Version
December 2025

English version

Translation of established Dutch version

Approval requirement 210

Gas stoppers for gas distribution systems

creating trust *driving progress*

GASTEC Qa

kiwa

Preface Kiwa

This, translated from Dutch, approval requirement (AR), is approved by the Board of Experts (BoE) GASTEC QA. in which relevant parties in the field of gas related products are represented. This Board of Experts supervises the certification activities and where necessary require the GASTEC QA approval requirement to be revised. All references to Board of Experts in this GASTEC QA approval requirement pertain to the above-mentioned Board of Experts.

This, translated from Dutch, AR will be used by Kiwa Nederland BV in conjunction with the GASTEC QA general requirements and the KIWA regulations for certification.

Kiwa has a method which is established in the certification procedure for the execution of:

- The investigation for provisioning and maintaining a GASTEC QA product certificate based on this AR.
- The periodic evaluations of the certified products for the purpose of maintaining a provided GASTEC QA product certificate based on this AR.

This AR, translated from Dutch, is used as supporting document. In case of doubt of interpretation of this AR, the Dutch version is leading.

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Content

1. Introduction

1.1. General

This GASTEC QA approval requirement (AR) in combination with the GASTEC QA general requirements, is applied by Kiwa as the basis for the issuing and maintaining the GASTEC QA product certificate for gasstoppers for gas distribution systems.

With this product certificate, the certificate holder can demonstrate to his or her customers that an expert independent organization monitors the production process of the certificate holder, the quality of the product and the related quality assurance.

Next to the requirements established in this AR and the general requirements, Kiwa has additional requirements in the sense of general procedural requirements for certification, as laid down in the internal certification procedures.

This GASTEC QA approval requirement replaces the version of January 2018.

List of changes:

- This approval requirement has been adapted to the new layout of GASTEC QA approval requirements.
- The approval requirement is fully textually reviewed.
- The allowed MOP has been adjusted from 8 bar to 200 mbar and it's also allowed to apply these products in metal piping systems.
- Additional requirement added for uniform corrosion resistance in paragraph 4.10.
- The test pressures to use in paragraph 4.2 have been adjusted.
- Paragraph 4.6 has been adjusted to clarify the test medium and test pressure.
- The chapter division has been adjusted.
- The list of reference standards has been adjusted.

The product requirements have changed.

1.2. Scope

This approval requirement is applicable to gas stoppers as independent component or as part for installation in another component, for the application in plastic or metal piping systems for the distribution of natural gas (see the 2nd and 3rd family gas according to EN 437) with a maximum operating pressure of 200 mbar and an operating temperature of -20°C up to and including +40°C.

2. Definitions

In this approval requirement, the following definitions are applicable:

Austenitic stainless steel: Stainless steel (SS) is an iron alloy and has a high corrosive resistance. The addition of alloying elements provides specific properties. Austenitic stainless steel belongs to 1 of the 4 main groups of stainless steel. Austenitic stainless steel is characterized by nickel and chromium as the main alloying elements.

Board of Experts (BoE): The Board of Experts GASTEC QA.

Closing flow: The flow at which the gas stopper closes.

Gas stopper: A component that independently shuts off the gas flow when the closing flow rate is reached.

Independent component: Component that is suitable for installation in the gas distribution network.

Leak tightness: A product is regarded as being leak tight when it complies with the following:
No liquid may visibly leak when using a liquid as the testing medium.
When using gas as a test medium:

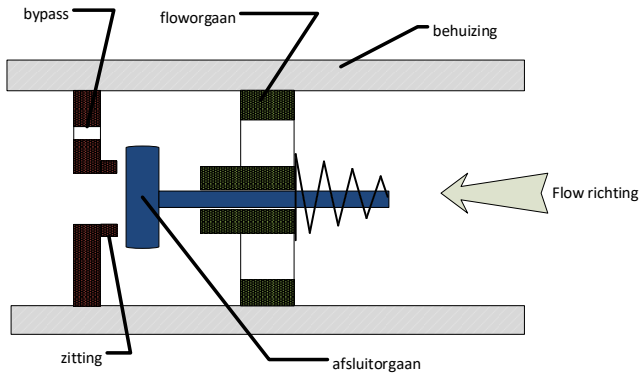
- No air bubbles are permitted when submerged.
- No continuous formation of bubbles is permitted when using leak detection fluid.

