

COMMISSION OF THE EUROPEAN COMMUNITIES

COM(78) 121 final.

Brussels, 22 March 1978.

PROPOSAL FOR A COUNCIL DIRECTIVE

ON THE LIMITATION OF THE

NOISE EMITTED BY COMPRESSORS

(submitted to the Council by the Commission)

COM(78) 121 final.

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1. Introduction

This proposal for a directive comes under the programme of action of the European Communities on the environment¹. That programme gives prominence to the priority afforded to action in connection with emissions from noise sources. Approximation of laws relating to constructional plant and equipment is likewise mentioned in the supplement of 21 May 1973² which the Council, on a proposal from the Commission, added to the general programme of 28 May 1969³ for the elimination of technical barriers to trade in industrial products.

Moreover, on 10 January 1977 the Government of the French Republic informed the Commission of its intention of adopting administrative measures for the limitation of the noise emitted by compressors. That notification was given under the terms of the Agreement of 5 March 1973⁴ on information for the Commission and for the Member States with a view to possible harmonization throughout the Communities of urgent measures concerning the protection of the environment.

The purpose of this proposal for a directive is to reduce the noise emitted by compressors within a uniform regulatory framework for the whole of the European Community.

This proposal for a directive refers to two proposals for directives now before the Council. It is based on the latest efforts of the Working Party on Economic Questions, namely R/1821/77(ECO 198) of 20 July 1977 for the outline directive and R/2324/77(ECO 250) of 3 November 1977 for the measurement method. The latter has been approved by the Committee of Permanent Representatives.

2. General

Because of their number and the way in which they are used in urban conditions, compressors and the associated tools have a considerable effect

¹OJ C 112 of 20.12.1973 and C 139 of 13.6.1977.

²OJ C 38 of 5.6.1973.

³OJ C 76 of 17.6.1969.

⁴OJ C 9 of 15.3.1973.

on the ambient noise level. Methods of noise suppression for compressors and tools are not comparable. Often they do not provide comparable results in terms of the instantaneous sound power level emitted. Also, taking into consideration the use of the compressor with its tools, it would be inappropriate to treat the combination (compressor and tools) as a single noise source. It is necessary to lay down separate limits for compressors and for tools. As long ago as 1975 the Commission submitted a proposal for a directive to limit the sound level of pneumatic drills¹, which are certainly the noisiest of the tools.

As mentioned in the introduction, the purpose of this proposal is to limit the noise emitted by compressors. It classifies them according to their air flow. Accordingly it makes provision for four classes based on both the service characteristics and on the methods of noise suppression for compressors, while taking into account the cost considerations for each of the classes.

The Commission proposes 'total harmonization'. This has the advantage over 'optional harmonization' of securing better protection of the environment. Moreover, this approach found a very large measure of support from the group of national experts called in by the Commission to assist it in preparing this Directive. Accordingly, the present proposal is intended, when adopted, to replace the legislative and regulatory provisions in force in the Member States.

In order to meet special protection requirements this proposal allows the Member States to add to the provisions of the Directive restrictions in their national legislation, provided that these restrictions are not discriminatory. In such case the application of the restrictions would have to extend to compressors already in use because, as stated elsewhere, this Directive is applicable only to those placed on the market after its entry into force. In regard to checking of conformity to approved type, the choice of approval procedures is based on the scope allowed by the outline Directive² now under consideration by the Council which lays down the different procedures for approval of constructional plant and equipment. Hence, Member States are offered the choice between EEC type-approval and EEC verification.

¹OJ C 82 of 14.4.1975

²R/1821/77 (ECO 198) of 20.7.1977

3. Legislative situation in the Member States

Belgium

The outline Law of 18 July 1973 empowers the central authorities to issue Orders for the purpose of limiting the sound emitted by mechanical equipment and to regulate its use. At present there are no specific regulations governing compressors.

Federal Republic of Germany

Article 48 of the Bundesimmissions-schutzgesetz empowers the Federal Government to make regulations imposing maximum emission values. In addition, the regulation of 19 August 1970 on noise pollution prescribes daytime and night-time perceived noise limits for different zones.

More specifically, the Government regulations of 24 October 1972 lay down noise limits for compressors used on building and similar sites.

France

Decree No 69-380 of 18 April 1969 stipulates that equipment used on building and similar sites must be sufficiently silenced to ensure that it does not cause excessive nuisance.

The Order of 11 April 1972 relating to limitation of the airborne sound level emitted by the internal combustion engine or engines of certain building site equipment prescribes the maximum sound levels of various types of compressor and provides for the type-approval of such equipment.

The Commission was informed on 10 January 1977 of a draft Order for the purpose of limiting airborne noise emitted by compressors.

