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## Legislation

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## II

*(Acts whose publication is not obligatory)*

## COUNCIL

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to seamless, steel gas cylinders

(84/525/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Whereas in the Member States the construction of gas cylinders and the relevant controls are subject to mandatory provisions varying from one Member State to another and consequently hinder the trade in such vessels; whereas it is therefore necessary to approximate these provisions;

Whereas Council Directive 76/767/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to common provisions for pressure vessels and methods of inspecting them <sup>(3)</sup>, as amended by the Act of Accession of 1979, lays down in particular the procedures of EEC pattern approval and

verification for these vessels; whereas, according to that Directive, it is advisable to lay down the technical requirements to be complied with by EEC-type seamless, steel gas cylinders with a capacity of 0,5 to 150 litres in order to be importable, commercialized and used without restraint after having undergone inspection and bearing accordingly a mark and a symbol,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive shall apply to the steel pressure-resistant shells of seamless cylinders, i.e. formed from a single piece, capable of being refilled and transported, with a capacity of between 0,5 and 150 litres inclusive and designed to contain compressed, liquefied or dissolved gases. These gas cylinders are hereinafter referred to as 'cylinders'.

2. This Directive shall not apply to cylinders made of austenitic steel or to cylinders to which metal is added when the base is being sealed.

3. This Directive shall apply irrespective of the number of outlets the cylinder has (one or two).

<sup>(1)</sup> OJ No C 2, 9. 1. 1974, p. 64.

<sup>(2)</sup> OJ No C 101, 23. 11. 1973, p. 25.

<sup>(3)</sup> OJ No L 262, 27. 9. 1976, p. 153.

*Article 2*

For the purposes of this Directive, 'EEC-type cylinder' shall mean any cylinder designed and manufactured in such a way that it satisfies the requirements of this Directive and of Directive 76/767/EEC.

*Article 3*

No Member State may, on grounds relating to the construction or inspection of a cylinder within the meaning of Directive 76/767/EEC and this Directive, refuse, prohibit or restrict the marketing and placing in service of an EEC-type cylinder.

*Article 4*

All EEC-type cylinders shall be subject to EEC pattern approval.

All EEC-type cylinders shall be subject to EEC verification with the exception of cylinders with a hydraulic test pressure of 120 bars or less and with a capacity of not more than one litre.

*Article 5*

Any amendments necessary to adapt sections 2.1.3, 2.1.4, 2.3, 3.1.1.1, 3.4, 3.5, 3.6, 3.7, 4, 5 and 6 of Annex I and the other Annexes to this Directive to technical progress shall be adopted in accordance with

the procedure laid down in Article 20 of Directive 76/767/EEC.

*Article 6*

The procedure laid down in Article 17 of Directive 76/767/EEC may apply to section 2.2 of Annex I to this Directive.

*Article 7*

1. Member States shall bring into force the laws, regulations and administrative provisions needed in order to comply with this Directive within 18 months of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 8*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive has been notified to the Member States on 26 September 1984.

## ANNEX I

## 1. DEFINITIONS OF, AND SYMBOLS FOR, THE TERMS USED IN THIS ANNEX

## 1.1. YIELD STRESS

For the purposes of this Directive, the yield stress values used in the calculation of the parts subjected to pressure shall be as follows:

- when a steel does not display a lower and an upper yield point, the minimum value of the conventional yield point  $R_{p0,2}$  is to be taken;
- when a steel displays a lower and an upper yield point, the value to be taken is:
  - $R_{eL}$ ,
  - $R_{eH} \times 0,92$ , or
  - $R_{p0,2}$ .

## 1.2. BURSTING PRESSURE

For the purposes of this Directive, 'bursting pressure' means the pressure at plastic instability, i.e. the maximum pressure obtained during a pressure bursting test.

## 1.3. SYMBOLS

The symbols used in this Annex have the following meanings:

- $P_h$  = hydraulic test pressure, in bars;
- $P_r$  = cylinder bursting pressure measured during the bursting test, in bars;
- $P_{rt}$  = calculated minimum theoretical bursting pressure, in bars;
- $R_e$  = value of the yield stress taken into account in accordance with 1.1 for the purpose of determining the value of  $R$  used in calculating the parts subjected to pressure, in  $N/mm^2$ ;
- $R_{eL}$  = minimum value of the lower yield point, guaranteed by the cylinder manufacturer, in  $N/mm^2$ ;
- $R_{eH}$  = minimum value of the upper yield point, guaranteed by the cylinder manufacturer, in  $N/mm^2$ ;
- $R_{p0,2}$  = conventional yield point 0,2 %, guaranteed by the manufacturer, in  $N/mm^2$ ;  
The conventional yield point is the value of the stress which gives rise to a non-proportional elongation equal to 0,2 % of the original gauge length.
- $R_m$  = minimum value of the tensile strength guaranteed by the cylinder manufacturer, in  $N/mm^2$ ;
- $a$  = calculated minimum thickness of the cylindrical shell wall, in mm;
- $D$  = nominal outside diameter of the cylinder, in mm;
- $d$  = mandrel diameter for bend tests, in mm;
- $R_{mt}$  = actual tensile strength, in  $N/mm^2$ .

## 1.4. NORMALIZATION

The term 'normalization' is used in this Directive as defined in paragraph 68 of EURONORM 52-83.

Normalization may be followed by tempering at a uniform temperature below the lowest transformation point ( $Ac1$ ) of the steel.

## 1.5. QUENCHING AND TEMPERING

The term 'quenching and tempering' relates to the heat treatment to which a completed cylinder is subjected, during which the cylinder is heated to a uniform temperature above the upper transformation

point (Ac3) of the steel. The cylinder is then cooled at a rate not exceeding 80 % of that obtained by cooling in water at 20 °C and subsequently tempered at a uniform temperature below the lowest transformation point (Ac1) of the steel.

The heat treatment must be such that it does not cause cracks in the cylinder. The cylinders must not be quenched in water without additives.

## 2. TECHNICAL REQUIREMENTS

### 2.1. STEELS USED

2.1.1. A steel shall be defined according to its method of manufacture, its chemical composition and the heat treatment to which the finished cylinder is subjected, and its mechanical characteristics. The manufacturer shall give the corresponding information, taking account of the requirements listed below. Any change in such information shall be deemed to correspond to a change in the type of steel for the purposes of EEC pattern approval.

#### (a) *Method of manufacture*

The method of manufacture shall be defined by reference to the process used (for example open-hearth furnace, oxygen converter, electric furnace) and the killing method used.

#### (b) *Chemical composition*

The chemical composition must show at least:

- the maximum sulphur and phosphorous content in all cases,
- the carbon, manganese and silicon content in all cases,
- the nickel, chromium, molybdenum and vanadium content when such substances are deliberately introduced as alloying elements.

The carbon, manganese, silicon and, where appropriate, nickel, chromium, molybdenum and vanadium content must be given with tolerances such that the differences between the maximum and minimum values for each cast do not exceed:

- carbon:
  - 0,06 % when the maximum content is less than 0,30 %,
  - 0,07 % when the maximum content is 0,30 % or more;
- manganese and silicon:
  - 0,30 %;
- chromium:
  - 0,30 % when the maximum content is less than 1,5 %,
  - 0,50 % when the maximum content is 1,5 % or more;
- nickel:
  - 0,40 %;
- molybdenum:
  - 0,15 %;
- vanadium:
  - 0,10 %.

#### (c) *Heat treatment*

The heat treatment shall be defined in terms of the temperature, the length of time held at the temperature and the nature of the cooling fluid used for each stage of the treatment (normalization, whether or not followed by tempering, or quenching and tempering).

The austenitization temperature before quenching or normalization must be fixed with a margin of 35 °C either way.

The same applies to the tempering temperature.

### 2.1.2. Conditions to be fulfilled

The steel used must be killed steel and resistant to ageing. The whole of the finished cylinder must be subjected to heat treatment which may be either normalization, whether or not followed by tempering,

or quenching followed by tempering. The sulphur and phosphorus contents obtained for the cast sample should each be not more than 0,035 % and must not in total exceed 0,06 %. The sulphur and phosphorus contents obtained for the product must each be not more than 0,04 % and must not in total exceed 0,07 %.

2.1.3. A steel within the meaning of 2.1.1 may not be used by a manufacturer unless it is accepted by a Member State for the manufacture of seamless cylinders. Each Member State shall supply any other Member State on request with a list of the materials used on its territory for the manufacture of the cylinders covered by this Directive.

2.1.4. There must be an opportunity of making independent analyses, in particular for the purposes of checking that the sulphur and phosphorus contents correspond to the requirements of 2.1.2. These analyses must be carried out on either specimens taken from the semi-finished product as supplied to the cylinder manufacturer by the steelmaker or the finished cylinders.

When it is decided to take a specimen from a cylinder, it is permissible for the specimen to be taken from one of the cylinders previously chosen for the mechanical tests specified in 3.1 or for the pressure bursting test specified in 3.2.

## 2.2. CALCULATIONS FOR THE PRESSURE PARTS

2.2.1. The minimum wall thickness shall be at least equal to the greatest value given by the following:

$$— a = \frac{P_h \cdot D}{\frac{20 R}{4/3} + P_h} \text{ mm}$$

where R is the smaller of the following two values:

(1)  $R_e$ ;

(2)  $0,75 \cdot R_m$ , for normalized or normalized and tempered cylinders,  
 $0,85 \cdot R_m$ , for quenched and tempered cylinders.

$$— a = \frac{D}{250} + 1 \text{ mm}$$

$$— a = 1,5 \text{ mm.}$$

2.2.2. If a convex end is obtained by forging from tube, the wall thickness measured at the centre of the shaped end shall be at least  $1,5a$ .

2.2.3. The thickness of the concave base of cylinders must not be less than  $2a$  within the diameter on which the cylinder stands.

2.2.4. In order to ensure satisfactory stress distribution, the thickness of the cylinder walls must increase progressively in the transition section between the cylindrical wall and the base.

## 2.3. CONSTRUCTION AND WORKMANSHIP

2.3.1. The thickness of each cylinder shall be checked and the condition of its internal and external surfaces inspected by the manufacturer in order to verify that:

- the wall thickness is at no point less than that specified on the drawing,
- the internal and external surfaces of the cylinder are free from defects which would adversely affect the operating safety of the cylinder.

2.3.2. The cut-of-roundness of the cylindrical shell must be limited to such a value that the difference between the maximum and minimum outside diameters in the same cross-section is not more than 1,5 % of the average of those diameters.

The maximum deviation of the cylindrical part of the shell from a straight line shall not exceed 3 mm per metre length.

- 2.3.3. Cylinder footings, where provided, must be sufficiently strong and be manufactured from a material which, with regard to corrosion, is compatible with the type of steel of which the cylinder is made. The shape of the footing must give the cylinder an adequate degree of stability. Footings must not allow water to accumulate or permit ingress of water between the ring and the cylinder.

### 3. TESTS

#### 3.1. MECHANICAL TESTS

##### 3.1.1. General requirements

- 3.1.1.1. Except where otherwise specified by this Directive, the mechanical tests shall be carried out in accordance with the following EURONORMS:

EURONORM 2-80: tensile test for steel;

EURONORM 3-79: Brinell hardness test;

EURONORM 6-55: bend test for steel;

EURONORM 11-80: tensile test for steel sheet and strip less than 3 mm thick;

EURONORM 12-55: bend test for steel sheet and strip less than 3 mm thick;

EURONORM 45-63: impact test on a notched test-piece resting on two supports.

- 3.1.1.2. All mechanical tests for checking the quality of the material used in cylinders shall be carried out on test-pieces taken from the finished cylinders.

##### 3.1.2. Types of test and test criteria

Every test cylinder must undergo one tensile test in a longitudinal direction, four bend tests in a circumferential direction and, if the wall thickness makes it possible to take test-pieces at least 5 mm wide, three impact tests. The impact test-pieces shall be taken in a transverse direction; however, if the thickness and/or diameter of the cylinder prevents a test specimen of at least 5 mm wide from being taken in a transverse direction, the impact test-pieces shall be taken in a longitudinal direction.

##### 3.1.2.1. Tensile test

- 3.1.2.1.1. The test-piece shall be in accordance with the provisions:

- of chapter 4 of EURONORM 2-80, where it is 3 mm thick or more,
- of chapter 4 of EURONORM 11-80, where it is less than 3 mm thick. In this case, the gauge width and length of the test-piece shall be 12,5 and 50 mm respectively, irrespective of the thickness of the test-piece.

- 3.1.2.1.2. The two faces of the test-piece corresponding to the internal and external walls of the cylinder must not be machined.

- 3.1.2.1.3. The elongation, expressed as a percentage, must not be less than:

$$\frac{25 \cdot 10^3}{2 R_{mt}}$$

Moreover, the elongation must in no case be less than:

- 14 %, where the test is carried out in accordance with EURONORM 2-80,
- 11 %, where the test is carried out in accordance with EURONORM 11-80.

- 3.1.2.1.4. The value obtained for tensile strength must not be less than  $R_m$ .

The yield stress to be determined during the tensile test shall be that used in accordance with 1.1 for the cylinder calculation. The upper yield point must be determined from the load/elongation diagram or by any other equally precise method.

The value obtained for the yield stress must not be less than  $R_{eH}$ ,  $R_{eL}$  or  $R_{p0,2}$ , as the case may be.

3.1.2.2. *Bend test*

3.1.2.2.1. The bend test shall be carried out on test-pieces obtained by cutting a ring 25 mm wide into two parts of equal length, each of which may be machined only on the edges. The two faces of each test-piece which correspond to the internal and external walls of the cylinder may not be machined.

3.1.2.2.2. The bend test must be carried out using a mandrel of diameter  $d$  and two cylinders separated by a distance of  $d + 3a$ .

During the test the inside face of the ring must remain against the mandrel.

3.1.2.2.3. The test-piece must not crack when bent inwards round a mandrel until the inside edges are no farther apart than the diameter of a mandrel (see diagram in Annex III).

3.1.2.2.4. The ratio ( $n$ ) between the diameter of the mandrel and the thickness of the test-piece must not exceed the values given in the following table:

| Actual tensile strength<br>$R_{mt}$ in N/mm <sup>2</sup> | Value of $n$ |
|----------------------------------------------------------|--------------|
| Up to 440 inclusive                                      | 2            |
| Above 440 to 520 inclusive                               | 3            |
| Above 520 to 600 inclusive                               | 4            |
| Above 600 to 700 inclusive                               | 5            |
| Above 700 to 800 inclusive                               | 6            |
| Above 800 to 900 inclusive                               | 7            |
| Above 900                                                | 8            |

3.1.2.3. *Impact tests*

3.1.2.3.1. The impact test shall be carried out on test-pieces of the EURONORM 45-63 type.

All impact strength measurements shall be carried out at  $-20\text{ }^{\circ}\text{C}$ .

The notch shall be perpendicular to the faces of the cylinder wall.

The test-pieces used for the impact test may not be straightened and must be machined on the six faces, but only to the extent necessary to achieve flat surfaces.

3.1.2.3.2. The average impact strength value obtained from three impact tests in a longitudinal or transverse direction and each of the individual values obtained from the tests may not be less than the corresponding value, expressed in J/cm<sup>2</sup>, indicated in the following table:

|                                  | Steels for which $R_m$ is not more than 650 N/mm <sup>2</sup> |            | Steels for which $R_m$ is greater than 650 N/mm <sup>2</sup> |            |
|----------------------------------|---------------------------------------------------------------|------------|--------------------------------------------------------------|------------|
|                                  | longitudinal                                                  | transverse | longitudinal                                                 | transverse |
| Average of the three test-pieces | 33                                                            | 17         | 50                                                           | 25         |
| Each individual value            | 26                                                            | 13         | 40                                                           | 20         |

### 3.2. HYDRAULIC PRESSURE BURSTING TEST

#### 3.2.1. Test conditions

Cylinders subjected to this test must bear the markings as specified in section 6.

3.2.1.1. The hydraulic pressure bursting test must be carried out in two successive stages, using a test-rig which allows pressure in the cylinder to be increased at an even rate until the cylinder bursts and the curve of pressure variation against time to be recorded. The test must be carried out at room temperature.

3.2.1.2. During the first stage, the increase in pressure shall be constant up to the level at which plastic deformation starts. This rate must not exceed 5 bars/sec.

From the start of plastic deformation (second phase), delivery from the pump must not be more than twice as much as it was in the first phase and must be maintained constant until the cylinder bursts.

#### 3.2.2. Interpretation of test

3.2.2.1. The interpretation of the pressure bursting test shall involve:

- examination of the pressure/time curve to determine the bursting pressure,
- examination of the tear and of the shape of its edges,
- verification, in the case of cylinders with a concave base, that the base of the cylinder has not been reversed.

3.2.2.2. The measured bursting pressure ( $P_r$ ) shall be greater than the value given by:

$$P_r = \frac{20a R_m}{D - a}$$

3.2.2.3. The bursting test must not cause fragmentation of the cylinder.

3.2.2.4. The main tear must not be of the brittle type, i.e. the edges of the fracture must not be radial but be sloping in relation to a diametral plane and must display a contraction.

A fracture shall be acceptable only if it meets the following conditions:

1. In the case of cylinders the thickness 'a' of which does not exceed 7,5 mm:
  - (a) the greater part of the fracture must be unmistakably longitudinal;
  - (b) the fracture must be without multiple branches;
  - (c) the fracture must not have a circumferential development of more than 90° on either side of its main part;
  - (d) the fracture must not extend into those parts of the cylinder which are more than 1,5 times thicker than the maximum thickness measured halfway up the cylinder;
  - (e) in the case of cylinders with convex bases, the fracture must not reach the centre of the cylinder base.

However, it is permissible for condition (d) not to be met:

- (a) in the case of a conical head or convex base where the fracture does not extend into parts of the cylinder having a diameter less than 0,75 times the nominal external diameter of the cylinder;
- (b) in the case of a concave base, where the distance between the furthestmost point of the fracture and the base-plane of the cylinder exceeds 5 times the thickness 'a';

2. In the case of cylinders the thickness 'a' of which exceeds 7,5 mm, the greater part of the fracture must be unmistakably longitudinal.

3.2.2.5. The tear shall not reveal any obvious defect in the metal.

**3.3. PRESSURE CYCLING TEST**

- 3.3.1. Cylinders subjected to this test must bear the markings specified in section 6.
- 3.3.2. The pressure cycling test shall be carried out on two cylinders which are guaranteed by the manufacturer to be reasonably representative of the minimum values specified in the design using a non-corrosive fluid.
- 3.3.3. This test shall be cyclical. The maximum cyclic pressure shall be equal to either the pressure  $P_h$  or two-thirds thereof.

The lower cyclic pressure must not exceed 10 % of the upper cyclic pressure.

The minimum number of cycles and the maximum test frequency are shown in the following table:

| Maximum applied pressure               | $P_h$  | $\frac{2}{3} P_h$ |
|----------------------------------------|--------|-------------------|
| Minimum number of cycles               | 12 000 | 80 000            |
| Maximum frequency in cycles per minute | 5      | 12                |

The temperature measured on the outer wall of the cylinder must not exceed 50 °C during the test.

The test shall be considered satisfactory if the cylinder attains the required number of cycles without developing a leak.

**3.4. HYDRAULIC TEST**

- 3.4.1. The water pressure in the cylinder must increase at an even rate until the pressure  $P_h$  is reached.
- 3.4.2. The cylinder must remain under the pressure  $P_h$  long enough to make it possible to establish that the pressure shows no tendency to fall and that there are no leaks.
- 3.4.3. After the test the cylinder must show no permanent deformation.
- 3.4.4. Any tested cylinder which does not fulfil the test requirements shall be rejected.

**3.5. CHECK ON THE CONSISTENCY OF A CYLINDER**

This test involves checking that any two points on the metal of the external surface of the cylinder do not differ in hardness by more than 25 HB. The check must be carried out on two transverse sections of the cylinder near the head and the base, at four evenly spaced points.

**3.6. CHECK ON THE CONSISTENCY OF A BATCH**

This test, which is carried out by the manufacturer, involves checking by means of a hardness test or some other appropriate means that no error has been made in the choice of the original material (sheet metal, billet, tubing) or in carrying out the heat treatment. However, in the case of normalized but non-tempered cylinders, the test need not be carried out on each cylinder.

**3.7. CHECK ON BASES**

A meridian section shall be made in the base of the cylinder and one of the surfaces thus obtained polished for examination under a magnification of between 5 and 10.

The cylinder must be regarded as defective if the presence of fissures is detected. It is also to be regarded as defective if the dimensions of any pores or inclusions present reach values considered to pose a threat to safety.

#### 4. EEC PATTERN APPROVAL

The EEC pattern approval referred to in Article 4 of the Directive may also be issued for families of cylinders.

'Family of cylinders' means cylinders from the same factory which differ only in their length, but within the following limits:

- the minimum length must not be less than 3 times the diameter of the cylinder;
- the maximum length must not be more than 1,5 times the length of the tested cylinder.

4.1. The applicant for EEC pattern approval shall, for each family of cylinders, submit the documentation necessary for the checks prescribed below and make available to the Member State a batch of 50 cylinders from which the number of cylinders required for the tests referred to in the same paragraph will be taken, together with any additional information required by the Member State. The applicant must indicate the type and duration of heat treatment and the temperatures. He must obtain and provide cast analysis certificates for steel supplied for cylinder manufacture.

4.2. In the course of the EEC pattern approval process, the Member State shall:

4.2.1. verify that:

- the calculations specified in 2.2 are correct,
- the thickness of the walls on two cylinders meets the requirements of 2.2, the measurements being taken on three transverse sections and over the whole circumference of the longitudinal sections of the base and head,
- the conditions specified in 2.1 and 2.3.3 are fulfilled,
- the requirements of 2.3.2 are complied with for all cylinders selected by the Member State,
- the internal and external surfaces of the cylinders are free of any defect which may make them unsafe.

4.2.2. carry out the following tests on the cylinders selected:

- the tests specified in 3.1, on two cylinders; however, where the length of the cylinder is 1 500 mm or more, the tensile test in a longitudinal direction and the bend tests shall be carried out on test-pieces taken from the upper and lower regions of the shell,
- the test specified in 3.2, on two cylinders,
- the test specified in 3.3, on two cylinders,
- the test specified in 3.5, on one cylinder,
- the test specified in 3.7, on all the sample cylinders.

4.3. If the results of the checks are satisfactory, the Member State shall issue the EEC pattern approval certificate in accordance with the model contained in Annex IV.

#### 5. EEC VERIFICATION

5.1. FOR THE PURPOSE OF EEC VERIFICATION, THE CYLINDER MANUFACTURER SHALL:

5.1.1. provide the inspection body with the EEC pattern approval certificate;

- 5.1.2. provide the inspection body with certificates stating the cast analyses of the steel supplied for the construction of the cylinders;
- 5.1.3. have a means of identifying the cast of steel from which each cylinder was made;
- 5.1.4. provide the inspection body with the documents relating to heat treatment, necessary to certify that the cylinders provided by him are in either the normalized or the quenched and tempered condition, and state the treatment applied;
- 5.1.5. provide the inspection body with a list of the cylinders, stating the numbers and inscriptions as required in section 6.

## 5.2. DURING EEC VERIFICATION

### 5.2.1. The inspection body shall:

- ascertain that the EEC pattern approval certificate has been obtained and that the cylinders conform to it,
- check the documents which give data concerning the materials,
- check whether the technical requirements set out in section 2 have been met, and in particular check by an external, and if possible internal, visual examination of the cylinders whether the construction and the checks carried out by the manufacturer in accordance with 2.3.1 are satisfactory; the visual examination shall cover at least 10 % of the cylinders submitted,
- carry out the tests specified in 3.1 and 3.2,
- check whether the information supplied by the manufacturer in the list referred to in 5.1.5 is correct; this shall be done by means of a random check,
- assess the result of the checks on the consistency of the batch carried out by the manufacturer in accordance with 3.6.

If the results of the checks are satisfactory, the inspection body shall issue an EEC verification certificate conforming to the model contained in Annex V.

### 5.2.2. For the two types of test prescribed in 3.1 and 3.2, two cylinders shall be taken at random from each batch of 202 cylinders or part thereof that have been made from the same cast and have undergone the specified heat treatment in identical circumstances.

One of the cylinders shall be subjected to the tests specified in 3.1 (mechanical tests) and the other to the test specified in 3.2 (bursting test). If it is shown that a test has been wrongly carried out or that a measuring error has been made, the test must be repeated.

If one or more tests prove even partially unsatisfactory, the cause must be investigated by the inspection body.

#### 5.2.2.1. If the failure is not due to the heat treatment, the batch shall be rejected.

#### 5.2.2.2. If the failure is due to the heat treatment, the manufacturer may subject all the cylinders in the batch to re-heat treatment.

Following re-heat treatment:

- the manufacturer shall carry out the check provided for in 3.6,
- the inspection body shall carry out all the tests provided for in the first and second paragraphs of 5.2.2.

If the cylinders are not subject to re-heat treatment or if the results of the check and tests carried out following re-heat treatment do not satisfy the requirements of this Directive, the batch shall be rejected.

- 5.2.3. The selection of specimens and all the tests shall be carried out in the presence and under the supervision of a representative of the inspection body.

- 5.2.4. After all the specified tests have been carried out, all the cylinders in the batch shall be subjected to the hydraulic test specified in 3.4 in the presence and under the supervision of a representative of the inspection body.

### 5.3. EXEMPTION FROM EEC VERIFICATION

In the case of the cylinders exempted from EEC verification pursuant to Article 4 of this Directive, all the test and inspection operations prescribed in 5.2 shall be carried out by the manufacturer on his own responsibility.

The manufacturer shall provide the inspection body with all the documents and the test and inspection reports.

## 6. MARKS AND INSCRIPTIONS

The marks and inscriptions specified in this section shall be stamped visibly, legibly and indelibly on the shoulder of the cylinder.

In the case of cylinders with a capacity of not more than 15 litres the marks and inscriptions may be stamped on either the shoulder or another sufficiently thick part of the cylinder.

A diagram showing examples of the marks and inscriptions is given in Annex II.

### 6.1. STAMPING OF MARKS

By way of derogation from the requirements of section 3 of Annex I to Directive 76/767/EEC, the manufacturer shall stamp the EEC pattern approval mark in the following order:

- for the cylinders subject to EEC pattern approval and EEC verification pursuant to Article 4 of this Directive:
  - the stylized letter  $\Sigma$ ,
  - the serial number 1 of this Directive,
  - the capital letter(s) identifying the State which has granted EEC pattern approval and the final two figures of the year in which pattern approval was granted,
  - the number of the EEC pattern approval (e.g.  $\Sigma$  1 D 79 45);
- for the cylinders exempted from EEC verification pursuant to Article 4 of this Directive:
  - the stylized letter  $\Sigma$  surrounded by a hexagon,
  - the serial number 1 of this Directive allocated according to the chronological order of adoption,
  - the capital letter(s) identifying the State which has granted EEC pattern approval and the final two figures of the year in which pattern approval was granted,
  - the number of the EEC pattern approval (e.g.  $\Sigma$  1 D 79 54).

By way of derogation from the requirements of section 3 of Annex II to Directive 76/767/EEC, the inspection body shall affix the EEC verification mark in the following order:

- the small letter 'e',
- the capital letter(s) identifying the State in which the verification is carried out, together with, where necessary, one or two numbers identifying a territorial subdivision,

- the mark of the inspection body affixed by the verifying agent, together with the mark of the verifying agent if appropriate,
- a hexagon,
- the date of verification: year, month (e.g. e D ×  80/01).

## 6.2. CONSTRUCTION INSCRIPTIONS

The manufacturer shall stamp the following construction inscriptions:

### 6.2.1. as regards the steel:

- a number indicating the value of R in N/mm<sup>2</sup> on which the calculation was based,
- the symbol N (cylinder in the normalized condition or normalized and tempered) or the symbol T (cylinder in the quenched and tempered condition);

### 6.2.2. as regards the hydraulic test:

the value of the test pressure in bars followed by the symbol 'bar';

### 6.2.3. as regards the type of cylinder:

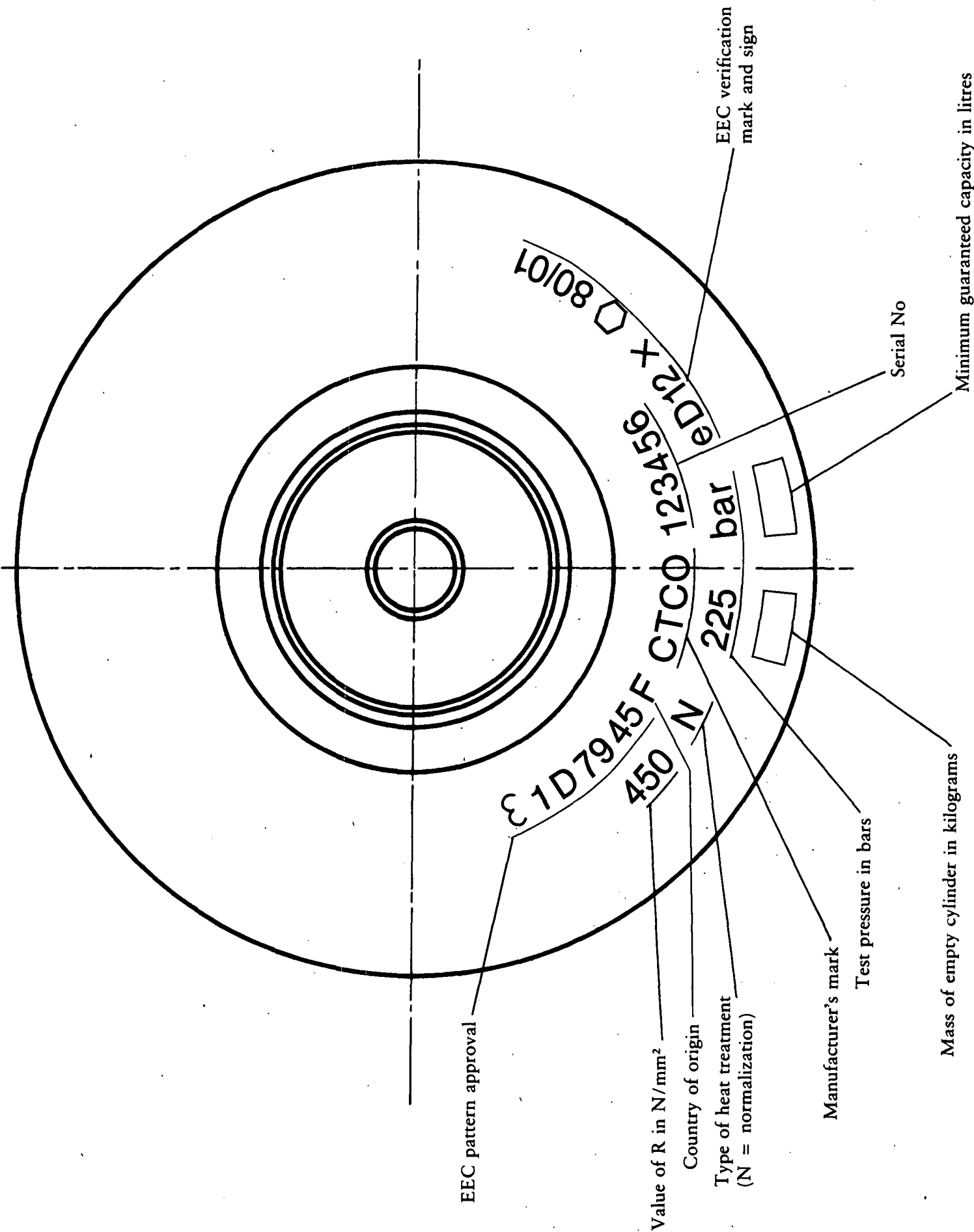
the mass of the cylinder, including all integral parts but excluding valve, in kilograms, and the minimum capacity in litres as guaranteed by the manufacturer of the cylinder;

the figures for mass and capacity must be given to one decimal place. This value is to be rounded down for the capacity and up for the mass;

### 6.2.4. as regards the origin:

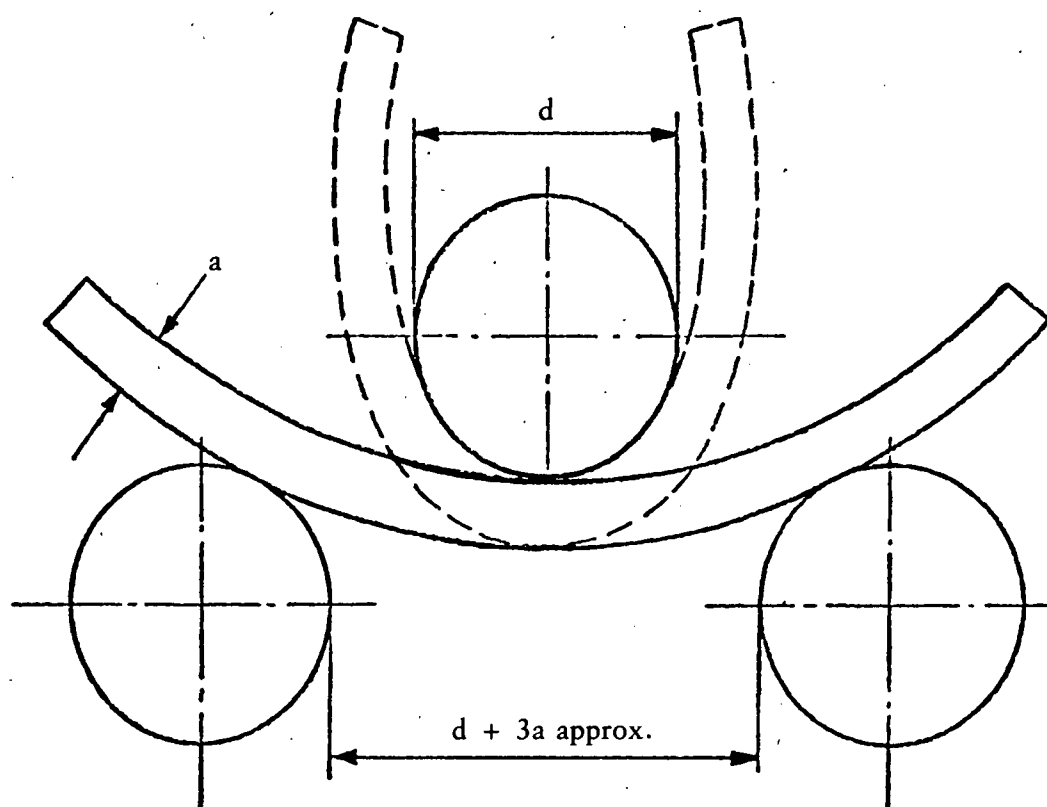
the capital letter(s) indicating the country of origin followed by the manufacturer's mark and the serial number.

ANNEX II



## ANNEX III

## Illustration of bend test



ANNEX IV

EEC PATTERN APPROVAL CERTIFICATE

Issued by ..... on the basis of  
(Member State)  
.....  
(National rules)  
applying Council Directive 84/525/EEC of 17 September 1984 concerning:

SEAMLESS, STEEL GAS CYLINDERS

EEC Approval No ..... Date .....  
Type of cylinder .....  
(Description of the family of cylinder which has received EEC approval)  
 $P_h$  .....  $D$  .....  $a$  .....  
 $L_{min}$  .....  $L_{max}$  .....  $V_{min}$  .....  $V_{max}$  .....  
Manufacturer or agent .....  
(Name and address of manufacturer or his agent)  
.....  
.....  
.....

EEC pattern approval mark  $\{$  .....  $\{$  .....

Details of the results of the examination of the pattern for EEC approval and the main features of the pattern are annexed.

All information may be obtained from .....  
(Name and address of the approving body)  
.....  
.....  
.....

Certified at ....., on .....

.....  
(Signature)

## TECHNICAL ANNEX TO EEC APPROVAL CERTIFICATE

1. Results of EEC examination of the pattern with a view to EEC approval.
2. Information on the main features of the pattern, in particular:
  - longitudinal cross-section of the type of cylinder which has received pattern approval, showing:
    - the nominal external diameter,  $D$ ,
    - the minimum thickness of the cylinder wall,  $a$ ,
    - the minimum thickness of the base and the head,
    - the minimum and maximum length(s),  $L_{\min}$ ,  $L_{\max}$ ;
  - the capacity or capacities,  $V_{\min}$ ,  $V_{\max}$ ;
  - the pressure,  $P_h$ ;
  - the name of the manufacturer/No of the drawing and date;
  - name of the type of cylinder;
  - the steel in accordance with section 2.1 (type/chemical composition/method of manufacture/heat treatment/guaranteed mechanical characteristics (tensile strength — yield point)).

ANNEX V

MODEL

EEC VERIFICATION CERTIFICATE

Application of Council Directive 84/525/EEC of 17 September 1984.

Inspection body .....

Date .....

EEC pattern approval No .....

Description of cylinders .....

EEC verification No .....

Manufacturing batch No ..... to .....

Manufacturer .....  
(Name and address)  
.....  
.....

Country ..... Mark .....  
(Name and address)

Owner .....  
.....  
.....

Customer .....  
(Name and address)  
.....  
.....

VERIFICATION TESTS

1. MEASUREMENTS OF SAMPLE CYLINDERS

| Test No | Batch consisting of No ..... to No ..... | Water capacity (litres) | Mass empty (kg) | Minimum measured thickness |                  |
|---------|------------------------------------------|-------------------------|-----------------|----------------------------|------------------|
|         |                                          |                         |                 | of the wall (mm)           | of the base (mm) |
|         |                                          |                         |                 |                            |                  |

2. MECHANICAL TESTS CARRIED OUT ON SAMPLE CYLINDERS

| Test No                  | Heat treatment No | Tensile test                                                     |                                        |                                                |                  | Impact test                                                  |                                | Bend test 180 ° without cracking | Hydraulic bursting test (bars) | Description of the fracture (Description or diagram attached) |
|--------------------------|-------------------|------------------------------------------------------------------|----------------------------------------|------------------------------------------------|------------------|--------------------------------------------------------------|--------------------------------|----------------------------------|--------------------------------|---------------------------------------------------------------|
|                          |                   | Test-piece in accordance with EURO-NORM<br>(a) 2-80<br>(b) 11-80 | Yield point $R_e$ (N/mm <sup>2</sup> ) | Tensile strength $R_{mt}$ (N/mm <sup>2</sup> ) | Elongation A (%) | Charpy notched test at - 20 °C, width of test piece . . . mm |                                |                                  |                                |                                                               |
|                          |                   |                                                                  |                                        |                                                |                  | Average Joules/cm <sup>2</sup>                               | Minimum Joules/cm <sup>2</sup> |                                  |                                |                                                               |
|                          |                   |                                                                  |                                        |                                                |                  |                                                              |                                |                                  |                                |                                                               |
| Minimum values specified |                   |                                                                  |                                        |                                                |                  |                                                              |                                |                                  |                                |                                                               |

I, the undersigned, hereby declare that I have checked that the verification operations, tests and checks prescribes in section 5.2 of Annex I to Council Directive 84/525/EEC of 17 September 1984 have been carried out successfully.

Special remarks .....

.....

General remarks .....

.....

Date ..... Place .....

.....  
(Signature of the inspector)

on behalf of .....  
(Inspection body)

\_\_\_\_\_

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to seamless, unalloyed aluminium and aluminium alloy gas cylinders

(84/526/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in the Member States the construction and inspection of gas cylinders are subject to mandatory provisions which differ from one Member State to another and consequently hinder trade in such cylinders; whereas it is therefore necessary to approximate these provisions;

Whereas Council Directive 76/767/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to common provisions for pressure vessels and methods of inspecting them <sup>(4)</sup>, as amended by the Act of Accession of 1979, lays down in particular the EEC pattern approval and verification procedures for these vessels; whereas, in accordance with that Directive, it is necessary to lay down the technical requirements to be complied with by EEC-type seamless, unalloyed aluminium and aluminium alloy gas cylinders with a capacity of 0,5 to 150 litres in order to be imported, marketed and used without restraint after undergoing the inspections and having affixed to them marks and signs laid down,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive shall apply to seamless, unalloyed aluminium and aluminium alloy gas cylinders, formed

from a single piece, capable of being refilled and transported, with a capacity of between 0,5 and 150 litres inclusive and designed to contain compressed, liquefied or dissolved gases. These gas cylinders are hereinafter referred to as 'cylinders'.

2. This Directive shall not apply to:

- cylinders manufactured from an aluminium alloy with a guaranteed minimum tensile strength greater than 500 N/mm<sup>2</sup>,
- cylinders to which metal is added when the base is being sealed.

*Article 2*

For the purpose of this Directive, 'EEC-type cylinder' shall mean any cylinder designed and manufactured in such a way that it satisfies the requirements of this Directive and of Directive 76/767/EEC.

*Article 3*

No Member State may, on grounds relating to the construction or inspection of a cylinder within the meaning of Directive 76/767/EEC and this Directive, refuse, prohibit or restrict the placing on the market and putting into service of an EEC-type cylinder.

*Article 4*

All EEC-type cylinders shall be subject to EEC pattern approval.

All EEC-type cylinders shall be subject to EEC verification with the exception of cylinders with a hydraulic test pressure of 120 bars or less and a capacity of not more than one litre.

*Article 5*

Any amendments necessary to adapt sections 2.1.5, 2.4, 3.1.0, 3.4, 3.5, 3.6, 3.7, 4, 5 and 6 of Annex I and the other Annexes to this Directive to technical progress

<sup>(1)</sup> OJ No C 104, 13. 9. 1974, p. 75.

<sup>(2)</sup> OJ No C 5, 8. 1. 1975, p. 52.

<sup>(3)</sup> OJ No C 62, 15. 3. 1975, p. 32.

<sup>(4)</sup> OJ No L 262, 27. 9. 1976, p. 153.

shall be adopted in accordance with the procedure laid down in Article 20 of Directive 76/767/EEC.

*Article 6*

The procedure laid down in Article 17 of Directive 76/767/EEC shall apply to section 2.3 of Annex I to this Directive.

*Article 7*

1. Member States shall bring into force the laws, regulations and administrative provisions needed in order to comply with this Directive within 18 months following its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 8*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

---

<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## 1. TERMS AND SYMBOLS USED IN THIS ANNEX

## 1.1. YIELD STRESS

For the purposes of this Directive, the yield stress values used in calculations of the pressure parts shall be as follows:

- for aluminium alloys, the 0,2 % proof stress  $R_{p0,2}$ , i.e. the value of the stress which gives rise to a non-proportional elongation equal to 0,2 % of the gauge length of the test-piece,
- for unalloyed aluminium in the unhardened state, the 1 % proof stress.

1.2. For the purposes of this Directive, 'bursting pressure' means the pressure at plastic instability, i.e. the maximum pressure obtained during a pressure bursting test.

1.3. The symbols used in this Annex have the following meanings:

- $P_h$  = hydraulic test pressure, in bars;
- $P_r$  = cylinder busting pressure measured during the bursting test, in bars;
- $P_{rt}$  = calculated minimum theoretical bursting pressure, in bars;
- $R_e$  = minimum value of the yield stress guaranteed by the cylinder manufacturer, in N/mm<sup>2</sup>;
- $R_m$  = minimum value of the tensile strength guaranteed by the cylinder manufacturer, in N/mm<sup>2</sup>;
- $a$  = calculated minimum thickness of the wall of the cylindrical part of the cylinder, in mm;
- $D$  = nominal external diameter of the cylinder, in mm;
- $R_{mt}$  = actual tensile strength, in N/mm<sup>2</sup>;
- $d$  = mandrel diameter for bend tests, in mm.

## 2. TECHNICAL REQUIREMENTS

## 2.1. MATERIALS USED, HEAT AND MECHANICAL TREATMENT

2.1.1. An aluminium alloy or unalloyed aluminium shall be defined according to its method of manufacture, its nominal chemical composition and the heat treatment undergone by the cylinder, the latter's resistance to corrosion and its mechanical properties. The manufacturer shall give the corresponding information, taking account of the requirements listed below. Any change in such information shall be deemed to correspond to a change in the type of material for the purposes of EEC pattern approval.

2.1.2. The following are permitted for the manufacture of cylinders:

- (a) all unalloyed aluminium containing at least 99,5 % aluminium;
- (b) aluminium alloys with the chemical composition set out in table 1 which have undergone the heat and mechanical treatments listed in table 2;

TABLE 1

|         |      | Chemical composition in % |     |     |     |     |     |      |         |      |              |
|---------|------|---------------------------|-----|-----|-----|-----|-----|------|---------|------|--------------|
|         |      | Cu                        | Mg  | Si  | Fe  | Mn  | Zn  | Cr   | Ti + Zr | Ti   | Total others |
| Alloy B | min. | —                         | 4,0 | —   | —   | 0,5 | —   | —    | —       | —    | remain-der   |
|         | max. | 0,10                      | 5,1 | 0,5 | 0,5 | 1,0 | 0,2 | 0,25 | 0,20    | 0,10 |              |
| Alloy C | min. | —                         | 0,6 | 0,7 | —   | 0,4 | —   | —    | —       | —    | remain-der   |
|         | max. | 0,10                      | 1,2 | 1,3 | 0,5 | 1,0 | 0,2 | 0,25 | —       | 0,10 |              |

TABLE 2

|         | Heat and mechanical treatments                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alloy B | <p>In order:</p> <ol style="list-style-type: none"> <li>Blank inhibition treatment: <ul style="list-style-type: none"> <li>— duration determined by the manufacturer,</li> <li>— temperature between 210 and 260 °C.</li> </ul> </li> <li>Extrusion with a degree of cold-working of at most 30 %.</li> <li>Formation of head: the temperature of the metal must be no less than 300 °C at the end of the process.</li> </ol>                            |
| Alloy C | <ol style="list-style-type: none"> <li>Placing in solution before quenching: <ul style="list-style-type: none"> <li>— duration determined by the manufacturer,</li> <li>— temperature in no case less than 525 °C or above 550 °C.</li> </ul> </li> <li>Quenching</li> <li>Artificial ageing: <ul style="list-style-type: none"> <li>— duration determined by the manufacturer,</li> <li>— temperature of between 140 and 190 °C.</li> </ul> </li> </ol> |

(c) any other aluminium alloy may be used for the manufacture of cylinders provided that it first passes the corrosion-resistance tests described in Annex II.

2.1.3. The cylinder manufacturer must obtain and provide cast-analysis certificates for the material used for the manufacture of the cylinders.

2.1.4. There must be an opportunity for making independent analyses. These analyses must be carried out either on specimens taken from the semi-finished product as supplied to the cylinder manufacturer or on the finished cylinders. When it is decided to take a specimen from a cylinder, it is permissible for the specimen to be taken from one of the cylinders previously chosen for the mechanical tests specified in 3.1 or for the pressure bursting test specified in 3.2.

2.1.5. Heat and mechanical treatment of the alloys referred to in 2.1.2 (b) and (c).

2.1.5.1. The last process in the manufacture of the cylinder, apart from finish machining, shall be artificial ageing.

2.1.5.1.1. The manufacturer shall indicate the characteristics of the final treatment which he carries out, i.e.:

- nominal temperatures during solution and artificial ageing,
- nominal duration of the time effectively spent at solution and artificial ageing temperatures.

During the heat treatment the manufacturer must comply with these characteristics within the following limits:

- solution temperature: to within  $\pm 5$  °C,
- artificial ageing temperature: to within  $\pm 5$  °C,
- duration of time effectively spent: to within  $\pm 10$  %.

2.1.5.1.2. However, for solution and artificial ageing the manufacturer may indicate a range of temperatures, with the difference between the extreme values not exceeding 20 °C. For each of these extreme values, he shall indicate the nominal duration of the time effectively spent.

For each intermediate temperature the nominal duration of the time effectively spent shall be determined by linear interpolation for the duration of the placing in solution and by linear interpolation of the logarithm of the time for the duration of artificial ageing.

The manufacturer must carry out the heat treatment at a temperature included in the range indicated for a duration of time effectively spent, which shall not vary by more than 10 % from the nominal duration calculated as above.

2.1.5.1.3. The manufacturer must indicate the characteristics of the final heat treatment he has carried out, in the file submitted for the purposes of EEC verification.

2.1.5.1.4. In addition to the final heat treatment, the manufacturer must also indicate all heat treatments carried out at over 200 °C.

2.1.5.2. The manufacture of the cylinder may not include quenching and artificial ageing.

2.1.5.2.1. The manufacturer must specify the characteristics of the last heat treatment he has carried out at a temperature exceeding 200 °C, taking account of differences, if necessary, between different parts of the cylinder.

He must also specify any forming operation (e.g. extrusion, drawing or head formation) in the course of which the temperature of the metal does not exceed 200 °C and which is not followed by heat treatment at a temperature higher than that value, as well as the position of the section of the formed body which has undergone most cold-working and the corresponding degree of cold-working.

For the purposes of applying this provision, 'degree of cold-working' is defined as the ratio  $\frac{S - s}{s}$ ,  $S$  being the initial section and  $s$  the final section.

The manufacturer must comply with these characteristics of the heat treatment and forming within the following limits:

- duration of the heat treatment to within  $\pm 10$  % and temperature to within  $\pm 5$  °C,
- degree of cold-working of the section which has undergone most cold-working to within  $\pm 6$  % if the diameter of the cylinder is equal to or less than 100 mm and to within  $\pm 3$  % if the diameter is more than 100 mm.

2.1.5.2.2. However, for the heat treatment the manufacturer may indicate a range of temperatures, with the difference between the extreme values not exceeding 20 °C. For each of these extreme values he shall indicate the nominal duration of the time effectively spent. For each intermediate temperature the nominal duration of the time effectively spent shall be determined by linear interpolation. The manufacturer must carry out the heat treatment at a temperature included in the range indicated for a duration of time effectively spent which shall not vary by more than 10 % from the nominal duration calculated as above.

2.1.5.2.3. The manufacturer must indicate the characteristics of the final heat treatment which he has carried out and of the forming process in the file submitted for the purposes of EEC verification.

2.1.5.3. Where the manufacturer has opted to indicate a range of temperatures for the heat treatment in accordance with 2.1.5.1.2 and 2.1.5.2.2, for the purpose of EEC pattern approval he must present two sets of cylinders, one made up of cylinders which have undergone the heat treatment at the lowest temperature of those envisaged and another made up of cylinders which have undergone the heat treatment at the highest temperature and with the shortest corresponding durations.

### 2.3. CALCULATION OF THE PRESSURE PARTS

2.3.1. The thickness of the cylindrical part of the gas cylinders must not be less than that calculated by means of the formula:

$$a = \frac{P_h \cdot D}{\frac{20 R}{4/3} + P_h}$$

where R is the smaller of the following two values:

- $R_e$
- $0,85 \cdot R_m$ .

2.3.2. The minimum wall thickness a may in no case be less than  $\frac{D}{100} + 1,5$  mm.

2.3.3. The thickness and the shape of the bottom and the top ends must be such as to satisfy the requirements of the tests laid down in 3.2 (bursting test) and 3.3 (pressure cycling test).

2.3.4. In order to obtain satisfactory stress distribution, the thickness of the cylinder walls must increase progressively in the transition section between the cylindrical part and the base where the bottom is thicker than the cylindrical wall.

### 2.4. CONSTRUCTION AND WORKMANSHIP

2.4.1. The thickness of each cylinder must be checked and the condition of its internal and external surfaces inspected by the manufacturer in order to verify that:

- the wall thickness is at no point less than that specified on the drawing,
- the internal and external surfaces of the cylinder are free from defects which would adversely affect the operating safety of the cylinder.

2.4.2. The out-of-roundness of the cylindrical shell must be limited to a value which is such that the difference between the maximum and minimum outside diameters in the same cross section is not more than 1,5 % of the average of those diameters.

The maximum deviation of the cylindrical part of the shell from a straight line shall not exceed 3 mm/metre length.

2.4.3. Cylinder footings, where provided, must be sufficiently strong and be manufactured from a material which, with regard to corrosion, is compatible with the type of material of which the cylinder is made. The shape of the footing must give the cylinder an adequate degree of stability. Footings must not allow water to accumulate or permit water to penetrate between the ring and the cylinder.

