

# Gas pressure regulators VGBF

Technical Information · GB

2 Edition 07.13



- Pressure regulators for gaseous media for installation in all types of gas appliances
- Design with inlet pressure compensation diaphragm ensures high control accuracy
- High flow rate due to optimal dimensioning
- Internal impulse on VGBF..05
- No breather line required
- EC type-tested and certified
- Certified by Gosstandart under Technical Regulations



**krom**  
**schröder**

# Contents

Gas pressure regulators VGBF ..... 1

Contents ..... 2

1 Application ..... 3

    1.1 Examples of application ..... 4

2 Certification ..... 5

3 Function ..... 6

4 Flow rate ..... 7

    4.1 Selection example for VGBF..05 ..... 7

    4.2 Selection example for VGBF..10 ..... 8

    4.3 Selection example for VGBF..40 ..... 9

5 Selection ..... 10

    5.1 Type code ..... 10

6 Project planning information ..... 11

    6.1 Installation ..... 11

    6.2 Installation to EN 746-2 ..... 11

    6.3 Installing the impulse line ..... 11

    6.4 Installation to NFPA 86 ..... 11

7 Accessories ..... 12

    7.1 Damping valve ..... 12

8 Technical data ..... 13

    8.1 Dimensions ..... 14

        8.1.1 VGBF with Rp internal thread or with ISO flange ..... 14

        8.1.2 VGBF..T with NPT internal thread or with ANSI flange ..... 15

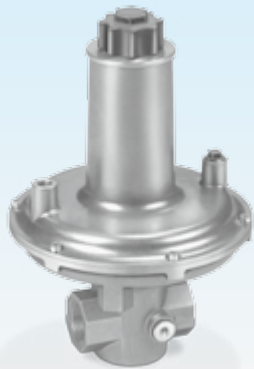
    8.2 Spring table ..... 16

9 Maintenance cycles ..... 17

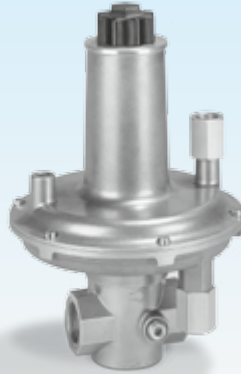
Feedback ..... 18

Contact ..... 18

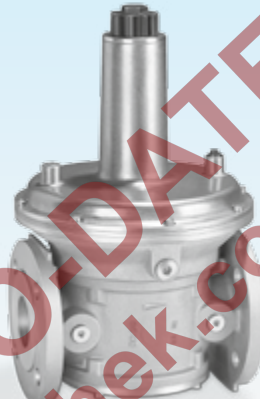
## 1 Application



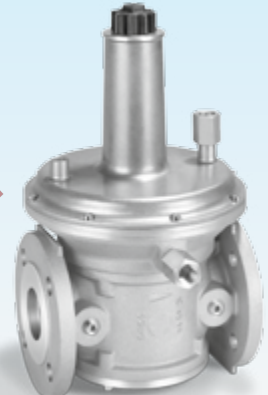
VGBF..R



VGBF..TN



VGBF..F

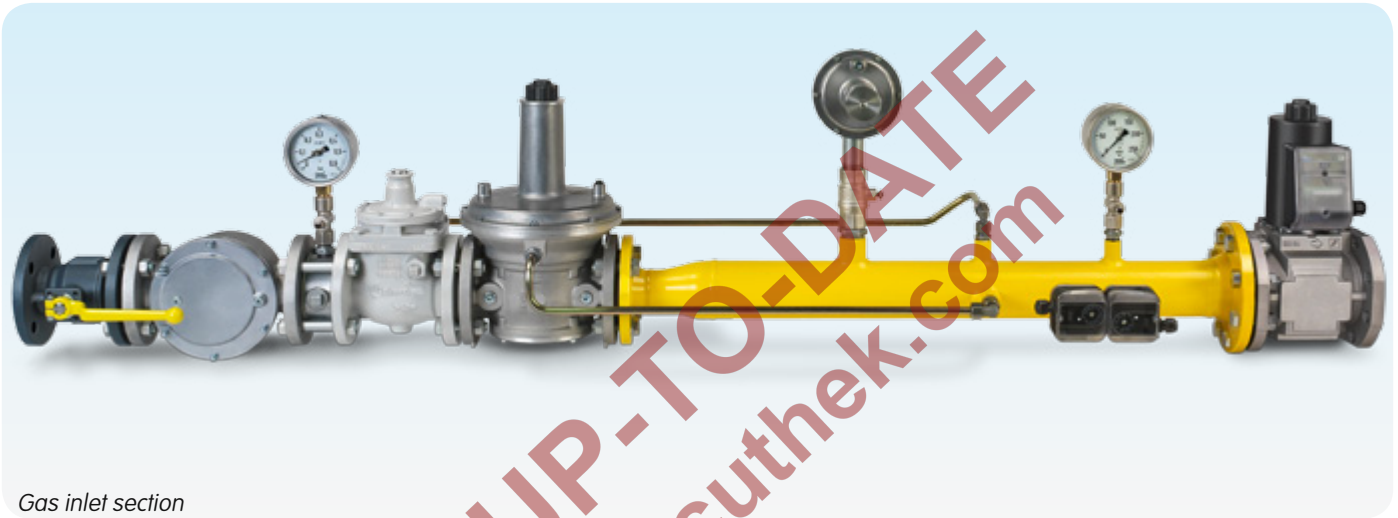


VGBF..TA

