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Operating instructions
Non-return gas valve GRS, non-return valve with flame arrester GRSF



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Safety

Please read and keep in a safe place

Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

Explanation of symbols

•, **1**, **2**, **3** ... = Action
▷ = Instruction

Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

⚠ DANGER
Indicates potentially fatal situations.

⚠ WARNING
Indicates possible danger to life and limb.

! CAUTION
Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

Changes to edition 04.18

The following chapters have been changed:
– Certification

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Checking the usage

Intended use

Non-return gas valves GRS, GRSF to prevent gas creepage or surge, for gas, air and oxygen, DVGW tested and registered.

GRS 15–50: not flame-arresting and not resistant to flashbacks

GRSF: only flame-arresting in the case of use with combustion air, not with oxygen.

This function is only guaranteed when used within the specified limits – see page 5 (Technical data). Any other use is considered as non-compliant:

- Operation with other media, pressures and pre-mixed gas-oxygen/compressed air mixtures.
- Operation with acetylene gas.
- Use as flame-arresting non-return valve in the case of combustion with oxygen.
- Use of liquefied gases.
- Use at ambient temperatures of less than -20°C and more than 70°C.

The safety device offers protection against:	
creeping and surges (GRS)	NV
creeping, surges and flashbacks (GRSF)	NV
impurities in the upstream gas circuit	DF

Type code

Code	Description
GRS	Non-return gas valve
GRSF	Flame-arresting non-return valve
15 – 80	Nominal size
R	G internal thread
F	Flange to ISO 7005
01	$p_{max.}$ 0.1 bar

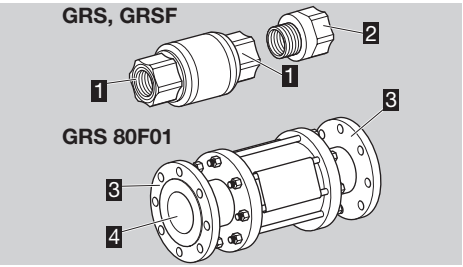
⚠ WARNING

Use only the max. operating pressures and gas types permitted for the non-return gas valve.

Type	Inlet pressure $p_{max.}$ [bar]								
	Town and district gas (C)	Hydrogen (H)	Natural gas (M)	Propane (P)	Purified biogas (M)	Nitrogen (N)	Inert gases (N)	Compressed air (D)	Oxygen (O)
GRS 15R	25	25	25	25	25	25	25	25	25
GRS 20R	25	25	25	25	25	25	25	25	25
GRS 25R	25	25	25	25	25	25	25	25	25
GRS 40R	20	20	20	20	20	20	20	20	20
GRS 50R	20	20	20	20	20	20	20	20	20
GRS 80F01	10	–	10	10	–	10	10	10	10
GRSF 15R	1.5	1.5	5	5	5	–	–	–	–
GRSF 20R	1.5	1.5	5	5	5	–	–	–	–
GRSF 25R	1.5	1.5	5	5	5	–	–	–	–
GRSF 40R	1	1	5	5	5	–	–	–	–
GRSF 50R	1	1	5	5	5	–	–	–	–

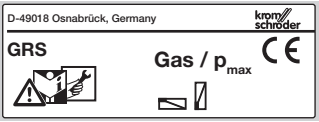
▷ **GRS 80F01** is flame-arresting in the case of combustion of natural gas with air up to a max. operating pressure of 8 bar. The pressure rating 01 (100 mbar) refers exclusively to the certification on the basis of testing pursuant to DIN 8521-2. This applies to safety devices which protect against gas reverse flow when using fuel gases from public distribution networks, air and oxygen or mixtures of these up to a permissible positive operating pressure of 100 mbar which have not been subjected to flashback tests and must therefore not be flame-arresting.

Part designations



1 Threaded connection
2 Adapter for length compensation (optional/separate)
3 Inlet/outlet flange
4 Protective cap

Ambient temperature, gas type, max. inlet pressure $p_{max.}$, installation position: see type label.



