
Tlačna oprema - 6. del: Oblika in vsebina navodil za obratovanje

Pressure equipment - Part 6: Structure and content of operating instructions

Druckgeräte - Teil 6: Aufbau und Inhalt einer Betriebsanleitung

Equipements sous pression - Partie 6 : Structure et contenu des instructions de service

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23.020.30	Tlačne posode, plinske jeklenke	Pressure vessels, gas cylinders
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Pressure equipment - Part 6: Structure and content of operating instructions

Equipements sous pression - Partie 6 : Structure et contenu des instructions de service

Druckgeräte - Teil 6: Aufbau und Inhalt einer Betriebsanleitung

This Technical Specification (CEN/TS) was approved by CEN on 30 April 2004 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This document (CEN/TS 764-6:2004) has been prepared by the Technical Committee CEN/TC 54 "Unfired pressure vessels", the secretariat of which is held by BSI.

This document EN 764 "Pressure equipment" consists of seven parts which are:

- Part 1: Terminology — Pressure, temperature, volume, nominal size
- Part 2: Terminology — Quantities, symbols and units
- Part 3: Terminology — Definition of parties involved
- Part 4: Establishment of technical delivery conditions for metallic materials
- Part 5: Inspection documentation of metallic materials and compliance with the material specification
- TS Part 6: Structure and content of operating instructions
- Part 7: Safety systems for unfired pressure equipment

It is intended that CEN/TC 54 amends this document as a Type 1 European Standard EN 764 Part 6 in a Joint Working Group together with CEN/TC 267 "Industrial piping and pipelines" and CEN/TC 269 "Shell and water tube boilers" (Resolution CEN/TC 54 no. 2003/427).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CEN/TS 764-6:2004 (E)**1 Scope**

This part six of this document identifies the requirements for operating instructions which accompany the pressure equipment when it is placed on the market. Operating instructions shall contain the necessary safety information covering installation including assembling, putting into service and maintenance.

2 General

The manufacturer shall identify and analyse all known and foreseeable hazards in the intended use and clearly foreseeable misuse which could occur in mounting, putting into service, use, maintenance and in service inspections by the user of the pressure equipment.

The possible hazards which could not be eliminated in the design of the product or by secondary safety devices are treated in Clause 3 of this document. These are residual hazards which can occur when a vessel is installed and used or operated under foreseeable conditions. Where appropriate, residual hazards shall be covered under the operating instructions given by the manufacturer.

Operating instructions shall cover information marked on the pressure equipment and where appropriate, be supported by technical documents, drawings and diagrams for a full understanding of these operating instructions.

3 Hazard analysis**3.1 General**

The hazard analysis shall enable the manufacturer to identify and to determine the potential modes of failure due to loading of pressure equipment which could occur when this equipment is installed and used in reasonable foreseeable conditions.

Given below in 3.2 and 3.3 are hazards or combinations of hazards which need to be considered for operating instructions. This list is not intended to be fully comprehensive but illustrative of the scope of information which needs to be taken into account.

3.2 Possible hazards for all pressure equipment and assemblies

Hazardous situations during operations are:

- a) exceeding of internal or external maximum allowable pressure;
- b) exceeding of maximum or minimum allowable temperature or temperature gradients;
- c) exceeding of features of design relevant to the life of equipment covering creep, fatigue and corrosion;
- d) hazards by static pressure and mass contents in operating and test conditions;
- e) exceeding of traffic-, wind-, snow-, earthquake- and dynamic-loading;
- f) exceeding of reaction forces and moments which result from supports, attachments, piping etc.;
- g) decomposition of unstable fluids;
- h) instability aspects;
- i) incorrect handling of closures and openings;

- j) dangerous discharge of pressure relief blow-off;
- k) incorrect handling of devices to prevent physical access whilst pressure or a vacuum exists;
- l) surface temperature taking into consideration the intended use;
- m) incorrect handling of unstable fluids resulting in decomposition;
- n) incorrect draining and venting with the following possible consequences:
 - 1) water hammer, vacuum collapse, corrosion and chemical reactions;
 - 2) inhibition of safe cleaning, inspection and maintenance in a safe manner;
- o) failing of protection against corrosion or inadequate allowance of chemical attack of the materials;
- p) excess wear;
- q) incorrect assembly of components;
- r) incorrect filling and discharge, e.g.:
 - 1) overfilling or overpressurisation;
 - 2) instability of the pressure equipment;
 - 3) uncontrolled release of the pressurised fluid;
 - 4) unsafe connection and disconnection;
- s) inadequate failure of safety accessories, pressure limiting- and temperature monitoring devices, e.g. with regard to:
 - 1) reliability for the intended duty;
 - 2) maintenance and test requirements;
 - 3) independence from functions;
- t) inadequate failure of provisions for external fire.

