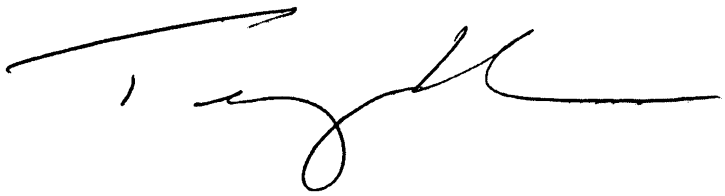
Safety of Pressure Systems and Transportable Gas Containers
APPROVED CODE OF PRACTICE

notice of approval

This Code of Practice entitled "Safety of Pressure Systems and Transportable Gas Containers", has been approved by the Employment and Social Security Committee under Article 10 of the Health and Safety at Work (Jersey) Law, 1989, ("the Law"). This Code provides practical guidance for all persons who have duties under Part II of the Law and who are involved with the use of pressure systems and transportable gas containers in relation to work activities.



Deputy T. A. Le Sueur
President
Employment and Social Security Committee Date: 1st October 1997.

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part I: introduction

The requirements of the Health and Safety at Work (Jersey) Law, 1989, Part II Articles 3 to 7 supported by this Approved Code of Practice provide a regime, the aim of which is to ensure the safety of pressure systems and transportable gas containers. The Code is relevant to all pressure systems and transportable gas containers that fall within the definition in this Code, which is primarily concerned with matters affecting the mechanical integrity of the pressure containing parts.

This Code can only, of course, give a broad outline of the principles which apply to pressure systems and transportable gas containers. There are other codes of practice, guidance documents and standards which may in particular cases help those who have duties and responsibilities under the Health and Safety at Work (Jersey) Law, 1989 to ensure the safety of pressure systems and transportable gas containers, but which the Employment and Social Security Committee have not formally approved. Such advice will normally supplement the practical guidance given in this Approved Code of Practice, but there may be some cases where a particular guidance from another source gives different advice than does this Code. In such a case the status of an Approved Code of Practice allows a person to follow the other guidance provided that he can demonstrate that in doing so he fully meets the requirements of the Health and Safety at Work (Jersey) Law, 1989.

This Code has been approved by the Employment and Social Security Committee, under Article 10 of the Health and Safety at Work (Jersey) Law, 1989.

Although failure to observe any provision of this Code is not in itself an offence, that failure may be taken by a Court in criminal proceedings as proof that a person has contravened the Health and Safety at Work (Jersey) Law, 1989 to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that the Health and Safety at Work (Jersey) Law, 1989 has been complied with.

Unless the contrary is stated, all references to pressure in this Code relate to pressures above atmospheric pressure.

part II: interpretation

Section 1a.
The competent person

"**competent person**" means a competent individual person (other than an employee) or a competent body of persons corporate or unincorporate; and accordingly any reference in this Approved Code of Practice to a competent person performing a function includes a reference to his performing it through his employees.

General

1 The term 'competent person' is used in connection with three distinct functions, i.e. advising the user on the scope of the written scheme (Section 6 of this Approved Code of Practice), drawing up or certifying schemes of examination (Section 6 of this Approved Code of Practice) and carrying out examinations under the scheme (Section 7 of this Approved Code of Practice). The general guidance given in paragraphs 1-6 relates to all three functions, whereas paragraphs 7-10 relate to schemes of examination, and paragraph 11 relates to examinations themselves. Paragraph 12 relates to transportable gas containers.

2 Although separate guidance is given on these functions, this does not mean that for any particular system they need to be carried out by different organisations.

3 It is the responsibility of users to select a competent person who is capable of carrying out his duties in a proper manner. In some cases the necessary expertise will lie within the user's own organisation, but small and medium size users are not likely to have sufficient expertise and should use a properly qualified and experienced independent inspection body. In all cases users should ensure that the competent person has sufficient expertise in the particular type of system.

4 Pressure systems vary greatly in complexity and sophistication, and a competent person suitable for drawing up or certifying schemes of examinations or examining a simple system may well not have the expertise to function adequately as a competent person for complex systems. For a number of systems, including the larger or more complex, no one individual will have sufficient knowledge and expertise to act on his own and a competent person should be chosen who has available a team of employees with the necessary breadth of knowledge and experience.

Schemes of examination

5 Any individual when carrying out competent person duties should be sufficiently independent from the interests of all other functions to ensure adequate segregation of accountabilities.

part II: interpretation

6 The competent person should act in an objective and professional manner, and advise users as to the scope of the written scheme, and draw up or certify written schemes, or carry out examinations solely on the basis of an impartial assessment of the nature and condition of the system under review.

7 The competent person should, through having staff with;

a) practical and theoretical knowledge,
b) actual experience of relevant systems,
c) access to specialist services,
d) effective organisation,
e) a proper degree of independence from those responsible for the operating function,
f) proper standards of professional probity, and
g) sufficient understanding of such systems,

as will enable it properly to draw up, or certify as suitable, schemes of examination under this Approved Code of Practice.

8 The competent person requires different attributes depending on the size and complexity of the system. For the purpose of indicating the level of attributes required in different circumstances, systems are divided into three categories as described in paragraph 9. However, in practice there are no clear dividing lines and these should be taken as indicating the range of systems covered rather than being sharp divisions. Particular systems may in fact not justify the category in which they appear to fall and this is especially important where, in fact, additional attributes are needed in order adequately to understand the system.

9 Systems may be divided into three categories as follows:

(a) Minor systems include those containing steam, pressurised hot water, compressed air, inert gases or fluorocarbon refrigerants which are small and present few engineering problems. The pressure should be less than 20 bar (290 psi) above atmospheric pressure (except for systems with a direct-fired heat source when it should be less than 2 bar (29 psi)). The pressure-volume product for the largest vessel should be less than 2×10^5 bar litres. The temperatures in the system should be between - 20°C and 250°C except in the case of smaller refrigeration systems operating at lower temperatures which will also fall into this category.

part II: interpretation

(b) Intermediate systems include the majority of storage systems and process systems which do not fall into either of the other two categories.

(c) Major systems are those which because of size, complexity or hazardous contents require the highest level of expertise in determining their condition. They include steam generating systems where the individual capacities of the steam generators are more than 10 MW, any pressure storage system where the pressure-volume product for the largest pressure vessel is more than 10^6 bar litres and any manufacturing or chemical reaction system where the pressure-volume product for the largest pressure vessel is more than 10^5 bar litres.

10 The attributes needed for 'competent persons' to draw up or certify schemes of examination are shown in the table over.

Examinations under the scheme

11 The competent person should have staff with such practical and theoretical knowledge and actual experience of the type of system which is to be examined as will enable defects or weaknesses, which it is the purpose of the examination to discover, to be detected and their importance in relation to the integrity and safety of the system to be assessed.