Maximum operating pressure (MOP): Maximum pressure that a component is capable of withstanding continuously in service under normal operating conditions.

Nominal flow: Gas flow rate for which the gas stopper is designed, as specified by the manufacturer.

Operating temperature: Temperature at which the product functions under normal conditions.

Schematic representation of a possible design for a gas stopper:



Uniform corrosion: Type of corrosion due to a natural interaction between a material and its environment. Oxygen corrosion is the most visible form of corrosion.

See also the definitions mentioned in the GASTEC QA general requirements.

3. Material and product requirements

This chapter contains the material and product requirements that the raw materials, materials and products used shall meet.

3.1. General

The supplier / certificate holder shall provide information at which capacity the gas stopper responds.

The gas stopper shall be internally and externally clean, free of blisters and show no defects. External sharp edges and corners are not allowed.

Drill holes for bolts, pins and other for the connection or assembly shall not form a connection between the gas carrying parts and the surroundings.

The design of the gas stopper shall be such, possibly by means of a safety device, that it's not possible to change the settings afterwards.

Glued connections with plastic parts are not allowed

Rubber sealing materials shall comply with EN 682 type GAL or GBL.

Threaded sealings shall comply with GASTEC QA approval requirements 31-1, 31-2 or 31-3.

3.1.1. Gas stopper as independent component

The gas stopper shall be provided on the inlet and outlet side with connections that meet the relevant GASTEC QA approval requirements or when no approval requirements are available with the relevant national or international standards

3.1.2. Gas stopper for installation in a component

The component in which the gas stopper is placed shall not disturb the operation of the gas stopper. The gas stopper shall be fixed in the component in which it is installed. The component in which the gas stopper can be placed shall comply with the relevant GASTEC QA approval requirements or when no approval requirements are available with the relevant national or international standards.

3.2. Materials

The materials used for making the housing, the flow mechanism, seat and closing element shall comply with paragraph 3.2.1. and/or 3.2.2.

3.2.1. Metals

The metals used shall be demonstrably suitable for the application (including pressure, ambient temperature, corrosion resistance, long-term behaviour).

The suitability of the metal can be demonstrated by:

- reference to relevant product standards of products with similar application in which the material in question is prescribed
- test results using, for example, the EN 12516 series.

The material shall be specified according to the relevant material standard.

To prove the corrosion resistance the products shall comply with the requirement in paragraph 4.10.

3.2.2. Non-metals

The non-metals used shall be demonstrably suitable for the application (including pressure, ambient temperature, gas resistance, long-term behaviour).

The suitability of the non-metal can be demonstrated by:

- reference to relevant product standards of products with similar application in which the material in question is prescribed
- test results.

For pressurized parts, an ISO 9080 report shall be available which shows that the material is suitable for the intended application.

Non-metal housings may only be produced from virgin material or from a combination of virgin material and own residual material.

The material shall be specified based on the raw material (+ supplier) and additives.

3.3. Closing mechanism

The closing mechanism shall not be provided with a lubricant.

3.4. Springs

Springs (intended for operating the closing flow) shall comply with paragraph 3.2.1 be produced from suitable steel. This can be demonstrated when the dynamic load is calculated according to EN 13906-1 or EN 13906-2 and the springs are produced from spring steel with a minimum quality of 1.4310 according to ISO 6931-1.

If the springs cannot be calculated in accordance with EN 13906-1 or EN 13906-2, they shall be tested in accordance with paragraph 4.9.

4. Performance requirements and test methods

This chapter contains the performance requirements and associated test methods that the products shall meet. This chapter also specifies the limit values, if applicable.

4.1. General

4.1.1. Test temperature

All tests shall be carried out at an ambient temperature of 23 ± 5 ° C unless otherwise specified.

4.1.2. Test samples and size groups

All tests shall be performed on 3 identical samples unless otherwise specified. For testing, gas stoppers (built-in or independent component) are installed in accordance with the supplier's installation instructions. Gas stoppers for installation in a component are tested built-in in the component. If multiple installation positions are possible, the tests are carried out in the most unfavourable position (to be determined by Kiwa).

