



FEDERATION EUROPEENNE DE LA MANUTENTION
Section IX
SERIES LIFTING EQUIPMENT

FEM
9.752

**Series hoists mechanisms with
adjustable speed electrical power
drive systems – Low voltage adjustable frequency
AC power drive systems**

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Introduction

This document has been compiled along the same lines as EN 414 in order to fulfil the essential requirements of safety document representing a means for achieving agreement with the essential health and safety requirements of Directive 98/37/EEC amended by 98/79/EC.

Within the scope of this document, it is stated which hazards are covered. For hazards not covered by this document, the low voltage adjustable frequency AC power drive systems, where applicable, shall comply with EN 292 Part 1 and Part 2.

1 Scope

This document applies to power driven hoists with or without trolleys powered by low voltage adjustable frequency AC power drive systems (referred as AFDs later in the text). They are designed for lifting and lowering of loads.

This document covers the specific hazards given in clause 4 and establishes the safety requirements for constructing and equipping series hoists mechanisms with AFDs.

The basic safety requirements for constructing and equipping power driven series hoist mechanisms are defined in FEM 9.751.

Basic requirements and recommendations relating to the electrical equipment of hoisting machines are given in EN 60204-32 and prEN 13135-1:1998.

Basic requirements for specifying and dimensioning of AFDs are given in IEC 61800-2.

The topics covered in this document include

- safety aspects,
- functional aspects,
- and device selection guidance.

This document does not cover power driven hoists with DC power drive systems.

This document does not apply to series hoists mechanisms intended for lifting of persons.

WARNING Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this document.

2 Normative References

This FEM Document incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this Document only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 954-2: 2000	Safety of machinery – Safety related parts of control systems – Part 2: Validation
prEN 13135-1: 1998	Cranes – Equipment – Part 1: Electrotechnical equipment
prEN 13135-2: 2000	Cranes – Equipment – Part 2: Non-Electrotechnical equipment
EN 292: 1991	Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology Part 2: Technical principles
EN 414: 2000	Safety of machinery – Rules for the drafting and presentation of safety standards
EN 954-1: 1996	Safety of machinery – Safety related parts of control systems – Part 1: General principles for design
EN 1050: 1996	Safety of machinery – Principles for risk assessment
EN 1070: 1998	Safety of machinery – Terminology; Trilingual version
EN 12077-2: 1998	Cranes safety – Requirements for health and safety – Part 2: Limiting and indicating devices
EN 50081-2: 1994	Electromagnetic compatibility – Generic emission standard – Part 2: Industrial environment
EN 50082-2: 1996	Electromagnetic compatibility – Generic immunity standard – Part 2: Industrial environment (EN 61000-6-2)
EN 60204-32: 1998	Safety of machinery – Electrical equipment of machines – Part 32: Requirements for hoisting machines (IEC 60204-32: 1998)
IEC 60364-3: 2000	Electrical installations of buildings – Part 3: Assessment of general characteristics
IEC 61800-2: 1995	Adjustable speed electrical power drive systems – Part 2: General requirements – Rating specifications for low voltage adjustable frequency AC power drive systems
IEC 61800-3: 2002	Adjustable speed electrical power drive systems – Part 3: EMC product standard including specific test methods
IEC 61800-5-1: 2003 ¹⁾	Adjustable speed electric drive systems- Part 5-1: Safety Requirements; Electrical, thermal and energy (current version IEC/22G/64/CD)
FEM 1.001: 1998	Rules for the Design of Hoisting Appliances (3 rd edition) – Booklet 5: Electrical Equipment
FEM 9.751: 1998	Series Lifting Equipment – Power driven series hoist mechanisms – Safety
FEM 9.683: 1995	Series Lifting Equipment – Selection of lifting and travel motors

¹⁾ indicates that this a preliminary document