Transportable gas containers

12 The term competent person in relation to transportable gas containers differs from the competent person described above for pressure systems. The term competent person associated with transportable gas containers should be taken to mean an organisation employing thoroughly experienced persons with adequate practical and theoretical knowledge of the cylinders concerned to be able to exercise sound judgement in relation to the integrity and safety of the cylinders to be assessed. Obviously there is a need on the part of the managements of filling plants to control carefully the circumstances in which individual employees exercise such competent person functions. It may be advantageous to list the individuals concerned and the extent of their authority.

part II: interpretation

Category	Staff	Specialist Services	Organisation
Minor Systems	At least one member of staff qualified to technician engineer level with adequate relevant experience and knowledge of the law, codes of practice, examination and inspection techniques and understanding of the effects of operation for the system concerned.	Established access to basic design and plant operation advice, materials engineering and non-destructive testing (NDT) facilities.	Sufficient organisation to ensure a reasonable data storage and retrieval system with ready access to relevant law, technical standards and codes.
Intermediate Systems	Depending on the complexity of the system, at least one senior member of staff to be of chartered engineer or equivalent status in each relevant discipline and supported by technically qualified and experienced staff with knowledge of the law, codes of practice, examination and inspection techniques and understanding of the effects of operation for the system concerned.	In-house or clearly established access to materials engineering, NDT, design and plant operating advice.	Clear supervisory arrangements - an adequate degree of formal organisation. Appropriate data storage and retrieval system with ready access to relevant law, technical codes and standards.
Major Systems	Depending on the complexity of the system, at least one senior member of staff to be of chartered engineer or equivalent status in each relevant discipline and supported by technically qualified and experienced staff with knowledge of the law, codes of practice, examination and inspection techniques and understanding of the effects of operation for the system concerned.	In-house or clearly established access to the full range of relevant specialist services in the fields of materials engineering, NDT, design and plant operation.	Formal structure and clear lines of authority and responsibility set out in a written statement. Formal recruitment and training policies for staff. Effective data storage and retrieval system with ready access to relevant law, technical codes and standards.

part II: interpretation

Section 1b. Meanings of other expressions and terms used in this Approved Code of Practice

"**danger**" in relation to a pressure system, means reasonably foreseeable danger to persons from system failure, but it does not mean danger from the hazardous characteristics of the relevant fluid other than from its pressure;

"**design specification**" means a specification for the design of one type of transportable gas container;

"**design standard**" means a standard for the design of more than one type of transportable gas container;

"**examination**" means a careful and critical scrutiny of a pressure system, part of a pressure system or transportable gas container, in or out of service as appropriate, using suitable techniques, including testing where appropriate, to assess -

(a) its actual condition; and

(b) whether, for the period up to the next examination, it will not cause danger when properly used if normal maintenance is carried out, and for this purpose "normal maintenance " means such maintenance as it is reasonable to expect the user (in the case of an installed system) or owner (in the case of a mobile system or transportable gas container) to ensure is carried out independently of any advice from the competent person making the examination;

"**installer**" means the employer of a person or self-employed person who installs a pressure system at work;

"**installed system**" means a pressure system other than a mobile system;

"**mobile system**" means a pressure system which can be readily moved between and used in different locations but it does not include a steam locomotive; (eg. mobile air compressor sets, pressurised beer tankers, road tankers carrying LPG, CO_2 etc.)

"**user**" in relation to a pressure system, or a vessel to which Section 12 of this Approved Code of Practice applies, means the employer or self-employed person who has control of the operation of the pressure system or such a vessel;

"**owner**" in relation to a pressure system or transportable gas container means the employer or self-employed person who owns the pressure system or transportable gas container, or, if he does not have a place of business in Jersey, his agent in Jersey, or, if there is no such agent, the user;

"**pipework** " means a pipe or system of pipes together with associated valves, pumps, compressors and other pressure containing components and includes a hose or bellows;

"**pressure system**" means -

(a) a system comprising one or more pressure vessels of rigid construction, any associated pipework and protective devices;

(b) the pipework with its protective devices to which a transportable gas container is, or is intended to be, connected;

which contains or is liable to contain a relevant fluid, but does not include a transportable gas container;

"**protective devices**" means devices designed to protect the pressure system against system failure and devices designed to give warning that system failure might occur, and include bursting discs;

"**relevant fluid**" means -

(a) steam;

(b) hot water which is at a pressure greater than 0.5 bar (7.25psi) above atmospheric pressure, and above 100°C;

(c) any fluid or mixture of fluids which is at a pressure greater than 0. 5 bar (7.25 psi) above atmospheric pressure, and which fluid or mixture of fluids, is -

(i) a gas, eg. oxygen, compressed air, nitrogen etc., or

(ii) a liquid which would have a vapour pressure greater than 0.5 bar (7.25 psi) above atmospheric pressure when in equilibrium with its vapour at either the actual temperature of the liquid or 17. 5 degrees Celsius; eg. liquid petroleum gas, or

(d) a gas dissolved under pressure in a solvent contained in a porous substance at ambient temperature and which could be released from the solvent without the application of heat; eg. acetylene.

"**safe operating limits**" means the operating limits (incorporating a suitable margin of safety) beyond which system failure is liable to occur;

"**system failure**" means the unintentional release of stored energy (other than from a pressure relief system) from a pressure system or transportable gas container;

"**transportable gas container**" means a container, including any permanent fitting of such a container, which is used, or is intended to be used, to contain a relevant fluid and is-

(a) designed to be transportable for the purpose of refilling and has an internal volume of at least 0.5 litres and not greater than 3000 litres;

(b) a non-refillable container having an internal volume of at least 1.4 litres and not greater than 5 litres; or

(c) for the purposes of Section 16(8) of this Approved Code of Practice only a non-refillable container.

part III: pressure systems

Section 2. Design, construction, repairs and modifications

1 Any person who designs, manufactures, imports or supplies any pressure system or article which is intended to be a component part of a pressure system shall ensure that:

a) it has been designed and properly constructed from suitable materials so as to prevent danger;
b) it has been designed and constructed so that all necessary examinations for preventing danger can be carried out;
c) where the system has means of internal access to its interior that access can be gained safely;
d) the system is provided with protective devices that will prevent danger; and that any device designed to release contents shall do so safely.

2 When designing repairs or modifications to the pressurised parts of the system, whether temporary or otherwise, consideration should be given to the original design specification, the duty for which the system is to be used after the repair or modification, including any change in relevant fluid, and the effects any such work may have on the integrity of the pressure system, and whether the protective equipment is still adequate. The repair or modification should be adequate for the duty as compared with the original design specification, and in accordance with appropriate standards.

3 The repair of defects in, or modifications to, non pressure containing parts of the system should be carried out so that the integrity of the pressure system is not adversely affected. Consideration should be given to the effect of any repairs or modifications on the operation of any protective devices.

Section 3. Provision of information and marking

1 Designers, manufacturers, suppliers or persons who modify or repair pressure systems must provide adequate information to the user of an installed system or the owner of a mobile system about pressure systems and how they can be operated, maintained and examined safely. It does not mean that designers and manufacturers, for example, have to pass on all the information they may have about systems, as much of this will not be of value to the user.

2 In many cases designers and manufacturers will have specified the design parameters and be best able to determine the proper conditions of use. In many cases it would be most appropriate for the designer or manufacturer to specify safe operating limits for the system or parts they are responsible for and lay down an adequate scheme of examination so that users, who may have little expertise themselves, do not need to repeat work already done.

3 The persons providing the information should consider how to provide it most effectively. Basic information about pressure vessels, except the smallest, should be permanently marked on the vessel (see Appendix 1 Marking of pressure vessels).

4 Additional information about pressure vessels and information relevant to the whole system should be provided in writing. It is not possible to give a complete list of all information which might be needed. Some items which may be relevant are:

(a) design standards used;

(b) certificates of conformity (both those issued by manufacturers and by inspection bodies);

(c) design pressures (maximum and minimum);

(d) design temperatures (maximum and minimum);

(e) intended contents especially where the design has been carried out for a specific process;

(f) flow rates and discharge capacities;

(g) capacities, especially for storage vessels. This may be expressed, depending on the intended contents, as maximum volume, pressure or filling ratio;

(h) materials of construction.

Section 4. Installation

1 The installer shall ensure that nothing about the way a pressure system is installed shall give rise to danger or otherwise impair the operation of any protective device or inspection facility. The amount of work the installer is asked to do will vary with circumstances. The installer may be required to follow a detailed specification with little freedom to choose the way in which the system is to be installed. He should then ensure that the manner of installation, e.g. welding procedures, handling practices etc. does not impair the designed integrity of the system. The installer may on the other hand be given only a broad outline of what is required with no details, (e.g. for installing pipework).

2 Hot work such as welding or cutting which may affect the integrity of the system should not be carried out without the agreement of a person who is competent to assess the effect of the work on the integrity of the system.

part III: pressure systems

3 The whole system, and especially large plant items, should have proper foundations taking into account the nature of the ground at the chosen location, the weight of the structure and any likely external forces on the structure.

