

Non-return gas valves GRS Non-return valves with flame arrester GRSF

Technical Information · GB
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- Short installation length
- Robust design
- Low opening pressures
- Installation in any position
- DIN-DVGW tested and registered



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1 Application



GRS, GRSF

The non-return gas valve GRS prevents creeping and surges against the intended direction of flow. The non-return valve with flame arrester GRSF also stops flashbacks of combustion gas-air mixtures and still prevents gas returning even after flashbacks.

The device is used to protect gas tapping points at which gas appliances or gas-fired installations are operated and where reverse flow of gas into the air supply line or of air into the gas supply line (inflammable mixture) cannot be prevented through design measures. It thus prevents the formation of inflammable mixtures in the supply line.

GRS are not flame-arresting and therefore may only be used in conjunction with an additional safety device which shuts off the gas supply in the event of a flashback.

In the case of GRSF, it may be used as a flame-arresting non-return gas valve in accordance with EN 730 exclusively with combustion air (not pure oxygen).

2 Certification

Certificates – see Docuthek.

EU certified



Classification of non-return gas valve pursuant to the Pressure Equipment Directive 97/23/EC.

Pressure accessory.

Fluid group 1.

Diagram 6, Annex II.

All nominal sizes up to DN 25 are covered by 'sound engineering practice' pursuant to Article 3, Para. 3 and must not be provided with a CE mark.

Nominal sizes DN 40 and DN 50 are subject to the conformity assessment procedure for Category 1 pursuant to Module A.

Approvals for non-return gas valve/non-return valve with flame arrester

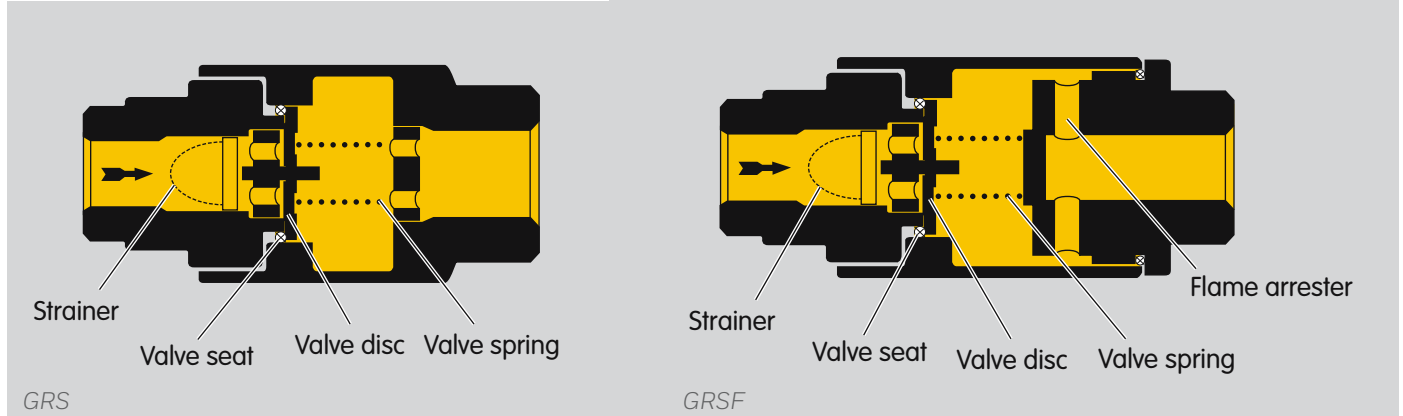
Type	DVGW test mark	Basis for testing
GRS 15 - 50	NG-4390CQ0113	DIN EN 730-2
GRSF 15 - 50	DG-4390CQ0112	DIN EN 730-2 DIN EN 730-1, Sections 5.7 and 6.7
GRS 80F01	NG-4390BN007	DIN EN 730-1 DIN 8521-2

Eurasian Customs Union



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

3 Function



The non-return gas valve/non-return valve with flame arrester is closed when no pressure is applied.

The gas supply is opened slowly and the valve disc is pushed away from the valve seat against the force of the valve spring. If creeping and surges occur, the valve disc is pressed back onto the valve seat.

The flame arrester in the GRSF also protects the non-return valve from flashbacks. The GRSF still stops gas returning, even after a flashback.

