

TAPPED PUNCHES

Tip profile alteration	1F	2F	3F	4F	5F	6F	7F

RoHS

Equivalent to SKD 11 60~63HRC

Powdered high-speed steel 64~67HRC

Catalog No.

Type: (D5~25) MP, (D5~25) A-MP, (D16~25) MPL, (D5~25) MPH, (D5~25) A-MPH

Tip shape: A, D, R, E, G, S, L, X

Tip length: B

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

For shank diameter tolerance D, select either m5 or +0.005/0.

* When D=5, the key slot depth is 0.5.

Tip shape details:

- A:** Tip diameter tolerance ± 0.01 , tip length tolerance ± 0.01 .
- D:** Tip diameter tolerance ± 0.01 , tip length tolerance ± 0.01 , chamfer $\frac{0.01}{2}$.
- R:** Tip diameter tolerance ± 0.01 , tip length tolerance ± 0.01 , chamfer $\frac{0.01}{2}$.
- E:** Tip diameter tolerance ± 0.01 , tip length tolerance ± 0.01 .
- G:** Tip diameter tolerance ± 0.01 , tip length tolerance ± 0.01 .

Formulas: $P \geq W$, $R=0$ can be selected, $K = \sqrt{P^2 + W^2}$, $0.15 \leq R < \frac{W}{2}$, $P > W$.

Type	Tip shape	Tip length	D	L					0.01mm increments			B	M		
				5	6	8	10	13	min. P	max. P	P-Kmax.			P-Wmin.	R
(Dm5) MP, MPH	S	5	40	50	60	70	80	2.00	4.99	4.97	1.20	8	3		
		6	40	50	60	70	80	2.00	5.99	5.97	1.50	13	4		
		8	(40)	50	60	70	80	90	100	3.00	7.99	7.97	2.00	19	5
		10	(40)	50	60	70	80	90	100	3.00	9.99	9.97	2.50	25	6
		13	(40)	50	60	70	80	90	100	6.00	12.99	12.97	3.00	25	3
		16	(40)	50	60	70	80	90	100	10.00	15.99	15.97	4.00	30	4
	(D+0.005/0) A-MP, A-MPH	L	5	50	60	70	80	2.00	4.99	4.97	2.00	13	3		
			6	50	60	70	80	2.00	5.99	5.97	2.00	19	4		
			8	50	60	70	80	90	100	3.00	7.99	7.97	2.50	25	5
		X	5	60	70	80	2.00	4.99	4.97	3.50	25	3			
			6	60	70	80	2.00	5.99	5.97	3.50	30	4			
			8	60	70	80	90	100	3.00	7.99	7.97	5.00	40	6	
		S	10	60	70	80	90	100	3.00	9.99	9.97	5.00	19	4	
			13	60	70	80	90	100	3.00	9.99	9.97	5.00	25	5	
			16	60	70	80	90	100	6.00	12.99	12.97	5.00	25	6	
L	16	70	80	90	100	10.00	15.99	15.97	4.00	30	4				
	20	70	80	90	100	13.00	19.99	19.97	5.00	40	6				
	25	70	80	90	100	18.00	24.99	24.97	6.00	19	8				
MPL	L	16	60	70	80	90	100	10.00	15.99	15.97	4.00	25	4		
		20	60	70	80	90	100	13.00	19.99	19.97	5.00	25	5		
		25	60	70	80	90	100	18.00	24.99	24.97	6.00	25	6		

$0.15 \leq R < \frac{W}{2}$ (R only)

* L(40)→B=8 If the full length is (40), the tip length is 8mm in all cases.

Order **Catalog No.** - L - P - W - R (R only)

MPAL 13 - 80 - P8.24

MPLRS 20 - 60 - P15.50 - W7.25 - R0.50

Days to Ship **Quotation**

Alterations **Catalog No.** - L(LC) - P(PC) - W(WC) - R - (BC-KC-WKC, etc.)

MPAL 13 - 80 - P8.24 - KC-LKC

Alteration	Code	A	D R E G	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.) P(PC) Bmax. 1.000~1.999 20 2.000~3.999 35 4.000~5.999 45 6.000~ 60	Tip dimension change $WC \geq \frac{P-W_{min}}{2} \geq 0.80$ 0.01 mm increments * Cannot be used for tip X. P(PC)·W(WC) Bmax. 0.80~1.49 8 1.50~1.99 13 2.00~3.49 19 3.50~4.99 25 5.00~ 30	
	WC			
	BC	Tip length change $2 \leq BC \leq B_{max}$ 0.1 mm increments * Full length L must be at least 25mm longer than tip length BC.	Tip length change $2 \leq BC \leq B_{max}$ 0.1 mm increments * Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip * P dimension tolerance and increment are the same. * R=0 cannot be selected for the tip D corner.		
	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-GC.		
	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-GC.		
Alterations to full length	LC	Full length change $25+B(BC) \leq LC < L$ 0.1 mm increments * If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length-25mm). (If combined with LKC-LKZ, 0.01mm increments can be selected.)	Full length change $30+B(BC) \leq LC < L$ 0.1 mm increments * If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length-30mm).	
	LKC	Full length tolerance change $L +0.3 \rightarrow +0.05$		
Others	LKZ	Full length tolerance change $L +0.3 \rightarrow +0.01$		
	KC	Addition of single key slot * Cannot be used for D5.	Key slot position change 1° increments	
	WKC	Addition of double key slots in parallel * Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
	NKC	No key slot		
Alterations to tip	PKC	Tip tolerance change $P +0.01 \rightarrow +0.005$ 0 0 * (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0 0	
	GC	$20^\circ \leq GC < 90^\circ$ 1° increments Tip length $B \geq f+2$ $f = P/2 \times \tan(90^\circ - GC^\circ)$ * If combined with SC, tip edges are rounded. * Cannot be combined with LKC-LKZ-PRC-PCC.		



