1st stage regulator Type VSR 0523, VSR 0524 and VSR 013

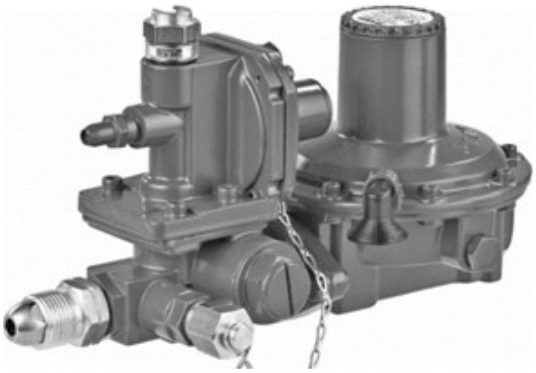
Pressure regulator with safety overpressure shut-off valve (OPSO) and pressure relief valve PRV

CE

Type VSR 0523 non-adjustable

Type VSR 0523 adjustable

Type VSR 0524



Type VSR 013

CONTENTS

ABOUT THE MANUAL

- This manual is part of the product.
- This manual must be observed and handed over to the operator to ensure that the component operates as intended and to comply with the warranty terms.
- Keep it in a safe place while you are using the product.
- In addition to this manual, please also observe national regulations, laws and installation guidelines.

MODIFICATIONS COMPARED TO PREVIOUS VERSION

- Medium pressure regulator type VSR 013 added.
- Diagrams 3a, 4a and 5a were changed to A3 B3/4 and A4 B3/4-t.
- Application examples added.
- OPSO (SAV) and PRV explained according to EN 16129.
- Safety advice added.

SAFETY ADVICE

Your safety and the safety of others are very important to us. We have provided many important safety messages in this assembly and operating manual.

✓ Always read and obey all safety messages.

This is the safety alert symbol.
This symbol alerts you to potential hazards that can kill or hurt you and others.
All safety messages will follow the safety alert symbol and either the word “DANGER”, “WARNING”, or “CAUTION”. These words mean:

⚠DANGER
describes a **personal hazard** with a **high degree of risk**.
➜ May result in **death or serious injury**.

⚠WARNING
describes a **personal hazard** with a **medium degree of risk**.
➜ May result in **death or serious injury**.

⚠CAUTION
describes a **personal hazard** with a **low degree of risk**.
➜ May result in **minor or moderate injury**.

NOTICE describes **material damage**.
➜ Has an **effect** on ongoing operation.

ⓘ describes a piece of information ✓ describes a call to action

GENERAL PRODUCT INFORMATION

The product keeps the specified outlet pressure constant within defined limits regardless of fluctuations in the inlet pressure and changes in flow and temperature.

NOTICE
This pressure regulator has passed the test for malfunctions such as ice/hydrate formation and for this reason is marked "E" (DIN 4811-E). However, under certain circumstances, the pressure regulator may ice up. To prevent icing, we recommend you use regulator heating type ES2000 (Part No. 05 220 00).

PRODUCT-RELATED SAFETY ADVICE

⚠ DANGER

Escaping liquid petroleum gas (category 1):

- is highly flammable
- may cause explosions
- severe burns in case of direct skin contact

✓ Regularly check connections for leak-tightness.
✓ If you smell gas or detect a leak, shut the system down immediately.
✓ Keep ignition sources and electrical devices out of reach.
✓ Observe applicable laws and regulations.

⚠ DANGER

Must not be used in potentially explosive ex-zone 0!

Can cause an explosion or serious injuries.

✓ Installation outside ex-zone 0.

May be used in potentially explosive ex-zones 1 or 2.

✓ Installation by a company that specialises in explosion protection (ATEX Directive 1999/92/EC).
✓ Installation within defined ex-zones 1 or 2.

INTENDED USE

Operating media

- LPG (gas phase)

You will find a **list of operating media** with descriptions, the relevant standards and the country in which they are used in the Internet at **www.gok-online.de/de/downloads/technische-dokumentation.**

Place of operation

- operate in buildings, in special installation rooms (acc. to TRF 2012) and outdoors, if protected against the weather

NOTICE If used in buildings, a ventilation line must be installed from the breather of the product to outdoors!

Installation location

- to connect to gas cylinders
- for direct connection to gas tank

Installation position

- optional
- observe the flow direction

INAPPROPRIATE USE

All uses exceeding the concept of intended use:

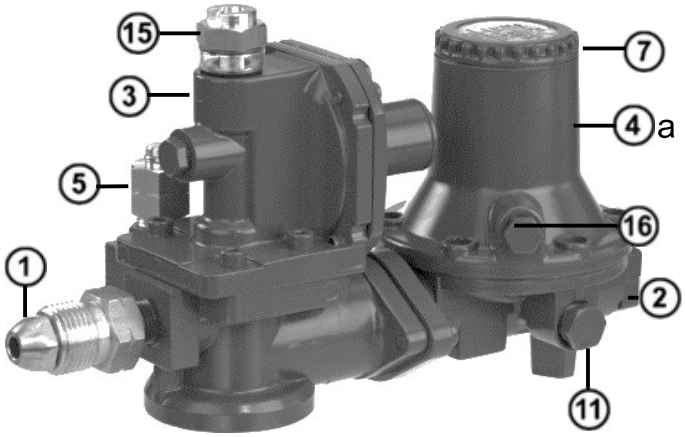
- e.g. operation using different media, pressures
- use of gases in the liquid phase
- installation against the flow direction
- operation with inappropriate hoses
- changes to the product or parts of the product
- use at ambient temperature varying from: see TECHNICAL DATA

