

BUTTON DIES

BUTTON DIES



Product name Catalog No.	SCRAP RETENTION REVERSE TAPER BUTTON DIES HEADED TYPE	SCRAP RETENTION REVERSE TAPER BUTTON DIES STRAIGHT TYPE	SCRAP RETENTION REVERSE ANGULAR BUTTON DIES HEADED TYPE	SCRAP RETENTION REVERSE ANGULAR BUTTON DIES STRAIGHT TYPE
Page	333	335	337	339



SCRAP RETENTION REVERSE ANGULAR BUTTON DIES —DOWEL SLOT TYPE—	SCRAP RETENTION REVERSE TAPER BUTTON DIES HEADED TYPE	BUTTON DIES HEADED TYPE (REGULAR)	BUTTON DIES HEADED TYPE (ECONOMY)
341	343	345	347



BUTTON DIES STRAIGHT TYPE (REGULAR)	BUTTON DIES STRAIGHT TYPE (ECONOMY)	SCRAP RETENTION BUTTON DIES HEADED TYPE (REGULAR)	SCRAP RETENTION BUTTON DIES HEADED TYPE (ECONOMY)
349	351	353	355



SCRAP RETENTION BUTTON DIES STRAIGHT TYPE (REGULAR)	SCRAP RETENTION BUTTON DIES STRAIGHT TYPE (ECONOMY)	NON-CLOGGING BUTTON DIES HEADED TYPE	ANGULAR BUTTON DIES HEADED TYPE
357	359	361	363



ANGULAR BUTTON DIES STRAIGHT TYPE	SCRAP RETENTION ANGULAR BUTTON DIES HEADED TYPE	SCRAP RETENTION ANGULAR BUTTON DIES STRAIGHT TYPE	BUTTON DIES, DEEP HOLE TYPE HEADED TYPE	BUTTON DIES, DEEP HOLE TYPE STRAIGHT TYPE
365	367	369	371	



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	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
373		375		377		379	



BUTTON DIES —DOWEL SLOT TYPE—	SCRAP RETENTION BUTTON DIES —DOWEL SLOT TYPE—	TILTING BUTTON DIES —DOWEL SLOT TYPE—	BUTTON DIES FOR FLAME HARDENING —DOWEL SLOT TYPE—
381	382	383	384



SCRAP VACUUM UNITS	PRODUCT SHOOTERS	SCRAP REMOVERS	SCRAP DISCHARGERS —MIDDLE STROKE TYPE (ST=40)—
385	386	387-388	389



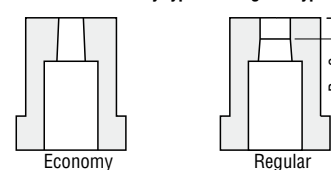
SCRAP DISCHARGERS —LONG STROKE TYPE (ST=70)—	SCRAP DISCHARGERS —VERTICAL INSTALLATION TYPE (ST=23)—	SCRAP DISCHARGERS —HORIZONTAL INSTALLATION TYPE (ST=23)—	BUTTON DIE BLANKS HEADED TYPE	BUTTON DIE BLANKS STRAIGHT TYPE
390	391	392	395	



ANGULAR BUTTON DIE BLANKS HEADED TYPE	ANGULAR BUTTON DIE BLANKS STRAIGHT TYPE	SPACERS —FOR ANGULAR BUTTON DIES—	SPACERS —FOR STRAIGHT BUTTON DIES WITH RELIEF HOLES—	COLLARS FOR HEADED BUTTON DIES
396	396	397	397	398

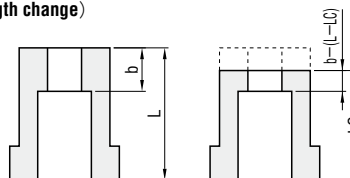
Button die type	Type	Shank dia. tolerance	Normal		Scrap retention		Scrap retention reverse taper			Non-clogging					
			Round	Shaped	Page	Round	Shaped	Page	Round	Shaped	Page	Round	Page		
Headed	Equivalent to SKD11	Regular type	D_{m5}	MHD	HD□	P.345	SR-MHD	SR-HD□		SRT-MHD	SRT-HD□				
			$D_{m5}^{+0.005/0}$	A-MHD	A-HD□	P.345	SRA-MHD	SRA-HD□		SRTA-MHD	SRTA-HD□		SV-MHD	P.361	
	Powdered high-speed steel	Regular type	D_{m5}	PMHD	PHD□	P.345	SR-PMHD	SR-PHD□		SRT-PMHD	SRT-PHD□				
			$D_{m5}^{+0.005/0}$	A-PMHD	A-PHD□	P.345	SRA-PMHD	SRA-PHD□		SRTA-PMHD	SRTA-PHD□		SV-PMHD	P.361	
	Equivalent to SKD11	Economy type	D_{m5}	EMHD	EHD□	P.347	SR-EMHD	SR-EHD□							
			$D_{m5}^{+0.005/0}$	A-EMHD	A-EHD□	P.347	SRA-EMHD	SRA-EHD□							
Straight	Equivalent to SKD11	Regular type	D_{n5}	MSD	SD□	P.349	SR-MSD	SR-SD□		SRT-MSD	SRT-SD□				
			$D_{n5}^{+0.005/0}$	A-MSD	A-SD□	P.349	SRA-MSD	SRA-SD□		SRTA-MSD	SRTA-SD□		SV-MSD	P.361	
	Powdered high-speed steel	Regular type	D_{n5}	EMSD	ESD□	P.351	SR-EMSD	SR-ESD□							
			$D_{n5}^{+0.005/0}$	A-EMSD	A-ESD□	P.351	SRA-EMSD	SRA-ESD□							
	Equivalent to SKD11	Economy type	D_{n5}	PMSD	PSD□	P.349	SR-PMSD	SR-PSD□		SRT-PMSD	SRT-PSD□				
			$D_{n5}^{+0.005/0}$	A-PMSD	A-PSD□	P.349	SRA-PMSD	SRA-PSD□		SRTA-PMSD	SRTA-PSD□		SV-PMSD	P.361	
Angular, headed	Equivalent to SKD11	Regular type	D_{m5}	AHD	AHD□	P.363	SR-AHD	SR-AHD□		SRT-AHD	SRT-AHD□				
			$D_{m5}^{+0.005/0}$	A-AHD	A-AHD□	P.363	SRA-AHD	SRA-AHD□		SRTA-AHD	SRTA-AHD□				
	Powdered high-speed steel	Regular type	D_{m5}	PAHD	PAHD□	P.363	SR-PAHD	SR-PAHD□		SRT-PAHD	SRT-PAHD□				
			$D_{m5}^{+0.005/0}$	A-PAHD	A-PAHD□	P.363	SRA-PAHD	SRA-PAHD□		SRTA-PAHD	SRTA-PAHD□				
	Equivalent to SKD11	Regular type	D_{n5}	ASD	ASD□	P.365	SR-ASD	SR-ASD□		SRT-ASD	SRT-ASD□				
			$D_{n5}^{+0.005/0}$	A-ASD	A-ASD□	P.365	SRA-ASD	SRA-ASD□		SRTA-ASD	SRTA-ASD□				
Powdered high-speed steel	Regular type	D_{n5}	PASD	PASD□	P.365	SR-PASD	SR-PASD□		SRT-PASD	SRT-PASD□					
		$D_{n5}^{+0.005/0}$	A-PASD	A-PASD□	P.365	SRA-PASD	SRA-PASD□		SRTA-PASD	SRTA-PASD□					
Long shaped hole, headed	Equivalent to SKD11	Regular type	D_{m5}	MHDS	HD□S	P.371									
Long shaped hole, straight	Equivalent to SKD11	Regular type	D_{n5}	MSDS	SD□S	P.371									
Configurable full length, headed	Equivalent to SKD11	Regular type	D_{m5}	S-MHD	S-HD□S	P.373	SRS-MHD	SRS-HD□S	P.375	SRTS-MHD	SRTS-HD□S	P.343			
Configurable full length, straight	Equivalent to SKD11	Regular type	D_{n5}	S-MSD	S-SD□S	P.373	SRS-MSD	SRS-SD□S	P.375	SRTS-MSD	SRTS-SD□S	P.343			
Configurable size, full length, shaped hole depth, and relief hole specified, headed	Equivalent to SKD11	Regular type	D_{m5}	FMHD	FHD□S	P.375	SR-FMHD	SR-FHD□S	P.379						
Configurable size, full length, shaped hole depth, and relief hole specified, straight	Equivalent to SKD11	Regular type	D_{n5}	FMSD	FSD□S	P.375	SR-FMSD	SR-FSD□S	P.379						
Dowel slot	Equivalent to SKD11	Economy type	D_{n5}	EKSD	EKD□	P.381	SR-EKSD	SR-EKD□							
			$D_{n5}^{+0.005/0}$	KSD	KD□	P.382	SR-KSD	SR-KD□		SRT-KSD	SRT-KD□	P.341			
Tilting, dowel slot	Equivalent to SKD11	Regular type	D_{n5}	KSDS	KD□S	P.383									
For flame hardening, dowel slot	SX105V	Regular type	D_{n5}	HKSDS	HKD□S	P.384									
Button die blanks	Equivalent to SKD11	Rear relief type	D_{m5}	HD-B		P.383									
			$D_{m5}^{+0.005/0}$	A-HD-B											
			D_{n5}	SD-B											
		Angular type	D_{m5}	AHD-B		P.384									
			$D_{m5}^{+0.005/0}$	A-AHD-B											
			D_{n5}	ASD-B											

■ 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 disappears.

■ Scrap retention button dies (For details, see P.1619)

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

- Hole diameter: $\phi 1.0 \sim \phi 16$
- Workpiece material: Can be used up to a maximum tensile strength of 120 kg/mm² (1177 N/mm²).
- Thickness of workpiece materials: Minimum thickness 0.15 mm
- 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.

Clearance (C) < Workpiece thickness (MT) × 20%

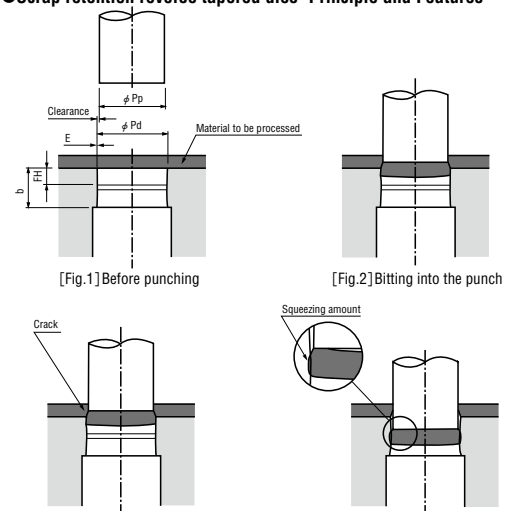
⚠ Because scrap retention button dies prevent scrap lifting by forming small projections on punching scrap, they are not suitable in cases such as punching of precision holes, or when the punched-out item becomes the product.

■ Scrap retention reverse tapered dies (For details, see P.1617)

● What is a Scrap retention reverse tapered dies?

In recent years, more and more high-tension materials with high pulling capacity are undergoing the punching process as a part of weight reduction activities. Generally, in high tensile materials the compression amount of the scrap is large [Fig.1] whereas the length of the cross section shortens [Fig.2]. Thus there has been a rise in cases where the existing countermeasures are failing to control the scrap lifting. MISUMI has developed a reverse taper die where the taper is provided inside the die considering the compression amount of the scrap. By providing a very small taper, even the compressed slug produces friction with the die which proves effective against scrap lifting.

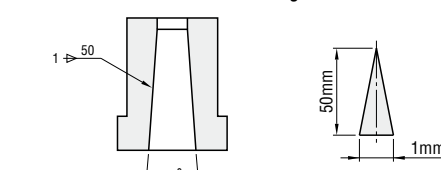
● Scrap retention reverse tapered dies- Principle and Features



[Fig.3] Cracks in the material to be processed

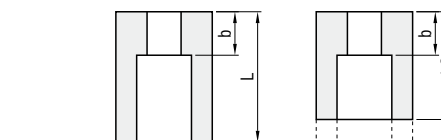
[Fig.4] As the punch goes on penetrating the inner diameter of the reverse taper die goes on decreasing. Therefore, the frictional force between the scrap and die increases because of the squeezing effect on the scrap. As a result, the scrap lifting is prevented.

■ Indication of button die relief angles



● The taper of 1:50 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°



● 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.)

■ Button die L dimension and P-W spread

(α × 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, $LC = \frac{L - B}{2}$ then $2\alpha =$ (taper denominator)

1) Principle of the Scrap retention reverse tapered dies [Fig.1] [Fig.4]

By providing a very small taper at the edge of the die, the inner side of the edge is made smaller than the scrap. As a result, the compressed scrap gets squeezed and the friction with the die increases, thus preventing the scrap lifting.

The compression amount of scrap may vary depending upon the punching conditions. However, at MISUMI, we have standardized the taper width as per the make specified by our customers as well as considering the clearance, thickness of the sheet and the tensile strength of the materials to be processed.

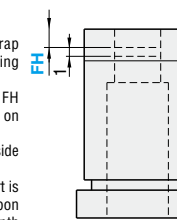
2) Cost reduction for all parts

The die unit is costlier as compared to other dies, however, just using the reverse taper die proves effective against scrap lifting. If Jector punch and taper die are used together as measures against scrap lifting (SR-□□) (below SR die) and the prices are compared, the price of the die unit comes out cheaper and this makes it possible to reduce the total cost of the parts. Particularly, there are cases where the die cannot bear the load of high tension steel sheets (high tensile material) during punching, and breaks from the Jector holes in the initial stages. The cost of repairing the die can be cut down effectively by using our product which uses a single die to prevent the slug from rising.

In addition, the reverse taper die is also effective in managing the sorting and scrapping costs related to screening the products which get dented as a result of the scrap lifting as well as in reducing costs related to repairing the dies.

■ Caution items

- The optimum tapering width is adopted to prevent scrap lifting, however as many conditions can cause scrap lifting there may be variations in the results.
- Set the pushing volume of the punch larger than the FH dimensions [Fig.5] to make sure that the scrap is pushed on the inner side of the tapered part.
- Specify the correct clearance so that diameter of the inner side of the tapered part is set larger than the punch diameter.
- The blade edge will deform if it is polished again as that part is tapered. The amount of deformation will vary depending upon the taper width (max. 0.05mm for one side), tapering depth and the amount of re-polishing.



[Fig.5]

SCRAP RETENTION REVERSE TAPER BUTTON DIES

—HEADED TYPE—

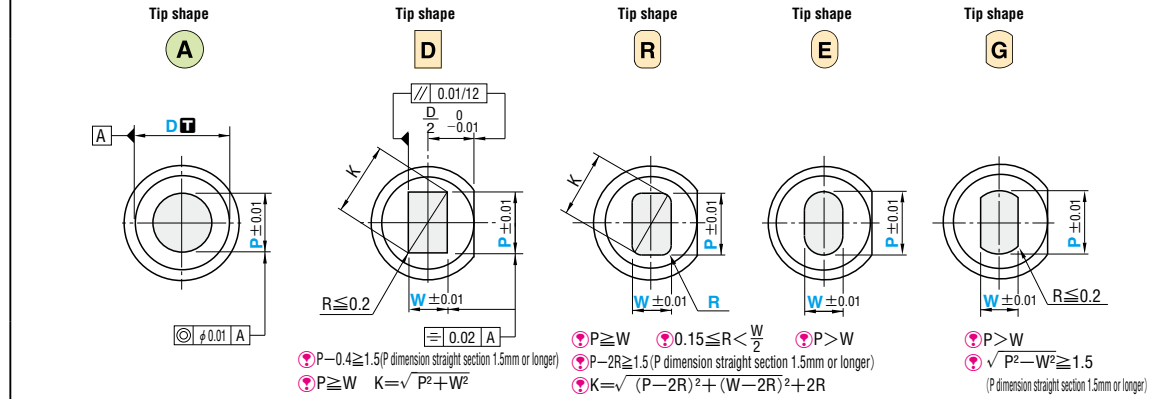
Patent pending

PRODUCTS DATA

P.1619

Headed type	Shank diameter D tolerance	M/F	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{m5}	M	D5	SRT-MHD	
			D6~25	SRT-HD□	
			D6~25	SRT-PMHD	
			D6~25	SRT-PHD□	
			D6~16	SRTA-MHD	
			D6~16	SRTA-HD□	
D ₀ ^{+0.005}	M	D5	SRTA-MHD	<p>Select a push-in amount of punch greater than FH dimension. Pushing in until the straight part is effective against scrap retention and scrap clogging.</p>	
		D6~16	SRTA-HD□		
		D6~16	SRTA-PMHD		
		D6~16	SRTA-PHD□		
		D6~16	SRTA-MHD		
		D6~16	SRTA-HD□		

For shank diameter tolerance D₀ select either m5 or +0.005/0



D	Shank diameter D tolerance	Catalog No.	Type	D	L	0.01mm increments				MT	C	Select	TS	FH	b	d	H	T
						A	D	R	E									
5	+0.009 +0.004	(Equivalent to SKH51) SRT-MHD SRTA-MHD	(D _{m5}) (D ₀ ^{+0.005})	5	16 20 22 25 28 30	2.00~2.50	-	-	-	0.15 ≤ R < W/2	0.060	1.0	2	2.9	6	3		
6	+0.012 +0.006	(Equivalent to SKD11) SRT-MHD SRTA-MHD	(D _{m5}) (D ₀ ^{+0.005})	6	16 20 22 25 28 30 32 35	2.00~3.00	3.00	2.00		C ≥ 0.060 (But C ≥ 0.050 if the clearance is 10% or below C ≥ 0.050) Clearance	Select the level of tensile strength	1.0~2.0	3	3.4	9			
8		8	16 20 22 25 28 30 32 35 40	2.00~4.00	4.00	2.00	1.0~3.0	4	4.4			11						
10		10	16 20 22 25 28 30 32 35 40 (45)	2.00~6.00	6.00	2.00	1.0~5.0	6	6.4			13						
13		13	16 20 22 25 28 30 32 35 40 (45)	3.00~8.00	8.00	2.00							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)		(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	(Equivalent to SKH51) SRT-MHD SRTA-MHD	(D ₀ ^{+0.005})	(22)	16 20 22 25 28 30 32 35 40 (45)	8.00~14.00	14.00	3.00		MT ≥ 0.5	Tensile strength (N/mm ²)	1.0~7.0	8	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					
6	+0.009 +0.004	(Equivalent to SKH51) SRT-MHD SRTA-MHD	(D _{m5}) (D ₀ ^{+0.005})	6	16 20 22 25 30 35	2.00~3.00	3.00	2.00				Clearance	Level	1.0~2.0	3	3.4	9	
8	8	16 20 22 25 30 35	2.00~4.00	4.00	2.00									1.0~3.0	4	4.4	11	
10	10	16 20 22 25 30 35	2.00~6.00	6.00	2.00									1.0~5.0	6	6.4	13	
13	13	16 20 22 25 30 35	3.00~8.00	8.00	2.00													8.4
16	16	16 20 22 25 30 35	5.00~10.00	10.00	2.00											10.6	19	
(20)	(20)	16 20 22 25 30 35	7.00~12.00	12.00	3.00											12.6	23	
(25)	+0.017 +0.008	(Equivalent to SKH51) SRT-MHD SRTA-MHD	(D ₀ ^{+0.005})	(25)	16 20 22 25 30 35	10.00~16.00	16.00	3.00				1.0~7.0	8	16.6	28			

D=(20)(22)(25) are specifications available for shank diameter tolerance of D_{m5} only
 L=(45) is specification available for shank dia. tolerance of D_{m5} only
 Use with the clearance (C) less than 20% of the processed plate material thickness (MT), otherwise the effect will not be as expected. Clearance (C) ≤ Proceed plate material thickness (MT) × 20%
 Taper depth FH will be in the right area. But, in case of LC alteration, it'll be in the right area.
 1/100 of relief taper length is as follows. Relief taper length = b - (FH + 1) In case of LC alteration, b = (L - LC) - (FH + 1)
 P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max. 0.05mm on one side) and taper depth & regrinding amount.

Order **Catalog No.** - L - P - W - R (R only) - MT - C - TS - FH

SRT-MHD 13 - 30 - P7.00 - MT1.5 - C0.105 - H - FH2.0
 SRT-HDD 16 - 25 - P9.2 - W3.0 - MT1.0 - C0.1 - L - FH1.5

Days to Ship **Quotation**

Alterations **Catalog No.** - L (LC) - P (PC) - W (WC) - R - MT - C - TS - FH - (HC-TC-CKC-MKC...etc.)

SRT-MHD 13 - 30 - P7.00 - MT1.50 - C0.105 - H - FH2.0 - TC3

Alterations	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min. 0.01mm $\frac{P-PC}{W} \geq \frac{P-Wmin.}{2} \geq 2.00$ 0.01mm increments		
		$\max. \frac{P-PC}{WC} \leq P \cdot Kmax. + 0.2$ 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 units can be selected.) b dimension 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 $L +0.4 \rightarrow +0.01$ $L +0.2 \rightarrow 0$ ✗ 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 L (LC) < 16.		
	TKC	Head thickness tolerance change $T +0.3 \rightarrow +0.02$ $T +0 \rightarrow -0.02$ ✗ Cannot be used with L (LC) < 16.		
	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 $T +0.3 \rightarrow 0$ $T +0 \rightarrow -0.02$		
	LKC	Full length tolerance change $L +0.4 \rightarrow +0.05$ $L +0.2 \rightarrow 0$		

Alterations	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head 270° at 0° and a selected angle 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 at 0° and a selected angle 1° increments ✗ Cannot be combined with KC-WKC. ✗ L (LC) < 16.		
	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 $T +0.3 \rightarrow +0.02$ $T +0 \rightarrow -0.02$ ✗ Cannot be used with 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.		
	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.		
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.		

Price **Quotation**

BUTTON DIES

SCRAP RETENTION REVERSE TAPER BUTTON DIES

—STRAIGHT TYPE—

Patent pending



Straight 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.
	Dn5	Equivalent to SKH51 61~64HRC	D5	SRT-MSD	
			D6~25	SRT-SD	
			D8~25	SRT-MSD	
			D6~25	SRT-PMSD	
			D8~25	SRT-PSD	
			D6~25	SRT-MSD	
	D+0.005 0	Equivalent to SKH51 61~64HRC	D5	SRTA-MSD	
			D6~16	SRTA-SD	
			D8~16	SRTA-MSD	
			D6~16	SRTA-PMSD	
			D8~16	SRTA-PSD	
			D6~16	SRTA-MSD	

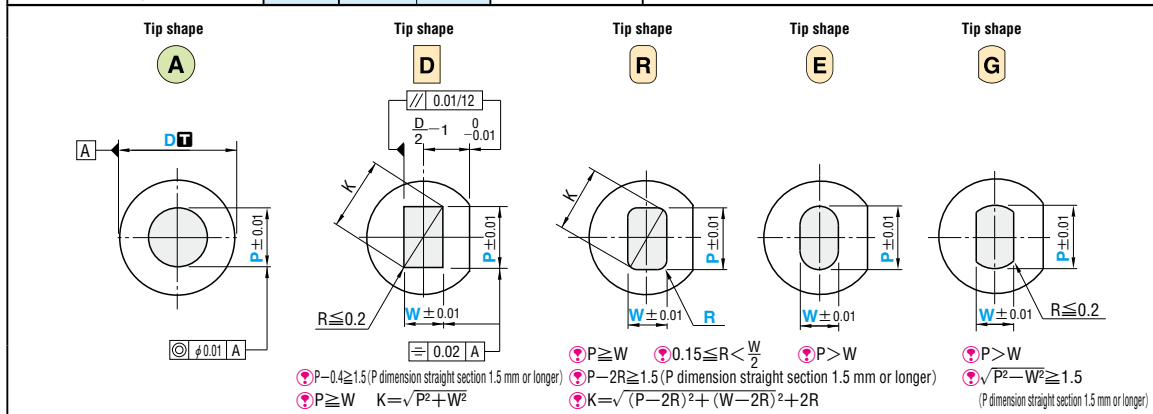
For shank diameter tolerance D tolerance, select either n5 or +0.005/0.

Select a push-in amount of punch greater than FH dimension. Pushing in until the straight part is effective against scrap retention and scrap clogging.

Order Catalog No. — L — P — W — R (Only) — MT — C — TS — FH
 SRT-SDR 13 — 35 — P5.25 — W2.82 — R0.40 — MT1.5 — C0.105 — H — FH2.0
 SRT-MSB 16 — 25 — P9.2 — MT2.6 — C0.1 — L — FH1.0

Days to Ship **Quotation**

Alterations Catalog No. — L(LC-SLC) — P(PC) — W(WC) — R — MT — C — TS — FH — (KC-LKC...etc.)
 SRT-SDD 13 — 35 — P5.58 — W2.25 — MT1.50 — C0.105 — H — FH2.0 — LKC



Alterations	Code	\textcircled{A}	\textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G}	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change $\min: \frac{P}{W} > \frac{PC}{WC} \Rightarrow \frac{P \cdot W \cdot \min}{2} \geq 2.00$ 0.01 mm increments		Quotation

Alterations	Code	\textcircled{A}	\textcircled{D} \textcircled{R} \textcircled{E} \textcircled{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 \textcircled{P} are the same as for LC. Full length change $L +0.4 \begin{matrix} +0.05 \\ 0 \end{matrix}$ Full length tolerance change $L +0.4 \begin{matrix} +0.05 \\ 0 \end{matrix}$ 0.01 mm increments	LKC LKC	
	LKC	Full length tolerance change $L +0.4 \begin{matrix} +0.05 \\ 0 \end{matrix}$		
	LKZ	Full length tolerance change $L +0.4 \begin{matrix} +0.01 \\ 0 \end{matrix}$ 0.01 mm increments \textcircled{P} Cannot be used for L(LC) < 16.		
Others	KC	Addition of single key flat \textcircled{P} Cannot be used for D5~6	270° 180° 90° Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel \textcircled{P} Cannot be used for D5~6. \textcircled{P} Can be combined with KC for shapes \textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G} .		

P Price **Quotation**

Shank diameter D tolerance	Catalog No.	L	0.01mm increments				0.005mm increments	Select	L (mm increments)	b	d				
			\textcircled{A}	\textcircled{D} \textcircled{R} \textcircled{E} \textcircled{G}	\textcircled{R}	MT (workpiece material thickness)									
5 +0.013 +0.008	(Equivalent to SKH51) Dn5 (D+0.005)	5	16 20 22 25 28 30	2.00~2.50	—	—	$C \geq 0.060$ (But $C \geq 0.050$ if the clearance is 10% or below $C \geq 0.050$) Clearance	TS (Tensile strength (N/mm ²)) Level H 800~ M 600~ L ~599	FH (Taper depth)	2	2.9				
	\textcircled{A} SRT-MSD SRTA-MSD	6	16 20 22 25 28 30 32 35	2.00~3.00	—	—						1.0~2.0	3	3.4	
	Dn5 (D+0.005)	(Equivalent to SKD11) Dn5 (D+0.005)	8	16 20 22 25 28 30 32 35	2.00~4.00	4.00						2.00	1.0~3.0	4	4.4
		\textcircled{A} SRT-MSD SRTA-MSD	10	16 20 22 25 28 30 32 35 (40)	2.00~6.00	6.00						2.00	1.0~5.0	6	6.4
		\textcircled{D} SRT-SDD SRTA-SDD	13	16 20 22 25 28 30 32 35 (40)	3.00~8.00	8.00						2.00	1.0~7.0	8	8.4
		\textcircled{R} SRT-SDR SRTA-SDR	16	16 20 22 25 28 30 32 35 (40)	5.00~10.00	10.00						2.00		10.6	
		\textcircled{E} SRT-SDE SRTA-SDE	(20)	16 20 22 25 28 30 32 35 (40)	7.00~12.00	12.00						3.00		12.6	
		\textcircled{G} SRT-SDG SRTA-SDG	(22)	16 20 22 25 28 30 32 35 (40)	8.00~14.00	14.00						3.00		14.6	
		(25)	16 20 22 25 28 30 32 35 (40)	10.00~16.00	16.00	3.00						16.6			
		6 +0.013 +0.008	(Powdered high-speed steel) Dn5 (D+0.005)	6	16 20 22 25 30 35	2.00~3.00						—		—	$0.15 \leq R < \frac{W}{2}$ (R only) $MT \geq 0.5$ Punch shaped hole Die shaped hole
\textcircled{A} SRT-PMSD SRTA-PMSD			8	16 20 22 25 30 35	2.00~4.00	4.00	2.00	1.0~2.0	4	4.4					
\textcircled{D} SRT-PSDD SRTA-PSDD	10		16 20 22 25 30 35	2.00~6.00	6.00	2.00	1.0~5.0	6	6.4						
\textcircled{R} SRT-PSDR SRTA-PSDR	13		16 20 22 25 30 35	3.00~8.00	8.00	2.00	1.0~7.0	8	8.4						
\textcircled{E} SRT-PSDE SRTA-PSDE	16		16 20 22 25 30 35	5.00~10.00	10.00	2.00		10.6							
\textcircled{G} SRT-PSDG SRTA-PSDG	(20)		16 20 22 25 30 35	7.00~12.00	12.00	3.00		12.6							
(25)	16 20 22 25 30 35		10.00~16.00	16.00	3.00	16.6									

\textcircled{D} = (20) (22) (25) are specifications available for shank diameter tolerance of Dn5 only
 \textcircled{P} Use with the clearance (C) less than 20% of the processed plate material thickness (MT), otherwise the effect will not be as expected. Clearance (C) \leq Proceed plate material thickness (MT) \times 20%
 \textcircled{L} = (40) is specification available for shank dia. tolerance of Dn5 only
 \textcircled{P} P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max. 0.05mm on one side) and taper depth & regrinding amount.

