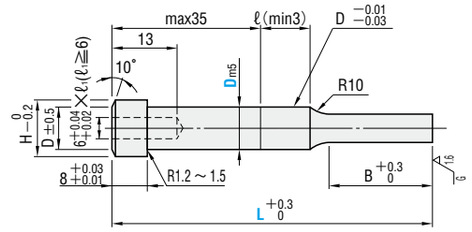
PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES
—FINISHED FOR RETAINERS・TiCN COATING—

PRODUCTS DATA P.1601・1604・1611

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	D_{m5}	Equivalent to SKH51 61～64HRC Surface 3000HV	H—AP	A D R E G	S L	—C
			Powdered high-speed steel 64～67HRC Surface 3000HV	H—APH			

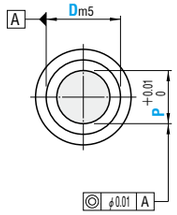
RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



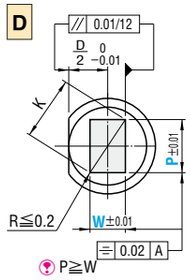
The tip end is ground before the coating is applied.
Tip length (B) L>S

Tip shape A



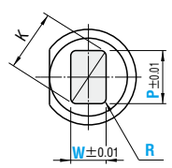
P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape D



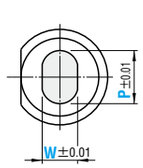
P≧W
R=0 can be selected.
K=$\sqrt{P^2+W^2}$

Tip shape R



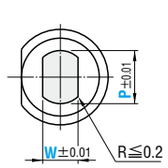
P≧W
0.15≦R<$\frac{W}{2}$
K=$\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type		D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
S H—APAS—C	H—APHAS—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	0.15≦R<$\frac{W}{2}$ (R only)	13	15
H—APDS—C	H—APHDS—C	13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRS—C	H—APHRS—C	16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	21
H—APES—C	H—APHES—C	20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGS—C	H—APHGS—C	25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
L H—APAL—C	H—APHAL—C	10	60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	15
H—APDL—C	H—APHDL—C	13	60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRL—C	H—APHRL—C	16	70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	21
H—APEL—C	H—APHEL—C	20	70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGL—C	H—APHGL—C	25	70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30

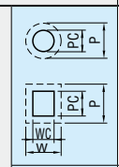
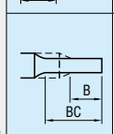
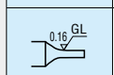
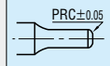
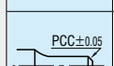
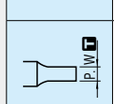
L(50)⋯B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03⋯ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05⋯ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

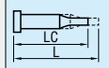
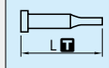
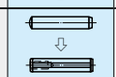
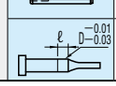
Order

Catalog No.	L	P	W	R (R only)
H—APAS—C20	80	P15.00		
H—APDS—C25	80	P18.00	W10.00	

Days to Ship Quotation

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC・KC, etc.)
H—APAS—C 20 — LC82 — PC12.00 — BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ $\frac{P_{min.}}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) 1.500～1.999 Bmax. 20; 2.000～3.999 35; 4.000～5.999 45; 6.000～ 60	Tip dimension change PC≧ $\frac{P \cdot W_{min.}}{2}$ WC≧ $\frac{P \cdot W_{min.}}{2}$ 0.01mm increments P(PC)・W(WC) Bmax.: 1.25～1.49 8; 1.50～1.99 13; 2.00～3.49 19; 3.50～4.99 25; 5.00～ 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. The base material is finished before the coating is applied. R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ Cannot be used for D>13.	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation