

Air/gas ratio controls GIK

Technical Information · GB
2 Edition 05.18

- To maintain a constant gas/air mixture
- For continuous and staged burner control
- Design with inlet pressure compensation diaphragm ensures high control accuracy
- Wide control range
- EC type-tested and certified



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1 Application



upstream of gas burners in systems without preheated combustion air.

For use in gas control lines 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.

Air/gas ratio controls GIK with inlet pressure compensation diaphragm and zero shut-off serve to maintain a constant gas/air ratio and to control the gas pressure

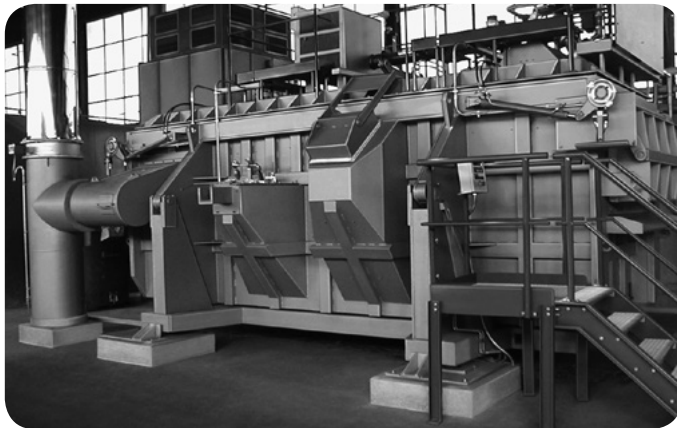
1.1 Examples of application



Metallurgical industry: bogie hearth furnace



Ceramics industry: intermittent shuttle kiln



Aluminium industry: smelting furnace

2 Certification

Certificates – see Docuthek

EU certified pursuant to



Regulation:

- Gas Appliances Regulation (EU) 2016/426

Standards:

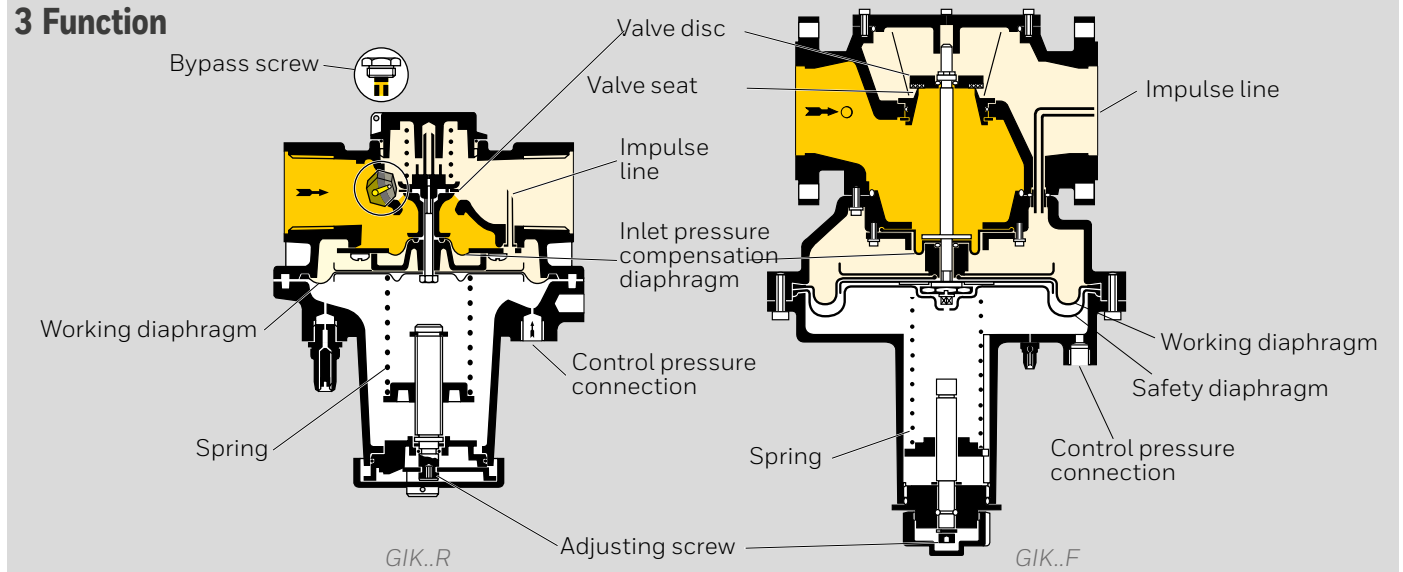
- EN 88-1:2011+A1:2016

Eurasian Customs Union



The product GIK meets the technical specifications of the Eurasian Customs Union.

3 Function



Air/gas ratio control GIK is actuated by the air line pressure. The valve disc is lifted from the valve seat and the gas flows into the regulator outlet area via the open valve seat. The outlet pressure is applied to the space above the working diaphragm via the impulse line. The outlet pressure is controlled in a ratio of 1:1 to the air control pressure. The inlet pressure compensation diaphragm ensures high control accuracy.

The burner capacity can be adjusted using the air control valve. Furnace pressure fluctuations have the same effect on the gas and air throughput so that the gas/air mixture will remain unchanged.

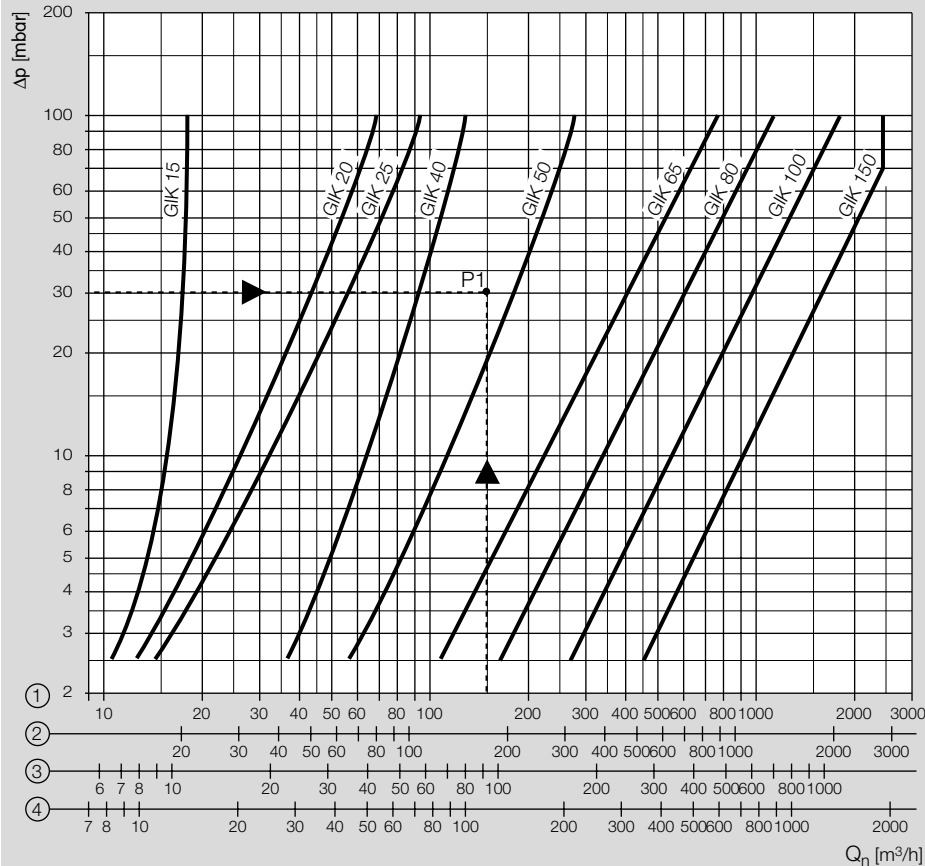
The spring can be used for compensating the weight of the measuring unit. In the low-fire range, the gas/air mixture can be set by adjusting the spring. For staged control, the spring is decompressed at the factory in such a way that the low-fire rate only flows through the bypass.

Adjustment at high-fire rate is carried out using restrictors or valves on the burner.

The zero shut-off prevents an increase in the outlet pressure when the consumer is switched off.