BUTTON DIES

SCRAP RETENTION REVERSE ANGULAR BUTTON DIES

—HEADED TYPE—

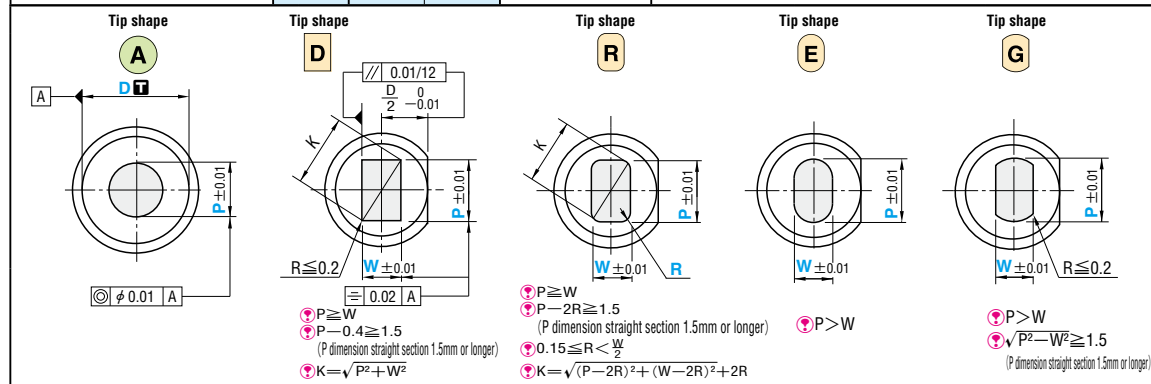
Patent pending



Headed 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 _{m5}	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	D5	SRT-AHD	
			D6~25	SRT-AHD	
			D6~25	SRT-AHD	
			D4~25	SRT-PAHD	
			D6~25	SRT-PAHD	
			D6~25	SRT-PAHD	
D _{±0.005} 0	Powdered high-speed steel 64~67HRC	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	D5	SRTA-AHD	
			D6~16	SRTA-AHD	
			D6~16	SRTA-AHD	
			D4~16	SRTA-PAHD	
			D6~16	SRTA-PAHD	
			D6~16	SRTA-PAHD	

For shank diameter tolerance D_{m5} select either m5 or ± 0.005 0

Select a push-in amount of punch greater than FH dimension. Pushing in until the straight part is effective against scrap retention and scrap clogging.



D	Shank diameter D tolerance	Catalog No.	Type	D	0.01mm increments				0.005mm increments	C (clearance)	Select	0.1mm increments	H	T			
					L										MT (workpiece material thickness)	TS (Tensile strength (N/mm ²))	FH (Taper depth)
					min. P max.	P-Kmax.	P-Wmin.	R									
5	+0.009 +0.004	(Equivalent to SKH51) (D _{m5}) (D _{±0.005}) A SRT-AHD SRTA-AHD	5	16 20 22 25 30	2.00~2.50	-	-	-	-	-	-	6	3				
6		(Equivalent to SKD11) (D _{m5}) (D _{±0.005}) A SRT-AHD SRTA-AHD	6	16 20 22 25 30 35	2.00~3.00	3.00	2.00	-	-	-	-	9					
8	+0.012		8	16 20 22 25 30 35	2.00~4.00	4.00	2.00	-	-	-	-	11					
10	+0.006		10	16 20 22 25 30 35 (40)	2.00~6.00	6.00	2.00	-	-	-	-	13					
13	+0.015		13	16 20 22 25 30 35 (40)	3.00~8.00	8.00	2.00	-	-	-	-	16	5				
16	+0.007		16	16 20 22 25 30 35 (40)	5.00~10.00	10.00	2.00	-	-	-	-	19					
(20)	+0.017		(20)	16 20 22 25 30 35	7.00~12.00	12.00	3.00	-	-	-	-	23					
(25)	+0.008		(25)	16 20 22 25 30 35	10.00~16.00	16.00	3.00	-	-	-	-	28					
5	+0.009	(Powdered high-speed steel) (D _{m5}) (D _{±0.005}) A SRT-PAHD SRTA-PAHD	5	16 20 22 25 30	2.00~2.50	-	-	-	-	-	-	6	3				
6	+0.004		6	16 20 22 25 30 35	2.00~3.00	3.00	2.00	-	-	-	-	9					
8	+0.012		8	16 20 22 25 30 35	2.00~4.00	4.00	2.00	-	-	-	-	11					
10	+0.006		10	16 20 22 25 30 35	2.00~6.00	6.00	2.00	-	-	-	-	13					
13	+0.015		13	16 20 22 25 30 35	3.00~8.00	8.00	2.00	-	-	-	-	16	5				
16	+0.007		16	16 20 22 25 30 35	5.00~10.00	10.00	2.00	-	-	-	-	19					
(20)	+0.017		(20)	16 20 22 25 30 35	7.00~12.00	12.00	3.00	-	-	-	-	23					
(25)	+0.008		(25)	16 20 22 25 30 35	10.00~16.00	16.00	3.00	-	-	-	-	28					

0.15 ≤ R < W/2 (R only)

MT ≥ 0.5

C ≥ 0.060 (But C ≥ 0.050 if the clearance is 10% or below C ≥ 0.050) Clearance

Select the level of tensile strength

Level	Tensile strength (N/mm ²)
H	800~
M	600~
L	~599

1.0~3.0

Punch shaped hole / Die shaped hole

Ⓜ D = (20) (25) are specifications available for shank diameter tolerance of D_{m5} only

Ⓜ Use with the clearance (C) less than 20% of the processed plate material thickness (MT), otherwise the effect will not be as expected. Clearance (C) ≤ Proceed plate material thickness (MT) × 20%

Ⓜ L = (40) is specifications available for SRT-AHD only

Ⓜ P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max.0.05mm on one side) and taper depth & regrinding amount.

Order	Catalog No.	L	P	W	R (R only)	MT	C	TS	FH
	SRT-AHD16	25	P9.2			MT1.0	C0.1	H	FH2.0
	SRT-AHDR13	25	P6.20	W2.00	R0.20	MT1.5	C0.105	H	FH2.0

Days to Ship **Quotation**

Alterations	Catalog No.	L (LC-LCT-LMT)	P (PC)	W (WC)	R	MT	C	TS	FH	(HC-TC...etc.)
	SRT-AHD6	16	P2.47			MT1.50	C0.105	H	FH2.0	HC8

Alterations	Code	A	D R E G	1Code	
Alterations to shaped hole	PC WC	Shaped hole diameter change min: $P > \frac{PC}{WC} \geq \frac{P \cdot W \cdot \min}{2} \geq 2.00$ 0.01mm increments			
		max: $\frac{P}{WC} < \frac{PC}{WC} \leq P \cdot K \cdot \max + 0.2$ 0.01mm increments			
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1 mm increments (If combined with LK-LKZ-CCK-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.			Quotation
		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.			Quotation
		TKM Head thickness tolerance change $T +0.3 \Rightarrow 0$ $0 \Rightarrow -0.02$	LKC Full length tolerance change $L +0.4 \Rightarrow +0.05$ $-0.2 \Rightarrow 0$		
	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.			Quotation
		TKC Head thickness + Full length + Full length tolerance change tolerance change Ⓜ 0.01 mm increments Ⓜ Cannot be used for L < 16.	LC change	LKC 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.			Quotation
TKM Head thickness + Full length + Full length tolerance change tolerance change Ⓜ 0.01 mm increments Ⓜ Cannot be used for L < 16.		LC change	LKC tolerance change		

P Price **Quotation**

Alterations	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-CCK-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
	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 $T +0.3 \Rightarrow +0.02$ $0 \Rightarrow 0$ Ⓜ Cannot be used for L (LC) < 16.	
TKM	Head thickness tolerance change $T +0.3 \Rightarrow 0$ $0 \Rightarrow -0.02$ Ⓜ Cannot be used for L (LC) < 16.			
	SKC	Single key flat on shank Ⓜ Can be used with D ≥ 8 and L (LC) ≥ 20 Ⓜ Cannot be combined with KC-WKC-KFC-ANF.		
ANF		Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2° increments Ⓜ $d \leq d_{max}$ Ⓜ $d = P + 2(L-B) \tan(ANF^\circ)$ Ⓜ $P - B \tan(ANF^\circ) \geq 0.6$ Ⓜ $W - B \tan(ANF^\circ) \geq 0.6$		

BUTTON DIES

SCRAP RETENTION REVERSE ANGULAR BUTTON DIES

—STRAIGHT TYPE—

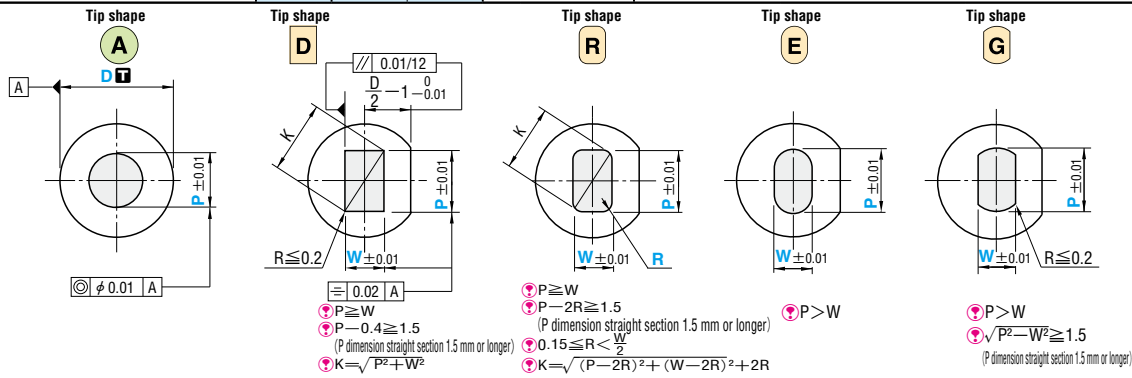
Patent pending



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.
	Dn5	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	D5	SRT-ASD	
			D6~25	SRT-ASD	
			D8~25	SRT-ASD	
			D4~25	SRT-PASD	
			D8~25	SRT-PASD	
	D+0.005/0	Powdered high-speed steel 64~67HRC	D5	SRTA-ASD	
			D6~16	SRTA-ASD	
			D8~16	SRTA-ASD	
			D5~16	SRTA-PASD	
			D8~16	SRTA-PASD	

For shank diameter tolerance D tolerance, select either n5 or +0.005/0.

Select a push-in amount of punch greater than FH dimension. Pushing in until the straight part is effective against scrap retention and scrap clogging.



D	Shank diameter D tolerance		Catalog No.	L	0.01mm increments				MT	C	Select	FH
	n5	+0.005/0			Type	D	A	D R E G				
5	+0.013	+0.008	(Equivalent to SKH51) (Dn5) (D+0.005)	5	16 20 22 25 30	2.00~ 2.50	—	—	0.15 ≤ R < W/2 (R only) MT ≥ 0.5 C ≥ 0.060 (But C ≥ 0.050 if the clearance is 10% or below C ≥ 0.050) Select the level of tensile strength Level tensile strength (N/mm²) H 800~ M 600~ L ~599	1.0~3.0	—	
6	—	—	(Equivalent to SKD11) (Dn5) (D+0.005)	6	16 20 22 25 30 35	2.00~ 3.00	—	—				
8	+0.016	+0.01	(Equivalent to SKD11) (Dn5) (D+0.005)	8	16 20 22 25 30 35	2.00~ 4.00	4.00	2.00				
10	+0.02	+0.01	(Equivalent to SKD11) (Dn5) (D+0.005)	10	16 20 22 25 30 35	2.00~ 6.00	6.00	2.00				
13	+0.02	+0.01	(Equivalent to SKD11) (Dn5) (D+0.005)	13	16 20 22 25 30 35	3.00~ 8.00	8.00	2.00				
16	+0.02	+0.01	(Equivalent to SKD11) (Dn5) (D+0.005)	16	16 20 22 25 30 35	5.00~ 10.00	10.00	2.00				
(20)	+0.024	+0.015	(Equivalent to SKD11) (Dn5) (D+0.005)	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00				
(25)	+0.024	+0.015	(Equivalent to SKD11) (Dn5) (D+0.005)	(25)	16 20 22 25 30 35	10.00~ 16.00	16.00	3.00				
5	+0.013	+0.008	(Powdered high-speed steel) (Dn5) (D+0.005)	5	16 20 22 25 30	2.00~ 2.50	—	—				
6	+0.013	+0.008	(Powdered high-speed steel) (Dn5) (D+0.005)	6	16 20 22 25 30 35	2.00~ 3.00	—	—				
8	+0.016	+0.01	(Powdered high-speed steel) (Dn5) (D+0.005)	8	16 20 22 25 30 35	2.00~ 4.00	4.00	2.00				
10	+0.01	+0.01	(Powdered high-speed steel) (Dn5) (D+0.005)	10	16 20 22 25 30 35	2.00~ 6.00	6.00	2.00				
13	+0.02	+0.01	(Powdered high-speed steel) (Dn5) (D+0.005)	13	16 20 22 25 30 35	3.00~ 8.00	8.00	2.00				
16	+0.02	+0.01	(Powdered high-speed steel) (Dn5) (D+0.005)	16	16 20 22 25 30 35	5.00~ 10.00	10.00	2.00				
(20)	+0.024	+0.015	(Powdered high-speed steel) (Dn5) (D+0.005)	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00				
(25)	+0.024	+0.015	(Powdered high-speed steel) (Dn5) (D+0.005)	(25)	16 20 22 25 30 35	10.00~ 16.00	16.00	3.00				

D=(20) (25) are specifications available for shank diameter tolerance of Dn5 only
 Use with the clearance (C) less than 20% of the processed plate material thickness (MT), otherwise the effect will not be as expected. Clearance (C) ≤ Proceed plate material thickness (MT) × 20%
 P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max.0.05mm on one side) and taper depth & regrinding amount.

Order Catalog No. — L — P — W — R (R only) — MT — C — TS — FH
 SRT-ASDE 8 — 20 — P3.80 — W2.00 — MT1.50 — C0.105 — H — FH2.0

Days to Ship **Quotation**

Alterations Catalog No. — L(LC-SLC) — P(PC) — W(WC) — R — MT — C — TS — FH — (KC...etc.)
 SRT-ASD 6 — 16 — P2.47 — MT1.50 — C0.105 — H — FH2.0 — LKZ

Alterations	Code	A	D R E G	1Code	
Alterations to shaped hole	PC WC	Shaped hole diameter change min: $P > WC \geq \frac{P-W}{2} \geq 2.00$ 0.01 mm increments max: $\frac{P}{WC} \leq P \cdot K_{max} + 0.2$ 0.01 mm increments			Quotation
		LC	Full length change 10 ≤ 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).		
Alterations to full length	LKC LKZ	Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$ Cannot be used for L(LC) < 10			Quotation
		Full length tolerance change $L + 0.4 \Rightarrow +0.01$ $L + 0.2 \Rightarrow 0$ Cannot be used for L(LC) < 16.			

Alterations	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. Full length change + Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$ 0.01 mm increments ⊕ Cannot be used for L(LC) < 10.			Quotation
		KC	Addition of single key flat ⊕ Can be combined with KC for shapes D R E G. ⊗ Cannot be used for D5~6. Key flat position change 270° 180° 1° increments		
Others	WKC ANF	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 D5~6.			Quotation
		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. Taper Angle (one side) 0.573°			

Price **Quotation**

BUTTON DIES

SCRAP RETENTION REVERSE ANGULAR BUTTON DIES

— DOWEL SLOT TYPE —

Patent pending



RoHS

Equivalent to SKD11
60~63HRC
MS4-15

SRT-KSD
SRT-KD

Select a push-in amount of punch greater than FH dimension. Pushing in until the straight part is effective against scrap retention and scrap clogging.

Tip shape **A**

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

Tip shape **D**

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

Tip shape **R**

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

Tip shape **E**

$P > W$

Tip shape **G**

$P > W$

D tolerance	Catalog No.	L	0.01mm increments					MT (workpiece material thickness)	C (clearance)	Select TS (Tensile strength (N/mm ²))	FH (Taper depth)	b	d	F								
			A	D	R	E	G															
10	(Equivalent to SKD11) (Dn5)	10	16	20	22	25	28	30	32	35	2.00~6.00	6.00	2.00	0.15 ≤ R < W/2 MT ≥ 0.5	C ≥ 0.060 (But C ≥ 0.050 if the clearance is 10% or below C ≥ 0.050) Clearance	Select the level of tensile strength Level Tensile strength (N/mm ²) H 800~ M 600~ L ~599	1.0~5.0	6	6.4	6.0		
13	A SRT-KSD	13	16	20	22	25	28	30	32	35	3.00~8.00	8.00	2.00								8.4	7.5
16	D SRT-KDD	16	16	20	22	25	28	30	32	35	5.00~10.00	10.00	2.00								10.6	8.0
20	R SRT-KDR	20	16	20	22	25	28	30	32	35	7.00~12.00	12.00	3.00								12.6	10.0
22	E SRT-KDE	22	16	20	22	25	28	30	32	35	8.00~14.00	14.00	3.00								14.6	11.0
25	G SRT-KDG	25	16	20	22	25	28	30	32	35	10.00~16.00	16.00	3.00	16.6	12.5							

Use with the clearance (C) less than 20% of the processed plate material thickness (MT), otherwise the effect will not be as expected. Clearance (C) ≤ Processed plate material thickness (MT) × 20%
 1/100 of relief taper length is as follows. Relief taper length = b - (FH + 1)
 P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max. 0.05mm on one side) and taper depth & regrinding amount.

Order

Days to Ship

Alterations

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

SRT-KDD16 — 25 — P9.20 — W2.00 — MT1.0 — C0.1 — M — FH2.0

SRT-KSD16 — 25 — P9.2 — — MT1.0 — C0.1 — H — FH2.0

Quotation Price **Quotation**

Catalog No. — L(LC) — P(PC) — W(WC) — R — MT — C — TS — FH — (KC...etc.)

SRT-KDD 16 — 25 — P9.20 — W2.00 — MT1.00 — C0.100 — M — FH2.0 — KC90

Alterations	Code	A	D	R	E	G
Alterations to tip	PC WC	$\min: \frac{P}{W} > \frac{PC}{WC} \geq \frac{P \cdot W \cdot \min}{2} \geq 2.00$ $\max: \frac{P}{W} < \frac{PC}{WC} \leq P \cdot K_{max} + 0.2$ 0.01mm increments				
Alterations to full length	LC	Full length change $10 \leq LC < L$ 0.1mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) Press-in lead is shortened by (L-LC)				
	LKC LKZ	Full length tolerance change $L +0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$				
Others	KC	Key flat position change 1° increments				

BUTTON DIES


SCRAP RETENTION REVERSE TAPER BUTTON DIE

Patent pending

PRODUCTS DATA

P.1619

—Headed type—



RoHS

M

H

D

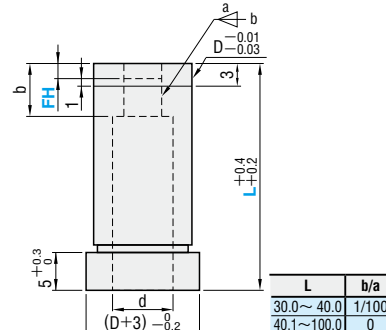
D6~56

D10~56

Catalog No.

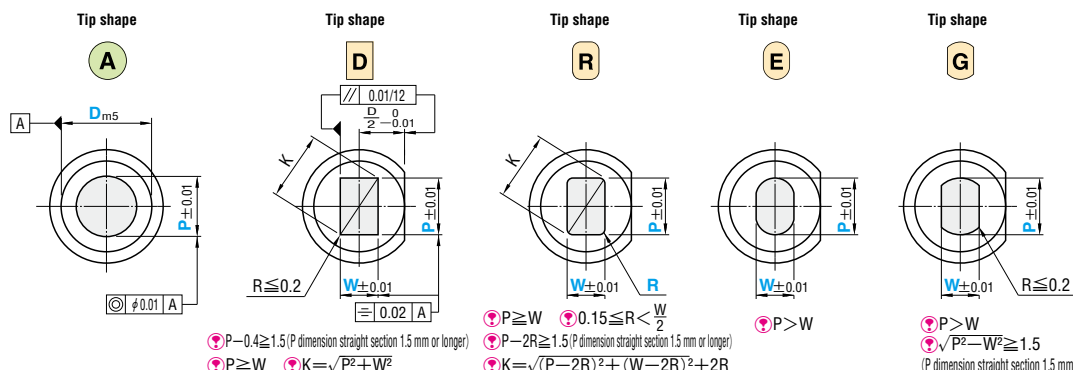
A SRTS—MHD
D SRTS—HDD
R SRTS—HDR
E SRTS—HDE
G SRTS—HDG

A SRTS—MHDS
D SRTS—HDDS
R SRTS—HDRS
E SRTS—HDES
G SRTS—HDGS



$L \pm 0.02$


L	b/a
30.0~40.0	1/100
40.1~100.0	0



Tip shape **A** Tip shape **D** Tip shape **R** Tip shape **E** Tip shape **G**

$P \geq 0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
 $P \geq W$ $0.15 \leq R < \frac{W}{2}$
 $P \geq W$ $K = \sqrt{P^2 + W^2}$

—Straight type—



RoHS

M

H

D

D6~56

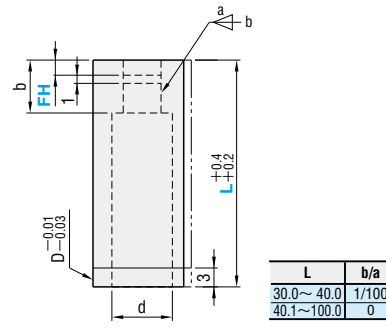
D8~56

D10~56

Catalog No.

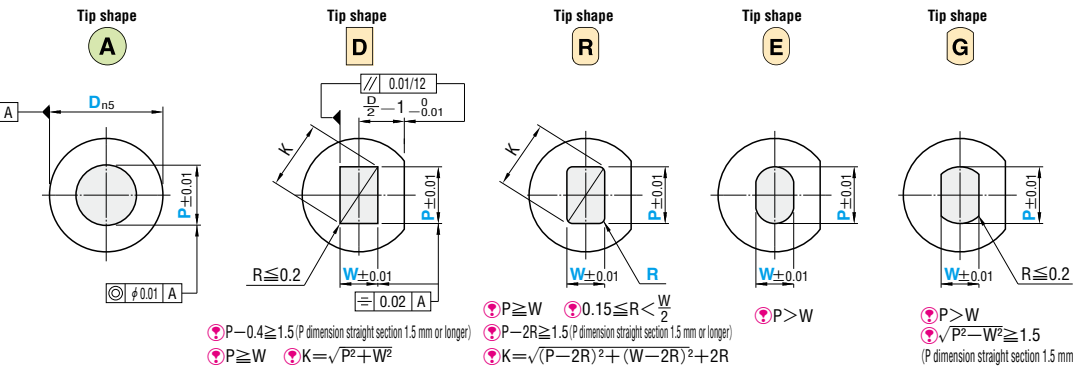
A SRTS—MSD
D SRTS—SDD
R SRTS—SDR
E SRTS—SDE
G SRTS—SDG

A SRTS—MSDS
D SRTS—SDDS
R SRTS—SDRS
E SRTS—SDES
G SRTS—SDGS



$L \pm 0.02$

L	b/a
30.0~40.0	1/100
40.1~100.0	0



Tip shape **A** Tip shape **D** Tip shape **R** Tip shape **E** Tip shape **G**

$P \geq 0.4 \geq 1.5$ (P dimension straight section 1.5 mm or longer)
 $P \geq W$ $0.15 \leq R < \frac{W}{2}$
 $P \geq W$ $K = \sqrt{P^2 + W^2}$

* P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max.0.5mm on one side) and taper depth & regrinding amount.

D tolerance			Catalog No.		D	0.1 mm increments L	0.01mm increments					MT (workpiece material thickness)	C (clearance)	Select TS (Tensile strength (N/mm ²))	FH (Taper depth)	b	d	
D	m5	n5	Type	Type			A	D	R	E	G							
6	+0.009 +0.004	+0.013 +0.008		Headed type (D _{m5})	Straight type (D _{n5})	30.0~40.0	2.00~3.00	3.00	2.00						1.0~2.0	3	3.4	
8	+0.012 +0.006	+0.016 +0.010					2.00~4.00	4.00	2.00							1.0~3.0	4	4.4
10	+0.015 +0.007	+0.020 +0.012	A	SRTS—MHD	SRTS—MSD		2.00~6.00	6.00	2.00							1.0~5.0	6	6.4
13	+0.017 +0.008	+0.024 +0.015	D	SRTS—HDD	SRTS—SDD		3.00~8.00	8.00	2.00									8.4
16	+0.017 +0.008	+0.024 +0.015	R	SRTS—HDR	SRTS—SDR		5.00~10.00	10.00	2.00									10.6
20	+0.020 +0.009	+0.028 +0.017	E	SRTS—HDE	SRTS—SDE		7.00~12.00	12.00	3.00									12.6
25	+0.020 +0.009	+0.028 +0.017	G	SRTS—HDG	SRTS—SDG		10.00~16.00	16.00	3.00									16.6
32	+0.024 +0.011	+0.033 +0.020					15.00~20.00	20.00	4.00									20.6
38	+0.024 +0.011	+0.033 +0.020					19.00~26.00	26.00	5.00									26.6
45	+0.024 +0.011	+0.033 +0.020					25.00~35.00	35.00	6.00									36.0
50	+0.024 +0.011	+0.033 +0.020				33.00~40.00	40.00	7.00									41.0	
56	+0.024 +0.011	+0.033 +0.020				38.00~45.00	45.00	8.00									46.0	
10	+0.012 +0.006	+0.016 +0.010		Headed type (D _{m5})	Straight type (D _{n5})	40.1~80.0 (40.01)	2.00~6.00	6.00	2.00								6.4	
13	+0.015 +0.007	+0.020 +0.012	A	SRTS—MHDS	SRTS—MSDS		3.00~8.00	8.00	2.00									8.4
16	+0.017 +0.008	+0.024 +0.015	D	SRTS—HDDS	SRTS—SDDS		5.00~10.00	10.00	2.00									10.6
20	+0.017 +0.008	+0.024 +0.015	R	SRTS—HDRS	SRTS—SDRS		7.00~12.00	12.00	3.00									12.6
25	+0.020 +0.009	+0.028 +0.017	E	SRTS—HDES	SRTS—SDES		10.00~16.00	16.00	3.00									16.6
32	+0.020 +0.009	+0.028 +0.017	G	SRTS—HDGS	SRTS—SDGS		15.00~20.00	20.00	4.00									20.6
38	+0.020 +0.009	+0.028 +0.017					19.00~26.00	26.00	5.00									26.6
45	+0.020 +0.009	+0.028 +0.017					25.00~35.00	35.00	6.00									36.0
50	+0.024 +0.011	+0.033 +0.020					33.00~40.00	40.00	7.00									41.0
56	+0.024 +0.011	+0.033 +0.020					38.00~45.00	45.00	8.00									46.0

Ⓜ 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).
 Ⓜ L (40.01) → When LKC-LKZ is selected, select an L dimension of 40.01 or larger.
 Ⓜ P dimension will change if regrinding is applied. Note that the change amount varies with the taper width (max.0.05mm on one side) and taper depth & regrinding amount.

