

ONE PAGE GUIDE TO THE PED

WHAT IS THE PURPOSE OF THE PED?

Removal of barriers to the free trade in pressurised equipment within the European Union (EU)*.

HOW DOES IT DO THIS?

By specifying minimum requirements which must be met by such equipment.

TO WHAT DOES IT APPLY?

The design, manufacture and conformity assessment of pressure equipment and assemblies with an allowable pressure greater than 0.5 bar placed on the market and put into service in the European Economic Area (EEA)* whether new equipment, or second hand imported from outside the EEA. It is understood that Switzerland is also likely to adopt the Directive.

HOW DOES IT APPLY TO VALVES?

Valves and actuators, although not specifically referenced, are considered as either pressure accessories or safety accessories. Pressure accessories have an operational function and pressure bearing parts, e.g. valves and pressure regulators. Safety accessories are designed to protect pressure equipment against allowable limits being exceeded e.g. safety valves, bursting discs and controlled safety pressure relief systems.

TO WHICH VALVES DOES IT APPLY?

Most valves used by the chemical, oil and gas production, petrochemical and power generation industries. There is a list of exclusions, some of which are significant (e.g. oil and gas well-head valves).

WHAT DOES IT CONTAIN?

A list of essential requirements which must be complied with.

Classification rules (related to level of hazard).

Rules for assessing conformity.

WHO IS RESPONSIBLE FOR MEETING ITS REQUIREMENTS?

The manufacturer of the equipment.

(Note that compliance with 'harmonised' CEN standards gives presumption of conformity.)

WHO IS RESPONSIBLE FOR ASSESSING CONFORMITY?

(1) 'Notified Bodies' (Inspection bodies independent of manufacturers and purchasers approved by national governments and employed by the equipment manufacturer at his expense).

(2) 'User Inspectorates' who may undertake the inspection activities of the Notified Body in certain circumstances (approved by national governments and employed by the purchaser for his own procurement only).

HOW DO WE KNOW EQUIPMENT CONFORMS?

Most equipment will carry a CE mark affixed by the manufacturer and have an 'EC declaration of conformity' drawn up by the manufacturer; where appropriate a 'certificate of conformity' will be issued by the Notified Body.

WHEN WILL IT BECOME EFFECTIVE?

Voluntary from 29th November 1999, mandatory from 30 May 2002.

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THE ENGINEERING EQUIPMENT AND MATERIALS USERS ASSOCIATION

VALVE PURCHASERS' GUIDE TO THE EUROPEAN PRESSURE EQUIPMENT DIRECTIVE

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THE ENGINEERING EQUIPMENT AND MATERIALS USERS ASSOCIATION

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FOREWORD

This Guide has been developed by the EEMUA Valves Technical Committee. It is intended to assist users in conforming with the requirements of the European Pressure Equipment Directive (PED) when purchasing valves and safety valves. It should not be assumed to guarantee compliance, and is not intended as a substitute for reading either the Directive, the DTI Guidance Notes, the Pressure Equipment Regulations 1999 or national legislative requirements.

The term **purchaser** is used both in the title and text of this Guide. In this context it refers to the end user of the valve(s) being purchased, or to the user's purchasing agent.

Reference is made in the text to various documents, some of which, at the time of writing, are still in draft. Since this EEMUA publication is a guide and not a specification, it does not contain *normative* references; furthermore the draft documents referenced are those whose eventual publication is considered a certainty. Documents in draft are clearly indicated in the list of references in Sec. 15.

Use of Language

The auxiliary verb 'must' is used to indicate a statutory requirement.

Units

Consistent with the Pressure Equipment Directive, 'bar' signifies gauge pressure (above atmospheric).

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1 INTRODUCTION

The European Pressure Equipment Directive (Directive 97/23/EC) is a 'New Approach' directive intended to harmonise the laws of member states concerning the design, manufacture and conformity assessment of pressure equipment with the objective of facilitating trade in this equipment. It becomes mandatory on 30 May 2002 and manufacturers may offer to supply in accordance with its requirements from 29 November 1999.

The requirements will apply to most valves *purchased* for use in the European Economic Area (EEA) whether for application in new construction or in existing plant, including valves which have been refurbished and placed on the market or which are being imported from outside the European Union.

Valves are classified by the PED as 'pressure accessories' or as 'safety accessories'. This means that they are accessories to a piping system (usually) or vessel (less frequently) and follow the classification and conformity assessment rules for these items and the relevant working fluid. A safety accessory is one which protects other pressurised equipment against the allowable limits being exceeded. Thus, a spring loaded or pilot operated safety relief valve will always be classified as a safety accessory but so will shut-down valves in high integrity pressure protection systems and valves in certain other specialised safety applications. In general, safety accessories are given a higher classification category than other accessories operating in comparable conditions.

With regard to pressure accessories, the PED is primarily concerned with their pressure containing aspects rather than their function; however see Appendix A for a qualification of this statement.

The PED places more responsibility on the manufacturer than has traditionally been the case (e.g. he is required to 'assess the hazard' associated with the application, and is responsible for compliance with the requirements of the PED). Also, 'Notified Bodies' (NoBos) have been introduced. These are inspection bodies which are independent of purchasers and manufacturers and appointed by the EU member governments and employed by manufacturers. The degree of involvement of the notified body varies according to the chosen route of conformity assessment which is itself determined by the classification category of the valve. This presumes that the category, and hence the limits of application, of the valve are known at time of purchase—a major change to current practice in the case of valves manufactured or purchased for stock.

