpiece material: Can be used up to a maximum tensile strength of 120 kgf/mm² (1177 N/mm²).
 3. Thickness of workpiece materials: Minimum thickness 0.15 mm
 4. The scrap retention effect cannot be obtained if the clearance (C) exceeds 20% of the workpiece thickness (MT). Make sure that the clearance is 20% or less of MT.

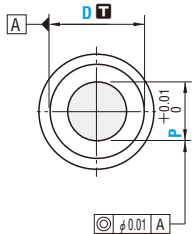
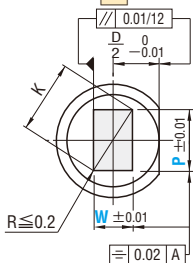
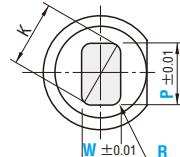
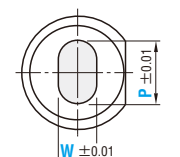
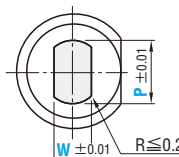
$$\text{Clearance (C)} < \text{Workpiece thickness (MT)} \times 20\%$$

- ⚠ Because scrap retention button dies prevent scrap lifting by forming small projections on punching scrap, they are not suitable in cases such as punching of precision holes, or when the punched-out item becomes the product.

BUTTON DIES

—HEADED TYPE (REGULAR)—

Headed	Shank diameter D $\pm$ tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from (A) (D) (R) (E) (G) below.
 For shank diameter tolerance D $\pm$, select either m5 or $^{+0.005}_0$.	Dm5	SKH51 61~64HRC Equivalent to SKD 11 60~63HRC	D3~5	MHD	Regular type 
		Equivalent to SKD 11 60~63HRC	D6~56	HD□	
		Equivalent to SKD 11 60~63HRC	D6~56	PMHD	
		Powdered high-speed steel 64~67HRC	D6~25	PHD□	
	D $^{+0.005}_0$	SKH51 61~64HRC Equivalent to SKD 11 60~63HRC	D3~5	A—MHD	
		Equivalent to SKD 11 60~63HRC	D6~16	A—HD□	
		Powdered high-speed steel 64~67HRC	D6~16	A—PMHD	
			D6~16	A—PHD□	

Hole shape (A)	Hole shape (D)	Hole shape (R)	Hole shape (E)	Hole shape (G)
				
$\odot \phi 0.01$ A	$\odot P \geq W$ $\odot K = \sqrt{P^2 + W^2}$	$\odot P \geq W$ $\odot 0.15 \leq R < \frac{W}{2}$ $\odot K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	$\odot P > W$	$\odot P > W$

D tolerance			Catalog No.		L		0.01mm increments				b	d	H	T			
D	m5	+0.005 0	Type	D			A		D R E G						R		
3	+0.006 +0.002	+0.005 0	(SKH51) (D _{m5}) MHD A—MHD (Equivalent to SKD11) (D _{m5}) (D ₀ ^{+0.005})	(3)	16 20	0.30~ 1.00	—	—	—	2	2.0	4	3				
4	+0.009 +0.004			(4)	16 20 22 25 28 30	0.50~ 2.00	—	—			2.4	5					
5	+0.009 +0.004			(5)	16 20 22 25 28 30	0.50~ 2.50	—	—			2.9	6					
6				6	16 20 22 25 28 30 32 35	1.00~ 3.00	3.00	1.00			3.4	9					
8	+0.012 +0.006			8	16 20 22 25 28 30 32 35 40	1.00~ 4.00	4.00	1.00			4.4	11					
10	+0.012 +0.006			10	16 20 22 25 28 30 32 35 40 (45)	2.00~ 6.00	6.00	1.20			6.4	13					
13	+0.015 +0.007			13	16 20 22 25 28 30 32 35 40 (45)	3.00~ 8.00	8.00	1.50			8.4	16					
16	+0.015 +0.007			16	16 20 22 25 28 30 32 35 40 (45)	5.00~ 10.00	10.00	2.00			10.6	19					
20	+0.017 +0.008			20	16 20 22 25 28 30 32 35 40 (45)	7.00~ 12.00	12.00	3.00			12.6	23					
22	+0.017 +0.008			22	16 20 22 25 28 30 32 35 40 (45)	8.00~ 14.00	14.00	3.00			14.6	25					
25		—	A MHD A—MHD D HDD A—HDD R HDR A—HDR E HDE A—HDE G HDG A—HDG	(25)	16 20 22 25 28 30 32 35 40 (45)	10.00~ 16.00	16.00	3.00	0.15≤R<W/2 (R only)	8	16.6	28	5				
32				(32)	16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00			20.6	35					
38	+0.020 +0.009			(38)	16 20 22 25 30 35	19.00~ 26.00	26.00	5.00			26.6	41					
45	+0.020 +0.009			(45)	20 22 25 30 35	25.00~ 35.00	35.00	6.00			36.0	48					
50				(50)	20 22 25 30 35	33.00~ 40.00	40.00	7.00			41.0	53					
56	+0.024 +0.011			(56)	20 22 25 30 35	38.00~ 45.00	45.00	8.00			46.0	59					
6	+0.008 +0.004			+0.005 0	(Powdered high-speed steel) (D _{m5}) (D ₀ ^{+0.005}) A PMHD A—PMHD D PHDD A—PHDD R PHDR A—PHDR E PHDE A—PHDE G PHDG A—PHDG	6	16 20 22 25 30 35	1.00~ 3.00			3.00	1.00		3	3.4	9	5
8	+0.012 +0.006					8	16 20 22 25 30 35	1.00~ 4.00			4.00	1.00			4.4	11	
10	+0.012 +0.006					10	16 20 22 25 30 35	2.00~ 6.00			6.00	1.20			6.4	13	
13	+0.015 +0.007					13	16 20 22 25 30 35	3.00~ 8.00			8.00	1.50			8.4	16	
16	+0.015 +0.007	16	16 20 22 25 30 35			5.00~ 10.00	10.00	2.00	10.6	19							
20	+0.017 +0.008	(20)	16 20 22 25 30 35			7.00~ 12.00	12.00	3.00	12.6	23							
25	+0.017 +0.008	(25)	16 20 22 25 30 35			10.00~ 16.00	16.00	3.00	16.6	28							

- (3) D3 dies are thin under the head. Be careful not to damage the bushings when mounting them.
 (4) D (3), (4), and (5) specifications are available for (A) shape (round) only. They are not available for shapes (D) (R) (E) (G).
 (5) D = (20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of Dm5 only.
 (6) L = (45) is a specification available for shank dia. tolerance of Dm5 only.



Order

Catalog No. — **L** — **P** — **W** — **R (R only)**
MHD 13 — **30** — **P7.00**



Days to Ship

Quotation

Alterations

Catalog No. — **L (LC)** — **P (PC)** — **W (WC)** — **R** — (BC·HC·TC·CKC·MKC, etc.)
MHD 13 — **30** — **P7.00** — **TC4.0** — **KFC90**

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole		PC Shaped hole diameter change $\min.: P > PC \geq \frac{P_{\min.}}{2} \geq 0.50$ 0.01 mm increments ⚡ If PC is 1.00~1.99, then b = 4. $\max.: \frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{\max.} + 0.2$ 0.01 mm increments		
		BC Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments ⚡ Cannot be used for $P < 1.00$.		
		PKC Shaped hole diameter tolerance change $P + 0.01 \rightarrow +0.005$ ⚡ Cannot be used for $P < 1.00$.		
Alterations to full length		LC Full length change (reduction in shaped hole depth) $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ·CKC·MKC, 0.01 mm units can be selected.) ⚡ b dimension and press-in lead are shortened by $(L-LC)$.		Quotation
		LKC Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
		LKZ Full length tolerance change $L + 0.4 \rightarrow +0.01$ $+0.2 \rightarrow 0$ ⚡ Cannot be used for $L (LC) < 16$. ⚡ Cannot be used for $D > 25$.		
		CKC Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. ⚡ Cannot be used for $L (LC) < 16$. TKC Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ $0 \rightarrow 0$ LKC Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
		MKC Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. ⚡ Cannot be used for $L (LC) < 16$. TKM Head thickness tolerance change $T + 0.3 \rightarrow 0$ $0 \rightarrow -0.02$ LKC Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		

Alteration	Code	A	D R E G	1Code
Alterations to head		KC Addition of single key flat to head		
		WKC Addition of double key flats in parallel		
		KFC Double key flats at 0° and a selected angle 1° increments ⚡ Cannot be combined with KC·WKC. ⚡ Cannot be used for $L (LC) < 16$ or $D > 25$.		
		HC Head diameter change $D \leq HC < H$ 0.1 mm increments		
		TC Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC, 0.01 mm increments can be selected.) ⚡ Full length L is shortened by $(T-TC)$. If combined with LC, full length is equal to LC.		Quotation
		TKC Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ $0 \rightarrow 0$ ⚡ Cannot be used with $L (LC) < 16$.		
Others		TKM Head thickness tolerance change $T + 0.3 \rightarrow 0$ $0 \rightarrow -0.02$ ⚡ Cannot be used for $L (LC) < 16$.		
		RC Head thickness is machined to a tolerance of $-0.04 \sim 0$ relative to the retainer surface. ⚡ Cannot be used for $L (LC) < 30$.		
		SKC Single key flat on shank ⚡ Can be used with $D \geq 8$ and $L (LC) \geq 20$. ⚡ Cannot be combined with KC·WKC·KFC.		

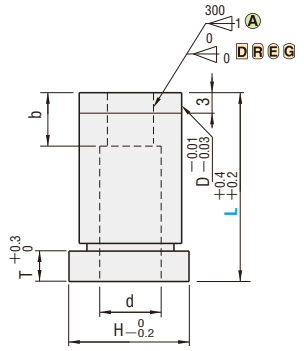


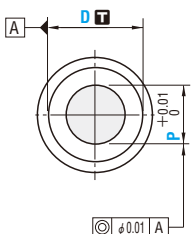
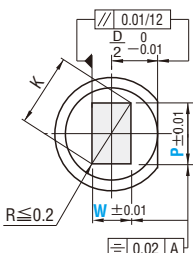
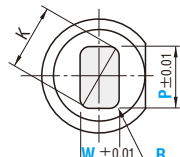
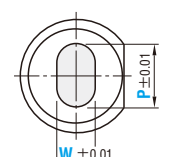
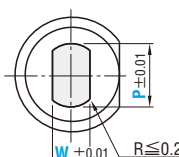
Price

Quotation

BUTTON DIES

—HEADED TYPE (ECONOMY)—

Headed	Shank diameter D $\pm$ tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
 For shank diameter tolerance D $\pm$, select either m5 or $^{+0.005}_0$.	Dm5	Equivalent to SKD11 60~63HRC	D6~56	EMHD	Economy type 
			D6~25	EHD□	
		Powdered high-speed steel 64~67 HRC	D6~25	EPMHD	
			D6~25	EPHD□	
	D $^{+0.005}_0$	Equivalent to SKD11 60~63HRC	D6~16	A-EMHD	
			D6~16	A-EHD□	
	D $^{+0.005}_0$	Powdered high-speed steel 64~67 HRC	D6~16	A-EPMHD	
			D6~16	A-EPHD□	

Hole shape A	Hole shape D	Hole shape R	Hole shape E	Hole shape G
 $\odot \phi 0.01 A$	 $P \geq W$ $K = \sqrt{P^2 + W^2}$	 $P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	 $P > W$	 $P > W$

D tolerance		Catalog No.	L	0.01mm increments				b	d	H	T									
D	m5			A		D R E G						R								
Type				min. P max.		P-Kmax.	P-Wmin.					R								
6	$\begin{smallmatrix} +0.009 \\ +0.004 \end{smallmatrix}$	(Equivalent to SKD11) (D _{m5}) (D $\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$)	6	16	20	22	25	28	30	32	35	1.00~	3.00	3.00	1.00	3	3.4	9		
8	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$		8	16	20	22	25	28	30	32	35	40	1.00~	4.00	4.00	1.00	4	4.4	11	
10	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$		10	16	20	22	25	28	30	32	35	40 (45)	2.00~	6.00	6.00	1.20	6	6.4	13	
13	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$		13	16	20	22	25	28	30	32	35	40 (45)	3.00~	8.00	8.00	1.50		8.4	16	
16	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$		16	16	20	22	25	28	30	32	35	40 (45)	5.00~	10.00	10.00	2.00		10.6	19	
20	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$		A	20	16	20	22	25	28	30	32	35	40 (45)	7.00~	12.00	12.00	3.00		12.6	23
22	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$		D	22	16	20	22	25	28	30	32	35	40 (45)	8.00~	14.00	14.00	3.00		14.6	25
25	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$		R	25	16	20	22	25	28	30	32	35	40 (45)	10.00~	16.00	16.00	3.00		16.6	28
32	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$		E	32	16	20	22	25	28	30	32	35		15.00~	20.00	20.00	4.00		20.6	35
38	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$		G	38	16	20	22	25		30	35		19.00~	26.00	26.00	5.00		26.6	41	
45	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$		45		20	22	25		30	35		25.00~	35.00	35.00	6.00		36.0	48		
50	$\begin{smallmatrix} +0.024 \\ +0.011 \end{smallmatrix}$		50		20	22	25		30	35		33.00~	40.00	40.00	7.00		41.0	53		
56	$\begin{smallmatrix} +0.024 \\ +0.011 \end{smallmatrix}$		56		20	22	25		30	35		38.00~	45.00	45.00	8.00		46.0	59		
6	$\begin{smallmatrix} +0.009 \\ +0.004 \end{smallmatrix}$	(Powdered high-speed steel) (D _{m5}) (D $\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$)	6	16	20	22	25		30	35		1.00~	3.00	3.00	1.00	3	3.4	9		
8	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$		A	8	16	20	22	25		30	35		1.00~	4.00	4.00	1.00	4	4.4	11	
10	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$		D	10	16	20	22	25		30	35		2.00~	6.00	6.00	1.20	6	6.4	13	
13	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$		R	13	16	20	22	25		30	35		3.00~	8.00	8.00	1.50		8.4	16	
16	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$		E	16	16	20	22	25		30	35		5.00~	10.00	10.00	2.00		10.6	19	
20	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$		G	20	16	20	22	25		30	35		7.00~	12.00	12.00	3.00		12.6	23	
25	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$			25	16	20	22	25		30	35		10.00~	16.00	16.00	3.00		16.6	28	

⚡ D=(20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of Dm5 only.
 ⚡ L=(45) is a specification available for shank dia. tolerance of Dm5 only.



Order

Catalog No. — L — P — W — R (R only)
EMHD 13 — 30 — P7.00



Days to Ship

Quotation



Alterations

Catalog No. — L (LC) — P (PC) — W (WC) — R — (HC-TC-CKC-MKC, etc.)
EMHD 13 — 30 — P7.00 — TC4.0 — KFC90

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole		Shaped hole diameter change min.: $P > PC \geq \frac{Pmin.}{2} \geq 0.50$ 0.01 mm increments When PC is 1.00~1.99, then b=4. max.: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot Kmax. + 0.2$ 0.01 mm increments	Shaped hole diameter change min.: $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P \cdot Wmin.}{2} \geq 1.00$ 0.01 mm increments	
	PC WC			
Alterations to full length		Full length change (reduction in shaped hole depth) $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments (If combined with LKC-LKZ-CKC-MKC, 0.01 mm increments can be selected.) Dimension b and lead are shortened by (L-LC).		
	LC			
		Full length tolerance change $L + 0.4 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.05$ $+ 0.2 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$		
	LKC			
		Full length tolerance change $L + 0.4 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.01$ $+ 0.2 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$		
	LKZ			
Alterations to full length		Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. Cannot be used for L (LC) < 16.		
	CKC			
		TKC Head thickness tolerance change $T + 0.3 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.02$ $0 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$	LKC Full length tolerance change $L + 0.4 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.05$ $+ 0.2 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$	
	TKC			
Alterations to full length		Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. Cannot be used for L (LC) < 16.		
	MKC			
Alterations to full length		TKM Head thickness tolerance change $T + 0.3 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$ $0 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} - 0.02$	LKC Full length tolerance change $L + 0.4 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.05$ $+ 0.2 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$	
	TKM			

Quotation

Alteration	Code	A	D R E G	1Code
Alterations to head		Key flat position increments	270° 180° 0° 90°	
	KC			
		Double key flats in parallel	270° 180° 0° 90°	
	WKC			
		Double key flats at 0° and a selected angle increments	270° 180° 0° 90°	
	KFC			
		Head diameter change $D \leq HC < H$ 0.1 mm increments		
	HC			
Alterations to head		Head thickness change $2 \leq TC < 5$ 0.1 mm increments (If combined with TKC-TKM-CKC-MKC, 0.01 mm increments can be selected.) Full length L is shortened by (5-TC). If combined with LC, full length is equal to LC.		
	TC			
		Head thickness tolerance change $T + 0.3 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} + 0.02$ $0 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$		
	TKC			
Alterations to head		Head thickness tolerance change $T + 0.3 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} 0$ $0 \begin{smallmatrix} \Rightarrow \\ \Rightarrow \end{smallmatrix} - 0.02$		
	TKM			
Alterations to head		Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. Cannot be used for L (LC) < 30.		
	RC			
Others		Single key flat on shank Can be used with $D \geq 8$ and $L (LC) \geq 20$. Cannot be combined with KC-WKC-KFC.		
SKC				

Quotation

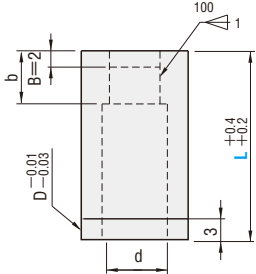


Price

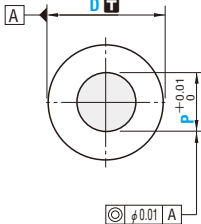
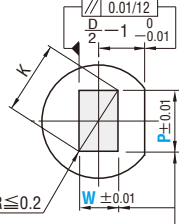
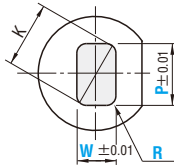
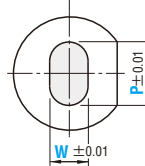
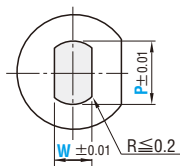
Quotation

BUTTON DIES

—STRAIGHT TYPE (REGULAR)—

Straight type	Shank diameter D Tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{n5}	SKH51 61~64HRC Equivalent to SKD 11 60~63 HRC	D3~5	MSD	Regular type 
			D6~56	SD□	
			D8~56	SD□	
			D6~25	PMSD	
			D8~25	PSD□	
	D ^{+0.005} ₀	SKH51 61~64HRC Equivalent to SKD 11 60~63 HRC	D3~5	A-MSD	
			D6~16	A-SD□	
			D8~16	A-SD□	
			D6~16	A-PMSD	
			D8~16	A-PSD□	

For shank diameter tolerance D_T, select either n5 or ^{+0.005}₀.

Hole shape A	Hole shape D	Hole shape R	Hole shape E	Hole shape G
				
	$P \geq W$ $K = \sqrt{P^2 + W^2}$	$P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	$P > W$	$P > W$

D tolerance		Catalog No.		L		0.01mm increments				b	d
D	n5	Type	D			A	D R E G	R			
3	^{+0.008} _{+0.004}	(SKH51)	(3)	16 20		0.30~1.00	—	—	—	2	2.0
4		(D _{n5}) (D ^{+0.005} ₀)	(4)	16 20 22 25 28 30		0.50~2.00	—	—	—		2.4
5	^{+0.013} _{+0.008}	A MSD A-MSD	(5)	16 20 22 25 28 30		0.50~2.50	—	—	—		2.9
6			(6)	16 20 22 25 28 30 32 35		1.00~3.00	—	—	—	3	3.4
8	^{+0.016} _{+0.010}	(Equivalent to SKD11)	8	16 20 22 25 28 30 32 35		1.00~4.00	4.00	1.00	—		4.4
10		(D _{n5}) (D ^{+0.005} ₀)	10	16 20 22 25 28 30 32 35 (40)		2.00~6.00	6.00	1.20	—		6.4
13	^{+0.020} _{+0.012}	A MSD A-MSD	13	16 20 22 25 28 30 32 35 (40)		3.00~8.00	8.00	1.50	—	8	8.4
16			16	16 20 22 25 28 30 32 35 (40)		5.00~10.00	10.00	2.00	—		10.6
20	^{+0.024} _{+0.015}	D SDD A-SDD	(20)	16 20 22 25 28 30 32 35 (40)		7.00~12.00	12.00	3.00	—		12.6
22			(22)	16 20 22 25 28 30 32 35 (40)		8.00~14.00	14.00	3.00	—		14.6
25		R SDR A-SDR	(25)	16 20 22 25 28 30 32 35 (40)		10.00~16.00	16.00	3.00	—		16.6
32			(32)	16 20 22 25 28 30 32 35		15.00~20.00	20.00	4.00	—		20.6
38	^{+0.028} _{+0.017}	E SDE A-SDE	(38)	16 20 22 25 30 35		19.00~26.00	26.00	5.00	—		26.6
45			(45)	20 22 25 30 35		25.00~35.00	35.00	6.00	—		36.0
50		G SDG A-SDG	(50)	20 22 25 30 35		33.00~40.00	40.00	7.00	—	8	41.0
56	^{+0.033} _{+0.020}		(56)	20 22 25 30 35		38.00~45.00	45.00	8.00	—		46.0
6	^{+0.013} _{+0.008}	(Powdered high-speed steel)	(6)	16 20 22 25 30 35		1.00~3.00	—	—	—	3	3.4
8		(D _{n5}) (D ^{+0.005} ₀)	8	16 20 22 25 30 35		1.00~4.00	4.00	1.00	—		4.4
10	^{+0.016} _{+0.010}	A PMSD A-PMSD	10	16 20 22 25 30 35		2.00~6.00	6.00	1.20	—	6	6.4
13	^{+0.020} _{+0.012}	D PSDD A-PSDD	13	16 20 22 25 30 35		3.00~8.00	8.00	1.50	—		8.4
16		R PSDR A-PSDR	16	16 20 22 25 30 35		5.00~10.00	10.00	2.00	—	8	10.6
20	^{+0.024} _{+0.015}	E PSDE A-PSDE	(20)	16 20 22 25 30 35		7.00~12.00	12.00	3.00	—		12.6
25		G PSDG A-PSDG	(25)	16 20 22 25 30 35		10.00~16.00	16.00	3.00	—		16.6

Ⓜ D=(3), (4), (5), and (6) are specifications available for A shape (round) only. They are not available for shapes D R E G.

Ⓜ D=(20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of D_{n5} only.

Ⓜ L=(40) is a specification available for shank dia. tolerance of D_{n5} only.



Order

Catalog No. — **L** — **P** — **W** — **R (R only)**
MSD 13 — **30** — **P7.00**



Days to Ship

Quotation

Order



Catalog No. — **L (LC·SLC)** — **P (PC)** — **W (WC)** — **R** — (BC·KC·WKC, etc.)
SDD 38 — **35** — **P21.03** — **W6.83** — **BC4.0**

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole		PC	Shaped hole diameter change $\frac{\min.}{P} > \frac{PC}{W} \geq \frac{P_{min.}}{2} \geq 0.50$ 0.01 mm increments ⚡ If PC is 1.00~1.99, then b = 4. $\frac{\max.}{W} - \frac{PC}{WC} \leq P \cdot K_{max.} + 0.2$ 0.01 mm increments	Quotation
		WC	Shaped hole diameter change $\frac{\min.}{P} > \frac{PC}{W} \geq \frac{P \cdot W_{min.}}{2} \geq 1.00$ 0.01mm increments	
		BC	Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments ⚡ Cannot be used for P < 1.00.	
		PKC	Shaped hole diameter tolerance change $P + 0.01 \rightarrow +0.005$ 0 ⚡ Cannot be used for P < 1.00.	

Alteration	Code	A	D R E G	1Code
Alterations to full length		LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ, 0.01 mm increments can be selected.) ⚡ Press-in lead is shortened by (L—LC).	Quotation
		SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚡) are the same as for LC. LKC Full length change + Full length tolerance change $L + 0.4 \rightarrow +0.05$ $L + 0.2 \rightarrow 0$ ⚡ Can be selected in 0.01 mm increments.	
		LKC	Full length tolerance change $L + 0.4 \rightarrow +0.05$ $L + 0.2 \rightarrow 0$	
		LKZ	Full length tolerance change $L + 0.4 \rightarrow +0.01$ $L + 0.2 \rightarrow 0$ ⚡ Cannot be used for L (LC) < 16. ⚡ Cannot be used for D > 25.	
Others		KC	Addition of single key flat ⚡ Cannot be used for D3~4. Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel ⚡ Cannot be used for D3 ~ 6. ⚡ Can be combined with KC for shapes D R E G .	



