

JIS

JAPANESE INDUSTRIAL STANDARD

Dimensional Tolerance for Steel Die Forgings (Hammer and Press Forging)

JIS B 0415 —1975

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Dimensional Tolerance for
Steel Die Forgings
(Hammer and Press Forging)

B 0415-1975
(Reaffirmed: 1978)

1. Scope

This Japanese Industrial Standard specifies the dimensional tolerances and deviations for thickness, length, width, height, centre-to-centre dimension, fillet and edge radii, draft angle, mismatch, camber, eccentricity of deep hole, residual flash and trimmed flat, burr, ejector mark, surface unevenness, deformation at sheared end, and local deformation of unforged portion of carbon steel and alloy steel die forgings ⁽¹⁾ manufactured by hammer and press, hereinafter referred to as the "forgings".

Note ⁽¹⁾ The forgings herein stated imply the final products at the time of delivery.

2. Definitions

The principal terms used in this standard are as defined below.

- (1) thickness Thickness of a section perpendicular to the die parting plane (see Fig. 1).
- (2) length, width and height Length and width are those which are parallel to the die parting plane of forging dies, or as nearly so as practical considerations will permit. Height is a dimension that is in depth direction perpendicular to the same die parting plane (see Figs. 1 to 4).

Fig. 1. Indication of Dimensions

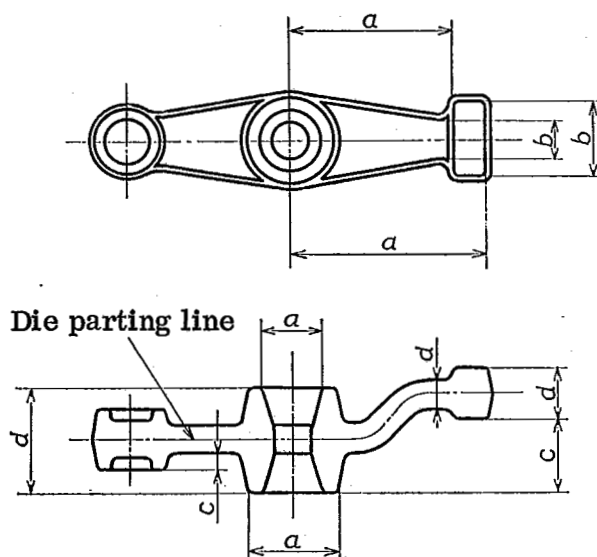
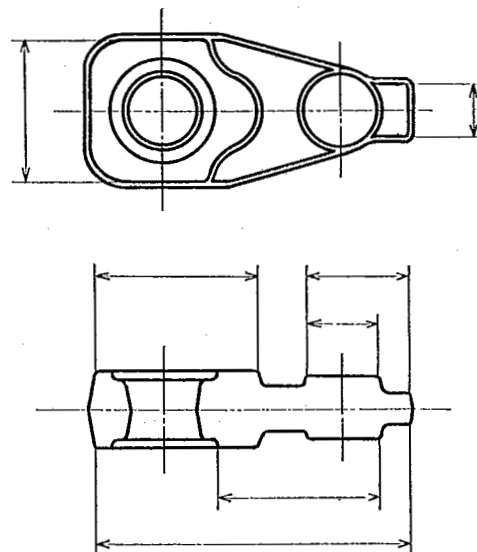


Fig. 2. Dimensions of Length and Width between External Surfaces



a: length
b: width
c: height
d: thickness

Fig. 3. Dimensions of Length and Width between Internal Surfaces

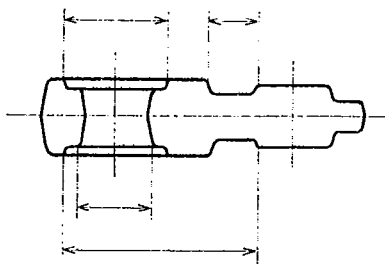
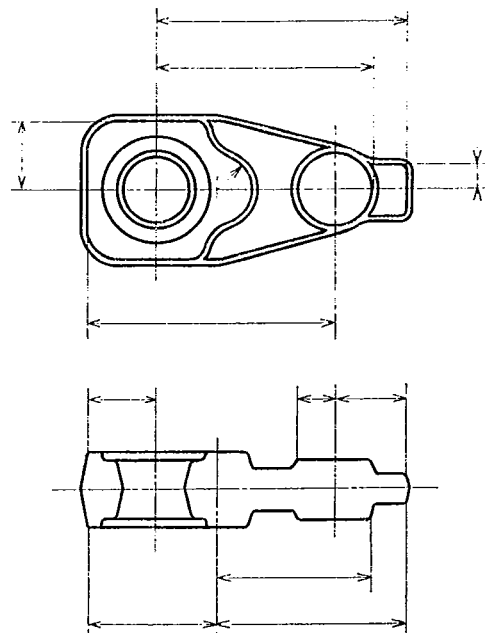


