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**Gas cylinders — Outlet connections for gas  
cylinder valves for compressed breathable  
air —**

**Part 2:  
Threaded connections**

*Bouteilles à gaz — Raccords de sortie pour robinets de bouteilles à gaz  
pour air comprimé respirable —*

*Partie 2: Raccords filetés*



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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 part of ISO 12209 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12209-2 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*.

ISO 12209 consists of the following parts, under the general title *Gas cylinders — Outlet connections for gas cylinder valves for compressed breathable air*:

- *Part 1: Yoke type connections*
- *Part 2: Threaded connections*
- *Part 3: Adaptor for 230 bar valves*

Annex A forms a normative part of this part of ISO 12209.

# Gas cylinders — Outlet connections for gas cylinder valves for compressed breathable air —

## Part 2: Threaded connections

### 1 Scope

This part of ISO 12209 specifies the characteristics of the threaded type outlet connections for gas cylinder valves for compressed breathable air cylinders, up to a maximum cylinder working pressure of 230 bar and 300 bar. It states the fundamental requirements for both the connection and its components and includes basic dimensions.

This part of ISO 12209 is not applicable to connections described in EN 144-2<sup>[1]</sup>.

Annex A gives the outlet connection prototype qualification test procedures.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12209. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12209 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 228-1:2000, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 10297, *Gas cylinders — Cylinder valves — Specification and type testing.*

ISO 11114-1, *Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials.*

### 3 General requirements

#### 3.1 General

Basic dimensions for the connections and components are shown on Figures 1, 3, 5, 6, 8 and 10 and are specified in Tables 1, 2, 3, 4, 5 and 6 respectively.

Unless otherwise specified, the general tolerances of form and position shall be in accordance with class m of ISO 2768-1:1994.

The requirements for material specifications, gas/material compatibility and valve prototype testing are covered in the relevant standards, for example ISO 10297 and ISO 11114-1.

### 3.2 300 bar valve

Figure 1 shows the valve outlet to be used for cylinders with a maximum working pressure of 300 bar and Table 1 specifies its dimensions.

