

Written schemes of examination

Pressure Systems Safety Regulations 2000



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The Pressure Systems Safety Regulations 2000 came into force on 21 February 2000. Users and owners of pressure systems are required to demonstrate that they know the safe operating limits, principally pressure and temperature, of their pressure systems, and that the systems are safe under those conditions. They need to ensure that a suitable written scheme of examination is in place before the system is operated. They also need to ensure that the pressure system is actually examined in accordance with the written scheme of examination.

This document complements the free HSE leaflet *Pressure systems: Safety and you*. It provides guidance on drafting written schemes of examination, but it cannot cover all relevant aspects of the Regulations. The 'Further information' section at the end of the document lists more detailed guidance, or you can contact your local Health and Safety Executive office or Local Authority Environmental Health Department.

What is a written scheme of examination?

A written scheme of examination is a document containing information about selected items of plant or equipment which form a pressure system, operate under pressure and contain a 'relevant fluid'. The term relevant fluid is defined in the Regulations and covers compressed or liquefied gas, including air, at a pressure greater than 0.5 bar (approximately 7 psi) above atmospheric pressure; pressurised hot water above 110°C; and steam at any pressure. Typical contents of a written scheme of examination include:

- identification of the items of plant or equipment within the system;
- those parts of the system which are to be examined;
- the nature of the examination required, including the inspection and testing to be carried out on any protective devices;
- the preparatory work needed for the item to be examined safely;
- where appropriate, the nature of any examination needed before the system is first used;
- the maximum interval between examinations;
- the critical parts of the system which, if modified or repaired, should be examined by a competent person before the system is used again;
- the name of the competent person certifying the written scheme of examination;
- the date of certification.

How do I draw up a written scheme of examination?

First, look around your workplace and decide which items of plant or equipment operate under pressure and form a pressure system.

Next, follow the steps described in the HSE leaflet *Pressure systems: Safety and you*.

Then, check the exceptions to the Regulations, since you may find your particular pressure system does not require a written scheme of examination at all. For example, you don't normally need to include the compressor associated with an air receiver in the scheme of examination. To see if any of your plant or equipment is an exception under the Regulations, the best place to look first is in *Safety of pressure systems. Pressure Systems Safety Regulations 2000. Approved Code of Practice* (see 'Further information' for details).

Which items of plant should I include in the written scheme of examination?

An item of plant from the pressure system should be included in a written scheme of examination if its failure could unintentionally release pressure from the system and the resulting release of stored energy could cause injury. Each system is likely to be unique, but the following questions may help users to arrive at some decisions:

- Do the manufacturers of the plant or equipment forming the pressure system give guidance, instruction and the precautions to take for safe operation of the system?
- Could failure of any part of the pressure system cause someone in the vicinity to be injured by the release of pressure, fragments or steam?
- Does the pressure system contain any protective devices?

If the answer to any of these questions is 'Yes', then those items of plant may need to be included in the written scheme of examination.

What types of typical pressurised systems might require a written scheme of examination?

The following pressurised systems are likely to require a written scheme of examination:

- a compressed air receiver and the associated pipework, where the product of the pressure in bars multiplied by the internal capacity in litres of the receiver is equal to or greater than 250 bar litres;
- a steam sterilising autoclave and associated pipework and protective devices;
- a steam boiler and associated pipework and protective devices;
- a pressure cooker;
- a gas loaded hydraulic accumulator;
- a vapour compression refrigeration system where the installed power exceeds 25 kW;
- a narrow gauge steam locomotive;
- the components of self-contained breathing apparatus sets (excluding the gas container);
- a fixed LPG storage system, supplying fuel for heating in a workplace.

The following pressurised systems are not likely to require a written scheme of examination:

- an office hot water urn (for making tea);
- a machine tool hydraulic system;
- a pneumatic cylinder in a compressed air system;

- a hand-held tool;
- a combustion engine cooling system;
- a portable compressed air receiver and the associated pipework, where the product of the pressure in bars multiplied by the internal capacity in litres of the receiver is less than 250 bar litres;
- any pipeline and its protective devices in which the pressure does not exceed 2 bar above atmospheric pressure;
- a portable fire extinguisher with a working pressure below 25 bar at 60°C and having a total mass not exceeding 23 kilograms;
- a portable LPG cylinder;
- a tyre used on a vehicle.