The spring-loaded gas pressure regulator VGBF with inlet pressure compensation diaphragm and zero shut-off serves to maintain the set outlet pressure constant despite changing gas flow rates and inlet pressures in gas pipelines. Thanks to an additional safety diaphragm, no breather line is required, except for installation pursuant to NFPA 86, see page 11 (Installation to NFPA 86).

For use in gas inlet sections in all sectors of the iron, steel, glass and ceramics industries as well as in commercial heat generation, such as the packaging, paper and foodstuffs industries.

## 1.1 Examples of application



## 2 Certification

### EC type-tested and certified



pursuant to

- Gas Appliances Directive (2009/142/EC) in conjunction with DIN EN 88 and DIN 3380.
- Pressure Equipment Directive (97/23/EC) in conjunction with DIN EN 334.

### Approval for Russia



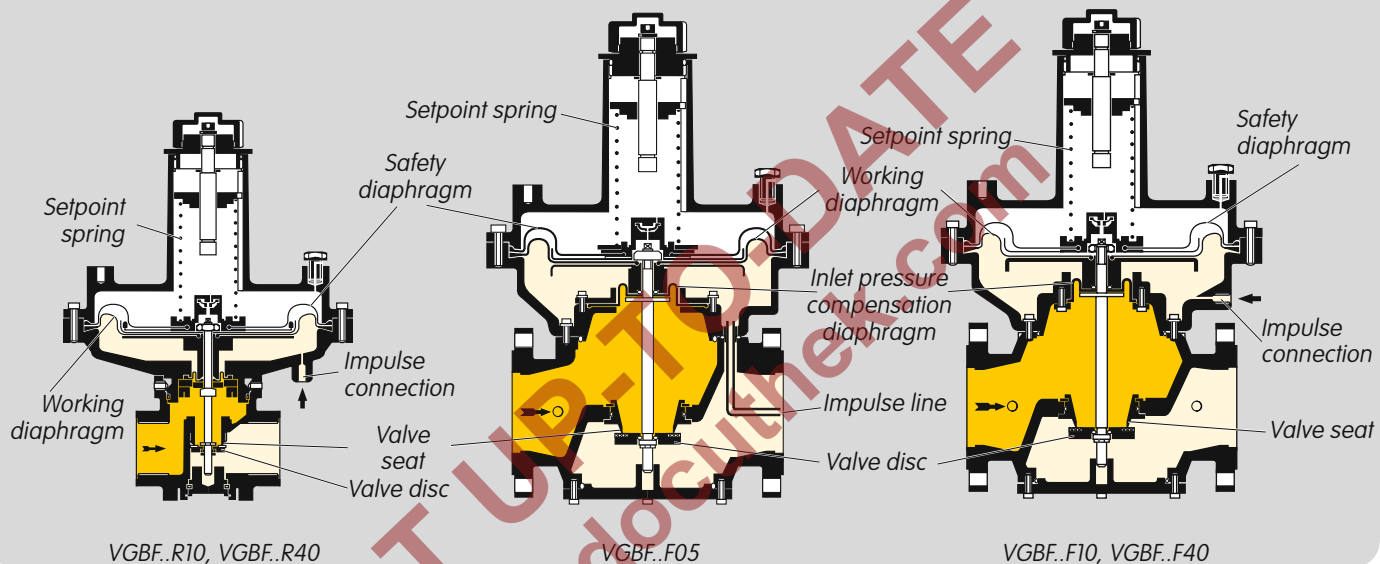
Certified by Gosstandart under Technical Regulations.

Approved by Rostekhnadzor (RTN).

Scan of the approval for Russia (RUS) – see [www.docuthek.com](http://www.docuthek.com)

→ Elster Kromschroder → Products → 02 Pressure regulators  
→ Gas pressure regulators VGBF → Kind of document: Certificate → VGBF B00093 (nationales Zertifikat Russland) (RUS).

### 3 Function



Gas pressure regulator VGBF is open when no pressure is applied.

The gas supply is opened slowly and the gas flows via the open valve seat to the pressure regulator outlet. The outlet pressure is applied to the space beneath the working diaphragm via the impulse line. As soon as the outlet pressure corresponds to the set spring force, the working diaphragm lifts and the valve disc connected to it reduces the flow rate.

If the outlet pressure drops, e.g. due to switching on a consumer, the valve disc is opened further and the outlet pressure increases again.