Order Catalog No. — L — P — W — R (R only) — MT — C — TS — FH
 SRTS—MHD 10 — 35.1 — P5.00 — MT1.5 — C0.105 — H — FH2.0
 SRTS—HDRS 20 — 65 — P8.00 — W8.00 — R0.40 — MT1.5 — C0.105 — H — FH2.0

Days to Ship **Quotation** **P** Price **Quotation**

P Price **Quotation**

Alterations Catalog No. — L — P(PC) — W(WC) — R — MT — C — TS — FH — (HC·TC...etc.)
 SRTS—MHD 13 — 35 — PC8.02 — MT1.5 — C0.105 — H — FH2.0 — TC4.0

Alterations	Code	A	D	R	E	G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min. $P > \frac{PC}{WC} \geq \frac{P \cdot W_{min}}{2} \geq 2.00$ 0.01mm increments max. $P < \frac{PC}{WC} \leq P \cdot K_{max} + 0.2$ 0.01mm increments					Quotation
Full length	LKC LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.05$ Full length tolerance change $L \pm 0.2 \rightarrow \pm 0.01$					
Head	KC	Addition of single key flat to head	180°	270°	90°	Key flat position change 1° increments	
		Addition of single key flat	180°	270°	90°	Key flat position change 1° increments	

Alterations	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.					Quotation
	KFC	Double key flats at 0° and a selected angle 1° increments Double key flats at 0° and a selected angle 1° increments					
Others	HC	Head diameter change $D \leq HC < (D+3)$ 0.01mm increments					
	TC	Head thickness change 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 $T \pm 0.3 \rightarrow \pm 0.02$					
	TKM	Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$					
	RC	Can be used for headed types only. Head thickness is machined to a tolerance of -0.04 ~ 0 relative to the retainer surface.					
	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

— 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.
	D _{m5}	M	D3~5	MHD	Regular type
			D6~56	HD	
			D6~56	PMHD	
			D6~25	PHD	
			D3~5	A-MHD	
			D6~16	A-HD	
D ₀ +0.005	D	H	D3~5	A-MHD	
			D6~16	A-HD	
			D6~16	A-PMHD	
			D6~16	A-PHD	
			D3~5	A-MHD	
			D6~16	A-HD	

D tolerance	Catalog No.	L	0.01mm increments					b	d	H	T
			A		D R E G		R				
			min. P	max.	P-Kmax.	P-Wmin.	R				
D ₀ +0.005	(Equivalent to SKH51) (D _{m5}) (D ₀ +0.005) A MHD A-MHD	(3) 16 20	0.30~1.00	—	—	—	0.15 ≤ R < W/2 (R only)	2	2.4	5	3
		(4) 16 20 22 25 28 30	0.50~2.00	—	—	—					
		(5) 16 20 22 25 28 30	0.50~2.50	—	—	—					
		6 16 20 22 25 28 30 32 35	1.00~3.00	3.00	1.00	—					
		8 16 20 22 25 28 30 32 35 40	1.00~4.00	4.00	1.00	—					
		10 16 20 22 25 28 30 32 35 40 (45)	2.00~6.00	6.00	1.20	—					
		13 16 20 22 25 28 30 32 35 40 (45)	3.00~8.00	8.00	1.50	—					
		16 16 20 22 25 28 30 32 35 40 (45)	5.00~10.00	10.00	2.00	—					
		20 16 20 22 25 28 30 32 35 40 (45)	7.00~12.00	12.00	3.00	—					
		22 16 20 22 25 28 30 32 35 40 (45)	8.00~14.00	14.00	3.00	—					
		25 16 20 22 25 28 30 32 35 40 (45)	10.00~16.00	16.00	3.00	—					
		(32) 16 20 22 25 28 30 32 35	15.00~20.00	20.00	4.00	—					
D ₀ +0.005	(Equivalent to SKD11) (D _{m5}) (D ₀ +0.005) A MHD A-MHD D HDD A-HDD R HDR A-HDR E HDE A-HDE G HDG A-HDG	(38) 16 20 22 25 30 35	19.00~26.00	26.00	5.00	0.15 ≤ R < W/2 (R only)	8	20.6	35	5	5
		(45) 20 22 25 30 35	25.00~35.00	35.00	6.00						
		(50) 20 22 25 30 35	33.00~40.00	40.00	7.00						
		(56) 20 22 25 30 35	38.00~45.00	45.00	8.00						
		6 16 20 22 25 30 35	1.00~3.00	3.00	1.00						
		8 16 20 22 25 30 35	1.00~4.00	4.00	1.00						
		10 16 20 22 25 30 35	2.00~6.00	6.00	1.20						
		13 16 20 22 25 30 35	3.00~8.00	8.00	1.50						
		16 16 20 22 25 30 35	5.00~10.00	10.00	2.00						
		(20) 16 20 22 25 30 35	7.00~12.00	12.00	3.00						
		(25) 16 20 22 25 30 35	10.00~16.00	16.00	3.00						
		D ₀ +0.005	(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	(3) 16 20 22 25 30 35	1.00~3.00						
(4) 16 20 22 25 30 35	1.00~4.00			4.00	1.00						
6 16 20 22 25 30 35	2.00~6.00			6.00	1.20						
8 16 20 22 25 30 35	3.00~8.00			8.00	1.50						
10 16 20 22 25 30 35	5.00~10.00			10.00	2.00						
(20) 16 20 22 25 30 35	7.00~12.00			12.00	3.00						
(25) 16 20 22 25 30 35	10.00~16.00			16.00	3.00						
3 16 20 22 25 30 35	1.00~3.00			3.00	1.00						
4 16 20 22 25 30 35	1.00~4.00			4.00	1.00						
6 16 20 22 25 30 35	2.00~6.00			6.00	1.20						
8 16 20 22 25 30 35	3.00~8.00			8.00	1.50						
10 16 20 22 25 30 35	5.00~10.00			10.00	2.00						

- Ⓜ D3 dies are thin under the head. Be careful not to damage the bushings when mounting them.
- Ⓜ D (3), (4), and (5) specifications are 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_{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)
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 WC	Shaped hole diameter change min. P > PC ≥ P _{min} / 2 ≥ 0.50 0.01 mm increments Ⓜ If PC is 1.00~1.99, then b = 4. max. W < PC / WC ≤ P · Kmax. + 0.2 0.01 mm increments	Shaped hole diameter change min. P > PC ≥ P · Wmin. / 2 ≥ 1.00 0.01 mm increments	
	BC	Shaped hole depth change 1 ≤ BC ≤ b 0.1 mm increments Ⓜ Cannot be used for P < 1.00.		
	PKC	Shaped hole diameter tolerance change P + 0.01 → +0.005 Ⓜ Cannot be used for P < 1.00.	Shaped hole diameter tolerance change P · W ± 0.01 → +0.01 0	
Alterations to full length	LC	Full length change (reduction in shaped hole depth) 10 ≤ L - (b - 1) ≤ 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 → +0.05 + 0.2 → 0		
	LKZ	Full length tolerance change L + 0.4 → +0.01 + 0.2 → 0 Ⓜ Cannot be used for L (LC) < 16. Ⓜ Cannot be used for D > 25.		
Alterations to head thickness	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 → +0.02 0 → 0 LKC Full length tolerance change L + 0.4 → +0.05 + 0.2 → 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 → +0.02 0 → -0.02 LKC Full length tolerance change L + 0.4 → +0.05 + 0.2 → 0		

Price Quotation

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head	270° Key flat position change 1° increments 180° 90°	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments	270° Double key flats at 0° and a selected angle 1° increments 180° 90°	
Alterations to head	HC	Head diameter change D ≤ HC < H 0.1 mm increments		
	TC	Head thickness change 2 ≤ 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 → +0.02 0 → 0	Ⓜ Cannot be used with L (LC) < 16.	
	TKM	Head thickness tolerance change T + 0.3 → 0 0 → -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.		
	Others	SKC	Single key flat on shank Ⓜ Can be used with D ≥ 8 and L (LC) ≥ 20. Ⓜ Cannot be combined with KC-WKC-KFC.	

BUTTON DIES

—HEADED TYPE (ECONOMY)—

Headed	Shank diameter D tolerance		D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{m5}		Equivalent to SKD11 60~63HRC	D6~56	EMHD EHD
			Powdered high-speed steel 64~67 HRC	D6~25	EPMHD EPHD
	D ^{+0.005} ₀		Equivalent to SKD11 60~63HRC	D6~16	A-EMHD A-EHD
			Powdered high-speed steel 64~67 HRC	D6~16	A-EPMHD A-EPHD

Hole shape **A**

Hole shape **D**

Hole shape **R**

Hole shape **E**

Hole shape **G**

D tolerance	m5	Catalog No.	Type	D	0.01mm increments				b	d	H	T	
					A		D R E G						R
					min.	P max.	P-Kmax.	P-Wmin.					
6	+0.009 +0.004	(Equivalent to SKD11) (D _{m5}) (D ^{+0.005} ₀)	A EMHD A-EMHD D EHDD A-EHDD R EHDR A-EHDR E EHDE A-EHDE G EHDG A-EHDG	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	+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	8.4	16		
16	+0.017 +0.008			16	16 20 22 25 28 30 32 35 40 (45)	5.00~ 10.00	10.00	2.00	10	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	12.6	23		
22	+0.020 +0.009			22	16 20 22 25 28 30 32 35 40 (45)	8.00~ 14.00	14.00	3.00	14	14.6	25		
25	+0.020 +0.009			25	16 20 22 25 28 30 32 35 40 (45)	10.00~ 16.00	16.00	3.00	16	16.6	28		
32	+0.020 +0.009			32	16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00	20	20.6	35		
38	+0.020 +0.009			38	16 20 22 25 30 35	19.00~ 26.00	26.00	5.00	26	26.6	41		
45	+0.024 +0.011			45	20 22 25 30 35	25.00~ 35.00	35.00	6.00	30	36.0	48		
50	+0.024 +0.011			50	20 22 25 30 35	33.00~ 40.00	40.00	7.00	35	41.0	53		
56	+0.024 +0.011			56	20 22 25 30 35	38.00~ 45.00	45.00	8.00	35	46.0	59		
6	+0.009 +0.004			(Powdered high-speed steel) (D _{m5}) (D ^{+0.005} ₀)	A EPMHD A-EPMHD D EPHDD A-EPHDD R EPHDR A-EPHDR E EPHDE A-EPHDE G EPHDG A-EPHDG	6	16 20 22 25 30 35	1.00~ 3.00	3.00	1.00	3	3.4	9
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 +0.006					10	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	6	6.4	13
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	+0.020 +0.012	16	16 20 22 25 30 35			5.00~ 10.00	10.00	2.00	10	10.6	19		
20	+0.017 +0.008	20	16 20 22 25 30 35			7.00~ 12.00	12.00	3.00	12	12.6	23		
25	+0.017 +0.008	25	16 20 22 25 30 35			10.00~ 16.00	16.00	3.00	16	16.6	28		

Ⓜ 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)
 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	PC WC	Shaped hole diameter change min.: P > PC ≥ P _{min.} ≥ 0.50 0.01 mm increments Ⓜ When PC is 1.00~ 1.99, then b=4. max.: W < WC ≤ P·Kmax. + 0.2 0.01 mm increments	Shaped hole diameter change min.: P > PC ≥ P·Wmin. ≥ 1.00 0.01 mm increments	
		Full length change (reduction in shaped hole depth) 10 ≤ L - (b-1) ≤ 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).		
Alterations to full length	LK	Full length tolerance change L + 0.4 ⇨ +0.05 + 0.2 ⇨ 0		Quotation
	LKZ	Full length tolerance change L + 0.4 ⇨ +0.01 + 0.2 ⇨ 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 ⇨ +0.02 0 ⇨ 0	LKC Full length tolerance change L + 0.4 ⇨ +0.05 + 0.2 ⇨ 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 ⇨ 0 0 ⇨ -0.02	LKC Full length tolerance change L + 0.4 ⇨ +0.05 + 0.2 ⇨ 0	

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head	270° Key flat position 180° 0° changes* 90° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle* 180° 0° 90° increments	270° Double key flats at 0° and a selected angle* 180° 0° 90° increments	Ⓜ Cannot be combined with KC-WKC. Ⓜ Cannot be used for L (LC) < 16 or D > 25.
	HC	Head diameter change D ≤ HC < H 0.1 mm increments		Ⓜ Cannot be used for L (LC) < 16 or D > 25.
	TC	Head thickness change 2 ≤ 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.		
	TKC	Head thickness tolerance change T + 0.3 ⇨ +0.02 0 ⇨ 0	Ⓜ Cannot be used for L (LC) < 16.	
Others	SKC	Single key flat on shank Ⓜ Can be used with D ≥ 8 and L (LC) ≥ 20. Ⓜ Cannot be combined with KC-WKC-KFC.		

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.		
<p>RoHS</p>	D _{n5}	Equivalent to SKH51 61~64HRC Equivalent to SKD 11 60~63 HRC Equivalent to SKD 11 60~63 HRC	D3~5	MSD			
			D6~56	SD□			
			D6~25	PMSD			
			D8~25	PSD□			
			D ₀ +0.005	Powdered high-speed steel 64~67 HRC		D3~5	A-MSD
						D6~16	A-SD□
	D8~16	A-MSD					
	D6~16	A-PMSD					
	D8~16	A-PSD□					
	D8~16	A-PSD□					

For shank diameter tolerance D, select either n5 or +0.005/0.

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 WC	Shaped hole diameter change min.: $P > PC \geq \frac{Pmin.}{2} \geq 0.50$ 0.01 mm increments * If PC is 1.00~1.99, then b = 4. max.: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot Kmax. + 0.2$ 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	Quotation
		Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments * Cannot be used for P < 1.00.		
	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		

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. 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 D3-6	270° 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

D tolerance	Catalog No.	L	0.01mm increments				b	d	
			A	D R E G	R	R			
D _{n5}	(Equivalent to SKH51) (D _{n5}) (D ₀ +0.005)	(3)	16 20	0.30~1.00	—	—	—	2.0	
		(4)	16 20 22 25 28 30	0.50~2.00	—	—		2.4	
		(5)	16 20 22 25 28 30	0.50~2.50	—	—		2.9	
		(6)	16 20 22 25 28 30 32 35	1.00~3.00	—	—		3.4	
		(8)	16 20 22 25 28 30 32 35	1.00~4.00	4.00	1.00		4.4	
		(10)	16 20 22 25 28 30 32 35 (40)	2.00~6.00	6.00	1.20		6.4	
	(Equivalent to SKD11) (D _{n5}) (D ₀ +0.005)	(13)	16 20 22 25 28 30 32 35 (40)	3.00~8.00	8.00	1.50	8.4		
		(16)	16 20 22 25 28 30 32 35 (40)	5.00~10.00	10.00	2.00	10.6		
		(20)	16 20 22 25 28 30 32 35 (40)	7.00~12.00	12.00	3.00	12.6		
		(22)	16 20 22 25 28 30 32 35 (40)	8.00~14.00	14.00	3.00	14.6		
		(25)	16 20 22 25 28 30 32 35 (40)	10.00~16.00	16.00	3.00	16.6		
		(32)	16 20 22 25 28 30 32 35	15.00~20.00	20.00	4.00	20.6		
—	(38)	16 20 22 25 30 35	19.00~26.00	26.00	5.00	26.6			
	(45)	20 22 25 30 35	25.00~35.00	35.00	6.00	36.0			
	(50)	20 22 25 30 35	33.00~40.00	40.00	7.00	41.0			
	(56)	20 22 25 30 35	38.00~45.00	45.00	8.00	46.0			
	D ₀ +0.005	(Powdered high-speed steel) (D _{n5}) (D ₀ +0.005)	(6)	16 20 22 25 30 35	1.00~3.00	—	—	0.15 ≤ R < $\frac{W}{2}$ (R only)	3 3.4
			(8)	16 20 22 25 30 35	1.00~4.00	4.00	1.00		4 4.4
(10)			16 20 22 25 30 35	2.00~6.00	6.00	1.20	6 6.4		
(13)			16 20 22 25 30 35	3.00~8.00	8.00	1.50	8.4		
(16)			16 20 22 25 30 35	5.00~10.00	10.00	2.00	10.6		
(20)			16 20 22 25 30 35	7.00~12.00	12.00	3.00	12.6		
(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.

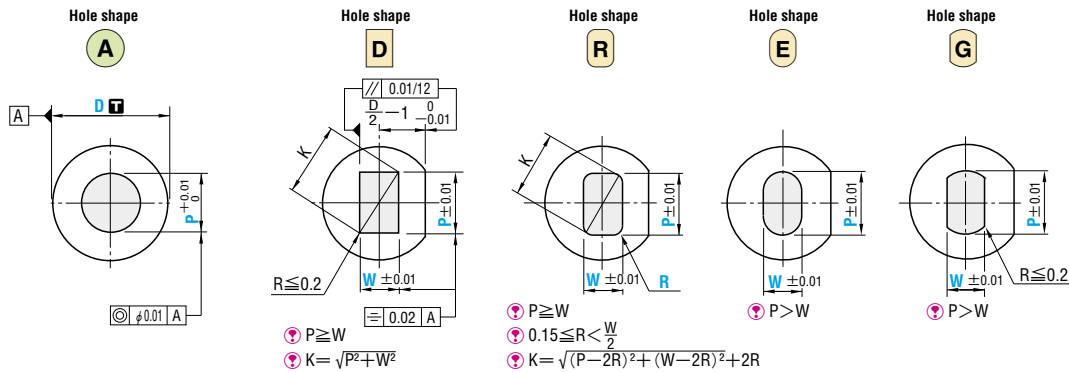
BUTTON DIES

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□			
			Powdered high-speed steel 64~67 HRC	D6~25		EPMSD	
				D8~25		EPSD□	
			D ^{+0.005} ₀	Equivalent to SKD11 60~63HRC		D6~16	A-EMSD
						D8~16	A-ESD□
Powdered high-speed steel 64~67 HRC	D6~16	A-EPMSD					
	D8~16	A-EPSD□					

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



D tolerance	Catalog No.	L	0.01mm increments				b	d
			A	D R E G	R	R		
D _{n5}	(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		8 16 20 22 25 28 30 32 35	1.00~ 4.00	4.00	1.00		4 4.4	
10		10 16 20 22 25 28 30 32 35 (40)	2.00~ 6.00	6.00	1.20		6 6.4	
13		13 16 20 22 25 28 30 32 35 (40)	3.00~ 8.00	8.00	1.50		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		(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) (D _{n5}) (D ^{+0.005} ₀)	(6) 16 20 22 25 30 35	1.00~ 3.00	—	—		3 3.4	
8		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		13 16 20 22 25 30 35	3.00~ 8.00	8.00	1.50		8.4	
16		16 16 20 22 25 30 35	5.00~ 10.00	10.00	2.00		10.6	
20		(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 (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	PC	Shaped hole diameter change min.: P > PC ≥ P _{min} /2 ≥ 0.50 0.01 mm increments Ⓜ When PC is 1.00~1.99, then b=4.	Shaped hole diameter change min.: P < PC ≤ P _{Wmin} /2 ≥ 1.00 0.01 mm increments	
	WC	max.: P/PC ≤ P _{Wmax} + 0.2 0.01 mm increments		
Alterations to full length	LC	Full length change 10 ≤ LC < L 0.1 mm increments (if combined with LKZ-LKZ, 0.01 mm increments can be selected.) Ⓜ Press-in lead is shortened by (L-LC).		
	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.		
	LKZ	Full length tolerance change L +0.4 → +0.05 L +0.2 → 0		
	LKC	Full length tolerance change L +0.4 → +0.05 L +0.2 → 0 Ⓜ Cannot be used for L (LC) < 16. Ⓜ Cannot be used for D > 25.		

Alteration	Code	A	D R E G	1Code
Others	KC	Addition of single key flat Ⓜ Cannot be used for D6.	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel Ⓜ Cannot be used for D6. Ⓜ Can be combined with KC for shapes D R E G.		

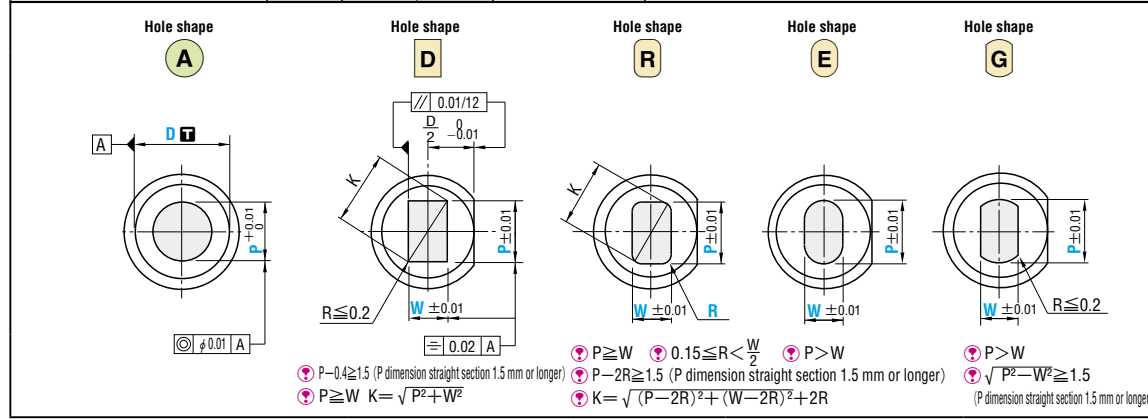
Price **Quotation**

SCRAP RETENTION BUTTON DIES

— HEADED TYPE (REGULAR) —



Headed	Shank diameter D tolerance	Material	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{m5}	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63 HRC Equivalent to SKD11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4-5	SR-MHD	Regular type
			D6~56	SR-HD	
			D6~56	SR-PMHD	
			D6~25	SR-PHD	
D ₀ ^{+0.005}	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63 HRC Equivalent to SKD11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4-5	SRA-MHD		
		D6~16	SRA-HD		
		D6~16	SRA-PMHD		
		D6~16	SRA-PHD		



D tolerance	Catalog No.	Type	D	0.01mm increments					C (clearance)	b	d	H	T
				A	D R E G	R	MT (workpiece material thickness)	C					
D _{m5}	(Equivalent to SKH51) (D _{m5}) (D ₀ ^{+0.005})	SR-MHD SRA-MHD	(4)	16 20 22 25 28 30	1.00~ 2.00	—	—	—	C ≥ 0.010 Select a clearance of 0.010mm or more.	2	2.4	5	3
			(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	3.00	1.00	—		3.4	9		
			(8)	16 20 22 25 28 30 32 35 40	1.00~ 4.00	4.00	1.00	—		4.4	11		
			(10)	16 20 22 25 28 30 32 35 40 (45)	2.00~ 6.00	6.00	1.20	—		6.4	13		
			(13)	16 20 22 25 28 30 32 35 40 (45)	3.00~ 8.00	8.00	1.50	—		8.4	16		
			(16)	16 20 22 25 28 30 32 35 40 (45)	5.00~ 10.00	10.00	2.00	—		10.6	19		
			(20)	16 20 22 25 28 30 32 35 40 (45)	7.00~ 12.00	12.00	3.00	—		12.6	23		
			(22)	16 20 22 25 28 30 32 35 40 (45)	8.00~ 14.00	14.00	3.00	—		14.6	25		
			(25)	16 20 22 25 28 30 32 35 40 (45)	10.00~ 16.00	16.00	3.00	—		16.6	28		
D ₀ ^{+0.005}	(Equivalent to SKD11) (D _{m5}) (D ₀ ^{+0.005})	SR-MHD SRA-MHD	(32)	16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00	—	8	20.6	35	5	
			(38)	16 20 22 25 30 35	19.00~ 26.00	26.00	5.00	—	20.6	41			
			(45)	20 22 25 30 35	25.00~ 35.00	35.00	6.00	—	26.6	48			
			(50)	20 22 25 30 35	33.00~ 40.00	40.00	7.00	—	36.0	53			
			(56)	20 22 25 30 35	38.00~ 45.00	45.00	8.00	—	41.0	59			
			(6)	16 20 22 25 30 35	1.00~ 3.00	3.00	1.00	—	3	3.4	9		
			(8)	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	—	4	4.4	11		
			(10)	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	—	6	6.4	13		
			(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	19			
D ₀ ^{+0.005}	(Powdered high-speed steel) (D _{m5}) (D ₀ ^{+0.005})	SR-PMHD SRA-PMHD	(6)	16 20 22 25 30 35	1.00~ 3.00	3.00	1.00	—	8	12.6	23	5	
			(8)	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	—	10.6	19			
			(10)	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	—	12.6	23			
			(13)	16 20 22 25 30 35	3.00~ 8.00	8.00	1.50	—	16.6	28			
			(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 $\frac{P}{2} > PC \geq \frac{P-W_{min}}{2} \geq 1.00$ 0.01 mm increments * For A only, if PC is 1.00~1.99, then b=4.		
	BC	Shaped hole depth change $\frac{P}{2} > PC \geq \frac{P-W_{min}}{2} \geq 1.00$ 0.01 mm increments 1 ≤ BC ≤ Bmax. 1 ≤ BC ≤ b 0.1 mm increments		
	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \rightarrow \pm 0.005$		
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 $L \pm 0.4 \rightarrow \pm 0.05$ $L \pm 0.2 \rightarrow 0$		
	LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.01$ $L \pm 0.2 \rightarrow 0$		
	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.		
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, 0.01 mm increments can be selected.) * Full length L is shortened by (T-TC). If combined with LC, full length is equal to L-LC.		
Others	TKC	Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ $T \pm 0.2 \rightarrow 0$		
	TKM	Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ $T \pm 0.2 \rightarrow 0$		
	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.			

Price **Quotation**

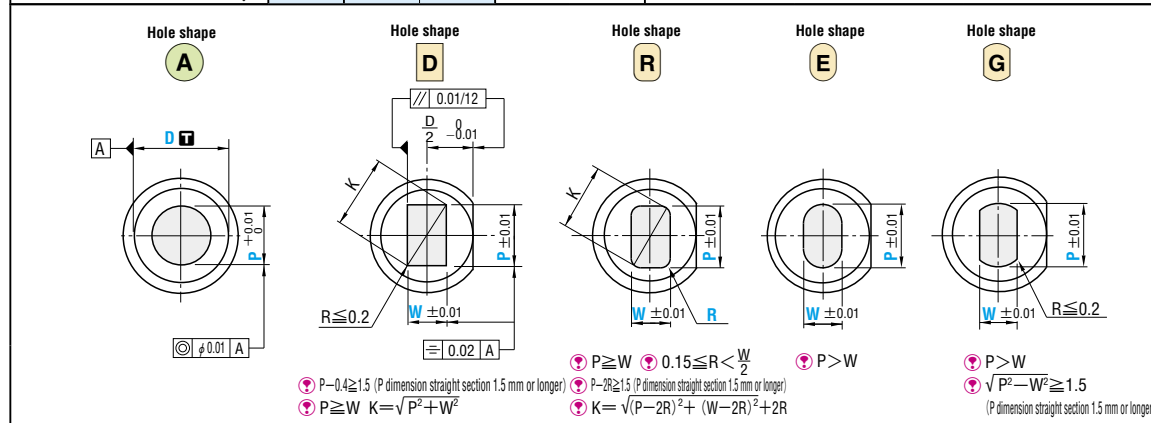
BUTTON DIES

SCRAP RETENTION BUTTON DIES

—HEADED TYPE (ECONOMY)—



Headed	Shank diameter D tolerance	M H	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
	D _{m5}	Equivalent to SKD11 60~63HRC	D6~56	SR-EMHD SR-EHD	
			Powdered high-speed steel 64~67 HRC	D6~25	
	D ⁺ +0.005/0	Equivalent to SKD11 60~63HRC	D6~16	SRA-EMHD SRA-EHD	
			Powdered high-speed steel 64~67 HRC	D6~16	



D tolerance	Catalog No.	Type	D	L	0.01mm increments				MT (workpiece material thickness)	C (clearance)	b	d	H	T	
					A	D R E G	R	R							
6	(Equivalent to SKD11) (D _{m5}) (D ⁺ +0.005/0)	A SR-EMHD SRA-EMHD D SR-EHD SRA-EHD R SR-EHDR SRA-EHDR E SR-EHDE SRA-EHDE G SR-EHDG SRA-EHDG	6	16 20 22 25 28 30 32 35	1.00~ 3.00	3.00	1.00	MT ≥ 0.15 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	9	5		
8			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			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	10.6	19			
20			20	16 20 22 25 28 30 32 35 40 (45)	7.00~ 12.00	12.00	3.00			12.6	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	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	16.6	28			
32			32	16 20 22 25 28 30 32 35	15.00~ 20.00	20.00	4.00			20.6	20.6	35			
38			38	16 20 22 25 30 35	19.00~ 26.00	26.00	5.00			26.6	26.6	41			
45			45	20 22 25 30 35	25.00~ 35.00	35.00	6.00			36.0	36.0	48			
50			50	20 22 25 30 35	33.00~ 40.00	40.00	7.00			41.0	41.0	53			
56			56	20 22 25 30 35	38.00~ 45.00	45.00	8.00			46.0	46.0	59			
6			(Powdered high-speed steel) (D _{m5}) (D ⁺ +0.005/0)	A SR-EPMHD SRA-EPMHD D SR-EPHD SRA-EPHD R SR-EPHDR SRA-EPHDR E SR-EPHDE SRA-EPHDE G SR-EPHDG SRA-EPHDG	6	16 20 22 25 30 35	1.00~ 3.00			3.00	1.00	3		3.4	9
8					8	16 20 22 25 30 35	1.00~ 4.00			4.00	1.00	4		4.4	11
10					10	16 20 22 25 30 35	2.00~ 6.00			6.00	1.20	6		6.4	13
13	13	16 20 22 25 30 35			3.00~ 8.00	8.00	1.50	8	8.4	16					
16	16	16 20 22 25 30 35			5.00~ 10.00	10.00	2.00	10.6	10.6	19					
20	20	16 20 22 25 30 35			7.00~ 12.00	12.00	3.00	12.6	12.6	23					
25	25	16 20 22 25 30 35			10.00~ 16.00	16.00	3.00	16.6	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 = (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.** SR-EMHD 13 **L** 30 **P** P7.00 **W** **R** (R only) **MT** MT1.50 **C** C0.105

Days to Ship **Quotation**

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

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min.: $\frac{P}{WC} > \frac{P}{WC} - \frac{P}{2} - W_{min.} \geq 1.00$ 0.01 mm increments For A only, if PC is 1.00~1.99, then b=4.		
	WC	max.: $\frac{P}{WC} < \frac{P}{WC} \leq P \cdot K_{max.} + 0.2$ 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-CKK-MKC, 0.01 mm increments can be selected.) Dimension b and lead are shortened by (L-LC).		
	LKC	Full length tolerance change $L +0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
	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 $L +0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
Alterations to head	TKM	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 $L +0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
	MKC	Changes to head thickness tolerance and full length tolerance are processed using a single code. Machining limits are the same as for TMC 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 $L +0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		

Price **Quotation**

Alteration	Code	A	D R E G	1Code
Alterations to head	KC	Addition of single key flat to head 270° Key flat position change 1° increments 180° 90°		
	WKC	Addition of double key flats in parallel Can be combined with KC for shapes D R E G.		
	KFC	270° Double key flats at 0° and a selected angle 1° increments 180° 90° 270° Double key flats at 0° and a selected angle 1° increments 180° 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-CKK-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 $T +0.3 \rightarrow +0.02$ $0 \rightarrow 0$ Cannot be used for L < 16.		
Others	SKC	Single key flat on shank Can be used with D ≥ 8 and L (LC) ≥ 20. Cannot be combined with KC-WKC-KFC.		