4 Replacement possibilities

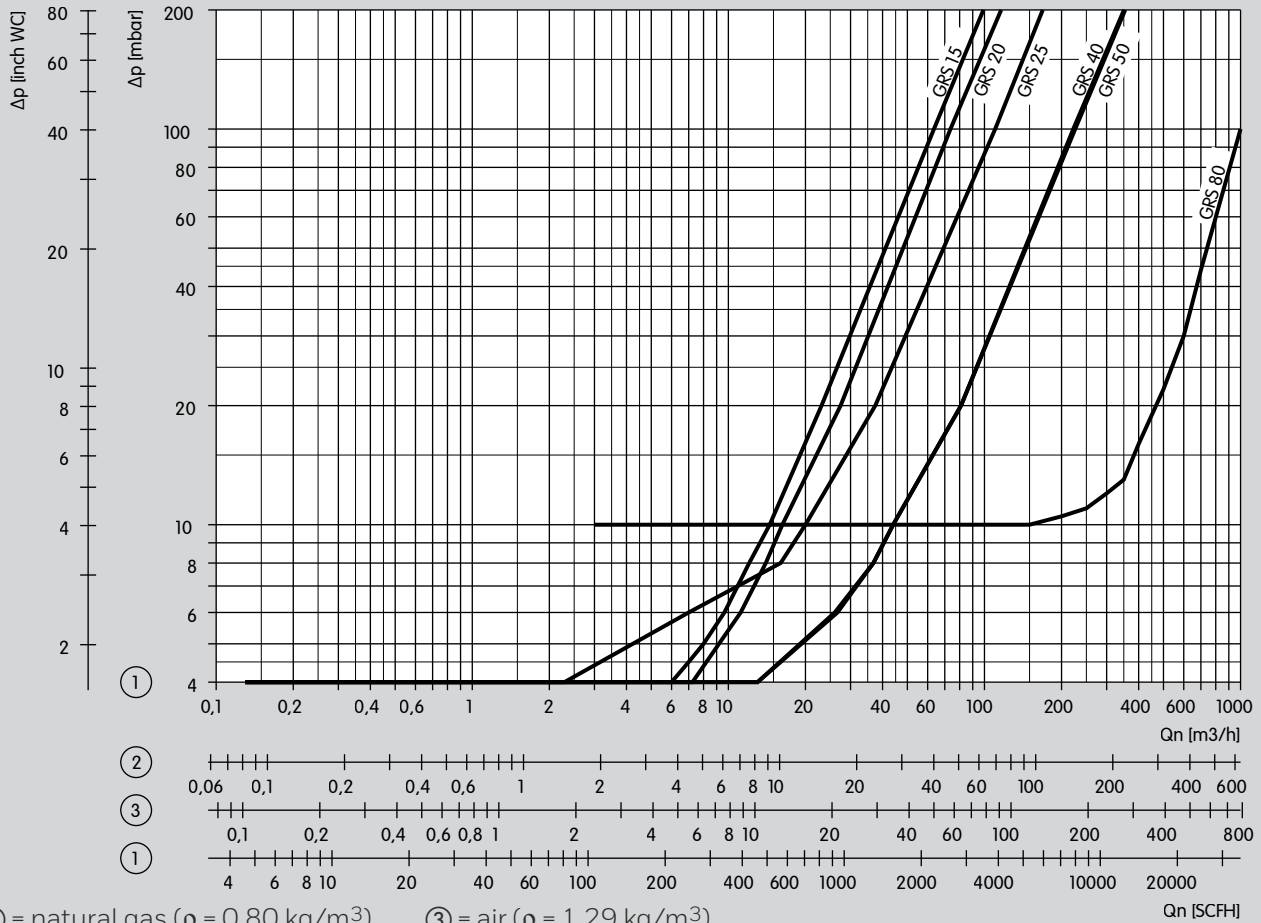
Old series		New series		
Type designation	Order No.	Type designation	Order No.	Adapter for length compensation
GRS 15R01	03150629	GRS 15R	03150667	-
GRS 20R01	03150636	GRS 20R	03150668	-
GRS 25R01	03150630	GRS 25R	03150669	GRS 25R
GRS 40R01	03150631	GRS 40R	03150670	GRS 40R
GRS 50R01	03150632	GRS 50R	03150671	-
GRSF 15R50	03150644	GRSF 15R	03150672	-
GRSF 20R50	03150637	GRSF 20R	03150673	-
GRSF 25R50	03150645	GRSF 25R	03150674	GRSF 25R
GRSF 40R50	03150634	GRSF 40R	03150675	GRSF 40R
GRSF 50R50	03150646	GRSF 50R	03150676	GRSF 50R

The installation length of the valves of the new series does not correspond to the installation length of the old series for all nominal sizes. In order to compensate for any differences in length, appropriate adapters are available, see page 11 (Accessories).

GRS 80F01 can still be ordered as previously.

