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Methods of Performing Axiometry and their Peculiarities

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Annotation: *this article provides information about the methods of performing axiometry and provides the results of the analysis.*

Keywords: *projection, isometry, dimmetry, axiometric axes.*

For the most part, not all axiometric projections meet practical requirements because the image of the object in an axiometric projection is depicted in many variations with respect to its actual appearance. From many types of axiometric projections, drawing practice employs types that describe the shape of the object with the least distortion, are simple and convenient to make, produce the most complete picture of it. Countless multi-axiometric projection types fall into two groups:

The right-angled axiometric projections of the moment are generated by projecting in a direction perpendicular to the plane of the cartines.

Axial projections with oblique angles are generated by projecting in a direction under a sharp angle to the plane of the cartines.

Each of the above groups in turn is divided into several other types by the ratio of axiometric scales and the magnitude of the coefficient of change. Axiometric projections on the same symbols can be divided into the following groups. Isometric (same measurement) - this type of axiometric projections will have the same scale and coefficient of variation on all three axes.

Dimetric (two - way dimension) - in some two axes, the scale and change coefficients are the same, and the scale and change coefficients in the third axis are different from the previous two.

Trimetric (three different dimensions) - the scales or change coefficients of such axiometric projections for each axonometry axis will be different, trimetry is the general case of axonometry.

The following five types of axiometric projections have been recommended for use by DST 2.317-69:

1. right angle isometric;
2. right angle dimetric;
3. oblique oblique frontal isometric;
4. horizontal isometric with oblique angle;
5. Oblique oblique frontal dimetric projections.

Right angle isometric projections (Figure 1). In a right-angle isometric projectionaiar, the coefficients of the three variations on the axles of the Axiometrics will also be equal to the same 0.82. When performing technical drawings in right-angle isometric projections, the coefficients of the fundamental change to the standards are taken as equal to 1. In this case, the image is depicted by enlarging it 1/0.82-1.22 times. But the magnification of the image does not affect the viability of the

representation, while the time spent on image execution is reduced in connection with the decrease in mathematical computations.

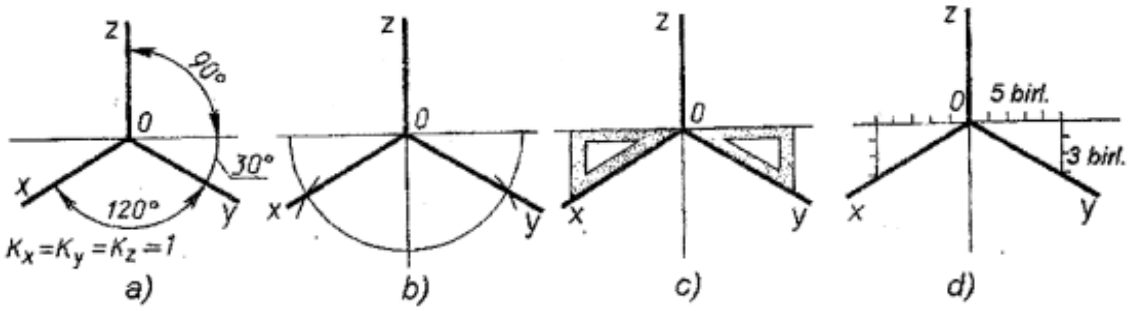

Figure 1. Axionometry axes and methods for their construction in right-angle isometric projections

In this view of projections, the angles between the axiometric axes will be equal to 120° (Figure 1 a). Axionometry axes are constructed using three methods: a circular one (Figure 1 b), an angular one and a drawing one (Figure 1 C), and a 5:3 ratio of right-angled triangle cathets. Consider examples of constructing right-angled isometric projections of flat shapes lying on or parallel to coordinate planes. Any flat shape will have two sizes. Therefore, in the construction of an axiometric projection, two coordinates are arranged on axes. If the shape is symmetric, its symmetry axes are placed parallel to the coordinate axes.