USER QUALIFICATION

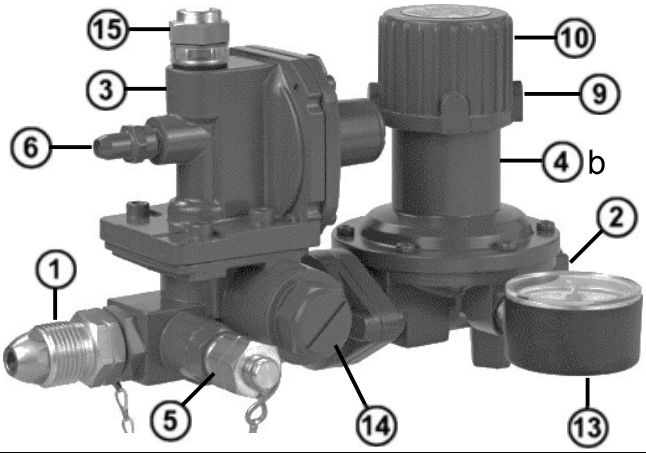
This product may be installed only by qualified experts. These are personnel who are familiar with setting up, installing, starting up, operating and maintaining this product.
"Equipment and systems requiring supervision may be operated only by persons aged at least 18, who are physically capable and who have the necessary specialist knowledge or who have been instructed by a competent person. Instruction at regular intervals, but at least once per year, is recommended."

Activity	Qualification
storing, transporting, unpacking, OPERATION	trained personnel
ASSEMBLY, MAINTENANCE, START-UP, SHUT-DOWN , REPLACEMENT, RESTART, RESTORATION, DISPOSAL,	qualified personnel, customer service

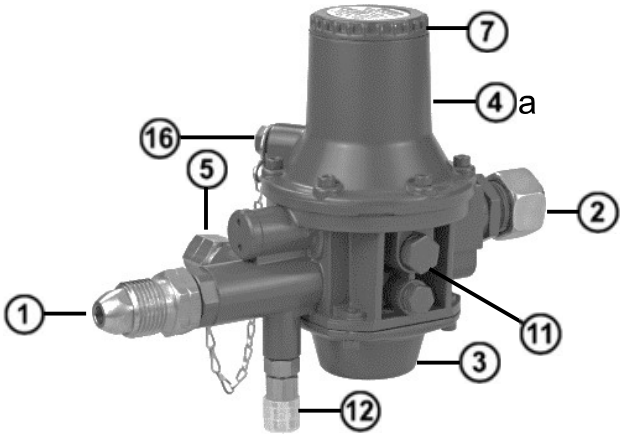
DESIGN



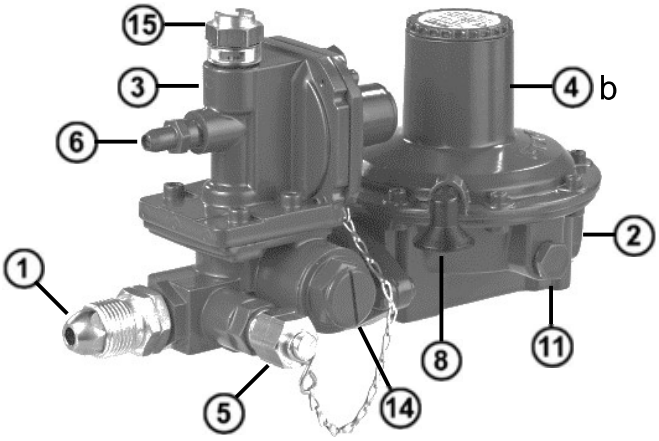
Type VSR 0523 non-adjustable



Type VSR 0523 adjustable



Type VSR 0524



Type VSR 013

① Inlet connection
② Outlet connection
③ Safety overpressure shut-off valve (OPSO)
④a Medium pressure regulator with integrated pressure relief valve PRV
④b Medium pressure regulator without integrated pressure relief valve PRV
⑤ Emergency supply connector
⑥ Test connector
⑦ Breather
⑧ Breather with insect protection
⑨ Set screw in handwheel
⑩ Handwheel, adjustable
⑪ Sealing screw
⑫ Regulator support, adjustable
⑬ Pressure gauge (axial or radial)
⑭ Pressure relief valve PRV with breather
⑮ Protective cap with visual indicator
⑯ Breather with sealing screw

⚠WARNING

Risk of asphyxiation from gas leaks in enclosed spaces!

High concentrations of gas can cause difficulty in breathing and lead to unconsciousness.

✓ A discharge line must be connected from the breather ⑭, ⑧ or ⑯ of the PRV to outdoors!

ADVANTAGES AND EQUIPMENT

Filter screen in the inlet connection of the pressure regulator

LPG may contain foreign matter, such as dirt particles. Over a certain size, these particles are trapped in the filter screen in the inlet connection. If the LPG is not filtered, wear and tear of the LPG system is increased up to complete failure. See TROUBLESHOOTING.

Safety overpressure shut-off valve OPSO

The OPSO - (Over-Pressure Shut Off) is an automatic safety device that protects connected devices against excessive high pressure. The outlet pressure is monitored constantly. If the outlet pressure is exceeded, the OPSO responds and the gas feed is interrupted. The visual display switches from **GREEN** to **RED**.