## 3. TESTS

### 3.1. MECHANICAL TESTS

Except for the requirements set out below, the mechanical tests shall be carried out in accordance with the following EURONORMS:

EURONORM 2-80: tensile test for steel;

EURONORM 3-79: Brinell hardness test;

EURONORM 6-55: bend test for steel;

EURONORM 11-80: tensile test for steel sheet and strip less than 3 mm thick;

EURONORM 12-55: bend test for steel sheet and strip less than 3 mm thick.

### 3.1.1. General requirements

All mechanical tests for checking the quality of the metal used for gas cylinders shall be carried out on metal taken from the finished cylinders.

### 3.1.2. Types of test and evaluation of test results

On every test cylinder there shall be carried out one tensile test in a longitudinal direction and four bend tests in a circumferential direction.

#### 3.1.2.1. Tensile test

3.1.2.1.1. The test-piece on which the tensile test is carried out must conform to the provisions of:

- chapter 4 of EURONORM 2-80, where it is 3 mm thick or more,
- chapter 4 of EURONORM 11-80; where it is less than 3 mm thick. In this case, the gauge width and length of the test-piece must be 12,5 and 50 mm respectively, irrespective of the thickness of the test-piece.

The two faces of the test-piece corresponding to the internal and external walls of the cylinder may not be machined.

- 3.1.2.1.2. — With regard to the alloys C referred to in 2.1.2 (b) and the alloys referred to in 2.1.2 (c), elongation after fracture must not be less than 12 %.
- With regard to the alloys B referred to in 2.1.2 (b), the elongation after fracture must not be less than 12 % where the tensile test is carried out on a single test-piece taken from the cylinder wall. The tensile test may also be carried out on four test-pieces distributed uniformly throughout the cylinder wall. The results must be as follows:
- no individual value may be less than 11 %,
  - the average of the four measurements must be at least 12.
- In the case of unalloyed aluminium, the elongation after fracture must not be less than 12 %.

3.1.2.1.3. The value obtained for tensile strength must not be less than  $R_m$ .

The yield stress to be determined during the tensile test shall be that used in accordance with 1.1 for the cylinder calculation.

The value obtained for the yield stress must not be less than  $R_e$ .

#### 3.1.2.2. Bend test

3.1.2.2.1. The bend test shall be carried out on test-pieces obtained by cutting a ring of width  $3a$  into two equal parts; in no case may the width of the test-piece be less than 25 mm. Each ring may be machined only on the edges. The latter may be rounded to a radius of no more than  $1/10$  of the thickness of the test-pieces or chamfered at an angle of 45 %.

3.1.2.2.2. The bend test must be carried out using a mandrel of diameter  $d$  and two rollers separated by a distance of  $d + 3a$ . During the test the inside face of the ring must remain in contact with the mandrel.

3.1.2.2.3. The test-piece must not crack when bent inwards around a mandrel until the inside edges are no farther apart than the diameter of a mandrel (see diagram in Appendix 2).

3.1.2.2.4. The ratio (n) between the diameter of the mandrel and the thickness of the test-piece must not exceed the values given in the following table:

| Actual tensile strength<br>$R_{mt}$ in N/mm <sup>2</sup> | Value of n |
|----------------------------------------------------------|------------|
| up to 220 inclusive                                      | 5          |
| above 220 to 330 inclusive                               | 6          |
| above 330 to 440 inclusive                               | 7          |
| above 440                                                | 8          |

### 3.2. HYDRAULIC PRESSURE BURSTING TEST

#### 3.2.1. Test conditions

Cylinders examined when this test is carried out must bear the markings specified in section 6 below.

3.2.1.1. The hydraulic pressure bursting test must be carried out in two successive stages, using a test-rig which allows pressure to be increased at an even rate until the cylinder bursts and the curve of pressure variation against time to be recorded. The test must be carried out at room temperature.

3.2.1.2. During the first stage, the increase in pressure shall be constant up to the level at which plastic deformation starts. This rate must not exceed 5 bars/sec.

From the start of plastic deformation (second stage), delivery from the pump must not be more than twice as much as it was in the first phase and must be maintained constant until the cylinder bursts.

#### 3.2.2. Interpretation of test

3.2.2.1. The interpretation of the pressure bursting test shall involve:

- examination of the pressure/time curve to determine the bursting pressure,
- examination of the tear and of the shape of its edges,
- verification, in the case of cylinders with a concave base, that the base of the cylinder has not been reversed.

3.2.2.2. The measured bursting pressure ( $P_r$ ) shall be greater than the value given by:

$$P_r = \frac{20a R_m}{D - a}$$

3.2.2.3. The bursting test must not cause fragmentation of the cylinder.

3.2.2.4. The main tear must not be of the brittle type, i.e. the edges of the fracture must not be radial but be sloping in relation to a diametral plane and must display a contraction.

A fracture shall be acceptable only if it conforms to one of the following descriptions:

- for cylinders of a thickness a of 13 mm or less:
  - the greater part of the fracture must be unmistakably longitudinal,
  - the fracture must be without multiple branches,

- the fracture must not have a circumferential development of more than 90° on either side of its main part,
- the fracture must not extend into those parts of the cylinder which are more than 1,5 times thicker than the maximum thickness measured halfway up the cylinder; however, for cylinders with convex bases the fracture must not reach the centre of the cylinder base;
- for cylinders of a thickness  $a$  of over 13 mm the greater part of the fracture must be longitudinal.

3.2.2.5. The tear shall not reveal any obvious defect in the metal.

3.3. PRESSURE CYCLING TEST

3.3.1. Cylinders subjected to this test must bear the markings specified in section 6.

3.3.2. The test shall be carried out using a non-corrosive fluid on two cylinders which are guaranteed by the manufacturer to be reasonably representative of the minimum values specified in the design.

3.3.3. This test shall be cyclical. The maximum cyclic pressure shall be equal to either the pressure  $P_h$  or two-thirds thereof.

The lower cyclic pressure must not exceed 10 % of the upper cyclic pressure.

The minimum number of cycles and the maximum test frequency are shown in the following table:

|                                        |        |                   |
|----------------------------------------|--------|-------------------|
| Maximum applied pressure               | $P_h$  | $\frac{2}{3} P_h$ |
| Minimum number of cycles               | 12 000 | 80 000            |
| Maximum frequency in cycles per minute | 5      | 12                |

The temperature measured on the outer wall of the cylinder must not exceed 50 °C during the test.

The test shall be considered satisfactory if the cylinder attains the required number of cycles without developing a leak.

3.4. HYDRAULIC TEST

3.4.1. The water pressure in the cylinder must increase at an even rate until the pressure  $P_h$  is reached.

3.4.2. The cylinder must remain under the pressure  $P_h$  long enough to make it possible to establish that the pressure shows no tendency to fall and that there are no leaks.

3.4.3. After the test the cylinder must show no permanent deformation.

3.4.4. Any tested cylinder which does not fulfil the test requirements shall be rejected.

3.5. CHECK ON THE HOMOGENEITY OF A CYLINDER

This test involves checking that any two points on the metal of the external surface of the cylinder do not differ in hardness by more than 15 HB. The check must be carried out on two transverse sections of the cylinder near the head and the base, at four evenly-spaced points.

**3.6. CHECK ON THE HOMOGENEITY OF A BATCH**

This test, which is carried out by the manufacturer, involves checking by means of a hardness test or some other appropriate means that no error has been made in the choice of the original billets or in carrying out the heat treatment.

**3.7. CHECK OF BASES**

A meridian section shall be made in the base of the cylinder and polished for examination at a magnification of between 5 and 10.

The cylinder must be regarded as defective if the presence of fissures is detected. It is also to be regarded as defective if the dimensions of any pores or inclusions present reach values considered to pose a threat to safety.

**4. EEC PATTERN APPROVAL**

The EEC pattern approval referred to in Article 4 of the Directive may be issued for types or for families of cylinders.

'Family of cylinders' means cylinders from the same factory differing only in length, but within the following limits:

- the minimum overall length must not be less than 3 times the external diameter of the cylinder,
- the maximum overall length must not be more than 1,5 times the overall length of the tested cylinder.

**4.1.** The applicant for EEC pattern approval shall, for each family of cylinders, submit the documentation necessary for the checks specified below and make available to the Member State a batch of 50 or two batches of 25 cylinders in accordance with 2.1.5.3, from which the number of cylinders required for the tests referred to below will be taken, together with any additional information required by the Member State.

In particular, the applicant must indicate the type of heat treatment and mechanical treatment, and the temperature and the duration of treatment under 2.1.5. He must provide cast analysis certificates for materials used in the manufacture of the cylinders.

**4.2.** In the course of the EEC pattern approval process, the Member State shall:

**4.2.1.** verify that:

- the calculations specified in 2.3 are correct,
- the thickness of the walls of two of the cylinders taken for tests meets the requirements of 2.3, the measurements being taken on three transverse sections and over the whole of the longitudinal sections of the base and the head,
- the requirements of 2.1 and 2.4.3 are complied with,
- the requirements of 2.4.2 are complied with for all cylinders selected by the Member State,
- the internal and external surfaces of the cylinders are free of any defect which might make them unsafe to use;

**4.2.2.** carry out the following tests on the cylinders selected:

- the tests for resistance to corrosion: intercrystalline corrosion and stress corrosion on 12 test-pieces as described in Annex II,

- the tests specified in 3.1, on two cylinders; however, where the length of the cylinder is 1 500 mm or more, the tensile tests in a longitudinal direction and the bend tests shall be carried out on test-pieces taken from the upper and lower regions of the shell,
- the test specified in 3.2, on two cylinders,
- the test specified in 3.3, on two cylinders,
- the test specified in 3.5, on one cylinder,
- the test specified in 3.7, on all the sample cylinders.

4.3. If the results of the checks are satisfactory, the Member State shall issue an EEC pattern approval certificate in accordance with the model given in Annex III to this Directive.

## 5. EEC VERIFICATION

5.1. For the purpose of EEC verification, the cylinder manufacturer shall provide the inspection body with:

- 5.1.1. the EEC pattern approval certificate;
- 5.1.2. cast ingot analysis certificates of the materials used for the manufacture of the cylinders;
- 5.1.3. means of identifying the cast of the material from which each cylinder was made;
- 5.1.4. the documents relating to heat treatment and mechanical treatment and state the treatment applied in accordance with 2.1.5;
- 5.1.5. a list of the cylinders, giving the numbers and inscriptions as required in section 6.

5.2. During EEC verification:

5.2.1. The inspection body shall:

- ascertain that the EEC pattern approval certificate has been obtained and that the cylinders conform to it,
- check the documents which give data concerning the materials,
- check whether the technical requirements set out in section 2 have been met, and in particular check by an external, and if possible internal, visual examination of the cylinders whether their construction and the checks carried out by the manufacturer in accordance with 2.4.1 are satisfactory; the visual examination shall cover at least 10 % of the cylinders manufactured,
- carry out the intercrystalline corrosion resistance test on three test-pieces, using one test-piece per section (head, body, base) in accordance with section 1 of Annex II on the alloys referred to in 2.1.2 (c) of this Annex,
- carry out the tests specified in 3.1 and 3.2,
- check whether the information supplied by the manufacturer in the list referred to in 5.1.5 is correct. This shall be done by means of a random check,
- assess the result of the checks on the homogeneity of the batch carried out by the manufacturer in accordance with 3.6.

If the results of the checks are satisfactory, the inspection body shall issue an EEC verification certificate conforming to the model given in Annex IV.

5.2.2. For the two types of test prescribed in 3.1 and 3.2, two cylinders shall be taken at random from each batch of 202 cylinders or part thereof that have been made from the same cast and have undergone the specified heat treatment in identical circumstances.

One of the cylinders shall be subjected to the tests in 3.1 (mechanical tests) and the other to the test prescribed in 3.2 (bursting test). If it is proved that a test has been carried out incorrectly or that a measuring error has been made, the test must be repeated.

If one or more tests prove even partially unsatisfactory the cause must be investigated by the manufacturer under the supervision of the inspection body.

5.2.2.1. If the failure is not due to the heat treatment applied, the batch must be rejected.

5.2.2.2. If the failure is due to the heat treatment applied, the manufacturer may subject all the cylinders in the batch to a further heat treatment. There may be only one such further treatment.

In that event:

- the manufacturer shall carry out the check provided for in 3.6,
- the inspection body shall carry out all the tests provided for in 5.2.2.

The results of the tests carried out following this further treatment must satisfy the requirements of this Directive.

5.2.3. The selection of specimens and all the tests shall be carried out in the presence and under the supervision of a representative of the inspection body. However, in respect of the test specified in the fourth indent of 5.2.1, the approved body may confine itself to being represented merely at the selection of specimens and examination of the results.

5.2.4. After all the tests specified have been carried out, all the cylinders in the batch must be subjected to the hydraulic test specified in 3.4 in the presence and under the supervision of a representative of the inspection body.

### 5.3. EXEMPTION FROM EEC VERIFICATION

In respect of the cylinders referred to in Article 4 of this Directive, and in accordance with Article 15 (a) of Directive 76/767/EEC, all the test and inspection operations prescribed in 5.2 must be carried out by the manufacturer on his own responsibility.

The manufacturer must provide the inspection body with all the documents mentioned in the EEC pattern approval and the test and inspection reports.

## 6. MARKS AND INSCRIPTIONS

The marks and inscriptions specified in this section must be affixed to the head of the cylinder.

In respect of cylinders with a capacity of not more than 15 litres the marks and inscriptions may be affixed either to the head or to a sufficiently strong part of the cylinder.

In respect of cylinders with a diameter of less than 75 mm, such marks must be 3 mm high.

Notwithstanding the requirements of section 3 of Annex I to Directive 76/767/EEC, the manufacturer must make the EEC pattern approval mark in the following order:

- for the cylinders referred to in Article 4 of this Directive:
  - the stylized letter  $\Sigma$ ,
  - the serial number 2 of this Directive,
  - the capital letter(s) identifying the Member State which has granted EEC pattern approval and the last two figures of the year in which the pattern approval was granted,
  - the number of the EEC pattern approval (e.g.  $\Sigma$  2 D 79 45);

- for the cylinders subject only to EEC pattern approval:
  - the stylized letter  $\Sigma$  surrounded by a hexagon,
  - the serial number 2 of this Directive,
  - the capital letter(s) identifying the Member State which has granted EEC pattern approval and the last two figures of the year in which the pattern approval was granted,
  - the number of the EEC pattern approval (e.g.  $\Sigma$  2 D 79 54).

Notwithstanding the requirements of section 3 of Annex II to Directive 76/767/EEC, the inspection body must affix the EEC verification mark in the following order:

- the small letter 'e',
- the capital letter(s) identifying the Member State in which the verification is carried out with, where necessary, one or two numbers identifying a territorial subdivision,
- the mark of the inspection body affixed by the verifying agent, together with the mark of the verifying agent if appropriate,
- a hexagon,
- the date of verification: year, month (e.g. e D 12 48  $\square$  80/01).

6.1. INSCRIPTIONS RELATING TO THE CONSTRUCTION

6.1.1. as regards the metal:

a number indicating the value of R in N/mm<sup>2</sup> on which the calculation was based;

6.1.2. as regards the hydraulic test:

the test pressure in bars followed by the symbol 'bar';

6.1.3. as regards the type of cylinder:

the mass of the cylinder, including all integral parts but excluding valve and tap, in kilograms, and the minimum capacity guaranteed by the manufacturer of the cylinder in litres.

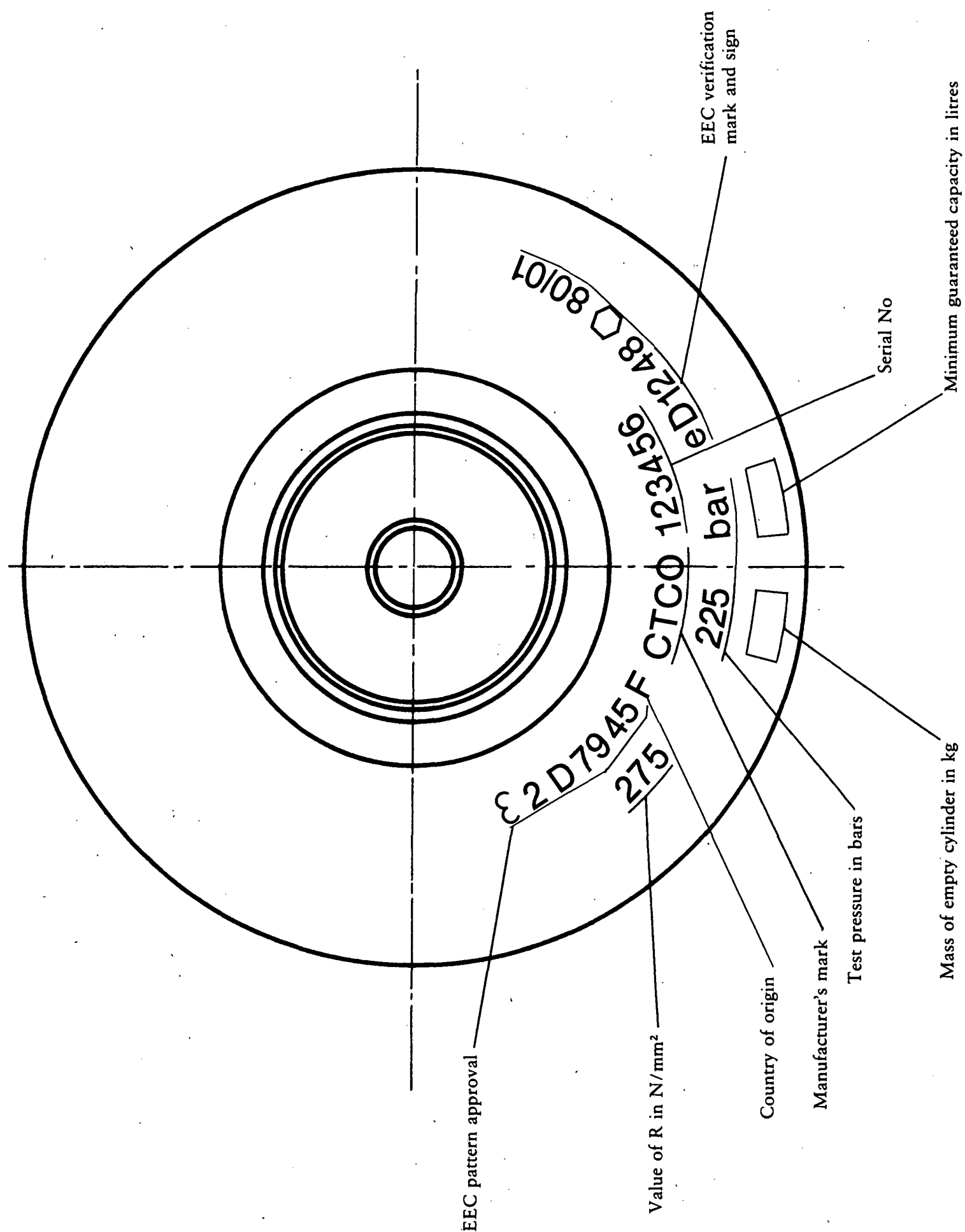
The figures for mass and capacity must be given to one decimal place. This value is to be rounded down for the capacity and up for the mass;

6.1.4. as regards origin:

the capital letter(s) indicating the country of origin, followed by the manufacturer's mark and the serial number.

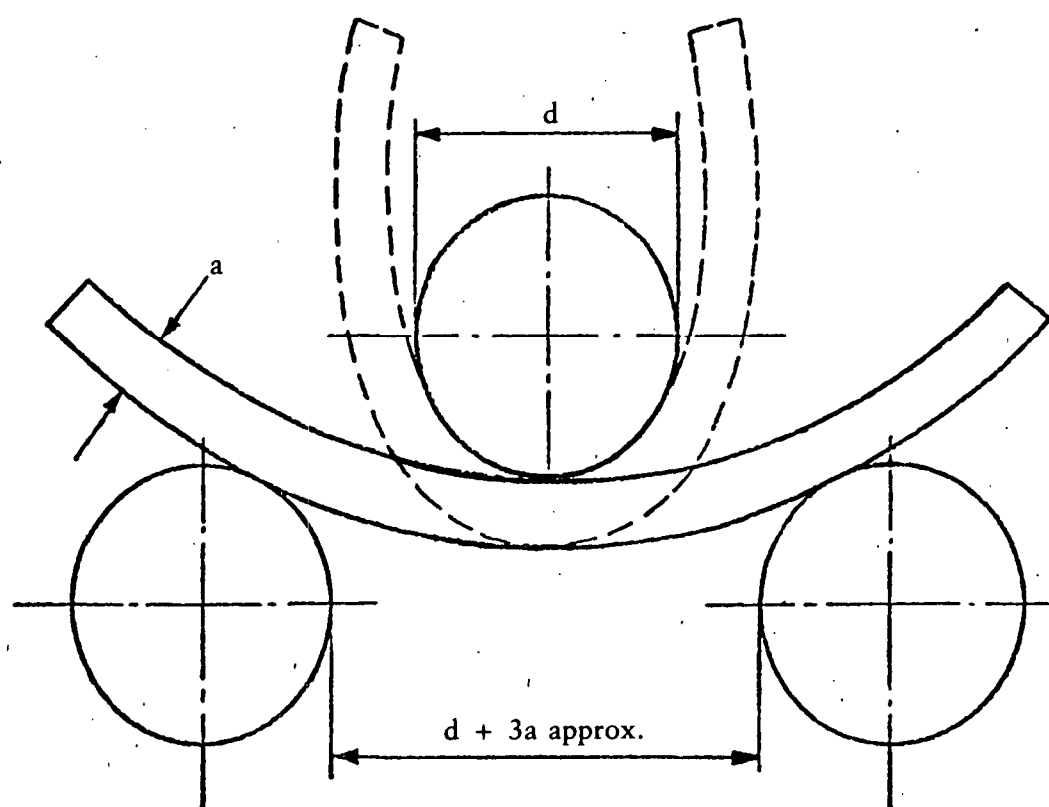
6.2. A diagram showing examples of the marks and inscriptions is given in Appendix 1.

Appendix 1



## Appendix 2

## Illustration of bend test



## ANNEX II

## CORROSION TESTS

## 1. TEST FOR ASSESSING SUSCEPTIBILITY TO INTERCRYSTALLINE CORROSION

The method described below consists of simultaneously immersing the specimens taken from the finished cylinder under test in two different corrosive solutions and examining them after a specified etching time in order to detect any signs of intercrystalline corrosion and determine the nature and degree of such corrosion. The propagation of intercrystalline corrosion is determined metallographically on polished surfaces cut transversely to the etched surface.

## 1.1. TAKING SPECIMENS

Specimens are taken from the head, body and base of the cylinder (figure 1), so that the tests with solution A as defined in 1.3.2.1 or solution B as defined in 1.3.2.2 can be carried out on metal from three parts of the cylinder.

Each specimen must be of the general shape and the dimensions indicated in figure 2.

The faces a1 a2 a3 a4, b1 b2 b3 b4, a1 a2 b2 b1, a4 a3 b3 b4 are all sawn with a band-saw and then carefully trimmed with a fine file. The surfaces a1 a4 b4 b1 and a2 a3 b3 b2 which correspond respectively to the inner and outer faces of the cylinder are left in their rough manufactured state.

## 1.2. PREPARATION OF SURFACE BEFORE CORROSIVE ETCHING

## 1.2.1. Products required

HNO<sub>3</sub> for analysis, density 1,33,  
HF for analysis, density 1,14 (at 40 %),  
de-ionized water.

## 1.2.2. Method

Prepare the following solution in a beaker:

HNO<sub>3</sub>: 63 cm<sup>3</sup>,

HF: 6 cm<sup>3</sup>,

H<sub>2</sub>O: 929 cm<sup>3</sup>.

Bring the solution to a temperature of 95 °C.

Treat each specimen, suspended on an aluminium wire, in this solution for one minute.

Wash in running water and then in de-ionized water.

Immerse the specimen in nitric acid, as defined in 1.2.1, for 1 minute at room temperature to remove any copper deposit which may have formed.

Rinse in de-ionized water.

To prevent oxidation of specimens, they should be plunged, as soon as they have been prepared, in the corrosion bath intended for them (see 1.3.1).

### 1.3. PERFORMANCE OF TEST

1.3.1. One of the following two corrosive solutions is to be used, at the discretion of the inspection body: one with 57 g/l sodium chloride and 3 g/l hydrogen peroxide (solution A), and the other with 30 g/l sodium chloride and 5 g/l hydrochloric acid (solution B).

### 1.3.2. Preparation of corrosive solutions

#### 1.3.2.1. Solution A

##### 1.3.2.1.1. Products required

NaCl crystallized, for analysis,  
H<sub>2</sub>O<sub>2</sub> 100 to 110 volumes — medicinal,  
KMnO<sub>4</sub> for analysis,  
H<sub>2</sub>SO<sub>4</sub> for analysis, density 1,83,  
de-ionized water.

##### 1.3.2.1.2. Titration of hydrogen peroxide

Since hydrogen peroxide is not very stable, it is essential to check its titre each time before use. To do this:

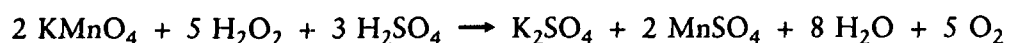
take 10 cm<sup>3</sup> of hydrogen peroxide with a pipette, dilute to 1 000 cm<sup>3</sup> (in a gauged flask) with de-ionized water, thus obtaining a hydrogen peroxide solution which will be called C. With a pipette, place in an Erlenmeyer flask:

- 10 cm<sup>3</sup> of the hydrogen peroxide solution C,
- 2 cm<sup>3</sup> approximately of sulphuric acid, density 1,83.

A solution of permanganate at 1,859 g/l is used for the titration. The permanganate itself serves as an indicator.

##### 1.3.2.1.3. Explanation of titration

The reaction of the permanganate on the hydrogen peroxide in a sulphuric medium is expressed as:



which gives the equivalence: 316 g KMnO<sub>4</sub> = 170 g H<sub>2</sub>O<sub>2</sub>.

Therefore 1 g of pure hydrogen peroxide reacts on 1 859 g of permanganate; hence the use of a 1,859 g/l solution of permanganate, which saturates, volume for volume, 1 g/l hydrogen peroxide. Since the hydrogen peroxide was diluted 100 times to begin with, the 10 cm<sup>3</sup> of the test sample represent 0,1 cm<sup>3</sup> of the original hydrogen peroxide.

By multiplying by 10 the number of cubic centimetres of permanganate solution used for the titration, the titre T of the original hydrogen peroxide in g/l is obtained.

##### 1.3.2.1.4. Preparation of the solution

Method for 10 litres:

Dissolve 570 g of sodium chloride in de-ionized water to obtain a total volume of about 9 litres. Add the quantity of hydrogen peroxide calculated below. Mix and then make up the volume to 10 litres with de-ionized water.

*Calculation of the volume of hydrogen peroxide to be put into the solution*

Quantity of pure hydrogen peroxide required: 30 g.

If the hydrogen peroxide contains T grams of  $H_2O_2$  per litre, the volume required, expressed in cubic centimetres, will be:

$$\frac{1\,000 \cdot 30}{T}$$

1.3.2.2. *Solution B*

## 1.3.2.2.1. Products required:

NaCl, crystallized, for analysis,

HCl, pure concentrated, 37 % HCl,

de-ionized water.

## 1.3.2.2.2. Preparation of the solution:

Method for 10 l of solution:

Dissolve 300 g of sodium chloride and 50 g of HCl (50 g = 0,5 %) in 9 l of de-ionized water, mix well and make up to 10 l.

## 1.3.3. Etching conditions

1.3.3.1. *Etching in solution A*

The corrosive solution is placed in a crystallizer (or possibly a large beaker), itself placed in a water bath. The water bath is stirred with a magnetic stirrer and the temperature is regulated with a contact thermometer.

The specimen is either suspended in the corrosive solution by means of an aluminium wire or placed in the solution so that it rests only on the corners, the second method being preferable. The etching time is six hours and the temperature fixed at  $30 \pm 1$  °C. Care should be taken to ensure that the quantity of reagent is at least 10 cm<sup>3</sup> per cm<sup>2</sup> of specimen surface.

After etching, the specimen is washed in water, immersed for about 30 seconds in 50 % dilute nitric acid, washed again in water and dried with compressed air.

## 1.3.3.2. A number of specimens can be etched at the same time provided that they are of the same type of alloy and that they are not in contact. The minimum quantity of reagent per unit of specimen surface must, of course, be adhered to.

1.3.3.3. *Etching in solution B*

The corrosive solution is poured into a suitable glass container (e.g. a beaker). The test is carried out at room temperature. If it is impossible to avoid variations in room temperature during the test, it is preferable to carry out the test in a water bath, the temperature of which is adjusted to 23 °C by means of a thermostat. Etching time is 72 hours.

The fixing of specimens in the corrosive solution is in accordance with 2.3.1. After etching, the specimens are very carefully washed with de-ionized water and dried with greasefree compressed air. Care must in any event be taken to see that the ratio of quantity of corrosive solution to specimen surface in ml/cm<sup>2</sup> is 10 : 1 (see 2.3.1).

#### 1.4. PREPARATION OF SPECIMENS FOR EXAMINATION

##### 1.4.1. Products required

Casting dishes with, for example, the following dimensions:

— external diameter: 40 mm,

— height: 27 mm,

— wall thickness: 2,5 mm,

Araldite DCY 230 }  
hardener HY 951 } or equivalent.

##### 1.4.2. Method

Each specimen is placed vertically in a casting dish so that it rests on its face a1 a2 a3 a4. Around it is poured a mixture of Araldite DCY 230 and hardener HY 951 in the proportion 9 to 1.

The setting time is about 24 hours.

A certain amount of material is removed from the face a1 a2 a3 a4, preferably by lathe, so that the section a'1 a'2 a'3 a'4 examined under the microscope cannot show corrosion from the surface a1 a2 a3 a4. The distance between the faces a1 a2 a3 a4 and a'1 a'2 a'3 a'4 i.e. the thickness removed by the lathe, must be at least 2 mm (figures 2 and 3).

The section for examination is polished mechanically with alumina first on paper and then on felt.

#### 1.5. MICROGRAPHIC EXAMINATION OF SPECIMENS

The examination consists of noting the intensity of intercrystalline corrosion on the part of the perimeter of the section to be examined under 1.6. When doing this, account is taken of the properties of the metal both on the outer and inner surfaces of the cylinder and in the thickness of the latter.

The section is first examined at low magnification ( $\times 40$  for example) in order to locate the most corroded areas, and then at a higher magnification, usually about  $\times 300$ , in order to assess the nature and extent of the corrosion.

#### 1.6. INTERPRETATION OF THE MICROGRAPHIC EXAMINATION

This consists in verifying that intergranular corrosion is superficial:

1. for alloys with equiaxed crystallization, the depth of corrosion round the entire perimeter of the section must not exceed the higher of the following two values:

— three grains in the direction perpendicular to the face examined,

— 0,2 mm;

However, it is permissible for these values to be exceeded locally provided that they are not exceeded in more than four fields of examination at  $\times 300$  magnification;

2. for alloys with crystallization set in one direction through cold-working, the depth of the corrosion into each of the two faces which make up the internal and external surfaces of the cylinder must not exceed 0,1 mm.

Appendix 1

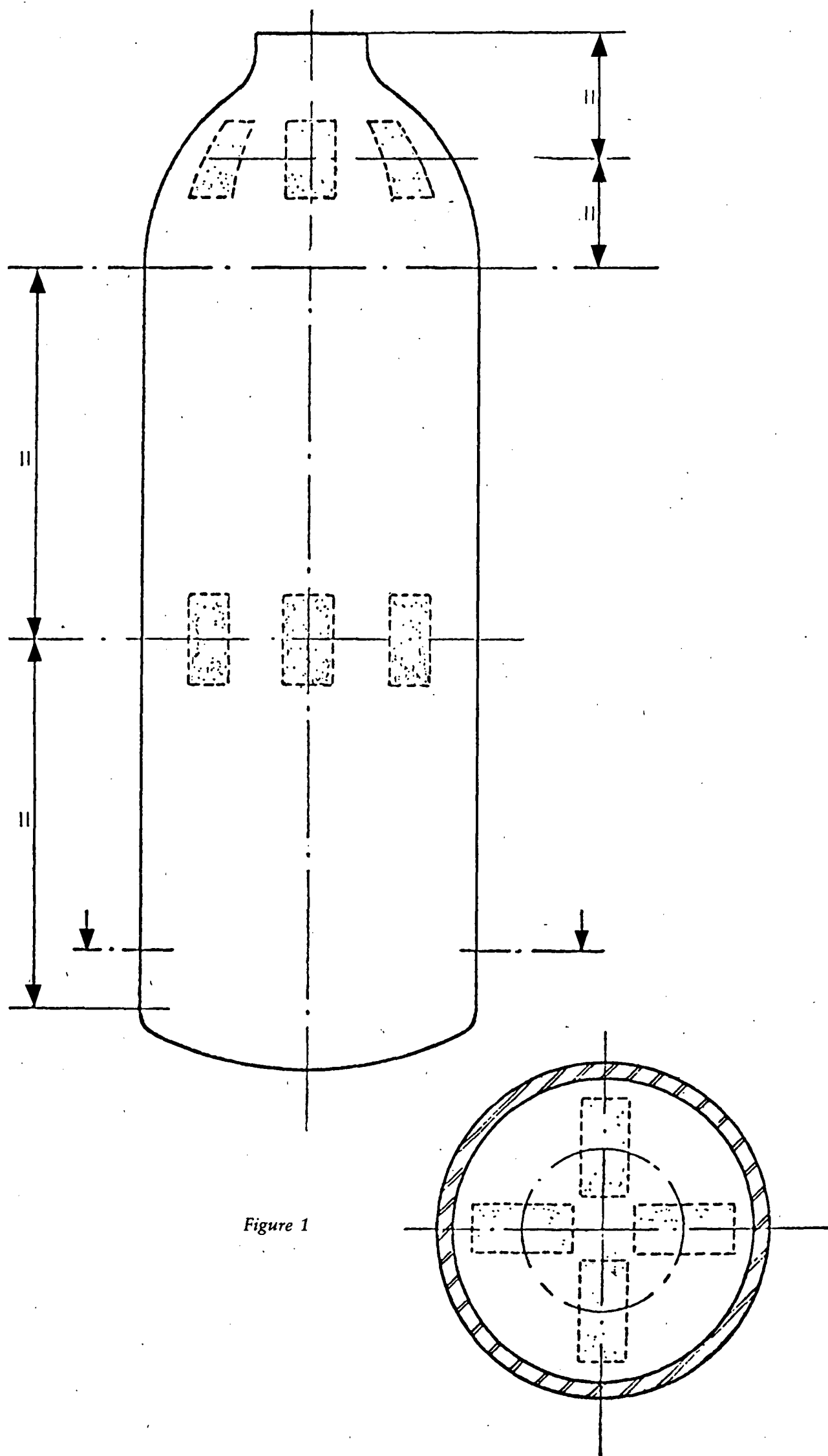


Figure 1

Appendix 2

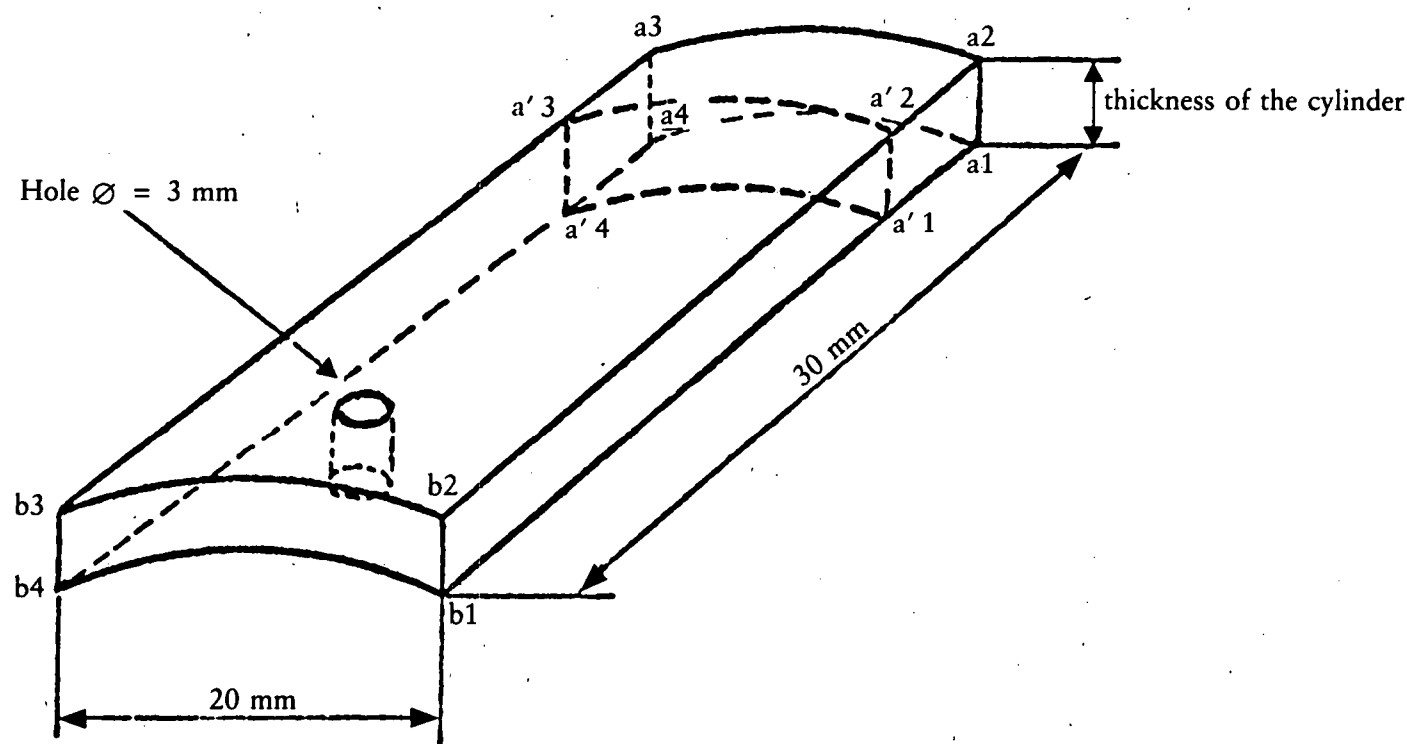


Figure 2

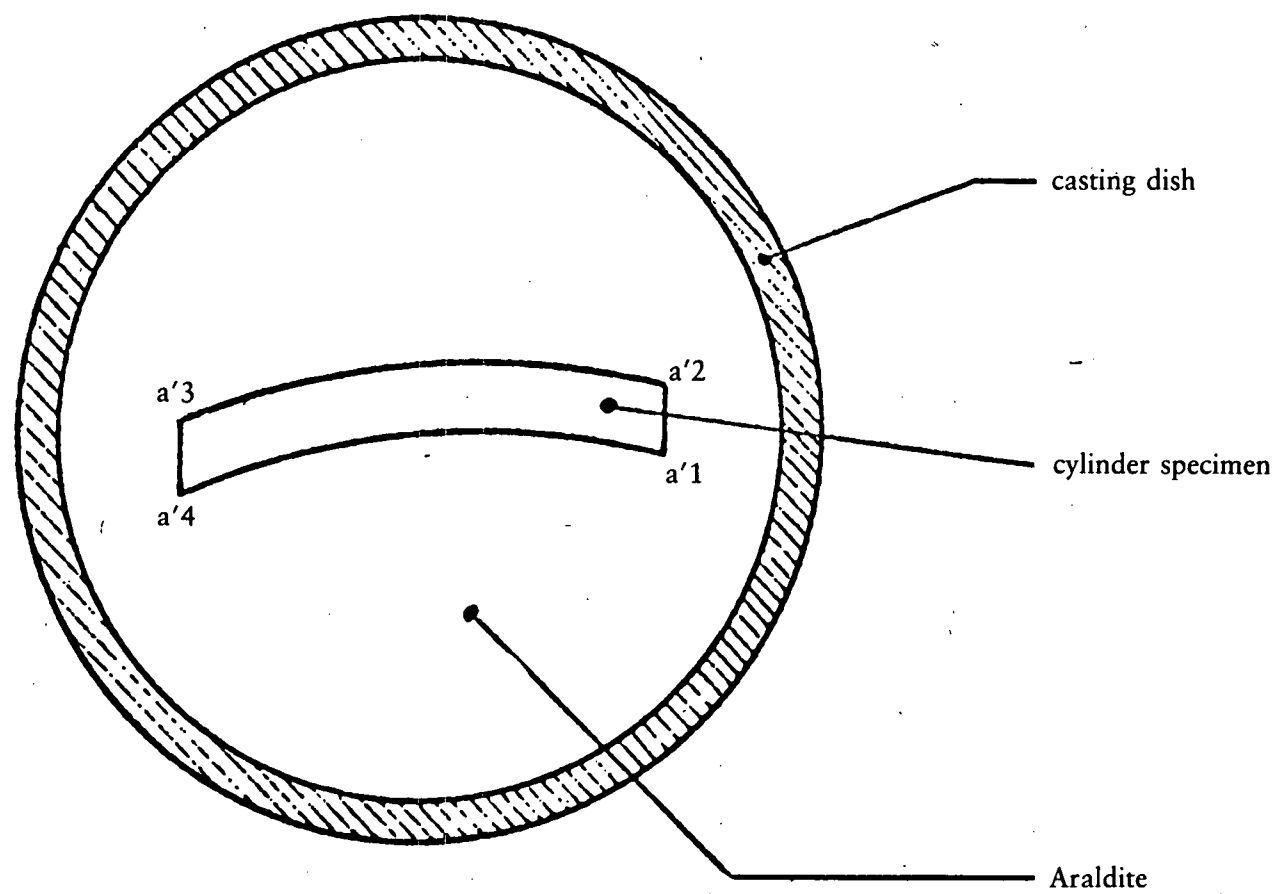


Figure 3

## 2. TESTS FOR ASSESSING SUSCEPTIBILITY TO STRESS CORROSION

The method described below consists of the subjection of rings cut from the cylindrical part of the cylinder to stress, their immersion in brine for a specified period, followed by removal of the brine and exposure to the air for a longer period and repetition of this cycle for 30 days. If there are no cracks in the rings after the period of 30 days, the alloy can be considered suitable for the manufacture of gas cylinders.

### 2.1. TAKING SPECIMENS

Six rings with a width of 4a or 25 mm, whichever is the greater, are to be cut from the cylindrical part of the cylinder (see figure 1). The specimens must have a 60° cut-out and be subjected to stress by means of a threaded bolt and two nuts (see figure 2).

Neither inner nor outer surfaces of the specimens are to be machined.

### 2.2. SURFACE PREPARATION BEFORE CORROSION TEST

All traces of grease, oil and adhesive used with stress gauges (see 2.3.2.4) must be removed with a suitable solvent.

### 2.3. PERFORMANCE OF THE TEST

#### 2.3.1. Preparation of the corrosive solution

2.3.1.1. The brine is prepared by dissolving  $3,5 \pm 0,1$  parts by mass of sodium chloride in 96,5 parts by mass of water.

2.3.1.2. The pH value of the freshly prepared solution must be in the range 6,4 to 7,2.

2.3.1.3. The pH may be corrected only by using dilute hydrochloric acid or dilute soda.

2.3.1.4. The solution must not be topped up by adding the salt solution described in 2.3.1.1 but only by adding distilled water up to the initial level in the vessel. Topping up may be carried out daily if necessary.

2.3.1.5. The solution must be completely replaced every week.

#### 2.3.2. Applying the stress to the rings

2.3.2.1. Three rings are to be compressed so that the outer surface is under stress.

2.3.2.2. Three rings are to be opened so that the inner surface is under stress.

2.3.2.3. The amount of stress must be the maximum permissible stress in the following wall-thickness calculation:

$\frac{R_e}{1,3}$  where  $R_e$  is the guaranteed minimum value of the yield stress at 0,2 % in N/mm<sup>2</sup>.

2.3.2.4. The actual stress can be measured by electric stress gauges.

- 2.3.2.5. The stress can also be calculated using the following formula:

$$D^1 = D \pm \frac{\pi R(D - a)^2}{4Eaz},$$

in which

$D^1$  = diameter of the ring when compressed (or opened);

$D$  = external diameter of the cylinder in mm;

$a$  = cylinder wall thickness in mm;

$R = \frac{R_e}{1,3}$  N/mm<sup>2</sup>;

$E$  = modulus of elasticity in N/mm<sup>2</sup> = 70 000 N/mm<sup>2</sup>;

$z$  = correction factor (figure 3).

- 2.3.2.6. It is essential for the nuts and bolts to be electrically insulated from the rings and protected from corrosion by the solution.
- 2.3.2.7. The six rings must be completely immersed in the saline solution for 10 minutes.
- 2.3.2.8. They are then removed from the solution and exposed to the air for 50 minutes.
- 2.3.2.9. This cycle must be repeated for 30 days or until the ring breaks, whichever happens first.
- 2.3.2.10. The specimens are to be inspected visually for any cracks.

## 2.4. INTERPRETATION OF THE RESULTS

The alloy will be considered acceptable for the manufacture of gas cylinders if none of the rings subjected to stress develops any cracks visible to the naked eye, or visible at low magnification (10 to 30), at the end of the test: 30 days.

## 2.5. POSSIBLE METALLOGRAPHICAL EXAMINATION

- 2.5.1. In the event of doubt about the presence of cracks (e.g. line of pitting), uncertainty can be removed by means of an additional metallographical examination of a section taken perpendicular to the axis of the ring in the suspect area. A comparison is made of the form (inter- or transcrystalline) and depth of penetration of the corrosion on the faces of the ring subject to tensile and compressive stress.

- 2.5.2. The alloy will be considered acceptable if the corrosion on both faces of the ring is similar.

On the other hand, if the face of the ring subject to tensile stress reveals inter-crystalline cracks which are clearly deeper than the corrosion affecting the face subject to compressive stress, the ring can be considered to have failed the test.

## 2.6. REPORTS

- 2.6.1. The name of the alloy and/or its standard number must be indicated.
- 2.6.2. Composition limits of the alloy must be given.
- 2.6.3. The actual analysis of the cast from which the cylinders were manufactured must be mentioned.
- 2.6.4. The actual mechanical properties of the alloy must be reported, together with the minimum mechanical property requirements.
- 2.6.5. The results of the test must be given.

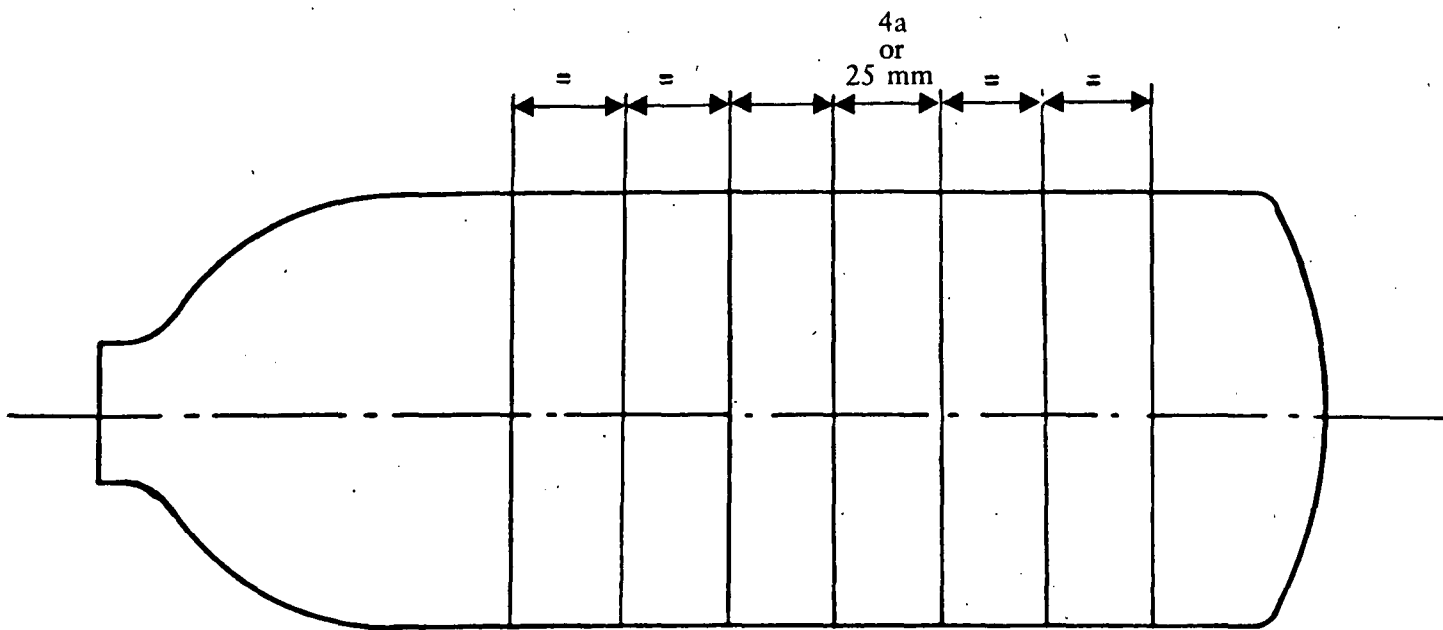


Figure 1

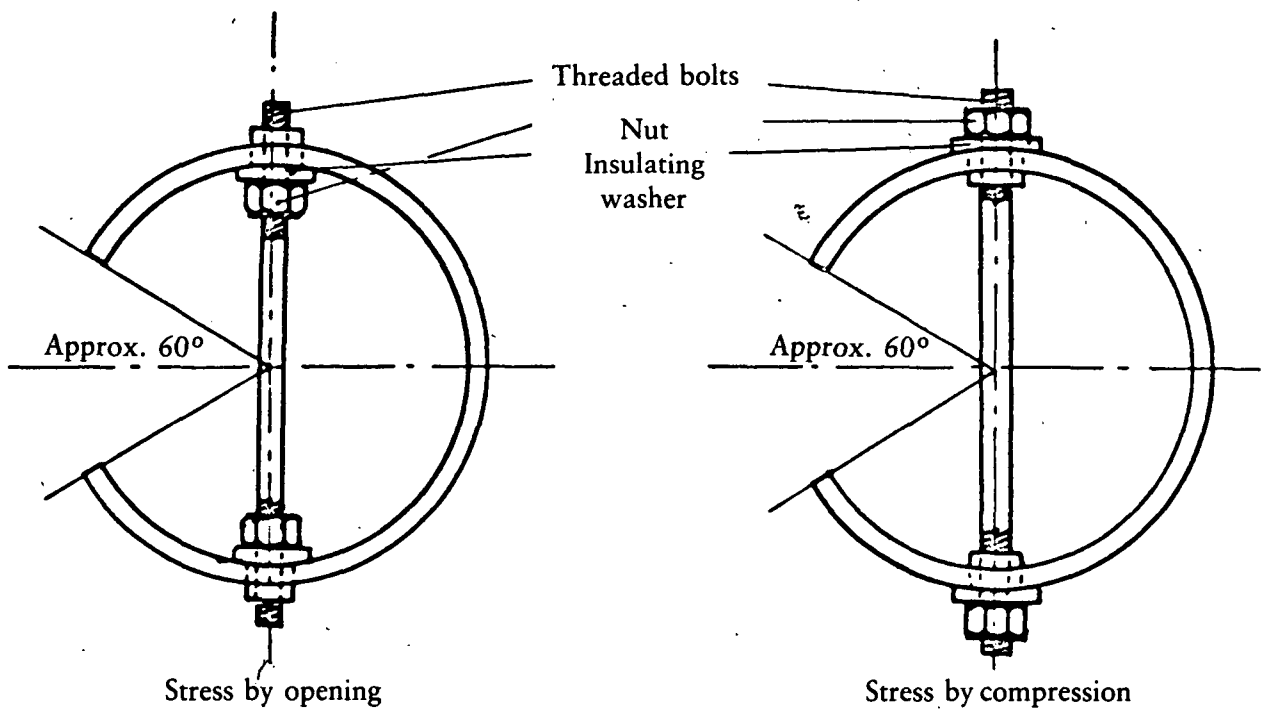


Figure 2

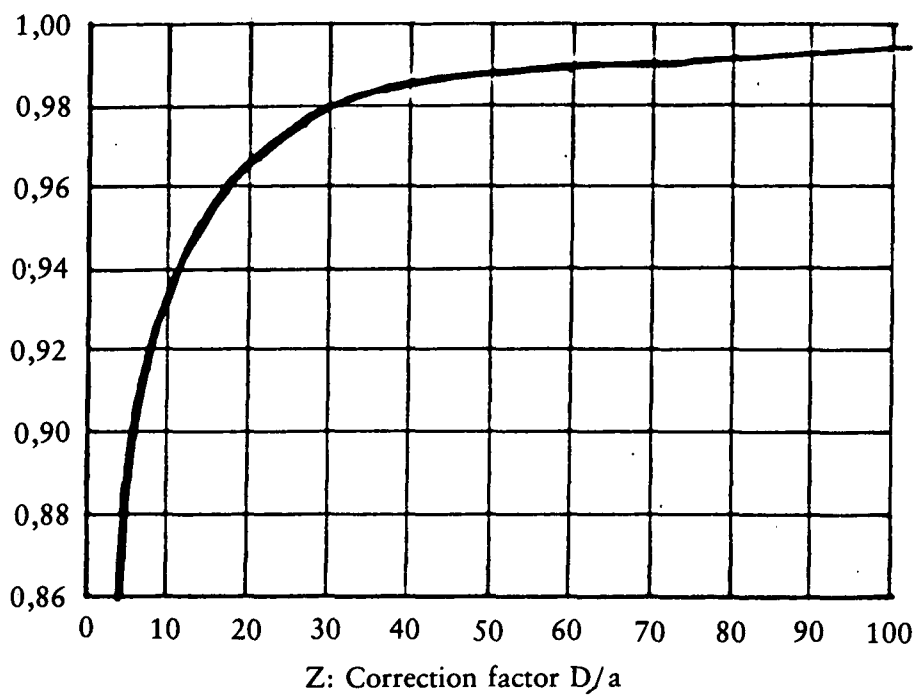


Figure 3

ANNEX III

EEC PATTERN APPROVAL CERTIFICATE

Issued by ..... on the basis of  
(Member State)

.....  
(National rules)

applying Directive 84/526/EEC of 17 September 1984 concerning

SEAMLESS, UNALLOYED ALUMINIUM AND ALUMINIUM  
ALLOY GAS CYLINDERS

Approval No ..... Date .....

