IEC 62841-4-2

Edition 1.0 2022-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 4-2: Particular requirements for hedge trimmers

Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité – Partie 4-2: Exigences particulières pour les taille-haies

IEC 62841-4-2:2017-12/AMD1:2022-05(en-fr)

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ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

Part 4-2: Particular requirements for hedge trimmers

AMENDMENT 1

FOREWORD

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Amendment 1 to IEC 62841-4-2:2017 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

The text of this Amendment is based on the following documents:

Draft	Report on voting
116/578/FDIS	116/586/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

INTRODUCTION

Add the following new Introduction:

INTRODUCTION

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1 Scope

Replace the existing text of NOTE 102 with the following new text:

NOTE 102 Scissors type grass shears are covered by IEC 60335-2-94 or IEC 62841-4-5.

2 Normative references

Add the following new normative references:

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

3 Terms and definitions

Replace the existing text of 3.111 with the following new text:

3.111
maximum speed
highest steady-state cutting device speed attainable under all conditions of normal use, including no-load, when adjusted in accordance with the manufacturer's specifications and/or instructions

Note 101 to entry: The steady-state **cutting device** speed excludes transients such as overshoot that may occur before attaining a steady-state condition.

5 General conditions for the tests

Add the following new subclause:

5.103 *For machines that do not attain **maximum speed** under no load conditions, the manufacturer shall provide samples with special hardware and/or software in order to perform the required tests.*

8 Marking and instructions

8.2 *Replace the first three dashes with the following:*

– "Wear ear protection", a relevant safety sign of ISO 7010 or the safety sign specified in Figure AA.7. This marking may be omitted if the measured emission sound pressure level at the operator's ear in accordance with Annex I does not exceed 85 dB(A); and

– "⚠DANGER – Keep hands away from blade" or the safety sign specified in Figure AA.1 or the safety sign specified in Figure AA.2.

Replace the fourth to seventh dashes with the following:

– "⚠WARNING – Do not expose to rain" or the safety sign specified in Figure AA.3.

– "⚠WARNING – Remove plug from the mains immediately if the cable is damaged or cut" or the safety sign specified in Figure AA.4.

Replace the ninth dash with the following:

– "⚠DANGER – Keep sufficient distance away from electrical power lines" or symbol C.2.30 of ISO 11684;

Add the following new subclause:

8.14.1.1 *Addition to item 2) c):*

For machines classified at least IPX4, the warning may be replaced as specified below.

c) **Do not operate the machine in rain or wet conditions.** *Water entering the machine may increase the risk of electric shock or malfunction that could result in personal injury.*

Replace the existing text of 8.14.1.101 with the following new text:

8.14.1.101 Safety instructions for hedge trimmers

For Category 1 **hedge trimmers** that can be converted to a grass shear, the term "hedge trimmer" may be replaced by alternate wording (e.g. "grass shear/hedge trimmer" or "grass shear/shrub shear"). For this case, the verbatim warnings below need not be repeated for the two configurations.

Hedge trimmer safety warnings:

a) **Do not use the hedge trimmer in bad weather conditions, especially when there is a risk of lightning**. *This decreases the risk of being struck by lightning*.

b) **Keep all power cords and cables away from cutting area**. *Power cords or cables may be hidden in hedges or bushes and can be accidentally cut by the blade*.

c) **Wear ear protection.** Adequate protective equipment will reduce the risk of hearing loss.

