

# 05

POCKET GUIDE  
SAFETY

## Connecting Gas Cylinders

**MESSER**   
Gases for Life



## Dear users of Messer gases

Messer produces and supplies a wide portfolio of products and cylinder gases. Handling gases is safe - as long as you pay attention to their special properties.

The gas in gas cylinders is under high pressures of up to 300 bar. It can also be toxic or highly reactive. So be sure to familiarize yourself with the properties of the gas in your compressed gas cylinder. The same applies to the dangers associated with it.

This pocket guide gives you tips and advice on how to connect gas cylinders safely.

In principle, the relevant legal regulations must be observed. We recommend that you keep the Pocket Guide within reach at all times.

### **Important**

For each product, you will receive a safety data sheet with all important safety information. The manufacturers of pressure reducers provide instructions for use which also contain safety information. Please familiarize yourself with this information.

Your team from Messer



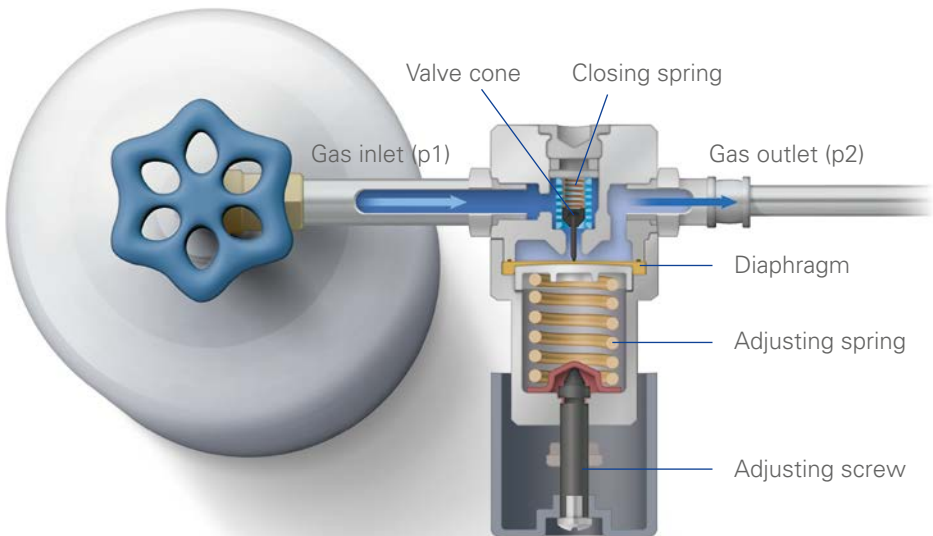
## "Specialists" for different tasks and gases

Pressure reducers can be used to reduce the pressure of gas cylinders, set the desired operating pressure, and keep it constant. This is achieved by a mechanism which essentially consists of an adjusting spring, a diaphragm, a pressure pin, a closing spring, and a valve plug.

**Two-stage pressure reducers** are ideal for achieving a particularly constant downstream pressure. In principle, this involves two single-stage pressure reducers in series. In this case, the first is fixed and regulates

the gas pressure of the cylinder down to about 25 bar. The second can thus operate at a relatively constant pre-pressure, which is not or only slightly influenced by the cylinder pressure.

If constant flow control is required, as when CO<sub>2</sub> is used as a shielding gas for welding applications, there are special **heated pressure reducers** or **separate heaters** that prevent the pressure reducer from icing up.



## Which pressure reducer for which application?

The answer to this question depends on three key factors:

- What is the pressure of the gas cylinder?
- Is the pressure reducer approved for the gas in question?
- In what range should the back pressure or flow rate be adjustable?

In order to prevent incorrect use of pressure reducers and to avoid confusion, **different gases require different connections.**

Gas cylinders for acetylene, for example, are connected via a bracket connection.



*Connection nut for fuel gases with groove*



*Connection nut for other gases without groove*

In the case of fuel gas cylinders, the different connections have a **left-hand thread**, while all other gas cylinders have a **right-hand thread**. Pressure reducers for fuel gases can also be identified by a **groove in the connection nut**.

# Safety right from the start

**Before assembly, check the pressure reducer for the following points:**

- Is the **positioning spring slackened**?
- Are the cylinder valve and pressure reducer connections **absolutely clean**, in **good condition** and **free of dirt particles** or even oil or **grease**?
- Are the **seals the right size** and **undamaged**? (This applies in particular to the O-rings on 300 bar pressure reducers.)
- Gasket damaged? Immediately replace with a **suitable original spare part** (other "suitable" seals, for example from the sanitary or automotive sector, are dangerous and not permitted).



## Step by step



### Before connecting

Fix the gas cylinder, then remove the bottle cap. Before mounting the pressure reducer, briefly open the cylinder valve to **blow out any impurities** that may be present. The jet must go into the empty space.

### Screw on the pressure reducer

300 bar pressure reducers can be tightened by hand, others require tools. The operating instructions for the pressure reducer provide information on this and also state how high the **maximum tightening torque** may be. As a rule, **do not overtighten!**



### Opening the valve

**Open** cylinder valves **slowly** to avoid a sudden increase in pressure. **One full turn** is sufficient. **Check** pressure reducer connection **for leaks**.

### Pause work

**Close all valves** before longer breaks in work, as **leaks can cause gas to escape in an uncontrolled manner**. Please also observe the relevant occupational health and safety regulations.



## Eliminating icing

Because gases are under high pressure and expand during tapping, icing can occur on the valve. These can be removed with **warm air**, for example, but **never use an open flame!**

## Remove pressure reducer

**Close** cylinder valve, **blow off** residual gas or **let it flow out**, most easily via the relief valve. The upstream and downstream pressure gauges must no longer indicate pressure. Then carefully loosen the pressure reducer. There may still be **residual pressure**. If in doubt, first fully tension the steel spring on the adjustment handle and then relax it again.

## Central aspects of handling pressure reducers

- Observe safety instructions for gases and pressure reducers.
- Caution with particularly reactive gases such as oxygen or acetylene.
- Cylinder valve and pressure reducer must be intact, absolutely clean and free of oil or grease.
- Adjusting spring must be released before connecting and removing the pressure reducer.





Additional **Pocket Guides Safety** can be accessed through our website or obtained directly from our experts.

### **Important**

This Pocket Guide contains general information only. It does not replace training and is not intended as such. Messer is not liable for the information contained in this brochure.



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