

# INTERNATIONAL STANDARD

# ISO 10517

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## Portable powered hedge trimmers — Definitions, mechanical safety requirements and tests

iTeh STANDARD PREVIEW

*(Taille-haie portatifs à moteur — Définitions, prescriptions de sécurité  
mécanique et essais)*

ISO 10517:1993

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Reference number  
ISO 10517:1993(E)

## 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 10517 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Sub-Committee SC 13, *Powered lawn and garden equipment*.

Annex A forms an integral part of this International Standard.

# Portable powered hedge trimmers — Definitions, mechanical safety requirements and tests

## 1 Scope

This International Standard presents definitions of terms, and specifies safety requirements and test procedures applicable to portable hand-held powered hedge trimmers which are primarily designed for cutting hedges and bushes using one or more linear reciprocating cutter blades.

It does not apply to hedge trimmers with rotating blades.

For different types of machines, see figure 1 a) and b) showing two internal combustion engine-driven hedge trimmers and figure 1 c) for an electrical-driven hedge trimmer.

The electrical aspects of electrical powered hedge trimmers are not covered by this International Standard. See IEC 745-2-15.

## 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.

IEC 745-1:1982, *Safety of hand-held motor-operated electric tools — Part 1: General requirements.*

IEC 745-2-15:1984, *Safety of hand-held motor-operated electric tools — Part 2: Particular requirements for hedge trimmers and grass shears.*

## 3 Definitions

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

**3.1 blade tooth:** That part of the cutter blade which is sharpened or has sharp edges to perform the shearing action.

**3.2 cutter blade:** Part of the cutting device having blade teeth which cut by shearing action either against other blade teeth or against an unsharpened shear plate.

**3.3 cutting device:** Exposed part of the assembly of cutter blade and unsharpened shear plate, or the cutting blades together with any supporting part, which perform the cutting action.

**3.4 front handle:** Support handle located at or towards the cutting device.

**3.5 rear handle:** Support handle located furthest from the cutting device.

**3.6 transport handle:** Handle designated by the manufacturer for carrying the machine.

NOTE 1 This may be the front handle.

**3.7 throttle lock:** Device for temporarily setting the throttle in a partially open position, to aid starting.

NOTE 2 This definition applies only to internal combustion engine-driven hedge trimmers.

**3.8 blade control:** Throttle trigger or switch actuator activated by the operator's hand or finger, for controlling the blade movement.

**3.9 cutting length:** Effective cutting length of the cutting device measured from the inside edge of the first blade tooth or shear plate tooth to the inside edge of the last blade tooth or shear blade tooth (see figure 2).

**3.10 maximum operating engine speed:** Highest engine speed obtainable when adjusted in accordance with the hedge trimmer manufacturer's specifications and/or instructions with the cutting device engaged, taking into account all tolerances.

