

## CONTROL VALVES AND SAFETY VALVES

# Technical document 079-02

Stop valves

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## MODIFICATION HISTORY

Revision no.	Date of application	Modifications
00	15/03/2019	<p><b>Update to the document introduction and reference.</b></p> <p><b>Basic modifications:</b></p> <p><b>Part 1: Application rules</b></p> <ul style="list-style-type: none"> <li>– Article 4.4 The end connections: a note concerning the follow-up to the dimensional deviations on the connections has been added;</li> <li>– Article 5 Designation: the essential information only is to be kept;</li> <li>– Article 6.1 Chemical and hygienic properties: <ul style="list-style-type: none"> <li>○ The test of “compatibility with products used for the disinfection of networks” is to be performed only using sodium hypochlorite;</li> <li>○ The type of water used is specified;</li> </ul> </li> <li>– Article 6.2.1 Copper alloys: reference is made to the list of the 4 MS (=Member States);</li> <li>– Test methods and/or specifications are given in the following articles: <ul style="list-style-type: none"> <li>○ 7.2.1 Torque test;</li> <li>○ 7.2.2 Bending moment;</li> <li>○ 7.3.1 Leaktightness;</li> <li>○ 7.3.2 Pressure resistance.</li> </ul> </li> <li>– Article 7.3.3 Flow capacity: deletion of the V<sub>C</sub> flowrate class;</li> <li>– Article 7.4 Acoustic tests: the type of valve concerned is specified;</li> <li>– Article 7.5 Endurance test: test applicable to DN ≤ DN25 and modification of the test method: <ul style="list-style-type: none"> <li>○ temperature of the fluid;</li> <li>○ number of cycles;</li> <li>○ closing torque.</li> </ul> </li> <li>– Addition of the following articles: <ul style="list-style-type: none"> <li>○ 10 Presentation at delivery;</li> <li>○ 11 Technical documentation;</li> <li>○ 12 Test sequence.</li> </ul> </li> </ul> <p><b>Part 2 and Part 3 are moved into a Technical Management Appendix (Control methods) and</b></p> <p><b>Update to Tables “Inspection during production” and “Inspection of finished products”.</b></p>

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## PART 1. RULES OF APPLICATION OF STANDARD NF EN 1213 AND COMPLEMENTARY SPECIFICATIONS

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### Foreword

The publication of Standard NF EN 1213 in December 2000 and Standard NF P 43-000 in February 2003 led us to specify and supplement the new standard reference frame, to guarantee a consistent level of quality for products that have already been certified (such as testing the compatibility of the materials used with disinfectants), and to perform the corresponding tests.

### Purpose

The purpose of this document is to add details to and/or supplement certain articles in Standard NF EN 1213, using the same numbering system as that used in the standard.

The supplemented, modified and added articles are identified in the title.

### 1 Field of application

This document applies to copper alloy stop valves covered by the standard.

### 2 Normative references

### 3 Terms and definitions

### 4 Classification (supplemented)

#### 4.1 General

#### 4.2 The nominal diameter (DN)

#### 4.3 The flow rate (supplemented)

The article is supplemented as follows:

The flow rate classes  $V_A$  and  $V_B$  correspond to stop valves whose head DN is equal to the valve DN.

#### 4.4 The end connections (supplemented)

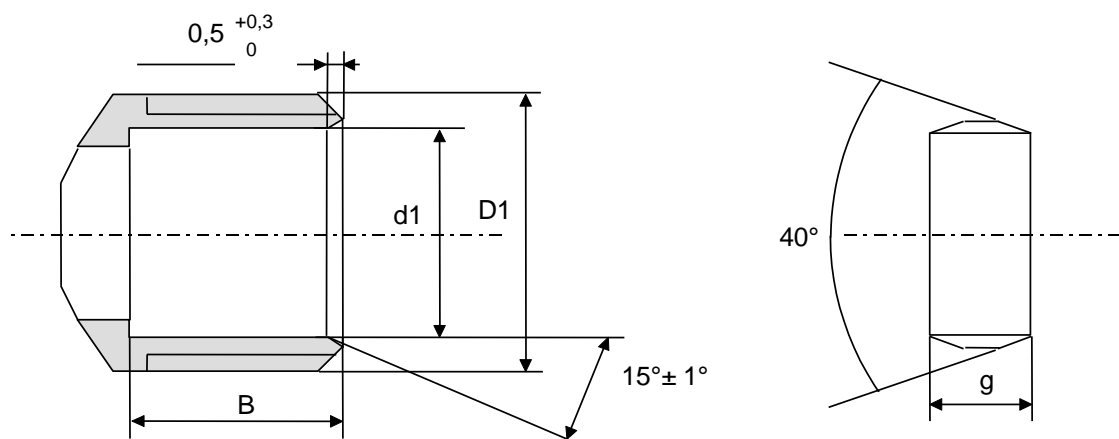
NOTE:

The dimensional deviations on the connections observed during CSTB inspection will be monitored during the inspection audits of the production sites. This monitoring will be reported in the audit reports and will be communicated to the relevant Committee.

The dimensional requirements for the end connections are defined in Tables 2, 3, 4, 5 and 6 of Standard NF P 43-000, article 1.2.3.