NOTE 101 This warning can be omitted if the measured emission sound pressure level at the operator's ear in accordance with Annex I does not exceed 85 dB(A).

d) **Hold the hedge trimmer by insulated gripping surfaces only, because the blade may contact hidden wiring or its own cord**. *Blades contacting a "live" wire may make exposed metal parts of the hedge trimmer "live" and could give the operator an electric shock.*

e) **Keep all parts of the body away from the blade. Do not remove cut material or hold material to be cut when blades are moving**. *Blades continue to move after the switch is turned off. A moment of inattention while operating the hedge trimmer may result in serious personal injury.*

f) **When clearing jammed material or servicing the hedge trimmer, make sure all power switches are off and the power cord is disconnected**. *Unexpected actuation of the hedge trimmer while clearing jammed material or servicing may result in serious personal injury.*

g) **Carry the hedge trimmer by the handle with the blade stopped and taking care not to operate any power switch**. *Proper carrying of the hedge trimmer will decrease the risk of inadvertent starting and resultant personal injury from the blades*.

h) **When transporting or storing the hedge trimmer, always use the blade cover**. *Proper handling of the hedge trimmer will decrease the risk of personal injury from the blades*.

Replace the existing text of 8.14.1.102 with the following new text:

8.14.1.102 Additional safety instructions for extended-reach hedge trimmers

Extended-reach hedge trimmer safety warnings:

a) **Always use head protection when operating the extended-reach hedge trimmer overhead**. *Falling debris can result in serious personal injury.*

NOTE 101 Alternate wording for "extended-reach" is possible, e.g. "pole" or "long reach".

b) **Always use two hands when operating the extended-reach hedge trimmer**. *Hold the extended-reach hedge trimmer with both hands to avoid loss of control*.

c) **To reduce the risk of electrocution, never use the extended-reach hedge trimmer near any electrical power lines**. *Contact with or use near power lines may cause serious injury or electric shock resulting in death.*

8.14.2 *Add the following new text after the existing text of 8.14.2 c):*

Replacement of the NOTE:

NOTE In Europe (EN IEC 62841-4-2), the following additional requirements apply:

Emissions

1) The noise emission, measured in accordance with Clause I.2, as follows:
   - A-weighted emission sound pressure level L_{pA} and its uncertainty K_{pA}, where L_{pA} exceeds 70 dB(A). Where L_{pA} does not exceed 70 dB(A), this fact shall be indicated;
   - the A-weighted measured and guaranteed sound power levels L_{WA};
2) Recommendation for the operator to wear hearing protection.
3) The vibration total value and its uncertainty measured in accordance with Clause I.3. When the vibration total value does not exceed 2,5 m/s^2, this shall be stated. When the vibration total value exceeds 2,5 m/s^2, its value shall be given in the instructions.
4) The following information:
   - that the declared vibration total value(s) and the declared noise emission value(s) has been measured in accordance with a standard test method and may be used for comparing one machine with another;
   - that the declared vibration total value(s) and the declared noise emission value(s) may also be used in a preliminary assessment of exposure.
5) A warning:
   - that the vibration during actual use of the machine can differ from the declared total value depending on the ways in which the machine is used; and
   - of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the machine is switched off and when it is running idle in addition to the trigger time).

14 Moisture resistance

Replace the existing text of 14.2.1 with the following new text:

14.2.1 *Replacement:*

The machine is not connected to the supply.

The machine is placed in its normal rest position on a perforated turntable. The turntable is then turned continuously at (1 ± 0,1) r /min during the test.

***Detachable parts** are removed and subjected, if necessary, to the relevant treatment with the main part. Movable covers that are non-**detachable parts** and are not self-restoring are placed in the most unfavourable position.*

NOTE Examples of self-restoring covers include those that are spring loaded or close by gravity.

Replace the existing text of 14.2.2 with the following new text:

14.2.2 *Add the following new text:*

Replacement of the last paragraph:

*Immediately after the appropriate treatment, the machine shall withstand the electric strength test of Annex D between **live parts** and **accessible parts**, the test voltage being 2 500 V. Then the machine is connected to the supply. It shall not start with the **power switch** in the "off" position.*

*Afterwards, inspection shall show that there is no trace of water on insulation which could result in a reduction of **creepage distances** between bare conductors of different potential below the values specified in 28.1. For all instances where **creepage distances** could be reduced below the values specified in 28.1, a short circuit is introduced between adjacent conductors. The machine is then evaluated for*

