PUNCHES

TiCN COATING

Type		M / H	Catalog No.	Shape
	RoHS	Equivalent to SKH51 61~64HRC Surface 3000HV	H—SHC	R≦0.5
		Powdered high-speed steel 64~67HRC Surface 3000HV	H—PHC	

Coating is applied to the tip end and the tip diameter (P). (Coating is not applied to the head.)
The tip end is ground before the coating is applied.

Catalog No. Type	No.	L								0.01mm increments min. P max.	H	T	Base unit price 1~9 pieces H—SHC	H—PHC
	4	40	50	60	70	80				3.00~ 4.00	7			
	5	40	50	60	70	80				4.00~ 5.00	8			
	6	40	50	60	70	80				5.00~ 6.00	9			
H—SHC	8	40	50	60	70	80	90	100		6.00~ 8.00	11			
	10	40	50	60	70	80	90	100		8.00~ 10.00	13	5	Quotation	
H—PHC	13	40	50	60	70	80	90	100	110	120	10.00~ 13.00	16		
	16	40	50	60	70	80	90	100	110	120	13.00~ 16.00	19		
	20	40	50	60	70	80	90	100	110	120	16.00~ 20.00	23		
	25	40	50	60	70	80	90	100	110	120	20.00~ 25.00	28		

Order
Catalog No. — L — P
H—SHC 6 — 40 — P5.50

Days to Ship Quotation

Alterations
Catalog No. — L(LC·LCT·LMT) — P — (TC·KC, etc.)
H—SHC 6 — LC45 — P5.50 — LKC

Price Quotation

Alterations to tip

Alteration	Code	Spec.	1Code
0.16 GL Effective lapping range	SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before coating is applied. Refer to the 224 page for a Effective lapping range.	
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·GC.	
PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC·GC.	
GC	GC	20°≦GC<90° 1° increments Cannot be combined with LKC·LCT·LMT· PRC·PCC.	

Alterations to full length

| Alteration	Code	Spec.	1Code
LC	LC	Full length change 20≦LC<L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.)	
LCT	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC Head thickness tolerance change T+0.3/0 ⇒ +0.02/0 LC Full length change + Full length change + L+0.3/0 ⇒ +0.1/0	
LMT	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM Head thickness tolerance change T+0.3/0 ⇒ 0/−0.02 LC Full length change + Full length change + L+0.3/0 ⇒ +0.1/0	

Full length

Alteration	Code	Spec.	1Code
L T	LKC	Full length tolerance change L+0.3/0 ⇒ +0.05/0 Cannot be combined with GC.	

Alterations to head

Alteration	Code	Spec.	1Code
	KC	Addition of single key flat to head	
	WKC	Addition of double key flats in parallel	
	KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
TC	TC	Head thickness change 4.0≦TC<T 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (T—TC). If combined with LC·LCT·LMT, full length is equal to LC.	
T T	TKC	Head thickness tolerance change T+0.3/0 ⇒ +0.02/0	
	TKM	Head thickness tolerance change T+0.3/0 ⇒ 0/−0.02	
TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments 0.5≦TCC≦(H—P)/2 If H≦5, then TCC is 0.5.	Quotation

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DLC COATING

Type		M / H	Catalog No.	Shape
	RoHS	Equivalent to SKH51 61~64HRC Surface 3000HV	N—SHC	R≦0.5
		Powdered high-speed steel 64~67HRC Surface 3000HV	N—PHC	

Coating is applied to the tip end and the tip diameter (P). (Coating is not applied to the head.)
The tip end is ground before the coating is applied.

Catalog No. Type	No.	L								0.01mm increments min. P max.	H	T	Base unit price 1~9 pieces N—SHC	N—PHC
	4	40	50	60	70	80				3.00~ 4.00	7			
	5	40	50	60	70	80				4.00~ 5.00	8			
	6	40	50	60	70	80				5.00~ 6.00	9			
N—SHC	8	40	50	60	70	80	90	100		6.00~ 8.00	11			
	10	40	50	60	70	80	90	100		8.00~ 10.00	13	5	Quotation	
N—PHC	13	40	50	60	70	80	90	100	110	120	10.00~ 13.00	16		
	16	40	50	60	70	80	90	100	110	120	13.00~ 16.00	19		
	20	40	50	60	70	80	90	100	110	120	16.00~ 20.00	23		
	25	40	50	60	70	80	90	100	110	120	20.00~ 25.00	28		

Order
Catalog No. — L — P
N—SHC 6 — 40 — P5.50
N—PHC 8 — 70 — P6.30

Days to Ship Quotation

Alterations
Catalog No. — L(LC·LCT·LMT) — P — (TC·KC, etc.)
N—SHC 6 — LC45 — P5.50 — LKC

Price Quotation

Alterations to tip

| Alteration	Code	Spec.	1Code
0.16 GL Effective lapping range	SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before coating is applied. Refer to the 224 page for a Effective lapping range.	
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·GC.	
PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC·GC.	
GC	GC	20°≦GC<90° 1° increments Cannot be combined with LKC·LCT·LMT· PRC·PCC.	

Alterations to full length

Alteration	Code	Spec.	1Code
LC	LC	Full length change 20≦LC<L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.)	
LCT	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC Head thickness tolerance change T+0.3/0 ⇒ +0.02/0 LC Full length change + Full length change + L+0.3/0 ⇒ +0.1/0	
LMT	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM Head thickness tolerance change T+0.3/0 ⇒ 0/−0.02 LC Full length change + Full length change + L+0.3/0 ⇒ +0.1/0	

Full length

Alteration	Code	Spec.	1Code
L T	LKC	Full length tolerance change L+0.3/0 ⇒ +0.05/0 Cannot be combined with GC.	

Alterations to head

Alteration	Code	Spec.	1Code
	KC	Addition of single key flat to head	
	WKC	Addition of double key flats in parallel	
	KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
TC	TC	Head thickness change 4.0≦TC<T 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (T—TC). If combined with LC·LCT·LMT, full length is equal to LC.	
T T	TKC	Head thickness tolerance change T+0.3/0 ⇒ +0.02/0	
	TKM	Head thickness tolerance change T+0.3/0 ⇒ 0/−0.02	
TCC	TCC	Chamfering of head 0.1 mm increments 0.5≦TCC≦(H—P)/2 If H≦5, then TCC is 0.5.	Quotation

■Effects of DLC coating
Effective for preventing adhesion during aluminum or copper blanking thanks to its low affinity for nonferrous metal. See the product data for details. P.1609