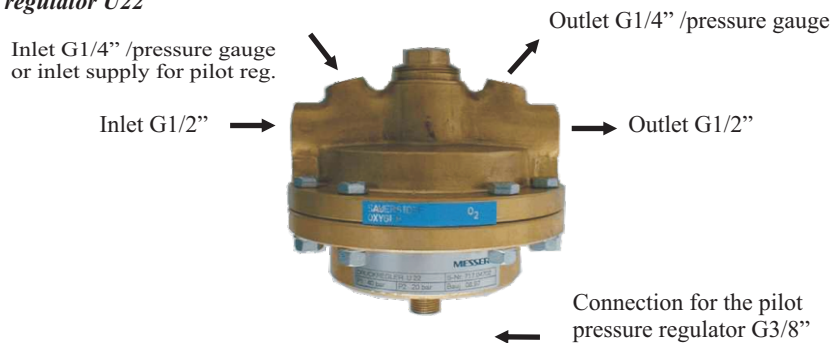


Pressure regulator U22



6. Start-up

- 6.1 Open the shut-off valve in the supply line of the pressure regulator (pressure build-up of the pressure regulator U22 and the pilot pressure regulator).
- 6.2 Open slightly the pilot pressure regulator by turning the hand knob clockwise.
- 6.3 Ensure a filling of the downstream line without any vibration.
- 6.4 Readjust the pilot pressure regulator to set the working pressure.

7. Operation and maintenance

- 7.1 Always protect the pressure regulator against damage (visual inspection at regular intervals).
- 7.2 The setting of the relief valve may not be changed.
- 7.3 Pay attention to perfect condition of seals, sealing areas and the gauges.
- 7.4 Always take pressure regulators out of operation and close isolation valves immediately in case of malfunctions, for example rise of the outlet pressure in case of consumption = 0, in case of leakage to atmosphere, a defective gauge or in case of actuation of the relief valve.

8. Shut-down

- 8.1 For short-time interruption of work, it is sufficient to close the isolation valve downstream of the pressure regulator.
- 8.2 In case of longer interruptions (e.g. over night), the pressure regulator must be relieved.
 1. Close inlet pressure isolation valve.
 2. Relieve the pilot pressure regulator by turning the hand knob anti clockwise.
Note: To relieve the pressure, ensure a gas withdrawal into the system, so that the pressure gauges indicate zero.

9. Repair

- 9.1 Repairs may only be carried out in authorized repair workshops by expert persons (Ask your local MESSER dealer for further informations).
- 9.2 Only original spare parts must be used. The materials have been adapted to the gas type in each instance. So always specify the gas type.
- 9.3 In case of independent repairs, the use of non-original spare parts or changes on the side of the user or a third party without the approval of the manufacturer, any form of liability for resulting damages will expire as well as the manufacturers warranty.
- 9.4 After being repaired, the pressure regulator must be checked with respect to proper function, leak-tightness and cleanliness of the gas-wetted surfaces. When the system is used again, a sufficient purging operation must be carried out first.

Instructions for use U 22 dom loaded pressure regulator



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1. Application

1.1 Designated use

Use the U22 pressure regulator to reduce an inlet pressure to an as constant as possible outlet pressure.
This equipment can be used in explosion endangered areas because they don't have an own potential source of ignition (ignition risk assessment according to DIN EN 13463-1).

1.2 Non-designated use



Do not use pressure regulators for gases in the liquid phase.
Do not use for unsuitable types of gas or corrosive gases.
Do not use at temperatures below -30°C or above +60°C.

Inlet pressure:	max. 40 bar	
Materials:	- Body:	Brass
	- Dome bonnet:	Brass
	- Diaphragm:	EPDM/ NBR
	- Seat seal:	Polyamide
Outlet pressure:	max. 20 bar	

The pressure regulator has to be used according to these instructions for use and especially the safety instructions.

2. Safety instructions

- 2.1 All items of informations marked with ▲ are valid as special safety instructions.
- 2.2 These pressure regulators adhere to state-of-the-art technology and to the demands of the existing standards and regulations.
- 2.3 Changes or modifications are not allowed to be made to the pressure regulator without the prior consent of the manufacturer.
- 2.4 The equipment must be operated by suitable trained personnel only.
- 2.5 The result of improper handling and improper use as intended can involve risks for the user and other persons as well as damage to the device.
- 2.6 Regulations to be adhered to:
 - BGV A1 (VBG 1), "General Specifications"
 - BGV D1 (VBG 15), "Welding, Cutting and Related Procedures"
 - BGV B7 (VBG 62), "Oxygen"
 european directive
 - **Pressure equipment device 97/23/EG**



Special attention has to be paid to the country specific laws, regulations and procedures concerning the use of this type of equipment.



