BALL-LOCK PUNCHES & DIES / RETAINERS

BALL-LOCK PUNCHES & DIES / RETAINERS

Product name Catalog No.	BALL-LOCK PUNCHES —ECONOMY TYPE— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK PUNCHES—WITH WRENCH FLAT— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK PUNCHES—HEAVY LOAD— —ECONOMY TYPE TiCN COATING—	—WITH WRENCH FLAT TiCN COATING—
Page	771	772	773	774	775	776

BALL-LOCK PUNCHES—HEAVY LOAD— —ECONOMY TYPE HW COATING—	—WITH WRENCH FLAT HW COATING—	BALL-LOCK JECTOR PUNCHES—ECONOMY TYPE— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK JECTOR PUNCHES—WITH WRENCH FLAT— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK JECTOR PUNCHES—HEAVY LOAD— —ECONOMY TYPE TiCN COATING—	—WITH WRENCH FLAT TiCN COATING—
777	778	779	780	781	782	783	784

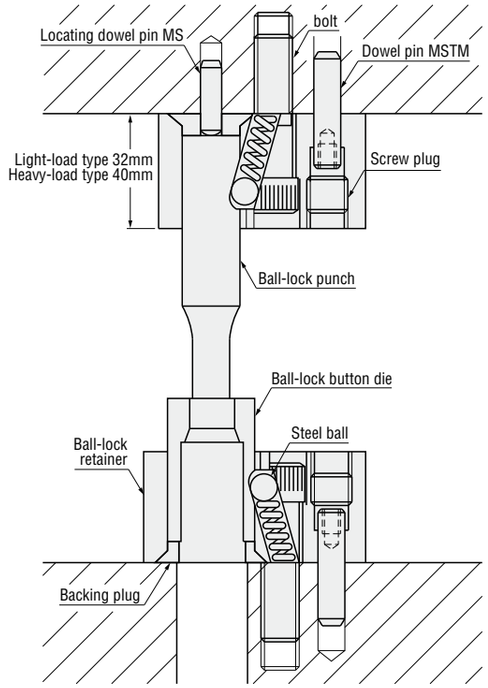
BALL-LOCK JECTOR PUNCHES—HEAVY LOAD— —ECONOMY TYPE HW COATING—	—WITH WRENCH FLAT HW COATING—	BALL-LOCK PUNCH BLANKS—ECONOMY TYPE— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK PUNCH BLANKS—WITH WRENCH FLAT— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK BUTTON DIES ELD□ LD□
785	786	787	787	788	788	789

BALL-LOCK RETAINERS—COMPACT TYPE— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK RETAINERS—TRIANGLE TYPE— —LIGHT LOAD—	—HEAVY LOAD—	BALL-LOCK RETAINERS —LIGHT LOAD·SPACE SAVING·SINGLE FIXING-BOLT TYPE—	SPECIAL RETAINER SETS —FOR BALL-LOCK PUNCHES—
791	792	793	794	795	797

BALL-LOCK PUNCHES & DIES / RETAINERS
—GUIDE—

■Structure of ball-lock punches & dies

The punch and die are fixed together by two retainers that each incorporates a steel ball and spring. The spring presses the ball into the recess (ball seat) of the punch or die, securely holding the punch and die in place.
The punch or die can be dismounted simply by pushing the steel ball, without removing the retainer.

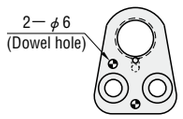
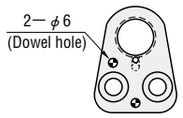


■Punch

- Select either the heavy-load type or the light-load type according to the conditions of use.
- Use the heavy-load type if the workpiece thickness is 3mm or more.
- A jector type for preventing scrap lifting is available for each type (heavy or light).

■Retainers

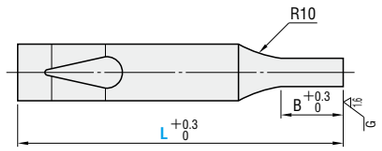
- Light and heavy-load types are available, to be selected according to the punch type.
- Use a light-load retainer for a light-load punch, and a heavy-load retainer for a heavy-load punch.

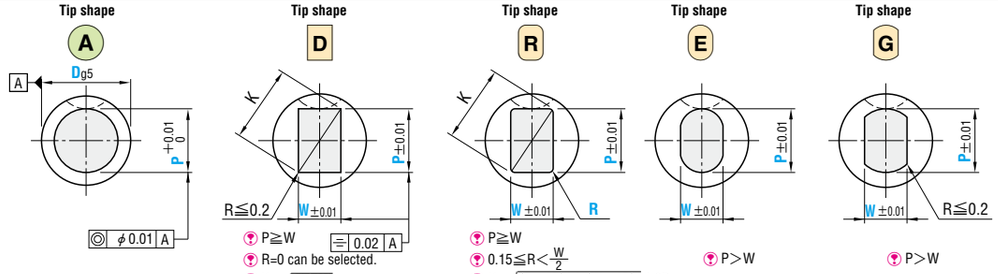
	Shape	Locating method
Light load		• **Punch positioning by NC machining** Position the punch using the backing plug center dowel and the retainer dowel hole.
Heavy load		• **Punch positioning by matching of the tip and shaped hole** Create matching holes corresponding to the 2 dowel holes in the retainer.

■Precautions

When removing a ball-lock punch and die from the retainers, be sure that the retainer is fastened to the die.
If the ball-lock punch and die is removed without the retainer fastened to the die, the spring may jump out and cause a malfunction.

BALL-LOCK PUNCHES
—LIGHT LOAD TYPE (ECONOMY)—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKD11 60 ~ 63HRC	ELP	A D R E G	S L	



Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B
S	10	63 71 74 80 90	3.00 ~ 9.97	9.90	2.50	0.15≦R<W/2 (R only)	13
Ⓐ ELPAS	13		6.00 ~ 12.97	12.90	3.00		
D ELPDS	16		10.00 ~ 15.97	15.90	4.00		19
R ELPRS	20		13.00 ~ 19.97	19.90	5.00		
E ELPES	25		18.00 ~ 24.97	24.90	6.00		
G ELPGS	32		22.00 ~ 31.97	31.90	7.00		
L	10	71 74 80 90	3.00 ~ 9.97	9.90	2.50		19
Ⓐ ELPAL	13		6.00 ~ 12.97	12.90	3.00		
D ELPDL	16		10.00 ~ 15.97	15.90	4.00		25
R ELPRL	20		13.00 ~ 19.97	19.90	5.00		
E ELPEL	25		18.00 ~ 24.97	24.90	6.00		
G ELPGL	32		22.00 ~ 31.97	31.90	7.00		

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
ELPRS 16	74	P12.00	W10.00	R3.00

Days to Ship **Quotation**

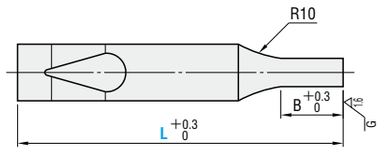
Alterations

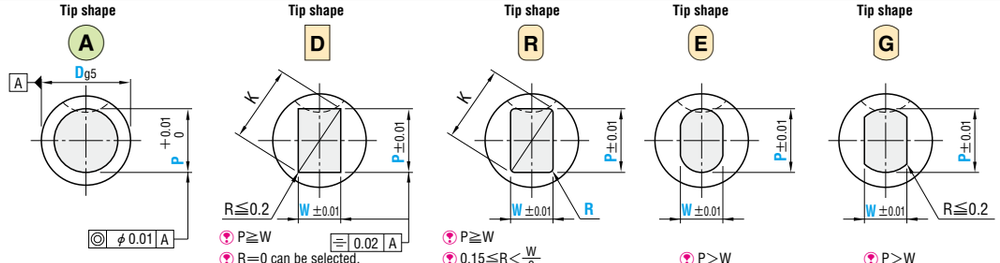
Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
ELPRS 16	LC70.5	P12.00	W10.00	R3.00	BC15.5

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: PC, WC	PC WC	Tip diameter change PC≧Pmin./2, 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 / 2.00 ~ 3.99 / 4.00 ~ / Bmax.: 20 / 35 / 45	Tip diameter change PC≧P·Wmin./2, WC≧P·Wmin./2, 0.01mm increments P·W: 1.25 ~ 1.49 / 1.50 ~ 1.99 / 2.00 ~ 3.49 / 3.50 ~ 4.99 / 5.00 ~ Bmax.: 8 / 13 / 19 / 25 / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments. Full length (L) must be at least 45mm longer than tip length (BC).		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
	SC	Lapping of tip. P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1, 0.1 mm increments. PRC≦(P−0.2)/2. ⊗ Cannot be combined with PCC.	—	Quotation
PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1, 0.1mm increments. PCC≦(P−0.2)/2. ⊗ Cannot be combined with PRC.	—	
Alterations to full length: LC	LC	Full length change 45+B(BC)≦LC<L. 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 45mm or less, tip length is adjusted to (Full length−45).		
LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	0°, 270°, 90°, 180°: Ball position change 1° increments	

BALL-LOCK PUNCHES
—HEAVY LOAD TYPE (ECONOMY)—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC	EBP	A D R E G	S L	



Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	0.15≦R<W/2 (R only)	13
Ⓐ EBPAS	13		6.00 ~ 12.97	12.90	3.00		
D EBPDS	16		10.00 ~ 15.97	15.90	4.00		19
R EBPRS	20		13.00 ~ 19.97	19.90	5.00		
E EBPES	25		18.00 ~ 24.97	24.90	6.00		
G EBPGS	32		22.00 ~ 31.97	31.90	7.00		
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19
Ⓐ EBPAL	13		6.00 ~ 12.97	12.90	3.00		
D EBPDL	16		10.00 ~ 15.97	15.90	4.00		25
R EBPRL	20		13.00 ~ 19.97	19.90	5.00		
E EBPEL	25		18.00 ~ 24.97	24.90	6.00		
G EBPGL	32		22.00 ~ 31.97	31.90	7.00		

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
EBPRL 32	100	P26.20	W14.00	R3.00

Days to Ship **Quotation**

Alterations

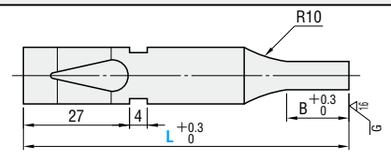
Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
EBPDS 32	100	P26.20	W14.00		KC90

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: PC, WC	PC WC	Tip diameter change PC≧Pmin./2, 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 / 2.00 ~ 3.99 / 4.00 ~ 5.99 / 6.00 ~ Bmax.: 20 / 35 / 45 / 50	Tip diameter change PC≧P·Wmin./2, WC≧P·Wmin./2, 0.01mm increments P·W: 1.25 ~ 1.49 / 1.50 ~ 1.99 / 2.00 ~ 3.49 / 3.50 ~ 4.99 / 5.00 ~ Bmax.: 8 / 13 / 19 / 25 / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments. Full length (L) must be at least 50mm longer than tip length (BC).		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
	SC	Lapping of tip. P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

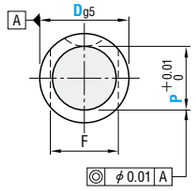
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1, 0.1 mm increments. PRC≦(P−0.2)/2. ⊗ Cannot be combined with PCC.	—	Quotation
PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1, 0.1mm increments. PCC≦(P−0.2)/2. ⊗ Cannot be combined with PRC.	—	
Alterations to full length: LC	LC	Full length change 50+B(BC)≦LC<L. 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		
LKC	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	0°, 270°, 90°, 180°: Ball position change 1° increments	

