

INTERNATIONAL STANDARD

ISO 6301-1

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Pneumatic fluid power — Compressed air lubricators —

Part 1:

**Main characteristics to be included in commercial
literature and specific requirements**

Transmissions pneumatiques — Lubrificateurs pour air comprimé —

*Partie 1: Principales caractéristiques à inclure dans la documentation commerciale et
exigences particulières*



Reference number
ISO 6301-1 : 1989 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6301-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

ISO 6301 will consist of the following parts, under the general title *Pneumatic fluid power — Compressed air lubricators*:

- *Part 1: Main characteristics to be included in commercial literature and specific requirements*
- *Part 2: Specifications for test installations and type test procedure*

Annex A of this part of ISO 6301 is for information only.

Introduction

In pneumatic fluid power systems, power is transmitted and controlled through air under pressure within a circuit. Where lubrication is desirable, compressed air lubricators are devices designed to introduce the required quantity of lubricant into the air stream.

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Pneumatic fluid power — Compressed air lubricators —

Part 1:

Main characteristics to be included in commercial literature and specific requirements

1 Scope

This part of ISO 6301 specifies which characteristics of compressed air lubricators, required by manufacturers and users of pneumatic fluid power systems, are to be included in the manufacturers' literature.

It also specifies some requirements which the lubricators must meet.

This part of ISO 6301 applies to direct injection type lubricators.

2 Normative references

The following standards contain provisions which, through reference in this test, constitute provisions of this part of ISO 6301. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6301 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7-1 : 1982, *Pipe threads where pressure-tight joint are made on the threads — Part 1 : Designation, dimensions and tolerances.*

ISO 228-1 : 1982, *Pipe threads where pressure-tight joints are not made on the threads — Part 1 : Designation, dimensions and tolerances.*

ISO 2944 : 1974, *Fluid power systems and components — nominal pressures.*

ISO 5598 : 1985, *Fluid power systems and components — Vocabulary.*

ISO 8778 : —¹⁾, *Pneumatic fluid power — Standard reference atmosphere.*

3 Definitions

For the purposes of this part of ISO 6301, the definitions given in ISO 5598, together with the following, apply.

compressed air lubricator : Device designed to introduce controlled quantities of lubricant into the compressed air stream.

4 Technical requirements

Descriptive literature covering compressed air lubricators shall include the following characteristics.

4.1 General characteristics

4.1.1 General dimensions

The dimensions shown in figure 1 shall be given, in millimetres. For ports, see 4.1.2.

4.1.2 Port sizes

Port sizes should be selected from ISO 228-1 for ports with pipe parallel threads, or ISO 7-1 for ports with pipe conical threads.

4.1.3 Operating pressures

Lubricators shall be classified according to their maximum operating pressure, selected from ISO 2944.

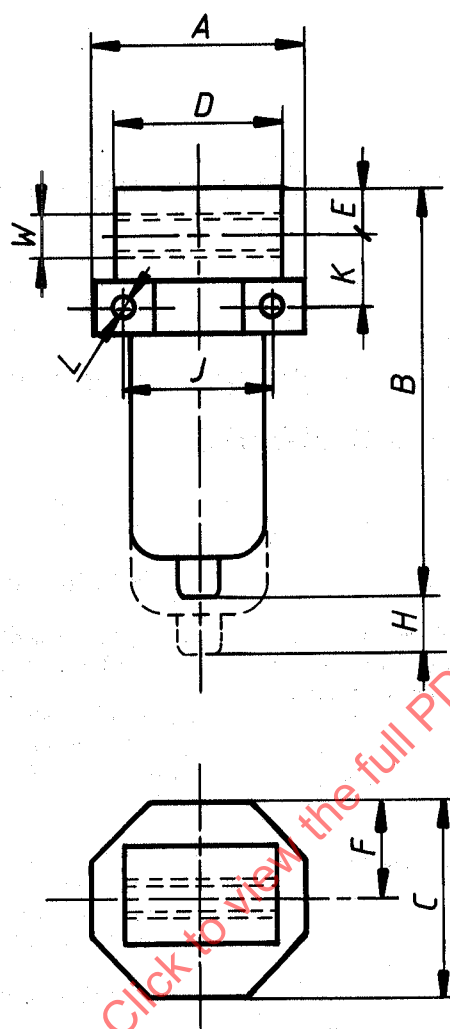
EXAMPLE

- 1 MPa (10 bar)
- 1,6 MPa (16 bar)
- 2,5 MPa (25 bar)

4.1.4 Range of operating temperatures

4.1.4.1 The temperature range in which the material and the operation of the lubricator are not impaired shall be stated.

1) To be published.



Key

- A = installation length
- B = maximum installation height
- C = installation depth
- D = distance between the faces of the compressed air connection (inlet/outlet)
- E = maximum height above the port centreline
- F = maximum installation depth from the port centreline
- H = depth for dismantling and removal of reservoir
- J ¹⁾ = distance between mounting holes
- K ¹⁾ = distance between the port centreline and mounting holes
- L ¹⁾ = minimum diameter and length of mounting holes or recommended mounting bolts
- W = port description

Figure 1 — Dimensions of lubricators

1) Dimensions J, K and L shall be indicated only if the device has provisions for mounting.