Type of cylinder .....  
(Description of the family of cylinders which has received EEC approval)

P<sub>h</sub> ..... D ..... a .....

L<sub>min</sub> ..... L<sub>max</sub> ..... V<sub>min</sub> ..... V<sub>max</sub> .....

Manufacturer or agent .....  
(Name and address of manufacturer or his agent)

.....  
.....  
.....

EEC pattern approval mark  .....  .....

Details of the results of the examination of the pattern for EEC approval and the main features of the pattern are annexed.

All information may be obtained from .....  
(Name and address of the approving body)

.....  
.....  
.....

Date ..... Place .....

.....  
(Signature)

## TECHNICAL ANNEX TO EEC PATTERN APPROVAL CERTIFICATE

1. Results of EEC examination of the pattern with a view to EEC approval.
  2. Main features of the pattern, in particular:
    - longitudinal cross-section of the type of cylinder which has received pattern approval, showing:
      - the nominal external diameter,  $D$ , with an indication of the design tolerances laid down by the manufacturer,
      - the minimum thickness of the cylinder wall,  $a$ ,
      - the minimum thickness of the base and the head, with an indication of the design tolerances laid down by the manufacturer,
      - the minimum and maximum length(s),  $L_{\min}$ ,  $L_{\max}$ ;
    - the capacity or capacities,  $V_{\min}$ ,  $V_{\max}$ ;
    - the pressure,  $P_h$ ;
    - the name of the manufacturer/No of the drawing and date;
    - name of the type of cylinder;
    - the alloy in accordance with section 2.1 (nature/chemical composition/method of manufacture/heat treatment/guaranteed mechanical characteristics (tensile strength — yield point)).
-

ANNEX IV

MODEL

EEC VERIFICATION CERTIFICATE

Application of Council Directive 84/526/EEC of 17 September 1984

Inspection body .....  
.....

Date .....

EEC pattern approval No .....

Description of vessels .....  
.....

EEC verification No .....

Manufacturing batch No ..... to .....

Manufacturer .....  
(Name and address)  
.....  
.....

Country ..... Mark .....

Owner .....  
(Name and address)  
.....  
.....

Customer .....  
(Name and address)  
.....  
.....

VERIFICATION TESTS

1. MEASUREMENTS OF SAMPLE CYLINDERS

| Test No | Batch consisting of No ..... to No ..... | Water capacity (litres) | Mass empty (kg) | Minimum measured thickness |                  |
|---------|------------------------------------------|-------------------------|-----------------|----------------------------|------------------|
|         |                                          |                         |                 | of the wall (mm)           | of the base (mm) |
|         |                                          |                         |                 |                            |                  |

2. MECHANICAL TESTS CARRIED OUT ON SAMPLE CYLINDERS

| Test No                  | Heat treatment No | Tensile test                                               |                                        |                                                |                  | Bend test 180 ° without cracking | Hydraulic bursting test (bars) | Description of the fracture (Description or diagram attached) |
|--------------------------|-------------------|------------------------------------------------------------|----------------------------------------|------------------------------------------------|------------------|----------------------------------|--------------------------------|---------------------------------------------------------------|
|                          |                   | Test-piece in accordance with EURO-NORM (a) 2-80 (b) 11-80 | Yield point $R_e$ (N/mm <sup>2</sup> ) | Tensile strength $R_{mt}$ (N/mm <sup>2</sup> ) | Elongation A (%) |                                  |                                |                                                               |
|                          |                   |                                                            |                                        |                                                |                  |                                  |                                |                                                               |
| Minimum values specified |                   |                                                            |                                        |                                                |                  |                                  |                                |                                                               |

I, the undersigned, hereby declare that I have checked that the verification operations, tests and checks prescribed in section 5.2 of Annex I to Directive 84/527/EEC have been carried out successfully.

Special remarks .....

General remarks .....

Certified on (date) .....,  
(Place)  
(Signature of the inspector)

on behalf of .....  
(Inspection body)

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to welded unalloyed steel  
gas cylinders

(84/527/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in the Member States the construction and the inspection of gas cylinders are subject to mandatory provisions varying from one Member State to another and consequently hinder trade in such cylinders; whereas it is therefore necessary to approximate these provisions;

Whereas Council Directive 76/767/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to common provisions for pressure vessels and methods of inspecting them <sup>(4)</sup>, lays down in particular the procedures of EEC pattern approval and verification for these vessels; whereas according to this Directive it is advisable to lay down the technical requirements to be complied with by EEC-type welded unalloyed steel gas cylinders with a capacity of 0,5 to 150 litres in order to be put into circulation, commercialized and used without restraint after having undergone inspection and bearing accordingly a mark and a symbol,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

This Directive shall apply to welded unalloyed steel gas cylinders formed from several pieces, of an actual

thickness of 5 mm or less, capable of being refilled several times, with a capacity ranging from 0,5 to 150 litres inclusive and designed to contain and transport compressed, liquefied or dissolved gases except liquefied gases at very low temperatures and acetylene. The design pressure ( $P_h$ ) of these cylinders shall not exceed 60 bars. These gas cylinders are hereinafter referred to as 'cylinders'.

*Article 2*

For the purposes of this Directive, 'EEC-type cylinder' shall mean any cylinder designed and manufactured in such a way that it satisfies the requirements of this Directive and of Directive 76/767/EEC.

*Article 3*

No Member State may, on grounds relating to the construction or inspection of a cylinder within the meaning of Directive 76/767/EEC and this Directive refuse, prohibit or restrict the placing on the market and putting into service of an EEC-type cylinder.

*Article 4*

All EEC-type cylinders shall be subject to EEC pattern approval.

All EEC-type cylinders shall be subject to EEC verification with the exception of cylinders with a capacity of not more than 1 litre.

*Article 5*

Any amendments necessary to adapt sections 1, 2.1.1, 2.3 except for 2.3.3, 2.4 except for 2.4.1 and 2.4.2.1, 3.1.1, 3.1.2, 3.3, 3.4, 3.5, 5 except for 5.2.2 and 5.3, and 6 of Annex I and Annexes II and III to this Directive to technical progress shall be adopted in accordance with the procedure laid down in Article 20 of Directive 76/767/EEC.

<sup>(1)</sup> OJ No C 104, 13. 9. 1974, p. 59.

<sup>(2)</sup> OJ No C 5, 8. 1. 1975, p. 52.

<sup>(3)</sup> OJ No C 62, 15. 3. 1975, p. 31.

<sup>(4)</sup> OJ No L 262, 27. 9. 1976, p. 153.

*Article 6*

The procedure laid down in Article 17 of Directive 76/767/EEC may apply to sections 2.2, 2.3.2 and 3.4.1.1 of Annex I to this Directive.

*Article 7*

1. Member States shall bring into force the laws, regulations and administrative provisions needed in order to comply with this Directive within 18 months of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field

covered by this Directive are communicated to the Commission.

*Article 8*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

---

<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## 1. SYMBOLS AND TERMS USED IN THIS ANNEX

## 1.1. The symbols used in this Annex have the following meanings:

- $P_h$  = hydraulic test pressure (design pressure), in bars;  
 $P_r$  = cylinder bursting pressure measured during the bursting test, in bars,  
 $P_{rt}$  = calculated minimum theoretical bursting pressure, in bars;  
 $R_e$  = minimum value of yield stress guaranteed by the cylinder manufacturer for the finished cylinder, in N/mm<sup>2</sup>;  
 $R_m$  = minimum tensile strength guaranteed by the material standard, in N/mm<sup>2</sup>;  
 $R_{mt}$  = actual tensile strength, in N/mm<sup>2</sup>;  
 $a$  = calculated minimum thickness of the cylindrical shell wall, in mm;  
 $b$  = calculated minimum thickness of barrelled ends, in mm;  
 $D$  = nominal outside diameter of the cylinder, in mm;  
 $R$  = inside radius of curvature of convex base, in mm;  
 $r$  = inside radius of junction of convex base, in mm;  
 $H$  = outside height of dished part of cylinder end, in mm;  
 $h$  = height of cylindrical part of dished end, in mm;  
 $L$  = length of cylinder's stress-resistant shell, in mm;  
 $A$  = elongation value of parent metal, in %;  
 $V_0$  = initial volume of the cylinder at the moment when the pressure is increased in the bursting test, in litres;  
 $V$  = final volume of the cylinder on bursting, in litres;  
 $Z$  = stress reduction factor.

## 1.2. For the purposes of this Directive, 'bursting pressure' means the pressure at plastic instability, i.e. the maximum pressure obtained during a burst test.

## 1.3. NORMALIZATION

The term 'normalization' is used in this Directive as defined in paragraph 68 of EURONORM 52-83.

## 1.4. STRESS RELIEVING

The term 'stress relieving' relates to the heat treatment to which a completed cylinder is subjected, during which the cylinder is heated to a temperature below the steel's lowest critical point ( $A_{c1}$ ) in order to reduce the residual stresses.

## 2. TECHNICAL REQUIREMENTS

## 2.1. MATERIALS

## 2.1.1. The material used for the manufacture of the stress-resistant cylinder shells must be steel as specified in EURONORM 120-83.

## 2.1.2. All components of the cylinder body and all the parts welded thereto must be made of mutually compatible materials.

- 2.1.3. The filler materials must be compatible with the steel so as to form welds with properties equivalent to those specified for the parent metal.
- 2.1.4. The cylinder manufacturer must obtain and provide chemical cast analysis certificates in respect of the steels supplied for the manufacture of the pressure parts.
- 2.1.5. It must be possible for independent analyses to be made. These analyses must be carried out either on specimens taken from the materials as supplied to the cylinder manufacturer or on the finished cylinders.
- 2.1.6. The manufacturer must make available to the inspection body the results of metallurgical and mechanical tests and analyses carried out on welds and must also provide it with a description of the welding methods and processes adopted which can be regarded as representative of the welds made during production.

## 2.2. HEAT TREATMENT

Cylinders shall be delivered in either the normalized or the stress-relieved condition. The cylinder manufacturer shall certify that the cylinders have been heat treated after completion of all welding and shall certify the process of heat treatment applied. Localized heat treatment is not permitted.

## 2.3. CALCULATIONS FOR THE PRESSURE PARTS

- 2.3.1. The thickness of the cylindrical shell wall at any point on the stress-resistant shell of the gas cylinders must not be less than that calculated by the formula:

- 2.3.1.1. for cylinders without longitudinal welds:

$$a = \frac{P_h \cdot D}{20 \frac{R_e}{4/3} + P_h}$$

- 2.3.1.2. for cylinders with longitudinal welds:

$$a = \frac{P_h \cdot D}{20 \frac{R_e}{4/3} Z + P_h}$$

Z being equal to:

- 0,85 where the manufacturer radiographs the intersection of the welds for a distance of 100 mm beyond the intersection in the case of the longitudinal weld and of 50 mm (25 mm on each side) in the case of the circumferential welds. One cylinder selected at the beginning and one at the end of each shift period and per machine is to be radiographed,
- 1 where the manufacturer spot radiographs the intersection of the welds for a distance of 100 mm beyond the intersection in the case of the longitudinal weld and of 50 mm (25 mm on each side) in the case of the circumferential welds.

This examination shall be carried out on 10 % of cylinders manufactured, chosen at random.

Should these radiograph tests reveal unacceptable defects, as defined in 3.4.1.4, all the necessary steps must be taken to examine the production run in question and eliminate the defects.

## 2.3.2. Dimensions and calculation of ends (see figures in Appendix 1)

- 2.3.2.1. The cylinder ends must fulfil the following conditions:

— *torispherical ends*simultaneous limits:  $0,003 D \leq b \leq 0,08 D$ 

$$r \geq 0,1 D$$

$$R \leq D$$

$$H \geq 0,18 D$$

$$r \geq 2 b$$

$$h \geq 4 b$$

— *elliptical ends*simultaneous limits:  $0,003 D \leq b \leq 0,08 D$ 

$$H \geq 0,18 D$$

$$h \geq 4 b$$

— *hemispherical ends*limits:  $0,003 D \leq b \leq 0,16 D$ 

- 2.3.2.2. The thickness of these dished ends must not at any point be less than the figure calculated by means of the following formula:

$$b = \frac{P_h \cdot D}{20 \frac{R_e}{4/3}} C$$

The coefficient of form C to be used for full ends is given in the table in Appendix 1.

However, the nominal thickness of the cylindrical edge of the ends must not be less than the nominal thickness of the cylindrical part.

- 2.3.3. The nominal wall thickness of the cylindrical part and of the dished end may not, under any circumstances, be less than:

$$- \frac{D}{250} + 0,7 \text{ mm where } P_h < 30 \text{ bar}$$

$$- \frac{D}{250} + 1 \text{ mm where } P_h \geq 30 \text{ bar}$$

with a minimum of 1,5 mm in both cases.

- 2.3.4. The cylinder body, excluding the valve seat, may be made up of two or three parts. The ends must be in one piece and convex.

## 2.4. CONSTRUCTION AND WORKMANSHIP

### 2.4.1. General requirements

- 2.4.1.1. The manufacturer guarantees on his own responsibility that he has the manufacturing facilities and processes to ensure that cylinders produced satisfy the requirements of this Directive.

- 2.4.1.2. The manufacturer must ensure through adequate supervision that the parent plates and pressed parts used to manufacture the cylinders are free from any defects likely to adversely affect the operating safety of the cylinder.

### 2.4.2. Pressure parts

- 2.4.2.1. The manufacturer must describe the welding methods and processes used and indicate the inspections carried out during production.

#### 2.4.2.2. Technical welding requirements

The butt welds must be executed by an automatic welding process.

The butt welds on the stress-resistant shell may not be located in any area where there are changes of profile.

Fillet welds may not be superimposed on butt welds and must be at least 10 mm away from them.

Welds joining parts making up the shell of the cylinder must satisfy the following conditions (see figures given as examples in Appendix 2):

- longitudinal weld: this weld is executed in the form of a butt weld on the full section of the metal of the wall,
- circumferential weld other than those fixing the valve flange collar to the upper end: this weld is executed in the form of a butt weld on the full section of the metal to the wall. A joggle joint weld is considered to be a special type of butt weld,
- circumferential weld fixing the valve flange collar to the upper end: this weld may be either a butt or a fillet weld. If it is a butt weld, it must be applied on the full section of the metal of the wall. A joggle joint weld is regarded as a special type of butt weld.

The requirements of this indent are not applicable where the upper end has a seat within the cylinder and where this seat is fixed to the end by a weld which is unrelated to the leak-tightness of the cylinder (see Appendix 2 hereto, figure 4).

In the case of butt welds, the misalignment of the joint faces may not exceed one-fifth of the thickness of the walls ( $1/5 a$ ).

#### 2.4.2.3. *Inspection of welds*

The manufacturer must ensure that the welds show continuous penetration without any deviation of the weld seam, and that they are free of defects likely to jeopardize the safe use of the cylinder.

For two-piece cylinders, and with the exception of welds complying with figure 2A in Appendix 2, the circular butt welds should be radiographed over a length of 100 mm, on one cylinder selected at the beginning and one at the end of each shift period during continuous production and, in the event of production being interrupted for a period of more than 12 hours, on the first cylinder welded.

#### 2.4.2.4. *Out-of-roundness*

The out-of-roundness of the cylindrical shell of the cylinder must be limited so that the difference between the maximum and minimum outside diameter of the same cross section is not more than 1 % of the average of those diameters.

#### 2.4.3. **Fittings**

2.4.3.1. The carrying handles and protective collars must be manufactured and welded to the cylinders body in such a way as not to cause dangerous concentrations of stresses or be conducive to the collection of water.

2.4.3.2. The base of the cylinder must be sufficiently strong and made of metal compatible with the type of steel used for the cylinder; the form of the base must give the cylinder sufficient stability. The top edge of the base must be welded to the cylinder in such a way as not to be conducive to the collection of water nor to allow water to penetrate between the base and the cylinder.

2.4.3.3. Where fitted, identification plates must be fixed on to the stress-resistant shell and not be removable; all the necessary corrosion prevention measures must be taken.

2.4.3.4. Any other material, however, may be used for the manufacture of the bases, carrying handles or protective collars, provided that their strength is assured and that all risk of the cylinder end corroding is eliminated.

#### 2.4.3.5. *Protection of the cock or valve*

The cylinder cock or valve must be effectively protected either by its design or by the design on the cylinder itself (e.g. protective collar), or by means of a protective cap or a securely attached cover.

### 3. TESTS

#### 3.1. MECHANICAL TESTS

##### 3.1.1. General requirements

3.1.1.1. Where not covered by the requirements contained in this Annex, the mechanical tests are to be carried out in accordance with EURONORMS:

- (a) 2-80 or 11-80 respectively in the case of the tensile test, according to whether the thickness of the test-piece is 3 mm or above, or less than 3 mm;
- (b) 6-55 or 12-55 respectively in the case of the bend test, according to whether the thickness of the test-piece is 3 mm or above, or less than 3 mm.

3.1.1.2. All the mechanical tests for checking the properties of the parent metal and welds of the stress-resistant shells of the gas cylinders shall be carried out on test-pieces taken from finished cylinders.

##### 3.1.2. Types of test and evaluation of test results

3.1.2.1. Each sample cylinder shall be subjected to the following tests:

(A) *For cylinders containing only circumferential welds* (two-piece cylinders), on test-pieces taken from the places shown in figure 1 of Appendix 3:

- 1 tensile test: parent metal in the geometric longitudinal direction of the cylinder (a); or, if it is not possible, in the circumferential direction;
- 1 tensile test: perpendicular to the circumferential weld (b);
- 1 bend test: on the back of the circumferential weld (c);
- 1 bend test: on the front of the circumferential weld (d);
- 1 macroscopic test: on the welded section.

(B) *For cylinders with longitudinal and circumferential welds* (three-piece cylinders), on test-pieces taken from the places shown in figure 2 of Appendix 3:

- 1 tensile test: parent metal of cylindrical part in the longitudinal direction (a); or, if this is not possible, in a circumferential direction;
- 1 tensile test: parent metal from bottom (b);
- 1 tensile test: perpendicular to the longitudinal weld (c);
- 1 tensile test: perpendicular to the circumferential weld (d);
- 1 bend test: back of longitudinal weld (e);
- 1 bend test: front of longitudinal weld (f);
- 1 bend test: back of circumferential weld (g);
- 1 bend test: front of circumferential weld (h);
- 1 macroscopic test: of the welded section.

3.1.2.1.1. Test-pieces which are not sufficiently flat must be flattened by cold pressing.

3.1.2.1.2. In all test-pieces containing a weld, the weld shall be machined flush, to trim the surplus.

##### 3.1.2.2. Tensile test

###### 3.1.2.2.1 Tensile test on parent metal

3.1.2.2.1.1. The procedure for carrying out the tensile test is that given in the appropriate EURONORM in accordance with 3.1.1.1.

The two faces of the test-piece representing the inside and outside walls of the cylinder respectively must not be machined.

- 3.1.2.2.1.2. The values determined for yield stress must be at least equal to the minimum values guaranteed by the cylinder manufacturer.

The values determined for tensile strength and elongation after the test-piece of the parent metal fractures must comply with EURONORM 120-83 (table III).

3.1.2.2.2. Tensile test on welds

- 3.1.2.2.2.1. The tensile test perpendicular to the weld must be carried out on a test-piece having a reduced cross section 25 mm in width for a length extending up to 15 mm beyond the edges of the weld, as shown in the figure in Appendix 4. Beyond this central part the width of the test-piece must increase progressively.

- 3.1.2.2.2.2. The tensile strength value obtained must be at least equal to that guaranteed for the parent metal irrespective of where the fracture occurs in the cross section of the central part of the test-piece.

3.1.2.3. Bend test

- 3.1.2.3.1. The procedure for carrying out the bend test is that given in the appropriate EURONORM in accordance with 3.1.1.1. The bend test must, however, be carried out transversely to the weld on a test-piece 25 mm in width. The mandrel must be placed in the centre of the weld while the test is being performed.

- 3.1.2.3.2. Cracks must not appear in the test-piece when it is bent round a mandrel such that the inside edges are separated by a distance not greater than the diameter of the mandrel (see figure 2 in Appendix 5).

- 3.1.2.3.3. The ratio (n) between the diameter of the mandrel and the thickness of the test-piece must not exceed the values given in the following table:

| Actual tensile strength<br>$R_{mt}$ in N/mm <sup>2</sup> | Value of n |
|----------------------------------------------------------|------------|
| up to 440 inclusive                                      | 2          |
| above 440 to 520 inclusive                               | 3          |
| above 520                                                | 4          |

3.2. BURST TEST UNDER HYDRAULIC PRESSURE

3.2.1. Test conditions

Cylinders subjected to this test must bear the inscriptions which it is proposed to make on the section of the cylinder subjected to pressure.

- 3.2.1.1. The burst test under hydraulic pressure must be carried out with equipment which enables the pressure to be increased at an even rate until the cylinder bursts and the change in pressure over time to be recorded.

3.2.2. Interpretation of test

- 3.2.2.1. The criteria adopted for the interpretation of the burst test are as follows:

- 3.2.2.1.1. Volumetric expansion of the cylinder; this equals:

- the volume of water used between the time when the pressure starts to rise and the time of bursting for cylinders of a capacity  $\geq 6,5$  litres,
- the difference between the volume of the cylinder at the beginning and the end of the test for cylinders of a capacity  $< 6,5$  litres;

3.2.2.1.2. Examination of the tear and the shape of its edges.

3.2.3. Minimum test requirements

3.2.3.1. The measured bursting pressure ( $P_r$ ) must not under any circumstances be less than 9/4 of the test pressure ( $P_h$ ).

3.2.3.2. Ratio of the volumetric expansion of the cylinder to its initial volume:

- 20 % if the length of the cylinder is greater than the diameter,
- 17 % if the length of the cylinder is equal to or less than the diameter.

3.2.3.3. The burst test must not cause any fragmentation of the cylinder.

3.2.3.3.1. The main fracture must not show any brittleness, i.e. the edges of the fracture must not be radial but must be at an angle to a diametral plane and display a reduction of area throughout their thickness.

3.2.3.3.2. The fracture must not reveal a clear defect in the metal.

3.3. HYDRAULIC TEST

3.3.1. The water pressure in the cylinder must increase at an even rate until the test pressure is reached.

3.3.2. The cylinder must remain under the test pressure long enough to make it possible to establish that the pressure is not falling off and that the cylinder can be guaranteed leak-proof.

3.3.3. After the test the cylinder must show no signs of permanent deformation.

3.3.4. Any cylinder tested which does not pass the test must be rejected.

3.4. NON-DESTRUCTIVE EXAMINATION

3.4.1. Radiographic examination

3.4.1.1. Welds must be radiographed in accordance with ISO specification R 1106-1969, class B.

3.4.1.2. When a wire-type indicator is used, the smallest diameter of visible wire may not exceed 0,10 mm.

When a stepped and holed type indicator is used, the diameter of the smallest visible hole may not exceed 0,25 mm.

3.4.1.3. Assessment of the weld radiographs must be based on the original films in accordance with the practice recommended in ISO standard 2504 — 1973, paragraph 6.

3.4.1.4. The following defects are not acceptable:

- cracks, inadequate welds or inadequate penetration of the weld.

The inclusions listed below are regarded as unacceptable:

- any elongated inclusion or any group of rounded inclusions in a row where the length represented (over a weld length of 12 a) is greater than 6 mm,
- any gas inclusion measuring more than  $a/3$  mm which is more than 25 mm from any other gas inclusion,
- any other gas inclusion measuring more than  $a/4$  mm,
- gas inclusions over any 100 mm weld length, where the total area of all the figures is greater than  $2 a \text{ mm}^2$ .

**3.4.2. Macroscopic examination**

The macroscopic examination of a full transverse section of the weld must show a complete fusion on the surface treated with any acid from the macro-preparation and must not show any assembly fault or a significant inclusion or other defects.

In case of doubt, a microscopic examination should be made of the suspect area.

**3.5. EXAMINATION OF THE OUTSIDE OF THE WELD**

3.5.1. This examination is carried out when the weld has been completed. The welded surface examined must be well illuminated, and must be free from grease, dust, scale residue or protective coating of any kind.

3.5.2. The fusion of the welded metal with the parent metal must be smooth and free from etching. There must be no cracks, notching or porous patches in the welded surface and the surface adjacent to the wall. The welded surface must be regular and even. Where a butt weld has been used, the excess thickness must not exceed  $\frac{1}{4}$  of the width of the weld.

**4. EEC PATTERN APPROVAL**

4.1. The EEC pattern approval referred to in Article 4 may be issued for types or families of cylinders.

'Type of cylinder' means cylinders of the same design and thickness, equipped with the same accessories, manufactured in the same workshops from sheet metal of identical technical specifications, welded by the same process and heat-treated under the same conditions.

'Family of cylinders' means three-piece cylinders from the same factory which differ in length alone, within the following limits:

- the minimum length must not be less than 3 times the diameter of the cylinder,
- the maximum length must not be more than 1,5 times the length of the tested cylinder.

4.2. The applicant for pattern approval must, for each type of cylinder or family of cylinders, submit the documentation necessary for the verification prescribed below and make available to the Member State a batch of 50 cylinders from which the number of cylinders required for the following tests will be taken, together with any additional information required by the Member State. The applicant must indicate the type and duration of heat treatment, the temperature used and the welding process. He must obtain and provide cast analysis certificates for steel supplied for cylinder manufacture,

4.3. In the course of the EEC pattern approval process, it shall be verified that:

- the calculations prescribed in 2.3 are correct,
- the conditions prescribed in 2.1, 2.2 and 2.4 and 3.5 are fulfilled.

The following must be carried out on the cylinders submitted as prototypes:

- the test prescribed in 3.1, on one cylinder,
- the test prescribed in 3.2, on one cylinder,
- the test prescribed in 3.4, on one cylinder.

If the results of the checks are satisfactory, the Member State shall issue the EEC pattern approval certificate in accordance with the specimen contained in Annex II.

## 5. EEC VERIFICATION

5.1. For the purpose of EEC verification the cylinder manufacturer must make available to the inspection body:

5.1.1. the EEC pattern approval certificate;

5.1.2. the cast analysis certificates for the steel supplied for the manufacture of the cylinders;

5.1.3. means of identifying the cast of steel from which each cylinder has come;

5.1.4. the documentation — in particular the documents relating to heat treatment — on the cylinders supplied by him, stating the process used in accordance with 2.2;

5.1.5. a list of the cylinders, giving the numbers and inscriptions prescribed in section 6;

5.1.6. the results of the non-destructive tests carried out during production and the welding methods used to ensure good reproducibility of cylinders during manufacture. The manufacturer must also provide a statement to the effect that for series production he undertakes to use a welding method identical to that which he used for the cylinders submitted for EEC pattern approval.

## 5.2. DURING EEC VERIFICATION

5.2.1. The inspection body must:

- ascertain that the EEC pattern approval certificate has been obtained and that the cylinders conform to it,
- verify the documents giving information about the materials and the manufacturing processes, in particular those specified in 2.1.6,
- check whether the technical requirements set out in section 2 have been met and carry out a visual external and internal examination of each cylinder of a random sample,
- be present at the tests prescribed in 3.1 and 3.2 and check their progress,
- check whether the information supplied by the manufacturer mentioned in 5.1.6 is correct, and whether the verifications he has carried out are satisfactory,
- issue the EEC verification certificate on the lines of the specimen set out in Annex III.

5.2.2. For the purpose of carrying out the tests, a random sample of cylinders as indicated below shall be taken from each batch.

A batch shall consist of a maximum of 3 000 cylinders of the same type as defined in the second paragraph of 4.1, manufactured on the same day or on consecutive days.

TABLE 1

| Actual N in batch        | Cylinders taken as samples | Cylinders subjected to the |             |
|--------------------------|----------------------------|----------------------------|-------------|
|                          |                            | mechanical tests           | burst tests |
| $N \leq 500$             | 3                          | 1                          | 2           |
| $500 < N \leq 1\,500$    | 9                          | 2                          | 7           |
| $1\,500 < N \leq 3\,000$ | 18                         | 3                          | 15          |

Depending on the size of the batch, the sample cylinders shall be subjected to the mechanical tests provided for in 3.1 and to the hydraulic pressure burst test provided for in 3.2, according to the distribution indicated in table 1.

If two or more cylinders fail the tests, the batch must be rejected.

Should one of the cylinders fail either the mechanical tests or the burst test, a number of cylinders as indicated in table 2 shall be selected at random, and the tests carried out according to the distribution in table 1.

TABLE 2

| Number N in batch | Cylinders taken as samples | Unsatisfactory tests | Cylinders subjected to the |            |
|-------------------|----------------------------|----------------------|----------------------------|------------|
|                   |                            |                      | mechanical tests           | burst test |
| 250 < N ≤ 500     | 3                          | mechanical tests     | 2                          | 1          |
|                   |                            | burst tests          | 1                          | 2          |
| 500 < N ≤ 1 500   | 9                          | mechanical tests     | 5                          | 4          |
|                   |                            | burst tests          | 2                          | 7          |
| 1 500 < N ≤ 3 000 | 18                         | mechanical tests     | 9                          | 9          |
|                   |                            | burst tests          | 3                          | 15         |

If one or more of these cylinders are not satisfactory, the batch must be rejected.

- 5.2.3. The selection of samples and all the tests are to be performed in the presence of a representative of the inspection body.
- 5.2.4. All the cylinders in the batch must undergo the hydraulic test specified in 3.3 in the presence and under the supervision of a representative of the inspection body.

5.3. EXEMPTION FROM EEC VERIFICATION

In the case of cylinders of less than 1 litre capacity, all the tests and checks specified in section 5 must be carried out by the manufacturer on his own responsibility. The manufacturer must make available to the inspection body all the documents and reports relating to the tests and checks.

6. MARKS AND INSCRIPTIONS

- 6.1. When the inspection body has carried out all the prescribed checks and if the results are satisfactory, it must issue a certificate stating the checks which have been performed.
- 6.2. For cylinders of less than 6,5 litres capacity, the marks and inscriptions relating to the cylinder construction may be made on the base; for other cylinders, they shall be made on the head or a reinforced part of the cylinder or on an identification plate. However, some of these inscriptions may be made on the dished end during forming provided the integrity of the cylinder is not weakened.

6.3. EEC PATTERN APPROVAL MARK

By way of derogation from the requirements of section 3 of Annex I to Directive 76/767/EEC, the manufacturer must make the EEC pattern approval mark in the following order:

- the stylized letter  $\xi$ ,
- the number 3 identifying this Directive,
- the capital letter(s) identifying the Member State which has granted EEC pattern approval and the final two figures of the year in which pattern approval was granted,
- the number identifying the EEC pattern approval (e.g.  $\xi$  3 D 79 45).

**6.4. EEC VERIFICATION MARK**

By way of derogation from the requirements of section 3 of Annex II to Directive 76/767/EEC, the inspection body must make the EEC verification mark in the following order:

- the small letter 'e',
- the capital letter(s) identifying the Member State in which the verification is carried out, together, where necessary, with one or two figures identifying a territorial subdivision,
- the mark of the inspection body made by the verifying agent, together with the mark of the verifying agent if appropriate,
- a hexagon,
- the date of verification: year, month (e.g. e D 12 48  80/01).

**6.5. CONSTRUCTION INSCRIPTIONS****6.5.1. As regards the steel**

- A number indicating the value of  $R_e$  in  $N/mm^2$  on which the calculation was based,
- the symbol N (cylinder in the normalized condition) or the symbol S (cylinder in the stress-relieved condition).

**6.5.2. As regards the hydraulic test**

The value of the test pressure in bars followed by the symbol 'bars'.

**6.5.3. As regards the type of cylinder**

The minimum capacity, in litres, guaranteed by the manufacturer of the cylinder.

This capacity must be given to one decimal place and rounded down.

**6.5.4. As regards origin**

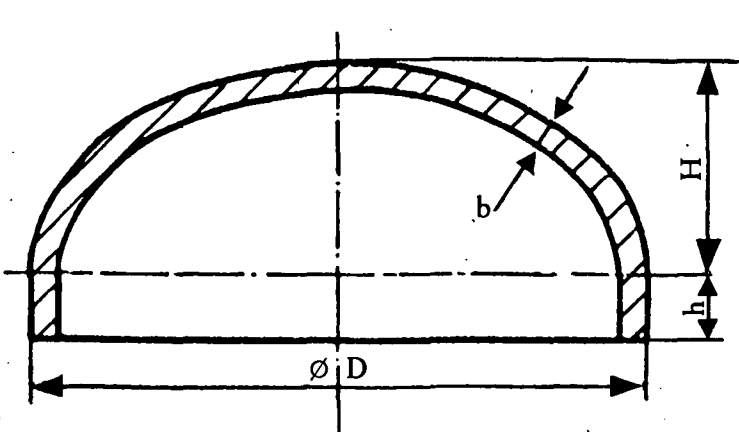
The capital letter(s) indicating the country of origin followed by the manufacturer's mark and the serial number.

**6.6. OTHER INSCRIPTIONS**

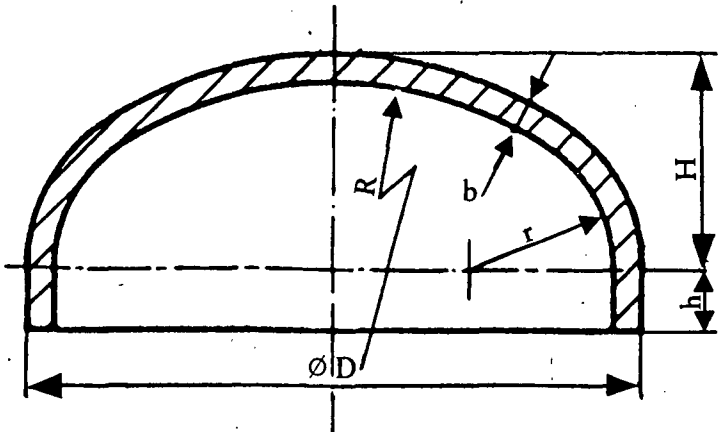
Where other inscriptions relating neither to the construction nor to the inspection thereof are required under national rules, they must be made on the cylinders in accordance with 6.2.

---

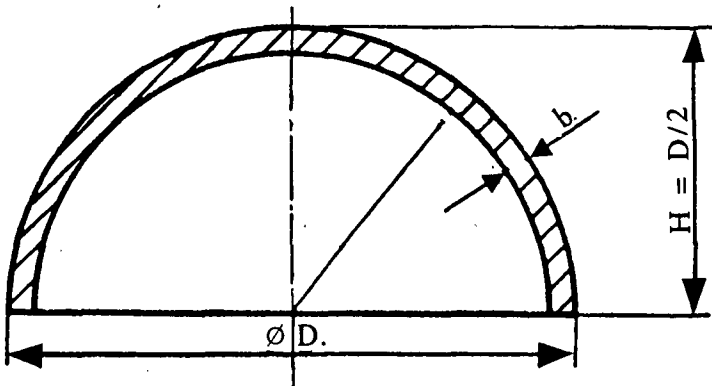
Appendix 1



Elliptical ends



Torispherical ends

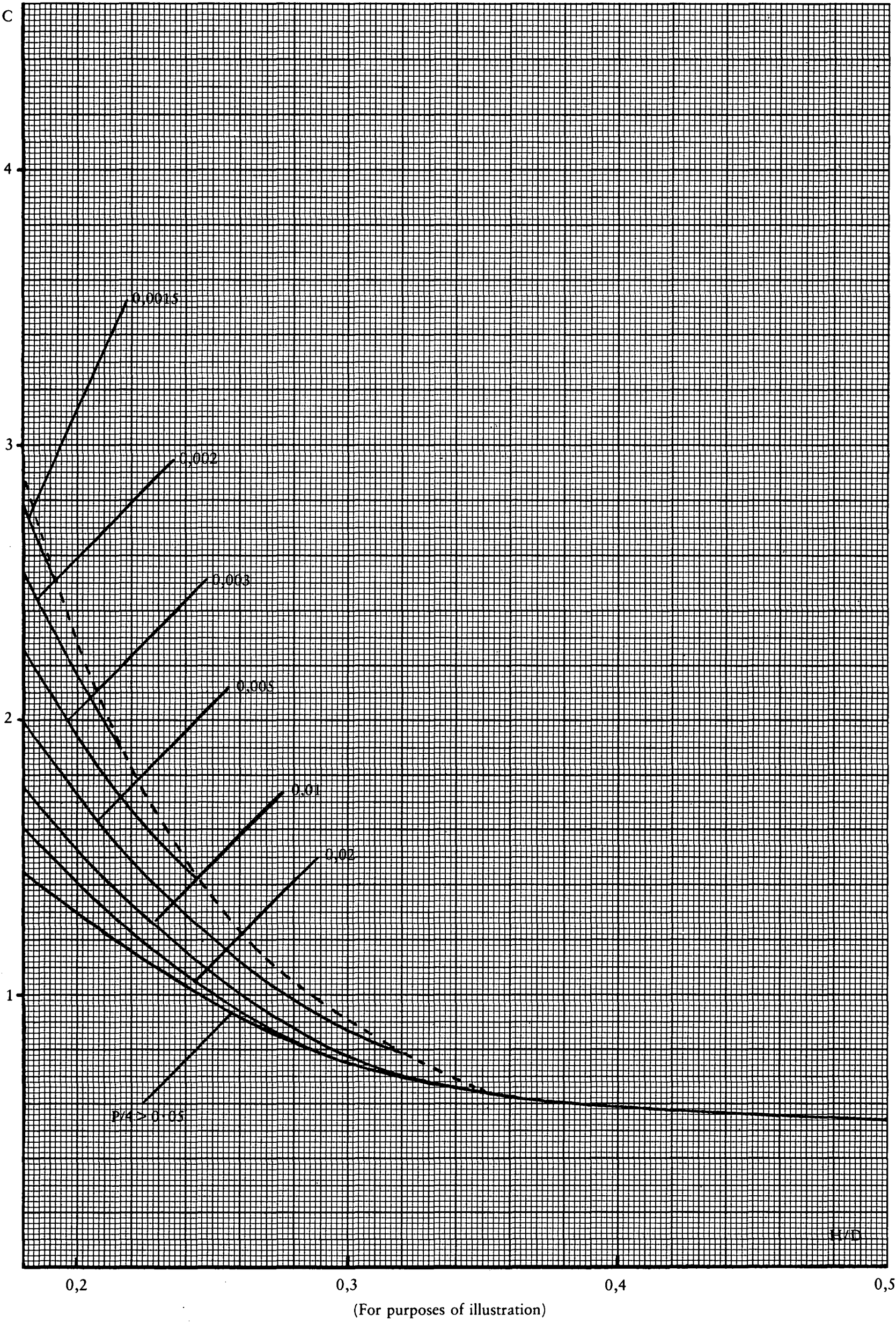


Hemispherical ends

COEFFICIENT OF FORM C FOR DISHED ENDS

| H/D            | $P_h/10 f = 0,001$<br>a/D C | $P_h/10 f = 0,0012$<br>a/D C | $P_h/10 f = 0,0015$<br>a/D C | $P_h/10 f = 0,002$<br>a/D C  |
|----------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| 0,180<br>0,200 |                             |                              | 0,00211 2,81                 | 0,00255 2,55<br>0,00218 2,18 |
| H/D            | $P_h/10 f = 0,003$<br>a/D C | $P_h/10 f = 0,004$<br>a/D C  | $P_h/10 f = 0,005$<br>a/D C  | $P_h/10 f = 0,01$<br>a/D C   |
| 0,180          | 0,00340 2,27                | 0,00423 2,12                 | 0,00500 2,00                 | 0,0088 1,76                  |
| 0,190          | 0,00316 2,11                | 0,00395 1,98                 |                              |                              |
| 0,200          | 0,00290 1,93                | 0,00364 1,82                 | 0,00433 1,73                 | 0,0077 1,54                  |
| 0,210          | 0,00273 1,82                | 0,00342 1,71                 |                              |                              |
| 0,220          | 0,00256 1,71                | 0,00320 1,60                 | 0,00382 1,53                 | 0,0068 1,38                  |
| 0,230          | 0,00236 1,57                | 0,00295 1,48                 |                              |                              |
| 0,240          | 0,00220 1,47                | 0,00276 1,38                 |                              |                              |
| 0,250          |                             |                              | 0,00307 1,23                 | 0,0055 1,10                  |
| 0,300          |                             |                              | 0,00220 0,88                 | 0,00395 0,79                 |
| 0,350          |                             |                              |                              | 0,00325 0,65                 |
| 0,400          |                             |                              |                              | 0,0030 0,60                  |
| 0,450          |                             |                              |                              | 0,0028 0,56                  |
| 0,500          |                             |                              |                              | 0,0027 0,54                  |
| H/D            | $P_h/10 f = 0,02$<br>a/D C  | $P_h/10 f = 0,05$<br>a/D C   | $P_h/10 f = 0,1$<br>a/D C    | $P_h/10 f = 0,2$<br>a/D C    |
| 0,180          | 0,0160 1,60                 | 0,0366 1,46                  | 0,0730 1,46                  | 0,147 1,47                   |
| 0,200          | 0,0141 1,41                 | 0,0330 1,32                  | 0,0650 1,30                  | 0,130 1,30                   |
| 0,220          | 0,0125 1,25                 | 0,0292 1,17                  | 0,0585 1,17                  | 0,118 1,18                   |
| 0,250          | 0,0102 1,02                 | 0,0250 1,00                  | 0,0500 1,00                  | 0,101 1,01                   |
| 0,300          | 0,0077 0,77                 | 0,0193 0,77                  | 0,0385 0,77                  | 0,077 0,77                   |
| 0,350          | 0,0065 0,65                 | 0,0162 0,65                  | 0,0325 0,65                  | 0,065 0,65                   |
| 0,400          | 0,0059 0,59                 | 0,0149 0,60                  | 0,0295 0,59                  | 0,059 0,59                   |
| 0,450          | 0,0056 0,56                 | 0,0140 0,56                  | 0,0280 0,56                  | 0,056 0,56                   |
| 0,500          | 0,0054 0,54                 | 0,0136 0,54                  | 0,0270 0,54                  | 0,054 0,54                   |
| H/D            | $P_h/10 f = 0,5$<br>a/D C   |                              |                              |                              |
| 0,350          | 0,163 0,65                  |                              |                              |                              |
| 0,400          | 0,150 0,60                  |                              |                              |                              |
| 0,450          | 0,140 0,56                  |                              |                              |                              |
| 0,500          | 0,136 0,54                  |                              |                              |                              |

$f = \frac{R_e}{4/3}$  in N/mm<sup>2</sup>



Appendix 2

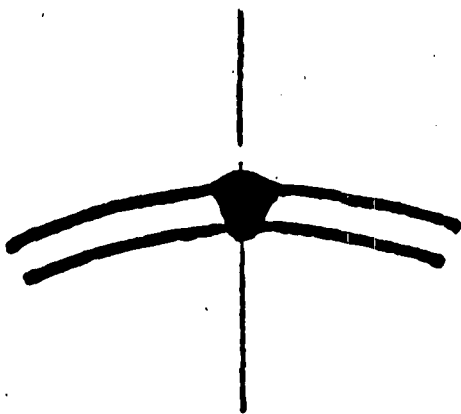


Figure 1

Longitudinal weld

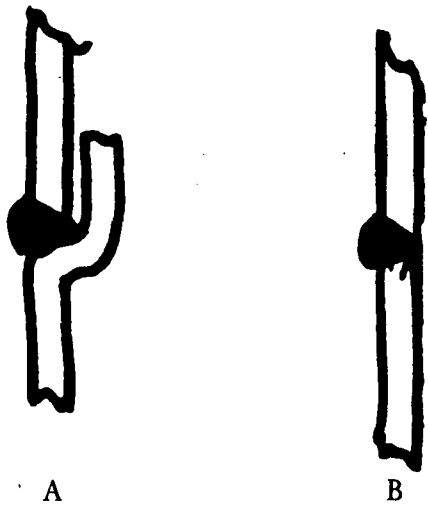


Figure 2

Circumferential weld

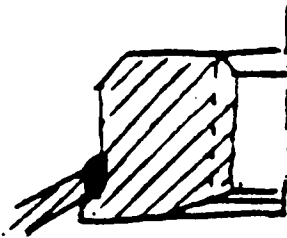
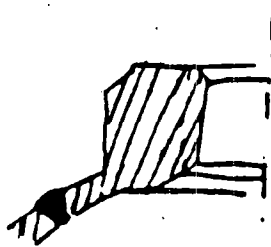