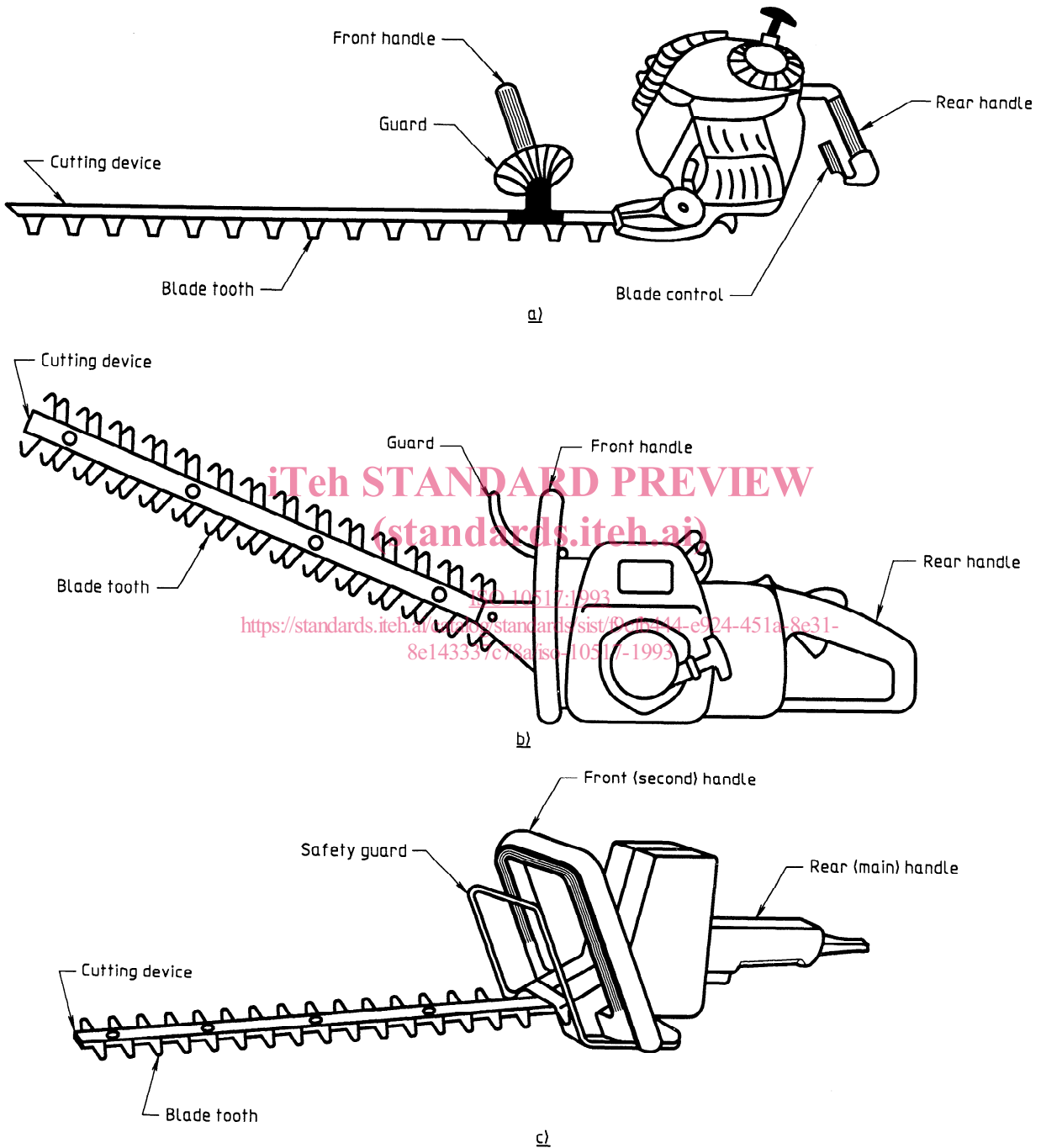


Figure 1

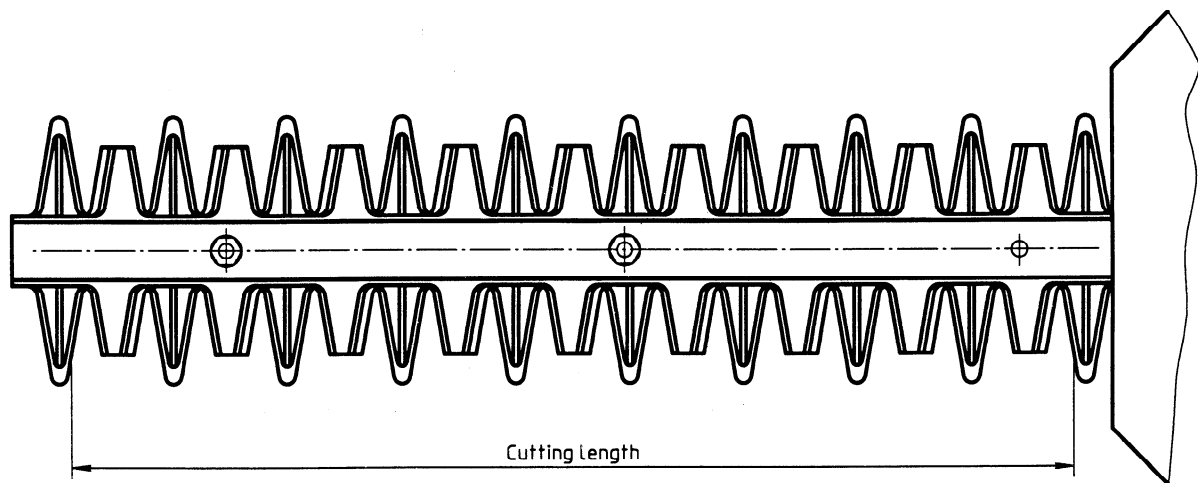


Figure 2

## 4 Handles

### 4.1 Requirements

Hedge trimmers with a cutting length longer than 200 mm shall be provided with two handles. If a part containing the motor is suitably shaped it may be considered as a handle.

