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**AMENDMENT 1**
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# Gas cylinders — Outlet connections for gas cylinder valves for compressed breathable air

## AMENDMENT 1: Outlet connection up to a maximum cylinder working pressure of 500 bar

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

*AMENDEMENT 1: Raccords de sortie jusqu'à une pression de travail de bouteilles maximale de 500 bar*



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Amendment 1 to ISO 12209:2013 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*.

This corrected version of ISO 12209:2013/Amd1:2016 incorporates the following corrections.

Figures 16, 18, 19 and 20 have been updated.

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

## AMENDMENT 1: Outlet connection up to a maximum cylinder working pressure of 500 bar

*Page 1, Clause 1*

Change list number 2 with the following:

— threaded type outlet connections up to a maximum cylinder working pressure of 232 bar, 300 bar and 500 bar;

*Page 4, Clause 5*

Replace the title of Clause 5 with the following:

**5 Threaded type outlet connections up to a maximum cylinder working pressure of 232 bar, 300 bar and 500 bar**

*Page 4, 5.1*

Replace 5.1 with the following::

**5.1 General requirements**

The three outlet connections specified in this clause consist each of a valve outlet, a filling connector and a gas withdrawal connector. Use of the specified filling connectors is essential to ensure the safe use of each connection at its intended working pressure.

Basic dimensions for the connections and components are shown on Figures 4, 6, 8, 9, 11, 13, 14, 16, 18 and 20 and are specified in Tables 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13, respectively.

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

The connection shall be qualified in accordance with A.2.

NOTE The requirements for material specifications, gas/material compatibility, valve prototype testing are covered in the relevant standards, ISO 11114-1, ISO 11114-2 and ISO 10297.

*Page 6, Table 5*

Replace the values for $l_2$ and $\alpha$ with the following:

**Table 5 — Dimensions of 232 bar filling connector**

| Symbol | Dimension<br>mm | Tolerance<br>mm |
|---|---|---|
| $l_2$ | 2 | +0,1<br>0 |
| $\alpha$ | 24° | — |

*Page 7, Table 6*

Replace the values for $l_2$ and $\alpha$ with the following:

**Table 6 — Basic dimensions of 232 bar gas withdrawal connector**

| Symbol | Dimension<br>mm | Tolerance<br>mm |
|---|---|---|
| $l_2$ | 2 | +0,1<br>0 |
| $\alpha$ | 24° | — |

*Page 10, Table 8*

Replace the values for $l_2$ and $\alpha$ with the following:

**Table 8 — Dimensions of 300 bar filling connector**

| Symbol | Dimension<br>mm | Tolerance<br>mm |
|---|---|---|
| $l_2$ | 2 | +0,1<br>0 |
| $\alpha$ | 24° | — |

*Page 11, Table 9*

Replace the values for $l_2$ and $\alpha$ with the following:

**Table 9 — Basic dimensions of 300 bar gas withdrawal connector**

| Symbol | Dimension<br>mm | Tolerance<br>mm |
|---|---|---|
| $l_2$ | 2 | +0,1<br>0 |
| $\alpha$ | 24° | — |

*Page 11, Clause 5*

After subclause 5.3, insert a new subclause 5.4:

### 5.4 "500 bar threaded outlet connection

#### 5.4.1 General

The outlet connection specified here is intended for use at cylinder working pressures not exceeding 500 bar

#### 5.4.2 500 bar valve

Figure 14 shows the valve outlet to be used for cylinders with a maximum working pressure of 500 bar and Table 10 specifies its dimensions.

