
Pneumatic fluid power — Compressed-air lubricators —

Part 1:

Main characteristics to be included in supplier's literature and product-marking requirements

Transmissions pneumatiques — Lubrificateurs pour air comprimé —

Partie 1: Principales caractéristiques à inclure dans la documentation du fournisseur et exigences de marquage du produit



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6301-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 5, *Control products and components*.

This third edition cancels and replaces the second edition (ISO 6301-1:1997), which has been technically revised.

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

- *Part 1: Main characteristics to be included in supplier's literature and product-marking requirements*
- *Part 2: Test methods to determine the main characteristics to be included in supplier's literature*

Introduction

In pneumatic fluid power systems, power is transmitted and controlled through air under pressure within a circuit. Where lubrication of the air media is desired, compressed-air lubricators are components 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 supplier's literature and product-marking requirements

1 Scope

This part of ISO 6301 specifies which characteristics of compressed-air lubricators are to be included in the supplier's literature.

It also specifies product-marking requirements for lubricators.

This part of ISO 6301 applies to compressed-air lubricators constructed from light alloys (e.g. aluminium), zinc die cast alloys, brass, steel and plastic, with a rated pressure of 1 600 kPa (16 bar¹⁾) and a maximum rated temperature of 80 °C.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 1179-1, *Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 1: Threaded ports*

ISO 2944, *Fluid power systems and components — Nominal pressures*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 6301-2:2006, *Pneumatic fluid power — Compressed-air lubricators — Part 2: Test methods to determine the main characteristics to be included in supplier's literature*

ISO 16030, *Pneumatic fluid power — Connections — Ports and stud ends*

1) 1 bar = 100 kPa = 10⁵ Pa.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 and the following apply.

3.1

compressed-air lubricator

component designed to introduce controlled quantities of lubricant into the compressed-air stream

NOTE 1 There are two kinds of compressed-air lubricators, based on two principles of operation; see 3.1.1 and 3.1.2.

NOTE 2 Adapted from ISO 5598:2008, definition 3.2.117.

3.1.1

non-recirculating lubricator

compressed-air lubricator that injects into the air flow all the lubricant passing through the lubricant feed mechanism

NOTE Adapted from ISO 5598:2008, definition 3.2.467.

3.1.2

recirculating lubricator

compressed-air lubricator that injects into the air flow only a portion of the lubricant observed passing through the lubricant feed mechanism

NOTE Adapted from ISO 5598:2008, definition 3.2.602.

3.2

rated pressure

pressure, confirmed through testing, at which a component or piping is designed to operate for a number of repetitions sufficient to ensure adequate service life

[ISO 5598:2008, definition 3.2.597]

3.3

minimum operating flow rate for a lubricator

minimum flow rate that, with the minimum lubricant level in the reservoir, provides a feed and atomization of the lubricant with a theoretical concentration when the lubricant feed mechanism is set at the maximum

4 Technical requirements

4.1 General characteristics

The supplier's descriptive literature covering compressed-air lubricators shall include the general characteristics specified from 4.1.1 to 4.1.4.

