CARBIDE SHOULDER PUNCHES
—MIRROR FINISHED—

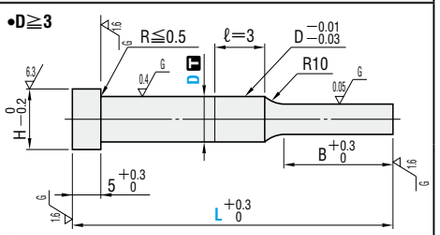
Type	Shank diameter D T tolerance	M H	Catalog No. Type: Head thickness T=3mm	Catalog No. Type: Head thickness T=5mm	Tip shape	B Tip length
RoHS	D_{m5}	V30 (HIP) 88 ～ 89HRA	M—WP (D2.0・2.5)	M—WP (D≧3) M—WPLT (D2.0・2.5)	Ⓐ	S
		Super fine grain (HIP) 90 ～ 92HRA	M—WXP (D2.0・2.5)	M—WXP (D≧3)		
	$D^{+0.005}_{0}$	V30 (HIP) 88 ～ 89HRA	AM—WP (D2.0・2.5)	AM—WP (D≧3) AM—WPLT (D2.0・2.5)		L
		Super fine grain (HIP) 90 ～ 92HRA	AM—WXP (D2.0・2.5)	AM—WXP (D≧3)		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

Tip length (B) L>S

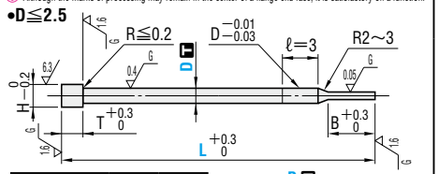
Shape

●D≧3

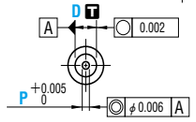


Although the marks of processing may remain in the center of a flange end face, it is satisfactory on a function.

●D≦2.5



Catalog No.	D	Head thickness
M—WPA□	2.0	3
M—WXPA□	2.5	
AM—WPA□	≧3	5
AM—WXPA□		
M—WPLTA□	2.0	5
AM—WPLTA□	2.5	



B Tip length	Catalog No. Type: Head thickness T=3mm	Catalog No. Type: Head thickness T=5mm	D	L	0.001mm increments Ⓐ min. P max.	B	H
S	(D_{m5}) M—WPAS M—WXPAS ($D^{+0.005}_{0}$) AM—WPAS AM—WXPAS	(D_{m5}) M—WPLTAS ($D^{+0.005}_{0}$) AM—WPLTAS	2.0	40 50 60	0.500 ～ 1.990	6	3
			2.5	40 50 60	0.800 ～ 2.490	8	3.5
	—	(D_{m5}) M—WPAS M—WXPAS ($D^{+0.005}_{0}$) AM—WPAS AM—WXPAS	3	40 50 60 70	1.000 ～ 2.990		5
			4	40 50 60 70	1.000 ～ 3.990		7
			5	40 50 60 70	2.000 ～ 4.990		8
			6	40 50 60 70	2.000 ～ 5.990		9
			(8)	(40) 50 60 70 80	3.000 ～ 7.990	13	11
			(10)	(40) 50 60 70 80	3.000 ～ 9.990		13
L	(D_{m5}) M—WPAL M—WXPAL ($D^{+0.005}_{0}$) AM—WPAL AM—WXPAL	(D_{m5}) M—WPLTAL ($D^{+0.005}_{0}$) AM—WPLTAL	2.0	40 50 60	0.500 ～ 1.990	8	3
			2.5	40 50 60	0.800 ～ 2.490	13	3.5
	—	(D_{m5}) M—WPAL M—WXPAL ($D^{+0.005}_{0}$) AM—WPAL AM—WXPAL	3	40 50 60 70	1.000 ～ 2.990		5
			4	50 60 70	1.000 ～ 3.990		7
			5	50 60 70	2.000 ～ 4.990		8
			6	50 60 70	2.000 ～ 5.990		9
			(8)	50 60 70 80	3.000 ～ 7.990	19	11
			(10)	50 60 70 80	3.000 ～ 9.990		13

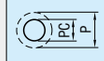
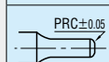
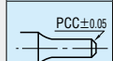
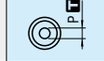
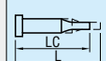
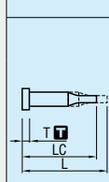
D (8) and (10) are specifications available for M—WP and AM—WP only.
L (40) ⋯B=8 If full length is (40), tip length is 8mm in all cases. Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

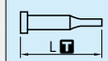
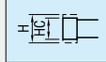
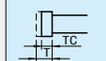
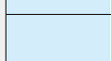
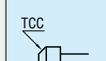
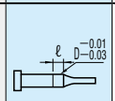
Order Catalog No. — L — P
M—WPAS2.5 — 50 — P1.600

Days to Ship Quotation

Price Quotation

Alterations Catalog No. — L (LC・LCT・LMT) — P (PC) — (BC・HC・TC, etc.)
M—WPAS2.5 — LC45 — P1.600 — BC6.0

Alteration		Code	Spec.	1Code
Alterations to tip		PC	Tip dimension change PC≧Pmin./2 0.001mm increments ⊗ Cannot be used for D≦2.5.	Quotation
		BC	Tip length change ・If D≦2.5, 2≦BC<B ・If D≧3, 2≦BC≦Bmax. 0.1mm increments (?) Full length L must be at least 25mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments (?) PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments (?) PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	
		PKV	Tip tolerance change $P^{+0.005}_{0}$ ⇨ ±0.002	
Alterations to full length		LC	Full length change ・If D≦2.5, 20≦LC<L ・If D≧3.0, 25+B(BC)≦LC<L (?) If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	
		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 tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$	
		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 tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$	

Alteration		Code	Spec.	1Code
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$	
Alterations to head		HC	Head diameter change D≦HC<H 0.1mm increments	
		TC	Head thickness change 2≦TC<T 0.1mm increments (If combined with TKC・TKM・LCT・LMT, 0.01mm increments can be selected.) (?) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length remains as specified.	
		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	Chamfering of head This improves the strength of the punch head. P.1611 0.1mm increments 0.5≦TCC≦(H−D)/2 (?) If H≦5, then TCC is 0.5. ⊗ Cannot be used for H<2.6.	
Shank		NDC	No press-in lead ℓ=3 ⇨ ℓ=0	

■Features
- The tip surface roughness of these punches is finished by grinding to a level equivalent to or smaller than lapping. (The tip gloss may be slightly inferior to lapping.)
- Because the tip is ground, there are none of the slight tip undulations which can be seen in lapping punches.