Motorcycles - Rider's eye range

1 Scope

This standard specifies the rider's eye locations on motorcycles when the rider is seated in a normal position, and methods to determine such eye locations.

2 Normative reference

The following standards, when referenced in this standard, constitute provisions of this standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JASO T006 Motorcycles - Procedure for H-point determination

3 Definitions

Definitions of main terms used in this standard shall be as follows.

3.1

Eye range

A statistical representation of the distribution of a rider's eye locations.

3.2

Eyellipse

An expression describing the elliptical shape of the rider's eye range as illustrated in side and plan views (see **Figure 1**).

3.3

Eyellipse inclination angle

The angle formed between the major axis of the eyellipse and the horizontal line shown in the eyellipse side view (see **Figure 1**).

3.4

Reference eye point

The point established as the representative rider's eye location. There are monocular and binocular reference eye points.

3.5

Two-dimensional manikin for motorcycles [1)]

Equipment used to determine the H-point and E-point for motorcycles.

3.6

H-point [1)]

The pivot centre of the torso and thigh of the two-dimensional manikin for motorcycles.

3.7

H'-point [1)]

The cross point of the vertical line that passes through the H-point and the upper surface of the seat.

Documents
Document Sharing Hub

Full document details: JASO T005 2009

3.8

S-point [1)]

The pivot centre of the torso and arm of the two-dimensional manikin for motorcycles.

3.9

E-point

The point corresponding to the eyellipse centroid (see **Figures 1 and 2**).

3.10

G-points [1)]

The points located at the centre of the upper part of the effective portion of the handle grips (see **Figure 3**).

3.11

Zero *"Y"* plane [2)]

A vertical plane constituting a reference in measurement, which corresponds to the longitudinal median plane of the motorcycle (see **Figure 4**).

3.12

Zero *"X"* plane [2)]

A vertical plane constituting a reference in measurement, normal to the zero *"Y"* plane (see **Figure 4**).

3.13

Zero *"Z"* plane [2)]

A horizontal plane constituting a reference in measurement, normal to the zero *"Y"* plane and the zero *"X"* plane (see **Figure 4**).

3.14

Riding position [1)]

The riding position of the motorcycle rider as determined on the zero *"Y"* plane, according to the following factors for drawings (see **Figure 5**).

a) **Distance *A***

The distance between the S-point and the G-point.

b) **Distance *B***

The distance between the S-point and the H-point.

c) **Distance *C***

The distance between the S-point and the E-point.

d) **Design position angle β**

The angle formed between the straight line connecting the S-point and the H-point, and the vertical line passing through the H-point. This angle shall be specified by the manufacturer.

e) **Neck angle γ**

The angle formed between the straight line connecting the S-point and the E-point and the straight line connecting the S-point and the H-point.

Note: [1)]

As specified in **JASO T006** (Motorcycles - Procedure for H-point determination.)

Note: [2)]

As specified in **JIS D0030** (Three-dimensional reference system for automobiles.)

Documents
Document Sharing Hub

Full document details: JASO T005 2009

4 Application condition of eyellipse

The eyellipse shall be usually applied to motorcycles within the range where the design position angle is between -45° (inclined forward) and 10° (inclined backward).

5 Eyellipse and eyellipse inclination angle

The eyellipse and eyellipse inclination angle shall be as shown in **Figures 1 and 6**. The size of eyellipse shall be the 95 percentile.

6 Establishment method for eyellipse

The eyellipse shall be established as follows.

6.1 Selection of factors for drawings

The factors for drawing corresponding to the design position angle β (see **Figure 5**) of the motorcycle, and the major axis, minor axis, and the inclination angle of the eyellipse shall be as shown in **Tables 1 and 2**.

6.2 Establishment of eyellipse on side view drawing

The eyellipse in the side view shall be established as follows (see **Figure 2**).

a) Draw a circular arc with radius *A* around the G-point (see **Figure 3**) on the zero *"Y"* plane (see **Figure 4**). Then draw a circular arc with radius *B* around the H-point, and set the point, at which both circular arcs cross each other, as the S-point.

b) Draw a circular arc with radius *C* around the S-point. Set the point, at which the circular arc and the straight line forming the angle γ with respect to the straight line connecting the S-point and the H-point cross each other, as the E-point.

c) Draw a major axis around the E-point forming the angle *θ* with respect to the horizontal line.

d) Draw a minor axis around the E-point, normal to the major axis as described in **c)** above.

e) Establish the eyellipse on the side view drawing by making the eyellipse major and minor axes in **Figure 6** accord with the major axis in **c)** and the minor axis in **d)** above.

6.3 Establishment of eyellipse on plan view drawing

The eyellipse in the plan view shall be established as follows (see **Figure 1**).

a) Draw a straight line passing through the E-point projected on the plan view drawing, and normal to the *X*-axis.

b) Draw two parallel lines whose distance from the *X*-axis is 32 mm right and left wise, respectively.

c) The major axis of the eyellipse in the plan view shall be established by projecting the eyellipse on the side view drawing onto the plan view drawing.

d) Establish the eyellipse on the plan view drawing, by drawing two ellipses with their minor axes on the straight line drawn in **a)** above (see **Table 2**), and their major axes on the line drawing in **b)**, with their centroids on the two cross points (EL and ER) generated by **a)** and **b)**.

AVA Documents
Document Sharing Hub

Full document details: JASO T005 2009

6.4 Reference eye point

a) Monocular eye point

The projected E-point shall be considered as the reference eye point for both the plan and side view drawings.

b) Binocular eye points

The EL (left eye) and ER (right eye), that are the centroids of the two eyellipses, shall be considered as the reference eye points on the plan view drawing.

Documents
Document Sharing Hub

Full document details: JASO T005 2009