4 Care should be taken that parts of the system to which access is required, i.e. for subsequent examination and maintenance, are not obstructed and that any protective devices are able to function correctly.

5 Suitable protection should be provided for the system or parts of the system if vehicle impact or other mechanical damage is likely.

6 Any relevant labels and marks on vessels should not be obscured or obstructed unless the marks are repeated on a visible data plate.

Compressed air systems

7 There should be space around and beneath drain valves on air receivers so that they can be easily reached and so that condensate can flow from the valve and discharge safely.

8 Compressors should be installed in a well ventilated, cool and clean air environment. Intercoolers and aftercoolers should, where they are cooled by air, be located so that the air flow over their surfaces is not obstructed.

9 Inlet air to compressors should be drawn from an area which is free from potentially flammable or corrosive concentrations of fumes or vapours, or air excessively laden with moisture or dust.

Section 5. Safe operating limits

1 The user of an installed system or owner of a mobile system shall know the safe limits of operation of the pressure system and ensure that it is operated within those limits. The user of an installed system or owner of a mobile system shall not allow the system to be operated if they have not established the safe operating limits.

2 Exactly what limits need to be specified for a particular system will depend on the circumstances and the complexity of the system. Some small simple systems may need little more than the establishment of the maximum pressure for safe operation. A complex, large system is likely to need a wide range of conditions specified, e.g. maximum and minimum temperatures and pressures, volumes and flow rates of contents, operating times, heat input or coolant flow etc. In all cases the safe operating limits should incorporate a suitable margin of safety which should be based on current good engineering practice.

part III: pressure systems

3 In a large number of cases the user will not need to carry out the detailed work needed to establish the safe operating limits himself. Especially where the system is a standard production item, the work will have been done by the designer and manufacturer who should have passed on the relevant information to the user. For systems where the user has specified the design, the user should however establish the actual safe operating limits. If the user does not have the level of technical expertise which is required, then an organisation which is competent to carry out the task should be used.

4 In the case of installed systems the safe operating limits should be in the form of a written statement. Where the limits have been specified by the designer or manufacturer, then the operating manual supplied with the system should be used to pass on the information. Larger or more complex systems may have the information recorded in several documents. Whatever method of recording the safe operating limits is used, the information should be readily available to those people who need to know or have access to it, including the competent person responsible for the examinations in accordance with the written scheme.

5 The owner of a mobile system shall supply the user with a written statement specifying the safe operating limits or ensure that details of such limits remain clearly marked on the equipment. The latter alternative is only appropriate where effective supervision can ensure that such details do not become obscured and a written statement will be more appropriate in the case of mobile systems which remain out on hire for long periods, and are subject to heavy usage.

6 For systems which were in use before the issue of this Approved Code of Practice the information will generally already be available. Where limits are already laid down and experience provides adequate evidence that they are safe, then the existing limits may be taken as the safe operating limits. Only in those cases where there is little or no evidence as to the actual condition of the system will a detailed assessment of the system be necessary.

7 Second hand equipment needs to be thoroughly assessed. Moreover, care needs to be taken when deciding on the safe operating limits. Often the original design information is not available and even when it is present deterioration may have occurred. Users should have proper assurance that the correct safe operating limits have in fact been established.

8 Users should ensure that the safe operating limits remain correct. The safe operating limits should be reviewed at examinations, when significant modifications or repairs are carried out and when there are changes in the relevant fluid contained within the system.

part III: pressure systems

Section 6. Written schemes of examination

1 The user of an installed system or the owner of a mobile system needs to have available a planned scheme for future examinations of relevant parts of the pressure system at appropriate intervals. The user of an installed system or owner of a mobile system shall not allow the system to be operated without a scheme of examination which must be certified as being suitable by a competent person. The scheme must be reviewed at appropriate intervals by a competent person for the purpose of determining whether it is suitable in current conditions of use of the system. The user of an installed system or owner of a mobile system must ensure that content of the scheme is modified in accordance with any recommendations made by the competent person arising out of that review.

2 Where the appropriate technical expertise exists, the written scheme may be drawn up by the manufacturer or user of the system and certified as suitable by a competent individual within his own organisation. Alternatively, the complete scheme may be drawn up by an independent competent person. Whichever method is used, the written scheme will need to specify:

(a) which parts of the pressure system need to be subject to examination (see paragraphs 3 to 5);

(b) what types of examination are necessary and the intervals between them (see paragraphs 6 to 13);

(c) any measures necessary to prepare the pressure system for safe examination.

See Appendix 2 for guidance on contents of a written scheme.

Scope

3 When addressing (a) above the user of an installed system or owner of a mobile system should first establish which parts of the pressure system are pressure vessels, protective devices, or pipework as defined in this Approved Code of Practice, and then consider the following general guidance:

(a) in general, pressure vessels should be included; but it might be reasonable to exclude small vessels with little stored energy which form part of a larger system, eg. small compressed air oil lubricators or filters;

(b) all protective devices should be included, even if they are on a part of the system which is not included;

(c) pipework, which is widely defined to include pipes, associated valves, pumps, compressors, hoses, bellows and other pressure containing components, will only need to be covered in the scheme if:

(i) it is subject to a duty such that its mechanical integrity is liable to be importantly reduced by corrosion, erosion, fatigue or any other factors; and

(ii) it is in such a service and location that failure with the sudden release of stored energy would give rise to danger.

part III: pressure systems

4 The responsibility for defining the scope of the scheme of examination lies with the user, or owner in the case of a mobile system. After identifying the protective devices to be included in the scheme, the user of an installed system or owner of a mobile system should consult a competent person on what other parts of the system should be included in the light of paragraph 3(a) and (c) above..

5 A competent person concerned with advising the user of an installed system or owner of a mobile system on his responsibility in connection with the scope of the scheme of examination, need not have the same attributes as the competent person who draws up or certifies a scheme as suitable.

Content

6 Different parts of the system may be examined at different intervals, taking account of the degree of risk associated with each part. The aim should be to ensure that sufficient examinations are carried out to identify at an early stage any deterioration or malfunction which is likely to affect adversely the safety of the system.

7 It will generally be necessary for the first examination to be carried out before the complete system is taken into use for the first time. This should be specified in the scheme.

8 The scheme should, where necessary, specify that certain types of repairs and modifications need to be examined by the competent person carrying out examinations before the system is taken back into use. Alternatively, the user or owner may if necessary adopt a comprehensive overall written scheme, or procedures, for certain types of repairs or modifications to all or some of his systems.

9 The scheme has to be certified as suitable by a competent person and the examinations under the scheme have to be carried out by a competent person. As long as the functions are carried out by suitable bodies or persons it is for the user to decide who to select and whether to use the same or different competent persons for each function. The user should use the guidance and criteria set out in paragraph 11 of section 1a of this Approved Code of Practice when deciding on the competence of whoever he selects for each function.

part III: pressure systems

10 Judgement of what are appropriate intervals for examination under the written scheme should be based on the safety record of the type of plant, its current condition and an evaluation of the expected conditions of operation. Systems operating under arduous conditions may need shorter intervals between examinations than those operating in less arduous conditions. Specific guidance for steam and air systems is given in paragraphs 14 to 17 and paragraphs 18 to 19 respectively in Section 6.

11 Although it is intended that some flexibility in setting intervals should occur, existing plant should not have the intervals significantly extended over present practice without an authoritative review both by the user and the competent person of all relevant factors. These might, for example, include the examination record of the system, the standard of technical supervision in the user's organisation, the quality of fluids introduced into the system, creep and other relevant metallurgical conditions, corrosion and wastage both internal and external, whether there is a directly fired heat source, the standard of operation, maintenance, routine checks and inspections and the applicability of any on-stream condition monitoring.

12 The type of examination should be specified in the scheme. These may vary from out of service examination with the system stripped down, to in service examination with the system running under normal conditions. Particular examinations may need to include both the out of service and in service checks.

