

# TAPERED HEAD PUNCHES

—NORMAL·TiCN COATING·HW COATING—



Type	MH	Catalog No.	Shape
—Normal—	RoHS	TSSHAS TSSHAL	<p>                     The tip end of a TiCN coating punch is ground before the coating is applied.                      The tip edge of an HW coating punch is very slightly rounded.                 </p>
—TiCN coating—		H—TSSHAS H—TSSHAL	
—HW coating—		HW—TSSHAS HW—TSSHAL	
—Normal—		TSPHAS TSPHAL	
—TiCN coating—		H—TSPHAS H—TSPHAL	
—HW coating—		HW—TSPHAS HW—TSPHAL	

Type	Catalog No.		L	0.01mm increments min. P max.	B	H
	D					
S TSSHAS TSPHAS —TiCN coating— H—TSSHAS H—TSPHAL —HW coating— HW—TSSHAS HW—TSPHAS	8	60 70 80 90 100	3.00~ 7.99	13	13	13
	10	60 70 80 90 100	3.00~ 9.99			15
	13	60 70 80 90 100	6.00~ 12.99			18
	16	60 70 80 90 100	10.00~ 15.99	19		21
	20	60 70 80 90 100	13.00~ 19.99			25
25	60 70 80 90 100	18.00~ 24.99	30			
L TSSHAL TSPHAL —TiCN coating— H—TSSHAL H—TSPHAL —HW coating— HW—TSSHAL HW—TSPHAL	8	60 70 80 90 100	3.00~ 7.99	19	19	13
	10	60 70 80 90 100	3.00~ 9.99			15
	13	60 70 80 90 100	6.00~ 12.99			18
	16	60 70 80 90 100	10.00~ 15.99	25		21
	20	60 70 80 90 100	13.00~ 19.99			25
25	60 70 80 90 100	18.00~ 24.99	30			

⊕ P>D-0.03...ℓ=0 If P>D-0.03, D<sub>-0.01/-0.03</sub> (press-in lead) is not included.

**Order** Catalog No. — L — P  
 HW—TSSHAS 20 — 80 — P15.00

**Days to Ship** **Quotation**

**Price** **Quotation**

**Alterations** Catalog No. — L(LC) — P(PC) — (BC-SC, etc.)  
 TSSHAS 20 — LC82 — PC12.00 — BC13

Alteration	Code	Spec.	1Code
Alterations to tip	PC	Tip dimension change $PC \geq \frac{P_{min}}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Quotation
	BC	Tip length change $2 \leq BC \leq B_{max}$ 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	
	SC	Lapping of tip P dimension tolerance and increment are the same. The base material finished before coating is applied Cannot be used with HW coating.	
	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. For HW coating, the tolerance is $PRC \pm 0.1$ .	
	PCC	Chamfering to tip side edge $0.3 \leq PCC \leq 1$ 0.1 mm increments $PCC \leq (P-0.2)/2$ Cannot be combined with PRC. For HW coating, the tolerance is $PCC \pm 0.1$ .	
	PKC	Tip dimension change $P +0.01 \rightarrow +0.005$ (P dimension can be selected in 0.001 mm increments.) TICN of HW coating cannot be used for D>13.	

### Example

- Features**
- Tapered head punches relieve stress concentration, providing greater head strength than conventional heavy-load punches.
  - These products were developed for heavy-load applications, such as punching of high-tensile steel sheets with tensile strength of 980 MPa (100 kgf/mm<sup>2</sup>) or higher, spring steel, and hardened steel.
  - When used with the accessory taper rings, the tapered head punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.
  - Because the head of a tapered head punch is interchangeable with that of a heavy-load punch, the retainer for a heavy-load punch can be used.
  - Guide to tapered head punches **P.1611**

- Note**
- The head thickness tolerance of a tapered head punch,  $8^{+0.03}_{+0.01}$ , is achieved by machining a match between the actual individual punch and its taper ring. Be sure to use a taper ring that has the same ID number as the punch. If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.
  - When a punch is replaced, replace both punch and taper ring as a set. (The punch and taper ring are not sold individually.)

Alteration	Code	Spec.	1Code
Alterations to tip	PKC	Tip dimension change $P +0.01 \rightarrow +0.005$ (P dimension can be selected in 0.001 mm increments.) TICN of HW coating cannot be used for D>13.	
Alterations to full length	LC	Full length change $35+B(BC) \leq LC < L$ 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length-35mm).	Quotation
Alterations to full length	LKC	Full length tolerance change $L +0.3 \rightarrow +0.05$	
Shank	NDC	No press-in lead $\ell \geq 3 \rightarrow \ell = 0$	

