

NOTES ON ASSEMBLING STRIPPER GUIDES

Effects of machining errors and adhesive gaps on stripper guides

Centering may deviate when the punch is inserted during die production due to machining errors in punch plates, stripper plates and die plates, and gaps between the guide bushing and adhesive. If inserted in these conditions, the punch will deform due to deviation from the center, resulting in breakage or abnormal wear.

The following countermeasures can be used to eliminate the causes of the above trouble :

Countermeasures

(I) Enlarge the hole of the punch guide bushing.

When the hole of the punch guide is enlarged, the stripper plate can only be used for stripping machining materials. This makes the features as a punch guide to be lost, and unsuitable for punching thin plates having small clearances or precision dies.

(II) Make the punch guide as an insert type for adjustments.

Adjustments are easy, but the cost will increase.

(III) Adjust the die.

Use liners, shims and the like on the block die to prevent center deviation.

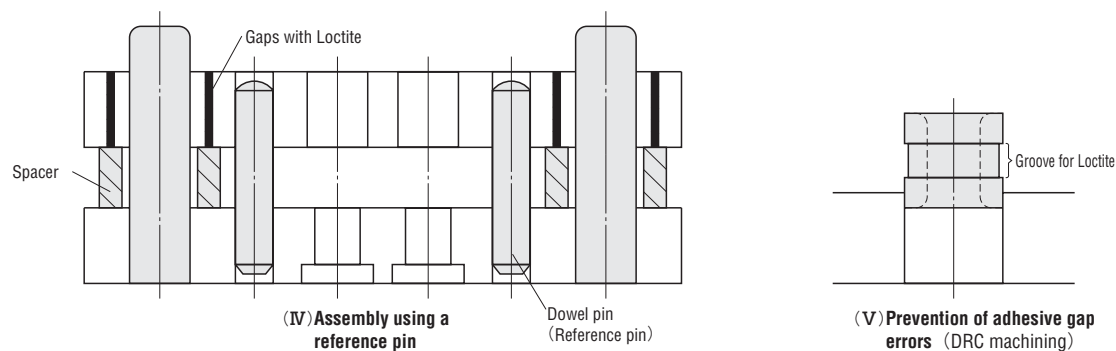
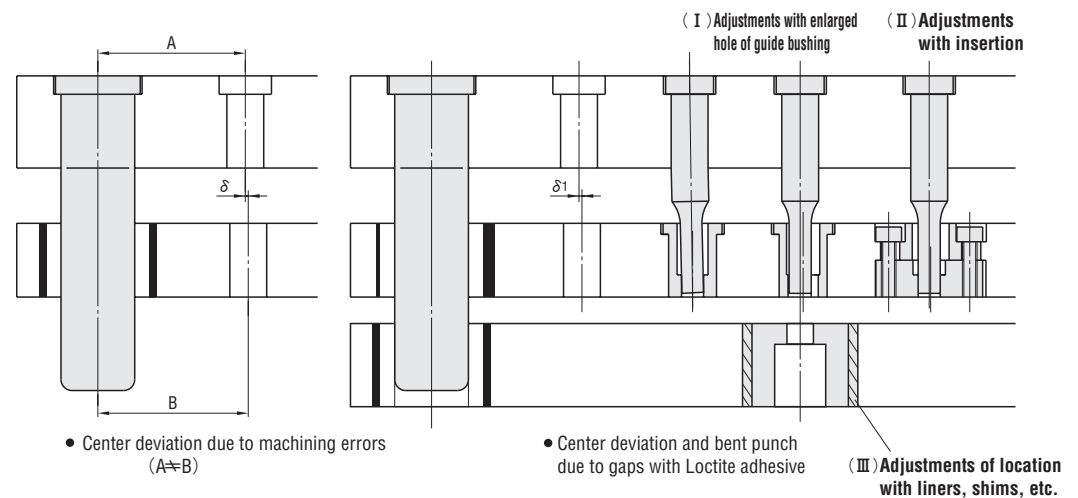
(IV) Use a reference pin for adjustments.