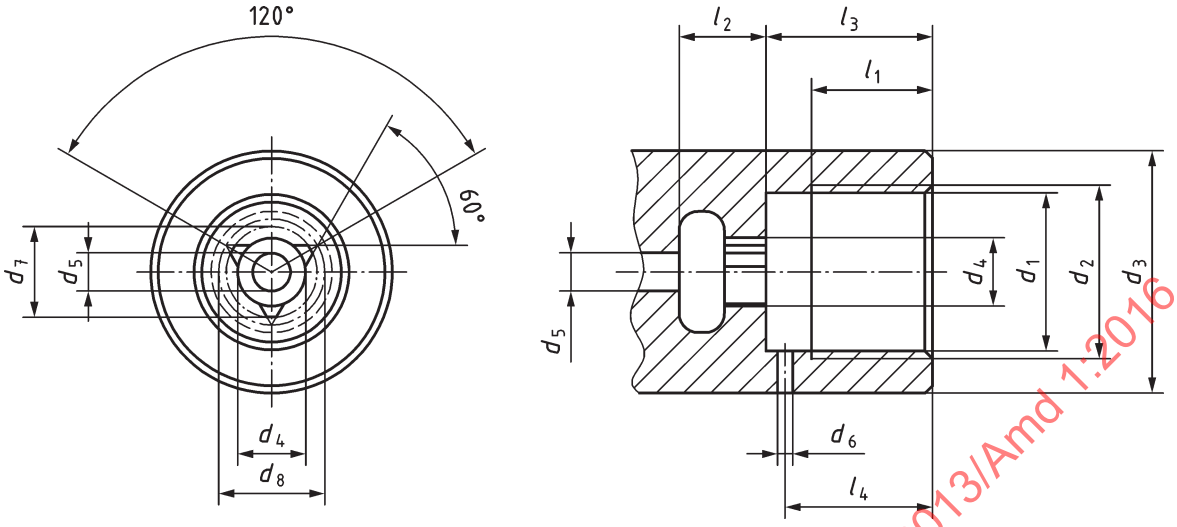


**Figure 14 — Outlet for 500 bar valves**

**Table 10 — Dimensions of outlet for 500 bar valves**

| Symbol | Dimension mm | Tolerance mm | Symbol | Dimension mm | Tolerance mm |
|---|---|---|---|---|---|
| $l_1$ | 16 min. | – | $d_3$ | 32 min. | — |
| $l_2$ | 11,5 | $^{0}_{-0,3}$ | $d_4$ | 9 | +0,2 |
| $l_3$ | 22 | $^{+0,3}_{-0,1}$ | $d_5$ | 5 max. | — |
| $l_4$ | 19,5 | | $d_6$ | 2 | +1 |
| $d_1$ | 20,5 min. | — | $d_7$ | 12 | +0,2 |
| $d_2$ | G5/8[a] | ISO 228-1 | $d_8$[b] | 14 | – |

NOTE Dimensions of sealing devices are in conformity with ISO 3601-1.

[a] For dimensions of pipe threads, see ISO 228-1.

[b] Theoretical dimension of the fully formed triangle.

### 5.4.3 500 bar filling connection

Figure 15 is an assembly drawing of the connection to be used for filling cylinders up to a maximum pressure of 500 bar.

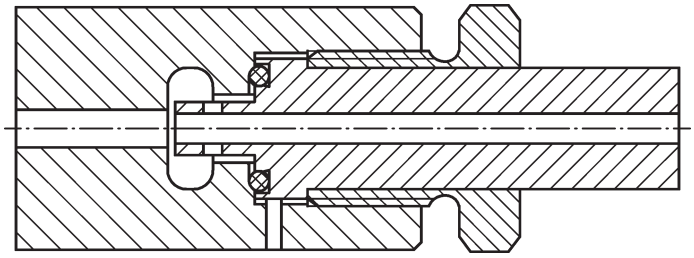

**Figure 15 — 500 bar filling connection — Assembly drawing**

Figure 16 shows the individual parts of the connection and Table 11 specifies their basic dimensions.