BALL-LOCK PUNCHES & DIES/RETAINERS

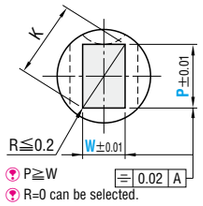
BALL-LOCK PUNCHES
—LIGHT LOAD TYPE WITH WRENCH FLAT—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS  The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKD11 60 ~ 63HRC	KLP	A D R E G	S L	

Tip shape A

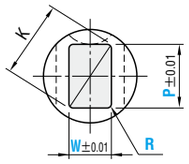


Tip shape D



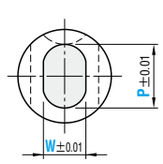
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



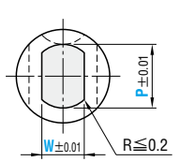
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	F
S	10	63 71 74 80 90	3.00 ~ 9.97	9.90	2.50	$\frac{W}{2}$ (R only) $0.15 \leqq R < \frac{W}{2}$	13	8
Ⓐ KLPAS	13		6.00 ~ 12.97	12.90	3.00			10
D KLPDS	16		10.00 ~ 15.97	15.90	4.00		19	13
R KLPRS	20		13.00 ~ 19.97	19.90	5.00			17
E KLPES	25		18.00 ~ 24.97	24.90	6.00			22
G KLPGS	32		22.00 ~ 31.97	31.90	7.00			29
L	10	71 74 80 90	3.00 ~ 9.97	9.90	2.50		19	8
Ⓐ KLPAL	13		6.00 ~ 12.97	12.90	3.00			10
D KLPDL	16		10.00 ~ 15.97	15.90	4.00		25	13
R KLPRL	20		13.00 ~ 19.97	19.90	5.00			17
E KLPEL	25		18.00 ~ 24.97	24.90	6.00			22
G KLPGL	32		22.00 ~ 31.97	31.90	7.00			29

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
KLPDL 16	80	P10.33	W8.64	

Days to Ship **Quotation**

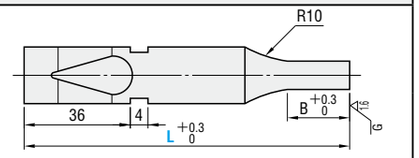
Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
KLPRS 16	LC70.5	P12.00	W10.00	R3.00	BC15.5

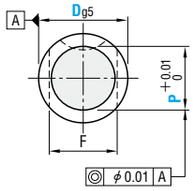
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change $PC \geqq \frac{Pmin.}{2}$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 / 2.00 ~ 3.99 / 4.00 ~ — Bmax.: 20 / 35 / 45	Tip diameter change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{P \cdot Wmin.}{2}$ 0.01mm increments P·W: 1.25 ~ 1.49 / 1.50 ~ 1.99 / 2.00 ~ 3.49 / 3.50 ~ 4.99 / 5.00 ~ — Bmax.: 8 / 13 / 19 / 25 / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 45mm longer than tip length (BC).		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip shape D corners.		

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change 45+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 45mm or less, tip length is adjusted to (Full length−45).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0° 90° 180° 270° Ball position change 1° increments	

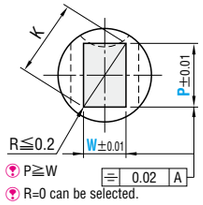
BALL-LOCK PUNCHES
—HEAVY LOAD TYPE WITH WRENCH FLAT—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS  The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKH51 61 ~ 64HRC	KBP	A D R E G	S L	

Tip shape A

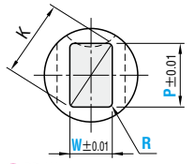


Tip shape D



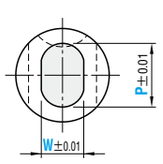
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



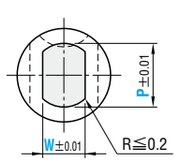
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	F
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	$\frac{W}{2}$ (R only) $0.15 \leqq R < \frac{W}{2}$	13	8
Ⓐ KBPAS	13		6.00 ~ 12.97	12.90	3.00			10
D KBPDS	16		10.00 ~ 15.97	15.90	4.00		19	13
R KBPRS	20		13.00 ~ 19.97	19.90	5.00			17
E KBPES	25		18.00 ~ 24.97	24.90	6.00			22
G KBPGS	32		22.00 ~ 31.97	31.90	7.00			29
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19	8
Ⓐ KBPAL	13		6.00 ~ 12.97	12.90	3.00			10
D KBPDL	16		10.00 ~ 15.97	15.90	4.00		25	13
R KBPRL	20		13.00 ~ 19.97	19.90	5.00			17
E KBPEL	25		18.00 ~ 24.97	24.90	6.00			22
G KBPGL	32		22.00 ~ 31.97	31.90	7.00			29

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
KBPRL 32	100	P26.20	W14.00	R3.00

Days to Ship **Quotation**

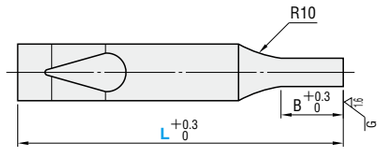
Alterations

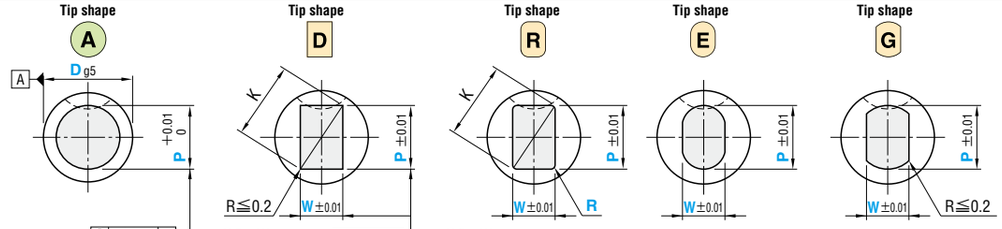
Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
KBPDS 32	100	P26.20	W14.00		KC90

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change $PC \geqq \frac{Pmin.}{2}$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 / 2.00 ~ 3.99 / 4.00 ~ 5.99 / 6.00 ~ — Bmax.: 20 / 35 / 45 / 50	Tip diameter change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{P \cdot Wmin.}{2}$ 0.01mm increments P·W: 1.25 ~ 1.49 / 1.50 ~ 1.99 / 2.00 ~ 3.49 / 3.50 ~ 4.99 / 5.00 ~ — Bmax.: 8 / 13 / 19 / 25 / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 50mm longer than tip length (BC).		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip shape D corners.		

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change 50+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0° 90° 180° 270° Ball position change 1° increments	

BALL-LOCK PUNCHES
—HEAVY LOAD ECONOMY TYPE TiCN COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	H—EBP	A D R E G	S L	



- Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$
- Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	$0.15 \leqq R < \frac{W}{2}$ (R only)	13
Ⓐ H—EBPAS	13		6.00 ~ 12.97	12.90	3.00		
Ⓓ H—EBPDS / Ⓡ H—EBPRS	16		10.00 ~ 15.97	15.90	4.00		19
Ⓔ H—EBPES	20		13.00 ~ 19.97	19.90	5.00		
Ⓖ H—EBPGS	25		18.00 ~ 24.97	24.90	6.00		
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19
Ⓐ H—EBPAL	13		6.00 ~ 12.97	12.90	3.00		
Ⓓ H—EBPDL / Ⓡ H—EBPRL	16		10.00 ~ 15.97	15.90	4.00		25
Ⓔ H—EBPEL	20		13.00 ~ 19.97	19.90	5.00		
Ⓖ H—EBPGL	25		18.00 ~ 24.97	24.90	6.00		

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
H—EBPRL 25	100	P22.20	W14.00	R3.00

Days to Ship Quotation

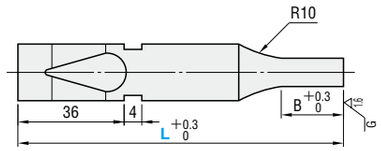
Alterations

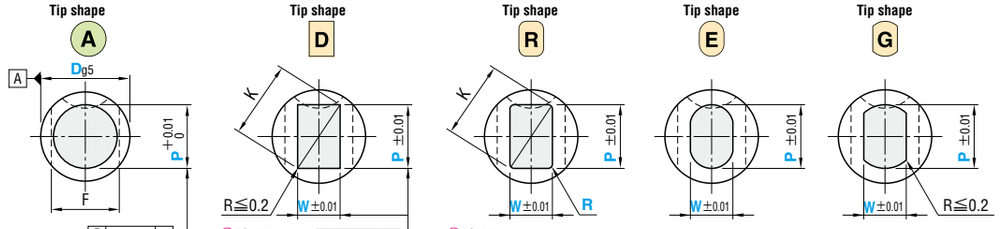
Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC…etc.)
H—EBPDS 20	100	P16.30	W10.00		KC90

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change $PC \geqq \frac{Pmin.}{2}$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 → Bmax 20; 2.00 ~ 3.99 → 35; 4.00 ~ 5.99 → 45; 6.00 ~ → 50	Tip diameter change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{P \cdot Wmin.}{2}$ 0.01mm increments P·W: 1.25 ~ 1.49 → Bmax 8; 1.50 ~ 1.99 → 13; 2.00 ~ 3.49 → 19; 3.50 ~ 4.99 → 25; 5.00 ~ → 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 50mm longer than tip length (BC).		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Cannot be used for D>13	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$ Cannot be used for D>13	
	SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip shape D corners.		

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change 50+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0° 90° 180° 270° Ball position change 1° increments	

BALL-LOCK PUNCHES
—HEAVY LOAD WITH WRENCH FLAT TiCN COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat—  RoHS The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	H—KBP	A D R E G	S L	



- Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$
- Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	F
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	8
Ⓐ H—KBPAS	13		6.00 ~ 12.97	12.90	3.00			10
Ⓓ H—KBPDS / Ⓡ H—KBPRS	16		10.00 ~ 15.97	15.90	4.00		19	13
Ⓔ H—KBPES	20		13.00 ~ 19.97	19.90	5.00			17
Ⓖ H—KBPGS	25		18.00 ~ 24.97	24.90	6.00			22
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19	8
Ⓐ H—KBPAL	13		6.00 ~ 12.97	12.90	3.00			10
Ⓓ H—KBPDL / Ⓡ H—KBPRL	16		10.00 ~ 15.97	15.90	4.00		25	13
Ⓔ H—KBPEL	20		13.00 ~ 19.97	19.90	5.00			17
Ⓖ H—KBPGL	25		18.00 ~ 24.97	24.90	6.00			22

Price **Quotation**

Order

Catalog No.	L	P	W	R (R only)
H—KBPRL 25	100	P21.20	W11.00	R3.00

Days to Ship Quotation

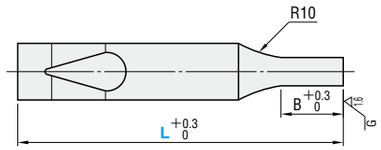
Alterations

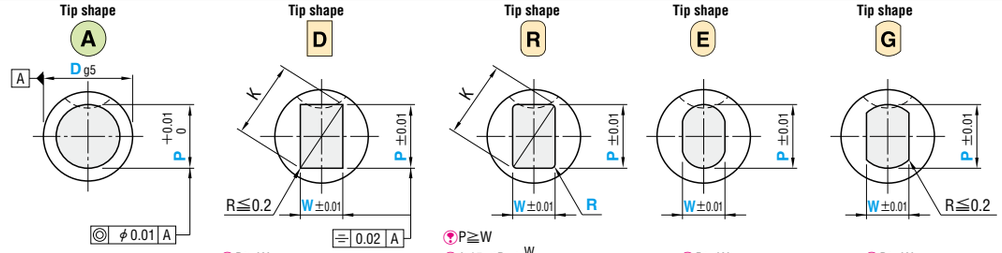
Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC…etc.)
H—KBPDS 25	100	P23.50	W13.00		KC90

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change $PC \geqq \frac{Pmin.}{2}$ 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P: 1.50 ~ 1.99 → Bmax 20; 2.00 ~ 3.99 → 35; 4.00 ~ 5.99 → 45; 6.00 ~ → 50	Tip diameter change $PC \geqq \frac{P \cdot Wmin.}{2}$ $WC \geqq \frac{P \cdot Wmin.}{2}$ 0.01mm increments P·W: 1.25 ~ 1.49 → Bmax 8; 1.50 ~ 1.99 → 13; 2.00 ~ 3.49 → 19; 3.50 ~ 4.99 → 25; 5.00 ~ → 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 50mm longer than tip length (BC).		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Cannot be used for D>13	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$ Cannot be used for D>13	
	SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip shape D corners.		