Price **Quotation**

TAPPED PUNCHES

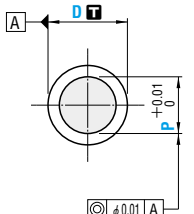
—TiCN COATING · DICOAT® TREATMENT—

PRODUCTS DATA

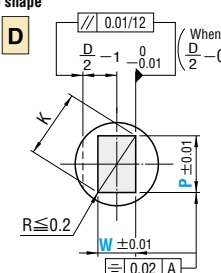
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Type	Shank diameter D Tolerance	M H	Catalog No.			The tip shape can be selected from Tip shape A~G in the figure below.
			Type	Tip shape	Tip length B	
—TiCN coating—  For shank diameter tolerance D T, select either m5 or +0.005/0	Dm5		H—MPH	A	S	
			AH—MPH	D		
—Dicoat® treatment—  For shank diameter tolerance D T, select either m5 or +0.005/0	Dm5		T—MP	R	L	
			T—MPH	E		
			AT—MP	G		
			AT—MPH	X		

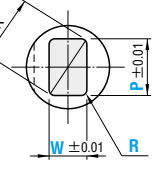
Tip shape A



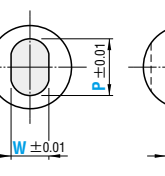
Tip shape D



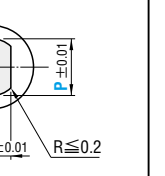
Tip shape R



Tip shape E



Tip shape G



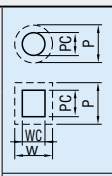
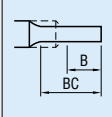
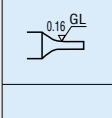
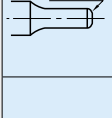
Type	Tip shape	Tip length B	Catalog No.										B	M		
			L													
			0.01mm increments													
(Dm5) H—MPH T—MP T—MPH	S	5	40	50	60	70	80	2.00	4.99	4.97	1.20	0.15 ≤ R < W/2	8	3		
		6	40	50	60	70	80	2.00	5.99	5.97	1.50				13	4
		8	(40)	50	60	70	80	90	100	3.00	7.99					
		10	(40)	50	60	70	80	90	100	3.00	9.99		9.97	2.50		
		13	(40)	50	60	70	80	90	100	6.00	12.99		12.97	3.00		
	16	(40)	50	60	70	80	90	100	10.00	15.99	15.97		4.00			
	20	(40)	50	60	70	80	90	100	13.00	19.99	19.97		5.00			
	(D+0.005/0) AH—MPH AT—MP AT—MPH	L	5	50	60	70	80	2.00	4.99	4.97	2.00		13	3		
			6	50	60	70	80	2.00	5.99	5.97	2.00				19	5
			8	50	60	70	80	90	100	3.00	7.99		7.97	2.50		
			10	50	60	70	80	90	100	3.00	9.99		9.97	2.50		
			13	50	60	70	80	90	100	6.00	12.99		12.97	3.00		
		16	60	70	80	90	100	10.00	15.99	15.97	4.00					
		X	5	60	70	80	2.00	4.99	4.97	3.50	25		3			
			6	60	70	80	2.00	5.99	5.97	3.50				30	6	
8			60	70	80	90	100	3.00	7.99	7.97	5.00					
10			60	70	80	90	100	3.00	9.99	9.97	5.00					
13	60		70	80	90	100	6.00	12.99	12.97	5.00						
16	70	80	90	100	10.00	15.99	—	—								
20	70	80	90	100	13.00	19.99										
25	70	80	90	100	18.00	24.99										

Ⓛ(40)→B=8 If the full length is (40), the tip length is 8mm in all cases. Ⓜ The Dicoat® treatment tip-length X type is available for tip shape A only.

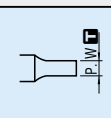
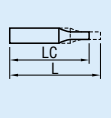
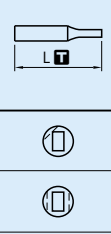
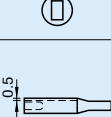
Order	Catalog No.	L	P	W	R (R only)
	AH—MPHRS 8	60	P6.50	W4.25	R0.50
	T—MPHAL 13	80	P8.24		

Days to Ship **Quotation**

Alterations	Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC-KC-WKC, etc.)
	T—MPHAL 13	80	P8.24			KC—LKC

