



**SLOVENSKI STANDARD**  
**SIST EN IEC 60034-23:2019**

**01-junij-2019**

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**Električni rotacijski stroji - 23. del: Popravilo, obnova in remont opreme (IEC 60034-23:2019)**

Rotating electrical machines - Part 23: Repair, overhaul and reclamation (IEC 60034-23:2019)

Drehende elektrische Maschinen - Teil 23: Reparatur, Überholung und Sanierung (IEC 60034-23:2019)

Machines électriques tournantes - Partie 23: Réparation, révision et remise en état (IEC 60034-23:2019)

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**Ta slovenski standard je istoveten z: EN IEC 60034-23:2019**

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**ICS:**

29.160.01      Rotacijski stroji na splošno      Rotating machinery in general

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EUROPEAN STANDARD

**EN IEC 60034-23**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2019

ICS 29.160.01

English Version

**Rotating electrical machines - Part 23: Repair, overhaul and  
reclamation  
(IEC 60034-23:2019)**

Machines électriques tournantes - Partie 23: Réparation,  
révision et remise en état  
(IEC 60034-23:2019)

Drehende elektrische Maschinen - Teil 23: Reparatur,  
Überholung und Sanierung  
(IEC 60034-23:2019)

This European Standard was approved by CENELEC on 2019-02-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN IEC 60034-23:2019 (E)****European foreword**

The text of document 2/1923/FDIS, future edition 1 of IEC 60034-23, prepared by IEC/TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60034-23:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-11-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-02-28

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**Endorsement notice**

The text of the International Standard IEC 60034-23:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

<u>SIST EN IEC 60034-23:2019</u>		
IEC 60034-2-1	NOTE	Harmonized as EN 60034-2-1
IEC 60034-2-2	NOTE	Harmonized as EN 60034-2-2
IEC 60034-3	NOTE	Harmonized as EN 60034-3
IEC 60034-4-1	NOTE	Harmonized as EN IEC 60034-4-1
IEC 60034-5	NOTE	Harmonized as EN 60034-5
IEC 60034-7	NOTE	Harmonized as EN 60034-7
IEC 60034-8	NOTE	Harmonized as EN 60034-8
IEC 60034-9	NOTE	Harmonized as EN 60034-9
IEC 60034-12	NOTE	Harmonized as EN 60034-12
IEC 60034-14	NOTE	Harmonized as EN IEC 60034-14
IEC 60034-15	NOTE	Harmonized as EN 60034-15
IEC 60034-16-1	NOTE	Harmonized as EN 60034-16-1
IEC 60034-18-1	NOTE	Harmonized as EN 60034-18-1
IEC 60034-18-21	NOTE	Harmonized as EN 60034-18-21
IEC 60034-18-22	NOTE	Harmonized as EN 60034-18-22
IEC 60034-18-31	NOTE	Harmonized as EN 60034-18-31

IEC 60034-18-32	NOTE	Harmonized as EN 60034-18-32
IEC 60034-18-34	NOTE	Harmonized as EN 60034-18-34
IEC 60034-18-41	NOTE	Harmonized as EN 60034-18-41
IEC 60034-18-42	NOTE	Harmonized as EN 60034-18-42
IEC 60034-19	NOTE	Harmonized as EN 60034-19
IEC 60034-27-1	NOTE	Harmonized as EN IEC 60034-27-1
IEC 60034-27-3	NOTE	Harmonized as EN 60034-27-3
IEC 60034-27-4	NOTE	Harmonized as EN IEC 60034-27-4
IEC 60349-1	NOTE	Harmonized as EN 60349-1
ISO 4287	NOTE	Harmonized as EN ISO 4287
ISO 4526	NOTE	Harmonized as EN ISO 4526
ISO 6158	NOTE	Harmonized as EN ISO 6158
ISO 9001	NOTE	Harmonized as EN ISO 9001

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60034		series Rotating electrical machines	EN IEC 60034	series
IEC 60034-1	-	Rotating electrical machines - Part 1: Rating and performance	-	-
IEC 60034-6	-	Rotating electrical machines - Part 6: Methods of cooling (IC Code)	EN 60034-6	-
IEC 60034-11	-	Rotating electrical machines - Part 11: Thermal protection	EN 60034-11	-
IEC 60034-30-1	-	Rotating electrical machines - Part 30-1: Efficiency classes of line operated AC motors (IE code)	EN 60034-30-1	-
IEC/TS 60034-30-2	-	Rotating electrical machines - Part 30-2: Efficiency classes of variable speed AC motors (IE-code)	-	-
IEC 60050-411	1996	International Electrotechnical Vocabulary - Chapter 411: Rotating machinery	-	-
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60072-2	-	Dimensions and output series for rotating electrical machines - Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2360	-	-
IEC 60079-19	-	Explosive atmospheres - Part 19: Equipment repair, overhaul and reclamation	EN 60079-19	-
IEC 60136	1986	Dimensions of brushes and brush-holders for electrical machinery	-	-
ISO 21940-11	-	Mechanical vibration - Rotor balancing - Part 11: Procedures and tolerances for rotors with rigid behaviour	-	-