BUTTON DIES

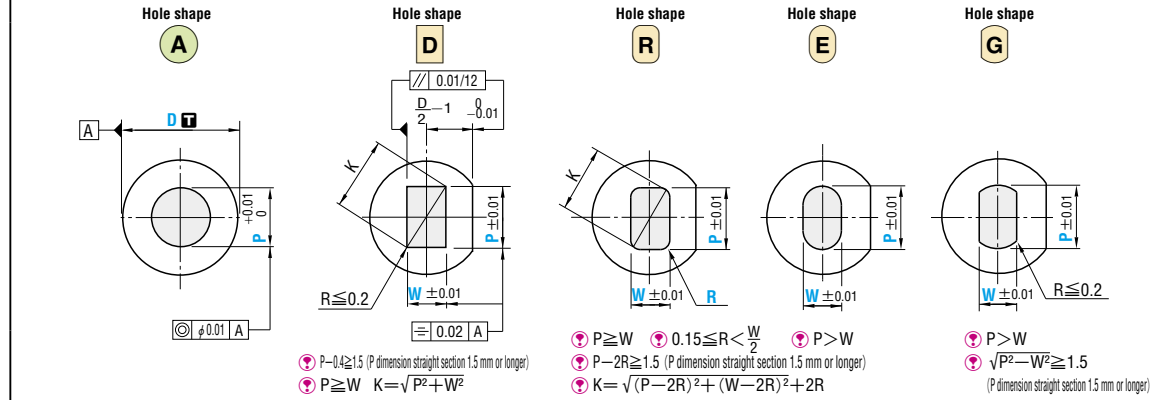
SCRAP RETENTION BUTTON DIES

— 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.
	Dn5	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63 HRC Equivalent to SKD11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4~5	SR-MSD	Regular type
			D6~56	SR-SD□	
			D8~56	SR-MSD	
			D6~25	SR-PMSD	
			D8~25	SR-PSD□	
	D ^{+0.005} ₀	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63 HRC Equivalent to SKD11 60~63 HRC Powdered high-speed steel 64~67 HRC	D4~5	SRA-MSD	
			D6~16	SRA-SD□	
			D8~16	SRA-MSD	
			D6~16	SRA-PMSD	
			D8~16	SRA-PSD□	

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



D tolerance	D n5 ^{+0.005} ₀	Catalog No.	Type	D	L	0.01mm increments				MT (workpiece material thickness)	C (clearance)	b	d
						A	D R E G	R	R				
^{+0.013} ^{+0.008} ^{+0.016} ^{+0.010} ^{+0.020} ^{+0.012}	Dn5	(Equivalent to SKH51) (D _{n5}) (D ₀ ^{+0.005})	SR-MSD SRA-MSD	(4)	16 20 22 25 28 30	1.00~2.00	—	—	—	$MT \geq 0.15$ Select a workpiece material thickness of 0.15 mm or more. $0.15 \leq R < \frac{W}{2}$ (R only)	$C \geq 0.010$ Select a clearance of 0.010mm or more.	2	2.4
				(5)	16 20 22 25 28 30	1.00~2.50	—	—	—			2.9	
				(6)	16 20 22 25 28 30 32 35	1.00~3.00	—	—	—			3.4	
				(8)	16 20 22 25 28 30 32 35	1.00~4.00	4.00	1.00	—			4.4	
				(10)	16 20 22 25 28 30 32 35 (40)	2.00~6.00	6.00	1.20	—			6.4	
				(13)	16 20 22 25 28 30 32 35 (40)	3.00~8.00	8.00	1.50	—			8.4	
				(16)	16 20 22 25 28 30 32 35 (40)	5.00~10.00	10.00	2.00	—			10.6	
				(20)	16 20 22 25 28 30 32 35 (40)	7.00~12.00	12.00	3.00	—			12.6	
				(22)	16 20 22 25 28 30 32 35 (40)	8.00~14.00	14.00	3.00	—			14.6	
				(25)	16 20 22 25 28 30 32 35 (40)	10.00~16.00	16.00	3.00	—			16.6	
^{+0.028} ^{+0.017} ^{+0.033} ^{+0.020}	Dn5	(Powdered high-speed steel) (D _{n5}) (D ₀ ^{+0.005})	SR-PMSD SRA-PMSD	(6)	16 20 22 25 30 35	1.00~3.00	—	—	$0.15 \leq R < \frac{W}{2}$ (R only)	$C \geq 0.010$ Select a clearance of 0.010mm or more.	3	3.4	
				(8)	16 20 22 25 30 35	1.00~4.00	4.00	1.00			4.4		
				(10)	16 20 22 25 30 35	2.00~6.00	6.00	1.20			6.4		
				(13)	16 20 22 25 30 35	3.00~8.00	8.00	1.50			8.4		
				(16)	16 20 22 25 30 35	5.00~10.00	10.00	2.00			10.6		
				(20)	16 20 22 25 30 35	7.00~12.00	12.00	3.00			12.6		
				(25)	16 20 22 25 30 35	10.00~16.00	16.00	3.00			16.6		

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

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min: $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P-Wmin.}{2} \geq 1.00$ 0.01 mm increments For A only, if PC is 1.00~1.99, then b=4. max: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot Kmax. + 0.2$ 0.01 mm increments		Quotation
		Shaped hole depth change min: 1.00~1.99 Bmax: 3 2.00~3.99 5 4.00~ 6 $1 \leq BC \leq Bmax.$ $1 \leq BC \leq b$ 0.1 mm increments	Shaped hole depth change $1 \leq BC < b$ 0.1 mm increments	
	Shaped hole diameter tolerance change $P + 0.01 \Rightarrow +0.005$ $0 \Rightarrow 0$	Shaped hole diameter tolerance change $P-W \pm 0.01 \Rightarrow +0.01$ $0 \Rightarrow 0$		

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. 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	
	LKC	Full length tolerance change $L + 0.4 \Rightarrow +0.05$ $L + 0.2 \Rightarrow 0$	LKZ	
Others	KC	Addition of single key flat ⊗ Cannot be used for D4~6. Key flat position 180° 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.		

Price **Quotation**

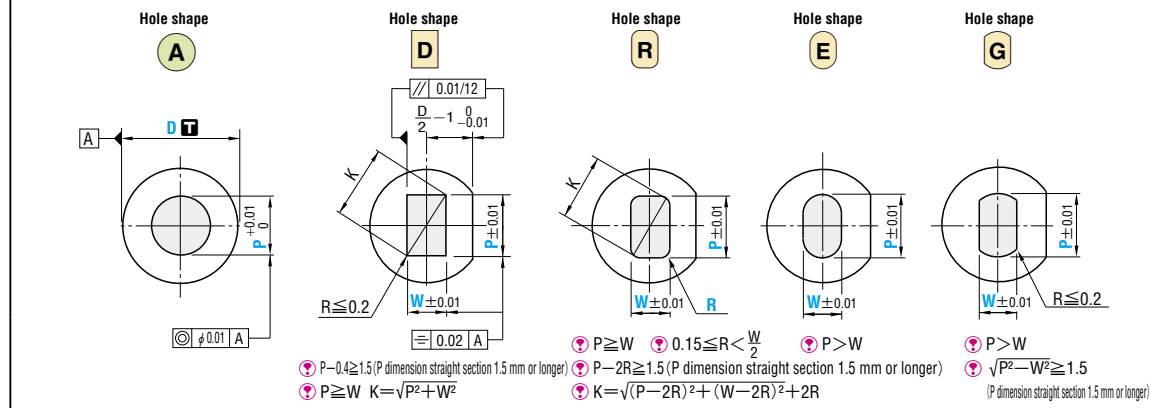
SCRAP RETENTION BUTTON DIES

—STRAIGHT TYPE (ECONOMY)—

PRODUCTS DATA

P.1619

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.	
<p>For shank diameter tolerance D tolerance, select either n5 or $0^{+0.005}$.</p>	Dn5	Equivalent to SKD11 60~63HRC	D6~56	SR—EMSD	Economy type 	
			D8~56	SR—ESD□		
			Powdered high-speed steel 64~67HRC	D6~25		SR—EPMSD
				D8~25		SR—EPSD□
			Equivalent to SKD11 60~63HRC	D6~16		SRA—EMSD
				D8~16		SRA—ESD□
Powdered high-speed steel 64~67HRC	D6~16	SRA—EPMSD				
	D8~16	SRA—EPSD□				



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

* D (6) is a specification available for shape A (round) only. It is 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—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 $\min. P > PC \geq \frac{P \cdot W_{\min}}{2} \geq 1.00$ 0.01 mm increments * For A only, if PC is 1.00~1.99, then b=4. $\max. W < WC \leq P \cdot K_{\max} + 0.2$ 0.01 mm increments		
Alterations to full length	LC SLC	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. 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.		

Alteration	Code	A	D R E G	1Code
Alterations to full length	LKC LKZ	Full length tolerance change $L +0.4 \Rightarrow +0.05$ $L +0.2 \Rightarrow 0$		
Others	KC WKC	Addition of single key flat * Cannot be used for D6. 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**

BUTTON DIES

NON-CLOGGING BUTTON DIES

—HEADED TYPE, STRAIGHT TYPE—



Type	RoHS	Material	D dimension	Catalog No.	Shape
—Headed—	RoHS	Equivalent to 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	Equivalent to 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	D tolerance		Catalog No.		L	0.01mm increments min. P max.	V	G	d	H	T		
	m5	n5	Type	D									
3	+0.006 +0.002	+0.008 +0.004	(Equivalent to 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	Straight type (Dn5) SV—MSD								4	0.50~2.00
5			5	0.50~2.50									
6	+0.012 +0.006	+0.016 +0.010	(Equivalent to SKD11)	6								1.00~3.00	
8			8	1.00~4.00									
10			10	2.00~6.00									
6	+0.009 +0.004	+0.013 +0.008	(Powdered high-speed steel)	6								1.00~3.00	
8			8	1.00~4.00									
10			10	2.00~6.00									

Ⓜ 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

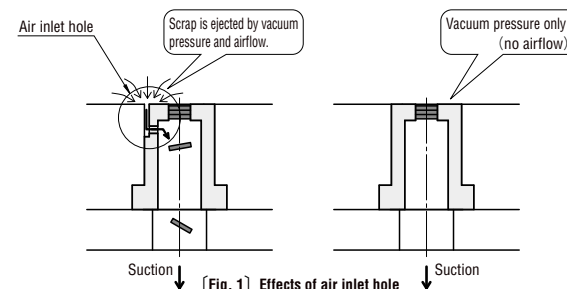
Days to Ship **Quotation**

Price **Quotation**

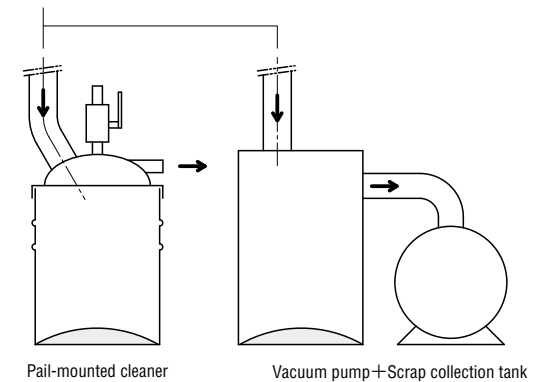
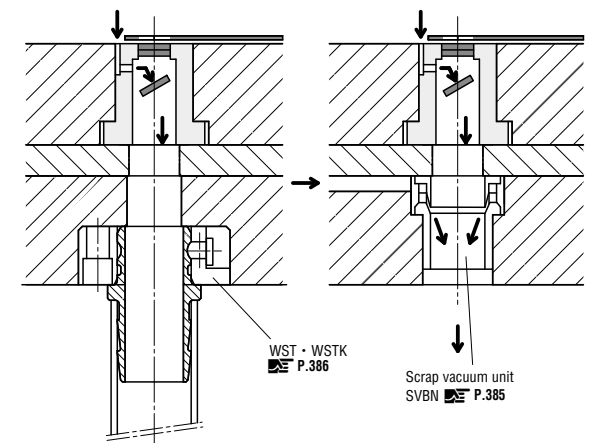
Alterations **Catalog No.** — **L (LC-SLC)** — **P (PC)** — **(HC-TC-CKC-MKC, etc.)**
 SV—MSD8 — LC18 — PC4.20 — LKC

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	
		max. : $P < PC \leq P_{max} + 0.2$ 0.01 mm increments	
	PKC	Shaped hole diameter tolerance change $P + 0.01 \rightarrow +0.005$ Ⓜ 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.	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 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.	
	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.	

■ **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.385) 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.1621



Alteration	Code	Spec.	1Code
Alterations to head	KC	Addition of single key flat to head	
		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	
	HC	Head diameter change $D \leq HC < H$ 0.1 mm increments	Quotation
	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 $T + 0.3 \rightarrow +0.02$ $T \rightarrow 0$ Ⓜ Cannot be used for $L (LC) < 16$.		
TKM	Head thickness tolerance change $T + 0.3 \rightarrow 0$ $T \rightarrow -0.02$ Ⓜ Cannot be used for $L (LC) < 16$.		

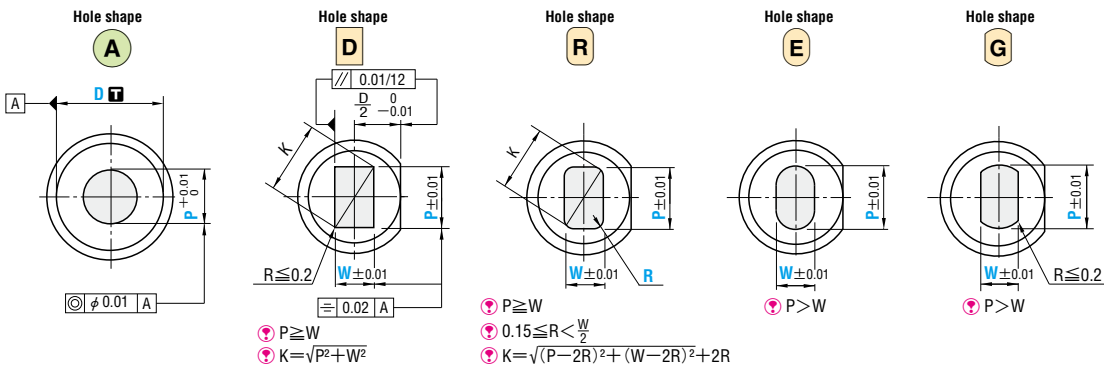
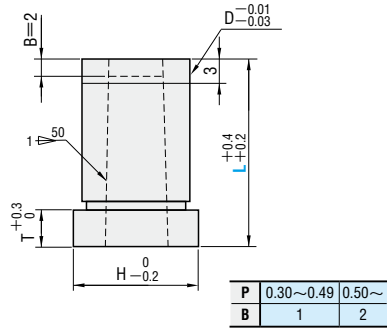


(Fig. 2) Examples of combinations with different vacuum devices

ANGULAR BUTTON DIES

— HEADED —

Headed type	Shank diameter D tolerance	D dimension	Catalog No.	The hole shape can be selected from A D R E G below.
<p>For shank diameter tolerance D tolerance, select either m5 or $\frac{+0.005}{0}$.</p>	D _{m5}	Equivalent to SKH51 61~64HRC	D3~5	AHD
		Equivalent to SKD11 60~63HRC	D6~25	AHD
		Powdered high-speed steel 64~67HRC	D3~25	PAHD
			D6~25	PAHD
	D $\frac{+0.005}{0}$	Equivalent to SKH51 61~64HRC	D3~5	A-AHD
		Equivalent to SKD11 60~63HRC	D6~16	A-AHD
Powdered high-speed steel 64~67HRC		D3~16	A-PAHD	
		D6~16	A-PAHD	



D tolerance	Catalog No.	D	L	0.01mm increments				H	T
				A	D R E G	R	R		
D m5	Type			min. P	max. P	P·Kmax.	P·Wmin.		
3 $\frac{+0.006}{+0.002}$	(D _{m5}) (Equivalent to SKH51) (Powdered high-speed steel)	(3)	8 13	0.30	0.70	—	—	4	
4 $\frac{+0.009}{+0.004}$	(D $\frac{+0.005}{0}$) (Equivalent to SKH51) (Powdered high-speed steel)	(4)	8 13 16 20 22 25 30	0.50	1.50	—	—	5	3
5 $\frac{+0.009}{+0.004}$	(D $\frac{+0.005}{0}$) (Equivalent to SKH51) (Powdered high-speed steel)	(5)	16 20 22 25 30	0.50	2.50	—	—	6	
6 $\frac{+0.009}{+0.004}$	(D _{m5}) (Equivalent to SKD11) (Powdered high-speed steel)	6	16 20 22 25 30 35	1.00	3.00	3.00	1.00	9	
8 $\frac{+0.012}{+0.006}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	8	16 20 22 25 30 35	1.00	4.00	4.00	1.00	11	
10 $\frac{+0.015}{+0.006}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	10	16 20 22 25 30 35 (40)	2.00	6.00	6.00	1.20	13	
13 $\frac{+0.017}{+0.007}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	13	16 20 22 25 30 35 (40)	3.00	8.00	8.00	1.50	16	5
16 $\frac{+0.017}{+0.007}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	16	16 20 22 25 30 35 (40)	5.00	10.00	10.00	2.00	19	
20 $\frac{+0.017}{+0.008}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	(20)	16 20 22 25 30 35	7.00	12.00	12.00	3.00	23	
25 $\frac{+0.017}{+0.008}$	(D $\frac{+0.005}{0}$) (Equivalent to SKD11) (Powdered high-speed steel)	(25)	16 20 22 25 30 35	10.00	16.00	16.00	3.00	28	

⊕ 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.

Order **Catalog No.** — **L** — **P** — **W** — **R (R only)**
 AHDR 13 — 25 — P6.20 — W2.00 — R0.50

Days to Ship **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—ANF1.2—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.: $P < PC \geq \frac{P-W_{min.}}{2} \geq 1.00$ 0.01 mm increments	
	WC	max.: $\frac{P}{W} < PC \leq P \cdot K_{max.} + 0.2$ 0.01 mm increments		
	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 $P \pm 0.01 \Rightarrow +0.005$ ⊗ Cannot be used for P < 1.00.	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \Rightarrow +0.01$	
	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).		
Alterations to full length	LKC	Full length tolerance change $L \pm 0.4 \Rightarrow +0.05$ $L \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for L(LC) < 10.		
	LKZ	Full length tolerance change $L \pm 0.4 \Rightarrow +0.01$ $L \pm 0.2 \Rightarrow 0$ ⊗ 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 $T \pm 0.3 \Rightarrow +0.02$ $T \pm 0.2 \Rightarrow 0$	LKC Full length tolerance change $L \pm 0.4 \Rightarrow +0.05$ $L \pm 0.2 \Rightarrow 0$	
	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.		
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.		
Others	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 ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16.	Double key flats at 0° and a selected angle ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16.	
	TKK	Head thickness tolerance change $T \pm 0.3 \Rightarrow +0.02$ $T \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for L(LC) < 16.		
	TKM	Head thickness tolerance change $T \pm 0.3 \Rightarrow -0.02$ $T \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for L(LC) < 16.		
	SKK	Single key flat on shank ⊕ Can be used with D ≥ 8 and L(LC) ≥ 20 ⊗ Cannot be combined with KC-WKC-KFC-ANF.		
Alterations to full length	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.		
	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.		
	LKC	Head thickness + Full length + Full length tolerance change ⊕ 0.01 mm increments ⊗ Cannot be used for L < 16.	LC Full length tolerance change ⊕ 0.01 mm increments ⊗ Cannot be used for L < 16.	LKC Full length tolerance change ⊕ 0.01 mm increments ⊗ Cannot be used for L < 16.

P Price **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.																						
	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 ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16.	Double key flats at 0° and a selected angle ⊗ Cannot be combined with KC-WKC. ⊗ Cannot be used for L(LC) < 16.																					
Others	TKK	Head thickness tolerance change $T \pm 0.3 \Rightarrow +0.02$ $T \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for L(LC) < 16.																						
	TKM	Head thickness tolerance change $T \pm 0.3 \Rightarrow -0.02$ $T \pm 0.2 \Rightarrow 0$ ⊗ Cannot be used for L(LC) < 16.																						
	SKK	Single key flat on shank ⊕ Can be used with D ≥ 8 and L(LC) ≥ 20 ⊗ Cannot be combined with KC-WKC-KFC-ANF.																						
Others	ANF	Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2° increments ⊕ d ≤ d _{max.} ⊕ d = P + 2(L-B)tan(ANF) ⊕ P - Btan(ANF) ≥ 0.6 ⊕ W - Btan(ANF) ≥ 0.6 ⊗ Cannot be used for P/W < 1.0. ⊗ Cannot be used for D = 3.	<table border="1"> <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																							
5	2.9																							
6	3.4																							
8	4.4																							
10	6.4																							
13	8.4																							
16	10.6																							
20	12.6																							
25	16.6																							
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.																							

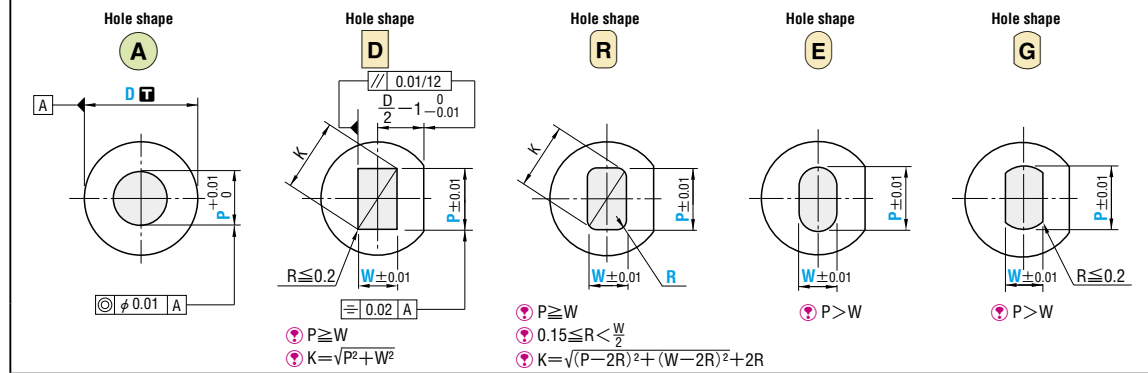
Quotation

BUTTON DIES

ANGULAR BUTTON DIES

—STRAIGHT—

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.
<p>RoHS</p>	Dn5	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	D3~5	ASD	
			D6~25	ASD	
			D8~25	ASD	
			Powdered high-speed steel 64~67HRC	D3~25	
D8~25	PASD				
D+0.005/0	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	Equivalent to SKH51 61~64HRC Equivalent to SKD11 60~63HRC Equivalent to SKD11 60~63HRC	D3~5	A-ASD	
			D6~16	A-ASD	
			D8~16	A-ASD	
			Powdered high-speed steel 64~67HRC	D3~16	A-PASD
D8~16	A-PASD				



D tolerance	D n5	+0.005/0	Catalog No.		L	0.01mm increments			
			Type	D		A	D R E G	R	
+0.008/+0.004	3	+0.008/+0.004	(Dn5)	(D+0.005/0)	(3) 8 13	0.30~0.70	-	-	0.15 ≤ R < W/2 (R only)
			(Equivalent to SKH51) (Powdered high-speed steel)	(Equivalent to SKH51) (Powdered high-speed steel)	(4) 8 13 16 20 22 25 30	0.50~1.50	-	-	
			A ASD PASD A-ASD A-PASD	(5) 8 13 16 20 22 25 30	0.50~2.50	-	-		
+0.013/+0.008	5	+0.013/+0.008	(Dn5)	(D+0.005/0)	(6) 16 20 22 25 30 35	1.00~3.00	-	-	
			(Equivalent to SKD11) (Powdered high-speed steel)	(Equivalent to SKD11) (Powdered high-speed steel)	8 16 20 22 25 30 35	1.00~4.00	4.00	1.00	
			A ASD PASD A-ASD A-PASD	10 16 20 22 25 30 35	2.00~6.00	6.00	1.20		
+0.016/+0.010	8	+0.016/+0.010	(Dn5)	(D+0.005/0)	13 16 20 22 25 30 35	3.00~8.00	8.00	1.50	
			(Equivalent to SKD11) (Powdered high-speed steel)	(Equivalent to SKD11) (Powdered high-speed steel)	16 20 22 25 30 35	5.00~10.00	10.00	2.00	
			D ASDD PASDD A-ASDD A-PASDD	13 16 20 22 25 30 35	7.00~12.00	12.00	3.00		
+0.020/+0.012	10	+0.020/+0.012	(Dn5)	(D+0.005/0)	(20) 16 20 22 25 30 35	10.00~16.00	16.00	3.00	
			(Equivalent to SKD11) (Powdered high-speed steel)	(Equivalent to SKD11) (Powdered high-speed steel)	16 20 22 25 30 35	10.00~16.00	16.00	3.00	
			R ASDR PASDR A-ASDR A-PASDR	16 20 22 25 30 35	10.00~16.00	16.00	3.00		
+0.024/+0.015	20	+0.024/+0.015	(Dn5)	(D+0.005/0)	(25) 16 20 22 25 30 35	10.00~16.00	16.00	3.00	
			(Equivalent to SKD11) (Powdered high-speed steel)	(Equivalent to SKD11) (Powdered high-speed steel)	16 20 22 25 30 35	10.00~16.00	16.00	3.00	
			E ASDE PASDE A-ASDE A-PASDE	16 20 22 25 30 35	10.00~16.00	16.00	3.00		

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

Order Catalog No. - L - P - W - R (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	PC	Shaped hole diameter change min.: P > PC ≥ Pmin. ≥ 0.50 0.01 mm increments	Shaped hole diameter change min.: P > PC ≥ P·Wmin. ≥ 1.00 0.01mm increments	Quotation
	WC	max.: P < PC ≤ P·Kmax. + 0.2 0.01 mm increments		
	BC	Shaped hole depth change 1 ≤ BC ≤ 4 0.1 mm increments Cannot be used for P < 1.0.		
Alterations to full length	PKC	Shaped hole diameter tolerance change P - 0.01 → +0.005 Cannot be used for P < 1.00.	Shaped hole diameter tolerance change P·W ± 0.01 → +0.01 0	Quotation
	LC	Full length change 10 ≤ 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).		
	LKC	Full length tolerance change +0.4 → +0.05 L + 0.2 → 0 Cannot be used for L(LC) < 10.		
	LKZ	Full length tolerance change +0.4 → +0.01 L + 0.2 → 0 Cannot be used for L(LC) < 16.		
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 (P) are the same as for LC. Full length change + Full length tolerance change L + 0.4 → +0.05 L + 0.2 → 0			

Alteration	Code	A	D R E G	1Code																						
Others	KC	Addition of single key flat Cannot be used for D < 6. Cannot be used for D3~6.	Key flat position change 180° 270° 90° 1° increments	Quotation																						
	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. Cannot be used for D3~6.																								
	KM	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.	<table border="1"> <tr><th>D</th><th>h</th><th>ℓ</th></tr> <tr><td>6</td><td>1</td><td></td></tr> <tr><td>8</td><td></td><td></td></tr> <tr><td>10</td><td>1.5</td><td>5 ≤ ℓ < L</td></tr> <tr><td>13</td><td></td><td>0.1mm increments</td></tr> <tr><td>16</td><td></td><td></td></tr> <tr><td>20</td><td>2</td><td></td></tr> <tr><td>25</td><td></td><td></td></tr> </table>		D	h	ℓ	6	1		8			10	1.5	5 ≤ ℓ < L	13		0.1mm increments	16			20	2		25
D	h	ℓ																								
6	1																									
8																										
10	1.5	5 ≤ ℓ < L																								
13		0.1mm increments																								
16																										
20	2																									
25																										
ANF	Angular angle change 0.6 ≤ ANF ≤ 1.2 0.2° increments d ≤ dmax. d = P + 2((L-B)tan(ANF°)) P - Btan(ANF°) ≥ 0.6 W - Btan(ANF°) ≥ 0.6 Cannot be used for P, W < 1.0. Cannot be used for D=3. Taper 1/50 Angle (one side) 0.573°	<table border="1"> <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				
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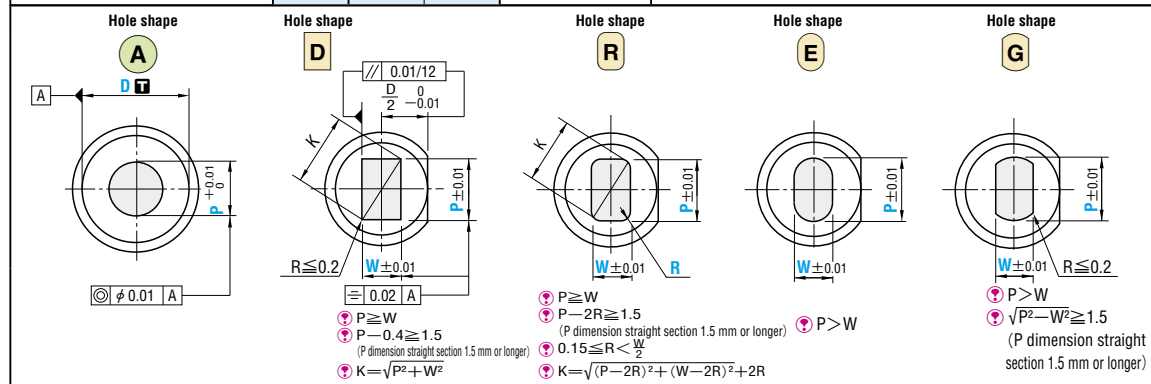
Price Quotation

SCRAP RETENTION ANGULAR BUTTON DIES

— HEADED —



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



D tolerance	Catalog No.	Type	D	L	0.01mm increments				MT (workpiece material thickness)	0.005mm increments C (clearance)	H	T
					A	D R E G	R	R				
D m5	Type	Type	D	L	min.	P max.	P·Kmax.	P·Wmin.	W (R only)	C ≥ 0.010	5	3
					4	5	6	8				

D = (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 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 (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.: $W > WC \geq P \cdot Wmin. \geq 1.00$ 0.01 mm increments			
		max.: $P < WC \leq P \cdot Kmax. + 0.2$ 0.01 mm increments			
	BC	Shaped hole depth change $1.00 \sim 1.99$ 3 $2.00 \sim$ 4 $1 \leq BC \leq Bmax.$ 0.1 mm increments	Shaped hole depth change $1 \leq BC \leq 2$ 0.1 mm increments		
		PKC	Shaped hole diameter tolerance change $P + 0.01 \rightarrow +0.005$ 0	Shaped hole diameter tolerance change $P - W \pm 0.01 \rightarrow +0.01$ 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 $+0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$	Cannot be used for L(LC) < 10.		
	LKZ	Full length tolerance change $+0.4 \rightarrow +0.01$ $+0.2 \rightarrow 0$	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 $+0.3 \rightarrow +0.02$ 0	LKC Full length tolerance change $+0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$		
	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 $+0.3 \rightarrow 0$ $0 \rightarrow -0.02$		LKC Full length tolerance change $+0.4 \rightarrow +0.05$ $+0.2 \rightarrow 0$			
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 + 0.01 mm increments	LC Full length change + 0.01 mm increments	LKC Full length tolerance change + 0.01 mm increments		
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	LC Full length change + 0.01 mm increments	LKC Full length tolerance change + 0.01 mm increments		

P Price **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 180° 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		Double key flats at 0° and a selected angle 1° increments																			
		TKC	Head thickness tolerance change $+0.3 \rightarrow +0.02$ 0	Cannot be used for L(LC) < 16.																			
TKM	Head thickness tolerance change $+0.3 \rightarrow 0$ $0 \rightarrow -0.02$		Cannot be used for L(LC) < 16.																				
	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 $d \leq dmax.$ $d = P + 2(L - d) \tan(ANF)$ $P - B \tan(ANF) \geq 0.6$ $W - B \tan(ANF) \geq 0.6$ Cannot be used with P, W < 1.0.		<table border="1"> <thead> <tr> <th>D</th> <th>d max.</th> </tr> </thead> <tbody> <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> </tbody> </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																						

Quotation

BUTTON DIES

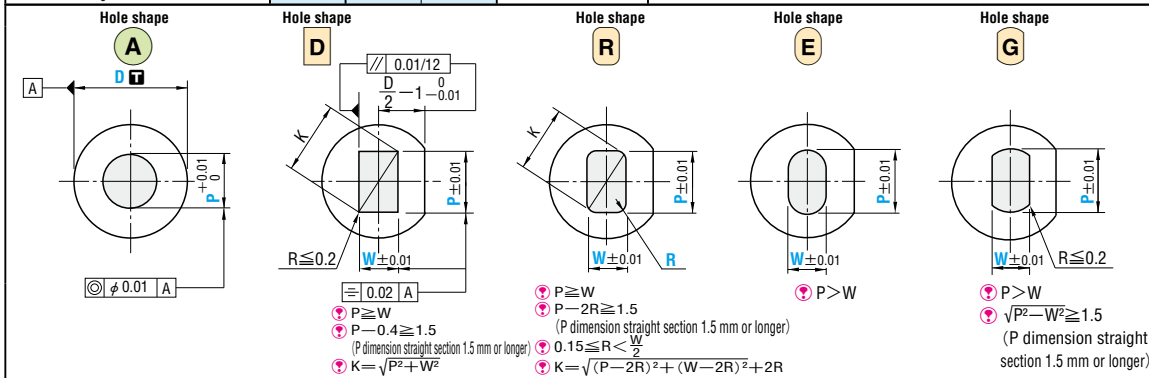
SCRAP RETENTION ANGULAR BUTTON DIES

— STRAIGHT —



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.
	Dn5	M	D4~5	SR-ASD	
			D6~25	SR-ASD	
			D8~25	SR-ASD	
			D4~25	SR-PASD	
			D8~25	SR-PASD	
			D4~5	SRA-ASD	
D+0.005/0	H	D4~5	SRA-ASD		
		D6~16	SRA-ASD		
		D8~16	SRA-ASD		
		D4~16	SRA-PASD		
		D8~16	SRA-PASD		
		D4~16	SRA-PASD		

For shank diameter tolerance D tolerance, select either n5 or +0.005/0.