Alteration	Code	A	D R E G	1Code																			
	PC WC	Tip dimension change $PC \geq \frac{P_{min}}{2}$ 0.01 mm increments (Combined with PC, 0.01 mm increments can be selected.)	Tip dimension change $WC \geq \frac{P \cdot W_{min}}{2} \geq 1.00$ 0.01 mm increments Ⓧ Cannot be used for tip X.	—																			
		<table border="1"> <tr> <th>P(PC)</th> <th>Bmax.</th> </tr> <tr> <td>1.000~1.999</td> <td>20</td> </tr> <tr> <td>2.000~3.999</td> <td>35</td> </tr> <tr> <td>4.000~5.999</td> <td>40(45)</td> </tr> <tr> <td>6.000~</td> <td>45(60)</td> </tr> </table>	P(PC)		Bmax.	1.000~1.999	20	2.000~3.999	35	4.000~5.999	40(45)	6.000~	45(60)	<table border="1"> <tr> <th>P(PC)·W(WC)</th> <th>Bmax.</th> </tr> <tr> <td>1.00~1.49</td> <td>8</td> </tr> <tr> <td>1.50~1.99</td> <td>13</td> </tr> <tr> <td>2.00~3.49</td> <td>19</td> </tr> <tr> <td>3.50~4.99</td> <td>25</td> </tr> <tr> <td>5.00~</td> <td>30</td> </tr> </table>	P(PC)·W(WC)	Bmax.	1.00~1.49	8	1.50~1.99	13	2.00~3.49	19	3.50~4.99
P(PC)	Bmax.																						
1.000~1.999	20																						
2.000~3.999	35																						
4.000~5.999	40(45)																						
6.000~	45(60)																						
P(PC)·W(WC)	Bmax.																						
1.00~1.49	8																						
1.50~1.99	13																						
2.00~3.49	19																						
3.50~4.99	25																						
5.00~	30																						
	BC	Tip length change $2 \leq BC \leq B_{max}$ 0.1 mm increments Ⓜ Full length L must be at least 25mm longer than tip length BC.	Tip length change $2 \leq BC \leq B_{max}$ 0.1 mm increments Ⓜ Full length L must be at least 30mm longer than tip length BC.	—																			
		Ⓜ 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. Ⓧ Can be used for TiCN coating types only.																					
	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-GC.		Quotation																			
		Chamfering to tip side edge $0.3 \leq PCC \leq 1$ 0.1 mm increments Ⓜ $PCC \leq (P-0.2)/2$ Ⓜ Can be used with TiCN coating only. Ⓧ Cannot be combined with PRC-GC.																					
	GC	$20^\circ \leq GC < 90^\circ$ 1° increments Tip length $B \geq f+2$ $f = P/2 \times \tan(90^\circ - GC)$ Ⓜ Can be combined with TiCN coating only. Ⓜ When used with SC, tip edges are rounded. Ⓧ Cannot be combined with LKC-PRC-PCC.		—																			

P Price **Quotation**

Alteration	Code	A	D R E G	1Code
	PKC	Tip tolerance change $P \pm 0.01 \rightarrow +0.005/0$ (P dimension can be selected in 0.001mm increments.) Ⓜ Can be used with TiCN coating only. Ⓧ Cannot be used for D > 13.	Tip tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01/0$	—
		Full length change $25+B(BC) \leq LC < L$ 0.1 mm increments Ⓜ If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length-25mm).	Full length change $30+B(BC) \leq LC < L$ 0.1 mm increments Ⓜ If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length-30mm).	
	LKC	Full length tolerance change $L \pm 0.3 \rightarrow +0.05/0$		Quotation
	KC	Addition of single key slot Ⓧ Cannot be used for D5.	Key slot position 90° change 1° increments	—
	WKC	Addition of double key slots in parallel Ⓧ Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
	NKC		No key slot	
	SKC	Addition of single key flat on shank ± 0.05 $D5 \cdot 6$ $P \leq D-1.2$ $W \leq D-1.2$ (Machining width 0.5) $D8 \sim P \leq D-2.2$ $W \leq D-2.2$ (Machining width 1) Ⓧ Cannot be combined with KC-WKC.		—

TAPPED PUNCHES

—WPC® TREATMENT·HW COATING—



Type	M	Catalog No.		Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
		Type	Type			
—WPC® treatment— RoHS	Equivalent to SKD11 60~63HRC Surface 1000~1100HV	WPC® treatment W—MP	WPC® treatment AW—MP	A	S	
—HW coating—		WPC® treatment W—MPH	WPC® treatment AW—MPH	D	L	
	Powdered high-speed steel 64~67HRC Surface 1000~1100HV	HW coating HW—MPH	HW coating AHW—MPH	E	X	
	Powdered high-speed steel 64~67HRC Surface 3000HV			G		