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Rotating electrical machines –  
Part 23: Repair, overhaul and reclamation**

**Machines électriques tournantes –  
Partie 23: Réparation, révision et remise en état**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	6
1 Scope.....	8
2 Normative references .....	8
3 Terms and definitions .....	9
4 General principles .....	10
4.1 Use of referenced documents .....	10
4.2 Hazardous areas.....	10
4.3 Special applications .....	11
4.4 Efficiency.....	11
4.5 System efficiencies .....	11
4.6 Environment and End of life recycling .....	11
4.7 Circular economy .....	12
5 General requirements for repair .....	12
5.1 General.....	12
5.2 Service facility .....	13
5.3 Scope of work .....	13
5.4 Standards .....	14
5.5 Quality program .....	14
5.6 User supplied information .....	15
5.6.1 User transfer document .....	15
5.6.2 Operating environment .....	15
5.6.3 Converter/inverter operation .....	15
5.6.4 Health and safety .....	15
5.7 Documentation.....	15
5.7.1 Records.....	15
5.7.2 Labels and rating plates.....	16
6 Assembled machine: inspection, tests and evaluation.....	16
6.1 Visual inspection.....	16
6.2 Tests before dismantling .....	17
6.2.1 Safety.....	17
6.2.2 Application.....	17
6.3 Stator winding or rotor winding tests .....	17
6.3.1 Winding resistance test.....	17
6.3.2 Phase balance test .....	17
6.3.3 Insulation resistance test .....	17
6.3.4 Polarization index test .....	18
6.3.5 No load test .....	19
6.4 Shaft and bearings.....	19
6.4.1 Shaft checks.....	19
6.4.2 Bearing checks .....	19
6.4.3 Bearing insulation resistance .....	19
6.5 Rotor cage integrity.....	20
6.5.1 General .....	20
6.5.2 Current signature analysis (harmonic analysis).....	20
6.5.3 Single-phase test method .....	20
6.5.4 Pole drop test – Salient pole rotor (motor or generator) .....	20



7	Dismantled machine: inspection, tests, and evaluation .....	20
7.1	General.....	20
7.2	Cleaning .....	20
7.3	Visual inspection.....	21
7.4	Air gap.....	21
7.5	Ventilation.....	21
7.6	Stator.....	21
7.7	Rotor .....	22
7.7.1	General .....	22
7.7.2	Rotor removal: vertical machines .....	22
7.7.3	Cage rotor .....	22
7.7.4	Cylindrical wound rotor windings.....	23
7.7.5	Permanent magnet (PM) machines: rotor removal .....	23
7.7.6	Salient pole rotor .....	23
7.7.7	Cylindrical solid rotors .....	23
7.8	Slip rings .....	24
7.9	Brushes and brush-holders .....	24
7.10	Rolling element bearings.....	24
7.11	Sleeve bearings .....	25
7.12	Seals and labyrinth seals .....	25
8	Repair work .....	25
8.1	Winding inspection.....	25
8.2	Core inspection.....	26
8.3	Rewinding .....	26
8.3.1	General.....	26
8.3.2	Random wound coils.....	27
8.3.3	Form-wound coils .....	27
8.3.4	Rewound stator tests .....	28
8.3.5	Winding resistance test.....	28
8.3.6	Surge comparison (or phase balance) test.....	28
8.3.7	Withstand voltage test .....	28
8.3.8	Thermal protection.....	30
8.3.9	Conductors and connections.....	30
8.3.10	Insulation system.....	30
8.3.11	Impregnation .....	30
8.3.12	Wound rotor banding .....	31
8.4	Components .....	31
8.4.1	General .....	31
8.4.2	Housing and end brackets .....	31
8.4.3	Fans and fan cowls.....	32
8.5	Rotor .....	32
8.5.1	General .....	32
8.5.2	Air gap.....	32
8.5.3	Cage rotor .....	32
8.5.4	Salient pole rotor .....	33
8.5.5	Slip-rings .....	33
8.5.6	Capacitors .....	33
8.5.7	Switches and starting components.....	33
8.5.8	Excitation components.....	33