Figure 3

Seat weld

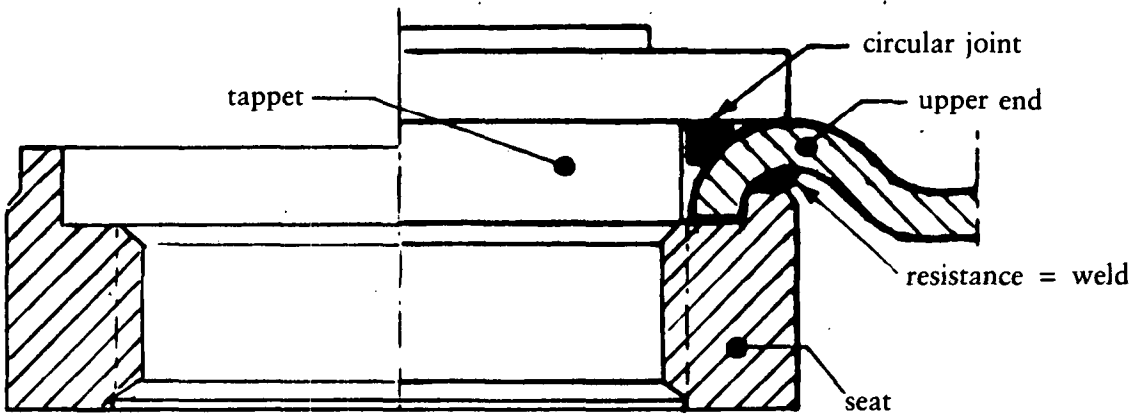


Figure 4

Valve seat

Appendix 3

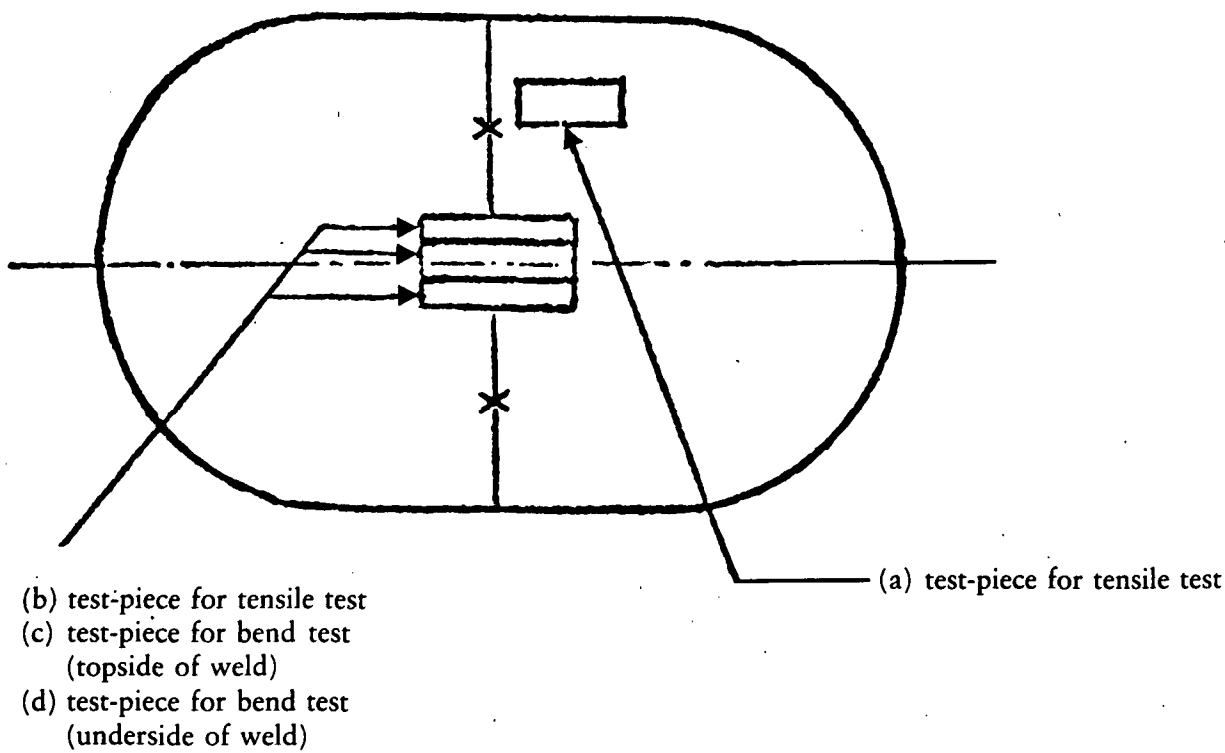


Figure 1

Test-pieces taken from two-piece cylinders

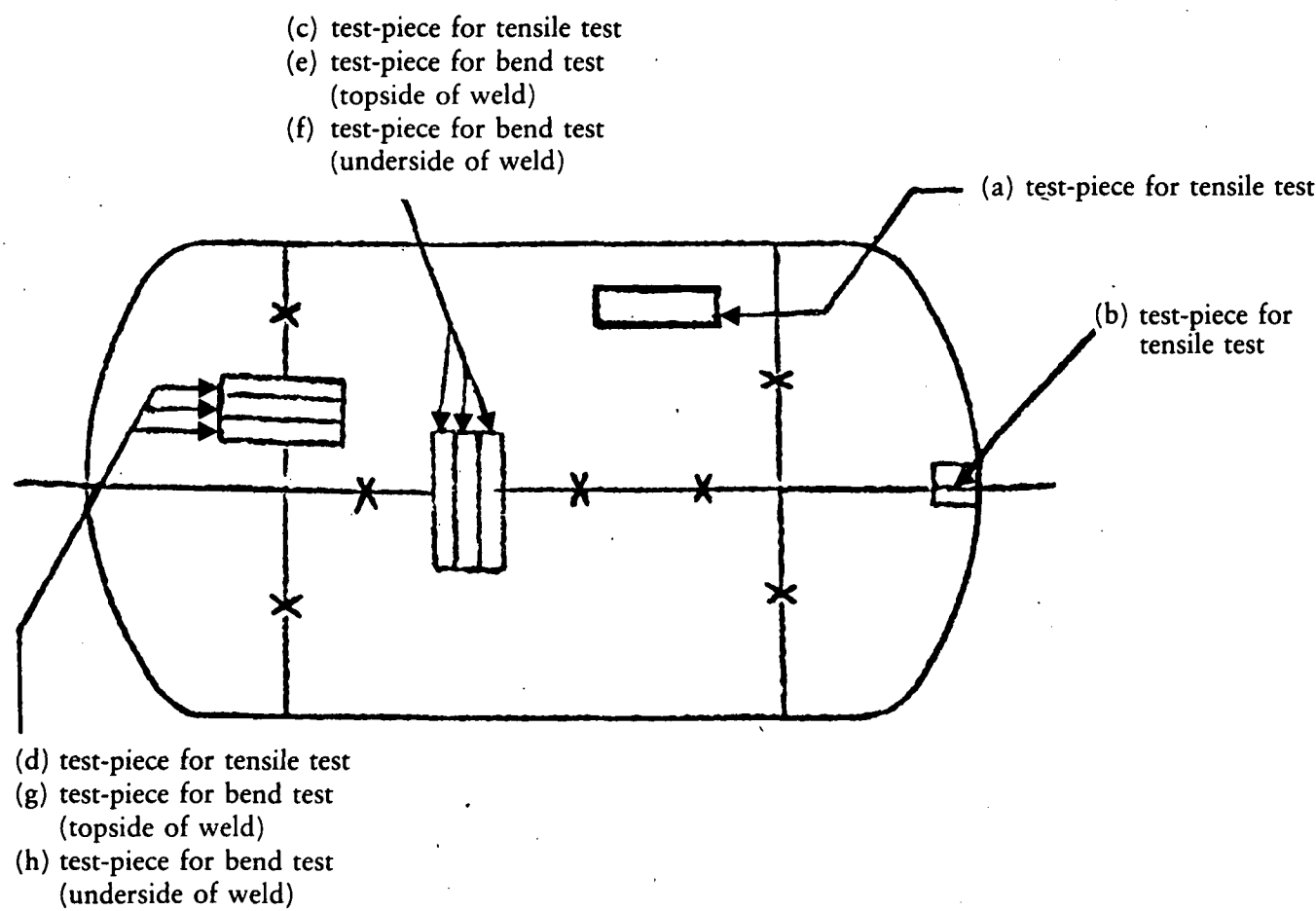
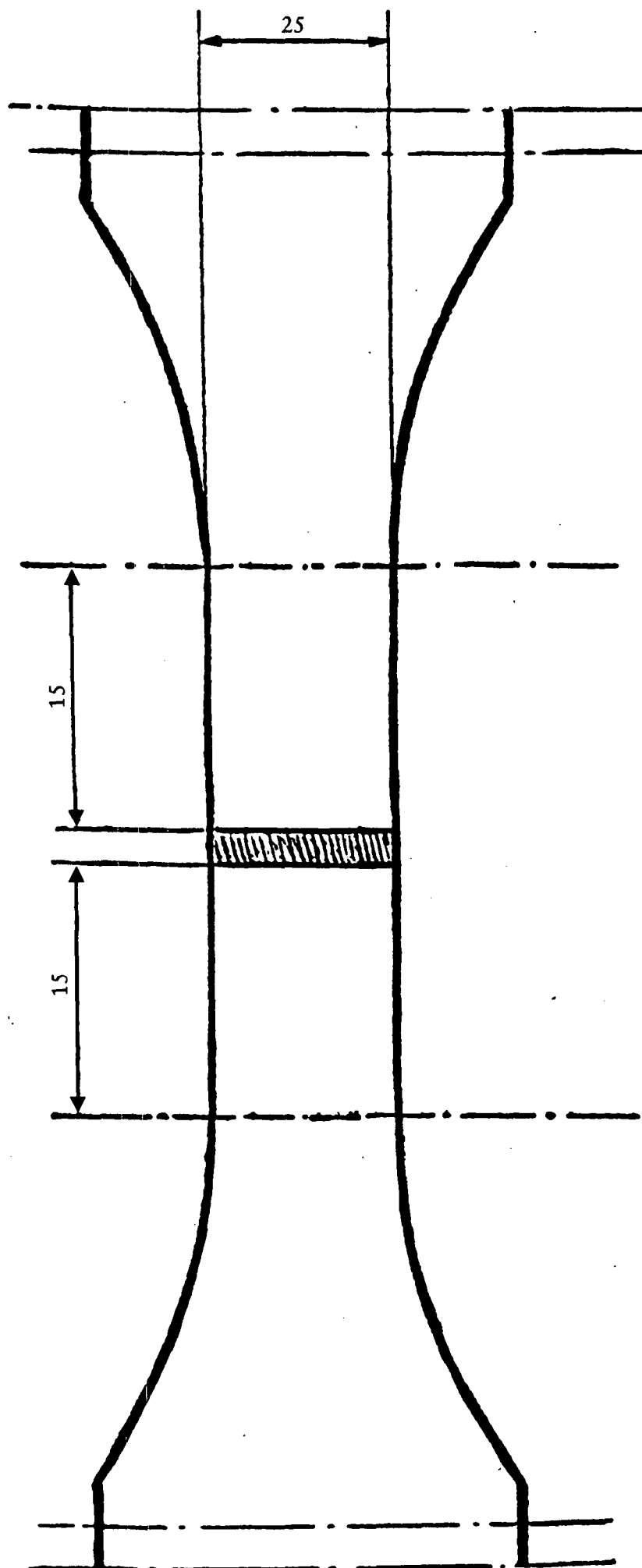


Figure 2

Test-pieces taken from three-piece cylinders

## Appendix 4



Test-piece for tensile test perpendicular  
to the weld (section 3.1.2.2.2)

Appendix-5

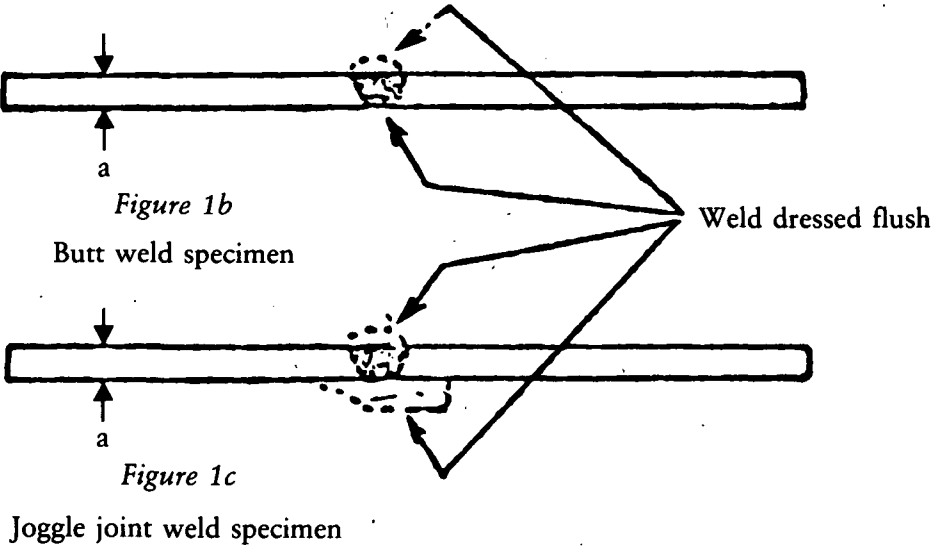
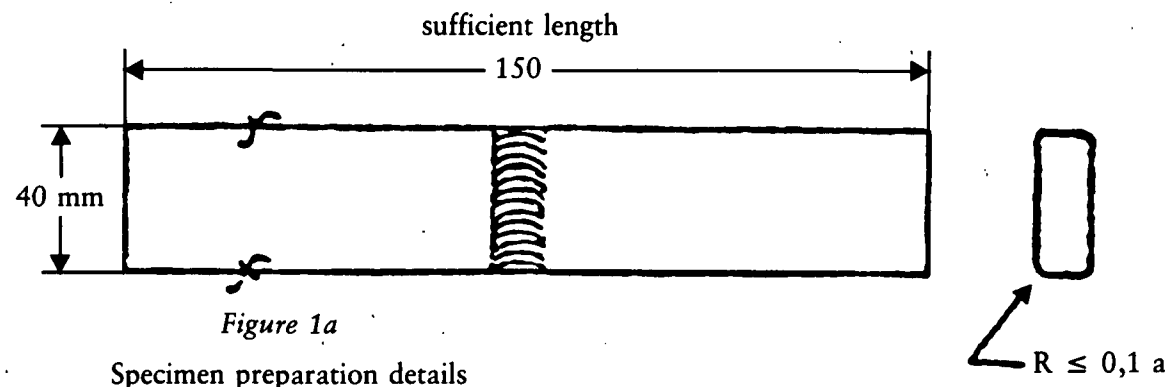


Figure 1

Transverse guided bend test

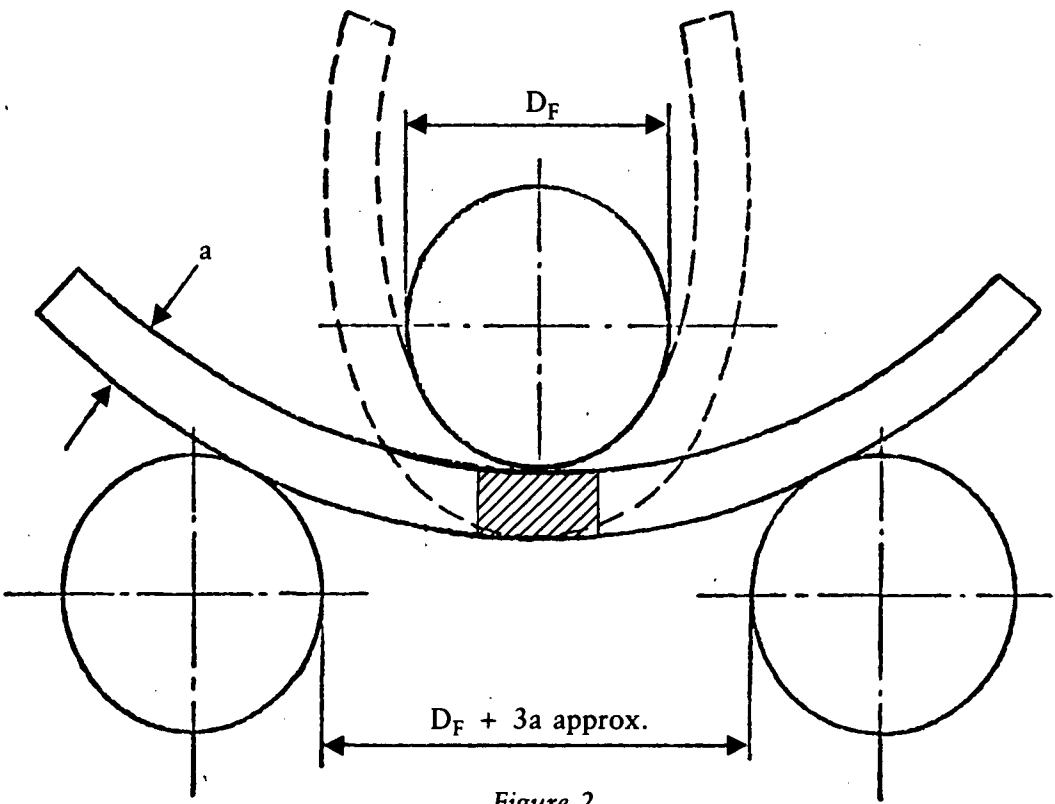


Illustration of bend test

ANNEX II

EEC PATTERN APPROVAL CERTIFICATE

Issued by ..... on the basis of  
(Member State)  
.....  
(National rules)  
applying Council Directive 84/527/EEC concerning:

WELDED UNALLOYED STEEL GAS CYLINDERS

Approval No ..... Date .....

Type of cylinder .....  
(Description of the family of cylinders which has received EEC approval)

P<sub>h</sub> ..... D ..... a .....

L<sub>min</sub> ..... L<sub>max</sub> ..... V<sub>min</sub> ..... V<sub>max</sub> .....

Manufacturer or authorized representative .....  
(Name and address of manufacturer or his authorized representative)

.....

.....

.....

EEC pattern approval mark  .....  .....

Details of the results of the examination of the pattern for EEC approval and the main features of the pattern are annexed.

All information may be obtained from .....  
(Name and address of the approving body)

.....

.....

.....

Certified at ..... on .....

.....  
(Signature)

## TECHNICAL ANNEX TO EEC PATTERN APPROVAL CERTIFICATE

1. Results of EEC examination of the pattern with a view to EEC pattern approval.
  2. Main features of the pattern, in particular:
    - longitudinal cross-section of the type of cylinder which has received pattern approval, showing:
      - the nominal external diameter,  $D$ ,
      - the minimum thickness of the cylinder wall,  $a$ ,
      - the minimum thickness of the base and the head,
      - the minimum and maximum length(s),  $L_{\min}$ ,  $L_{\max}$ ,
      - the external height of the curved part of the base of cylinder  $H$ , in mm,
    - the capacity or capacities,  $V_{\min}$ ,  $V_{\max}$ ;
    - the pressure,  $P_h$ ;
    - the name of the manufacturer/No of the drawing and date;
    - name of the type of cylinder;
    - the steel in accordance with section 2.1.
-

ANNEX III

MODEL

EEC VERIFICATION CERTIFICATE

Application of Council Directive 84/527/EEC of 17 September 1984

Inspection body .....

.....

Date .....

EEC pattern approval No .....

Description of cylinders .....

.....

EEC verification No .....

Manufacturing batch No ..... to .....

Manufacturer .....

.....

.....  
(Name and address)

Country ..... Mark .....

Owner .....

.....

.....  
(Name and address)

Customer .....

.....

.....  
(Name and address)

VERIFICATION TESTS

1. MEASUREMENTS OF SAMPLE CYLINDERS

| Test No | Batch consisting of No ..... to No ..... | Water capacity (litres) | Mass empty (kg) | Minimum measured thickness |                  |
|---------|------------------------------------------|-------------------------|-----------------|----------------------------|------------------|
|         |                                          |                         |                 | of the wall (mm)           | of the base (mm) |
|         |                                          |                         |                 |                            |                  |

2. MECHANICAL TESTS CARRIED OUT ON SAMPLE CYLINDERS

| Test No                  | Heat treatment No | Tensile test                                                    |                                           |                                                   |                  | Bend test 180 ° without cracking | Hydraulic bursting test (bars) |
|--------------------------|-------------------|-----------------------------------------------------------------|-------------------------------------------|---------------------------------------------------|------------------|----------------------------------|--------------------------------|
|                          |                   | Test-piece in accordance with EURONORM<br>(a) 2-80<br>(b) 11-80 | Yield point $R_e$<br>(N/mm <sup>2</sup> ) | Tensile strength $R_{mT}$<br>(N/mm <sup>2</sup> ) | Elongation A (%) |                                  |                                |
|                          |                   |                                                                 |                                           |                                                   |                  |                                  |                                |
| Minimum values specified |                   |                                                                 |                                           |                                                   |                  |                                  |                                |

I, the undersigned, hereby declare that I have checked that the verification operations, tests and checks prescribed in section 5.2 of Annex I to Directive 84/527/EEC have been carried out successfully.

Special remarks .....

General remarks .....

Certified on ..... at .....

.....  
(Signature of the inspector)

on behalf of .....  
(Inspection body)

\_\_\_\_\_

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to common provisions for lifting and mechanical handling appliances

(84/528/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in each Member State mandatory provisions determine the technical characteristics of construction, verification and/or the operation of lifting and mechanical handling appliances; whereas these requirements differ from one Member State to another; whereas such differences hinder trade and may create unequal conditions of competition within the Community;

Whereas these hindrances to the establishment and functioning of the common market can be reduced or indeed eliminated if the same requirements apply in each of the Member States either in addition to or in place of their existing laws;

Whereas a check on compliance with these technical requirements is necessary to provide effective protection for users and third parties; whereas the existing inspection procedures differ from one Member State to another; whereas in order to achieve free movement of lifting and mechanical handling appliances within the common market and to obviate multiple inspections which are in effect barriers to the free movement of these appliances, arrangements should be made for the mutual recognition of inspection procedures by the Member States;

Whereas in order to facilitate this mutual recognition of inspection procedures it is necessary, in particular, to

establish appropriate administrative procedures before these machines are placed on the market, namely: EEC type-approval/component type-approval, EEC type-examination, EEC verification, EEC inspection and EEC self-certification; whereas it is necessary to harmonize the criteria to be considered when appointing the approved bodies responsible for carrying out EEC type-examination;

Whereas in each Member State the responsibility of the bodies carrying out the checks is defined differently, making harmonization necessary;

Whereas the presence on a lifting or mechanical handling appliance or component of EEC marks showing that it has undergone the appropriate inspection indicates that it satisfies the relevant technical requirements and therefore makes it unnecessary, on importation, to repeat the inspections which have already been carried out;

Whereas national rules concerning lifting and mechanical handling appliances cover numerous categories of lifting and mechanical handling appliances of widely varying uses, capacities and loads; whereas this Directive should lay down the general provisions dealing, in particular, with EEC type-approval, EEC component type-approval, EEC type-examination, EEC verification, EEC inspection and EEC self-certification procedures; whereas separate Directives for each category of lifting and mechanical handling appliance will lay down the technical requirements as to design, inspection procedures for the appliances and their components and, where appropriate, the conditions under which Community technical requirements are to replace the national provisions in force;

Whereas this Directive shall not affect the provisions of Directive 70/156/EEC <sup>(4)</sup>;

Whereas technical progress requires prompt adaptation of the technical requirements specified in the Directives relating to lifting and mechanical handling appliances; whereas in order to facilitate the implementation of the measures necessary to this end, it is necessary to ensure

<sup>(1)</sup> OJ No C 221, 29. 9. 1975, p. 1.

<sup>(2)</sup> OJ No C 7, 12. 1. 1976, p. 37.

<sup>(3)</sup> OJ No C 131, 12. 6. 1976, p. 31.

<sup>(4)</sup> OJ No L 42, 23. 2. 1970, p. 1.

close cooperation between the Member States and the Commission within the Committee for Adaptation to Technical Progress of the Directives for Removing Technical Barriers to Trade in Lifting Appliances and Equipment, established by Council Directive 73/361/EEC of 19 November 1973 on the approximation of the laws regulations and administrative provisions of the Member States relating to the certification and marking of wire-ropes, chains and hooks<sup>(1)</sup>, as amended by the 1979 Act of Accession;

Whereas lifting and mechanical handling appliances placed on the market, although conforming to the requirements of the relevant separate Directive, might nevertheless constitute a safety hazard; whereas provision should therefore be made for a procedure to reduce this hazard,

HAS ADOPTED THIS DIRECTIVE:

## CHAPTER I

### Definitions and scope

#### Article 1

1. For the purposes of this Directive, 'lifting and mechanical handling appliances' means all lifting and mechanical handling appliances which are electrically, hydraulically or mechanically operated, such as lifts, civil engineering hoists, goods lifts, cranes, conveyor belts and motorized trucks.

2. For the purposes of this Directive, 'component' means any part of a lifting or mechanical handling appliance as defined in the separate Directives.

3. This Directive does not cover lifting or mechanical handling appliances specially designed for military or research purposes, or those used on ships, on offshore prospecting and drilling rigs, in mines or for the handling of radioactive materials.

#### Article 2

1. For the purposes of this Directive:

'EEC type-approval/component type-approval' means the procedure whereby a Member State establishes, following tests, and certifies that a type of lifting or

mechanical handling appliance and/or component referred to in Article 1 conforms to the requirements harmonized under this Directive and the relevant separate Directives;

'EEC verification' means the procedure whereby a Member State can affirm, following tests, that each appliance and/or component conforms to the requirements harmonized under this Directive and the relevant separate Directives;

'EEC type-examination' means the procedure whereby the body approved for that purpose by a Member State establishes, following tests, and certifies that a type of appliance and/or component conforms to the requirements harmonized under this Directive and the relevant separate Directives;

'EEC inspection' means the procedure whereby the body approved for that purpose by a Member State establishes, after issuing an EEC type-examination certificate in accordance with this Directive and the relevant separate Directives, that the appliances and/or components have been manufactured in conformity with the approved types;

'EEC self-certification' means the procedure whereby the manufacturer, or his authorized representative established in the Community, certifies, on his own responsibility, that an appliance and/or component conforms to the requirements harmonized under this Directive and the relevant separate Directives.

2. The separate Directives shall — having regard where appropriate to the manner in which such appliances are used — lay down the technical requirements and the inspection, testing and, where necessary, operating procedures for the categories of lifting and mechanical handling appliances and/or components to which they relate and which are referred to in Article 1.

They shall specify which procedure(s) referred to in paragraph 1 shall apply to a particular category of appliances and/or components.

The separate Directives may also require Member States to take, either upon their entry into force or at a later specified date, all necessary measures to prevent the placing on the market or putting into service for a purpose for which they were intended of lifting or mechanical handling appliances and/or components which do not meet the requirements of the relevant separate Directives.

#### Article 3

1. For the purposes of this Directive, an 'EEC-type lifting or mechanical handling appliance and/or

<sup>(1)</sup> OJ No L 335, 5. 12. 1973, p. 51.

component' means any appliance and/or component which satisfies the requirements of this Directive and of the relevant separate Directives and which accordingly bears the EEC mark of conformity referred to in Article 20.

2. No Member State may refuse, prohibit or restrict the placing on the market or putting into service for a purpose for which it was intended of an EEC-type appliance and/or component on grounds relating to its construction or to the inspection thereof.

3. However, provision may be made in the separate Directives for inspection by the Member State concerned of an EEC-type appliance and/or component when it is being installed or put into service, and periodically thereafter.

#### Article 4

Member States shall attach the same value to EEC type-approval/component type-approval, EEC verification, EEC type-examination, EEC inspection and EEC self-certification as to the corresponding national procedures.

### CHAPTER II

#### EEC type-approval/component type-approval

#### Article 5

1. Where it is provided for in a separate Directive, EEC type-approval/component type-approval shall be a prerequisite for the placing on the market and the putting into service of an appliance and/or component.

2. Member States shall, at the request of a manufacturer, or his authorized representative established in the Community, grant EEC type-approval/component type-approval for any type of lifting or mechanical handling appliance and/or component which satisfies the requirements of this Directive and the relevant separate Directives.

3. For a given type of lifting or mechanical handling appliance and/or component, an application for EEC type-approval/component type-approval shall be submitted in only one Member State.

The Member States shall grant, refuse, suspend or withdraw EEC type-approval/component type-approval in accordance with the provisions of this Chapter and Annex I.

#### Article 6

1. The Member State granting EEC type-approval/component type-approval shall make out an EEC type-approval/component type-approval certificate which shall be forwarded to the applicant without delay.

The EEC type-approval/component type-approval certificate must be drawn up in accordance with the model given in Annex III.

2. The separate Directives may lay down that EEC type-approval/component type-approval shall be subject to certain conditions or time limits.

3. If the separate Directive so requires, the manufacturer shall inform the Member State of the date on which he will begin mass production of an EEC-type appliance and/or component.

#### Article 7

1. If a Member State which has granted EEC type-approval/component type-approval finds that one or more appliances and/or components for which such approval has been granted fail to conform to the type, it shall suspend or withdraw the approval.

2. The EEC approval may, however, be maintained where the State considers that the differences established are minor, have no fundamental effect on the design of the appliance and/or component and in no way represent a hazard to safety or health; in this case, the Member State may request the manufacturer to make the appropriate manufacturing changes as soon as possible. However, where the requirements of the separate Directive have not been complied with, the Member State must request that the appropriate changes be made.

The Member State must withdraw the approval if the manufacturer fails to comply with this request.

3. The Member State which granted EEC type-approval/component type-approval must also withdraw it if it finds that the approval should not have been granted or that the conditions referred to in Article 6 (2) have not been fulfilled.

4. Furthermore, if the Member State which granted EEC type-approval/component type-approval is informed by another Member State of the existence of one of the cases referred to in paragraphs 1, 2 and 3, it shall, after consulting the latter State, act in accordance with the provisions of those paragraphs.

5. Where the advisability or necessity of suspending or withdrawing approval is the subject of dispute between

the Member State which granted the EEC type-approval/component type-approval and another Member State, the Commission shall be kept informed. It shall, where necessary, hold appropriate consultations in order to arrive at a solution.

6. Only that Member State which granted the EEC type-approval/component type-approval may decide to suspend or withdraw it. It shall forthwith notify the other Member States and the Commission of any such decision, giving, as far as possible, such detailed information as may be required for identification of the equipment which does not conform to the approved type.

### CHAPTER III

#### EEC verification and self-certification

##### Article 8

The separate Directives which provide for EEC verification or EEC self-certification shall specify the procedure to be followed.

### CHAPTER IV

#### EEC type-examination and EEC type-examination certificate

##### Article 9

1. Where it is provided for in a separate Directive, EEC type-examination shall be a prerequisite for the placing on the market and the putting into service of an appliance and/or component.

2. EEC type-examination shall be carried out by bodies approved for this purpose by the Member State.

##### Article 10

1. Approved bodies appointed by Member States to carry out EEC type-examination in accordance with Article 11 shall comply with the minimum criteria laid down in Annex II, without prejudice to Member States' competence to take such measures and lay down such conditions as they consider necessary at national level to ensure that these bodies operate in an efficient, coordinated and exemplary fashion.

Compliance with the minimum criteria by a body shall not oblige a Member State to approve that body.

2. Where a Member State has approved a body or bodies to carry out EEC type-examination, it shall notify the other Member States and the Commission of the body or list of bodies concerned. It shall also notify the other Member States and the Commission of any subsequent amendments to these particulars.

##### Article 11

1. The EEC type-examination certificate shall be the document by which an approved body certifies that a type of appliance and/or component conforms to the requirements of this Directive and the relevant separate Directives.

At the request of the manufacturer, or his authorized representative established in the Community, the approved bodies referred to in Article 10 shall carry out the EEC type-examination of a type of appliance and/or component. If the type meets the requirements of this Directive and of the relevant separate Directives and if the manufacturer undertakes to comply with the conditions referred to in Article 17 and in the separate Directives, the approved body shall issue an EEC type-examination certificate. This certificate shall conform to the model given in Annex III, save where otherwise provided in the separate Directives.

The appliances and/or components which are to be manufactured following certification of EEC type-examination must conform to the appliance thus certified.

2. The approved bodies shall issue, refuse to issue, suspend or withdraw EEC type-examination certificates in accordance with the provisions of this Chapter and of Annex I.

3. Applications for EEC type-examination relating to the same type of appliance shall be submitted to only one of the approved bodies.

4. The EEC type-examination certificate shall be subject to the conditions contained in Article 17 and may also be issued for a limited period or be subject to other conditions stipulated in the separate Directives.

5. The requirements governing EEC certification are given in Annex I.

*Article 12*

1. If an approved body finds that one or more samples of an appliance and/or component of the type for which it has issued an EEC type-examination certificate fail to conform to that type, it shall request the holder of the certificate to rectify production within a specified period, if necessary suspending the certificate. Where necessary, the separate Directive relating to the appliance and/or component concerned shall fix the number of samples deemed sufficient to justify intervention by the approved body. Failing rectification within the specified period the approved body shall suspend or withdraw the certificate.

2. The approved body which has granted the EEC type-examination certificate must withdraw it if it finds that the certificate should not have been granted or that the conditions referred to in Article 11 (4) have not been fulfilled.

3. It shall suspend or withdraw the certificate if the holder fails to fulfil the undertakings to the approved body which are referred to in Articles 11 and 17.

*Article 13*

1. Member States shall ensure that the approved bodies carry out the aforementioned tasks correctly.

To this end they shall, by appropriate measures, oblige the approved bodies to allow the competent authorities of the Member States which appointed them to make checks at any time.

2. A Member State may authorize a body approved by it, without thereby restricting that body's own responsibility, to entrust to one or more laboratories the task of carrying out the tests to be conducted in the context of the EEC type-examination and the EEC inspection provided for in Chapter V, provided that these laboratories satisfy the criteria laid down in sections 2, 3, 4 and 7 of Annex II.

3. Member States shall take the necessary steps to ensure that the applicant or the person to whom the EEC type-examination certificate was issued is able to appeal against decisions by the approved body to refuse, suspend or withdraw the EEC type-examination certificate.

4. If a Member State finds that a body which it has approved is not correctly fulfilling the tasks referred to

in Articles 11 and 12, such Member State shall take all appropriate steps with regard to that body.

5. The Member State shall in any event withdraw approval from an approved body if it finds that that body has ceased to satisfy the minimum criteria laid down in Annex II or that it does not comply with the conditions set by the Member State.

6. If a Member State does not withdraw approval from a body which no longer satisfies the minimum criteria, any other Member State may bring this fact to the attention of the Commission. The Commission shall take appropriate steps to find a solution.

*Article 14*

1. A Member State which withdraws approval from a body shall take all necessary steps to ensure continuity with regard to fulfilment of the obligations and duties resulting from the issue of EEC type-examination certificates by that body before the withdrawal of approval.

2. The Member State must withdraw all certificates issued by that body before withdrawal of approval if they were issued improperly.

*Article 15*

1. If one of the cases referred to in Article 12 is noted in a Member State, the competent authorities of that Member State shall bring this fact to the attention of the Member State in which the certificate was issued.

2. The competent authorities of the Member State in which the EEC type-examination certificate was issued shall oblige the approved body concerned to take the steps provided for in Article 12.

3. In the event of a dispute between the Member State in which an EEC type-examination certificate was issued and another Member State the Commission shall be informed and shall take appropriate steps.

**CHAPTER V****EEC inspection***Article 16*

Member States shall ensure that EEC inspection, the aim of which is to ensure correct use of the EEC mark, is carried out. Inspection may be carried out by the

approved bodies referred to in Article 10 which issued the EEC type-certificate. Inspection shall be carried out by taking samples and by spot checks, *inter alia*. The bodies which carry out the inspection must, in any case, satisfy the criteria laid down in Annex II and be notified in accordance with Article 10.

#### Article 17

1. A manufacturer, or his authorized representative established in the Community, who makes use of the EEC mark must:

(a) inform the approved body which granted the EEC type-certificate of:

- the places where the appliances are manufactured and/or warehoused, as requested by the approved body,
- the date on which manufacture commences,
- any other information required by the approved body to enable it to carry out its task and provided for by the separate Directive;

(b) allow representatives of the approved body which granted the certificate to have access for the purpose of inspection to the said places of manufacture and/or warehousing and to inspection records and provide all necessary information relevant to such inspection;

(c) permit the approved body which granted the certificate to take one or more appliances and/or components as samples for inspection purposes from the places of manufacture or warehousing.

2. The approved body which granted the EEC type-certificate must supply copies of the test report and, when requested, copies of the technical file to the other approved bodies, the Member States and the Commission.

3. The holder of the EEC mark must carry out manufacturing control and inspection or ensure that it is carried out, and have at his disposal the equipment necessary for him to monitor adequately the conformity of appliances and/or components manufactured with the appliance for which the EEC type-certificate was issued.

#### Article 18

1. The approved body which granted the EEC type-certificate shall organize EEC inspection of the manufactured appliances and/or components for which the EEC type-certificate was granted.

This inspection must enable the approved body to verify, firstly, whether the manufacturer has the inspection facilities referred to in Article 17 (3) and, secondly, whether the manufacturer actually carries out checks to verify whether production appliances and/or components conform to the appliance and/or component for which the EEC type-certificate was granted; for example, whether he keeps inspection records if he has been requested to do so.

The approved body may also arrange for sampling to be carried out unannounced at the designated places of manufacture and warehousing. The approved bodies shall not be prevented from carrying out sampling, upon payment, at any stage of marketing as well.

2. If the place of manufacture, warehousing or marketing is situated in a Member State other than that of the approved body which granted the EEC type-certificate, that body shall, if necessary, contact an approved body in the Member State where the samples are to be taken for the inspection referred to above.

The approved body which carried out the inspection shall send a report to the approved body which granted the EEC type-certificate.

#### Article 19

1. Should the inspection referred to in Article 18 prove that the appliances and/or components do not conform to the appliance and/or component which received the EEC type-certificate and that the requirements of this Directive and the relevant separate Directive have not all been fulfilled, the approved body must take one of the following measures against the holder of the EEC mark:

- (a) a simple warning formally requiring that the infringements noted cease within a given period of time;
- (b) a warning as referred to in (a) but accompanied by more frequent inspections;
- (c) suspension of the EEC type-certificate;
- (d) withdrawal of the EEC type-certificate.

These measures may be taken only by the approved body which granted the EEC type-certificate.

2. The first two measures shall be taken where the differences do not affect the general design of the appliance or where the infringements noted are minor and in no way represent a safety or health hazard.

One of the last two measures shall be taken where the differences or infringements noted are considerable and in any case if they represent a safety or health hazard.

3. The approved body which granted the EEC type-certificate must also withdraw the certificate:

- if the manufacturer, or his authorized representative established in the Community, prevents the inspection provided for in Article 18 from being carried out,
- if it finds that the EEC type-certificate should not have been granted.

4. If the approved body which granted the EEC type-certificate is informed by an approved body of another Member State of the existence of one of the cases referred to in paragraphs 2 and 3, it shall also, after consulting that body, take the measures provided for in those paragraphs.

5. Suspension or withdrawal of the EEC type-certificate shall be notified to the Member State and the approved bodies.

#### CHAPTER VI

**Provisions common to the EEC type-approval/component type-approval, EEC verification and EEC type-examination procedures**

##### *Article 20*

1. The EEC mark of conformity affixed to an appliance and/or component shall certify that it conforms to the type approved or granted an EEC type-examination certificate.

2. The EEC type-approval/component type-approval certificate or the EEC type-examination certificate shall entitle the manufacturer, on his own responsibility, to affix the EEC mark of conformity to products to be marketed which conform to the type granted such certificate and/or, if the separate Directive so provides, to issue a certificate of conformity in accordance with the model shown in Annex IV.

The requirements governing the EEC mark are given in Annex I.

3. Member States shall take all necessary measures to ensure that lifting or mechanical handling appliances and/or components required to undergo EEC type-approval/component type-approval, EEC verification or EEC type-examination do not bear any sign or inscription liable to be confused with the EEC mark.

##### *Article 21*

Each Member State shall forward to the other Member States and to the Commission:

- the list of bodies responsible for carrying out examinations and tests under the EEC type-approval/component type-approval and EEC verification procedures,
- the list of approved bodies responsible for carrying out the EEC type-examination and EEC inspection,
- any subsequent amendments to these lists.

#### CHAPTER VII

##### **Adaptation of the Directives to technical progress**

##### *Article 22*

1. Any amendments necessary to adapt to technical progress Annex I to this Directive, with the exception of sections 1.1 and 5, shall be made in accordance with the procedure laid down in Article 5 of Directive 73/361/EEC.

2. The separate Directives relating to lifting and mechanical handling appliances and/or components shall specify which of the provisions of their technical Annexes may or may not be adapted under this procedure.

#### CHAPTER VIII

##### **Derogating clause**

##### *Article 23*

1. The design of an appliance and/or component and the methods used in its manufacture may, in specific instances, depart from some of the provisions of the separate Directives, without the appliance and/or component ceasing to be covered by Article 3 (2) of this

Directive, provided that the alterations made are such as to ensure at least an equivalent level of protection as far as safety or health are concerned.

2. Each of the separate Directives shall expressly specify the provisions from which such derogation is possible or the provisions from which there can be no derogation.

3. Where a request for derogation is accepted, the following procedure shall be observed:

(a) The Member State, either directly in the case of the EEC type-approval procedure, or indirectly through the approved body it has appointed in the case of the EEC type-examination procedure, shall forward to the Commission the documents giving the description of the appliance and/or component and the documents supporting its request for derogation, including the result of any tests carried out. The Commission shall send a copy to the other Member States which shall then have a period of four months from that date to agree or disagree with the Member State concerned or to ask that the matter be referred to the Committee provided for in Directive 73/361/EEC. A copy of each document shall be sent to the Commission; all the correspondence shall be confidential.

(b) If no Member State has disagreed or asked that the matter be referred to the Committee before the end of the period laid down under (a), the Commission may convene the Committee or authorize the Member State to grant or approve the derogation requested and shall inform the other Member States thereof.

(c) If a Member State has not replied by the end of the statutory period, it shall be regarded as having agreed.

(d) Otherwise the Commission shall act on the derogation request after having received the opinion of the Committee provided for in Directive 73/361/EEC.

(e) The relevant documents shall be submitted in an official language of the country of destination or, in special cases, in another language acceptable to it.

4. In the case of a certificate issued by the manufacturer himself, it shall be possible to derogate from the Directive, pursuant to paragraph 1, only if an approved body has confirmed to the manufacturer that the derogation proposed does not reduce safety.

Before granting the derogation, the approved body shall inform the other approved bodies. Should one of these

bodies object within a period of two months, the matter shall be placed before the Commission through a Member State. The Commission shall try to settle the dispute. If necessary, it shall convene the Committee provided for in Directive 73/361/EEC and shall take a decision after consulting it.

## CHAPTER IX

### Safeguard clause

#### Article 24

1. Where a Member State has good grounds for believing that a lifting or mechanical handling appliance and/or component represents a safety and/or health hazard even though it satisfies the requirements of this Directive and of the separate Directives, it may temporarily prohibit or restrict on its territory the placing on the market and putting into service of the appliance and/or component for the use for which it was intended. It shall immediately inform the Commission and the other Member States thereof, giving the reasons for its decision.

2. The Commission shall consult the Member States concerned within six weeks and shall then give its view without delay and take the appropriate steps.

3. Where the Commission considers that technical adaptations to the Directive are necessary, such adaptations shall be made either by the Commission or by the Council in accordance with the procedure laid down in Article 5 of Directive 73/361/EEC. In this event, the Member State which has taken the safeguard measures may retain them until such adaptations come into force.

## CHAPTER X

### Final provisions

#### Article 25

The costs arising from EEC type-approval/component type-approval, EEC type-examination and EEC inspection shall be borne by the manufacturer, or by his authorized representative established in the Community, who has requested application of these procedures.

*Article 26*

Any decision pursuant to this Directive and to the separate Directives to refuse EEC type-approval/component type-approval, EEC verification or EEC type-examination, to suspend or withdraw an EEC type-approval/component type-approval certificate, EEC verification certificate or EEC type-examination certificate, or to prohibit the placing on the market or putting into service of EEC-type lifting and mechanical handling appliances and/or EEC-type components shall state the grounds on which it is based. Such a decision shall be communicated as soon as possible to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member State in question and of the time limits to which such remedies are subject.

*Article 27*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive so that they enter into force

on the same date as those introduced in order to comply with Directive 84/529/EEC<sup>(1)</sup>. They shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 28*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> See page 86 of this Official Journal.

## ANNEX I

## EEC TYPE-APPROVAL/COMPONENT TYPE-APPROVAL AND EEC TYPE EXAMINATION

1. APPLICATION FOR EEC TYPE-APPROVAL/COMPONENT TYPE-APPROVAL OR EEC TYPE-EXAMINATION
  - 1.1. The application and the correspondence relating to it shall be drawn up in the official language (or one of the official languages) of the State to which the application is made. This State, or the approved body or bodies which it has appointed, has the right to require that the annexed documents should also be drawn up in that same official language.
  - 1.2. The application shall contain the following information:
    - name and address of the manufacturer or firm, of his or its authorized representative or of the applicant,
    - category of the appliance and/or component,
    - intended use and any prohibited uses,
    - trade name, if any, or type,
    - technical characteristics.
  - 1.3. The application shall be accompanied by two copies of the documents required and in particular:
    - 1.3.1. — the technical file required by the separate Directives,
    - the places where the EEC mark specified in this Directive and the other marks specified in the separate Directives are to be affixed;
    - 1.3.2. — a statement certifying that no other application for EEC type-approval/component type-approval or EEC type-examination has been submitted for the same type of appliance and/or component;
    - 1.3.3. — where appropriate, documents relating to all types of national approval already granted and the components used which have been granted EEC component type-approval or have undergone EEC type-examination of EEC verification.
2. PROCESSING OF THE APPLICATION
  - 2.1. The application shall be examined on the basis of the plans and, where appropriate, the appliances and/or components.
 

This examination shall cover all the examinations and tests specified in this Directive and the separate Directives relating thereto.
  - 2.2. The separate Directives for the various categories of lifting and mechanical handling appliances and/or components shall determine, if necessary, the rules for manufacture, calculation and examination and the coefficients to be used for calculation, and shall specify the nature and quality of the materials that may be used in the manufacture of such lifting or mechanical handling appliances.
3. EEC CERTIFICATES AND MARK
 

The EEC type-approval/component type-approval certificate or EEC type-examination certificate shall contain the conclusions of the type-examination and shall indicate any conditions attaching to its issue. It shall be accompanied by the descriptions and drawings necessary to identify the type and, where appropriate, to explain how it functions. The EEC mark provided for in Article 20 of the Directive shall be a stylized letter  $\Sigma$  in a hexagon containing:

  - in the upper part, the serial number of the separate Directive allocated according to the chronological order of adoption, and the capital letters identifying the State where the certificate was issued (B for Belgium, D for the Federal Republic of Germany, DK for Denmark, F for France, GR

for Greece, I for Italy, IRL for Ireland, L for Luxembourg, NL for the Netherlands, UK for the United Kingdom) and the two final digits of the year of issue of the certificate; the number of the separate Directive to which the certificate refers will be allocated by the Council when that separate Directive is adopted,

— in the lower part, the certificate number.

An example of this mark is shown in 6.1.

#### 4. MODIFICATION OF THE PRODUCT MARKETED

The Member State or approved body which has granted a certificate must be informed of all significant modifications, particularly those involving changes in the trade descriptions of a product.

#### 5. PUBLICATION OF CERTIFICATES

5.1. An extract from the certificates shall be published in the *Official Journal of the European Communities*.

5.2. At the same time as the party concerned is notified, copies of the certificate shall be sent by the Member State in which it was issued to the Commission and to the other Member States, which may also obtain copies of the definitive technical file on the appliance and of the reports on the examinations and tests it has undergone.

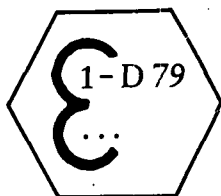
5.3. Withdrawal of an EEC certificate shall be published in accordance with the procedure laid down in 5.1 and 5.2.

5.4. Any Member State refusing a certificate shall, either directly in the case of EEC type-approval/component type-approval or at the request of the approved body in the case of EEC type-examination, inform the other Member States and the Commission of such refusal.

#### 6. EEC MARK

6.1. EEC mark (see section 3)

Example:



Certificate granted by the Federal Republic of Germany or by an approved body appointed by it, in 1979, pursuant to the first separate Directive.

Certificate number.

6.2. The separate Directives may specify the placing and dimensions of the EEC marks.

Unless otherwise indicated in the separate Directives, the letters and digits in each mark must be at least 5 mm high.

6.3. This mark must be visibly, legibly and indelibly affixed to each appliance and component.

## ANNEX II

## CRITERIA TO BE TAKEN INTO ACCOUNT BY MEMBER STATES WHEN APPOINTING APPROVED BODIES

1. The body and its director and staff may not be the designer, manufacturer, supplier or installer of the appliances, or the authorized representative of any of those parties. They may not become directly involved in the design, construction, marketing, representation or maintenance of such appliances or components, nor represent the parties engaged in these activities. This does not preclude the possibility of exchanges of technical information between the manufacturer and the approved body.
2. The staff responsible for examining appliances with a view to the issue of EEC type-examination certificates and to carrying out inspections must discharge these tasks with the highest degree of integrity and technical competence and must be free from all pressures and inducements, particularly financial, which might influence their judgement or the results of their work, especially from persons or groups or persons with an interest in the results of examinations.
3. The bodies responsible for examining appliances and components with a view to the issues of EEC certificates and carrying out inspections must possess the staff and resources necessary for the proper discharge of the technical and administrative tasks connected with the issue of EEC certificates and the carrying out of inspections, and must have access to the equipment required for special examinations and inspections.
4. The staff responsible for examinations and inspections must have:
  - sound technical and professional training,
  - satisfactory knowledge of the requirements of the examinations and inspections which they carry out and adequate experience of such tasks,
  - the ability to draw up the records and reports required to authenticate the performance of the work.
5. The impartiality of inspection staff must be guaranteed. Their remuneration must not depend on the number of inspections they carry out, nor on the results of such inspections.
6. The body must have third party insurance unless civil liability is assumed by the State in accordance with national law.
7. Staff of the approved body shall be bound to observe professional secrecy with regard to all information acquired in carrying out their duties (except *vis-à-vis* the competent administrative authorities of the State in which they carry out their activities) under this Directive and the separate Directives or under any provision of national law giving effect to these Directives.

ANNEX III

MODEL EEC TYPE-APPROVAL/COMPONENT TYPE-APPROVAL OR EEC TYPE-EXAMINATION CERTIFICATE FOR LIFTING AND MECHANICAL HANDLING APPLIANCES AND/OR COMPONENTS

Competent administration or approved body .....  
.....  
.....  
EEC type-approval/component type-approval/EEC type-examination certificate <sup>(1)</sup> .....  
.....  
.....  
EEC type-approval/EEC type-examination No <sup>(1)</sup> .....  
1. Category, type and trade name or mark .....  
2. Name and address of manufacturer .....  
.....  
.....  
3. Name and address of certificate holder .....  
.....  
.....  
4. Date of submission for EEC type-approval/EEC type-examination <sup>(1)</sup> .....  
5. Certificate issued on the basis of the following requirement .....  
.....  
6. Test laboratory .....  
7. Date and number of laboratory report .....  
8. Date of granting of EEC type-approval/EEC type-examination <sup>(1)</sup> .....  
9. The following documents bearing the EEC type-approval/EEC type-examination <sup>(1)</sup> number shown above are annexed to this certificate  
10. Any additional information .....  
.....  
.....

Place ..... Date .....

.....  
(Signature)

.....  
<sup>(1)</sup> Delete as appropriate

ANNEX IV

EEC CERTIFICATE OF CONFORMITY

I, the undersigned, .....  
(Surname and first names)

hereby certify that the equipment — installation — component — lifting or mechanical handling  
appliance <sup>(1)</sup>

1. Category .....

2. Manufactured by .....  
.....

3. Type .....

4. Serial No .....

5. Year of manufacture .....

conforms to

— the type(s) approved (EEC type-approval/component type-approval) <sup>(1)</sup>

— the type(s) examined (EEC type-examination) <sup>(1)</sup>

as shown in the table below

| Separate Directives | In the case of type approval/<br>component type-approval <sup>(1)</sup> |      |              | In the case of type-examination <sup>(1)</sup> |      |               |
|---------------------|-------------------------------------------------------------------------|------|--------------|------------------------------------------------|------|---------------|
|                     | No                                                                      | date | Member State | No                                             | date | approved body |
|                     |                                                                         |      |              |                                                |      |               |
|                     |                                                                         |      |              |                                                |      |               |
|                     |                                                                         |      |              |                                                |      |               |
|                     |                                                                         |      |              |                                                |      |               |
|                     |                                                                         |      |              |                                                |      |               |
|                     |                                                                         |      |              |                                                |      |               |

Done at .....  
(Date) (Signature)

.....  
(Position)

<sup>(1)</sup> Delete as appropriate.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to electrically operated lifts

(84/529/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

HAS ADOPTED THIS DIRECTIVE:

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in the Member States the construction and inspection of electrically operated lifts are subject to mandatory provisions which differ from one Member State to another and consequently hinder trade in such lifts; whereas it is therefore necessary to approximate these provisions;

Whereas the rules concerning installation, the tests carried out at the time of inspection before entry into service and the performance checks on these appliances affect their manufacture; whereas such rules differ from one Member State to another and must therefore also be harmonized;

Whereas Council Directive 84/528/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for lifting and mechanical handling appliances <sup>(4)</sup> has laid down in particular the procedures for EEC type-examination and EEC inspection for these appliances; whereas, according to that Directive, it is necessary to lay down the technical requirements which electrically operated lifts and their essential components (locking devices, landing doors, overspeed governors, safety gears, hydraulic buffers) must satisfy in order to be freely imported, marketed and used after having undergone the requisite inspections and bearing accordingly the required marks and signs,

*Article 1*

1. This Directive shall apply to permanently installed electrically operated hoisting appliances serving specific levels, having a car designed for the transport of persons or of persons and goods, suspended by ropes or chains and moving at least partially between guides which are vertical or inclined at an angle of less than 15° to the vertical, hereinafter referred to as 'lifts'.

2. This Directive shall not apply to:

- lifts specially designed for military or research purposes, or those used as equipment on ships, on offshore prospecting and drilling rigs, in mines or for the handling of radioactive materials,
- lifts intended exclusively for the transport of goods,
- passenger, goods or service lifts not driven by an electric motor, appliances actuated by fluids (such as oil and hydraulic lifts), or any of the following hoisting appliances: paternosters, rack-and-pinion elevators, screw-driven elevators, theatre elevators, loading appliances, skips, lifts and goods hoists on building or public works sites, construction or maintenance equipment and lifts specially constructed for transporting the handicapped.

*Article 2*

1. Without prejudice to Article 3, no Member State may, on grounds relating to the requirements of this Directive, refuse, prohibit, or restrict the installation and entry into service of lifts which satisfy the requirements of this Directive and of Directive 84/528/EEC. In Member States where acceptance inspections are required before a lift can be put into service, their conformity with Community provisions shall be established by means of checks and tests carried out in accordance with the provisions of this Directive and of Directive 84/528/EEC.

<sup>(1)</sup> OJ No C 221, 29. 9. 1975, p. 1.

<sup>(2)</sup> OJ No C 7, 12. 1. 1976, p. 37.

<sup>(3)</sup> OJ No C 131, 12. 6. 1976, p. 31.

<sup>(4)</sup> See page 72 of this Official Journal.

The latter Member States shall nominate, in accordance with their national provisions, the bodies competent to undertake such tests and inspections.

2. Neither Community nor national measures concerning the construction of buildings, and in particular fire protection, shall be affected save where they fall within the scope of the requirements of this Directive in this respect.

3. Where a Member State requires authorization prior to installation, examination of the request for authorization shall be conducted in accordance with the requirements of this Directive.

4. Examinations and tests carried out periodically as part of lift servicing or following an extensive modification shall be conducted in accordance with national provisions; as regards lifts covered by this Directive, these examinations and tests may not be more stringent than those laid down in the Annex.

#### *Article 3*

1. The lift components set out in Annex II shall be submitted to EEC type-examination and EEC inspection in accordance with Directive 84/528/EEC on the approximation of the laws of the Member States relating to common provisions for lifting and mechanical handling appliances.

2. No Member State may refuse, prohibit or restrict the placing on the market or the use for construction or installation of these lift components, if they conform to the type examined, bear the EEC type-examination sign and are accompanied by a certificate of conformity made out by the manufacturer which is in conformity with the model shown in Annex IV to Directive 84/528/EEC.

3. The EEC type-examination certificate which confirms that a type of component satisfies Community requirements shall be valid for a period of 10 years and may be renewed, on request, for 10-year periods.

#### *Article 4*

Member States shall take all necessary measures to ensure that construction components can be subjected to EEC type-examination and that the EEC type-examination certificate referred to in Article 3, the model for which is contained in Annex III, is granted where these components satisfy the technical requirements in Annex I.

#### *Article 5*

Any amendments necessary to adapt the Annexes to this Directive to technical progress shall be adopted in accordance with Article 22 of Directive 84/528/EEC.

#### *Article 6*

1. Member States shall bring into force the laws, regulations and administrative provisions needed in order to comply with this Directive on the expiry of a period of 24 months from its notification <sup>(1)</sup>. They shall immediately inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

#### *Article 7*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## TECHNICAL REQUIREMENTS

1. The appliances referred to in Article 1 (1) must, with the exception of the sections referred to in paragraph 2 below, comply with Standard EN 81-1 (14 October 1977 edition) for electrically powered lifts, as adopted by the European Committee for Standardization (CEN).

