International Standard 789/3

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Agricultural tractors — Test procedures — Part 3 : Turning and clearance diameters

Tracteurs agricoles — Méthodes d'essai — Partie 3 : Diamètres de braquage et de dégagement

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Descriptors : agricultural machinery, tractors, tests, measurement, turning circles, clearances, testing conditions.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 789/3 was developed by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, and was circulated to the member bodies in May 1981.

It has been approved by the member bodies of the following countries :

Australia	France	Poland
Austria	Germany, F. R.	Portugal
Belgium	India	Romania
Brazil	Iran	Spain
Bulgaria	Italy	Sweden
Canada	Korea, Dem. P. Rep. of	Switzerland
Denmark	Korea, Rep. of	USA
Egypt, Arab Rep. of	Mexico	USSR
Finland	New Zealand	

The member body of the following country expressed disapproval of the document on technical grounds :

United Kingdom

Printed in Switzerland

Agricultural tractors — Test procedures — Part 3 : Turning and clearance diameters

0 Introduction

This International Standard specifies test procedures for agricultural tractors. This part deals with turning and clearance diameters. Other parts of this International Standard will be as follows :

Part 1 : Power tests.

Part 2 : Hydraulic power and lifting capacity.

Part 4 : Exhaust smoke measurement.

Part 5 : Partial power p.t.o. — non-mechanically transmitted power.

Part 6 : Centre of gravity.

Part 7 : Power and torque of the drive wheels.

Part 8 : Engine air cleaner.

1 Scope and field of application

This part of ISO 789 specifies a method of determining the turning and clearance diameters of agricultural tractors.

The method is applicable to agricultural tractors having at least two axles fitted with pneumatic tyres or tracks.

2 References

ISO 612, *Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions.*

ISO/TR 4004, *Agricultural tractors and machinery — Track widths.*

3 Definitions

For the purposes of this part of ISO 789, the following definitions apply.

3.1 agricultural tractor :

See ISO 3339/1 (in preparation).

3.2 track tread (of wheeled tractor) :

See ISO/TR 4004.

3.3 wheelbase :

See ISO 612.

3.4 minimum turning diameter : The diameter of the circular path described by the centre of the tyre, in contact with the ground, of the wheel describing the largest circle, while the tractor is executing its sharpest practicable turn. This is often called the turning circle.

3.5 minimum clearance diameter : The diameter of the smallest circle which will enclose the outer-most points of projection of the tractor and its equipment while executing its sharpest practicable turn.

4 Apparatus

The following apparatus is required.

4.1 Tape measure, of length greater than the turning and clearance diameters to be measured, having an accuracy up to 1 %.

4.2 Plumb line, if required, for measuring clearance diameters.

5 General requirements

5.1 Test area

The test area shall be a clean, flat and horizontal, compacted or paved surface, affording good tyre adhesion and capable of displaying legible markings.

5.2 Tractor

5.2.1 Tyre and wheel equipment

The tyre and wheel equipment shall be that commonly used in the country for which the tractor is intended, i.e. as specified by the manufacturer, and shall be stated in the test report. Tyre pressures shall be recorded.

5.2.2 Track (tread) setting

The track setting shall be as specified by the manufacturer and shall be stated in the test report.

5.2.3 Movable equipment

Movable equipment shall be in its recommended transport position.

5.2.4 Tandem rear wheels

In the case of tractors with tandem rear wheels which can be raised individually off the ground, measurements shall be made under the following three conditions :

a) both tandem wheels on the ground;

b) rearmost tandem wheels in the raised position;

c) frontmost tandem wheels in the raised position.

The results and respective wheelbases shall be recorded for these three conditions in the test report.

6 Procedure

6.1 All tests shall be conducted with the tractor equipped as stated in clause 5, and moving at 1,5 to 2,0 km/h, measured at a point located midway between the rear wheels.

For tractors with more than one driven axle, or axles having steered wheels, the test may be carried out with any transmission drive or steering configuration, in which case the configuration and measurement shall be reported for each test. Tractors which have all wheels steerable, and which have devices for disconnecting either or both axles, shall be tested in each operating condition in which the tractor is intended to be used. Results shall be recorded for each operating condition.

6.2 Tests shall be made by turning as sharply as possible, without the use of directional turning brakes, until at least one 360° turn is completed, both to the right and to the left. After each turn (right or left), measure the turning and clearance diameters (see the figure) at a minimum of three equally spaced places. Record the average values as the minimum turning and clearance diameters.

