

Reciprocating internal combustion engine driven alternating current generating sets —

Part 4: Controlgear and switchgear

ICS 27.020; 29.160.40

National foreword

This British Standard reproduces verbatim ISO 8528-4:2005 and implements it as the UK national standard. It supersedes BS 7698-4:1993 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee MCE/14, RIC engines, to Subcommittee MCE/14/-/8, RIC engines — generating sets, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to iv, pages 1 to 18, an inside back cover and a back cover.

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 3 February 2006

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ISBN 0 580 47771 8

Amendments issued since publication

Amd. No.	Date	Comments

INTERNATIONAL STANDARD

ISO
8528-4

Second edition
2005-06-01

Reciprocating internal combustion engine driven alternating current generating sets —

Part 4: Controlgear and switchgear

*Groupes électrogènes à courant alternatif entraînés par moteurs
alternatifs à combustion interne —*

Partie 4: Appareillage de commande et de coupure



Reference number
ISO 8528-4:2005(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 8528-4 was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*.

This second edition cancels and replaces the first edition (ISO 8528-4:1993), which has been technically revised.

ISO 8528 consists of the following parts, under the general title *Reciprocating internal combustion engine driven alternating current generating sets*:

- *Part 1: Application, ratings and performance*
- *Part 2: Engines*
- *Part 3: Alternating current generators for generating sets*
- *Part 4: Controlgear and switchgear*
- *Part 5: Generating sets*
- *Part 6: Test methods*
- *Part 7: Technical declarations for specification and design*
- *Part 8: Requirements and tests for low-power generating sets*
- *Part 9: Measurement and evaluation of mechanical vibrations*
- *Part 10: Measurement of airborne noise by the enveloping surface method*
- *Part 11: Rotary uninterruptible power systems — Performance requirements and test methods¹⁾*
- *Part 12: Emergency power supplies to safety services*

1) Part 11 will be published as ISO/IEC 88528-11.

Reciprocating internal combustion engine driven alternating current generating sets —

Part 4: Controlgear and switchgear

1 Scope

This part of ISO 8528 specifies the criteria for controlgear and switchgear for generating sets with reciprocating internal combustion engines.

It applies to Alternating Current (a.c.) generating sets driven by Reciprocating Internal Combustion (RIC) engines for land and marine use excluding generating sets used on aircraft or to propel land vehicles and locomotives.

For some specific applications (e.g. essential hospital supplies and high-rise buildings), supplementary requirements may be necessary. The provisions of this part of ISO 8528 should be regarded as a basis for establishing any supplementary requirements.

For generating sets driven by other prime movers (e.g. steam engines), this part of ISO 8528 should be regarded as a basis for establishing these requirements.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 6826, *Reciprocating internal combustion engines — Fire protection*

ISO 8528-1²⁾, *Reciprocating internal combustion engine driven alternating current generating sets — Part 1: Application, ratings and performance*

ISO 8528-5²⁾, *Reciprocating internal combustion engine driven alternating current generating sets — Part 5: Generating sets*

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

IEC 62271-200, *A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 60439-1, *Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies*

IEC 60947-1, *Low-voltage switchgear and controlgear — Part 1: General rules*

2) ISO 8528-1 and ISO 8528-5 are under revision.

3 Other regulations and additional requirements

For a.c. generating sets used on board ships and offshore installations which have to comply with rules of a classification society, the additional requirements of the classification society shall be observed. The classification society shall be stated by the customer prior to placing the order.

For a.c. generating sets operating in non-classified equipment, any additional requirements are subject to agreement between the manufacturer and customer.

If special requirements from any other regulatory authority (e.g. inspecting and/or legislative authorities) have to be met, the authority name shall be stated by the customer prior to placing the order.

Any additional requirements shall be subject to agreement between the manufacturer and customer.

4 General equipment requirements

4.1 Mounting

Switchgear, controlgear and monitoring equipment may be mounted on or off the generator set and in one or more cubicles.

4.2 Construction

The equipment shall be constructed in accordance with the following requirements:

- a) for rated voltages up to 1 kV, IEC 60439-1 applies;
- b) for rated voltages from 1 kV to 52 kV, IEC 62271-200 applies.

4.3 Operating voltage

The definition of operating voltage is given in IEC 60439-1 and IEC 62271-200.

4.4 Rated frequency

The operational frequency of the switchgear and controlgear shall be the same as the rated frequency of the generating set.

The frequency shall lie within the limits specified in the relevant IEC standards for the incorporated components. Unless otherwise stated, the acceptable operating limit values shall be assumed to comply with the requirements of Clause 16 of ISO 8528-5.

4.5 Rated current

The rated current of the switchgear assembly shall be stated, taking into account the ratings of all components of electrical equipment in the main circuit within the assembly, their disposition and application.

This current shall be carried without the temperature rise of any of its parts exceeding the limits specified in IEC 60439-1 and IEC 62271-200.

If the switchgear assembly consists of multiple main circuits, derating shall be carried out, taking into account the maximum sum of the actual currents at any one time.

The voltage variations during operation of the generator shall be taken into account when determining the rated current of the equipment (see 12.3 of IEC 60034-1).