The handles shall be designed in such a way that each one can be grasped completely with one hand. The gripping surface shall be at least 100 mm long (for an example, see figure 7) and there shall be 25 mm radial clearance around the gripping length. On bail or closed handles (U-shaped handles) this dimension is related to the inner width of the gripping surface. On straight handles it is the complete length between the housing and the end of the handle.

Adjustable handles shall be positively located. If they are adjustable in different positions it shall not be possible to lock them in a position not complying with the safety requirements.

If a handle is supplied unassembled from the machine, it shall not be possible to assemble it without any necessary guard being properly in place.

Compliance shall be checked by inspection and measurement.

## 4.2 Hand protection

### 4.2.1 Requirement

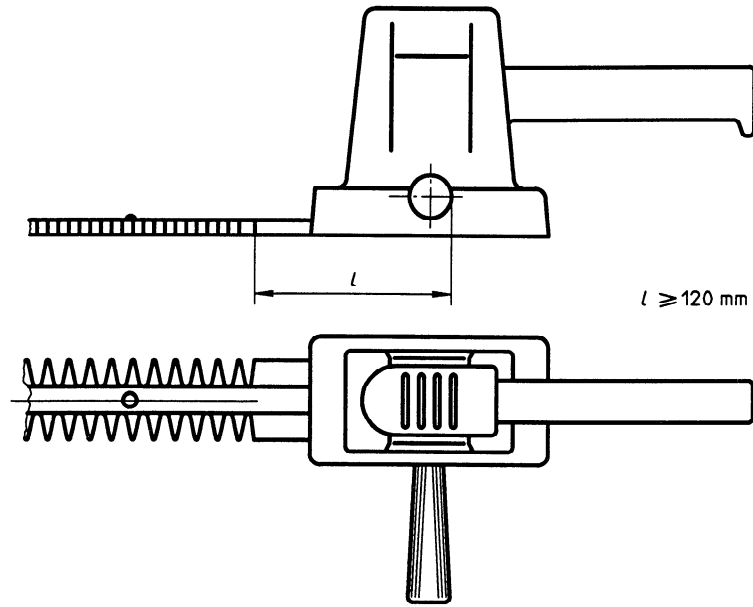
With both hands on the handles, it shall not be possible to touch the moving cutter blade with fingers spread out.

### 4.2.2 Test method

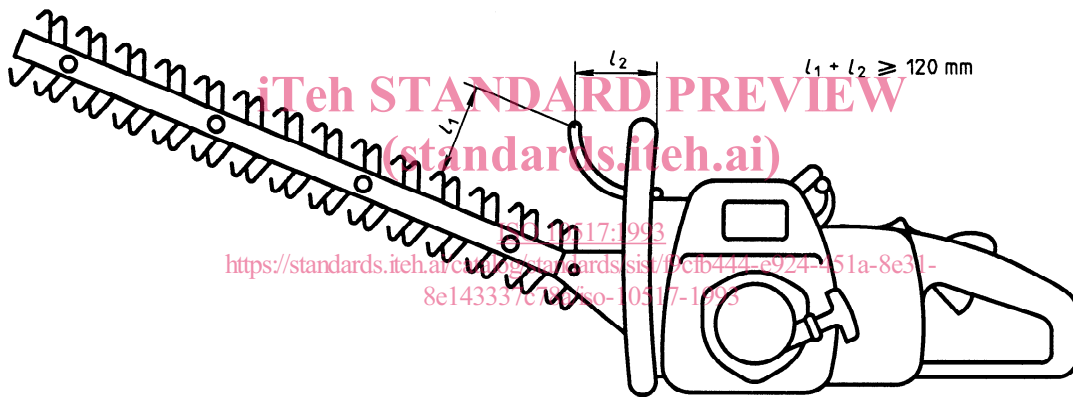
The requirement in 4.2.1 is met if both handles are located so that the test distance from the cutter blade to the side of either handle furthest from the cutter blade is not less than 120 mm. This distance shall be measured along the shortest paths from the furthest side of the handle to the cutter blade [see figure 3 a)] and, if there is a guard, from the furthest side of the handle to the guard and from here to the nearest cutting edge of the cutter blade [see figure 3 b)].