13 In general protective devices should be examined at least at the same time and frequency as the plant to which they are fitted. However, some protective devices may need to be examined at more frequent intervals. Devices which are on parts of the system which do not need to be examined should nevertheless be included in the scheme (i.e. a pressure reducing set which is situated on a section of pipework that has been excluded from the scope). The examination should include checks that the devices function correctly and are properly calibrated, alternatively that the devices have been replaced by recently tested units.

Steam and pressurised hot water plant

14 The period laid down in the scheme between examinations for boilers should not generally exceed 14 months. A shorter period will be necessary for boilers operating under arduous conditions or when the condition of the boiler has deteriorated. Longer periods should only be set for boilers where experience of the type of boiler shows that it is reasonable to do so and the arrangements for maintaining the safety of the system are to a high standard. In particular it will be necessary to consider water treatment arrangements.

part III: pressure systems

15 The first examination should be set so that boilers are examined before being taken into use for the first time.

16 Superheaters and similar plant items should be examined at the same intervals as boilers of similar size and complexity.

17 More flexibility can be allowed for the period between examinations of receivers. This should generally be in the range of 26 to 38 months. It may be convenient to examine them at the same time as the boilers to which they are connected.

Compressed air systems

18 It is not normally necessary to include air compressors in the scheme of examination.

19 The period laid down in the scheme for air receivers should be between 24 to 48 months, except that in appropriate cases where there is not liable to be significant corrosion, and the arrangements for maintaining the safety of the system are to a high standard, up to 72 months may be appropriate. (An example of this would be an air/oil receiver which separates oil from an air/oil mixture and which is fitted with a device to switch off the compressor when a temperature of 120oC is reached).

Section 7. Examination in accordance with the written scheme of examination

1 The user of an installed system or owner of a mobile system shall ensure that those parts of the systems included in the written scheme of examination are examined by a competent person within the intervals specified in the scheme and before the system is brought into use for the first time. They shall, prior to each examination, take all appropriate safety measures to prepare the system for examination.

2 Factors which should be taken into account during an examination include the age and known history of the system or part of the system, its contents and conditions of use, the time since the last examination, what means have been provided on the system for the examination, and the expected behaviour and use of the system before the next examination. After the examination the competent person should be satisfied that enough has been done to assess adequately both the condition of the parts requiring examination and their fitness for continued use.

3 When the competent person carries out his examination he should base his assessment on the established use and current functions of the system. He should report on the basis that the system will continue to be used in a similar way in the future unless the user of an installed system or owner of a mobile system informs him of an intended change of use.

part III: pressure systems

4 The user should ensure that any preparatory work which is necessary is carried out so that the competent person can do whatever checks, tests, inspections etc. are necessary as part of the examination. The sort of preparations which are needed may include cooling the system, proper isolation of the system from other pressure sources, removing contents, venting vessels, erecting suitable staging for access, cleaning surfaces, removing specimen pieces of insulation or arranging for the system to be tested.

5 Users and competent persons should remember that there are other dangers not covered by this Approved Code of Practice which may be met during examinations (for example means of access, entry into confined spaces, lack of oxygen, hazards of toxic substances, asbestos in lagging) and should take the appropriate precautions as may be required by the Health & Safety at Work (Jersey) Law, 1989.

6 At the end of each examination the competent person should be satisfied that the protective devices, especially any safety valves, have been correctly set. Where protective devices which have been removed during an examination are found to be defective, the matter needs to be further investigated.

7 After a proper assessment by the user of an installed system or owner of a mobile system, in many cases a considerable amount of pipework is likely to have been excluded from the scheme of examination. Where pipework has been included it may be difficult to examine it internally. The examination may need to be done from the outside using suitable non destructive testing techniques. If there is evidence that it is necessary, sections of lagging may need to be removed, particularly at support locations, to expose the external surface in order to detect the presence and extent of external corrosion.

8 The competent person should report on the actual condition of the system as found during the examination. Where repairs are carried out as a result of the examination but are finished before it is completed, the competent person should include details of what was found and the remedial action taken.

9 In making his report on an examination under the written scheme the competent person may qualify his report by stating that the report is dependent upon certain specified operating conditions being observed or certain maintenance procedures being carried out.

10 If the competent person is of the opinion that the risk of danger may reasonably foreseeably be increased if the next examination takes place on a date set in accordance with the maximum interval specified under the written scheme, he should set an earlier date for the next examination.

part III: pressure systems

11 No format is laid down for the report as systems vary so much in size and complexity. The format can be chosen to fit in with the record keeping systems of the user and competent person. Computer print-outs with appropriate validation are acceptable and any secure system that can be validated would be acceptable as the sole record keeping medium. (See Appendix 3 for suggested items for inclusion in Report Forms.)

12 On completion of the examination a written report, dated, signed or otherwise authenticated by the competent person shall be sent to the user of an installed system or owner of a mobile system within 28 days of completion of the examination.

13 The report required by paragraph 12 shall:

(a) state which parts of the system have been examined, the condition of those parts and the result of the examination.

(b) specify any repairs or modifications to, or changes in the established safe operating limits of the parts examined, which are necessary to prevent danger, or to ensure the continued effective working of the protective devices. A date should be specified by which any such repairs or modifications must be completed or any changes to the safe operating limits must be made.

(c) specify the date within the limits set by the scheme of examination after which the pressure system may not be used without further examination under the scheme of examination, and

(d) state in the opinion of the competent person whether the scheme of examination is still suitable or should be modified, (for the purpose of preventing danger) and if the latter state the reasons.

14 The user of an installed system or owner of a mobile system shall ensure that the system is not operated after:

(a) the date specified under (13)(b), unless the repairs or modification specified under that paragraph have been completed, and the changes to the safe operating limits so specified have been made, or

(b) the date specified under paragraph (13)(c) unless a further examination has been carried out under the scheme of examination.

15 The owner of a mobile system shall ensure that the date specified in paragraph (13)(c) is legibly and durably marked on the mobile system and that the mark is clearly visible.

part III: pressure systems

Postponement

16 The date specified in the report under (13)(c) may be postponed to a later date by agreement in writing between the competent person who made the report and the user of an installed system or owner of a mobile system if:

(a) such postponement does not give rise to danger;

(b) only one such postponement is made for any one examination;

(c) such postponement is notified by the user of an installed system or owner of a mobile system in writing to the Health and Safety Inspectorate of the Employment and Social Security Department before the date specified in the report under paragraph (13)(c).

Steam and pressurised hot water plant

17 The preparation of a boiler for examination should be sufficient to enable the competent person to assess its condition and may include any of the following, or other preparation the competent person wishes:

(a) the opening out, cleaning and descaling of the boiler;

(b) the removal and cleaning of the firing appliances;

(c) the removal of brickwork;

(d) the removal of protective devices;

(e) opening out of float/probe control chambers;

(f) the removal of lagging.

18 After preparation, the competent person should examine the boiler when cold and subsequently at normal operating pressure and temperature. There should not be undue delay between the two parts of the examination which both need to be done for the examination to be completed. After pressure has been raised and the boiler brought up to temperature the second part of the examination should be completed as soon as possible thereafter.

19 Receivers should be examined when cold and also when under normal operating conditions if so required by the scheme of examination.

20 Safety valves should be properly adjusted and tested at each examination.

Section 8. Action in case of imminent danger

1 If the competent person carrying out the examination under the scheme of examination is of the opinion that the pressure system or part of the pressure system will give rise to imminent danger unless certain repairs or modifications have been carried out or unless suitable changes to the operating conditions have been made, he shall forthwith make a written report to that effect identifying the system and specifying the repairs, modifications or changes concerned and give it:

a) in the case of an installed system, to the user; or

b) in the case of a mobile system, to the owner and the user, if any.