Fig. 4. Dimensions of Length and Width from Centre to a Surface



- (3) centre-to-centre dimension Dimension which is measured along a line connecting two centres contained within a profile of forging (see Fig. 5). However, a dimension which involves a bend as given in Fig. 6 is not dealt with as the centre distance.

Fig. 5. Dimensions to which Tolerances on Centre-to-Centre Dimension are Applicable

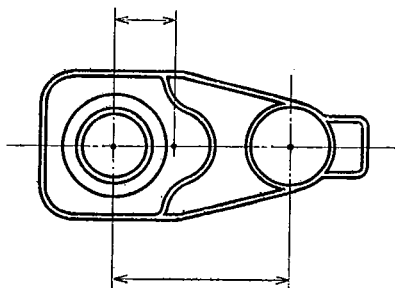
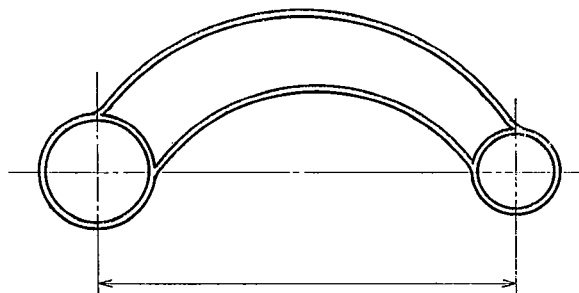
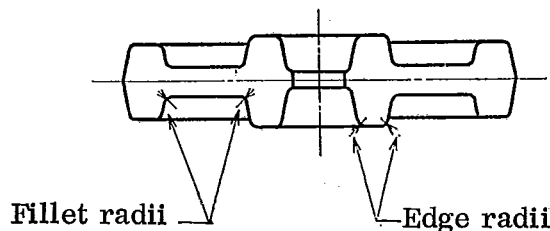


Fig. 6. Dimensions to which Tolerances on Centre-to-Centre Dimension are not Applicable



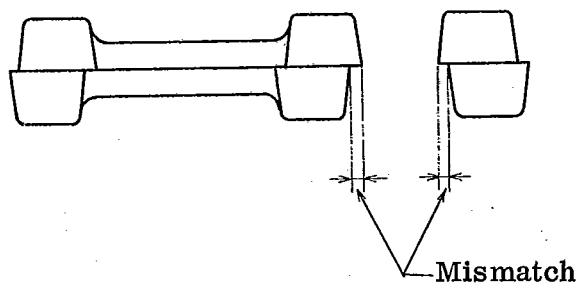
- (4) fillet and edge radii Radii which are to be given at edge and fillet (see Fig. 7).

Fig. 7. Fillet and Edge Radii



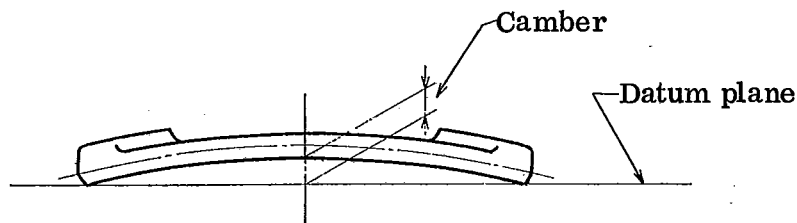
- (5) draft angle Tapered draft to be given in forging direction to facilitate forging process.
- (6) mismatch Amount of mismatch between the upper and the lower dies in the die parting plane (see Fig. 8).