### 4.2.3 Cutting device requirement

Hedge trimmers shall be so designed that injury to the operator, from the cutting device, is reduced as far as practical. This requirement is met if the requirements of table 1 and figures 4 to 6 are met.



a)



b)

Figure 3

Table 1 — Cutting device requirements

Category	Cutting device	Cutting length mm	Holding moment N·m	Handle		Stopping time <sup>1)</sup> s
				number	blade control	
1	figure 4	≤ 200	≤ 20	1	1	none
2	figure 4 or 5	> 200	< 20	2	both	2
3	figure 4, 5 or 6	—	> 20	2	rear	2

1) Stopping time will be reviewed 3 years after publication with a view to reducing the values.

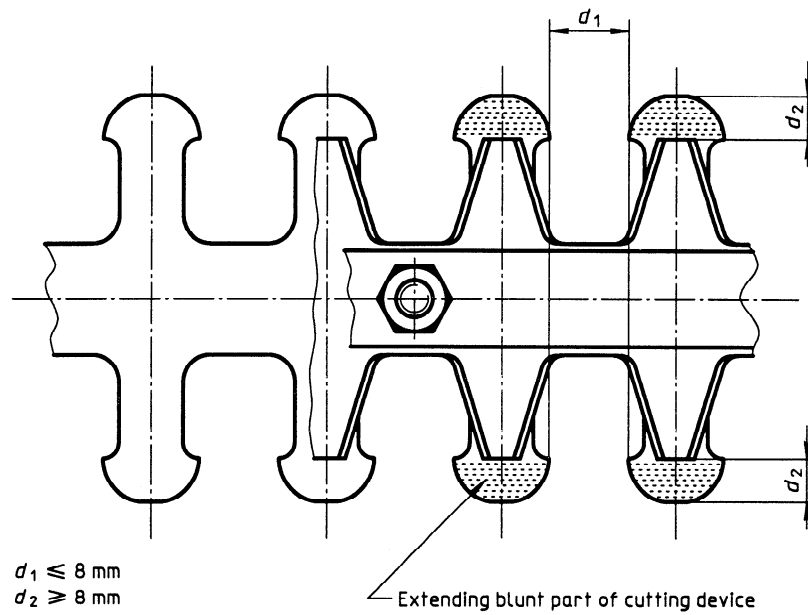


Figure 4

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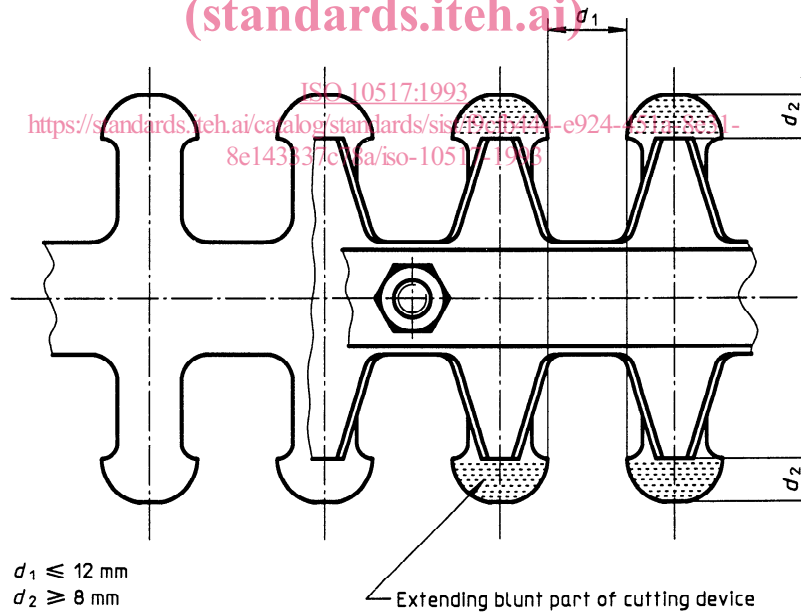


