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Equipment for crop protection – Sprayers – Demonstration track for field crop sprayers

DANSK STANDARD
Danish Standards

Kollegievej 6
DK-2920 Charlottenlund
Tel: +45 39 96 61 01
Fax: +45 39 96 61 02
dansk.standard@ds.dk
www.ds.dk

DS/ISO 22763

København
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INTERNATIONAL STANDARD

ISO 22763

First edition
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Equipment for crop protection — Sprayers — Demonstration track for field crop sprayers

Matériel de protection des cultures — Pulvérisateurs — Piste de démonstration pour les pulvérisateurs

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22763 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*.

This first edition of ISO 22763 cancels and replaces ISO/TS 22763:2002, of which it constitutes a technical revision.

Introduction

The movement of the spray boom is an important performance criterion for field crop sprayers. During practical demonstrations, the sprayers are driven on demonstration tracks to give the visual impression of the boom movement. The tracks used are very different.

This International Standard specifies a uniform track that can be used for practical demonstrations. As the intention is to show the boom movement visually, not to measure it, and due to the conditions under which practical demonstrations are normally performed, it gives the main characteristics — but not all details — required in, for example, laboratory measurements.

This demonstration track includes three individual sections which respectively

— represent field conditions (Section A), defined by evaluating real, rough field surfaces,

— show the headland situation (Section B), including an extreme obstacle (simulating, for example, a potato dam), and

— include a combination of obstacles (Section C) to show boom movement under very rough conditions exceeding normal/real conditions.

Section A, simulating field conditions, is based on detailed research. It has been proven that this track represents field conditions and excites a wider range of signals than previous demonstration tracks.

Equipment for crop protection — Sprayers — Demonstration track for field crop sprayers

1 Scope

This International Standard specifies a uniform demonstration track for showing the spray boom movement of field crop sprayers in, for example, practical demonstrations. The track specified can be used in demonstrations for mounted, trailed or self-propelled sprayers.

2 General

2.1 The demonstration track may consist of the following sections (see Figure 1):

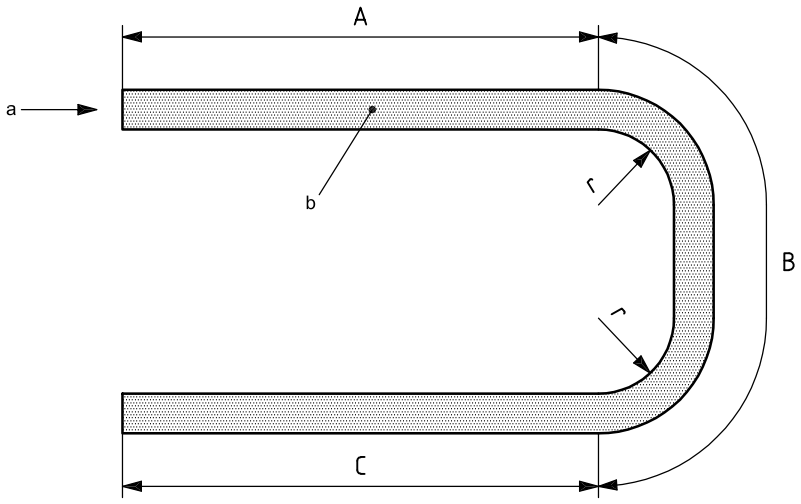
— Section A, field track;

— Section B, headland turning track;

— Section C, bumpy track.

While Sections B and/or C are optional, the demonstration track shall include Section A.

2.2 National and local regulatory conditions and health and safety requirements for visitors and operators should be observed and followed.



Key

A field track
B headland turning track
C bumpy track
r radius
a Start/driving direction.
b Acceleration zone.

Figure 1 — Demonstration track (Sections A, B and C) — Top view

2.3 The demonstration track shall provide equal conditions for all sprayers independently of when the sprayers are passing over the track. To this end, the ground surface of the demonstration track shall be hard and solid across the total track length. Test blocks, bumps and ground surface shall withstand the loads without deformation or change of position generated by the sprayers or tractor/sprayer combinations, in accordance with 2.5 to 2.8.

2.4 The ground surface shall be generally even along the whole boom width.

2.5 In order to ensure a constant speed at the beginning of the demonstration track, a zone of sufficient length shall be provided for acceleration of the tractor/sprayer. This length shall correspond to the driving speed used (2.9 and 2.10).

2.6 All sprayers shall have the same track setting, the same height of the boom, the automatic boom levelling device switched on or off and 50 % volume of the liquid in the tank, unless these aspects are the subject of the demonstration.