5 Flow rate

5.1 GRS

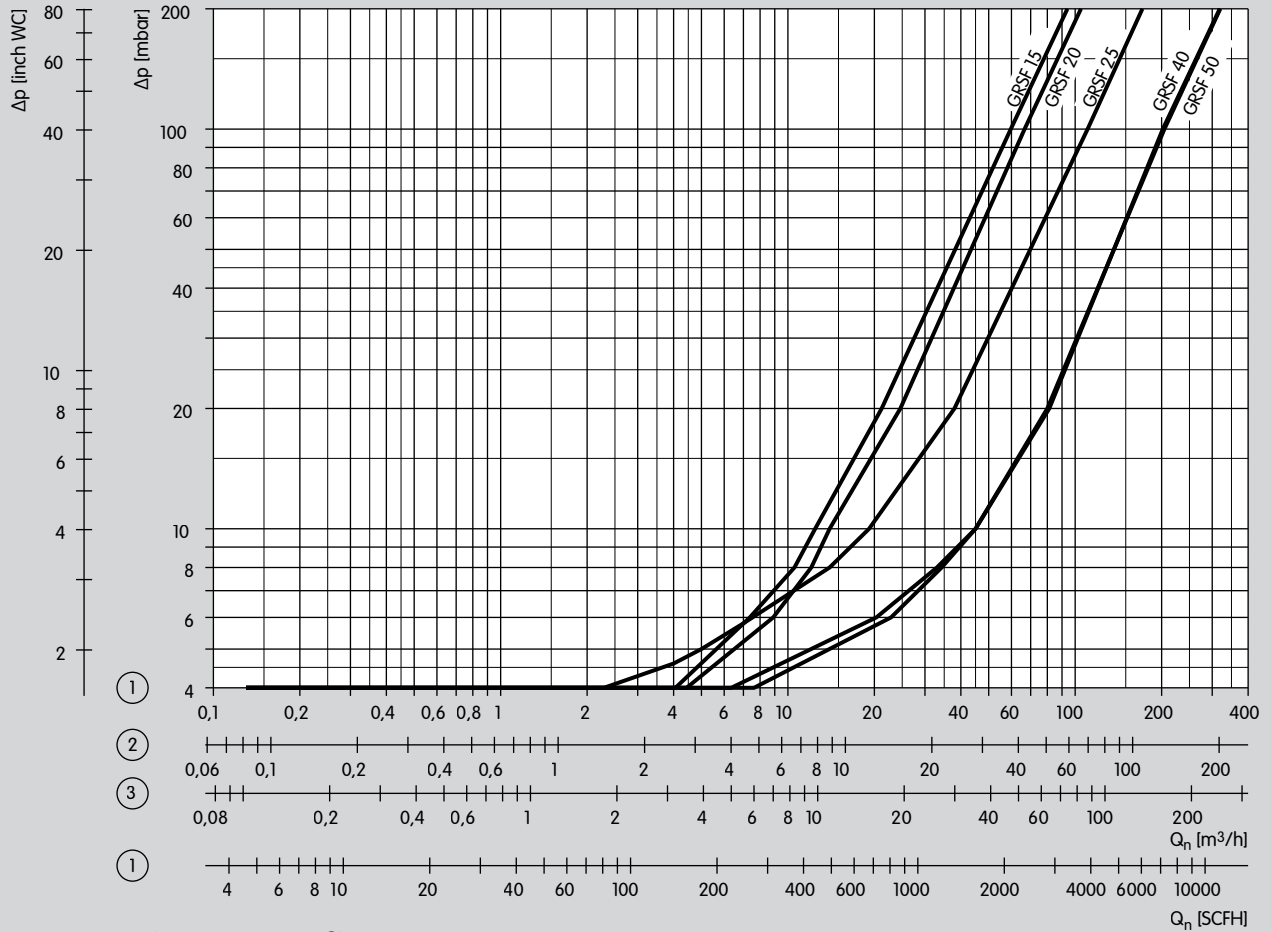


① = natural gas ($\rho = 0.80 \text{ kg/m}^3$)

③ = air ($\rho = 1.29 \text{ kg/m}^3$)

② = propane ($\rho = 2.01 \text{ kg/m}^3$)

5.2 GRSF



① = natural gas ($\rho = 0.80 \text{ kg/m}^3$)

② = propane ($\rho = 2.01 \text{ kg/m}^3$)

③ = air ($\rho = 1.29 \text{ kg/m}^3$)