Price

Quotation

BUTTON DIES

—STRAIGHT TYPE (ECONOMY)—

Straight type	Shank diameter D Tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{n5}	Equivalent to SKD11 60~63HRC	D6~56	EMSD	Economy type
			D8~56	ESD□	
			D6~25	EPMSD	
			D8~25	EPSD□	
	D ^{+0.005} ₀	Equivalent to SKD11 60~63HRC	D6~16	A—EMSD	
			D8~16	A—ESD□	
	D ^{+0.005} ₀	Powdered high-speed steel 64~67 HRC	D6~16	A—EPMSD	
			D8~16	A—EPSD□	

For shank diameter tolerance D T select either n5 or ^{+0.005}₀

Hole shape	Hole shape	Hole shape	Hole shape	Hole shape
A	D	R	E	G
⚡ P ≥ W ⚡ K = √P² + W²	⚡ P ≥ W ⚡ K = √P² + W²	⚡ P ≥ W ⚡ 0.15 ≤ R < $\frac{W}{2}$ ⚡ K = √(P - 2R)² + (W - 2R)² + 2R	⚡ P > W	⚡ P > W

D tolerance	Catalog No.	Type	D	L	0.01mm increments				b	d
					A	D R E G	R			
D	n5				min. P max.	P·Kmax.	P·Wmin.	R		
6	^{+0.013} _{+0.008}	(Equivalent to SKD11) (D _{n5}) (D ^{+0.005} ₀)	(6)	16 20 22 25 28 30 32 35	1.00 ~ 3.00	—	—	—	3	3.4
8	^{+0.016} _{+0.010}		8	16 20 22 25 28 30 32 35	1.00 ~ 4.00	4.00	1.00	—	4	4.4
10	^{+0.020} _{+0.012}		10	16 20 22 25 28 30 32 35 (40)	2.00 ~ 6.00	6.00	1.20	—	6	6.4
13	^{+0.024} _{+0.015}		13	16 20 22 25 28 30 32 35 (40)	3.00 ~ 8.00	8.00	1.50	—	8	8.4
16	^{+0.028} _{+0.017}		16	16 20 22 25 28 30 32 35 (40)	5.00 ~ 10.00	10.00	2.00	—	8	10.6
20	^{+0.033} _{+0.020}		(20)	16 20 22 25 28 30 32 35 (40)	7.00 ~ 12.00	12.00	3.00	—	8	12.6
22	^{+0.038} _{+0.024}		(22)	16 20 22 25 28 30 32 35 (40)	8.00 ~ 14.00	14.00	3.00	—	8	14.6
25	^{+0.043} _{+0.028}		(25)	16 20 22 25 28 30 32 35 (40)	10.00 ~ 16.00	16.00	3.00	—	8	16.6
32	^{+0.048} _{+0.033}		(32)	16 20 22 25 28 30 32 35	15.00 ~ 20.00	20.00	4.00	—	8	20.6
38	^{+0.053} _{+0.038}		(38)	16 20 22 25 30 35	19.00 ~ 26.00	26.00	5.00	—	8	26.6
45	^{+0.058} _{+0.043}		(45)	20 22 25 30 35	25.00 ~ 35.00	35.00	6.00	—	8	36.0
50	^{+0.063} _{+0.048}		(50)	20 22 25 30 35	33.00 ~ 40.00	40.00	7.00	—	8	41.0
56	^{+0.068} _{+0.053}		(56)	20 22 25 30 35	38.00 ~ 45.00	45.00	8.00	—	8	46.0
6	^{+0.013} _{+0.008}	(Powdered high-speed steel) (D _{n5}) (D ^{+0.005} ₀)	(6)	16 20 22 25 30 35	1.00 ~ 3.00	—	—	—	3	3.4
8	^{+0.016} _{+0.010}		8	16 20 22 25 30 35	1.00 ~ 4.00	4.00	1.00	—	4	4.4
10	^{+0.020} _{+0.012}		10	16 20 22 25 30 35	2.00 ~ 6.00	6.00	1.20	—	6	6.4
13	^{+0.024} _{+0.015}		13	16 20 22 25 30 35	3.00 ~ 8.00	8.00	1.50	—	8	8.4
16	^{+0.028} _{+0.017}		16	16 20 22 25 30 35	5.00 ~ 10.00	10.00	2.00	—	8	10.6
20	^{+0.033} _{+0.020}		(20)	16 20 22 25 30 35	7.00 ~ 12.00	12.00	3.00	—	8	12.6
25	^{+0.038} _{+0.024}		(25)	16 20 22 25 30 35	10.00 ~ 16.00	16.00	3.00	—	8	16.6

⚡ D (6) is a specification available for shape A (round) only. It is not available for shapes D R E G.

⚡ D = (20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of D_{n5} only.

⚡ L = (40) is a specification available for shank dia. tolerance of D_{n5} only.



Order

Catalog No. — **L** — **P** — **W** — **R (R only)**
EMSD 13 — **30** — **P7.00**



Days to Ship

Quotation

Alterations



Catalog No. — **L (LC-SLC)** — **P (PC)** — **W (WC)** — **R** — (KC-WKC, etc.)
ESDD 38 — **35** — **P21.03** — **W6.83** — **KC90**

Alteration	Code	A	D R E G	1Code	
Alterations to shaped hole		Shaped hole diameter change $\min.: P > PC \geq \frac{P_{\min.}}{2} \geq 0.50$ 0.01 mm increments ⚡ When PC is 1.00 ~ 1.99, then b=4. $\max.: \frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{\max.} + 0.2$ 0.01 mm increments	Shaped hole diameter change $\min.: P > PC \geq \frac{P \cdot W_{\min.}}{2} \geq 1.00$ 0.01 mm increments		
	PC WC				
Alterations to full length		Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) ⚡ Press-in lead is shortened by $(L - LC)$. Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚡) are the same as for LC.		Quotation	
	LC				
		LC Full length change + LKC Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $+0.2 \Rightarrow 0$ ⚡ Can be selected in 0.01 mm increments.			
	SLC				
		Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $+0.2 \Rightarrow 0$			
	LKC				
		Full length tolerance change $L + 0.4 \Rightarrow +0.01$ $+0.2 \Rightarrow 0$ ⚡ Cannot be used for L (LC) < 16. ⚡ Cannot be used for D > 25.			
	LKZ				

Alteration	Code	A	D R E G	1Code
Others		KC Addition of single key flat ⚡ Cannot be used for D6.		Quotation
		WKC Addition of double key flats in parallel ⚡ Cannot be used for D6. ⚡ Can be combined with KC for shapes D R E G .		

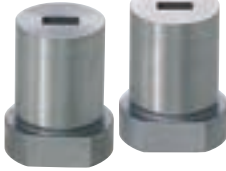
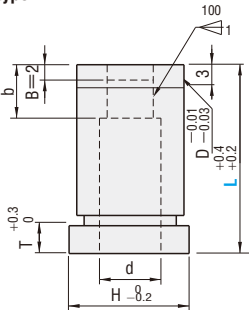


Price

Quotation

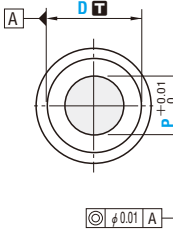
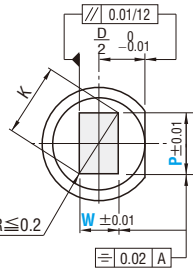
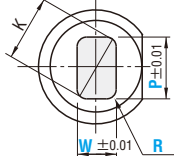
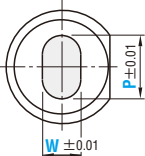
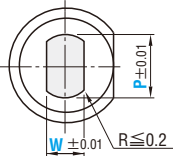
SCRAP RETENTION BUTTON DIES

—HEADED TYPE (REGULAR)—

Headed	Shank diameter D Tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
 RoHS	D _{m5}	SKH51 61~64HRC Equivalent to SKD11 60~63 HRC	D4-5	SR—MHD	Regular type 
			D6~56	SR—HD□	
			D6~56	SR—PMHD	
			D6~25	SR—PHD□	
	D ^{+0.005} ₀	SKH51 61~64HRC Equivalent to SKD11 60~63 HRC	D4-5	SRA—MHD	
			D6~16	SRA—HD□	
			D6~16	SRA—PMHD	
			D6~16	SRA—PHD□	

For shank diameter tolerance D **T**, select either m5 or ^{+0.005}₀.

For shank diameter tolerance D T, select either m5 or ^{+0.005}₀.

Hole shape A	Hole shape D	Hole shape R	Hole shape E	Hole shape G
				
$\text{P} \geq 0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer) $\text{P} \geq W$ $K = \sqrt{P^2 + W^2}$	$\text{P} \geq 0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer) $\text{P} \geq W$ $K = \sqrt{P^2 + W^2}$	$\text{P} \geq W$ $0.15 \leq R < \frac{W}{2}$ $\text{P} \geq W$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	$\text{P} \geq W$ $0.15 \leq R < \frac{W}{2}$ $\text{P} \geq W$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	$\text{P} \geq W$ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

D tolerance		Catalog No.		D	L	0.01mm increments					0.005mm increments	b	d	H	T
D	m5	Type	Type			A	D	R	E	G					
4		(SKH51)	(SKH51)	(4)	16 20 22 25 28 30	1.00~ 2.00	—	—	—	—	MT ≥ 0.15 Select a workpiece material thickness of 0.15 mm or more. 	2	2.4	5	3
5	^{+0.009} _{+0.004}	(D _{m5})	(D _{m5})	(5)	16 20 22 25 28 30	1.00~ 2.50	—	—	—	—		2	2.9	6	3
6		(Equivalent to SKD11)	(Equivalent to SKD11)	6	16 20 22 25 28 30 32 35	1.00~ 3.00	3.00	1.00	—	—		3	3.4	9	—
8	^{+0.012} _{+0.006}			8	16 20 22 25 28 30 32 35 40	1.00~ 4.00	4.00	1.00	—	—		4	4.4	11	—
10				10	16 20 22 25 28 30 32 35 40 (45)	2.00~ 6.00	6.00	1.20	—	—		6	6.4	13	—
13	^{+0.015} _{+0.007}			13	16 20 22 25 28 30 32 35 40 (45)	3.00~ 8.00	8.00	1.50	—	—		8	8.4	16	—
16				16	16 20 22 25 28 30 32 35 40 (45)	5.00~ 10.00	10.00	2.00	—	—		10.6	19	—	—
20	^{+0.017} _{+0.008}	A SR—MHD	SRA—MHD	(20)	16 20 22 25 28 30 32 35 40 (45)	7.00~ 12.00	12.00	3.00	—	—		12.6	23	—	—
22		D SR—HDD	SRA—HDD	(22)	16 20 22 25 28 30 32 35 40 (45)	8.00~ 14.00	14.00	3.00	—	—		14.6	25	5	—
25		R SR—HRR	SRA—HRR	(25)	16 20 22 25 28 30 32 35 40 (45)	10.00~ 16.00	16.00	3.00	—	—		16.6	28	—	—
32		E SR—HDE	SRA—HDE	(32)	16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00	—	—		20.6	35	—	—
38	^{+0.020} _{+0.009}	G SR—HDG	SRA—HDG	(38)	16 20 22 25 30 35	19.00~ 26.00	26.00	5.00	—	—		26.6	41	—	—
45				(45)	20 22 25 30 35	25.00~ 35.00	35.00	6.00	—	—		36.0	48	—	—
50				(50)	20 22 25 30 35	33.00~ 40.00	40.00	7.00	—	—		41.0	53	—	—
56	^{+0.024} _{+0.011}			(56)	20 22 25 30 35	38.00~ 45.00	45.00	8.00	—	—		46.0	59	—	—
6	^{+0.009} _{+0.004}	(Powdered high-speed steel)	(Powdered high-speed steel)	6	16 20 22 25 30 35	1.00~ 3.00	3.00	1.00	—	—	C ≥ 0.010 Select a clearance of 0.010mm or more.	3	3.4	9	5
8	^{+0.012} _{+0.006}	A SR—PMHD	SRA—PMHD	8	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	—	—		4	4.4	11	—
10		D SR—PHDD	SRA—PHDD	10	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	—	—		6	6.4	13	—
13	^{+0.015} _{+0.007}	R SR—PHDR	SRA—PHDR	13	16 20 22 25 30 35	3.00~ 8.00	8.00	1.50	—	—		8.4	16	—	—
16		E SR—PHDE	SRA—PHDE	16	16 20 22 25 30 35	5.00~ 10.00	10.00	2.00	—	—		10.6	19	—	—
20	^{+0.017} _{+0.008}	G SR—PHDG	SRA—PHDG	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00	—	—		12.6	23	—	—
25				(25)	16 20 22 25 30 35	10.00~ 16.00	16.00	3.00	—	—		16.6	28	—	—

Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).

MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P-W-R) when selecting the button die finishing dimensions.

D = (4) and (5) are specifications available for shape A (round) only. They are not available for shapes D R E G.

D = (20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of D_{m5} only.

L = (45) is a specification available for shank dia. tolerance of D_{m5} only.



Order

Catalog No. — L — P — W — R (R only) — MT — C
SR—MHD 13 — 30 — P7.00 — MT1.50 — C0.105



Days to Ship

Quotation



Alterations

Catalog No. — L (LC) — P (PC) — W (WC) — R — MT — C — (BC·HC·TC·CKC·MKC, etc.)
SR—MHD 13 — 30 — P7.00 — MT1.50 — C0.105 — TC3

Alteration	Code	(A)	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P \cdot W_{min}}{2} \geq 1.00$ 0.01 mm increments ⚠ For (A) only, if PC is 1.00~1.99, then b=4.		
	BC	Shaped hole depth change $\frac{P}{B} > \frac{PC}{B_{max}} \geq 1.00$ 0.01 mm increments 1 ≤ BC ≤ Bmax. 1 ≤ BC ≤ b 0.1 mm increments	Shaped hole depth change 1 ≤ BC < 2 0.1 mm increments	
	PKC	Shaped hole diameter tolerance change $P +0.01 \rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0	
Alterations to full length	LC	Full length change (reduction in shaped hole depth) $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ·CKC·MKC, 0.01 mm units can be selected.) ⚠ Dimension b and press-in lead are shortened by (L-LC).		
	LKC	Full length tolerance change $L +0.4 \rightarrow +0.05$ $L +0.2 \rightarrow 0$		
	LKZ	Full length tolerance change $L +0.2 \rightarrow +0.01$ $L +0.2 \rightarrow 0$	⚠ Cannot be used for L (LC) < 16. ⚠ Cannot be used for D > 25.	
	CKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. ⚠ Cannot be used for L (LC) < 16.		
		TKC Head thickness tolerance change $T +0.3 \rightarrow +0.02$ $T +0.3 \rightarrow 0$	LKC Full length tolerance change $L +0.4 \rightarrow +0.05$ $L +0.2 \rightarrow 0$	
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. ⚠ Cannot be used for L (LC) < 16.		
		TKM Head thickness tolerance change $T +0.3 \rightarrow 0$ $T +0.3 \rightarrow -0.02$	LKC Full length tolerance change $L +0.4 \rightarrow +0.05$ $L +0.2 \rightarrow 0$	

Quotation

Alteration	Code	(A)	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head 180° 270° 0° 90° Key flat position change! increments		
	WKC	Addition of double key flats in parallel ⚠ Can be combined with KC for shapes D R E G.		
	KFC	Double key flats at 0° and a selected angle 1° increments 180° 270° 0° 90° ⚠ Cannot be combined with KC·WKC. ⚠ Cannot be used for L (LC) < 16 or D > 25.	Double key flats at 0° and a selected angle 1° increments 180° 270° 0° 90° ⚠ Cannot be combined with KC·WKC. ⚠ Cannot be used for L (LC) < 16 or D > 25.	
	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments		
	TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC, 0.01 mm increments can be selected.) ⚠ Full length L is shortened by (T-TC). If combined with LC, full length is equal to LC.		
	TKC	Head thickness tolerance change $T +0.3 \rightarrow +0.02$ $T +0.3 \rightarrow 0$	⚠ Cannot be used for L (LC) < 16.	
Others	TKM	Head thickness tolerance change $T +0.3 \rightarrow -0.02$ $T +0.3 \rightarrow 0$	⚠ Cannot be used for L (LC) < 16.	
	RC	Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. ⚠ Cannot be used for L (LC) < 30.		
	SKC	Single key flat on shank ⚠ Can be used for D ≥ 8 and L (LC) ≥ 20. ⚠ Cannot be combined with KC·WKC·KFC.		

Quotation

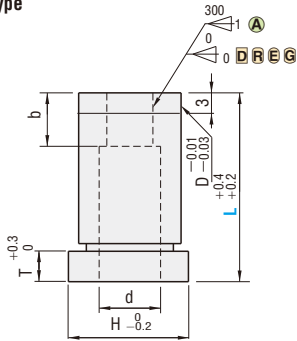


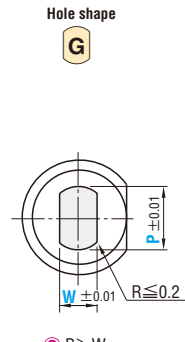
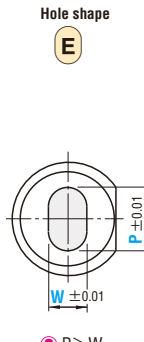
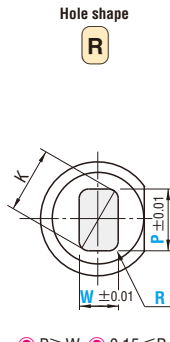
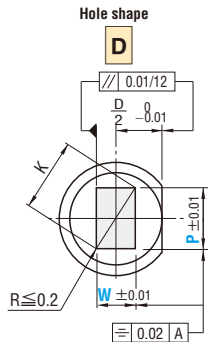
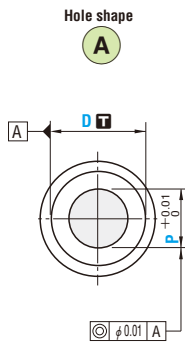
Price

Quotation

SCRAP RETENTION BUTTON DIES

—HEADED TYPE (ECONOMY)—

Headed	Shank diameter D Tolerance	$\frac{M}{H}$	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
 For shank diameter tolerance D T, select either m5 or $\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Dm5	Equivalent to SKD11 60~63HRC	D6~56	SR—EMHD	Economy type 
		Powdered high-speed steel 64~67 HRC	D6~25	SR—EHD	
				SR—EPMHD	
				SR—EPHD	
	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Equivalent to SKD11 60~63HRC	D6~16	SRA—EMHD	
		Powdered high-speed steel 64~67 HRC	D6~16	SRA—EHD	
				SRA—EPMHD	
				SRA—EPHD	



$\textcircled{P} P \geq 1.5$ (P dimension straight section 1.5 mm or longer)
 $\textcircled{P} P \geq W$ $K = \sqrt{P^2 + W^2}$
 $\textcircled{P} P \geq W$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

$\textcircled{P} P \geq W$ $\textcircled{P} 0.15 \leq R < \frac{W}{2}$

$\textcircled{P} P > W$

$\textcircled{P} P > W$
 $\textcircled{P} \sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

D tolerance			Catalog No.		D	L				0.01mm increments				MT (workpiece material thickness)	0.005mm increments		b	d	H	T							
D	m5	+0.005 0	Type	(D _{m5})		(D ^{+0.005} ₀)	A		D	R	E	G	R														
							min. P	max.	P-Kmax.	P-Wmin.																	
6	+0.009 +0.004	+0.005 0	(Equivalent to SKD11) (D _{m5})	A SR-EMHD	SRA-EMHD	6	16	20	22	25	28	30	32	35	1.00~ 3.00	3.00	1.00	0.15 ≤ R < $\frac{W}{2}$ (R only)	MT ≥ 0.15 Select a workpiece material thickness of 0.15 mm or more.		8	3	3.4	9	5		
8	+0.012 +0.006					8	16	20	22	25	28	30	32	35	40	1.00~ 4.00	4.00					1.00	4	4.4		11	
10	+0.015 +0.007					10	16	20	22	25	28	30	32	35	40 (45)	2.00~ 6.00	6.00					1.20	6	6.4		13	
13	+0.015 +0.007					13	16	20	22	25	28	30	32	35	40 (45)	3.00~ 8.00	8.00					1.50		8.4		16	
16	+0.015 +0.007					16	16	20	22	25	28	30	32	35	40 (45)	5.00~ 10.00	10.00					2.00		10.6		19	
20	+0.017 +0.008	—	D SR-EHDD	SRA-EHDD	(20)	16	20	22	25	28	30	32	35	40 (45)	7.00~ 12.00	12.00	3.00		12.6	23							
22					(22)	16	20	22	25	28	30	32	35	40 (45)	8.00~ 14.00	14.00	3.00		14.6	25							
25					(25)	16	20	22	25	28	30	32	35	40 (45)	10.00~ 16.00	16.00	3.00		16.6	28							
32					(32)	16	20	22	25	28	30	32	35		15.00~ 20.00	20.00	4.00		20.6	35							
38					(38)	16	20	22	25	30	35				19.00~ 26.00	26.00	5.00		26.6	41							
45	+0.020 +0.009	—	E SR-EHDE	SRA-EHDE	(45)		20	22	25	30	35				25.00~ 35.00	35.00	6.00		36.0	48							
50	(50)					20	22	25	30	35				33.00~ 40.00	40.00	7.00		41.0	53								
56	(56)					20	22	25	30	35				38.00~ 45.00	45.00	8.00		46.0	59								
6	+0.009 +0.004				+0.005 0	(Powdered high-speed steel) (D _{m5})	(D ^{+0.005} ₀)	6	16	20	22	25	30	35			1.00~ 3.00	3.00	1.00	0.15 ≤ R < $\frac{W}{2}$ (R only)	MT ≥ 0.15 Select a workpiece material thickness of 0.15 mm or more.		8	3	3.4	9	5
8	+0.012 +0.006							8	16	20	22	25	30	35			1.00~ 4.00	4.00	1.00					4	4.4	11	
10	+0.015 +0.007	10	16	20				22	25	30	35			2.00~ 6.00	6.00	1.20	6	6.4	13								
13	+0.015 +0.007	13	16	20				22	25	30	35			3.00~ 8.00	8.00	1.50		8.4	16								
16	+0.015 +0.007	16	16	20				22	25	30	35			5.00~ 10.00	10.00	2.00		10.6	19								
20	+0.017 +0.008	—	R SR-EHDR	SRA-EHDR	(20)	16	20	22	25	30	35			7.00~ 12.00	12.00	3.00		12.6	23								
25					(25)	16	20	22	25	30	35			10.00~ 16.00	16.00	3.00		16.6	28								

$\textcircled{P}$ Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).

$\textcircled{P}$ MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P-W-R) when selecting the button die finishing dimensions.

$\textcircled{P}$ D = (20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of Dm5 only.

$\textcircled{P}$ L = (45) is a specification available for shank dia. tolerance of Dm5 only.



Order

Catalog No. — L — P — W — R (R only) — MT — C
SR—EMHD 13 — 30 — P7.00 — MT1.50 — C0.105



Days to Ship

Quotation



Alterations

Catalog No. — L (LC) — P (PC) — W (WC) — R — MT — C — (HC·TC·CKC·MKC, etc.)
SR—EMHD 13 — 30 — P7.00 — MT1.50 — C0.105 — TC3

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change $\frac{P}{\min.} > \frac{PC}{WC} \geq \frac{P - W_{\min.}}{2} \geq 1.00$ 0.01 mm increments		
	WC	For (A) only, if PC is 1.00~1.99, then b=4. $\frac{P}{\max.} < \frac{PC}{WC} \leq P \cdot K_{\max.} + 0.2$ 0.01 mm increments		
Alterations to full length	LC	Full length change (reduction in shaped hole depth) $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ·CKC·MKC, 0.01 mm increments can be selected.) Dimension b and lead are shortened by (L-LC).		
	LKC	Full length tolerance change $L + 0.4 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.05$ $+ 0.2 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$		
	LKZ	Full length tolerance change $L + 0.4 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.01$ $+ 0.2 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$ Cannot be used for L (LC) < 16. Cannot be used for D > 25.		
	CKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. Cannot be used for L (LC) < 16. TKC Head thickness tolerance change $T + 0.3 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.02$ $0 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$ LKC Full length tolerance change $L + 0.4 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.05$ $+ 0.2 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$		
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. Cannot be used for L (LC) < 16. TKM Head thickness tolerance change $T + 0.3 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$ $0 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} - 0.02$ LKC Full length tolerance change $L + 0.4 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.05$ $+ 0.2 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$		

Quotation

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head 	270° 180° 90° Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel Can be combined with KC for shapes D R E G		
	KFC	Double key flats 270° 180° 90° at 0° and a selected angle 1° increments	270° 180° 90° Double key flats at 0° and a selected angle 1° increments	
	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments		
	TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC, 0.01 mm increments can be selected.) Full length L is shortened by (T-TC). If combined with LC, full length is equal to LC.		
	TKC	Head thickness tolerance change $T + 0.3 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} + 0.02$ $0 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$ Cannot be used for L < 16.		
	TKM	Head thickness tolerance change $T + 0.3 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} 0$ $0 \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} - 0.02$ Cannot be used for L < 16.		
	RC	Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface. Cannot be used for L (LC) < 30.		
Others	SKC	Single key flat on shank Can be used with D ≥ 8 and L (LC) ≥ 20. Cannot be combined with KC·WKC·KFC.		

Quotation

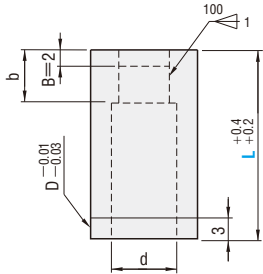


Price

Quotation

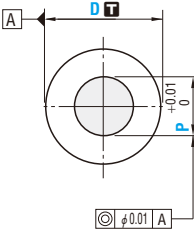
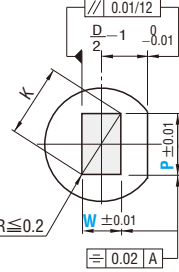
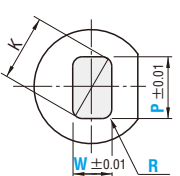
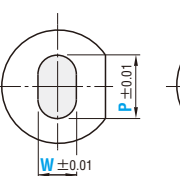
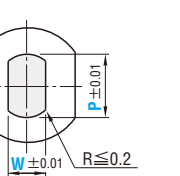
SCRAP RETENTION BUTTON DIES

—STRAIGHT TYPE (REGULAR)—

Straight type	Shank diameter D Tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
 RoHS	Dn5	SKH51 61~64HRC Equivalent to SKD 11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4・5	SR—MSD	Regular type 
			D6~56		
			D8~56	SR—SD□	
			D6~25	SR—PMSD	
			D8~25	SR—PSD□	
	D ^{+0.005} ₀	SKH51 61~64HRC Equivalent to SKD 11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4・5	SRA—MSD	
			D6~16		
			D8~16	SRA—SD□	
			D6~16	SRA—PMSD	
			D8~16	SRA—PSD□	

For shank diameter tolerance D T, select either n5 or ^{+0.005}₀.