Alterations	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change 50+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0° 90° 180° 270° Ball position change 1° increments	

BALL-LOCK PUNCHES
—HEAVY LOAD ECONOMY TYPE HW COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	HW—EBP	A D R E G	S L	



P≧W
K=√(P²+W²)
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²)+2R
P>W
P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	0.15≦R<W/2 (R only)	13
Ⓐ HW—EBPAS	13		6.00 ~ 12.97	12.90	3.00		
Ⓓ HW—EBPDS	16		10.00 ~ 15.97	15.90	4.00		19
Ⓡ HW—EBPRS	20		13.00 ~ 19.97	19.90	5.00		
Ⓔ HW—EBPES	25		18.00 ~ 24.97	24.90	6.00		
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19
Ⓐ HW—EBPAL	13		6.00 ~ 12.97	12.90	3.00		
Ⓓ HW—EBPDL	16		10.00 ~ 15.97	15.90	4.00		25
Ⓡ HW—EBPRL	20		13.00 ~ 19.97	19.90	5.00		
Ⓔ HW—EBPEL	25		18.00 ~ 24.97	24.90	6.00		
Ⓖ HW—EBPGL							

P Price Quotation

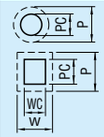
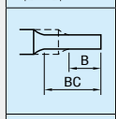
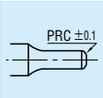
Order

Catalog No.	L	P	W	R (R only)
HW—EBPRL 25	100	P22.20	W14.00	R3.00

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC…etc.)
HW—EBPDS 25	100	P21.30	W10.00		KC90

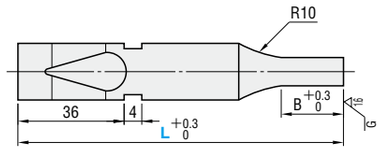
Alterations	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip diameter change PC ≧ Pmin./2 0.01mm increments	Tip diameter change PC ≧ P·Wmin./2 WC ≧ 0.01mm increments	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 50mm longer than tip length (BC).		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2	———	

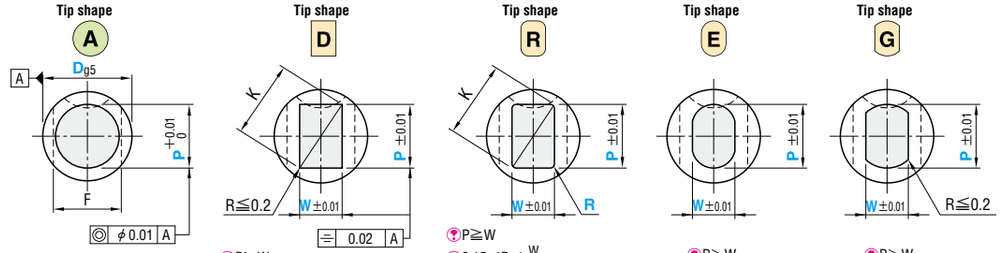
P·Kmax.	Bmax
1.50 ~ 1.99	20
2.00 ~ 3.99	35
4.00 ~ 5.99	45
6.00 ~	50

P·W	Bmax
1.25 ~ 1.49	8
1.50 ~ 1.99	13
2.00 ~ 3.49	19
3.50 ~ 4.99	25
5.00 ~	30

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length	LC	Full length change 50+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		Quotation
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	———	0° 270° 90° 180° Ball position change 1° increments	

BALL-LOCK PUNCHES
—HEAVY LOAD WITH WRENCH FLAT HW COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat—  RoHS The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	HW—KBP	A D R E G	S L	



P≧W
K=√(P²+W²)
P≧W
0.15≦R<W/2
K=√((P−2R)²+(W−2R)²)+2R
P>W
P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	F
S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50	0.15≦R<W/2 (R only)	13	8
Ⓐ HW—KBPAS	13		6.00 ~ 12.97	12.90	3.00			10
Ⓓ HW—KBPDS	16		10.00 ~ 15.97	15.90	4.00		19	13
Ⓡ HW—KBPRS	20		13.00 ~ 19.97	19.90	5.00			17
Ⓔ HW—KBPES	25		18.00 ~ 24.97	24.90	6.00			22
L	10	80 90 100	3.00 ~ 9.97	9.90	2.50		19	8
Ⓐ HW—KBPAL	13		6.00 ~ 12.97	12.90	3.00			10
Ⓓ HW—KBPDL	16		10.00 ~ 15.97	15.90	4.00		25	13
Ⓡ HW—KBPRL	20		13.00 ~ 19.97	19.90	5.00			17
Ⓔ HW—KBPEL	25		18.00 ~ 24.97	24.90	6.00			22
Ⓖ HW—KBPGL								

P Price Quotation

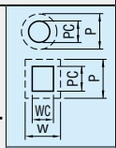
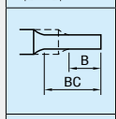
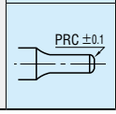
Order

Catalog No.	L	P	W	R (R only)
HW—KBPRL 25	100	P21.20	W11.00	R3.00

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC…etc.)
HW—KBPDS 20	100	P16.50	W10.50		KC90

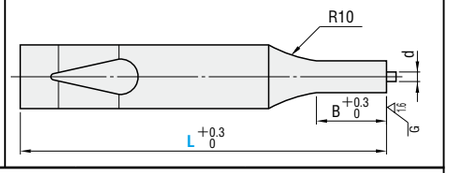
Alterations	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip diameter change PC ≧ Pmin./2 0.01mm increments	Tip diameter change PC ≧ P·Wmin./2 WC ≧ 0.01mm increments	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1mm increments Full length (L) must be at least 50mm longer than tip length (BC).		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2	———	

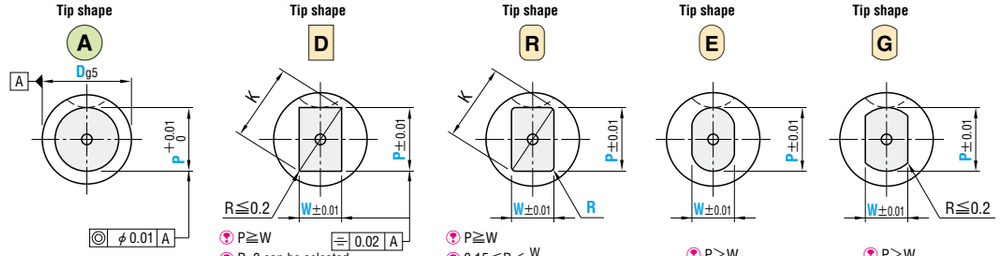
P·Kmax.	Bmax
1.50 ~ 1.99	20
2.00 ~ 3.99	35
4.00 ~ 5.99	45
6.00 ~	50

P·W	Bmax
1.25 ~ 1.49	8
1.50 ~ 1.99	13
2.00 ~ 3.49	19
3.50 ~ 4.99	25
5.00 ~	30

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length	LC	Full length change 50+B(BC)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length (LC) and tip length (B) is 50mm or less, tip length is adjusted to (Full length−50).		Quotation
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	———	0° 270° 90° 180° Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—LIGHT LOAD TYPE (ECONOMY)—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKD11 60 ~ 63HRC	ELJ	A D R E G	S L	



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	d (Hole diameter)
S	10	63 71 74 80 90	3.00 ~ 9.97	9.90	3.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	1.5
Ⓐ ELJAS	13		6.00 ~ 12.97	12.90	6.00			1.8
D ELJDS	16		10.00 ~ 15.97	15.90	6.00		19	2.8
R ELJRS	20		13.00 ~ 19.97	19.90	6.00			
E ELJES	25		18.00 ~ 24.97	24.90	6.00			
G ELJGS	32		22.00 ~ 31.97	31.90	6.00			
L	10	71 74 80 90	3.00 ~ 9.97	9.90	3.00		19	1.5
Ⓐ ELJAL	13		6.00 ~ 12.97	12.90	6.00			1.8
D ELJDL	16		10.00 ~ 15.97	15.90	6.00		25	2.8
R ELJRL	20		13.00 ~ 19.97	19.90	6.00			
E ELJEL	25		18.00 ~ 24.97	24.90	6.00			
G ELJGL	32		22.00 ~ 31.97	31.90	6.00			

P Price Quotation

Order: Catalog No. — L — P — W — R (R only)
ELJEL 25 — 80 — P21.00 — W12.40

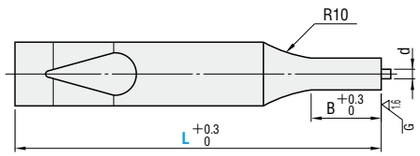
Days to Ship: Quotation

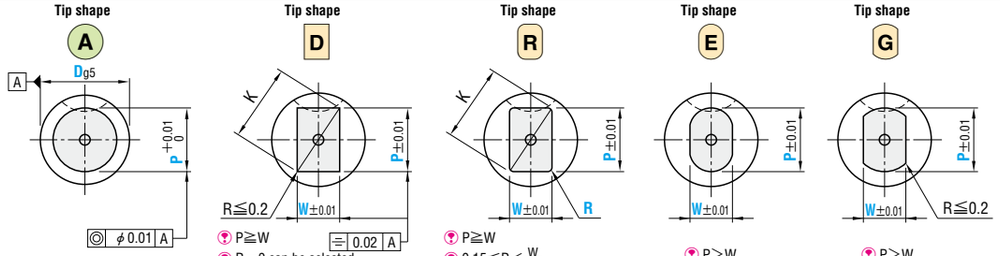
Alterations: Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·KC, etc.)
ELJEL 25 — 80 — P21.00 — W12.40 — PKC

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) D / PCmin.: 10 2.80; 13 5.00; 16 8.00; 20 9.00; 25 9.00; 32 15.00	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments D / PC·WCmin.: 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00; 32 5.00	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
	SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC±0.05	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments ⓟ PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	———	Quotation
	PCC±0.05	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments ⓟ PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	———	
Alterations to full length	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) ⓟ Tip length B is shortened by (L−LC).		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	———	0° 90° 180° 270° Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD TYPE (ECONOMY)—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC	EBJ	A D R E G	S L	



