

KEY FLAT SHANK SHOULDER PUNCHES

— NORMAL · TiCN COATING —



| Type | Shank diameter D tolerance | M H | Catalog No. | | | The tip shape can be selected from Tip shape A~G in the figure below. |
|------|-------------------------------|--------|---|-----------------------|------------------------|---|
| | | | Type | Tip shape | B length Tip length | |
| | D +0.005 0 | | Equivalent to SKD 11 60~63HRC | G—SP | A | <p>The tip end of a TiCN coating punch is ground before the coating is applied.</p> |
| | | | SKH51 61~64HRC | G—SH | D | |
| | | | Powdered high-speed steel 64~67HRC | G—PH | R | |
| | | | SKH51 61~64HRC Surface 3000HV | TiCN coating GH—SH | E | |
| | | | Powdered high-speed steel 64~67HRC Surface 3000HV | TiCN coating GH—PH | G | Tip length (B) X>L>S |

Tip shape A

When D=3~6
D/2 -0.5 -0.01

$R \leq 0.2$

$\phi 0.01 A$

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

Tip shape D

When D=3~6
D/2 -0.5 -0.01

$R \leq 0.2$

$W \pm 0.01$
 $\pm 0.02 A$

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

Tip shape R

$R \leq 0.2$

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

Tip shape E

$W \pm 0.01$
 $P > W$

Tip shape G

$W \pm 0.01$
 $R \leq 0.2$
 $P > W$

| Type | Tip shape | B length Tip length | D | L | | | | | | | | | | B | H | |
|-------|-----------|------------------------|------|-------------------|--------|---------|--------|---------|-------|-------|-------|-------|-------|-------|------|----|
| | | | | 0.01mm increments | | | | | R | R | R | R | R | | | |
| | | | | min. | P max. | P-Kmax. | W max. | P-Wmin. | | | | | | | | |
| G—SP | S | 3 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 1.80 | | | 5 | |
| | | 4 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 2.80 | 3.97 | 2.80 | 1.00 | 7 |
| | | 5 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 3.80 | 4.97 | 3.80 | 1.20 | 8 |
| | | 6 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 4.80 | 5.97 | 4.80 | 1.50 | 9 |
| | | 8 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 5.80 | 7.97 | 5.80 | 2.00 | 11 |
| | | 10 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 7.80 | 9.97 | 7.80 | 2.50 | 13 |
| | | 13 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 6.00 | ~ | 10.80 | 12.97 | 10.80 | 3.00 | 16 |
| | | 16 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 10.00 | ~ | 13.80 | 15.97 | 13.80 | 4.00 | 19 |
| | | 20 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 13.00 | ~ | 17.80 | 19.97 | 17.80 | 5.00 | 23 |
| | | 25 | (40) | 50 | 60 | 70 | 80 | 90 | 100 | 18.00 | ~ | 22.80 | 24.97 | 22.80 | 6.00 | 28 |
| G—SH | A | 3 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 1.80 | | | 5 | |
| | | 4 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 2.80 | 3.97 | 2.80 | 2.00 | 7 | |
| | | 5 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 3.80 | 4.97 | 3.80 | 2.00 | 8 | |
| | | 6 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 4.80 | 5.97 | 4.80 | 2.00 | 9 | |
| | | 8 | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 5.80 | 7.97 | 5.80 | 2.50 | 11 | |
| | | 10 | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 7.80 | 9.97 | 7.80 | 2.50 | 13 | |
| | | 13 | 50 | 60 | 70 | 80 | 90 | 100 | 6.00 | ~ | 10.80 | 12.97 | 10.80 | 3.00 | 16 | |