4.1.1 General dimensions

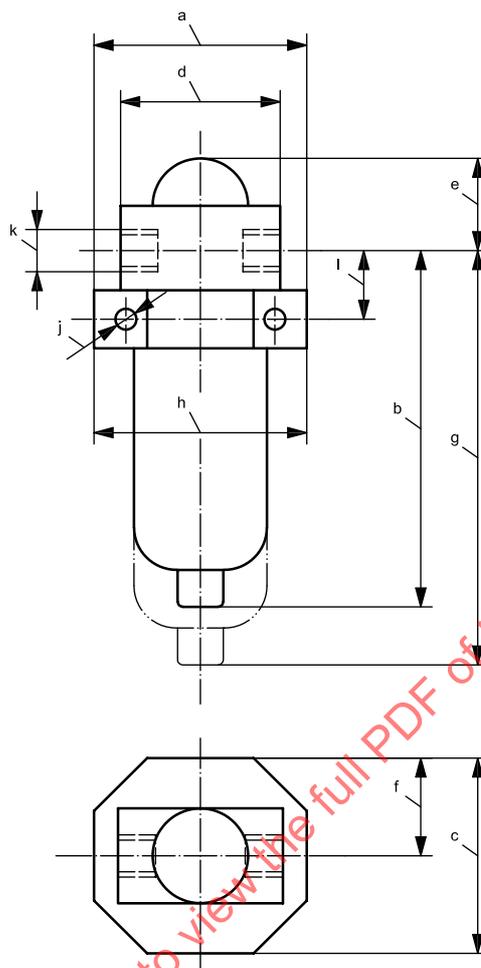
The dimensions shown in Figure 1 shall be given in millimetres. For ports, see 4.1.2.

4.1.2 Port forms

Port forms should be selected from ISO 16030 or ISO 1179-1 for ports with parallel threads or, for ports with tapered threads, thread forms in accordance with ISO 7-1 should be used.

The connecting interface for flange-mounted compressed-air lubricators may be plain ported and counterbored to accept O-rings.

For certain applications and connections, other port forms may be employed. See Annex A.



Key

- a Maximum overall width.
- b Maximum installation height below the port centreline.
- c Maximum overall depth.
- d Distance between the faces of the compressed-air connection (inlet and outlet).
- e Maximum height above the port centreline.
- f Maximum installation depth from the port centreline (applies also for mounting brackets).
- g Minimum clearance from the port centreline to permit dismantling.
- h Distance between mounting holes (this dimension only applies if the lubricator has provisions for mounting).
- i Distance between the port centreline and mounting holes (this dimension only applies if the lubricator has provisions for mounting).
- j Minimum diameter and length of mounting holes or recommended mounting screws (this dimension only applies if the lubricator has provisions for mounting).
- k Port description.

Figure 1 — Dimensions of lubricators

4.1.3 Rated pressure

Compressed-air lubricators shall be classified according to a pressure selected from the preferred nominal pressures listed in ISO 2944.

The rated pressure shall be verified using the test procedure specified in ISO 6301-2:2006, Clause 6.

4.1.4 Range of operating temperatures

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

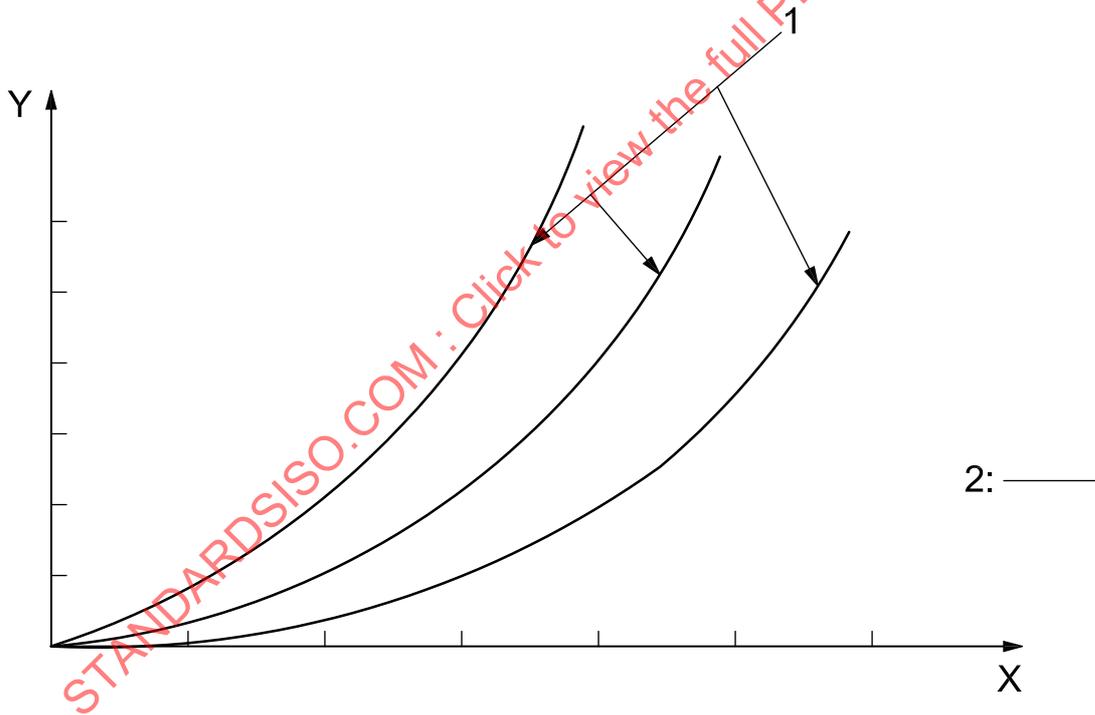
Alternate combinations of constant maximum operating pressure and temperature ratings shall be specified when optional designs may require a different rating.