Potential for clearly foreseeable misuse which can not be eliminated by design shall be clearly identified by a visible warning and shall be described in the operating instructions.

3.3 Possible hazards for specific pressure equipment and assemblies

3.3.1 Fired or otherwise treated pressure equipment and assemblies

A failure of protection against significant loss of containment from overheating covers, but is not limited to:

- a) lack of operating parameters for heat input, heat take-off and where appropriate fluid level;
- b) defective sampling points to allow evaluation of fluid properties to avoid risk related to deposits and for corrosion;
- c) failure of provisions to eliminate risks of damage from deposits and the safe removal of residual heat after shut-down;
- d) failure of provisions to prevent a dangerous accumulation of ignitable mixtures of combustible substances and air or flame blow back.

CEN/TS 764-6:2004 (E)

3.3.2 Piping

NOTE Any reference to piping has been withdrawn from this TS 764-6:200X. CEN/TC 54 intends to amend this document as a Type 1 European Standard EN 764 Part 6 in a Joint Working Group together with CEN/TC 267 "Industrial piping and pipelines" and CEN/TC 269 "Shell and water tube boilers" (Resolution CEN/TC 54 no. 2003/427).

4 Content of operating instructions

4.1 General

4.1.1 Introduction

When pressure equipment is placed on the market, the manufacturer is required to ensure that it is accompanied by instructions for the user containing safety information.

NOTE Additional information may be requested by the user or recommended by the manufacturer, and agreed as part of the order or contract.

Regarding general information about the pressure equipment, operating instructions shall contain all important safety information applicable to the equipment and shall include, but not be limited to the following:

4.1.2 Information on the data plate

a) This shall contain:

- 1) name and address or other means of identification of the manufacturer and, where appropriate, of his authorised representative established within the Community;
- 2) year of manufacture;
- 3) identification of the pressure equipment according to its nature, such as type series or batch identification;
- 4) essential maximum/minimum allowable limits.

b) depending on the type of pressure equipment, further information may be necessary for safe installation, operation or use, where applicable, maintenance and periodic inspection such as:

- 1) volume V of the pressure equipment, in litres (L);
- 2) nominal size for piping, DN;
- 3) test pressure (P_T) applied, in bar, and the date;
- 4) safety device set pressure, in bar;
- 5) output of the pressure equipment, in kW
- 6) supply voltage, in V (volts);
- 7) intended use;
- 8) filling ratio, in kg/L;
- 9) maximum filling mass, in kg;
- 10) tare mass, in kg;
- 11) product (fluid) group.

4.1.3 Information in operating instructions

On all occasions where warnings are fixed to the pressure equipment these shall be identified in the operating instructions. Where appropriate, operating instructions should also contain:

a) safe operating limits and design basis, including anticipated operating and assumed design conditions;

- b) design standard;
- c) joint coefficients;
- d) the estimated lifetime, taking account of fatigue, creep, corrosion, and wear;
- e) features of the design relevant to the life of the equipment;
- f) residual hazards not prevented by design or protective measures, that might arise from foreseeable misuse;
- g) technical documents, drawings and diagrams necessary for a full understanding of these instructions;
- h) information about replaceable parts.

NOTE Other information may be included by contractual agreement, such as hazard analysis, material test certificates, detailed design calculations, "as built" drawings, heat treatment records, welding records, NDT results, results of dimensional checks, full records of proof test, details and results of special checks, details of any corrective repair or modification, full documentation of any concessions made.

4.2 Transportation and erection or installation (mounting)

Where appropriate, operating instructions shall contain the entire information relevant to the transportation and erection of the pressure equipment. This shall include, but not be limited to the following:

- a) storage and transport aspects;
- b) possible variations in erection/transport of assembly (supported by technical drawings and calculations if necessary);
- c) necessary distance to other objects.

4.3 Putting into service

Where appropriate, operating instructions shall provide information necessary to put pressure equipment safely into service.

This shall include, but not be limited to the following:

- a) removal of existing transportation protection etc.;
- b) details on operating fluids and start-up quantities;
- c) additional safety requirements associated with commissioning or start up.