Fig. 8. Mismatch



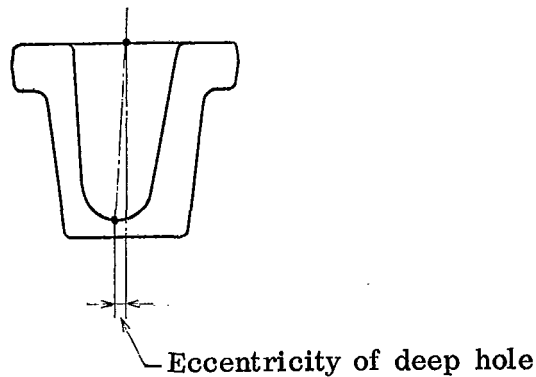
- (7) camber Deviation from a datum plane (see Fig. 9).

Fig. 9. Camber



- (8) eccentricity of deep hole Eccentricity between the centre of top surface and that of the bottom face. The eccentricity applies to a hole of depth deeper than its diameter (see Fig. 10).

Fig. 10. Eccentricity of Deep Hole



- (9) residual flash and trimmed flat Residual flash is defined as portion from the body of the forging to the trimmed edge of the flash (see Fig. 11). Trimmed flat is defined as an amount of insufficiency of wall relative to the imaginary intersection point of draft in the drawing (see Fig. 12).

Fig. 11. Residual Flash

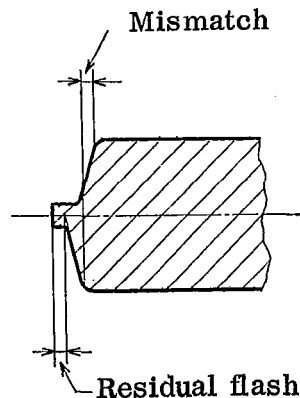
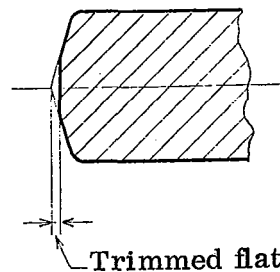
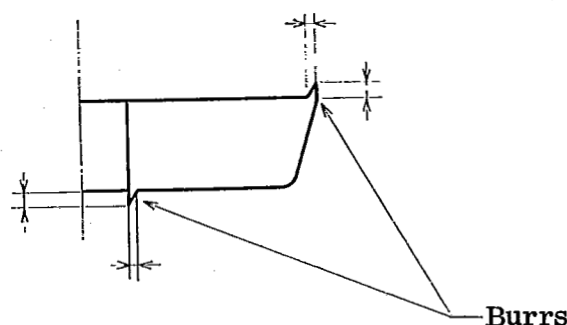


Fig. 12. Trimmed Flat



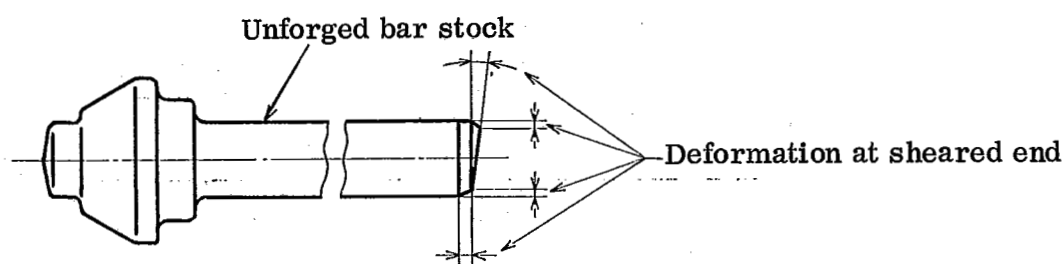
- (10) burr Burr which is formed on an edge portion when trimming or punching (see Fig. 13).

Fig. 13. Burrs



- (11) ejector marks Sunken or raised mark remained on a forging, when a forging dies incorporating ejector has been used.
- (12) surface unevenness Pit formed by scale during forging and pit formed during surface dressing.
- (13) deformation at sheared end Deformation arising from shearing at the end of unforged bar stock (see Fig. 14).

Fig. 14. Deformation at Sheared End



- (14) local deformation of unforged portion Deformation arising locally from die forging at the unforged bar stock (see Fig. 15).

Fig. 15. Local Deformation at Unforged Bar Stock

