Rotative axis safety limit switches
Technical data
Specifications, directives, standards & EC conformity

Definitions
The ABB limit switches listed in this catalogue are developed and manufactured according to the rules set out in IEC international publications and EN European standards. In most countries, the devices are not subject to further obligation for approval. In some countries, however, the law stipulates obligation for approval.

Specifications
- **International Specifications**
  The International Electrotechnical Commission, IEC, which is part of the International Standards Organization, ISO, publishes IEC publications which act as a basis for the world market.
- **European Specifications**
  The European Committee for Electrotechnical Standardization (CENELEC), grouping 18 European countries, publishes EN standards for low voltage industrial apparatus. These European standards vary very little from IEC international standards and use a similar numbering system. The same is true of national standards. Contradicting national standards are withdrawn.
- **Harmonized European Specifications**
  The European Committees for Standardization (CEN and CENELEC), grouping 18 European countries, publish EN standards relating to safety of machinery.
- **Specifications in Canada and the USA**
  These are equivalent, but differ markedly from IEC, UTE, VDE and BS specifications.
  UL Underwriters Laboratories (USA)
  CSA Canadian Standards Association (Canada)

Remark concerning the label issued by the UL (USA). Two levels of acceptance between devices must be distinguished:

"Recognized"	Authorized to be included in equipment, if the equipment in question has been entirely mounted and wired by qualified personnel. They are not valid for use as "General purpose products" as their possibilities are limited. They bear the mark: .
"Listed"	Authorized to be included in equipment and for separate sale as "General purpose products" components in the USA. They bear the mark: .

European Directives
The guarantee of free movement of goods within the European Community assumes elimination of any regulatory differences between the member states. European Directives set up common rules that are included in the legislation of each state while contradictory regulations are cancelled.
There are three main directives:
- **Low Voltage Directive 73/23/EEC**, amended by Directive 93/68/EEC concerning electrical equipment from 50 to 1000 V a.c. and from 75 to 1500 VDC. This specifies that compliance with the requirements that it sets out is acquired once the equipment conforms to the standards harmonized at European level: EN 60947-1 and EN 60947-5-1 for limit switches.
- **Machines Directives - 89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC** - defining main safety and health requirements concerning design and manufacture of the machines and other equipment including safety components in European Union countries.
- **Electromagnetic Compatibility Directive 89/336/EEC**, amended by Directive 92/31/EEC and Directive 93/68/EEC concerning all electrical devices likely to create electromagnetic disturbances.

Signification of CE marking:
CE marking must not be confused with a quality label.
CE marking placed on a product is proof of conformity with the European Directives concerning the product.
CE marking is part of an administrative procedure and guarantees free movement of the product within the European Community.

Standards
- **International standards**

IEC 60947-1	Low-voltage switchgear and controlgear – Part 1: General Rules (NFC 63-001).
IEC 60947-5-1	Low-voltage switchgear and controlgear – Part 5: Control circuit devices and switching elements – Section 1: Electromechanical control circuit devices (NFC 63-146) – Chapter 3: Special requirements for control switches with positive opening operation.
IEC 60204-1	Electrical equipment of industrial machines – Part 1: General requirements (≈ NFC 79-130).
IEC 60204-2	Electrical equipment of industrial machines – Part 2: Item designation and examples of drawings, diagrams, tables and instructions (Appendices D and E of Publications IEC 60204-1).

- **European Standards**

EN 50005	Low-voltage switchgear and controlgear for industrial use – Terminal marking and distinctive number: General rules (NFC 63-030).
EN 50013	Low-voltage switchgear and controlgear for industrial use – Terminal marking and distinctive number for particular control switches (NFC 63-033).
EN 50041	Low-voltage switchgear and controlgear for industrial use – Control switches – Position switches 42.5 x 80 – Dimensions and characteristics.
EN 50047	Low-voltage switchgear and controlgear for industrial use – Control switches – Position switches 30 x 55 – Dimensions and characteristics.
EN 60947-1	Low-voltage switchgear and controlgear for industrial use – Part 1: General rules (NFC 63-001).
EN 60947-5-1	Low-voltage switchgear and controlgear for industrial use – Part 5: Control circuit devices and switching elements – Section 1: Electromechanical control circuit devices (NFC 63-146) – Chapter 3: Special requirements for control switches with positive opening operation.

- **Harmonized European Standards**
  These standards are common to all European Union and EFTA (European Free Trade Association) countries. They were prepared (prEN project) and written (EN final text) by the European standardization committees CEN or CENELEC.
  Harmonized European standards were drawn up to allow definition of the rules and technical means to be used to satisfy the main safety requirements on machines and thus guarantee conformity with the Machines Directive.
  Compliance with a harmonized European standard is presumption of conformity with the relevant Directive.
  European standards relating to machine safety are divided into groups (A, B and C types).

Type A standards:	basic standards: setting out design principles and the general aspects valid for all machine types.
EN 292-1	Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology.
EN 292-2 and EN 292-2/A1	Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications.
EN 1050	Safety of machinery – Principles for risk assessment.
Type B standards:	group standards:
B1: dealing with specific safety aspects.	
EN 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements.
EN 954-1	Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design.
B2: dealing with components and devices determining safety.	
EN 1088	Safety of machinery – Interlocking devices associated with guards – Principles for design and selection.
Type C standards:	specific standards or standards per machine family giving detailed safety specifications applicable to a machine or to a group of machines.
EN 81-1	Safety rules for the construction and installations of lifts – Part 1: Electric lifts.

Content of the "EC" Declaration of Conformity for Safety Components
The "EC" Declaration of Conformity is intended to certify that the safety component complies with the main safety and health requirements of Machines Directive 89/392/EEC.
It must contain the following information:
– the name and address of the manufacturer or his representative established in the European Community,
– the description of the safety component (brand, type, serial number, etc.),
– the safety function performed by the safety component if this is not obvious from the description,
– when needed, the name and address of the notified organisation and the number of the type "CE" certificate,
– when needed, the name and address of the notified organisation to which the file has been sent as per article 8, paragraph 2, point c), first hyphen,
– when needed, the name and address of the notified organisation who performed the check referred to in article 8, paragraph 2, point c), second hyphen,
– when needed, the reference to the harmonized standards,
– when needed, the national technical standards and specifications used,
– identification of the signatory authorized to hire the manufacturer or his representative established in the European Community.