

[PRODUCT DATA]

GUARANTEED RANGE OF SHAFT DIAMETER PRECISION FOR EJECTOR SLEEVES AND CENTER PINS

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STEP R AND CONCENTRICITY OF STEPPED EJECTOR SLEEVES AND STEPPED CENTER PINS

Guaranteed Range of Shaft-Diameter Precision for Ejector Sleeves

	Straight Ejector Sleeve	Center Pin—Shaft Diameter (D) Selection Type—
Shaft diameter (DorP) Guaranteed precision range Length (b <sub>1</sub> )		
	$b_1 \geq L - x_1 \text{ max.}$	$b_1 \geq F - x_1 \text{ max.}$ or $b_1 \geq L - (\text{tip length}) - x_1 \text{ max.}$
		For the shaft diameter (P) designation types, refer to the explanation below.
	Stepped Ejector Sleeve	Stepped Center Pin
Shaft diameter (D) Guaranteed precision range Length (e)		
	$e \geq N - 5 - x_1 \text{ max.}$ * a : Length of step R section	$e \geq N - 5 - x_1 \text{ max.}$ * a : Length of step R section
	* 5 : Tolerance of length of N * 3 : Tolerance of step R section length	* 5 : Tolerance of length of N * 3 : Tolerance of step R section length

M	Head Thickness (T)	x <sub>1</sub> max.
SKH51	T4 (4mm)	30*
	JIS (4·6·8mm)	35
SKD61	T4 (4mm)	30
SKD61 + Nitriding	T4 (4mm) ECB, ECBB	10
	T4 (4mm)	30
	JIS (4·6·8mm)	35
	T10 (10mm)	40

Straight Ejector Sleeves		Stepped Ejector Sleeves	
Center Pins		Stepped Center Pins	
T (DorP)	p <sub>1</sub> Precision	T (D)	d <sub>1</sub> Precision
(DorP) $-0.005$	$p_1 = (DorP) -0.1$	$D -0.005$	$d_1 = D -0.1$
(DorP) $-0.01$	$p_1 = (DorP) -0.1$	$D -0.02$	$d_1 = D -0.1$
(DorP) $-0.03$	$p_1 = (DorP) -0.1$	$D -0.01$	$d_1 = D -0.1$
		$D -0.02$	$d_1 = D -0.1$

\* When L20.00~39.99 is x<sub>1</sub> max.=10

Center Pin — Shaft diameter (P) designated type—

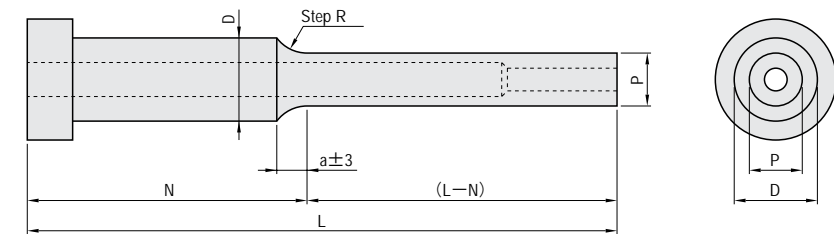
$b_1 \geq F - x_1$

●Detail of Part A

●When L ≥ 200.01  
As shown in the illustration, smooth step R processing is performed on the junction section between the shaft-diameter (P) area and the relief area.  
※Size of step R: approximately 100R (reference value)

Misumi's center pin with relief enables to be designated in 0.01mm increments of the shaft diameter (P), even with long length L.  
The guaranteed range of shaft-diameter (P) precision is b<sub>1</sub>, and the shaft-diameter area outside of this is relief processed.

Step R and Concentricity of Stepped Ejector Sleeve



In order to ensure the effective dimensions of the length (L-N) of tip diameter (P), (L-N) is designed to be a plus tolerance and N is a minus tolerance. Step R is configured to form a smooth transition between the tip diameter (P) and the shaft diameter (D).

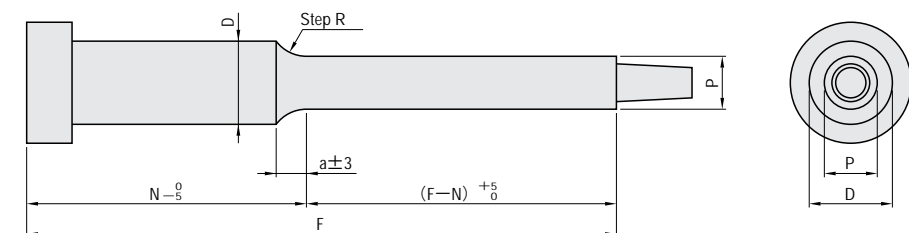
Size of step R: approximately R8 to 12. \*

\* The size of step R is determined by the size of the grindstone used to process it. This is not a guaranteed value for R.

Formula used for calculating the length (a) of step R:  $a = \sqrt{\frac{D-P}{2}} \times (2R - \frac{D-P}{2})$

Concentricity of tip diameter (P) and shaft diameter D: 0.2mm or less (this translates into a core misalignment of 0.1 mm or less (on one side).)

Step R and Concentricity of Stepped Center Pins



In order to ensure the effective dimensions of the length (F-N) of tip diameter (P), (F-N) is designed to be a plus tolerance and N is a minus tolerance. Step R is configured to form a smooth transition between the tip diameter (P) and the shaft diameter (D).

Size of step R: approximately R8 to 12. \*

\* The size of step R is determined by the size of the grindstone used to process it. This is not a guaranteed value for R.

Formula used for calculating the length (a) of step R:  $a = \sqrt{\frac{D-P}{2}} \times (2R - \frac{D-P}{2})$

Concentricity of tip diameter (P) and shaft diameter D: 0.2mm or less (this translates into a core misalignment of 0.1 mm or less (on one side).)

M	Head Thickness (T)	T (P)	p <sub>1</sub> Precision	x <sub>1</sub> max.									
				L150.00 or less	L150.01 ~200.00	L200.01 ~250.00	L250.01 ~300.00	L300.01 ~350.00	L350.01 ~400.00	L400.01 ~450.00	L450.01 ~500.00		
SKH51 (※P 0.01mm increments)	T4 (4mm)	$P -0.005$	$p_1 = P -0.1$	30	30	110	160	210	—	—	—		
	JIS (4·6·8mm)			35	35								
	T4 (4mm)	$P -0.01$	$p_1 = P -0.1$	30	30								
	JIS (4·6·8mm)			35	35								
SKD61 (※P 0.01mm increments)	T4 (4mm)	$P -0.005$	$p_1 = P -0.1$	30	60	110	160	210	—	—	—		
SKD61 + Nitriding (※P 0.1mm increments)	T4 (4mm)	$P -0.01$	$p_1 = P -0.1$	30	30	30	30	210	260	310	360		
	JIS (4·6·8mm)	$P -0.03$	$p_1 = P -0.1$	35	35	35	35						