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Installation

! CAUTION

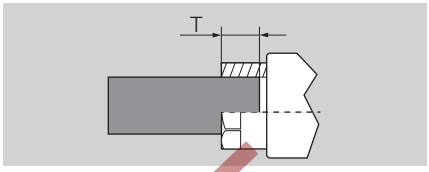
Please observe the following to ensure that the GRS, GRSF is not damaged during installation:

- Only operate the device in conjunction with additional downstream equipment pursuant to EN 746, Part 2.
- Install the GRS, GRSF in a clean pipeline that is ready for operation, i.e. that has been tested.
- Note direction of flow.
- Sealing material, thread cuttings and other impurities must not be allowed to get into the housing. Before installation, remove dirt from all connections and check for damage.
- Keep the non-return gas valve completely free of oil and grease and protect from heat radiation.
- Only sealing materials and seals pursuant to EN 751 which are approved for the relevant gas may be used to seal the pipe connecting threads.
- Markings made by the operator (e.g. Inventory No., date of commissioning) must not be punched onto the device. This can damage the safety device and cause leaks.
- Do not remove the thread adapters which are fitted at the factory.
- Do not damage the inlet filter.
- Use a suitable spanner.
- Secure the valve only on the inlet or outlet side where the connection is to be made – see Fig. **4**.
- Avoid subjecting the GRS, GRSF to strong or violent vibrations and shocks (punches).
- When using oxygen, ensure that the connection elements, safety device and coupling are free of oil and grease.

▷ Any installation position.

▷ DIN EN 746-2: non-return gas valves which are not flame-arresting may only be used in conjunction with an additional safety device which shuts off the gas supply in the event of a flashback. Remove the GRS immediately after each flashback and return it to the manufacturer for inspection.

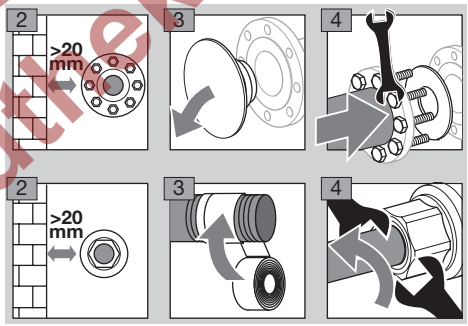
▷ Note the maximum thread reach of the inlet coupling.



Type	T [mm]
GRS 15R	15.5
GRS 20R	17.0
GRS 25R	19.0
GRS 40R	22.0
GRS 50R	24.0
GRSF 15R	15.5
GRSF 20R	17.0
GRSF 25R	19.0
GRSF 40R	22.0
GRSF 50R	24.0

To avoid endurance burning, the supply of fresh gas must be stopped in the event of a flashback:

1 Install a suitable shut-off valve upstream of the non-return gas valve, e.g. manual valve AKT.



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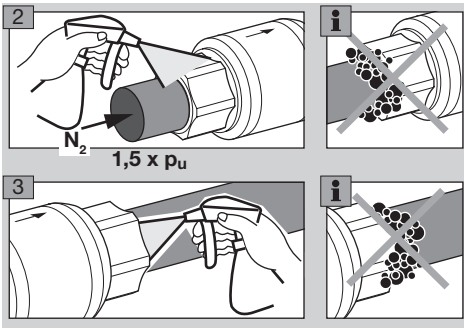
Tightness test

▷ Also after maintenance.

1 Block the pipeline at the inlet and outlet.

▷ The maximum inlet pressure $p_{u\ max.}$ may be exceeded only briefly for the duration of the tightness test.

▷ Only apply test pressure at the inlet end.



4 Relieve the outlet pressure p_d. Unblock the pipeline at the outlet.

▷ Pipeline leaking: remove and replace the device.

Commissioning

To prevent the valve seals from sticking:

▷ If stored for a long time or if not used for a long time, blow through the GRS/GRSF with operating gas or with nitrogen at approx. 0.5 to 1 bar.

⚠ WARNING

A GRS/GRSF which has been used with a medium other than oxygen must not subsequently be used with oxygen – risk of explosion!