The reference pin can be used for leveling uneven gaps between the guide bushing and Loctite adhesive.

(V) Make the precision of mounting hole of stripper guide bushing to the level of a micro clearance.

For precision dies that should have no machining errors, one way to prevent center deviation due to gaps produced by adhesive is to minimize the clearance between the mounting hole and bushing. In this case, the concentricity and circularity of the bushing are critical. Use a precision class bushing (VG/TG series). Using alteration DRC is the best way to increase the adhesive strength.

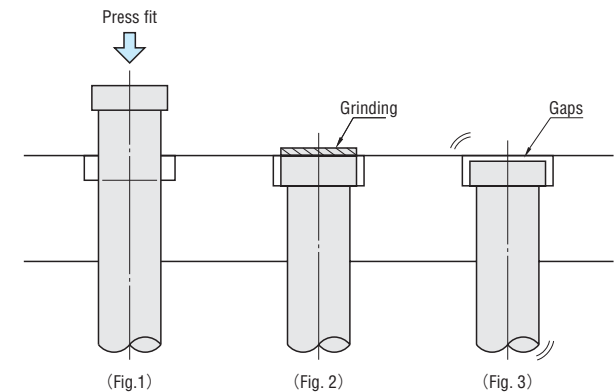
Press fit of the bushing is another way to prevent center deviation, but is not recommended for precision dies because press fit will cause deformation due to the shrinkage of internal diameter, or weaken the mounting strength.



Assembling stripper guide pin

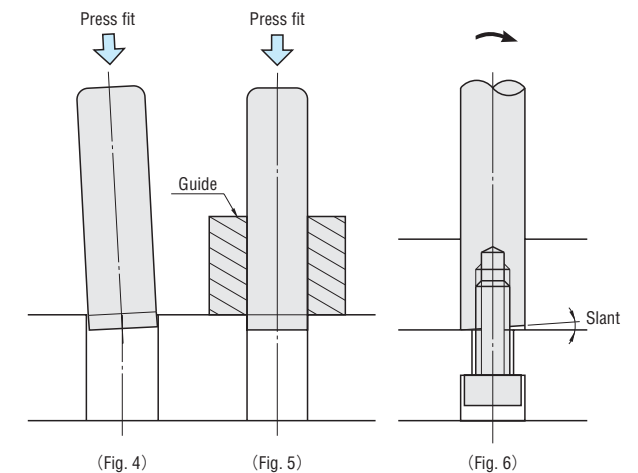
Head type

- The head type guide pins are press fit with the sliding part as a lead. This minimizes the press-fit errors, and facilitates to produce perpendicularity. (Fig. 1)
- It is ideal to level off the guide pin and plate surface after press fit by grinding the head of the pin protruding from the plate surface. (Fig.2)
(Adjustments with counterbore depth is possible for the TG/VG series having the tolerance of $5 - 0.05$ in head thickness.) For SGPH/SGOH, alteration TKC will improve the tolerance of head thickness. Gaps at the head part will cause a slight movement of the guide pin which will exert bad effects on perpendicularity during machining. (Fig. 3)



Straight Type

- When the straight type guide pin is press fit as slanted during assembly, a seizure may be caused during sliding due to insufficient perpendicularity. (Fig. 4)
Perfect perpendicularity can be obtained by press fit of the guide pin using a guide (Fig.5)
- For bolt type guide pins, perpendicularity defect will be caused by tightening the bolt if perpendicularity is not maintained at the end face of the guide pin. (Fig. 6)
(The TG/VG series are delivered with their end faces polished.)



Guide length of stripper guide pins

Press fit length of guide pin of punch plate

Thickness of the plate 1.5 to 2 times the diameter of the guide pin is most suitable for producing perpendicularity. (Fig. 7)

$$T \geq D, \quad T = (1.5 \sim 2) D$$

Guide length of stripper plates

Thickness of the plate 1.5 to 2 times the diameter of the guide pin is most suitable considering the stability and seizure of the guide (Fig. 8).

$$T \geq D, \quad T = (1.5 \sim 2) D$$

