
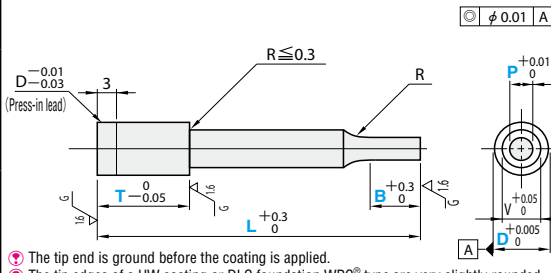


ROUND PUNCHES

—NORMAL · TiCN COATING · HW COATING · DLC COATING—

PRODUCTS DATA

P.1601-1604-1605-1609

Type	M H	Catalog No.	Shape
	RoHS	PHTAL	
Powdered high-speed steel 64~67HRC		TiCN coating H-PHTAL	
Powdered high-speed steel 64~67HRC Surface 3000HV		HW coating HW-PHTAL	
Powdered high-speed steel 64~67HRC Surface 3000HV~		DLC coating N-PHTAL	
		DLC foundation WPC® NW-PHTAL	

Ⓢ The tip end is ground before the coating is applied.
Ⓢ The tip edges of a HW coating or DLC foundation WPC® type are very slightly rounded.

Catalog No. Type	D	L	0.01mm increments min. P max.	T	1mm increments B	V	R	Base Unit Price 1~4			
								PHTAL	H-PHTAL	HW-PHTAL	NW-PHTAL
PHTAL	4	40	0.50 (1.00) ~ 2.00	13 16 20	2 ~ 6	2	2~3				
		50		13 16 20 25	2 ~ 8						
—TiCN coating— H-PHTAL	5	40	1.00 ~ 3.00	13 16 20	2 ~ 8	3					
		50 60		13 16 20 25	2 ~ 8						
—HW coating— HW-PHTAL	6	40	1.50 ~ 4.00	13 16 20	2 ~ 10	4					
		50 60 70		13 16 20 25	2 ~ 13						
—DLC coating— N-PHTAL	8	40	2.00 ~ 6.00	13 16 20	2 ~ 10	6					
		50 60 70		13 16 20 25	2 ~ 13						
—DLC foundation WPC®— NW-PHTAL	10	40	3.00 ~ 8.00	13 16 20	2 ~ 10	8	10				
		50 60 70		13 16 20 25	2 ~ 13						
	13	40	3.00 ~ 10.00	13 16 20	2 ~ 10	11					
		50 60 70		13 16 20 25	2 ~ 13						
	16	40	6.00 ~ 13.00	13 16 20	2 ~ 10	14					
		50 60 70		13 16 20 25	2 ~ 13						
	20	40	10.00 ~ 16.00	13 16 20	2 ~ 10	18					
		50 60 70		13 16 20 25	2 ~ 13						
	25	40	13.00 ~ 23.00	13 16 20	2 ~ 10	23					
		50 60 70		13 16 20 25	2 ~ 13						

Ⓢ P (1.00) ---For TiCN coating, Pmin. is 1.00.

Order Catalog No. — L — P — T — B
PHTAL 5 — 60 — P3.00 — T20 — B5

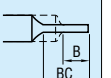
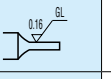
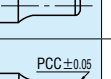



Price **Quotation**

Days to Ship **Quotation**

Example Example showing use of slotted plate to prevent loosening of punch Example showing use of punch fixing key

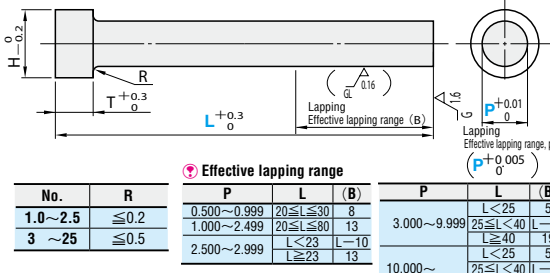
Alterations Catalog No. — L(LC-LCT) — P — T(TC) — B(BC) — (PKC-LKC...etc.)
PHTAL 5 — 60 — P3.00 — TC15.0 — B5