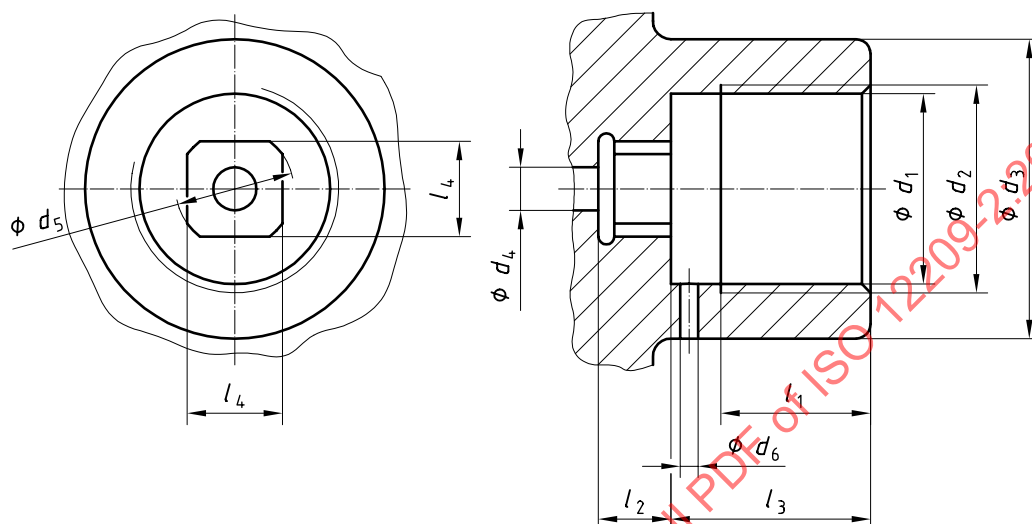


Figure 1 — Outlet for 300 bar valves

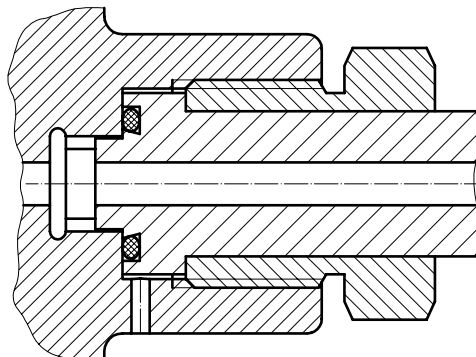
Table 1 — Dimensions of outlet for 300 bar valves

Dimensions in millimetres

| Symbol                                                      | Dimension | Tolerance                                         | Symbol     | Dimension          | Tolerance                                         |
|-------------------------------------------------------------|-----------|---------------------------------------------------|------------|--------------------|---------------------------------------------------|
| $l_1$ min.                                                  | 16        | —                                                 | $d_2$      | G 5/8 <sup>a</sup> | —                                                 |
| $l_2$                                                       | 8         | $\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$ | $d_3$ min. | 32                 | —                                                 |
| $l_3$                                                       | 22        | —                                                 | $d_4$ max. | 5                  | —                                                 |
| $l_4$                                                       | 10,5      | $\pm 0,1$                                         | $d_5$      | 13                 | $\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$ |
| $d_1$                                                       | 21        | —                                                 | $d_6$      | 2                  | $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$   |
| <sup>a</sup> For dimensions of pipe threads, see ISO 228-1. |           |                                                   |            |                    |                                                   |

### 3.3 300 bar off-take connection

Figure 2 is an assembly drawing of the gas off-take connection for valves for use with cylinders with a maximum working pressure of 300 bar.



**Figure 2 — 300 bar off-take connection — Assembly drawing**

Figure 3 shows the individual parts of the off-take connection and Table 2 specifies their basic dimensions. Figure 1 shows the valve outlet.

**Table 2 — Basic dimensions of 300 bar off-take connection**

Dimensions in millimetres

| Symbol                                                                                | Dimension | Tolerance                                         | Symbol | Dimension          | Tolerance                                         |
|---------------------------------------------------------------------------------------|-----------|---------------------------------------------------|--------|--------------------|---------------------------------------------------|
| $l_1$                                                                                 | 3         | —                                                 | $d_3$  | 17                 | —                                                 |
| $l_2$                                                                                 | 1,9       | $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$ | $d_4$  | 12                 | $\begin{smallmatrix} +0,1 \\ 0 \end{smallmatrix}$ |
| $l_3$                                                                                 | 7         | —                                                 | $d_5$  | 10                 | $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$ |
| $l_4$ max.                                                                            | 18        | —                                                 | $d_6$  | 16                 | d11                                               |
| $\alpha$                                                                              | 15°       | —                                                 | $d_7$  | 20                 | —                                                 |
| $d_1$                                                                                 | 11,2      | —                                                 | $d_8$  | G 5/8 <sup>a</sup> | —                                                 |
| $d_2$                                                                                 | 2,65      | —                                                 | $d_9$  | 16                 | B11                                               |
| NOTE Dimensions of sealing devices are in conformity with ISO 3601-1 <sup>[2]</sup> . |           |                                                   |        |                    |                                                   |
| <sup>a</sup> For dimensions of pipe threads, see ISO 228-1.                           |           |                                                   |        |                    |                                                   |