Maintenance

In order to ensure smooth operation:

▷ Have the GRS/GRSF checked at least once a year by the manufacturer for functional safety and housing tightness. The user or buyer is responsible for monitoring the date on which this must be carried out. The test will be charged for.

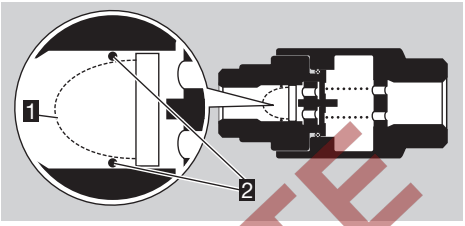
▷ Remove the non-return gas valve GRS immediately after each flashback and return it to the manufacturer for inspection.

▷ It is permitted to change and/or clean the dirt filter, see page 4 (Cleaning the dirt filter).

▷ Check the pipe connections on the non-return gas valve for external tightness after carrying out maintenance work on the system and after installing the GRS, GRSF.

Cleaning the dirt filter

1 Remove the device.



2 Remove the dirt filter 1.

▷ To do so, remove the spring clamp 2 using needle-nose pliers.

3 Turn the gas inlet opening of the device downwards so that the dirt filter can drop out.

▷ Ensure that no dirt particles may enter the device during filter removal.

4 Check the dirt filter for signs of damage and clean if required.

▷ Replace defective filter.

5 Reinsert the dirt filter and secure with the spring clamp.

▷ Ensure that the spring clamp is placed securely in the corresponding groove.

6 Reinstall the device, see page 3 (Installation).

Assistance in the event of malfunction

? **Faults**
! **Cause**
• **Remedy**

? **No flow**
! No pressure or pressure too low.
• Check the operating pressure.
• Check the shut-off valves and sources of gas.
• Check the direction of flow.

? **Gas reverse flow (NV)**
• Remove and replace the device.

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Accessories

Adapter for length compensation



For length compensation when replacing with devices of the new series.

Adapter for length compensation for	Order number
GRS 25R	03150677
GRS 40R	03150678
GRSF 25R	03150679
GRSF 40R	03150680
GRSF 50R	03156387

Technical data

Gas type: natural gas, town gas, LPG (gaseous), oxygen and air. Other types of gas on request (not for acetylene and raw biogas).
Housing: Ms (GRS 80F01: St 37). Dirt filter made of rustproof wire mesh 1.4301 (max. mesh size 100 µm).
Connection:
GRS..R: internal thread to ISO 7-1,
GRS..F: PN 16 flange to ISO 7005.
Ambient temperature:
GRS 15–50/GRSF 15–50: -20 to +70°C,
GRS 80F01: -20 to +70°C.
Storage temperature: 5 to 35°C.

Logistics

Transport

Protect the unit from external forces (blows, shocks, vibration). On receipt of the product, check that the delivery is complete, see page 2 (Part designations). Report any transport damage immediately.

Storage

Store the product in a dry and clean place.
Storage temperature: see page 5 (Technical data).
Storage time: 6 months in the original packaging before using for the first time. If stored for longer than this, the overall service life will be reduced by the corresponding amount of extra storage time.

Packaging

The packaging material is to be disposed of in accordance with local regulations.

Disposal

Components are to be disposed of separately in accordance with local regulations.

Certification

Declaration of conformity

CE

We, the manufacturer, hereby declare that the product GRS, GRSF complies with the requirements of the listed Directives and Standards.
GRS 40R to GRS 50R,
GRSF 40R to GRSF 50R + GRS 80F01
Directives:
– 2014/68/EU
Standards:
– DIN EN ISO 5175-2
The production is subject to the conformity assessment procedure pursuant to Directive 2014/68/EU Annex III Module A.
Elster GmbH

Scan of the Declaration of conformity (D, GB) – see www.docuthek.com

Eurasian Customs Union

EAC

The product GRS, GRSF meets the technical specifications of the Eurasian Customs Union.

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Contact

If you have any technical questions, please contact your local branch office/agent. The addresses are available on the Internet or from Elster GmbH.

We reserve the right to make technical modifications in the interests of progress.

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