2.7 The tyre pressure shall be as recommended by the tyre manufacturer for the full load condition of the sprayer.

2.8 Boom skids designed to maintain the target spraying height shall be removed.

2.9 The driving speeds shall correspond to the local practice and to the different categories of sprayers and be communicated to the participants in a timely manner.

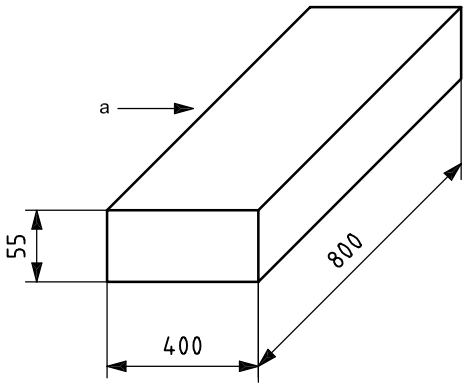
2.10 Driving speeds shall be kept to within a tolerance of $\pm$ 1 km/h and should be monitored and communicated to the visitors.

NOTE The specified test track is designed for driving speeds of between 6 km/h (or 4 km/h) and 12 km/h.

3 Section A — Field track

The track is constructed from 143 blocks, all having the same size, as shown in Figure 2, and distributed over the total length of the track (51,6 m) in accordance with Annex A.

Dimensions in millimetres



[a] Driving direction.

Figure 2 — Field track blocks

4 Section B — Headland turning track

The headland turning track shall

a) be on even ground,

b) start/end with a minimum radius, r, of 10 m,

c) have a straight line part of a minimum of 15 m,

d) include one test bump (including ramps with integrated plates), as shown in Figure 3, in the middle of the straight line and having the dimensions

— total length of ramp, D_1 = 800 mm,

— length of ramp plate, $D_{1.1}$ = 500 mm,

— length of ramp wedge, $D_{1.2}$ = 300 mm,

— length of test bump, D_2 = 100 mm,

— total length of ramp, D_3 = 800 mm,

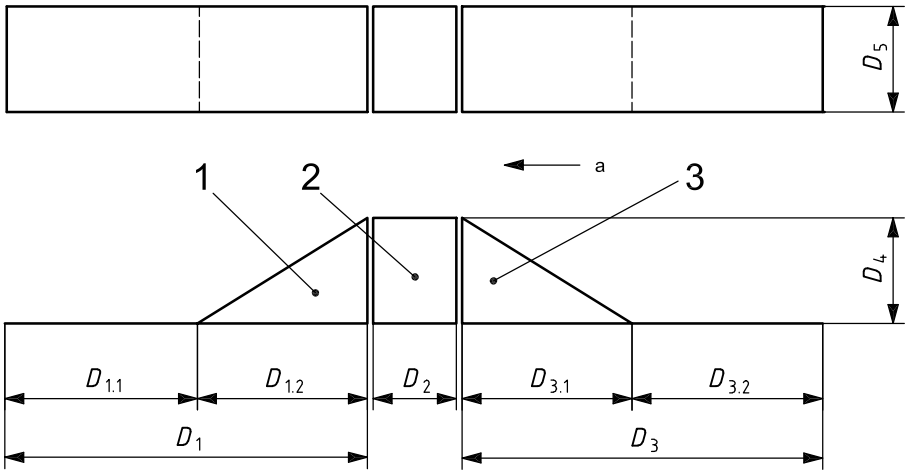
— length of ramp wedge, $D_{3.1}$ = 300 mm,

— length of ramp plate, $D_{3.2}$ = 500 mm,

— height of ramp and test bump, D_4 = 150 mm,

— width of ramp and test bump, D_5 = 800 mm.

Optionally, the track may include arrangements to show or to measure accuracy of wheel tracking for trailed and self-propelled machines through the use of soft soil, making track patterns visible.



Key

D_1 total length of ramp
$D_{1.1}$ length of ramp plate
$D_{1.2}$ length of ramp wedge
D_2 length of test bump
D_3 total length of ramp
$D_{3.1}$ length of ramp wedge
$D_{3.2}$ length of ramp plate
D_4 height of ramps and test bump
D_5 width of ramps and test bump

1 ramp to facilitate dismounting
2 test bump
3 ramp to facilitate mounting

[a] Driving direction.

