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JAPANESE INDUSTRIAL STANDARD

Earth-moving Machinery-Method
for Locating the Centre of Gravity

JIS A 8915 —1982

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Earth-moving Machinery-Method for
Locating the Centre of Gravity

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1. Scope

This Japanese Industrial Standard specifies the method for locating the centre of gravity of the earth-moving machinery⁽¹⁾, hereinafter referred to as the "machine".

Note ⁽¹⁾ The earth-moving machineries mentioned here are tractors, tractor shovels, scrapers, excavators, motor graders, dump trucks, tire rollers, vibration rollers, road rollers, etc.

2. Definitions

For the purpose of this standard, the following definitions apply:

(1) vertical reference plane 1 A plane which serves as a reference plane indicating the position of centre of gravity, that is generally a vertical plane through an axis of driving wheels or rear wheels (for 3 or more axles, the rearmost wheels). However, for a tractor shovel, a vertical plane through an axis of idle wheels⁽²⁾ or front wheels.

Note ⁽²⁾ The position of the idle wheels shall be that corresponding to the grounding length prescribed in the specification.

(2) vertical reference plane 2 A plane which serves as a reference plane indicating the position of centre of gravity, that is a vertical plane intersecting vertically with the vertical reference plane 1, through the centre line of the centre distance of tracklinks, track or compacting width.

(3) horizontal reference plane A plane which serves as a reference plane, on which a machine is to be placed. However, the plane shall be such that no grouser penetration of a crawler type machine will cause.

(4) horizontal fore-and-aft co-ordinate A distance between the centre of gravity and the vertical reference plane 1.

(5) lateral co-ordinate in the horizontal plane A distance between the centre of gravity and the vertical reference plane 2. It shall be taken as plus, if the centre of gravity lies on the right hand of the vertical reference plane 2 and as minus if it lies on the left hand, viewed towards advancing direction.

(6) vertical co-ordinate A distance between the centre of gravity and the horizontal reference plane.

Applicable Standards and Corresponding International Standard: See page 9.



Documents

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3. Measuring Conditions

The machine shall be subjected to measurements under the following conditions.

Furthermore, measurements may be made under the conditions otherwise as agreed between the parties concerned.

- (1) The machine shall be free from adhesion of mud, sand, etc. and partial deformation and the like, and shall be in a condition operatable normally.
- (2) Quantity of the fuel shall be not less than 95 % in tank capacity, and the cooling water, lubricating oil, working oil, etc. shall respectively be the specified quantities, and the mass of operator shall not be included.
- (3) Tools, spare tires and others shall be provided in the normal stowage positions.
- (4) The tire inflation-pressures shall be as specified in the manufacturer's operating instructions or, if a range of pressures is specified, generally be at the highest pressure. In the case of machines fitted with hydro-inflation tires, these shall be filled with the liquid in accordance with the manufacturer's designation.
- (5) The machine shall be subjected to measurement under no load condition, generally in the travelling position or in the operating position. However, if it is required to obtain the centres of gravity in other positions⁽³⁾ or other loaded conditions, measurements may be made under respective conditions.

Note ⁽³⁾ Details for these positions shall be specified in the standards for respective machines.

4. Measuring Instruments

The measuring instruments to be used for the measurements of centre of gravity shall be as given in the following, except for the crane, decking, knife edges, plumb rule or those having functions equal to these.

- (1) Levels The levels specified in JIS B 7510 or JIS B 7511.
- (2) Squares Those as specified in JIS B 7526 or JIS B 7534.
- (3) Tape Measures The tape measures of Grade 1 as specified in JIS B 7512.
- (4) Weighbridge The weighbridge having sufficient capacity for weighing the measuring objects shall be used, and its accuracy shall be 0.5 % FS (full scale).
- (5) Recording Board The recording board, a firm board with smooth surface of 600 mm or more high and 450 mm or more wide in dimensions, shall be attached, at right-angles with the vertical reference plane 1 and horizontal reference plane, and in parallel with the vertical reference plane 2, on an appropriate place at the side of the machine.