For shank diameter tolerance D T, select either n5 or ^{+0.005}₀

Hole shape A	Hole shape D	Hole shape R	Hole shape E	Hole shape G
				
$P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer) $P \geq W$ $K = \sqrt{P^2 + W^2}$	$P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer) $P \geq W$ $K = \sqrt{P^2 + W^2}$	$P \geq W$ $0.15 \leq R < \frac{W}{2}$ $P-2R \geq 1.5$ (P dimension straight section 1.5 mm or longer) $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	$P > W$ $P-2R \geq 1.5$ (P dimension straight section 1.5 mm or longer)	$P > W$ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

D tolerance	Catalog No.	L	0.01mm increments	0.005mm increments	b	d
D n5 ^{+0.005} ₀	Type	D	A min. P max. P·Kmax. P·Wmin.	R MT (workpiece material thickness)	C (clearance)	
4	(SKH51) (Dn5) (D ^{+0.005} ₀)	(4) 16 20 22 25 28 30	1.00~ 2.00	—	—	2.4
5	A SR—MSD SRA—MSD	(5) 16 20 22 25 28 30	1.00~ 2.50	—	—	2.9
6		(6) 16 20 22 25 28 30 32 35	1.00~ 3.00	—	—	3.4
8		8 16 20 22 25 28 30 32 35	1.00~ 4.00	4.00	1.00	4.4
10	(Equivalent to SKD11) (Dn5) (D ^{+0.005} ₀)	10 16 20 22 25 28 30 32 35 (40)	2.00~ 6.00	6.00	1.20	6.4
13		13 16 20 22 25 28 30 32 35 (40)	3.00~ 8.00	8.00	1.50	8.4
16	A SR—MSD SRA—MSD	16 16 20 22 25 28 30 32 35 (40)	5.00~ 10.00	10.00	2.00	10.6
20	D SR—SDD SRA—SDD	(20) 16 20 22 25 28 30 32 35 (40)	7.00~ 12.00	12.00	3.00	12.6
22	R SR—SDR SRA—SDR	(22) 16 20 22 25 28 30 32 35 (40)	8.00~ 14.00	14.00	3.00	14.6
25	E SR—SDE SRA—SDE	(25) 16 20 22 25 28 30 32 35 (40)	10.00~ 16.00	16.00	3.00	16.6
32	G SR—SDG SRA—SDG	(32) 16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00	20.6
38		(38) 16 20 22 25 30 35	19.00~ 26.00	26.00	5.00	26.6
45		(45) 20 22 25 30 35	25.00~ 35.00	35.00	6.00	36.0
50		(50) 20 22 25 30 35	33.00~ 40.00	40.00	7.00	41.0
56		(56) 20 22 25 30 35	38.00~ 45.00	45.00	8.00	46.0
6	(Powdered high-speed steel) (Dn5) (D ^{+0.005} ₀)	(6) 16 20 22 25 30 35	1.00~ 3.00	—	—	3.4
8	A SR—PMSD SRA—PMSD	8 16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	4.4
10	D SR—PSDD SRA—PSDD	10 16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	6.4
13	R SR—PSDR SRA—PSDR	13 16 20 22 25 30 35	3.00~ 8.00	8.00	1.50	8.4
16	E SR—PSDE SRA—PSDE	16 16 20 22 25 30 35	5.00~ 10.00	10.00	2.00	10.6
20	G SR—PSDG SRA—PSDG	(20) 16 20 22 25 30 35	7.00~ 12.00	12.00	3.00	12.6
25		(25) 16 20 22 25 30 35	10.00~ 16.00	16.00	3.00	16.6

Ⓜ D=(4), (5), and (6) are specifications available for shape A (round) only. They are not available for shapes D R E G. Ⓜ Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).

Ⓜ D=(20), (22), (25), (32), (38), (45), (50), (56) are specifications available for shank diameter tolerance of Dn5 only.

Ⓜ L=(40) is a specification available for shank dia. tolerance of Dn5 only.

Ⓜ MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P·W·R) when selecting the button die finishing dimensions.



Order

Catalog No. — L — P — W — R (R only) — MT — C
SR—SDR 13 — 35 — P5.25 — W2.82 — R0.40 — MT1.50 — C0.105



Days to Ship

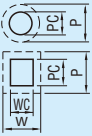
Quotation



Alterations

Catalog No. — L (LC-SLC) — P (PC) — W (WC) — R — MT — C — (BC-KC-LKC, etc.)
SR—SDD 13 — 35 — P5.58 — W2.25 — MT1.50 — C0.105 — LKC

Alterations to shaped hole

Alteration	Code	A	D R E G	1Code								
 PC WC		Shaped hole diameter change $\min: \frac{P}{W} > \frac{PC}{WC} \geq \frac{P \cdot W \min}{2} \geq 1.00$ 0.01 mm increments ⚡ For (A) only, if PC is 1.00~1.99, then b=4. $\max: \frac{P}{W} < \frac{PC}{WC} \leq P \cdot K \max. + 0.2$ 0.01 mm increments		Quotation								
 BC		Shaped hole depth change <table><tr><th>P</th><th>Bmax.</th></tr><tr><td>1.00~1.99</td><td>3</td></tr><tr><td>2.00~3.99</td><td>5</td></tr><tr><td>4.00~</td><td>6</td></tr></table> $1 \leq BC \leq B \max.$ $1 \leq BC \leq b$ 0.1 mm increments	P		Bmax.	1.00~1.99	3	2.00~3.99	5	4.00~	6	Shaped hole depth change 1 ≤ BC < 2 0.1 mm increments
P	Bmax.											
1.00~1.99	3											
2.00~3.99	5											
4.00~	6											
 PKC		Shaped hole diameter tolerance change $P + 0.01 \Rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow +0.01$ 0									



Price

Quotation

Alteration	Code	A	D R E G	1Code
Alterations to full length	 LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) ⚡ Press-in lead is shortened by (L-LC).		Quotation
	 SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚡) are the same as for LC. LC Full length change LKC Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$ ⚡ Can be selected in 0.01 mm increments.		
	 LKC	Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$		
	 LKZ	Full length tolerance change $L + 0.4 \Rightarrow +0.01$ $L + 0.2 \Rightarrow 0$ ⚡ Cannot be used for L (LC) < 16. ⚡ Cannot be used for D > 25.		
Others	 KC	Addition of single key flat ⚡ Cannot be used for D4~6. Key flat position 270° 180° 90° change 1° increments		
	 WKC	Addition of double key flats in parallel ⚡ Cannot be used for D4 ~ 6. ⚡ Can be combined with KC for shapes D R E G.		

—STRAIGHT TYPE (ECONOMY) —

D tolerance			Catalog No.		0.01mm increments										0.005mm increments				
D	n5	+0.005 0	Type	D	L					A		DREG		R	MT (workpiece material thickness)	C (clearance)	b	d	
										min.	P max.	P-Kmax.	P-Wmin.	R					
6	+0.013 +0.008	+0.005 0	(Equivalent to SKD11) (Dn5) (D ^{+0.005} ₀)	(6)	16	20	22	25	28	30	32	35	1.00~ 3.00	—	—	0.15≧R< ^W / ₂ (R only)	C≧0.010 Select a clearance of 0.010mm or more.	3	3.4
8	+0.016 +0.010			8	16	20	22	25	28	30	32	35	1.00~ 4.00	4.00	1.00			4	4.4
10	+0.020 +0.012			10	16	20	22	25	28	30	32	35 (40)	2.00~ 6.00	6.00	1.20			6	6.4
13	+0.024 +0.015			13	16	20	22	25	28	30	32	35 (40)	3.00~ 8.00	8.00	1.50			8	8.4
16	—	16	16	20	22	25	28	30	32	35 (40)	5.00~ 10.00	10.00	2.00	10.6					
20		(20)	16	20	22	25	28	30	32	35 (40)	7.00~ 12.00	12.00	3.00	12.6					
22		(22)	16	20	22	25	28	30	32	35 (40)	8.00~ 14.00	14.00	3.00	14.6					
25		(25)	16	20	22	25	28	30	32	35 (40)	10.00~ 16.00	16.00	3.00	16.6					
32		(32)	16	20	22	25	28	30	32	35	15.00~ 20.00	20.00	4.00	20.6					
38	+0.028 +0.017	(38)	16	20	22	25	30	35	19.00~ 26.00	26.00	5.00	26.6							
45	+0.033 +0.020	(45)	20	22	25	30	35	25.00~ 35.00	35.00	6.00	36.0								
50		(50)	20	22	25	30	35	33.00~ 40.00	40.00	7.00	41.0								
56		(56)	20	22	25	30	35	38.00~ 45.00	45.00	8.00	46.0								
6		+0.013 +0.008	(6)	16	20	22	25	30	35	1.00~ 3.00	—	—	3	3.4					
8	+0.016 +0.010	+0.005 0	(Powdered high-speed steel) (Dn5) (D ^{+0.005} ₀)	8	16	20	22	25	30	35	1.00~ 4.00	4.00	1.00	4	4.4				
10	10			16	20	22	25	30	35	2.00~ 6.00	6.00	1.20	6	6.4					
13	+0.020 +0.012			13	16	20	22	25	30	35	3.00~ 8.00	8.00	1.50	8	8.4				
16	16			16	20	22	25	30	35	5.00~ 10.00	10.00	2.00	10.6						
20	+0.024 +0.015	—	(E) SR-EPSE SRA-EPSE	(20)	16	20	22	25	30	35	7.00~ 12.00	12.00	3.00	12.6					
25	(25)			16	20	22	25	30	35	10.00~ 16.00	16.00	3.00	16.6						

MT≧0.15

Select a workpiece material thickness of 0.15 mm or more.



⚠ MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P·W·R) when selecting the button die finishing dimensions.



Order

Catalog No. — L — P — W — R (R only) — MT — C
SR—ESDR 13 — 35 — P5.25 — W2.82 — R0.40 — MT1.50 — C0.105



Days to Ship

Quotation



Alterations

Catalog No. — L (LC·SLC) — P (PC) — W (WC) — R — MT — C — (KC·LKC, etc.)
SR—ESDD13 — 35 — P5.58 — W2.25 — MT1.50 — C0.105 — LKC

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change $\min. \frac{P}{W} > \frac{PC}{WC} \geq \frac{P-W_{\min}}{2} \geq 1.00$ 0.01 mm increments ⚡ For (A) only, if PC is 1.00~1.99, then b=4. $\max. \frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{\max} + 0.2$ 0.01 mm increments		Quotation
	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC·LKC, 0.01 mm increments can be selected.) ⚡ Press-in lead is shortened by (L-LC).		
Alterations to full length	SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚡) are the same as for LC. LC LKC Full length change + Full length tolerance change $L +0.4$ $L +0.2 \Rightarrow +0.05$ 0 ⚡ Can be selected in 0.01 mm increments.		Quotation

Alteration	Code	A	D R E G	1Code
Alterations to full length	LKC	Full length tolerance change $L +0.4$ $L +0.2 \Rightarrow +0.05$ 0		Quotation
	LKZ	Full length tolerance change $L +0.4$ $L +0.2 \Rightarrow +0.01$ 0	⊗ Cannot be used for L (LC) < 16. ⊗ Cannot be used for D > 25.	
Others	KC	Addition of single key flat ⊗ Cannot be used for D6.	270° 180° 90° Key flat position change*1 increments	Quotation
	WKC	Addition of double key flats in parallel ⊗ Cannot be used for D6. ⚡ Can be combined with KC for shapes D R E G.		

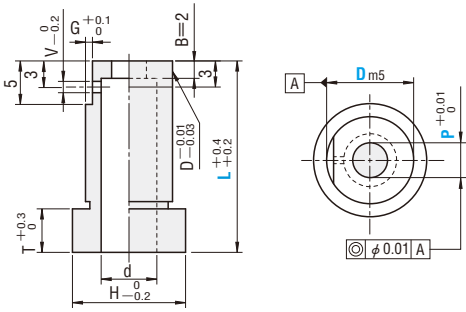
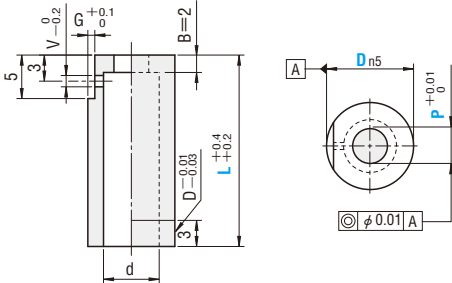


Price

Quotation

NON-CLOGGING BUTTON DIES

—HEADED TYPE, STRAIGHT TYPE—

Type	RoHS	D dimension	Catalog No.	Shape
—Headed— 	RoHS	SKH51 61~64HRC D3~5	SV—MHD	
		Equivalent to SKD11 60~63HRC D6~10		
		Powdered high-speed steel 64~67HRC D6~10	SV—PMHD	
—Straight— 	RoHS	SKH51 61~64HRC D3~5	SV—MSD	
		Equivalent to SKD11 60~63HRC D6~10		
		Powdered high-speed steel 64~67HRC D6~10	SV—PMSD	

D tolerance			Catalog No.		L	0.01mm increments min. P max.	V	G	d	H	T
D	m5	n5	Type	D							
3	+0.006 +0.002	+0.008 +0.004	(SKH51)	3	16	0.50~1.00	0.4	0.2	2.0	4	3
4	+0.009 +0.004	+0.013 +0.008	Headed type (Dm5) SV—MHD	4		0.50~2.00			2.4	5	
5			Straight type (Dn5) SV—MSD	5		0.50~2.50			2.9	6	
6			(Equivalent to SKD11)	6	20	1.00~3.00	0.8	0.3	3.4	9	5
8	+0.012 +0.006	+0.016 +0.010	Headed type (Dm5) SV—MHD	8		1.00~4.00			4.4	11	
10			Straight type (Dn5) SV—MSD	10		2.00~6.00			6.4	13	
6	+0.009 +0.006	+0.013 +0.010	(Powdered high-speed steel)	6	(25)	1.00~3.00	0.8	0.3	3.4	9	5
8			Headed type (Dm5) SV—PMHD	8		1.00~4.00			4.4	11	
10			Straight type (Dn5) SV—PMSD	10		2.00~6.00			6.4	13	

⚠ D3 headed types are thin under the head. Be careful not to damage the bushings when mounting them.

⚠ L (22) and (25) are specifications available for D4~10 only.



Order

Catalog No.

—

L

—

P

SV—PMHD10 — 25 — P4.50



Days to Ship

Quotation



Price

Quotation



Alterations



Catalog No. — L (LC·SLC) — P (PC) — (HC·TC·CKC·MKC, etc.)

SV—MSD8

LC18

PC4.20

LKC

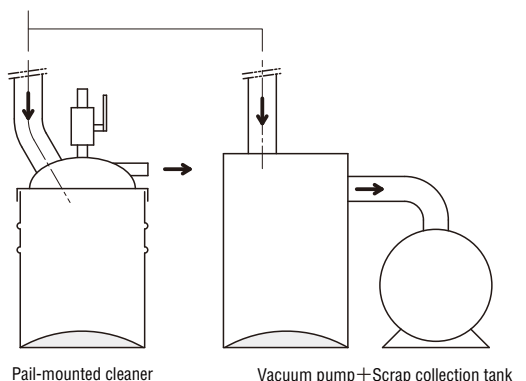
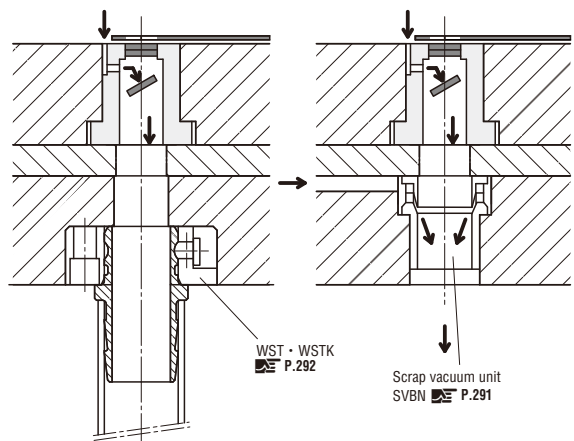
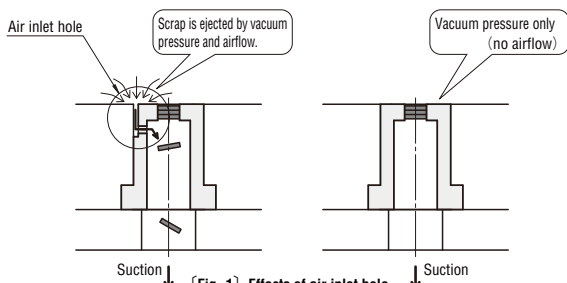
Alteration	Code	Spec.	1Code
Alterations to shaped hole	PC	Shaped hole diameter change $\min. : P > PC \geq \frac{P_{\min}}{2} \geq 0.50$ 0.01 mm increments	
	PKC	Shaped hole diameter tolerance change $P + 0.01 \Rightarrow +0.005$ 0.01 mm increments ⊗ Cannot be used for P < 100.	
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) ⊗ Press-in lead is shortened by (L—LC). ⊗ Cannot be used for headed types.	
	SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⊗) are the same as for LC. LC Full length change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$ LKC Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$ ⊗ 0.01 mm increments ⊗ Cannot be used for headed types.	
	LKC	Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$	
	LKZ	Full length tolerance change $L + 0.4 \Rightarrow +0.01$ $L + 0.2 \Rightarrow 0$ ⊗ Cannot be used for L (LC) < 16.	
	CKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. ⊗ Cannot be used for straight types. TKC Head thickness tolerance change $T + 0.3 \Rightarrow +0.02$ $T + 0 \Rightarrow 0$ LKC Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$	
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. ⊗ Cannot be used for straight types. TKM Head thickness tolerance change $T + 0.3 \Rightarrow 0$ $T + 0 \Rightarrow -0.02$ LKC Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$	

Quotation

Alteration	Code	Spec.	1Code
Alterations to head	KC	Addition of single key flat to head	
	KC	Addition of single key flat ⊗ Cannot be used for D3~6.	
	WKC	Addition of double key flats in parallel ⊗ Cannot be combined with KC. ⊗ Cannot be used for straight types.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC. ⊗ Cannot be used for straight types.	
	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments	
	TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC, 0.01 mm increments can be selected.) ⊗ Full length L is shortened by (T—TC). If combined with LC, full length is equal to LC.	
	TKC	Head thickness tolerance change $T + 0.3 \Rightarrow +0.02$ $T + 0 \Rightarrow 0$ ⊗ Cannot be used for L (LC) < 16.	
	TKM	Head thickness tolerance change $T + 0.3 \Rightarrow 0$ $T + 0 \Rightarrow -0.02$ ⊗ Cannot be used for L (LC) < 16.	

Quotation

- **Features**—These non-clogging button dies are intended to be used in combination with a vacuum device such as a vacuum pump.
- Because an air inlet hole is created near the shaped hole, when a vacuum device is used to provide suction, an air flow is produced inside the button die. This results in more effective scrap discharge compared with button dies that do not have air inlet holes. [Fig. 1]
 - It is also possible to use products such as a scrap vacuum unit (P.291) or commercially available pail-mounted cleaner as the vacuum device in place of the vacuum pump. In these cases, the drive source is compressed air from a compressor or other machine. [Fig. 2]
 - Non-clogging button dies [Products Data] P.1105



[Fig. 2] Examples of combinations with different vacuum devices

—HEADED—

For shank diameter tolerance D_T , select either m5 or $^{+0.005}_0$.

$$\begin{aligned} \text{④ } P &\geq W & \text{⑤ } 0.15 \leq R < \frac{W}{2} \\ \text{⑥ } K &= \sqrt{P^2 + W^2} & \text{⑦ } K = \sqrt{(P-2R)^2 + (W-2R)^2 + 2R} \end{aligned}$$

- ◆ D = (3), (4), and (5) are specifications available for shape **A** (round) only. They are not available for shapes **D** **R** **E** **G**.
- ◆ D = (20) and (25) are specifications available for shank diameter tolerance of D_{m5} only.
- ◆ L = (40) is a specification available for AHD, AHDD, AHDR, AHDE, and AHDG only.



AHBR 13 — 25 — P6.20 — W2.00 — R0.50



Quotation



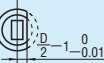
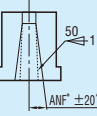
Alterations



Catalog No. — **L (LC·LCT·LMT)** — **P (PC)** — **W (WC)** — **R** — (BC·HC·TC·CKC·MKC, etc.)
AHD 6 — **16** — **P2.47** — **HC8.0—ANF1.8—KFC135**

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min.: $P > PC \geq \frac{P_{min}}{2} \geq 0.50$ 0.01 mm increments	Shaped hole diameter change min.: $P > PC \geq \frac{P_{min}}{2} \geq 1.00$ 0.01 mm increments	
	WC			
	BC	Shaped hole depth change $1 \leq BC \leq 4$ 0.1 mm increments ⊗ Cannot be used for $P < 1.0$.		
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \Rightarrow \pm 0.005$ ⊗ Cannot be used for $P < 1.00$.	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow \pm 0.01$	
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ·CKC·MKC, then 0.01 mm increments can be selected.) ⊕ Press-in lead is shortened by $(L - LC)$.		
	LKC	Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.05$ $L \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for $L(LC) < 10$.		
	LKZ	Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.01$ $L \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for $L(LC) < 16$.		
	CKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. ⊗ Cannot be used for $L(LC) < 16$.		
	TKC	Head thickness tolerance change $T \pm 0.3 \Rightarrow \pm 0.02$ $T \pm 0 \Rightarrow 0$	LKC Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.05$ $L \pm 0.2 \Rightarrow 0$	
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. ⊗ Cannot be used for $L(LC) < 16$.		
	TKM	Head thickness tolerance change $T \pm 0.3 \Rightarrow \pm 0.02$ $T \pm 0 \Rightarrow 0$	LKC Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.05$ $L \pm 0.2 \Rightarrow 0$	
	LCT	Changes to head thickness tolerance, full length, and full length tolerance are processed using a single code. The ordering process is the same as for LC. The machining limits and notes (⊕) are the same as for each individual alteration.		
	TKC	Head thickness tolerance change ⊕ 0.01 mm increments ⊗ Cannot be used for $L < 16$.	LC Full length change	LKC Full length tolerance change
	LMT	Changes to head thickness tolerance, full length, and full length tolerance are processed using a single code. The ordering process is the same as for LC. The machining limits and notes (⊕) are the same as for each individual alteration.		
	TKM	Head thickness tolerance change ⊕ 0.01 mm increments ⊗ Cannot be used for $L < 16$.	LC Full length change	LKC Full length tolerance change

Quotation

Alteration	Code	A	D R E G	1Code																			
Alterations to head		HC	Head diameter change $D \leq HC < H$ 0.1 mm increments																				
		TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC·LCT·LMT, 0.01 mm increments can be selected.) ⊕ Full length L is shortened by $(T - TC)$. ⊗ If combined with LC·LCT·LMT, full length remains as specified.																				
		KC	Addition of single key flat to head ⊗ Cannot be used for $L(LC) < 16$	Key flat position change 1° increments 270° 180° 90°																			
		WKC	Addition of double key flats in parallel ⊗ Can be combined with KC for shapes D R E G . ⊗ Cannot be used for $L(LC) < 16$.																				
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC. ⊗ Cannot be used for $L(LC) < 16$.	Double key flats at 0° and a selected angle 1° increments 270° 180° 90°																			
		TKC	Head thickness tolerance change $T \pm 0.3 \Rightarrow \pm 0.02$ $T \pm 0 \Rightarrow 0$ ⊗ Cannot be used for $L(LC) < 16$.																				
		TKM	Head thickness tolerance change $T \pm 0.3 \Rightarrow \pm 0.02$ $T \pm 0 \Rightarrow 0$ ⊗ Cannot be used for $L(LC) < 16$.																				
	Others		SKC	Single key flat on shank ⊕ Can be used with $D \geq 8$ and $L(LC) \geq 20$ ⊗ Cannot be combined with KC·WKC·KFC·ANF.																			
		ANF	Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2° increments ⊕ $d \leq d_{max}$ ⊕ $d = P + 2[(L - B) \tan(ANF)]$ ⊕ $P - B \tan(ANF) \geq 0.6$ ⊕ $W - B \tan(ANF) \geq 0.6$ ⊗ Cannot be used for $P, W < 1.0$ ⊗ Cannot be used for $D = 3$.	<table><tr><th>D</th><th>d max</th></tr><tr><td>4</td><td>2.4</td></tr><tr><td>5</td><td>2.9</td></tr><tr><td>6</td><td>3.4</td></tr><tr><td>8</td><td>4.4</td></tr><tr><td>10</td><td>6.4</td></tr><tr><td>13</td><td>8.4</td></tr><tr><td>16</td><td>10.6</td></tr><tr><td>20</td><td>12.6</td></tr><tr><td>25</td><td>16.6</td></tr></table> Taper 1/50 Angle (one side) 0.573°	D	d max	4	2.4	5	2.9	6	3.4	8	4.4	10	6.4	13	8.4	16	10.6	20	12.6	25
D	d max																						
4	2.4																						
5	2.9																						
6	3.4																						
8	4.4																						
10	6.4																						
13	8.4																						
16	10.6																						
20	12.6																						
25	16.6																						

Quotation

Quotation

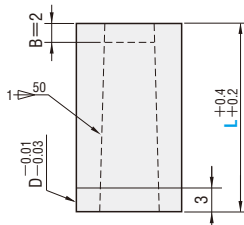


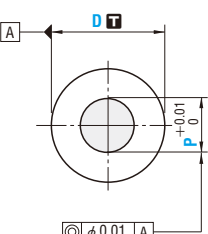
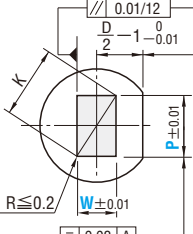
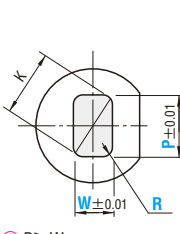
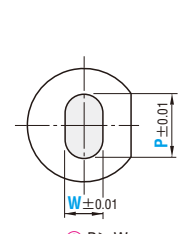
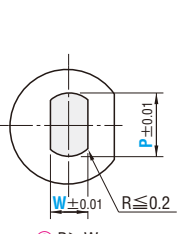
Price