Figure 3 — Test bump (including ramps with integrated plates) — Side and top views

5 Section C — Bumpy track

5.1 Subsections

The bumpy track shall consist of the following subsections:

— subsection C_A, following the furrow;

— subsection C_B, passing field irregularities, which shall be 5 m in length;

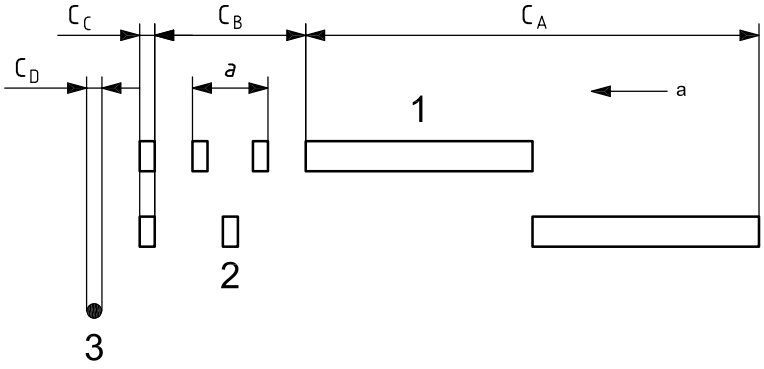
— subsection C_C, crossing bumps;

— subsection C_D, hitting an obstacle;

All subsections, except for C_D, may be freely located. For practical reasons, subsection C_D shall be located at the end of the section.

The distance between two subsections — from the end of the last test bump to the beginning of the next test bump/obstacle — shall be at least 10 m.

Figure 4 shows an example of a bumpy track and its subsections.



Key

a	length of passing field irregularities (= 5 m)	1	furrow test bump
C_A	furrow	2	test bump
C_B	field irregularities	3	break-back obstacle
C_C	crossing bumps		
C_D	hitting an obstacle	a	Driving direction.

Figure 4 — Section C — Bumpy track — Example

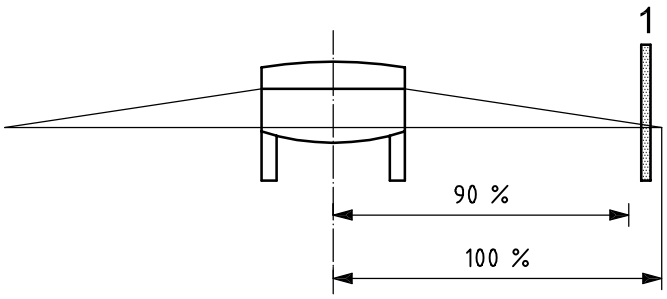
5.2 Obstacle, test bumps and ramps

5.2.1 Break-back test

5.2.1.1 Obstacle

The obstacle shall be a round pole having a minimum diameter of 150 mm and minimum height of 2 m.

It shall be designed such that it does not catch or damage the spray boom, and shall be placed at between 90 % and 100 % of the half-boom width (see Figure 5).



Key

1 obstacle

Figure 5 — Position of obstacle

5.2.1.2 Test bumps and ramps (see Figure 3)

5.2.1.2.1 Test bumps

The bumps shall be non-deformable, of rectangular shape and have the following dimensions:

— length D_2 = 100 mm,

— height D_4 = 125 mm,

— width D_5 = 800 mm.

5.2.1.2.2 Test ramps

The ramps shall be non-deformable, with an additional plate in front (500 mm) and the following dimensions:

— total length D_1 = 750 mm,

— length of ramp plate $D_{1.1}$ = 500 mm,

— length of ramp wedge $D_{1.2}$ = 250 mm,

— total length D_3 = 750 mm,

— length of ramp wedge $D_{3.1}$ = 250 mm,

— length of ramp plate $D_{3.2}$ = 500 mm,

— height D_4 = 125 mm,

— width D_5 = 800 mm.