If the outlet pressure increases, e.g. due to reduced consumption, the valve disc is closed further and the outlet pressure decreases again.

Thus, the outlet pressure is maintained constant despite changing gas flow rates.

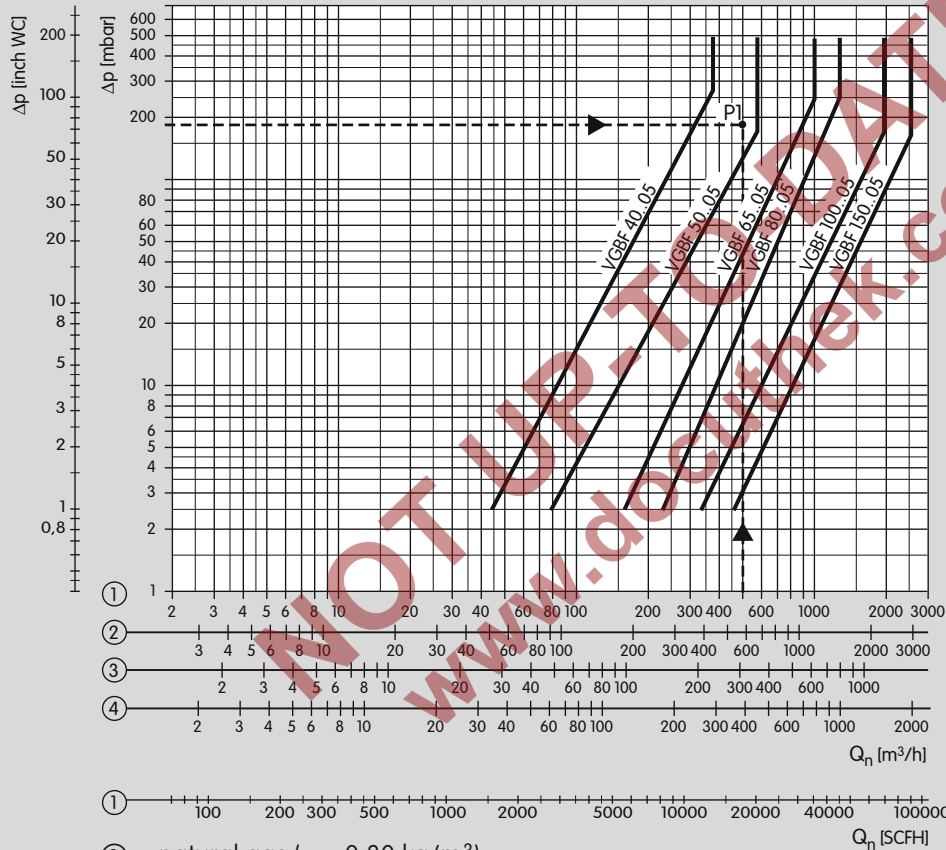
If consumption is stopped, the valve disc cuts off the flow completely (zero shut-off).

Fluctuations in the inlet pressure are compensated by the inlet pressure compensation diaphragm.

Pressure test nipples can be installed to measure the inlet and outlet pressures.

## 4 Flow rate

### 4.1 Selection example for VGBF..05



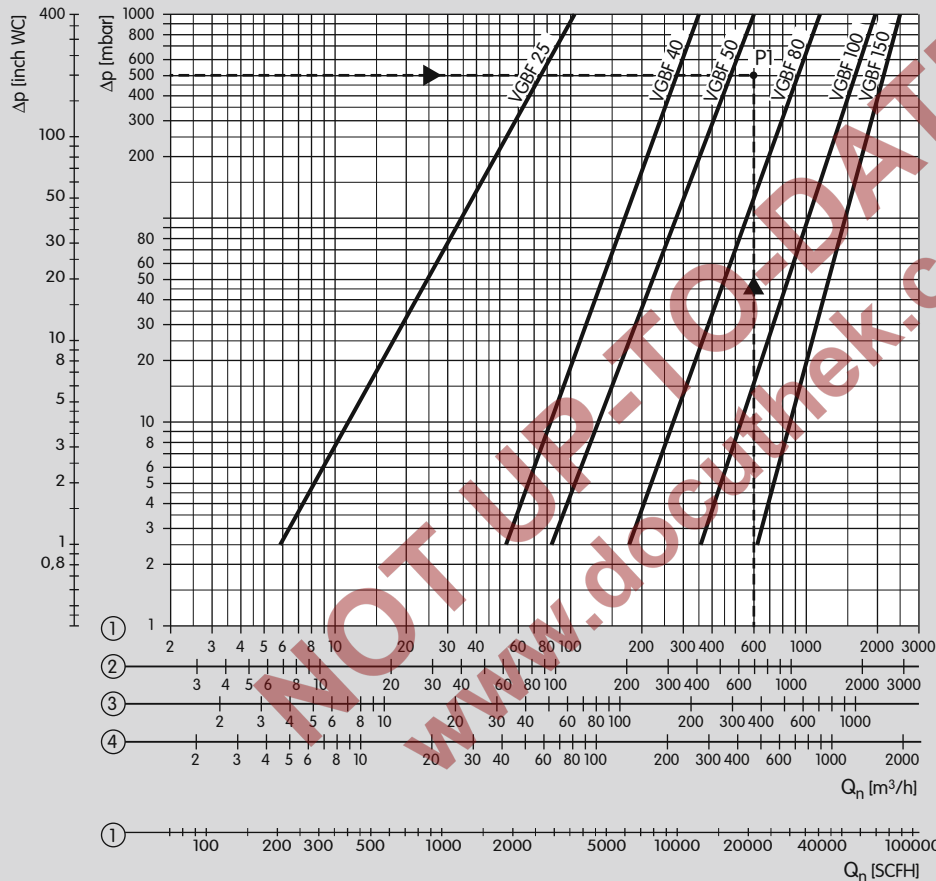
Gas type: natural gas,  
 flow rate  $Q = 500 \text{ m}^3/\text{h}$ ,  
 inlet pressure  $p_u = 200 \text{ mbar}$ ,  
 outlet pressure  $p_d = 20 \text{ mbar}$ ,  
 pressure loss  
 $\Delta p = p_u - p_d = 180 \text{ mbar}$ .