Type	Tip shape	Tip length	D	L								0.01mm increments				B	M	
				A	D	R	E	G	min. P	max. P	P-Kmax.	P-Wmin.	R					
—WPC® treatment— W—MP W—MPH	S	8	5	40	50	60	70	80	90	100	2.00	4.99	4.97	1.20	8	3		
			6	40	50	60	70	80	2.00	5.99	5.97	1.50						
			8	(40)	50	60	70	80	90	100	3.00	7.99	7.97	2.00			13	4
			10	(40)	50	60	70	80	90	100	3.00	9.99	9.97	2.50				
			13	(40)	50	60	70	80	90	100	6.00	12.99	12.97	3.00			19	5
			16	(40)	50	60	70	80	90	100	10.00	15.99	15.97	4.00				
20	(40)	50	60	70	80	90	100	13.00	19.99	19.97	5.00							
—HW coating— HW—MPH	A, D, R	13	5	50	60	70	80	2.00	4.99	4.97	2.00	13	3					
			6	50	60	70	80	2.00	5.99	5.97	2.00							
			8	50	60	70	80	90	100	3.00	7.99			7.97	2.50	19	4	
			10	50	60	70	80	90	100	3.00	9.99			9.97	2.50			
			13	50	60	70	80	90	100	6.00	12.99			12.97	3.00	25	5	
			16	60	70	80	90	100	10.00	15.99	15.97			4.00				
20	60	70	80	90	100	13.00	19.99	19.97	5.00									
—WPC® treatment— AW—MP AW—MPH	E, G	25	5	60	70	80	2.00	4.99	4.97	3.50	25	3						
			6	60	70	80	2.00	5.99	5.97	3.50								
			8	60	70	80	90	100	3.00	7.99			7.97	5.00	30	4		
			10	60	70	80	90	100	3.00	9.99			9.97	5.00				
			13	60	70	80	90	100	6.00	12.99			12.97	5.00	40	5		
			16	70	80	90	100	10.00	15.99									
20	70	80	90	100	13.00	19.99												
—HW coating— AHW—MPH	X	30	5	70	80	90	100	18.00	24.99			40	6					
			6	70	80	90	100	18.00	24.99									
			8	70	80	90	100	18.00	24.99									

Ⓢ L(40)→B=8 If the full length is (40), the tip length is 8mm in all cases.

Order Catalog No. — L — P — W — R (Ⓢ only)
AW—MPDL 13 — 80 — P10.50 — W7.34

Days to Ship **Quotation**

Alterations Catalog No. — L(LC) — P(PC) — W(WC) — R — (BC-KC-WKC, etc.)
W—MPAL 13 — 80 — P8.24 — KC-LKC

Alteration	Code	A	D R E G	1Code
Alterations to tip	PC WC	Tip dimension change $PC \geq \frac{P_{min.}}{2}$ 0.01 mm increments (If combined with PCC, 0.01 mm increments can be selected.)	Tip dimension change $WC \geq \frac{P \cdot W_{min.}}{2} \geq 1.00$ 0.01 mm increments Ⓢ Cannot be used for tip X.	Quotation
	BC	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Ⓢ Full length L must be at least 25 mm longer than tip length BC.	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments Ⓢ Full length L must be at least 30 mm longer than tip length BC.	
	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.		
	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.		
	PKC	Tip tolerance change $P + 0.01 \rightarrow +0.005$ 0 Ⓢ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \rightarrow +0.01$ 0 Ⓢ HW coating cannot be used for $D > 13$.	
	Others	KC	Addition of single key slot Ⓢ Cannot be used for DS.	
	WKC	Addition of double key slots in parallel Ⓢ Cannot be used for DS.	Double key slots in parallel Can be combined with KC.	
	NKC		No key slot	
	SKC	Single key flat on shank Ⓢ D5-6 $P \leq D-1.2$ $W \leq D-1.2$ (Machining width 0.5) Ⓢ D8~ $P \leq D-2.2$ $W \leq D-2.2$ (Machining width 1)		

Price **Quotation**

PUNCHES

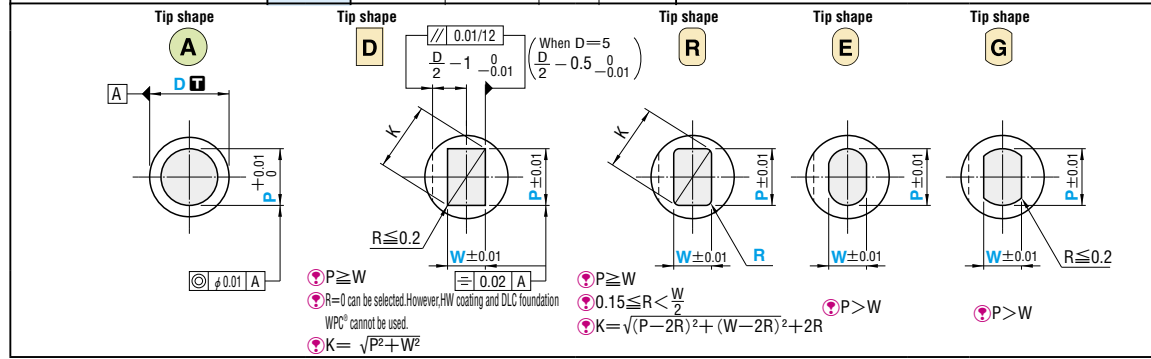


TAPPED PUNCHES

— RW COATING · DLC COATING —



Type	M H	Catalog No.		Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
		Type	Type			
— RW coating — RoHS	Powdered high-speed steel 64~67HRC RW coating Surface 3100HV	RW-MPH	ARW-MPH	A	S	
— DLC coating —		N-MPH	AN-MPH	D	L	
	Powdered high-speed steel 64~67HRC DLC coating Surface 3000HV~	NW-MPH	ANW-MPH	E	X	
				G		