2. This standard shall apply subject to the following modifications:

— Section 2.

The reference to HD 25, HD 223 and HD 224 is to be replaced by a reference to HD 384, point 2;

— Section 5.7.1. *Top clearances for traction drive and positive drive lifts*

Amend as follows:

'5.7.1.1. When the counter-weight rests on its fully compressed buffer, the following four conditions shall be satisfied at the same time:

- (a) the guided travel of the car, still possible in the upward direction, shall be ... (no change);
- (b) the free height above the area referred to in 8.13.1 (b) shall be at least ... (no change);
- (c) the free distance between the lowest parts of the roof of the well and:
  - 1. ... (no change),
  - 2. ... (no change);
- (d) the space above the car must be sufficient to accommodate a rectangular block not less than  $0,5 \times 0,6 \times 0,8$  m resting on one of its faces.

5.7.2.2. When the upper buffers ... (no change):

- (a) the free distance above the area referred to in 8.13.1 (b) shall not be less than 1 m;
- (b) the free distance between the lowest part of the roof of the well ... (no change);
- (c) the space above the car must be sufficient to accommodate a rectangular block not less than  $0,5 \times 0,6 \times 0,8$  m resting on one of its faces.'

— Section 5.7.3.3.

The dimensions laid down in paragraph (a) are to be replaced by the following:

' $0,5 \times 0,6 \times 1$  m';

— Section 6.2.1.

Access from the public way to the interior of the machine and pulley rooms must:

- (a) be capable of being properly lit by (a) permanent electric light fixture(s),
- (b) be easy to use in complete safety in all circumstances and without necessitating entry into private premises.

The access ways to the machine rooms and the entrances themselves must be of a minimum height of 1,8 m. (Thresholds and flanges which do not project beyond 0,4 m are not taken into consideration) (N c);

— Section 6.3.2.1.

Amend the second paragraph as follows:

'In particular there shall be provided:

- (a) a clear horizontal area in front of panels and cabinets. This area is defined as follows (N c):
  - depth, measured from the external surface of the enclosures, at least 700 mm. This distance may be reduced to 600 mm in front of protruding controls (handles, etc.);

- width: the bigger of the following two values:  
500 mm or  
full width of the cabinet or panel;  
(b) (no change).';
- Sections 7.1.1 and 8.6.3.  
Replace '10 mm' by '6 mm'. However, the second sentence of section 0.1.2.2 does not apply to this new value;
- Section 8.2. Internal area of the car  
At the bottom of table 1, replace the last three lines by the following:  
'If the rated load exceeds that indicated in the table for the area of the car, the maximum number of persons must correspond to the actual available area of the car.';
- Section 8.13.1.  
Add the following requirement:  
'The car roof must be so designed as to permit the installation of a balustrade. Member States may lay down that, in their territory, installation of a balustrade on the car roof is compulsory.';
- Section 9.1.2 (c)  
Replace by the following:  
'The other characteristics (construction, extension, ovality, flexibility tests ...) must at least correspond to those laid down in the relevant ISO international standards. If no such standards exist, the national standards and requirements of the Member State where a lift is installed must be complied with when lifts are being installed.';
- Section 10.5.3.1 (b) 2.  
Replace by the following:  
'2. open by an electrical safety device (14.1.2) the circuit directly supplying the coils of two contactors, the contacts of which are in series in the circuits supplying the motor and brake. Each of the contactors shall be capable of breaking the circuit under load.';
- Section 11. CLEARANCE BETWEEN CAR AND WALLS AND BETWEEN CAR AND COUNTERWEIGHT
- Section 11.2. Clearance between car and wall in the case of lift cars with doors  
(no change);
- Section 11.3. Clearance between car and wall in the case of lift cars without doors  
(no change);  
Add the following new subsection:  
'11.4. Clearance between car and counterweight  
The car and associated components shall be at a distance of at least 0,05 m from the counterweight (if there is one) and associated components.';
- Section 12.4.2.1.  
Add the following:  
'All the mechanical components of the brake which take part in the application of the braking action on the drum or disc must be installed in two sets and be of dimensions such that if one of the components were not working on the brake drum or disc a sufficient braking effect to slow down the car when containing the allowable load would continue to be exercised. However, for five years as from the entry into force of this Directive, Member States shall remain free to decide whether or not to impose this requirements.';

— Section 13.1.1.2.

Replace by the following:

'National regulations relating to electricity supply circuit shall apply as far as the input terminals of the switches referred to in 13.1.1.1. They shall apply to the whole lighting circuit of the machine room, the pulley room and the well and pit.';

— Section 13.1.1.3.

Inasmuch as Standard EN 81-1 contains no special provisions for components of the electrical installations for lifts, Directive 73/23/EEC shall apply to them;

— Section 13.1.1.4.

Replace by the following:

'The electrical installations for lifts must:

- (a) comply with the requirements stated in the Cenelec harmonized documents accepted by the national electro-technical committees of the EEC Member States;
- (b) where no harmonized documents on electrical installations as referred to in (a) exist, comply with the requirements of the national rules of the country in which the lift is installed.';

— Section 13.1.2.

Replace by the following:

'In the machine and pulley rooms protection against direct contact by means of casings providing a degree of protection of at least IP 1 X is necessary.';

— Section 13.2.1.3.

Amend as follows:

'Both for the main contactors referred to in 13.2.1.1 and for the relay contactors referred to in 13.2.1.2, it may be assumed in the measures taken to comply with 14.1.1.1 that:'

... (remainder unchanged);

— Section 13.3.

Replace by the following:

'13.3.1. Motors directly connected to the mains shall be protected against short-circuiting.

13.3.2. Motors directly connected to the mains shall be protected against overloads by means of manual reset (except as provided for in 13.3.3) automatic circuit-breakers which shall cut off the supply to the motor in all live conductors.

13.3.3. When the detection of overloads operates on the basis of temperature increases in the windings of the motor, the circuit-breaker may be closed automatically after sufficient cooling down has taken place.

13.3.4. The provisions of 13.3.2 and 13.3.3 apply to each winding if the motor has windings supplied by different circuits.

13.3.5. When the lifting motors are supplied by d.c. generators driven by motors, the lifting motors shall also be protected against overloads.';

— Section 13.5.3.5.

Add at the end:

'or shall terminate in a suitably constructed gland.';

— Section 13.5.4.

Replace by the following:

'Connectors and devices of the plug-in type placed in safety device circuits shall be so designed and arranged that if their withdrawal does not require the use of a tool it is impossible to reinsert the plug incorrectly.';

— Section 13.6.2.

Replace 'in accordance with 438 of Cenelec HD 224' by 'in accordance with Chapter 41, Section 411 of HD 384';

— Section 14.1.2.1.2.

This section is deleted;

— Section 14.1.2.1.6.

Replace by the following:

'In safety circuits comprising two or more parallel channels all information other than that required for parity checks shall be taken from one channel only.';

— Section 14.1.2.1.8.

Replace the first sentence of this section by the following:

'The construction and arrangement of the internal power supply units shall be such as to prevent the appearance of false signals at out-puts of electric safety devices due to the effects of switching.';

— Section 14.1.2.2.1.

Replace by the following:

'The operation of a safety contact shall be by positive separation of the circuit-breaking devices. This separation shall occur even if the contacts are welded together.

Positive opening is achieved when all the contact-breaking elements are brought to their open position and when for a significant part of the travel there are no resilient members (e.g. springs) between the moving contacts and the part of the actuator to which the actuating force is applied.

The design shall be such as to minimize the risk of a short-circuit resulting from component failure.';

— Section 14.1.2.2.2.

Add:

'The safety contacts shall belong to the following categories as defined in publication IEC 337-1:

(a) AC 11 for safety contacts in a.c. circuits;

(b) DC 11 for safety contacts in d.c. circuits.';

Substitute 'enclosure' for 'sheathing';

— Section 14.1.2.2.3.

Substitute 'enclosure' for 'sheathing';

— Section 14.1.2.2.5.

Delete the words 'If the contact elements rub on insulating parts.';

— Section 14.1.2.3.1.

This section is deleted;

Amend the numbering:

'14.1.2.3.2.' becomes '14.1.2.3.1.'

'14.1.2.3.3.' becomes '14.1.2.3.2.';

— Section 14.1.2.3.3.

Add the following paragraph:

'(d) In redundancy-type circuits measures shall be taken to limit as far as possible the risk of defects occurring simultaneously in more than one circuit arising from a single cause.';

— Section 14.1.2.5.

Replace by the following:

'In the case of redundancy-type safety circuits, it shall be ensured by mechanical or geometric arrangements of the transmitter elements that a mechanical fault shall not cause loss of redundancy.

Transmitter elements of safety circuits shall withstand, independently of the direction, a vibration of sine-wave form, with a frequency  $f$  of between 1 Hz and 50 Hz and an amplitude  $a$  (mm) which is given as a function of  $f$  by the equations:

$$a = \frac{25}{f} \text{ for } 1 < f \leq 10 \text{ Hz}$$

$$a = \frac{250}{f^2} \text{ for } 10 < f \leq 50 \text{ Hz}$$

Transmitter elements of safety circuits mounted on cars or doors shall withstand, independently of the direction, an acceleration of  $\pm 30 \text{ m/sec}^2$ .

*Note:* Where shock absorbers for transmitter elements are fitted they shall be considered as part of the transmitter elements.';

— Section D.2 (j) 2.

Add the following:

'However, each Member State may fix a testing speed higher than that indicated but not exceeding the nominal speed (N b).';

— Section F.O.2.5.

Add the following:

'In accordance with Article 13 (2) of Directive 84/528/EEC.'

3. In so far as certain sectors designated in the standard in accordance with section 0.1.4 by N a, N b or N c, may remain within the scope of national regulations, each Member State shall, six months after the Directive is published, inform the Commission and the other Member States of the conditions to be fulfilled within its national territory.

## ANNEX II

LIST OF LIFT COMPONENTS SUBJECT TO EEC TYPE-EXAMINATION AND EEC INSPECTION IN ACCORDANCE WITH ARTICLE 2 <sup>(1)</sup>

1. Landing-door locking devices;
2. Overspeed governors (car and counterweight);
3. Safety gears (car and counterweight);
4. Buffers (energy accumulation type with buffered return movement and energy dissipation buffers).

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<sup>(1)</sup> As soon as the requirements for landing doors are supplemented as regards behaviour in fire, in accordance with the procedure laid down in Article 5, they will also be subject to EEC type-examination and EEC inspection.

### ANNEX III

# MODEL EEC TYPE-EXAMINATION CERTIFICATE

Name of the approved body .....

.....

EEC type-examination certificate .....

.....

.....

EEC type-examination No .....

1. Category, type and make or trade name .....

2. Manufacturer's name and address .....

.....

.....

3. Name and address of certificate holder .....

.....

.....

.....

4. Date of submission for EEC type-examination .....

5. Certificate issued on the basis of the following requirement .....

.....

Test laboratory .....

6. Test laboratory .....

7. Date and number of laboratory report .....

8. Date of EEC type-examination .....

9. The following documents, bearing the EEC type-examination number shown above, are annexed to this certificate .....

Any additional information .....

10. Any additional information .....

.....

.....

Place .....

(Date)

.....  
(Signature)

**COUNCIL DIRECTIVE****of 17 September 1984****on the approximation of the laws of the Member States relating to common provisions for appliances using gaseous fuels, safety and control devices for these appliances and methods of surveillance of them****(84/530/EEC)**

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in certain Member States mandatory provisions determine the technical characteristics of construction, verification and/or operation of appliances using gaseous fuels; whereas these requirements differ from one Member State to another; whereas such differences hinder trade and may create unequal conditions of competition within the Community;

Whereas these obstacles to the establishment and functioning of the common market can be reduced or indeed eliminated if the same requirements apply in each of the Member States, either in addition to or in place of their existing laws;

Whereas a check on compliance with these technical requirements is necessary to provide effective protection for users and third parties; whereas the existing inspection procedures differ from one Member State to another; whereas in order to achieve free movement of appliances within the common market and to obviate multiple inspections which are in effect a barrier to the free movement of these appliances, arrangements should be made for the mutual recognition of inspection procedures by the Member States;

Whereas, in order to facilitate this mutual recognition of inspection procedures, adequate EEC type-examination procedures and EEC surveillance

procedures for appliances should be established and the criteria for appointing the bodies responsible for verification should be harmonized;

Whereas the presence on an appliance using gaseous fuels of the EEC mark showing that it has undergone the appropriate inspections indicates that it satisfies the relevant technical requirements and therefore makes it unnecessary, on the importation and placing into service of the appliance, to repeat inspections which have already been carried out;

Whereas national rules on appliances using gaseous fuels cover numerous types of appliances using gaseous fuels of widely varying uses and capacities; whereas this Directive should lay down the general provisions dealing, in particular, with EEC type-examination procedures and EEC surveillance; whereas separate Directives for each category of appliance will lay down the technical requirements as to the design and methods of surveillance of such appliances and, where appropriate, the conditions under which Community technical requirements are to replace national provisions in force; whereas the results obtained by international standardization bodies should be used as far as possible in the separate Directives;

Whereas the technical requirements of the Directives on appliances using gaseous fuels must be adapted without delay to take account of technical progress; whereas, in order to facilitate the implementation of the measures necessary for this purpose, provision should be made for a procedure establishing close cooperation between the Member States and the Commission, within the Committee for Adaptation to Technical Progress of the Directives for Removing Technical Barriers to Trade in Appliances using Gaseous Fuels;

Whereas appliances using gaseous fuels placed on the market, although conforming to the requirements of the relevant separate Directives might nevertheless constitute a safety hazard; whereas provision should therefore be made for a procedure to reduce this hazard;

Whereas different conditions as regards types of gas and fuel feed pressures are in force in the Member States;

<sup>(1)</sup> OJ No C 134, 16. 6. 1975, p. 37.

<sup>(2)</sup> OJ No C 76, 7. 4. 1975, p. 37.

<sup>(3)</sup> OJ No C 270, 27. 11. 1975, p. 28.

whereas these mandatory conditions cannot be harmonized in view of the fact that each Member State's energy supply and distribution situation is peculiar to it;

Whereas certain appliances using gaseous fuels may also be regarded as falling partly within the scope of Council Directive 76/767/EEC of 27 July 1976 relating to pressure vessels and methods of inspecting them <sup>(1)</sup>, as amended by the Act of Accession of 1979; whereas the Council will have to decide in each individual case whether, as regards construction specifications and surveillance methods, the parts of such appliances under pressure should come under Directive 76/767/EEC,

HAS ADOPTED THIS DIRECTIVE:

## CHAPTER I

### Definitions and basic principles

#### Article 1

1. This Directive shall apply to any appliance for cooking, heating, hot water production, refrigeration, lighting or washing which uses gaseous fuels and to any safety or control device which is intended to form an integral part of such an appliance.

2. The appliances and devices referred to in paragraph 1 are hereinafter called 'appliances'.

3. The following shall be excluded from the scope of this Directive:

- appliances specifically intended for installation in ships and aircraft,
- appliances not covered by a separate Directive within the meaning of Article 2.

4. For the purposes of this Directive, 'gaseous fuel' means any fuel which is entirely in a gaseous state at a temperature of 15 °C under a pressure of 1,01325 bar.

5. For the purpose of this Directive:

'EEC type-examination' means the procedure whereby the body approved for that purpose by a Member State establishes, following tests, and certifies that a type of appliance conforms to the requirements harmonized

under this Directive and the relevant separate Directives;

'EEC surveillance' means the procedure whereby the body approved for that purpose by a Member State ensures, after an EEC type-examination certificate has been issued in accordance with this Directive and the relevant separate Directive, that appliances have been manufactured in conformity with the approved type.

#### Article 2

1. Separate Directives shall lay down the design and construction requirements, methods of surveillance and testing and, where necessary, the manner of operation for the categories of appliances to which they relate.

2. The aims which must in principle be pursued in devising the requirements and tests referred to in paragraph 1, taking into account the state of technical progress, must ensure in particular that appliances:

- when properly installed and maintained and used for the purpose intended, do not endanger the safety of persons, domestic animals or property,
- meet the requirements of rational use of energy,
- fulfil the purpose for which they are intended.

3. The separate Directives may specify the date from which the Member States may no longer allow the placing on their markets of the appliances covered by these Directives, unless they conform thereto.

#### Article 3

1. For the purposes of this Directive, 'EEC-type appliance' means any appliance which satisfies the requirements of this Directive and of the relevant separate Directive, and which accordingly bears the EEC mark of conformity referred to in Article 7 (6) and (7) and/or has been granted a certificate of conformity which may be provided for in the relevant separate Directive.

2. No Member State may, on grounds relating to the construction of an EEC appliance or surveillance thereof within the meaning of this Directive and the relevant separate Directive, refuse, prohibit or restrict the placing on the market, connection to the distribution network and putting into service for a purpose for which it was intended of an EEC-type appliance.

3. Member States shall in particular ensure that authorities or bodies responsible for the supply of gas, connection to the network and putting into service of

<sup>(1)</sup> OJ No L 262, 27. 9. 1976, p. 153.

such appliances do not impose upon such connection and putting into service any technical conditions other than the following:

- connection and putting into service for a use which is in conformity with the appliance's intended use,
- compliance with the installation requirements in force in the territory of a Member State.

#### *Article 4*

Member States shall attach the same value to EEC type-examination and EEC surveillance as to the corresponding national procedures.

### CHAPTER II

#### EEC type-examination and EEC type-examination certificate

#### *Article 5*

1. Where it is provided for in a separate Directive, EEC type-examination shall be a prerequisite for the placing on the market, connection to the distribution network, and putting into service of an appliance.

2. EEC type-examination shall be carried out by bodies approved for this purpose by the Member State.

#### *Article 6*

1. Approved bodies appointed by Member States to carry out EEC type-examination in accordance with Article 7 shall comply with the minimum criteria laid down in Annex II, without prejudice to Member States' competence to take such measures and lay down such conditions as they consider necessary at national level to ensure that these bodies operate in an efficient, coordinated and exemplary fashion.

Compliance with the minimum criteria by a body shall not oblige a Member State to approve it.

2. Where a Member State has approved a body or bodies to carry out EEC type-examination, it shall notify the other Member States and the Commission of the body or list of bodies concerned. It shall also notify the other Member States and the Commission of any subsequent amendments to these particulars.

#### *Article 7*

1. The EEC type-examination certificate shall be the document by which an approved body certifies that a type of appliance conforms to the requirements of this Directive and the relevant separate Directives.

2. At the request of the manufacturer, or his authorized representative established in the Community, the approved bodies referred to in Article 6 shall carry out the EEC type-examination of a type of appliance. If the type meets the requirements of this Directive and of the relevant separate Directives and if the manufacturer undertakes to comply with the conditions referred to in Article 13 and in the separate Directives, the approved body shall issue an EEC type-examination certificate. This certificate shall conform to the model given in the separate Directives.

The appliance subjected to the EEC type-examination must be representative of the proposed production series. Appliances manufactured with a view to obtaining an EEC type-examination certificate must conform to the appliance for which this certificate was issued.

3. The approved bodies shall issue, refuse to issue, suspend or withdraw EEC type-examination certificates in accordance with the provisions of this chapter and of Annex I.

4. Applications for EEC type-examination relating to the same type of appliance may be submitted to only one of the approved bodies.

5. The EEC type-examination certificate shall be subject to the conditions contained in Article 13 and may also be issued for a limited period or be subject to other conditions stipulated in the separate Directives.

6. Any manufacturer who has obtained an EEC type-examination certificate shall be entitled to affix an EEC mark of conformity to the products to be marketed which correspond to the type for which the certificate was issued. This mark must be visibly, legibly and indelibly affixed to each appliance.

7. The requirements relating to the EEC type-examination certificate and the EEC mark of conformity are given in Annex I.

#### *Article 8*

1. If an approved body finds that several samples of an appliance of the type for which it has issued an EEC type-examination certificate fail to conform to that

type, it shall request the holder of the certificate to rectify production within a specified period, if necessary suspending the certificate. Where necessary, the separate Directive relating to the type of appliance concerned shall fix the number of samples deemed sufficient to justify intervention by the approved body. Failing rectification within the specified period, the approved body shall suspend or withdraw the certificate.

2. The approved body which has granted the EEC type-examination certificate must withdraw it if it finds that the certificate should not have been granted.

3. It shall suspend or withdraw the certificate if the holder fails to fulfil the undertakings to the approved body which are referred to in Articles 7 and 13.

#### *Article 9*

1. Member States shall ensure that the approved bodies carry out the aforementioned tasks correctly.

To this end they shall, by appropriate measures, oblige the approved bodies to allow the competent authorities of the Member States which appointed them to make checks at any time.

2. A Member State may authorize a body approved by it, without thereby restricting that body's own responsibility, to entrust to one or more laboratories the task of carrying out the tests to be conducted in the context of the EEC type-examination and the EEC surveillance provided for in Chapter III, provided that these laboratories satisfy the criteria laid down in sections 3, 4 and 5 of Annex II.

3. Member States shall take the necessary steps to ensure that the applicant or the person to whom the EEC type-examination certificate was issued is able to appeal against decisions by the approved body to refuse, suspend or withdraw the EEC type-examination certificate.

4. If a Member State finds that a body which it has approved is not correctly fulfilling the tasks referred to in Articles 7 and 8, such Member State shall take all appropriate steps with regard to that body.

5. The Member State shall in any event withdraw approval if it finds that an approved body has ceased to

satisfy the minimum criteria laid down in Annex II or that it does not comply with the conditions set by the Member State.

6. If a Member State does not withdraw approval from a body which no longer satisfies the minimum criteria, any other Member State may bring this fact to the attention of the Commission. The Commission shall take appropriate steps to find a solution.

#### *Article 10*

1. A Member State which withdraws approval from a body shall take all necessary steps to ensure continuity with regard to fulfilment of the obligations and duties resulting from the issue of EEC type-examination certificates by that body before the withdrawal of approval. Applications refused by that body may, moreover, be re-submitted.

2. The Member State must withdraw all certificates issued by that body before withdrawal of approval if they were issued improperly.

#### *Article 11*

1. If one of the cases referred to in Article 8 is noted in a Member State, the competent authorities of that Member State shall bring this fact to the attention of the Member State in which the certificate was issued.

2. The competent authorities of the Member State in which the EEC type-examination certificate was issued shall oblige the approved body concerned to take the steps provided for in Article 8.

3. In the event of a dispute between the Member State in which an EEC type-examination certificate was issued and another Member State, the Commission shall be informed and shall take appropriate steps.

### CHAPTER III

#### EEC surveillance

#### *Article 12*

Member States shall ensure that EEC surveillance, the aim of which is to ensure correct use of the EEC mark of conformity, is carried out. Surveillance may be carried out by the approved bodies referred to in Article 6 which issued the EEC type-certificate. Surveillance

shall be carried out by taking samples and by spot checks, *inter alia*. The bodies which carry out the surveillance must, in any case, satisfy the criteria laid down in Annex II and be notified in accordance with Article 6.

### Article 13

1. A manufacturer, or his authorized representative established in the Community, who makes use of the EEC mark must:

(a) inform the approved body which granted the EEC type-examination certificate of:

- the places where the appliances are manufactured and/or warehoused, as requested by the approved body,
- the date on which manufacture commences,
- any other information required by the body to enable it to carry out its task and provided for by the separate Directive;

(b) allow representatives of the approved body which granted the certificate to have access for the purpose of surveillance to the said places of manufacture and/or warehousing and to inspection records and provide all necessary information relevant to such surveillance;

(c) permit the approved body which granted the certificate to take one or more appliances as samples for surveillance purposes from the places of manufacture or warehousing.

2. The approved body which granted the EEC type-examination certificate must supply copies of the test report and, where appropriate, of the technical file to the other approved bodies, the Member States and the Commission, if they so request.

3. The holder of the EEC mark of conformity must carry out production checks or ensure that they are carried out and have at his disposal the equipment necessary for him to monitor adequately the conformity of appliances manufactured with the appliance for which the EEC type-examination certificate was issued.

### Article 14

1. The approved body which granted the EEC type-examination certificate shall organize EEC surveillance of the manufactured appliances for which the EEC type-examination certificate was granted.

This surveillance must enable the approved body to verify, firstly, whether the manufacturer has the

facilities for carrying out the checks referred to in Article 13 (3) and, secondly, whether the manufacturer actually carries out checks to verify whether appliances manufactured conform to the appliance for which the EEC type-examination certificate was granted; for example, whether he keeps inspection records if he has been requested to do so.

The approved body may also arrange for sampling to be carried out unannounced at the designated places of manufacture and warehousing. The approved bodies shall not be prevented from carrying out sampling, upon payment, at any stage of marketing as well.

2. If the place of manufacture, warehousing or marketing is situated in a Member State other than that of the approved body which granted the EEC type-examination certificate, that body shall, if necessary, contact an approved body in the Member State where the samples are to be taken for the checks referred to above.

The approved body which carried out the surveillance shall send a report to the approved body which granted the EEC type-examination certificate.

3. The costs which the manufacturer is required to bear as a result of EEC surveillance at any stage in the marketing process once the appliance has left the place of manufacture or warehousing may be determined in accordance with the detailed rules laid down in the separate Directives.

### Article 15

1. Should the checks referred to in Article 14 prove that the appliances do not conform to the appliance which received the EEC type-examination certificate and/or that the requirements of this Directive and the relevant separate Directive have not all been fulfilled, the approved body must take one of the following measures against the holder of the EEC mark of conformity:

(a) a simple warning formally requiring that the infringements noted cease within a given period of time;

(b) a warning as referred to in (a) but accompanied by more frequent surveillance checks;

(c) suspension of the EEC type-examination certificate;

(d) withdrawal of the EEC type-certificate.

These measures may be taken only by the approved body which granted the EEC type-certificate.

2. The first two measures shall be taken where the differences do not affect the general design of the appliance or where the infringements noted are minor and in no way represent a safety hazard.

One of the last two measures shall be taken where the differences or infringements noted are considerable, and in any case if they represent a safety hazard.

3. The approved body which granted the EEC type-certificate must also withdraw the certificate:

- if the manufacturer, or his authorized representative established in the Community, prevents the checks provided for in Article 14 from being carried out,
- if it finds that the EEC type-examination certificate should not have been granted.

4. If the approved body which granted the EEC type-examination certificate is informed by the approved body of another Member State of the existence of one of the cases referred to in paragraphs 2 and 3 it shall also, after consulting that body, take the measures provided for in those paragraphs.

5. Suspension or withdrawal of the EEC type-examination certificate shall be notified to the Member States and the other approved bodies.

#### Article 16

All costs relating to EEC type-examination and EEC surveillance shall be borne by the manufacturer or his representative established in the Community.

### CHAPTER IV

#### Adaptation of the Directive to technical progress

#### Article 17

Any amendments necessary to adapt to technical progress Annex I to this Directive, with the exception of

sections 1.1 and 5 thereof and those provisions of the separate Directives which are specifically indicated in each of them, shall be adopted in accordance with the procedure laid down in Article 19.

#### Article 18

1. A committee (hereinafter called 'the Committee') is hereby set up to adapt to technical progress the Directives concerning the elimination of technical barriers to trade in appliances using gaseous fuels. It shall consist of representatives of the Member States, and have a Commission representative as chairman.

2. The Committee shall adopt its own rules of procedure.

#### Article 19

1. Where the procedure laid down in this Article is invoked, the matter shall be referred to the Committee by its chairman, either on his own initiative or at the request of a representative of a Member State.

2. The Commission representative shall submit to the Committee a draft of the measures to be taken. The Committee shall give its opinion on that draft within a time limit set by the chairman having regard to the urgency of the matter. Opinions shall be delivered by a majority of 45 votes, the votes of the Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) Where the measures envisaged are in accordance with the opinion of the Committee, the Commission shall adopt them.

(b) Where the measures envisaged are not in accordance with the opinion of the Committee or if no opinion is delivered, the Commission shall without delay submit to the Council a proposal on the measures to be taken. The Council shall decide by a qualified majority.

(c) If within three months of the proposal being submitted to it the Council has not taken any decision, the proposed measures shall be adopted by the Commission.

## CHAPTER V

## Derogating clause

## Article 20

1. The design of an appliance and the methods used in its manufacture may, in specific instances, depart from some of the provisions of the separate Directives, without the appliance ceasing to be covered by Article 3 of this Directive, provided that the alterations made are such as to ensure at least an equivalent level of protection as far as safety or health are concerned.

2. Each of the separate Directives shall expressly specify the provisions from which such derogation is possible or the provisions from which there can be no derogation.

3. Where a request for derogation is accepted, the following procedure shall be observed:

(a) The Member State, through the approved body it has appointed, shall forward to the Commission the documents giving the description of the appliance and the documents supporting its request for derogation, including the results of any tests carried out. The Commission shall send a copy to the other Member States which shall then have a period of four months from that date to agree or disagree with the Member State concerned or to ask that the matter be referred to the Committee. A copy of each document shall be sent to the Commission; all the correspondence shall be confidential.

(b) If no Member State has disagreed or asked that the matter be referred to the Committee before the end of the period laid down under (a), the Commission may convene the Committee or authorize the Member State to grant or approve the derogation requested and shall inform the other Member States thereof.

(c) If a Member State has not replied by the end of the statutory period, it shall be regarded as having agreed.

(d) Otherwise the Commission shall act on the derogation request after having received the opinion of the Committee.

(e) The relevant documents shall be submitted in an official language of the country of destination, or, in special cases, in another language acceptable to it.

## CHAPTER VI

## Safeguard clause

## Article 21

1. Where a Member State has good grounds for believing that an appliance represents a safety hazard, even though it satisfies the requirements of this Directive and the separate Directives, it may temporarily prohibit the placing on the market, connection to the distribution network and putting into service in accordance with its intended use of the appliance on its territory or make it subject to special conditions. It shall immediately inform the Commission and the other Member States thereof, giving the reasons for its decision.

2. The Commission shall consult the Member States concerned within six weeks, then give its view without delay and take the appropriate steps.

3. Where the Commission considers that technical amendments to the separate Directive are necessary, such amendments shall be adopted by either the Commission or the Council in accordance with the procedure laid down in Article 19. In this event, any Member State which has taken safeguard measures may retain them until such amendments come into force.

## CHAPTER VII

## Final provisions

## Article 22

Any decision by a Member State or an approved body pursuant to this Directive and the separate Directives to refuse an EEC type-examination, to suspend or withdraw an EEC type-examination certificate, or to prohibit the placing on the market, connection to the distribution network or putting into service for a purpose for which it was intended of an EEC-type appliance, shall state the grounds on which it is based. Such a decision shall be notified as soon as possible to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member State in question and of the time limits to which such remedies are subject.

## Article 23

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to

comply with this Directive so that these provisions enter into force on the same date as those taken in order to comply with Directive 84/531/EEC <sup>(1)</sup>. They shall forthwith inform the Committee thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 24*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> See page 106 of this Official Journal.

## ANNEX I

## EEC TYPE-EXAMINATION AND EEC TYPE-EXAMINATION CERTIFICATE

## 1. APPLICATION FOR EEC TYPE-EXAMINATION

1.1. The application and the correspondence relating to it shall be drawn up in an official language of the State to which the application is made in accordance with the laws of that State. The approved body shall have the right to require that the annexed documents should also be drawn up in that same official language.

1.2. The application shall contain the following information:

- name and address of the manufacturer or firm, of his or its authorized representative or of the applicant, and the place or places of manufacture of the appliances,
- nature and category of the appliance,
- intended use and any prohibited uses,
- trade name, if any, or type,
- Member State(s) where it is planned to market the appliance.

1.3. The application shall be accompanied by two copies of the documents required and in particular:

- 1.3.1. — the technical file required by the separate Directives,
- the places where the EEC mark of conformity specified in this Directive and the other marks specified in the separate Directives are to be affixed,

1.3.2. a statement certifying that no other application for EEC type-examination has been submitted for the same type of appliance.

## 2. PROCESSING OF THE APPLICATION

The application shall be processed in accordance with the procedure laid down in the separate Directives.

## 3. EEC TYPE-EXAMINATION CERTIFICATE AND EEC MARK OF CONFORMITY

The certificate referred to in Article 7 shall contain the conclusions of the EEC type-examination and shall indicate any conditions to which its grant may be subject. It shall be accompanied by the descriptions and drawings necessary to identify the type and, where appropriate, to explain how it functions. The EEC mark provided for in Article 7 of the Directive shall be a stylized letter  $\varepsilon$  in a hexagon containing:

- in the upper part, the serial number of the separate Directive allocated according to the chronological order of adoption, and the capital letters identifying the State which has granted approval (B for Belgium, D for the Federal Republic of Germany, DK for Denmark, F for France, GR for Greece, I for Italy, IRL for Ireland, L for Luxembourg, NL for the Netherlands, UK for the United Kingdom) and the two final figures of the year of issue of the certificate; the number of the separate Directive to which the certificate refers will be allocated by the Council when that Directive is adopted,
- in the lower part, the certificate number.

An example of this mark is shown in 6.1.

When the certificate has been issued on the basis of Article 20 of the Directive it must show clearly that it has been granted on such a basis.

#### 4. MODIFICATION OF THE PRODUCT MARKETED

The approved body which has granted an EEC type-examination certificate must be informed of all significant modifications, particularly those involving changes in the commercial description of a product.

#### 5. PUBLICATION OF EEC TYPE-EXAMINATION CERTIFICATES

5.1. An extract from EEC type-examination certificates shall be published in the *Official Journal of the European Communities*.

5.2. At the same time as the party concerned is notified, copies of the EEC type-examination certificate shall be sent by the competent department of the Member State which appointed the approved body to the Commission and to the other Member States, which may also obtain copies of the definitive technical file on the appliance and of the reports on the examinations and tests it has undergone.

5.3. Withdrawal or suspension of an EEC type-examination certificate shall be published in accordance with the procedure laid down in 5.1 and 5.2.

5.4. Any approved body refusing to grant an EEC type-examination certificate shall inform the competent departments of the Member State which appointed it; the latter shall inform the other Member States and the Commission.

#### 6. EEC MARK OF CONFORMITY

6.1. EEC mark of conformity (see section 3)

Example:



EEC type-examination certificate granted by an approved body of the Federal Republic of Germany in 1979, pursuant to the first separate Directive.

EEC type-examination certificate number.

6.2. The separate Directives may specify the placing and dimensions of the EEC mark of conformity.

Unless otherwise indicated in the separate Directives, the letters and numbers in this mark must be at least 5 mm high.

## ANNEX II

MINIMUM CRITERIA TO BE TAKEN INTO ACCOUNT BY MEMBER STATES WHEN  
APPOINTING APPROVED BODIES

1. The bodies responsible for examining appliances with a view to the issue of EEC type-examination certificates and carrying out surveillance must have at their disposal the necessary staff and possess the necessary means for them to perform properly the technical and administrative tasks connected with issuing EEC type-examination certificates and carrying out surveillance and must have access to the equipment required for any special examinations provided for in the separate Directives.
  2. The body, its director and its staff may not be the manufacturer, supplier or installer of the appliances, or the authorized representative of any of those parties. They may not become involved either directly, or as authorized representatives, in the design, construction, marketing or maintenance of such appliances, or in representational activities relating to them. This does not preclude the possibility of exchanges of technical information between the manufacturer and the approved body.
  3. The staff responsible for examining appliances with a view to the issue of EEC type-examination certificates must carry out these tasks with the highest degree of integrity and technical competence and must be free from all pressures and inducements, particularly financial, which might influence their judgement or the results of their work, especially from persons or groups of persons with an interest in the results of examinations.
  4. The staff responsible for carrying out examinations must have:
    - sound technical and professional training,
    - a satisfactory knowledge of the requirements relating to the examinations they carry out and adequate practical experience of such work,
    - the necessary ability to prepare the records and reports incorporating the results of the work carried out.
  5. The impartiality of examining staff must be guaranteed. Their remuneration must not depend on the number of examinations they carry out, or on the results obtained.
  6. The body must have third party insurance unless civil liability is assumed by the State in accordance with national law.
  7. Staff of the body must be bound by professional secrecy regarding everything they learn in the exercise of their duties (save with regard to the competent administrative authorities of the State which appointed them) under this and the separate Directives or under any provision of national law giving effect to them.
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## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to appliances using gaseous fuels for instantaneous production of hot water for sanitary purposes

(84/531/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

HAS ADOPTED THIS DIRECTIVE:

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas in the Member States the construction and inspection of appliances using gaseous fuels for instantaneous production of hot water for sanitary purposes are subject to mandatory provisions which differ from one Member State to another and consequently hinder trade in these appliances; whereas it is therefore necessary to approximate these provisions;

Whereas Council Directive 84/530/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for appliances using gaseous fuels, safety and control devices for these appliances and methods of surveillance of them <sup>(4)</sup> laid down in particular the EEC type-examination and EEC surveillance procedures for these appliances; whereas in accordance with that Directive it is necessary to lay down the technical requirements with which appliances using gaseous fuels for instantaneous production of hot water must comply in order to be placed on the market, connected to the distribution network and put into service after they have been subjected to surveillance and the prescribed marks have been affixed to them;

Whereas it is advisable, with a view to the mutual exchange of information, that each Member State should notify the Commission and the other Member States of the conditions under which families of gases and their supply pressures are defined within its territory,

*Article 1*

1. This Directive shall apply to the following appliances using gaseous fuels for the instantaneous production of hot water:

- small water heaters with a nominal useful output of less than 17 kW,
- bath water heaters with a nominal useful output of between 17 and 28 kW inclusive.

2. For the purposes of this Directive, 'appliance for the instantaneous production of hot water' means any appliance in which the heating of water is directly activated by drawing off water and the output temperature of the hot water is less than 100 °C.

3. Storage appliances in which the hot water is directly stored inside the actual appliance shall not be covered.

*Article 2*

1. For the purposes for this Directive, 'EEC-type appliance' means any appliance which satisfies the requirements of the Annex to this Directive and of Directive 84/530/EEC and which accordingly bears the EEC mark of conformity referred to in Article 5.

Pursuant to Directive 84/530/EEC, EEC-type appliances, equipped with their safety and control devices, must have satisfactorily undergone EEC-type examination and shall be subject to EEC surveillance.

EEC type-examination and EEC surveillance shall be carried out by the approved bodies in accordance with Directive 84/530/EEC and the Annex to this Directive.

2. The period of validity of an EEC type-examination certificate issued for these appliances shall be five years from the date on which the party concerned is notified.

<sup>(1)</sup> OJ No C 134, 16. 6. 1975, p. 37.

<sup>(2)</sup> OJ No C 76, 7. 4. 1975, p. 37.

<sup>(3)</sup> OJ No C 270, 26. 11. 1975, p. 28.

<sup>(4)</sup> See page 95 of this Official Journal.

This period of validity may be extended for successive periods of a maximum of five years by the approved body which issued the certificate.

### Article 3

No Member State may, on grounds relating to the construction of an EEC-type appliance or surveillance thereof within the meaning of Directive 84/530/EEC and of this Directive, refuse, subject to the conditions laid down in Article 4, prohibit or restrict the placing on the market, connection to the distribution network or putting into service for a purpose for which it is intended of an EEC-type appliance.

Member States shall in particular ensure that authorities or bodies responsible for the supply of gas, connection to the mains and putting into service of such appliances do not impose upon such connection and putting into service any technical conditions other than the following:

- connection and putting into service for a purpose for which the appliance is intended,
- compliance with the installation requirements in force in the territory of a Member State.

### Article 4

1. Appliances shall be placed on the market and put into service for the purpose for which they are intended in accordance with the conditions laid down by each Member State in respect of the clauses of Standard EN 26 referred to in the Annex, as regards:

- commercial categories of appliances (6.1),
- gases used and supply pressures (6.2),
- gas inlet connections (6.3),
- water inlet connections (6.4),
- pilot-light flame failure devices (6.7).

After 31 December 1984 these devices shall be mandatory for all EEC-type appliances and Member States may not withhold approval of appliances affording a degree of safety at least equal to that required in Standard EN 26 referred to in the Annex, and in particular 3.4.1 thereof.

2. No later than six months after notification of this Directive, each Member State shall inform the Commission and the other Member States of the

conditions referred to in paragraph 1 which must be met within its territory.

3. (a) Each Member State shall inform the Commission and the other Member States 18 months beforehand of any amendments to the conditions referred to in paragraph 2.

(b) Amendments concerning:

- rules governing the connection of gas,
- rules governing the connection of water,
- flame failure devices,

must not result in the application, on the Community market, of solutions other than those provided for in the corresponding tables of Standard EN 26 referred to in the Annex (tables 14, 15 and 16 of the Standard).

### Article 5

The EEC mark of conformity provided for in Article 7 (6) of Directive 84/530/EEC shall be affixed to each appliance for which an EEC type-examination certificate has been granted, either by the manufacturer of the appliance, or by the person responsible for placing it on the market, acting on their own responsibility.

### Article 6

In addition to complying with section 1 of Annex I to Directive 84/530/EEC, applicants for EEC type-examination certificates shall be required to submit:

- technical schedules as provided for in 4.10.2 of Standard EN 26 referred to in the Annex,
- a number of appliances representative of the series sufficient to satisfy the requirements of the approved body.

### Article 7

Any amendments necessary to adapt the Annex and Articles 4 (1) and 6 of this Directive to technical progress shall be adopted in accordance with the procedure laid down in Article 19 of Directive 84/530/EEC.

### Article 8

1. Without prejudice to the provisions of Article 4 (1), the Member States shall bring into force the laws,

regulations and administrative provisions necessary to comply with this Directive so that they take effect on the same date as those introduced pursuant to the Directive adapting for the first time the Annex to this Directive. They shall forthwith inform the Commission thereof.

2. The Member States shall ensure that the texts of any provisions of national law that they adopt in the field covered by this Directive are communicated to the Commission.

*Article 9*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

ANNEX

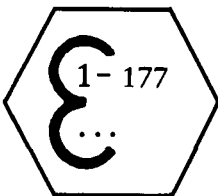
1. The appliances referred to in Article 1 of the Directive must satisfy the requirements of Standard EN 26 of September 1977, edition No 3, on gas-burning appliances for instantaneous production of hot water as adopted by the European Committee for Standardization with the exception of clauses 5.2 and 6.5, hereinafter referred to as Standard EN 26.

However, the nominal useful output for the water heaters referred to in 1.4.3 of Standard EN 26 shall be between 8 and 10 kW.

2. DATA PLATE

The data plate, which shall be affixed to each appliance, shall bear the particulars given below:

Example

|                                                                                                                                |                         |                        |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|
| chauffe-eau — water heater — Warmwasserbereiter<br>scaldacqua — warmwatertoestel — vandvarmer —<br>θερμοσίφωνας <sup>(1)</sup> |                         |                        |
|  <sup>(2)</sup>                             | II12 HL <sup>(3)</sup>  | 8,7 kW <sup>(4)</sup>  |
| Name and address <sup>(5)</sup> :                                                                                              |                         |                        |
| N° 8355 SE <sup>(6)</sup>                                                                                                      | B <sup>(7)</sup>        | 13 bars <sup>(8)</sup> |
| 025 20 mbar <sup>(9)</sup>                                                                                                     | 20 mbar <sup>(10)</sup> |                        |

The data plate shall be divided into two sections in such a way that the following particulars appear:

(a) in the upper section:

- <sup>(1)</sup> the denomination under which the appliance is submitted for EEC type-examination;
- <sup>(2)</sup> the EEC mark of conformity;
- <sup>(3)</sup> the category of appliance;
- <sup>(4)</sup> the nominal useful output of the appliance expressed in kW;

(b) in the lower section:

- <sup>(5)</sup> name and address of the manufacturer or of the person responsible for placing the appliance on the market;
- <sup>(6)</sup> manufacturer's serial number;
- <sup>(7)</sup> the type of appliance;
- <sup>(8)</sup> the maximum water supply pressure, expressed in bars, at which the appliance may be used;
- <sup>(9)</sup> the gas supply pressure for the third family, expressed in mbar;
- <sup>(10)</sup> the gas pressure for which the appliance has been set by the manufacturer, at one of the pressure listed in 6.2 of Standard EN 26, where this gas belongs to the third family, expressed in mbar.

3. The appliances shall be accompanied by the directions referred to in 5.3 of Standard EN 26, taking into account the conditions laid down in Article 4 (1) (connection of gas and water, pilot-light flame failure device).

#### 4. PROCEDURES AND ARRANGEMENTS FOR CARRYING OUT EEC SURVEILLANCE

At least one appliance must be subjected to EEC surveillance each year.

Pursuant to Article 14 (3) of Directive 84/530/EEC, the costs which the manufacturer is required to bear as a result of EEC surveillance carried out at any stage in the marketing process once the appliance has left the designated place of manufacture or warehousing shall be limited to those arising out of the sampling and examining of a maximum of 0,1 % of the manufacturer's annual production of the appliances concerned.

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## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment

(84/532/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas, in each Member State, construction plant and equipment must have certain technical characteristics which are laid down in mandatory requirements; whereas these requirements differ from one Member State to another; whereas these differences hinder trade within the European Community;

Whereas such obstacles to the establishment and functioning of the common market can be reduced and eliminated if the same requirements are adopted by all the Member States either in addition to or in place of their present laws;

Whereas the requirements of this Directive are applicable to construction plant and equipment, and are aimed primarily at ensuring the protection of the environment from airborne noise and safety at work except where this is directly associated with lifting equipment; whereas, therefore, lifting appliances on worksites will, if necessary, form the subject of special requirements;

Whereas, verification that technical requirements have been observed is necessary in order that users and others may be properly protected; whereas the existing inspection procedures differ from one Member State to

another and, in order to achieve free movement of construction plant and equipment within the common market and avoid multiple inspections, which constitute obstacles to the free movement of such plant and equipment, provision should be made for mutual recognition of inspections between the Member States;

Whereas, in order to assist this mutual recognition of inspections, suitable administrative procedures to be followed prior to the marketing of appliances should be introduced, viz. EEC type-approval, EEC type-examination, EEC verification and EEC self-certification; whereas there should be harmonization of the criteria to be applied when appointing the approved bodies for carrying out EEC type-examinations;

Whereas the national regulations relating to construction plant and equipment cover numerous categories of plant and equipment with widely varying uses; whereas it is therefore desirable to lay down in this Directive general provisions on the procedures for EEC type-approval, EEC type-examination, EEC verification and EEC self-certification; whereas separate Directives for each category of construction plant and equipment lay down the requirements relating to the technical construction, the methods for inspecting such plant and equipment and, where appropriate, the conditions under which Community technical requirements are to be substituted for the national provisions which already exist;

Whereas this Directive does not differ the provisions of Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers <sup>(4)</sup>, as last amended by Directive 80/1267/EEC <sup>(5)</sup>;

Whereas it is conceivable that construction plant or equipment placed on the market may meet the requirements of the relevant separate Directives but nevertheless represent a hazard to health or safety;

<sup>(1)</sup> OJ No C 82, 14. 4. 1975, p. 91.

<sup>(2)</sup> OJ No C 76, 7. 4. 1975, p. 37.

<sup>(3)</sup> OJ No C 263, 17. 11. 1975, p. 42.

<sup>(4)</sup> OJ No L 42, 23. 2. 1970, p. 1.

<sup>(5)</sup> OJ No L 375, 31. 12. 1980, p. 34.

whereas it is therefore necessary to lay down a procedure to reduce that risk;

Whereas, in order to take account of technical progress, a prompt adaptation of the technical requirements specified in the Directives on construction plant and equipment is necessary; whereas, in order to facilitate application of the measures necessary for this purpose, there should be a procedure for setting up close cooperation between the Member States and the Commission within a Committee for the adaptation to technical progress of the Directives on the elimination of technical barriers to intra-Community trade in construction plant and equipment,

HAS ADOPTED THIS DIRECTIVE:

## CHAPTER I

### Definitions

#### Article 1

1. For the purposes of this Directive, 'construction plant and equipment' means all machinery, appliances, plant and installations or components thereof which are used, according to their type, to perform work on civil engineering and building sites but which are not primarily intended for the transport of goods or persons.

2. This Directive shall apply only to civil engineering and building equipment as defined in paragraph 1, for which detailed rules are laid down in the separate Directives mentioned in Article 3.

3. Agricultural and forestry tractors and lifting appliances are excluded from the scope of this Directive.

#### Article 2

For the purposes of this Directive:

'EEC type-approval' means the procedure whereby a Member State establishes, following tests, and certifies that a type of equipment referred to in Article 1 conforms to the requirements harmonized under the relevant separate Directives;

'EEC type-examination' means the procedure whereby a body approved for that purpose by a Member State establishes, following tests, and certifies that a type of equipment conforms to the harmonized requirements under this Directives;

'EEC verification' means the procedure whereby a Member State can affirm, following tests, that each item of equipment conforms to the harmonized requirements under this Directive and under the relevant separate Directives;

'EEC self-certification' means the procedure whereby the manufacturer, or the authorized representative established in the Community, certifies, on his own responsibility, that an item of equipment conforms to the harmonized requirements under this Directive and the relevant separate Directives.

## Article 3

1. For all equipment, general Directives shall define the harmonized requirements, in particular those concerning safety at work and the method of measuring the sound emission level of equipment.

2. Separate Directives shall specify the technical requirements for the construction and functioning of the categories of equipment to which they refer and shall further state which of the procedures referred to in Article 2 is applicable.

## CHAPTER II

### EEC type-approval

#### Article 4

1. Where it is provided for in a separate Directive, EEC type-approval shall be a prerequisite for the marketing, planing into service and use of an item of equipment.

2. Member States shall, at the request of the manufacturer, or of his authorized representative established in the Community, grant EEC type-approval for any type of equipment which conforms to the requirements of this Directive and of the relevant separate Directive.

3. An application for EEC type-approval for a given type of equipment may be submitted in only one Member State.

4. Member States shall grant, refuse, suspend or withdraw EEC type-approval in accordance with the provisions of this chapter and of Annex I.

5. For the tests which form part of an EEC type-approval, a Member State may obtain the assistance of one or more laboratories.

*Article 5*

1. If the results of the tests provided for in Annex I, section 2, are satisfactory, the Member State which carried out the tests shall make out an EEC type-approval certificate, which shall be forwarded to the applicant.

The EEC type-approval certificate may be subject to conditions laid down in the separate Directives.

2. A model EEC type-approval certificate is shown in Annex III.

3. The EEC type-approval certificate shall be subject to any conditions and to any limitation on the period of validity which may be laid down in the separate Directives.

*Article 6*

1. The Member State which has granted EEC type-approval shall take the necessary measures, if need be in cooperation with other Member States, to ensure the conformity of the manufactured equipment with the approved type.

2. Details of the measures provided for in the previous paragraph shall be laid down in separate Directives. These measures may include supervision by means of spot checks.

*Article 7*

1. If a Member State which has granted EEC type-approval finds that some samples of an item of equipment for which such type-approval has been granted fail to conform to the type, it shall suspend or withdraw the approval.

2. The EEC type-approval may, however, be maintained where the differences recorded are minimal or have no fundamental effect on the design of the equipment and in no way represent a hazard to personal safety or the environment; in such cases, the Member State shall request the manufacturer to make the appropriate manufacturing changes as soon as possible. The Member States shall withdraw type-approval if the manufacturer fails to comply with this request.

3. The Member State which granted EEC type-approval shall also withdraw it if it finds that the approval should not have been granted.

4. Furthermore, if the said Member State is informed by another Member State of the existence of one of the cases referred to in paragraphs 1, 2 and 3, it shall, after consulting that State, act in accordance with the provisions of those paragraphs.

5. Where the advisability or necessity of withdrawing approval is the subject of dispute between the competent authorities of the Member State which has granted EEC type-approval and those of another Member State, the Commission shall be kept informed. It shall, where necessary, hold appropriate consultations in order to arrive at a solution.

6. Only the Member State which granted EEC type-approval may decide to withdraw it; it shall forthwith notify the other Member States and the Commission of any such decision.

## CHAPTER III

## EEC type-examination

*Article 8*

1. Where it is stipulated in a separate Directive, EEC type-examination shall be a prerequisite for the marketing, placing into service and use of an item of equipment.