When it has responded, the OPSO must be opened manually. If the OPSO responds, the gas feed can be restarted again by following the steps in "Restarting the safety overpressure shut-off valve OPSO / UPSO". If an OPSO is installed, the pressure regulator is also marked "OPSO" on the type label.

Pressure relief valve PRV

The pressure relief valve (PRV) is an automatic safety device with limited flow that is installed in the pressure regulator to protect connected devices against inadmissible high pressures. If there is inadmissible high pressure at the outlet side, for example due to high temperatures, the PRV opens and relieves the excess pressure through the breather. When the pressure falls, the PRV closes again automatically.
A connection to the open air must be created if a pressure regulator with PRV is to be operated indoors, inside housing or in any other areas that could be at risk.
"PRV" is marked on the type label of the pressure regulator.

⚠WARNING

Risk of asphyxiation from gas leaks in enclosed spaces.

High concentrations of gas can cause difficulty in breathing and lead to unconsciousness.

✓ A discharge line must be connected from the breather ⑭, ⑧ or ⑯ on the product to outdoors.

✓ To do this, install the ventilation set (see LIST OF ACCESSORIES) to discharge any escaping LPG outdoors.

Emergency supply connector option

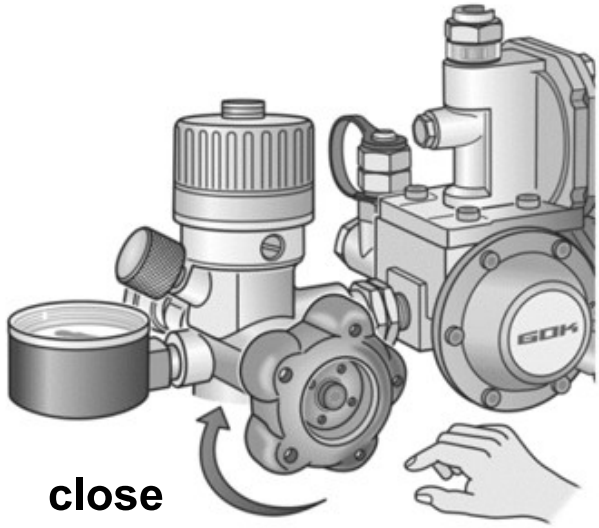
In case of unforeseen events, such as the gas tank becoming empty, the gas supply can be maintained until the gas tank is refilled with the help of a gas cylinder and the emergency supply set.

NOTICE

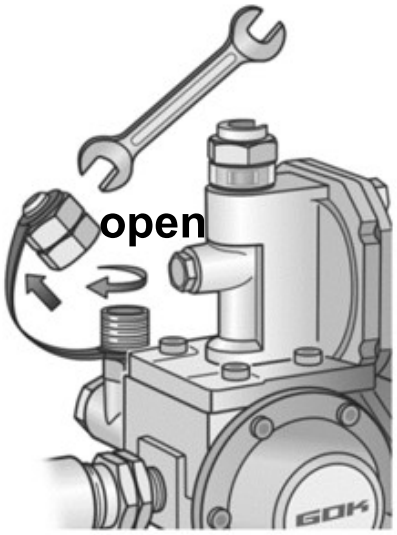
The gas cylinder is not intended for permanent supply. It is intended only as a temporary solution until the gas tank has been refilled.

With the emergency supply set (Part No. 02 498 00) connect a gas cylinder to the emergency supply connector (G 3/8 LH-KN) of the pressure regulator.

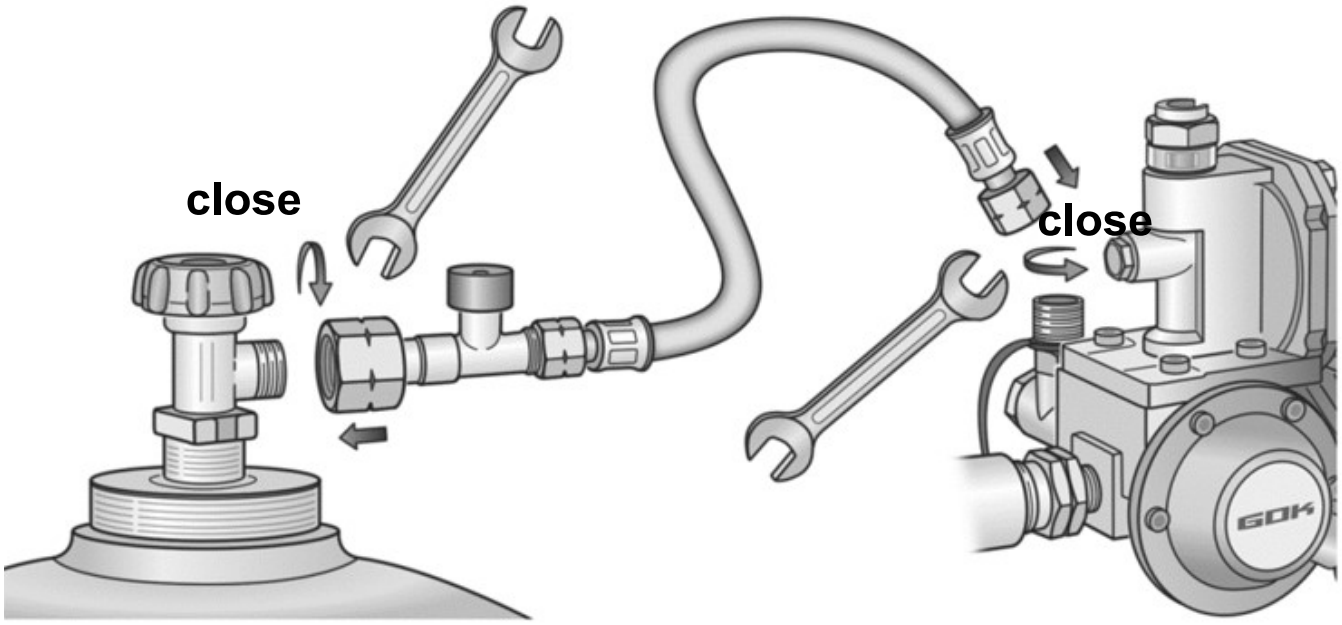
Connecting a gas cylinder with emergency supply set; double-stage tank regulator type BHK 052 or type BHK 052B