It would be a mistake to assume that application of the PED will result in valves being manufactured to higher quality standards than are currently applied. For example many valves (more for liquid service than for gas and more for Group 2 fluids than for Group 1) are not required to be produced in accordance with the conformity assessment modules of the PED (Annex III). Instead they are to follow the 'sound engineering practice (SEP) of member states', an undefined term which could allow a manufacturer to reduce standards below those commonly insisted on at present. The purchaser should ensure that his contractual requirements continue to specify the degree of quality which he currently finds acceptable, e.g. by specifying a higher category than demanded by the PED.

A working group set up by the Commission (Working Group (Pressure)—WGP) is currently charged with establishing standard interpretations of the PED. Interpretations adopted by WGP are being formally issued as 'Guidelines', which in effect bear the imprimatur of the European Commission, but do not have the force of law. The WGP has in turn set up a subsidiary working party (Working Party on Guidelines—WPG) to act as a 'first assessor' of detailed questions. Nevertheless it is important to recognise that, under the rules established, the NoBo is the ultimate arbiter of conformance.

2 SCOPE

This EEMUA publication offers guidance on the application of the PED to (a) block valves, check valves and control valves which may be considered as pressure accessories and (b) safety relief valves and such other valves which may be considered as safety accessories.

3 EXCLUSIONS

Not all valves are required to conform to the PED. Principal relevant exclusions are:

- Pipeline valves, including the first/last isolation valves located within the confines of the facilities or sites connected by the pipeline. Note that valves associated with pumping and compression stations *are* included in the scope of the Directive.
- Valves associated with oil, gas or geothermal exploration and production and underground storage equipment including Christmas tree, work-over equipment and piping manifold. (Valves downstream of the manifold are included in the scope of the Directive.)
- Valves associated with water supply, distribution and discharge of water including penstocks, and valves for hydroelectric power systems.
- Valves designed and constructed for military purposes.
- Valves designed for nuclear use, failure of which might cause an emission of radioactivity.
- Valves for ships, rockets, aircraft and mobile offshore units (e.g. drilling rigs).
- Valves used in warm water heating systems ($\leq 110^{\circ}\text{C}$).
- Valves covered by Directive 87/404/EEC on Simple Pressure Vessels.
- Valves designed to operate at pressures no higher than 0.5 bar.
- Valves purchased within the EEA but put into service elsewhere, or imported for re-export elsewhere.
- Valves, the use of which is in the interests of experimentation.

In addition, where valves would be classified as no higher than category I under the PED and are covered by another, listed directive, they are excluded from the scope of the PED. These other directives are those covering:

Machinery (98/37/EC)

Low Voltage Equipment (73/23/EEC)

Equipment used in explosive atmospheres (94/9/EC)

Equipment associated with burning of gaseous fuels (90/396/EEC)

Medical devices (93/42/EEC)

Lifts (95/16/EC).

4 CLASSIFICATION OF EQUIPMENT (Article 9)

The PED divides equipment into five categories ('sound engineering practice', I, II, III and IV) according to the ascending level of hazard. Category is determined by the working fluid, pressure and size (DN for piping, volume for vessels).

In order to determine which conformity assessment modules can be used, it is necessary to establish the applicable category.

This will normally be done by the valve manufacturer or supplier based on the following minimum information*:

- nominal pipe size (DN or NPS)
- maximum allowable pressure (PS) (see Sec. 16)
- nature of the working fluid (liquid or gas), and whether it is Group 1 or Group 2 (see below)
- valve function (i.e. safety accessory or pressure accessory).

In addition, the manufacturer is required to assess the hazards involved in the application and so must be provided with details of any unusual loadings, upset conditions, etc. In the case of items purchased for stock by a user, it is recommended that he provide information covering the most onerous duty envisaged for the particular type of valve.

In the PED, fluids are divided into two groups, according to the degree of hazard they represent, as defined by Directive 67/548/EEC (27 June 1967), i.e. according to whether they are explosive, toxic, flammable, etc., and whether they are liquids or gases.

Group 1 comprises fluids which are:

- explosive
- flammable (max. allowable temperature above flash point); highly flammable; extremely flammable;
- toxic; very toxic
- oxidising.

Group 2 comprises:

- all other fluids (note that this includes steam).

The appropriate group can usually be determined from the safety data sheet. If not, the site safety specialist should be consulted.

With this information, the supplier can access the 'tables' (in effect charts) in Annex II of the Directive to determine the category. Linear-linear plots of these tables have been included in Appendix B of the present document to better illustrate the classification for typical sizes and pressure ratings.

When valves are purchased for stock, a sufficiently high category must be selected to allow maximum freedom of application. When stock valves are used as safety accessories the user should check that the classification is equal to or higher than that of the equipment being protected.

* This is the minimum information necessary to enable the manufacturer to comply with the requirements of the PED. In order to be able to ensure that the valve being offered will perform satisfactorily, he should be provided with the maximum possible information relating to the valve duty and function.