Motorcycles – Procedure for H-point determination

1 Scope

This standard specifies the procedure for H-point determination for motorcycles.

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 T003 Motorcycles - Riding position

JASO T004 Motorcycles - Measuring method of dimensions, masses, and loads

JASO T005 Motorcycles - Rider's eye range

JIS D0030 Three-dimensional reference system for automobiles

JIS D0109 Motorcycles and mopeds -- Vocabulary

3 Definitions

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

3.1

Two-dimensional manikin for motorcycles

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

3.2

H-point

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

3.3

H'-point

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

3.4

S-point

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

3.5

E-point [1)]

The point corresponding to the eyellipse centroid.

3.6

G-points [1)]

The points located at the centre of the upper part of the effective portion of the handle grips.

3.7

Zero *"Y"* plane [2)]

A vertical plane constituting a reference in measurement, which corresponds to the longitudinal median plane of the motorcycle (see **Figure 1**).

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3.8

Zero *"X"* plane [2)]

A vertical plane constituting a reference in measurement, normal to the zero *"Y"* plane (see **Figure 1**).

3.9

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 1**).

3.10

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 2**).

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.

3.11

Seating reference line

An arc described about the H-point sight mark on the two-dimensional manikin for motorcycles, indicating the vertical distance from the H'-point to H-point.

Note: [1)]

As specified in **JASO T005** (Motorcycles - Rider's eye range.)

Note: [2)]

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

4 Application condition

The procedure for H-point determination specified in this standard is applied to motorcycles whose design position angle ranges from -45 ° (inclined forward) to 10 ° (inclined backward).

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5 Description of two-dimensional manikin for motorcycles

A template in which the arms and hands are connected to the torso, the head to the torso, thighs to the torso, the thighs to legs, feet to the legs by means of pins, each in a rotatable manner.

The description and dimensions of elements are shown in **Figure 3**.

6 Installation procedure for two-dimensional manikin for motorcycles

The two-dimensional manikin for motorcycles shall be installed as follows.

a) Factors for drawing corresponding to the design position angle β for the object motorcycle (distance *A* and distance *B*) shall be selected from **Table 1**.

b) Adjust dimensions a and b of the two-dimensional manikin for motorcycles so that they agree with distance *A* and distance *B* selected in **a)**.

c) Select the seating reference line for the two-dimensional manikin for motorcycles corresponding to the value closest to the vertical distance from the H-point to the H'-point.

d) Bring the lower end of the seating reference line selected in **c)** into contact with the upper surface of the rider's seat in a side view drawing of the object motorcycle.

e) Position the feet of the two-dimensional manikin for motorcycles on the footrest in the side view drawing.

f) Position the G-point sight mark of the two-dimensional manikin for motorcycles on G-point in the side view drawing.

g) Adjust the location of the H-point sight mark so that the value indicated by the position angle protractor of the two-dimensional manikin for motorcycles agrees with design position angle β of the object motorcycle.

It shall be checked at this time that the manikin satisfies the conditions of **d) to f)**.

Note: The locations of the E-point can be determined by adjusting the dimension *C* and the neck angle γ of the two-dimensional manikin for motorcycles to the respective value corresponding to the design position angle β

Table 1 Factors for drawing

Design position angle β (°) / Riding position / Item	-45	-7	10
		Inclined forward	Inclined backward	
Distance *A* (mm)		630	598	
Distance *B* (mm)		514	486 (514)	
Distance *C* (mm)		219	238	
Angle γ (°)		131-0.67β (-45≤β≤0) 131-β (0<β≤10)		

Note: When the motorcycle is an on/off-road type, use the value in parentheses for distance *B*.

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