The result is intersection P1.

The next largest nominal size is selected: VGBF 50..05.

At a pressure loss of  $\Delta p = 180 \text{ mbar}$ ,  
 the max. flow rate is  $Q_{\text{max.}}: 580 \text{ m}^3/\text{h}$ ,  
 the min. flow rate is  $Q_{\text{min.}}$  derived from  
 $Q_{\text{min.}} = Q_{\text{max.}} \times 10\% = 58 \text{ m}^3/\text{h}$ .

## 4.2 Selection example for VGBF..10

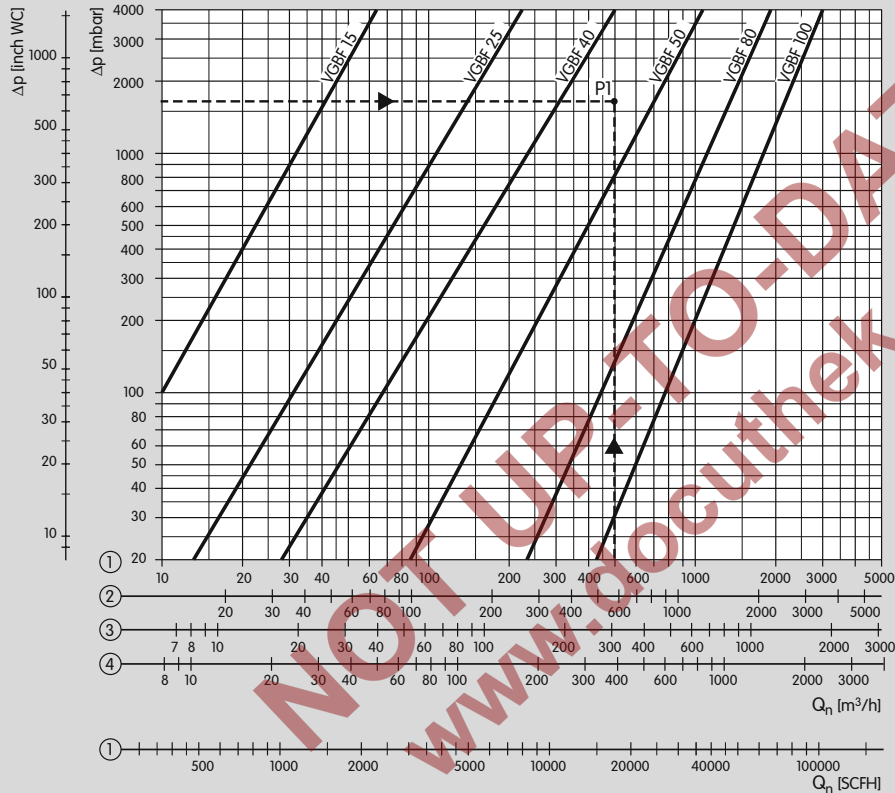


Gas type: natural gas,  
 flow rate  $Q = 600$   $m^3/h$ ,  
 inlet pressure  $p_u = 600$  mbar,  
 outlet pressure  $p_d = 100$  mbar,  
 pressure loss  $\Delta p = p_u - p_d = 500$  mbar.

The result is intersection P1.  
 The next largest nominal size is selected: VGBF 80..10.

At a pressure loss of  $\Delta p = 500$  mbar,  
 the max. flow rate is  $Q_{max.}$ : 910  $m^3/h$ ,  
 the min. flow rate is  $Q_{min.}$  derived from  
 $Q_{min.} = Q_{max.} \times 10\% = 91$   $m^3/h$ .