Quotation

ANGULAR BUTTON DIES

—STRAIGHT—

Straight type	Shank diameter D  tolerance		D dimension	Catalog No.	The hole shape can be selected from      below.						
 RoHS For shank diameter tolerance D , select either n5 or $\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$.	D _{n5}	SKH51 61~64HRC Equivalent to SKD11 60~63HRC	D3~ 5	ASD	 <table border="1" data-bbox="1063 595 1223 643"><tr><td>P</td><td>0.30~0.49</td><td>0.50~</td></tr><tr><td>B</td><td>1</td><td>2</td></tr></table>	P	0.30~0.49	0.50~	B	1	2
		P	0.30~0.49	0.50~							
		B	1	2							
		Equivalent to SKD11 60~63HRC	D6~25	ASD 							
	Powdered high-speed steel 64~67HRC	D3~ 25	PASD								
	D8~25	PASD 									
	D $\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	SKH51 61~64HRC Equivalent to SKD11 60~63HRC	D3~ 5	A—ASD							
		Equivalent to SKD11 60~63HRC	D6~16	A—ASD 							
Powdered high-speed steel 64~67HRC		D3~ 16	A—PASD								
D8~16		A—PASD 									

Hole shape	Hole shape	Hole shape	Hole shape	Hole shape
$\textcircled{A}$	$\textcircled{D}$	$\textcircled{R}$	$\textcircled{E}$	$\textcircled{G}$
 $\phi 0.01 \text{ A}$	 $\sqrt{0.01/12}$ $D - 1 - 0.01$ $R \leq 0.2$ $W \pm 0.01$ $P \pm 0.01$ $\sqrt{0.02 \text{ A}}$ $\textcircled{P} \geq W$ $\textcircled{K} = \sqrt{P^2 + W^2}$	 $W \pm 0.01$ $P \pm 0.01$ $\textcircled{P} \geq W$ $\textcircled{0.15} \leq R < \frac{W}{2}$ $\textcircled{K} = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$	 $W \pm 0.01$ $P \pm 0.01$ $\textcircled{P} > W$	 $W \pm 0.01$ $P \pm 0.01$ $R \leq 0.2$ $\textcircled{P} > W$

D tolerance		Catalog No.		L	0.01mm increments			
D	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Type	D		$\textcircled{A}$ min. P max.	$\textcircled{D}$ P·Kmax.	$\textcircled{R}$ P·Wmin.	$\textcircled{G}$ R
3	$\begin{smallmatrix} +0.008 \\ +0.004 \end{smallmatrix}$	(Dn5) (SKH51) (Powdered high-speed steel)	($\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$) (SKH51) (Powdered high-speed steel)	(3) 8 13	0.30~0.70	—	—	—
4	$\begin{smallmatrix} +0.013 \\ +0.008 \end{smallmatrix}$	$\textcircled{A}$ ASD PASD A—ASD A—PASD		(4) 8 13 16 20 22 25 30	0.50~1.50	—	—	—
5	$\begin{smallmatrix} +0.013 \\ +0.008 \end{smallmatrix}$			(5) 8 13 16 20 22 25 30	0.50~2.50	—	—	—
6	$\begin{smallmatrix} +0.016 \\ +0.010 \end{smallmatrix}$	(Dn5) (Equivalent to SKD11) (Powdered high-speed steel)	($\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$) (Equivalent to SKD11) (Powdered high-speed steel)	(6) 16 20 22 25 30 35	1.00~3.00	—	—	—
8	$\begin{smallmatrix} +0.016 \\ +0.010 \end{smallmatrix}$	$\textcircled{A}$ ASD PASD A—ASD A—PASD		8 16 20 22 25 30 35	1.00~4.00	4.00	1.00	$0.15 \leq R < \frac{W}{2}$ ($\textcircled{R}$ only)
10	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	$\textcircled{D}$ ASDD PASDD A—ASDD A—PASDD		10 16 20 22 25 30 35	2.00~6.00	6.00	1.20	
13	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	$\textcircled{R}$ ASDR PASDR A—ASDR A—PASDR		13 16 20 22 25 30 35	3.00~8.00	8.00	1.50	
16	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	$\textcircled{E}$ ASDE PASDE A—ASDE A—PASDE		16 16 20 22 25 30 35	5.00~10.00	10.00	2.00	
20	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	$\textcircled{G}$ ASDG PASDG A—ASDG A—PASDG		(20) 16 20 22 25 30 35	7.00~12.00	12.00	3.00	
25	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$			(25) 16 20 22 25 30 35	10.00~16.00	16.00	3.00	

$\textcircled{P}$ D = (3), (4), (5), and (6) are specifications available for $\textcircled{A}$ shape (round) only. They are not available for shapes $\textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G}$.

$\textcircled{P}$ D = (20) and (25) are specifications available for shank diameter tolerance of Dn5 only.

Order

Catalog No.	—	L	—	P	—	W	—	R ($\textcircled{R}$ only)
ASDE 8	—	20	—	P3.80	—	W2.00		

Days to Ship **Quotation**



Alterations



Catalog No. — L(LC·SLC) — P(PC) — W(WC) — R — (BC·KC, etc.)

ASD 6

16

P2.47

ANF1.2

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole		Shaped hole diameter change $\min. \frac{P}{2} \geq \frac{P_{min}}{2} \geq 0.50$ 0.01 mm increments	Shaped hole diameter change $\min. \frac{P}{2} \geq \frac{P_{min}}{2} \geq 1.00$ 0.01 mm increments	
	PC WC			
		Shaped hole depth change $1 \leq BC \leq 4$ 0.1 mm increments ✗ Cannot be used for $P < 1.0$.		
	BC			
Alterations to full length		Shaped hole diameter tolerance change $P \pm 0.01 \Rightarrow \pm 0.005$ ✗ Cannot be used for $P < 1.00$.	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow \pm 0.01$ 0	
	PKC			
		Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ, 0.01 mm increments can be selected.) ✗ Press-in lead is reduced by $(L-LC)$.		Quotation
	LC			
		Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.05$ ✗ Cannot be used for $L(LC) < 10$.		
	LKC			
		Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.01$ ✗ Cannot be used for $L(LC) < 16$.		
	LKZ			
		Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (✗) are the same as for LC. Full length change + Full length tolerance change $L \pm 0.4 \Rightarrow \pm 0.05$ ✗ 0.01 mm increments ✗ Cannot be used for $L(LC) < 10$.		
	SLC			



Price

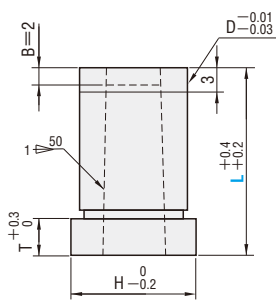
Quotation

Alteration	Code	A	D R E G	1Code
Others		Addition of single key flat ✗ Cannot be used for D3~6.	Key flat position change 1" increments	
	KC			
		Addition of double key flats in parallel ✗ Can be combined with KC for shapes D R E G. ✗ Cannot be used for $L(LC) < 16$. ✗ Cannot be used for D3~6.		
	WKC			
		Addition of key groove to prevent lifting ✗ Cannot be used for $D < 6$. ✗ Cannot be combined with WKC-ANF. ✗ If $D=6$, can be used for hole shape A only.		
Others				
	KM			
	ANF			

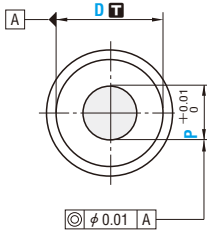
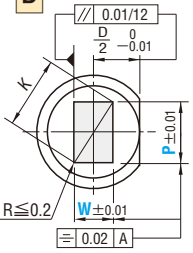
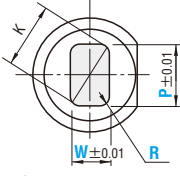
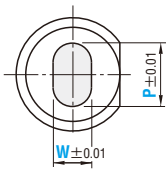
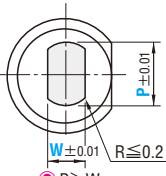
Quotation

SCRAP RETENTION ANGULAR BUTTON DIES

—HEADED—

Headed type	Shank diameter D Tolerance	$\frac{M}{H}$	D dimension	Catalog No.	The hole shape can be selected from $\textcircled{A} \textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G}$ below.
	D _{m5}	SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC Powdered high-speed steel 64~67HRC	D4~5	SR—AHD	
			D6~25	SR—AHD□	
			D6~25	SR—PAHD	
			D4~25	SR—PAHD□	
			D6~25	SR—PAHD□	
			D6~25	SR—PAHD□	
	D ^{+0.005} ₀	SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC Powdered high-speed steel 64~67HRC	D4~5	SRA—AHD	
			D6~16	SRA—AHD□	
			D6~16	SRA—AHD□	
			D6~16	SRA—AHD□	
			D4~16	SRA—PAHD	
			D6~16	SRA—PAHD□	

For shank diameter tolerance D_T, select either m5 or ^{+0.005}₀.

Hole shape	Hole shape	Hole shape	Hole shape	Hole shape
$\textcircled{A}$	$\textcircled{D}$	$\textcircled{R}$	$\textcircled{E}$	$\textcircled{G}$
				
$\textcircled{A}$ $\phi 0.01$ A	$\textcircled{D}$ $\frac{0.01}{12}$ $\frac{D}{2}$ -0.01 $R \leq 0.2$ $W \pm 0.01$ $P \pm 0.01$ $\frac{0.02}{A}$	$\textcircled{R}$ $W \pm 0.01$ R	$\textcircled{E}$ $W \pm 0.01$ $P \pm 0.01$	$\textcircled{G}$ $W \pm 0.01$ $R \leq 0.2$
	$\textcircled{D}$ $P \geq W$ $\textcircled{D}$ $P - 0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer) $\textcircled{D}$ $K = \sqrt{P^2 + W^2}$	$\textcircled{R}$ $P \geq W$ $\textcircled{R}$ $P - 2R \geq 1.5$ (P dimension straight section 1.5 mm or longer) $\textcircled{R}$ $0.15 \leq R < \frac{W}{2}$ $\textcircled{R}$ $K = \sqrt{(P - 2R)^2 + (W - 2R)^2} + 2R$	$\textcircled{E}$ $P > W$	$\textcircled{G}$ $P > W$ $\textcircled{G}$ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

D tolerance			Catalog No.		L	0.01mm increments				MT (workpiece material thickness)	0.005mm increments		H	T
D	m5	+0.005 0	Type	D		A min. P max.	D R E G P-Kmax. P-Wmin.	R R	C (clearance)					
4	+0.009 +0.004		(D _{m5}) (SKH51) (D ^{+0.005} ₀) A SR—AHD SRA—AHD (Powdered high-speed steel)	(4)		8 13 16 20 22 25 30	1.00~ 1.50	—	—		—	MT≥0.15 Select a workpiece material thickness of 0.15 mm or more.		
5			A SR—PAHD SRA—PAHD	(5)	8 13 16 20 22 25 30	1.00~ 2.50	—	—	6					
6			(D _{m5}) (Equivalent to SKD11) (D ^{+0.005} ₀) A SR—AHD SRA—AHD D SR—AHDD SRA—AHDD R SR—AHDR SRA—AHDR E SR—AHDE SRA—AHDE G SR—AHDG SRA—AHDG (Powdered high-speed steel)	6	16 20 22 25 30 35	1.00~ 3.00	3.00	1.00	9					
8	+0.012 +0.006		A SR—AHD SRA—AHD D SR—AHDD SRA—AHDD R SR—AHDR SRA—AHDR E SR—AHDE SRA—AHDE G SR—AHDG SRA—AHDG	8	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	0.15≤R<$\frac{W}{2}$ (R only)		11		5	
10			10	16 20 22 25 30 35 (40)	2.00~ 6.00	6.00	1.20	13						
13			13	16 20 22 25 30 35 (40)	3.00~ 8.00	8.00	1.50	16						
16	16	16 20 22 25 30 35 (40)	5.00~ 10.00	10.00	2.00	19								
20	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00	23								
25	(25)	16 20 22 25 30 35	10.00~ 16.00	16.00	3.00	28								

Clearance

Punch shaped hole

Die shaped hole

- $\textcircled{D}$ = (4) and (5) are specifications available for shape $\textcircled{A}$ (round) only. They are not available for shapes $\textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G}$.
- $\textcircled{D}$ = (20) and (25) are specifications available for shank diameter tolerance of D_{m5} only.
- $\textcircled{L}$ = (40) is a specification available for SR—AHD, SR—AHDD, SR—AHDR, SR—AHDE, and SR—AHDG only.
- Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).
- MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves.
- Specify the shaped hole dimensions (P·W·R) when selecting the button die finishing dimensions.



Order

Catalog No. — L — P — W — R ($\textcircled{R}$ only) — MT — C
SR—AHDR13 — 25 — P6.20 — W2.00 — R0.20 — MT1.50 — C0.105



Days to Ship

Quotation



Alterations



Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — MT — C — (BC·HC·TC, etc.)

SR—AHD6

16

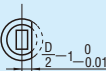
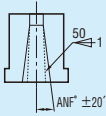
P2.47

MT1.50

C0.105

HC8

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P \cdot W_{min.}}{2} \geq 1.00$ 0.01 mm increments		
		max.: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{max.} + 0.2$ 0.01 mm increments		
	BC	Shaped hole depth change $\frac{P}{1.00 \sim 1.99} \frac{B_{max.}}{3}$ $\frac{2.00 \sim}{4}$ $1 \leq BC \leq B_{max.}$ 0.1 mm increments	Shaped hole depth change $1 \leq BC \leq 2$ 0.1 mm increments	
	PKC	Shaped hole diameter tolerance change $P \cdot 0.01 \rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0	
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC·LKZ·CKC·MKC, then 0.01 mm increments can be selected.) ⚡ Press-in lead is shortened by $(L-LC)$.		
	LKC	Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$	⚡ Cannot be used for $L(LC) < 10$.	
	LKZ	Full length tolerance change $L + 0.4 \rightarrow +0.01$ $+0.2 \rightarrow 0$	⚡ Cannot be used for $L(LC) < 16$.	
	CKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC. ⚡ Cannot be used for $L(LC) < 16$. TKC Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0 LKC Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		Quotation
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKM and LKC. ⚡ Cannot be used for $L(LC) < 16$. TKM Head thickness tolerance change $T + 0.3 \rightarrow -0.02$ 0 LKC Full length tolerance change $L + 0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
	LCT	Changes to head thickness tolerance, full length, and full length tolerance are processed using a single code. The ordering process is the same as for LC. The machining limits and notes (⚡) are the same as for each individual alteration. TKC Head thickness tolerance change + LC Full length change + LKC Full length tolerance change ⚡ 0.01 mm increments ⚡ Cannot be used for $L < 16$.		
	LMT	Changes to head thickness tolerance, full length, and full length tolerance are processed using a single code. The ordering process is the same as for LC. The machining limits and notes (⚡) are the same as for each individual alteration. TKM Head thickness tolerance change + LC Full length change + LKC Full length tolerance change ⚡ 0.01 mm increments ⚡ Cannot be used for $L < 16$.		

Alteration	Code	A	D R E G	1Code																			
Alterations to head		HC	Head diameter change $D \leq HC < H$ 0.1 mm increments																				
		TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC·LCT·LMT, 0.01 mm increments can be selected.) ⚡ Full length L is shortened by $(T-TC)$. If combined with LC·LCT·LMT, full length remains as specified.																				
		KC	Addition of single key flat to head ⚡ Cannot be used for $L < 16$.	 Key flat 180° 270° 0° position change 1" increments																			
		WKC	Addition of double key flats in parallel ⚡ Can be combined with KC for shapes D R E G. ⚡ Cannot be used for $L(LC) < 16$.																				
		KFC	Double key flats at 0° and a selected angle 1" increments ⚡ Cannot be combined with KC·WKC. ⚡ Cannot be used for $L(LC) < 16$.	 Double key flats at 0° and a selected angle 1" increments ⚡ Cannot be combined with KC·WKC. ⚡ Cannot be used for $L(LC) < 16$.																			
		TKC	Head thickness tolerance change $T + 0.3 \rightarrow +0.02$ 0	⚡ Cannot be used for $L(LC) < 16$.																			
		TKM	Head thickness tolerance change $T + 0.3 \rightarrow 0$ 0	⚡ Cannot be used for $L(LC) < 16$.																			
	Others		SKC	Single key flat on shank ⚡ Can be used with $D \geq 8$ and $L(LC) \geq 20$ ⚡ Cannot be combined with KC·WKC·KFC·ANF.																			
		ANF	Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2" increments ⚡ $d \leq d_{max.}$ ⚡ $d = P + 2((L-B) \tan(ANF))$ ⚡ $P - B \tan(ANF) \geq 0.6$ ⚡ $W - B \tan(ANF) \geq 0.6$ ⚡ Cannot be used with P, W < 1.0. Taper 1/50 Angle (one side) 0.573°	<table><tr><th>D</th><th>d max.</th></tr><tr><td>4</td><td>2.4</td></tr><tr><td>5</td><td>2.9</td></tr><tr><td>6</td><td>3.4</td></tr><tr><td>8</td><td>4.4</td></tr><tr><td>10</td><td>6.4</td></tr><tr><td>13</td><td>8.4</td></tr><tr><td>16</td><td>10.6</td></tr><tr><td>20</td><td>12.6</td></tr><tr><td>25</td><td>16.6</td></tr></table>	D	d max.	4	2.4	5	2.9	6	3.4	8	4.4	10	6.4	13	8.4	16	10.6	20	12.6	25
D	d max.																						
4	2.4																						
5	2.9																						
6	3.4																						
8	4.4																						
10	6.4																						
13	8.4																						
16	10.6																						
20	12.6																						
25	16.6																						

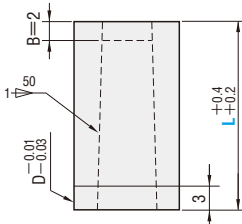


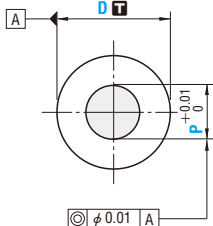
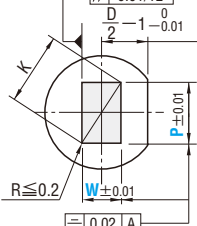
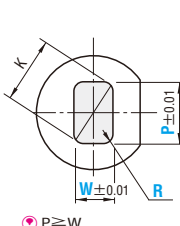
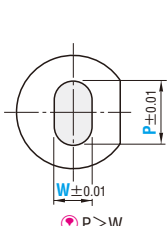
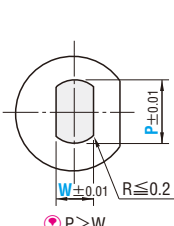
Price

Quotation

SCRAP RETENTION ANGULAR BUTTON DIES

—STRAIGHT—

Straight type	Shank diameter D  tolerance		D dimension	Catalog No.	The hole shape can be selected from  below.	
 For shank diameter tolerance D  , select either n5 or $\frac{+0.005}{0}$.	Dn5	SKH51 61~64HRC Equivalent to SKD11 60~63HRC	D4~5	SR—ASD		
			D6~25	SR—ASD 		
			D8~25	SR—ASD 		
			D4~25	SR—PASD		
	D $\frac{+0.005}{0}$	SKH51 61~64HRC Equivalent to SKD11 60~63HRC	D4~5	SRA—ASD		
			D6~16	SRA—ASD 		
			D8~16	SRA—ASD 		
		Powdered high-speed steel 64~67HRC	D4~16	SRA—PASD		
			D8~16	SRA—PASD 		

Hole shape 	Hole shape 	Hole shape 	Hole shape 	Hole shape 
				

D tolerance			Catalog No.		L	0.01mm increments				0.005mm increments		
D	n5	+0.005 0	Type	D		A min. .P max.	D R E G P·Kmax. P·Wmin.	R	MT (workpiece material thickness)	C (clearance)		
4	+0.013 +0.008	+0.005 0	(Dn5) (D+0.005) (SKH51) 0	(4)		8 13 16 20 22 25 30	1.00~ 1.50	—	—	—	C≥0.010 Select a clearance of 0.010 mm or more.	
5			A SR—ASD SRA—ASD (Powdered high-speed steel)	(5)	8 13 16 20 22 25 30	1.00~ 2.50	—	—				
6			(Dn5) (D+0.005) (Equivalent to SKD11)	(6)	16 20 22 25 30 35	1.00~ 3.00	—	—				
8	+0.016 +0.010	A SR—ASD SRA—ASD	8	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	W (R only) 0.15 ≤ R < 2	MT ≥ 0.15 Select a workpiece material thickness of 0.15 mm or more.			
10	D SR—ASDD SRA—ASDD	10	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20						
13	+0.020 +0.012	R SR—ASDR SRA—ASDR	13	16 20 22 25 30 35	3.00~ 8.00	8.00	1.50					
16	E SR—ASDE SRA—ASDE	16	16 20 22 25 30 35	5.00~ 10.00	10.00	2.00						
20	+0.024 +0.015	G SR—ASDG SRA—ASDG	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00					
25			(Dn5) (D+0.005) (Powdered high-speed steel)	(25)	16 20 22 25 30 35	10.00~ 16.00	16.00	3.00				
			A SR—PASD SRA—PASD									
			D SR—PASDD SRA—PASDD									
			R SR—PASDR SRA—PASDR									
			E SR—PASDE SRA—PASDE									
			G SR—PASDG SRA—PASDG									

Clearance

Punch shaped hole

Die shaped hole

 D=(4), (5), and (6) are specifications available for shape  (round) only. They are not available for shapes .

 D=(20) and (25) are specifications available for shank diameter tolerance of Dn5 only.

 Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).

 MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves.

Specify the shaped hole dimensions (P·W·R) when selecting the button die finishing dimensions.

	Order	Catalog No.	—	L	—	P	—	W	—	R (R only)	—	MT	—	C
		SR—ASDE 8	—	20	—	P3.80	—	W2.00	—		—	MT1.50	—	C0.105

	Days to Ship	Quotation



Alterations



Catalog No. — L (LC-SLC) — P (PC) — W (WC) — R — MT — C — (BC-KC, etc.)
SR—ASD 6 — 16 — P2.47 — MT1.50 — C0.105 — LKZ

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: $\frac{P}{W} < \frac{PC}{WC} \leq \frac{P \cdot W_{min}}{2} \geq 1.00$ 0.01 mm increments max.: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{max} + 0.2$ 0.01 mm increments		
	BC	Shaped hole depth change $\frac{P}{1.00 \sim 1.99}$ $\frac{B_{max}}{2.00 \sim 4}$ $1 \leq BC \leq B_{max}$ 0.1 mm increments	Shaped hole depth change $1 \leq BC \leq 2$ 0.1 mm increments	
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \Rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow +0.01$ 0	
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) Press-in lead is shortened by (L-LC).		
	LKC	Full length tolerance change $L \pm 0.4 \Rightarrow +0.05$ 0	Cannot be used for L (LC) < 10.	
	LKZ	Full length tolerance change $L \pm 0.4 \Rightarrow +0.01$ 0	Cannot be used for L (LC) < 16.	