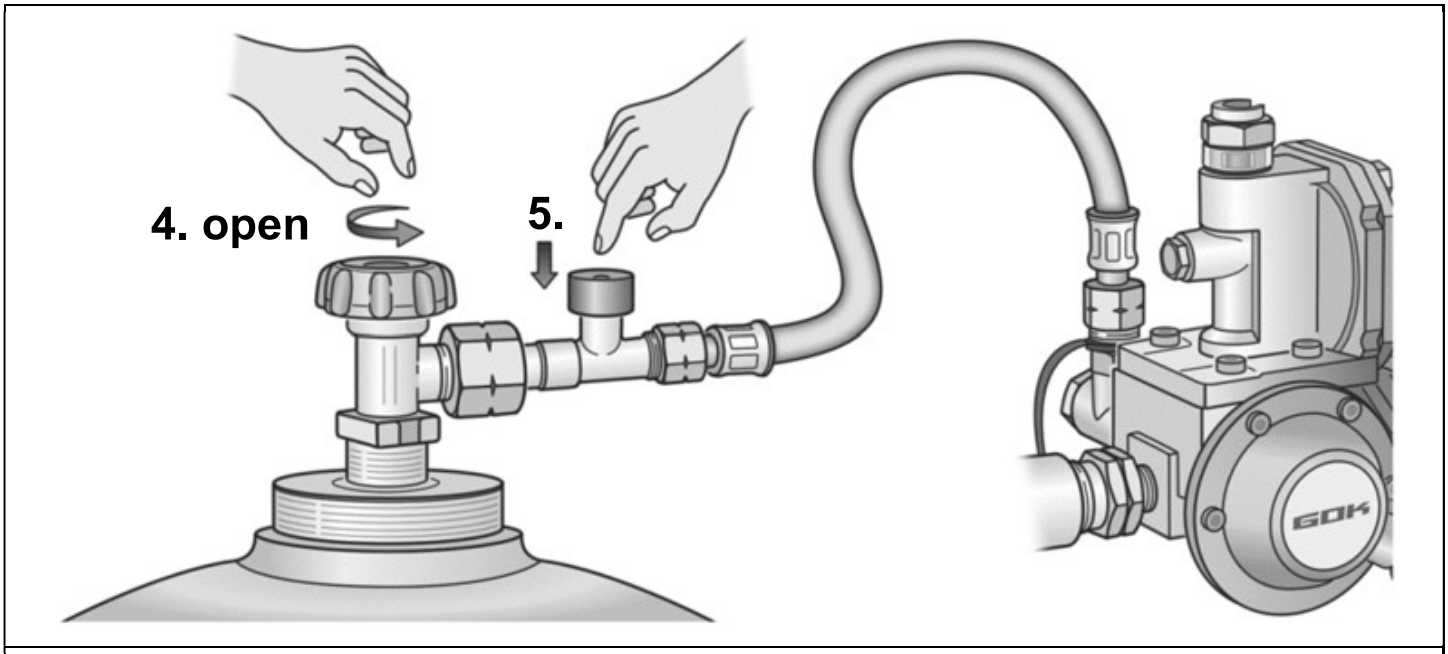
1. Close the gas withdrawal valve on the overfill sensor on the gas tank.



2. Unscrew the sealing nut of the emergency supply with a suitable open-end spanner (width 19).



3. First screw the emergency supply connector on to the emergency supply set and then connect it with the gas cylinder (spanner width 30).



4. Open the cylinder valve.
5. Press the start-up button of the excess flow valve.
6. Check the connections on the gas cylinder and on the emergency supply for leaks (spray with a foaming agent according to EN 14291 (e.g. leak detector spray, Part no. 02 601 00).

NOTICE

When the gas tank has been refilled, dismantle the emergency supply set in the following sequence:

- close the cylinder valve
- loosen and remove the connections of the emergency supply set
- screw the sealing nut of the emergency supply connector on again tightly (Figure 2),
- check for leaks

Insect protection option with sieve

Insert in the breather on the 8 mm vent socket or screw into the female thread G 1/8.

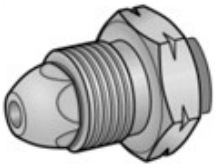
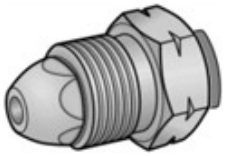
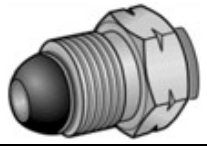
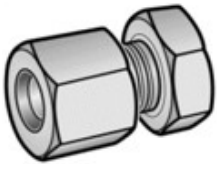
NOTICE

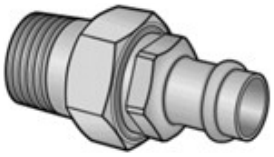
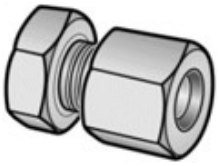
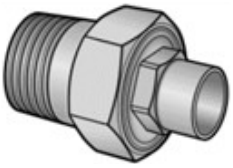
Check regularly that the sieve is not blocked. A blocked sieve can increase or lower the outlet pressure and cause the safety overpressure shut-off valve (OPSO) to respond. Clean or replace it as required.

