

JIS

JAPANESE INDUSTRIAL STANDARD

Dimensional Tolerance for Steel
Die Forgings (Upsetting)

JIS B 0416 —1975

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JAPANESE INDUSTRIAL STANDARD

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Dimensional Tolerance for Steel
Die Forgings (Upsetting)B 0416-1975
(Reaffirmed: 1978)1. Scope

This Japanese Industrial Standard specifies the dimensional tolerances and deviations for thickness, diameter, step dimension, length, centre-to-centre dimension, fillet and edge radii, draft angle, mismatch and eccentricity, camber, eccentricity for deep hole, residual flash and trimmed flat, burrs and fins, surface unevenness, deformation of sheared end, and local deformation of unforged portion of hot upset forgings ⁽¹⁾ formed by upsetters of carbon steel and alloy steel, hereinafter referred to as the "forgings".

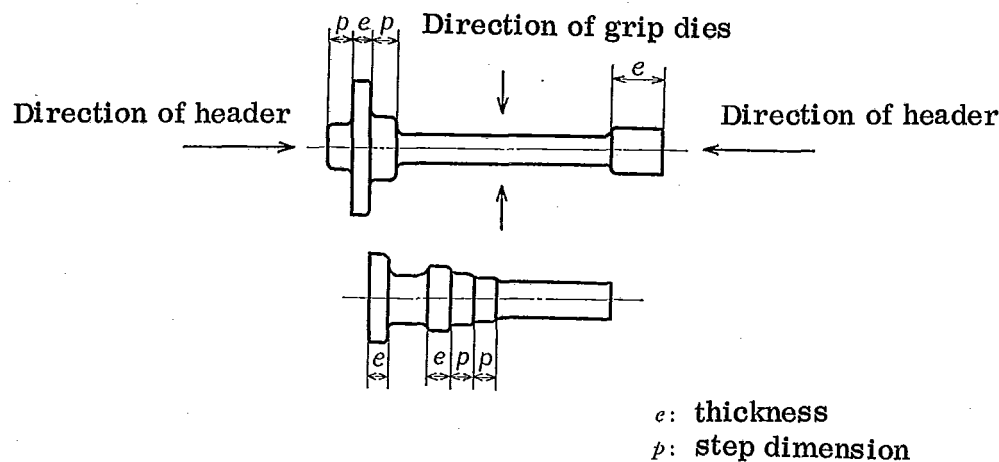
Note ⁽¹⁾ The forgings herein stated imply the final products at the time of delivery.

2. Definitions

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

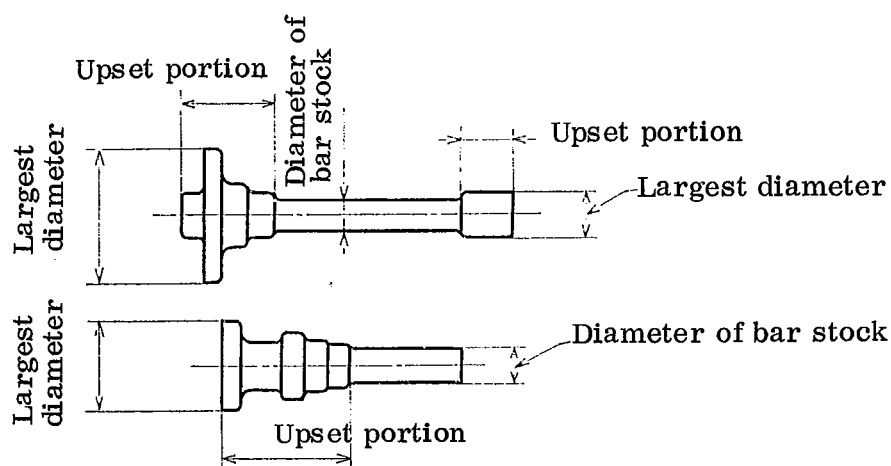
- (1) thickness Thickness, parallel to the axis of the bar stock of upset portion, of a portion which is perpendicular to the die parting line between the header and the grip dies (see Fig. 1).

Fig. 1. Dimensions of Thickness and Step



- (2) diameter All diameters which are perpendicular to the axis of the bar stock of upset portions (see Fig. 2).

Fig. 2. Dimension of Diameter



- (3) step dimension Dimension, parallel to the axis of bar stock, of an upset portion to each step (see Fig. 1).

However, the dimension between the upset flanges is not included in this dimension.

- (4) length Length, parallel to the axis of bar stock, from the inside of the largest diameter portion of upset to the opposite end face of the forging (see Figs. 3 and 4).