2 The competent person shall within 14 days of completion of the examination send a written report containing the same particulars to the Health and Safety Inspectorate of the Employment and Social Security Department. This period is set to allow sufficient time to enable a formal written report to be sent to the Inspectorate. This should be distinguished from the immediate notification given to the user of an installed system or owner of a mobile system by the competent person, and subsequently confirmed by written report to him.

3 In these cases the user of an installed system or owner of a mobile system shall ensure the system or part of the system affected is not operated until the repairs, modifications or changes, as the case may be, have been carried out or made.

4 This Section applies only in the case of serious defects which require immediate attention and is not to be used routinely. It is intended to apply where there is a risk of imminent failure of the system if immediate repairs are not undertaken or other suitable modifications are not made to the operating conditions. It is unlikely to be invoked for gradual deterioration over time, and implies sudden and unexpected deterioration or gross neglect by the user as assessed by the competent person at the time of the examination.

Section 9. Operation

1 The user of an installed system or owner of a mobile system shall ensure that any person operating the system has adequate and suitable instructions for its safe operation and that the system is not operated except in accordance with those instructions. It is appreciated that users may have instructions which deal with the efficiency of the system and its economic operation and, although such matters are outside the scope of this Approved Code of Practice, such instructions should preferably be combined with the guidance required by this Approved Code of Practice to form complete operating instructions for the system. Where manufacturer's/supplier's instructions are appropriate to the particular installation, consistent with the user operating requirement and sufficiently comprehensive, they should be used as the whole or part of the instructions required by this paragraph.

2 The instructions should include all information which the operators need for safety. These should include such matters as start up and shut down procedures, precautions needed during stand by operation, the likely fluctuations which may occur in normal operation, the function and effect of controls and the procedures to be followed in the case of emergency.

part III: pressure systems

3 Instructions should be given in the most appropriate way, and should be readily available to operators. Instructions should also be given as part of any training programme. Simple concise instructions may be displayed near the relevant part of the system where they can easily be seen by the operator. Displayed instructions should be pointed out to the operator before first use of the system.

4 Where a vessel or vessels in the system are fitted with quick opening or bolted doors for access during a process cycle, then the following should be part of the instructions:

(a) the procedure for checking the door locking mechanisms in the open and closed positions;

(b) the procedure for tightening and releasing the securing bolts of multi-bolted doors;

(c) the procedure for verifying that venting is complete before attempting to disengage the door securing mechanism; and

(d) information on the dangers of forcing the doors into position and of by-passing or interfering with door mechanisms.

5 In the case of leased systems (see Section 13 of this Approved Code of Practice) the owner should supply the necessary operating instructions and the person or organisation using the system should ensure that the system is operated in accordance with those instructions.

Steam and pressurised hot water plant

6 Pre-firing and start up instructions should include:

(a) methods of establishing the proper water level in the boiler and maintaining adequate water supplies;

(b) methods of carrying out any necessary flue gas side purging;

(c) methods of establishing correct firing conditions in order that pressure/temperature are raised carefully, preventing undue thermal shock; and

(d) procedures to avoid water hammer.

7 There should be instructions covering:

(a) if appropriate, the feed water treatment;

(b) the safe blow down of the boiler and any other part of the system requiring such treatment;

(c) the precautions to be taken when emptying the boiler, e.g. by allowing it to cool down sufficiently before emptying it; and

(d) the procedures to be followed in the event of a shortage of water, bursting of tubes or other event requiring the boiler to be shut down.

Compressed air systems

8 The instructions should at least cover such of the following items as are relevant to the system:

(a) the pre-start checks to be carried out;

(b) the circumstances in which the compressor should be shut down, e.g. when specified operating limits are exceeded;

(c) clear and concise instructions on the emergency shut down procedure;

(d) instructions for checking and topping up of compressor lubricants;

(e) instructions for draining of receivers, intercoolers, aftercoolers, pipework, etc;

(f) instructions regarding the keeping of operating logs or running records;

(g) the purpose and operation of protective devices;

(h) instructions regarding the need for good housekeeping, in particular where dirt and/or spillage may affect the operation of or obscure any protective devices;

(i) warnings of the dangers associated with the removal of inspection covers or pipework before residual pressure has been vented; and

(j) instructions on the thorough cleaning of receivers at the time of examination.

Section 10. Maintenance

1 The user of an installed system or owner of a mobile system is required to maintain the pressure system in good repair, so as to prevent danger. The maintenance needs should be determined taking into account the age of the system, the conditions of operation and the environment in which it works. Account should also be taken of whatever relevant records are available on such matters as running hours of the system, results of examinations by the competent person, routine checks and inspections and any repair or modifications.

2 Consideration should be given as to what systems or parts require routine, regular checks and replacement. For example, lubricating fluids and coolants often need to be regularly topped up or changed. Some parts of systems should be subject to sample inspection during regular shut downs when signs of deterioration such as leakage, external damage or corrosion are apparent. Pipework systems for instance may not be subject to examination under the written scheme, but periodic checks are necessary at particularly vulnerable areas such as expansion loops, bends and low points. Systems which have been out of service for a significant time will need more detailed checks and maintenance before being returned to service. Some systems should be subject to a formal preventative maintenance programme to ensure that they are kept in a safe condition.

part III: pressure systems

3 Where protective devices are liable to be rendered ineffective by accumulations of deposits of waste material evolved during process operations, frequent checks are required to maintain the protective devices in efficient working order. Experience will dictate the frequency of such checks.

4 Where manufacturer's/supplier's instructions are appropriate to the system and sufficiently comprehensive they should be used.

5 The method by which maintenance staff are provided with the instructions which are needed to ensure proper maintenance, will depend on the complexity of the system and the user's organisational arrangements. For example, a simple maintenance schedule could take the form of a check list beside the systems concerned. Whatever planning system is used, the aim should be to select the method which will be most effective.

Section 11. Keeping of records

1 Where a pressure system or part of a pressure system is required to have a written scheme of examination, then it should have records which are sufficient to enable the condition of safety critical parts of the system to be determined, and their fitness for further operation properly assessed.

2 Whatever method is used for the keeping of records, it should be adequate to ensure that the records allow for a relevant and coherent listing of the system to be retrieved, (see Appendix 3 for suggested items for an examination report for small and medium size systems). These records should be kept available for inspection by the Health and Safety Inspectorate of the Employment and Social Security Department or the competent person.

3 The records should be clearly identifiable with the system and parts of the system to which they refer.

Section 12. Precautions to prevent pressurisation

1 The purpose of this requirement is to prevent an unintentional build up of pressure in a vessel which is provided with a permanent outlet to atmosphere, or to a space where the pressure does not exceed atmospheric. The user shall ensure that the outlet is kept free from obstruction when the vessel is in use.

part III: pressure systems

Section 13. Modification of duties in cases where pressure systems are supplied by way of lease, hire or other arrangements

1. This Section applies where a person supplies an installed system by way of lease or hire and agrees in writing to be responsible for discharging the duties of the user under Section 6 (1), 7 (1), 9 (1), 10 and 11. It allows the supplier to assume the duties for compliance for those duties which deal with in-service examinations for the time the agreement is in force.It shall be a defence in any proceedings for breach of a duty of any such provisions against the user of an installed system, for that person to prove that the supplier had agreed in writing to be responsible for discharging the User's duty at the relevant time.

2. Where the competent person who is to carry out the examination under the scheme of examination is a person other than the supplier, the supplier shall notify the competent person that any reports required to be sent or given to the User under Section 7 or 8 shall be sent or given to the supplier as well.

3 On receipt of a report from a competent person under Section 7, the supplier shall take all practicable steps to ensure that the pressure system will not be operated in contravention of Sections 7 and 8 as the case may be.