Test connector option

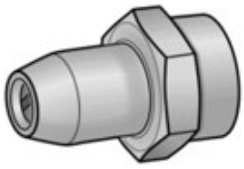
A leak tester can be connected to the test connector for pressure and leak tests. First, loosen the set screw in the test connector. When you have used it, tighten the set screw again and check for leaks again. See LEAK CHECK.

CONNECTIONS

Inlet, optional	Trading name and dimensions acc. to standard	Installation notes
	Cylindrical female thread • **G.37 =** F G 1/4, G 3/8, G 1/2, G 3/4 or G 1 • For a screw-in connector with O-ring	
	Italian connection • with rubber gasket and cap nut • **G.1** = Thread W 20 x 1/14 ÜM	Spanner size 25 Hexagonal
	Large cylinder connection GF • with aluminium gasket • **G.4** = Thread W 21.8 x 1/14 lh	Spanner size 30 Hexagonal
	Combinded fitting (Komb.A) • with polyamide gasket • **G.5** = Thread W 21.8 x 1/14	Spanner size 30 Hexagonal
	British POL connection • with sealing fitting and retaining screw • **G.7** = Thread G 5/8 lh	Spanner size 30 Hexagonal
	Shell connection, soft • with rubber gasket and coupling nut • **G.8** = Thread W 21.8 x 1/14 lh	Spanner size 30 Hexagonal
	US POL connection • with sealing fitting and retaining screw • **G.9** = Thread 0.880-14 NGO lh	Spanner size 24 Hexagonal
	POL connection, soft • with rubber gasket and retaining screw • **G.10** = Thread 0.880-14 NGO lh	Spanner size 24 Hexagonal
	Compression fitting • **G.15** = compr. fit 8, 10 • **G.22** = compr. fit 12, 15, 18, 22, 28 or 35	

Outlet, optional	Trading name and dimensions acc. to standard	Installation notes
	Compression/separation connector • Thread optionally G 3/4, G 1 • Nominal size optionally 12 mm, 15 mm, 18 mm, 22 mm, 28 mm	
	Screw-in connector • **H.22 =** G 1/4, G 3/8, G 1/2, G 3/4 or G 1 • For a screw-in connector with O-ring	
	Compression fitting • **H.8** = compr. fit 12, compr. fit 15, compr. fit 18, compr. fit 22, compr. fit 28, compr. fit 35 • **H.9** = compr. fit 8, compr. fit 10	
	Solder/separation connector • **H.10** = Thread G 3/4 or G 1 • Diameter 10 mm to 28 mm	Spanner sizes G 3/4 = width 30 G 1 = width 38 Hexagonal
	Ball-cone connector • **H.6** = Thread G 3/8 lh M	Torque: G 3/8 = 15 Nm

All **G. and H.** connections according to EN 16129. Other connections may also be used.

Other connections	Trading name and dimensions acc. to standard	Installation instructions
	Emergency supply connector with non-return valve • Thread G 3/8 lh M • according to EN 16129	See emergency supply connector option
	Test connector • 9 mm nozzle • with set screw	First, loosen the set screw with a screwdriver, then attach the test hose.

ASSEMBLY

Before assembly, check that the product is complete and has not suffered any damage during transport.

ASSEMBLY must be carried out by a specialised company.

The specialised company and the operator must observe, comply with and understand all of the following instructions in this assembly and operating manual. For the system to function as intended, it must be installed professionally in compliance with the technical rules applicable to the planning, construction and operation of the entire system.

⚠CAUTION

Risk of injuries due to blown-out metal chips!

Metal chips may cause eye injuries.

✓ Wear safety goggles!

NOTICE **Malfunctions caused by residues!** Proper functioning is not guaranteed.

✓ Visually check that there are no metal chips or other residues in the connections!

✓ It is important that metal chips or other residues are blown out!

NOTICE **Install with suitable tools, if required.**

Regarding screw connections, use a second spanner to brace against the connection nozzle.

Do not use unsuitable tools, such as pliers.

NOTICE **Product damaged through incorrect installation direction**

Proper functioning is not guaranteed.

✓ Observe the installation direction (marked on the product with an arrow ➡).

Screw connections

⚠CAUTION **Tank regulator damaged through incorrect installation.**

May cause gas leaks and malfunctioning.

✓ Follow the correct sequence to prevent leaks.

✓ Do not install the tank regulator under tension.

✓ When you have tightened the POL coupling nut, do not twist the tank regulator any more.

✓ Tighten connections only when they are not pressurised.

The installation steps are described using a pressure regulator with US POL connection as an example (British POL connection and POL connection soft)

1. Apply a drop of oil to the conical sealing surface of the POL connector.
2. Screw the POL connection on to the withdrawal valve of the gas cylinder hand-tight.
3. Tighten the piping on the outlet nozzle while bracing against the flat of the pipe coupling.
4. Tighten the POL connector on the withdrawal valve.

