

BALL-LOCK PUNCHES

—LIGHT LOAD TYPE WITH WRENCH FLAT—

Shank type —With wrench flat— **RoHS**

Equivalent to SKD11 60 ~ 63HRC

Catalog No. Type Tip shape Tip length

The tip shape can be selected from Tip shape A ~ G in the figure below.

Tip shape A: D_{g5} , F , $P \pm 0.01$, $\phi 0.01 A$

Tip shape D: K , $P \pm 0.01$, $R \leq 0.2$, $W \pm 0.01$, $\frac{0.02}{2} A$

Tip shape R: K , $P \pm 0.01$, R , $W \pm 0.01$

Tip shape E: $P \pm 0.01$, $W \pm 0.01$

Tip shape G: $P \pm 0.01$, $W \pm 0.01$, $R \leq 0.2$

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

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

$P > W$

$P > W$

Catalog No.	Type	D	L	0.01mm increments					B	F
				A	D	R	E	G		
				min.	P max.	P-Kmax.	P-Wmin.	R		
	S	10	63 71 74 80 90	3.00 ~ 9.97	9.90	2.50			13	8
	A	13		6.00 ~ 12.97	12.90	3.00			10	
	D	16		10.00 ~ 15.97	15.90	4.00			13	
	R	20		13.00 ~ 19.97	19.90	5.00			17	
	E	25		18.00 ~ 24.97	24.90	6.00			19	22
	G	32	22.00 ~ 31.97	31.90	7.00			29		
	S	10	71 74 80 90	3.00 ~ 9.97	9.90	2.50			19	8
	A	13		6.00 ~ 12.97	12.90	3.00			10	
	D	16		10.00 ~ 15.97	15.90	4.00			13	
	R	20		13.00 ~ 19.97	19.90	5.00			17	
	E	25		18.00 ~ 24.97	24.90	6.00			22	
	G	32	22.00 ~ 31.97	31.90	7.00			29		

P 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	A	D R E G	1Code
Alterations to tip	PC	Tip diameter change $PC \geq \frac{P_{min}}{2}$	Tip diameter change $PC \geq \frac{P-W_{min}}{2}$	Quotation
	WC	0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	0.01mm increments	
Alterations to tip length	BC	Tip length change $2 \leq BC \leq B_{max}$	0.1mm increments	Quotation
	PKC	Tip tolerance change $P+0.01 \rightarrow +0.005$	Tip tolerance change $P-W \pm 0.01 \rightarrow +0.01$	
Others	SC	Lapping of tip		Quotation
	KC		Ball position change 1° increments	

Alteration	Code	A	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge $0.3 \leq PRC \leq 1$		Quotation
	PCC	Chamfering to tip side edge $0.3 \leq PCC \leq 1$		
Alterations to full length	LC	Full length change $45 + B(BC) \leq LC < L$		Quotation
	LKC	Full length tolerance change $L + 0.3 \rightarrow +0.05$		
Others	KC		Ball position change 1° increments	

BALL-LOCK PUNCHES

—HEAVY LOAD TYPE WITH WRENCH FLAT—

Shank type —With wrench flat— **RoHS**

Equivalent to SKH51 61 ~ 64HRC

Catalog No. Type Tip shape Tip length

The tip shape can be selected from Tip shape A ~ G in the figure below.

Tip shape A: D_{g5} , F , $P \pm 0.01$, $\phi 0.01 A$

Tip shape D: K , $P \pm 0.01$, $R \leq 0.2$, $W \pm 0.01$, $\frac{0.02}{2} A$

Tip shape R: K , $P \pm 0.01$, R , $W \pm 0.01$

Tip shape E: $P \pm 0.01$, $W \pm 0.01$

Tip shape G: $P \pm 0.01$, $W \pm 0.01$, $R \leq 0.2$

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

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

$P > W$

$P > W$

Catalog No.	Type	D	L	0.01mm increments					B	F
				A	D	R	E	G		
				min.	P max.	P-Kmax.	P-Wmin.	R		
	S	10	71 80 90 100	3.00 ~ 9.97	9.90	2.50			13	8
	A	13		6.00 ~ 12.97	12.90	3.00			10	
	D	16		10.00 ~ 15.97	15.90	4.00			13	
	R	20		13.00 ~ 19.97	19.90	5.00			17	
	E	25		18.00 ~ 24.97	24.90	6.00			19	22
	G	32	22.00 ~ 31.97	31.90	7.00			29		
	S	10	80 90 100	3.00 ~ 9.97	9.90	2.50			19	8
	A	13		6.00 ~ 12.97	12.90	3.00			10	
	D	16		10.00 ~ 15.97	15.90	4.00			13	
	R	20		13.00 ~ 19.97	19.90	5.00			17	
	E	25		18.00 ~ 24.97	24.90	6.00			22	
	G	32	22.00 ~ 31.97	31.90	7.00			29		

P Price **Quotation**

Order **Catalog No.** — **L** — **P** — **W** — **R** (R only)

KBPR 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 — R3.00

Alteration	Code	A	D R E G	1Code
Alterations to tip	PC	Tip diameter change $PC \geq \frac{P_{min}}{2}$	Tip diameter change $PC \geq \frac{P-W_{min}}{2}$	Quotation
	WC	0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	0.01mm increments	
Alterations to tip length	BC	Tip length change $2 \leq BC \leq B_{max}$	0.1mm increments	Quotation
	PKC	Tip tolerance change $P+0.01 \rightarrow +0.005$	Tip tolerance change $P-W \pm 0.01 \rightarrow +0.01$	
Others	SC	Lapping of tip		Quotation
	KC		Ball position change 1° increments	

Alteration	Code	A	D R E G	1Code
Alterations to tip	PRC	Rounding of tip side edge $0.3 \leq PRC \leq 1$		Quotation
	PCC	Chamfering to tip side edge $0.3 \leq PCC \leq 1$		
Alterations to full length	LC	Full length change $50 + B(BC) \leq LC < L$		Quotation
	LKC	Full length tolerance change $L + 0.3 \rightarrow +0.05$		
Others	KC		Ball position change 1° increments	