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	1.5
Ⓐ EBJAS	13		6.00 ~ 12.97	12.90	6.00			1.8
D EBJDS	16		10.00 ~ 15.97	15.90	6.00		19	2.8
R EBJRS	20		13.00 ~ 19.97	19.90	6.00			
E EBJES	25		18.00 ~ 24.97	24.90	6.00			
G EBJGS	32		22.00 ~ 31.97	31.90	6.00			
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	1.5
Ⓐ EBJAL	13		6.00 ~ 12.97	12.90	6.00			1.8
D EBJDL	16		10.00 ~ 15.97	15.90	6.00		25	2.8
R EBJRL	20		13.00 ~ 19.97	19.90	6.00			
E EBJEL	25		18.00 ~ 24.97	24.90	6.00			
G EBJGL	32		22.00 ~ 31.97	31.90	6.00			

P Price Quotation

Order: Catalog No. — L — P — W — R (R only)
EBJAS 13 — 71 — P12.56

Days to Ship: Quotation

Alterations: Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC·KC, etc.)
EBJAS 13 — LC78.5 — P12.56

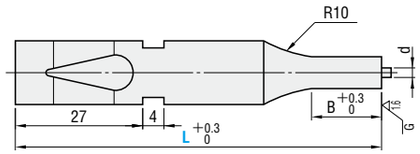
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) D / PCmin.: 10 2.80; 13 5.00; 16 8.00; 20 9.00; 25 9.00; 32 15.00	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments D / PC·WCmin.: 10 2.80; 13 5.00; 16 5.00; 20 5.00; 25 5.00; 32 5.00	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
	SC	Lapping of tip ⓟ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

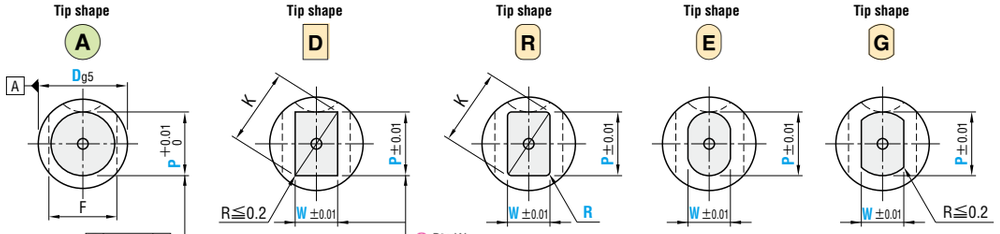
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC±0.05	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments ⓟ PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	———	Quotation
	PCC±0.05	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments ⓟ PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	———	
Alterations to full length	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) ⓟ Tip length B is shortened by (L−LC).		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	———	0° 90° 180° 270° Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—LIGHT LOAD TYPE WITH WRENCH FLAT—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS	Equivalent to SKD11 60~63HRC	KLJ	A D R E G	S L	

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





P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

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

P>W

P>W

Catalog No. Type	D	L	0.01mm increments min. P max.	Ⓐ P·Kmax.	D R E G P·Wmin.	R R	B	F	d (Hole diameter)
S	10	63 71 74 80 90	3.00 ~ 9.97	9.90	3.00	0.15≦R<W/2 (R only)	13	8	1.5
Ⓐ KLJAS	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D KLJDS	16		10.00 ~ 15.97	15.90	6.00		19	13	2.8
R KLJRS	20		13.00 ~ 19.97	19.90	6.00			17	
E KLJES	25		18.00 ~ 24.97	24.90	6.00			22	
G KLJGS	32		22.00 ~ 31.97	31.90	6.00			29	
L	10	71 74 80 90	3.00 ~ 9.97	9.90	3.00		19	8	1.5
Ⓐ KLJAL	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D KLJDL	16		10.00 ~ 15.97	15.90	6.00		25	13	2.8
R KLJRL	20		13.00 ~ 19.97	19.90	6.00			17	
E KLJEL	25		18.00 ~ 24.97	24.90	6.00			22	
G KLJGL	32		22.00 ~ 31.97	31.90	6.00			29	

P Price Quotation

Order

Catalog No.	L	P	W	R (R only)
KLJDS 20	71	P16.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
KLJDS 20	71	P16.00	W10.00		PKC

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	SC	Lapping of tip. P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

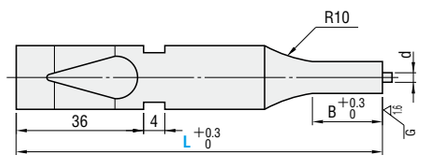
D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

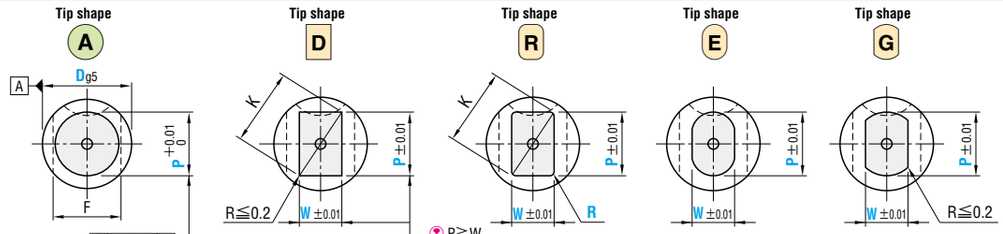
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is shortened by (L−LC).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0°, 90°, 180°, 270° Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD TYPE WITH WRENCH FLAT—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS	Equivalent to SKH51 61~64HRC	KBJ	A D R E G	S L	

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





P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

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

P>W

P>W

Catalog No. Type	D	L	0.01mm increments min. P max.	Ⓐ P·Kmax.	D R E G P·Wmin.	R R	B	F	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	0.15≦R<W/2 (R only)	13	8	1.5
Ⓐ KBJAS	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D KBJDS	16		10.00 ~ 15.97	15.90	6.00		19	13	2.8
R KBJRS	20		13.00 ~ 19.97	19.90	6.00			17	
E KBJES	25		18.00 ~ 24.97	24.90	6.00			22	
G KBJGS	32		22.00 ~ 31.97	31.90	6.00			29	
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	8	1.5
Ⓐ KBJAL	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D KBJDL	16		10.00 ~ 15.97	15.90	6.00		25	13	2.8
R KBJRL	20		13.00 ~ 19.97	19.90	6.00			17	
E KBJEL	25		18.00 ~ 24.97	24.90	6.00			22	
G KBJGL	32		22.00 ~ 31.97	31.90	6.00			29	

P Price Quotation

Order

Catalog No.	L	P	W	R (R only)
KBJDL 20	80	P16.00	W10.00	

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC, etc.)
KBJDL 20	80	P16.00	W10.00		LKC

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
	SC	Lapping of tip. P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

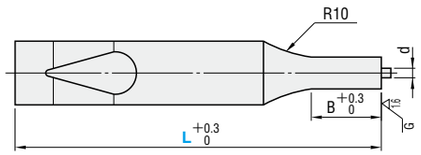
D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

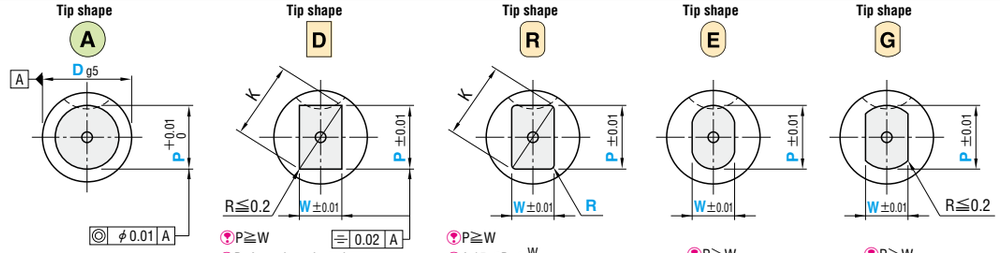
D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is shortened by (L−LC).		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others	KC	—	0°, 90°, 180°, 270° Ball position change 1° increments	

BALL-LOCK PUNCHES & DIES/RETAINERS

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD ECONOMY TYPE TiCN COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	H—EBJ	A D R E G	S L	



Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type	D	L	0.01mm increments min. P max.	Ⓐ P·Kmax.	Ⓐ P·Wmin.	D R E G R	B	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	0.15≦R< W/2 (R only)	13	1.5
Ⓐ H—EBJAS	13		6.00 ~ 12.97	12.90	6.00			1.8
D H—EBJDS	16		10.00 ~ 15.97	15.90	6.00		19	2.8
R H—EBJRS								
E H—EBJES	20		13.00 ~ 19.97	19.90	6.00			
G H—EBJGS	25		18.00 ~ 24.97	24.90	6.00			
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	1.5
Ⓐ H—EBJAL	13		6.00 ~ 12.97	12.90	6.00			1.8
D H—EBJDL	16		10.00 ~ 15.97	15.90	6.00		25	2.8
R H—EBJRL								
E H—EBJEL	20		13.00 ~ 19.97	19.90	6.00			
G H—EBJGL	25		18.00 ~ 24.97	24.90	6.00			

P Price **Quotation**

Order

Catalog No. — L — P — W — R (R only)

H—EBJAS 13 — 71 — P12.56

Days to Ship **Quotation**

Alterations

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

H—EBJAS 13 — LC78.5 — P12.56

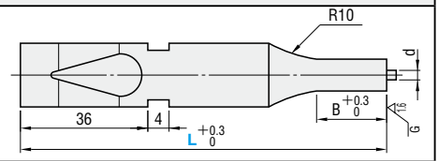
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⊗ Cannot be used for D>13	Tip tolerance change P·W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D>13	
	SC	Lapping of tip ♀ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

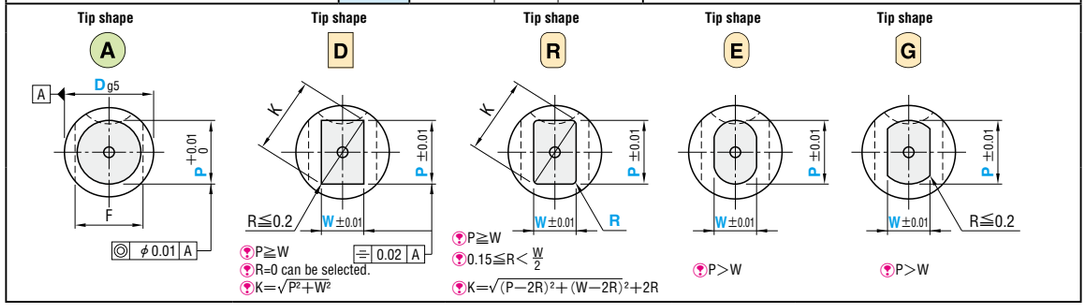
D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments ♀ PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments ♀ PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change L—(B—2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) ♀ Tip length B is shortened by (L—LC).		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD WITH WRENCH FLAT TiCN COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS  ♀ The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKH51 61~64HRC Surface 3000HV	H—KBJ	A D R E G	S L	



Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type	D	L	0.01mm increments min. P max.	Ⓐ P·Kmax.	Ⓐ P·Wmin.	D R E G R	B	F	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	0.15≦R< W/2 (R only)	13	8	1.5
Ⓐ H—KBJAS	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D H—KBJDS	16		10.00 ~ 15.97	15.90	6.00		19	13	2.8
R H—KBJRS									
E H—KBJES	20		13.00 ~ 19.97	19.90	6.00			17	
G H—KBJGS	25		18.00 ~ 24.97	24.90	6.00			22	
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	8	1.5
Ⓐ H—KBJAL	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D H—KBJDL	16		10.00 ~ 15.97	15.90	6.00		25	13	2.8
R H—KBJRL									
E H—KBJEL	20		13.00 ~ 19.97	19.90	6.00			17	
G H—KBJGL	25		18.00 ~ 24.97	24.90	6.00			22	

