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**Walk-behind powered rotary tillers —  
Definitions, safety requirements and test  
procedures**

**Sample Document**

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 11449 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 13, *Powered lawn and garden equipment*.

Annex A forms an integral part of this International Standard.

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# Walk-behind powered rotary tillers — Definitions, safety requirements and test procedures

## 1 Scope

This International Standard specifies mechanical safety requirements and tests applicable to pedestrian-controlled (walk-behind) powered rotary tillers of a rated engine/motor capacity less than or equal to 7,5 kW, designed primarily for garden and horticulture use.

It does not apply to

- rotary tillers having a rated engine/motor capacity greater than 7,5 kW used in commercial agricultural or forestry operations;
- PTO-driven machines;
- electric powered handheld front-mounted tillers;
- the electric aspects of electrically powered rotary tillers having a voltage exceeding 42 V d.c. or which are mains-connected.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3411:1982, *Earth-moving machinery — Human physical dimensions of operators and minimum operator space envelope.*

ISO 3767-1:1991, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1: Common symbols.*

ISO 3767-2:1991, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 2: Symbols for agricultural tractors and machinery.*

ISO 3767-3:1988, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 3: Symbols for powered lawn and garden equipment.*

ISO 3789-1:1982, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Location and method of operation of operator controls — Part 1: Common controls.*

ISO 3789-2:1982, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Location and method of operation of operator controls — Part 2: Controls for agricultural tractors and machinery.*

ISO 5395:1990, *Power lawn-mowers, lawn tractors, lawn and garden tractors, professional mowers, and lawn and garden tractors with mowing attachments — Definitions, safety requirements and test procedures.*

ISO 11684:—<sup>1)</sup>, *Tractors and machinery for agriculture and forestry, powered lawn and garden equipment — General principles for safety signs and hazard pictorials.*

IEC 335-1:1976, *Safety of household and similar electrical appliances — Part 1: General requirements.*

### 3 Definitions

For the purposes of this International Standard, the following definitions apply.

**3.1 pedestrian-controlled (walk-behind) powered rotary tiller:** Tilling machine with a powered rotary member, with or without traction drive that is intended to break up soil and is normally controlled by the operator walking behind or alongside it.

**3.1.1 front tine rotary tiller:** Pedestrian-controlled (walk-behind) powered rotary tiller whose ground traction is provided by its rotating tines or whose rotating member is substantially forward of the drive wheels. [See figure 1 a).]

**3.1.2 rear tine rotary tiller:** Pedestrian-controlled (walk-behind) powered rotary tiller whose ground traction is provided by the drive wheels and whose rotating member is substantially behind the drive wheels. [See figure 1 b).]

**3.1.3 handheld rotary tiller:** Pedestrian-controlled (walk-behind) rotary tiller whose ground traction is provided by its rotating tines with or without support wheels in such a way that its rotating elements act as hoeing blades and ensure forward propulsion. [See figure 1 c).]

**3.2 power source:** Engine or motor which provides mechanical energy for linear or rotational movement.

**3.3 clutch:** Device used for engaging or disengaging the load from the power source.

**3.4 starting device:** Handle, lever, switch or similar control required to actuate starting mechanism.

**3.5 handlebars:** Device equipped with grips enabling the machine to be controlled manually.

**3.6 tines [tools]:** Those portions of the rotating member that are in contact with and penetrate the soil.

**3.7 tine barrier:** Structural members, such as transport wheels, portions of the tiller frame, ground stake, or any combination of these members, that restrict entry of the operator into the rotating tines.

**3.8 guard; shield:** Part of the rotary tiller or component incorporated to provide protection for the operator.

**3.9 operator presence control:** Control designed so that it will automatically interrupt power to a drive when the operator's actuating force is removed.

**3.10 engine [motor] start:** Change of engine state from not producing power to producing power.

**3.11 manual start:** Use of operator force on a device to rotate the engine for starting purposes.

**3.12 operator hand-control position:** Area or space within which all hand-controls to be operated from the operator position are located.

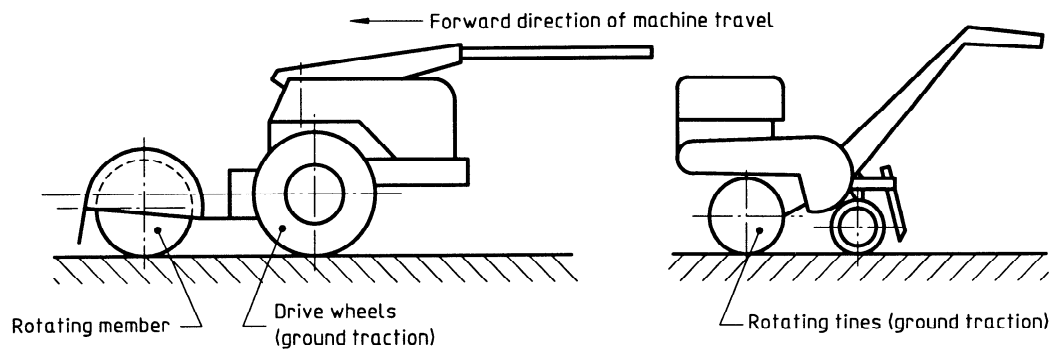
**3.13 operator position:** Area occupied by the operator during normal operation of the machine.

**3.14 operator zone:** Area into which the extremities of a 95th percentile male can reach from the normal operator position. (See figure 5.)

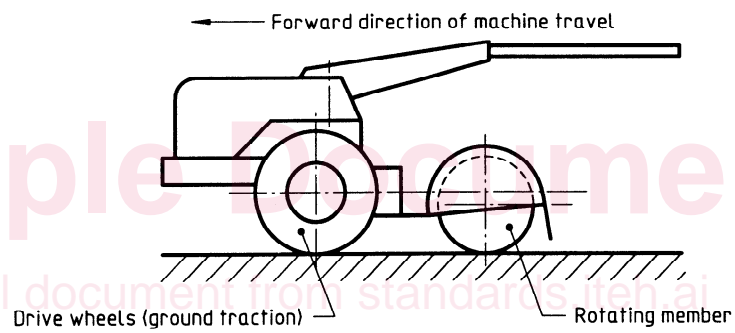
**3.15 normal operation:** Any use of the machine which is reasonably foreseeable, as perceived by the ordinary user, and which is consistent with such activities as tilling, starting, stopping, fuelling and transporting.

**3.16 durable label:** Label that is considered to be virtually permanent.

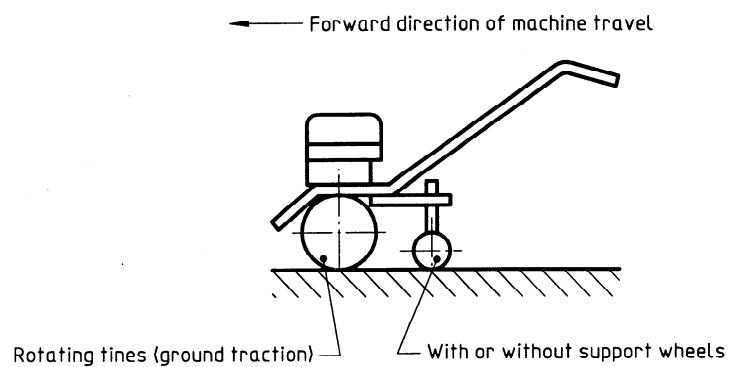
1) To be published.



a) Front tine tiller



b) Rear tine tiller



c) Handheld tiller

**Figure 1 — Types of rotary tillers**