Netherlands

The general law of 1952 on nuisance empowered the authorities to issue regulations for the purpose of limiting the sound emitted by noisy plant and equipment. The draft of a basic law at present before the legislature is more specific in this respect and provides for the laying down of sound limits for noisy plant and equipment.

United Kingdom

Section III of the Control of Pollution Act of 1 January 1976 empowers local authorities to control noise on building and similar sites. The Act grants those authorities powers to regulate sites by stipulating:

- (a) the manner of performance of the works;
- (b) the plant or equipment to be used;
- (c) working periods;
- (d) noise limits.

In the other Member States the matter is covered by general legislation.

Comparison of the countries' regulations on noise emitted by compressors (see annexed table) reveals marked differences.

Since the disparity between legislative provisions in the Member States is capable of distorting the conditions of competition and therefore directly affecting the functioning of the Common Market, it is appropriate to act under Article 100 of the Treaty.

4. Noise Limits

Noise limits for compressors are to be lowered in two stages. This method of proceeding is definitely advantageous to manufacturers, whom it will apprise the policy adopted for future requirements. To users it makes known the clear determination to secure in due course a very marked improvement in sound emissions from construction sites.

In order to make as much allowance as possible for the variety of types of compressor, the Commission proposes that compressors be grouped in four classes with different permissible sound levels.

Compressors with air flow not exceeding 1 m³/min (16.5 l/s)

Reduction in the short term of the sound level of compressors in this class to a level below 102 dB (A) would result in a rise of more than 50% in the purchase price by comparison with existing equipment. Since

these compressors (the smallest of which are often used for household purposes) are employed for short-lasting tasks, and usually inside construction works, the Commission considers that the level of 102 dB (A) until 31 December 1982 will give manufacturers who produce these types the opportunity to design models which satisfy more stringent requirements.

Compressors with air flow of between 1 and 10 m³

This type of compressor is usually mobile and accounts for 95% of the market. It is used extensively on construction sites of all kinds and demands a special effort at noise suppression. The level of 100 dB (A) proposed for the first stage is a considerable improvement on the requirements of existing legislation and means that the noise intensity of new equipment is to be reduced by nearly 80% compared with that of unsilenced equipment still on the market.

Compressors with air flow of between 10 m³/min and 30 m³/min

This category is mobile or mounted on skids and is used on large construction sites, where advantage may be taken of the distance factor as a means of limiting the noise impact on neighbouring areas. In view of the effect of noise suppression on the cost of a piece of equipment of this type and taking into consideration the purposes for which such equipment is used, the level of 104 dB (A) is reasonable.

Compressors with air flow above 30 m³/min

In view of its size and air flow, this type of compressor is, as a rule, used only on large-scale building sites away from inhabited areas.

Furthermore, although it would be possible to reduce its sound power level to around 104 dB (A), the result would be an increase in cost of over 25%.

For this reason a sound power level of 106 dB (A) is acceptable both from the economic point of view (an increase in cost of less than 10%) and from the environmental point of view (noise reduction of more than 80% of the sound power level) as a first step.

Note

The maximum values proposed for the first stage, ending on 31 December 1982, are based on the present state of the art. Those for the second stage demand the embodiment in production equipment of known research findings.

In respect of work requiring the use of compressors, the Member States are requested to take measures regulating this use in areas which they regard as particularly sensitive.

5. Assessment of the economic effect of the proposal

The Commission had paid great attention to the economic impact of the proposed measures. In its consultations with industrial circles it has endeavoured to obtain details of the true cost of the noise suppression required. According to manufacturers the rise in the purchase price of silenced compressors compared with that of unsilenced ones would be 10 to 15%, except compressors with an air flow of over 30 m³/min. However, such compressors represent only a very slight percentage of the market.

As there are already a large number of silenced compressors in some Member States - roughly 70% of the existing stock - this means that part of the economic effort required to conform has already been made. According to the manufacturers, the increase in the purchase price as a whole would be of the order of 9 to 10% in comparison with unsilenced compressors. This is confirmed by an in-depth study¹ carried out by EPA (US Environmental Protection Agency), noise suppression on compressors in the United States not having been obligatory until very recently. The EPA concluded that noise suppression on compressors would cause a rise of 12.3% in their selling prices on the United States market.

However, since the reliability and life of a quiet compressor are better than with an unsilenced compressor, the effect of the rise in the purchase price on the cost of use is low.

Moreover, the cost of compressor services is a very small fraction of site costs. This is therefore a very modest increase which cannot be inflationary.