P Price **Quotation**

Order

Catalog No. — L — P — W — R (R only)

H—KBJDL 20 — 80 — P16.00 — W10.00

Days to Ship **Quotation**

Alterations

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

H—KBJDL 20 — 80 — P16.00 — W10.00 — LKC

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 ⊗ Cannot be used for D>13	Tip tolerance change P·W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D>13	
	SC	Lapping of tip ♀ P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		

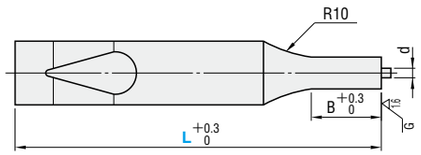
D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

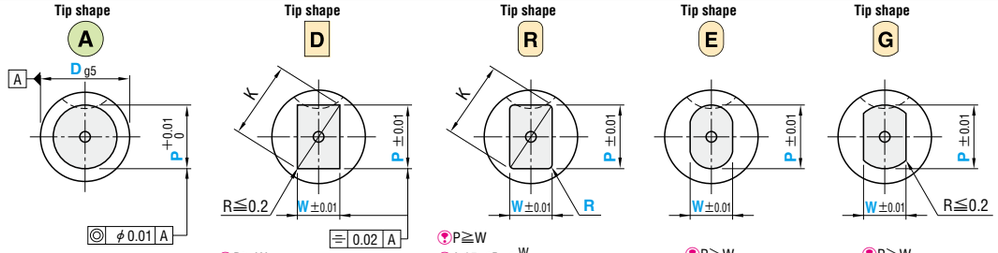
D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments ♀ PRC≦(P−d−0.5)/2 ⊗ Cannot be combined with PCC.	—	Quotation
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments ♀ PCC≦(P−d−0.5)/2 ⊗ Cannot be combined with PRC.	—	
Alterations to full length	LC	Full length change L—(B—2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) ♀ Tip length B is shortened by (L—LC).		
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others	KC	—	Ball position change 1° increments	

BALL-LOCK PUNCHES & DIES/RETAINERS

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD ECONOMY TYPE HW COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
 RoHS	Equivalent to SKH51 61 ~ 64HRC Surface 3000HV	HW—EBJ	A D R E G	S L	



Catalog No. Type	D	L	0.01mm increments min. P max. (Ⓐ)	P·Kmax. (D R E G)	P·Wmin. (D R E G)	R (R)	B	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	0.15≦R< W/2 (Ⓡ only)	13	1.5
Ⓐ HW—EBJAS	13		6.00 ~ 12.97	12.90	6.00			1.8
D HW—EBJDS	16		10.00 ~ 15.97	15.90	6.00		19	2.8
R HW—EBJRS								
E HW—EBJES	20		13.00 ~ 19.97	19.90	6.00			
G HW—EBJGS	25		18.00 ~ 24.97	24.90	6.00			
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	1.5
Ⓐ HW—EBJAL	13		6.00 ~ 12.97	12.90	6.00			1.8
D HW—EBJDL	16		10.00 ~ 15.97	15.90	6.00		25	2.8
R HW—EBJRL								
E HW—EBJEL	20		13.00 ~ 19.97	19.90	6.00			
G HW—EBJGL	25		18.00 ~ 24.97	24.90	6.00			

P Price **Quotation**

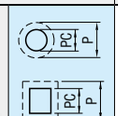
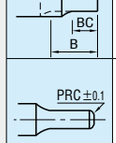
Order

Catalog No.	L	P	W	R (Ⓡ only)
HW—EBJAS 13	71	P12.56		

Days to Ship **Quotation**

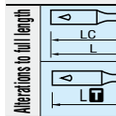
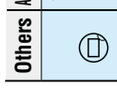
Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC...etc.)
HW—EBJAS 13	LC78.5	P12.56			

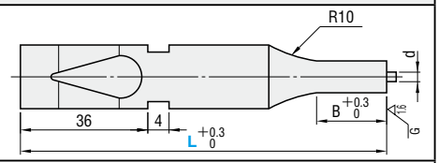
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: 	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d−0.5)/2	——	

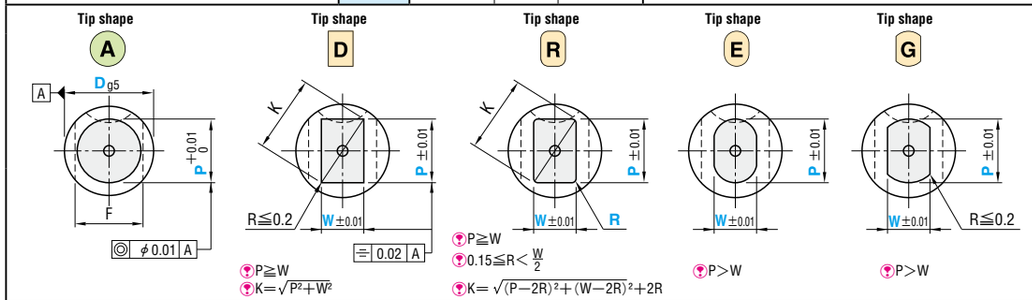
D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length: 	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is shortened by (L−LC).		Quotation
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others:	KC	——	0° 270° 90° 180° Ball position change 1° increments	

BALL-LOCK JECTOR PUNCHES
—HEAVY LOAD WITH WRENCH FLAT HW COATING—

Shank type	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—With wrench flat— RoHS  The wrench flat is used to check that the punch is correctly locked in place. P.796	Equivalent to SKH51 61~64HRC Surface 3000HV	HW—KBJ	A D R E G	S L	



Catalog No. Type	D	L	0.01mm increments min. P max. (Ⓐ)	P·Kmax. (D R E G)	P·Wmin. (D R E G)	R (R)	B	F	d (Hole diameter)
S	10	71 80 90 100	3.00 ~ 9.97	9.90	3.00	0.15≦R< W/2 (Ⓡ only)	13	8	1.5
Ⓐ HW—KBJAS	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D HW—KBJDS	16		10.00 ~ 15.97	15.90	6.00		19	13	2.8
R HW—KBJRS									
E HW—KBJES	20		13.00 ~ 19.97	19.90	6.00			17	
G HW—KBJGS	25		18.00 ~ 24.97	24.90	6.00			22	
L	10	80 90 100	3.00 ~ 9.97	9.90	3.00		19	8	1.5
Ⓐ HW—KBJAL	13		6.00 ~ 12.97	12.90	6.00			10	1.8
D HW—KBJDL	16		10.00 ~ 15.97	15.90	6.00		25	13	2.8
R HW—KBJRL									
E HW—KBJEL	20		13.00 ~ 19.97	19.90	6.00			17	
G HW—KBJGL	25		18.00 ~ 24.97	24.90	6.00			22	

P Price **Quotation**

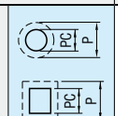
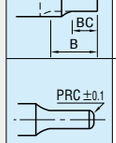
Order

Catalog No.	L	P	W	R (Ⓡ only)
HW—KBJDL 20	80	P16.00	W10.00	

Days to Ship **Quotation**

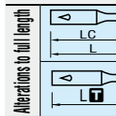
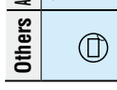
Alterations

Catalog No.	L (LC)	P (PC)	W (WC)	R	(BC·KC...etc.)
HW—KBJDL 20	80	P16.00	W10.00		LKC

Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip: 	PC WC	Tip diameter change PC≧PCmin. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	Tip diameter change PC·WC≧PC·WCmin. 0.01mm increments	Quotation
	BC	Tip length change 2≦BC<B 0.1mm increments		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d−0.5)/2	——	

D	PCmin.
10	2.80
13	5.00
16	8.00
20	9.00
25	9.00
32	15.00

D	PC·WCmin.
10	2.80
13	5.00
16	5.00
20	5.00
25	5.00
32	5.00

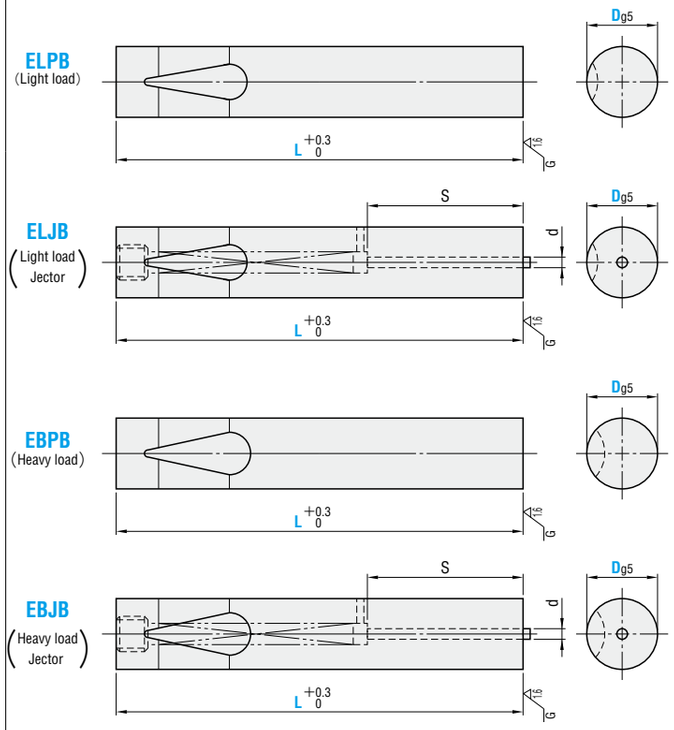
Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length: 	LC	Full length change L−(B−2)≦LC<L 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.) Tip length B is shortened by (L−LC).		Quotation
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others:	KC	——	0° 270° 90° 180° Ball position change 1° increments	

BALL-LOCK PUNCHES & DIES/RETAINERS

BALL-LOCK PUNCH BLANKS
—ECONOMY—

Applicable L dimension	Application	Catalog No.	M H
63・71・74・80・90	Light load	ELPB	Equivalent to SKD11 60～63HRC
	Light-load jector	ELJB	
71・80・90・100	Heavy load	EBPB	Equivalent to SKH51 61～64HRC
	Heavy-load jector	EBJB	

RoHS



Catalog No. Type		D	L Light load					L Heavy load				d (Hole diameter)	S
(Light load)	ELPB	10	63	71	74	80	90	71	80	90	100	1.5	28
(Light load・jector)	ELJB	13										1.8	
(Heavy load)	EBPB	16										2.8	36
(Heavy load・jector)	EBJB	20											
		25											
		32											