Fig. 3. Length Dimension for Single-Ended Upset Forging

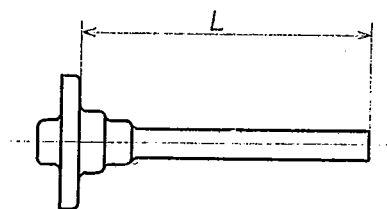
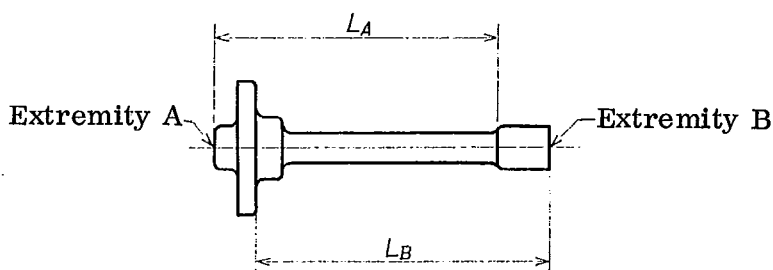
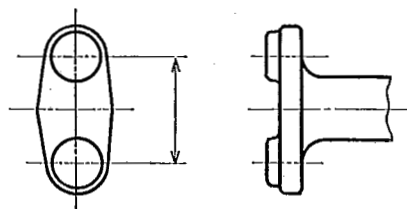


Fig. 4. Length Dimension for Double-Ended Upset Forging



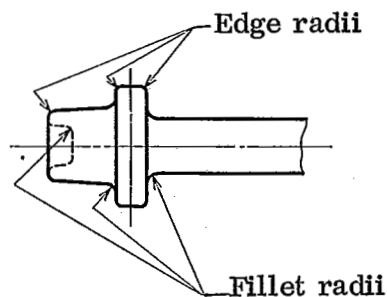
- (5) centre-to-centre dimension Dimension, perpendicular to the axis of the bar stock, between two centre lines which are within a contour of upset portion (see Fig. 5).

Fig. 5. Centre-to-Centre Dimension



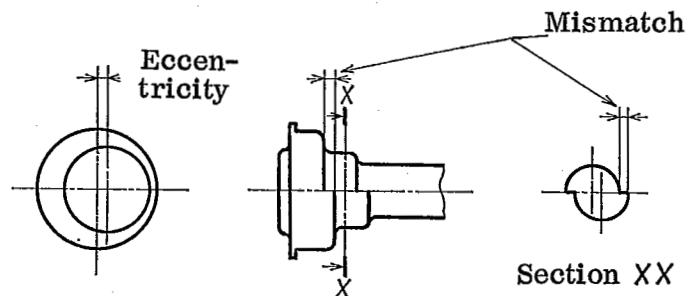
- (6) fillet and edge radii Radii which are to be given at edge and fillet (see Fig. 6).

Fig. 6. Edge and Fillet Radii



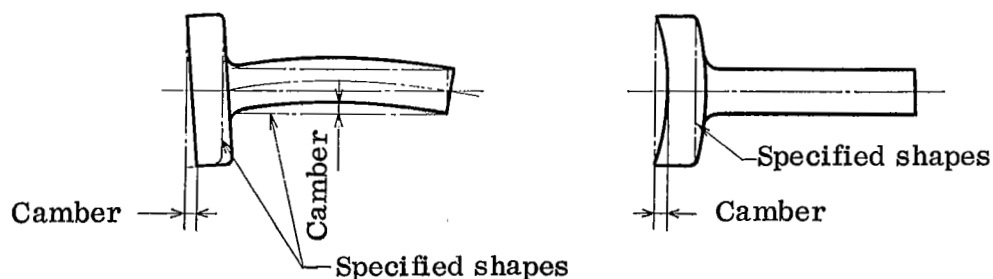
- (7) draft angle Tapered draft to be given in forging direction to facilitate forging process.
- (8) mismatch and eccentricity Mismatch is defined as displacement between the upper die and the lower die (or left side die and right side die) in the parting plane of a pair of grip dies. Eccentricity is defined as displacement between the centre of contour of header side upset portion and that of grip die side upset portion (see Fig. 7).

Fig. 7. Mismatch and Eccentricity



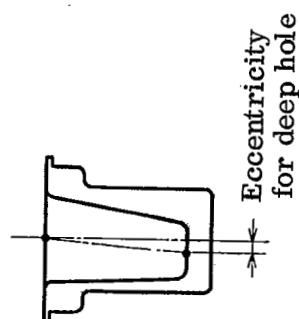
- (9) camber Deviation from the specified shape (see Fig. 8).

Fig. 8. Cambers



- (10) eccentricity for deep hole Eccentricity of the centre of bottom face from that of the top surface. The eccentricity applies to a hole of depth larger than its diameter (see Fig. 9).

Fig. 9. Eccentricity for Deep Hole



- (11) residual flash and trimmed flat Residual flash is defined as portion from the body of the forging to the trimmed edge of the flash. Trimmed flat is defined as amount of insufficiency of wall relative to the imaginary point of intersection of drafts on the drawing (see Figs. 10 and 11).

Fig. 10. Residual Flash

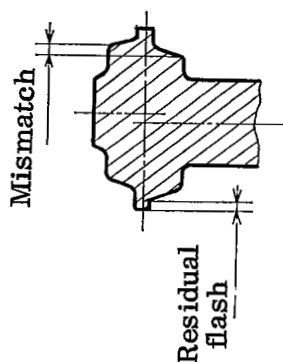


Fig. 11. Trimmed Flat