Sample selection

Unless otherwise stated, the tests shall be carried out on 3 samples per size group and per MOP class:

Size group	1	2	3	4
Pipe diameter (mm)	16 up to and including 40	50 up to and including 110	125 up to and including 200	225 up to and including 355

Pipe diameter is the diameter of the pipe for which the gas stopper is suitable

4.2. Strenght of the housing

In the case of a gas stopper as an independent component, it shall be able to withstand an internal pressure of 40 mbar, MOP and 1 bar for 2 minutes without damage or deformation. The test shall be carried out in accordance with paragraph 4.2.1.

4.2.1. Determination strenght of he housing

A pressure of 40 mbar, MOP and 1 bar is applied to the inlet and outlet sides of the gas stopper. The pressure is applied for 2 minutes. During this period, it is necessary to visually check whether damage and / or deformations occur.

4.3. External gas tightness

In the case of a gas stopper as an independent component, no external leakage shall be visible at a test pressure of 25 mbar, MOP and 1.5 x MOP. The test shall be carried out in accordance with paragraph 4.3.1.

4.3.1. Determination external gas tightness

A pressure equal to the MOP is applied to the inlet and outlet sides of the gas stopper. The pressure is applied for 2 minutes. The gas stopper shall be externally leakproof during this period.

Repeat this test with a pressure of 1.5 x MOP and with 25 mbar.

4.4. Closing flow

The flow at which the gas stopper closes is at most 1.8 times the nominal flow rate specified by the manufacturer. The test shall be carried out in accordance with paragraph 4.4.1.

4.4.1. Determination closing flow

Place the gas stopper in a set up according to figure 1.

- Apply with the help of the pressure regulator (2) and control valve (5) the MOP at nominal flow
- Wait till there is a stable flow through the control valve (5)
- Next, open the control valve (5) slowly and evenly until the gas stopper closes
- Determine the closing flow by means of a flow meter (4)

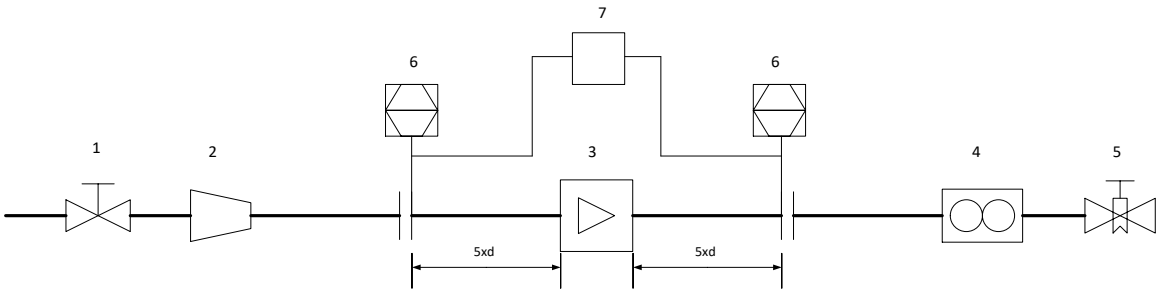


Figure 1

1 Valve
2 Adjustable pressure regulator
3 Gas stopper
4 Flow meter
5 Control valve
6 Pressure meter
7 Pressure difference meter (optional)
d diameter pipe

4.5. Operation with an increase in flow

A gas stopper that is used in a pipe system with a MOP of 200 mbar shall not close in the event of a sudden increase within 1 second in flow from nominal to 115% nominal flow. The test shall be carried out in accordance with paragraph 4.5.1.

4.5.1. *Determination operation with an increase in flow*

Place the gas stopper in a set up according to figure 2.

- Apply with the help of a pressure regulator (2) and control valve (5) an inlet pressure of 200 mbar at nominal flow
- Next, set, with the valve in the open position (8), the control valve (9) (opened at once by hand) such that 115% nominal flow goes through the gas stopper
- Next, close the valve (8)
- Wait till a stable flow has been created through the control valve (5)
- Then open the valve (8)
- Check with the help of the flow meter (4) if the gas stopper is closed