Order: Catalog No. — L
ELPB 16 — 71

Price: Quotation

Days to Ship: Quotation

Alterations: Catalog No. — L (LC) — (LKC)
ELPB 16 — LC72.5 — LKC

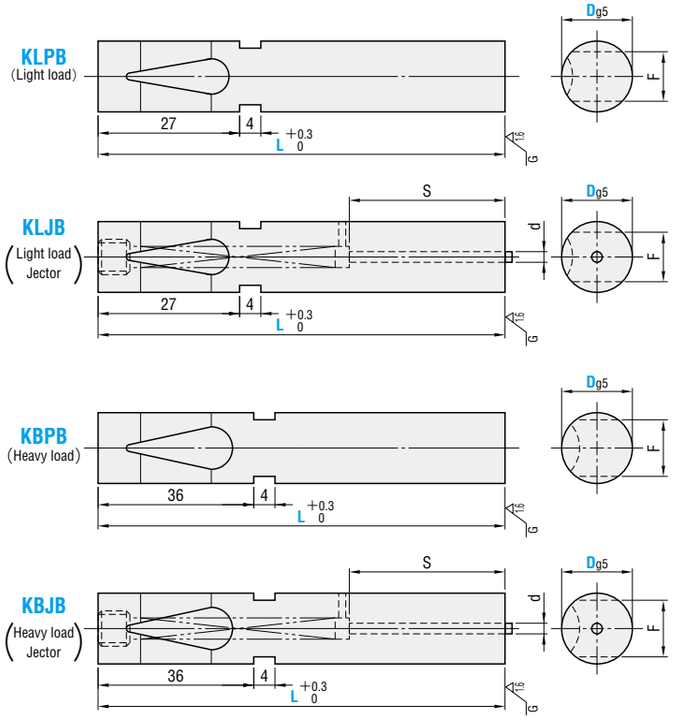
Alteration	Code	Spec.	1Code
Alterations to full length (LC, L)	LC	Full length change 0.1mm increments Light load 50≦LC<90 Heavy load 60≦LC<100 S dimension is shortened by (L—LC).	Quotation
Alterations to full length (L T)	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	

BALL-LOCK PUNCH BLANKS
—TYPE WITH WRENCH FLAT —

Applicable L dimension	Application	Catalog No.	M H
63・71・74・80・90	Light load	KLPB	Equivalent to SKD11 60～63HRC
	Light-load jector	KLJB	
71・80・90・100	Heavy load	KBPB	Equivalent to SKH51 61～64HRC
	Heavy-load jector	KBJB	

RoHS

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



Catalog No. Type		D	L Light load					L Heavy load				F	d (Hole diameter)	S
(Light load)	KLPB	10	63	71	74	80	90	71	80	90	100	8	1.5	28
(Light load・jector)	KLJB	13										10	1.8	
(Heavy load)	KBPB	16										13	2.8	36
(Heavy load・jector)	KBJB	20										17		
		25										22		
		32										29		

Order: Catalog No. — L
KLPB 16 — 71

Price: Quotation

Days to Ship: Quotation

Alterations: Catalog No. — L (LC) — (LKC)
KLPB 16 — LC72.5
KBJB 25 — 90 — LKC

Alteration	Code	Spec.	1Code
Alterations to full length (LC, L)	LC	Full length change 0.1mm increments Light load 50≦LC<90 Heavy load 60≦LC<100 S dimension is shortened by (L—LC).	Quotation
Alterations to full length (L T)	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	

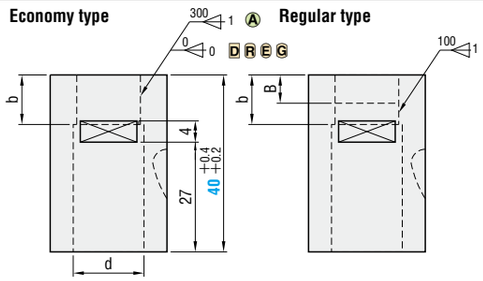
BALL-LOCK BUTTON DIES

RoHS

M H	Application	Catalog No. Type	Hole shape
Equivalent to SKD11 60～63HRC	Economy type	ELD	A D R E G
	Regular type	LD	

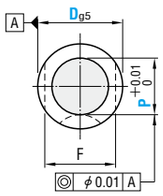
The wrench flat is used to check that the punch is correctly locked in place. P.796

The hole shape can be selected from Hole shape A ～ G in the figure below.

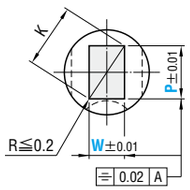


Use light-load type retainers.These dies cannot be used with heavy-load type retainers.

Hole shape A



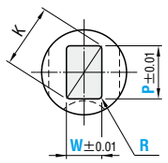
Hole shape D



P≧W

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

Hole shape R

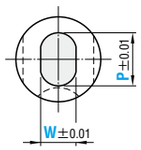


P≧W

$0.15 \leqq R < \frac{W}{2}$

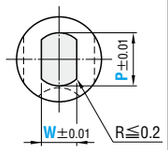
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Hole shape E



P>W

Hole shape G



P>W

Catalog No. Type		D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	B	b	d	F	Base unit price 1～9 pieces ELDA	ELDD·ELDR ELDE·ELDG	LDA	LDD·LDR LDE·LDG
Economy type	Regular type														
Ⓐ ELDA	LDA	13	40	3.00～5.00	5.00	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	6	10	5.4	10				
Ⓓ ELDD	LDD	16		3.50～8.00	8.00	3.00				8.4	13				
Ⓡ ELDR	LDR	20		7.00～11.00	11.00	3.00		8	12	11.4	17				
Ⓔ ELDE	LDE	25		10.00～16.00	16.00	4.00				16.6	22				
Ⓖ ELDG	LDG	32		15.00～20.00	20.00	5.00		10	15	20.6	29				
		38		19.00～26.00	26.00	5.00				26.6	35				

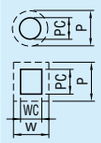
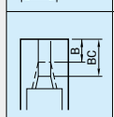
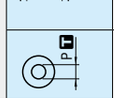
Quotation

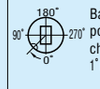
Order: Catalog No. — L — P — W — R (Ⓡ only)
ELDR 32 — 40 — P16.00 — W10.00 — R4.90

Price: Quotation

Days to Ship: Quotation

Alterations: Catalog No. — L (LC) — P (PC) — W (WC) — R — (BC·KC, etc.)
ELDR 32 — 40 — P16.00 — W10.00 — R4.00 — KC45

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to shaped hole		PC WC	Shaped hole diameter change min.: $\frac{P \cdot W_{min.}}{2} \leqq \frac{P_C}{W_C} < \frac{P}{W}$ 0.01mm increments If PC1.25～1.99, B·b=4. max.: $\frac{P}{W} < \frac{P_C}{W_C} \leqq P \cdot K_{max.} + 0.2$ 0.01mm increments		Quotation
		BC	Shaped hole depth change $1 \leqq B_C \leqq b$ 0.1mm increments Can be used for regular types only. Cannot be used for economy types.		
		PKC	Shaped hole diameter tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ Cannot be used for economy types.	——	

Alteration		Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change $33 \leqq L_C < 40$ 0.1mm increments b dimension is shortened by (L−LC). Regular type If L−LC>b−B, length of shaped hole straight portion B is b−(L−LC).		Quotation
		LKC	Full length tolerance change $L^{+0.4}_{+0.2} \Rightarrow {}^{+0.05}_{0}$		
Others		KC	——	 Ball position change 1° increments	

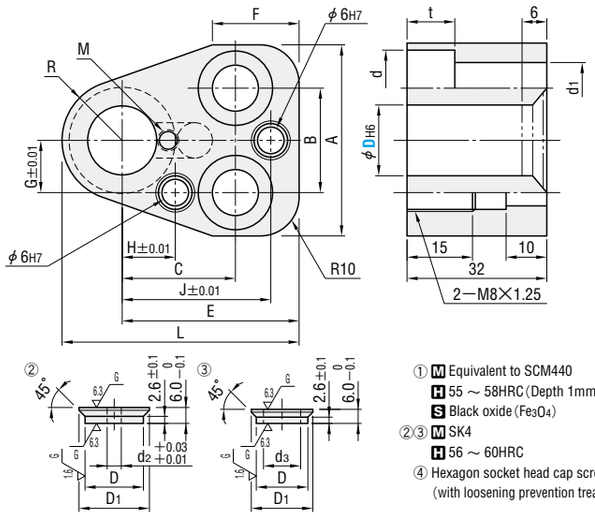
BALL-LOCK RETAINERS
—LIGHT LOAD TYPE (COMPACT)—

Refer to Notes on P.770.

Application	Catalog No.	①	②	③	④	⑤	⑥	⑦	D
For punch	CLN—P	○	○		○	○	○	○	10 ～ 32
For die	CLN—D	○		○	○	○	○	○	13 ～ 38
Retainer body for punch ＋plug	CLN—PP	○	○						10 ～ 32
Retainer body for die ＋plug	CLN—DN	○		○					13 ～ 38

RoHS

Use these retainers for light load type punches. They cannot be used for heavy load type punches.



① M Equivalent to SCM440
H 55 ～ 58HRC (Depth 1mm)
S Black oxide (Fe_3O_4)
②③ M SK4
H 56 ～ 60HRC
④ Hexagon socket head cap screw (with loosening prevention treatment)

Catalog No. / Type	D	D_{H6}	A	B	C	E	F	G	H	J	L	R	D_1	d	d_1	t	d_2	M	d_3	A
(For punch)	(10)	+0.009 0	37	20	21	35	20	10	9	29	44.5	9.5	16	14	9	10	6	4	—	④M8—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
①②④⑤⑥⑦ CLN—P	13	+0.011 0	43	26	23	38		13	11	32	50	12	19						6.2	
①② CLN—PP	16		44	24	26	40			12	34	54	14	22	17	11	12			9	④M10—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
(For die)	20	+0.013 0	48	28	27	42		16	14	36	59	17	26						12	
①③④⑤⑥⑦ CLN—D	25		50	30	30	46		18	17	39	65.5	19.5	31						17	
①③ CLN—DN	32	+0.016 0	54		33	48		21	20	42	71	23	38	19	13	14			21	④M12—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
	(38)		58		35	52		23	23	46	78	26	44				—		27	

D10 can be used for punches only. D38 can be used for dies only.

Order — Catalog No. CLN—P 16

Days to Ship — Quotation

Price — Quotation

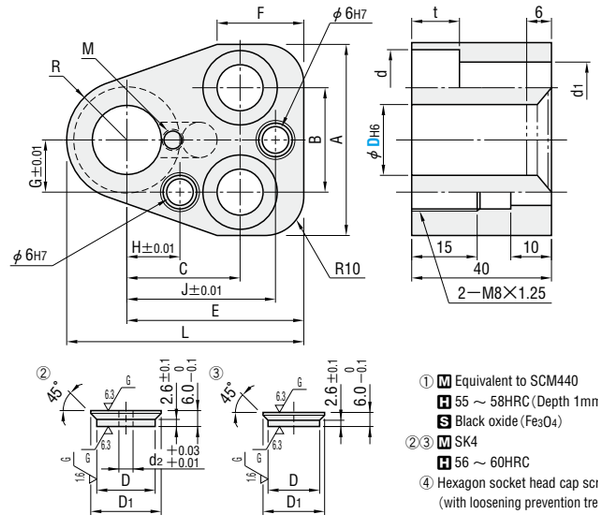
BALL-LOCK RETAINERS
—HEAVY LOAD TYPE (COMPACT)—

Refer to Notes on P.770.

Application	Catalog No.	①	②	③	④	⑤	⑥	⑦	D
For punch	CBN—P	○	○		○	○	○	○	10 ～ 32
	CBN—PN	○		○	○	○	○	○	
Retainer body ＋plug	CBN—PP	○	○						
	CBN—PNP	○		○					

RoHS

Use these retainers for heavy load type punches. They cannot be used for light load type punches.