Type	Tip shape	Tip length	D	L								0.01mm increments				B	M
				5	6	8	10	13	16	20	25	min. P	max. P	P-Kmax.	P-Wmin.		
— RW coating — RW-MPH	S	5	40	50	60	70	80	90	100	2.00	4.99	4.97	1.20	0.15 ≤ R < W/2	8	3	
		6	40	50	60	70	80	90	100	2.00	5.99	5.97	1.50				
		8	40	50	60	70	80	90	100	3.00	7.99	7.97	2.00				
		10	40	50	60	70	80	90	100	3.00	9.99	9.97	2.50				
		13	40	50	60	70	80	90	100	6.00	12.99	12.97	3.00				
— DLC coating — N-MPH	L	16	40	50	60	70	80	90	100	10.00	15.99	15.97	4.00	0.15 ≤ R < W/2	13	4	
		20	40	50	60	70	80	90	100	13.00	19.99	19.97	5.00				
		25	40	50	60	70	80	90	100	18.00	24.99	24.97	6.00				
		5	50	60	70	80	90	100	2.00	4.99	4.97	2.00					
		6	50	60	70	80	90	100	3.00	7.99	7.97	2.50					
— DLC foundation WPC® — NW-MPH	L	8	50	60	70	80	90	100	3.00	9.99	9.97	2.50	0.15 ≤ R < W/2	19	5		
		10	50	60	70	80	90	100	6.00	12.99	12.97	3.00					
		13	50	60	70	80	90	100	10.00	15.99	15.97	4.00					
		16	60	70	80	90	100	13.00	19.99	19.97	5.00						
		20	60	70	80	90	100	18.00	24.99	24.97	6.00						
— RW coating — ARW-MPH	L	5	60	70	80	90	100	2.00	4.99	4.97	3.50	0.15 ≤ R < W/2	25	6			
		6	60	70	80	90	100	2.00	5.99	5.97	3.50						
		8	60	70	80	90	100	3.00	7.99	7.97	5.00						
		10	60	70	80	90	100	3.00	9.99	9.97	5.00						
		13	60	70	80	90	100	6.00	12.99	12.97	5.00						
— DLC coating — AN-MPH	L	16	70	80	90	100	10.00	15.99	15.97	4.00	0.15 ≤ R < W/2	25	3				
		20	70	80	90	100	13.00	19.99	19.97	5.00							
		25	70	80	90	100	18.00	24.99	24.97	6.00							
		5	60	70	80	90	100	2.00	4.99	4.97				3.50			
		6	60	70	80	90	100	2.00	5.99	5.97				3.50			
— DLC foundation WPC® — ANW-MPH	X	8	60	70	80	90	100	3.00	7.99	7.97	5.00	0.15 ≤ R < W/2	30	4			
		10	60	70	80	90	100	3.00	9.99	9.97	5.00						
		13	60	70	80	90	100	6.00	12.99	12.97	5.00						
		16	70	80	90	100	10.00	15.99	15.97	4.00							
		20	70	80	90	100	13.00	19.99	19.97	5.00							
		25	70	80	90	100	18.00	24.99	24.97	6.00		40	6				

Ⓛ (40) → B=8 If the full length is (40), the tip length is 8mm in all cases.

Order **Catalog No.** — **L** — **P** — **W** — **R (R only)**
ARW-MPHDL 13 — 80 — P10.50 — W7.34

Days to Ship **Quotation**

Alterations **Catalog No.** — **L (LC)** — **P (PC)** — **W (WC)** — **R** — (BC-KC-WKC...etc.)
RW-MPHAL 13 — 80 — P8.24 — KC-LKC

Alterations	Code	A	D R E G	1Code
Alterations to full length	PC	Tip dimension change $PC \geq \frac{P_{min.}}{2}$ 0.01 mm increments	Tip dimension change $PC \geq \frac{P-W_{min.}}{2} \geq 1.00$ 0.01 mm increments ⊗ Cannot be used for tip X.	Quotation
	WC	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments ⊗ Full length L must be at least 25 mm longer than tip length BC.	Tip length change $2 \leq BC \leq B_{max.}$ 0.1 mm increments ⊗ Full length L must be at least 30 mm longer than tip length BC.	
Alterations to tip	BC	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.	—	Quotation
	PRC	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. RW coating · DLC foundation WPC® cannot be used.	—	
Others	PCC	Lapping of tip ⊗ P dimension tolerance and increment are the same. ⊗ Cannot be combined with RW coating and DLC foundation WPC®. ⊗ R=0 cannot be selected for the tip D corner.	—	Quotation
	SC	—	—	

Alterations	Code	A	D R E G	1Code
Alterations to full length	LC	Full length change $25+B(BC) \leq LC < L$ 0.1 mm increments ⊗ If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length-25 mm).	Full length change $30+B(BC) \leq LC < L$ 0.1 mm increments ⊗ If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length-30mm).	Quotation
	LKC	Full length tolerance change $L^{+0.3}_0 \rightarrow ^{+0.05}_0$	—	
Others	KC	Addition of single key slot ⊗ Cannot be used for DS.	Key slot position change $0^\circ \sim 180^\circ$ 1° increments	Quotation
	WKC	Addition of double key slots in parallel ⊗ Cannot be used for DS.	Double key slots in parallel Can be combined with KC.	
	NKC	—	No key slot	
Others	SKC	Single key flat on shank $0.5 \sim 0.01$	⊗ $D5-6$ $P \leq D-1.2$ $W \leq D-1.2$ (Machining width 0.5) ⊗ $D8 \sim$ $P \leq D-2.2$ $W \leq D-2.2$ (Machining width 1)	Quotation
		⊗ Cannot be combined with KC-WKC.	—	