### 4.3 Selection example for VGBF..40



Gas type: natural gas,  
flow rate  $Q = 500 \text{ m}^3/\text{h}$ ,  
inlet pressure  $p_u = 2 \text{ bar}$ ,  
outlet pressure  $p_d = 300 \text{ mbar}$ ,  
pressure loss  $\Delta p = p_u - p_d = 1.7 \text{ bar}$ .

The result is intersection P1.  
The next largest nominal size is selected: VGBF 50..40.

At a pressure loss of  $\Delta p = 1.7 \text{ bar}$ , the  
max. flow rate is  $Q_{\text{max}}$ :  $700 \text{ m}^3/\text{h}$ , the  
min. flow rate is  $Q_{\text{min}}$ , derived from  
 $Q_{\text{min}} = Q_{\text{max}} \times 10\% = 70 \text{ m}^3/\text{h}$ .

## 5 Selection

| Type     | T | N | R | A | F | 05 | 10 | 40 | -1 | -2 | -3 | V |
|----------|---|---|---|---|---|----|----|----|----|----|----|---|
| VGBF 15  | ● | ● | ● |   |   |    |    | ●  | ●  | ●  |    |   |
| VGBF 25  | ● | ● | ● |   |   |    | ●  | ●  | ●  | ●  |    |   |
| VGBF 40  | ● | ● | ● |   | ● | ●  | ●  | ●  |    |    | ●  | ○ |
| VGBF 50  | ● |   |   | ● | ● | ●  | ●  | ●  |    |    | ●  | ○ |
| VGBF 65  | ● |   |   | ● | ● | ●  |    |    |    |    | ●  | ○ |
| VGBF 80  | ● |   |   | ● | ● | ●  | ●  | ●  |    |    | ●  | ○ |
| VGBF 100 | ● |   |   | ● | ● | ●  | ●  | ●  |    |    | ●  | ○ |
| VGBF 150 |   |   |   |   | ● | ●  | ●  |    |    |    | ●  | ○ |

● = standard, ○ = available

### Order example

VGBF 50F05-3

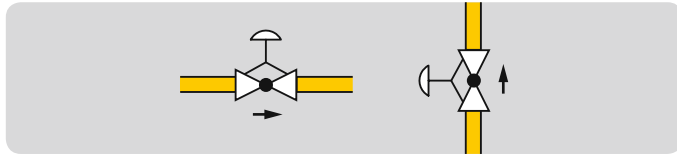
### 5.1 Type code

| Code   | Description                             |
|--------|-----------------------------------------|
| VGBF   | Gas pressure regulator                  |
| 15-150 | Nominal size                            |
| T      | T-product                               |
| N      | NPT internal thread                     |
| R      | Rp internal thread                      |
| A      | ANSI flange                             |
| F      | Flange to ISO 7005                      |
| 05     | p <sub>U</sub> max. 500 mbar (7.5 psig) |
| 10     | p <sub>U</sub> max. 1 bar (15 psig)     |
| 40     | p <sub>U</sub> max. 4 bar (60 psig)     |
| -1     | Screw plug at the inlet                 |
| -2*    | Screw plug at the outlet*               |
| -3     | Screw plug at the inlet and outlet      |
| V      | Viton equipment (without approval)      |

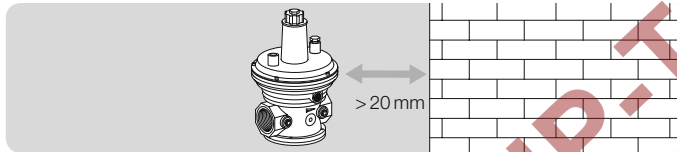
\* For T-products range only

## 6 Project planning information

### 6.1 Installation

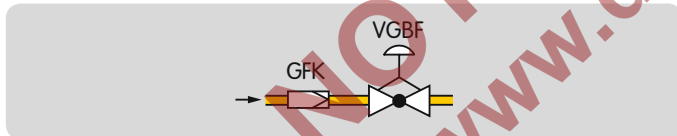


Installation position: any, not upside down. Recommended installation position as of nominal size DN 65: spring dome pointing vertically upwards.



The gas pressure regulator VGBF must not be in contact with masonry. Minimum clearance 20 mm.

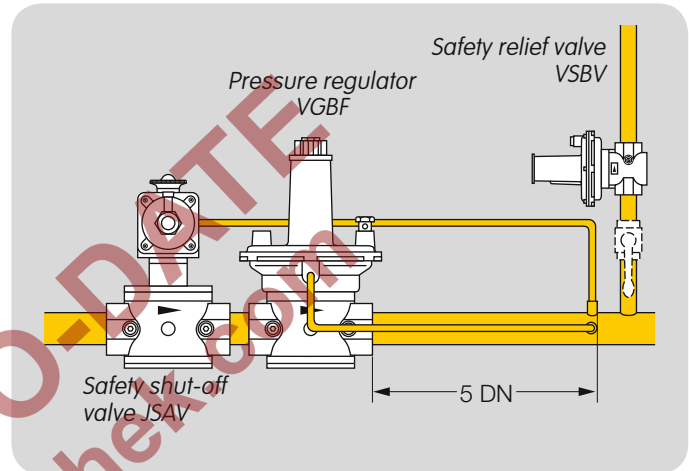
Do not store or install the unit in the open air.



Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the regulator housing. Install a filter (GFK) upstream of every system.

### 6.2 Installation to EN 746-2

In accordance with EN 746-2, a safety shut-off valve upstream of the gas pressure regulator and a safety relief valve are required for gas pressure control systems.



These valves are not required if the highest possible operating pressure upstream of the regulator cannot exceed the maximum allowable operating pressure of the downstream devices.

### 6.3 Installing the impulse line

Gas pressure regulator VGBF..F05 features an internal feedback function. On VGBF..F10 and VGBF..F40, the feedback function is performed via an external impulse line (5 x DN), see illustration at 6.2.

### 6.4 Installation to NFPA 86

#### NFPA 86-8.2.10 and NFPA 86-6.2.4

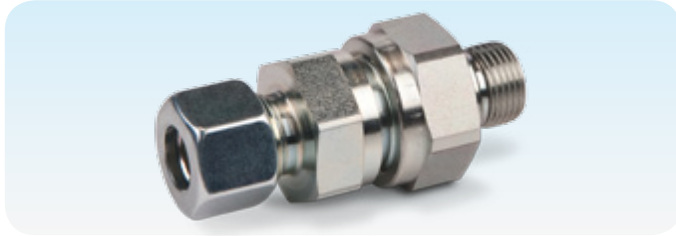
If the inlet pressure to a fuel pressure regulator exceeds the pressure rating of any component, overpressure protection shall be provided.

#### With reference to NFPA 86-6.2.4:

The gas pressure regulator requires a relief line on the spring dome, see illustration at 6.2.

## 7 Accessories

### 7.1 Damping valve



VGBF..10 and VGBF..40: damping valve for Rp  $\frac{3}{8}$  impulse line

VGBF..T: damping valve not available.

VGBF 15 – 25: not required.

VGBF 40 – 100..40: loosely enclosed.

Can be ordered on request for VGBF 40 – 150..10.

Order No. 75439215.

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## 8 Technical data

Gas types: natural gas, town gas, LPG (gaseous) and biologically produced methane (max. 0.02 %-by-vol.  $H_2S$ ), VGBF..V also for air. The medium must be dry in all temperature conditions and must not contain condensate.

Inlet pressure range: up to 500 mbar (7.25 psig),  
1 bar (14.5 psig) and 4 bar (14.5 psig).

Outlet pressure ranges:

VGBF 15 – 50: 5 – 350 mbar (2 – 137 "WC),

VGBF 65, 150: 5 – 160 mbar (2 – 62 "WC),

VGBF 80, 100: 5 – 350 mbar (2 – 137 "WC).

VGBF..05: Class A.

VGBF..10, VGBF..40:

Accuracy Class: AC 10,

Lock-up pressure class: SG 30.

Ambient temperature:

standard: -15 to +60°C (5 to 140°F),

VGBF..V: 0 to +60°C (32 to 140°F).

Storage temperature:

standard: -15 to +40°C (5 to 104°F),

VGBF..V: 0 to +40°C (32 to 104°F).

Valve housing: aluminium,

valve seat and stem: aluminium.

Wetted diaphragms:

standard: Perbunan,

VGBF..V: Viton.

Valve disc:

standard: Perbunan,

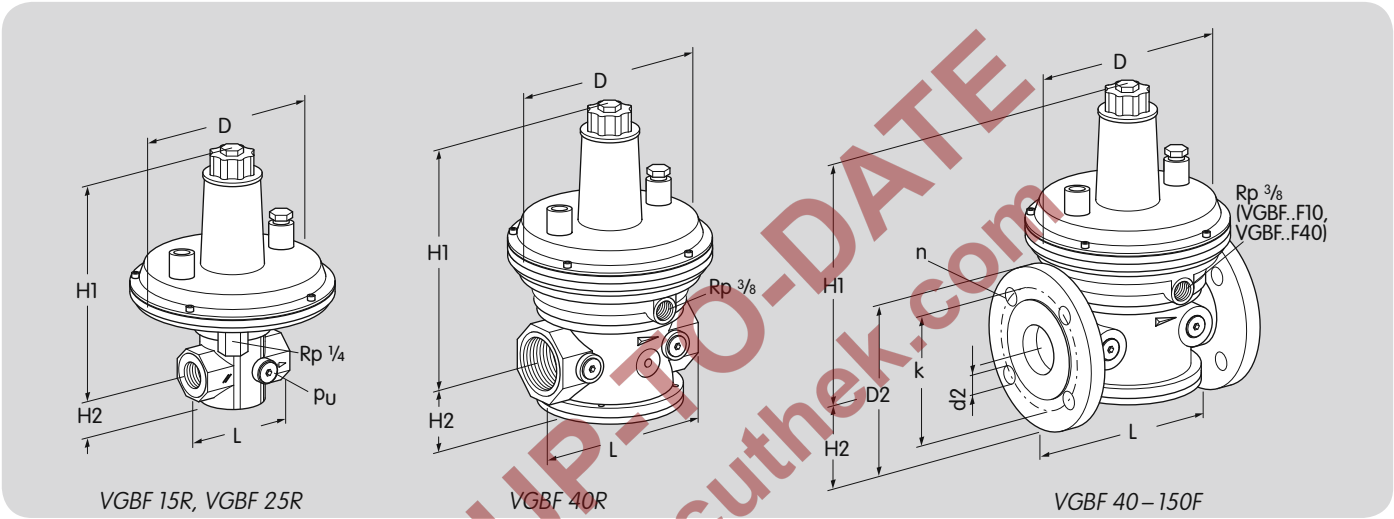
VGBF..V: Viton.