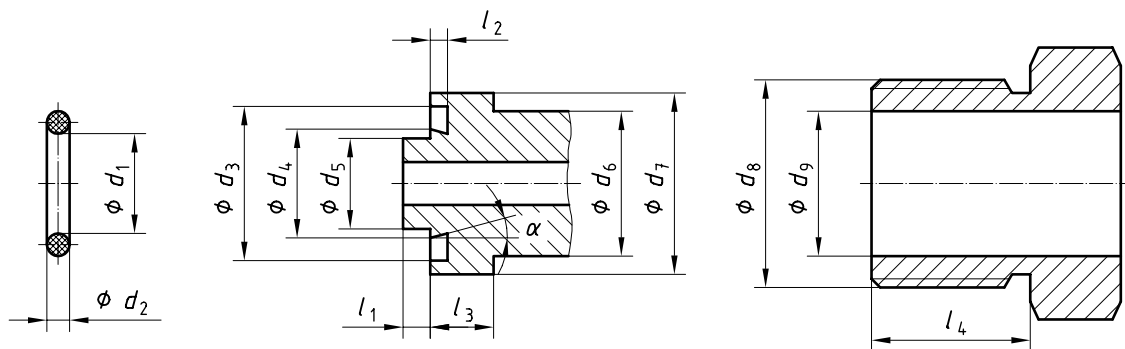


Figure 3 — 300 bar off-take connection — Parts

### 3.4 300 bar filling connection

Figure 4 is an assembly drawing of the connection to be used for filling cylinders up to a maximum pressure of 300 bar.

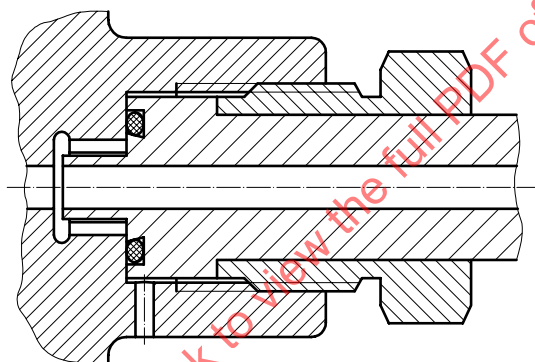


Figure 4 — 300 bar filling connection — Assembly drawing

Figure 5 shows the individual parts of the connection and Table 3 specifies their basic dimensions. Figure 1 shows the valve outlet.

