**Guaranteed Range of Shaft-Diameter Precision for Ejector Pins**

<table>
<thead>
<tr>
<th>Shaft diameter (D)</th>
<th>Guaranteed precision range Length (e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Ejector Pins</td>
<td>11 b1</td>
</tr>
<tr>
<td>Free Flange-Position Ejector Pins</td>
<td>11 b1</td>
</tr>
</tbody>
</table>

- **Shaft Diameter Designation (0.1mm Increments):** Types
  - As shown in the illustration, smooth Step R processing is performed on the junction section between the shaft diameter (D) area and the relief area.
  - Size of Step R: approximately 1.00R (reference value).
  - The guaranteed range of precision for Step R is determined by the size of the grindstone used to process it. This is not a guaranteed value for R.

**Straight Ejector Pins—Shaft Diameter Designation (0.1mm Increments):** Types

<table>
<thead>
<tr>
<th>SKH51</th>
<th>T4 (440C)</th>
<th>JIS (4-6H8mm)</th>
<th>JIS (4-6H7mm)</th>
</tr>
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<tbody>
<tr>
<td>SKD61</td>
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<td>JIS (4-6H7mm)</td>
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</tbody>
</table>

**Step R and Concentricity of Stepped and Rectangular Ejector Pins**

- **Step R and Concentricity of Stepped Ejector Pins**
  - In order to ensure the effective dimensions of the length (L—N) of the rectangular tip section (P—W), (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 tip diameter (P) and shaft diameter (D).
  - Tolerance of Step R section length: 0.005P.
  - Concentricity of the rectangular tip section (P—W) and shaft diameter (D): 0.02mm or less.

- **Step R and Concentricity of Rectangular Ejector Pins**
  - In order to ensure the effective dimensions of the length (L—N) of the rectangular tip section (P—W), (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 tip diameter (P) and shaft diameter (D).
  - Tolerance of Step R section length: 0.005P.
  - Concentricity of the rectangular tip section (P—W) and shaft diameter (D): 0.02mm or less.

**Relationship with Step R and Head Part of Stepped Center Pins**

- Head part (h) may contact grindstone depending on specifications between Step R and P = W, N, and D or N dimensions. (Refer to the right photo)
  - Following formula is solutions to avoid the contact. This is theoretical value, but not a guaranteed one.
  - In case of P dimensions direction, please calculate by replacing W by P.

- 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.

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  - Size of Step R: approximately 0.80R to 1.20R.
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