2. EEC type-examinations shall be carried out by bodies approved for this purpose by the Member States.

*Article 9*

1. Approved bodies appointed by Member States to carry out EEC type-examination in accordance with Article 10 shall comply with the minimum criteria laid down in Annex II.

The fact that a body complies with the minimum criteria does not mean that a Member State is obliged to approve that body.

2. Where a Member State has approved a body or bodies to carry out EEC type-examinations, it shall notify the other Member States and the Commission of the body or bodies concerned. It shall also notify the other Member States and the Commission of any subsequent amendments to these particulars.

*Article 10*

1. The approved bodies referred to in Article 9 shall, at the request of the manufacturer, or of his authorized

representative established in the Community, grant an EEC type-examination certificate for any type of equipment which conforms to the requirements of this Directive and of the relevant separate Directive and in respect of which the manufacturer has undertaken to comply with the conditions laid down in the separate Directives.

2. An application for EEC type-examination for a given type of equipment may be submitted to only one of the approved bodies.

3. The approved bodies shall grant, refuse, suspend or withdraw EEC type-examination certificates in accordance with the provisions of this chapter and of Annex I.

#### *Article 11*

1. The EEC type-examination certificate shall conform to the model given in Annex III.

2. The EEC type-examination certificate shall be subject to any conditions and to any limitation on the period of validity which may be laid down in the separate Directives.

#### *Article 12*

1. The approved body which granted the EEC type-examination certificate shall take the necessary measures to ensure the conformity of the manufactured equipment with the type examined.

2. Details of the measures provided for in the previous paragraph shall be laid down in separate Directives. These measures may include supervision by means of spot checks.

#### *Article 13*

1. If an approved body finds that samples of equipment of the type for which it has issued an EEC type-examination certificate fail to conform to that type, it shall request the holder of the certificate to rectify production within a specified period, if necessary suspending the certificate in the meantime. Where necessary, the separate Directive on the equipment concerned shall determine the number of samples deemed sufficient to justify action on the part of the approved body. If the manufacturer fails to comply with this request within the specified period, the approved body shall suspend or withdraw the certificate.

2. The approved body shall withdraw the EEC type-examination certificate which it has issued if it finds that it should not have been granted.

3. It shall suspend or withdraw the certificate if the holder fails to fulfil the undertakings to the approved body which are referred to in Article 10.

#### *Article 14*

1. Member States shall ensure that the approved bodies carry out the aforementioned tasks correctly.

To this end they shall, by appropriate measures, oblige the approved bodies to allow the competent authorities of the Member State which appointed them to make checks at any time.

2. Member States shall take the necessary steps to ensure that the applicant or the person to whom the EEC type-examination certificate was issued is able to appeal against decisions by the approved body to refuse, withdraw or suspend the EEC type-examination certificate.

3. If a Member State finds that a body which it has appointed is not correctly fulfilling the tasks referred to in Articles 10 and 13, it shall take all appropriate steps with regard to that body.

4. The Member State shall in any event withdraw approval from a body which it has appointed if it finds that that body has ceased to satisfy the minimum criteria laid down in Annex II or that it does not comply with the conditions set by the Member State.

5. If a Member State does not withdraw approval from a body which no longer satisfies the minimum criteria, any other Member State may bring the situation to the attention of the Commission. The Commission shall take the appropriate steps to find a solution.

#### *Article 15*

1. A Member State which withdraws approval from a body shall take all necessary steps to ensure continuity

in the fulfilment of the obligations and duties resulting from the issue of EEC type-examination certificates by that body before the withdrawal of approval.

2. The Member State shall annul all certificates issued by that body before withdrawal of approval if they were issued improperly.

#### *Article 16*

1. If one of the cases referred to in Article 13 is found to exist in a Member State, the competent authorities of that Member State shall bring this fact to the attention of the Member State in which the certificate was issued.

2. The competent authorities of the latter Member State shall oblige the approved body concerned to take the steps provided for in Article 13.

3. In the event of a dispute between the Member State in which an EEC type-examination certificate was issued and another Member State, the Commission shall be informed and shall take appropriate steps.

### CHAPTER IV

#### EEC verification and EEC self-certification

#### *Article 17*

1. Separate Directives as provided for in Article 3 (2) which stipulate EEC verification or EEC self-certification shall lay down the procedure to be followed.

2. In the case of self-certification, the Member States shall take steps to ensure that the equipment satisfies the requirements of the separate Directives.

### CHAPTER V

#### Common provisions

#### *Article 18*

1. The manufacturer, or his authorized representative established in the Community, shall issue an EEC certificate of conformity, a model of which is given in Annex IV, for each item of a given type of equipment which is manufactured in accordance with the harmonized requirements and which conforms to the type approved or examined.

2. If so required by a separate Directive, the manufacturer shall affix to the equipment the mark together with the information specified in that separate Directive.

3. Costs arising from application of the procedures laid down in a separate Directive shall be borne by the applicant.

### CHAPTER VI

#### Harmonized technical requirements

#### *Article 19*

1. No Member State may prohibit, refuse or restrict the marketing, placing into service and use, subject to the conditions laid down in paragraph 4 and in the separate Directives, of any equipment on grounds relating to its construction or functioning within the meaning of the relevant separate Directives, or the checking thereof, where such equipment complies with the requirements of this Directive and the relevant separate Directives.

2. The Member States shall take all appropriate steps to ensure that their competent administrative authorities accept the certificate of conformity referred to in Article 18 and, where separate Directives so require, a conformity mark affixed to the equipment as a presumption of conformity with the provisions of the previous paragraph.

3. A Member State may require that this certificate be drawn up in its own national language or languages when equipment is offered for sale to the consumer in its territory.

4. If they are not subject to other Community provisions, the conditions of use shall remain subject to the laws, regulations and administrative provisions of the country of destination; with particular regard to noise, the use of construction plant and equipment may be subject to restrictions within geographically limited zones.

National laws, regulations and administrative provisions governing conditions of use may not result in discrimination over the use of equipment covered by this Directive which is manufactured in other States.

#### *Article 20*

1. If a Member State has good grounds for believing that an item of equipment represents a hazard to safety or health, although satisfying the requirements of this

Directive and the relevant separate Directives, it may temporarily prohibit the marketing and use of that item of equipment in its territory or make them subject to special conditions. It shall immediately inform the other Member States and the Commission thereof, giving the reasons for its decision.

2. The Commission shall consult the Member States concerned within six weeks, then give its opinion without delay and take the appropriate steps.

3. If the Commission considers that technical modifications to the Directive or the relevant separate Directives are necessary, such modifications shall be adopted, by either the Commission or the Council, in accordance with the procedure laid down in Article 24; in this event, the Member State which has taken the safeguard measures may retain them until such modifications come into force.

#### *Article 21*

1. The design of a type of equipment and the methods used in its manufacture may, in specific instances, depart from some of the provisions of the separate Directives, without the type of equipment ceasing to be covered by Article 19, provided that the alterations made are such as to ensure at least an equivalent level of protection as far as safety or health are concerned.

2. Each of the separate Directives shall specify clearly the provisions from which such derogation is possible or the provisions from which there can be no derogation.

3. Whenever a request for derogation is accepted, the following procedure shall be observed:

(a) the Member State — either directly in the case of the EEC type-approval procedure or indirectly through the approved body which it has appointed in the case of the EEC type-examination procedure — shall forward to the Commission the documents giving the description of the type of equipment and the documents supporting its request for derogation, including the results of any tests carried out. The Commission shall send a copy to the other Member States which shall then have a period of four months from that date to agree or disagree with the Member State concerned or to ask that the matter be referred to the Committee provided for in Article 23. A copy of each document shall be sent to the Commission; all correspondence shall be confidential;

(b) if no Member State has disagreed or asked that the matter be referred to the Committee before the end of the period laid down under (a), the Commission may convene the Committee or authorize the Member State to grant or approve the derogation requested and shall inform the other Member States thereof;

(c) if a Member State has not replied by the end of the statutory period, it shall be regarded as having agreed;

(d) otherwise, the Commission shall act on the derogation request after having received the opinion of the Committee provided for under Article 23;

(e) the relevant documents shall be submitted in the official language or languages of the country of destination or, in special cases, in another language acceptable to it.

4. In the case of a certificate issued by the manufacturer himself, it shall be possible to derogate from the Directive, pursuant to paragraph 1, only if an approved body has confirmed to the manufacturer that the derogation proposed does not reduce safety.

Before granting the derogation, the approved body shall inform the other approved bodies. Should one of these bodies object within a period of two months, the matter shall be placed before the Commission through a Member State. The Commission shall try to settle the dispute. If necessary, it shall convene the Committee provided for in Article 23 and shall take a decision after consulting it.

#### CHAPTER VII

##### **Adaptation of the Directives to technical progress**

#### *Article 22*

The amendments necessary to keep:

- the Annexes to this Directive and
- the provisions of the separate Directives, referred to in Article 3, which will be specifically indicated in each of those Directives,

in line with technical progress shall be made in accordance with the procedure laid down in Article 24.

*Article 23*

1. A Committee on the Adaptation to Technical Progress of the Directives Concerning the Elimination of Technical Barriers to Trade in Construction Plant and Equipment, hereinafter called 'the Committee' is hereby set up; it shall consist of representatives of the Member States with a Commission representative as chairman.

2. The Committee shall adopt its own rules of procedure.

*Article 24*

1. Where the procedure laid down in this Article is invoked, the matter shall be referred to the Committee by its chairman either on his own initiative or at the request of the representative of a Member State.

2. The Commission representative shall submit to the Committee a draft of the measures to be taken. The Committee shall deliver its opinion on the draft within a period to be fixed by the chairman in accordance with the urgency of the question at issue. Decisions shall be taken by a majority of 45 votes, the votes of the Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) The Commission shall adopt the proposed measures if they are consistent with the opinion of the Committee.

(b) If the proposed measures do not conform with the opinion of the Committee, or if no opinion is delivered, the Commission shall without delay propose to the Council the measures to be adopted. The Council shall decide by a qualified majority.

(c) If within three months of the proposal being submitted to it, the Council has not taken any decision, the proposed measures shall be adopted by the Commission.

## CHAPTER VIII

## General and final provisions

*Article 25*

Any decision taken by a Member State or approved body pursuant to this Directive and the separate Directives to refuse EEC type-approval, EEC type-examination or EEC verification, to suspend or to withdraw an EEC type-approval or an EEC type-examination certificate or to prohibit the marketing, placing into service and use of a type or item of equipment shall state the exact grounds on which it is based. Such a decision shall be notified as soon as possible to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member State in question and of the time limits to which such remedies are subject.

*Article 26*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive within 18 months of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 27*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## EEC TYPE-APPROVAL AND EEC TYPE-EXAMINATION

## 1. APPLICATION FOR EEC TYPE-APPROVAL OR EEC TYPE-EXAMINATION

1.1. The application and the correspondence relating to it shall be drawn up in an official language of the State in which the application is made in accordance with the laws of that State. The Member State or the approved body has the right to require that the annexed documents should also be drawn up in that same official language.

1.2. The application shall contain the following information:

- name and address of the manufacturer or firm, of his or its authorized representative or of the applicant, and the place or places of manufacture of the equipment,
- category of the equipment,
- intended use,
- technical characteristics,
- trade name, if any, or type.

1.3. The application shall be accompanied by two copies of the documents containing all the information provided for in the separate Directive and by a statement certifying that no other application has been submitted for EEC type-approval or EEC type-examination for the same equipment.

## 2. TESTS FOR EEC TYPE-APPROVAL OR EEC TYPE-EXAMINATION

Tests on equipment for EEC type-approval or EEC type-examination shall be carried out in accordance with the requirements of the relevant separate Directive.

A report on the tests shall be drawn up in accordance with the model contained in the separate Directive relating to the equipment.

## 3. EEC TYPE-APPROVAL OR EEC TYPE-EXAMINATION CERTIFICATE

The certificate referred to in Articles 5 and 10, a model of which is shown in Annex III, shall indicate the results of the tests on the equipment and shall state any conditions to which EEC type-approval or EEC type-examination may be subject. It shall be accompanied by the descriptions, drawings and any photographs required for exact identification of the equipment and, where necessary, an explanation of how it functions.

## 4. PUBLICATION OF EEC TYPE-APPROVAL OR EEC TYPE-EXAMINATION

4.1. The Commission shall ensure that relevant extracts, and in particular the special conditions, from EEC type-approval or EEC type-examination certificates are published in the *Official Journal of the European Communities*.

4.2. At the same time as the party concerned is notified, the Member State granting EEC type-approval shall send copies of the EEC type-approval certificate to the Commission and to the other Member States or the approved body shall send copies of the EEC type-examination certificate to the Commission and to the other approved bodies. The other Member States and approved bodies may also obtain copies of the

definitive technical file on the equipment and of the reports on the examinations and tests which it has undergone.

The Commission, the Member States and the approved bodies which receive copies of the definitive technical documents shall ensure that industrial property rights are respected and professional secrecy observed.

- 4.3. Withdrawal of EEC type-approval or of an EEC type-examination certificate shall be published in accordance with the procedure laid down in 4.1 and 4.2.
- 4.4. A Member State which refuses EEC type-approval shall inform the Commission and the other Member States accordingly and an approved body which refuses an EEC type-examination certificate shall inform the Commission and the other approved bodies.
-

## ANNEX II

**MINIMUM CRITERIA TO BE TAKEN INTO ACCOUNT BY MEMBER STATES  
WHEN APPOINTING APPROVED BODIES**

1. The bodies responsible for examining equipment shall have at their disposal a sufficient number of qualified staff and possess the necessary means for them to perform properly the technical and administrative tasks and have access to the equipment required for any special examinations provided for in the separate Directives.
  2. The body, its director and its staff may be neither the designer, manufacturer, supplier or installer of the equipment nor the authorized representative of any of those parties. They may become involved neither directly nor as authorized representatives in the design, construction, marketing and maintenance of such appliances or in representational activities relating to them. This does not preclude the possibility of exchanges of technical information between the manufacturer and the body.
  3. The staff responsible for examining equipment with a view to the issue of EEC type-examination certificates shall carry out these tasks with the highest degree of integrity and technical competence and shall be free from all pressures and inducements, particularly financial, which might influence their judgement or the results of their work, especially from persons or groups of persons with an interest in the results of examinations.
  4. The staff responsible for carrying out examinations shall have:
    - sound technical and professional training,
    - satisfactory knowledge of the requirements of the examinations they carry out and adequate practical experience of such work,
    - the necessary ability to prepare the records and reports incorporating the results of the work carried out.
  5. The impartiality of examining staff shall be guaranteed. Their remuneration shall depend on neither the number of examinations carried out nor the results obtained.
  6. The body shall be covered by third party insurance unless such liability is assumed by the State in accordance with national law.
  7. Staff of the body shall be bound by professional secrecy regarding everything learnt by it in the exercise of its duties (save with regard to the competent administrative authorities of the State which appointed it) under this and separate Directives or under any provision of national law giving effect to them.
-

ANNEX III

MODEL EEC TYPE-APPROVAL OR EEC TYPE-EXAMINATION CERTIFICATE FOR  
CONSTRUCTION PLANT AND EQUIPMENT

Competent administration or approved body <sup>(1)</sup>

Notification of EEC type-approval/EEC type-examination in respect of the harmonized requirements

EEC type-approval/EEC type-examination No <sup>(1)</sup>

1. Category, make and type or trade name

2. Name and address of manufacturer

3. Name and address of certificate holder

4. Date of submission for EEC type-approval/EEC type examination <sup>(1)</sup>

5. Certificate issued on the basis of the following requirements

6. Test laboratory

7. Date and number of laboratory report

8. Date of granting of EEC type-approval/EEC type-examination <sup>(1)</sup>

9. The following documents bearing the EEC type-approval/EEC type-examination number shown above are annexed to this certificate <sup>(1)</sup>

10. Any additional information

Place

(Date)

(Signature)

<sup>(1)</sup> Delete as appropriate.

ANNEX IV

EEC CERTIFICATE OF CONFORMITY IN RESPECT OF TYPE-APPROVED OR  
TYPE-EXAMINED CONSTRUCTION PLANT AND EQUIPMENT

I, the undersigned, .....  
(Surname and first names)

hereby certify that the construction equipment specified hereunder

- 1. Category .....
- 2. Make .....  
.....
- 3. Type .....
- 4. Type serial number of equipment .....
- 5. Type serial number of chassis if different from that of the equipment .....  
.....
- 6. Year of manufacture .....

has been manufactured in conformity with

- EEC type-approval <sup>(1)</sup>
- EEC type-examination <sup>(1)</sup>

as shown in the table below

| Separate Directives | In the case of EEC type-approval <sup>(1)</sup> |      |              | In the case of EEC type-examination <sup>(1)</sup> |      |               |
|---------------------|-------------------------------------------------|------|--------------|----------------------------------------------------|------|---------------|
|                     | No                                              | date | Member State | No                                                 | date | approved body |
|                     |                                                 |      |              |                                                    |      |               |
|                     |                                                 |      |              |                                                    |      |               |
|                     |                                                 |      |              |                                                    |      |               |
|                     |                                                 |      |              |                                                    |      |               |
|                     |                                                 |      |              |                                                    |      |               |
|                     |                                                 |      |              |                                                    |      |               |

7. Special provisions .....

Done at .....  
(Date) (Signature)  
.....  
(Position)

<sup>(1)</sup> Delete as appropriate.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of compressors

(84/533/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the 1973 and 1977 action programmes of the European Communities on the environment <sup>(4)</sup> reflect the importance of the problem of noise nuisance and in particular the need for action to regulate the worst noise sources;

Whereas disparity between the measures already applicable or in preparation in the various Member States concerning the limitation of the sound emission level of compressors creates unequal conditions of competition and thereby directly affect the functioning of the common market; whereas it is therefore appropriate to proceed in that field with the approximation of laws for which Article 100 of the Treaty provides;

Whereas Council Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment <sup>(5)</sup> has laid down, in particular, the procedure for EEC type-examination; whereas it is necessary, pursuant to that Directive, to

prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the measurement of the sound level of construction plant and equipment <sup>(6)</sup>, as amended by Directive 81/1051/EEC <sup>(7)</sup>, laid down, in particular, the method which should be used for establishing the acoustic criteria for compressors;

Whereas owing to the effect of the noise emitted by compressors on the environment and, more particularly, on human well-being and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound power level of compressors;

Whereas it is important to be able to regulate the use of compressors in certain areas considered to be particularly sensitive so as to limit the nuisance caused by the airborne noise emitted by such compressors;

Whereas technical provisions must be adapted rapidly to technical advances; whereas it is necessary to this end to provide for the application of the procedure set out in Article 5 of Directive 79/113/EEC,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive applies to the permissible sound power level of compressors used to perform work on civil engineering and building sites.

2. It is a separate Directive within the meaning of Article 3 (2) of Directive 84/532/EEC, hereinafter referred to as the 'framework Directive'.

<sup>(1)</sup> OJ No C 94, 19. 4. 1978, p. 2 and OJ No C 87, 3. 4. 1979, p. 16.

<sup>(2)</sup> OJ No C 39, 12. 1. 1979, p. 72.

<sup>(3)</sup> OJ No C 283, 27. 11. 1978, p. 35.

<sup>(4)</sup> OJ No C 112, 20. 12. 1973, p. 1 and OJ No C 139, 13. 6. 1977, p. 1.

<sup>(5)</sup> See page 111 of this Official Journal.

<sup>(6)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(7)</sup> OJ No L 376, 30. 12. 1981, p. 49.

Article 2

For the purposes of this Directive: 'compressor' means any motor-driven device for circulating and compressing air other than the following two categories of device:

- fans, i.e. devices producing air circulation at a positive pressure of not more than 1,1,
- vacuum pumps, i.e. devices or appliances for extracting air from an enclosed space at a pressure not exceeding atmospheric pressure.

Article 3

1. The approved bodies shall issue an EEC type-examination certificate for each type of compressor for which the sound power level of airborne noise, measured under the conditions set out in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, does not exceed the permissible sound power levels given in the following table:

| Standardized<br>nominal air flow<br>Q in m <sup>3</sup> /min | Permissible sound power level<br>in dB(A)/1 pW as from |                                                   |
|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------|
|                                                              | 18 months after<br>notification<br>of the Directive    | 5 years after<br>notification<br>of the Directive |
| Q ≤ 5                                                        | 101                                                    | 100                                               |
| 5 < Q ≤ 10                                                   | 102                                                    | 100                                               |
| 10 < Q ≤ 30                                                  | 104                                                    | 102                                               |
| Q > 30                                                       | 106                                                    | 104                                               |

2. All applications for an EEC type-examination certificate in respect of the permissible sound power level of a compressor shall be accompanied by an information document conforming to the model shown in Annex II.

3. For each type of compressor which it certifies, the approved body shall complete all the sections of the EEC type-examination certificate conforming to the model given in Annex III to the framework Directive.

4. The period of validity of EEC type-examination certificates shall be limited to five years. This may be extended by five years provided that application is made during the 12 months preceding the expiry of the first five-year period.

However, at the end of a period of five years from notification of the Directive, EEC type-examination

certificates shall cease to be valid unless they were issued for compressors which comply with the maximum level entering into force on that date.

5. By way of derogation from Article 19 (1) of the framework Directive, the advantages provided for in this Article shall, after a period of 5<sup>1</sup>/<sub>2</sub> years from notification of the Directive, no longer be available for compressors supplied with certificates of conformity drawn up on the basis of a type-examination certificate for the figures in the first period; the period of validity shall accordingly be shown on the certificates of conformity concerned.

6. For every compressor built in conformity with the type certified by EEC type-examination, the manufacturer shall complete a certificate of conformity conforming to the model given in Annex IV to the framework Directive in the columns relating to the EEC type-examination certificate.

7. Each compressor built in accordance with the type certified by EEC type-examination shall bear a clear and permanent mark indicating the sound power level in db(A) to 1 pW guaranteed by the manufacturer and determined as laid down in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, together with the symbol ε (epsilon). The model for this mark is given in Annex III to this Directive.

Article 4

Member States may take measures to regulate the use of compressors in areas which they consider sensitive.

Article 5

Verification of the conformity of production models with the type examined, as provided for in Article 12 of the framework Directive, shall be carried out using the technical procedure stipulated in Annex IV.

Article 6

The Council shall act unanimously, within 18 months, on the proposal for a reduction in the noise levels which the Commission will present as soon as possible and no later than five years after the adoption of this Directive.

*Article 7*

The following shall be adopted in accordance with the procedure laid down in Article 5 of Directive 79/113/EEC:

- the procedure for the checking of the air flow referred to in 6.2.2 of Annex I,
- the technical procedure in Annex IV for checking the conformity of production models with the type examined,
- the amendments necessary to adapt the requirements of the Annexes to technical progress.

*Article 8*

Member States shall take all the necessary measures to ensure that compressors as defined in Article 2 cannot be placed on the market unless they satisfy the provisions of this Directive and of the framework Directive.

*Article 9*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive on the expiry of a period of 18 months as of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

*Article 10*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

**ANNEX I****METHOD OF MEASURING AIRBORNE NOISE EMITTED BY COMPRESSORS****SCOPE**

This measurement method is applicable to compressors. It specifies the test procedures for use in determining the sound power level of such equipment for the purpose of EEC type-examination and testing as to conformity.

These technical procedures shall comply with the requirements of Annex I to Directive 79/113/EEC.

All the sections in Annex I to Directive 79/113/EEC shall apply to compressors, subject to the following amendments:

**4. CRITERIA TO BE USED FOR EXPRESSING RESULTS**

4.1. The acoustic criterion for the environment of compressors is their sound power level.

**6. MEASURING CONDITIONS**

6.1. During testing, no tools shall be coupled to the compressor. At each measuring point, the noise level of release and escape of air from the external lines coupled to the air outlet valves of compressors shall be more than 10 dB lower than the noise level of the compressor.

6.2. **Operation of the sound source during measurement.**

6.2.1. Not applicable.

6.2.2. The compressor shall be brought to its steady-state temperature within the range specified by the manufacturer. It shall operate at its nominal speed and its nominal pressure.

The nominal speed and pressure are those appearing in the direction for use supplied to the purchaser.

In these operating conditions, the air flow shall be checked as laid down in International Standard ISO 1217, first edition, 1975.

6.3. **Measuring site.**

The compressor shall be installed on a reflecting plane of concrete or non-porous asphalt. Skid-mounted compressors shall be placed on supports 0,40 m high, unless otherwise required by the manufacturer's conditions of installation.

6.4.1. *Measuring surface.*

The measuring surface to be used for testing shall be a hemisphere. The centre of the hemisphere shall be the vertical projection onto the reflecting plane of the geometric centre of the compressor. The radius shall be:

— 4 m, where the greatest dimension of the compressor to be tested is not more than 1,5 m,

- 10 m, where the greatest dimension of the compressor to be tested is more than 1,5 m but not more than 4 m,
- 16 m, where the greatest dimension of the compressor to be tested is more than 4 m.

Table I in Annex I to Directive 79/113/EEC gives the coordinates of the measuring points.

- 6.4.2.1. The x axis of the set of coordinates, in relation to which the positions of the measuring points are fixed, shall be parallel to the main axis of the compressor.

## 7. MEASUREMENTS

- 7.1.1. Only the background noise shall be taken into account for the purpose of corrections.

### 7.1.5. *Presence of obstacles*

A visual check in a circular zone with a radius of three times that of the measurement hemisphere and the centre of which coincides with the centre of that hemisphere is adequate to ensure that the provisions of the third subparagraph of section 6.3 of Annex I to Directive 79/113/EEC are complied with.

- 7.2. If the sound pressure levels at the measuring points are determined from readings taken by a sonometer, there shall be at least five such readings, taken at regular intervals.

## 8. USE OF RESULTS

- 8.2. Not applicable.

- 8.6.2. In view of 6.3, section 8.6.2 is not applicable and  $C = 0$ .
-

ANNEX II

MODEL INFORMATION DOCUMENT FOR A TYPE OF COMPRESSOR TO BE SUPPLIED FOR  
EEC TYPE-EXAMINATION

1.

General

1.1.

Name and address of manufacturer .....

.....

1.2.

Name and address of manufacturer's authorized representative (if any) .....

.....

1.3.

Make (name of undertaking) .....

1.4.

Trade name .....

1.5.

Type .....

1.6.

Compression system: reciprocating, rotary or centrifugal <sup>(1)</sup>

2.

Dimensions of the compressor

2.1.

Length ..... m

Width ..... m

Height ..... m

Mass ..... kg

3.

Operating conditions

3.1.

*Operation of the drive motor*

3.1.1.

Make and type .....

3.1.2.

Energy used: petrol, diesel, electricity, gas <sup>(1)</sup>

3.1.3.

Nominal speed .....rpm

3.1.4.

Motor power .....kW (DIN 6270 B)

3.2.

*Operation of the compressor*

3.2.1.

Make and type .....

3.2.2.

Nominal speed at full load .....rpm

3.2.3.

Nominal delivery pressure .....kPa

3.2.4.

Nominal air flow at the above speed and pressure, measured in accordance with ISO 1217 .....m<sup>3</sup>/min

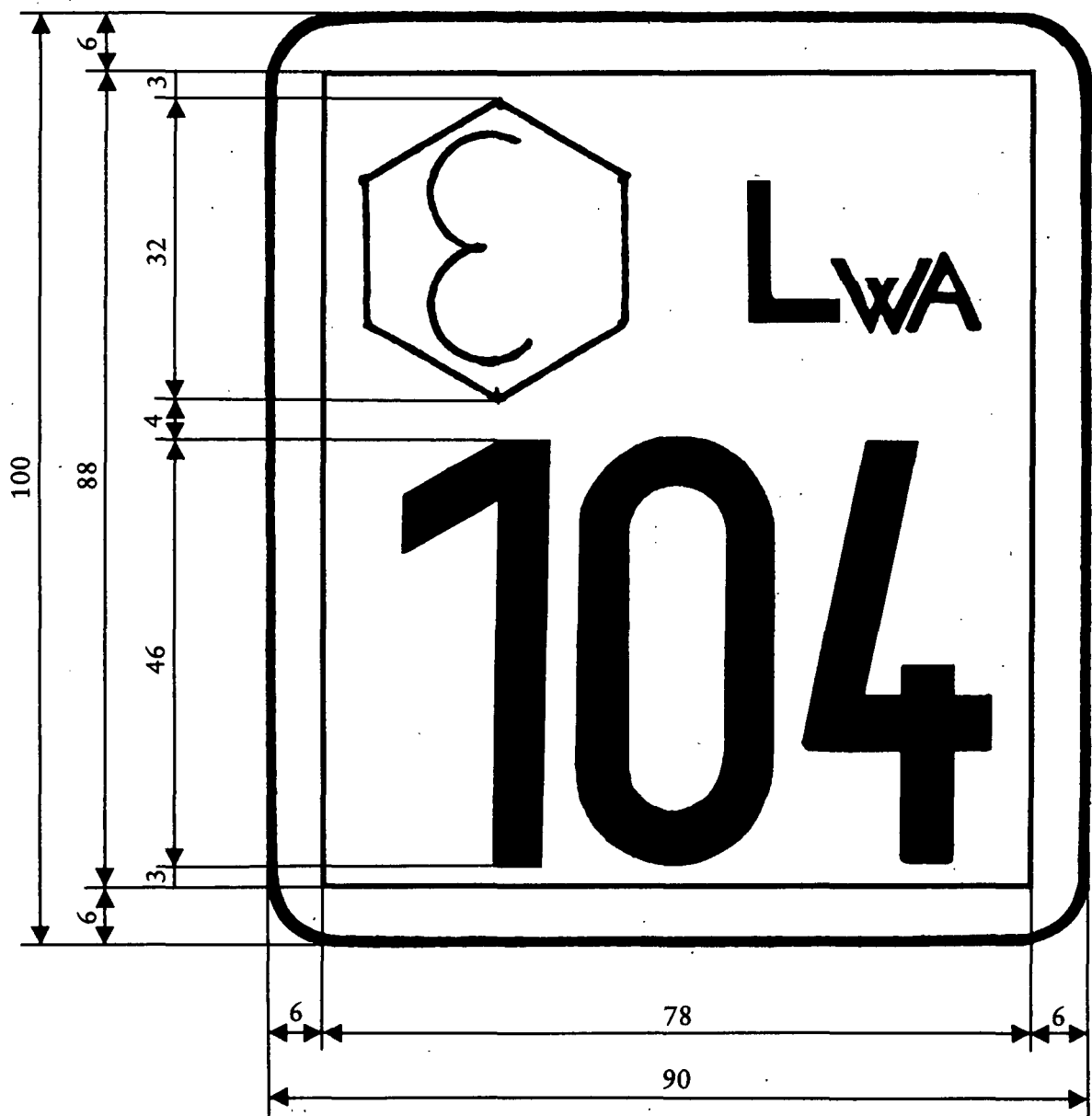
4.

Attach descriptive trade leaflet, if any.

<sup>(1)</sup> Delete as appropriate.

ANNEX III

MODEL FOR MARK FOR SOUND POWER LEVEL



ANNEX IV

TECHNICAL PROCEDURE FOR CHECKING THE CONFORMITY OF PRODUCTION MODELS WITH THE TYPE EXAMINED

The conformity of production models with the type examined shall, if possible, be verified by spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of tower cranes

(84/534/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the 1973 and 1977 action programmes of the European Communities on the environment <sup>(4)</sup> reflect the importance of the problem of noise nuisance and in particular the need for action to regulate the worst noise sources;

Whereas disparity between the measures already applicable or in preparation in the various Member States concerning the limitation of the sound emission level of tower cranes creates unequal conditions of competition and thereby directly affects the functioning of the common market; whereas it is, therefore, appropriate to proceed in that field with the approximation of laws for which Article 100 of the Treaty provides;

Whereas Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment <sup>(5)</sup> laid down, in particular, the procedure for EEC type-examination; whereas it is necessary, pursuant to that Directive, to prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the

Member States relating to the measurement of the sound level of construction plant and equipment <sup>(6)</sup>, as amended by Council Directive 81/1051/EEC <sup>(7)</sup>, laid down, in particular, the method which should be used for establishing the acoustic criteria for tower cranes;

Whereas owing to the effect of the noise emitted by tower cranes on the environment and, more particularly, on human well-being and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound power level of tower cranes;

Whereas it is important to be able to regulate the use of tower cranes in certain areas considered to be particularly sensitive so as to limit the nuisance caused by the airborne noise emitted by such tower cranes;

Whereas technical provisions must be adapted rapidly to technical advances; whereas it is necessary to this end to provide for the application of the procedure set out in Article 5 of Directive 79/113/EEC,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive applies to the permissible sound power level of tower cranes used to perform work on civil engineering and building sites.

2. By way of derogation from the provisions of Article 1 (3) of Directive 84/532/EEC, hereinafter referred to as the 'framework Directive', this Directive is regarded as a separate Directive within the meaning of Article 3 (2) of the aforementioned Directive.

*Article 2*

For the purposes of this Directive, 'tower crane' means a power-driven lifting appliance which:

<sup>(1)</sup> OJ No C 54, 8. 3. 1976, p. 63.

<sup>(2)</sup> OJ No C 125, 8. 6. 1976, p. 43.

<sup>(3)</sup> OJ No C 197, 23. 8. 1976, p. 11.

<sup>(4)</sup> OJ No C 112, 20. 12. 1973, p. 1 and OJ No C 139, 13. 6. 1977, p. 1

<sup>(5)</sup> See page 111 of this Official Journal.

<sup>(6)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(7)</sup> OJ No L 376, 30. 12. 1981, p. 49.

- when in use, consists of a vertical tower with a jib fitted to the upper part,
- is equipped with means for raising and lowering suspended loads and for horizontal movement of such loads by variation of load-lifting radius and/or by slewing and/or by travelling of the complete appliance,
- is designed to be able to be removed when the work for which it was erected has been completed.

Article 3

1. The approved bodies shall issue an EEC type-examination certificate for each type of tower crane for which the sound power level of airborne noise, measured under the conditions set out in Annex I to Council Directive 79/113/EEC, as amended by Annex I to this Directive, does not exceed the permissible sound power levels given in the following table:

|                                                                  | Permissible sound power level<br>in dB(A)/1 pW as from                                       |                                                   |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------|
|                                                                  | 18 months after<br>notification<br>of the Directive                                          | 5 years after<br>notification<br>of the Directive |
| Lifting mechanism                                                | 102                                                                                          | 100                                               |
| Energy generator                                                 | Levels laid down in the Directive<br>on power generators according to<br>the power generated |                                                   |
| Assembly comprising<br>lifting mechanism and<br>energy generator | Highest values of the two<br>components                                                      |                                                   |

2. All applications for an EEC type-examination certificate in respect of the permissible sound power level of a type of tower crane shall be accompanied by an information document conforming to the model shown in Annex II.
3. For each type of tower crane which it certifies, the approved body shall complete all the sections of the EEC type-examination certificate conforming to the model given in Annex III to the framework Directive.
4. The period of validity of EEC type-examination certificates shall be limited to five years. This may be extended by five years provided that application is made no sooner than 12 months before the expiry of the first five-year period.
- However, at the end of a period of five years from notification of the Directive, EEC type-examination

certificates shall cease to be valid unless they were issued for tower cranes which comply with the maximum level entering into force on that date.

5. By way of derogation from Article 19 (1) of the framework Directive, the advantages provided for in that Article shall, after a period of 5 1/2 years from notification of the Directive, no longer be available for any type of tower crane supplied with a certificate of conformity drawn up on the basis of a type-examination certificate relating to the figures in the first period; the period of validity shall accordingly be shown on the certificates of conformity concerned.

6. For every tower crane built in conformity with the type certified by EEC type-examination, the manufacturer shall complete a certificate of conformity, the model of which is given in Annex IV to the framework Directive in the columns relating to the EEC type-examination certificate.
7. Each tower crane built in accordance with the type certified by EEC-type-examination shall bear a clear and permanent mark indicating the sound power level in dB(A) with reference to 1 pW guaranteed by the manufacturer, and determined as laid down in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, together with the symbol ε (epsilon). The model for this mark is given in Annex III to this Directive.

Article 4

The provisions of this Directive shall not affect the Member States' entitlement to limit, with due observance of the Treaty, and in particular Articles 30 to 36 thereof, the level of noise at the operator's position for tower cranes, provided that this does not involve an obligation to adapt tower cranes which comply with this Directive to different emission standards within the meaning of Annex I to the Directive.

Article 5

Member States may take measures to regulate the use of tower cranes in areas which they consider sensitive.

Article 6

Verification of the conformity of production models with the type examined, as provided for in Article 12 of the framework Directive, shall be carried out using the technical procedure stipulated in Annex IV.

*Article 7*

The Council shall act unanimously, within 18 months, on the proposal for a reduction in the noise levels which the Commission will present as soon as possible and no later than five years after the adoption of this Directive.

*Article 8*

The following shall be adopted in accordance with the procedure laid down in Article 5 of Directive 79/113/EEC, as amended by Directive 81/1051/EEC:

- the technical procedure in Annex IV for checking the conformity of production models with the type examined,
- the amendments necessary to adapt the requirements of the Annexes to technical progress.

*Article 9*

Member States shall take all the necessary measures to ensure that tower cranes as defined in Article 2 cannot be placed on the market unless they satisfy the provisions of this Directive and of the framework Directive.

*Article 10*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive on the expiry of a period of 18 months as of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

*Article 11*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## METHOD OF MEASURING AIRBORNE NOISE EMITTED BY TOWER CRANES

## SCOPE

This measurement method is applicable to tower cranes. It specifies the test procedures for use in determining the sound power level of such equipment for the purpose of EEC type-examination and testing as to conformity.

These technical procedures comply with the requirements of Annex I to Directive 79/113/EEC.

All the sections in Annex I to Directive 79/113/EEC shall apply to tower cranes, subject to the following amendments:

## 4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

- (a) Where the tower crane is powered by an independent energy source, the acoustic criterion for the environment of the tower crane shall be the sound power level of the lifting mechanism.
- (b) Where the energy source is incorporated in the crane, the acoustic criterion for the environment of the tower crane shall be either:
  - the sound power levels of the energy generator and the lifting mechanism when these two devices are not combined,
  - or
  - the sound power level of the energy generator and the lifting mechanism combined.

## 6. MEASURING CONDITIONS

## 6.2. Operation of the sound source during measurement.

Where the lifting mechanism is situated on the jib stay, the noise measurements may be carried out with the mechanism either mounted on the jib stay or fixed to the ground.

Where the energy source powering the crane is independent from it (electrical power generator or mains, or hydraulic or pneumatic power source), only the noise level of the mechanism winch shall be measured.

Where the energy generator is attached to the crane, the energy generator and the lifting mechanism shall be measured separately if they are not combined.

Where these two devices are combined, the measurements shall refer to the whole assembly.

For noise measurements, the lifting mechanism and the energy generator shall be installed and used in accordance with the manufacturer's instructions. The energy generator incorporated in the crane shall operate at the full power rating indicated by the manufacturer. The lifting mechanism shall operate as indicated in 6.2.1 and 6.2.2 in the raising and lowering modes.

6.2.1. *A test of the sound source free of load (idling).*

The lifting mechanism shall be operating free of load, with its drum turning at the rotation speed corresponding to the maximum hook-displacement speed. This speed shall be specified by the manufacturer.

6.2.2. *Tests carried out under load.*

The lifting mechanism shall operate with a cable tension at the drum corresponding to the maximum load (for the minimum radius) with the hook moving at the maximum speed:

The load and speed figures shall be specified by the manufacturer.

The speed shall be checked during the test.

*Note:* The greater of the two sound power levels (raising or lowering) shall be used for the results of the test.

**6.3. Measuring site.**

**6.3.1. *Measurements of the lifting mechanism.***

In order to carry out the noise measurements, the lifting mechanism shall be mounted in one of the ways described below. The position used shall be described in the test report.

**(a) Lifting mechanism at ground level.**

The mounted crane shall be placed on a flat reflecting surface of concrete or non-porous asphalt.

**(b) Lifting mechanism on the jib stay.**

The lifting mechanism shall be at least 12 m above the ground.

**(c) Lifting mechanism fixed to the ground.**

The lifting mechanism shall be fixed to a flat and reflecting surface of concrete or non-porous asphalt.

**6.3.2. *Measurement of the energy generator.***

Where the energy generator is attached to the crane, whether or not it is linked to the lifting mechanism, the crane shall be positioned on a flat reflecting surface of concrete or non-porous asphalt.

**6.4. Measuring surface, measuring distance, location and number of measuring points.**

**6.4.1. *Measuring surface, measuring distance.***

**(a) Measurements carried out at ground-level.**

The measuring surface to be used for the ground-level test shall be a hemisphere (figures 1 and 2). The centre of the hemisphere shall be the vertical projection on the flat reflecting surface of the geometric centre of the frame of the lifting mechanism of the energy generator or of the two combined.

The radius shall be:

- 4 m, where the greatest dimension of the lifting mechanism, the energy generator or the combined unit is not more than 1,50 m,
- 10 m, where the greatest dimension of the lifting mechanism, the energy generator or the combined unit is more than 1,50 m.

**(b) Measurements carried out at jib-height.**

Where the lifting mechanism is located on the jib stay, the measurement surface shall be a sphere of 4 m radius, the centre of which shall coincide with the geometrical centre of the winch (figure 3).

**6.4.2. *Location and number of measuring points.***

**(a) Measurements at ground-level.**

For noise measurements at ground-level, there shall be six measuring points, namely points 2, 4, 6, 8, 10, 12, positioned in accordance with section 6.4.2.2 of Annex I to Directive 79/113/EEC.

For the measurements of the lifting mechanism or of the mechanism linked to the energy generator, the X-axis of the system of coordinates of the measuring points shall be parallel to the axis of the drum of the lifting mechanism.

## (b) Measurement at jib-height.

Where the lifting mechanism is located on the jib stay of the crane, the measuring points shall be as follows, as illustrated in figure 3.

Four measuring points on a horizontal plane passing through the geometric centre of the mechanism ( $H = h/2$ )

with  $L = \frac{r}{\sqrt{2}} = 2,80 \text{ m}$

and  $d = 2,80 \text{ m} - \frac{l}{2}$

$r$  = radius of the measuring surface = 4 m;

$L$  = half-distance between two consecutive measuring points;

$l$  = length of mechanism (along axis of jib);

$b$  = width of mechanism;

$h$  = height of mechanism;

$d$  = distance between microphone support and mechanism in direction of jib.

The other two measuring points shall be located at the points of intersection of the sphere and the vertical line passing through the geometric centre of the mechanism.

*Note:*

Measurement may be easier if a device is used to check from ground level the position and calibration of the microphones. For the purposes of the measurement, this device shall be mounted on the lifting mechanism, together with the microphones.

## 7. MEASUREMENTS

### 7.1.1. Only the background noise shall be taken into account for correction purposes.

*Note:*

At the time of measurements to determine the sound power level of the lifting mechanism, every precaution shall be taken to ensure that the parasitic noise produced directly or indirectly by the energy generator does not influence the measurements of the noise of the lifting mechanism.

### 7.1.5. Presence of obstacles.

A visual check in a circular zone with a radius of three times that of the measurement hemisphere and the centre of which coincides with the centre of that hemisphere shall be adequate to ensure that the provisions of the third subparagraph of section 6.3 of Annex I to Directive 79/113/EEC are complied with.

## 7.2. Measurement of the sound pressure level $L_{pA}$ .

The sound pressure levels of the lifting mechanism and/or the energy generator shall be measured as specified in the first subparagraph of section 7.2 of Annex I to Directive 79/113/EEC.

The sound pressure levels  $L_{pA}$  shall be measured at least three times. If the sound power levels obtained in any two of these measurements do not differ by more than 1 dB, no further measurements shall be taken; otherwise, measurements shall continue until the results of two or three such measurements do not differ by more than 1 dB. The root mean square of the readings within 1 dB of one another obtained in this way shall be taken as the measurement result.

For the measurement of the sound pressure levels of the lifting mechanism, the measuring period shall be  $(t_r + t_f)$  seconds:

- $t_r$  being the period in seconds prior to activation of the brake, with the lifting mechanism operating in the manner specified in 6.2.1 and 6.2.2. For the purposes of the tests,  $t_r = 3$  seconds,
- $t_f$  being the period in seconds between the moment when the brake is activated and that when the hook comes to a complete standstill.

If an integrator is used, the integration period shall be equal to  $(t_r + t_f)$  seconds.

## 8. USE OF RESULTS

For the purposes of applying the provisions of this Directive, the sound power level adopted for tower cranes shall be the highest level of those calculated in accordance with 7.2 in respect of the tests carried out free of load and under load, as provided for in 6.2.

8.1.1. *Root mean square value at a measuring point.*

The root mean square value at a measuring point *i* shall be given by:

$$L_{pi} = 10 \log_{10} \frac{1}{t_r + t_f} (10^{0,1} L_{1i} \cdot t_r + 10^{0,1} L_{2i} \cdot t_f);$$

$t_f$  — given in 7.2;

$t_r$  — given in 7.2;

$L_{1i}$  = sound pressure level at measuring point *i* during time  $t_r$  as indicated in 7.2;

$L_{2i}$  = sound pressure level at measuring point *i* during braking time  $t_f$  as indicated in 7.2.

## 8.2. Not applicable.

8.3. Calculation of area *S* of the measuring surface.

## (a) Where the measuring surface is a hemisphere

The area *S* of the measuring surface in  $m^2$  shall be as follows:

$$S = 2 \pi r^2$$

*Note:* The surface level  $10 \log_{10} \frac{S}{S_0}$  shall be 20 dB where  $r = 4$  m;  
28 dB where  $r = 10$  m.

## (b) Where the measuring surface is a sphere

The area *S* of the measuring surface in  $m^2$  shall be as follows:

$$\begin{aligned} S &= 4 \pi r^2 \\ &= 200 \text{ m}^2 \end{aligned}$$

*Note:* The surface level  $10 \log_{10} \frac{S}{S_0}$  shall be 23 dB.

8.6.2. In view of section 6.3 in Annex I to Directive 79/113/EEC, the constant *C* shall not be applicable and  $K_2 = 0$ .

## Measurement surface according to position of lifting mechanism

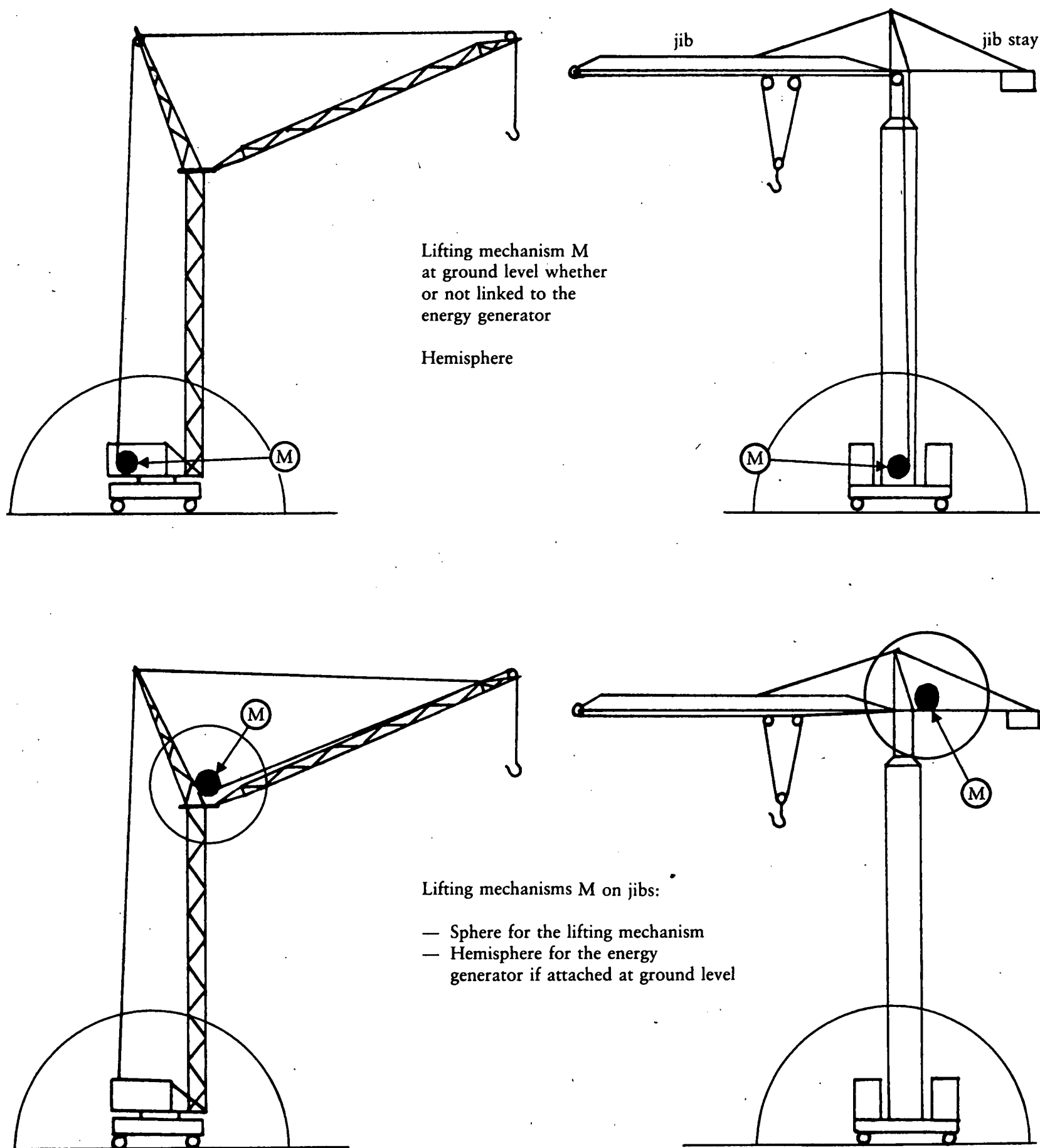


Figure 1

Arrangement of measuring points where the lifting mechanism is placed at ground level.

The measuring points are: 2, 4, 6, 8, 10, 12.

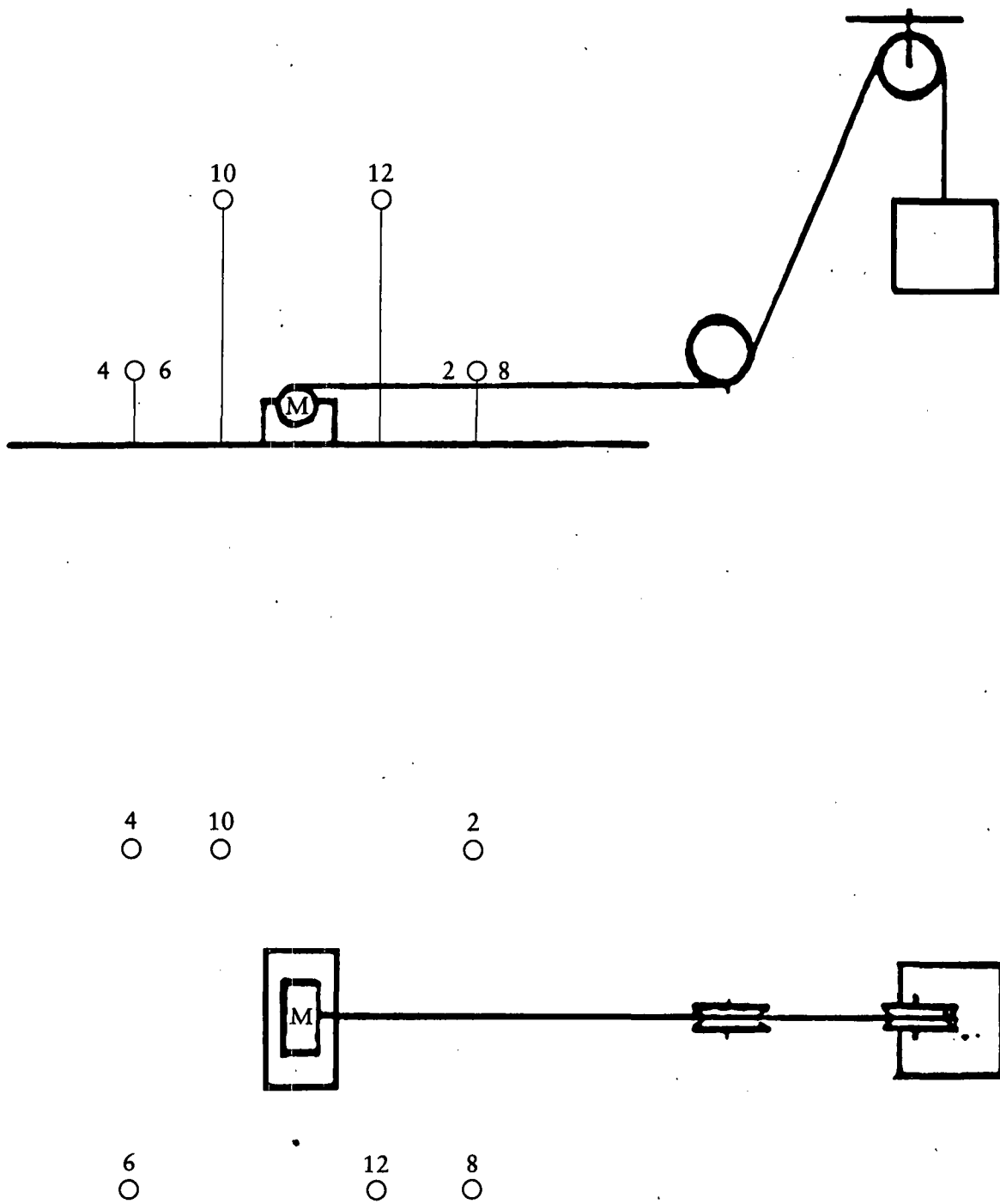


Figure 2

Arrangement of the measuring points (1 to 6) where the lifting mechanism is located on the jib stay.

