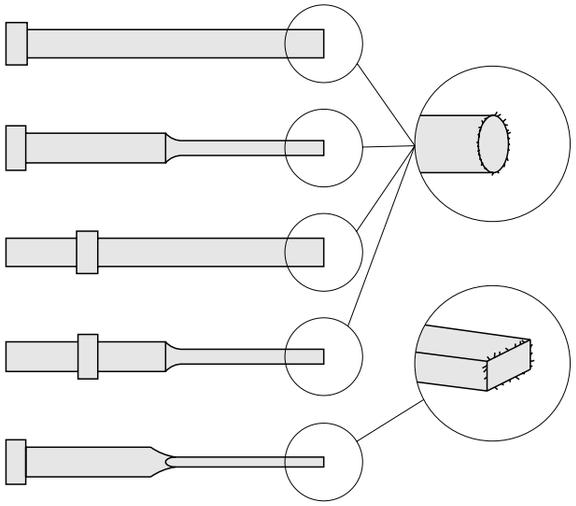
■Finishing of tips and edges



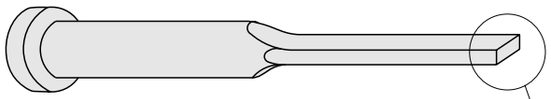
When ejector pins and core pins are processed to determine the total length, fine, processing burring about 0.02～0.05mm(reference values)in length occurs at the edge of the tip. When this burring is removed, a slight sag results.

MISUMI does not process the tip in order to prevent sagging.

The allowable sag R depends on a variety of conditions such as the particular mold being used(precision of mold, characteristics of the formed object, shape, resin type). For this reason, the sag R caused by deburring may be an issue. Use an oilstone, sandpaper, cloth, etc to remove the burring according the precision control standards on your design drawing of the mold being used.

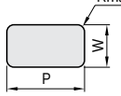
On general purpose machinery, it is common to use slight chamfering(C about 0.1～0.3), but as the tips of the ejector pin and core pin come in contact with the formed object, chamfering is generally not carried out or kept to a minimum.

■Finishing of corners of rectangular ejector pins



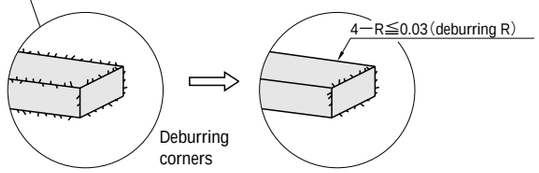
For rectangular ejector pins, P and W dimensions cannot be measured if there is burring, so remove the burring from the corners. As a result, a maximum of 0.03mm of burring R occurs. However, the deburring of edges is not carried out.
This deburring is for measuring the P and W dimensions and may leave some burring.

R value for tip



Rmax.≦0.03(deburring R)

Light deburring is carried out on the corners of the tip to measure the P and W dimensions.

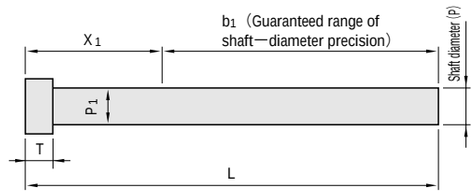


●Hints and tips

About processing burring: When cutting(with a blade)or grinding(with a grinding stone)steel, small splinter shaped burrs occur on the edge of the processed surface.
For example, just like splinters occur when wood is cut with a saw, similar small splinters occur when processing metal. These splinters are called burrs. In general, the size of the burrs is smaller for harder materials. On the other hand, the pieces of material that melts and is caught in gaps during casting, die-casting, and molding of plastics are called flash.
In English, the burrs caused in processing are called BURRs, while those cause in molding are called FLASH, or FIN.
Reference: Zukai Kikai Yougo Jiten(Illustrated Dictionary of Machinery), THE NIKKAN KOGYO SHIMBUM, LTD.

■Comparison of Guaranteed Range of Shaft Diameter Precision between Ejector Pins and Core Pins

Ejector pins



Guaranteed range of shaft-diameter precision
b1≧L−X1max.