Price **Quotation**

■ Effects of RW coating
Effective for press processing of ultra-high-tensile material and thick plate high-tensile material thanks to its superior wear resistance, peeling resistance and heat resistance. See the product data for details. **P.1607**

■ 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**

TAPPED JECTOR PUNCHES

—NORMAL · WPC® TREATMENT—



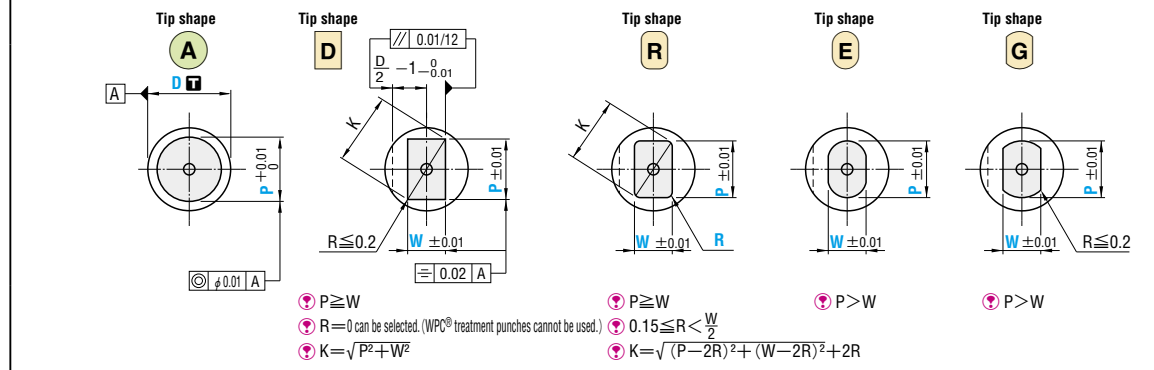
Calculating the projection length of the jector pin (reference value) **P.241**

• For details of jector holes, refer to Jector Punch Blanks. **P.238**
 • For details of jector pins, refer to Jector Pin Sets. **P.241**

Type	Shank diameter D Tolerance	M H	Catalog No.			The tip shape can be selected from Tip shape A~G in the figure below.
			Type	Tip shape	Tip length B	
—Normal— RoHS	D _{m5}	Equivalent to SKD 11 60~63HRC	MJ	A	S	
—WPC® treatment—			W-MJ	D	L	
	D ^{+0.005} / ₀	WPC® treatment 60~63HRC Surface 1000~1100HV	A-MJ	E		
			AW-MJ	G		

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

The tip edge of a WPC® treatment punch is very slightly rounded.



Type	Tip shape	Tip length B	D	L										0.01mm increments			B	M
														A	D R E G	R		
														min. P max.	P · Kmax.	P · Wmin.		
(D _{m5}) MJ	S	8	6	(40)	50	60	70	80	90	100	2.00~	5.99	5.97	2.00	0.15 ≤ R < W/2 (R only)	8	3	
				(40)	50	60	70	80	90	100	3.00~	7.99	7.97	3.00				
				(40)	50	60	70	80	90	100	3.00~	9.99	9.97	3.00				
				(40)	50	60	70	80	90	100	6.00~	12.99	12.97	6.00				
				(40)	50	60	70	80	90	100	10.00~	15.99	15.97	6.00				
—WPC® treatment— W-MJ	L	13	6	(40)	(50)	60	70	80	90	100	2.00~	5.99	5.97	2.00	13	3		
				(40)	(50)	60	70	80	90	100	3.00~	7.99	7.97	3.00				
				(40)	(50)	60	70	80	90	100	3.00~	9.99	9.97	3.00				
				(40)	(50)	60	70	80	90	100	6.00~	12.99	12.97	6.00				
				(40)	(50)	60	70	80	90	100	10.00~	15.99	15.97	6.00				
(D ^{+0.005} / ₀) A-MJ	L	19	6	(40)	(50)	60	70	80	90	100	2.00~	5.99	5.97	2.00	19	6		
				(40)	(50)	60	70	80	90	100	3.00~	7.99	7.97	3.00				
				(40)	(50)	60	70	80	90	100	3.00~	9.99	9.97	3.00				
				(40)	(50)	60	70	80	90	100	6.00~	12.99	12.97	6.00				
				(40)	(50)	60	70	80	90	100	10.00~	15.99	15.97	6.00				
—WPC® treatment— AW-MJ	L	25	6	(40)	(50)	60	70	80	90	100	2.00~	5.99	5.97	2.00	25	6		
				(40)	(50)	60	70	80	90	100	3.00~	7.99	7.97	3.00				
				(40)	(50)	60	70	80	90	100	3.00~	9.99	9.97	3.00				
				(40)	(50)	60	70	80	90	100	6.00~	12.99	12.97	6.00				
				(40)	(50)	60	70	80	90	100	10.00~	15.99	15.97	6.00				

• L (40) → B=6 If full length is (40), tip length is 6mm in all cases.
 • L (50) → B=13 If full length is (50), tip length is 13mm in all cases.