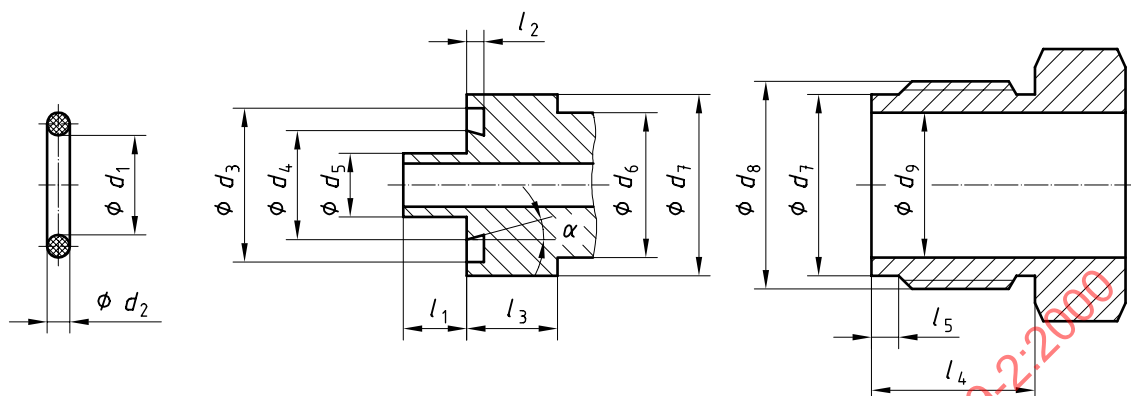


Figure 5 — 300 bar filling connection — Parts

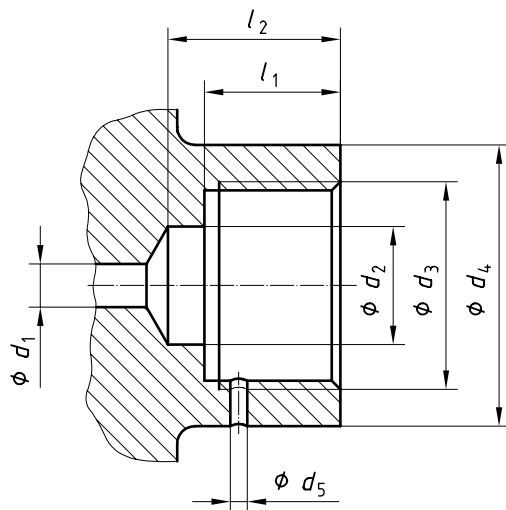
Table 3 — Dimensions of off-take connection

Dimensions in millimetres

| Symbol                                                                | Dimension | Tolerance     | Symbol | Dimension          | Tolerance     |
|-----------------------------------------------------------------------|-----------|---------------|--------|--------------------|---------------|
| $l_1$                                                                 | 7         | $+0,3$<br>$0$ | $d_3$  | 17                 | —             |
| $l_2$                                                                 | 1,9       | $0$<br>$-0,1$ | $d_4$  | 12                 | $+0,1$<br>$0$ |
| $l_3$                                                                 | 10        | $+0,3$<br>$0$ | $d_5$  | 7                  | $0$<br>$-0,1$ |
| $l_4$ min.                                                            | 17        | —             | $d_6$  | 16                 | d11           |
| $l_5$                                                                 | 3         | $+0,5$<br>$0$ | $d_7$  | 20                 | —             |
| $\alpha$                                                              | 15°       | —             | $d_8$  | G 5/8 <sup>a</sup> | —             |
| $d_1$                                                                 | 11,2      | —             | $d_9$  | 16                 | B11           |
| $d_2$                                                                 | 2,65      | —             | —      | —                  | —             |
| NOTE Dimensions of sealing devices are in conformity with ISO 3601-1. |           |               |        |                    |               |
| <sup>a</sup> For dimensions of pipe threads, see ISO 228-1.           |           |               |        |                    |               |

### 3.5 230 bar valve

Figure 6 shows the valve outlet to be used for cylinders with a maximum working pressure of 230 bar and Table 4 specifies its dimensions.



NOTE The venting hole is optional.

Figure 6 — Outlet for 230 bar valves

Table 4 — Dimensions of outlet for 230 bar valves

Dimensions in millimetres

| Symbol                                                      | Dimension | Tolerance                                            | Symbol     | Dimension          | Tolerance                                       |
|-------------------------------------------------------------|-----------|------------------------------------------------------|------------|--------------------|-------------------------------------------------|
| $l_1$                                                       | 15        | $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$    | $d_2$      | 13                 | $\pm 0,3$                                       |
| $l_2$                                                       | 19        | $\begin{smallmatrix} +0,5 \\ -0,2 \end{smallmatrix}$ | $d_3$      | G 5/8 <sup>a</sup> | —                                               |
| $d_1$ max.                                                  | 5         | —                                                    | $d_4$ min. | 30                 | —                                               |
| —                                                           | —         | —                                                    | $d_5$      | 2                  | $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ |
| <sup>a</sup> For dimensions of pipe threads, see ISO 228-1. |           |                                                      |            |                    |                                                 |

### 3.6 230 bar off-take connection

Figure 7 is an assembly drawing of the gas off-take connection for valves for use with cylinders with a maximum working pressure of 230 bar.

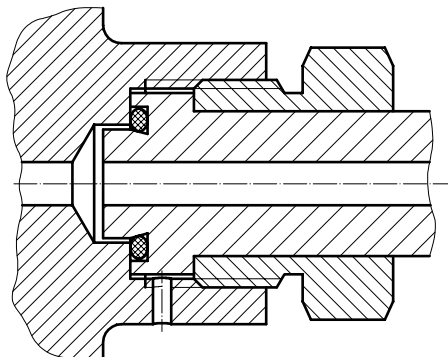


Figure 7 — 230 bar off-take connection — Assembly drawing

Figure 8 shows the individual parts of the off-take connection and Table 5 specifies their basic dimensions. Figure 6 shows the valve outlet.