4 Where a person supplies a pressure system to another ("the customer") under a hire-purchase agreement, conditional sale agreement, or lease, the customer and not the person who provided the finance shall be treated for the purposes of this Approved Code of Practice, as being the owner of the pressure system. The duties placed on the owner in this Approved Code of Practice shall accordingly fall on the customer and not on the person providing the finance.

part IV: transportable gas containers

Section 14. General duties

1 There are a number of general duties as follows:

(a) containers which require protective valve caps or covers should have the caps or covers in position before they are dispatched from or to fillers/testers;

(b) containers should not be used for any purpose other than the storage and supply of fluids, e.g. as rollers or supports, although if suitably constructed may support either other similar containers in a properly assembled container stack during storage, or suitably designed appliances;

(c) containers should be safely stowed when not being moved about. They should be secured, unless designed so as to be left free-standing in safety;

(d) containers should not be dropped in service except on to suitable handling mats;

(e) valves should be kept closed while the container is not in use. Where replaceable dust caps are provided, they should be fitted to prevent moisture or dirt accumulating in the valve while the container is not in use.

Lifting (mechanical)

2 There are a number of general duties as follows:

(a) valves, shrouds and caps should not be used for lifting containers unless they have been designed and constructed for the purpose;

(b) when a hoist or crane is used for lifting containers, suitable lifting gear should be used to ensure the safety of the containers;

(c) containers should not be raised or lowered on the forks of lift trucks unless adequate precautions are taken to prevent the containers falling from the forks.

Transport

3 During transport, containers should be firmly secured in cradles, multi-pallets, trolleys or similar suitable frameworks, or other methods adopted to limit container movement, and prevent the container from falling off the vehicle or projecting beyond the sides or end of the vehicle, while being conveyed.

Storage

4 There are a number of general duties as follows:

(a) containers should be stored in a safe place in the open air or, if this is not reasonably practicable, in an adequately ventilated building or compartment of a building reserved for such storage. Containers that have been loaded should be removed from the loading place as soon as is reasonably practicable;

(b) containers should be protected from external heat sources which may adversely affect their mechanical integrity and thus place them outside their design criteria and original manufacturing specification;

(c) containers should be stored in such a way that they do not normally stand or lie in water;

part IV: transportable gas containers

(d) special consideration should be given to the storage of containers of flammable, oxidising or toxic gases having regard to the nature of the gases they contain;

(e) the guidance in this paragraph is in addition to and not in substitution for the requirements of the Safeguarding of Workers (Highly Flammable Liquids) (Jersey) Regulations, 1979, or the Safeguarding of Workers (Liquefied Petroleum Gas) (Jersey) Regulations, 1984.

Lubrication

5 Oils or other lubricants should not be used on valves or other fittings of any container unless they are either compatible with the gas within the container or cannot come into contact with the gas.

Section 15. Design standards

1 No person shall supply for the first time or import a transportable gas container unless the container has been verified as conforming to a recognised design standard or design specification. (The verification can either be by certificate or by means of stamping the container).

2 The reference to the supplying of a transportable gas container for the first time is a reference to supplying an unused transportable gas container, that is, one from which a relevant fluid has not been used.

Section 16. Filling of containers

1 The markings on the containers will provide the record of container identity, age, specification, test and examination requirements.

2 Accordingly, before the filler passes the container for refilling he should be satisfied that the container is within the date for periodic examination and test (see Appendix 5).

3 If the filler is unable to identify the container as one made to an approved standard or specification, or to distinguish the test details, he will be unable to pass the cylinder as safe for use without further detailed investigation.

4 The other appropriate safety checks, once the container has been identified as being made to an appropriate standard or specification and being within date for periodic examination, must consist of finding out the physical condition of the container by visual means.

5 The following external checks should be made:

(a) the general external condition of the container, including the foot-ring and valve shroud (if fitted), looking particularly for signs of cracking, corrosion, pitting or bulging of the pressure containing parts or unacceptable damage;

(b) any indications of the container having been exposed to fire damage or excessive heat;

part IV: transportable gas containers

(c) whether the container valve is in good condition and operates satisfactorily;

(d) if there is any visible evidence that the container has been subjected to any illegal modifications or repairs.

Containers should be rejected if they do not at least meet the above criteria for acceptability. Persons carrying out checks may wish additionally to mark containers in a prominent way to distinguish, more easily, the ones due for re-examination and test.

6 Any container considered to be unfit for filling should be subjected to an examination and, if necessary, to tests as specified in BS 5306, BS 5430 or BS 6071 to establish whether the container can be re-introduced into service. (See Appendix 5.)

7 No person shall fill a fluid other than that indicated on the container, unless a competent person is satisfied that the container is of a type, construction and condition suitable for the proposed change of service. The container should then be given appropriate identification before being redirected to a different service.

8 The employer of a person who fills a transportable gas container with a relevant fluid at work shall ensure that, after filling that person checks that:

(a) it is within its safe operating limits;

(b) that it is not over filled;

(c) that he removes any excess fluid in a safe manner in the event of over filling.

The employer shall also ensure that no person employed by him refills at work a non-refillable container with a relevant fluid.

9 For containers, some of the safe operating limits are those which place restrictions on:

(a) the purpose for which the container is suitable;

(b) the composition of fluid which can be filled;

(c) the maximum quantity of fluid or maximum permissible gas pressure at the reference temperature;

(d) the dryness of the fluid and container, where relevant.

10 After the container has been filled the container valve should be checked for leaks.

11 Appropriate techniques should be used for drying the container and the fluid where the presence of moisture contamination is liable to impair the pressure integrity of the container.

part IV: transportable gas containers

12 Containers should be thoroughly purged where this is necessary to prevent mixtures of fluid occurring which are liable to affect the pressure integrity of the container.

13 The maximum quantity of fluid allowed in containers should be established from the relationship between the charging pressure or filling ratio as appropriate, and the test pressure determined from the relevant parts of BS 5355 (see Appendix 5) and the design standard to which the cylinder is manufactured.

14 The maximum permissible pressure in containers for dissolved acetylene should be 16 bar gauge (232 psi gauge) at a temperature of 15°C unless the design standard specifically allows or requires a different pressure.

Section 17. Examination of containers

1 The owner of a transportable gas container shall, for the purpose of determining whether it is safe, ensure that the container is examined at appropriate intervals by a competent person. Examinations carried out in accordance with BS 5430, BS 6071 or BS 5306 (see Appendix 5) where applicable, are acceptable.

2 A competent person should be competent to carry out periodic examinations and tests of transportable gas containers for the purpose of identifying relevant defects, and assessing that the container is safe for further use.

3 After satisfactory completion of the periodic examinations and tests the competent person should place sufficient new markings on the containers, including the dates of the examinations, as required by the relevant standard or specification.

Section 18. Repair work or modification of containers.

1 An employer shall ensure that no person employed by him carries out at work any major repair or modification on the body of a transportable gas container -

(a) of seamless construction, or

(b) which has contained acetylene.

2 An employer shall ensure that no person employed by him carries out at work any major repair or modification on the body of any other type of transportable gas container unless he is competent to do so, or if the modification would put the container outside the scope of the design standard or design specification to which it was originally designed.

3 No person shall supply a transportable gas container for use which has undergone major repair or modification unless following such work a person or body of persons competent to do so has marked or certified it as being fit for use.

4 Paragraph (1) shall not apply to the remaking of a thread if this is done in accordance with an approved standard.

5 In this Section "major repair" means any repair involving hot work or welding on the body of a transportable gas container but (except in relation to paragraph (1)(b)) it does not mean heat treatment applied for the use of restoring the metallurgical properties of the container.

part V: exemptions

Section 19. Pressure systems and transportable gas containers - Partial exemptions from this Approved Code of Practice

Portable oxy-fuel gas welding sets are exempt from having a written scheme of examination (Section 6), and from examinations, in accordance with a written scheme of examination (Section 7). Written schemes 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, burning and cutting).

In the context of gas welding sets, the pressure systems they form do not contain any protective devices as defined in the Approved Code of Practice, nor do they contain any components (apart from the gas cylinders) whose failure is likely to give rise to danger as a result of the release of stored energy.

Section 15 shall not apply to any transportable gas container which-

(a) is a refillable container; and

(b) is used solely for containing liquefied petroleum gas; and

(c) has a water capacity up to and including 6.5 litres.