Order **Catalog No.** — **L** — **P** — **W** — **R (R only)**
A-MJAL 13 - 80 - P8.24

Days to Ship **Quotation**

Alterations **Catalog No.** — **L (LC)** — **P (PC)** — **W (WC)** — **R** — (BC·KC·WKC, etc.)
A-MJAL 13 - 80 - P8.24 - KC-LKC

Alteration	Code	A	D R E G	1Code																																
Alterations to full length	PC WC	Tip dimension change PC ≥ PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.)	Tip dimension change PC·WC ≥ PC·WCmin. 0.01 mm increments	<table border="1"> <tr> <th>D</th> <th>PCmin.</th> <th>D</th> <th>PC·WCmin.</th> </tr> <tr> <td>6</td> <td>1.80</td> <td>6</td> <td>1.80</td> </tr> <tr> <td>8</td> <td>2.50</td> <td>8</td> <td>2.50</td> </tr> <tr> <td>10</td> <td>2.80</td> <td>10</td> <td>2.80</td> </tr> <tr> <td>13</td> <td>5.00</td> <td>13</td> <td>5.00</td> </tr> <tr> <td>16</td> <td>8.00</td> <td>16</td> <td>5.00</td> </tr> <tr> <td>20</td> <td>9.00</td> <td>20</td> <td>5.00</td> </tr> <tr> <td>25</td> <td>9.00</td> <td>25</td> <td>5.00</td> </tr> </table>	D	PCmin.	D	PC·WCmin.	6	1.80	6	1.80	8	2.50	8	2.50	10	2.80	10	2.80	13	5.00	13	5.00	16	8.00	16	5.00	20	9.00	20	5.00	25	9.00	25	5.00
		D	PCmin.		D	PC·WCmin.																														
	6	1.80	6	1.80																																
	8	2.50	8	2.50																																
	10	2.80	10	2.80																																
	13	5.00	13	5.00																																
16	8.00	16	5.00																																	
20	9.00	20	5.00																																	
25	9.00	25	5.00																																	
Alterations to tip	BC	Tip length change (shorter than standard) 2 ≤ BC < B 0.1 mm increments	Quotation																																	
	SC	Lapping of tip • P dimension tolerance and increment are the same. • R=0 cannot be selected for tip shape D corners. • Cannot be used with WPC® treatment.																																		
	PRC	Rounding of tip side edge 0.3 ≤ PRC ≤ 1 0.1 mm increments • PRC ≤ (P - d) - 0.5 / 2 d, dimension P.238 • Cannot be combined with PCC. • WPC® treatment, the tolerance is PRC ± 1.1.																																		
	PCC	Chamfering of tip side edge 0.3 ≤ PCC ≤ 1 0.1 mm increments • PCC ≤ (P - d) - 0.5 / 2 d, dimension P.238 • Cannot be combined with PRC. • For WPC® treatment, the tolerance is PCC ± 1.1.																																		
	PKC	Tip tolerance change P +0.01 / 0 → +0.005 / 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W ± 0.01 → +0.01 / 0																																	

P Price **Quotation**

Alteration	Code	A	D R E G	1Code
Alterations to full length	LC	Full length change LC < L (reduction in tip length) 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.) • Tip length B is shortened by (L-LC). • Projection length of jector pin is 2 mm.		
	LKC	Full length tolerance change L +0.3 / 0 → +0.05 / 0		
	LKZ	Full length tolerance change L +0.3 / 0 → +0.01 / 0 • Cannot be used with WPC® treatment.		
Others	KC	Addition of single key slot Key slot 90° position change 1° increments		Quotation
	WKC	Addition of double key slots in parallel Double key slots in parallel Can be combined with KC.		
	NKC	No key slot		
	SKC	Single key flat on shank A D R E G • D6 P ≤ D - 1.2 W ≤ D - 1.2 (Machining width 0.5) • D8 ~ P ≤ D - 2.2 W ≤ D - 2.2 (Machining width 1) • Cannot be combined with KC-WKC.		
	AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		

PUNCHES



DOUBLE-STEPPED TAPPED PUNCHES

— NORMAL · TiCN COATING · HW COATING —

Type	Shank diameter, D _{m5} tolerance	M H	Catalog No.			Tip shape	The tip shape can be selected from Tip shape A~G in the figure below.
			Normal	TiCN coating surface 3000HV	HW coating surface 3000HV		
 	D _{m5}	Equivalent to SKD11 60 ~ 63HRC	MPTW Tapped large-diameter type	—	—	A	
			MPHTW Powdered high-speed steel	H-MPHTW	HW-MPHTW	D	
	D _{+0.005/0}	Equivalent to SKD11 60 ~ 63HRC	A-MPTW	—	—	E	<p>* When D=5, the key slot depth is 0.5. * The tip end is ground before the coating is applied. * The tip edge of a HW coating punch is very slightly rounded.</p>
			A-MPHTW	AH-MPHTW	AHW-MPHTW	G	