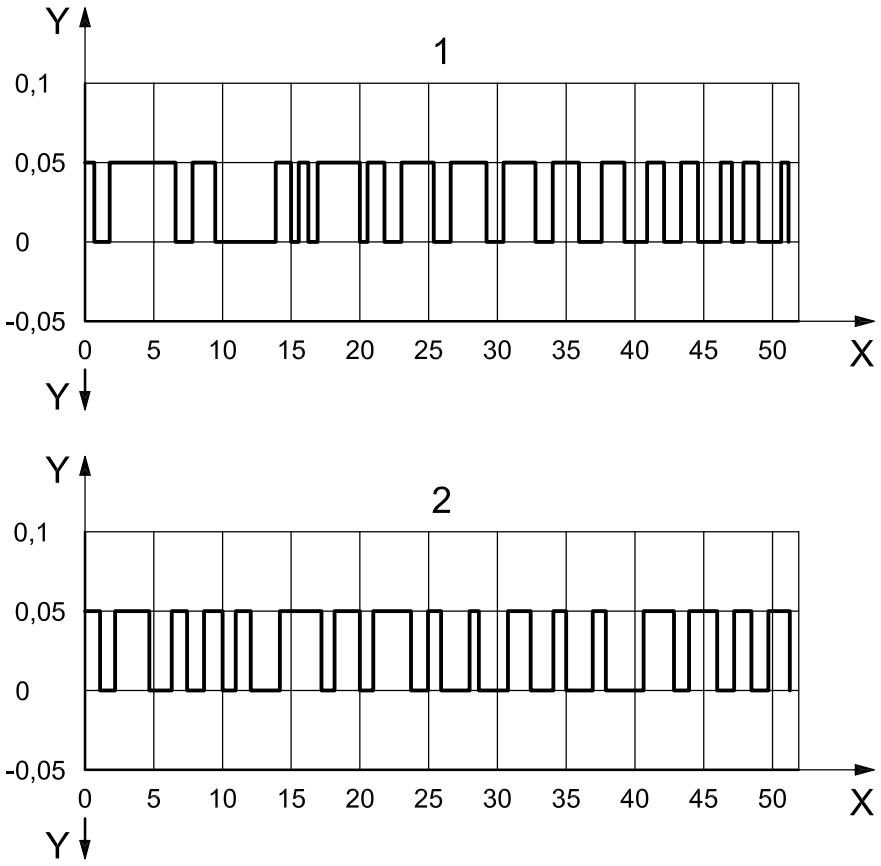
5.2.2 Furrow test

The test bumps and the ramps shall have the same dimensions as those specified in 5.2.1.2, except for the length of test bump, D_2, which shall be a minimum of 10 m.

Annex A
(normative)

Sequence of blocks and spaces over total length of field track

The sequence of 143 blocks over the total length (51,6 m) of the field track as defined in Figure A.1 is given in Table A.1.



Key

X travel distance, m
Y height, m
1 left side
2 right side

Figure A.1 — Field track definition

Table A.1 — Section A — Field track — Sequence of blocks and spaces

Travel distance m	Left side	Right side
0	block	block
0,4	block	block
0,8	0	block
1,2	0	0
1,6	0	0
2	block	0
2,4	block	block
2,8	block	block
3,2	block	block
3,6	block	block
4	block	block
4,4	block	block
4,8	block	0
5,2	block	0
5,6	block	0
6	block	0
6,4	block	block
6,8	0	block
7,2	0	block
7,6	0	0
8	block	0
8,4	block	0
8,8	block	block
9,2	block	block
9,6	0	block
10	0	0
10,4	0	0
10,8	0	block
11,2	0	block
11,6	0	block
12	0	0
12,4	0	0
12,8	0	0
13,2	0	0
13,6	0	0
14	block	block
14,4	block	block
14,8	block	block
15,2	0	block
15,6	block	block
16	block	block
16,4	0	block
16,8	block	block

Table A.1 (*continued*)

Travel distance m	Left side	Right side
17,2	block	0
17,6	block	0
18	block	block
18,4	block	block
18,8	block	block
19,2	block	block
19,6	block	block
20	0	0
20,4	block	0
20,8	block	block
21,2	block	block
21,6	0	block
22	0	block
22,4	0	block
22,8	block	block
23,2	block	block
23,6	block	0
24	block	0
24,4	block	0
24,8	block	block
25,2	0	block
25,6	0	0
26	0	0
26,4	block	0
26,8	block	0
27,2	block	0
27,6	block	block
28	block	block
28,4	block	0
28,8	block	0
29,2	0	0
29,6	0	0
30	0	0
30,4	block	block
30,8	block	block
31,2	block	block
31,6	block	block
32	block	0
32,4	block	0
32,8	0	0
33,2	0	0
33,6	0	block
34	block	block

Table A.1 (*continued*)

Travel distance m	Left side	Right side
34,4	block	block
34,8	block	0
35,2	block	0
35,6	block	0
36	0	0
36,4	0	0
36,8	0	block
37,2	0	block
37,6	block	0
38	block	0
38,4	block	0
38,8	block	0
39,2	0	0
39,6	0	0
40	0	0
40,4	0	block
40,8	block	block
41,2	block	block
41,6	block	block
42	0	block
42,4	0	block
42,8	0	0
43,2	0	0
43,6	block	0
44	block	block
44,4	block	block
44,8	0	block
45,2	0	block
45,6	0	block
46	0	0
46,4	block	0
46,8	block	0
47,2	0	block
47,6	0	block
48	block	block
48,4	block	0
48,8	block	0
49,2	0	0
49,6	0	block
50	0	block
50,4	0	block
50,8	block	block
51,2	0	0

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