8.6	Shafts .....	33
8.7	Bearings .....	34
8.8	Lubrication .....	34
8.8.1	Grease .....	34
8.8.2	Oil .....	35
8.9	Space heaters.....	35
8.10	Temperature sensors .....	35
8.11	Ingress and corrosion protection .....	35
8.12	Terminal boxes and connections .....	35
9	Final tests.....	35
9.1	Test equipment.....	35
9.2	Insulation resistance .....	36
9.3	Winding resistance.....	36
9.4	No load test .....	36
9.5	Magnetic centre marking (by agreement) .....	37
9.6	Locked rotor test (where applicable) .....	37
9.7	Full load run for motors .....	37
9.8	Zero power factor full current heat run (by agreement).....	37
9.9	Electromagnetic compatibility (by agreement).....	37
9.10	Auxiliaries .....	37
9.11	Salient pole DC or AC drop test .....	37
10	Additional requirements for DC machines .....	37
10.1	General.....	37
10.2	Assembled DC machine: inspection, tests and evaluation .....	37
10.2.1	General.....	37
10.2.2	No load test, or light load run.....	38
10.2.3	Bar to bar test.....	38
10.2.4	Surge test.....	38
10.3	Dismantled condition: inspection, tests and evaluation.....	38
10.3.1	Field winding .....	38
10.3.2	Inter-pole and compensation winding.....	38
10.3.3	Armature winding.....	38
10.3.4	Commutator.....	39
10.4	Repair work .....	39
10.4.1	Commutator dimensions .....	39
10.4.2	Brush-holders .....	39
10.4.3	Brushes .....	40
10.4.4	Brush neutral.....	40
10.4.5	Field, inter-pole, and compensation windings.....	41
10.4.6	Air gap.....	41
10.4.7	Rotor run-outs .....	41
10.4.8	Rotor balance .....	41
10.5	DC machines final tests .....	42
10.5.1	Brush holders .....	42
10.5.2	No load test or light load test .....	42
11	Additional requirements for high voltage AC machines (by agreement).....	42
11.1	Assembled HV machine, inspection and tests .....	42
11.1.1	General .....	42
11.1.2	The tan-delta (tip-up test in North America) .....	42

11.1.3	Partial discharge test .....	42
11.2	Dismantled HV machine , inspection and tests .....	42
11.2.1	Dielectric dissipation factor test .....	42
11.2.2	Dielectric dissipation factor tests of stator winding coils and bars .....	42
11.2.3	Stator slot wedge deterioration .....	42
11.2.4	Stator winding slot and overhangs discharge suppression .....	42
11.3	High voltage machines: final tests .....	43
11.3.1	High voltage withstand test: for HV machines .....	43
11.3.2	Withstand voltage tests, for overhauls and partial rewinds (by agreement) .....	43
11.3.3	Over-speed test (by agreement) .....	43
11.3.4	Short circuit run (by agreement) .....	43
11.3.5	Remnant voltage (by agreement) .....	43
11.3.6	Cooling circuit leakage tests (by agreement) .....	43
12	Additional tests for high voltage generators .....	44
12.1	Stator winding crevice corrosion .....	44
12.2	Solid cylindrical rotor .....	44
12.3	Cooling circuits (hydrogen/water) .....	44
13	Customer reports and handover .....	44
13.1	Exterior finish .....	44
13.2	Transport and packaging .....	44
13.3	Report to the user .....	44
Annex A (informative)	Flow chart for repair, overhaul and reclamation .....	45
Annex B (informative)	Standard extracts and tolerance tables .....	46
Bibliography	<a href="https://standards.iteh.ai/catalog/standards/sist/c6f96653-15a0-40a9-b4bf-0b05c1ce0c82/sist-en-iec-60034-23-2019">https://standards.iteh.ai/catalog/standards/sist/c6f96653-15a0-40a9-b4bf-0b05c1ce0c82/sist-en-iec-60034-23-2019</a> .....	49
Figure 1	– Electrical machine components .....	13
Table 1	– Recommended minimum insulation resistance values at a base temperature of 40 °C reference IEC 60034-27-4 .....	18
Table 2	– Guide to application of DC voltages for the insulation resistance and PI test .....	19
Table 3	– Withstand voltage tests as per IEC 60034-1 .....	28
Table 4	– Minimum schedule of routine tests as per IEC 60034-1 .....	36
Table 5	– Brush to brush holder clearance (Extract from Table 1 of IEC 60136:1986) .....	40
Table B.1	– Shaft extensions and couplings reference IEC 60072-1 .....	46
Table B.2	– Dimensions for the width of keyway to take keys to a tap fit (IEC 60072-1:1991, C.1.5) .....	46
Table B.3	– Table of tolerances for shaft extension run-out .....	47
Table B.4	– Table for mounting spigot diameter tolerances (IEC 60072-1:1991, C.1.7) .....	48
Table B.5	– Table for concentricity of spigot diameter and perpendicularity of mounting face to shaft extension (IEC 60072-1:1991, C.7.1) .....	48

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**ROTATING ELECTRICAL MACHINES –  
Part 23: Repair, overhaul and reclamation****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60034-23 has been prepared by IEC technical committee 2: Rotating machinery.