4.1.4.2 If required, a derating coefficient to be applied to the operating pressure as a function of the operating temperature shall be included.

4.1.5 Proof pressure

The complete unit shall be so constructed that it will withstand, without damage or permanent deformation of any component, a proof pressure of 1,5 times the rated maximum operating pressure at the rated maximum operating temperature. This does not imply that the unit is safe for use at a pressure greater than the operating pressure (see 4.1.3).

4.2 Particular requirements

The data supplied by the manufacturer shall assist the user in selecting the compressed air lubricator which is best suited for the particular application.

4.2.1 Pressure drop — Air flow rate

4.2.1.1 Graphical form

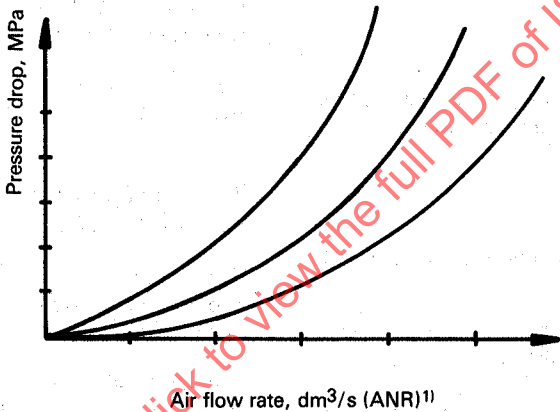
The pressure drop at a given upstream pressure as a function of air flow rate shall be represented for each port size and each reservoir volume.

These data shall be given for at least three inlet pressures selected from the preferred pressures specified in ISO 2944.

The graph shall be presented as shown in figure 2.

4.2.1.2 Tabular form

The air flow rate for each inlet pressure shall be presented using the form of table 1. Values indicated shall be at a pressure drop of 5 % of inlet pressure.



1) See ISO 8778.

Figure 2 — Pressure drop *versus* air flow rate

Table 1 — Air flow rate for inlet pressure

Inlet pressure MPa (bar)	Port sizes							
	Air flow rate, dm³/s (ANR)							
0,25 (2,5)								
0,4 (4)								
0,63 (6,3)								
1 (10)								
1,6 (16)								
2,5 (25)								
NOTE — At least three inlet pressures shall be chosen.								

4.2.2 Limits of use — Minimum air flow rate

The minimum air flow rate for each inlet pressure shall be presented using the form of table 2.

NOTE — The minimum air flow rate is the lower limit of use. It is the minimum flow rate which, with the minimum oil level in the reservoir, provides consistent oil feed and proper atomization of the lubricant with a minimum acceptable fog density when the oil feed adjustment is set at the maximum.

4.2.3 Oil reservoir

4.2.3.1 The reservoir shall allow the storage of lubricant, indicate reserve supply and be readily serviceable.

4.2.3.2 The reservoir usable capacity shall be stated.

NOTE — An example of usable reservoir capacity is given in annex A.

4.2.4 Adjustment of oil flow

The method of adjusting the oil flow, of viewing its delivery rate and of locking the setting (if provided) shall be specified.

4.2.5 Filling

The method of filling and the filling procedure shall be stated.

5 Operation and maintenance

All information required for operation and maintenance, including the nature of those lubricants incompatible with the equipment materials and products that can be used for cleaning air lubricators (for example reservoir) shall be provided.

6 Marking

6.1 The compressed air lubricators shall be marked with the following information :

- a) when space permits, the supplier's name and lubricator identification data;
- b) maximum operating pressure;
- c) range of operating temperature;
- d) direction of air flow;
- e) maximum and minimum oil levels;
- f) a warning about cleaning products, if applicable.

6.2 Other data may also be marked on the compressed air lubricators, for example date code.

7 Test methods

See 4.1.5, 4.2.1 and 4.2.2 for definitions of the test requirements of compressed air lubricators.

NOTE — The values of these characteristics should be obtained according to ISO 6301-2, the test standard for compressed air lubricators.

8 Identification statement (Reference to this part of ISO 6301)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this part of ISO 6301 :

"Characteristics and requirements for compressed air lubricators are in accordance with ISO 6301-1, *Pneumatic fluid power — Compressed air lubricators — Part 1: Main characteristics to be included in commercial literature and specific requirements.*"

Table 2 — Minimum air flow rates for inlet pressures

Inlet pressure MPa (bar)	Port sizes							
	Minimum air flow rate, dm ³ /s (ANR)							
0,25 (2,5)								
0,4 (4)								
0,63 (6,3)								
1 (10)								
1,6 (16)								
2,5 (25)								
NOTE — At least three inlet pressures shall be chosen.								

Annex A
(informative)

Example of usable reservoir capacities

Table A.1 — Example of usable reservoir capacity

Port size		1/8	1/4	3/8	1/2	3/4	1	1 1/2	2
Example of usable reservoir capacity	cm ³	40	50	100	150	200	400	500	750

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