2.7 Use only for gas types the pressure regulator is labelled for (see item 3).



2.8 Do not use at temperatures below -30°C or above +60°C.

2.9 Valve has always to be opened slowly!

2.10 It must be guaranteed that no dirt particles such as rust and chips can enter the pressure regulator. In this case, a filter should be installed upstream of the pressure regulator (see publication 770.50267).



2.11 All parts coming into contact with oxygen must be kept in oil-free and grease-free condition.

Fire or explosion hazard!



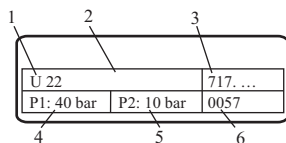
2.12 Smoking or open fire (e.g. candles) in the vicinity of the gas supply system is strictly prohibited.



Fire and explosion hazard!

3. Labelling

Nameplate



- | | |
|---------------------|------------------------|
| 1 Type of regulator | 4 Max. inlet pressure |
| 2 Type of gas | 5 Max. outlet pressure |
| 3 Part number | 6 Manufacturing date |

K Inspection stamp
confirming successful
test pass

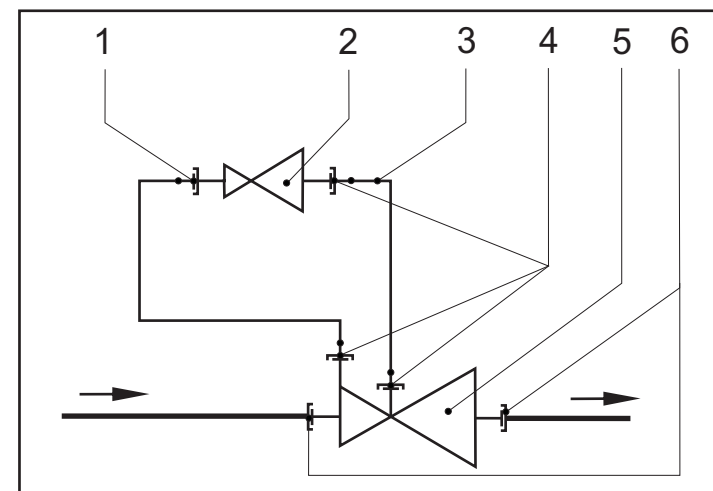
4. Relief valve

- 4.1 The built in relief valve can vent quantities of gas which flow through the pressure regulator because of a leaky main valve when there is no gas consumption to the atmosphere. It does not serve as a safety valve for the downstream equipment. To protect the downstream equipment against overpressure in case of a failure of the pressure regulator, a safety device complying with the regulations should be installed. In case of combustible gases, connect a discharge line to the relief valve and ensure a discharge without danger.

5. Installation

- 5.1 Check whether the pressure regulator is labelled for the used gas type. If the type of gas does not correspond with the enclosed gas identification plate in accordance with the instructions, the system must not be installed.
- 5.2 The pressure regulators are delivered for vertical installation (positioning dome bonnet pointing downwards) and for gas flow from left to right (when looking at the gauges or nameplate).
- 5.3 An isolation valve should be installed upstream of the pressure regulator in so that the gauges of the pressure regulator can be observed when opening the isolation valve. An isolation valve is necessary in the line between the pressure regulator and the point of use if there is no possibility to isolate the line or if the point of use is located more than 50 x ND (nominal diameter) of the downstream piping. The isolation valve is to be installed at a distance of 20 x ND (nominal diameter).
- 5.4 During the installation of piping and connection fittings, attention must be paid without fail to ensure that the pipe axes align with the connection axes of the pressure regulator and that the flat surfaces are parallel to each other. It must never be attempted to straighten incorrectly laid pipe through excessive tightening of the nuts.
- 5.5 The correct dimensioning of the related piping and the arrangement of other fittings are decisive for the perfect functioning of the pressure regulator.
- 5.6 Before start-up check all connections for leaks.

Scheme



- | | |
|--------------------------------------|---------------------------------|
| 1 Threaded connection | 4 Connection |
| 2 Pilot pressure regulator (ST 2000) | 5 Pressure regulator (U 22) |
| 3 Pipe | 6 Connection for in- and outlet |