This first edition cancels and replaces IEC TS 60034-23 published in 2003. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- the title of the standard has been changed to *Rotating electrical machines – Part 23: Repair, overhaul and reclamation*;
- Clause 1 Scope
  - Hydrogen cooled turbine generators added to special applications,
  - maintaining or improving the rated energy efficiency added
  - ensuring environmental considerations are taken into account added;

- Clause 4 General Principles added to cover: hazardous areas, traction motors, machine efficiency, environment, end of life recycling. and circular economy considerations;
- Clause 5 General: Scope of work, health and safety, standards, quality, information required and documentation now covered;
- Original Annexes B and C incorporated into the standard;
- Clause 9 Final tests updated;
- Clause 10 Additional requirements for the repair and testing of DC machines added;
- Clause 11 Additional requirements for the repair and testing of High Voltage AC machines added;
- Clause 12 Customer reports and handover added;
- New Annex B standard tolerances added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
2/1923/FDIS	2/1924/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60034 series, published under the general title *Rotating electrical machines*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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.

# ROTATING ELECTRICAL MACHINES –

## Part 23: Repair, overhaul and reclamation

### 1 Scope

This part of IEC 60034 covers the procedures necessary to ensure the satisfactory repair, overhaul, and reclamation of all types and sizes of rotating electrical machines covered by the IEC 60034 series. The standard creates a generic industry procedure covering common aspects of a complete repair. The scope of work depends on the machine type, rating, condition, and the importance of plant reliability and safety. It includes

- determining cause of failure, where necessary;
- determining the extent of repair, as applicable;
- defining revised performance, operating and ambient conditions, if required;
- reviewing the original design, and upgrading the specification of the design, if required;
- proving the quality and performance of the repaired machine, maintaining or improving the rated energy efficiency;
- ensuring environmental considerations are taken into account.

This document does not supersede the requirements prescribed in IEC 60079-19 or elsewhere concerning the repair and overhaul for machines used in explosive atmospheres.

Machines for special applications such as hermetic, submersible, nuclear, hydrogen cooled machines, military, aviation and traction motors might have additional requirements, which are the subject of agreement between the service facility and user.

This document is not intended to take the place of the original machine manufacturer's instructions and recommendations.

Re-designs and performance changes requiring machine designer input are beyond the scope of this document.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60034 (all parts), *Rotating electrical machines*

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-6, *Rotating electrical machines – Part 6: Methods of cooling (IC Code)*

IEC 60034-11, *Rotating electrical machines – Part 11: Thermal protection*

IEC 60034-30-1, *Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE code)*

IEC TS 60034-30-2, *Rotating electrical machines – Part 30-2: Efficiency classes of variable speed AC motors (IE-code)*

IEC 60050-411:1996, *International Electrotechnical Vocabulary – Chapter 411: Rotating machines*

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60072-2, *Dimensions and output series for rotating electrical machines – Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2360*

IEC 60079-19, *Explosive atmospheres – Part 19: Equipment repair, overhaul, and reclamation*

IEC 60136:1986, *Dimensions of brushes and brush-holders for electrical machinery*

ISO 21940-11, *Mechanical vibration – Rotor balancing – Part 11: Procedures and tolerances for rotors with rigid behaviour*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60034 (all parts) and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at [http://www.iso.org/obp](http://www.iso.org/obp/ui/#iso:code:37100:9-b4bf-0b05c1ce0c82/sist-en-iec-60034-23-2019)

#### 3.1

##### **customer**

person or company, who places the order for a repair with the service facility and may or may not be the owner or user of the machine

#### 3.2

##### **dismantling**

disassembly of a machine into component parts or sub-assemblies

#### 3.3

##### **maintenance**

routine actions taken to preserve the installed equipment in a fully serviceable condition

#### 3.4

##### **manufacturer**

party responsible for the manufacture of the machine as originally supplied

#### 3.5

##### **overhaul**

action to restore to fully serviceable condition equipment which has been in use or in storage for a period of time but which is not faulty

#### 3.6

##### **reclamation**

means of repair involving the removal or addition of material to reclaim component parts which have sustained damage, in order to restore such parts to a serviceable condition in accordance with the original standards and specifications