– *the risk of fire in accordance with item a) of 18.6.1; and*

– *the loss of any **SCF**, unless the machine is rendered into a safe state.*

17 Endurance

17.2 *Add the following new paragraph:*

*Care shall be taken to avoid overheating the **cutting device** by operating continuously and therefore appropriate interruptions for cooling and lubrication may be introduced.*

19 Mechanical hazards

Replace the existing text of 19.1 with the following new text:

19.1 *Replacement of the first paragraph:*

All power-driven hazardous parts (e.g. gears), other than those moving parts (e.g. **cutting device**), barriers and covers which are separately covered by 19.102, 19.103, 19.105 and 19.106, shall be so positioned or enclosed to provide adequate protection. The requirements of this subclause apply to all operating configurations as described in 8.14.2.

Replace the existing text of the third paragraph of 19.101.1.1 with the following new text:

The handles shall be designed in such a way that each one can be grasped with one hand. Handles shall be suitably shaped to be grasped securely and have a perimeter *P* between 63 mm and 170 mm as illustrated in Figure 105 a), 105 b) or 105 c). The perimeter is determined by a chain measurement with the **blade control**, if any, fully depressed. The gripping length of the handle(s) required in Table 101 shall be at least 100 mm.

Replace the existing text of the first paragraph of 19.101.1.2 with the following new text:

On bail or closed handles (U-shaped handles) the gripping length is related to the inner length of the gripping surface. There shall be a minimum radial clearance of 25 mm around the gripping length. In addition, for a handle incorporating a **blade control**, there shall be a minimum radial clearance of 25 mm around the **blade control** actuator with the **blade control** not depressed.

Add, after the first paragraph of 19.101.1.3, the following new paragraph:

In addition, for a handle incorporating a **blade control**, there shall be a minimum radial clearance of 25 mm around the **blade control** actuator with the **blade control** not depressed.

Replace the existing text of the fourth paragraph of 19.101.2.1 with the following new text:

The handles shall be designed in such a way that each one can be grasped with one hand. Handles shall be suitably shaped to be grasped securely and have a perimeter *P* between 63 mm and 170 mm as illustrated in Figure 105 a), 105 b) or 105 c). The perimeter *P* is determined by a chain measurement with the **blade control**, if any, fully depressed. The gripping length of the **front handle** and the **rear handle** shall be at least 100 mm long. In addition, for a handle incorporating a **blade control**, there shall be a minimum radial clearance of 25 mm around the **blade control** actuator with the **blade control** not depressed.

Replace the existing text of the first paragraph of 19.101.2.2 with the following new text:

On bail or closed handles (U-shaped handles), the gripping length is related to the inner length of the gripping surface. There shall be a minimum radial clearance of 25 mm around the gripping length. In addition, for a handle incorporating a **blade control**, there shall be a minimum radial clearance of 25 mm around the **blade control** actuator with the **blade control** not depressed.

Add, after the first paragraph of 19.101.2.3, the following new paragraph:

In addition, for a handle incorporating a **blade control**, there shall be a minimum radial clearance of 25 mm around the **blade control** actuator with the **blade control** not depressed.

19.101.3.2 *Replace the first paragraph with the following:*

Any adjustable handle shall have a defined centre position. The handle shall have a locking detent at the centre position and at any other intended handle adjustment position of operation as described in 8.14.2. These other operating positions shall not locate the handle further than 95° from the centre position about their axis of rotation. See Figures 106 and 107. The handle movement, when locked by the detent and subjected to a torque of (2 ± 0,1) Nm, shall be limited to 5° rotation. The handle shall have a handle release control as required in 19.101.3.3 that releases the handle from the detent position.

19.102.2.1 *Replace the existing text with the following:*

The **front handle** shall be located so that the distance from the nearest cutting edge of the **cutter blade** to the furthest side of any handle, except for Category 1, is not less than 120 mm as shown in Figure 108 a) and Figure 108 b).