D tolerance	Catalog No.	Type	D	L	0.01mm increments				MT (workpiece material thickness)	C (clearance)
					A min. . P max.	D R E G P-Kmax. P-Wmin.	R	R		
D n5	(Dn5) (D+0.005/0) (Equivalent to SKH51)	A SR-ASD SRA-ASD	(4)	8 13 16 20 22 25 30	1.00~ 1.50	—	—	—	—	C ≥ 0.010
+0.013 / +0.008	(Dn5) (D+0.005/0) (Equivalent to SKD11)	A SR-ASD SRA-ASD	(6)	16 20 22 25 30 35	1.00~ 3.00	—	—	—	C ≥ 0.010	
										(Powdered high-speed steel)
+0.016 / +0.010	(Dn5) (D+0.005/0) (Equivalent to SKD11)	D SR-ASDD SRA-ASDD	8	16 20 22 25 30 35	1.00~ 4.00	4.00	1.00	—	C ≥ 0.010	
										(Powdered high-speed steel)
+0.020 / +0.012	(Dn5) (D+0.005/0) (Equivalent to SKD11)	R SR-ASDR SRA-ASDR	10	16 20 22 25 30 35	2.00~ 6.00	6.00	1.20	—	C ≥ 0.010	
										(Powdered high-speed steel)
+0.024 / +0.015	(Dn5) (D+0.005/0) (Equivalent to SKD11)	E SR-ASDE SRA-ASDE	13	16 20 22 25 30 35	3.00~ 8.00	8.00	1.50	—	C ≥ 0.010	
										(Powdered high-speed steel)
+0.024 / +0.015	(Dn5) (D+0.005/0) (Equivalent to SKD11)	G SR-ASDG SRA-ASDG	(20)	16 20 22 25 30 35	7.00~ 12.00	12.00	3.00	—	C ≥ 0.010	
										(Powdered high-speed steel)

(D) = (4), (5), and (6) 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 Dn5 only.
 (A) 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


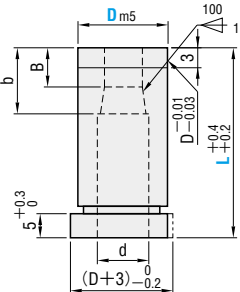
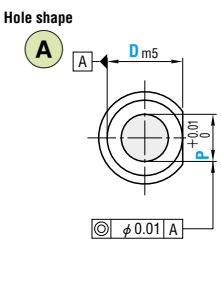
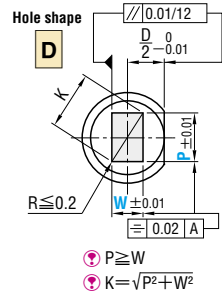
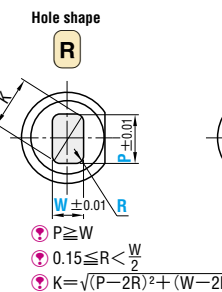
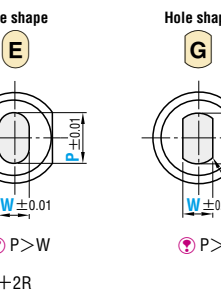
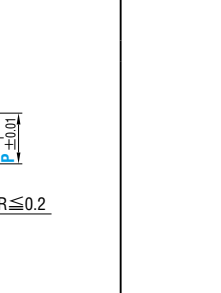

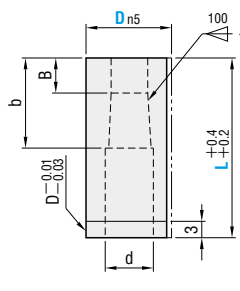
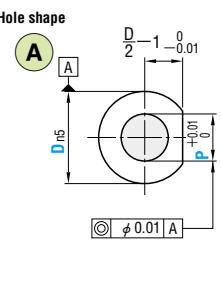
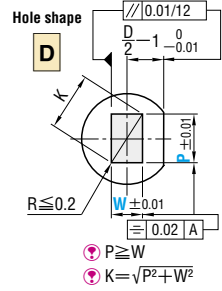
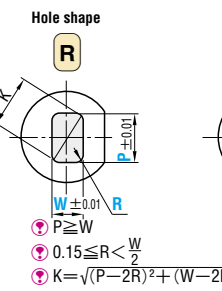
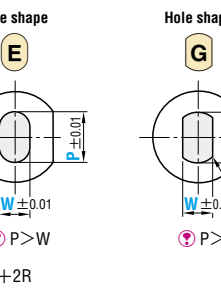
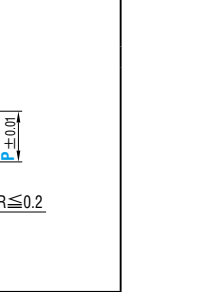
Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: $\frac{P}{W} < \frac{PC}{WC} \leq \frac{P-Wmin.}{2} \geq 1.00$ 0.01 mm increments		
		max.: $\frac{P}{W} < \frac{PC}{WC} \leq P \cdot Kmax. + 0.2$ 0.01 mm increments		
	BC	Shaped hole depth change $\frac{P}{1.00 \sim 1.99} \sim \frac{Bmax.}{2.00 \sim 4}$ $1 \leq BC \leq Bmax.$ 0.1 mm increments	Shaped hole depth change $1 \leq BC \leq 2$ 0.1 mm increments	
Alterations to full length	PKC	Shaped hole diameter tolerance change $P \pm 0.01 \rightarrow +0.005/0$	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01/0$	
	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 LKZ	Full length tolerance change $L + 0.4 \rightarrow +0.05/0$ Full length tolerance change $L + 0.4 \rightarrow +0.01/0$		
Alterations to full length	SLC	Full length change + Full length tolerance change $L + 0.4 \rightarrow +0.05/0$		
		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.		

Alteration	Code	A	D R E G	1Code
Others	KC	Addition of single key flat Cannot be used for D4~6.	Key flat position change 180° increments	
	WKC	Addition of double key flats in parallel Cannot be used for L (LC) < 16. Cannot be used for D4~6.		
	KM	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	ANF	Angular angle change $0.6 \leq ANF \leq 1.2$ 0.2° increments $d \leq dmax.$ $d = P + 2((L-B) \tan(ANF))$ $P - B \tan(ANF) \geq 0.6$ $W - B \tan(ANF) \geq 0.6$ Cannot be used for P, W < 1.0.		

Price **Quotation**

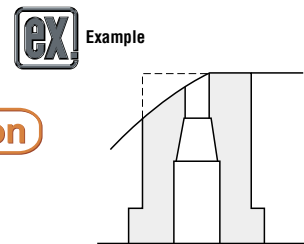
BUTTON DIES

BUTTON DIES, DEEP HOLE TYPE

<p>—Headed type—</p>  <p>RoHS</p>	<p>Equivalent to SKD11 60~63HRC</p>	<p>D dimension</p> <p>D10~56</p>	<p>Catalog No.</p> <p> A MHDS D HDDS R HDRS E HDES G HDGS </p>		<p>Hole shape</p> <p>A</p>  <p> $\phi 0.01$ A $P \geq W$ $K = \sqrt{P^2 + W^2}$ </p>	<p>Hole shape</p> <p>D</p>  <p> $P \geq W$ $K = \sqrt{P^2 + W^2}$ </p>	<p>Hole shape</p> <p>R</p>  <p> $P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$ </p>	<p>Hole shape</p> <p>E</p>  <p> $P > W$ </p>	<p>Hole shape</p> <p>G</p>  <p> $P > W$ </p>
<p>—Straight type—</p>  <p>RoHS</p>	<p>Equivalent to SKD11 60~63HRC</p>	<p>D dimension</p> <p>D10~56</p>	<p>Catalog No.</p> <p> A MSDS D SDDS R SDRS E SDES G SDGS </p>		<p>Hole shape</p> <p>A</p>  <p> $\phi 0.01$ A $P \geq W$ $K = \sqrt{P^2 + W^2}$ </p>	<p>Hole shape</p> <p>D</p>  <p> $P \geq W$ $K = \sqrt{P^2 + W^2}$ </p>	<p>Hole shape</p> <p>R</p>  <p> $P \geq W$ $0.15 \leq R < \frac{W}{2}$ $K = \sqrt{(P-2R)^2 + (W-2R)^2} + 2R$ </p>	<p>Hole shape</p> <p>E</p>  <p> $P > W$ </p>	<p>Hole shape</p> <p>G</p>  <p> $P > W$ </p>

D tolerance	Catalog No.		L	0.01mm increments				B	b	d
	Type	D		A	D R E G	R				
D _{m5}	10	Headed type	10	2.00~6.00	6.00	1.20	0.15 ≤ R < W/2 (R only)	6	10	6.4
	13		13	3.00~8.00	8.00	1.50		8.4		
	16		16	5.00~10.00	10.00	2.00		10.6		
	20		20	7.00~12.00	12.00	3.00		12.6		
	25		25	10.00~16.00	16.00	3.00		16.6		
	32		32	15.00~20.00	20.00	4.00		20.6		
	38		38	19.00~26.00	26.00	5.00		26.6		
	45		45	25.00~35.00	35.00	6.00		36.0		
	50		50	33.00~40.00	40.00	7.00		41.0		
	56		56	38.00~45.00	45.00	8.00		46.0		
D _{n5}	10	Straight type	10	2.00~6.00	6.00	1.20	0.15 ≤ R < W/2 (R only)	6	10	6.4
	13		13	3.00~8.00	8.00	1.50		8.4		
	16		16	5.00~10.00	10.00	2.00		10.6		
	20		20	7.00~12.00	12.00	3.00		12.6		
	25		25	10.00~16.00	16.00	3.00		16.6		
	32		32	15.00~20.00	20.00	4.00		20.6		
	38		38	19.00~26.00	26.00	5.00		26.6		
	45		45	25.00~35.00	35.00	6.00		36.0		
	50		50	33.00~40.00	40.00	7.00		41.0		
	56		56	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



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.: $P > PC$ $W \geq WC$ $P \cdot W_{min.} \geq 1.00$ 0.01 mm increments For A only, if PC is 1.00 ~ 1.99, then b=4. max.: $P < PC$ $W < WC$ $P \cdot W_{max.} + 0.2$ 0.01 mm increments		
		Shaped hole depth change $1 \leq BC \leq b$ 0.1 mm increments		
	PKC	Shaped hole diameter tolerance change $P \pm 0.01$ Shaped hole diameter tolerance change $P \cdot W \pm 0.01$		
Alterations to full length	LC	Full length change $10 \leq L - (b-1) \leq LC < L$ 0.1 mm increments Dimension b and press-in lead are shortened by (L-LC).		Quotation
		Full length change $10 \leq LC < L$ 0.1 mm increments Dimension b and press-in lead are shortened by (L-LC).		
	LKC LKZ	Full length tolerance change $L \pm 0.4$ Full length tolerance change $L \pm 0.4$		
	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 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		Quotation
		Key flat position change 1° increments		
	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 < 16 or D > 25. Cannot be used for straight types.		
Others	NKC	No key flat Can be used for straight types only.		
	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 $T \pm 0.3$ Head thickness tolerance change $T \pm 0.3$		
	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

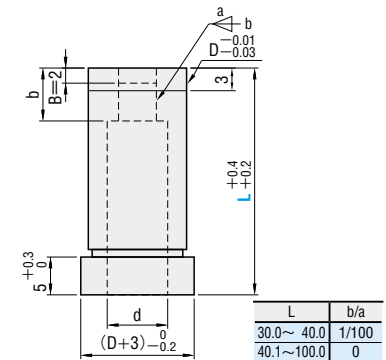
BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE

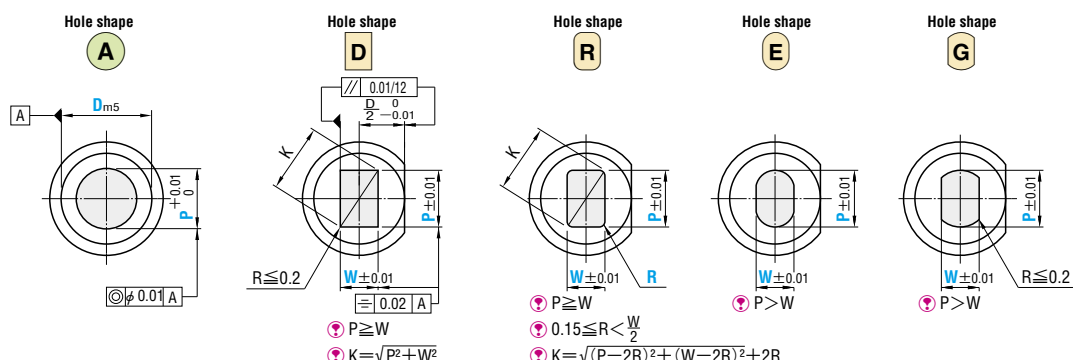
—Headed type—




RoHS

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



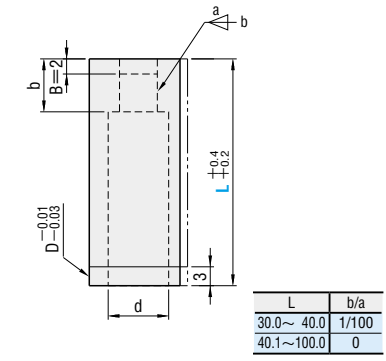


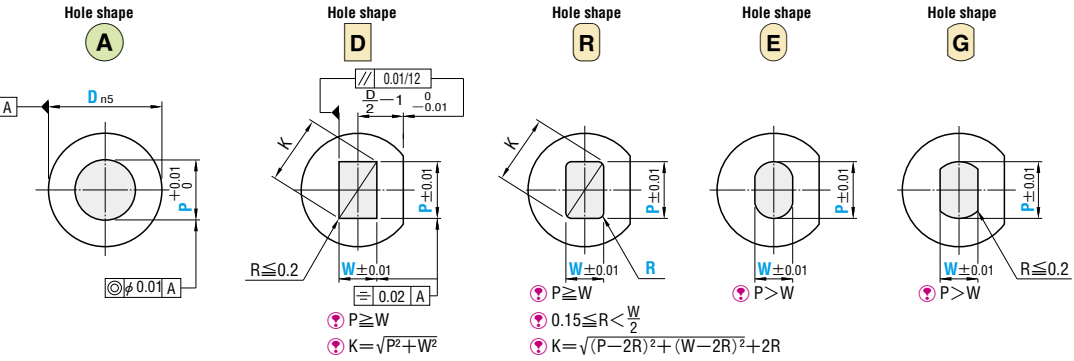
—Straight type—



RoHS

M	H	D dimension	Catalog No.
Equivalent to SKD11 60~63HRC	D6~56	A	S—MSD
		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





D tolerance		Catalog No.		0.1 mm increments		0.01mm increments				b	d	
D	m5	n5	Type	D	L	A	D	R	E			G
6	+0.009 +0.004	+0.013 +0.008	Headed type (Dm5) Straight type (Dns)	A S—MHD D S—HDD R S—HDR E S—HDE G S—HDG	S—MSD S—SDD S—SDR S—SDE S—SDG	30.0~40.0	1.00~3.00	3.00	1.00	0.15 ≤ R < W/2 (R only)	3	3.4
8	+0.012	+0.016					1.00~4.00	4.00	1.00		4	4.4
10	+0.006	+0.010					2.00~6.00	6.00	1.20		6	6.4
13	+0.015	+0.020					3.00~8.00	8.00	1.50		8	8.4
16	+0.007	+0.012					5.00~10.00	10.00	2.00		10	10.6
20	+0.017	+0.024					7.00~12.00	12.00	3.00		12	12.6
25	+0.008	+0.015					10.00~16.00	16.00	3.00		16	16.6
32	+0.020	+0.028					15.00~20.00	20.00	4.00		20	20.6
38	+0.009	+0.017					19.00~26.00	26.00	5.00		25	25.6
45	+0.009	+0.017					25.00~35.00	35.00	6.00		30	30.6
50			33.00~40.00	40.00	7.00	35	35.6					
56	+0.024 +0.011	+0.033 +0.020	38.00~45.00	45.00	8.00	40	40.6					
10	+0.012 +0.006	+0.016 +0.010	Headed type (Dm5) Straight type (Dns)	A S—MHDS D S—HDDS R S—HDRS E S—HDES G S—HDGS	S—MSDS S—SDDS S—SDRS S—SDES S—SDGS	40.1~80.0 (40.01)	2.00~6.00	6.00	1.20	0.15 ≤ R < W/2 (R only)	6	6.4
13	+0.015	+0.020					3.00~8.00	8.00	1.50		8	8.4
16	+0.007	+0.012					5.00~10.00	10.00	2.00		10	10.6
20	+0.017	+0.024					7.00~12.00	12.00	3.00		12	12.6
25	+0.008	+0.015					10.00~16.00	16.00	3.00		16	16.6
32							15.00~20.00	20.00	4.00		20	20.6
38	+0.020	+0.028					19.00~26.00	26.00	5.00		25	25.6
45	+0.009	+0.017					25.00~35.00	35.00	6.00		30	30.6
50							33.00~40.00	40.00	7.00		35	35.6
56	+0.024 +0.011	+0.033 +0.020					38.00~45.00	45.00	8.00		40	40.6

Ⓜ 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.
 Ⓜ 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**

Alteration	Code	A	D	R	E	G	1Code	
Alterations to shaped hole	PC WC	Shaped hole diameter change min.: P > PC ≥ Pmin. ≥ 0.50 0.01 mm increments Ⓜ If PC is 1.00~1.99, then b=4. max.: W < PC ≤ P·Kmax. + 0.2 0.01 mm increments	Shaped hole diameter change min.: P > PC ≥ P·Wmin. ≥ 1.00 0.01 mm increments				Quotation	
		Shaped hole depth change 1 ≤ BC ≤ b 0.1 mm increments Ⓜ Cannot be used for L > 40.	Ⓜ Cannot be used for P < 1.00.					
	Full length	LKC LKZ	Shaped hole diameter tolerance change P + 0.01 ⇨ +0.005 0 ⇨ 0 Ⓜ Cannot be used for P < 1.00.	Shaped hole diameter tolerance change P·W ± 0.01 ⇨ +0.01 0 ⇨ 0				Quotation
			Full length tolerance change L + 0.4 ⇨ +0.05 L + 0.2 ⇨ 0	Ⓜ If combined with LKC, L dimension can be selected in 0.01 mm increments. Ⓜ 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 180° 0° position change 1° increments	Key flat 270° 0° position change 1° increments				Quotation	
		Addition of single key flat 180° 0° position change 1° increments	Key flat 270° 0° position change 1° increments					

Alteration	Code	A	D	R	E	G	1Code	
Alterations to head	WKC KFC	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.	Double key flats at 0° and a selected angle 1° increments	Double key flats at 0° and a selected angle 1° increments			Quotation	
		Head diameter change D ≤ HC < (D+3) 0.1 mm increments	Ⓜ Cannot be combined with KC-WKC. Ⓜ Cannot be used for L < 16 or D > 25.	Ⓜ Cannot be combined with KC-WKC. Ⓜ Cannot be used for L < 16 or D > 25.				
	Full length	TC TKC TKM	Head thickness change 2 ≤ TC < 5 0.1 mm increments (If combined with TKC·TKM, 0.01 mm increments can be selected.) Ⓜ The full length remains as specified.	Head thickness tolerance change T + 0.3 ⇨ +0.02 0 ⇨ -0.02	Head thickness tolerance change T + 0.3 ⇨ +0.02 0 ⇨ -0.02			Quotation
			Head thickness tolerance change T + 0.3 ⇨ +0.02 0 ⇨ -0.02	Head thickness tolerance change T + 0.3 ⇨ +0.02 0 ⇨ -0.02				
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.						

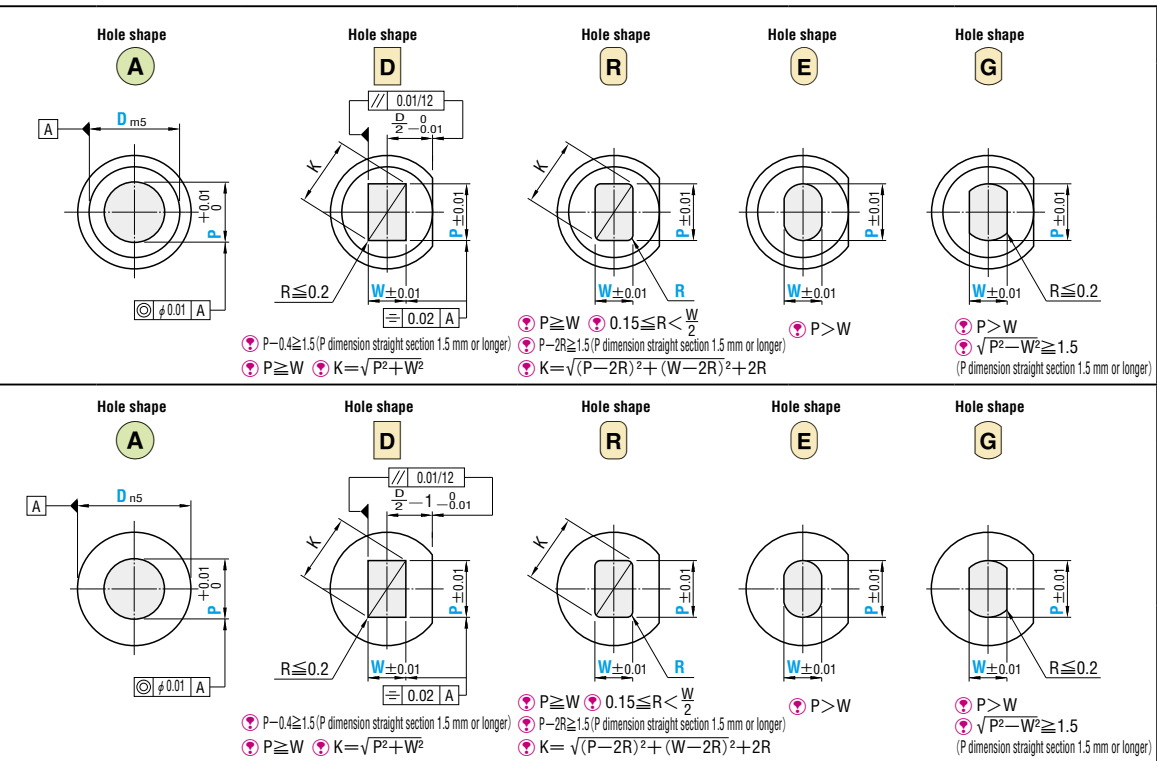
BUTTON DIES

SCRAP RETENTION BUTTON DIES, CONFIGURABLE FULL LENGTH TYPE



—Headed type—		RoHS	M H	D	Catalog No.							
				D6~56	A SRS—MHD D SRS—HDD R SRS—HDR E SRS—HDE G SRS—HDG							
Equivalent to SKD11 60~63 HRC				D10~56	A SRS—MHDS D SRS—HDDS R SRS—HDRS E SRS—HDES G SRS—HDGS	<table border="1"> <tr><td>L</td><td>b/a</td></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
L	b/a											
30.0~40.0	1/100											
40.1~100.0	0											

—Straight type—		RoHS	M H	D	Catalog No.							
				D6~56	A SRS—MSD D SRS—SDD R SRS—SDR E SRS—SDE G SRS—SDG							
Equivalent to SKD11 60~63 HRC				D8~56	A SRS—MSDS D SRS—SDDS R SRS—SDRS E SRS—SDES G SRS—SDGS	<table border="1"> <tr><td>L</td><td>b/a</td></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
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					0.005mm increments C (clearance)	b	d
D	m5 n5	Type	D		A	D R E G	R	MT (workpiece material thickness)				
6	+0.009 +0.013 -0.004 -0.008	Headed type (Dms) Straight type (Dns)	(6)	1.00~3.00 3.00 1.00					3	3.4		
8	+0.012 +0.016 -0.006 -0.010	A SRS—MHD SRS—MSD D SRS—HDD SRS—SDD R SRS—HDR SRS—SDR E SRS—HDE SRS—SDE G SRS—HDG SRS—SDG	8	1.00~4.00 4.00 1.00					4	4.4		
10			10	2.00~6.00 6.00 1.20					6	6.4		
13	+0.015 +0.020 -0.007 -0.012		13	3.00~8.00 8.00 1.50					8	8.4		
16			16	5.00~10.00 10.00 2.00					10.6	10.6		
20	+0.017 +0.024 -0.008 -0.015		20	7.00~12.00 12.00 3.00					12.6	12.6		
25			25	10.00~16.00 16.00 3.00					16.6	16.6		
32			32	15.00~20.00 20.00 4.00					20.6	20.6		
38	+0.020 +0.028 -0.009 -0.017		38	19.00~26.00 26.00 5.00					26.6	26.6		
45			45	25.00~35.00 35.00 6.00					36.0	36.0		
50			50	33.00~40.00 40.00 7.00					41.0	41.0		
56	+0.024 +0.033 -0.011 -0.020		56	38.00~45.00 45.00 8.00					46.0	46.0		
10	+0.018 +0.018 -0.006 -0.010		Headed type (Dms) Straight type (Dns)	10	2.00~6.00 6.00 1.20				6	6.4		
13	+0.015 +0.020 -0.007 -0.012		A SRS—MHDS SRS—MSDS D SRS—HDDS SRS—SDDS R SRS—HDRS SRS—SDRS E SRS—HDES SRS—SDES G SRS—HDGS SRS—SDGS	13	3.00~8.00 8.00 1.50					8	8.4	
16				16	5.00~10.00 10.00 2.00					10.6	10.6	
20	+0.017 +0.024 -0.008 -0.015			20	7.00~12.00 12.00 3.00					12.6	12.6	
25				25	10.00~16.00 16.00 3.00					16.6	16.6	
32		32		15.00~20.00 20.00 4.00					20.6	20.6		
38	+0.020 +0.028 -0.009 -0.017	38		19.00~26.00 26.00 5.00					26.6	26.6		
45		45		25.00~35.00 35.00 6.00					36.0	36.0		
50		50		33.00~40.00 40.00 7.00					41.0	41.0		
56	+0.024 +0.033 -0.011 -0.020	56		38.00~45.00 45.00 8.00					46.0	46.0		

(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).
 (L) (40.01) → When LKC·LKZ is selected, select an L dimension of 40.01 or larger.
 Effective depth of scrap retention grooves (table below). Perform shaped hole regrinding within the range of (Groove effective depth—1 mm).
 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
	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

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change min. $P \geq \frac{PC}{W} \geq \frac{P \cdot W_{min}}{2} \geq 1.00$ 0.01mm increments For (A) only, if PC is 1.00~1.99, b=4. max. $P \cdot W_{WC} \leq P \cdot K_{max} + 0.2$ 0.01mm increments		
	WC	Shaped hole depth change $1 \leq BC < 2$ 0.1 mm increments Cannot be used for L>40.		
	BC	Shaped hole diameter tolerance change $P \cdot W \pm 0.01 \rightarrow \pm 0.01$ $P \cdot W \pm 0.005 \rightarrow \pm 0.005$ 0.01mm increments		
Full length	LKC	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.05$ 0.01mm increments		
	LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.01$ 0.01mm increments		
Head	KC	Addition of single key flat to head Key flat position change 1° increments		
		Addition of single key flat Key flat position change 1° increments		
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.		
	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, 0.01mm increments can be selected). Full length remains as specified.		
	TKC	Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ $T \pm 0.3 \rightarrow 0$		
Others	SKC	Can be used for headed types only. Head thickness is machined to a tolerance of -0.04~0 relative to the retainer surface.		
		Single key flat on shank Can be used for D≥8. Cannot be combined with KC·WKC·KFC. Cannot be used for straight types.		

