Australian Standard®

EARTH-MOVING MACHINERY—TESTS AND MEASUREMENTS

Part 2—METHOD FOR LOCATING THE CENTRE OF GRAVITY

(ISO Title: Earth-moving machinery—Method for locating the centre of gravity)

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Australian Mining Industry Council
Bureau of Steel Manufacturers of Australia
Construction Equipment Importers and Manufacturers of Australia
Department of Administrative Services
Department of Conservation, Forests and Lands, Vic.
Department of Defence
Department of Forestry, Qld.
Department of Industrial Relations and Employment, N.S.W.
Department of Labour, Vic.
Department of Mines, Qld.
Earth-movers and Road Contractors Association of Australia
Forestry Commission of New South Wales
Local Government Engineers Association of New South Wales
Metal Trades Industry Association of Australia
National Association of Australian State Road Authorities
Rural Water Commission, Vic.
Safety Institute of Australia
Telecom Australia
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Water Board, Sydney

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FOREWORD

1. This Australian Standard corresponds with ISO 5005—1977, *Earth-moving machinery — Method for locating the centre of gravity*.

2. Introduction to and complete listing of the SAA series of earth-moving machinery Standards (AS 2951 to AS 2958) is available on request.

3. For the purpose of this Australian Standard the words 'International Standard' should be replaced by 'Australian Standard'.

Earth-moving machinery—Tests and measurements Part 2—Method for locating the centre of gravity

0 INTRODUCTION

Although there are many possible methods of determining the centre of gravity, the intent of this International Standard is to specify one simple and practical method which requires the use of a weighbridge and crane.

There is no single fixed position of the centre of gravity of a machine which has attachments or components that are movable. When such a machine is tilted, as it must be to find the vertical co-ordinates, flexible parts deflect, fluids and loose parts move, and the position of the centre of gravity therefore changes. Again, particularly in the case of earth-moving machinery, the position of the centre of gravity will depend upon the nature and position of any attachments or ancillary equipment with which the item is fitted. It is therefore essential in all cases to state exactly the conditions of test.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the co-ordinates of the centre of gravity of earthmoving machinery such as tractors, loaders, dumpers and graders in any condition of loading or position of attachments.

2 DEFINITIONS

For the purpose of this International Standard the following definitions apply:

2.1 machine: The machine or other object whose centre of gravity is to be determined.

2.2 apparatus: The equipment required to determine the centre of gravity of a machine.

2.3 attachment: A piece of equipment which is available for mounting on the machine for a particular purpose (for example a bulldozer blade, winch or bucket).

2.4 "left-hand" and "right-hand" sides: These terms apply when facing in the primary direction of travel.

2.5 mass: The mass of the machine as submitted for test.

3 PREPARATION AND LOADING OF MACHINE

The machine shall be clean and shall be tested in normal working conditions or in a specified condition agreed between the manufacturer and the testing authority.

3.1 Radiator, sump, hydraulic and other reservoirs, shall be filled to specified working levels; the fuel tank shall be full or empty or in a specified condition as agreed between the manufacturer and testing authority.

3.2 Tools, spare tyre, and loose accessories and equipment shall be complete as supplied and shall be in the normal stowage positions.

3.3 Tyre pressures shall be as specified in the manufacturer's operating instructions or, if a range of pressures is allowed, at the highest pressure recommended. In the case of machines fitted with hydro-inflation tyres they shall be filled in accordance with the manufacturer's operating instructions.

3.4 The attachment shall be normally put in the operating position; for example:

a) for crawler or wheeled tractors, with the dozer equipment lowered, tilt adjustment horizontal, to the lowest possible position just clear of the horizontal reference plane (see 5.3);

b) for loaders with the bucket fully crowded back and the front linkage in such a position that the lower part of it or the bucket is just clear of the horizontal reference plane;

c) for graders with the cutting edge of the blade horizontal and perpendicular to the horizontal axis of the machine and 20 cm above the horizontal reference plane. The front wheels shall be vertical.

The centre of gravity may be determined in a similar manner with the attachment(s) in many different positions and the co-ordinates for these different positions recorded as indicated in the report table at 6.4.

3.5 Articulated machines will normally be tested locked in a straight line, but the test may be required to be conducted with the joint set at the maximum or any intermediate angle.