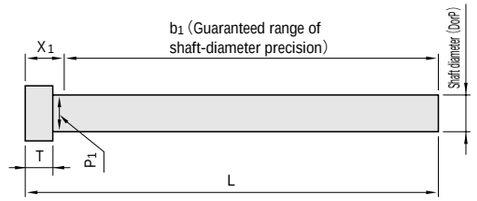
X1 dimensions

Ejector pins		X1max.
L≦150	T4(4mm)	30
	JIS(4･6･8mm)	35
	T10(10mm)	40
L>150	X1max.varies depending on the L dimension. For details refer to P.1415	

P1 Precision

Shaft diameter(P) Precision	P1 Precision
P 0 −0.002	P1 0 −0.1
P 0 −0.005	P1 0 −0.1
P −0.01 −0.02	P1 −0.01 −0.1

Core pins



Guaranteed range of shaft-diameter precision
b1≧L−X1max.

X1 dimensions

Core pins	X1max. L<10	X1max. L≧10
Standard	T(TC)+1.5	T(TC)+4
Precision	T(TC)+1	T(TC)+2
Extra precision		

P1 Precision

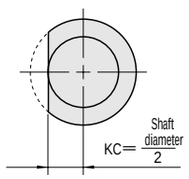
Shaft diameter precision	P1 Precision
Shaft diameter 0 −0.003	P1 0 −0.05
Shaft diameter 0 −0.005	P1 0 −0.05
Shaft diameter −0.01 −0.02	P1 −0.01 −0.06

■Designation Method and Precision of Key Flat Cutting of Ejector Pins and Core Pins

● Method of key flat cutting

Key flat cutting	Single flat	Two flats(parallel)	Two flats (different dimensions)	Two flats(right angled)	Three flats	Four flats	Two flats(angled)	Three flats(at 120°)
Code	KC VKC	WKC VWC	KAC KBC	RKC	DKC	SKC	KGC	KTC
Alterations	KC･VKC	WKC･VWC	KAC KBC	RKC RKC	DKC DKC DKC	SKC SKC	AG°±0.5 0° KGC KGC	120° 120° 120° KTC
Range of designation	Shaft diameter/2 ≦KC VKC< Head diameter/2	Shaft diameter/2 ≦WKC VWC< Head diameter/2	Shaft diameter/2 ≦KAC; KAC<KBC< Head diameter/2	Shaft diameter/2 ≦RKC< Head diameter/2	Shaft diameter/2 ≦DKC< Head diameter/2	Shaft diameter/2 ≦SKC< Head diameter/2	Shaft diameter/2 ≦KGC< Head diameter/2	Shaft diameter/2 ≦KTC< Head diameter/2

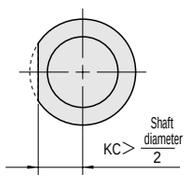
① Designated according to shaft diameter



When designated according to shaft diameter,
in order to designate the shaft diameter×1/2

Shaft diameter selection type → 0.05mm increments possible
Shaft diameter designation (0.01mm increments) type → 0.005mm increments possible
Shaft diameter designation (0.005mm increments) type → 0.0025mm increments possible
Shaft diameter designation (0.001mm increments) type → 0.0005mm increments possible

② Designated with free dimensions (outside the shaft diameter)



When designated using free dimensions
Designation is only in 0.1mm increments

Precision of key flat cutting

①When key flat cutting is designated according to shaft diameter.

Category	Key flat cutting tolerance
Ejector pins	0 −0.1
Ejector pins alterations VKC･VWC･VAK･VAW	0 −0.02
Core pin shaft diameter tolerance 0 −0.003	0 −0.01
Core pin shaft diameter tolerance 0 −0.005	
Core pin shaft diameter tolerance −0.01 −0.02	

②When designated with free dimensions

Category	Key flat cutting tolerance
Ejector pins	0 −0.1
Ejector pins alterations VKC･VWC	0 −0.02
Core pin shaft diameter tolerance 0 −0.003	0 −0.01
Core pin shaft diameter tolerance 0 −0.005	
Core pin shaft diameter tolerance −0.01 −0.02	