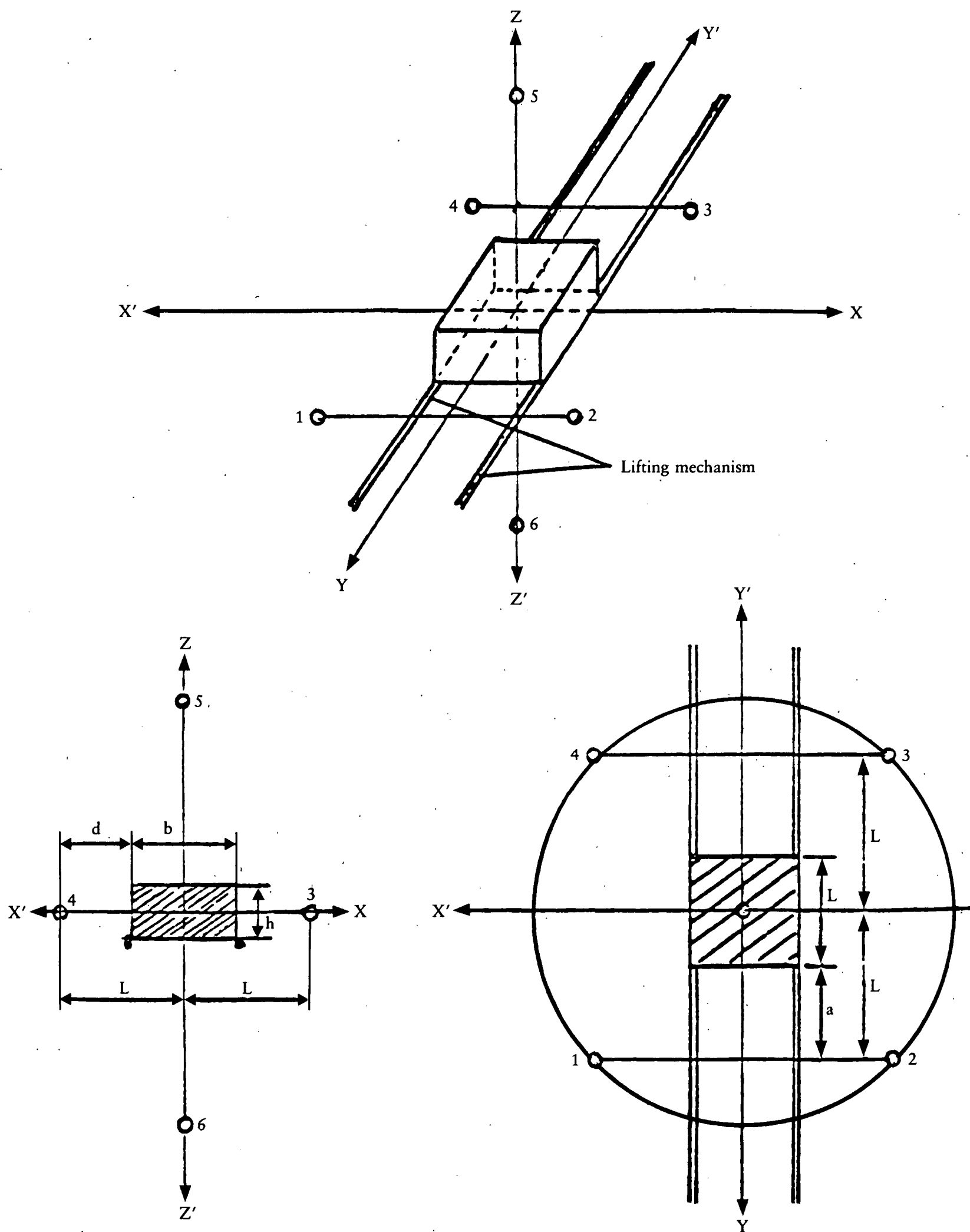


Figure 3

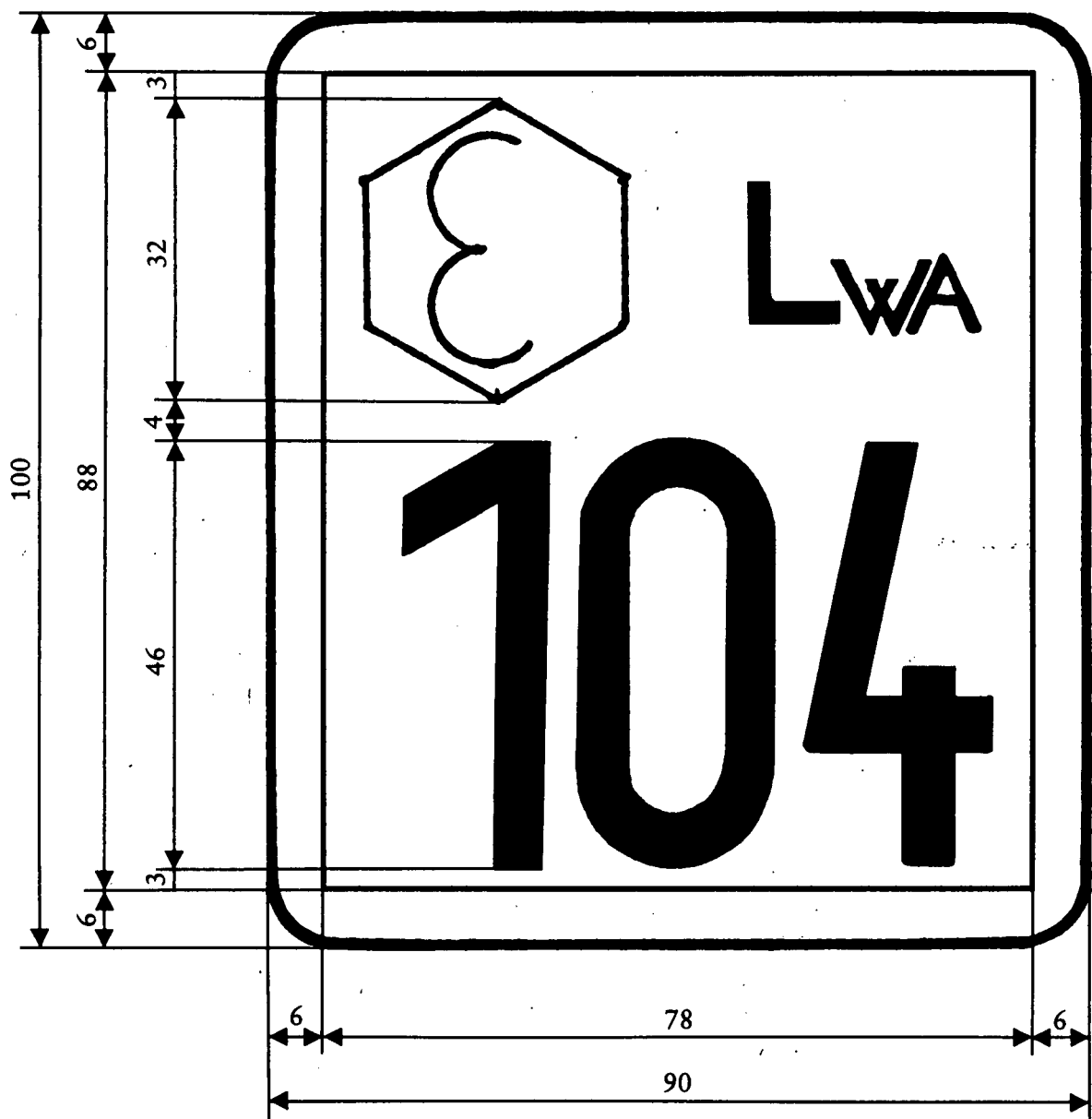
ANNEX II

MODEL OF INFORMATION DOCUMENT FOR A TYPE OF TOWER CRANE TO BE SUPPLIED  
FOR THE PURPOSES OF EEC TYPE-EXAMINATION

- 1. GENERAL
    - 1.1. Name and address of manufacturer .....
    - 1.2. Name and address of manufacturer's authorized representative (if any) .....  
.....
    - 1.3. Make (name of undertaking) .....
    - 1.4. Trade name (mention any variations) .....
    - 1.5. Type .....
    - 1.6. Category .....
    - 1.7. Location of statutory data plates and inscriptions and method of fixing .....
  - 2. OPERATION
  - 3. INSTRUCTIONS FOR USE
  - 4. Attach descriptive trade leaflet, if any.
-

ANNEX III

MODEL FOR MARK FOR SOUND POWER LEVEL



ANNEX IV

TECHNICAL PROCEDURE FOR CHECKING THE CONFORMITY OF PRODUCTION MODELS WITH THE TYPE EXAMINED

The conformity of production models with the type examined shall be verified, if possible, by spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of welding generators

(84/535/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the 1973 and 1977 action programmes of the European Communities on the environment <sup>(4)</sup> reflect the importance of the problem of noise nuisance and in particular the need for action to regulate the worst noise sources;

Whereas disparity between the measures already applicable or in preparation in the various Member States concerning the limitation of the sound emission level of welding generators creates unequal conditions of competition and thereby directly affect the functioning of the common market; whereas it is therefore appropriate to proceed in that field with the approximation of laws for which Article 100 of the Treaty provides;

Whereas Council Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment <sup>(5)</sup> laid down, in particular, the procedure for EEC type-examination; whereas it is necessary, pursuant to that Directive, to

prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the measurement of the sound level of construction plant and equipment <sup>(6)</sup>, as amended by Council Directive 81/1051/EEC of 7 December 1981 <sup>(7)</sup>, laid down, in particular, the method which should be used for establishing the acoustic criteria for welding generators;

Whereas owing to the effect of the noise emitted by welding generators on the environment and, more particularly, on human well-being and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound power level of welding generators;

Whereas it is important to be able to regulate the use of welding generators in certain areas considered to be particularly sensitive so as to limit the nuisance caused by the airborne noise emitted by such welding generators;

Whereas technical provisions must be adapted rapidly to technical advances; whereas it is necessary to this end to provide for the application of the procedure set out in Article 5 of Directive 79/113/EEC,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive applies to the permissible sound power level of welding generators used to perform work on civil engineering and building sites.

2. It is a separate Directive within the meaning of Article 3 (2) of Directive 84/532/EEC, hereinafter referred to as the 'framework Directive'.

<sup>(1)</sup> OJ No C 54, 8. 3. 1976, p. 63.

<sup>(2)</sup> OJ No C 125, 8. 6. 1976, p. 43.

<sup>(3)</sup> OJ No C 197, 23. 8. 1976, p. 11.

<sup>(4)</sup> OJ No C 112, 20. 12. 1973, p. 1 and OJ No C 139, 13. 6. 1977, p. 1.

<sup>(5)</sup> See page 111 of this Official Journal.

<sup>(6)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(7)</sup> OJ No L 376, 30. 12. 1981, p. 49.

Article 2

For the purposes of this Directive, 'welding generator' means any rotary device which produces a welding current.

Article 3

1. The approved bodies shall issue an EEC type-examination certificate for each type of welding generator for which the sound power level of airborne noise, measured under the conditions set out in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, does not exceed the permissible sound power level given in the following table:

| Nominal maximum welding current | Permissible sound power level in dB(A)/1 pW as from |                                             |
|---------------------------------|-----------------------------------------------------|---------------------------------------------|
|                                 | 18 months after notification of the Directive       | 5 years after notification of the Directive |
| Not greater than 200 A          | 104                                                 | 101                                         |
| Greater than 200 A              | 101                                                 | 100                                         |

2. All applications for an EEC type-examination certificate in respect of the permissible sound power level of a welding generator shall be accompanied by an information document conforming to the model shown in Annex II.

3. For each type which it certifies, the approved body shall complete all the sections of the type-examination certificate conforming to the model given in Annex III to the framework Directive.

4. The period of validity of EEC type-examination certificates shall be limited to five years. This may be extended by five years, provided that application is made in the 12 months before the expiry of the first five-year period.

However, at the end of a period of five years from notification of the Directive, EEC type-examination certificates shall cease to be valid unless they were issued for welding generators which comply with the maximum level entering into force on that date.

5. By way of derogation from Article 19 (1) of the framework Directive, the advantages provided for in that Article shall, after a period of 5½ years from notification of the Directive, no longer be available for welding generators supplied with certificates of

conformity drawn up on the basis of an EEC type-examination certificate for the figures in the first period; the period of validity shall accordingly be shown on the certificates of conformity concerned.

6. For every welding generator built in conformity with the type certified by EEC type-examination, the manufacturer shall complete a certificate of conformity conforming to the model given in Annex IV to the framework Directive in the columns relating to the EEC type-examination certificate.

7. Each welding generator built in accordance with the type certified by EEC type-examination shall bear a clear and permanent mark indicating the sound power level in dB(A) to 1 pW guaranteed by the manufacturer and determined as laid down in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, together with the symbol ε (epsilon). The model for this mark is given in Annex III to this Directive.

Article 4

Member States may take measures to regulate the use of welding generators in areas which they consider sensitive.

Article 5

Verification of the conformity of production models with the type examined, as provided for in Article 12 of the framework Directive, shall be carried out using the technical procedure stipulated in Annex IV.

Article 6

The Council shall act unanimously, within 18 months, on the proposal for a reduction in the noise levels which the Commission will present as soon as possible and no later than five years after the adoption of this Directive.

Article 7

The following shall be adopted in accordance with the procedure laid down in Article 5 of Directive 79/113/EEC:

- the technical procedure in Annex IV for checking the conformity of production models with the type examined,
- the amendments necessary to adapt the requirements of the Annexes to technical progress.

*Article 8*

Member States shall take all the necessary measures to ensure that welding generators as defined in Article 2 cannot be placed on the market unless they satisfy the provisions of this Directive and of the framework Directive.

*Article 9*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive on the expiry of a period of 18 months as of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

*Article 10*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## METHOD OF MEASURING AIRBORNE NOISE EMITTED BY WELDING GENERATORS

## SCOPE

This measurement method shall be applicable to welding generators. It specifies the test procedures for use in determining the sound power level of such equipment for the purpose of EEC type-examination and checking as to conformity.

These technical procedures shall comply with the requirements of Annex I to Directive 79/113/EEC.

All the sections in Annex I to Directive 79/113/EEC shall apply to welding generators, subject to the following amendments:

## 4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

- 4.1. The acoustic criterion for the environment of welding generators shall be their sound power level.

## 6. MEASURING CONDITIONS

## 6.2. Operation of the sound source during measurement.

- 6.2.1. Not applicable.

6.2.2. *Welding speed.*

The welding generator unit shall be used in accordance with the manufacturer's recommendations. It shall operate, as laid down in recommendation ISO/R700-1968, first edition, 1968, at its nominal speed producing the nominal welding current through a resistance.

## 6.3. Measuring site.

The welding generator unit shall be installed on a reflecting plane of concrete or non-porous asphalt. Skid-mounted welding generators shall be placed on supports 0,40 m high, unless otherwise required by the manufacturer's conditions of installation.

6.4.1. *Measuring surface.*

The measuring surface to be used for testing shall be a hemisphere. The centre of the hemisphere shall be the vertical projection on to the reflecting plane of the geometric centre of the welding generator. The radius shall be:

- 4 m, where the greatest dimension of the welding generator to be tested is not more than 1,5 m,
- 10 m, where the greatest dimension of the welding generator to be tested is more than 1,5 m but not more than 4 m,
- 16 m, where the greatest dimension of the welding generator to be tested is more than 4 m.

Table I in Annex I to Directive 79/113/EEC gives the coordinates of the measuring points.

- 6.4.2.1. The x axis of the set of coordinates, in relation to which the positions of the measuring points are fixed, shall be parallel to the main axis of the welding generator unit.

7. MEASUREMENTS

7.1.1. Only the background noise shall be taken into account for the purpose of corrections.

7.1.5. *Presence of obstacles.*

A visual check in a circular zone with a radius of three times that of the measurement hemisphere and the centre of which coincides with the centre of that hemisphere is adequate to ensure that the provisions of the third subparagraph of section 6.3 of Annex I to Directive 79/113/EEC are complied with.

7.2. Measurement of the sound pressure level  $L_{pA}$ .

If the sound pressure levels at the measuring points are determined from readings taken from a sonometer, there shall be at least five such readings, taken at regular intervals.

8. USE OF RESULTS

8.2. Not applicable.

8.6.2. In view of 6.3, section 8.6.2 shall not be applicable and  $C = 0$ .

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ANNEX II

MODEL INFORMATION DOCUMENT FOR A TYPE OF WELDING GENERATOR TO BE  
SUPPLIED FOR EEC TYPE-EXAMINATION

1. General
- 1.1.

Name and address of manufacturer .....
- 1.2.

Name and address of manufacturer's authorized representative (if any) .....
- 1.3.

Make (name of undertaking) .....
- 1.4.

Trade name .....
- 1.5.

Type .....
2. Dimensions of the welding generator unit
- 2.1.

Length .....

Width .....

Height .....

Mass .....

m

m

m

kg
- 2.2.

Unit lay-out: skid-mounted, trailer, other <sup>(1)</sup>
3. Operating conditions
- 3.1.

Operation of the drive motor
- 3.1.1.

Make and type .....
- 3.1.2.

Energy source: petrol, diesel, electricity, gas <sup>(1)</sup>
- 3.1.3.

Speed of rotation .....

rpm
- 3.2.

Operation of the generator
- 3.2.1.

Make and type .....
- 3.2.2.

Speed of rotation .....

rpm
- 3.2.3.

Nominal welding current .....

A
- 3.2.4.

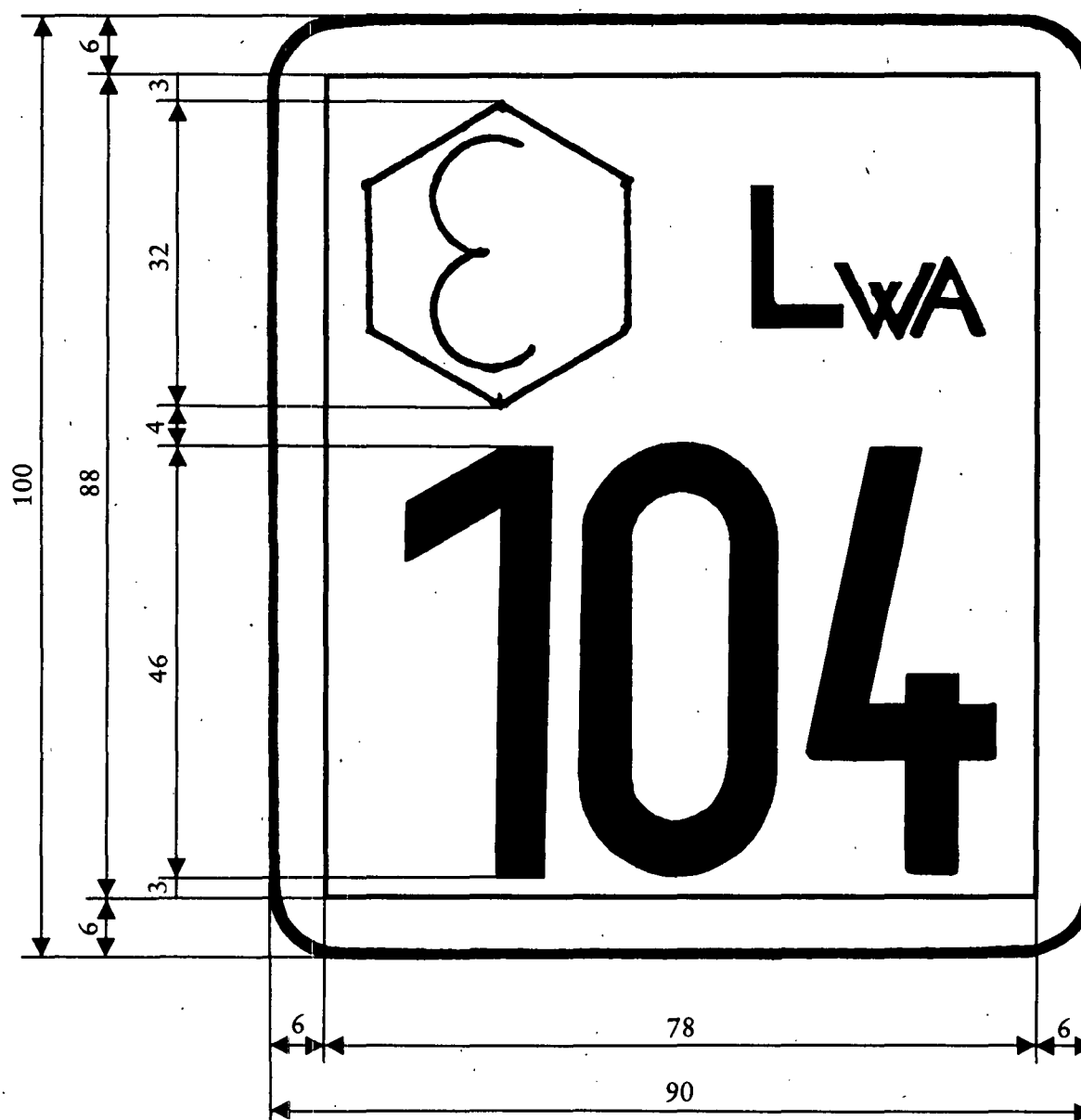
Maximum nominal current .....

A
4. Attach descriptive trade leaflet, if any.

<sup>(1)</sup> Delete as appropriate.

## ANNEX III

## MODEL FOR MARK FOR SOUND POWER LEVEL



## ANNEX IV

TECHNICAL PROCEDURE FOR CHECKING THE CONFORMITY OF PRODUCTION MODELS  
WITH THE TYPE EXAMINED

The conformity of production models with the type examined shall, if possible, be verified by spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of power generators

(84/536/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the 1973 and 1977 action programmes of the European Communities on the environment <sup>(4)</sup> reflect the importance of the problem of noise nuisance and in particular the need for action to regulate the worst noise sources;

Whereas disparity between the measures already applicable or in preparation in the various Member States concerning the limitation of the sound emission level of power generators creates unequal conditions of competition and thereby directly affect the functioning of the common market; whereas it is therefore appropriate to proceed in that field with the approximation of laws for which Article 100 of the Treaty provides;

Whereas Council Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment <sup>(5)</sup> has laid down, in particular, the procedure for EEC type-examination; whereas it is necessary, pursuant to that Directive, to

prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the measurement of the sound level of construction plant and equipment <sup>(6)</sup>, as amended by Council Directive 81/1051/EEC <sup>(7)</sup>, laid down in particular the method which should be used for establishing the acoustic criteria for power generators;

Whereas, owing to the effect of the noise emitted by power generators on the environment and, more particularly, on human well-being and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound power level of power generators;

Whereas it is important to be able to regulate the use of power generators in certain areas considered to be particularly sensitive so as to limit the nuisance caused by the airborne noise emitted by such power generators;

Whereas technical provisions must be adapted rapidly to technical advances; whereas it is necessary to this end to provide for the application of the procedure set out in Article 5 of Directive 79/113/EEC,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive applies to the permissible sound power level of power generators used to perform work on civil engineering and building sites.

2. It is a separate Directive within the meaning of Article 3 (2) of the Council Directive 84/532/EEC, hereinafter referred to as the 'framework Directive'.

<sup>(1)</sup> OJ No C 54, 8. 3. 1976, p. 63.

<sup>(2)</sup> OJ No C 125, 8. 6. 1976, p. 43.

<sup>(3)</sup> OJ No C 197, 23. 8. 1976, p. 11.

<sup>(4)</sup> OJ No C 112, 20. 12. 1973, p. 1 and OJ No C 139, 13. 6. 1977, p. 1.

<sup>(5)</sup> See page 111 of this Official Journal.

<sup>(6)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(7)</sup> OJ No L 376, 30. 12. 1981, p. 49.

### Article 2

For the purposes of this Directive, 'power generator' means any device comprising a motor unit driving a rotary generator producing continuous electrical power.

### Article 3

1. The approved bodies shall issue an EEC type-examination certificate for each type of power generator for which the sound power level of airborne noise, measured under the conditions set out in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, does not exceed the permissible sound power level given in the following table:

| Electric power (P)                       | Permissible sound power level<br>in dB(A)/1 pW as from |                                                   |
|------------------------------------------|--------------------------------------------------------|---------------------------------------------------|
|                                          | 18 months after<br>notification<br>of the Directive    | 5 years after<br>notification<br>of the Directive |
| $P \leq 2 \text{ kVA}$                   | 104                                                    | 102                                               |
| $2 \text{ kVA} < P \leq 8 \text{ kVA}$   | 104                                                    | 100                                               |
| $8 \text{ kVA} < P \leq 240 \text{ kVA}$ | 103                                                    | 100                                               |
| $P > 240 \text{ kVA}$                    | 105                                                    | 100                                               |

2. All applications for an EEC type-examination certificate in respect of the permissible sound power level of a power generator shall be accompanied by an information document conforming to the model shown in Annex II.

3. For each type which it certifies, the approved body shall complete all sections of the type-examination certificate conforming to the model given in Annex III to the framework Directive.

4. The period of validity of EEC type-examination certificates shall be limited to five years. This may be extended by five years, provided that application is made in the 12 months before the expiry of the first five-year period.

However, at the end of a period of five years from notification of the Directive, EEC type-examination certificates shall cease to be valid unless they were issued for power generators which comply with the maximum level entering into force on that date.

5. By way of derogation from Article 19 (1) of the framework Directive, the advantages provided for in that Article shall, after a period of  $5\frac{1}{2}$  years from notification of the Directive, no longer be available for power generators supplied with certificates of

conformity drawn up on the basis of an EEC type-examination certificate for the figures in the first period; the period of validity shall accordingly be shown on the certificates of conformity concerned.

6. For every power generator built in conformity with the type certified by EEC type-examination, the manufacturer shall complete a certificate of conformity conforming to the model given in Annex IV to the framework Directive in the columns relating to the EEC type-examination certificate.

7. Each power generator built in accordance with the type certified by EEC type-examination shall bear a clear and permanent mark indicating the sound power level in dB(A) to 1 pW guaranteed by the manufacturer and determined as laid down in Annex I to Directive 79/113/EEC as amended by Annex I to this Directive, together with the symbol  $\epsilon$  (epsilon). The model for this mark is given in Annex III to this Directive.

### Article 4

Member States may take measures to regulate the use of power generators in areas which they consider sensitive.

### Article 5

Verification of the conformity of production models with the type examined, as provided for in Article 12 of the framework Directive, shall be carried out using the technical procedure stipulated in Annex IV.

### Article 6

The Council shall act unanimously within 18 months, on the proposal for a reduction in the noise levels which the Commission will present as soon as possible and no later than five years after the adoption of this Directive.

### Article 7

The following shall be adopted in accordance with the procedure laid down in Article 5 of Directive 79/113/EEC:

- the technical procedure in Annex IV for checking the conformity of production models with the type examined,
- the amendments necessary to adapt the requirements of the Annexes to technical progress.

*Article 8*

Member States shall take all the necessary measures to ensure that power generators as defined in Article 2 cannot be placed on the market unless they satisfy the provisions of this Directive and the framework Directive.

*Article 9*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive on the expiry of a period of 18 months as of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

*Article 10*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

## METHOD OF MEASURING AIRBORNE NOISE EMITTED BY POWER GENERATORS

## SCOPE

This measurement method shall be applicable to power generators. It shall specify the test procedures for use in determining the sound power level of such equipment for the purpose of EEC type-examination and checking as to conformity.

These technical procedures shall comply with the requirements of Annex I to Directive 79/113/EEC.

All the sections in Annex I to Directive 79/113/EEC shall apply to power generators, subject to the following amendments:

## 4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

- 4.1. The acoustic criterion for the environment of power generators shall be the sound power level.

## 6. MEASURING CONDITIONS

- 6.2. Operation of the sound source during measurement.

- 6.2.1. Not applicable.

- 6.2.2. The power generator shall be used in accordance with the manufacturer's recommendations. It shall operate at a steady speed, with a current flow through a non-inductive resistance equal to three-quarters of the unit power load in kW defined on the basis of the nominal power in kVA, taking into account the power factor ( $\cos \phi$ ).

- 6.3. Measuring site.

The power generator shall be installed on a reflecting plane of concrete or non-porous asphalt. Skid-mounted power generators shall be placed on supports above the reflecting plane, unless otherwise required by the manufacturer's conditions of installation.

- 6.4.1. *Measuring surface*

The measuring surface to be used for testing shall be a hemisphere. The centre of the hemisphere shall be the vertical projection on to the reflecting plane of the geometric centre of the power generator. The radius shall be:

- 4 m where the greatest dimension of the power generator to be tested is not more than 1,5 m,
- 10 m where the greatest dimension of the power generator to be tested is more than 1,5 m but not more than 4 m,
- 16 m where the greatest dimension of the power generator to be tested is more than 4 m.

Table I in Annex I to Directive 79/113/EEC gives the coordinates of the measuring points.

- 6.4.2.1. The x axis of the set of coordinates, in relation to which the positions of the measuring points are fixed, shall be parallel to the main axis of the power generator.

## 7. MEASUREMENTS

- 7.1.1. Only the background noise shall be taken into account for the purpose of corrections.

7.1.5. *Presence of obstacles.*

A visual check in a circular zone with a radius of three times that of the measurement hemisphere and the centre of which coincides with the centre of that hemisphere shall be adequate to ensure that the provisions of the third subparagraph of section 6.3 of Annex I to Directive 79/113/EEC are complied with.

7.2. **Measurement of the sound pressure level  $L_{pA}$ .**

If the sound pressure levels at the measuring points are determined from readings taken from a sonometer, there shall be at least five such readings, taken at regular intervals.

8. **USE OF RESULTS**

8.2. **Not applicable.**

8.6.2. **In view of 6.3, section 8.6.2 shall not be applicable and  $C = 0$ .**

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## ANNEX II

MODEL INFORMATION DOCUMENT FOR A TYPE OF POWER GENERATOR TO BE  
SUPPLIED FOR EEC TYPE-EXAMINATION

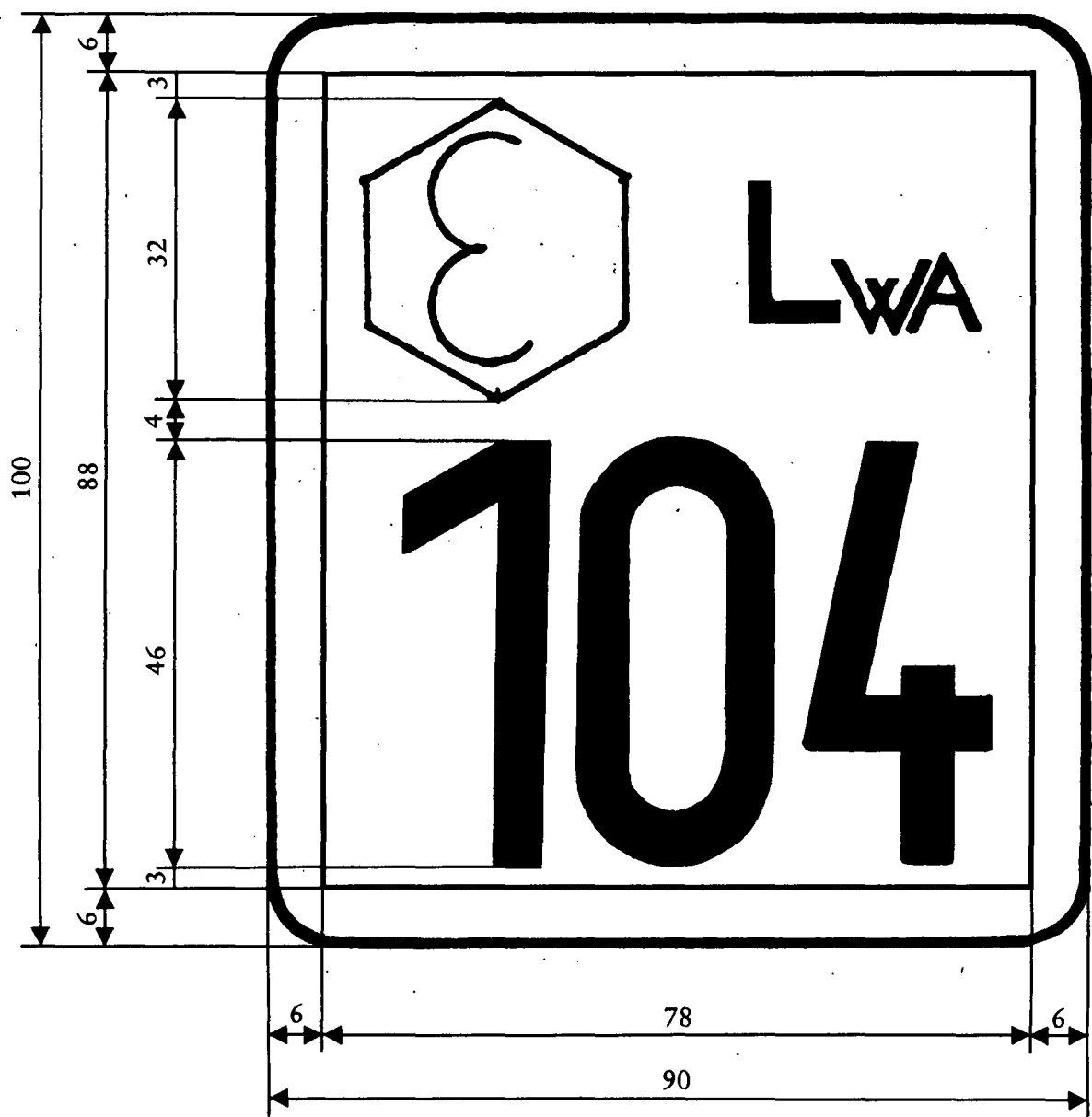
1. General
  - 1.1. Name and address of manufacturer .....
  - 1.2. Name and address of manufacturer's authorized representative (if any) .....
  - 1.3. Make (name of undertaking) .....
  - 1.4. Trade name .....
  - 1.5. Type .....
2. Dimensions of the power generator unit
  - 2.1. Length ..... m  
Width ..... m  
Height ..... m  
Mass ..... kg
  - 2.2. Unit lay-out: skid-mounted, trailer, other <sup>(1)</sup>
3. Operating conditions
  - 3.1. Operation of the drive motor
    - 3.1.1. Make and type .....
    - 3.1.2. Energy source: petrol, diesel, gas <sup>(1)</sup>
    - 3.1.3. Speed of rotation ..... rpm
  - 3.2. Operation of the generator
    - 3.2.1. Make and type .....
    - 3.2.2. Speed of rotation ..... rpm
    - 3.2.3. Continuous operating power  
— apparent power kVA:  
— actual power (kW):
    - 3.2.4. Type of current: alternating current, single phase, three phase, direct current, etc. <sup>(1)</sup>
    - 3.2.5. Inter-phases and neutral voltage <sup>(1)</sup>
    - 3.2.6. Frequency of current ..... Hz
4. Attach descriptive trade leaflet, if any.

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<sup>(1)</sup> Delete as appropriate.

ANNEX III

MODEL FOR MARK FOR SOUND POWER LEVEL



ANNEX IV

TECHNICAL PROCEDURE FOR CHECKING THE CONFORMITY OF PRODUCTION MODELS WITH THE TYPE EXAMINED

The conformity of production models with the type examined shall, if possible, be verified by spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of powered hand-held concrete-breakers and picks

(84/537/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the 1973 and 1977 action programme of the European Communities on the environment <sup>(4)</sup> reflect the importance of the problem of noise nuisance and in particular the need for action to regulate the worst noise sources;

Whereas disparity between the measures already applicable or in preparation in the various Member States concerning the limitation of the sound emission level of powered hand-held concrete-breakers and picks creates unequal conditions of competition and thereby directly affects the functioning of the common market; whereas it is therefore appropriate to proceed in that field with the approximation of laws for which Article 100 of the Treaty provides;

Whereas Council Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment <sup>(5)</sup> has laid down, in particular, the procedure for EEC type-examination; whereas it is necessary, pursuant to that Directive, to

prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the measurement of the sound level of construction plant and equipment <sup>(6)</sup>, as amended by Council Directive 81/1051/EEC <sup>(7)</sup> laid down the method which should be used for establishing the acoustic criteria for powered hand-held concrete-breakers and picks;

Whereas owing to the effect of the noise emitted by powered hand-held concrete-breakers and picks on the environment and, more particularly, on human well-being and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound power level of powered hand-held concrete-breakers and picks;

Whereas it is important to be able to regulate the use of powered hand-held concrete-breakers and picks in certain areas considered to be particularly sensitive, so as to limit the nuisance caused by the airborne noise emitted by such powered hand-held concrete-breakers and picks;

Whereas technical provisions must be adapted rapidly to technical advances; whereas it is necessary to this end to provide for the application of the procedure set out in Article 5 of Directive 79/113/EEC,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive applies to the permissible sound power level for powered hand-held concrete-breakers and picks used to perform work on civil engineering and building sites, (hereinafter referred to as 'appliances').

<sup>(1)</sup> OJ No C 82, 14. 4. 1976, p. 91.

<sup>(2)</sup> OJ No C 76, 7. 4. 1975, p. 37.

<sup>(3)</sup> OJ No C 263, 17. 11. 1975, p. 42.

<sup>(4)</sup> OJ No C 112, 20. 12. 1973, p. 1 and OJ No C 139, 13. 6. 1977 p. 1.

<sup>(5)</sup> See page 111 of this Official Journal.

<sup>(6)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(7)</sup> OJ No L 376, 30. 12. 1981, p. 49.

2. It is a separate Directive within the meaning of Article 3 (2) of Directive 84/532/EEC, hereinafter referred to as the 'framework Directive'.

Article 2

1. The approved bodies shall issue an EEC type-examination certificate for each type of appliance the sound power level of which, measured in the manner laid down in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, does not exceed the permissible sound power level given in the following table:

| Mass of appliance (m)                                          | Permissible sound power level in dB(A)/1 pW as from |                                             |
|----------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|
|                                                                | 18 months after notification of the Directive       | 5 years after notification of the Directive |
| m < 20 kg                                                      | 110                                                 | 108                                         |
| 20 kg ≤ m ≤ 35 kg                                              | 113                                                 | 111                                         |
| m > 35 kg                                                      | 116                                                 | 114                                         |
| and appliances with an internal-combustion engine incorporated |                                                     |                                             |

2. All applications for an EEC type-examination certificate in respect of the permissible sound power level of an appliance shall be accompanied by an information document conforming to the model shown in Annex II.

3. For each type of appliance which it certifies, the approved body shall complete all the sections of the EEC type-examination certificate conforming to the model given in Annex III to the framework Directive.

4. The period of validity of type-examination certificates shall be limited to five years. This may be extended by five years provided that application is made no more than 12 months before the expiry of the first five-year period.

At the end of a period of five years from notification of the Directive, however, EEC type-examination certificates shall cease to be valid unless they were issued for appliances which meet the standards entering into force on that date.

5. By way of derogation from Article 19 (1) of the framework Directive, the advantages provided for in this Article shall, after a period of 5 1/2 years from notification of the Directive, no longer be available for appliances supplied with certificates of conformity drawn up on the basis of an EEC type-examination certificate for the figures in the first period; the period

of validity shall accordingly be shown on the certificates of conformity concerned.

6. For every appliance built in conformity with the type certified by EEC type-examination, the manufacturer shall complete a certificate of conformity conforming to the model given in Annex IV to the framework Directive in the columns relating to the EEC type-examination certificate.

7. Each appliance built in accordance with the type certified by EEC type-examination shall bear a clear and permanent mark indicating the sound power level in dB(A) to 1 pW guaranteed by the manufacturer and determined as laid down in Annex I to Directive 79/113/EEC, as amended by Annex I to this Directive, and the symbol ε (epsilon). The model of such mark is shown in Annex III to this Directive.

Article 3

Member States may take measures to regulate the use of appliances in areas which they consider sensitive.

Article 4

Verification of the conformity of production models with the type examined, as provided for in Article 12 of the framework Directive, shall be carried out using the technical procedure stipulated in Annex IV.

Article 5

The Council shall act unanimously, within 18 months, on the proposal for a reduction in the noise levels which the Commission will present as soon as possible and no later than five years after the adoption of this Directive.

Article 6

The following shall be adopted in accordance with the procedure laid down in Article 5 of Directive 79/113/EEC,

- the technical procedure in Annex IV for the checking of the conformity of production models with the type examined,
- the amendments necessary to adapt the requirements of the Annexes to technical progress.

*Article 7*

Member States shall take all the necessary measures to ensure that appliances cannot be placed on the market unless they satisfy the provisions of this Directive and of the framework Directive.

*Article 8*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive on the expiry of a period of 18 months as of its notification <sup>(1)</sup> and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

*Article 9*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

## ANNEX I

METHOD OF MEASURING AIRBORNE NOISE EMITTED BY POWERED HAND-HELD  
CONCRETE-BREAKERS AND PICKS

## SCOPE

This measurement method is applicable to powered hand-held concrete-breakers and picks, hereinafter referred to as 'appliances'. It specifies the test procedures for use in determining the sound power level of such equipment for the purpose of EEC type-examination and testing as to conformity.

These technical procedures shall comply with the requirements of Annex I to Directive 79/113/EEC.

All the sections in Annex I to Directive 79/113/EEC shall apply to appliances, subject to the following amendments:

## 4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

- 4.1. The acoustic criterion for the environment of an appliance shall be expressed by its sound power level.

## 6. MEASURING CONDITIONS

6.1.1. *Determining the mass of an appliance.*

When the mass is being determined, the appliance shall be fitted out as for normal use, except for the tool, the supply tube and, where appropriate, the coupling.

6.1.2. *Supports of the appliance.*

- (a) To ensure that the tests are completely reproducible, the appliance shall be coupled during the test run to a tool embedded in a cube-shaped concrete block placed in a concreted pit sunk into the ground.
- (b) An intermediate steel piece may be inserted during tests between the appliance and the support tool. This intermediate piece shall form a stable structure between the appliance and the support tool. The diagram in figure 2 incorporates these requirements.

6.1.3. *Block characteristics.*

The block shall be in the shape of a cube,  $0,60\text{ m} \pm 2\text{ mm}$  long at the edge and as regular as possible; it shall be made of reinforced concrete and thoroughly vibrated in layers of up to 0,20 m to avoid excessive sedimentation.

The distance between the extremity of the appliance (without the tool) and the screening slab shall be between 0,10 and 0,20 m.

6.1.4. *Composition of the concrete.*

For one 50-kilogram sack of pure Portland cement, category 400 or equivalent:

- 65 litres of ungraded, non-calcareous sand with a grain size of 0,1 mm to 5 mm,
- 115 litres of non-calcareous alluvial gravel with a grain size of 5 to 25 mm,

The cube shall be reinforced by 8-mm-diameter steel rods without ties, each rod being independent of the others; the design concept is illustrated in figure 1.

6.1.5. *Supporting tool.*

The tool shall be sealed into the block and shall consist of a rammer of no less than 178 mm or no more than 220 mm diameter and a tool chuck component identical to that normally used with the appliances being tested and complying with ISO recommendations R 1180 and R 1571 but sufficiently long to enable the practical test to be carried out.

Suitable treatment shall be carried out to integrate the two components. The tool shall be fixed in the block so that the bottom of the rammer is 0,30 m from the upper face of the block (see figure 1).

The block shall remain mechanically sound, particularly at the point where the supporting tool and the concrete meet. Before and after each test, it shall be established that the tool sealed in the concrete block is integrated with it.

6.1.6. *Positioning of the cube.*

The cube shall be set in a pit cemented throughout, covered by a screening slab of at least 100 kg/m<sup>2</sup>, as indicated in the attached figure 4, so that the upper surface of the screening slab is flush with the ground. To avoid any parasitic noise, the block shall be insulated against the bottom and sides of the pit by elastic blocks, the cut-off frequency of which shall not be more than half the striking rate of the appliance tested, expressed as strokes per second.

The opening in the screening slab through which the tool chuck component passes shall be as small as possible and sealed by a flexible sound-proof joint.

6.2. *Operation of the sound source during measurements.*

To ensure that the measurements may be reproduced, all appliances shall be tested in the vertical position.

In the case of pneumatic appliances, the air exhaust axis of the test appliance shall be equidistant from two measuring points (air exhausted directly on to a microphone distorts the measurement, which consequently has to be abandoned). The microphone shall not be placed between the appliance and the air receiver (see figure 3).

6.2.1. *Not applicable.*

6.2.2. *In the case of pneumatic appliances, the operation of the machine shall have the same acoustic stability as in normal service and shall satisfy the following requirements.*

The appliance shall operate at a working pressure of 600 kPa.

If this is impossible, the pressure used and the reasons why it was impossible to use the stipulated pressure shall be indicated in the test report.

During the measurements, the air pressure shall be measured while the appliance is in operation. The appliance shall operate normally; any hindrances to the air exhaust, such as icing up, shall be avoided. The type, quality and quantity of the lubricating oil used shall comply with the manufacturer's recommendations.

In the case of appliances powered other than by compressed air, the operating conditions shall be those corresponding to the maximum speed at which the appliance can operate continuously, according to the manufacturer's statement.

*Test set-up.*

The appliances shall run unattended by an operator in the manner described below:

- (a) the appliance shall operate in an upright position on the device described in 6.1.5, which shall be provided with a tool shank of the correct size for attachment to the appliance;
- (b) the appliance shall be firmly held down by a flexible device in order to give the same stability as that existing under normal operating conditions, when the tool is embedded in the material to be broken up before the latter fractures; the flexible device may take the form of calibrated springs or pneumatic jacks, for example.

Pressure control in the case of appliances.

Since the appliance has to operate at 600 kPa or at its nominal pressure if this is different, the pressure shall be checked at the air inlet coupling to the appliance (see figure 3).

The pressure may be checked by means of a dial pressure gauge but, in view of the pulsation of the appliance, it is preferable to use an arrangement consisting of an air receiver of 50 to 100 litres capacity supplied by a 20-m-long 19-mm-diameter tube. The appliance shall be supplied from this receiver through a 25- to 30-mm-diameter 4,5-m-long tube, connected to the coupling. The air receiver shall be placed as far away as possible from the appliance. The pressure inside the air receiver shall be measured through a connection on the latter.

The pressure may be adjusted either through the outlet valve on the compressor or by leaking pressure from the air receiver through an adjustable silencer.

This device is illustrated schematically in figure 3.

6.3. The test area shall be a minimum of 4 m in radius.

6.4.1. *Measuring surface.*

The measuring surface to be used for testing shall be a hemisphere. The centre of the hemisphere shall be the vertical projection on to the reflecting plane of the geometric centre of the appliance. The radius is given in the following table:

| Mass of the appliance<br>as normally used | Radius of the<br>hemisphere | Value of z<br>for points<br>1 to 8 |
|-------------------------------------------|-----------------------------|------------------------------------|
| less than 10 kg                           | 2 m                         | 0,75 m                             |
| 10 kg or more                             | 4 m                         | 1,50 m                             |

6.4.2.2. *Measuring points.*

For each appliance, there shall be 12 measuring points with the variations in the value of z of points 1 to 8 as shown in the previous table.

7. MEASUREMENTS

7.1.1. Only the background noise shall be taken into account for the purpose of corrections.

8. USE OF RESULTS

8.2. Not applicable.

8.6.2. Since the ground surface of the test area is made of concrete or non-porous asphalt, 8.6.2 is not applicable and C = 0.

8.6.3. The icing-up which is characteristic of the operation of pneumatic appliances shall be avoided during the measurements.

9. DATA TO BE RECORDED

A model report is given in the Appendix.

