

AR 168

November 2024

# Approval requirement 168

Self-closing gas valves



Trust  
Quality  
Progress

# Foreword

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

In this AR is established which requirements a product and the requestor/ certificate holder of the GASTEC QA product certificate should meet and the matter to which Kiwa evaluates this.

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.

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The use of this approval requirement by third parties, for any purpose whatsoever, is only allowed after a written agreement is made with Kiwa to this end

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# 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 self-closing gas valves.

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 February 2019.

List of changes:

- These approval requirements have been fully reviewed textually.
- Paragraphs 3.3.2 and 4.5 have been removed.

The product requirements have changed.

## 1.2 Scope

This AR applies to self-closing gas valves for installation in high-impact polyvinylchloride (PVC-HI) connection pieces and tee piece BG for gasless tapping high-impact polyvinylchloride (PVC-HI) distribution lines (according to NEN 7230) and PE gas distribution lines (according to EN 1555-2) and gasless installing of inflatable pipe plugs.

The self-closing gas valves are for use in underground gas installations for 2<sup>nd</sup> and 3<sup>rd</sup> family gases according to EN 437 for gas pressures up to and including 200 mbar.

The specific functional recommendations for application of these self-closing valves in gas systems are described in the relevant parts of NEN 7244 and national and international standards and/or regulations.

## 2 Definitions

In this approval requirement, the following terms and definitions are applicable:

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

**Clamp:** conical montage element for both sides of the saddle.

**Connection piece:** Construction element for connecting the service line to the saddle.

**High impact PVC:** blend of unplasticized PVC with high impact additive.

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

**Pressure:** static overpressure regarding to atmospheric.

**Self-closing gas valve:** an element in the top piece for closing of gas pressure from the main gas line.

**Tapping saddle:** Construction element for placing connection pieces to be able to make branches for connecting pipes on main pipes, whether or not under gas pressure. The tapping saddle is also used for placing tee piece BG for placing and removing gas bladders.

**Tee piece BG:** Construction element for drilling, placing and removal of gas bladders through the saddle.

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 compounds, materials and products used shall meet.

### 3.1 General

In this chapter the functional and performance requirements imposed on self-closing gas valves for hot tapping and hot installing of inflatable pipe plugs are included, as well as the determination methods to be able to determine whether the requirements are fulfilled.

#### 3.1.1 Assembly

The assembly, dimensions and tolerances of the components shall comply with the construction drawings provided by the manufacturer.

#### 3.1.2 Reliability and suitability

The self-closing gas valve shall be reliable and well-suited for the intended purpose. It shall be possible to drill safe and reliable taps under practical conditions and to set inflatable plugs with virtually no gas being released.

#### 3.1.3 Provision for pressure test

The manufacturer shall be able to provide a plug for the pressure test equipment or provide another provision that makes it possible for the service line to be pressure tested at 1 bar without creating a pressure difference over the self-closing gas valve.

#### 3.1.4 Self-closing gas valves for tapping

The self-closing gas valve for tapping shall only be used in combination with GASTEC QA approved connection pieces and tee piece BG's.

The connection pieces and tee piece BG's shall meet the NEN 7232 for saddles with clamp connections of modified polyvinyl chloride (PVC-HI).

#### 3.1.5 Connection pieces and tee piece BG's with self-closing gas valve for installation of inflatable pipe plugs

The top pieces with built-in self-closing gas valve for installing of inflatable pipe plugs may only be used in combination with GASTEC QA approved tapping saddles. The tapping saddles shall meet the AR 58 for saddles with clamp connections of modified polyvinyl chloride (PVC-HI).

### 3.2 Materials

#### 3.2.1 Plastics

Plastic components of the construction that contact gas, shall be made of high-impact PVC, in accordance with the AR 58 for saddles with clamp connections of modified polyvinyl chloride (PVC-HI). The material shall be free of contamination and resistant against the action of gas and its components.

### **3.2.2 *Elastomers***

Elastomeric sealing components shall conform to the requirements of EN 682, Type GAL or GBL.

## **3.3 Construction**

### **3.3.1 *Pressure accomodation during use***

The construction shall be made in such a way that no pressure difference is created over the self-closing gas valve under operational conditions.



## 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

All measurements shall be performed at  $23 \pm 2$  °C. Pressures shall be measured using a precision manometer as specified by EN 837-2.

Leakage losses shall be measured with an accuracy to  $\pm 5$  cm<sup>3</sup>/h. Tests shall be done in 3-fold.