Table 5 — Basic dimensions of 230 bar off-take connection

Dimensions in millimetres

| Symbol                                                                | Dimension | Tolerance                                         | Symbol | Dimension          | Tolerance                                         |
|-----------------------------------------------------------------------|-----------|---------------------------------------------------|--------|--------------------|---------------------------------------------------|
| $l_1$                                                                 | 3         | —                                                 | $d_3$  | 17                 | —                                                 |
| $l_2$                                                                 | 1,9       | $\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$ | $d_4$  | 12                 | $\begin{smallmatrix} +0,1 \\ 0 \end{smallmatrix}$ |
| $l_3$                                                                 | 7         | $\begin{smallmatrix} 0 \\ -2 \end{smallmatrix}$   | $d_6$  | 16                 | d11                                               |
| $l_4$                                                                 | 12        | $\pm 0,3$                                         | $d_7$  | 20                 | —                                                 |
| $\alpha$                                                              | 15°       | —                                                 | $d_8$  | G 5/8 <sup>a</sup> | —                                                 |
| $d_1$                                                                 | 11,2      | —                                                 | $d_9$  | 16                 | B11                                               |
| $d_2$                                                                 | 2,65      | —                                                 | —      | —                  | —                                                 |
| NOTE Dimensions of sealing devices are in conformity with ISO 3601-1. |           |                                                   |        |                    |                                                   |
| <sup>a</sup> For dimensions of pipe threads, see ISO 228-1.           |           |                                                   |        |                    |                                                   |

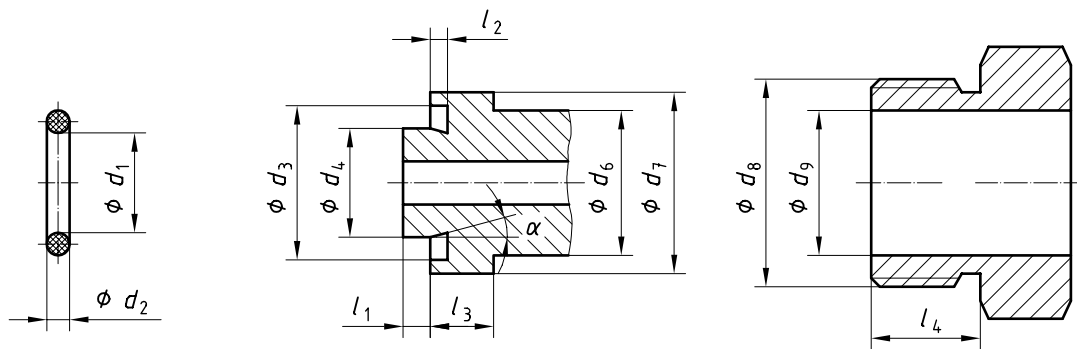


Figure 8 — 230 bar off-take connection — Parts

### 3.7 230 bar filling connection

Figure 9 is an assembly drawing of the off-take connection to be used for filling cylinders up to a maximum pressure of 230 bar.

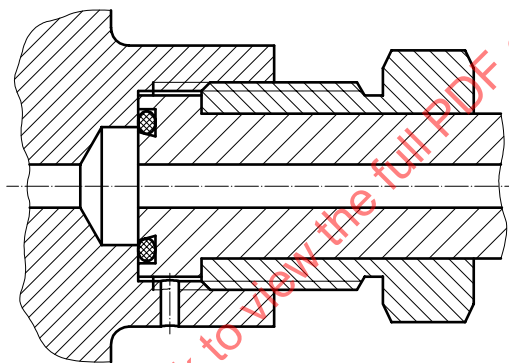


Figure 9 — 230 bar filling connection — Assembly drawing