6.3 If applicable, repeat the tests specified in 6.2, conducting them in the same manner as before, but applying directional turning brakes with a pedal effort (subject to a maximum of 600 N for pedal and 400 N for lever) sufficient to lock the wheel while making the turn, until the turn is completed.

After each turn (right or left), measure and record the minimum turning and clearance diameters.

7 Test report (see the annex)

The test report shall include the following information :

a) the name and address of the manufacturer;

b) the type and model of tractor;

c) the tyre sizes and pressures (in kilopascals);

d) the track (tread) of the tractor (in millimetres);

e) the minimum turning diameters and the minimum clearance diameters (in metres, to two decimal places) :

1) right hand turn without brakes,

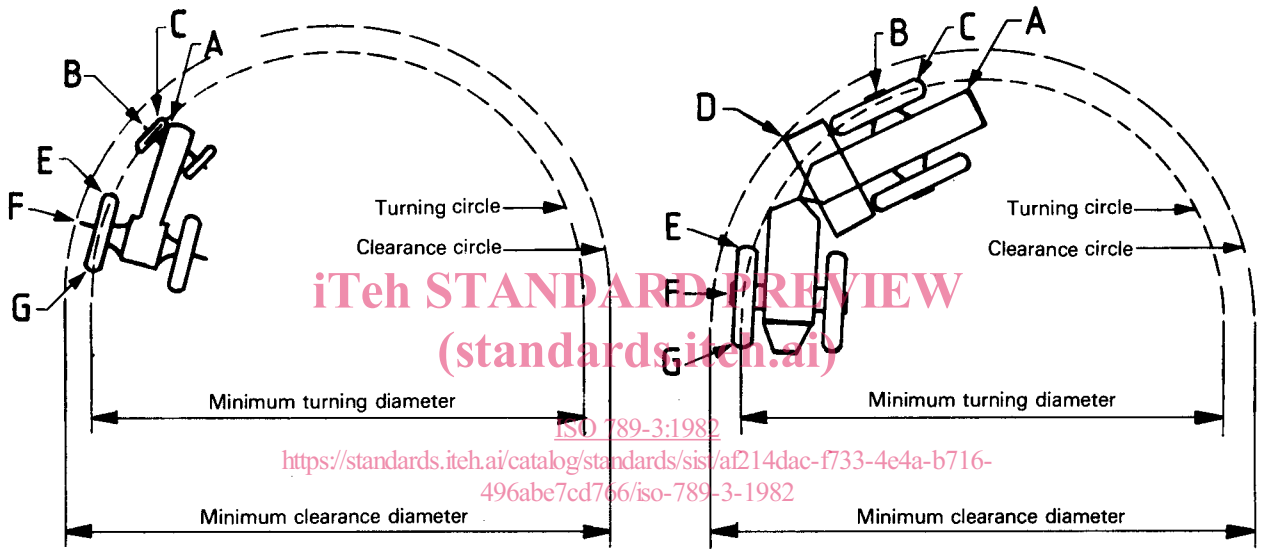
2) left hand turn without brakes,

and, if applicable

3) right hand turn with brakes,

4) left hand turn with brakes;

f) the point of the tractor that determines the minimum clearance diameter (A, B, C, D, E, F or G; see the figure).



Figure

NOTE — The minimum diameters are the averages of three or more measurements.

Annex

Example of test report

Manufacturer's name and address : .....

Tractor make : ..... Model : ..... Date of test : .....

Mass of tractor submitted for test : .....

Description of ballast (if provided) : .....

Track (tread) setting
(as specified by the manufacturer)

Front : ..... mm Rear : ..... mm

Drive and steering

2 wheel (rear) : .....

4 wheel : (equal front and rear) ..... (unequal front and rear) .....

Tyres and wheels

	Front	Rear
Tyre size	.	.
Tyre pressure (kPa)	.	.
Wheel type	.	.
Wheelbase	.	

Minimum turning diameter (m)				**Minimum clearance diameter** (m)*			
Brakes applied		Brakes released		Brakes applied		Brakes released	
Left	Right	Left	Right	Left	Right	Left	Right
.....	.....	.....	.....	.....	.....	.....	.....

* Point of tractor which determines clearance diameter (A, B, C, D, E, F or G; see the figure).

Comments : ..... Measured by : .....

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