6. Consultation with interested parties

During the preparation of this proposal the Commission consulted interested parties extensively, i.e. PNEUROPE (European Committee of Manufacturers of Compressors, Vacuum Pumps and Compressed Air Tools).

¹ Background document for proposed portable air compressor noise emission, EPA 550/9-74-016.

7. Cooperation at international level

Whilst drafting this proposal for a directive, the Commission took part in the standardization work of the ISO/TC43/SC1/WG9 group engaged in producing standards for airborne noise emitted by compressors and pneumatic equipment.

The participation of the Commission in that work demonstrates its desire to achieve common requirements which not only secure the protection and improvement of the environment but also greatly facilitate international trade in compressors.

The Commission also exchanged information and test results in this field with EPA.

Through ISO/TC43 the Commission exchanged views with CAGI, the Compressed Air and Gas Institute, USA.

Comparative table of maximum sound power levels for compressors

Class (output in m ³ /min)	Sound power levels in A-weighted dB with reference to 1pW				
	FRG ¹	French draft	EPA ¹	EEC proposal	
				to 31.12.1982	after 31.12.1982
1	104	102	102	102	95
> 1 and < 5	104	102	102	100	95
> 5 and < 10		103	104/105		95
> 10 and < 30	109	106	104/105	104	99
> 30	109	106	104/105	106	101

¹These values are calculated, as the levels prescribed in the national legislation are expressed in terms of sound pressure level.

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;

Having regard to the Opinion of the Economic and Social Committee;

Whereas the 1973 and 1977 action programmes of the European Communities on the environment¹ 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 carry out in that field the approximation of laws for which Article 100 of the Treaty provides;

Whereas Council Directive of on the approximation of the laws of the Member States relating to common provisions for constructional plant and equipment, in particular, has laid down the procedures for EEC type-approval and EEC verification; whereas it is necessary, pursuant to that Directive, to prescribe the harmonized requirements which each category of equipment must satisfy;

Whereas Council Directive No of on the approximation of the laws of the Member States relating to the measurement of the sound level of constructional plant and equipment laid down 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 wellbeing and health, it is necessary to bring about a progressive and appreciable reduction in the permissible sound emission level of compressors;

¹OJ C 112 of 20.12.1973 - C 139 of 13.6.1977.

Whereas it is appropriate to set a sound emission level applicable until 31 December 1982 and that as from 1 January 1983 more stringent restrictions should come into force;

Whereas it is necessary 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 21 of the Council Directive of

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive applies to compressors. It lays down maximum permissible values for sound levels of such equipment and prescribes the method of measurement of that sound.
2. This is a Special Directive within the meaning of Article 3(2) of the Council Directive of hereinafter called the "outline Directive".

Article 2

For the purposes of this Directive:

1. '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 compression ratio of about 1.1;
 - vacuum pumps, i.e. devices or appliances for extracting air from an enclosed space at a pressure not exceeding atmospheric pressure.
2. 'Approval' means the EEC type-approval or EEC verification procedures laid down in Article 2(1) and (2) of the Council Directive of

Article 3

The Member States shall adopt all provisions necessary to ensure that compressors as defined in Article 2 shall not be placed on the market unless they satisfy the provisions of this Directive and the outline Directive. They may carry out controls, though these should be limited to spot checks.

Article 4

1. The Member States shall grant type-approval or, in the event of EEC type-verification, the authorized authorities shall give an EEC type-verification certificate to every type of compressor for which the sound power level of airborne noise, measured in the conditions set out in the Annex to the Council Directive amended by Annex I to this Directive, does not exceed the permissible level as specified in the following table.

Corrected nominal air flow ¹ m ³ /min	Sound power level in dB(A)/1pW	
	to 31.12.1982	from 1.1.1983
≤ 1	102	95
1 < and ≤ 10	100	95
10 < and ≤ 30 <	104	99
> 30	106	101

¹International Standard ISO 1217 - first edition 1975.

2. Each Member State shall prescribe in its legislative measures whichever of the two procedures mentioned in Article 2(1) and (2) of the outline Directive - EEC type-approval or EEC type-verification - it applies for the approval of compressors.
3. EEC type-approval or the EEC verification certificate shall be granted for a period of five years, renewable on application for a further period of five years.

Article 5

1. Every application for approval of a compressor as to the permissible sound emission level shall be accompanied by an information document, the model of which is given in Annex II.
2. For every type of compressor which it approves the Member State shall complete all the sections of the document of which the model is given in Annex III to the outline Directive.
3. For every type of compressor for which it issues a certificate, the authorized authority shall complete all the sections of the document of which the model is given in Annex III to the outline Directive.
4. For every compressor built in conformity with the approved type or certified by an EEC type-verification the manufacturer shall complete the certificate of conformity of which the model is given in Annex IV of the outline Directive and shall state:
 - in the columns for type-approval or certification of EEC type-verification: the date of approval or of the EEC type-verification certificate.