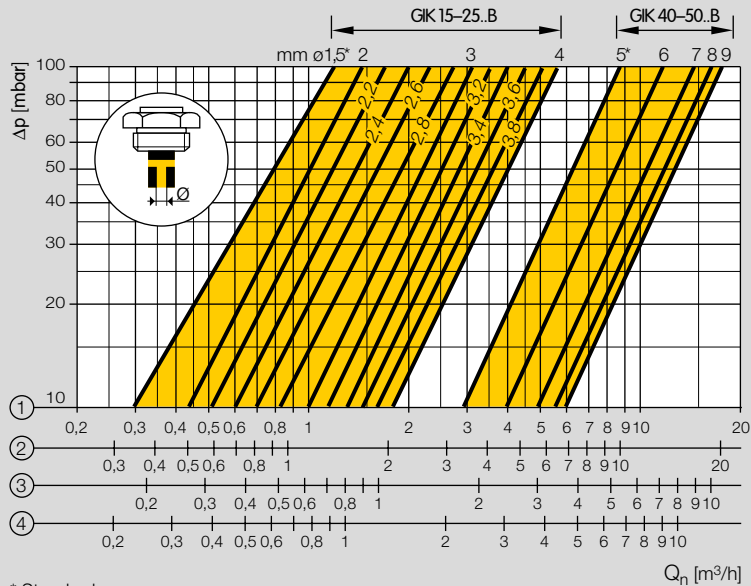
Test nipples have been installed to measure the static inlet, outlet and control pressures.

4 Flow rate



Gas type: natural gas,
flow rate $Q = 150 \text{ m}^3/\text{h}$,
inlet pressure $p_u = 50 \text{ mbar}$,
outlet pressure $p_d = 20 \text{ mbar}$,
pressure loss $\Delta p = p_u - p_d = 30 \text{ mbar}$.
The result is intersection P1.
The next largest nominal size is selected:
GIK 50.

4.1 Bypass screw flow rate



* Standard:
GIK 15 – 25..B: 1,5 mm
GIK 40 – 50..B: 5 mm

- ① = natural gas ($\rho = 0.80 \text{ kg/m}^3$)
- ② = town gas ($\rho = 0.64 \text{ kg/m}^3$)
- ③ = LPG ($\rho = 2.01 \text{ kg/m}^3$)
- ④ = air ($\rho = 1.29 \text{ kg/m}^3$)

5 Selection

Type	R	F	02	-5	-6	L	B
GIK 15	●	-	●	●	-	○	○
GIK 20	●	-	●	●	-	○	○
GIK 25	●	-	●	●	-	○	○
GIK 40	●	-	●	●	-	○	○
GIK 50	●	-	●	●	-	○	○
GIK 65	-	●	●	-	●	○	-
GIK 80	-	●	●	-	●	○	-
GIK 100	-	●	●	-	●	○	-
GIK 150	-	●	●	-	●	○	-

● = standard, ○ = available

Order example

GIK 40R02-5

5.1 Type code

Code	Description
GIK	Air/gas ratio control
15-150	Nominal size
R	Rp internal thread
F	Flange to ISO 7005
02	p _u max. 200 mbar
-5	Pressure test point at the outlet
-6	Pressure test point at the inlet and outlet
L*	For air only (without approval)
B*	Bypass screw

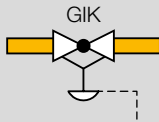
* If "none", this letter is omitted.

6 Project planning information

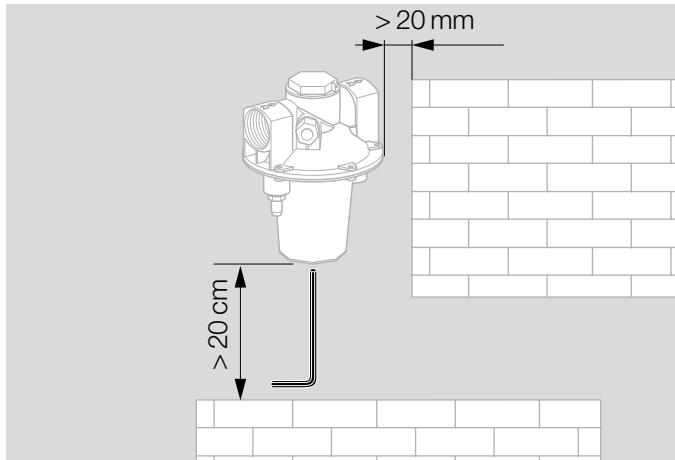
The gas inlet pressure p_u must always be greater than the air control pressure p_L + pressure loss Δp to ensure that the air/gas ratio control is not overloaded.

