

AR 168

February 2019

Approval requirement 168

Self-closing gas valves



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Foreword

This GASTEC QA Approval requirement has been approved by the Board of Experts product certification 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 GASTEC QA Approval requirement will be used by Kiwa Nederland BV in conjunction with the GASTEC QA general requirements and the KIWA regulations for certification.

Approved by Board of Experts : February 10, 2019

Accepted by Kiwa Nederland B.V. : February 10, 2019

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1 Introduction

1.1 General

This GASTEC QA approval requirement in combination with the GASTEC QA general requirements include all relevant requirements, which are adhered by Kiwa as the basis for the issue and maintenance of a GASTEC QA certificate for self-closing gas valves.

This GASTEC QA Approval requirements replace the GASTEC QA Approval Requirements 168 "self-closing gas valves for hot tapping and hot installing of inflatable pipe plugs" dated March 2013.

List of changes:

- Update to the new format for GASTEC QA approval requirements
- These approval requirements have been fully reviewed textually.
- All general requirements have been deleted and included in the GASTEC QA general requirements document
- Change of paragraphs

The product requirements have not changed.

1.2 Scope

These Approval Requirements apply to self-closing gas valves to be mounted in high-impact polyvinylchloride (PVC-HI) tapping saddles for gasless tapping high-impact polyvinylchloride (PVC-HI) distribution lines and gasless installing of inflatable pipe plugs.

The self-closing gas valves are for use in gas installations for 2nd and 3rd family gases according to NEN-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 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: The board of experts GASTEC QA

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

Tapping saddle: Construction, including all parts, for connecting the service line on the main gas line.

Top piece: construction for connecting the service line on the saddle

Pressure: static overpressure regarding to atmospheric

Clamp: conical montage element for both sides of the saddle

High impact PVC: blend of unplastified PVC with high impact additive

3 Product requirements

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 in order 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 approved and certified by Kiwa Nederland.

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 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 may only be used in combination with GASTEC QA approved top pieces for tapping saddles. The top pieces shall meet the GASTEC QA Approval Requirements 58 for saddles with clamp connection of high-impact polyvinylchloride (PVC-HI) dated February 2018.

3.1.5 *Top pieces 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 GASTEC QA Approval requirements 58 for saddles with clamp connection of high-impact polyvinylchloride (PVC-HI) dated February 2018.

3.2 Materials

3.2.1 *Plastics*

Plastic components of the construction that make contact with gas shall be made of high-impact PVC, in accordance with the GASTEC-QA Approval Requirements 58 for saddles with clamp connection of polyvinylchloride (PVC-HI) dated February 2018. 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 NEN-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.

3.3.2 *Pressure accomodation during pressure testing*

The construction shall be made in such a way that when the service line is pressurized to 1 bar from the gas meter side, no pressure difference is created over the self-closing gas valve.

When pressurizing to 1 bar from the side of the top piece, this can be achieved with a provision in the connector of the pressurizing device on the top piece.

4 Performance requirements and test methods

4.1 General

All measurements shall be performed at 23 ± 2 °C. Pressures shall be measured using a precision manometer as specified by NEN 927, class 1.

Leakage losses shall be measured with an accuracy to ± 5 cm³/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 the drill provided for this. The seal of the valve shall be checked for leak tightness. The leakage loss may not exceed 1000 cm³/h.

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 screw 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 from the start to the end of the test period may not exceed 1000 cm³/h.

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.

Tapping shall be done 10 times at an operational pressure of 200 +10/-0 mbar through the self-closing gas valve with the drill provided for this.

The self-closing gas valve may not show any damage after completion of the tappings. The test is performed by measuring the leakage loss over the self-closing gas valve. The leakage loss may not exceed 1000 cm³/h.

4.5 Testing for pressure difference over the self-closing gas valve during pressurizing of the service line

The construction is brought to 1 bar with an even pressure build-up from the service line connection. The duration of this pressure build-up is 15 seconds. No pressure difference may arise across the self-closing gas valve during this process

4.6 Leak tightness test after pressure test

Directly after being subjected to the pressure test mentioned in paragraph 4.5, the leak tightness of the self-closing valve shall be tested. 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 may not exceed 1000 cm³/h. The self-closing gas valve may not show any damage or malfunction after completion of the test. This shall be checked by way of a visual test.

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
- The GASTEC QA word mark or logo mark;

5.2 Instructions

The manufacturer shall also supply assembly instructions 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 supplier shall make a risk assessment of the product and production process according to chapter 3.1.1.1 and 3.1.2.1 of the GASTEC QA general requirements. The risk assessments shall be available to Kiwa for review.

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
General	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
Top pieces with self-closing gas valve for installation of inflatable pipe plugs	3.1.5	X	X	each year
Materials	3.2			
Plastics	3.2.1	X	X	each year
Rubbers	3.2.2	X	X	each year
Construction	3.3			
Pressure accommodation during use	3.3.1	X		
Pressure accommodation during pressure testing	3.3.2	X		
Testing	4			
Leak tightness after tapping	4.2	X	X	
Leak tightness at 200 mbar	4.3	X		
Leak tightness after repeated use	4.4	X		each year
Pressure difference over the self-closing gas valve during pressurizing of the service line	4.5	X	X	each year
Leak tightness after pressure test	4.6	X	X	each year
Marking and instruction	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.

NEN-EN 437:2003 +A1:2009	Test gases - Test pressures - Appliance categories
NEN-EN 682:2002	Elastomeric seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids
NEN 927:1963	Pressure gauges - Testing and gauging
NEN 7232:2011	Plastics piping systems for gas supply - Saddles with clamp connection of modified poly (vinyl chloride) (modified PVC) - Requirements and test methods
NEN 7244 series	Dutch edition on base of NEN-EN 12007 series: Gas supply systems - Pipelines for maximum operating pressure up to and including 16 bar
Gastec QA approval requirements 58	Approval requirements for the GASTEC QA product certificate for saddles with clamp connection of high-impact polyvinylchloride (PVC-HI)