Article 6

Every compressor built in conformity with the approved type or certified by an EEC type-verification shall bear a clear, indelible and durable mark indicating the sound power level in dB (A) with reference to 1pW guaranteed by the manufacturer and determined in the conditions set out in the Annex to the Council Directive of as amended by Annex I to this Directive. The model for such a mark is given in Annex III to this Directive.

Article 7

1. Member States shall not prohibit, on grounds relating to the permissible sound level, the sale, placing in service or use for the intended purpose of any compressor accompanied by the certificate of conformity referred to in Article 5.4 which is marked as described in Article 6.
2. Member States shall take measures to regulate the use of compressors in areas which they consider particularly sensitive.

Article 8

Amendments necessary to bring Annexes I, II and III of this Directive into line with technical advances shall be adopted in conformity with the procedure provided for in Article 21 of the outline Directive.

Article 9

Each Member State shall communicate to the other Member States and the Commission a list of authorities authorized to carry out type-approval or EEC type-verification of compressors and to issue EEC type-approval documents or EEC type-verification certificates with respect to the permissible sound level, as well as all later amendments to these lists.

Article 10

1. Member States shall bring into force the measures needed in order to comply with this Directive within eighteen months of its notification. They shall forthwith inform the Commission thereof.
2. As from notification of this Directive, the Member States shall inform the Commission in good time for it to make its comments of all draft legislative, regulatory and administrative measures which they propose to take in this field.

Article 11

This Directive is addressed to the Member States.

ANNEX IMethod of measuring airborne noise emitted by compressorsScope

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 its EEC type-approval or EEC type-verification and testing of its conformity. These technical procedures comply with the requirements of the Annex to the Council Directive of relating to 'Determination of airborne noise emitted by machines and equipment used outdoors'.

All the points in the Annex to the Council Directive of relating to determination of airborne noise emitted by machines and equipment used outdoors apply to compressors, subject to the following amendments:

4. Criteria for the expression of results

- 4.1. The acoustic criterion for the environment of compressors is their sound power level.
- 4.2. Not applicable.

6. Conditions of measurement

- 6.1. During testing no tools are to be coupled to the compressor. The noise level of release and escape of air from the external lines coupled to the air outlet valves of compressors must be more than 10 dB lower at the measuring points than the noise level of the compressor.
- 6.2. Operation of the sound source during tests
- 6.2.1. Not applicable.
- 6.2.2. The compressor must be brought to its steady-state (oil) temperature within the range specified by the manufacturer. It must operate at its nominal speed and its nominal pressure¹.
- In these operating conditions the air flow is to be checked as laid down in International Standard ISO 1217, First Edition, 1975.

¹Nominal conditions are those appearing in the directions for use supplied to the purchaser.

ANNEX I6.3. Test environment

The compressor is to be installed on a reflecting plane of concrete or non-porous asphalt. Skid-mounted compressors are to be placed on supports 0.40 m high.

6.4. Measurement surface

- The measurement surface to be used for testing is a hemisphere. The centre of the hemisphere is to be the vertical projection on to the reflecting plane of the geometric centre of the compressor. The radius is to be:
 - 4 m where the greatest dimension (length, width or height) 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;
 - 15 m where the greatest dimension of the compressor to be tested is more than 4 m.

Table I in the Annex to the Council Directive of gives the coordinates of the measuring points.

However, where the radius is 15 m, only the eight points on the lower horizontal plane are taken into account.

6.5. Not applicable.

7. Performance of the measurements

7.1.1. Only the background noise is to be taken into account for the purpose of corrections.

8. Calculation of the results

8.3. Not applicable.

8.6.2. In view of 6.3., Point 8.6.2. is not to be taken into account and $C = 0$.

ANNEX II

MODEL INFORMATION DOCUMENT FOR A TYPE OF COMPRESSOR
WITH RESPECT TO EEC TYPE-APPROVAL

Fermissible sound level1. 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. Commercial description (mention any variants)¹
.....
- 1.5. Type
- 1.6. Location of statutory plates and inscriptions and method of fixing
.....

2. Dimensions

- 2.1. Length m
Width m
Height m
- 2.2. Weight kg

3. Operating conditions

- 3.1. Type of motor
- 3.2. Nominal speed rev/min
- 3.3. Nominal pressure bar
- 3.4. Corrected nominal air flow l/sec
..... m³/min

¹ eg positive displacement (reciprocating or rotary), piston, valve or rotary-vane, etc.

ANNEX III