| | | 16 | 60 | 70 | 80 | 90 | 100 | 10.00 | ~ | 13.80 | 15.97 | 13.80 | 4.00 | 19 | | |
| | | 20 | 60 | 70 | 80 | 90 | 100 | 13.00 | ~ | 17.80 | 19.97 | 17.80 | 5.00 | 23 | | |
| | | 25 | 60 | 70 | 80 | 90 | 100 | 18.00 | ~ | 22.80 | 24.97 | 22.80 | 6.00 | 28 | | |
| G—PH | R | 3 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 1.80 | | | 5 | |
| | | 4 | 50 | 60 | 70 | 80 | 90 | 100 | 1.00 | ~ | 2.80 | 3.97 | 2.80 | 2.00 | 7 | |
| | | 5 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 3.80 | 4.97 | 3.80 | 2.00 | 8 | |
| | | 6 | 50 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 4.80 | 5.97 | 4.80 | 2.00 | 9 | |
| | | 8 | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 5.80 | 7.97 | 5.80 | 2.50 | 11 | |
| | | 10 | 50 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 7.80 | 9.97 | 7.80 | 2.50 | 13 | |
| | | 13 | 50 | 60 | 70 | 80 | 90 | 100 | 6.00 | ~ | 10.80 | 12.97 | 10.80 | 3.00 | 16 | |
| | | 16 | 60 | 70 | 80 | 90 | 100 | 10.00 | ~ | 13.80 | 15.97 | 13.80 | 4.00 | 19 | | |
| | | 20 | 60 | 70 | 80 | 90 | 100 | 13.00 | ~ | 17.80 | 19.97 | 17.80 | 5.00 | 23 | | |
| | | 25 | 60 | 70 | 80 | 90 | 100 | 18.00 | ~ | 22.80 | 24.97 | 22.80 | 6.00 | 28 | | |
| GH—SH | E | 3 | 50 | 60 | 70 | 80 | 90 | 100 | 1.20 | ~ | 1.80 | | | 5 | | |
| | | 4 | 50 | 60 | 70 | 80 | 90 | 100 | 1.20 | ~ | 2.80 | 3.97 | 2.80 | 2.00 | 7 | |
| | | 5 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 3.80 | 4.97 | 3.80 | 3.50 | 8 | | |
| | | 6 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 4.80 | 5.97 | 4.80 | 3.50 | 9 | | |
| | | 8 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 5.80 | 7.97 | 5.80 | 5.00 | 11 | | |
| | | 10 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 7.80 | 9.97 | 7.80 | 5.00 | 13 | | |
| | | 13 | 60 | 70 | 80 | 90 | 100 | 6.00 | ~ | 10.80 | 12.97 | 10.80 | 5.00 | 16 | | |
| | | 16 | 70 | 80 | 90 | 100 | 10.00 | ~ | 13.80 | 15.97 | 13.80 | 5.00 | 19 | | | |
| | | 20 | 70 | 80 | 90 | 100 | 13.00 | ~ | 17.80 | 19.97 | 17.80 | 5.00 | 23 | | | |
| | | 25 | 70 | 80 | 90 | 100 | 18.00 | ~ | 22.80 | 24.97 | 22.80 | 6.00 | 28 | | | |
| GH—PH | X | 3 | 50 | 60 | 70 | 80 | 90 | 100 | 1.20 | ~ | 1.80 | | | 5 | | |
| | | 4 | 50 | 60 | 70 | 80 | 90 | 100 | 1.20 | ~ | 2.80 | 3.97 | 2.80 | 2.00 | 7 | |
| | | 5 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 3.80 | 4.97 | 3.80 | 3.50 | 8 | | |
| | | 6 | 60 | 70 | 80 | 90 | 100 | 2.00 | ~ | 4.80 | 5.97 | 4.80 | 3.50 | 9 | | |
| | | 8 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 5.80 | 7.97 | 5.80 | 5.00 | 11 | | |
| | | 10 | 60 | 70 | 80 | 90 | 100 | 3.00 | ~ | 7.80 | 9.97 | 7.80 | 5.00 | 13 | | |
| | | 13 | 60 | 70 | 80 | 90 | 100 | 6.00 | ~ | 10.80 | 12.97 | 10.80 | 5.00 | 16 | | |
| | | 16 | 70 | 80 | 90 | 100 | 10.00 | ~ | 13.80 | 15.97 | 13.80 | 5.00 | 19 | | | |
| | | 20 | 70 | 80 | 90 | 100 | 13.00 | ~ | 17.80 | 19.97 | 17.80 | 5.00 | 23 | | | |
| | | 25 | 70 | 80 | 90 | 100 | 18.00 | ~ | 22.80 | 24.97 | 22.80 | 6.00 | 28 | | | |

L (40) → B=8 If full length is (40), tip length is 8mm in all cases.
 D=3~6 → a=0.5 When D dimension is 3~6, a dimension is 0.5mm.
 D=8~25 → a=1 When D dimension is 8~25, a dimension is 1mm.