① M Equivalent to SCM440
H 55 ～ 58HRC (Depth 1mm)
S Black oxide (Fe_3O_4)
②③ M SK4
H 56 ～ 60HRC
④ Hexagon socket head cap screw (with loosening prevention treatment)

Catalog No. / Type	D	D_{H6}	A	B	C	E	F	G	H	J	L	R	D_1	d	d_1	t	d_2	M	A
(For punch)	10	+0.009 0	37	20	21	35	20	10	9	29	44.5	9.5	16	14	9	10	6	4	④M8—45 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
①②④⑤⑥⑦ CBN—P	13	+0.011 0	43	26	23	38		13	11	32	50	12	19						
①② CBN—PP	16		44	24	26	40			12	34	54	14	22	17	11	12			④M10—50 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
①③④⑤⑥⑦ CBN—PN	20	+0.013 0	48	28	27	42		16	14	36	59	17	26						
①③ CBN—PNP	25		50	30	30	46		18	17	39	65.5	19.5	31						
	32	+0.016 0	54		33	48		21	20	42	71	23	38	19	13	14			④M12—50 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20

Order — Catalog No. CBN—P 10

Days to Ship — Quotation

Price — Quotation

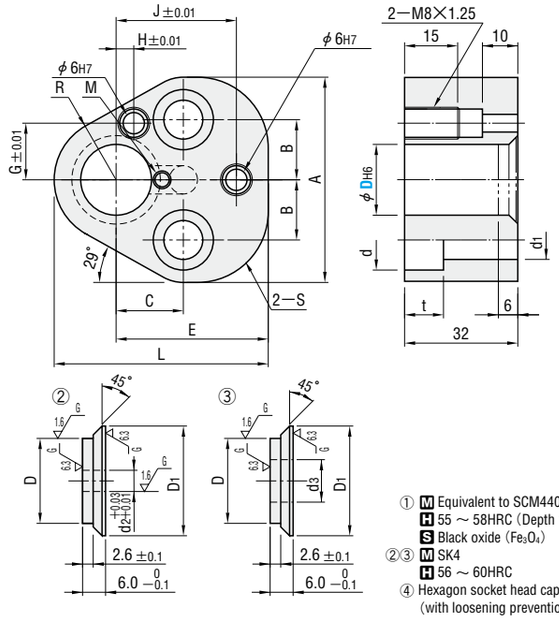
BALL-LOCK RETAINERS
—LIGHT LOAD TYPE (TRIANGLE)—

Refer to Notes on P.770.

Application	Catalog No.	①	②	③	④	⑤	⑥	⑦	D
For punch	CRN—P	○	○		○	○	○	○	10 ~ 32
For die	CRN—D	○		○	○	○	○	○	13 ~ 38
Retainer body for punch+plug	CRN—PP	○	○						10 ~ 32
Retainer body for die+plug	CRN—DN	○		○					13 ~ 38

RoHS

Use these retainers for light-load type punches. They cannot be used for heavy load type punches.



① M Equivalent to SCM440
H 55 ~ 58HRC (Depth 1mm)
S Black oxide (Fe_3O_4)
②③ M SK4
H 56 ~ 60HRC
④ Hexagon socket head cap screw (with loosening prevention treatment)

Catalog No. Type	D	D_{H6}	A	B	C	E	G	H	J	L	R	S	D_1	d	d_1	t	d_2	d_3	M	A
(For punch) ①②④⑤⑥⑦ CRN—P ①② CRN—PP	(10)	+0.009 0	43.7	11.12	19.05	35.0	9.0	7.5	26.925	44.5	9.5	12.0	16	14	9	9	6	—	4	④M8—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
	13	+0.011 0	50.0	14.27		38.1	12.0	6.5	29.970	50.8	12.7	15.2	19					6.2		
	16		53.2	15.87		39.7	13.5	6.0	31.750	54.0	14.3	16.8	22					9		
(For die) ①③④⑤⑥⑦ CRN—D ①③ CRN—DN	20	+0.013 0	59.5	17.47		42.8	16.5	5.0	33.530	60.3	17.5	20.0	26	17	11	11		12		④M10—40 ⑥MSW8 ⑤MSTM6—30 ⑦MS6—20
	25		69.1	19.84	23.82	47.7	22.0	7.0	40.640	69.9	22.2	24.7	31	19	13	14		17		④M12—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
	32	+0.016 0											38					21		
	(38)		76.6	24.00	27.00	51.4	26.0	10.0	43.993	77.4	26.0	28.5	44				—	27		

D10 can be used for punches only. D38 can be used for dies only.

Order — Catalog No. CRN—P 16

Days to Ship — Quotation

Price — Quotation

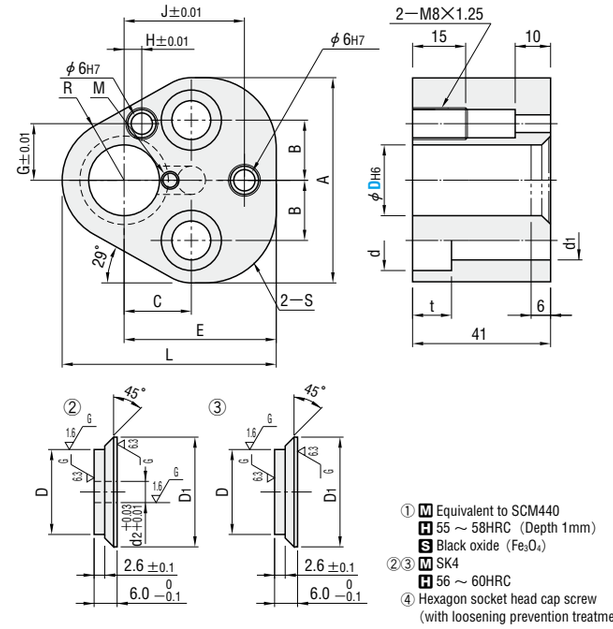
BALL-LOCK RETAINERS
—HEAVY LOAD TYPE (TRIANGLE)—

Refer to Notes on P.770.

Application	Catalog No.	①	②	③	④	⑤	⑥	⑦	D
For punch	BRN—P	○	○		○	○	○	○	10 ~ 32
	BRN—PN	○		○	○	○	○	○	
Retainer body+plug	BRN—PP	○	○						
	BRN—PNP	○		○					

RoHS

Use these retainers for heavy-load type punches. They cannot be used for light load type punches.



① M Equivalent to SCM440
H 55 ~ 58HRC (Depth 1mm)
S Black oxide (Fe_3O_4)
②③ M SK4
H 56 ~ 60HRC
④ Hexagon socket head cap screw (with loosening prevention treatment)

Catalog No. Type	D	D_{H6}	A	B	C	E	G	H	J	L	R	S	D_1	d	d_1	t	d_2	M	A
(For punch) ①②④⑤⑥⑦ BRN—P ①② BRN—PP	10	+0.009 0	43.7	11.12	19.05	35.0	9.0	7.5	26.925	44.5	9.5	12.0	16	14	9	9	6	4	④M8—45 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
	13	+0.011 0	50.0	14.27		38.1	12.0	6.5	29.970	50.8	12.7	15.2	19						
	16		53.2	15.87		39.7	13.5	6.0	31.750	54.0	14.3	16.8	22						
①③④⑤⑥⑦ BRN—PN ①③ BRN—PNP	20	+0.013 0	59.5	17.47		42.8	16.5	5.0	33.530	60.3	17.5	20.0	26	17	11	11			④M10—50 ⑥MSW8 ⑤MSTM6—30 ⑦MS6—20
	25		69.1	19.84	23.82	47.7	22.0	7.0	40.640	69.9	22.2	24.7	31	19	13	14			④M12—50 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
	32	+0.016 0											38						

Order — Catalog No. BRN—P 20

Days to Ship — Quotation

Price — Quotation

BALL-LOCK RETAINERS
—LIGHT LOAD・SPACE SAVING・SINGLE FIXING-BOLT TYPE—

Refer to Notes on P.770.

For round punch RoHS

Ⓐ

Application	Catalog No.	Components ①	②	③	④	⑦
For round punch	CLN—PS	○	○		○	○
Retainer body +plug	CLN—PN	○	○			

⑤MSTM and ⑥MSW are not included with retainers for round punches.

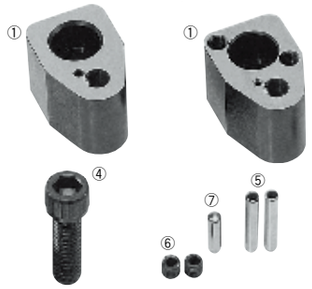
For shaped punch and button die

D R E G

Application	Catalog No.	Components ①	②	③	④	⑤	⑥	⑦
For shaped punch	CLN—FS	○	○		○	○	○	○
For button die	CLN—DS	○		○	○	○	○	○
Retainer body for shaped punch+plug	CLN—FSN	○	○					
Retainer body for button die+plug	CLN—DSN	○		○				

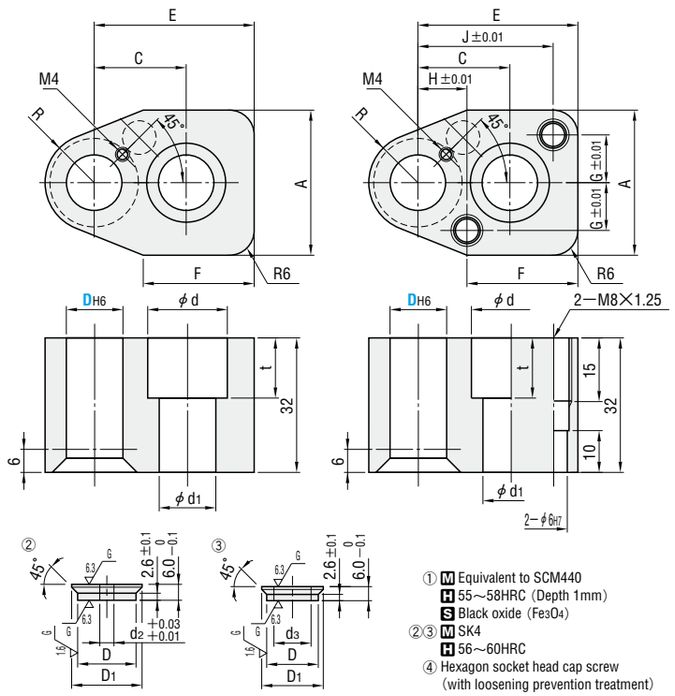
Only D13・D16 are available for button dies.

For round punch **For shaped punch and button die**



Use these retainers for light-load type punches. They cannot be used for heavy load type punches.

—For round punch— **—For shaped punch and button die—**



① M Equivalent to SCM440
H 55～58HRC (Depth 1mm)
S Black oxide (Fe_3O_4)
②③ M SK4
H 56～60HRC
④ Hexagon socket head cap screw (with loosening prevention treatment)

Catalog No. Type	D	D_{H6}	A	C	E	F	G	H	J	R	D_1	d	d_1	t	d_2	d_3	For round punch A ④ ⑦	For shaped punch A ④⑤⑥⑦
(For round punch) ①②④⑦ CLN—PS ①② CLN—PN	(10)	+0.009 0	34	22	38	26	11	12	32	11.5	16	19	13	14	6	—	④M12—40 ⑦MS6—20	④M12—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20
(For shaped punch and button die) ①②④⑤⑥⑦ CLN—FS ①③④⑤⑥⑦ CLN—DS ①② CLN—FSN ①③ CLN—DSN	13	+0.011 0									19					6.2		
	16		36	26	45	33	12		39	13	22	25	17	18		9	④M16—40 ⑦MS6—20	④M16—40 ⑤MSTM6—30 ⑥MSW8 ⑦MS6—20

D10 is available only for punch retainers.