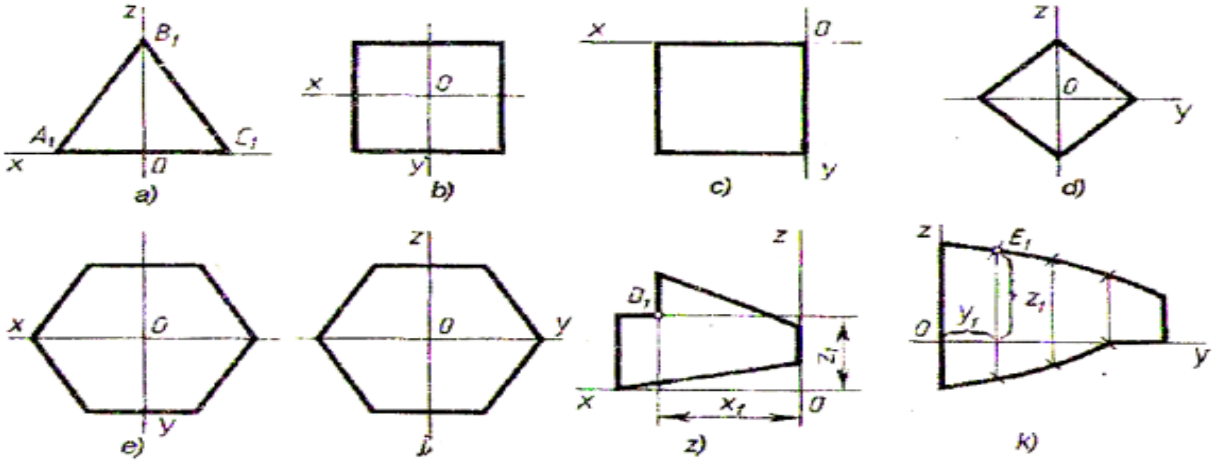

Figure 3. Drawings of flat shapes

Figure 3 shows drawings of various flat shapes. Projections of coordinate axes are constructed with their shape and symmetry axes in mind. To construct an axonometric projection of each shape, first the arrows of the acnometry are passed, and then the characteristic points of the shape are transferred from the drawing to the arrows using the method of cordinata.

In right-angle dimetric projections, too, the image of the shapes is constructed as in right-angle isometric projections, but in this case it becomes necessary to take into account that the coefficient of variation on the axis is 0.5. Projections of circles lying on the coordinate or planes parallel to them are described as ellipses. The major axis of ellipses always passes perpendicular to its minor axis and to the coordinate axis lying opposite itself.

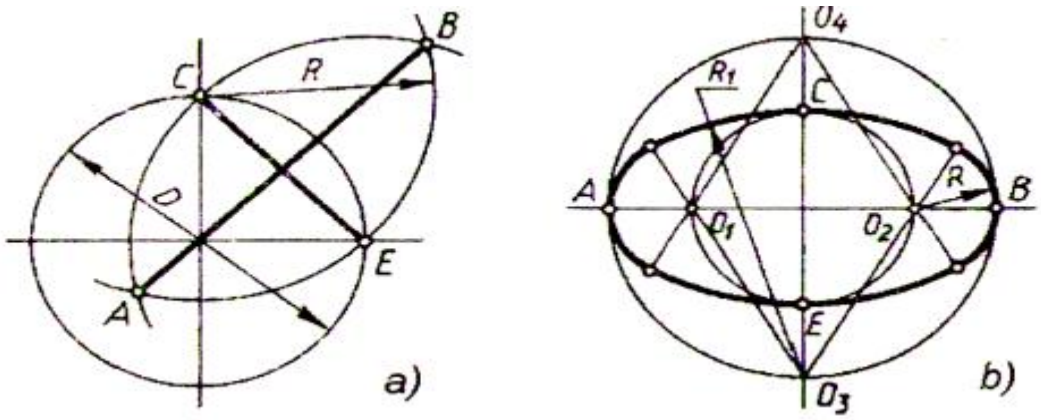

Figure 4. Making an oval instead of an ellipse in right-angle isometry

Oblique frontal isometric projection. In oblique frontal isometric projections, the angle between the X and z axonometry axes is 90 angles, while that axis is 45 angles with a straight line perpendicular to the Z axis.Angle A is also allowed to be taken equal to 30 or 60. In all three axes, the coefficient of positive change is 1. Flat forms located on the Frontal planes are depicted without exception. Circles lying on the Frontal or parallel planes are projected onto the plane of axonometry in a circle, while circles lying on planes parallel to the horizontal and profile or uiar are projected in the form of ellipses (Figure 5). The larger axis of the 2 and 3 ellipses will be 1.3 parts of the diameter, and the smaller axis will be 0.54 parts of the diameter. Horizontal isometric projection with oblique angles. Axonometry arrows'ng situation is given in Form 16. In horizontal isometric projection, it is also allowed to take the angle of inclination of the Axis X and u equal to 45 and 60, while maintaining an angle of 90° between the axes. The horizontal isometric projection X, u, and z are executed unchanged on the axes. Circles lying in planes parallel to the plane of horizontal projections are circular to the plane of axonometry, while circles in planes parallel to the planes of frontal and profile projections are projected in the form of ellipses (Figure 7). The larger Axis (1) of the Ellipse will be 1.37 of the diameter of the circle, and the smaller axis will be 0.37. The larger axis of the Ellipse (3) is 1.22 of the diameter of the circle, and the smaller axis is 0.71.