## TEST BLOCK

Cube 0,60 m along the edge, fully vibrated

Composition: 1 sack pure Portland cement, category 400 or equivalent  
65 litres non-calcareous-sand, ungraded, grain size 0,1 to 5 mm  
115 litres non-calcareous gravel, grain size 5 to 25 mm

Untied reinforcements, 8 mm diameter

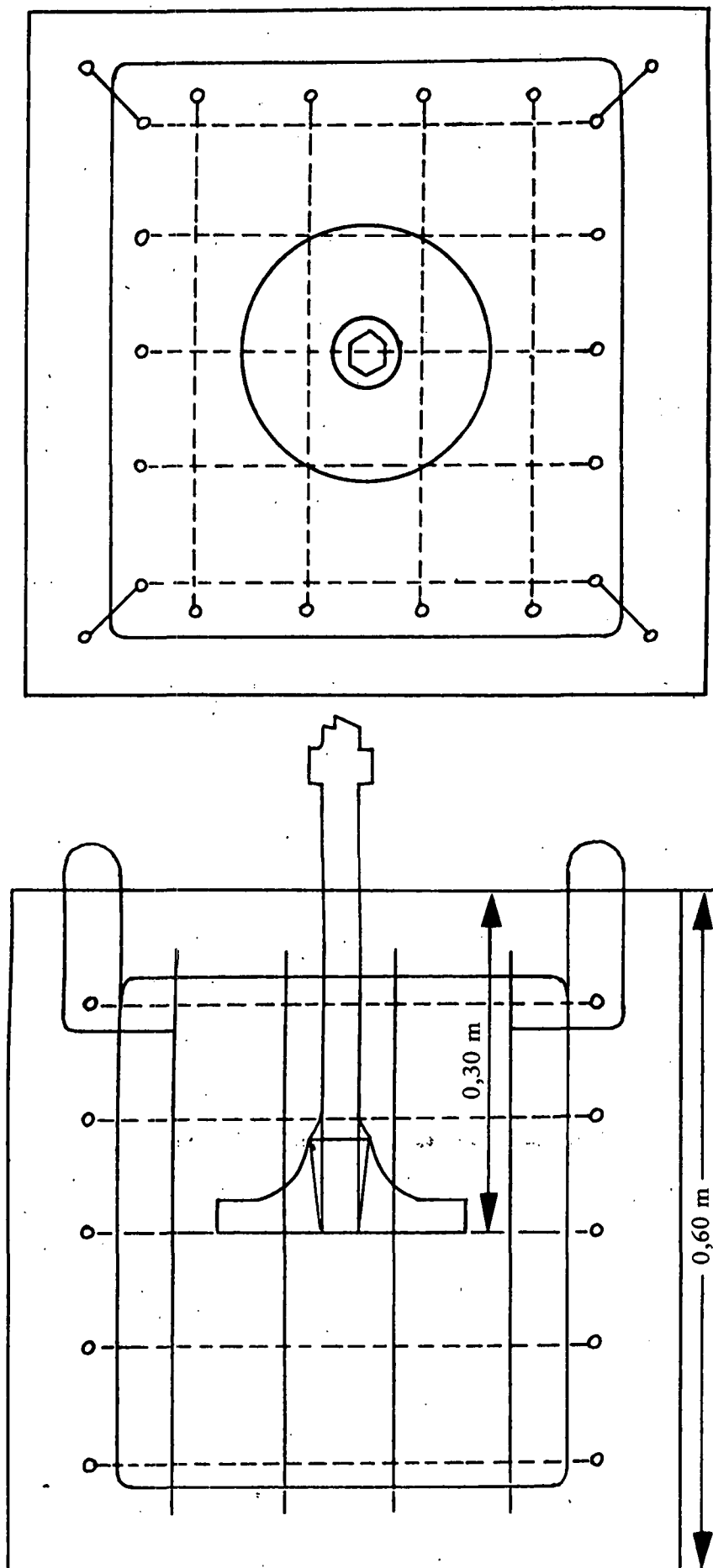


Figure 1

SCHEMATIC DIAGRAM

Intermediate piece referred to in 6.1.2

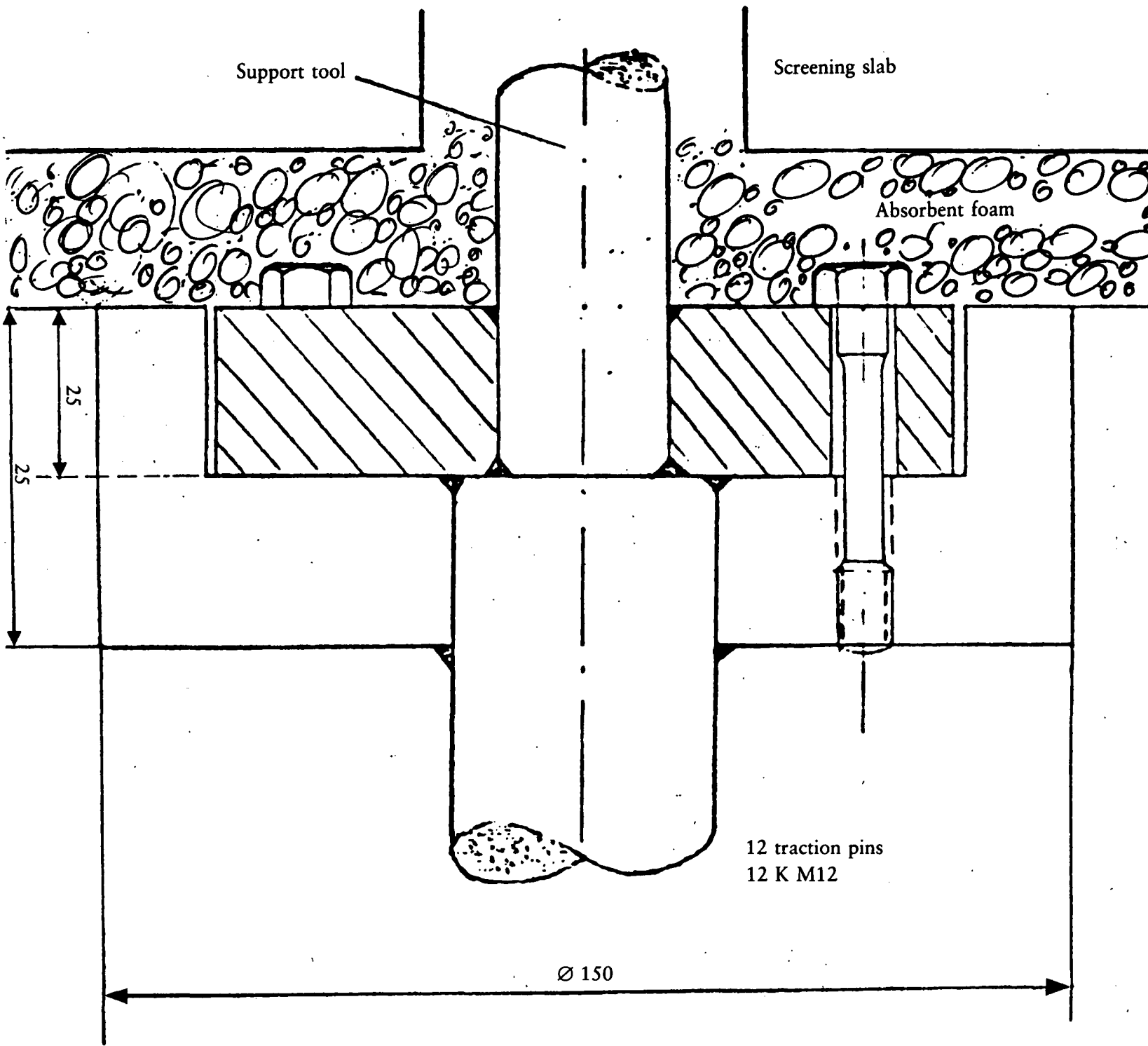


Figure 2

DIAGRAM OF DEVICE FOR SUPPLYING COMPRESSED AIR

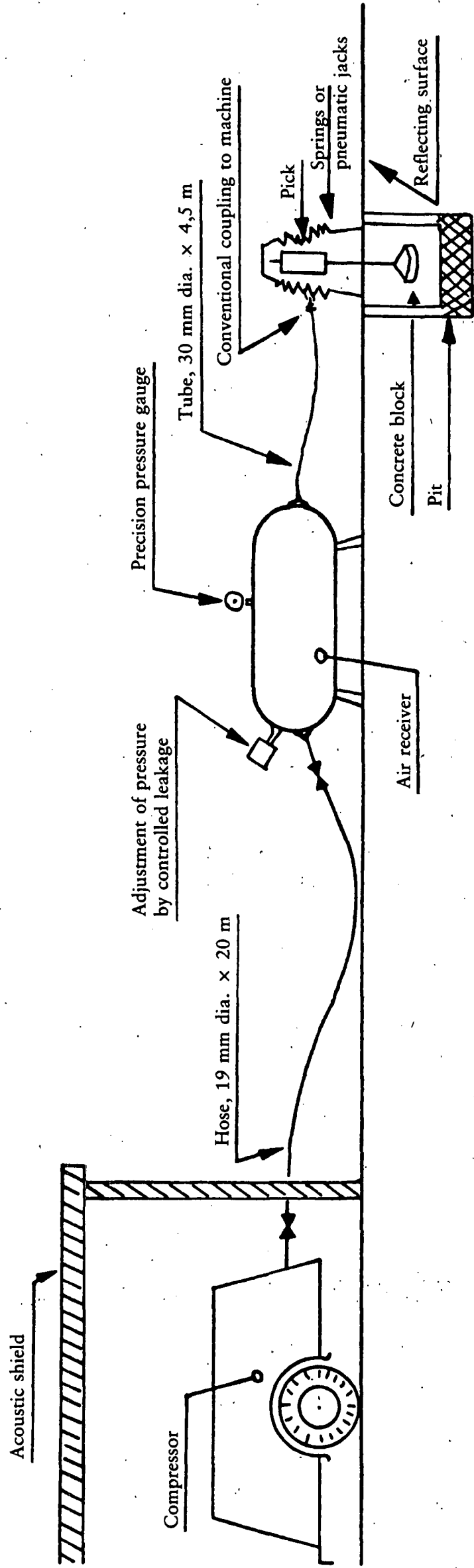


Figure 3

## TESTING DEVICE

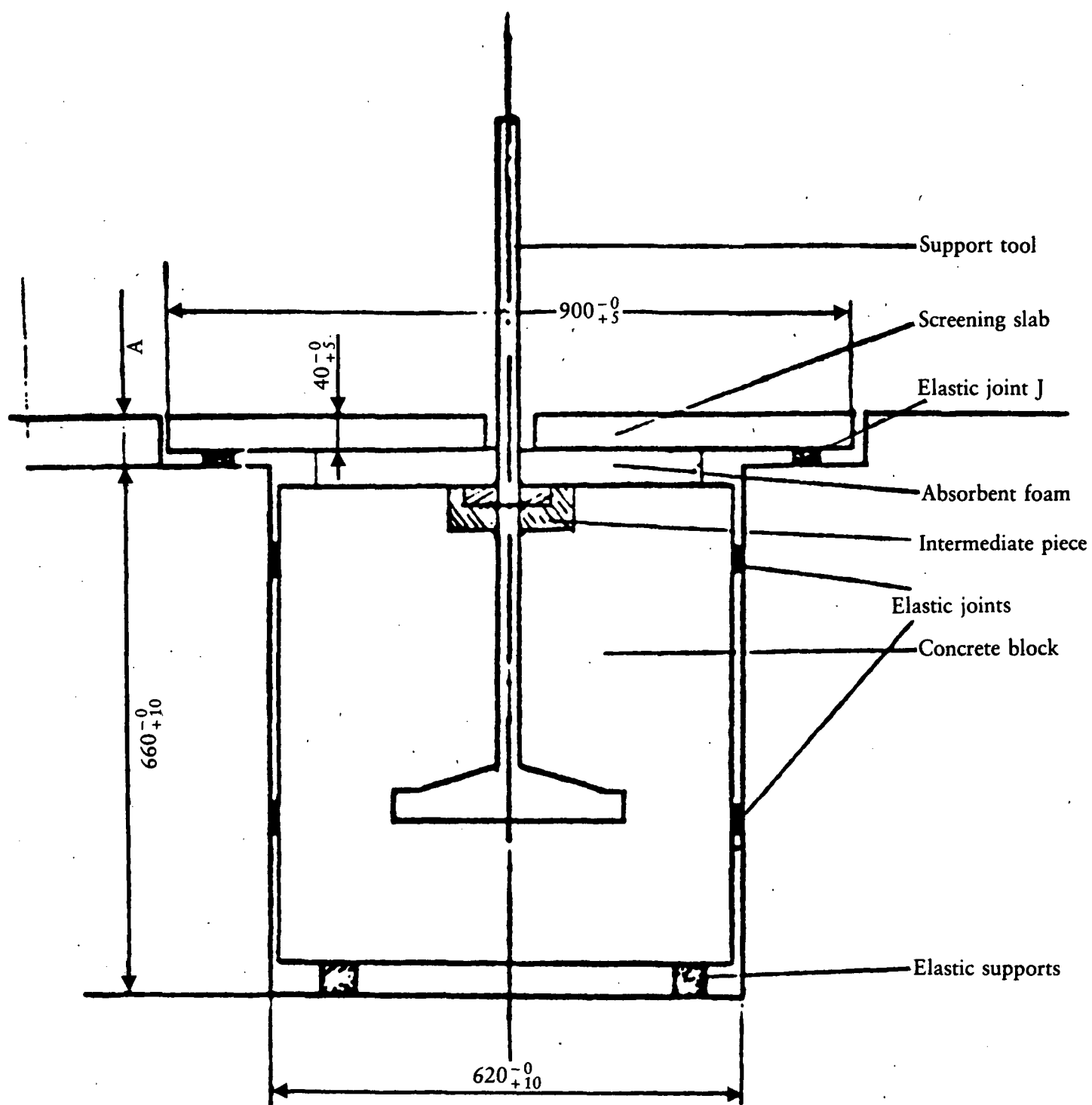


Figure 4

The value of A should be such that the screening slab resting on the elastic joint J is flush with the ground.

APPENDIX

MODEL REPORT

TEST REPORT FOR POWERED PICKS AND CONCRETE-BREAKERS

1.

Test article

Manufacturer .....

Model ..... Serial No .....

Principal dimensions .....

Description ..... Mass .....

Type: compressed air, hydraulic, electric, petrol <sup>(1)</sup>

2.

Operating conditions

2.1. *Pneumatic*

Operating pressure ..... pascals

Air intake ..... m<sup>3</sup>/sec

Striking rate ..... strokes/sec

Soundproofing device .....

2.2. *Hydraulic*

Hydraulic fluid pressure ..... pascals

Striking rate ..... strokes/sec

2.3. *Electric*

Operating voltage ..... volts

Striking rate ..... strokes/sec

2.4. *Petrol*

Engine speed ..... rpm

Make and type of silencer used (or fitted) .....

.....

Striking rate ..... strokes/sec

Soundproofing device .....

3.

Test conditions

Barometric pressure ..... Ambient temperature .....

Composition and dimensions of reflecting surface .....

Remarks .....

4.

Equipment

Microphone ..... Serial No .....

Sound-level meter ..... Serial No .....

<sup>(1)</sup> Delete as appropriate.

|                                                       |                 |
|-------------------------------------------------------|-----------------|
| Octave-band analyzer .....                            | Serial No ..... |
| Calibrating equipment .....                           | Serial No ..... |
| Miscellaneous (e.g. wind shield or recorder)<br>..... | Serial No ..... |

5. Diagram showing microphone locations and, if applicable, the direction of the exhaust and the position of any large objects situated less than 25 m from the appliance under test

6. Acoustic data:
- area  $S$  in  $m^2$  of measuring surface and value of  $10 \log_{10} \frac{S}{S_0}$ ;
  - sound-pressure levels measured at measuring points;
  - average sound-pressure level over measuring surface;
  - any corrections in decibels;
  - surface sound-pressure level  $L_{pAm}$ ;
  - sound-power level;
  - directivity index and number of the measuring point at which  $L_{pAmax}$  was recorded;
  - nature of noise:  
(audible discrete tones, impulse, time-related characteristics, etc.);
  - date and time of measurements.

ANNEX II

MODEL INFORMATION DOCUMENT FOR A TYPE OF POWERED HAND-HELD  
CONCRETE-BREAKER OR PICK TO BE SUBMITTED FOR ITS EEC TYPE-EXAMINATION

1. General

1.1. Name and address of manufacturer .....

.....

1.2. Name and address of manufacturer's authorized representative (if any) .....

.....

1.3. Make (name of undertaking) .....

1.4. Trade name (mention any variations) .....

1.5. Type .....

1.6. Location of statutory plates and inscriptions and method of fixing .....

2. Mass

2.1. Mass ..... kg

3. Operation

3.1. Pneumatic

3.1.1. Operating pressure ..... pascals

3.1.2. Air intake ..... m<sup>3</sup>/sec

3.1.3. Striking rate ..... strokes/sec

3.1.4. Soundproofing device: fitted, removable <sup>(1)</sup> (make and type) .....

3.2. Hydraulic

3.2.1. Hydraulic fluid pressure .....

3.2.2. Striking rate ..... strokes/sec

3.2.3. Soundproofing device: fitted, removable <sup>(1)</sup> (make and type) .....

3.2.4. Inertial mass .....

3.2.5. Mass under movement .....

3.2.6. Energy consumption per minute .....

3.3. Electric

3.3.1. Operating voltage ..... V

3.3.2. Striking rate ..... strokes/sec

3.3.3. Soundproofing device: fitted, removable <sup>(1)</sup> (make and type) .....

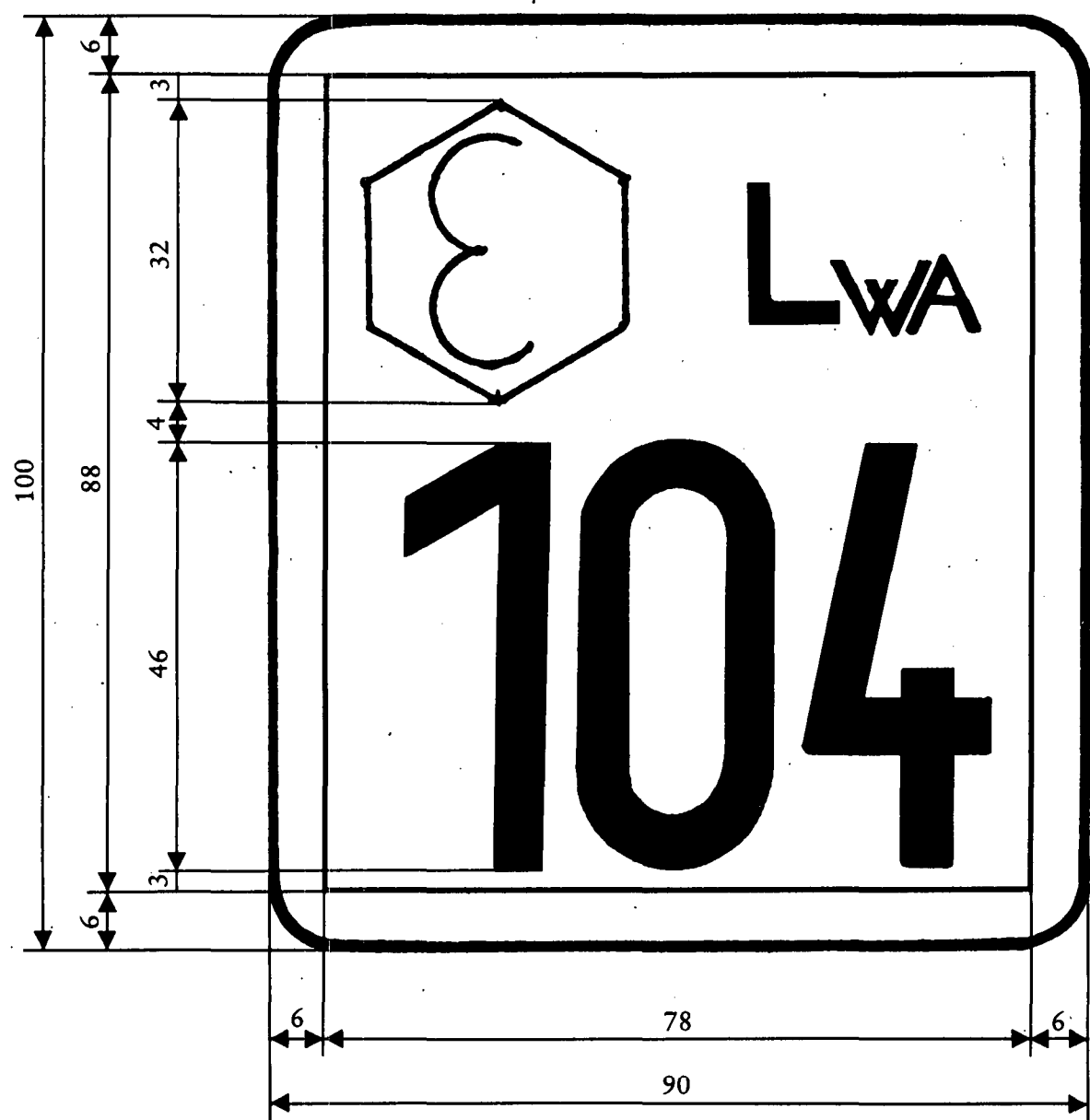
3.3.4. Inertial mass .....

<sup>(1)</sup> Delete as appropriate.

(<sup>1</sup>) Delete as appropriate.

ANNEX III

MODEL FOR MARK FOR SOUND POWER LEVEL



ANNEX IV

TECHNICAL PROCEDURE FOR CHECKING THE CONFORMITY OF PRODUCTION MODELS WITH THE APPROVED TYPE

The conformity of production models with the approved type shall, if possible, be verified by spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to the permissible sound power level of lawnmowers

(84/538/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas the technical requirements with which lawnmowers must comply under the terms of the national laws concern, *inter alia*, their noise emission; whereas these requirements differ from one Member State to another; whereas, through their disparities, they hamper trade within the European Community;

Whereas these obstacles to the establishment and operation of the common market can be reduced or even removed if the same requirements are adopted by all the Member States in place of their existing laws;

Whereas the main objective of the provisions of this Directive is to ensure protection against nuisances due to noise by reducing the inconvenience caused by the noises emitted by lawnmowers;

Whereas it is therefore necessary to determine at Community level the permissible upper limits for noise emissions from lawnmowers and a common method for measuring such emissions;

Whereas it is desirable to bring to the attention of the consumer the acoustic quality of lawnmowers; whereas an effective method of informing the consumer is to require that each lawnmower should be marked with the level of its acoustic force; whereas it is, however, pointless to require this mark on lawnmowers which are not noisy by construction, such as electric lawnmowers with a small cutting-width;

Whereas the conformity of lawnmowers with this Directive may be presumed by virtue of the certificate of conformity issued by the manufacturer, or by the importer resident in the Community; whereas the Member States must recognize such certificates as conclusive evidence, thus ensuring the free movement of lawnmowers throughout the Community;

Whereas, without prejudice to Articles 169 and 170 of the Treaty, it is advisable, within the framework of cooperation between the competent authorities of the Member States, to lay down provisions to help resolve disputes of a technical nature regarding the conformity of production models with the requirements of this Directive;

Whereas it should be expressly confirmed that those concerned must have available to them appropriate legal remedies in respect of decisions taken by the appropriate national authorities for purposes of implementing this Directive;

Whereas technical progress requires prompt adjustment of the technical requirements specified in this Directive; whereas, in order to facilitate implementation of the measures required for this purpose, a procedure should be prescribed for establishing close cooperation between the Member States and the Commission within the committee established by Article 5 of Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the determination of the noise emission of construction plant and equipment <sup>(4)</sup>, as amended by Directive 81/1051/EEC <sup>(5)</sup>,

<sup>(1)</sup> OJ No C 86, 2. 4. 1979, p. 9.

<sup>(2)</sup> OJ No C 127, 21. 5. 1979, p. 80.

<sup>(3)</sup> OJ No C 247, 11. 10. 1979, p. 19.

<sup>(4)</sup> OJ No L 33, 8. 2. 1979, p. 15.

<sup>(5)</sup> OJ No L 376, 30. 12. 1981, p. 42.

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. The purpose of this Directive is to restrict the permissible sound power level of lawnmowers by specifying upper limits and the methods for measuring such level.
2. 'Lawnmower' means all motorized equipment appropriate for the upkeep by cutting, by whatever method, of areas under grass used for recreational, decorative or similar purposes.
3. This Directive applies to mowers as referred to in paragraph 2, except for the following:
- motorized cylinder mowers,
  - agricultural and forestry equipment,
  - non-independent devices (e.g. drawn cylinders), with cutting devices actuated by the wheels or by an integrated drawing or carrier component,
  - multi-purpose devices the main motorized components of which have an installed power of over 20 kW.

Article 2

Member States shall take all appropriate measures to ensure that lawnmowers as defined in Article 1 may not be placed on the market unless their sound power levels, as measured under the conditions specified in Annex I, do not exceed the permissible level for the cutting width of the mower as shown in the following table:

| Cutting width<br>of lawnmower (L)     | Permissible sound power level<br>in dB(A)/1 pW |
|---------------------------------------|------------------------------------------------|
| $L \leq 50\text{ cm}$                 | 96                                             |
| $50\text{ cm} < L \leq 120\text{ cm}$ | 100                                            |
| $L > 120\text{ cm}$                   | 105                                            |

Article 3

A lawnmower's conformity with the requirements of this Directive shall be attested by the manufacturer, or by the importer domiciled in the Community, on his own responsibility, in a certificate (see model in Annex II) which shall accompany the machine and which shall be based on the report on the tests carried out on each type of lawnmower by one of the

laboratories included in a list to be drawn up by each Member State and notified to the other Member States. This certificate may be reproduced on the directions for use or on the guarantee certificate.

Article 4

Prior to being placed on the market, lawnmowers shall, in a clearly visible and durable fashion either directly or on a plate (such as a riveted or self-adhesive plate) permanently attached to them, bear marks identifying the manufacturer, describing the type and indicating the maximum sound power level expressed in dB(A)/1 pW, guaranteed by the manufacturer.

The model for these indications is set out in Annex III.

Article 5

1. Subject to the provisions in paragraph 2, no Member State may refuse, prohibit or restrict the sale, putting into service or use of lawnmowers on grounds relating to their sound power levels if they satisfy the requirements of this Directive and are accompanied by the certificate of conformity referred to in Article 3 and bear the indications referred to in Article 4.
2. Member States may take measures to regulate the use of lawnmowers in areas which they consider sensitive.

Article 6

Member States shall take all the necessary measures to verify that lawnmowers conform to the requirements of this Directive. Such verification shall be carried out in accordance with the technical specifications laid down in Annex IV.

Article 7

1. If a Member State in which the lawnmower is manufactured finds that the latter does not conform to the provisions of this Directive or if it is notified to this effect by another Member State, it shall take the necessary measures to ensure that the further production of like models conforms to the approved type.
- The Member State in question shall inform the other Member States and the Commission of the measures taken within one month, stating the grounds for such action.

2. If a Member State disputes the failure to conform notified to it, the Member States concerned shall endeavour to settle the dispute. The Commission shall be kept informed and shall, where necessary, hold appropriate consultations for the purpose of reaching a settlement.

#### *Article 8*

Any amendments necessary in order to adapt the Annexes to this Directive to technical progress shall be adopted in accordance with the procedure laid down in Article 5 of Council Directive 79/113/EEC.

#### *Article 9*

The provisions of this Directive shall not affect the Member States' entitlement to limit, with due observance of the Treaty, and in particular Articles 30 to 36 thereof, the level of noise at the operator's position for lawnmowers for professional use with a cutting width of more than 120 cm provided that this does not involve an obligation to adapt lawnmowers which comply with this Directive to different emission standards within the meaning of Annex I to the Directive.

#### *Article 10*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 1 July 1987 and shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

#### *Article 11*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

## ANNEX I

## METHOD OF MEASURING AIRBORNE NOISE EMITTED BY LAWNMOWERS

## SCOPE

This measuring method applies to lawnmowers. It specifies the procedures for determining their sound power level so that their conformity with requirements may be attested.

These technical procedures comply with the requirements set out in Annex I to Directive 79/113/EEC.

The provisions of Annex I to Directive 79/113/EEC shall apply to lawnmowers, with the following amendments:

## 4. CRITERIA TO BE USED FOR EXPRESSING RESULTS

## 4.1. Acoustic criteria for the environment.

The acoustic criterion for the environment of a lawnmower shall be expressed by the sound power level.

## 6. MEASURING CONDITIONS

## 6.1. Purpose of the measurement.

## 6.1.1. Lawnmowers designed to be equipped with a device for collecting the grass shall be tested under normal conditions of use with that device fitted.

## 6.1.2. The cutting device shall be adjusted to its minimum height, but shall not, however, be less than 3 cm from the ground. The grass in the test area shall be mown with this cutting device setting before any sound measurement is taken.

For the sound measurement, all grass shall be removed from the lawnmower and the grass collector shall be empty.

## 6.2. Operation of the sound source during measurement.

Before each sound measurement is taken, the lawnmower shall be warmed up in accordance with the manufacturer's instructions.

The sound power level of lawnmowers shall, in principle, be measured when the lawnmower is stationary without its operator being present and the cutting device and the motor are operating at maximum speed.

If the cutting device cannot be separated from the driving wheels of the lawnmower, the mower shall be tested while moving and driven by an operator under the following conditions:

— *direct-drive lawnmower:*

in this case, it shall be moving at a speed such that the cutting device is operating at the maximum speed laid down by the manufacturer,

— *variable-drive lawnmower:*

in this case, the highest gear shall be selected. The lawnmower shall be moving at a speed such that the cutting device is operating at the maximum speed laid down by the manufacturer.

(a) *Lawnmowers with combustion engines:*

- The engine oil used for operating the mower during measurement shall be as specified by the manufacturer. The fuel tank shall not be more than half full.

(b) *Lawnmowers with electric motors:*

If the lawnmower is powered by battery, the battery shall be fully charged. If the lawnmower is powered by a generating unit or from the mains, the frequency of the supply current specified for the motor shall be stable at  $\pm 1$  Hz.

6.3. **Measuring site.**

The test area shall be flat and horizontal. The area, including the microphone placements, shall be covered in turf which is not wet.

6.4. **Measuring surface, measuring distance, location and number of measuring points.**6.4.1. *Measuring surface.*

The measuring surface to be used for the test shall be a hemisphere. The radius of the hemisphere shall be determined by the width of cut of the lawnmower.

The radius shall be:

- 4 m, where the width of cut of the lawnmower to be tested is no more than 1,2 m,
- 10 m, where the width of cut of the lawnmower to be tested exceeds 1,2 m.

6.4.2. *Location and number of measuring points.*6.4.2.1. **General.**

For the purpose of measuring the noise emitted by lawnmowers when stationary and in motion, six measuring points shall be used, i. e. points 2, 4, 6, 8, 10 and 12, arranged in accordance with section 6.4.2.2 of Annex I to Directive 79/113/EEC. When measurements are taken for stationary mowers, the centre of the hemisphere shall coincide with the projection of the geometric centre of the lawnmower to the ground, pointing from measuring point 1 towards point 5. For moving measurements, the displacement axis shall pass through the positions of measuring points 1 and 5.

7. **MEASUREMENTS**7.1.1. *Extraneous noise.*

The measurement of the level of parasitic noise shall not be taken into consideration (7.1.1 (b)).

7.1.5. *Presence of obstacles.*

A visual check in a circular area of a radius equal to three times that of the measurement hemisphere, the centre of which coincides with that of the hemisphere, shall be adequate to ensure that the provisions of the third paragraph of section 6.3 of Annex I to Directive 79/113/EEC have been complied with.

7.2. **Measurement of the sound pressure level  $L_{pA}$ .**

The sound pressure  $L_{pA}$  shall be measured in accordance with the first paragraph of section 7.2 of Annex I to Directive 79/113/EEC. When the mower is in motion, the measuring time shall be the time which it takes to cover the distance AB (figure) at constant speed.

The sound pressure levels  $L_{pA}$  of a lawnmower shall be measured at least three times. If the sound power levels obtained from these measurements differ by more than 1 dB, further measurements shall be taken until two power levels are obtained which do not differ by more than 1 dB and the higher of which shall be the sound power level of the lawnmower.

*Note:* Where a sound level meter is used for measurements with the mower in motion, in most cases  $L_{pA}$  shall be equal to the level measured when the mower passes the centre of the hemisphere.

## 8. USE OF RESULTS

### 8.6.2. *Acoustic properties of test area.*

For these measurements, the constant C determined in accordance with section 8.6.2 of Annex I to Directive 79/113/EEC shall be between 0,5 and 2 dB with  $K_2 = 0$ .

## 9. DATA TO BE RECORDED

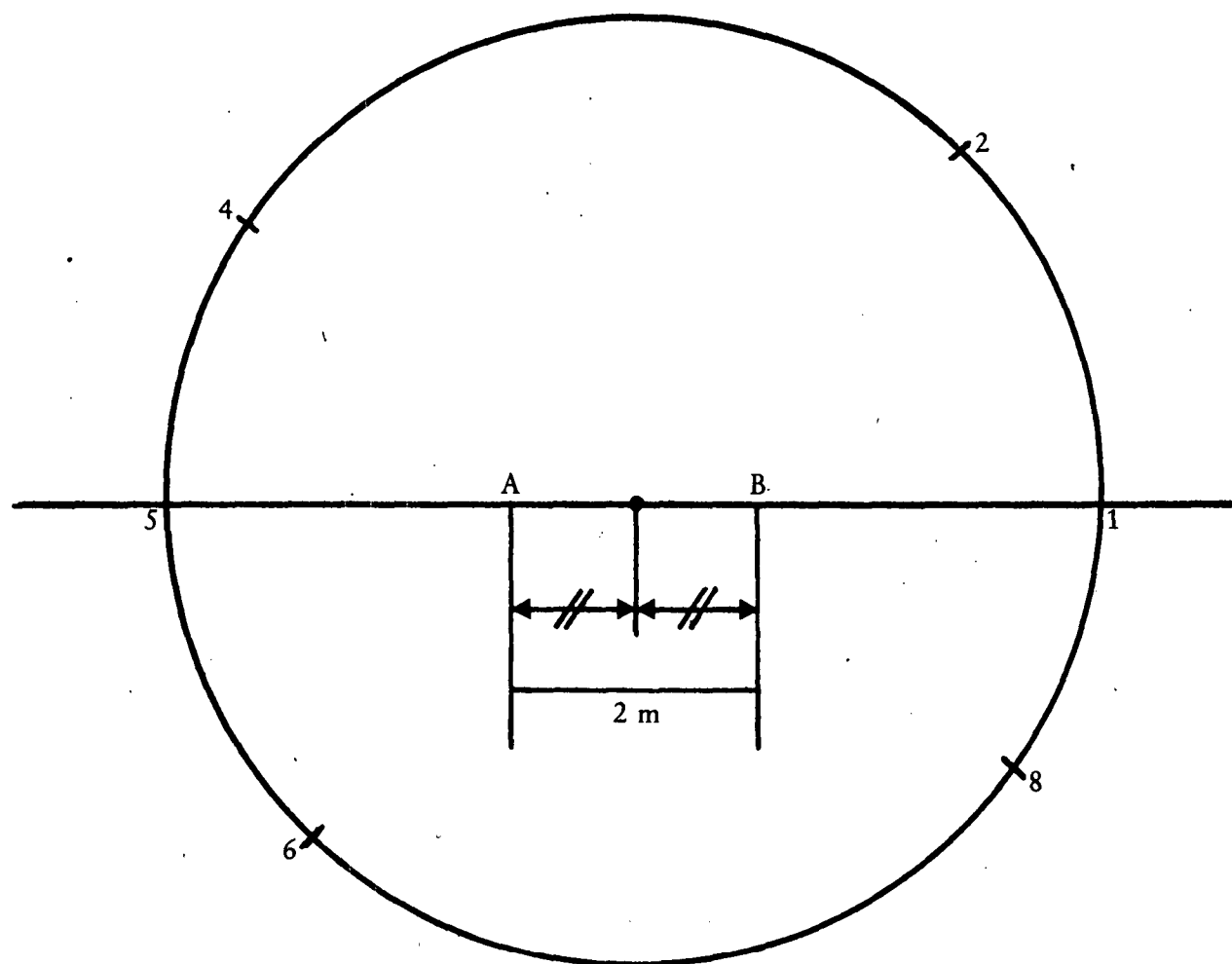
### 9.1. Sound source under test:

- (f) width of cut;
- (g) speed of rotation of the cutting device.

### 9.4. Acoustic data

- (b) delete 'area S of measuring surface in  $m^2$ ';
- (c) place, date and time of measurements.

### Appendix



Figure

ANNEX II

MODEL CERTIFICATE OF CONFORMITY ISSUED BY THE MANUFACTURER

I, the undersigned, .....  
.....  
(Name and address)

certify that the lawnmower:

- 1. Category .....  
(Combustion engine, electrical, etc.)
- 2. Make .....
- 3. Type .....
- 4. Serial No .....

conforms to the specifications of Directive 84/538/EEC

Guaranteed sound power level ..... dB (A)  
— type of cutting device .....  
— width of cut ..... cm  
— speed of rotation of the cutting device ..... rpm

Done at ..... , .....  
(Date)

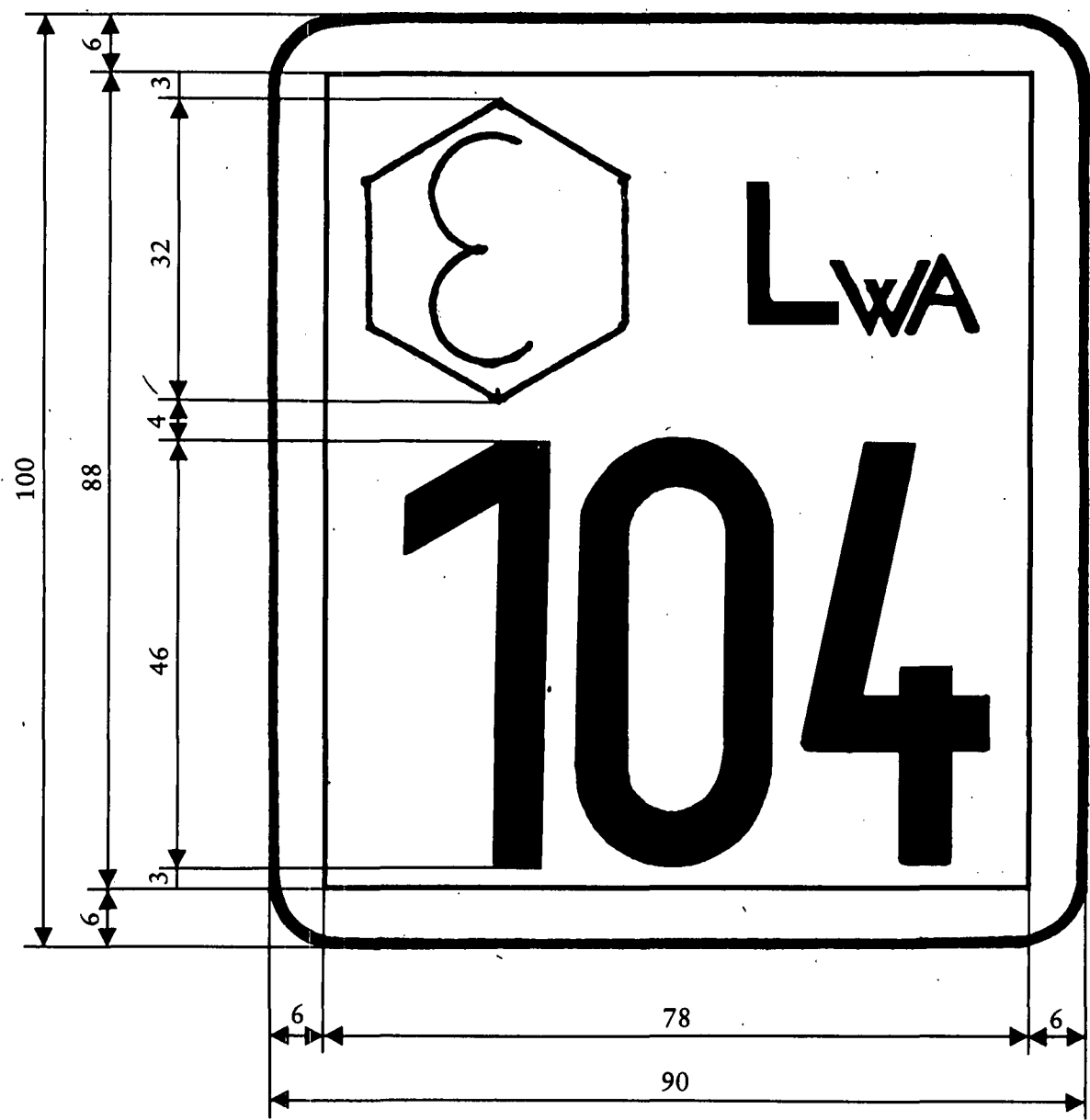
.....  
(Signature)

.....  
(Position)

\_\_\_\_\_

ANNEX III

MODEL FOR MARK FOR SOUND POWER LEVEL



ANNEX IV

TECHNICAL PROCEDURES FOR CHECKING THAT MOWERS CONFORM TO THE REQUIREMENTS OF THE DIRECTIVE

Where possible, the conformity of mowers to the requirements of this Directive shall be verified by means of spot checks.

## COUNCIL DIRECTIVE

of 17 September 1984

on the approximation of the laws of the Member States relating to electro-medical equipment used in human or veterinary medicine

(84/539/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas, in each Member State, electro-medical equipment used in human or veterinary medicine must meet a high and clearly-defined degree of safety both for the users of such equipment and for those receiving treatment by means of the equipment;

Whereas several Member States have sought to ensure that degree of safety by mandatory specifications relating both to the technical safety regulations and the inspection procedures; whereas those specifications differ from one Member State to another;

Whereas these obstacles to the establishment and operation of the common market can be reduced or even eliminated if the same specifications are adopted by all the Member States, either in addition to or in place of their present legislation;

Whereas it is advisable in the first instance to harmonize at Community level one section of the equipment in question; whereas the most adequate form of harmonization is by reference to the standards drawn up by the European Committee for Electrotechnical Standardization (Cenelec);

Whereas, in order to ensure that the equipment complies with the harmonized standards, the manufacturer acknowledges his responsibility by a mark or declaration of conformity;

Whereas technical progress requires prompt adaptation of the technical specifications laid down by the Directives with respect to electro-medical equipment; whereas, in order to facilitate the implementation of the measures required, provision should be made for a procedure establishing close cooperation between the Member States and the Commission within the Committee on the Adaptation to Technical Progress of the Directives for Removing Technical Barriers to Trade in Electro-medical Equipment;

Whereas electro-medical equipment, although conforming to the requirements of this Directive, might endanger public safety and health; whereas a procedure should therefore be laid down to obviate this risk,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

This Directive shall apply to the electro-medical equipment listed in Annex II (hereinafter called 'equipment') which is intended, by its nature, for use in human or veterinary medicine.

*Article 2*

1. Member States may not, on grounds of safety relating to its manufacture, refuse, prohibit or restrict the sale, free movement or use for its intended purpose of the equipment referred to in Article 1 of this Directive where it conforms with the requirements of this Directive.

Annex I contains the technical requirements to which the equipment must conform.

<sup>(1)</sup> OJ No C 33, 12. 2. 1975, p. 5.

<sup>(2)</sup> OJ No C 76, 14. 3. 1975, p. 37.

<sup>(3)</sup> OJ No C 233, 17. 11. 1975, p. 39.

2. The conformity of equipment to the requirements of this Directive shall be attested by the manufacturer or by the importer, under the latter's responsibility, by the affixing of a mark which conforms to the specimen shown in Annex III or by a declaration which conforms to the specimen shown in Annex IV.

#### Article 3

Member States shall ensure that the services provided with the help of equipment meeting the requirements of this Directive are reimbursed on the same terms as the services provided with the help of equipment meeting the criteria required under the provisions in force within their territory as regards the authorized applications and minimum requirements for the equipment.

#### Article 4

The following shall be adopted in accordance with the procedure laid down in Article 6:

- any amendments to Annex I made necessary by the adaptation to technical progress of the harmonized standards by the relevant standards organization,
- any amendments to Annex I which are desirable because of adaptation to technical progress where the relevant standards organization has not made the corresponding amendments to the harmonized standard.

In the latter case, the amendments shall be notified to the competent standards organization.

#### Article 5

1. A Committee on the Adaptation to Technical Progress of the Directives for Removing Technical Barriers to Trade in Electro-medical Equipment (hereinafter called 'the Committee') is hereby set up; it shall consist of representatives of the Member States and shall be chaired by a Commission representative.

2. The Committee shall draw up its own rules of procedure.

#### Article 6

1. Where reference is made to the procedure laid down in this Article, the matter shall be referred to the Committee by its chairman, either on his own initiative or at the request of a representative of a Member State.

2. The Commission representative shall submit to the Committee a draft of the measures to be taken. The Committee shall give its opinion on that draft within a time limit set by the chairman having regard to the urgency of the matter. Opinions shall be delivered by a majority of 45 votes, the votes of the Member States being weighted as provided for in Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) Where the proposed measures are in accordance with the opinion of the Committee the Commission shall adopt them.

(b) Where the proposed measures are not in accordance with the opinion of the Committee or if no opinion is delivered, the Commission shall without delay submit to the Council a proposal on the measures to be taken. The Council shall act by a qualified majority.

(c) If, within three months of the proposal being submitted to it, the Council has not acted, the proposed measures shall be adopted by the Commission.

#### Article 7

1. If a Member State determines, on the basis of a substantiated justification, that one or more appliances, although complying with the requirements of this Directive, represent a hazard to safety, it may provisionally prohibit the sale, free movement or use of the appliance or appliances on its territory or make it subject to special conditions. It shall immediately inform the other Member States and the Commission thereof, stating the grounds for its decision.

2. The Commission shall, within six weeks, consult the Member States concerned, following which it shall deliver its opinion without delay and take the appropriate steps.

3. If the Commission is of the opinion that technical adaptations to the Directive are necessary, such adaptations shall be adopted by either the Commission or the Council in accordance with the procedure laid down in Article 6. In that case, the Member State which has adopted the safeguard measures may maintain them until the entry into force of the adaptations.

#### Article 8

1. Member States shall take all appropriate measures to ensure that the marks and declaration of conformity referred to in Article 2 are issued by the manufacturer

or the importer only under the conditions laid down in the Directive.

2. Member States shall make all necessary arrangements to ensure adequate surveillance of the manufacture of the equipment.

#### *Article 9*

Member States shall take all appropriate measures to prevent the use on equipment of marks or markings which might be confused with the EEC mark described in Annex III.

#### *Article 10*

1. Member States shall bring into force the measures necessary to comply with this Directive within

24 months of its notification and shall forthwith inform the Commission thereof <sup>(1)</sup>.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

#### *Article 11*

This Directive is addressed to the Member States.

Done at Brussels, 17 September 1984.

*For the Council*

*The President*

P. BARRY

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<sup>(1)</sup> This Directive was notified to the Member States on 26 September 1984.

*ANNEX I*

The technical requirements to which the equipment referred to in Article 1 must conform are the following:

Harmonization document of the European Committee for Electrotechnical Standardization (Cenelec) HD 395-1: General Requirements (1979 edition — document based on IEC No 601-1 of the International Electrotechnical Commission); this standard being applicable subject to the following amendments:

In the case of the equipment referred to in 2.2.1.1 of Annex II, the requirements of HD 395-1 are amended as follows:

Sub-clause 14.6 (b): The equipment shall be minimally of type BF;

Sub-clause 19.3: Patient Auxiliary Current:  
Normal condition — 1 mA  
Single fault condition — 5 mA.

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## ANNEX II

## LIST OF EQUIPMENT REFERRED TO IN ARTICLE 1

## 1. DIAGNOSTIC EQUIPMENT

(excluding equipment subject to defibrillator discharge protection)

## 1.1. Equipment for the procurement of information from a living being without the influence of an external source.

1.1.1. *Equipment for the procurement of biopotentials.*

## 1. Equipment and corresponding accessories for diagnostic or monitoring purposes to study or monitor electrical activity or electrical characteristics of living beings:

- electroencephalographs and electrocorticographs,
- electromyographs,
- electroretinographs,
- electronystagmographs.

## 2. Equipment and corresponding accessories.

1.1.2. *Equipment for the procurement of other parameters.*

## 1. Equipment and corresponding accessories to study the infra-red radiation produced by living organisms for diagnostic purposes:

- thermoscanners,
- thermographs,
- radiation thermometers.

## 2. Equipment and corresponding accessories to study acoustic activity or sensitivity of living beings:

- electronic stethoscopes,
- phonocardiscopes and phonocardiographs only where not intended for cardiovascular interventions,
- audiometers,
- audiophones.

## 3. Equipment and corresponding accessories:

- ballistocardiographs,
- electronic thermometers only where intended for cardiovascular interventions.

## 1.2. Equipment for the procurement of information from a living being under the influence of an external source.

1.2.1. *Equipment using an electronic source.*

Equipment and corresponding accessories which apply directly electrical currents to living organisms:

- equipment for the measurement of skin resistance,
- equipment for pulmonary or vascular impedance rheography.

1.2.2. *Equipment using another source.*

1. Equipment and corresponding accessories for ophthalmological diagnosis:
  - equipment for illumination of the eye: slit lamps, eye mirrors, spectral light sources, ophthalmoscopes,
  - equipment for viewing, imaging and measurement of the eye: ophthalmometers, refractometers, tonometers, photometers, retinoscopes, cornea-microscopes,
  - ophthalmological diagnostic units consisting of ophthalmological equipment as mentioned above combined with necessary auxiliary devices: stands, columns, chairs.
2. Equipment and corresponding accessories intended to support visibility by monocular or binocular enlargement for diagnostic purposes and to be used for viewing surgical procedures (excluding high-frequency surgical equipment):
  - surgical microscopes,
  - colposcopes,
  - otoscopes,
  - dermatoscopes.
3. Equipment and corresponding accessories intended for local illumination of areas to be examined or treated:
  - head-lamps,
  - illuminated head-mirrors,
  - fluorescent hand-lamps,
  - mouth-lamps.

2. THERAPEUTIC EQUIPMENT

2.1. Specific therapeutic equipment.

2.1.1. *Equipment using electric energy.*

1. Equipment and corresponding accessories which produce electrically charged or ionized air, vapours or mists; charging or ionization may be achieved by:
  - high voltage,
  - electron emission from hot metal.

2.1.2. *Equipment applying other forms of energy.*

1. Equipment and corresponding accessories which produce certain mechanical effects in medicine:
  - vibrators,
  - equipment for pressurized water-massage,
  - equipment for extracorporeal cardiac massage.
2. Equipment and corresponding accessories which produce hot air, steam or vapours for medical therapeutic purposes:
  - equipment in which solid or liquid material is evaporated by heating or mechanical means for inhalation purposes,
  - hot-air baths.

This section does not include ultrasonic equipment.

**2.2. Electro-surgical equipment.****2.2.1. *Equipment using electric energy.***

1. Equipment and corresponding accessories using low-frequency electric energy to produce heat for electrocautery:
  - equipment for electrocautery,
  - parts of combined medical electrical equipment intended for electrocautery.

**2.2.2. *Equipment using other forms of energy.***

1. Equipment and corresponding accessories for ophthalmological therapeutic purposes:
  - equipment for treatment of the eye,
  - eye magnets.
2. Equipment and corresponding accessories.
3. Equipment and corresponding accessories which produce certain mechanical effects in medicine:
  - drilling, sawing and polishing equipment for dentistry or surgery,
  - water-driven equipment.

**2.3. Equipment for the support or replacement of body functions  
(excluding implanted cardiac stimulators and other implanted devices).****2.3.1. *Equipment for support or replacement by other means.***

1. Equipment and corresponding accessories intended to support or replace certain body functions:
  - artificial limbs,
  - aids for the paralyzed,
  - artificial speech equipment.
2. Equipment and corresponding accessories intended to assist human sensors:
  - aids for the blind.

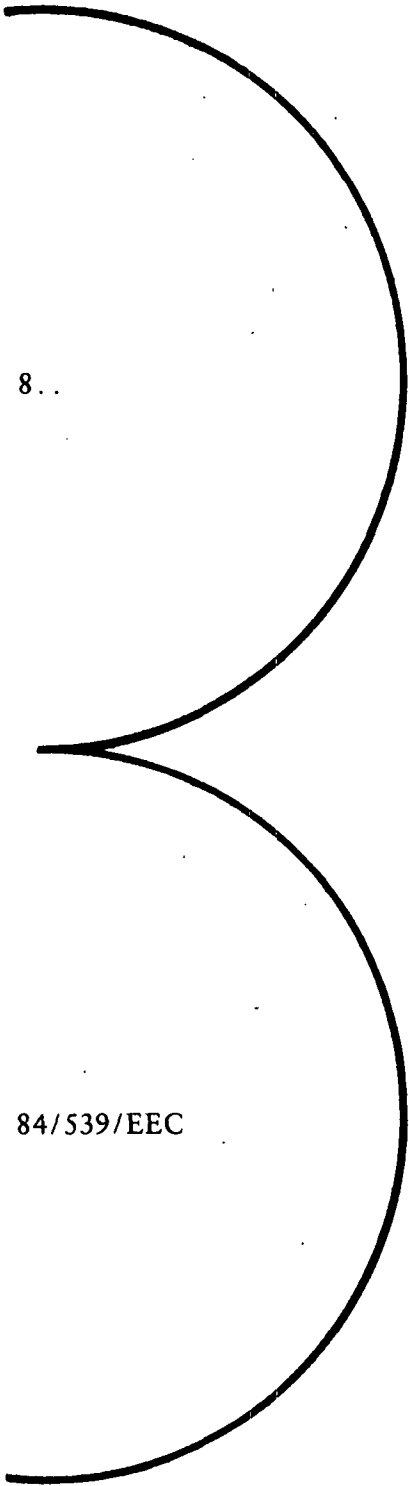
**3. OTHER EQUIPMENT**

Equipment and accessories for handling and positioning of the patient for surgical or dental purposes:

- operating tables,
  - operating chairs,
  - operating units,
  - dental chairs,
  - dental units.
-

ANNEX III

SPECIMEN MARK OF CONFORMITY AFFIXED BY THE MANUFACTURER



8..

equipment manufactured in 198..

84/539/EEC

in conformity with Directive 84/539/EEC

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ANNEX IV

SPECIMEN DECLARATION OF CONFORMITY

Application of Council Directive 84/539/EEC of 17 September 1984

Manufacturer's name .....  
Manufacturer's address .....  
Name of equipment .....  
Type No, Model No, or Reference No .....  
Serial No .....  
Year of manufacture .....

I, the undersigned, hereby declare that the equipment specified above conforms to Directive 84/539/EEC.

Place .....  
..... (Signature)  
  
Date .....  
..... (Full name)  
  
.....  
..... (Position)

(To be completed and signed by a person responsible for the undertaking named in the Declaration)

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