GIK..B: the air control pressure must be less than 2 mbar at low-fire rate.

6.1 Installation



Installation position: Install in horizontal pipelines only. Spring dome pointing downwards.

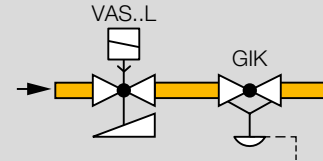


The air/gas ratio control GIK must not be in contact with masonry. Ensure that there is sufficient space for adjusting the low-fire rate.

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.

The outlet opening on the installed reducing fitting must also be protected from dirt.



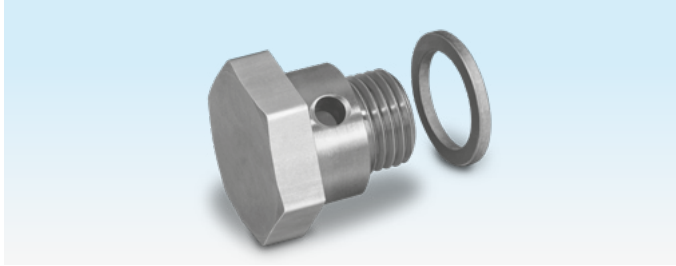
Safety valves must always be installed upstream of the air/gas ratio control GIK. For continuous control, we recommend using slow opening safety valves VAS..L.

We recommend that a slowing down section of 3 x DN be provided downstream of the GIK.

Every signal line whose failure may lead to the uncontrolled escape of gas and therefore to an unsafe status and gas fire must be made of metal.

7 Accessories

7.1 Conversion kit for zero pressure control

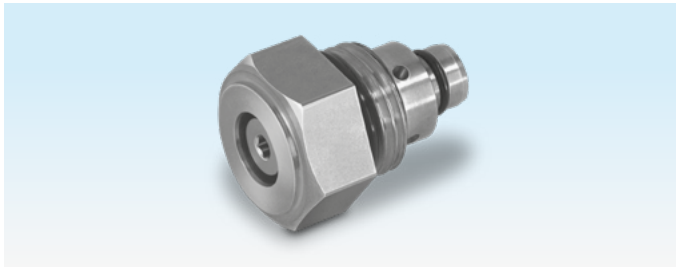


The conversion kit for zero pressure control is screwed in instead of the air impulse line.

Order No.:

GIK 15 – 50: 03351039, GIK 65 – 150: 74910853.

7.2 Bypass screw GIK 15 – 25, variable



The bore hole diameter for the flow rate can be adjusted as desired and corresponds to holes of 1.5 – 4 mm, see page 8 (Bypass screw flow rate).

Order No.: GIK 15 – 25: 74919806.

7.3 Bypass screw, diameter to order



The bore hole diameter of the bypass screw is made to order.

Order No.:

GIK 15 – 25: 74919820, GIK 40 – 50: 74919821.

8 Technical data

Gas types: natural gas, town gas, LPG (gaseous) and biologically produced methane (max. 0.02 %-by-vol. H₂S), GIK..L also for air. The medium must be dry in all temperature conditions and must not contain condensate.

Air control pressure: 0.5 to 120 mbar.

Outlet pressure: 0.2 to 119 mbar.

Differential pressure between inlet area and outlet pressure: max. 100 mbar.

Transmission ratio: 1:1.

Control range: 1:10.

Internal thread: Rp 1 to ISO 7-1.

Flanged connection: PN 16 to ISO 7005.

No condensation permitted.

Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).

Bypass screw: brass.

GIK 15 – 25:

Standard: 1.5 mm, up to 4 mm possible.