For Category 1, the shortest distance between the front of the handle grip and the nearest **blade tooth** shall be at least 120 mm (see Figure 111). The distances shall be measured along the shortest path from the front of the handle grip to the nearest cutting edge of the **cutter blade**.

For all categories in Table 101, if there is a front hand barrier, then the x_1 and x_2 distances in Figure 108 a) and Figure 108 b) shall be measured along the shortest path from the furthest side of the handle, via the edge of the front hand barrier, to the nearest cutting edge of the **cutter blade**. The front hand barrier shall not have any openings with a minor dimension larger than 10 mm.

Additionally, for category 3a **hedge trimmers**, the front hand barrier shall have a minimum shape described by:

– a height y_1 of 90 mm measured perpendicularly from the cutting plane; and

– a width y_2 of 50 mm on either side of the centreline of the **cutting device**.

Both the y_1 and y_2 measurements are made with the **cutting device** in the 0˚ position, if axially rotatable. See Figure 109.

Compliance is checked by inspection and by measurement.

19.103.2.4 Hedge trimmer category 4 (see Figure 116)

Add the following new paragraph before the compliance paragraph

Blunt extensions are not required for category 4 **hedge trimmers** with a blade configuration where there are only two handles and the **front handle** is a stick-type handle that is permanently fixed to the smooth side of a single sided **cutting device** (see Figure 104 b)).

19.103.3.4 *Replace the existing text of the first paragraph with the following new text:*

An adjustable **cutting device** shall be provided with a momentary **cutting device** release control to disengage the **cutting device** from a locked position. A handle in accordance with 8.14.2 b) 108) shall be provided for adjusting the position of the **cutting device** such that contact with the **cutting device** is not required. The requirements of 21.30 shall not apply to the **cutting device** adjusting handle.

19.103.3.6 *Replace the existing text of the third paragraph with the following new text:*

*The **cutting device** release control is actuated in accordance with 8.14.2 b) 108) a total of 2 000 times, engaging all locking detent positions over the full range of travel of the adjustable **cutting device**, in both directions.*

19.104.2 *Replace the existing text of the first paragraph with the following new text:*

*The **hedge trimmer** shall be mounted and instrumented in such a manner that the results of the test are not affected.*

20 Mechanical strength

Replace the existing text of the fourth paragraph of 20.3.1 with the following new text:

Each drop shall be conducted on a separate sample, unless a single sample can be subjected to multiple drops without failure. If a sample has been subjected to multiple drops and fails, then the drop in the orientation that resulted in the failure is repeated using a new sample. If the new sample passes the test for the drop in that orientation, then the requirements for the drop in that orientation are considered to be fulfilled. The test is continued in this manner until all drops in each of the four orientations are completed.

20.101.3.3 *Replace the first two dashes with the following:*

– temporarily deflect more than an additional 15 % of the length measured from the point of the **power switch** closest to the **cutter blade** and the nearest cutting edge of the **cutter blade** while a force of 50 N is applied to a part of the **cutter blade** nearest to the **front handle**, with the additional deflection being measured at the point of each applied force;

– permanently be deformed by more than 5 % of the length measured from the point of the **power switch** closest to the **cutter blade** and the nearest cutting edge of the **cutter blade** after removal of the applied force above, with the permanent deformation being measured at the point of each applied force; and

21 Construction

Add the following new subclause:

21.17.1 *Addition:*

This subclause of Part 1 is also applicable for an **operator presence sensor** whose motion is mechanically obstructed and either

– functions as a lock-off device; or

– is locked off by the lock-off device.

Add the following new subclause:

21.17.1.3 *Replacement of Table 7:*

Table 7 – Switch trigger force

Trigger type	Force N
Single finger trigger (trigger length < 30 mm)	100
Multi finger trigger (trigger length ≥ 30 mm)	150
Operator presence sensor	100

21.18.102.3 *Replace the second paragraph with the following:*

Drive to the **cutting device** shall only be enabled when the lock-off device is operated prior to the **blade control**.