NOTICE

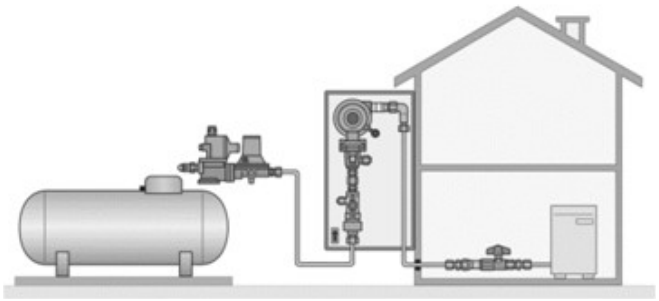
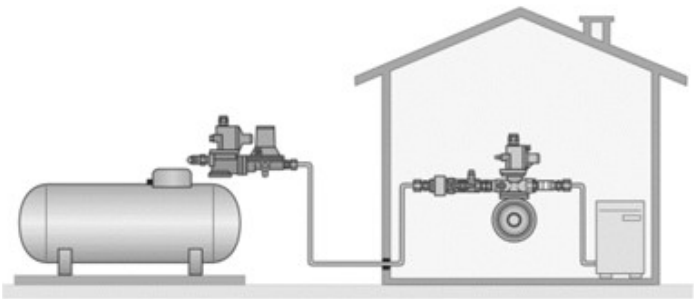
During installation make sure that the withdrawal valve and the piping are aligned. Do not install the tank regulator under tension. We recommend the "regulator support for CE tanks", Part no. 02 510 40.

NOTICE

To install the connections, see CONNECTIONS in the assembly manual.

NOTICE

If compression/separation connectors are used in the building, a 1st stage regulator with maximum 1 bar shut-off pressure of the safety overpressure shut-off valve (OPSO) must be used.

	
rExamples of applications: Tank system according to A3 B3/4 - 1st stage regulator 1st stage for outdoor installations "f", for connecting directly to the gas tank	Examples of applications: Tank system according to A4 B3/4-t - 1st stage regulator 1st stage for indoor installations "t", for connecting directly to the gas tank

NOTICE

For installation in a dome, we recommend:
Installation of ventilation set (Part No. 02 063 12).

✓ Prevents water getting into the pressure regulator.

NOTICE For outdoor applications, the product must be located or protected so that no dripping water can enter. We recommend installation in under a hood and in a control cabinet, respectively, or in a housing.

⚠WARNING

Risk of asphyxiation from gas leaks in enclosed spaces.

High concentrations of gas can cause difficulty in breathing and lead to unconsciousness.

✓ A discharge line must be connected from the breather ⑭, ⑧ or ⑯ on the product to outdoors.

✓ To do this, install the ventilation set (see LIST OF ACCESSORIES) to discharge any escaping LPG outdoors.

NOTICE

If the pressure regulator is installed in the flow direction downstream from another pressure regulator, the supply pressure range must correspond to the regulated pressure range of the first pressure regulator, with consideration of the pressure loss in the piping between the two devices.

NOTICE

For installation on an underground gas tank with long welding sleeve, use the regulator support for CE tanks (Part No. 02 510 40).

✓ Suitable for all GOK tank regulators.

✓ Suitable for retrofitting.

NOTICE

Observe the evaporation capacity of gas cylinders and gas tanks.

✓ Temperature change of the gas.

✓ The cylinder/gas tank pressure falls below the required inlet pressure of the operating regulator.

✓ Proper operation of the LPG system is no longer guaranteed.

LEAK CHECK

⚠CAUTION

Risk of burning or fire.

Serious burns to the skin or damage to property.

✓ Do not use an open flame to check for function!

Leak check before start-up

Before start-up, check the product connections for leaks!

1. Close all shut-off fittings on the connected devices.
2. Slowly open the withdrawal valve or the gas cylinder valve(s).
3. If there is a safety device (e.g. EFV) between the tank and the connected device(s), open this during the leak check.
4. Spray all connections with a foam producing substance according to EN 14291 (e.g. leak detector spray, Part no. 02 601 00).
5. Bubbles will form in the foam producing substance if there are any leaks.

NOTICE If bubbles form, tighten the connections (see ASSEMBLY). If the leaks cannot be repaired, the product must not be used.

NOTICE In Germany, the test specifications according to Item 8.3 TRF 2012 must also be taken into account.

For testing at the test connection, we recommend the leak and function tester type DFP25 (Part no. 02 617 05).

START-UP

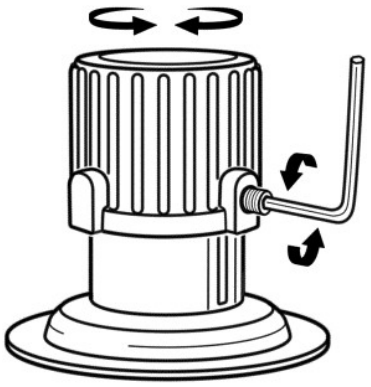
After the product has been ASSEMBLED and LEAK TESTING has been carried out successfully, it is immediately ready for operation.

1. All shut-off fittings on the gas devices must be closed.
2. Slowly open the gas withdrawal valve.
3. Observe the assembly and operating instructions of the gas device!

OPERATION

- Use this product only when you have carefully read the assembly and operating manual.
- For your own safety, observe all the safety messages in this assembly and operating manual.
- Please also consider the safety of others.