Quotation

Alteration	Code	A	D R E G	1Code																			
Alterations to full length	SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (⚡) are the same as for LC. LC Full length change + LKC Full length tolerance change $L \pm 0.4 \Rightarrow \begin{matrix} +0.05 \\ 0 \end{matrix}$ ⚡ 0.01 mm increments ⚡ Cannot be used for L (LC) < 10.																					
	KC	Addition of single key flat ⚡ Can be combined with KC for shapes $\frac{270^\circ}{180^\circ}$ position change ⚡ Cannot be used for D4~6.	Key flat position change increments $\frac{270^\circ}{180^\circ}$ 1°																				
Others	WKC	Addition of double key flats in parallel ⚡ Can be combined with KC for shapes $\frac{270^\circ}{180^\circ}$ position change ⚡ Cannot be used for L (LC) < 16. ⚡ Cannot be used for D4~6.																					
	ANF	Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2° increments ⚡ $d \leq d_{max}$. ⚡ $d = P + 2((L - B) \tan(ANF^\circ))$ ⚡ $P - B \tan(ANF^\circ) \geq 0.6$ ⚡ $W - B \tan(ANF^\circ) \geq 0.6$ ⚡ Cannot be used for P, W < 1.0.	Taper 1/50 Angle (one side) 0.573° <table><tr><th>D</th><th>d max.</th></tr><tr><td>4</td><td>2.4</td></tr><tr><td>5</td><td>2.9</td></tr><tr><td>6</td><td>3.4</td></tr><tr><td>8</td><td>4.4</td></tr><tr><td>10</td><td>6.4</td></tr><tr><td>13</td><td>8.4</td></tr><tr><td>16</td><td>10.6</td></tr><tr><td>20</td><td>12.6</td></tr><tr><td>25</td><td>16.6</td></tr></table>	D	d max.	4	2.4	5	2.9	6	3.4	8	4.4	10	6.4	13	8.4	16	10.6	20	12.6	25	16.6
D	d max.																						
4	2.4																						
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6	3.4																						
8	4.4																						
10	6.4																						
13	8.4																						
16	10.6																						
20	12.6																						
25	16.6																						

Quotation

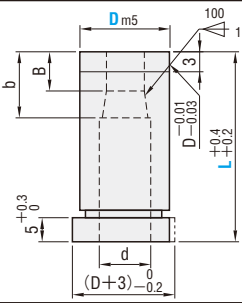
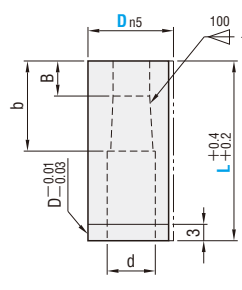
Quotation



Price

Quotation

BUTTON DIES, DEEP HOLE TYPE

—Headed type— 	RoHS 	 D dimension Equivalent to SKD11 60~63HRC D10~56	Catalog No. A MHDS D HDDS R HDRS E HDES G HDGS	
—Straight type— 	RoHS 	 D dimension Equivalent to SKD11 60~63HRC D10~56	Catalog No. A MSDS D SDDS R SDRS E SDES G SDGS	

D tolerance			Catalog No.		L	0.01mm increments				B	b	d					
			Type	D		A		D R E G					R				
Dm5	10	+0.012 +0.006	Headed type A MHDS D HDDS R HDRS E HDES G HDGS	10	40	min.	P max.	P-Kmax.	P-Wmin.	R	0.15≤R< W/2 (R only)	6	10	6.4			
	13	+0.015		13		2.00~	6.00	6.00	1.20	3.00~				8.00	8.00	1.50	8.4
	16	+0.007		16		3.00~	8.00	8.00	1.50	5.00~				10.00	10.00	2.00	10.6
	20	+0.017 +0.008		20		5.00~	10.00	10.00	2.00	7.00~		12.00	12.00	3.00	8	12	12.6
	25	+0.008		25		7.00~	12.00	12.00	3.00	10.00~		16.00	16.00	3.00			16.6
	32			32		10.00~	16.00	16.00	3.00	15.00~		20.00	20.00	4.00	10	15	20.6
	38	+0.020 +0.009		38		15.00~	20.00	20.00	4.00	19.00~		26.00	26.00	5.00			26.6
	45	+0.009		45		19.00~	26.00	26.00	5.00	25.00~		35.00	35.00	6.00			36.0
	50			50		25.00~	35.00	35.00	6.00	33.00~		40.00	40.00	7.00	14	20	41.0
56	+0.024 +0.011	56	33.00~	40.00	40.00	7.00	38.00~	45.00	45.00	8.00	46.0						
Dn5	10	+0.016 +0.010	Straight type A MSDS D SDDS R SDRS E SDES G SDGS	10	16 20 22 25 30 35 40	2.00~	6.00	6.00	1.20	0.15≤R< W/2 (R only)	6	10	6.4				
	13	+0.020		13	16 20 22 25 30 35 40	3.00~	8.00	8.00	1.50				3.00~	8.00	8.00	1.50	8.4
	16	+0.012		16	16 20 22 25 30 35 40	5.00~	10.00	10.00	2.00				5.00~	10.00	10.00	2.00	10.6
	20	+0.024 +0.015		20	16 20 22 25 30 35 40	7.00~	12.00	12.00	3.00		7.00~	12.00	12.00	3.00	8	12	12.6
	25	+0.015		25	16 20 22 25 30 35 40	10.00~	16.00	16.00	3.00		10.00~	16.00	16.00	3.00			16.6
	32			32	16 20 22 25 30 35 40	15.00~	20.00	20.00	4.00		15.00~	20.00	20.00	4.00	10	15	20.6
	38	+0.028 +0.017		38	16 20 22 25 30 35 40	19.00~	26.00	26.00	5.00		19.00~	26.00	26.00	5.00			26.6
	45	+0.017		45	20 22 25 30 35 40	25.00~	35.00	35.00	6.00		25.00~	35.00	35.00	6.00			36.0
	50			50	20 22 25 30 35 40	33.00~	40.00	40.00	7.00		33.00~	40.00	40.00	7.00	14	20	41.0
56	+0.033 +0.020	56	20 22 25 30 35 40	38.00~	45.00	45.00	8.00	38.00~	45.00	45.00	8.00	46.0					



Order

Catalog No. — L — P — W — R (R only)
SDDS 25 — 35 — P10.00 — W8.00



Example



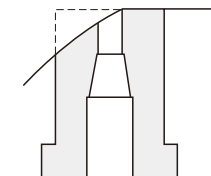
Days to Ship

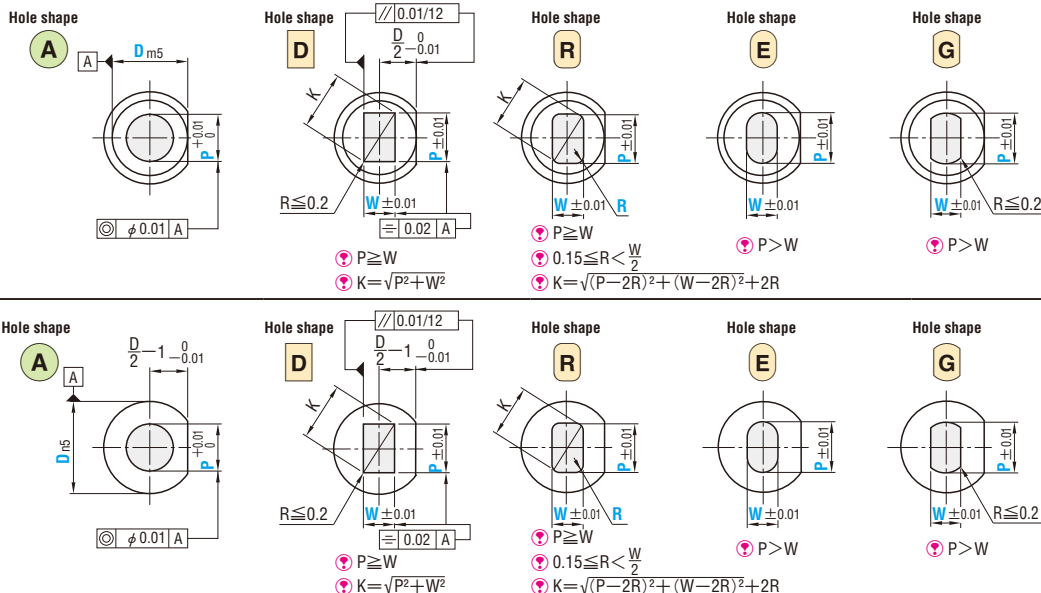
Quotation



Price

Quotation





Alterations

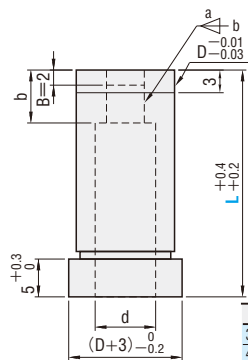
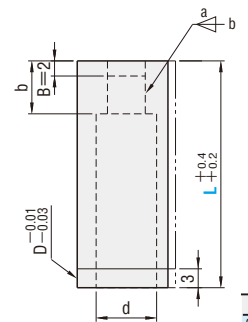


Catalog No. — L (LC·SLC) — P (PC) — W (WC) — R — (BC·HC·TC·CKC·MKC, etc.)
 HDRS 45 — 40 — P25.2 — W10.2 — R1.50 — BC20

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change $\min.: P > PC \geq P \cdot W_{\min.} \geq 1.00$ 0.01 mm increments For (A) only, if PC is 1.00 ~ 1.99, then b=4. $\max.: P < PC \leq P \cdot K_{\max.} + 0.2$ 0.01 mm increments		
	BC	Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments		
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \rightarrow \pm 0.005$ Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow \pm 0.01$		
Alterations to full length	LC	Full length change $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments If combined with LKC, 0.01 mm increments can be selected. Dimension b and press-in lead are shortened by (L-LC). Full length change $10 \leq LC < L$ 0.1 mm increments If combined with LKC, 0.01 mm increments can be selected. Press-in lead is shortened by (L-LC).		Quotation
	LKC LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.05$ $L \pm 0.2 \rightarrow \pm 0.01$ Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.01$ $L \pm 0.2 \rightarrow \pm 0.01$ Cannot be used for L < 16 or D > 25.		
	CKC MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TKC and LKC.	TKC TKM LKC LKC	
	SLC	Changes to full length and full length tolerance are processed using a single code. The allowable range of change, increment, ordering process, and notes (A) are the same as for LC.	LC LKC	

Alteration	Code	A	D R E G	1Code
Alterations to head	KC		Key flat position change 1° increments	
	WKC		Key flat position change 1° increments	
	KFC	Double key flats at 0° and a selected angle 1° increments	Double key flats at 0° and a selected angle 1° increments	
	NKC	No key flat Can be used for straight types only.		Quotation
	HC	Head diameter change $D \leq HC < (D+3)$ 0.1 mm increments		
	TC	Head thickness change $2 \leq TC < T$ 0.1 mm increments (If combined with TKC·TKM·CKC·MKC, 0.01 mm increments can be selected.) Full length L is shortened by (T-TC). If combined with LC, full length is equal to LC.		
	TKC TKM	Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ Cannot be used for L (LC) < 16.		
	RC	Head thickness is machined to a tolerance of -0.04 ~ 0 relative to the retainer surface. Cannot be used for L (LC) < 30.		
	SKC	Single key flat on shank Can be used for L (LC) ≥ 20. Cannot be combined with KC·WKC·KFC. Cannot be used for straight types.		

BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE

— Headed type — 	RoHS	<table><tr><th>M H</th><th>D dimension</th><th>Catalog No.</th></tr><tr><td rowspan="12">Equivalent to SKD11 60~63HRC</td><td rowspan="6">D6~56</td><td>A S—MHD</td></tr><tr><td>D S—HDD</td></tr><tr><td>R S—HDR</td></tr><tr><td>E S—HDE</td></tr><tr><td>G S—HDG</td></tr><tr><td rowspan="6">D10~56</td><td>A S—MHDS</td></tr><tr><td>D S—HDDS</td></tr><tr><td>R S—HDRS</td></tr><tr><td>E S—HDES</td></tr><tr><td>G S—HDGS</td></tr></table>	M H	D dimension	Catalog No.	Equivalent to SKD11 60~63HRC	D6~56	A S—MHD	D S—HDD	R S—HDR	E S—HDE	G S—HDG	D10~56	A S—MHDS	D S—HDDS	R S—HDRS	E S—HDES	G S—HDGS	 <table><tr><th>L</th><th>b/a</th></tr><tr><td>30.0~40.0</td><td>1/100</td></tr><tr><td>40.1~100.0</td><td>0</td></tr></table>	L	b/a	30.0~40.0	1/100	40.1~100.0	0	
M H	D dimension	Catalog No.																								
Equivalent to SKD11 60~63HRC	D6~56	A S—MHD																								
		D S—HDD																								
		R S—HDR																								
		E S—HDE																								
		G S—HDG																								
		D10~56	A S—MHDS																							
	D S—HDDS																									
	R S—HDRS																									
	E S—HDES																									
	G S—HDGS																									
	L		b/a																							
	30.0~40.0	1/100																								
40.1~100.0	0																									
— Straight type — 	RoHS	<table><tr><th>M H</th><th>D dimension</th><th>Catalog No.</th></tr><tr><td rowspan="12">Equivalent to SKD11 60~63HRC</td><td>D6~56</td><td>A S—MSD</td></tr><tr><td rowspan="5">D8~56</td><td>D S—SDD</td></tr><tr><td>R S—SDR</td></tr><tr><td>E S—SDE</td></tr><tr><td>G S—SDG</td></tr><tr><td rowspan="5">D10~56</td><td>A S—MSDS</td></tr><tr><td>D S—SDDS</td></tr><tr><td>R S—SDRS</td></tr><tr><td>E S—SDES</td></tr><tr><td>G S—SDGS</td></tr></table>	M H	D dimension	Catalog No.	Equivalent to SKD11 60~63HRC	D6~56	A S—MSD	D8~56	D S—SDD	R S—SDR	E S—SDE	G S—SDG	D10~56	A S—MSDS	D S—SDDS	R S—SDRS	E S—SDES	G S—SDGS	 <table><tr><th>L</th><th>b/a</th></tr><tr><td>30.0~40.0</td><td>1/100</td></tr><tr><td>40.1~100.0</td><td>0</td></tr></table>	L	b/a	30.0~40.0	1/100	40.1~100.0	0
M H	D dimension	Catalog No.																								
Equivalent to SKD11 60~63HRC	D6~56	A S—MSD																								
	D8~56	D S—SDD																								
		R S—SDR																								
		E S—SDE																								
		G S—SDG																								
		D10~56	A S—MSDS																							
	D S—SDDS																									
	R S—SDRS																									
	E S—SDES																									
	G S—SDGS																									
	L	b/a																								
	30.0~40.0	1/100																								
40.1~100.0	0																									

D tolerance			Catalog No.				0.1 mm increments L	0.01mm increments				b	d	
D	m5	n5	Type		D	(A)		D R E G		R				
						min. P		max.	P·Kmax.		P·Wmin.			R
6	+0.009 +0.004	+0.013 +0.006	A	S—MHD	Straight type (D _{ns})	(6)	30.0~40.0	1.00~	3.00	3.00	1.00	0.15 ≤ R < $\frac{W}{2}$ (R only)	3	3.4
8	+0.012	+0.016				8		1.00~	4.00	4.00	1.00		4	4.4
10	+0.006	+0.010				10		2.00~	6.00	6.00	1.20		6	6.4
13	+0.015	+0.020				13		3.00~	8.00	8.00	1.50		8	8.4
16	+0.007	+0.012				16		5.00~	10.00	10.00	2.00			10.6
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00	12.6					
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00	16.6					
32			32	15.00~	20.00	20.00		4.00	20.6					
38	+0.020	+0.028	E	S—HDE	S—SDE	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			G	S—HDG	S—SDG	50	33.00~	40.00	40.00	7.00	41.0			
56	+0.024 +0.011	+0.033 +0.020				56	38.00~	45.00	45.00	8.00	46.0			
10	+0.012 +0.006	+0.016 +0.010				10	40.1~80.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	G	S—HDS	S—SDS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			D	S—HDDS	S—SDDS	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	G	S—HDGS	S—SDGS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			D	S—HDDS	S—SDDS	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	G	S—HDGS	S—SDGS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			D	S—HDDS	S—SDDS	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	G	S—HDGS	S—SDGS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			D	S—HDDS	S—SDDS	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	G	S—HDGS	S—SDGS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			D	S—HDDS	S—SDDS	50		33.00~	40.00	40.00	7.00		41.0	
56	+0.024 +0.011	+0.033 +0.020				56		38.00~	45.00	45.00	8.00		46.0	
10	+0.012 +0.006	+0.016 +0.010				10	40.1~100.0 (40.01)	2.00~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	6.4
13	+0.015	+0.020	13	3.00~	8.00	8.00		1.50	8	8.4				
16	+0.007	+0.012	16	5.00~	10.00	10.00		2.00		10.6				
20	+0.017	+0.024	20	7.00~	12.00	12.00		3.00		12.6				
25	+0.008	+0.015	25	10.00~	16.00	16.00		3.00		16.6				
32			32	15.00~	20.00	20.00		4.00		20.6				
38	+0.020	+0.028	R	S—HDRS	S—SDRS	38		19.00~	26.00	26.00	5.00		26.6	
45	+0.009	+0.017				45		25.00~	35.00	35.00	6.00		36.0	
50			E	S—HDES	S—SDES	50		33.00~	40.00	40.00</				

① D (6) ... The D=6 straight type is a specification available for shape (A) (round) only. It is not available for shapes (D) (R) (E) (G).

② L (40.01) ... When LKC·LKZ is selected, select an L dimension of 40.01 or larger.



Order

Catalog No. — L — P — W — R (R only)

S—MHD 10 — 35.1 — P5.00

S—SDRS 20 — 65 — P8.00 — W8.00 — R0.40



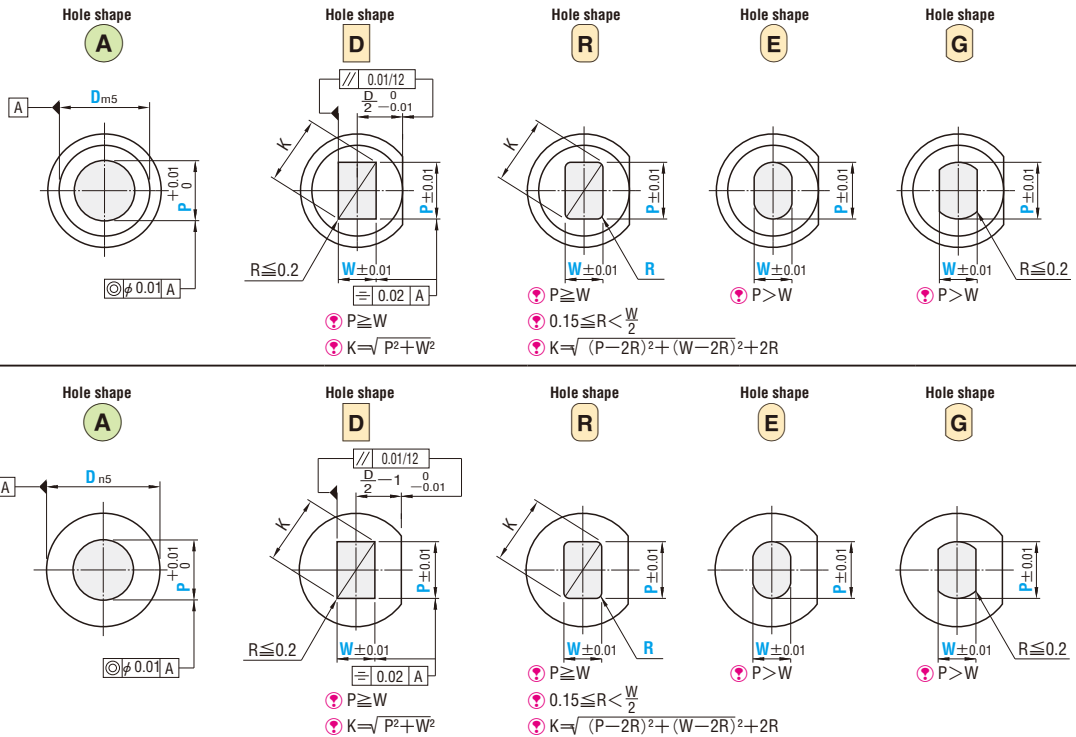
Days to Ship

Quotation



Price

Quotation



Alterations



Catalog No.

L

P (PC)

W (WC)

R

(BC · HC · TC, etc.)

S—MHD 13 — 35 — PC8.02

TC4.0

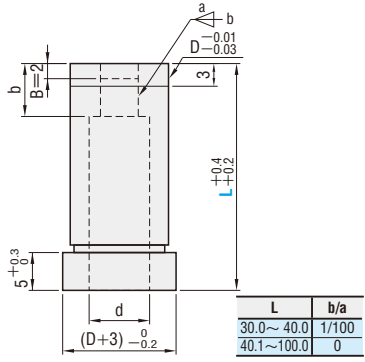
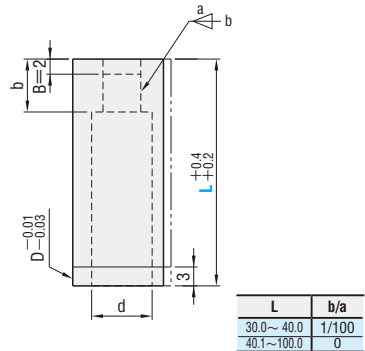
Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min.: $P > PC \geq \frac{P_{min.}}{2} \geq 0.50$ 0.01 mm increments If PC is 1.00~1.99, then b=4.	Shaped hole diameter change min.: $P > PC \geq \frac{P_{min.}}{2} \geq 1.00$ 0.01 mm increments	
	WC	max.: $\frac{P}{2} < WC \leq P \cdot K_{max.} + 0.2$ 0.01 mm increments		
	BC	Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments Cannot be used for L>40.	Cannot be used for P<1.00.	
Full length	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \rightarrow +0.005$ 0 Cannot be used for P<1.00.	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0	
	LKC	Full length tolerance change $L \pm 0.4 \rightarrow +0.05$ 0	If combined with LKC, L dimension can be selected in 0.01 mm increments.	
	LKZ	Full length tolerance change $L \pm 0.4 \rightarrow +0.01$ 0	If combined with LKZ, L dimension can be selected in 0.01 mm increments. Cannot be used for D>25.	
Head	KC	Addition of single key flat to head	Key flat 180° 0° position change 1° increments	
		Addition of single key flat	Key flat 180° 0° position change 1° increments	

Quotation

Alteration	Code	A	D R E G	1Code
Alterations to head	WKC	Addition of double key flats in parallel Can be combined with KC for shapes D R E G. Cannot be used for D6 straight types.		
	KFC	Double key flats at 0° and a selected angle 1° increments 270° 180° 0° 90°	Double key flats at 0° and a selected angle 1° increments 270° 180° 0° 90°	
	HC	Head diameter change $D \leq HC < (D+3)$ 0.1 mm increments		
	TC	Head thickness change $2 \leq TC < 5$ 0.1 mm increments (If combined with TKC·TKM, 0.01 mm increments can be selected.) The full length remains as specified.		
	TKC	Head thickness tolerance change $T \pm 0.3 \rightarrow +0.02$ 0		
	TKM	Head thickness tolerance change $T \pm 0.3 \rightarrow 0$ -0.02		
	RC	Can be used for headed types only. Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface.		
Others	SKC	Single key flat on shank Can be used for headed types only. Can be used for D≥8. Cannot be combined with KC·WKC·KFC. Cannot be used for straight types.		

Quotation

SCRAP RETENTION BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE

—Headed type— 	RoHS	M H	D	Catalog No.	
—Straight type— 	RoHS	M H	D	Catalog No.	

D tolerance			Catalog No.		0.1 mm increments L	0.01mm increments					0.005mm increments C (clearance)	b	d
D	m5	n5	Type	D		(A) min. P max.	D	R	MT (workpiece material thickness)	R			
6	+0.009	+0.013	A SRS—MHD D SRS—HDD R SRS—HDR E SRS—HDE G SRS—HDG	Headed type (D _{m5})	8	1.00~ 3.00	3.00	1.00	Select a clearance of 0.010 mm or more. Select a workpiece material thickness of 0.15 mm or more.	0.15 ≤ R < W/2 (R only)	C ≥ 0.010 Select a clearance of 0.010 mm or more.	3	3.4
8	+0.012	+0.016		Straight type (D _{n5})	10	1.00~ 4.00	4.00	1.00				4	4.4
10	+0.006	+0.010			13	2.00~ 6.00	6.00	1.20				6	6.4
13	+0.015	+0.020			16	3.00~ 8.00	8.00	1.50				8	8.4
16	+0.007	+0.012			20	5.00~ 10.00	10.00	2.00				10	10.6
20	+0.017	+0.024			25	7.00~ 12.00	12.00	3.00				12	12.6
25	+0.008	+0.015			32	10.00~ 16.00	16.00	4.00				16	16.6
32					38	15.00~ 20.00	20.00	5.00				20	20.6
38	+0.020	+0.028			45	19.00~ 26.00	26.00	6.00				26	26.6
45	+0.009	+0.017			50	25.00~ 35.00	35.00	7.00				30	30.6
50			A SRS—MHDS D SRS—HDDS R SRS—HDRS E SRS—HDES G SRS—HDGS	Headed type (D _{m5})	10	2.00~ 6.00	6.00	1.20	Select a clearance of 0.010 mm or more. Select a workpiece material thickness of 0.15 mm or more.	0.15 ≤ R < W/2 (R only)	C ≥ 0.010 Select a clearance of 0.010 mm or more.	6	6.4
10	+0.012	+0.016		Straight type (D _{n5})	13	3.00~ 8.00	8.00	1.50				8	8.4
13	+0.015	+0.020			16	5.00~ 10.00	10.00	2.00				10	10.6
16	+0.007	+0.012			20	7.00~ 12.00	12.00	3.00				12	12.6
20	+0.017	+0.024			25	10.00~ 16.00	16.00	4.00				16	16.6
25	+0.008	+0.015			32	15.00~ 20.00	20.00	5.00				20	20.6
32					38	19.00~ 26.00	26.00	6.00				26	26.6
38	+0.020	+0.028			45	25.00~ 35.00	35.00	7.00				30	30.6
45	+0.009	+0.017			50	33.00~ 40.00	40.00	7.00				40	40.6
50					56	38.00~ 45.00	45.00	8.00				46	46.0

① D(6)→The D=6 straight type is a specification available for shape(A) (round) only. It is not available for shapes (D) (E) (G). ② L(40.01)→When LKC-LKZ is selected, select an L dimension of 40.01 or larger.
③ Effective depth of scrap retention grooves (table below). Perform shaped hole regrinding within the range of (Groove effective depth—1 mm).

L	L ≤ 40.0	L ≥ 40.1
Effective groove depth	P1.00~1.99 P2.00~3.99 P4.00~	
Shaped hole depth B (BC)	3 5 6	

④ Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120 kgf/mm²).

⑤ MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P-W-R) when selecting the button die finishing dimensions.



Order

Catalog No.	L	P	W	R (R only)	MT	C
SRS—MHD 10	35.1	P5.00			MT1.5	C0.105
SRS—HDRS 20	65	P8.00	W8.00	R0.40	MT1.5	C0.105



Days to Ship

Quotation

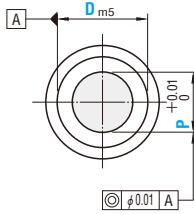


Price

Quotation

Hole shape

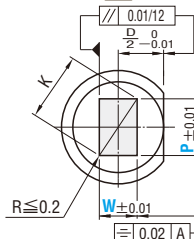
A



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

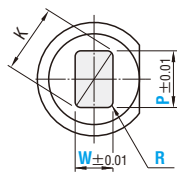
D



- ⚡ $P \geq W$
- ⚡ $0.15 \leq R < \frac{W}{2}$
- ⚡ $P-2R \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

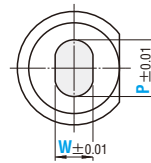
Hole shape

R



Hole shape

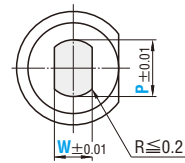
E



- ⚡ $P > W$

Hole shape

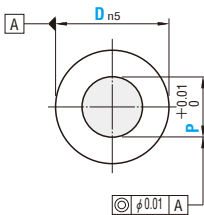
G



- ⚡ $P > W$
- ⚡ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

Hole shape

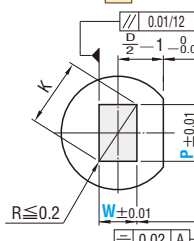
A



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

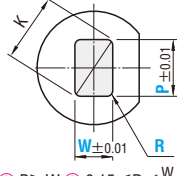
D



- ⚡ $P \geq W$
- ⚡ $0.15 \leq R < \frac{W}{2}$
- ⚡ $P-2R \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

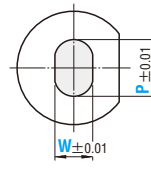
Hole shape

R



Hole shape

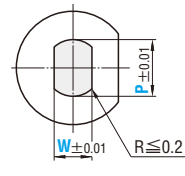
E



- ⚡ $P > W$

Hole shape

G



- ⚡ $P > W$
- ⚡ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)



Alterations



Catalog No.

SRS-MHD 13 - 35 - PC8.02

L

P(PC)

W(WC)

R

MT

C

(BC·HC·TC, etc.)