Replace the paragraph after the NOTE with the following:

The **hedge trimmer** shall return to the original locked state within 5 s when the **blade control** is released (i.e. at least two separate and dissimilar actions are required before drive to the **cutting device** is possible), unless

– an **operator presence sensor** is provided; and

– the hand is not released from the **operator presence sensor**.

Replace the last two paragraphs with the following:

Additionally, for lock-off devices that are actuated in a direction generally perpendicular to the longitudinal vertical plane of the machine, (see Figure 124), and that are located within any grasping surface of handle(s) or grasping surface(s) identified in accordance with 8.14.2 b) 103), in order to determine if it is possible to actuate the ***blade control*** *and the lock-off device with a single grasping motion or a straight line motion, compliance is checked by the following test:*

With the ***blade control*** *in the "off" position, the lock-off device shall not be actuated by the cylindrical face of a 25 mm diameter × 75 mm long steel rod when applied with a force not exceeding 20 N. The axis of the rod is applied perpendicular to the axis of the handle and is either:*

– *rotated around the handle, see Figure 126; or*

– *applied in the direction perpendicular to the handle axis, see Figure 127,*

while bridging the handle surface and surface of the lock-off device and any surface adjacent to the lock-off device. When applying the steel rod, the circular end faces and edges shall not be used for probing.

During the test, it shall not be possible to actuate the ***blade control*** *by applying a force as specified in Table 7.*

21.30.101 *Replace the last two paragraphs before the compliance paragraph with the following:*

An insulated, stick type, auxiliary handle shall be provided with a flange having a height not less than 12 mm above the handle and covering at least 2/3 of the periphery to provide a barrier to minimize the likelihood of the hand from slipping onto surfaces that are not suitably insulated or isolated.

A grasping surface formed by sections of the **shaft** of an **extended-reach hedge trimmer** shall be provided with a flange at each end to minimize the likelihood of the hand from slipping onto surfaces that are not suitably insulated or isolated. Both flanges shall have a height not less than 6 mm above the grasping surface and shall cover at least 2/3 of the periphery.

The flange nearest to the **rear handle** may be omitted if the **shaft** insulation extends from the **rear handle** to the grasping surface.

The flange nearest to the **cutting device** may be omitted if the **shaft** insulation combined with the grasping surface extends to a location at least 1,2 m from the **blade control** in the **rear handle**.

23 Components

Add, at the end of 23.3, the following new paragraph:

This subclause is not applicable for

– machines fitted with two **blade controls** that require simultaneous actuation; and
– **extended-reach hedge trimmers**.

28 Creepage distances, clearances and distances through insulation

Replace the existing text of Clause 28 with the following new text:

Replacement:

28.1 Creepage distances and **clearances** shall not be less than the values in millimetres shown in Table 12. The values specified in the table do not apply to cross-over points of motor windings.

The values in Table 12 are equal or larger than the values required by IEC 60664-1, when

– an overvoltage category II;
– a material group III;
– a pollution degree 1 for parts protected against deposition of dirt and for lacquered or enamelled windings;
– a pollution degree 3 for other parts;
– inhomogeneous electric field;
– transient overvoltages originating in the equipment not exceeding 4 000 V

are applied.

Protection against deposition of dirt may be achieved through the use of

– encapsulation with a minimum thickness of 0,5 mm; or
– protective coatings that prevent the combined deposition of fine particles and moisture on surfaces between conductors. Requirements for these types of protective coatings are described in IEC 60664-3:2016; or
– enclosures that prevent the ingress of dust by means of filters or seals, provided that no dust is generated within the enclosure itself.

NOTE 1 An example of encapsulation is potting.