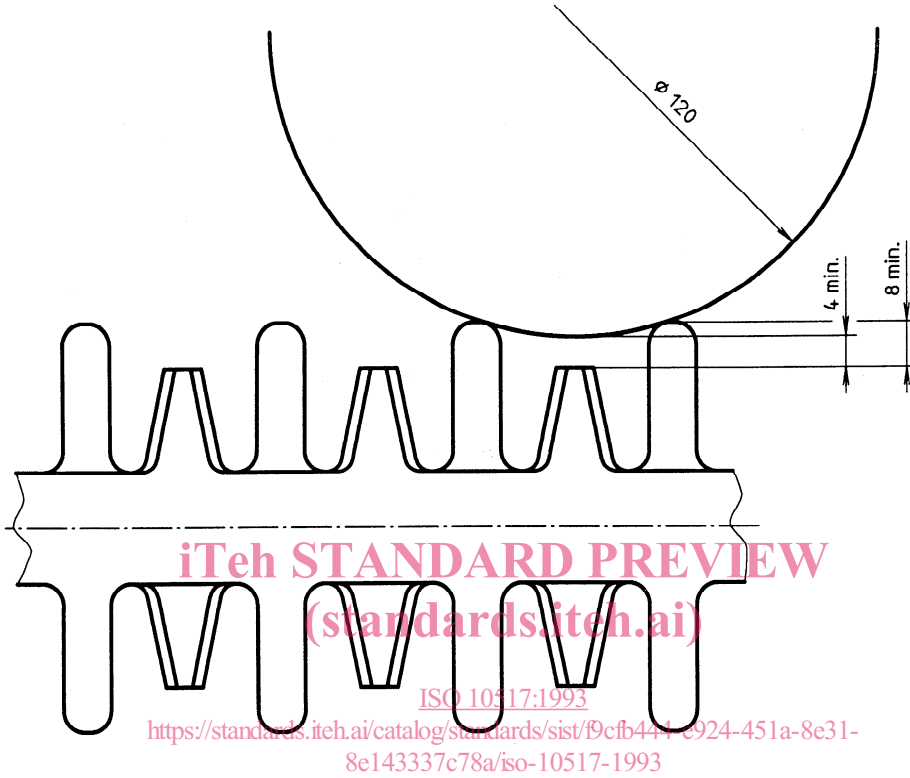
Figure 5

**4.3 Holding moment**

The reference point (P) of the holding moment is 300 mm to the rear from the centre of the rear handle

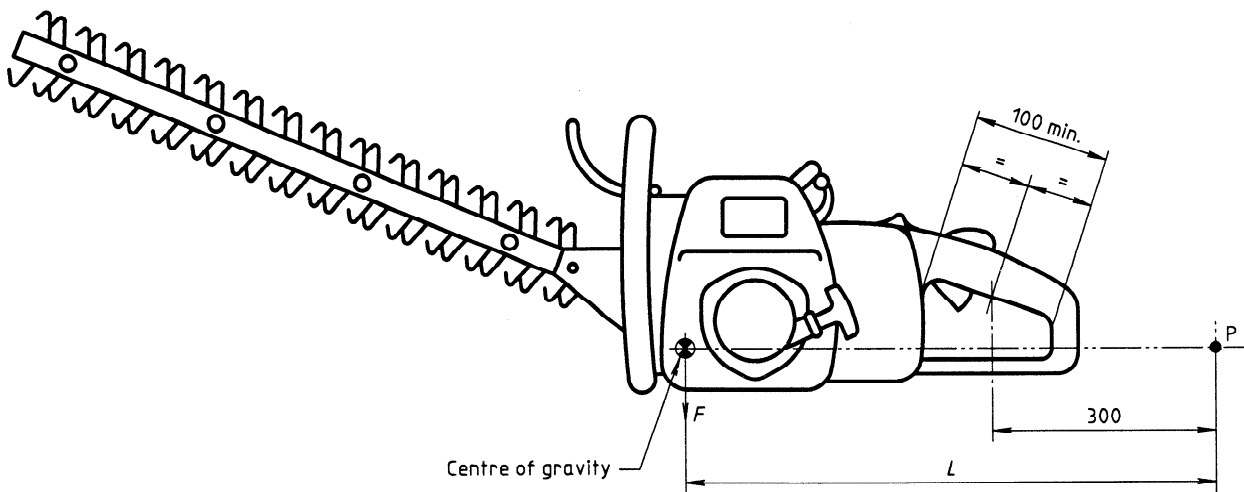
(see figure 7). The holding moment shall be determined with the tanks needed for operation half-full.