4.2 Particular requirements

The supplier's descriptive literature covering compressed-air lubricators shall include the data specified from 4.2.1 to 4.2.7, to assist the user in selecting the compressed-air lubricator that is best suited for the particular application.

4.2.1 Pressure drop contingent on air flow rate

The pressure drop at three inlet pressure levels, 250 kPa (2,5 bar), 630 kPa (6,3 bar) and 1 000 kPa (10 bar), or rated pressure if different from 1 000 kPa (10 bar), shall be measured in accordance with ISO 6301-2:2006, Clause 7, for each port size, lubricator type (recirculating or non-recirculating) and reservoir size. The pressure drop at additional inlet pressures, selected from ISO 2944 or elsewhere, may also be recorded. Results shall be presented in either graphical or tabular form; typical examples are given in Figure 2 and Table 1.



Key

- X air flow rate in dm³/s (ANR)
- Y pressure drop in kPa (bar)
- 1 inlet pressure in kPa (bar) (one for each curve)
- 2 model number

Figure 2 — Example of graphical form of reporting pressure drop contingent on air flow rate performance

Table 1 — Example of tabular form of reporting pressure drop vs. air flow rate performance

| Lubricator model number: | | | | | | | |
|--------------------------|-------|---|--|--|--|--|--|
| Inlet pressure | | Port size | | | | | |
| | | | | | | | |
| kPa | (bar) | Air flow rate in dm ³ /s (ANR) | | | | | |
| 250 | (2,5) | | | | | | |
| 630 | (6,3) | | | | | | |
| 1 000 ^a | (10) | | | | | | |

^a Or rated pressure if different from 1 000 kPa (10 bar).

4.2.2 Lubricator type

The supplier's descriptive literature, including test documentation and catalogue information, shall clearly state whether the lubricator is of the recirculating or non-recirculating type.

4.2.3 Minimum operating flow rate

The minimum operating flow rate for an inlet pressure of 630 kPa (6,3 bar), or rated pressure if lower, shall be determined in accordance with ISO 6301-2:2006, Clause 8, and published with the supplier's literature. The method used to determine the minimum operating flow rate (option 1 or option 2) shall be stated in the supplier's literature.

4.2.4 Lubricant reservoir capacity

The capacity of the lubricant reservoir shall be measured in accordance with ISO 6301-2:2006, Clause 9, for each size of reservoir and type of lubricator to which it is attached. Results shall be published with other descriptive specifications for lubricators.

4.2.5 Adjustment of lubricant flow

The method of adjusting the lubricant flow, of controlling its delivery rate, and of locking the setting (if provided) shall be specified in the literature.

4.2.6 Filling

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

4.2.7 Materials of construction

The generic materials of construction (for example, those used for the body, spring cage, bottom plug and internal parts, elastomers and bowl) shall be listed.