BUTTON DIES, CONFIGURABLE SIZE

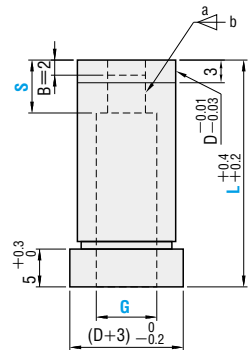
—CONFIGURABLE FULL LENGTH, HOLE DEPTH, AND RELIEF HOLE TYPE—

—Headed type—

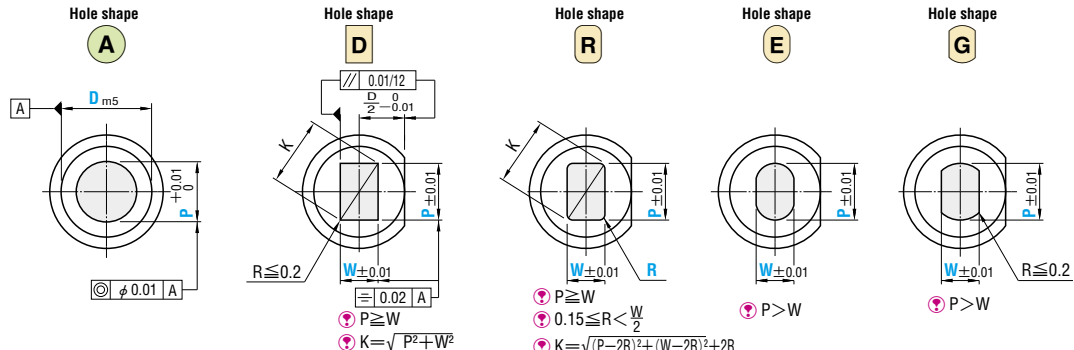


RoHS


M	H	D dimension	Catalog No.
Equivalent to SKD11 60~63HRC	D6~56	A	FMHD
		D	FHDD
		R	FHDR
	D8~56	E	FHDE
		G	FHDG
		D10~56	A
D	FHDDS		
R	FHDRS		
E	FHDES		
G	FHDGS		



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

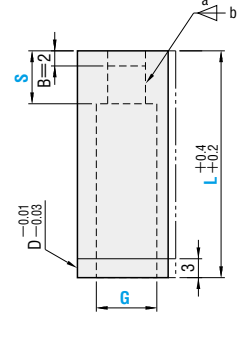


—Straight type—

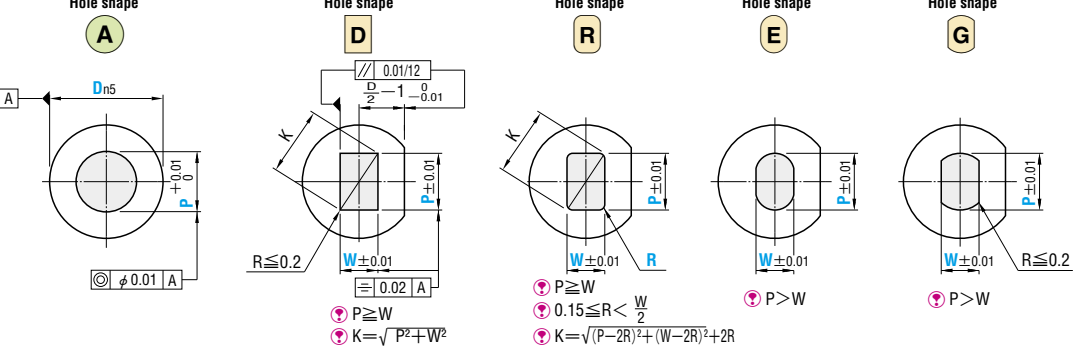


RoHS

M	H	D dimension	Catalog No.
Equivalent to SKD11 60~63HRC	D6~56	A	FMSD
		D	FSDD
		R	FSDR
	D8~56	E	FSDE
		G	FSDG
		D10~56	A
D	FSDDS		
R	FSDRS		
E	FSDES		
G	FSDGS		



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



D tolerance			Catalog No.		L		0.01mm increments					1mm increments		G	
D	m5	n5	Type	D	0.1mm increments	A	D	R	E	G	R	S	L	G	
						min. P max.	P·Kmax.	P·Wmin.					⊙ L<40.0	⊙ G≥P·K+0.4	
6	+0.009	+0.013	Headed type (Dm5) Straight type (Dns)	8	16.0~40.0	0.50~3.20	—	—	—	—	—	3~4	3.0~3.6	0.2mm increments	
8	+0.012	+0.016		10		1.00~4.40	4.40	1.00	—	—	—	—	3~6		3.0~4.8
10	+0.006	+0.010		13		1.50~8.50	8.50	1.00	—	—	—	—	—		3.0~6.8
13	+0.015	+0.020		16		2.50~10.50	10.50	1.00	—	—	—	—	—		3.0~11.0
16	+0.007	+0.012		20		3.50~12.50	12.50	1.50	—	—	—	—	—		4.0~13.0
20	+0.017	+0.024		25		5.00~16.50	16.50	1.50	—	—	—	—	—		5.5~17.0
25	+0.008	+0.015	32	7.50~21.00	21.00	2.00	—	—	—	—	—	8.0~21.5	0.5mm increments		
32	+0.020	+0.028	38	9.50~27.00	27.00	2.50	—	—	—	—	—	9.5~27.5			
38	+0.017	+0.024	45	12.50~36.00	36.00	3.00	—	—	—	—	—	13.0~36.5			
45	+0.009	+0.017	50	16.50~41.00	41.00	3.50	—	—	—	—	—	17.0~41.5			
50	+0.024	+0.033	56	19.00~46.00	46.00	4.00	—	—	—	—	—	19.5~46.5			
56	+0.011	+0.020	10	40.1~80.0 (40.01)	1.00~6.00	6.00	1.00	—	—	—	—	3~10		5.0~6.5	0.5mm increments
10	+0.012	+0.016	13		1.50~8.50	8.50	1.00	—	—	—	—	—	5.0~9.0		
13	+0.015	+0.020	16		2.50~10.50	10.50	1.00	—	—	—	—	—	5.0~11.0		
16	+0.007	+0.012	20		3.50~12.50	12.50	1.50	—	—	—	—	—	5.0~13.0		
20	+0.017	+0.024	25		5.00~16.50	16.50	1.50	—	—	—	—	—	6.0~17.0		
25	+0.008	+0.015	32		7.50~21.00	21.00	2.00	—	—	—	—	—	9.0~21.5		
32	+0.020	+0.028	38	9.50~27.00	27.00	2.50	—	—	—	—	—	11.0~27.5	0.5mm increments		
38	+0.017	+0.024	45	12.50~36.00	36.00	3.00	—	—	—	—	—	14.0~36.5			
45	+0.009	+0.017	50	16.50~41.00	41.00	3.50	—	—	—	—	—	18.0~41.5			
50	+0.024	+0.033	56	19.00~46.00	46.00	4.00	—	—	—	—	—	20.0~46.5			
56	+0.011	+0.020													

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

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
		min.	max.	min.	max.	
Alterations to shaped hole	BC	Shaped hole depth change 1≤BC≤S 0.1mm increments ⊙ Cannot be used for L>40. ⊙ Cannot be used for P<1.00.				
	PKC	Shaped hole diameter tolerance change P+0.01 → +0.005 0 → 0 ⊙ Cannot be used for P<1.00.		Shaped hole diameter tolerance change P-W±0.01 → +0.01 0 → 0		
Full length	LKC	Full length tolerance change L+0.4 → +0.05 +0.2 → 0		⊙ If combined with LKC, L dimension can be selected in 0.01mm increments.		Quotation
	LKZ	Full length tolerance change L+0.4 → +0.01 +0.2 → 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		180° Key flat position 0° change 1° increments		Quotation
		Addition of single key flat		180° Key flat position 0° change 1° increments		
	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.			
	Double key flats at 0° and a selected angle		180° Double key flats at 0° and a selected angle 1° increments			
Others	SKC	Single key flat on shank		⊙ Can be used for headed types only. ⊙ Can be used for D≥8. Can be used for L≥20. ⊙ Cannot be combined with KC-WKC-KFC. ⊙ Cannot be used for straight types.		

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**

SCRAP RETENTION BUTTON DIES, CONFIGURABLE SIZE

— CONFIGURABLE FULL LENGTH, HOLE DEPTH, AND RELIEF HOLE TYPE —



— Headed type —		RoHS	M	D dimension	Catalog No.																			
	Equivalent to SKD11 60~63HRC	<table border="1"> <tr><td>D6~56</td><td>A SR-FMHD</td></tr> <tr><td>D</td><td>SR-FHDD</td></tr> <tr><td>R</td><td>SR-FHDR</td></tr> <tr><td>E</td><td>SR-FHDE</td></tr> <tr><td>G</td><td>SR-FHDG</td></tr> <tr><td>D10~56</td><td>A SR-FMHDS</td></tr> <tr><td>D</td><td>SR-FHDDS</td></tr> <tr><td>R</td><td>SR-FHDRS</td></tr> <tr><td>E</td><td>SR-FHDES</td></tr> <tr><td>G</td><td>SR-FHDGS</td></tr> </table>	D6~56	A SR-FMHD	D		SR-FHDD	R	SR-FHDR	E	SR-FHDE	G	SR-FHDG	D10~56	A SR-FMHDS	D	SR-FHDDS	R	SR-FHDRS	E	SR-FHDES	G	SR-FHDGS	D6~56
			D6~56	A SR-FMHD																				
			D	SR-FHDD																				
			R	SR-FHDR																				
			E	SR-FHDE																				
			G	SR-FHDG																				
			D10~56	A SR-FMHDS																				
			D	SR-FHDDS																				
			R	SR-FHDRS																				
E	SR-FHDES																							
G	SR-FHDGS																							
D8~56	D SR-FHDD																							
R SR-FHDR																								
E SR-FHDE																								
G SR-FHDG																								
D10~56	A SR-FMHDS																							
D SR-FHDDS																								
R SR-FHDRS																								
E SR-FHDES																								
G SR-FHDGS																								
— Straight type —		RoHS	M <th>D dimension</th> <th>Catalog No.</th> <th rowspan="2"> </th>	D dimension	Catalog No.																			
	Equivalent to SKD11 60~63HRC	<table border="1"> <tr><td>D6~56</td><td>A SR-FMSD</td></tr> <tr><td>D</td><td>SR-FSDD</td></tr> <tr><td>R</td><td>SR-FSDR</td></tr> <tr><td>E</td><td>SR-FSDE</td></tr> <tr><td>G</td><td>SR-FSDG</td></tr> <tr><td>D10~56</td><td>A SR-FMSDS</td></tr> <tr><td>D</td><td>SR-FSDDS</td></tr> <tr><td>R</td><td>SR-FSDRS</td></tr> <tr><td>E</td><td>SR-FSDES</td></tr> <tr><td>G</td><td>SR-FSDGS</td></tr> </table>	D6~56	A SR-FMSD	D		SR-FSDD	R	SR-FSDR	E	SR-FSDE	G	SR-FSDG	D10~56	A SR-FMSDS	D	SR-FSDDS	R	SR-FSDRS	E	SR-FSDES	G	SR-FSDGS	D6~56
			D6~56	A SR-FMSD																				
			D	SR-FSDD																				
			R	SR-FSDR																				
			E	SR-FSDE																				
			G	SR-FSDG																				
			D10~56	A SR-FMSDS																				
			D	SR-FSDDS																				
			R	SR-FSDRS																				
E	SR-FSDES																							
G	SR-FSDGS																							
D8~56	D SR-FSDD																							
R SR-FSDR																								
E SR-FSDE																								
G SR-FSDG																								
D10~56	A SR-FMSDS																							
D SR-FSDDS																								
R SR-FSDRS																								
E SR-FSDES																								
G SR-FSDGS																								

D tolerance		Catalog No.		L	0.01mm increments				1mm increments	G		0.01mm increments	0.005mm increments
D	m5	n5	Type		D	A	D	R	E	G	S	MT	C
6	+0.009	+0.013	Headed type Straight type (Dm5)	(6)	1.00~3.20	—	—	—	—	3~4	3.0~3.6	0.2mm increments	C ≥ 0.010
8	+0.012	+0.016			1.00~4.40	4.40	1.00	—	—	—	3~4		
10	+0.006	+0.010	A SR-FMHD SR-FMSD	10	1.00~6.40	6.40	1.00	—	—	3~6	3.0~6.8	0.5mm increments	MT ≥ 0.15
13	+0.015	+0.020			1.50~8.50	8.50	1.00	—	—	—	3~8		
16	+0.007	+0.012	D SR-FHDD SR-FSDD	16	2.50~10.50	10.50	1.00	—	—	3~6	3.0~11.0	0.5mm increments	Clearance
20	+0.017	+0.024	R SR-FHDR SR-FSDR	20	3.50~12.50	12.50	1.50	—	—	3~8	4.0~13.0		
25	+0.008	+0.015	E SR-FHDE SR-FSDE	25	5.00~16.50	16.50	1.50	—	—	3~8	5.5~17.0	0.5mm increments	Clearance
32	+0.017	+0.024	G SR-FHDG SR-FSDG	32	7.50~21.00	21.00	2.00	—	—	3~8	8.0~21.5		
38	+0.020	+0.028	Headed type Straight type (Dm5)	40.1~80.0 (40.01)	9.50~27.00	27.00	2.50	—	—	3~10	5.0~9.0	0.5mm increments	Clearance
45	+0.009	+0.017			12.50~36.00	36.00	3.00	—	—	—	3~10		
50	+0.024	+0.033	A SR-FMHDS SR-FMSDS	50	16.50~41.00	41.00	3.50	—	—	3~10	5.0~6.5	0.5mm increments	Clearance
56	+0.011	+0.020	D SR-FHDDS SR-FSDDS	56	19.00~46.00	46.00	4.00	—	—	3~10	5.0~9.0		
10	+0.012	+0.016	Headed type Straight type (Dm5)	40.1~100.0 (40.01)	1.50~8.50	8.50	1.00	—	—	3~10	5.0~9.0	0.5mm increments	Clearance
13	+0.015	+0.020			2.50~10.50	10.50	1.00	—	—	—	3~10		
16	+0.007	+0.012	D SR-FHDDS SR-FSDDS	16	3.50~12.50	12.50	1.50	—	—	3~12	5.0~13.0	0.5mm increments	Clearance
20	+0.017	+0.024	R SR-FHDRS SR-FSDRS	20	5.00~16.50	16.50	1.50	—	—	3~12	6.0~17.0		
25	+0.008	+0.015	E SR-FHDES SR-FSDES	25	7.50~21.00	21.00	2.00	—	—	3~15	9.0~21.5	0.5mm increments	Clearance
32	+0.017	+0.024	G SR-FHDGS SR-FSDGS	32	9.50~27.00	27.00	2.50	—	—	3~15	11.5~27.5		
38	+0.020	+0.028	Headed type Straight type (Dm5)	40.1~100.0 (40.01)	12.50~36.00	36.00	3.00	—	—	3~15	14.0~36.5	0.5mm increments	Clearance
45	+0.009	+0.017			16.50~41.00	41.00	3.50	—	—	—	3~15		
50	+0.024	+0.033	A SR-FMHDS SR-FMSDS	50	19.00~46.00	46.00	4.00	—	—	3~20	20.0~46.5	0.5mm increments	Clearance
56	+0.011	+0.020	D SR-FHDDS SR-FSDDS	56	19.00~46.00	46.00	4.00	—	—	3~20	20.0~46.5		

* 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 (40.01) → When LKC-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.

L	L ≤ 40.0	L ≥ 40.1
Effective groove depth	Shaped hole depth B (BC)	3
		5
		6

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**

P Price **Quotation**

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 — MT1.5 — C0.105 — TC4-KC

Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	BC	Shaped hole depth change P 1.00~1.99 3 2.00~3.99 5 4.00~ 6 1 ≤ BC ≤ Bmax. 1 ≤ BC ≤ S 0.1mm increments * Cannot be used for L > 40.	Shaped hole depth change 1 ≤ BC < 2 0.1mm increments * Cannot be used for L > 40.	
	PKC	Shaped hole diameter tolerance change P +0.01 → +0.005	Shaped hole diameter tolerance change P-W ± 0.01 → +0.01	
Alterations to full length	LKC	Full length tolerance change L +0.4 → +0.05 L +0.2 → 0	* If combined with LKC, L dimension can be selected in 0.01 mm increments.	Quotation
	LKZ	Full length tolerance change L +0.4 → +0.01 L +0.2 → 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 * Cannot be used for D6.	Key flat position 270° 0° change 1° increments	Quotation
		Addition of single key flat * Cannot be used for D6.	Key flat position 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.		

Alteration	Code	A	D R E G	1Code
Alterations to head	KFC	270° Double key flats at 0° and a selected angle 1° increments * Cannot be combined with KC-WKC. * Cannot be used for L(LL) < 16 or D > 25. * Cannot be used for straight types.	270° Double key flats at 0° and a selected angle 1° increments * Cannot be combined with KC-WKC. * Cannot be used for L(LL) < 16 or D > 25. * Cannot be used for straight types.	
	HC	Head diameter change D ≤ HC < (D+3) 0.1mm increments		
	TC	Head thickness change 2 ≤ 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 → +0.02 0		
Others	TKM	Head thickness tolerance change T +0.3 → 0 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. * Cannot be used for L < 30.		
	SKC	Single key flat on shank * Can be used for headed types only. * D ≥ 8 Can be used for L ≥ 20. * Cannot be combined with KC-WKC-KFC. * Cannot be used for straight types.		

BUTTON DIES

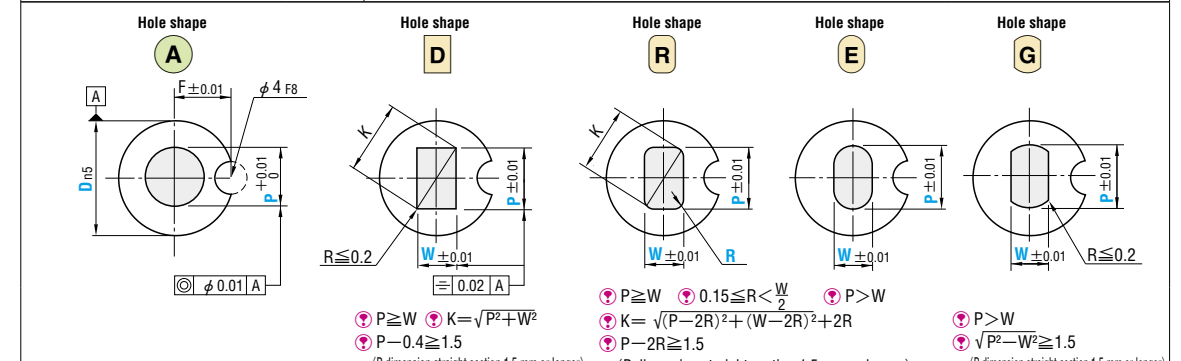
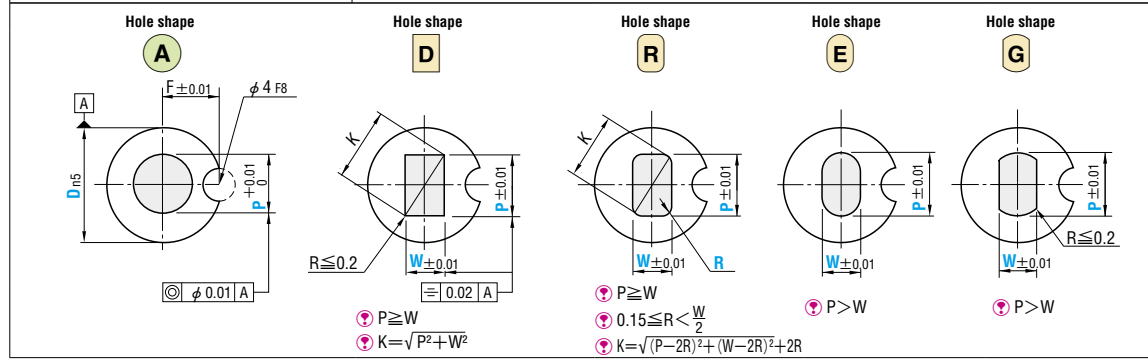
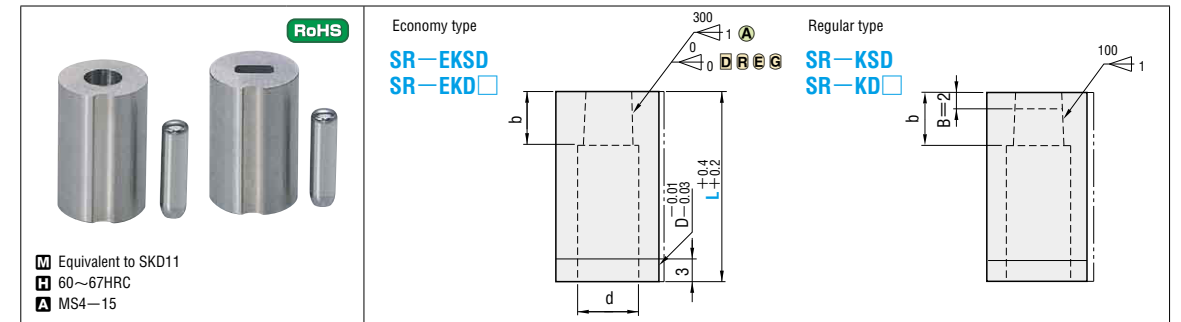
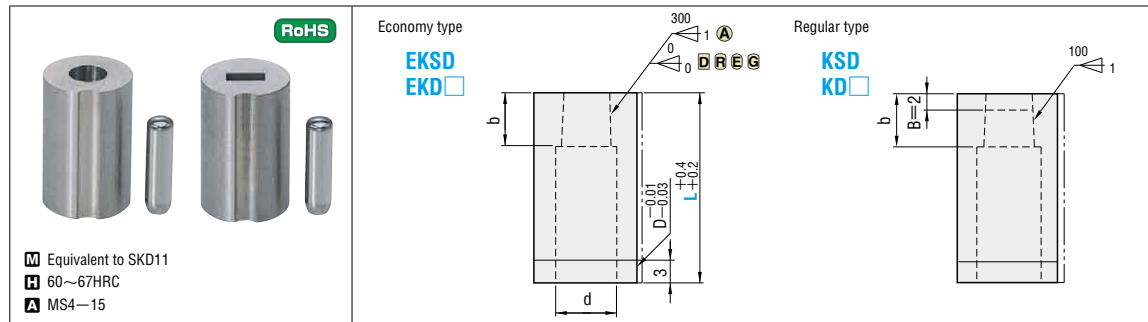
-DOWEL SLOT TYPE-

SCRAP RETENTION BUTTON DIES

-DOWEL SLOT TYPE-

PRODUCTS DATA

P.1619



D _{h5}	Catalog No.		L	0.01mm increments				b	d	F	Base unit price 1~9 pieces									
	Type			min.	P max.	P.Kmax.	P.Wmin.				R	EKSD	KSD	EKD	KD					
	Economy type	Regular type																		
10	A	EKSD	10	16	20	22	25	28	30	32	35	2.00	~	6.00	1.20					
13	A	KSD	13	16	20	22	25	28	30	32	35	3.00	~	8.00	1.50					
16	D	EKDD	16	20	22	25	28	30	32	35	5.00	~	10.00	2.00						
20	D	KDD	20	16	20	22	25	28	30	32	35	7.00	~	12.00	3.00					
22	R	EKDR	22	16	20	22	25	28	30	32	35	8.00	~	14.00	3.00					
25	R	KDR	25	16	20	22	25	28	30	32	35	10.00	~	16.00	3.00					
32	R	EKDR	32	16	20	22	25	28	30	32	35	15.00	~	20.00	4.00					
38	E	EKDE	38	16	20	22	25	30	35			19.00	~	26.00	5.00					
45	E	KDE	45	20	22	25	30	35				25.00	~	35.00	6.00					
50	G	EKDG	50	20	22	25	30	35				33.00	~	40.00	7.00					
56	G	KDG	56	20	22	25	30	35				38.00	~	45.00	8.00					

D _{h5}	Catalog No.		L	0.01mm increments				b	d	F	Base unit price 1~9 pieces									
	Type			min.	P max.	P.Kmax.	P.Wmin.				R	EKSD	KSD	EKD	KD					
	Economy type	Regular type																		
10	A	SR-EKSD	10	16	20	22	25	28	30	32	35	2.00	~	6.00	1.20					
13	A	KSD	13	16	20	22	25	28	30	32	35	3.00	~	8.00	1.50					
16	D	SR-EKDD	16	20	22	25	28	30	32	35	5.00	~	10.00	2.00						
20	D	KDD	20	16	20	22	25	28	30	32	35	7.00	~	12.00	3.00					
22	R	SR-EKDR	22	16	20	22	25	28	30	32	35	8.00	~	14.00	3.00					
25	R	KDR	25	16	20	22	25	28	30	32	35	10.00	~	16.00	3.00					
32	R	SR-EKDR	32	16	20	22	25	28	30	32	35	15.00	~	20.00	4.00					
38	E	SR-EKDE	38	16	20	22	25	30	35			19.00	~	26.00	5.00					
45	E	KDE	45	20	22	25	30	35				25.00	~	35.00	6.00					
50	G	SR-EKDG	50	20	22	25	30	35				33.00	~	40.00	7.00					
56	G	KDG	56	20	22	25	30	35				38.00	~	45.00	8.00					

Order **Catalog No.** - **L** - **P** - **W** - **R (R only)**
 EKDR 13 - 20 - P6.00 - W2.40 - R1.00

Days to Ship **Quotation**

Price **Quotation**

Alterations **Catalog No.** - **L(LC)** - **P(PC)** - **W(WC)** - **R** - **(BC-KC, etc.)**
 EKDD 13 - 20 - P6.00 - WC1.00 - KC90

Order **Catalog No.** - **L** - **P** - **W** - **R (R only)** - **MT** - **C** **Price** **Quotation**
 SR-EKDR 13 - 20 - P6.00 - W2.40 - R1.00 - MT1.50 - C0.105

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 $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P-Wmin}{2}$ 0.01mm increments For A only, if PC is 1.00~1.99, then b = 4.		Quotation
	WC	max. $\frac{P}{W} < \frac{PC}{WC} \leq \frac{P-Kmax+0.2}{2}$ 0.01mm increments		
	BC	Shaped hole depth change $1 \leq BC \leq b$ 0.1mm increments Cannot be used for economy types.		

Alteration	Code	(A)	D R E G	1Code
Shaped hole	PKC	Shaped hole diameter tolerance change $\frac{P}{W} \pm 0.01 \rightarrow \pm 0.005$ Cannot be used for economy types.		Quotation
	LC	Full length change $10 \leq LC < L$ 0.1mm increments (if combined with LK-LKZ, 0.01 mm increments can be selected.) Press-in lead is shortened by (L-LC).		
Alterations to full length	LKC	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.05$		Quotation
	LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.01$ Cannot be used for L < 16 or D > 25.		
Others	KC	Key flat position change 1° increments		

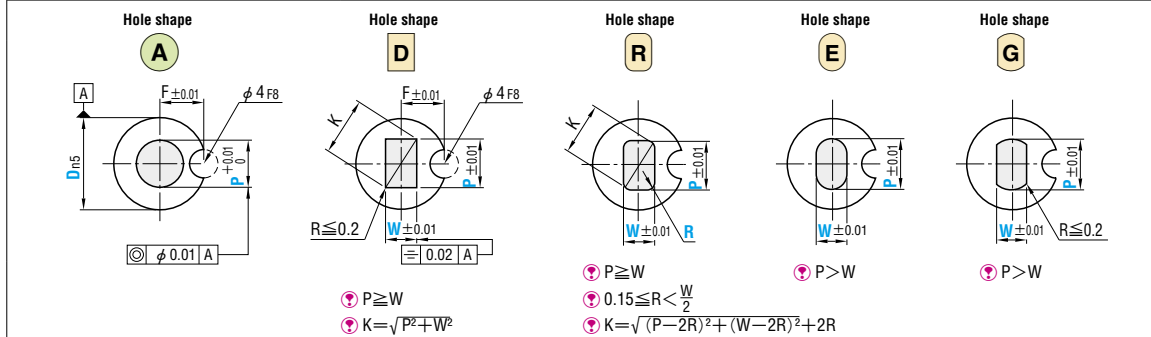
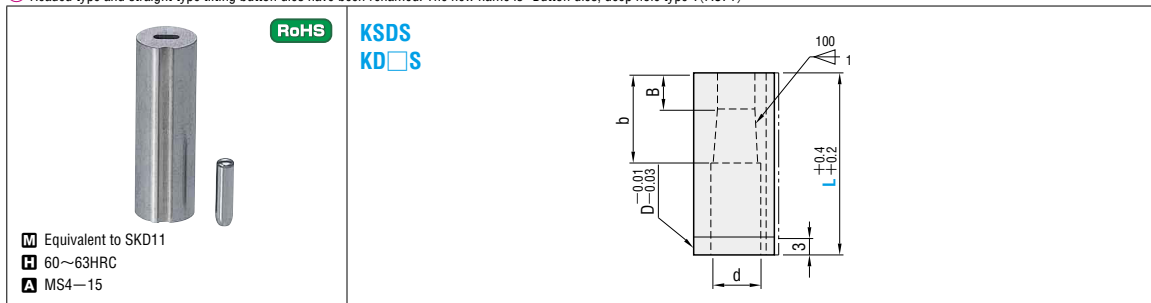
Alteration	Code	(A)	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change $\frac{P}{W} > \frac{PC}{WC} \geq \frac{P-Wmin}{2}$ 0.01mm increments A only, if PC is 1.00~1.99, then b = 4.		Quotation
	WC	max. $\frac{P}{W} < \frac{PC}{WC} \leq \frac{P-Kmax+0.2}{2}$ 0.01mm increments		
	BC	Shaped hole depth change $1 \leq BC \leq Bmax.$ 0.1mm increments Cannot be used for economy types.		