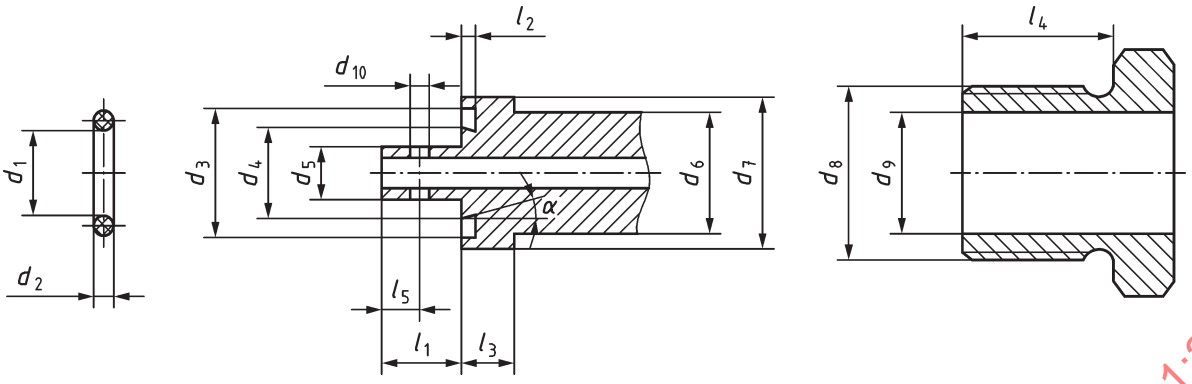


**Figure 16 — 500 bar filling connection — Parts**

**Table 11 — Dimensions of 500 bar filling connection**

| Symbol | Dimension mm | Tolerance mm | Symbol | Dimension mm | Tolerance mm |
|---|---|---|---|---|---|
| $l_1$ | 10,5 | +0,3<br>0 | $d_4$ | 12 | +0,1<br>0 |
| $l_2$ | 2 | +0,1<br>0 | $d_5$ | 7 | 0<br>−0,1 |
| $l_3$ | 7 | +0,3<br>−0,1 | $d_6$ | 16 | −0,05<br>−0,16[b] |
| $l_4$ | 20 | — | $d_7$ | 20 | +0,1<br>0 |
| $\alpha$ | 24° | — | | | |
| $l_5$ | 5 | — | $d_8$ | G5/8[a] | ISO 228-1 |
| $d_1$ | 11,2 | — | $d_9$ | 16 | +0,25<br>+0,15[c] |
| $d_2$ | 2,65 | — | $d_{10}$ | 2,5 max. | |
| $d_3$ | 17 | +0,1<br>0 | | | |

NOTE Dimensions of sealing devices are in conformity with ISO 3601-1.

[a] For dimensions of pipe threads, see ISO 228-1.

[b] The tolerance is taken from ISO 286 where it is defined as “d11”.

[c] The tolerance is taken from ISO 286 where it is defined as “B11”.

### 5.4.4 500 bar gas withdrawal connection

Figure 17 is an assembly drawing of the gas withdrawal connection for valves for use with cylinders with a maximum working pressure of 500 bar.

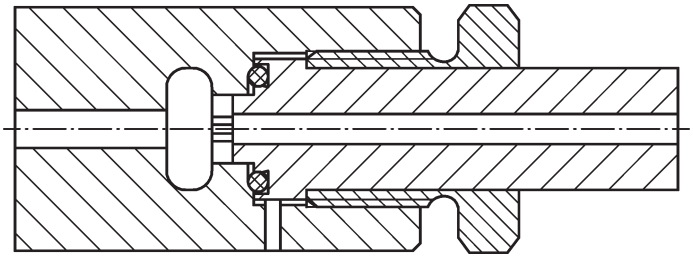

**Figure 17 — 500 bar gas withdrawal connection — Assembly drawing**

Figure 18 shows the individual parts of the gas withdrawal connection and Table 12 specifies their basic dimensions.

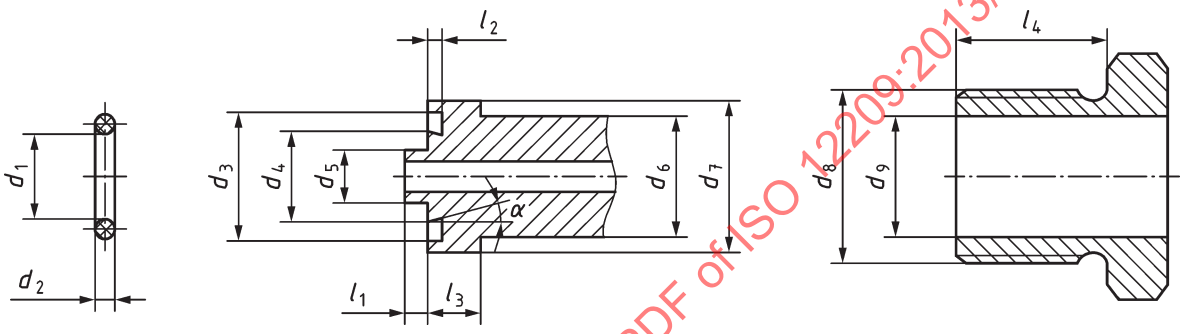


**Figure 18 — 500 bar gas withdrawal connection — Parts**

**Table 12 — Basic dimensions of 500 bar gas withdrawal connection**

| Symbol | Dimension mm | Tolerance mm | Symbol | Dimension mm | Tolerance mm |
|---|---|---|---|---|---|
| $l_1$ | 3 | — | $d_4$ | 12 | +0,1<br>0 |
| $l_2$ | 2 | +0,1<br>0 | $d_5$ | 8,5 | 0<br>−0,1 |
| $l_3$ | 7 | +0,3<br>−0,1 | $d_6$ | 16 | −0,05<br>−0,16[b] |
| $l_4$ | 20 | — | $d_7$ | 20 | +0,1<br>0 |
| $\alpha$ | 24° | — | | | |

NOTE Dimensions of sealing devices are in conformity with ISO 3601-1.