Lock-in device on handwheel with adjustable version



1. Loosen handwheel: Unscrew the set screw of the handwheel slightly using an Allen key.
2. Adjust the outlet pressure: Adjust the required outlet pressure by turning the handwheel (turning clockwise = increases the outlet pressure)

NOTICE

The outlet pressure can be seen on the pressure gauge.

3. Lock the handwheel: Tighten the set screw in the groove on the housing of the handwheel with an Allen key.

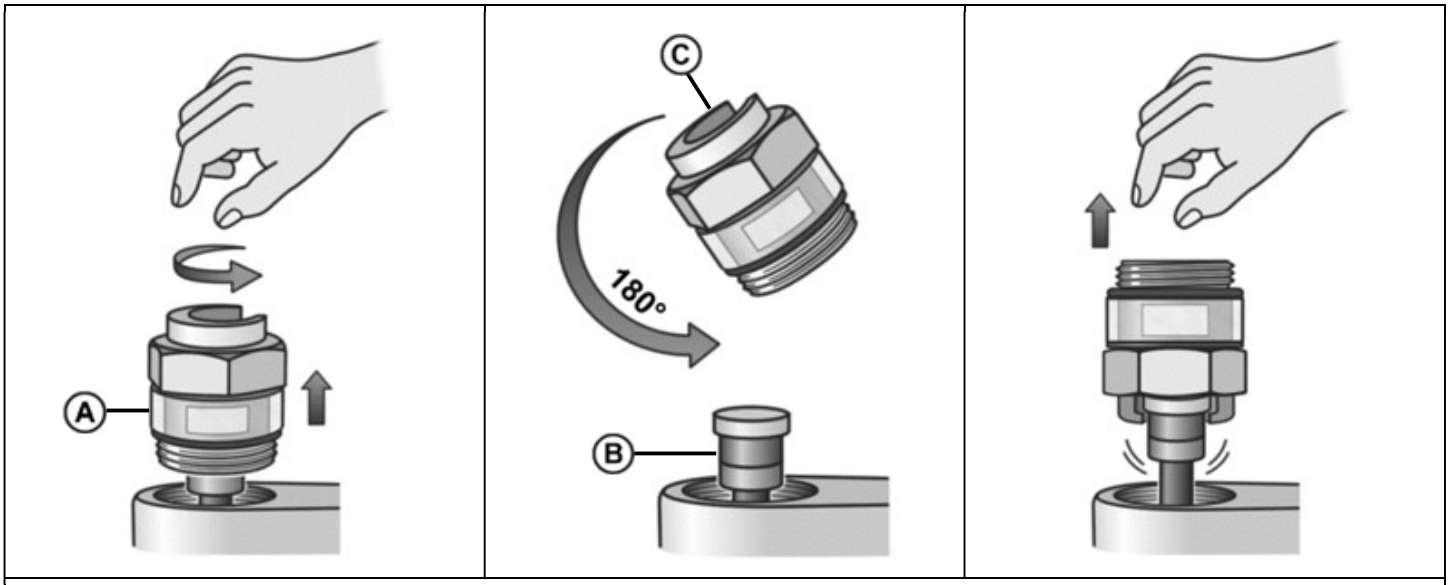
⚠CAUTION The product can be damaged if the gas cylinder is moved!
Entrained liquid phase can cause the pressure to increase in the LPG system and damage the product or the LPG system.
✓ Do not move the gas cylinder while the system is in operation.

TROUBLESHOOTING

Fault cause	Action
⚠ Gas smell **Leaking LPG is extremely flammable.** Can cause explosions.	➜ Close the gas supply. ➜ Do not use any electric switches. ➜ Do not use a phone in the building. ➜ Ventilate rooms well. ➜ Shut down the LPG system. ➜ Contact a specialised company.
Abnormal flame pattern of non-adjustable pressure regulator	Compare the nominal outlet pressure with the nominal connection pressure: ➜ if they do not correspond, replace the pressure regulator or the gas appliance Measure the outlet pressure; outlet pressure is not within the specified limits: ➜ check the system configuration ➜ pressure regulator is defective, replace ➜ check the gas filter
Abnormal flame pattern of adjustable pressure regulator	Compare the nominal outlet pressure of the pressure regulator with that of the connected device: ➜ If they do not match, adjust the pressure regulator to the nominal connection pressure Measure the outlet pressure of the pressure regulator; outlet pressure is not within the specified limits. ➜ Check the system configuration ➜ Readjust the outlet pressure
No gas flow	Gas feed is closed: ➜ open the gas cylinder valve or the shut-off fittings Safety overpressure shut-off valve (OPSO) is closed: ➜ carry out the steps described in "Restarting the safety overpressure shut-off valve (OPSO)" Filter sieve in the input connection is dirty: ➜ send the pressure regulator to the manufacturer to be checked
OPSO cannot be unlocked	Regulator membrane is damaged: ➜ Pressure regulator is defective, replace.
Pressure gauge indicates incorrect values or is not working at all.	Pressure gauge is defective. ➜ Replace only when the LPG system is completely de-pressurised.