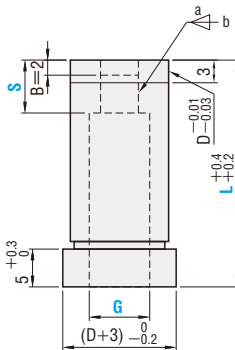
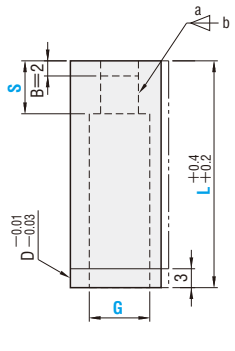
MT1.5 - C0.105 - TC4.0

Alteration		Code	(A)	D R E G	1Code								
Alterations to shaped hole		PC WC	Shaped hole diameter change $\min.: \frac{P}{W} > \frac{PC}{WC} \geq \frac{P-Wmin.}{2} \geq 1.00$ 0.01mm increments ⚡ For (A) only, if PC is 1.00~1.99, b=4. $\max.: \frac{P}{W} < \frac{PC}{WC} \leq \frac{P-Kmax.}{2} + 0.2$ 0.01mm increments										
		BC	Shaped hole depth change <table border="1"><thead><tr><th>P</th><th>Bmax.</th></tr></thead><tbody><tr><td>1.00~1.99</td><td>3</td></tr><tr><td>2.00~3.99</td><td>5</td></tr><tr><td>4.00~</td><td>6</td></tr></tbody></table> $1 \leq BC < Bmax.$ $1 \leq BC \leq b$ 0.1 mm increments ⊗ Cannot be used for $L > 40$.	P	Bmax.	1.00~1.99	3	2.00~3.99	5	4.00~	6	Shaped hole depth change $1 \leq BC < 2$ 0.1 mm increments ⊗ Cannot be used for $L > 40$.	
	P	Bmax.											
1.00~1.99	3												
2.00~3.99	5												
4.00~	6												
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0										
Full length		LKC	Full length tolerance change $L \pm 0.4 \rightarrow +0.05$ 0	⚡ If combined with LKC, L dimension can be selected in 0.01mm increments.									
		LKZ	Full length tolerance change $L \pm 0.4 \rightarrow +0.01$ 0	⚡ If combined with LKZ, L dimension can be selected in 0.01mm increments. ⊗ Cannot be used for $D > 25$.									
Head		KC	Addition of single key flat to head ⊗ Addition of single key flat ⊗ Cannot be used for D6.	Key flat position 180° 270° 0° change 1° increments 90°									
			Key flat position 180° 270° 0° change 1° increments 90°										

Alteration	Code	A	D R E G	1Code
Alterations to head	WKC	Addition of double key flats in parallel ⚡ Can be combined with KC for shapes D R E G. ⊗ Cannot be used for D6 straight type.		
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16 or D > 25. ⊗ Cannot be used for straight types.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16 or D > 25. ⊗ Cannot be used for straight types.	
	HC	Head diameter change $D \leq HC < (D+3)$ 0.1 mm increments		
	TC	Head thickness change $2 \leq TC < 5$ 0.1mm increments (If combined with TKC-TKM, 0.01 mm increments can be selected.) ⚡ Full length remains as specified.		
	TKC	Head thickness tolerance change $T \pm 0.3 \rightarrow +0.02$ 0		
	TKM	Head thickness tolerance change $T \pm 0.3 \rightarrow 0$ -0.02		
	RC	Can be used for headed types only. Head thickness is machined to a tolerance of -0.04 ~ 0 relative to the retainer surface.		
Others	SKC	Single key flat on shank ⚡ Can be used for headed types only. ⚡ Can be used for D ≥ 8. ⊗ Cannot be combined with KC-WKC-KFC. ⊗ Cannot be used for straight types.		

BUTTON DIES, CONFIGURABLE SIZE

—Configurable full length, hole depth, and relief hole type—

—Headed type— 	RoHS		D dimension	Catalog No.	
—Straight type— 	RoHS		D dimension	Catalog No.	

D tolerance			Catalog No.		L		0.01mm increments				1mm increments	G	
D	m5	n5	Type	D	0.1mm increments		(A) min. P max.	D R E G P·Kmax. P·Wmin.	R	R	S	L ≤ 40.0 L ≥ 40.1	G ≥ P·K+0.4 G ≥ P·K+0.5
6	+0.009 +0.004	+0.013 +0.006	Headed type (D _{ms}) Straight type (D _{ns}) A FMHD FMSD D FHDD FSDD R FHDR FSDR E FHDE FSDE G FHDG FSDG	(6)	16.0~40.0		0.50~ 3.20	—	—	—	3~4	3.0~ 3.6	0.2mm increments
8	+0.012	+0.016		8			0.50~ 4.40	4.40	1.00	—	3~6	3.0~ 4.8	
10	+0.006	+0.010		10			1.00~ 6.40	6.40	1.00	—	3~8	3.0~ 6.8	
13	+0.015	+0.020		13			1.50~ 8.50	8.50	1.00	—	3~10	3.0~ 9.0	
16	+0.007	+0.012		16			2.50~ 10.50	10.50	1.00	—	3~12	3.0~ 11.0	
20	+0.017	+0.024		20			3.50~ 12.50	12.50	1.50	—	3~15	4.0~ 13.0	
25	+0.008	+0.015		25			5.00~ 16.50	16.50	1.50	—	3~20	5.5~ 17.0	
32				32			7.50~ 21.00	21.00	2.00	—	3~25	8.0~ 21.5	
38	+0.020	+0.028		38			9.50~ 27.00	27.00	2.50	—	3~30	9.5~ 27.5	
45	+0.009	+0.017		45			12.50~ 36.00	36.00	3.00	—	3~40	13.0~ 36.5	
50			Headed type (D _{ms}) Straight type (D _{ns}) A FMHDS FMSDS D FHDDS FSDDS R FHDRS FSDRS E FHDES FSDES G FHDGS FSDGS	50	40.1~100.0 (40.01)		16.50~ 41.00	41.00	3.50	—	3~50	17.0~ 41.5	0.5mm increments
56	+0.024 +0.011	+0.033 +0.020		56			19.00~ 46.00	46.00	4.00	—	3~60	19.5~ 46.5	
10	+0.012 +0.006	+0.016 +0.010		10			1.00~ 6.00	6.00	1.00	—	3~10	5.0~ 6.5	
13	+0.015	+0.020		13			1.50~ 8.50	8.50	1.00	—	3~12	5.0~ 9.0	
16	+0.007	+0.012		16			2.50~ 10.50	10.50	1.00	—	3~15	5.0~ 11.0	
20	+0.017	+0.024		20			3.50~ 12.50	12.50	1.50	—	3~20	6.0~ 13.0	
25	+0.008	+0.015		25			5.00~ 16.50	16.50	1.50	—	3~25	6.0~ 17.0	
32				32			7.50~ 21.00	21.00	2.00	—	3~30	9.0~ 21.5	
38	+0.020	+0.028		38			9.50~ 27.00	27.00	2.50	—	3~40	11.0~ 27.5	
45	+0.009	+0.017		45			12.50~ 36.00	36.00	3.00	—	3~50	14.0~ 36.5	
50				50			16.50~ 41.00	41.00	3.50	—	3~60	18.0~ 41.5	
56	+0.024 +0.011	+0.033 +0.020		56			19.00~ 46.00	46.00	4.00	—	3~70	20.0~ 46.5	

① D(6) is a specification available for shape (A) (round) only. It is not available for shapes (B) (R) (E) (G). ② L(40.01) → When LK·LKZ is selected, select an L dimension of 40.01 or larger. ③ P=1.00~1.99 → Smax=4 If P is 1.00~1.99, the maximum S is 4 mm.



Order

Catalog No.	L	P	W	R (R only)	S	G
FMHD 10	35.1	P5.00			S6	G5.4
FSDRS 20	65.5	P10.00	W8.00	R2.25	S10	G12.5



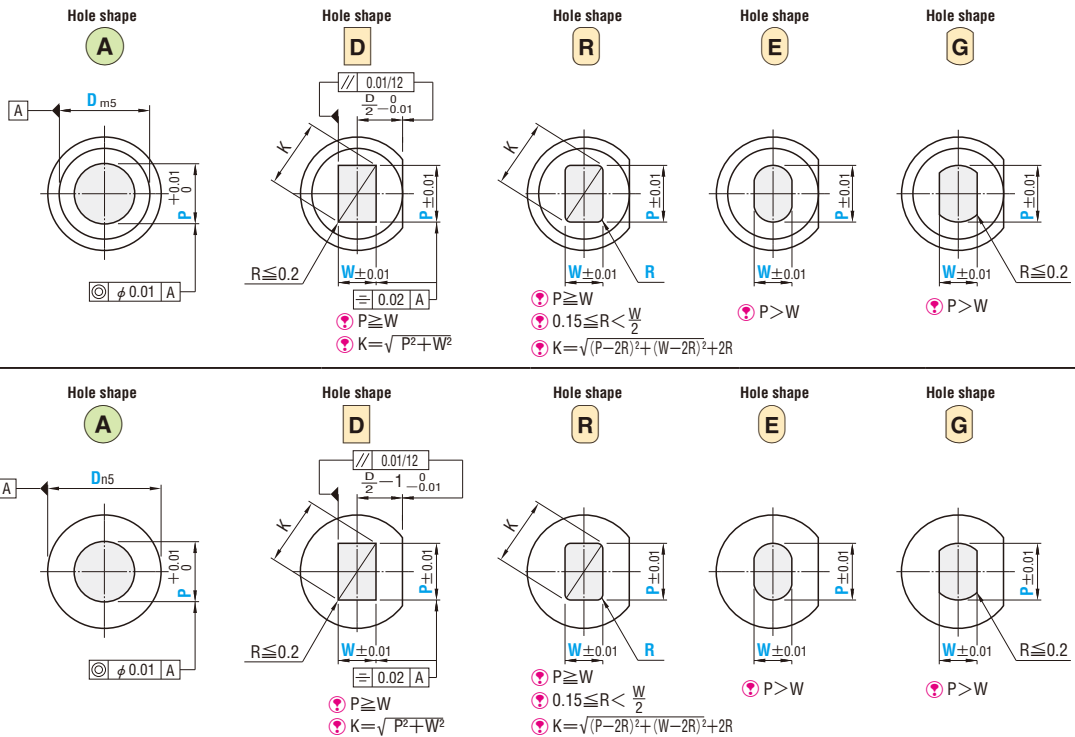
Days to Ship

Quotation



Price

Quotation



Alterations



Catalog No.

L

P

W

R

S

G

(BC·HC·TC, etc.)

FMHD 10 — 35.1 — P5.00

S6 — G5.4 — TC4-KC

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	BC	Shaped hole depth change $1 \leq BC \leq 5$ 0.1mm increments ✗ Cannot be used for $L > 40$. ✗ Cannot be used for $P < 1.00$.		
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \Rightarrow +0.005$ 0 ✗ Cannot be used for $P < 1.00$.	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow +0.01$ 0	
Full length	LKC	Full length tolerance change $L \pm 0.4 \Rightarrow +0.05$ $+0.2 \Rightarrow 0$	✗ If combined with LKC, L dimension can be selected in 0.01mm increments.	
	LKZ	Full length tolerance change $L \pm 0.4 \Rightarrow +0.01$ $+0.2 \Rightarrow 0$	✗ If combined with LKZ, L dimension can be selected in 0.01mm increments. ✗ Cannot be used for $D > 25$.	
Alterations to head	KC	Addition of single key flat to head	Key flat position 180° 270° 0° change 1° increments	Quotation
		Addition of single key flat	Key flat position 180° 270° 0° change 1° increments	
	WKC	Addition of double key flats in parallel Can be combined with KC for shapes D R E G. ✗ Cannot be used for D6 straight type.		
	KFC	Double key flats at 0° and a selected angle 1° increments ✗ Cannot be combined with KC-WKC. ✗ Cannot be used for $L(LD) < 16$ or $D > 25$. ✗ Cannot be used for straight types.	Double key flats at 0° and a selected angle 1° increments ✗ Cannot be combined with KC-WKC. ✗ Cannot be used for $L(LD) < 16$ or $D > 25$. ✗ Cannot be used for straight types.	

Alteration	Code	A	D R E G	1Code
Alterations to head	HC	Head diameter change $D \leq HC < (D+3)$ 0.1mm increments		
	TC	Head thickness change $2 \leq TC < 5$ 0.1mm increments (If combined with TKC-TKM, 0.01mm increments can be selected.) ✗ The full length remains as specified.		
	TKC	Head thickness tolerance change $T \pm 0.3 \Rightarrow +0.02$ 0		
	TKM	Head thickness tolerance change $T \pm 0.3 \Rightarrow -0.02$ 0		
Others	RC	Can be used for headed types only. Head thickness is machined to a tolerance of $-0.04 \sim 0$ relative to the retainer surface. ✗ Cannot be used for $L < 30$.		
	SKC	Single key flat on shank ✗ Can be used for headed types only. ✗ Can be used for $D \geq 8$. Can be used for $L \geq 20$. ✗ Cannot be combined with KC-WKC-KFC. ✗ Cannot be used for straight types.		

Quotation

SCRAP RETENTION BUTTON DIES, CONFIGURABLE SIZE

—Configurable full length, hole depth, and relief hole type—

—Headed type—	RoHS	M H	D dimension	Catalog No.	<table><tr><td>L</td><td>b/a</td></tr><tr><td>16.0~40.0</td><td>1/100</td></tr><tr><td>40.1~100.0</td><td>0</td></tr></table>	L	b/a	16.0~40.0	1/100	40.1~100.0	0
L	b/a										
16.0~40.0	1/100										
40.1~100.0	0										
		Equivalent to SKD11 60~63HRC	D6~56	 SR-FMHD	<table><tr><td>L</td><td>b/a</td></tr><tr><td>16.0~40.0</td><td>1/100</td></tr><tr><td>40.1~100.0</td><td>0</td></tr></table>	L	b/a	16.0~40.0	1/100	40.1~100.0	0
L	b/a										
16.0~40.0	1/100										
40.1~100.0	0										
D8~56	 SR-FHDD SR-FHDR SR-FHDE SR-FHDG										
D10~56	 SR-FMHDS SR-FHDDS SR-FHDRS SR-FHDES SR-FHDGS										

L	b/a
16.0~40.0	1/100
40.1~100.0	0

L	b/a
16.0~40.0	1/100
40.1~100.0	0

—Straight type—	RoHS	M H	D dimension	Catalog No.					------------	-------		L	b/a		16.0~40.0	1/100		40.1~100.0	0	
		Equivalent to SKD11 60~63HRC	D6~56	SR-FMSD					------------	-------		L	b/a		16.0~40.0	1/100		40.1~100.0	0	
D8~56	SR-FSDD SR-FSDR SR-FSDE SR-FSDG																			
D10~56	SR-FMSDS SR-FSDDS SR-FSDRS SR-FSDES SR-FSDGS																			

L	b/a
16.0~40.0	1/100
40.1~100.0	0

L	b/a
16.0~40.0	1/100
40.1~100.0	0

D tolerance			Catalog No.		L 0.1mm increments	0.01mm increments				1mm increments	G		0.01mm increments	0.005mm increments
D	m5	n5	Type			D	(A) min. P max.	D REG P-Kmax.	R P-Wmin.	R	S	$\begin{matrix} \text{P} \leq 40.0 \\ \text{L} \geq 40.1 \end{matrix}$ $\begin{matrix} G \geq P \cdot K + 0.4 \\ G \geq P \cdot K + 0.5 \end{matrix}$	MT (workpiece material thickness)	C (clearance)
6	+0.009 +0.004	+0.013 +0.008	Headed type (Dms)	Straight type (Dns)	(6)	16.0~40.0	1.00 ~ 3.20	—	—	0.15 ≤ R < 0.2 (R only)	3 ~ 4	3.0 ~ 3.6 3.0 ~ 4.8	0.2mm increments	Select a clearance of 0.010 mm or more. C ≥ 0.010
8	+0.012 +0.006	+0.016 +0.010			8		1.00 ~ 4.40	4.40	1.00		3 ~ 6	3.0 ~ 6.8		
10	+0.015 +0.007	+0.020 +0.012	A SR-FMHD	SR-FMSD	10		1.00 ~ 6.40	6.40	1.00		3 ~ 8	3.0 ~ 9.0		
13			D SR-FHDD	SR-FSDD	13		1.50 ~ 8.50	8.50	1.00			3.0 ~ 6.8		
16			R SR-FHDD	SR-FSDD	16		2.50 ~ 10.50	10.50	1.00			3.0 ~ 11.0		
20	+0.017 +0.008	+0.024 +0.015	R SR-FHDD	SR-FSDR	20		3.50 ~ 12.50	12.50	1.50			4.0 ~ 13.0		
25			E SR-FHDE	SR-FSDE	25		5.00 ~ 16.50	16.50	1.50			5.5 ~ 17.0		
32			G SR-FHDG	SR-FSDG	32		7.50 ~ 21.00	21.00	2.00			8.0 ~ 21.5		
38	+0.020 +0.009	+0.028 +0.017			38		9.50 ~ 27.00	27.00	2.50			9.5 ~ 27.5		
45					45		12.50 ~ 36.00	36.00	3.00			13.0 ~ 36.5		
50					50	16.50 ~ 41.00	41.00	3.50		17.0 ~ 41.5				
56	+0.024 +0.011	+0.033 +0.020			56	19.00 ~ 46.00	46.00	4.00		19.5 ~ 46.5				
10	+0.012 +0.006	+0.016 +0.010	Headed type (Dms)	Straight type (Dns)	10	40.1~80.0 (40.01)	1.00 ~ 6.00	6.00	1.00	0.15 ≤ R < 0.2 (R only)	3 ~ 10	5.0 ~ 6.5 5.0 ~ 9.0	0.5mm increments	Select a workpiece material thickness of 0.15mm or more. MT ≥ 0.15
13	+0.015 +0.007	+0.020 +0.012			A SR-FMHDS		SR-FMSDS	13	1.50 ~ 8.50		8.50	1.00		
16			D SR-FHDS	SR-FSDS	16		2.50 ~ 10.50	10.50	1.00			5.0 ~ 13.0		
20	+0.017 +0.008	+0.024 +0.015	R SR-FHDS	SR-FSDR	20		3.50 ~ 12.50	12.50	1.50			6.0 ~ 17.0		
25			R SR-FHDS	SR-FSDR	25		5.00 ~ 16.50	16.50	1.50			9.0 ~ 21.5		
32			E SR-FHDS	SR-FSDE	32		7.50 ~ 21.00	21.00	2.00			11.5 ~ 27.5		
38	+0.020 +0.009	+0.028 +0.017	G SR-FHDS	SR-FSDG	38		9.50 ~ 27.00	27.00	2.50			14.0 ~ 36.5		
45					45		12.50 ~ 36.00	36.00	3.00			18.0 ~ 41.5		
50					50		16.50 ~ 41.00	41.00	3.50			20.0 ~ 46.5		
56	+0.024 +0.011	+0.033 +0.020			56		19.00 ~ 46.00	46.00	4.00					

Clearance

Die shaped hole
Punch shaped hole

- P=1.00 ~ 1.99→Smax=4 If P is 1.00~1.99, the maximum S is 4mm
 D (6) is a specification available for shape (A) (round) only. It is not available for shapes (D) (R) (E) (G).
 Effective depth of scrap retention grooves (table below).
 Perform shaped hole regrinding within the range of (Groove effective depth—1mm).

L	L ≤ 40.0	L ≥ 40.1
Effective groove depth	Shaped hole depth B (BC)	Shaped hole depth B (BC)
	3	5

- L (40.01)→When LK·LKZ is selected, select an L dimension of 40.01 or larger.
 Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120kgf/mm²).
 MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves.
 Specify the shaped hole dimensions (P·W·R) when selecting the button die finishing dimensions.



Order

Catalog No.	L	P	W	R (R only)	S	G	MT	C
SR-FMHD 10	35.1	P5.00	—	—	S6	G5.4	MT1.5	C0.105
SR-FSDRS 25	65.5	P10.00	W8.00	R2.25	S10	G14.5	MT1.5	C0.105



Days to Ship

Quotation

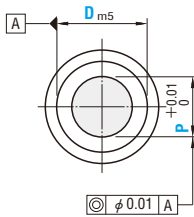


Price

Quotation

Hole shape

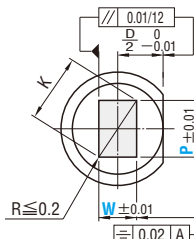
A



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

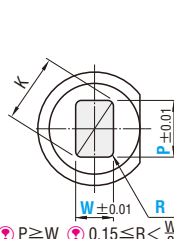
D



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

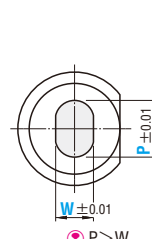
R



- ⚡ $P \geq W$
- ⚡ $0.15 \leq R < \frac{W}{2}$
- ⚡ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

Hole shape

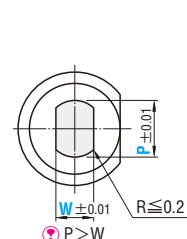
E



- ⚡ $P > W$

Hole shape

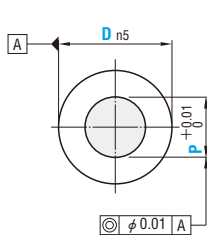
G



- ⚡ $P > W$
- ⚡ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)

Hole shape

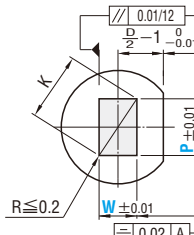
A



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

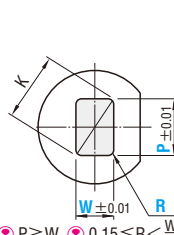
D



- ⚡ $P-0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
- ⚡ $P \geq W$
- ⚡ $K = \sqrt{P^2 + W^2}$

Hole shape

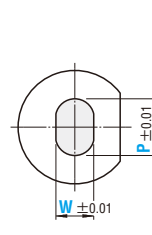
R



- ⚡ $P \geq W$
- ⚡ $0.15 \leq R < \frac{W}{2}$
- ⚡ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

Hole shape

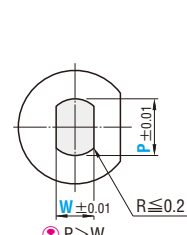
E



- ⚡ $P > W$

Hole shape

G



- ⚡ $P > W$
- ⚡ $\sqrt{P^2 - W^2} \geq 1.5$ (P dimension straight section 1.5 mm or longer)



Alterations



Catalog No. - L - P - W - R - S - G - MT - C - (BC-HC-TC, etc.)

SR-FMHD 10 - 35.1 - P5.00 - S6 - G5.4 - MT1.50 - C0.105 - TC4-KC

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	BC	Shaped hole depth change $\begin{matrix} P \\ 1.00 \sim 1.99 \\ 2.00 \sim 3.99 \\ 4.00 \sim \end{matrix} \begin{matrix} B_{max} \\ 3 \\ 5 \\ 6 \end{matrix}$	Shaped hole depth change $1 \leq BC < 2$ 0.1mm increments ⚡ Cannot be used for $L > 40$.	
	PKC	Shaped hole diameter tolerance change $P+0.01 \rightarrow +0.005$ $0 \rightarrow +0.005$	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$	
Full length	LKC	Full length tolerance change $L+0.4 \rightarrow +0.05$ $L+0.2 \rightarrow 0$	⚡ If combined with LKC, L dimension can be selected in 0.01 mm increments.	
	LKZ	Full length tolerance change $L+0.4 \rightarrow +0.01$ $L+0.2 \rightarrow 0$	⚡ If combined with LKZ, L dimension can be selected in 0.01 mm increments. ⚡ Cannot be used for $D > 25$.	
Alterations to head	KC	Addition of single key flat to head	Key flat position 270° 180° 0° change 1° increments	
		Addition of single key flat	Key flat position 270° 180° 0° change 1° increments	
	WKC	Addition of double key flats in parallel ⚡ Can be combined with KC for shapes D R E G. ⚡ Cannot be used for D6 straight type.		

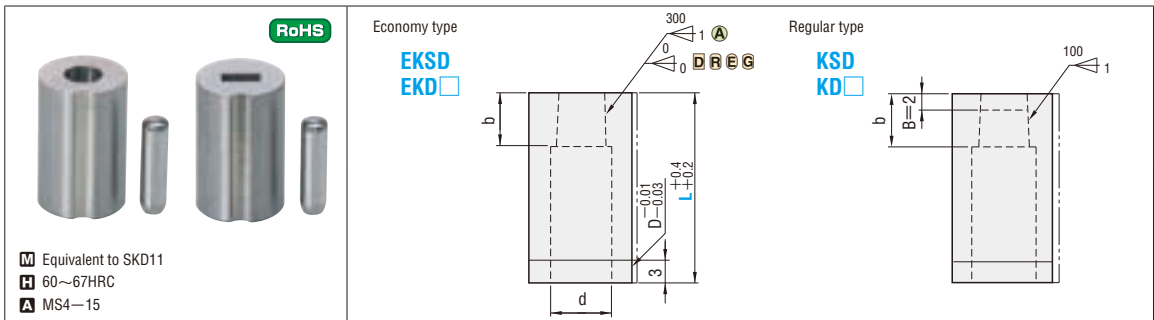
Quotation

Alteration	Code	A	D R E G	1Code
Alterations to head	KFC	Double key flats at 0° and a selected angle 1° increments ⚡ Cannot be combined with KC-WKC ⚡ Cannot be used for $L(LC) < 16$ or $D > 25$ ⚡ Cannot be used for straight types.	Double key flats at 0° and a selected angle 1° increments ⚡ Cannot be combined with KC-WKC ⚡ Cannot be used for $L(LC) < 16$ or $D > 25$ ⚡ Cannot be used for straight types.	
	HC	Head diameter change $D \leq HC < (D+3)$ 0.1mm increments		
	TC	Head thickness change $2 \leq TC < 5$ 0.1mm increments (If combined with TKC-TKM, 0.01mm increments can be selected.) ⚡ The full length remains as specified.		
	TKC	Head thickness tolerance change $T+0.3 \rightarrow +0.02$ $0 \rightarrow +0.02$		
	TKM	Head thickness tolerance change $T+0.3 \rightarrow 0$ $0 \rightarrow -0.02$		
	RC	Can be used for headed types only. Head thickness is machined to a tolerance of $-0.04 \sim 0$ relative to the retainer surface. ⚡ Cannot be used for $L < 30$.		
Others	SKC	Single key flat on shank ⚡ Can be used for headed types only. $D \geq 8$ Can be used for $L \geq 20$. ⚡ Cannot be combined with KC-WKC-KFC. ⚡ Cannot be used for straight types.		

