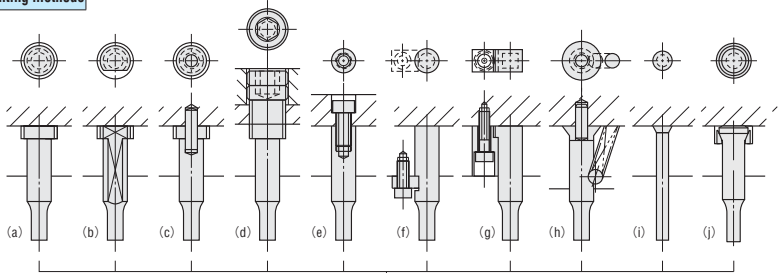


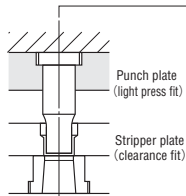
[PRODUCTS DATA] MOUNTING METHODS OF PUNCHES AND DIES

Punch mounting methods

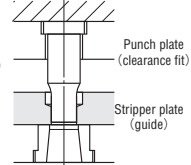


Punch holding methods

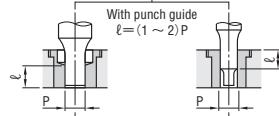
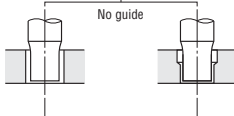
Based on punch plate (Fig. 1)



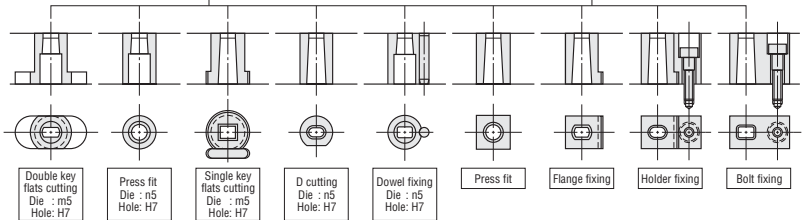
Based on stripper plate (Fig. 2)



Punch guiding methods



Die mounting methods



■ Punch mounting methods

| Type | Mounting method | Remarks | Page |
|--|--|--|---------|
| a Flange fixing | The position and perpendicularity of the punch are maintained by the shank, and the head prevents the punch from coming off. | Standard type for round punches. Reliable in preventing the punch from coming off. | P. 47~ |
| b Flange (positioning with a key flat) | The position and perpendicularity of the punch are maintained by the shank, and the head prevents the punch from coming off. | The position is determined by a key flat shank machined by WEDM and inserted into a hole. | P. 79~ |
| c Locating with dowel pin | Positional accuracy is achieved with the dowel pin, and the head fastens the punch in place. | The dowel hole is created by NC machining, allowing easy positioning. This type is often used for automobile dies. | P. 87~ |
| d Fixing with adjustment pins | The position and perpendicularity of the punch are maintained by the shank, and the head is fastened with a bolt. | This type allows the punch to be replaced easily. | P. 699~ |
| e Bolt fixing (tapping) | The position and perpendicularity of the punch are maintained by the punch plate, and the bolt prevents the punch from coming off. | Highly accurate and also reliable in preventing the punch from coming off. Not suitable for thin punches or punching for heavy load. | P. 147~ |
| f Key fixing | The groove of the punch is fixed in place with a key. | This type allows the punch to be installed and replaced easily. This type is often used for precision dies based on the stripper plates. | P. 159~ |
| g Holder fixing | The head of the punch is screwed in place with a holder. | This type allows the punch to be replaced easily. This type is used in cases when the clearance between the punch plate and stripper plate is small. | P. 365~ |
| h Ball lock | A steel ball inside a special retainer locks the punch groove to fasten the punch in place. | The punch can be mounted and removed easily by lifting up the steel ball with a pin. This type is often used for automobile dies. | P. 647~ |
| i Taper fixing | A tapered part prevents the punch from coming off. | This type is inexpensive because the head is produced by upsetting. This type is often used for quill punches. | P. 177~ |
| j Taper + ring | A special ring supports the tapered part. | The special ring allows tapered head punches with high-strength heads to be easily installed. | P. 129~ |

■ Punch holding methods

- Based on punch plate : This is the most commonly-used method, and because the punch is press-fit into the punch plate, dies can be produced easily. If the punch concentricity (Fig. 1) or accuracy of hole machining is poor, variation is likely to occur in the clearance between the punch and die. As a result, this method is not suitable for cases when clearance between the punch and die is small.
- Based on stripper plate : This method is primarily used for thin, high-precision dies. (Fig. 2) The punch tip is guided by the stripper plate, which is located close to the punch and die, making it possible to minimize precision error. The punch is held in the punch plate by a clearance fit.

■ Methods of adjusting punches and dies

- Adjustments at regrinding
If the punch shim, punch spacer, and die spacer are used, the height of the punch and die will not change when regrinding is performed.
- Adjustments of clearance
The position of the die can be easily adjusted by using the position-adjustment shims or liners.