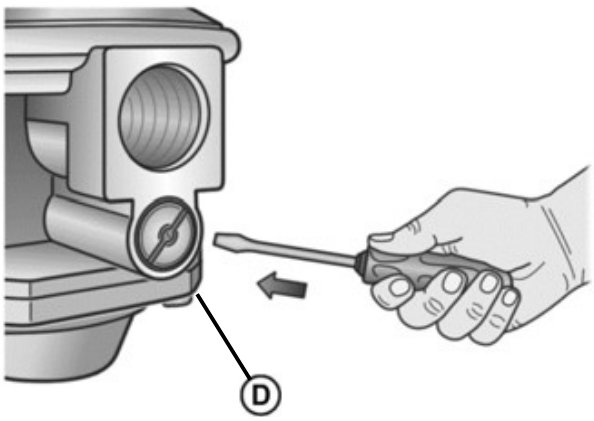
Restarting the safety overpressure shut-off valve OPSO with visual indicator

If the safety overpressure shut-off valve OPSO has responded, which is shown in **RED** on the visual indicator - take the following steps.



1. Close the gas withdrawal valve.
2. Vent the pressure regulator ➜ loosen the screw connection on the outlet side ②.
3. Ventilate the inlet pressure ➜ Loosen the connection on the inlet side ①.
4. Tighten all connections again.
5. After elimination of defects, open the gas cylinder valve or the shut-off fittings.
6. Unscrew the protective cap Ⓐ by hand.
7. Turn the protective cap Ⓐ around and pull out the spindle Ⓑ with the release device Ⓒ until the spindle Ⓑ clicks into place and remains open.
8. Screw the protective cap Ⓐ on again by hand.
9. OPSO ③ is ready to operate ➜ and the display is **GREEN**.
10. Check for leaks.

Restarting the integrated safety overpressure shut-off valve (OPSO)



1. Close the gas withdrawal valve.
2. Ventilate the pressure regulator ➜ loosen the connection on the outlet side ②.
3. Ventilate the inlet pressure ➜ loosen the connection on the inlet side ①.
4. Tighten all connections again.
5. Depress the button Ⓓ with a screwdriver (approx. 5 mm), until the button locks into place.
6. The safety overpressure shut-off valve (OPSO) ③ is ready for operation.
7. Check for leaks.

MAINTENANCE

Upon proper ASSEMBLY and OPERATION, the product is maintenance-free.

REPLACEMENT

If there is any sign of wear or if the product or parts thereof are damaged, it must be replaced. When the product has been replaced, observe the steps ASSEMBLY, LEAK TESTING and START-UP.
To ensure that the installation works faultlessly under normal operating conditions, it is recommended that you replace the device within 10 years of the date of manufacture.

NOTICE In commercial applications, according to DGUV regulation 79, parts of consumer units that are subject to wear and ageing* must be replaced after 8 years. This does not apply if the proper condition has been confirmed by an expert.
* System parts that are subject to wear or ageing are, for example, membranes, automatic and manual changeover valves, pressure regulators, hoses assemblies.

⚠CAUTION

Product damaged due to flooding!
This causes corrosion and malfunctions to the pressure regulator.
✓ Replace the pressure regulator following flooding!

RESTORATION

If the actions described in TROUBLESHOOTING do not lead to a proper restart and if there is no dimensioning problem, the product must be sent to the manufacturer to be checked. Our warranty does not apply in cases of unauthorised interference.

SHUT-DOWN

Close the cylinder valve and then the shut-off devices of the consumer unit. When the system is not used, all valves must be kept closed.

SHUT-DOWN

Close the gas supply and then the shut-off fittings of the connected loads. When the LPG system is not in use, all valves must remain closed.

NOTICE

Close all free connections in the feed lines of the LPG system tightly with a suitable cap to prevent gas from flowing out.

DISPOSAL

To protect the environment, our products may not be disposed of along with household waste.
The product must be disposed of via a local collection station or a recycling station.

SERVICE

At the web address www.gok-blog.de you can find answers to frequently asked questions relating to the topics of LPG systems, liquefied gas for leisure time use, oil firing installations and tank management.

TECHNICAL DATA

Inlet pressure p	to 16 bar		
Outlet pressure p_d	Type VSR 0523:	set between: adjustable, optionally:	0.7 and 2.0 bar 0.5 to 4.0 bar
	Type VSR 0524:	set between:	0.7 and 2.0 bar
	Type VSR 013:	set between: adjustable, optionally:	0.7 and 2.0 bar 0.5 to 2.0 bar
Nominal flow rate M_g	Type VSR 0523:	24 kg/h	
	Type VSR 0524:	10 kg/h for p_d < 1 bar 12 kg/h for p_d ≥ 1 bar	
	Type VSR 013:	max. 100 kg/h	
Response pressure	OPSO:	1.0 bar or 2.0 bar or p_{dmax} + 0.5 bar	
	PRV:	1.5 bar or 2.5 bar or p_{dmax} + 0.7 bar	
Maximum admissible pressure	PS 25 bar		
Ambient temperature	-20 °C to +50 °C		

Refer to the type label of the pressure regulator for more technical data and special settings!

LIST OF ACCESSORIES

Product name	Order no.
Ventilation set for Type VSR 0523, Type VSR 0524	02 063 12
Ventilation set for Type VSR 013	02 063 09
Ventilation set for breather PRV	02 063 18
Emergency supply set	02 498 00
Regulator support for CE tanks	02 510 40
Regulator heating type ES2000	05 220 00

WARRANTY

We guarantee that the product will function as intended and will not leak during the legally specified period. The scope of our warranty is based on Section 8 of our terms and conditions of delivery and payment.

TECHNICAL CHANGES

All the information contained in this assembly and operating manual is the result of product testing and corresponds to the level of knowledge at the time of testing and the relevant legislation and standards at the time of issue. We reserve the right to make technical changes without prior notice. Errors and omissions excepted. All figures are for illustration purposes only and may differ from actual designs.

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