Alteration	Code	(A)	D R E G	1Code
Shaped hole	PKC	Shaped hole diameter tolerance change $\frac{P}{W} \pm 0.01 \rightarrow \pm 0.005$ Cannot be used for economy types.		Quotation
	LC	Full length change $10 \leq LC < L$ 0.1mm increments (if combined with LK-LKZ, 0.01 mm increments can be selected.) Press-in lead is shortened by (L-LC).		
Alterations to full length	LKC	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.05$		Quotation
	LKZ	Full length tolerance change $L \pm 0.4 \rightarrow \pm 0.01$ Cannot be used for L < 16 or D > 25.		
Others	KC	Key flat position change 1° increments		

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.371)



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			
D _{n5}	10	A	KSDS	10	16	20	22	25	30	35	40	2.00~6.00	6.00	1.20	Quotation
	13			16	20	22	25	30	35	40	3.00~8.00	8.00	1.50		
	16	D	KDDS	16	20	22	25	30	35	40	5.00~10.00	10.00	2.00		
	20			25	30	35	40	7.00~12.00	12.00	3.00					
	25	R	KDRS	25	16	20	22	25	30	35	40	10.00~16.00	16.00	3.00	
	32			16	20	22	25	30	35	40	15.00~20.00	20.00	4.00		
	38	E	KDES	38	16	20	22	25	30	35	40	19.00~26.00	26.00	5.00	
	45			20	22	25	30	35	40	25.00~35.00	35.00	6.00			
	50	G	KDGS	50	20	22	25	30	35	40	33.00~40.00	40.00	7.00		
	56			20	22	25	30	35	40	38.00~45.00	45.00	8.00			

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

Days to Ship **Quotation**

Price **Quotation**

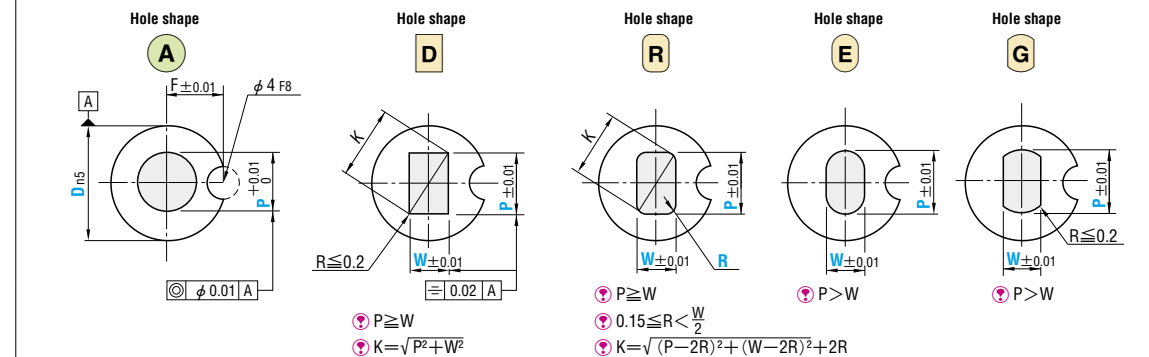
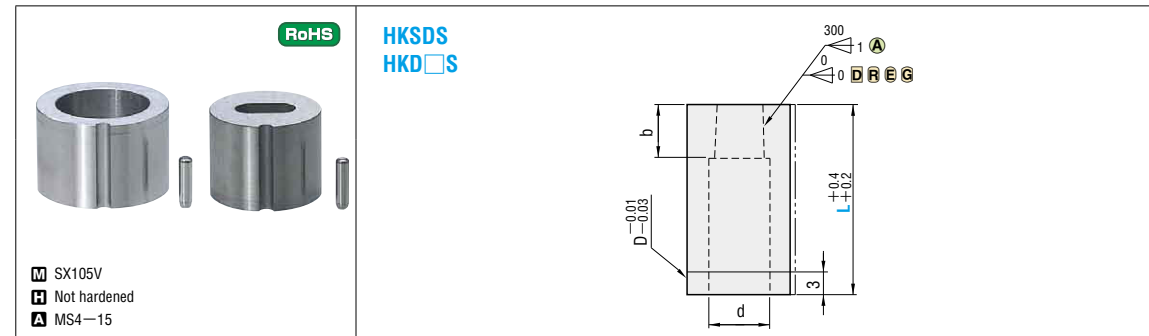
Alterations **Catalog No.** — L(LC) — P(PC) — W(WC) — R — (BC-KC, etc.)
 KDRS45 — 40 — P25.2 — W10.2 — R1.50 — BC20

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

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

BUTTON DIES FOR FLAME HARDENING

—DOWEL SLOT TYPE—



D _{n5}	Catalog No.		L	0.01mm increments				b	d	F	Base unit price 1~9 pieces	
	Type	D		A	D R E G	R	HKSDS				HKD□S	
20	A	HKSDS	20	25	6.00~12.00	12.20	3.00	8	12.6	10	Quotation	
					10.00~16.20	16.20	3.00					
					15.00~20.20	20.20	4.00					
					19.00~26.20	26.20	5.00					
25	D	HKDDS	25	25	10.00~16.20	16.20	3.00	10	16.6	12.5	Quotation	
					15.00~20.20	20.20	4.00					
32	R	HKDRS	32	25	19.00~26.20	26.20	5.00	10	20.6	16	Quotation	
					25.00~35.00	35.00	6.00					
38	E	HKDES	38	25	33.00~40.00	40.00	7.00	10	26.6	19	Quotation	
					38.00~45.00	45.00	8.00					

Order **Catalog No.** — L — P — W — R (R only)
 HKDRS 20 — 25 — P10.00 — W8.00 — R2.25 Days to Ship **Quotation**

Price **Quotation**

Alterations **Catalog No.** — L(LC) — P(PC) — W(WC) — R — (KC-LKC-TYC, etc.)
 HKDDS 20 — 25 — P8.00 — WC2.00 — KC90

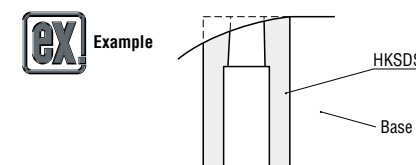
Alteration	Code	A	D R E G	1Code
Alterations to shaped hole	PC	Shaped hole diameter change $P > PC \Rightarrow \frac{P-W_{min}}{2} \geq 1.50$ 0.01mm increments		Quotation
	WC	max: $\frac{P}{WC} < \frac{PC}{WC} \leq P \cdot K_{max} + 0.2$ 0.01mm increments		
	TYC	Addition of an end step A step is machined in the hole end.		

Alteration	Code	A	D R E G	1Code
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.) ① Press-in lead is shortened by (L-LC).		Quotation
	LKC	Full length tolerance change $L + 0.4 \Rightarrow +0.05$		
Head	KC	Key flat position $180^\circ \sim 270^\circ$ change 1° increments		

Button dies for flame hardening

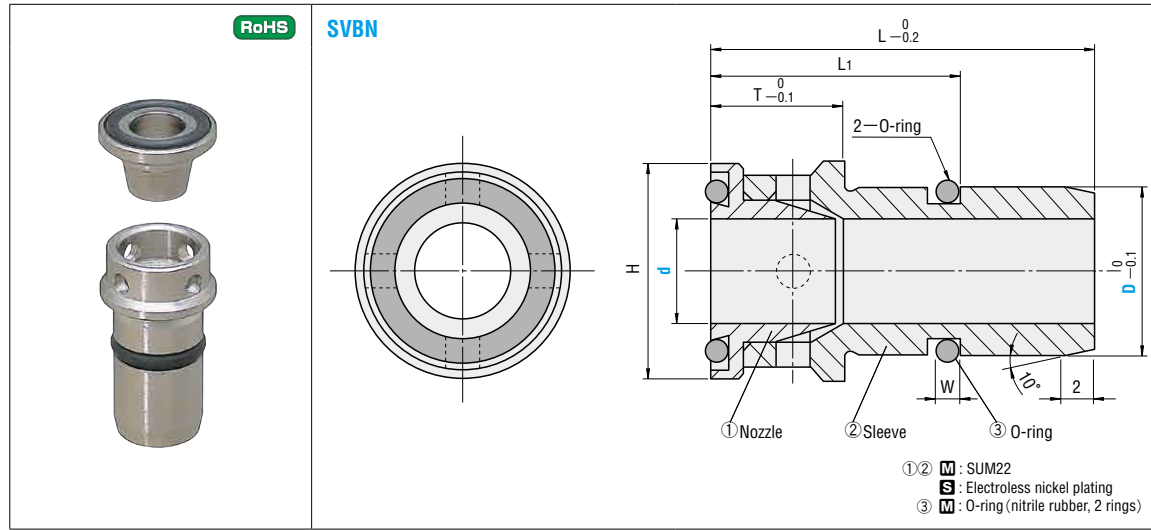
Because these button dies have not been hardened, alterations can be added easily. They are suitable for cases such as when the shape is machined after the die is installed onto a cast base. If flame hardening is performed after machining, the hardened surface layer will be 63~64HRC, providing high wear resistance.

① 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



H	L	L1	T	O-ring		Catalog No.		Base unit price 1~9 pieces	
				Thickness W	Designation No.	Type	D		d
8	18	13	8	1	5	SVBN	6	3	Quotation
11	25	15			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**

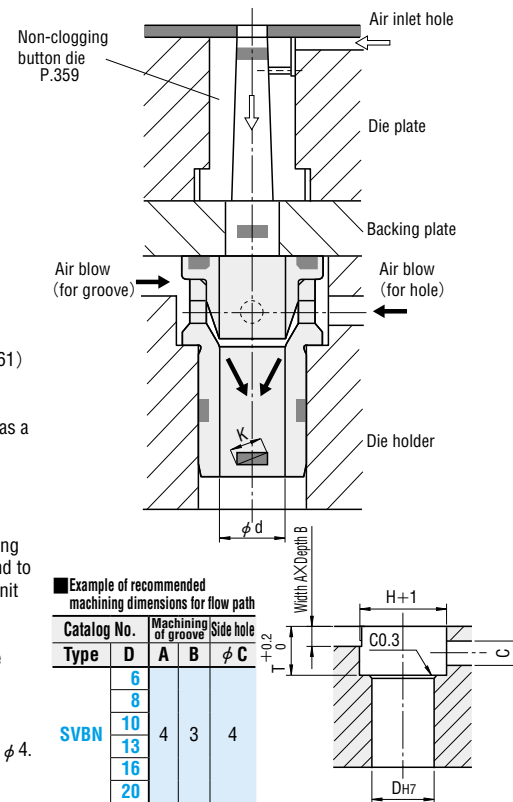
Price **Quotation**

Features

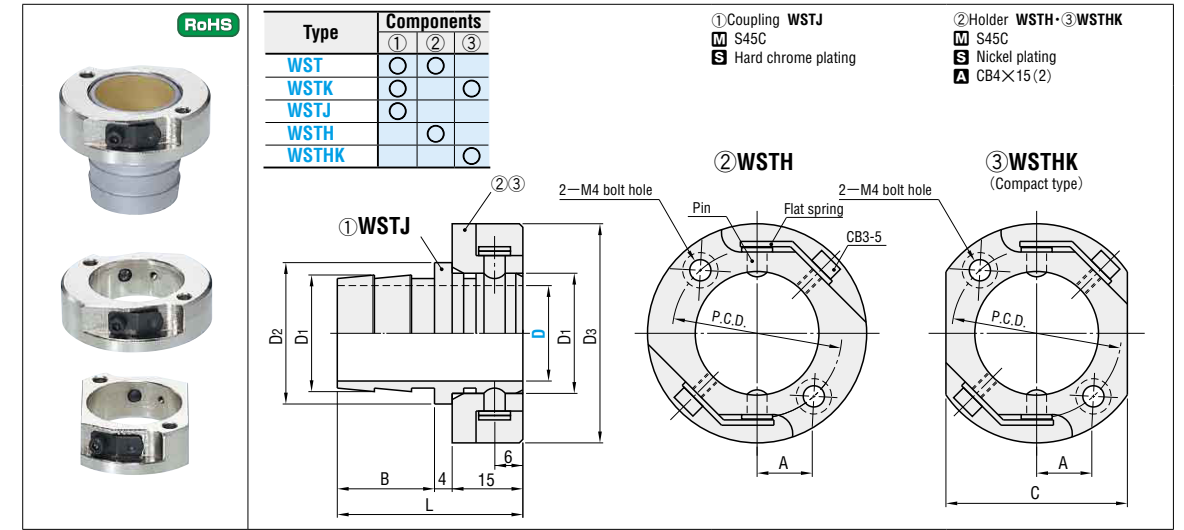
- The scrap vacuum unit utilizes an air blow (compressed air) to create negative pressure inside the die, pulling the punching scrap (product) downward, and preventing clogging and scrap lifting.
- Greater effects can be achieved when a non-clogging button die with air inlet (P.361) is used. (For details, refer to PRODUCTS DATA on P.1621.)
- 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 $\phi 4$.



PRODUCT SHOOTERS



Hose inner dia. D1	D2	D3	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					WSTK	(Set of ①, ③)	20				
32	37	52	42	12			37	WSTJ	(① only)	27				
38	43	58	48					43	WSTH	(② only)	33			
45	50	65	55	14	26	45	50	WSTH	(② only)	40				
50	55	70	60					55	WSTHK	(③ only)	45			

Order **Catalog No.**
WST 20

Days to Ship **Quotation**

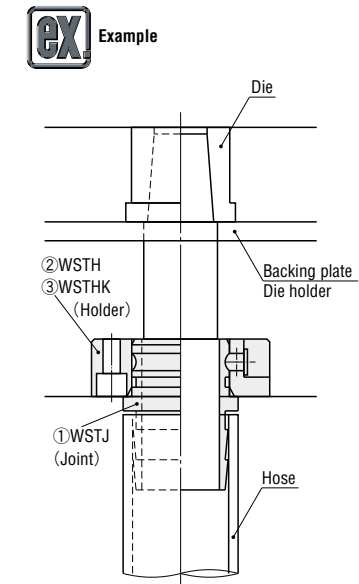
Price **Quotation**

Features


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

Precautions

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

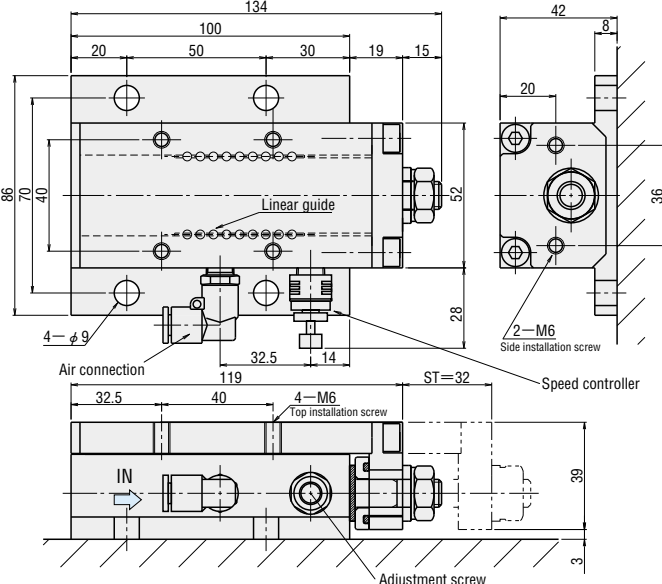


SCRAP REMOVERS



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: φ6
- Max. tilt angle: 8°

Catalog No.	Type	No.	Base unit price
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.

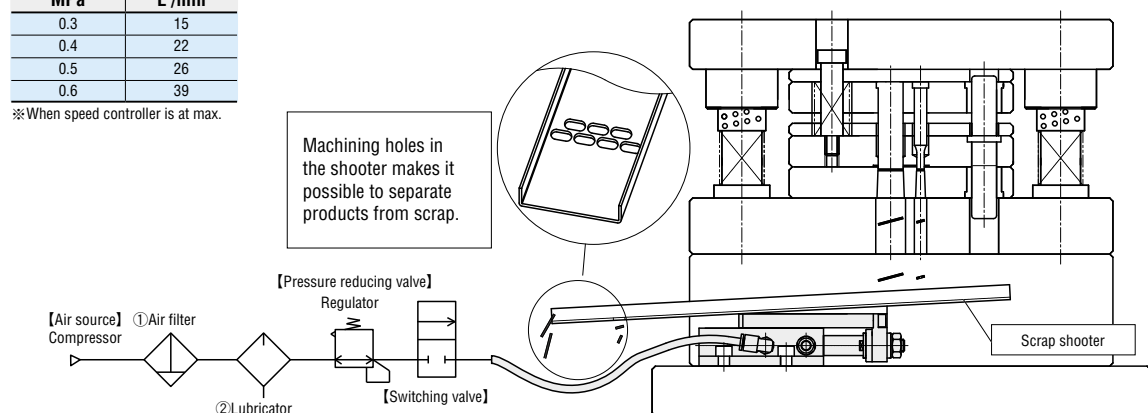
How to use


- 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.

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.

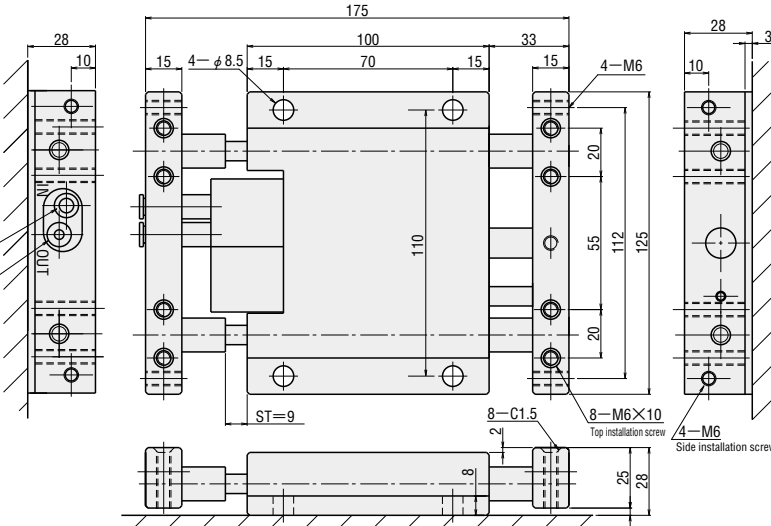
Embossed shooter plates **P.1108**





RoHS

MRE50



- 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
- Speed controller
- Piping tube: φ4×100mm

Catalog No.	Type	No.	Base unit price
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

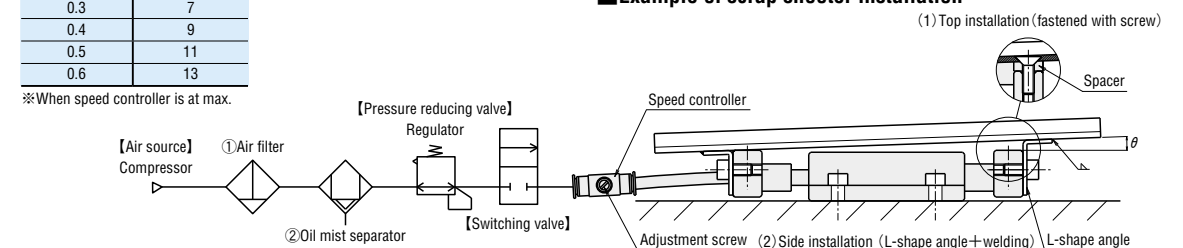
- When compressed air (0.3~0.6MPa) is connected to the scrap remover air coupling, the table begins vibrating. Use a tube with outer diameter 6 mm and inner diameter 4mm
- Adjust the speed controller screw and fasten the nut at the position of the correct speed.
- To facilitate scrap transport, either 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.

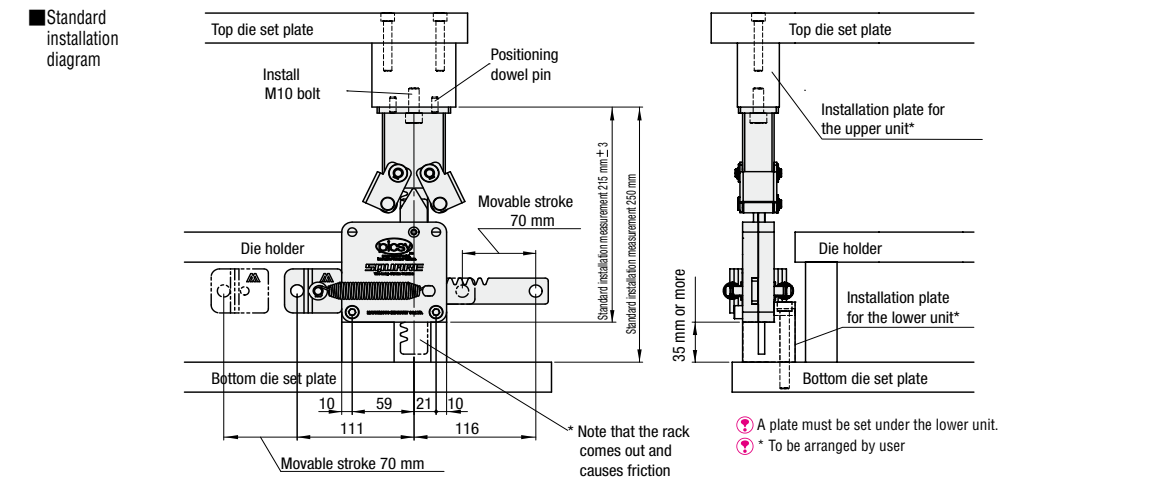
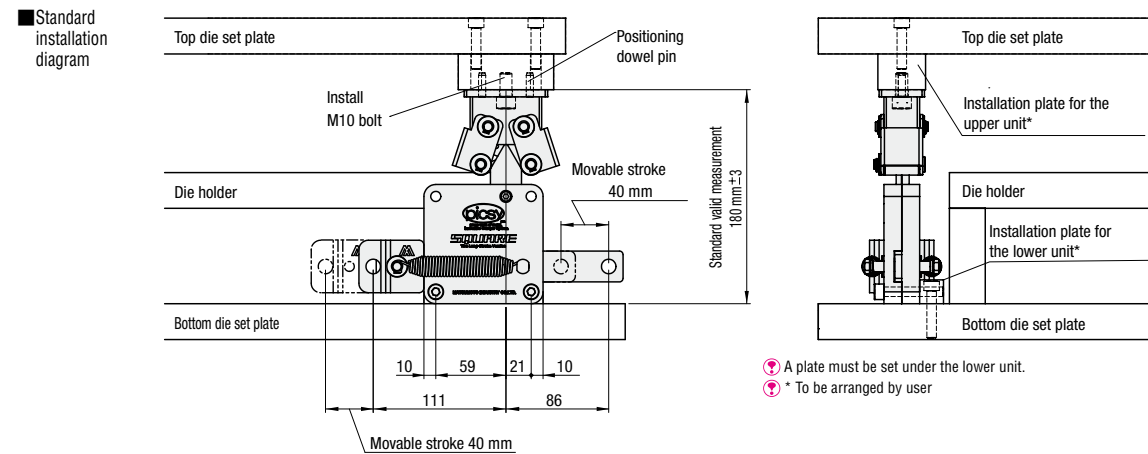
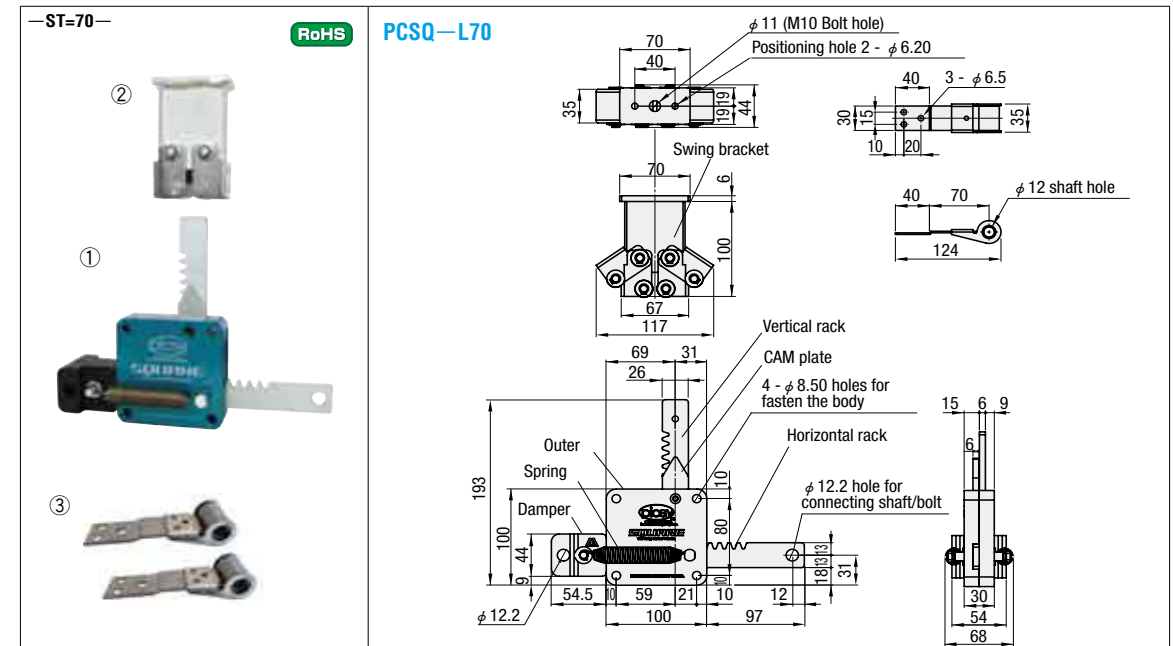
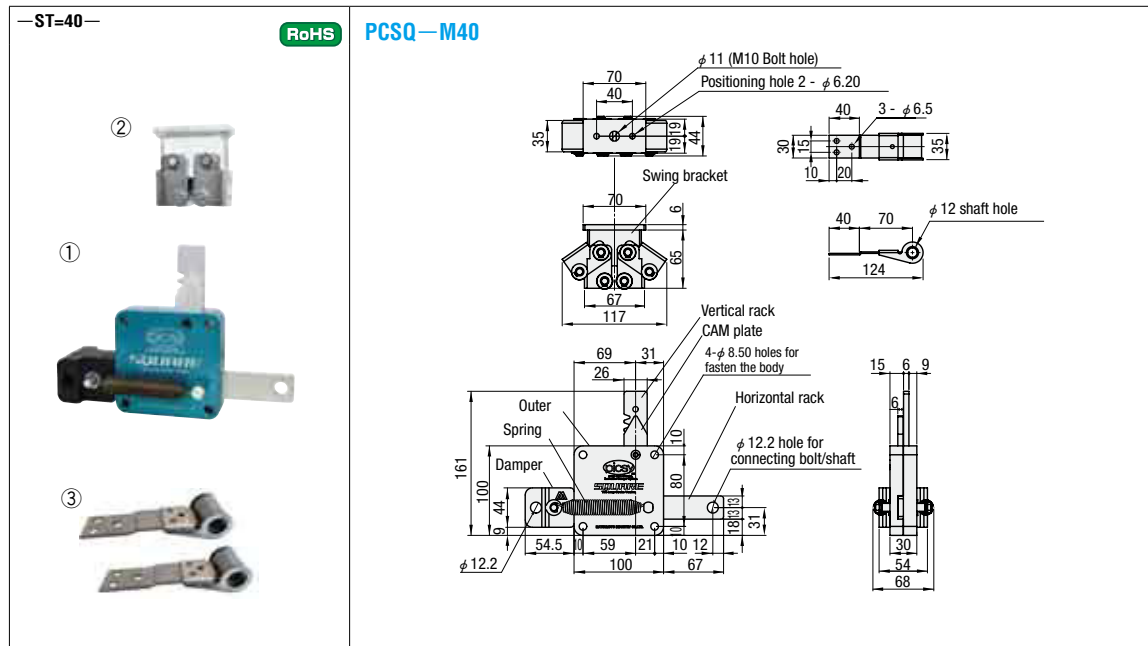
Precautions

- 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.1108**

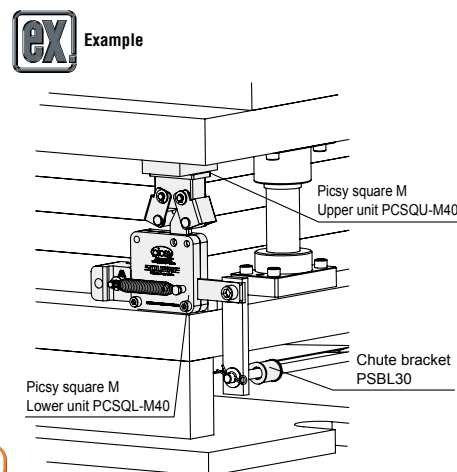
Example of scrap shooter installation





Part name	Accessory	Catalog No. Type	Base unit price
Picsy square M Set of upper and lower units (①②, and ③)	One hexagon socket head cap bolt (M10—15) Two dowel pins (φ 6—20) Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—50)	PCSQ-M40	Quotation
Picsy square M Upper unit (②)	One hexagon socket head cap bolt (M10—15) Two dowel pins (φ 6—20)	PCSQU-M40	
Picsy square M Lower unit (①)	Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—50)	PCSQL-M40	
Chute bracket (③)	—	PSBL30	

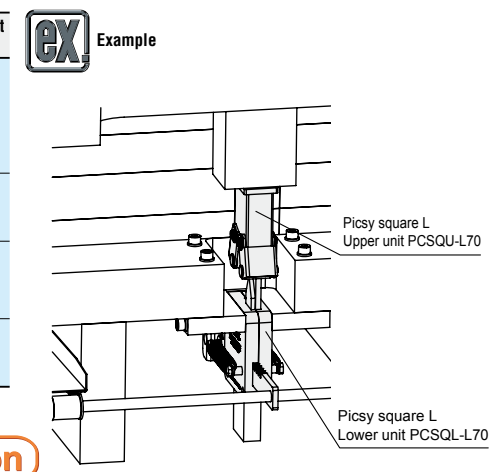
① Two chute brackets (③) are included in a set sales. PSBL30 (chute bracket (③)) sales per piece.