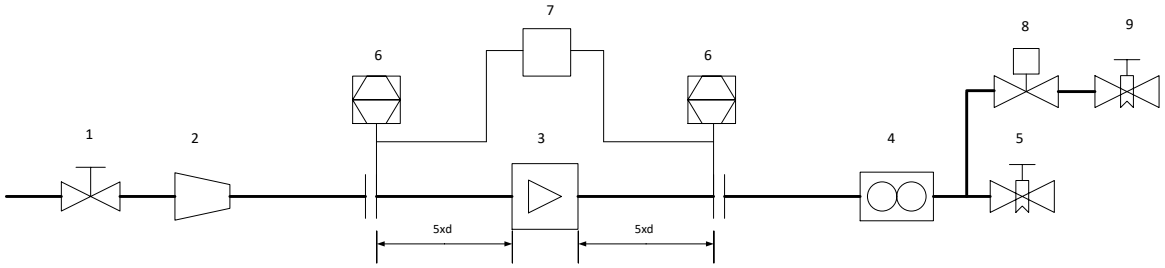


Figure 2

1. *Valve*
2. *Adjustable pressure regulator*
3. *Gas stopper*
4. *Flow meter*
5. *Control valve*
6. *Pressure meter*
7. *Pressure difference meter (optional)*
8. *Electromagnetic valve (opening time 0,2 second)*
9. *Control valve*

d *diameter pipe*

4.6. Leak flow

At a test pressure of MOP, or a different pressure if provided by the manufacturer, the leakage with a completely closed gas stopper may:

- Be maximally 3 l/h[1]) for gas stoppers without bypass.
- Be maximally the amounts stated by the supplier for gas stoppers with bypass.

The test shall be carried out in accordance with paragraph 4.6.1 using air as test medium.

[1]) Air under standard conditions (1013,25 mbar / 15 ° C)

4.6.1. *Determination leak flow*

Place the gas stopper in the set up according to figure 1.

- Apply with the help of a pressure regulator (2) and control valve (5) the MOP at nominal flow
- Wait till there is a stable flow through the control valve (5)
- Open the control valve (5) evenly and slowly till the gas stopper closes
- After closing of the gas stopper, the leak flow will be determined using the flow meter (4).

4.7. Repeated resetting

After repeated (100 times) closing and opening of the gas stopper at a test pressure of MOP, it shall still meet the requirements set out in paragraphs 4.2, 4.3, 4.4, 4.5 and 4.6.

The test shall be carried out in accordance with paragraph 4.7.1.

4.7.1. Determination repeated resetting

Place the gas stopper in the set up according to figure 1.

- Apply with the help of a pressure regulator (2) and control valve (5) the MOP at nominal flow
- Wait till there is a stable flow through the control valve (5)
- Open the control valve (5) quickly and as such the gas stopper closes
- Close the control valve (5) slowly until the gas stopper opens via the bypass or reset the gas stopper according to the instructions of the manufacturer.

Repeat these steps until the gas stopper has been closed 100 times. Then repeat the tests as described in paragraphs 4.2, 4.3, 4.4, 4.5 and 4.6.

4.8. Pressure loss

The measured pressure loss, determined with air as medium, over the gas stopper shall correspond to the maximum pressure loss specified by the supplier. The test shall be carried out in accordance with paragraph 4.8.1.

4.8.1. Determination pressure loss

This test is performed at nominal flow with test pressures of 40 mbar, 100 mbar, 200 mbar and if not already performed at the MOP as specified by the manufacturer.

Place the gas stopper in the set up according to figure 1.

Apply with the help of the pressure regulator (2) the above-mentioned inlet pressures. Measure the flow and the pressure difference over the gas stopper. Depending on the method of specification of the pressure loss by the manufacturer, this measurement shall be repeated at different set ups.

4.9. Dynamic load springs

If the requirements of paragraph 3.4 are not met, the following requirement applies. The closing flow rate shall not deviate more than 6% after the closing device has completed 10.000 circuits at an ambient temperature of 60 °C. The test shall be carried out in accordance with paragraph 4.9.1.

4.9.1. Determination of the dynamic load of the springs

Measure the closing flow of the gas stopper according to paragraph 4.4. Next place the gas stopper in an ambient temperature of 60°C. Have the gas stopper make 10.000 switches and re-determine the closing flow according to paragraph 4.4.

4.10. Uniform corrosion resistance

All parts shall be resistant against uniform corrosion. Parts made by a type of Austenitic RVS 300 series are exempt of this requirement due to the material characteristics related to the requirement of uniform corrosion.