6 Selection

6.1 Selection table

	15	20	25	40	50	80	R	F*	01*
GRS	●	●	●	●	●	●	●	●	●
GRSF	●	●	●	●	●		●		

* Only in conjunction with GRS 80

● = standard, ○ = available

Order example

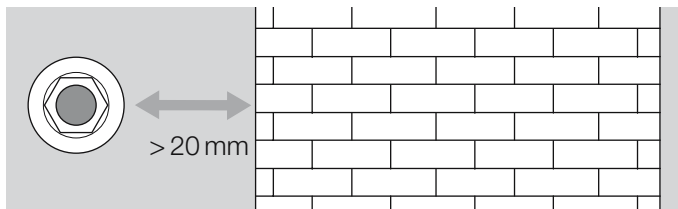
GRS 20R

6.2 Type code

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

7 Project planning information

7.1 Installation



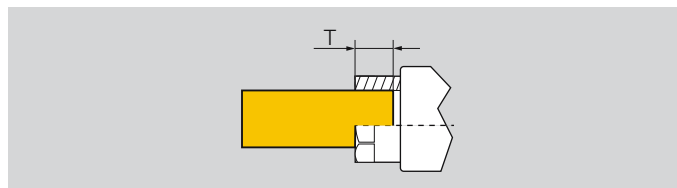
The GRS/GRSF must not be in contact with masonry. Minimum clearance 20 mm (0.8 inch).

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.

Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the housing.

Flexible tube connections are to be assembled using hose connectors to EN 560 and hoses to DIN EN ISO 3821. Hose assemblies are to be mounted pursuant to EN 1256.

7.2 Thread reach



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

8 Accessories

8.1 Adapter for length compensation



In order to be able to replace valves from the old series without having to modify the system, adapters are available. These adapters compensate for the differences in length between the series.

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

9 Technical data

Gas types and inlet pressure:

Type	Inlet pressure p_{max} [bar]								
	Town and district gas (C)	Hydrogen (H)	Natural gas (M)	Propane (P)	Purified biogas	Nitrogen	Inert gases	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	-	-	-	-

Housing: Ms (GRS 80F01: St 37). Dirt filter made of rustproof wire mesh 1.4301 (max. mesh size 100 μ m).

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,

when used with oxygen: -20°C to +60°C.

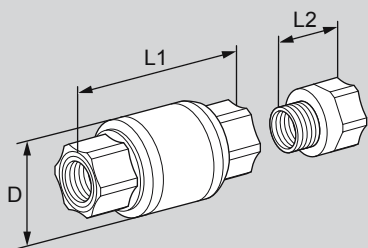
Storage temperature: +5 to +35°C.

Note on GRS 80F01

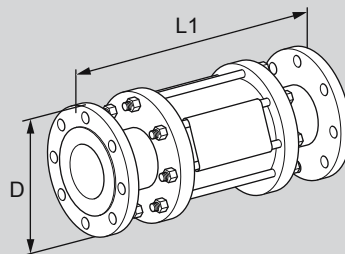
GRS 80F01 is flame-arresting in the case of combustion of natural gas with air up to a max. operating pressure of 8 bar. The pressure rating O1 (100 mbar) refers exclusively to the certification on the basis of testing pursuant to DIN 8521-2.

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.

9.1 Dimensions



GRS, GRSF



GRS 80F01

Type	Dimensions					Weight
	DN	Connection	L1	L2	D	
			mm	mm	mm	kg
GRS 15	15	G ½	89	-	50	0.7
GRS 20	20	G ¾	89	-	50	0.65
GRS 25	25	G 1	95	31	60	1.0
GRS 40	40	G 1½	124	29	94	3.6
GRS 50	50	G 2	145	-	94	4.4
GRS 80	80	DN 80	350	-	200	26.0
GRSF 15	15	G ½	103	-	54.5	1.2
GRSF 20	20	G ¾	121	-	54.5	1.3
GRSF 25	25	G 1	150	24	64.5	2.1
GRSF 40	40	G 1½	175	43	94	5.9
GRSF 50	50	G 2	176	34	94	6.0

10 Maintenance cycles

At least once a year, at least twice a year in the case of biogas.

Feedback

Finally, we are offering you the opportunity to assess this “Technical Information (TI)” and to give us your opinion, so that we can improve our documents further and suit them to your needs.

Clarity

- Found information quickly
- Searched for a long time
- Didn't find information
- What is missing?
- No answer

Comprehension

- Coherent
- Too complicated
- No answer

Scope

- Too little
- Sufficient
- Too wide
- No answer



Use

- To get to know the product
- To choose a product
- Planning
- To look for information

Navigation

- I can find my way around
- I got “lost”
- No answer

My scope of functions

- Technical department
- Sales
- No answer

Remarks

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