Internal thread: Rp to ISO 7-1, NPT to ANSI/ASME.

Flanged connection:

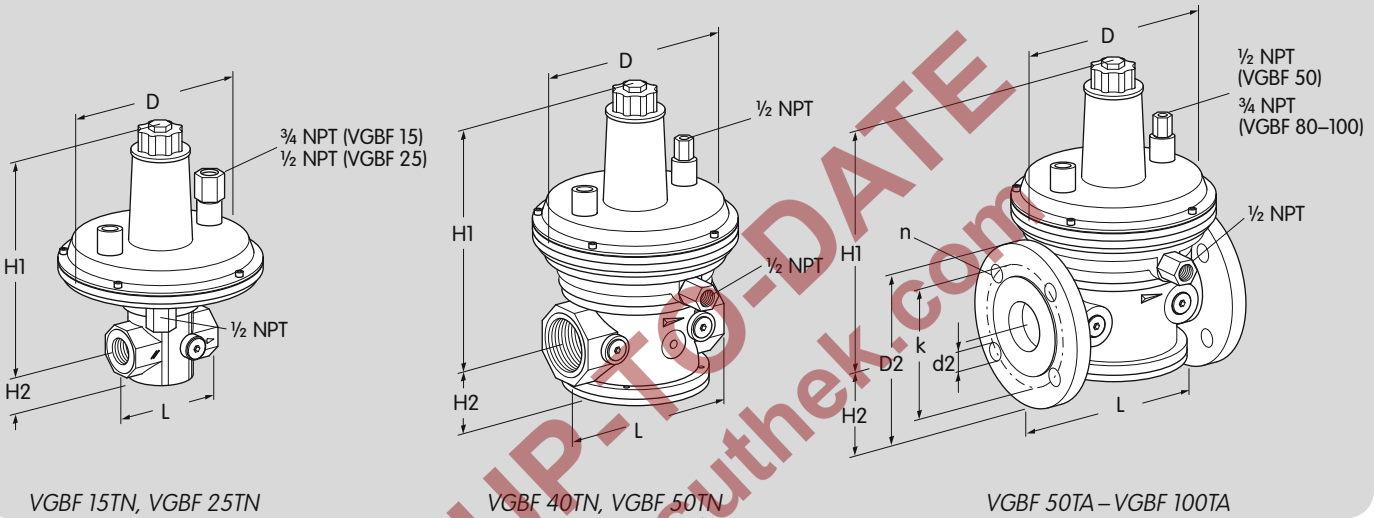
PN 16 pursuant to ISO 7005, ANSI flange pursuant to ASA.

8.1 Dimensions



8.1.1 VGBF with Rp internal thread or with ISO flange

| Type      | Dimensions |            |         |          |          |         | p <sub>u</sub> max.<br>bar | Flange   |         | Drilling |          | Weight<br>kg |
|-----------|------------|------------|---------|----------|----------|---------|----------------------------|----------|---------|----------|----------|--------------|
|           | DN         | Connection | L<br>mm | H1<br>mm | H2<br>mm | D<br>mm |                            | D2<br>mm | k<br>mm | d2<br>mm | n<br>No. |              |
| VGBF 15R  | 15         | Rp 1/2     | 70      | 151      | 24       | 132     | 4                          | —        | —       | —        | —        | 0.9          |
| VGBF 25R  | 25         | Rp 1       | 90      | 250      | 33       | 190     | 1; 4                       | —        | —       | —        | —        | 1.9          |
| VGBF 40R  | 40         | Rp 1 1/2   | 150     | 260      | 56       | 190     | 1; 4                       | —        | —       | —        | —        | 2.9          |
| VGBF 40F  | 40         | 40         | 200     | 260      | 75       | 190     | 0.5; 1; 4                  | 150      | 110     | 18       | 4        | 4.8          |
| VGBF 50F  | 50         | 50         | 230     | 316      | 83       | 240     | 0.5; 1; 4                  | 165      | 125     | 18       | 4        | 7.7          |
| VGBF 65F  | 65         | 65         | 290     | 412      | 89       | 260     | 0.5                        | 185      | 145     | 18       | 4        | 12.0         |
| VGBF 80F  | 80         | 80         | 310     | 446      | 100      | 310     | 0.5; 1; 4                  | 200      | 160     | 18       | 8        | 16.1         |
| VGBF 100F | 100        | 100        | 350     | 501      | 115      | 396     | 0.5; 1; 4                  | 229      | 180     | 18       | 8        | 26.0         |
| VGBF 150F | 150        | 150        | 480     | 573      | 150      | 520     | 0.5; 1                     | 285      | 240     | 22       | 8        | 46.5         |