If a resonance voltage occurs between the point where a winding and a capacitor are connected together, and metal parts which are separated from **live parts** by **basic insulation** only, the **creepage distance** and **clearance** shall not be less than the values specified for the value of the voltage imposed by the resonance, these values being increased by 4 mm in the case of **reinforced insulation**.

Compliance is checked by measurement.

For machines provided with an appliance inlet, the measurements are made with an appropriate connector inserted. For other machines, they are made on the machine as delivered.

For machines provided with belts, the measurements are made with the belts in place, and the devices intended for varying the belt tension adjusted to the most unfavourable position within their range of adjustment, and also with the belts removed.

Movable parts are placed in the most unfavourable position; nuts and screws with non-circular heads are assumed to be tightened in the most unfavourable position.

*The **clearances** between terminals and accessible metal parts are also measured with the screws or nuts unscrewed as far as possible, but the **clearances** shall then be not less than 50 % of the value shown in Table 12.*

Table 12 – Minimum creepage distances and clearances

Dimensions in millimetres

Distances	Class III tools (machines)		Other machines					
			Working voltage ≤ 130 V		Working voltage > 130 V and ≤ 280 V		Working voltage > 280 V and ≤ 480 V	
	Creepage distance	Clear-ance	Creepage distance	Clear-ance	Creepage distance	Clear-ance	Creepage distance	Clear-ance
Between parts of different potential [a]:								
– if lacquered or enamelled windings or if protected against deposition of dirt	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0
– if not protected against deposition of dirt	2,0 [c]	1,5	2,0 [b]	1,5	3,0 [b]	2,5	8,0 [e]	3,0
Between **live parts** and other metal parts over **basic insulation**:								
– if the **live parts** are lacquered or enamelled windings [d] or if protected against deposition of dirt	–	–	1,0	1,0	2,0	2,0	2,0	2,0
– if not protected against deposition of dirt	–	–	2,4 [c]	1,5	4,0 [c]	3,0	8,0 [e]	3,0
Between **live parts** and other metal parts over **reinforced insulation**:								
– if the **live parts** are lacquered or enamelled windings or protected against deposition of dirt	–	–	5,0	5,0	6,0	6,0	10,0 [e]	6,0
– for other **live parts** not protected against deposition of dirt	–	–	5,0	5,0	8,0	8,0	16,0 [e]	8,0
Between metal parts separated by **supplementary insulation**	–	–	2,5	2,5	4,0	4,0	8,0 [e]	4,0

[a] The **clearances** specified do not apply to the air gap between the contacts of thermal controls, **protective devices**, switches of micro-gap construction, and the like, or to the air gap between the current-carrying members of such devices where the **clearance** varies with the movement of the contacts.

[b] These **creepage distances** are slightly lower than suggested by IEC 60664-1. **Creepage distances** between parts of different potential (functional insulation) are only associated to fire hazard, not to electric shock hazard. As products in the scope of IEC 62841 are products supervised during **normal use**, lower distances are justified.

[c] These **creepage distances** may be reduced to values in accordance with IEC 60664-1, if the insulation parts are of material group II or lower.

[d] Windings are considered to have **basic insulation** if they are wrapped with tape and then impregnated, or if they are covered with a layer of self-hardening resin, and if, after the test of 14.1, an electric strength test as specified in Clause D.2 is withstood, the test voltage being applied between the conductors of the winding and metal foil in contact with the surface of the insulation.

It is sufficient that the wrapping and impregnation, or the layer of self-hardening resin, cover the windings only at places where it is not possible to obtain the **creepage distance** or **clearance** specified for lacquered or enamelled windings.

[e] These **creepage distances** are valid for frequencies up to 30 kHz. For higher frequencies, **creepage distances** shall be in accordance with IEC 60664-4:2005. **Creepage distances** and **clearances** can be reduced in accordance with IEC 60664-1 if the insulation parts are of material group II or lower and/or for **working voltages** ≤400 V, however they shall not be lower than the values required in the column "**Working voltage** > 130 V and ≤ 280 V".