The limited exemption of Section 15 is given to certain small imported liquefied petroleum gas cylinders which are generally not used in work situations, and to which it is not practicable to apply all the provisions of the Approved Code of Practice, because of design features. It should be noted however that such cylinders still have to be properly constructed and, in accordance with Section 15, the filler has to make appropriate safety checks before they are filled. Where there is any doubt about the safety of such a cylinder, it should be reconditioned or scrapped by the filler.

Section 20. Pressure systems and transportable gas containers - Exemptions from this Approved Code of Practice

The following is a list of pressure systems exempted from this Approved Code of Practice:

1 A pressure system which forms part of any braking, control or suspension system of a wheeled or tracked vehicle.

(This Approved Code of Practice is not intended to cover pressure systems which form part of the braking, control or suspension system of road or rail vehicles. No internal combustion engine of itself is considered to be covered by this Approved Code of Practice.)

2 That part of a system which is only a pressure system because it is:

a. subject to a leak test;

b. pressurised unintentionally, such pressurisation being not reasonably foreseeable.

part V: exemptions

(A system which is only a pressure system because it is subject to a leak test, is not covered by the Approved Code of Practice. For example, a road tanker under leak test would not be subject to this Approved Code of Practice, although appropriate precautions will of course need to be taken under other relevant statutory provisions. Likewise radiators under leak test will be exempt from the Approved Code of Practice under this provision.

The exception also extends to situations where pressurisation is unintentional and not reasonably foreseeable. This is not a blanket exception to cover situations where the hazard should have been foreseen but was not. Proper enquiry is necessary to ascertain the safe operating limits when new plant or processes are developed, and protective measures should be designed into the plant if loss of process control can lead to excess pressure generation within the system.)

3 Any pipework and its protective devices containing a Liquid Petroleum Gas/Air mixture.

(The effect of this paragraph is to exclude from the Approved Code of Practice low pressure pipework of the Jersey Gas Company Ltd. distribution systems.)

4 Any pressure system comprising a gas propulsion or gas fired heating, cooking, ventilating or refrigeration system fitted to a motor vehicle or trailer.

(This provision exempts from the Approved Code of Practice the fuel storage tank and fuel system of a vehicle which uses a relevant fluid for propulsion and also exempts other pressure systems found on a vehicle such as those for heating, cooking, ventilation and refrigeration.)

5 Any water cooling system of an internal combustion engine or on any compressor.

(The Approved Code of Practice does not apply to a pressure system which is part of a braking, control or suspension system of a vehicle (exception 1) or to prime movers which are pressure vessels (exception 11). This paragraph confirms the exception of pressurised water cooling systems both for internal combustion engines and compressors.)

6 A container of the type known as a two-part beer keg, one part of which is intended to contain a gas or mixture of gasses under pressure.

(This exception for the two-part beer keg relates to a particular type of keg well known in the industry to which it would be inappropriate to apply the requirements for gas cylinders.)

part V: exemptions

7 A container used for the conveyance or storage of beer or carbonated drinks, the capacity of which does not exceed 0.252 cubic metres and the maximum working pressure of which is not greater than 12 bar gauge (174 psi gauge).

(This exception refers to the container used to convey and keep soft drinks and beer. However, the Approved Code of Practice still applies to the high pressure side of the system, namely the compressed gas cylinder and any associated pipework and fittings designed to reduce the cylinder pressure to the operating pressure in the system.)

8 Any tyre used or intended to be used on a vehicle.

(The exception clause for tyres has been inserted to make it clear that a tyre should not be considered a rigid vessel, and so brought inadvertently within the scope of the Approved Code of Practice.)

9 Any vapour compression refrigeration system incorporating compressor drive motors, including standby compressor motors, having a total installed power not exceeding 25 kW and where the largest vessel has a pressure volume product below 250 bar litres.

(This exemption totally excludes the smaller systems from the application of the Approved Code of Practice. It is recognised within the refrigeration industry that there is in addition a considerable number of existing systems which, because of their design and non-corrosive contents, do not need more than an external examination as part of an established maintenance routine. Such systems will have the safe operating limits expressed in terms of maximum and minimum temperatures. They will need a simple written scheme of examination which will acknowledge that the necessary examination is part of the laid-down regular maintenance, and that initial testing and operational experience make internal examination unnecessary. Such a statement should be drawn up or certified as suitable by a competent person (see Section 1a).)

10 Prime movers including turbines but not including steam locomotives or traction engines.

part V: exemptions

11 Any portable fire extinguisher with a working pressure below 25 bar (362.5 psi) at 60°C and having a total mass not exceeding 23 kilograms.

(Portable fire extinguishers are excluded from the Approved Code of Practice if they have a working pressure below 25 bar (362.5 psi) at 60°C, and have a total mass not exceeding 23 kilograms. This definition is taken from BS 5423 (See appendix 5). This therefore excludes from the scope of the Approved Code of Practice all portable fire extinguishers except those which are in effect gas cylinders used as extinguishers such as carbon dioxide and halon types. However, fixed (installed) fire extinguishing systems containing a relevant fluid are subject to the Approved Code of Practice as a pressure system.)

12 Any part of a tool or appliance (designed to be held in the hand) which is a pressure vessel.

(Hand-held tools which otherwise might be considered covered by the Approved Code of Practice as pressure vessels, are exempt. These are often small compressed air-driven tools. However, such tools, and the hoses and couplings used to connect them to the system, will still need regular safety checks.)

appendices

Appendix 1. Marking of pressure vessels (Section 3).

The information referred to in Section 3 is as follows:

1 The manufacturer's name.

2 A serial number to identify the vessel.

3 The date of manufacture of the vessel.

4 The standard to which the vessel was built.

5 The maximum design pressure of the vessel.

6 The minimum design pressure of the vessel where it is other than atmospheric.

7 The design temperature.

Appendix 2. Guidance on the contents of a written scheme of examination (Section 6).

The typical contents of a scheme of examination (Section 6) are as follows:

1. Plant designation (e.g. Compressor House).
2. Those parts of the pressure system which are to be examined (see Section 6 paragraph 3).
3. Nature of the examination required for those parts (i.e. internal/external, any non destructive testing etc.). This should cover the nature of the checks to be undertaken on protective devices.
4. Any preparatory work for the examination.
5. The date by which the initial examination is to be completed (for systems newly installed).
6. The maximum intervals between examinations.
7. Any critical parts of the system which, if modified or repaired, should be examined by a competent person before the system is used again.
8. Name of competent person drawing up or certifying the scheme of examination.

Appendix 3. Report of examination of a pressure system under the scheme of examination (Section 7).

1. All systems

   (a) Name and address of owner.

   (b) Whether subject to a written agreement under Section 20
   Yes/No.

2. Installed systems

   Address of location of system and name of user if different from (1).

appendices

3. All systems

(a) Identification of system or part(s) of system examined (i.e. vessel number etc.).

(b) Condition of system or parts examined.

(c) Result of examination.

(d) Any repairs which are needed and time within which they should be completed.

(e) Any changes in safe operating limits of the system and the date by which those changes should be made.

(f) In the light of any deterioration, or other circumstances, whether any change is advised in the scheme of examination.

(g) Date by which the next examination is required to have been completed.

(h) Where the current examination has been postponed in accordance with Section 7, names of appropriate members of both the competent person's and the user's/owner's organisation, date of giving the relaxation, and the new date by which the examination is to be completed.

(i) Other observations.

(Note; This examination relates to those parts of the pressure system where there is reasonable foreseeable risk of injury from system failure.)

(j) Date of current examination.

(k) Name and address of competent person carrying out examination.

(l) Signature (or authorisation) on behalf of.....

(m) Date of report.

Appendix 4. Duties for existing systems

The duties for owners and users under the Approved Code of Practice for existing plant (excluding gas cylinders, and open vented vessels) are given in Figure 1.