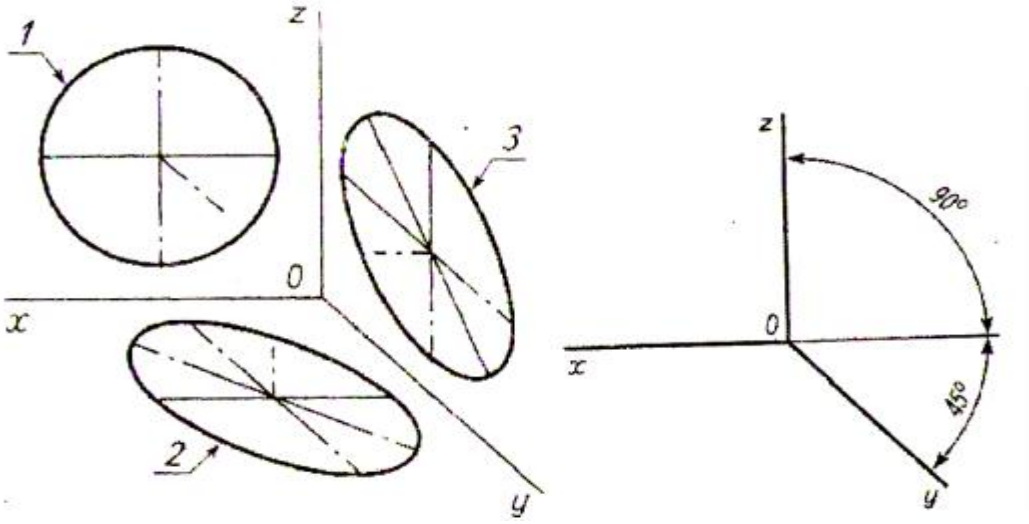

Figure 5. Axonometry axes in oblique angle frontal isometry are the location of

Figure 6. Imaging nishi of the circle in oblique angular frontal isometry:

1) Circle; 2) Ellipse; 3) large axis Z Ellipse located at an angle of 22°30' to the axis

Oblique oblique frontal dimetric projection. The situation of axonometry axes is also allowed to use frontal dimetric projections with angles of deviation of Y axes of 30 and 60°. The coefficient of variation in the Y-axis is 0.5, and in the X-and z-axes it is 1. Circles lying in planes parallel to the Frontal projections plane are projected into the axonometry plane in a circle, while circles in planes

parallel to the plane of horizontal and profile projections are projected into an ellipse. The major axis of ellipses 2 and 3 is 1.07 of the diameter of the circle, and the minor axis is 0.33(Figure 7).

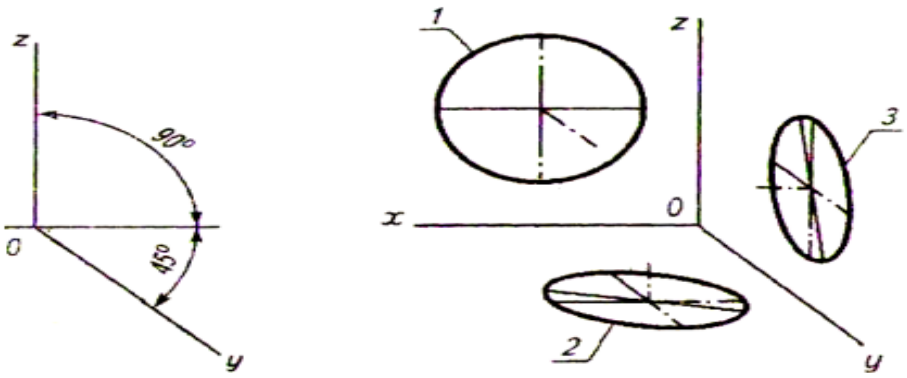

Figure 7. Representation of a circle in oblique frontal dimetry:

Circle; 2) an ellipse at an angle of 7°14' to the X axis; 3) an ellipse at an angle of 7°14' to the Z axis.

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