GIK 40 – 50:

Standard: 5 mm, up to 9 mm possible.

GIK 15 – 150:

Housing: AlSi.

Diaphragms: NBR.

GIK 15 – 50:

Adjusting range at low fire: -3 to +3 mbar.

Connection for control line: Rp 1/4.

Ambient temperature: -20 to +60°C.

Storage temperature: -20 to +40°C.

Valve disc: plastic.

Valve disc seal: NBR.

GIK 65 – 150:

Adjusting range at low fire: -2 to +2 mbar.

Connection for control line: Rp 1/2.

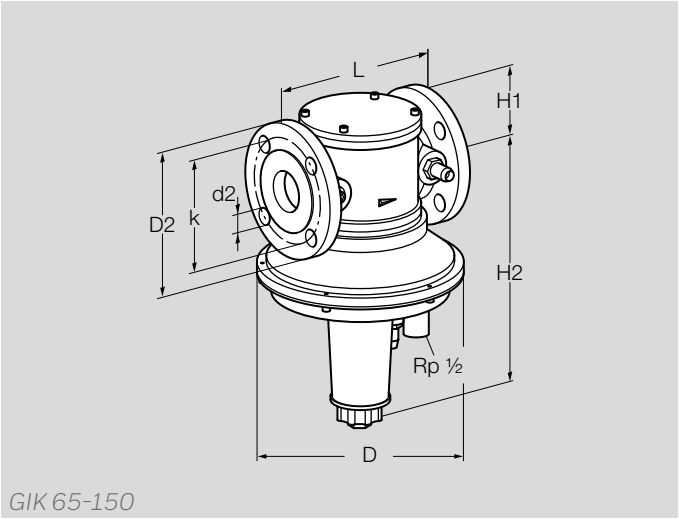
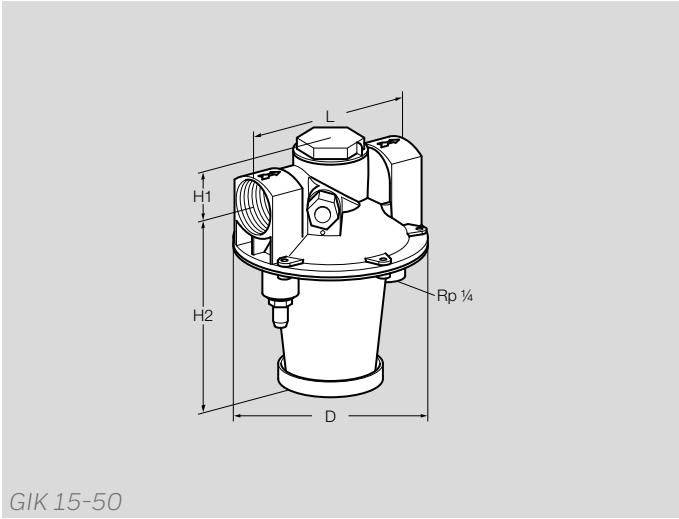
Ambient temperature: -15 to +60°C.

Storage temperature: -15 to +40°C.

Valve disc: aluminium.

Valve disc seal: vulcanized NBR seal.

8.1 Dimensions



Type	Dimensions						p _u max.	Flange		Drilling		Weight
	DN	Connection	L mm	H1 mm	H2 mm	D mm		D2	k	d2	No.	
GIK 15	15	Rp 1/2	120	34	132	134	200	–	–	–	–	1.0
GIK 20	20	Rp 3/4	125	34	132	134	200	–	–	–	–	1.1
GIK 25	25	Rp 1	125	34	132	134	200	–	–	–	–	1.1
GIK 40	40	Rp 1 1/2	155	45	149	185	200	–	–	–	–	1.8
GIK 50	50	Rp 2	200	52	167	240	200	–	–	–	–	2.8
GIK 65	65	65	290	89	412	260	200	185	145	18	4	12.0
GIK 80	80	80	310	100	446	310	200	200	160	18	8	16.1
GIK 100	100	100	350	115	501	396	200	229	180	18	8	26.0
GIK 150	150	150	480	150	573	520	200	285	240	22	8	46.5