Dimensions in millimetres



**Figure 6**

Dimensions in millimetres



Holding moment (moment of force):  $M = F \times L$

**Figure 7**



#### 4.4 Blade stopping mechanism life expectancy

The cutting device stopping mechanism shall meet the life expectancy of the machine with adjustment and lubrication as recommended by the manufacturer. The manufacturer may be requested to furnish proof to the certification authority that the mechanism has satisfied tests to meet this requirement.

Such tests shall consist of a minimum of 2 500 on/off cycles from maximum speed.

#### 4.5 Balance of machine for transport

##### 4.5.1 Requirement

The angle measured in accordance with 4.5.2 shall be between  $-45^\circ$  and  $+45^\circ$ . This requirement applies only to those machines having a holding moment greater than 20 N·m where there is a transport handle.

##### 4.5.2 Test method

With the tanks needed for operation half-full, suspend the machine from the transport handle at the point giving the best lateral balance. Measure the angle between the centreline of the cutting device and the horizontal plane.

#### 4.6 Transport guard

A transport guard shall be provided. It shall be durable and cover the cutting device during transportation or when the hedge trimmer is stored.

The guard shall stay in its protective position when holding the covered cutting device downwards.

### 5 Starting and idling

The hedge trimmer shall be so designed that two separate and dissimilar actions are required before the cutting means starts to move. The provision of two switches in separate handles does not satisfy this requirement unless their methods of operation are different. Starting the engine shall not be considered as one of these actions unless the engine stops when the control is released.

On internal combustion engine-driven hedge trimmers, there shall be a means which separates the driving mechanism from the cutting blades. When starting and when the engine is idling, the cutting device shall not have any cutting action.

This requirement shall be checked by inspection.

When starting the engine of machines, the throttle trigger may be locked in a starting position. This position shall be cancelled automatically when the throttle

trigger is operated. If a centrifugal clutch is provided, it shall stop the power to the cutting blades when the engine is idling. This requirement is met if the cutting device disengages at not less than 1,3 times the idling speed.

### 6 Blade control

With the hands on the handles, it shall be easy to operate the control from all normal positions of the hands, without having to move the position of either hand. Release of the control shall cause the cutting device to stop.

This requirement shall be checked by inspection.

### 7 Engine stop

Internal combustion engine-driven hedge trimmers shall have an on/off control which may be operated without releasing hold of either of the handles. The engine-stopping device shall not depend on sustained manual pressure for its operation. The stop position shall be clearly marked.

### 8 Moving parts protection

All moving parts other than the cutting device shall be guarded to prevent the operator's contact with these components.

This requirement shall be checked by using the IEC finger probe (see IEC 745-1).

### 9 Heat protection

#### 9.1 Requirements

A guard or shield shall be provided to prevent inadvertent contact with any exposed engine exhaust component larger than 10 cm<sup>2</sup> and with a surface hotter than 80 °C, measured at  $(20 \pm 3)$  °C ambient temperature, during normal starting and operation of the machine.

Handles and permanently held controls shall not exceed 45 °C measured at  $(20 \pm 3)$  °C ambient temperature. Other controls contacted during normal operation shall not exceed 55 °C measured at  $(20 \pm 3)$  °C ambient temperature.

#### 9.2 Test method

Conduct the test in the shade. Lubricate as recommended by the manufacturer. Operate the engine at its maximum no-load speed until the temperature stabilizes.

Determine temperatures by correcting the observed temperature by the difference between the specified ambient and the test ambient temperature.