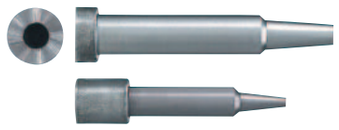
FREE DESIGNATION ONE-STEP CORE PINS WITH DOUBLE STEP COOLING HOLE
—NO COATING・TiCN COATING—

RoHS



Part Number		M	H	T					
				P	L	F		A・V	
No coating	TiCN coating		HRC			Step 1A	Step 1B・1C・1D・1E	No coating	TiCN coating
RD−CPDB	HRD−CPDB	SKD61 (H13)	48～52	$^{-0.01}_{-0.02}$	$^{+0.02}_{0}$ When Shape G $^{0}_{-0.1}$ Shape B	$^{+0.05}_{0}$	$^{+0.02}_{0}$	※±0.015	±0.02
RD−CPHB	—	SKH51 (M2)	58～60	$^{0}_{-0.005}$	$^{+0.02}_{0}$ $^{0}_{-0.1}$	$^{+0.05}_{0}$	$^{+0.02}_{0}$	※±0.01	—

※ When Step 1E A±0.02

■Guide for TiCN Coating

・TiCN coating, applied through PVD (physical vapor deposition), features excellent abrasion and corrosion resistance properties, and improves mold-release performance.

Hardness	3000HV～
Coating thickness	2～5 μm
Color	Blue-gray

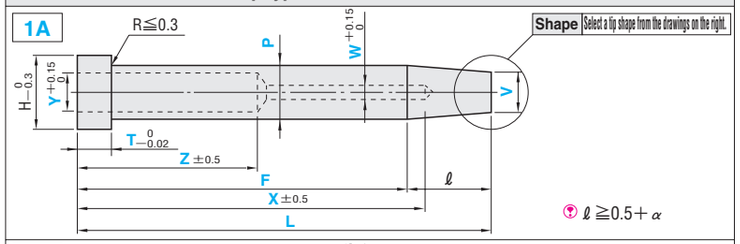
・Coating made on the tip and shaft.

The dimensions and tolerances shown in the drawings are the values after the product is coated.

The thickness of coating layer may be slightly inconsistent around the tip corners.

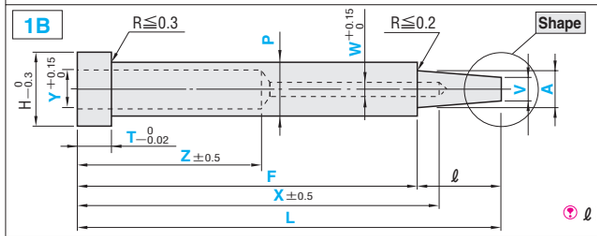
Step type selected from A～E below

1A



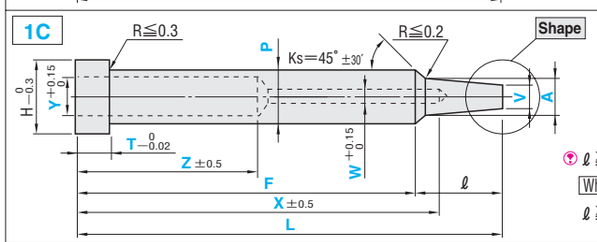
ℓ ≧0.5+α

1B



ℓ ≧0.7+α

1C

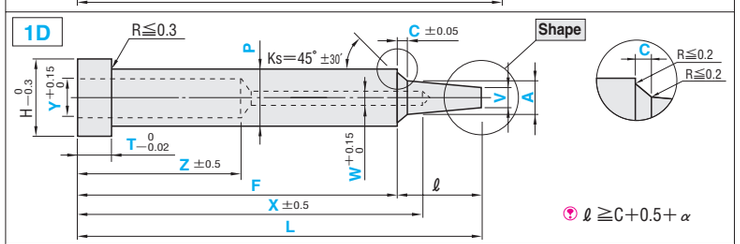


ℓ ≧ $\frac{P-A}{2}$ +0.5+α

When AC alteration is used

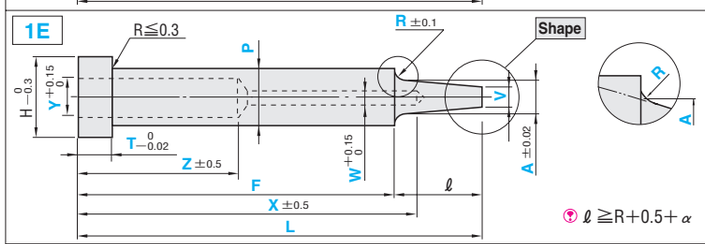
ℓ ≧ $\frac{P-A}{2\tan AC°}$ +0.5+α

1D



ℓ ≧C+0.5+α

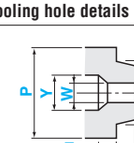
1E



ℓ ≧R+0.5+α

Shape (Tip shape: V is dimension before tip processing.)

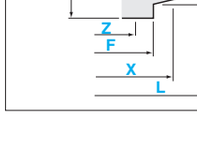
(Not processed)



Designation of the shape is unnecessary when tip processing is not required.