### 4.2 Leak tightness test after tapping

The high-impact polyvinylchloride (PVC-HI) main line should be tapped at an operating pressure of  $25 +5/-0$  mbar using through the self-closing gas valve with a suitable drill for this. The seal of the valve shall be checked for leak tightness. The leakage loss shall not exceed 1 liter per hour.

### 4.3 Leak tightness test at 200 mbar

After being subjected to the leak tightness test mentioned in paragraph 4.2, without installation of the cut of plug / cut of cap/ threaded cap, the construction shall be able to withstand an internal pressure of  $200 +10/-0$  mbar for a period of 24 hours under the self-closing gas valve. The construction shall remain intact.

The test is performed by measuring the leakage loss over the self-closing gas valve from the start of the test to the end of the test. The leakage loss shall not exceed 1 liter per hour.

### 4.4 Leak tightness after repeated use

After being subjected to leak tightness test mentioned in paragraph 4.3, the construction shall be tested after repeated use.

Inserting the tapping tool shall be done 10 times at an operational pressure of  $200 +10/-0$  mbar through the self-closing gas valve.

The self-closing gas valve shall not show any damage after completion of the times 10 inserting the tapping tool.

After inserting the tool 10 times, for 15 minutes the leakage loss shall be measured. The leakage loss may not exceed 1 liter per hour.

#### **4.5 Leak tightness**

The self-closing valve shall be tested for leak tightness. The seal of the valve shall be checked for leak tightness during 1 hour at 200 +10/-0 mbar and 1 hour at 25 +5/-0 mbar.

The leakage loss shall not exceed 1 liter per hour with a pressure of 200 +10/-0 mbar and shall not exceed 1 liter per hour at 25 +5/-0 mbar.

The self-closing gas valve may not show any damage or malfunction after the test. This shall be checked with a visual evaluation.

# 5 Marking and instructions

## 5.1 Marking

The following information shall be permanently applied to the construction:

- Name of the manufacturer or supplier and/or the registered trademark;
- GASTEC QA or GASTEC QA logo.

## 5.2 Instructions

The manufacturer shall supply assembly instructions in the language of the country of use and in Dutch. The documentation shall provide clear instructions for tapping, pressurizing and placement of inflatable pipe plugs. The following shall be indicated in the documentation:

- The types of top pieces and tapping saddles for which the constructions are suitable;
- What cutters and devices for the placement of inflatable pipe plugs may be used;
- The type of fitting and connector to be used for the pressure testing equipment;
- The maximum allowable pressure for pressurizing and placing inflatable pipe plugs.

## 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 tests

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

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

## 7.1 Test matrix

Description of requirement	Clause	Test within the scope of		
		Initial product assessment	Product verification	
			Verification	Frequency
<b>General</b>	3.1			
Assembly	3.1.1	X	X	each year
Reliability and suitability	3.1.2	X		
Provision for pressure test	3.1.3	X	X	each year
Self-closing gas valves for tapping	3.1.4	X	X	each year
Connection pieces and tee piece BG's with self-closing gas valve for installation of inflatable pipe plugs	3.1.5	X	X	each year
<b>Materials</b>	3.2			
Plastics	3.2.1	X	X	each year
Rubbers	3.2.2	X	X	each year
<b>Construction</b>	3.3			
Pressure accommodation during use	3.3.1	X		
<b>Testing</b>	4			
Leak tightness after tapping	4.2	X	X	each year
Leak tightness at 200 mbar	4.3	X		
Leak tightness after repeated use	4.4	X	X	each year
Leak tightness after pressure test	4.5	X		
<b>Marking and instruction</b>	5			
Marking	5.1	X	X	each year
Instructions	5.2	X	X	each year

# 8 List of referenced documents and source

## 8.1 Standards / normative documents

All normative references in this Approval Requirement refer to the editions of the standards as mentioned in the list below.

EN 682:2002	Elastomeric seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids
EN 837-2: 1997	Pressure gauges - Part 2: Selection and installation recommendations for pressure gauges
NEN 7232: 2020	Plastics piping systems for gas supply - Saddles with clamp connections of high-impact polyvinyl chloride (PVC-HI) - Requirements and test methods
Approval requirements 58	Saddles with clamp connections of modified polyvinyl chloride (PVC-HI)

## 8.2 Source of informative documents

EN 437:2021	Test gases - Test pressures - Appliance categories
EN 1555-2:2021	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes
NEN 7230:2020	Plastics piping systems for gas supply - Pipes of high-impact poly(vinyl chloride) (PVC-HI) - Requirements and test methods
NEN 7244 series	Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar
General requirements GASTEC QA	