Order — Catalog No. CLN—PS 10

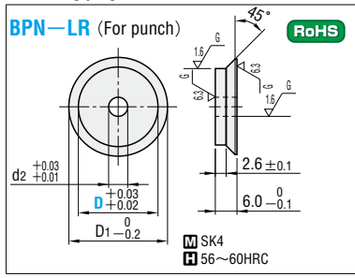
Days to Ship — Quotation

Price — Quotation

BALL-LOCK RETAINERS
—COMPONENTS—

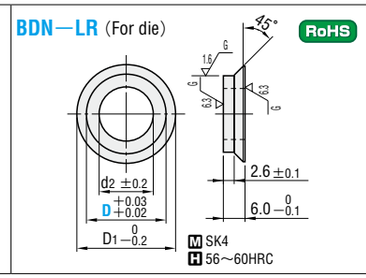
■Backing plugs for ball-lock

BPN—LR (For punch) RoHS



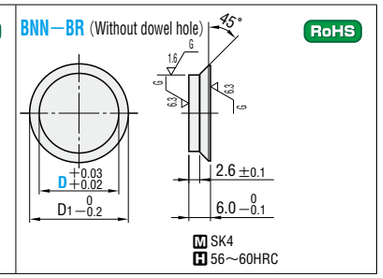
M SK4
H 56～60HRC

BDN—LR (For die) RoHS



M SK4
H 56～60HRC

BNN—BR (Without dowel hole) RoHS



M SK4
H 56～60HRC

Retainer	D_1	d_2	Catalog No. Type	D	Base unit price 1～4 pieces	Volume discount unit price 5～9 pieces	10～19 pieces	20～50 pieces
CRN—P BRN—P CLN—P CBN—P CCRN CLN—PS CLN—FS LRGD—L/R BRGD—L/R	16	6	BPN—LR	10	Quotation			
	19			13				
	22			16				
	26			20				
	31			25				
	38			32				
CRN—D CLN—D	19	6.2	BDN—LR	13				
	22	9		16				
	26	12		20				
	31	17		25				
	38	21		32				
	44	27		38				
BRN—P CBN—PN	16	—	BNN—BR	10				
	19			13				
	22			16				
	26			20				
	31			25				
	38			32				

■Balls for ball-lock retainers

Retainer				D	Catalog No.	Base unit price 1～4 pieces	Volume discount unit price 5～9 pieces	10～19 pieces	20～50 pieces
Light load	CLN—P CLN—PS CLN—D	CRN—P CLN—FS CRN—D	CCRN	10～38	BB 8	Quotation			
Heavy load	CBN—P CBN—PN	CRN—P BRN—PN		10	BB 10				
				13～32	BB 13				

■Springs for ball-lock retainers

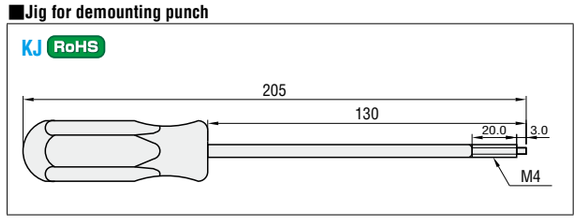
Retainer				D	Catalog No.	Base unit price 1～4 pieces	Volume discount unit price 5～9 pieces	10～19 pieces	20～50 pieces
Light load	CLN—P CLN—PS CLN—D	CRN—P CLN—FS CRN—D	CCRN	10～38	BF 8	Quotation			
Heavy load	CBN—P CBN—PN	CRN—P BRN—PN		10	BF 10				
				13～32	BF 13				

Order — Catalog No. BPN—LR25

Days to Ship — Quotation

■Jig for demounting punch

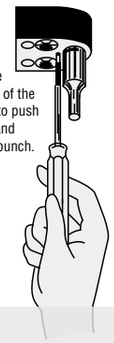
KJ RoHS



Order — Catalog No. KJ

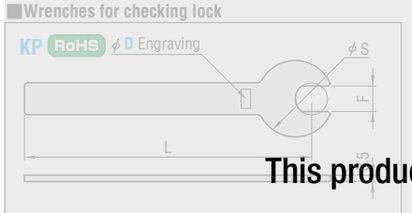
Days to Ship — Quotation

●Screw in the threaded tip of the jig in order to push up the ball and release the punch.



■Wrenches for checking lock

KP RoHS φD Engraving

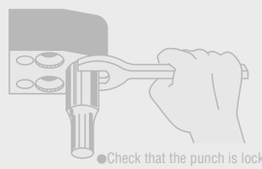


D	F	S	L	Catalog No. Type	D	Base unit price 1～4 pieces	Volume discount unit price 5～9 pieces	10～19 pieces	20～50 pieces
10	8	20	83	KP	10	Quotation			
13	10	25	84		13				
16	13	30	85		16				
20	17	36	105		20				
25	22	45	106		25				
30	26	55	124		32				

This product was discontinued in 2017.

Catalog No. : KP

Example



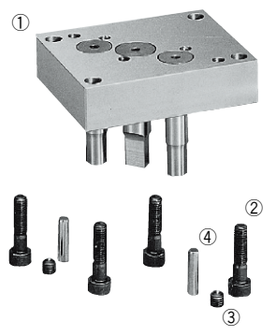
●Check that the punch is locked by the ball-lock in the correct position by placing a wrench into the punch groove and turning it in both directions.

Order — Catalog No. KP 32

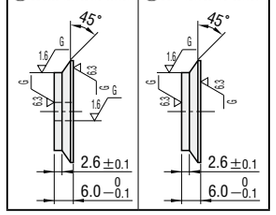
Days to Ship — Quotation

SPECIAL RETAINER SETS
—FOR BALL-LOCK PUNCHES—

RoHS



Backing plug	
Type A	Type B
⑤With dowel hole	⑥No dowel hole



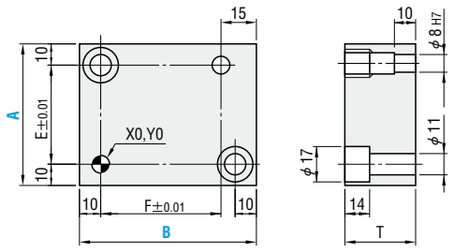
The type A backing plug is the default type.
To select type B, add the letter "B" after the code for the punch type.
(ex. LRGD—L80100—RB13···)

•Backing plugs P.796

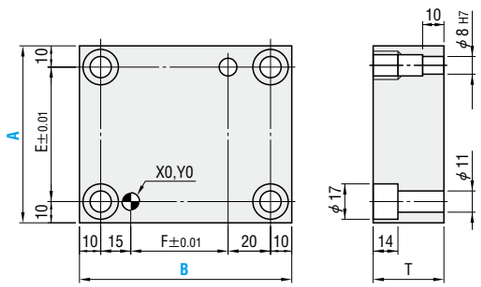
① M SNCM220
H 55 ~ 58HRC Depth 1mm
②Hexagon socket head cap screw (with loosening prevention treatment)
⑤⑥ M SK4
H 56 ~ 60HRC

Standard dimensions of retainer plate

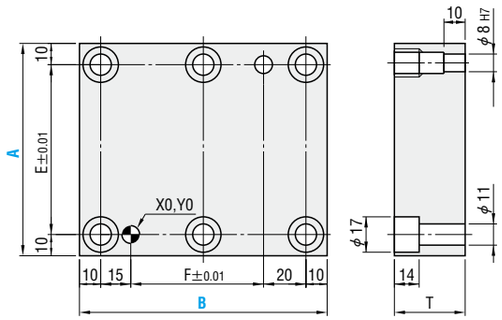
A	B	E	F	T	A
50	60	30	35	LRGD 32	②M10—40 2 pcs. ③MSW10 2 pcs. ④MSTM8×30 2 pcs.
	80		55		
60	80	40	55	BRGD 40	
	100		75		



A	B	E	F	T	A
80	80	60	25	LRGD 32	②M10—40 4 pcs. ③MSW10 2 pcs. ④MSTM8×30 2 pcs.
	100		45		
	125		70		
100	100	80	45	BRGD 40	
	125		70		
	150		95		

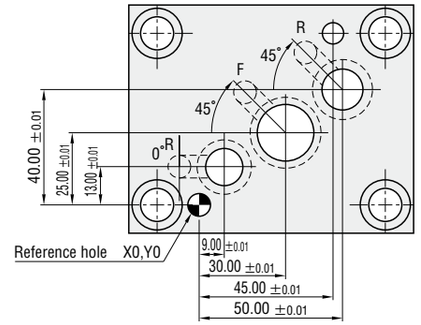


A	B	E	F	T	A
125	150	105	95	LRGD 32	②M10—40 6 pcs. ③MSW10 2 pcs. ④MSTM8×30 2 pcs.
	175		120		
150	175	130	120	BRGD 40	
	200		145		



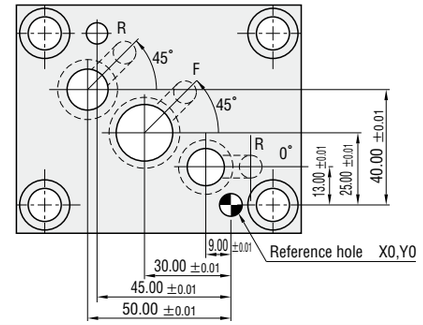
EX.1 Left hand type

Light load **LRGD—L**
Heavy load **BRGD—L**

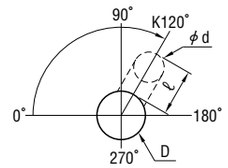


EX.2 Right hand type

Light load **LRGD—R**
Heavy load **BRGD—R**



Ball position (left hand type)



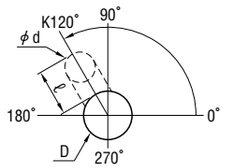
Space for ball hole

Catalog No.		D	φd	ℓ
Light load	LRGD—L	φ10~32	8	13
	LRGD—R			
Heavy load	BRGD—L	φ10	10	15
	BRGD—R	φ13~32	12	17

Ball position tolerance

R	F
±30′ Machining	±5′ Grinding

Ball location (right hand type)



Order

(1) Selection of left-hand type or right-hand type
(2) Selection of the standard retainer plate from the detail specifications on the page at left
(3) Selection of punch type (round or shaped), backing plug (type A or type B), and punch diameter
Type A backing plug < For round punch—Put "D" after code "R". / For shaped punch—Put "D" after code "F".
Type B backing plug < For round punch—Put "D" after code "RB". / For shaped punch—Put "D" after code "FB".
(4) Specify the punch hole position. T X±0.01 Y±0.01
X and Y are indicated in units of 0.01mm from the center of the reference hole.
Punch holes must be separated from each other and from the dowel holes and bolt holes by a minimum of 2 mm in order to prevent interference.
(5) Selection of the ball position
Selection of angle K in 1° increments

	(1) Plate Type	(2) A B	(3) R(B)・F(B)・D	(4) X	(4) Y	(5) K
EX.1 Left hand type	LRGD—L	80 100	R13	X 9.00	Y13.00	K 0
			F20	X30.00	Y25.00	K45
			R16	X50.00	Y40.00	K45
EX.2 Right hand type	BRGD—R	80 100	RB13	X 9.00	Y13.00	K 0
			FB20	X30.00	Y25.00	K45
			RB16	X50.00	Y40.00	K45

Days to Ship **Quotation**

Price **Quotation**