[a] For dimensions of pipe threads, see ISO 228-1.

[b] The tolerance is taken from ISO 286 where it is defined as “d11”.

[c] The tolerance is taken from ISO 286 where it is defined as “B11”.

**Table 12** *(continued)*

| Symbol | Dimension | Tolerance | Symbol | Dimension | Tolerance |
|---|---|---|---|---|---|
| $d_1$ | 11,2 | — | $d_8$ | G5/8[a] | ISO 228-1 |
| $d_2$ | 2,65 | — | $d_9$ | 16 | +0,25<br>+0,15[c] |
| $d_3$ | 17 | +0,1<br>0 | | | |

NOTE Dimensions of sealing devices are in conformity with ISO 3601-1.

[a] For dimensions of pipe threads, see ISO 228-1.

[b] The tolerance is taken from ISO 286 where it is defined as “d11”.

[c] The tolerance is taken from ISO 286 where it is defined as “B11”.

### 5.4.5 500 bar plug connection

Figure 19 is an assembly drawing of the plug connection for valves for use with cylinders with a maximum working pressure of 500 bar.

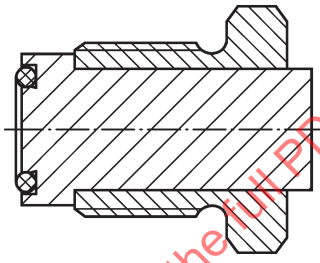

**Figure 19 — 500 bar plug connection — Parts**

Figure 20 shows the individual parts of the plug connection and Table 13 specifies their basic dimensions.

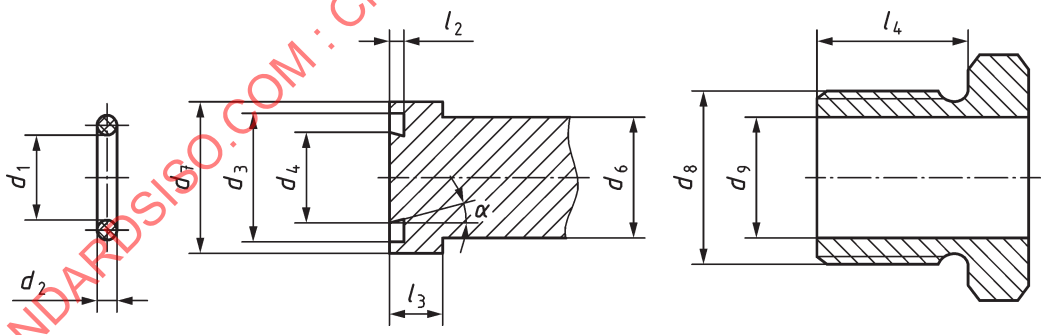


**Figure 20 — 500 bar plug connection — Parts“**



 

**Table 13 — Basic dimensions of 500 bar plug connection**

| Symbol | Dimension mm | Tolerance mm | Symbol mm | Dimension mm | Tolerance mm |
|---|---|---|---|---|---|
| | | | $d_3$ | 17 | +0,1<br>0 |
| $l_2$ | 2 | +0,1<br>0 | $d_4$ | 12 | +0,1<br>0 |
| $l_3$ | 7 | – | $d_6$ | 16 | −0,05<br>−0,16[b] |
| $l_4$ | 20 | – | $d_7$ | 20 | +0,1<br>0 |
| $\alpha$ | 24° | – | | | |
| $d_1$ | 11,2 | – | $d_8$ | G5/8[a] | ISO 228-1 |
| $d_2$ | 2,65 | – | $d_9$ | 16 | +0,25<br>+0,15[c] |

NOTE Dimensions of sealing devices are in conformity with ISO 3601-1.

[a] For dimensions of pipe threads, see ISO 228-1.

[b] The tolerance is taken from ISO 286 where it is defined as “d11”.

[c] The tolerance is taken from ISO 286 where it is defined as “B11”.