Type	Tip shape	D	L	0.01mm increments		Diagonal Kmax.	0.01mm increments		DREG	V	F	M
				A	B		P-W	R				
Standard type (D _{m5}) Normal MPTW MPHTW TiCN coating H-MPHTW HW coating HW-MPHTW (D _{+0.005/0}) Normal A-MPTW A-MPHTW TiCN coating AH-MPHTW HW coating AHW-MPHTW Tapped large-diameter type MPLTW	A D R E G	5 6 8 10 13 16 20 25 16 20 25	40-50-60-70-80 40-50-60-70-80 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100 40-50-60-70-80-90-100	1.00 ~ 1.999 2.00 ~ 3.999 4.00 ~ 4.98 4.00 ~ 4.98	2.0 ~ 20.0 2.0 ~ 35.0 2.0 ~ 45.0 2.0 ~ 45.0	4.96	0.80 (1.00 ~ 1.49) 1.50 ~ 1.99 2.00 ~ 3.49 3.50 ~ 4.96	2.0 ~ 8.0 2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0	2.0 ~ 8.0 2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0	B+f+2 < F ≤ Fmax & F ≤ L-30	3 4 5 6 8	
				1.00 ~ 1.999 2.00 ~ 3.999 4.00 ~ 5.98 4.00 ~ 5.98	2.0 ~ 20.0 2.0 ~ 35.0 2.0 ~ 45.0 2.0 ~ 45.0	5.96	0.80 (1.00 ~ 1.49) 1.50 ~ 1.99 2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 5.96	2.0 ~ 8.0 2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0				
				1.00 ~ 1.999 2.00 ~ 3.999 4.00 ~ 5.999 6.00 ~ 7.98 6.00 ~ 7.98	2.0 ~ 20.0 2.0 ~ 35.0 2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0	7.96	1.00 ~ 1.49 1.50 ~ 1.99 2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 7.96	2.0 ~ 8.0 2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0				
				1.50 ~ 1.999 2.00 ~ 3.999 4.00 ~ 5.999 6.00 ~ 9.98 6.00 ~ 9.98	2.0 ~ 20.0 2.0 ~ 35.0 2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0	9.96	1.25 ~ 1.49 1.50 ~ 1.99 2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 9.96	2.0 ~ 8.0 2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0				
				3.00 ~ 3.999 4.00 ~ 5.999 6.00 ~ 12.98 6.00 ~ 12.98	2.0 ~ 35.0 2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0	12.96	1.50 ~ 1.99 2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 12.96	2.0 ~ 13.0 2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0				
				5.00 ~ 5.999 6.00 ~ 15.98 6.00 ~ 15.98 6.50 ~ 19.98 6.50 ~ 19.98	2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	15.96	2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 15.96 2.50 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				
				9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98	2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	24.96	3.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 24.96 3.00 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				
				5.00 ~ 5.98 6.00 ~ 15.98 6.00 ~ 15.98 6.50 ~ 19.98 6.50 ~ 19.98	2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	15.96	2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 15.96 2.50 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				
				9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98	2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	24.96	3.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 24.96 3.00 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				
				5.00 ~ 5.98 6.00 ~ 15.98 6.00 ~ 15.98 6.50 ~ 19.98 6.50 ~ 19.98	2.0 ~ 45.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	15.96	2.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 15.96 2.50 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				
				9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98 9.00 ~ 24.98	2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0 2.0 ~ 60.0	24.96	3.00 ~ 3.49 3.50 ~ 4.99 5.00 ~ 24.96 3.00 ~ 3.49	2.0 ~ 19.0 2.0 ~ 25.0 2.0 ~ 30.0 2.0 ~ 19.0				

Order Catalog No. — L — P — W — B — V — F — R (R only)

MPTWA10 — 80 — P9.50 — B30 — V9.80 — F45
 A-MPHTWR13 — 80 — P10.50 — W7.34 — B25 — V12.00 — F45 — R0.5

Days to Ship **Quotation**

Alterations Catalog No. — L (LC) — P — W — B — V — F — R (R only) — (KC-WKC, etc.)

MPTWA10 — LC72 — P4.80 — B10 — V6.80 — F40 — KC

Alteration	Code	A	D R E G	1Code
	SC	Lapping of tip P dimension tolerance and increment are the same. With TiCN coating, the base material is finished before the coating is applied. Cannot be used with HW coating. R=0 cannot be selected for the tip D corner.		
	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, the tolerance is PRC ± 0.1.		
	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. For HW coating, the tolerance is PCC ± 0.1.		
	GC	20° ≤ GC < 90° 1° increments Tip length B ≥ g+2 g = P/2 × tan(90° - GC°) If combined with SC, tip edges are rounded. Cannot be combined with LKC-LKZ-PRC-PCC. Cannot be used with TiCN coating or HW coating.		
	PKC	Tip tolerance change P ₀ ^{+0.01} → ₀ ^{+0.005} (P dimension can be selected in 0.001 mm increments.) TiCN coating/HW coating cannot be used for D > 13.	Tip tolerance change P·W ± 0.01 → ₀ ^{+0.01}	

Alteration	Code	A	D R E G	1Code
	LC	Full length change 30 + F ≤ LC < L 0.1 mm increments (If combined with LKC-LKZ, 0.01 mm increments can be selected.)		
	LKC	Full length tolerance change L ₀ ^{+0.3} → ₀ ^{+0.05}		
	LKZ	Full length tolerance change L ₀ ^{+0.3} → ₀ ^{+0.01}		
	KC	Addition of single key slot Cannot be used for D5. Key slot position change 1° increments		
	WKC	Addition of double key slots in parallel Cannot be used for D5.		
	NKC	No key slot		
	SKC	Single key flat on shank D5-6 V ≤ D-1.2 (Machining width 0.5) D8 ~ V ≤ D-2.2 (Machining width 1) Cannot be combined with KC-WKC.		

Price **Quotation**

207 If V > D - 0.03 → ℓ = 0 If V > D - 0.03, D₀^{-0.01} (press-in lead) is not included. * For TiCN coating and HW coating, P·W min. is 1.00.

PUNCHES