The duties for owners and employers under the Approved Code of Practice for Transportable Gas Containers are given in Figure 2.

Appendix 5. Relevant British Standards

BS 5306	Fire extinguishing installations and equipment on premises.
BS 5355	Specification for filling ratios and developed pressures for liquefied and permanent gases.
BS 5430	Specification for periodic inspection, testing and maintenance of transportable gas containers (excluding dissolved acetylene).
Part 1	Seamless steel containers.
Part 2	Welded steel containers of water capacity 1 litre up to 130 litres.
Part 3	Seamless aluminium alloy containers.
BS 6071	Specification for periodic inspection and maintenance of transportable gas containers for dissolved acetylene.

figure 1 - pressure systems - duties of users and owners

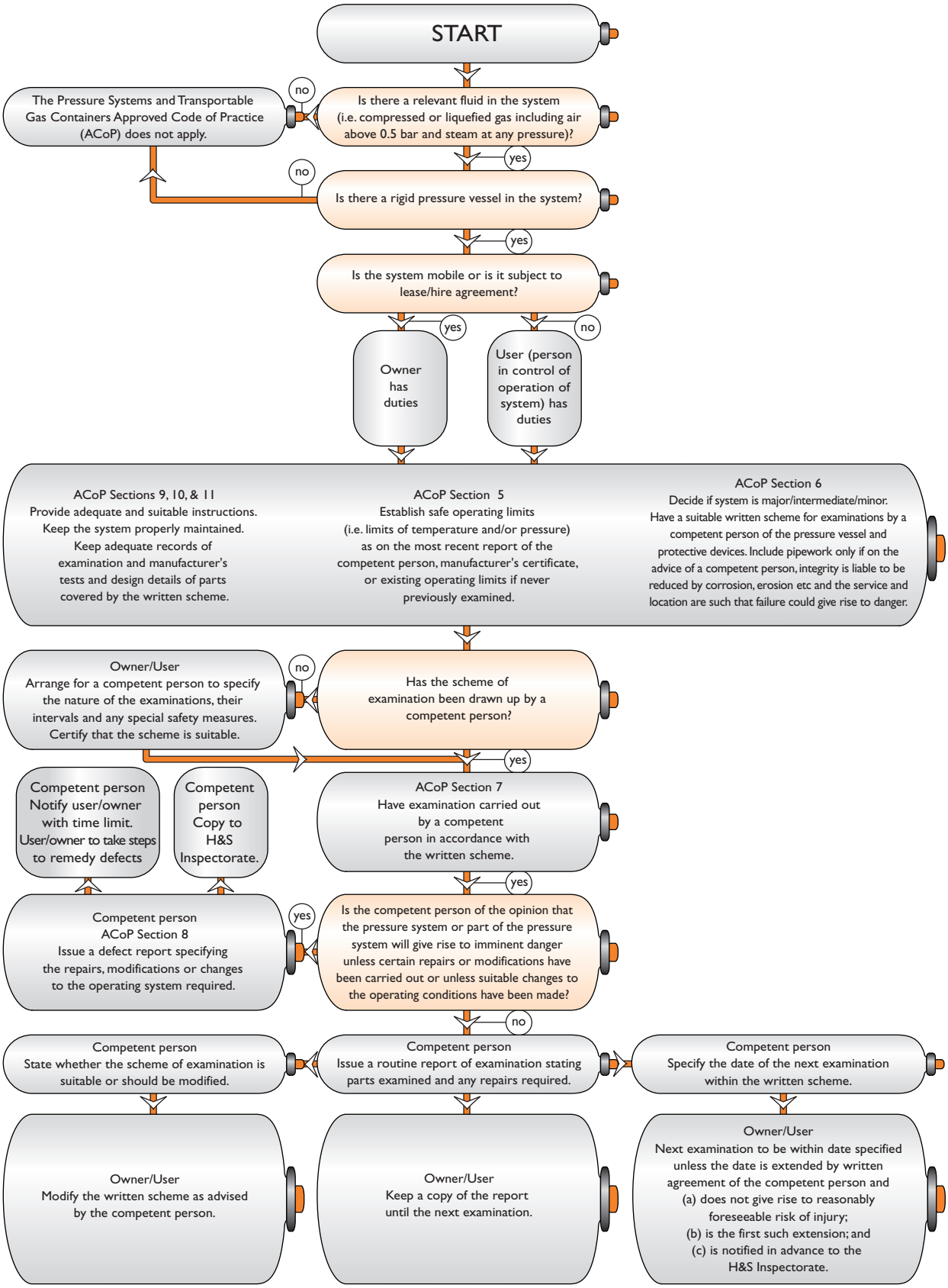
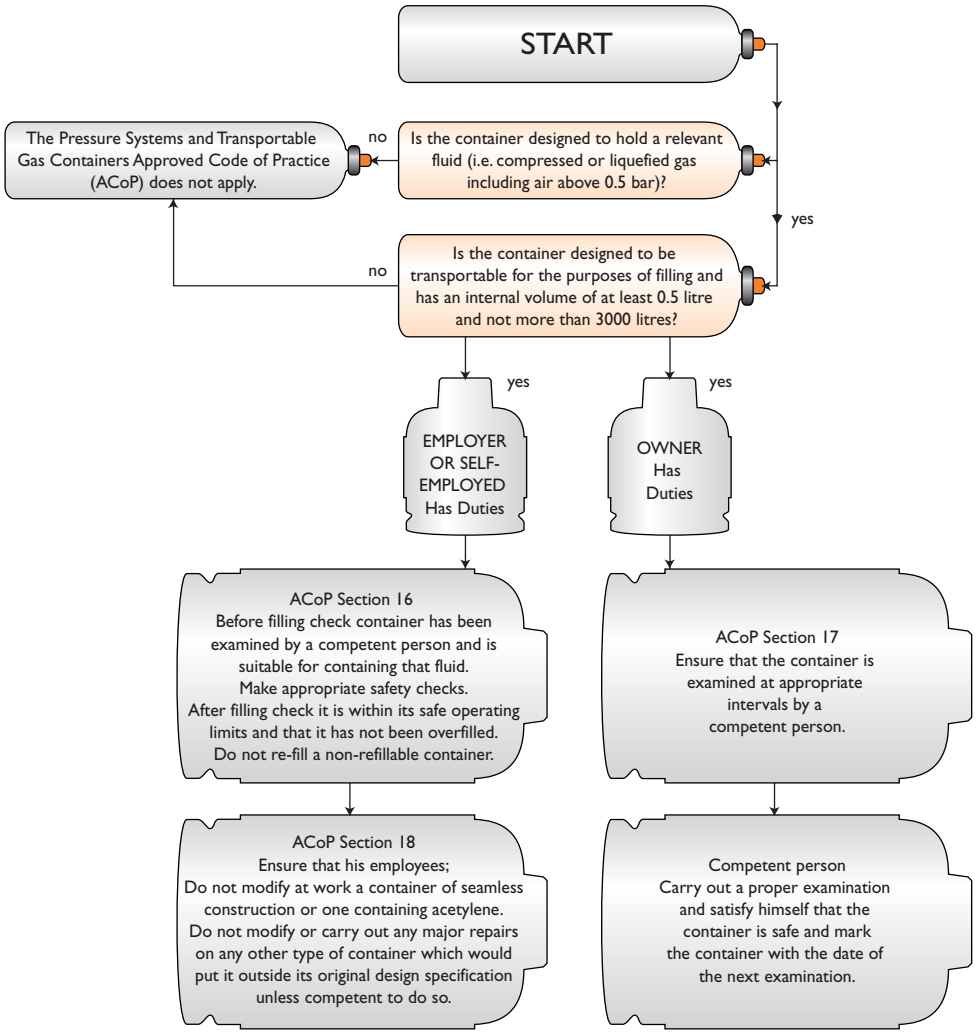


figure 2 - transportable gas containers - duties of owners and employers



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