Order **Catalog No.** — L — P — W — R (R only)
 G—PHD 13 — 80 — P10.50 — W7.34

Days to Ship **Quotation**

Alterations **Catalog No.** — L (LC·LCT·LMT) — P (PC) — W (WC) — R — (BC·HC·TC, etc.)
 G—SPAS 10 — LC72 — PC2.80 — BC8

| Alteration | Code | A | D R E G | 1Code | |
|------------|----------|--|--|-------|--|
| | PC WC | Tip dimension change $PC \geq \frac{P_{min.}}{2}$ 0.01mm increments For TiCN coating, PC> Pmin./2>1.00 (If combined with PKC, 0.01mm increments can be selected.) | Tip dimension change $PC \geq P \cdot W_{min.} \geq 0.80$ 0.01 mm increments For TiCN coating type: $PC \geq P \cdot W_{min.} \geq 1.00$ $WC \geq \frac{2}{2}$ Cannot be used for tip X. | 1Code | |
| | | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 25mm longer than tip length BC. | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 30mm longer than tip length BC. | 1Code | |
| | BC | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 25mm longer than tip length BC. | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 30mm longer than tip length BC. | 1Code | |
| | | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 25mm longer than tip length BC. | Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Full length L must be at least 30mm longer than tip length BC. | 1Code | |
| | PRC | Rounding of tip side edge $0.3 \leq PRC \leq 1$ 0.1 mm increments $PRC \leq (P-0.2)/2$ Cannot be combined with PCC·GC. | | | |
| | | Chamfering of tip side edge $0.3 \leq PCC \leq 1$ 0.1 mm increments $PCC \leq (P-0.2)/2$ Cannot be combined with PRC·GC. | | | |
| | GC | $20^\circ \leq GC < 90^\circ$ 1° increments Tip length $B \geq f+2$ $f = P/2 \cdot \tan(90^\circ - GC)$ If combined with SC, tip edges are rounded. Cannot be combined with LKC·LKZ·LCT· LMT·PRC·PCC. | | | |
| | | Tip tolerance change $P \pm 0.01 \rightarrow \pm 0.005$ $W \pm 0.01 \rightarrow \pm 0.005$ P dimension can be selected in 0.01mm increments. TiCN coating cannot be used for D>13. | Tip tolerance change $P \cdot W \pm 0.01 \rightarrow \pm 0.01$ | | |

Price **Quotation**

| Alteration | Code | A | D R E G | 1Code |
|------------|--|---|--|-------|
| | LC | Full length change $25+B(BC) \leq LC < L$ 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length-25 mm). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) | Full length change $30+B(BC) \leq LC < L$ 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length-30mm). | 1Code |
| | | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.1$ | 1Code |
| | LCT | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.1$ | 1Code |
| | | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.1$ | 1Code |
| LMT | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.1$ | 1Code | |
| | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.1$ | 1Code | |
| LKC | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | 1Code | |
| | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | 1Code | |
| LKZ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | 1Code | |
| | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | Full length tolerance change $L \pm 0.3 \rightarrow \pm 0.05$ | 1Code | |
| | WKC | Addition of double key flats in parallel | | |
| | | Head diameter change $D \leq HC < H$ 0.1 mm increments | | |
| | TC | Head thickness change $2 \leq TC < 5$ 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5-TC). | | |
| | | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | | |
| | TKC | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | | |
| | | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | | |
| TKM | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | | | |
| | Head thickness tolerance change $T \pm 0.3 \rightarrow \pm 0.02$ | | | |
| TCC | Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments $0.5 \leq TCC \leq (H-D)/2$ If H≤5, then TCC is 0.5. | | | |
| | Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments $0.5 \leq TCC \leq (H-D)/2$ If H≤5, then TCC is 0.5. | | | |
| | SKF | Single key flat on shank, configurable size $SKF \pm 0.01$ $P \leq 2(SKF-0.1)$ $W \leq 2(SKF-0.1)$ 0.1mm increments 0.1mm increments $0.3D \leq SKF \leq D/2 - 0.1$ Cannot be combined with WKC. | | |
| | | No press-in lead $\ell \geq 3 \rightarrow \ell = 0$ | | |