All other metal materials shall be assessed according to paragraph 4.10.1 of this AR.

4.10.1. Test method

The uniform corrosion shall be assessed by performing the salt spray test according to ISO 9227, with a liquid according to paragraph 5.2.2 and a test duration of 168h.

The gas stopper will be exposed to the salt spray test unassembled.

After completion of the salt spray test, the gas stopper will be assembled, and the leak tightness will be assessed according to paragraph 4.3. The sample will pass if the product is mountable and leak tight.

5. Marking, instructions and packaging

5.1. Marking

The gas stopper shall be marked with the following information:

- GASTEC QA, GASTEC QA logo or punchmark*
- Name or identification mark of the supplier.
- Type notification (incl. application and use).
- Production date or code.
- Nominal flow.
- MOP.
- Operating pressure range.
- Nominal connection size of the inlet and outlet side (in case of an independent component).
- Direction of flow.

*can be marked on the smallest packaging.

5.2. Instructions

The supplier shall provide instructions and deliver it with the product. The supplier shall provide user instructions in the Dutch language and in the language of the country in which the product will be used.

These instructions shall include that it's a GASTEC QA approved product. have the following information included:

- The use, installation and in case applicable, de-installation of the product.
- The maximum length of the connection pipe for which the gas stopper is suitable.
- The conditions and applicable piping systems under which the product can be used.
- In case applicable the need for additional attachment for the use in metal piping systems.
- The way it can be controlled that the product is correctly installed.
- The way the product should be stored.
- Maximum shelf-life when stored.
- A graph which the pressure loss is plotted against flow.

5.3. Packaging

The product shall be packaged such that contamination and damage is not possible from the outside.

6. Quality system requirements

The requirements for the quality system are described in the GASTEC QA general requirements. An important part of this are the requirements for drawing up a risk analysis (e.g., an FMEA) of the product design and the production process in accordance with chapters 3.1.1.1 and 3.1.2.1. This risk analysis shall be available for inspection by Kiwa.

7. Summary of evaluation

This chapter contains a summary of the evaluation to be carried out during:

- The initial product assessment;
- The periodic product verification;

7.1. Evaluation matrix

Description of requirement	Clause	Investigation within the scope of		
		Initial product assessment	Product verification	
			Inspection	Frequency
Material and product requirements	**3**			
General	3.1	X		
Gas stopper as independent component	3.1.1	X		
Gas stopper for installation in a component	3.1.2	X		
Materials	3.2	X		
Metals	3.2.1	X		
Non-metals	3.2.2	X		
Closing mechanism	3.3	X		
Springs	3.4	X		
Performance requirements	**4**			
General	4.1			
Strength of the housing	4.2	X		
External gas tightness	4.3	X	X	Once a year
Closing flow	4.4	X	X	Once a year
Operation with increasing flow	4.5	X		
Leak flow	4.6	X		
Repeated resetting	4.7	X	X	Once a year
Pressure loss	4.8	X		
Dynamical load springs	4.9	X		
Uniform corrosion resistance	4.10	X		
Marking, instructions and packaging	5	X	X	Once a year

8. List of referenced documents and source

8.1. Standards/ normative documents

Number	Title	Version *
EN 12516 series	Industrial valves - Shell design strength - Part 1: Tabulation method for steel valves shells	
EN 13906-1	Cylindrical helical springs made from round wire or bar - Calculation and design - Part 1: Compression springs	2013
EN 13906-2	Cylindrical helical springs made from round wire or bar - Calculation and design - Part 2: Extension springs	2013
ISO 6931-1	Stainless steels for springs - Part 1: Wire	2020
ISO 9080	Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation	2012
ISO 9227	Corrosion tests in artificial atmospheres – Salt spray tests	2022
DIN 30652-2	Excess flow valves – Part 2: Excess flow valves for service lines	2022

*) If no date of issuance is specified in this column, the current version of the document applies.

8.2. Source of informative documents

Number	Title	Version *
EN 437	Test gases- test pressure – appliance categorie	2021
EN 682	Elastomeric seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids	2002+A1: 2005
	General requirements GASTEC QA	

*) If no date of issuance is specified in this column, the current version of the document applies.