8.1.2 VGBF..T with NPT internal thread or with ANSI flange

| Type       |     |            |           |            |            |           | p <sub>u</sub> max. | Flange     |           | Drilling   |          | Weight |
|------------|-----|------------|-----------|------------|------------|-----------|---------------------|------------|-----------|------------|----------|--------|
|            | DN  | Connection | L<br>inch | H1<br>inch | H2<br>inch | D<br>inch |                     | D2<br>inch | k<br>inch | d2<br>inch | n<br>No. |        |
| VGBF 15TN  | 15  | 1/2 NPT    | 2.76      | 5.91       | 0.94       | 5.20      | 1.5                 |            |           |            |          | 2.0    |
| VGBF 25TN  | 25  | 1 NPT      | 3.54      | 9.84       | 1.30       | 7.48      | 0.4; 1.5            |            |           |            |          | 4.2    |
| VGBF 40TN  | 40  | 1 1/2 NPT  | 5.91      | 10.24      | 2.20       | 7.48      | 0.4; 1.5            |            |           |            |          | 6.4    |
| VGBF 50TN  | 50  | 2 NPT      | 7.17      | 12.44      | 2.72       | 9.45      | 0.2; 0.4; 1.5       |            |           |            |          | 12.6   |
| VGBF 50TA  | 50  | 2 ANSI     | 9.06      | 12.44      | 3.01       | 9.45      | 0.2; 0.4; 1.5       | 6.02       | 4.75      | 0.75       | 4        | 17.0   |
| VGBF 80TA  | 80  | 3 ANSI     | 12.20     | 17.56      | 3.78       | 12.20     | 0.2; 0.4; 1.5       | 7.50       | 6.00      | 0.75       | 4        | 35.5   |
| VGBF 100TA | 100 | 4 ANSI     | 13.78     | 19.72      | 4.53       | 15.59     | 0.2; 0.4; 1.5       | 9.02       | 7.50      | 0.75       | 8        | 57.3   |

## 8.2 Spring table

| Outlet pressure range |          | Marking      | Order No. |                    |             |          |          |          |          |
|-----------------------|----------|--------------|-----------|--------------------|-------------|----------|----------|----------|----------|
| mbar                  | "WC      |              | VGBF 15   | VGBF 25<br>VGBF 40 | VGBF 50     | VGBF 65  | VGBF 80  | VGBF 100 | VGBF 150 |
| 5–12.5                | 2–5      | –            | 75421911  | 75421961           | 75422031    | 75426160 | 75426230 | 75426310 | 75426450 |
| 10–30*                | 4–12     | red          | 75421921  | 75421971           | 75422041    | 75426170 | 75426240 | 75426320 | 75426460 |
| 25–45                 | 10–17.5  | yellow       | 75421931  | 75421980           | 75422051    | 75426180 | 75426250 | 75426330 | 75426470 |
| 40–60                 | 16–23    | green        | 75421941  | 75421990           | 75422061    | 75426190 | 75426260 | 75426340 | 75426480 |
| 55–75                 | 21–29    | blue         | 75421951  | 75422000           | 75422071    | 75426200 | 75426270 | 75426350 | 75426490 |
| 70–90                 | 27–35    | black        | 75442046  | 75422010           | 75422081    | 75426210 | 75426280 | 75426360 | 75426500 |
| 85–105                | 33–41    | white        | 75442047  | 75422020           | 75422091    | 75426220 | 75426290 | 75426370 | 75426510 |
| 100–160**             | 39–62    | black/red    | 75442048  | 75438978           | 75438981    | 75446329 | 75438984 | 75438987 | 75438990 |
| 150–230               | 58.5–90  | black/yellow | 75442049  | 75438979           | 75438982    | –        | 75438985 | 75438988 | –        |
| 220–350               | 86–136.5 | black/green  | 75442050  | 75438980           | 75438983*** | –        | 75438986 | 75438989 | –        |

Dispatch complete with label for changed outlet pressure.

\* Standard spring.

\*\* T-products range standard spring.

\*\*\* Spring set comprising two springs.

## 9 Maintenance cycles

At least once a year, at least twice a year in the case of biologically produced methane.

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Found information quickly  
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### Comprehension

Coherent  
Too complicated  
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### Scope

Too little  
Sufficient  
Too wide  
No answer

inter  
active

### Use

To get to know the product  
To choose a product  
Planning  
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### Navigation

I can find my way around  
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