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

Alterations	Code	Spec.	1Code
	BC	Tip length change 0.50~0.999 6 2≤BC≤Bmax. 1.000~1.999 10 0.1 mm increments 2.000~2.999 20 Ⓢ L-B-T≥10 3.000~3.999 30 4.000~ 40	
	SC	Lapping of tip Ⓢ P dimension tolerance and increment are the same. Ⓢ The base material is finished before coating is applied. Ⓢ R=0 cannot be selected for the tip Ⓢ corner-DLC foundation WPC.	
	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. Ⓢ For HW coating and DLC foundation WPC®, the tolerance is PRC±0.1.	Quotation
	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. Ⓢ HW coating and DLC foundation WPC® cannot be used.	
	GC	20°≤GC<90° 1° increments Tip length B≥f+2 f=P/2×tan(90°-GC) Ⓢ If combined with SC, tip edges are rounded. Ⓢ Cannot be combined with LKC-LKZ-LCT-PRC-PCC. Ⓢ Cannot be used for P<1.0. Ⓢ HW coating and DLC foundation WPC® cannot be used.	
	PKC	Tip tolerance change P+0.01 ⇄ +0.005 0	
Alterations to full length	LC	Full length change 40<LC<L 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) Ⓢ If LC<50, T and TC must be 20 or less. Ⓢ If LC<50 with D6~8, the allowable range of B is 2~10.	
Alterations to full length	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.	
Alterations to full length	TKC	Head thickness tolerance change T-0.05 ⇄ 0 -0.02	
Alterations to full length	LC	Full length tolerance change L+0.3 ⇄ +0.05 0 0	
Alterations to full length	LKC	Full length tolerance change L+0.3 ⇄ +0.05 0 0	
Alterations to full length	LKZ	Full length tolerance change L+0.3 ⇄ +0.01 0 0	Quotation
Alterations to head	TC	T dimension change 13<TC<25 0.1 mm increments Ⓢ If L<50, the allowable range is 13<TC<20. Ⓢ The full length L remains the same.	
Alterations to head	TKC	Head thickness tolerance change T-0.05 ⇄ 0 -0.02	
Others	VC	V dimension change D4~6 V-0.5≤VC≤D-1.2 D8~ V-2≤VC≤D-1.2 0.1 mm increments	

STRAIGHT PUNCHES

—NORMAL · LAPPING TYPE—

Type	M H	Catalog No.	Shape
Normal	RoHS	SPC	
Equivalent to SKD11 60~63HRC		Lapping L-SPC	
Equivalent to SKH51 61~64HRC		Lapping SHC	
		Lapping L-SHC	
Powdered high-speed steel 64~67HRC		Lapping PHC	
		Lapping L-PHC	

Effective lapping range

No.	R	P	L (B)	P	L (B)
1.0~2.5	≤0.2	0.500~0.999	20≤L≤30 8	3.000~9.999	25≤L<40 L-20
3~25	≤0.5	1.000~2.499	20≤L≤30 13		25≤L<40 L-19
		2.500~2.999	L<23 L-10		L<25 5
			L≥23 13		25≤L<40 L-20
				10.000~	L≥40 25

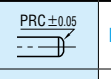
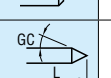

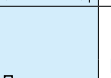
Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	H	T
—Lapping— SHC PHC	1.0	20 25 30	0.50 ~ 1.00	2.0	3
	1.6	20 25 30 35 40 50 60	1.00 ~ 1.60		
	2.0	20 25 30 35 40 50 60	1.60 ~ 2.00		
	2.5	20 25 30 35 40 50 60	2.00 ~ 2.50		
—Lapping— SPC SHC PHC	3	40 50 60 70 80	2.00 ~ 3.00	5	
	4	40 50 60 70 80	3.00 ~ 4.00		
	5	40 50 60 70 80	4.00 ~ 5.00		
	6	40 50 60 70 80	5.00 ~ 6.00		
	8	40 50 60 70 80 90 100	6.00 ~ 8.00		
	10	40 50 60 70 80 90 100	8.00 ~ 10.00		
	13	40 50 60 70 80 90 100 110 120	10.00 ~ 13.00		
	16	40 50 60 70 80 90 100 110 120	13.00 ~ 16.00		
	20	40 50 60 70 80 90 100 110 120	16.00 ~ 20.00		
	25	40 50 60 70 80 90 100 110 120	20.00 ~ 25.00		

Order Catalog No. — L — P
PHC 6 — 40 — P5.50
L-Phc 6 — 40 — P5.50

Price **Quotation**

Days to Ship **Quotation**

Alterations Catalog No. — L(LC-LCT-LMT) — P — (HC-TC-GC...etc.)
SPC 6 — LC45 — P5.50 — PKC — LKC

Alterations	Code	Spec.	1Code
	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	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	20°≤GC<90° 1° increments Ⓢ Cannot be combined with LKC-LCT-LMT-PRC-PCC. Ⓢ Lapping cannot be used.	
	PKC	Tip tolerance change P+0.01 ⇄ +0.005 0 0 Ⓢ P dimension can be selected in 0.001 mm increments. Ⓢ Lapping cannot be used.	
Alterations to full length	LC	Full length change 20≤LC<L 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.)	
Alterations to full length	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.	
Alterations to full length	TKC	Head thickness tolerance change T+0.3 ⇄ +0.02 0 0	
Alterations to full length	LC	Full length tolerance change L+0.3 ⇄ +0.05 0 0	
Alterations to full length	LKC	Full length tolerance change L+0.3 ⇄ +0.05 0 0	
Alterations to full length	LKZ	Full length tolerance change L+0.3 ⇄ +0.01 0 0	Quotation
Alterations to head	TC	T dimension change 13<TC<25 0.1 mm increments Ⓢ If L<50, the allowable range is 13<TC<20. Ⓢ The full length L remains the same.	
Alterations to head	TKC	Head thickness tolerance change T+0.3 ⇄ +0.02 0 0	
Alterations to head	TKM	Head thickness tolerance change T+0.3 ⇄ 0 +0.3 ⇄ +0.1 0 0	
Alterations to head	TCC	Chamfering of head This improves the strength of the punch head. P.1611 0.1 mm increments Ⓢ 0.5≤TC≤(H-P)/2 Ⓢ If H≤5, then TCC is 0.5.	