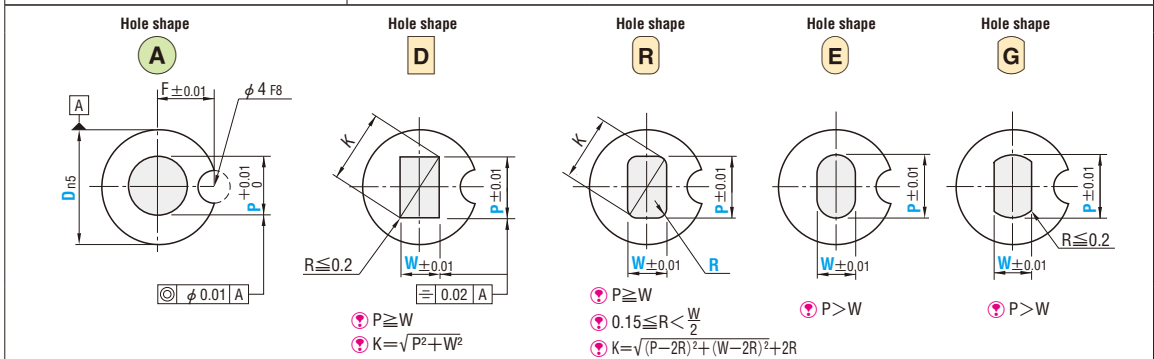
Quotation

BUTTON DIES

—Dowel slot type—



- M** Equivalent to SKD11
- H** 60~67HRC
- A** MS4-15



D _{n5}	Catalog No.			L	0.01mm increments				b	d	F	Base unit price 1~9 pieces																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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10	A	EKSD	KSD	10	16	20	22	25	28	30	32	35	2.00	~ 6.00	6.00	1.20	0.15≤R< W/2 (R only)	8	6	6.4	6	7.5	8	10.6	12.6	14.6	16.6	18.6	20.6	22.6	24.6	26.6	28.6	30.6	32.6	34.6	36.6	38.6	40.6	42.6	44.6	46.6	48.6	50.6	52.6	54.6	56.6	58.6	60.6	62.6	64.6	66.6	68.6	70.6	72.6	74.6	76.6	78.6	80.6	82.6	84.6	86.6	88.6	90.6	92.6	94.6	96.6	98.6	100.6	102.6	104.6	106.6	108.6	110.6	112.6	114.6	116.6	118.6	120.6	122.6	124.6	126.6	128.6	130.6	132.6	134.6	136.6	138.6	140.6	142.6	144.6	146.6	148.6	150.6	152.6	154.6	156.6	158.6	160.6	162.6	164.6	166.6	168.6	170.6	172.6	174.6	176.6	178.6	180.6	182.6	184.6	186.6	188.6	190.6	192.6	194.6	196.6	198.6	200.6	202.6	204.6	206.6	208.6	210.6	212.6	214.6	216.6	218.6	220.6	222.6	224.6	226.6	228.6	230.6	232.6	234.6	236.6	238.6	240.6	242.6	244.6	246.6	248.6	250.6	252.6	254.6	256.6	258.6	260.6	262.6	264.6	266.6	268.6	270.6	272.6	274.6	276.6	278.6	280.6	282.6	284.6	286.6	288.6	290.6	292.6	294.6	296.6	298.6	300.6	302.6	304.6	306.6	308.6	310.6	312.6	314.6	316.6	318.6	320.6	322.6	324.6	326.6	328.6	330.6	332.6	334.6	336.6	338.6	340.6	342.6	344.6	346.6	348.6	350.6	352.6	354.6	356.6	358.6	360.6	362.6	364.6	366.6	368.6	370.6	372.6	374.6	376.6	378.6	380.6	382.6	384.6	386.6	388.6	390.6	392.6	394.6	396.6	398.6	400.6	402.6	404.6	406.6	408.6	410.6	412.6	414.6	416.6	418.6	420.6	422.6	424.6	426.6	428.6	430.6	432.6	434.6	436.6	438.6	440.6	442.6	444.6	446.6	448.6	450.6	452.6	454.6	456.6	458.6	460.6	462.6	464.6	466.6	468.6	470.6	472.6	474.6	476.6	478.6	480.6	482.6	484.6	486.6	488.6	490.6	492.6	494.6	496.6	498.6	500.6	502.6	504.6	506.6	508.6	510.6	512.6	514.6	516.6	518.6	520.6	522.6	524.6	526.6	528.6	530.6	532.6	534.6	536.6	538.6	540.6	542.6	544.6	546.6	548.6	550.6	552.6	554.6	556.6	558.6	560.6	562.6	564.6	566.6	568.6	570.6	572.6	574.6	576.6	578.6	580.6	582.6	584.6	586.6	588.6	590.6	592.6	594.6	596.6	598.6	600.6	602.6	604.6	606.6	608.6	610.6	612.6	614.6	616.6	618.6	620.6	622.6	624.6	626.6	628.6	630.6	632.6	634.6	636.6	638.6	640.6	642.6	644.6	646.6	648.6	650.6	652.6	654.6	656.6	658.6	660.6	662.6	664.6	666.6	668.6	670.6	672.6	674.6	676.6	678.6	680.6	682.6	684.6	686.6	688.6	690.6	692.6	694.6	696.6	698.6	700.6	702.6	704.6	706.6	708.6	710.6	712.6	714.6	716.6	718.6	720.6	722.6	724.6	726.6	728.6	730.6	732.6	734.6	736.6	738.6	740.6	742.6	744.6	746.6	748.6	750.6	752.6	754.6	756.6	758.6	760.6	762.6	764.6	766.6	768.6	770.6	772.6	774.6	776.6	778.6	780.6	782.6	784.6	786.6	788.6	790.6	792.6	794.6	796.6	798.6	800.6	802.6	804.6	806.6	808.6	810.6	812.6	814.6	816.6	818.6	820.6	822.6	824.6	826.6	828.6	830.6	832.6	834.6	836.6	838.6	840.6	842.6	844.6	846.6	848.6	850.6	852.6	854.6	856.6	858.6	860.6	862.6	864.6	866.6	868.6	870.6	872.6	874.6	876.6	878.6	880.6	882.6	884.6	886.6	888.6	890.6	892.6	894.6	896.6	898.6	900.6	902.6	904.6	906.6	908.6	910.6	912.6	914.6	916.6	918.6	920.6	922.6	924.6	926.6	928.6	930.6	932.6	934.6	936.6	938.6	940.6	942.6	944.6	946.6	948.6	950.6	952.6	954.6	956.6	958.6	960.6	962.6	964.6	966.6	968.6	970.6	972.6	974.6	976.6	978.6	980.6	982.6	984.6	986.6	988.6	990.6	992.6	994.6	996.6	998.6	1000.6	1002.6	1004.6	1006.6	1008.6	1010.6	1012.6	1014.6	1016.6	1018.6	1020.6	1022.6	1024.6	1026.6	1028.6	1030.6	1032.6	1034.6	1036.6	1038.6	1040.6	1042.6	1044.6	1046.6	1048.6	1050.6	1052.6	1054.6	1056.6	1058.6	1060.6	1062.6	1064.6	1066.6	1068.6	1070.6	1072.6	1074.6	1076.6	1078.6	1080.6	1082.6	1084.6	1086.6	1088.6	1090.6	1092.6	1094.6	1096.6	1098.6	1100.6	1102.6	1104.6	1106.6	1108.6	1110.6	1112.6	1114.6	1116.6	1118.6	1120.6	1122.6	1124.6	1126.6	1128.6	1130.6	1132.6	1134.6	1136.6	1138.6	1140.6	1142.6	1144.6	1146.6	1148.6	1150.6	1152.6	1154.6	1156.6	1158.6	1160.6	1162.6	1164.6	1166.6	1168.6	1170.6	1172.6	1174.6	1176.6	1178.6	1180.6	1182.6	1184.6	1186.6	1188.6	1190.6	1192.6	1194.6	1196.6	1198.6	1200.6	1202.6	1204.6	1206.6	1208.6	1210.6	1212.6	1214.6	1216.6	1218.6	1220.6	1222.6	1224.6	1226.6	1228.6	1230.6	1232.6	1234.6	1236.6	1238.6	1240.6	1242.6	1244.6	1246.6	1248.6	1250.6	1252.6	1254.6	1256.6	1258.6	1260.6	1262.6	1264.6	1266.6	1268.6	1270.6	1272.6	1274.6	1276.6	1278.6	1280.6	1282.6	1284.6	1286.6	1288.6	1290.6	1292.6	1294.6	1296.6	1298.6	1300.6	1302.6	1304.6	1306.6	1308.6	1310.6	1312.6	1314.6	1316.6	1318.6	1320.6	1322.6	1324.6	1326.6	1328.6	1330.6	1332.6	1334.6	1336.6	1338.6	1340.6	1342.6	1344.6	1346.6	1348.6	1350.6	1352.6	1354.6	1356.6	1358.6	1360.6	1362.6	1364.6	1366.6	1368.6	1370.6	1372.6	1374.6	1376.6	1378.6	1380.6	1382.6	1384.6	1386.6	1388.6	1390.6	1392.6	1394.6	1396.6	1398.6	1400.6	1402.6	1404.6	1406.6	1408.6	1410.6	1412.6	1414.6	1416.6	1418.6	1420.6	1422.6	1424.6	1426.6	1428.6	1430.6	1432.6	1434.6	1436.6	1438.6	1440.6	1442.6	1444.6	1446.6	1448.6	1450.6	1452.6	1454.6	1456.6	1458.6	1460.6	1462.6	1464.6	1466.6	1468.6	1470.6	1472.6	1474.6	1476.6	1478.6	1480.6	1482.6	1484.6	1486.6	1488.6	1490.6	1492.6	1494.6	1496.6	1498.6	1500.6	1502.6	1504.6	1506.6	1508.6	1510.6	1512.6	1514.6	1516.6	1518.6	1520.6	1522.6	1524.6	1526.6	1528.6	1530.6	1532.6	1534.6	1536.6	1538.6	1540.6	1542.6	1544.6	1546.6	1548.6	1550.6	1552.6	1554.6	1556.6	1558.6	1560.6	1562.6	1564.6	1566.6	1568.6	1570.6	1572.6	1574.6	1576.6	1578.6	1580.6	1582.6	1584.6	1586.6	1588.6	1590.6	1592.6	1594.6	1596.6	1598.6	1600.6	1602.6	1604.6	1606.6	1608.6	1610.6	1612.6	1614.6	1616.6	1618.6	1620.6	1622.6	1624.6	1626.6	1628.6	1630.6	1632.6	1634.6	1636.6	1638.6	1640.6	1642.6	1644.6	1646.6	1648.6	1650.6	1652.6	1654.6	1656.6	1658.6	1660.6	1662.6	1664.6	1666.6	1668.6	1670.6	1672.6	1674.6	1676.6

SCRAP RETENTION BUTTON DIES

—Dowel slot type—

PRODUCTS DATA

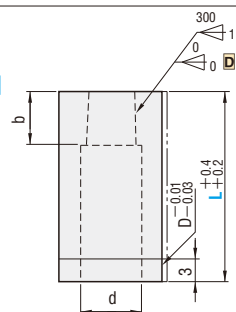
P.1103




M Equivalent to SKD11
H 60~67HRC
A MS4—15

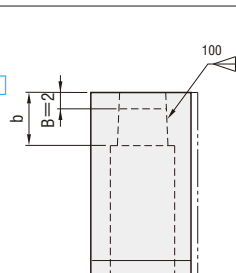
Economy type

SR—EKSD
SR—EKD

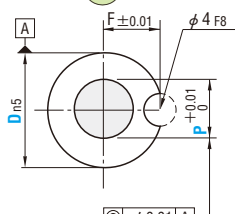


Regular type

SR—KSD
SR—KD

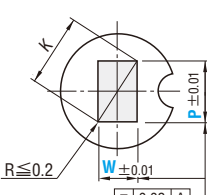


Hole shape **A**



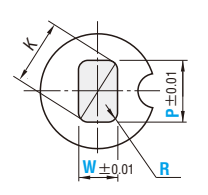
$P \geq W$ $K = \sqrt{P^2 + W^2}$
 $P - 0.4 \geq 1.5$
 (P dimension straight section 1.5 mm or longer)

Hole shape **D**



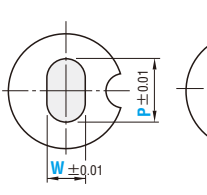
$P \geq W$ $K = \sqrt{P^2 + W^2}$
 $P - 0.4 \geq 1.5$
 (P dimension straight section 1.5 mm or longer)

Hole shape **R**



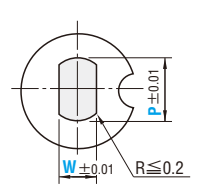
$P \geq W$ $0.15 \leq R < \frac{W}{2}$
 $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$
 $P - 2R \geq 1.5$
 (P dimension straight section 1.5 mm or longer)

Hole shape **E**



$P > W$
 $\sqrt{P^2 - W^2} \geq 1.5$
 (P dimension straight section 1.5 mm or longer)

Hole shape **G**



$P > W$
 $\sqrt{P^2 - W^2} \geq 1.5$
 (P dimension straight section 1.5 mm or longer)

D _{h5}	Catalog No.				L	0.01mm increments						0.01mm increments	0.005mm increments	b	d	F	Base unit price 1~9 pieces																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Type					A	D	E	G	R	MT (workpiece material thickness)	C (clearance)	SR-EKSD				SR-KSD	SR-EKDD	SR-KDD																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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10	+0.016 -0.010	Economy type	SR-EKSD	SR-KSD	10	16	20	22	25	28	30	32	35	2.00~	6.00	6.00	1.20	6	6.4	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

Can be used only for workpiece materials with tensile strengths up to 1177 N/mm² (120kgf/mm²).

MT (workpiece material thickness) and C (clearance) are used as data for machining the scrap retention grooves. Specify the shaped hole dimensions (P-W-R) when selecting the button die finishing dimensions.



Order

Catalog No. — L — P — W — R (R only) — MT — C

SR—EKDR 13 — 20 — P6.00 — W2.40 — R1.00 — MT1.50 — C0.105



Price

Quotation



Days to Ship

Quotation



Alterations

Catalog No. — L (LC) — P (PC) — W (WC) — R — MT — C — (BC·KC, etc.)

SR—EKDD 13 — 20 — P6.00 — WC1.00 — MT1.50 — C0.105 — KC90

Alteration	Code	(A)	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min: $\frac{P}{W} > \frac{PC}{WC} \Rightarrow P - W \min \geq 1.00$ 0.01mm increments only, if PC is 1.00~1.99, then b = 4.		Quotation
	WC	max: $\frac{P}{W} < \frac{PC}{WC} \Rightarrow P - W \max + 0.2$ 0.01mm increments		
	BC	Shaped hole depth change min: $\frac{P}{W} > \frac{BC}{WC} \Rightarrow P - W \min \geq 1.00$ 0.1mm increments	Shaped hole depth change 1 ≤ BC < 2 0.1mm increments	
Others	KC	Key flat position change 1° increments		Quotation

TILTING BUTTON DIES

—Dowel slot type—

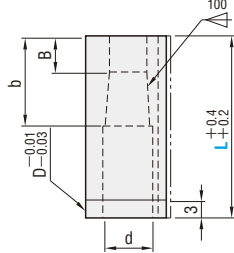
Headed type and straight type tilting button dies have been renamed. The new name is "Button dies, deep hole type". (P.277)



RoHS

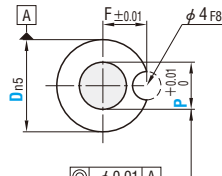
KSDS
KD□**S**

Equivalent to SKD11
60~63HRC
MS4—15



Hole shape

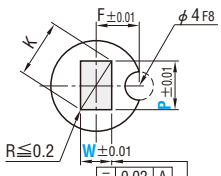
A



⊙ $\phi 0.01$ | A

Hole shape

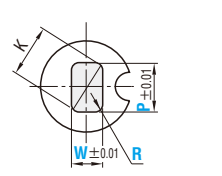
D



$P \geq W$
 $K = \sqrt{P^2 + W^2}$

Hole shape

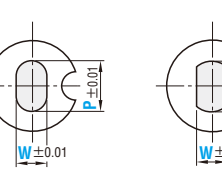
R



$P \geq W$
 $0.15 \leq R < \frac{W}{2}$
 $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

Hole shape

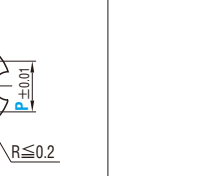
E



$P > W$

Hole shape

G



$P > W$

D tolerance			Catalog No.		L							0.01mm increments				B	b	d	F	Base unit price 1~9 pieces					
			Type	D								A		D R E G						R	KSDS	KD□S			
					min.		P max.		P.Kmax.		P.Wmin.		R												
D _{n5}	10	+0.016 +0.010	A	KS	DS	10	16	20	22	25	30	35	40	2.00	~	6.00	6.00	1.20	0.15 ≤ R < $\frac{W}{2}$ (R only)	6	10	6.4	6	Quotation	
	13	+0.020				13	16	20	22	25	30	35	40	3.00	~	8.00	8.00	1.50				8.4	7.5		
	16	+0.012	D	KD	DS	16	16	20	22	25	30	35	40	5.00	~	10.00	10.00	2.00		8	12	10.6	8		
	20	+0.024				20	16	20	22	25	30	35	40	7.00	~	12.00	12.00	3.00				12.6	10		
	25	+0.015	R	KD	RS	25	16	20	22	25	30	35	40	10.00	~	16.00	16.00	3.00		10	15	16.6	12.5		
	32					32	16	20	22	25	30	35	40	15.00	~	20.00	20.00	4.00				20.6	16		
	38	+0.028 +0.017	E	KD	ES	38	16	20	22	25	30	35	40	19.00	~	26.00	26.00	5.00		14	20	26.6	19		
	45					45		20	22	25	30	35	40	25.00	~	35.00	35.00	6.00				36.0	22.5		
	50		G	KD	GS	50		20	22	25	30	35	40	33.00	~	40.00	40.00	7.00				41.0	25		
	56	+0.033 +0.020				56		20	22	25	30	35	40	38.00	~	45.00	45.00	8.00				46.0	28		

Order  Catalog No. — L — P — W — R (R only)
KDDS 25 — 35 — P10.00 — W8.00

Days to Ship  **Quotation**

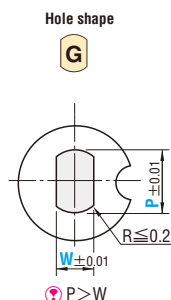
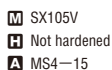
Price  **Quotation**

Alterations  Catalog No. — L (LC) — P (PC) — W (WC) — R — (BC·KC, etc.)
KDRS45 — 40 — P25.2 — W10.2 — R1.50 — BC20

Alteration	Code	(A)	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min: $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P-Wmin}{2} \geq 1.00$ 0.01mm increments ⚡ (A) only, if PC is 1.00~1.99, then B·b=4.		Quotation
	WC	max: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot Kmax + 0.2$ 0.01mm increments		
	BC	Shaped hole depth change $1 \leq BC \leq b$ 0.1mm increments		

Alteration	Code	(A)	D R E G	1Code
Shaped hole	PKC	Shaped hole diameter tolerance change $P+0.01 \rightarrow +0.005$ $0 \rightarrow 0$	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ $0 \rightarrow 0$	Quotation
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1mm increments (if combined with LKC, 0.01mm increments can be selected.) ⚡ Press-in lead is shortened by (L-LC).		
	LKC	Full length tolerance change $L+0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
Others	KC	—	Key flat position 270° 180° 90° 0° change 1° increments	

—Dowel slot type—



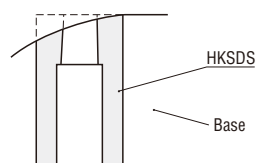
Quotation



Quotation

Quotation

⚠ The shaped hole dimensions are the dimensions prior to flame hardening. Be aware that depending on the hardening conditions, some changes in the dimensions may occur.

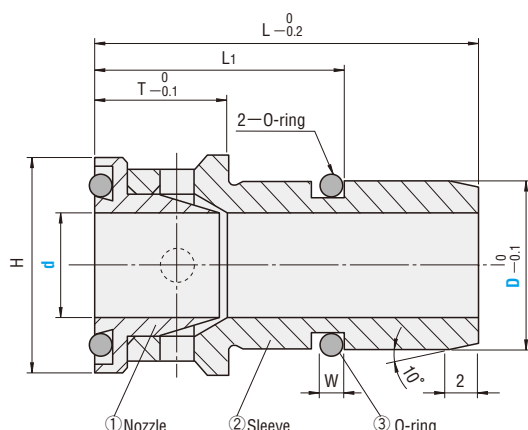
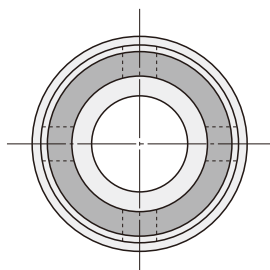


SCRAP VACUUM UNITS

Patent pending

RoHS

SVBN



①② M : SUM22
S : Electroless nickel plating
③ M : O-ring (nitrile rubber, 2 rings)

H	L	L ₁	T	O-ring		Catalog No.		d	Base unit price
				Thickness W	Designation No.	Type	D		1~9 pieces
8	18	13	8	1	5	SVBN	6	3	Quotation
11	25	15		1.5	6		8	4	
13	25				8		10	6	
16	30				10		13	9	
19	35				14		16	12	
23	40				18		20	16	



Order

Catalog No. — d
SVBN 10 — 6



Days to Ship

Quotation



Price

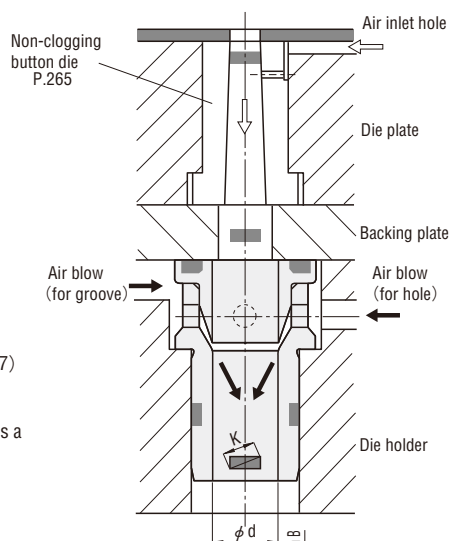
Quotation

Features

- The scrap vacuum unit utilizes an air blow (compressed air) to create negative pressure inside the die, pulling the punching scrap (product) downward, and preventing clogging and scrap lifting.
- Greater effects can be achieved when a non-clogging button die with air inlet (P.267) is used. (For details, refer to PRODUCTS DATA on P.1105.)
- Two types of air supply can be selected: a machined groove, or a machined hole.
- Because this type is embedded in the die holder, it can be installed at a later time as a countermeasure to scrap lifting or scrap clogging.

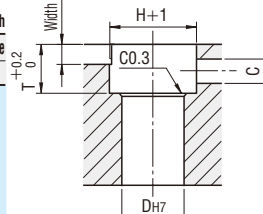
Precautions

- When multiple scrap vacuum units are used together, ensure that the airflow paths are equal. In this case the flow speed will decrease, decreasing the vacuum. The vacuum is proportional to the pressure of the compressed air and to the cross-sectional area of the flow path, and inversely proportional to the blow unit diameter D and to the length of the flow path.
- Use under conditions such that the punching scrap size $K \leq d - 3$.
- Although this unit can be used to prevent scrap lifting and clogging, it may not be able to resolve these problems under all conditions.
- Chamfer the die holder in order to prevent damage to the O-ring when the scrap vacuum is inserted.
- Use a hose with a minimum outer diameter of $\phi 6$ and a minimum inner diameter of $\phi 4$.

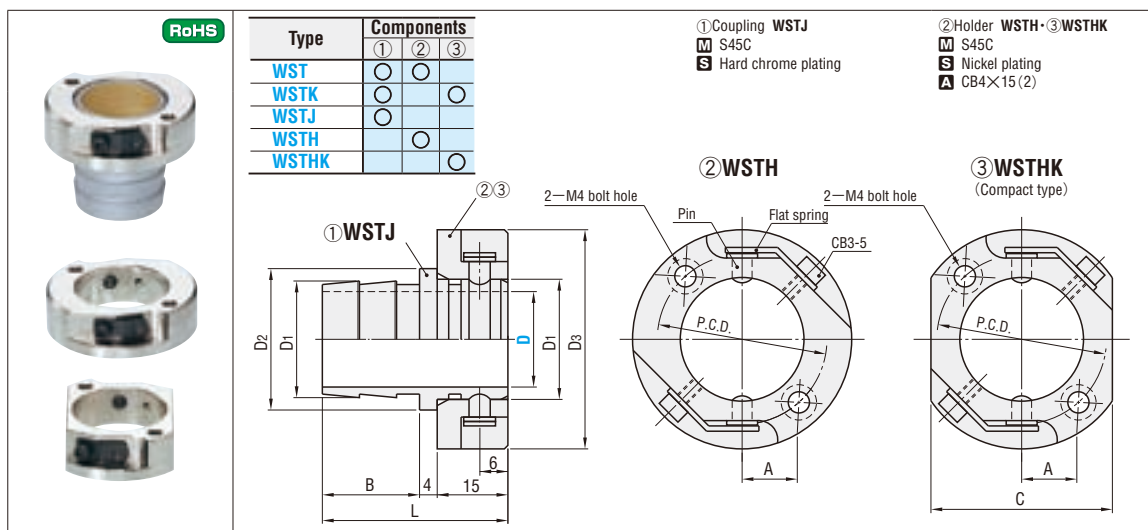


Example of recommended machining dimensions for flow path

Catalog No.	Machining of groove	Side hole
Type	D	A B ϕC
6		
8		
10	4	3 4
13		
16		
20		



PRODUCT SHOOTERS



Hose inner dia.D ₁	D ₂	D ₃	P.C.D.	A	B	L	C	Catalog No.		Base unit price 1~9 pieces					
								Type	D	WST	WSTK	WSTJ	WSTH	WSTHK	
19	24	39	29	10	21	40	30	WST (Set of ①, ②)	15						
25	30	45	35				37	WSTK (Set of ①, ③)	20						
32	37	52	42	12			43	WSTJ (① only)	27	Quotation					
38	43	58	48				50	WSTH (② only)	33						
45	50	65	55	14	26	45	50	WSTHK (③ only)	40						
50	55	70	60				55	45							



Order

Catalog No.