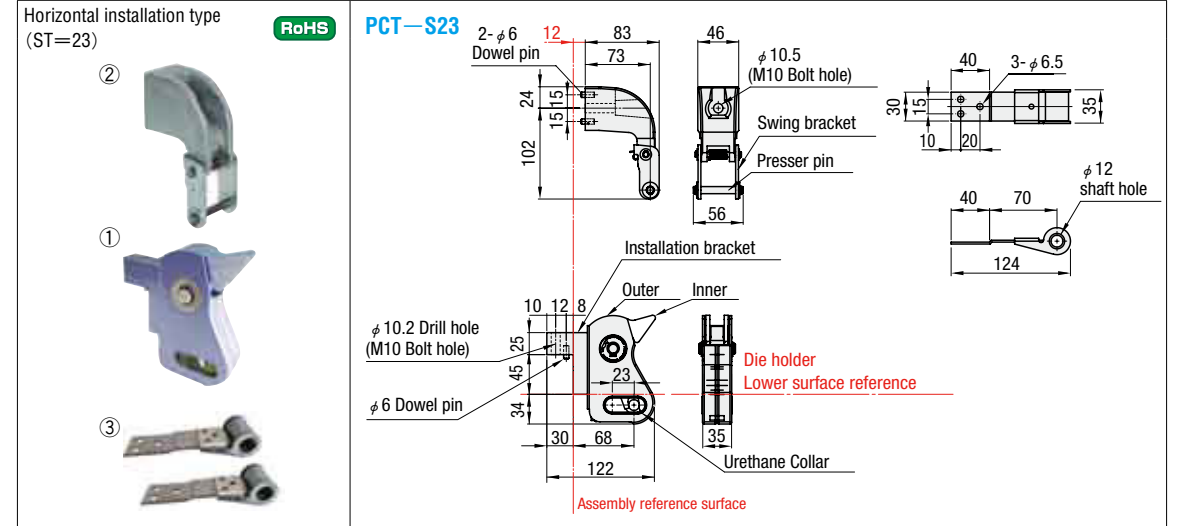
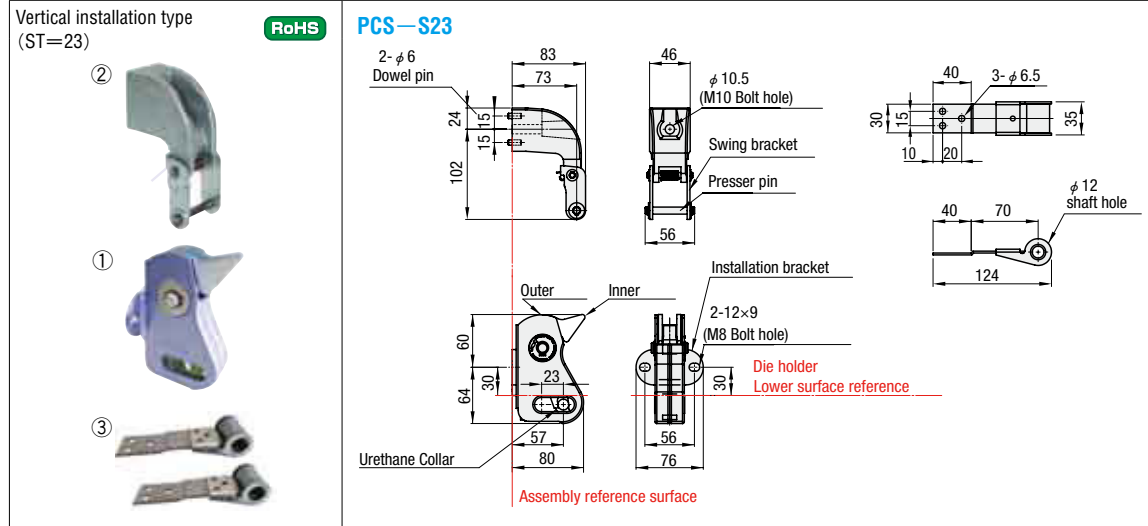
Order **Catalog No. PCSQ—M40** Days to Ship **Quotation**

Part name	Accessory	Catalog No. Type	Base unit price
Picsy square L Set of upper and lower units (①②, and ③)	One hexagon socket head cap bolt (M10—15) Two dowel pins (φ 6—20) Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—50)	PCSQ-L70	Quotation
Picsy square L Upper unit (②)	One hexagon socket head cap bolt (M10—15) Two dowel pins (φ 6—20)	PCSQU-L70	
Picsy square L Lower unit (①)	Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—50)	PCSQL-L70	
Chute bracket (③)	—	PSBL30	

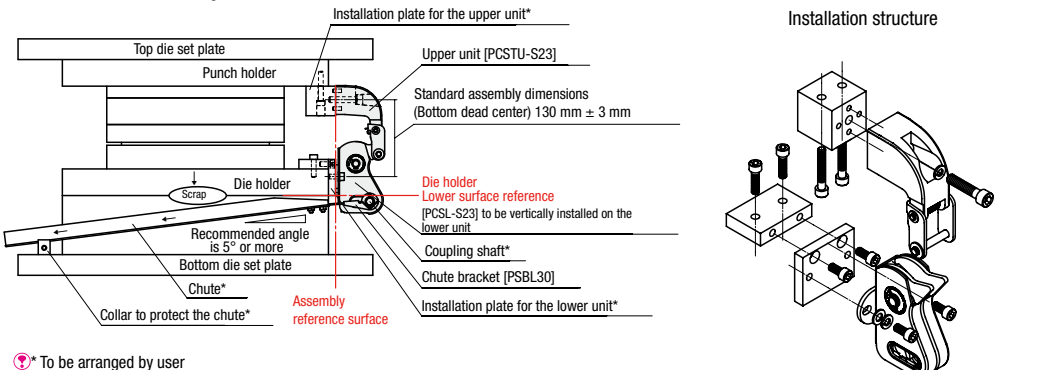
① Two chute brackets (③) are included in a set sales. PSBL30 (chute bracket (③)) sales per piece.



Order **Catalog No. PCSQ—L70** Days to Ship **Quotation**

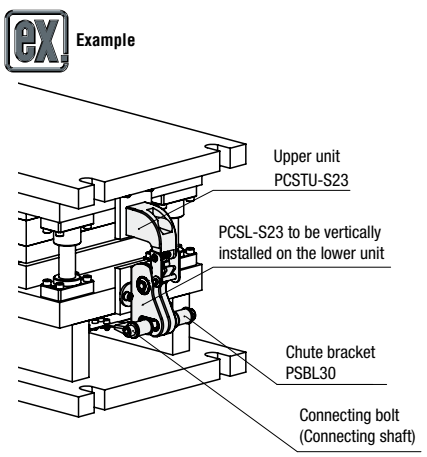


Standard installation diagram



Ⓜ* To be arranged by user
 A rod can be used to support the chute; however, it is recommended that you use a rotating part such as collar to reduce of wear.

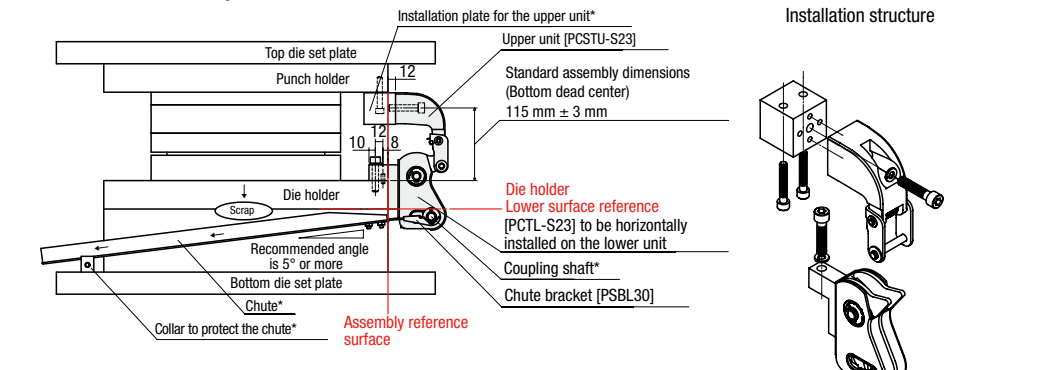
Part name	Accessory	Catalog No. Type	Base unit price
Vertical installation type Set of upper and lower units (① ②, and ③)	One spring washer (for M10) One hexagon socket head cap bolt (M10—50) Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—18)	PCS-S23	Quotation
Vertical installation type Upper unit (②)	One spring washer (for M10) One hexagon socket head cap bolt (M10—50)	PCSTU-S23	
Vertical installation type Lower unit (①)	Two plain washers (for M8) Two spring washers (for M8) Two hexagon socket head cap bolt (M8—18)	PCSL-S23	
Chute bracket (③)	—	PSBL30	



ⓂTwo chute brackets (③) are included in a set sales. PSBL30 (chute bracket (③)) sales per piece.

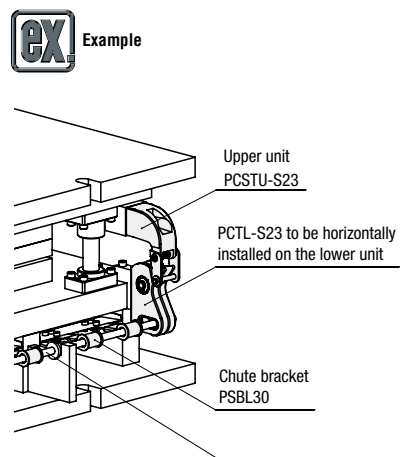
Order Catalog No. PCS-S23 Days to Ship **Quotation**

Standard installation diagram



Ⓜ* To be arranged by user
 A rod can be used to support the chute; however, it is recommended that you use a rotating part such as collar to reduce of wear.

Part name	Accessory	Catalog No. Type	Base unit price
Horizontal installation type Set of upper and lower units (① ②, and ③)	One spring washer (for M10) One hexagon socket head cap bolt (M10—50) Two plain washers (for M10) Two spring washers (for M10) Two hexagon socket head cap bolt (M10—45)	PCT-S23	Quotation
Horizontal installation type Upper unit (②)	One spring washer (for M10) One hexagon socket head cap bolt (M10—50)	PCSTU-S23	
Horizontal installation type Lower unit (①)	Two spring washers (for M8) Two hexagon socket head cap bolt (M10—45)	PCTL-S23	
Chute bracket (③)	—	PSBL30	



ⓂTwo chute brackets (③) are included in a set sales. PSBL30 (chute bracket (③)) sales per piece.

Order Catalog No. PCT-S23 Days to Ship **Quotation**

BUTTON DIES

[PRODUCT DATA] SCRAP DISCHARGER

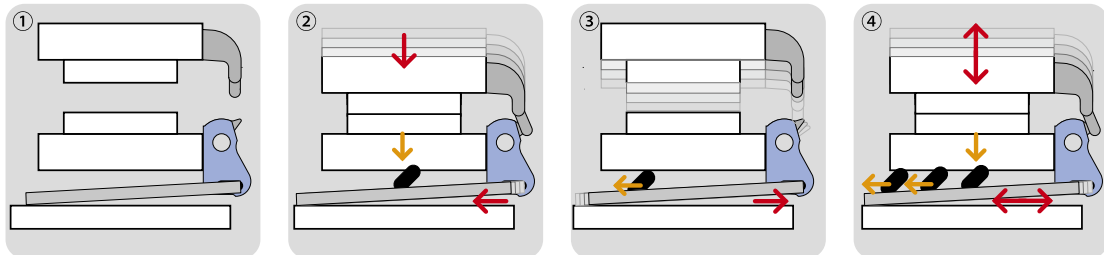
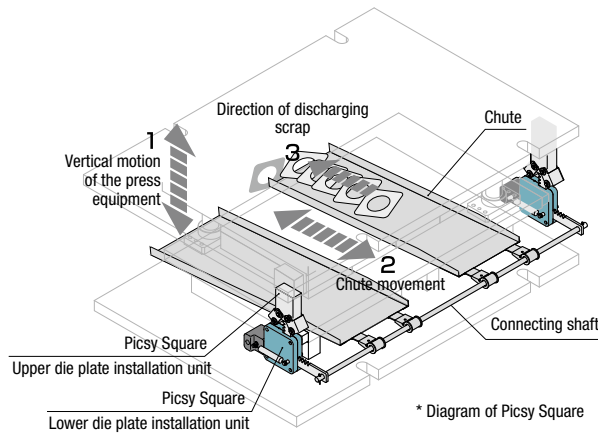
■About the 'Picsy'

The 'Picsy' is a scrap discharger which need no electricity to operate. Designed by an auto parts manufacturer with keen eye of improvement, 'Picsy' can be the new standard of scrap discharging method as well as air blowing and conveyor carrying. 'Picsy' is the Eco-friendly and User-friendly product.



■The discharging mechanism

'Picsy' use the force of inertia for discharging scraps.
 'Picsy' push a chute using the power of press machine by changing the vertical motion to horizontal movement. In some points the spring inside the 'Picsy' pulls quickly then generates inertia. Discharging is possible if there is small inclination under the die sets.



Install the Picsy unit on the upper and lower die plates.

Change the vertical motion of the press machine to horizontal movement and push the chute.

The spring inside the picsy pulls quickly, then inertia is generated and scraps go down.

The chute moves at the same speed with press machine and discharges scraps.

■Scrap discharge difficulty

One of the eternal tasks of press factories is 'press scraps'. 'Picsy' is revolutionary product of this. Today conveyors and air blowings are the major ways for discharging scraps, although they cause troubles such as oil mist and mechanical trouble, etc. 'Picsy' can solve those tasks at once.

■Comparison: Air Blow vs. Picsy.

Tasks	Air blow	Picsy
Scrap discharge	Scrap scatters around	Scrap does not scatter
Effect on quality	Dents due to scrap blowup	No scrap blowup
Operation environment	Shrill noise Oil scatters in the air	No noise and oil scatter
Time for setup	Piping and chuter setup take significant time	Instant setup
Large-size scrap	N / A	Discharge is possible (See the selection chart)
Running cost	Electricity charges are applicable \$2800 USD per year	N / A

* 1. Air blow electricity charges for each nozzle



* Average electricity charge in United States

■Selection chart

Note that 'Picsy' would not work appropriately under the conditions below.

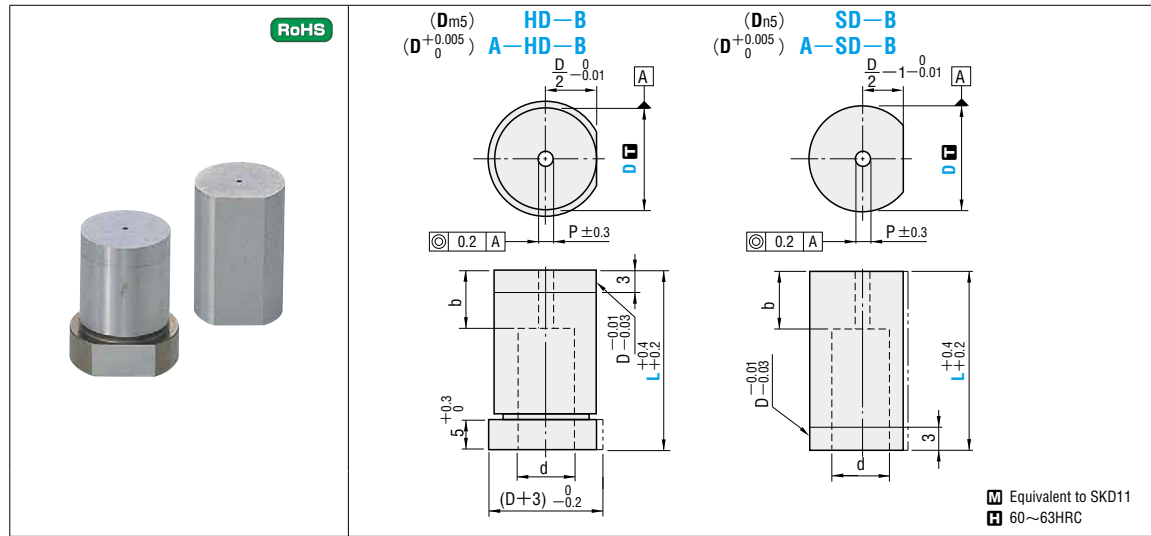
- Exceeding SPM80
- Scrap shape which could stand up on the chuter.
- The height under the stage for putting on die sets is less than 50mm
- Excessive oil

The total weight of chute and scraps must be under 6kg per unit.

Product types	Picsy Square		Picsy
	L type	M type	S type
Photographs of products			
Stroke	70 mm	40 mm	23 mm
Scrap size (Standard size of one side)	150 mm or more	150 mm or less	less than 50 mm
Types	L type	←————→	
	M type	←————→	
	S type	←————→	

⊙ Recommended chute inclina is 5° or more. Discharging status would be changed by various conditions such as scrap shape, or oil adhesion. Please make sure there is smooth discharging before start pressing. Do not use this product when abnormal situation happened.

BUTTON DIE BLANKS



D	Shank dia. tolerance			Catalog No.		L	P	b	d	Base unit price 1~9 pieces									
	D _{m5}	D _{n5}	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Type	D					HD-B	A-HD-B	SD-B	A-SD-B						
6	$\begin{smallmatrix} +0.009 \\ +0.004 \end{smallmatrix}$	—	—	(D _{m5}) HD-B	(D _{n5}) A-HD-B	6	16	20	22	25	28	30	32	35					
8	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$	$\begin{smallmatrix} +0.016 \\ +0.010 \end{smallmatrix}$	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	(D _{m5}) HD-B	(D _{n5}) A-HD-B	8	16	20	22	25	28	30	32	35	(40)				
10	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			10	16	20	22	25	28	30	32	35	(40)	(45)			
13	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			13	16	20	22	25	28	30	32	35	(40)	(45)			
16	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			16	16	20	22	25	28	30	32	35	(40)	(45)			
20	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	—	(20)	(20)	16	20	22	25	28	30	32	35	(40)	(45)				
22	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	—	(22)	(22)	16	20	22	25	28	30	32	35	(40)	(45)				
25	$\begin{smallmatrix} +0.017 \\ +0.008 \end{smallmatrix}$	$\begin{smallmatrix} +0.024 \\ +0.015 \end{smallmatrix}$	—	(25)	(25)	16	20	22	25	28	30	32	35	(40)	(45)				
32	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$	$\begin{smallmatrix} +0.028 \\ +0.017 \end{smallmatrix}$	—	(32)	(32)	16	20	22	25	28	30	32	35						
38	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$	$\begin{smallmatrix} +0.028 \\ +0.017 \end{smallmatrix}$	—	(38)	(38)	16	20	22	25	30	35								
45	$\begin{smallmatrix} +0.020 \\ +0.009 \end{smallmatrix}$	$\begin{smallmatrix} +0.028 \\ +0.017 \end{smallmatrix}$	—	(45)	(45)	20	22	25	30	35									
50	$\begin{smallmatrix} +0.024 \\ +0.011 \end{smallmatrix}$	$\begin{smallmatrix} +0.023 \\ +0.020 \end{smallmatrix}$	—	(50)	(50)	20	22	25	30	35									
56	$\begin{smallmatrix} +0.024 \\ +0.011 \end{smallmatrix}$	$\begin{smallmatrix} +0.023 \\ +0.020 \end{smallmatrix}$	—	(56)	(56)	20	22	25	30	35									

⚡ 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 D_{m5}•D_{n5} only.

Order Catalog No. — L
SD-B 20 — 25

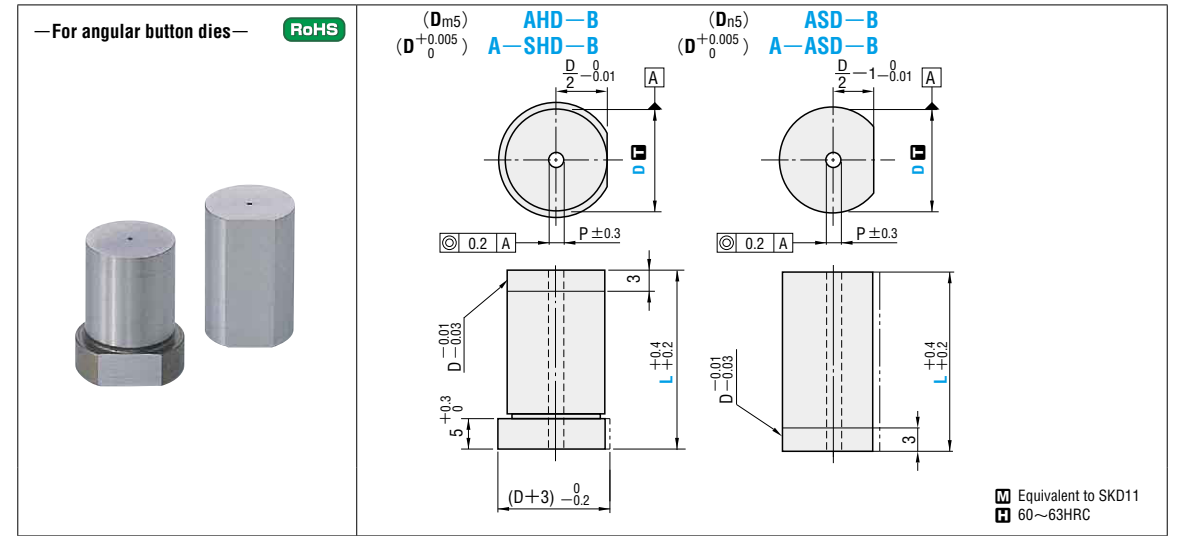
Price Quotation

Days to Ship Quotation

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

Alteration	Code	Spec.	1Code
	HC	Head diameter change D ≤ HC < H 0.1 mm increments	
	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.	Quotation
	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
	LC	HD-B Full length change 10 ≤ L - (b-1) ≤ LC < L 0.1 mm increments Press-in lead is shortened by (L-LC).	
	NHC	No start hole Cannot be used for D > 16.	Quotation



D	Shank dia. tolerance			Catalog No.		L	P	Base unit price 1~9 pieces									
	D _{m5}	D _{n5}	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	Type	D			AHD-B	A-AHD-B	ASD-B	A-ASD-B						
6	$\begin{smallmatrix} +0.009 \\ +0.004 \end{smallmatrix}$	—	—	(D _{m5}) AHD-B	(D _{n5}) A-AHD-B	6	16	20	22	25	30	35					
8	$\begin{smallmatrix} +0.012 \\ +0.006 \end{smallmatrix}$	$\begin{smallmatrix} +0.016 \\ +0.010 \end{smallmatrix}$	$\begin{smallmatrix} +0.005 \\ 0 \end{smallmatrix}$	(D _{m5}) AHD-B	(D _{n5}) A-AHD-B	8	16	20	22	25	30	35					
10	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			10	16	20	22	25	30	35	(40)				
13	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			13	16	20	22	25	30	35	(40)				
16	$\begin{smallmatrix} +0.015 \\ +0.007 \end{smallmatrix}$	$\begin{smallmatrix} +0.020 \\ +0.012 \end{smallmatrix}$	—			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)	(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)	(25)	16	20	22	25	30	35						

⚡ L = (40) is a specification available for AHD-B only. ⚡ D = (20) and (25) are specifications available for shank diameter tolerance of D_{m5} and D_{n5} 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-B 20 — 25 — TC3


Alteration	Code	Spec.	1Code
	HC	Head diameter change D ≤ HC < H 0.1 mm increments	
	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.	Quotation
	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
	LC	Full length change 10 ≤ LC < L 0.1 mm increments Press-in lead is shortened by (L-LC).	
	NHC	No start hole Cannot be used for D > 16.	Quotation

SPACERS

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

—For angular button dies— **RoHS**

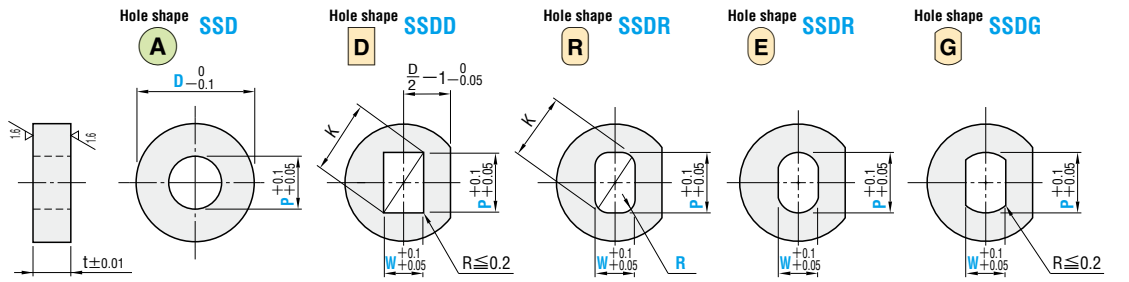


SK5
45 HRC~

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.

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** Hole shape **SSDD** **D** Hole shape **SSDR** **R** Hole shape **SSDR** **E** Hole shape **SSDG** **G**



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

The outside diameter has slight depression.

Catalog No.	0.01mm increments					t	Base unit price (8-piece set) 1~4 sets
	Type	D	min. P max.	P·Kmax.	P·Wmin.		
A SSD	6	1.00~ 4.00	—	—	—	0.05	Quotation
D SSDD	8	1.00~ 5.00	5.00	1.00	—	0.1	
R SSDR	10	2.00~ 7.00	7.00	1.20	—	0.2	
E SSDE	13	3.00~ 9.00	9.00	1.50	—	0.3	
G SSDG	16	5.00~ 12.00	12.00	2.00	—	0.5	
	20	7.00~ 16.00	16.00	3.00	—	1.0	
	22	8.00~ 18.00	18.00	3.00	—	1.5	
	25	10.00~ 20.00	20.00	3.00	—	2.0	

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

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	⊙	270° Key flat position change 1° increments	Quotation

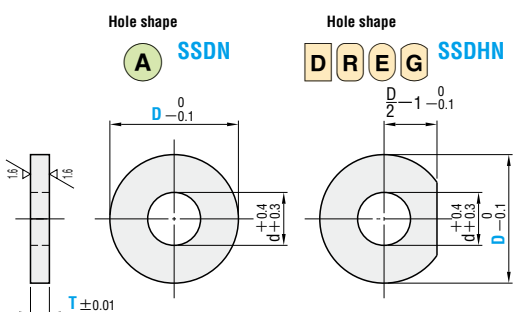
Price **Quotation**

—For straight button dies with relief holes— **RoHS**



SK5
45 HRC~

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



The outside and inside diameter has slight depression.

d	Catalog No.	Type	D	T	Base unit price (5-piece set) 1~9 sets					
					T0.05	T0.1	T0.2	T0.5	T1.0	
3.4	SSDN	(for round die D6~25)	6	0.05	Quotation					
4.4			8							
6.4			10							
8.4	SSDHN	(for shaped die D8~25)	13	0.2						
10.6			16							
12.6			20							
14.6			22							
16.6			25	1.0						

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.


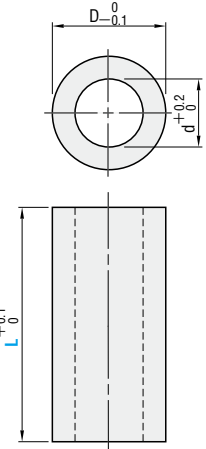
Order **Catalog No.** — **T** **SSDN 6** — **0.1**

Days to Ship **Quotation**

Price **Quotation**

COLLARS FOR HEADED BUTTON DIES

RoHS **HBDC**

SKS3
58~60 HRC

D _{-0.1}	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.** — **L** **HBDC 8** — **40.5**

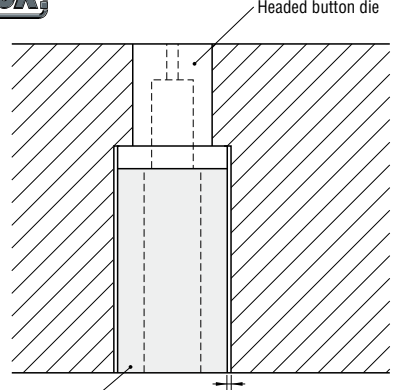
Days to Ship **Quotation**

Price **Quotation**

Alterations **Catalog No.** — **L** — (**LKC**) **HBDC 8** — **40.5** — **LKC**

Alteration	Code	Spec.	1Code
Alterations to full length	LKC	L dimension tolerance change L +0.1 ↔ +0.05 0 ↔ 0	Quotation

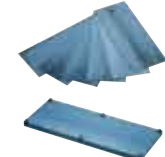


Example **ex**



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	UTPB UTPL	FGSM FGSMW FGSML
		
P.839	P.841	P.840