α=0

C (C chamfered)



0.5≦G<V/2

0.1mm increments

α=G θ<45°

G (Cone)

20<K≦60

1° increments

α= $\frac{V}{2tanK}$ θ<K

T (Tapered)

0.1≦S< $\frac{V}{2tanK}$

0.1mm increments

20<K≦45

1° increments

α=S θ<K

R (R chamfered)

0.2≦Q<V/2

0.1mm increments

α=Q

B (Spherical processed)

α=V/2

■Cooling hole details

H	Part Number				0.01mm increments			0.1mm increments	0.01mm increments		0.1mm increments	ℓ max.
	Type	Step	Shape	No.	L	P	F	T	A	Vmin.	C・R	
10	RD−CPDB RD−CPHB −TiCN coating− HRD−CPDB	1A 1B 1C 1D 1E	Designation is unnecessary when tip processing is not required. C G T R B	10	20.00～120.00	5.50～ 7.00	F≧T+10	2.0≦T≦20.0 When HRD-CPDB1 is selected T≧4.0	P>A≧V Step A P>V No designation necessary for A	2.00	$C<\frac{P-A}{2}$ 0.1≦C≦4.0 (Available for Step 1D only)	50.00
11				11		6.50～ 8.00						
15				15		7.50～10.00				2.50		
18				18		9.50～13.00						
21				21		12.50～16.00						
25				25	30.00～120.00	16.50～20.00	F≧T+24			5.00	$R\leqq\frac{P-A}{2}$ R≧0.2 (Available for Step 1E only)	

P	1mm increments						
	Single step type			Double step type			
	W		X	Y		Z	
	When X≦F−3	When X>F−3					
5.50～ 5.99	2≦W≦Y−1	2≦W≦Y−1 and W≦V−2	7≦X≦L−5−α	3≦Y≦P−2	Y≧W+1	Z<X−2 and 5≦Z≦F−5	
6.00～ 9.99				3≦Y≦P−3			
10.00～20.00				3≦Y≦P−4			

Order

Part Number	L	P	F	T	A	V	C・R	Tip size (K・S・G・Q)	Cooling hole (W・X・Y・Z)
RD−CPHB1 D B 15	80.00	P9.70	F60.00	T15.5	A8.00	V6.00	C0.3		− W3 − X65 − Y6 − Z50

Alterations

Part Number	L	P	F	T	A	V	C	R/RE	Tip size (K・S・G・Q)	Cooling hole (W・X・Y・Z)	(KC・WKC…etc.)
RD−CPHB1DB15	80.00	P9.70	F60.00	T15.5	A8.00	V6.00	C0.3			− W3 − X65 − Y6 − Z50	− ZPC6

See alteration guide for more details

Alterations	Code	Spec.
KC $^{0}_{-0.01}$	KC	Single flat cutting P/2≦KC<H/2
WKC $^{0}_{-0.01}$	WKC	Two flats cutting P/2≦WKC<H/2
KAC KBC $^{0}_{-0.01}$	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2
RKC $^{0}_{-0.01}$	RKC	Two flats (right angled) cutting P/2≦RKC<H/2
DKC DKC $^{0}_{-0.01}$	DKC	Three flats cutting P/2≦DKC<H/2
SKC $^{0}_{-0.01}$	SKC	Four flats cutting P/2≦SKC<H/2
AG° ±0.5 KGC $^{0}_{-0.01}$	KGC	Two flats (angled) cutting P/2≦KGC<H/2 0<AG<360 AG=1° increments
120° 120° KTC $^{0}_{-0.01}$	KTC	Three flats cutting at 120° P/2≦KTC<H/2
H HC $^{0}_{-0.3}$	HC	Head diameter change HC=0.1mm increments P≦HC<H In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.
H HCC $^{0}_{-0.02}$	HCC	Head diameter change (precision) HCC=0.1mm increments P+0.5≦HCC<H−0.3

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter

Unit of designation 0.005mm increments possible

(2)To designate arbitrary key flat dimensions

Unit of designation 0.1mm

Alterations	Code	Spec.
RR	RR	Changes R (normally≦0.2) to R0.3～0.5 (Improves strength) Available for Step 1B・1C・1D Step 1B・1C: P−A≧1.0 Step 1D: C≧0.5
RE	RE	R shape alteration (enlargement) RE=0.5mm increments 0.5≦RE≦2.0 F tolerance is $^{+0.05}_{0}$ Available for Step 1E only
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step 1C・1D Step 1D: C≦1.0, A+2 (C×tanAC°)<P Combination with RR not available.
	TRN	Relief under the head (No need for plate chamfering)
	TRC	Changes the head R from R0.3 or lower to R0.3～0.5.
H h W t T	ZPC	Adds O-ring groove (applicable with ORP) Designation method: Code ZPC ORP№ 3 H−h≧2 T≧4 No.≧W Combination with key flat cutting other than TRN・TRC not available.

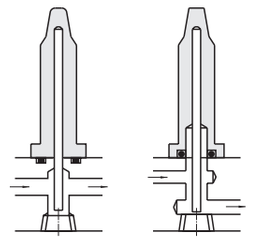
No.	h	t
3	6	1.4
4	7	
5	8	
6	9	
7	10	
8	11	
9	12	
10	13	
11	15	1.8
12	16	
14	18	

Example

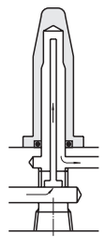
■Characteristic

Free Designation Round Core Pins with Cooling Hole

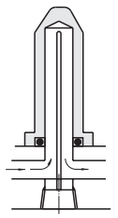
It is possible to machine holes that match heat exchanger pipes, cooling pipes, baffle plates, etc.



Heat transaction pipe



Cooling pipe



Baffle plate