WST 20



Days to Ship

Quotation



Price

Quotation

Features

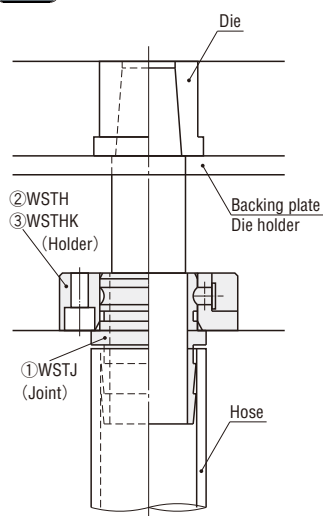
- (1) Convenient for use in separating the product from other scrap at locations where the punched-out piece becomes the product.
- (2) Air suction can also be used as a countermeasure to prevent scrap lifting and clogging.
- (3) Because these units can be installed or removed with a single touch, die replacement is easy.
- (4) The special structure makes these units extremely compact.

Precautions

- Check the coupling installation before beginning pressing work.
- Use commercially available hoses and hose bands.



Example



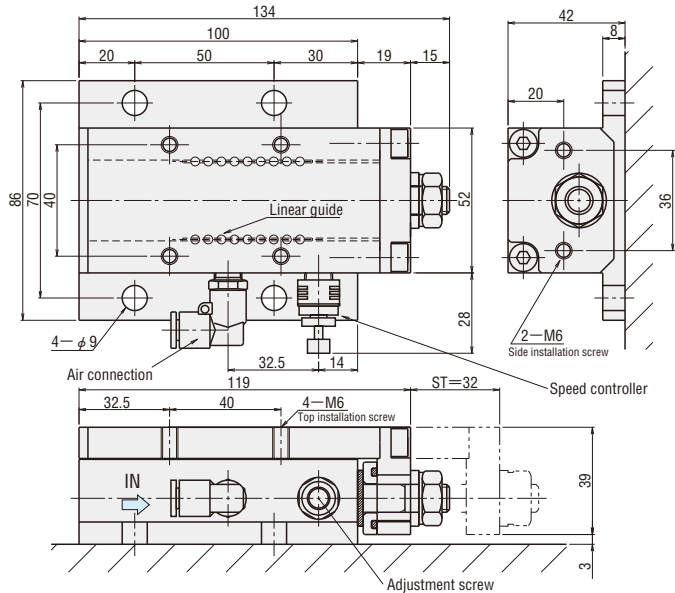
SCRAP REMOVERS



RoHS

MREE15

- Operating pressure: 0.3~0.6MPa (3.1~6.1kgf/cm²)
- Max. stroke ST: 32mm
- Max. transportable load: 150N (15.3kgf)
- Operating temperature: 0~60°C
- Piping tube diameter: $\phi 6$
- Max. tilt angle: 8°



Catalog No.	Base unit price
Type No.	1~9 pieces
MREE 15	Quotation



Order

Catalog No.
MREE15



Days to Ship

Quotation



Price

Quotation

■Features

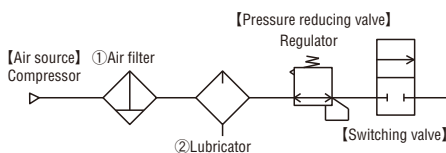
- Simply by connecting air piping, this unit will use vibration to transport scrap.
- Unlike belt conveyors, there is no need to be concerned about AC power and belt breakage.
- Unlike air cylinders, solenoid valves and other wiring are unnecessary.
- Because a ball-type linear guide is used, the system is highly resistant to eccentric loads and provides smooth motion.

■Air consumption (150N load)

MPa	L/min
0.3	15
0.4	22
0.5	26
0.6	39

※When speed controller is at max.

Machining holes in the shooter makes it possible to separate products from scrap.



■How to use

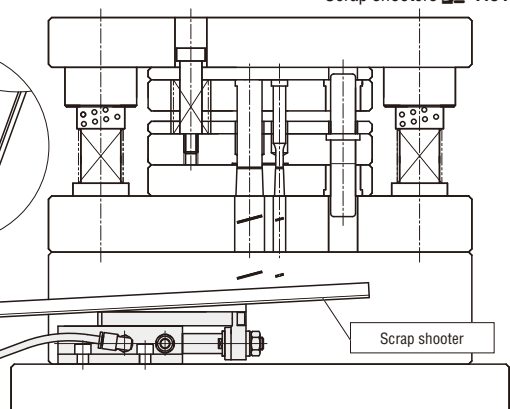
- When compressed air (0.3 ~ 0.6MPa) is connected to the scrap remover air coupling, the table begins vibrating. Use a tube with outer diameter 6 mm and inner diameter 4mm
- Adjust the speed controller screw and fasten the nut at the position of the correct speed.
- To facilitate scrap transport, either change the inclination of the scrap shooter or incline the scrap remover by inserting a plate or washer between the scrap remover and anchoring base.
- To install the scrap shooter, either use flathead screws and install from the top or install an L angle into the side tap hole and weld the scrap shooter into place.
- If the amount of oil dripping onto the scrap shooter is large, install an embossed shooter plate (P.940).
- If the weight of the scrap is large, ensure that the scrap is distributed uniformly on the scrap shooter.
- For scrap shooters, refer to P.941.

■Precautions

- If the scrap shooter is not installed so that it is even to the left and right, and one side is longer than the other, a high bending moment may be generated, resulting in duller vibration. In this case, take supplementary steps such as installing rollers onto the scrap shooter.
- Pass the air used through ① an air filter and ② a lubricator.

Dust and other substances in the air may cause operation failures.

Embossed shooter plates P.940
Scrap shooters P.941

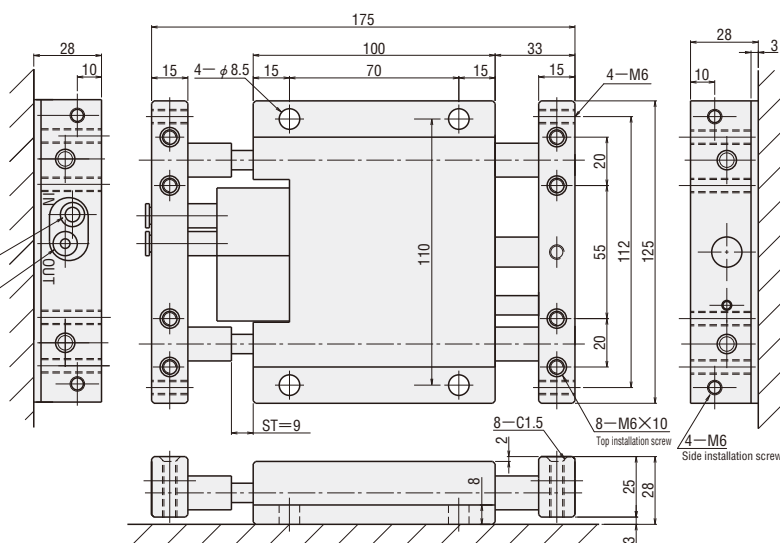


RoHS

MRE50

Air connection (tube dia $\phi 6$)
(IN)
Speed controller
(OUT)

- Operating pressure: 0.3~0.6MPa
(3.1~6.1kgf/cm²)
 - Max. stroke ST: 9mm
 - Max. transportable load: 500N (51kgf)
 - Operating temperature: 0~60°C
- A** Speed controller
Piping tube: $\phi 4 \times 100$ mm



Catalog No.		Base unit price
Type	No.	1~9 pieces
MRE	50	Quotation



Order

Catalog No.

MRE50



Days to Ship

Quotation

**Price**

Quotation

■ Features

- The MRE50 mechanism varies the reciprocation speed in order to transport the scrap. Therefore it is possible to transport the scrap to a higher location (max. 2''). The air consumption is 1/2 or less than MREE.
- Because the speed controller can be installed on the exterior, speed control can be easily performed even in a narrow space.
- Unlike belt conveyors, there is no need to be concerned about AC power and belt breakage.
- Unlike air cylinders, solenoid valves and other wiring are unnecessary.
- Because a linear bushing guide system is used, the system is highly resistant to eccentric loads and provides smooth motion.

■ Air consumption (250N load)

MPa	L/min
0.3	7
0.4	9
0.5	11
0.6	13

※When speed controller is at max.

■ How to use

- When compressed air (0.3~0.6MPa) is connected to the scrap remover air coupling, the table begins vibrating. Use a tube with outer diameter 6 mm and inner diameter 4mm
- Adjust the speed controller screw and fasten the nut at the position of the correct speed.
- To facilitate scrap transport, either change the inclination θ of the scrap shooter or incline the scrap remover by inserting a plate or washer between the scrap remover and anchoring base.
- To install the scrap shooter, either use flathead screws and install from the top or install an L angle into the side tap hole and weld the scrap shooter into place.
- If the amount of oil dripping onto the scrap shooter is large, install an embossed shooter plate (P.940).
- If the weight of the scrap is large, ensure that the scrap is distributed uniformly on the scrap shooter.
- For scrap shooters, refer to P.941.

■ Precautions

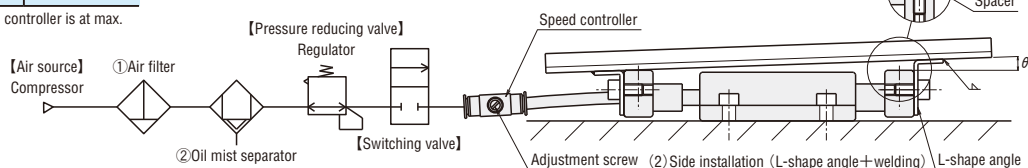
- If the scrap shooter is not installed so that it is even to the left and right, and one side is longer than the other, a high bending moment may be generated, resulting in duller vibration. In this case, take supplementary steps such as installing rollers onto the scrap shooter.
- Pass the air used through ① an air filter and ② an oil mist separator. Dust and other substances in the air may cause operation failures.

Embossed shooter plates P.940

Scrap shooters P.941

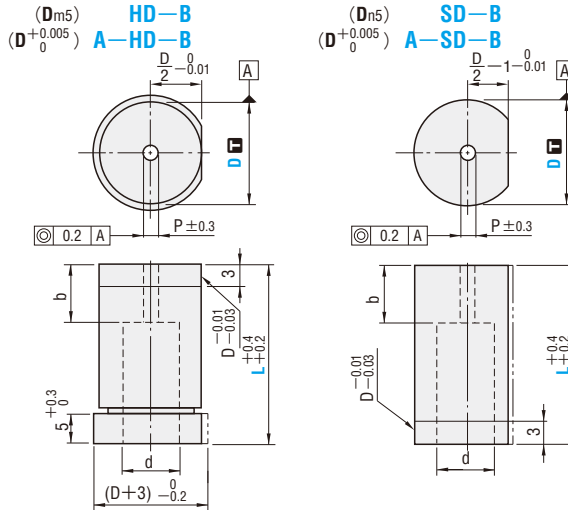
■ Example of scrap shooter installation

(1) Top installation (fastened with screw)



BUTTON DIE BLANKS

RoHS



Equivalent to SKD11
60~63HRC

D	Shank dia. tolerance			Catalog No.		L	P	b	d	Base unit price 1~9 pieces			
	Dm5	Dn5	+0.005/0	Type	D					HD-B	A-HD-B	SD-B	A-SD-B
6	+0.009 +0.004	—	+0.005/0	(Dm5) HD-B	6	16 20 22 25 28 30 32 35	0.8	3	3.4				
8	+0.012 +0.006	+0.016 +0.010		(D+0.005/0) A-HD-B	8	16 20 22 25 28 30 32 35 (40)		4	4.4				
10	—	—			10	16 20 22 25 28 30 32 35 (40) (45)		6	6.4				
13	+0.015 +0.007	+0.020 +0.012			13	16 20 22 25 28 30 32 35 (40) (45)		8	8.4				
16	—	—	—	(Dm5) HD-B	16	16 20 22 25 28 30 32 35 (40) (45)	1.0	10.6	10.6				
20	—	—		(D+0.005/0) A-HD-B	(20)	16 20 22 25 28 30 32 35 (40) (45)		12.6	12.6				
22	+0.017 +0.008	+0.024 +0.015			(22)	16 20 22 25 28 30 32 35 (40) (45)		14.6	14.6				
25	—	—			(25)	16 20 22 25 28 30 32 35 (40) (45)		16.6	16.6				
32	—	—	—	(Dn5) SD-B	(32)	16 20 22 25 28 30 32 35	2.8	20.6	20.6				
38	+0.020 +0.009	+0.028 +0.017		(D+0.005/0) A-SD-B	(38)	16 20 22 25 30 35		26.6	26.6				
45	—	—			(45)	20 22 25 30 35		36.0	36.0				
50	—	—			(50)	20 22 25 30 35		41.0	41.0				
56	+0.024 +0.011	+0.023 +0.020	—		(56)	20 22 25 30 35		46.0	46.0				

Quotation

⚠ L = (40) is a specification available for HD-B, A-HD-B, and SD-B only. ⚠ L = (45) is a specification available for HD-B only.
⚠ D = (20) ~ (56) are specifications available for shank diameter tolerance of Dm5 • Dn5 only.



Order

Catalog No. — L
SD-B 20 — 25



Price

Quotation



Days to Ship

Quotation



Alterations



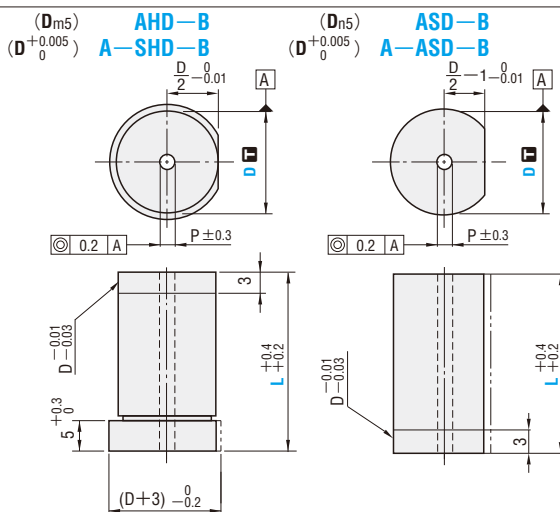
Catalog No. — L(LC) — (HC•TC, etc.)
SD-B 25 — LC27 — WKC

Alteration	Code	Spec.	1Code
Alterations to head	HC	Head diameter change D ≤ HC < H 0.1 mm increments	Quotation
	TC	Head thickness change 2 ≤ TC < 5 0.1 mm increments ⚠ Full length is shortened by (5-TC). ⚠ If combined with LC, full length is equal to LC.	
	WKC	Addition of double key flats in parallel ⚠ Cannot be used for L(LC) < 16.	
	NKC	No key flat ⚠ Cannot be used for D > 16.	
	RC	Head thickness is machined to a tolerance of -0.04 ~ 0 relative to the retainer surface. ⚠ Cannot be used for L < 30.	

Alteration	Code	Spec.	1Code
Alterations to full length	LC	• HD-B Full length change 10 ≤ L - (b-1) ≤ LC < L 0.1 mm increments ⚠ Press-in lead is shortened by (L-LC).	Quotation
		• SD-B Full length change 10 ≤ LC < L 0.1 mm increments ⚠ Press-in lead is shortened by (L-LC).	
Others	NHC	No start hole ⚠ Cannot be used for D > 16.	

— For angular button dies —

RoHS



Equivalent to SKD11
60~63HRC

D	Shank dia. tolerance			Catalog No.		L	P	Base unit price 1~9 pieces			
	D _{ms}	D _{ns}	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Type	D			AHD-B	A-AHD-B	ASD-B	A-ASD-B
6	$\begin{smallmatrix} +0.009 \\ +0.004 \end{smallmatrix}$	—	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} (D_{ms}) \\ (D^{+0.005}_0) \end{smallmatrix}$ AHD-B A-AHD-B	6	16 20 22 25 30 35	0.8				
8	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$	$\begin{smallmatrix} +0.016 \\ +0.010 \end{smallmatrix}$			8	16 20 22 25 30 35					
10	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$		$\begin{smallmatrix} (D_{ms}) \\ (D^{+0.005}_0) \end{smallmatrix}$ AHD-B A-AHD-B	10	16 20 22 25 30 35 (40)					
13	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$		$\begin{smallmatrix} (D_{ns}) \\ (D^{+0.005}_0) \end{smallmatrix}$ ASD-B A-ASD-B	13	16 20 22 25 30 35 (40)					
16	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	—		16	16 20 22 25 30 35 (40)					
20	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$			(20)	16 20 22 25 30 35					
25	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$			(25)	16 20 22 25 30 35					

Quotation

① L = (40) is a specification available for AHD-B only. ② D = (20) and (25) are specifications available for shank diameter tolerance of D_{ms} and D_{ns} only.



Order

Catalog No. — L

AHD-B 20 — 25



Days to Ship

Quotation



Price

Quotation



Alterations



Catalog No. — L(LC) — (HC-TC-WKC, etc.)

AHD-B20 — 25 — TC3

Alteration	Code	Spec.	1Code
Alterations to head 	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments	Quotation
	TC	Head thickness change $2 \leq TC < 5$ 0.1 mm increments ① Full length is shortened by (5-TC). ② If combined with LC, full length is equal to LC.	
	WKC	Addition of double key flats in parallel ⊗ Cannot be used for L(LC) < 16.	
	NKC	No key flat ⊗ Cannot be used for D > 16.	

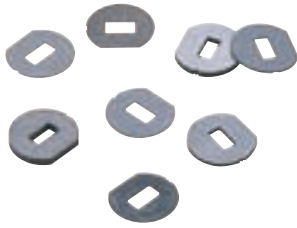
Alteration	Code	Spec.	1Code
Alterations to full length 	LC	Full length change $10 \leq LC < L$ 0.1 mm increments ① Press-in lead is shortened by (L-LC).	Quotation
	NHC	No start hole ⊗ Cannot be used for D > 16.	

SPACERS

—FOR ANGULAR BUTTON DIES AND STRAIGHT BUTTON DIES WITH RELIEF HOLES—

—For angular button dies—

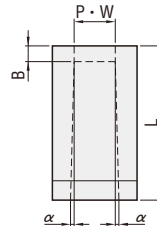
RoHS



SK5
45 HRC ~

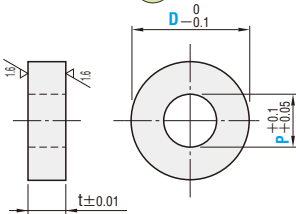
■ Button die L dimension and P·W spread

($\alpha \times 2$) dimension: P·W spread (when B=2)
The values in the table below are the values for α on each side.



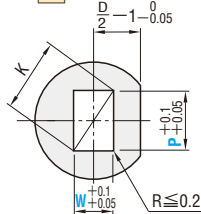
L	Taper	1/50	1/100	1/150
16		0.28	0.14	0.09
20		0.36	0.18	0.12
22		0.40	0.20	0.13
25		0.46	0.23	0.15
30		0.56	0.28	0.19
35		0.66	0.33	0.22
40		0.76	0.38	0.25

Hole shape **SSD**
A



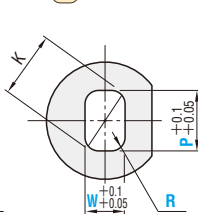
The outside diameter has slight depression.

Hole shape **SSDD**
D



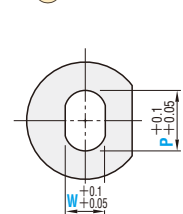
$P \geq W$
 $K = \sqrt{P^2 + W^2}$

Hole shape **SSDR**
R



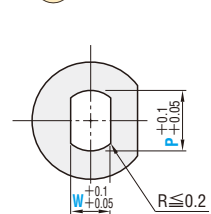
$P \geq W$
 $0.15 \leq R < \frac{W}{2}$
 $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$

Hole shape **SSDR**
E



$P > W$

Hole shape **SSDG**
G



$P > W$

Catalog No.

0.01mm increments

Type		D	A		D R E G		R	t	(8-piece set)
			min. P	max.	P·Kmax.	P·Wmin.	R		1~4 sets
A	SSD	6	1.00 ~	4.00	—	—	—	0.05 0.1 0.2 0.3 0.5 1.0 1.5 2.0	Quotation
		8	1.00 ~	5.00	5.00	1.00	—		
D	SSDD	10	2.00 ~	7.00	7.00	1.20	—		
		13	3.00 ~	9.00	9.00	1.50	—		
R	SSDR	16	5.00 ~	12.00	12.00	2.00	—		
		20	7.00 ~	16.00	16.00	3.00	—		
E	SSDE	25	10.00 ~	20.00	20.00	3.00	—		
G	SSDG								

1 set consists of 8 spacers (1 of each t dimension).



Price

Quotation



Order

Catalog No.

P W R (R only)

SSDG 10 — P5.65 — W3.25



Days to Ship

Quotation



Alterations

Catalog No.

P W R (KC)

SSDD 8 — P3.60 — W2.85 — KC90

Alteration	Code	A	D	R	E	G	1Code
Head	KC	⊙	⊙	⊙	⊙	⊙	168
		Addition of single key flat	270°	180°	90°	0°	Key flat position change 1° increments

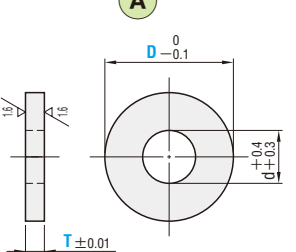
—For straight button dies with relief holes—

RoHS



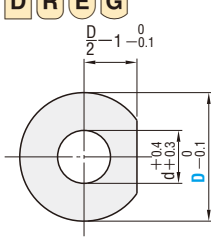
SK5
45 HRC ~

Hole shape **SSDN**
A



The outside and inside diameter has slight depression.

Hole shape **SSDHN**
D **R** **E** **G**



d	Catalog No.		T	Base unit price (5-piece set) 1~9 sets				
	Type	D		T0.05	T0.1	T0.2	T0.5	T1.0
3.4	SSDN (for round die D6~25)	6	0.05					
4.4		8						
6.4		10						
8.4		13						
10.6	SSDHN (for shaped die D8~25)	16	0.5	Quotation				
12.6		20	1.0					
16.6		25						

A set consists of 5 spacers of the same T dimension.

For example, with T0.1, a set consists of 5 spacers of thickness 0.1.



Order

Catalog No.

T

SSDN 6 — 0.1



Days to Ship

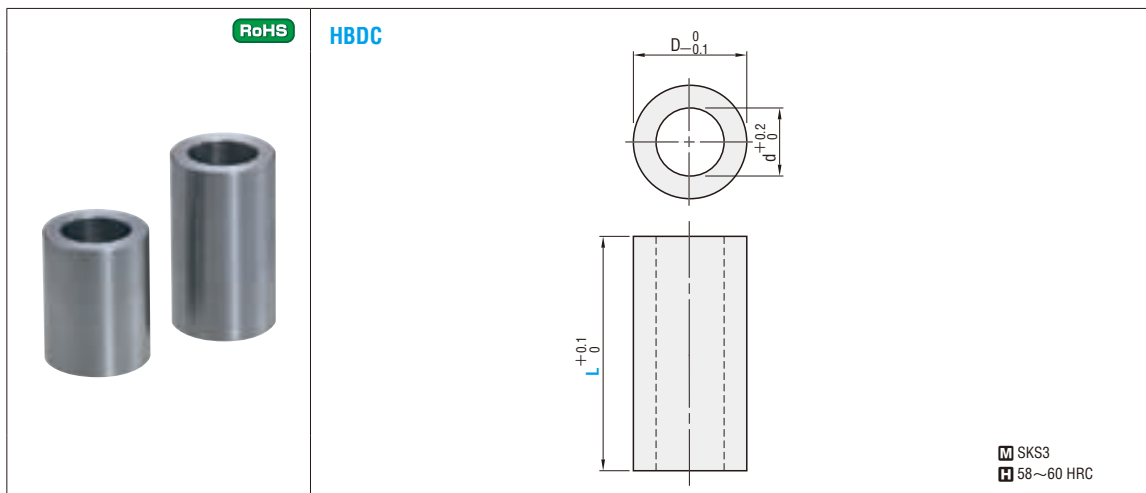
Quotation



Price

Quotation

COLLARS FOR HEADED BUTTON DIES



D _{-0.1} ⁰	d _{+0.2} ⁰	Catalog No.		L 0.1mm increments	Base unit price 1~9 pieces
		Type	No.		
11	5.4	HBDC	8	10.0~60.0	Quotation
13	7.8		10		
16	10		13		
19	12.4		16		
23	14.6		20		
25	16.8		22		
28	18.8		25		
35	23		32		



Order

Catalog No.

HBDC 8

L

40.5



Days to Ship

Quotation



Price

Quotation



Alterations



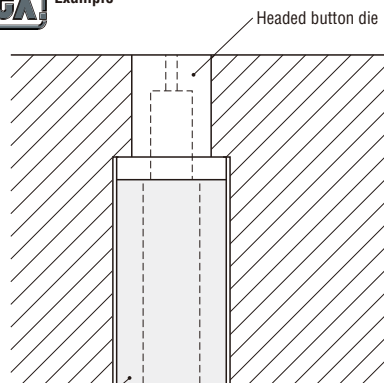
Catalog No. — L — (LKC)

HBDC 8 — 40.5 — LKC



Example

Alteration	Code	Spec.	1Code
Alterations to full length 	LKC	L dimension tolerance change L $\begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix} \Rightarrow \begin{smallmatrix} +0.05 \\ 0 \end{smallmatrix}$	Quotation



Collar for headed button die

It is recommended that the clearance be as small as possible.

Products related to shims and spacers

Spacer layer plates	Precision multipurpose plates	Shim tape
LHP LHP—H LHP—SET P.707	UTPB UTPL P.709	FGSM FGSMW FGSML P.708