These are typical examples for guidance purposes only. You must decide whether your pressurised system is covered by the Regulations in practice.

Do I need written schemes of examination for portable gas welding sets?

HSE have taken the view that written schemes of examination are not required for the regulators, pressure gauges, hoses, torches and other components that form part of conventional gas welding sets (portable, twin cylinder, oxy-acetylene or oxy-propane sets used for welding, cutting and burning).

Who decides which items of plant are included in the written scheme of examination?

Users of pressure equipment which is not mobile, or owners of mobile systems (eg hired pressure plant), have a legal responsibility to define the items of plant which form a pressure system and within that system the items of plant which need to be included in the written scheme of examination. To arrive at a properly informed decision, users or owners may need to seek advice from other sources, such as in-house engineering staff, inspection bodies or consultants, but the legal responsibility for defining the scope of the scheme rests with users or owners. The written scheme should generally cover all items within a self-contained pressurised system which may give rise to danger. If you have more than one self-contained pressure system, you will probably need more than one written scheme, ie one system, one scheme.

What happens when the scope of the written scheme has been decided?

The user or owner of the pressure system should:

- contact a person with sufficient knowledge and expertise about the system, ie one who is capable of offering informed advice on the subject; and
- discuss the scope of the written scheme with them; and
- if necessary, modify the scope accordingly.

The written scheme of examination should then be submitted to a competent person (as defined in the Regulations) who may or may not be the same competent person who advised the user or owner on the scope of the written scheme. The competent person will normally advise on the nature and frequency of examination and any special safety measures necessary to prepare the system for examination. If requested by the user, the competent person may draw up a suitable written scheme of examination, or he or she may certify as being suitable a written scheme of examination prepared by the user or owner.

Which competent person should I choose?

Guidance on the selection of competent persons is given in the HSE leaflet *Pressure systems: Safety and you and Safety of pressure systems. Pressure Systems Safety Regulations 2000. Approved Code of Practice*. Users (or owners) of pressure systems are free to select any competent person they wish, but they should take all reasonable steps to ensure that the competent person selected can actually demonstrate competence, ie the necessary breadth of knowledge, experience and independence. In judging levels of competence, users or owners may wish to know that a national accreditation scheme has been developed by the United Kingdom Accreditation Service (UKAS) for bodies that provide services of this nature. Further guidance is given in the 'Further information' section.

Does the written scheme of examination need to be reviewed periodically?

The written scheme of examination must be 'suitable' throughout the lifetime of the plant or equipment, so it should be reviewed and, when necessary, revised. For example, as the age of some plant increases you may need to carry out more frequent examinations or change their content or type. *It is the user's responsibility under the Regulations to ensure that the content of the written scheme is reviewed at appropriate intervals by a competent person to determine if it remains suitable*, but clearly the competent person should be in a position to give advice on this aspect.

What should I do next?

The users and owners of pressure systems covered by a written scheme of examination have a legal responsibility to ensure that those systems are examined by a competent person in accordance with the scheme.

Further information

Safety of pressure systems. Pressure Systems Safety Regulations 2000. Approved Code of Practice L122 HSE Books 2000 ISBN 0 7176 1767 X (The Approved Code of Practice lists relevant HSE guidance.)

Pressure systems: Safety and you Leaflet INDG261(rev1) HSE Books 2001 (single copy free or priced packs of 15 ISBN 0 7176 1562 6) Web version: www.hse.gov.uk/pubns/indg261.pdf

The Pressure Systems Safety Regulations 2000 SI 2000/128 The Stationery Office 2000 ISBN 0 11 085836 0

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Advice on bodies that have relevant accreditation for the provision of competent persons can be obtained from the United Kingdom Accreditation Service (UKAS) at: 21-47 High Street, Feltham, Middlesex, TW13 4UN Tel: 020 8917 8400 Website: www.ukas.com

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This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

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