Further to these specifications, the following requirements apply to stop valves with Type A biconical connections:

a) Dimensional characteristics



Valve	D1	Biconical end	d1 (+0.3/0)	B max	G (+0.5/0)
3/8	G1/2	Ø 12	12.2	16	7.5
		Ø 14	14.2	16	8.0
1/2	G3/4	Ø 16	16.2	15	8.5
		Ø 18	18.2	15	8.5

Dimensions in millimetres

b) Packaging

The valves shall be packaged with the rings and nuts of appropriate size.

## 4.5 Overall length (added)

The dimensional requirements are defined in Table 7 of Standard NF P 43-000, article 1.3.

## 4.6 Head and body interchangeability dimensions (added)

The dimensional requirements are defined in Table 1 of Standard NF P 43-000, article 1.1.3.

# 5 Designation (modified)

This article has been modified as follows:

For practical and clarification purposes, it has been agreed to keep the essential information defined in the standard:

- pattern (straight or angle);
- nominal size (diameter);
- end connections;
- reference to the European standard.

The logo of this certification has been added to this designation.

Minimum designation.

EXAMPLE

Straight pattern stop valve, DN25, Female-Female 1', NF EN 1213, **NF**.

## 6 Materials

All materials in contact with potable water shall comply with the regulations: see article 2.1 of the certification reference system "Control valves and safety valves" (« Robinetterie de réglage et de sécurité ») (ACS – Health compliance certificate).

### 6.1 Chemical and hygienic characteristics

This article is supplemented with the requirements of article 2 of Standard NF P 43-000:

2.1 *Nature of the visible surfaces*

2.2 *Compatibility with products used for the disinfection of networks (supplemented)*

Article 2.2 has been supplemented as follows:

The test is conducted at a pressure of  $(6 \pm 1)$  bar for at least **24 h** for the sodium hypochlorite solution.

NOTE 1:

The purpose of this test is to take account of the disinfection carried out prior to the commissioning of a given facility.

In order to take into consideration the current practices, this test is only conducted using a sodium hypochlorite solution diluted with a "quality 3" water, regarded as being appropriate for the preparation of solutions and for most of the chemistry applications. It shall be carried out by single distillation, by demineralization or by reverse osmosis.

NOTE 2:

The test is to be conducted with a fully-opened valve.

### 6.2 Body materials

#### 6.2.1 Copper alloys (supplemented)

Table 2 of Standard NF EN 1213 has been supplemented as follows:

Designation		EN
Symbols	Numbers	
CuZn39Pb1Al1 Die-cast brass	CC754 S	EN 1982

NOTE:

The alloys referenced in the "4 MS" list are admitted too.

By "4 MS" is meant "4 Member States". Signature, in December 2010, of a declaration of intent by the respective competent authorities of the 4 Member States.

[www.sante.gouv.fr/IMG/pdf/4MS\\_Declaration\\_of\\_Intent\\_signedVF-4MS.pdf](http://www.sante.gouv.fr/IMG/pdf/4MS_Declaration_of_Intent_signedVF-4MS.pdf).

#### 6.2.2 Other metallic materials

## 7 Tests and requirements

### 7.1 General

### 7.2 Mechanical requirements and tests

#### 7.2.1 Torque test of the body (supplemented)

##### 7.2.1.1 Principle



#### 7.2.1.2 Test (modified)

In order to clarify the test defined in Standard NF EN 1213, the test method below is to be applied.

The test is broken down into two stages:

- Stage 1: Torque test of the body  
For this test, the valve's head can be replaced by a specific device.
- Stage 2: Strength of the operating lever (added)  
The valve is to be tested in its initial state.  
The torque is applied to the operating lever in the closing direction **and in the opening direction** according to the torque values defined in Table 1.

Table 1: Torque to be applied (Nm)

DN	Mt closing torque (Body)	Mt closing and opening torque (Operating member)
DN10	10 ± 10%	10 ± 10%
DN15	10 ± 10%	10 ± 10%
DN20	15 ± 10%	10 ± 10%
DN25	20 ± 10%	10 ± 10%

#### 7.2.1.3 Requirements (supplemented)

This article has been supplemented as follows:

During the test and at the end of it, no visible deformation of any part of the valve, whichever it is, shall be observed.

At the end of the test and without replacing any part, the valve shall meet the leaktightness test defined in article 7.3.1.

### 7.2.2 Bending moment

#### 7.2.2.1 Principle

#### 7.2.2.2 Test (supplemented)

This article has been supplemented as follows:

The test shall be conducted in water, under an upstream static pressure of 16 (+1/0) bar, the product being adjusted to obtain a maximum downstream pressure.

#### 7.2.2.3 Requirements (supplemented)

This article has been supplemented as follows:

The stop valve shall withstand the applied bending moment for (30 ± 3) s without any **visual** fracture or rupture. Any deformation shall not impair the function and leaktightness of the stop valve.

## 7.3 Hydraulic tests and requirements

### 7.3.1 Leaktightness

#### 7.3.1.1 Principle

#### 7.3.1.2 Test (supplemented)

This article has been supplemented as follows:

The leaktightness is verified by applying a closing torque not exceeding 3 Nm.

#### 7.3.1.3 Requirements

### 7.3.2 Pressure resistance

#### 7.3.2.1 Principle

#### 7.3.2.2 Test

#### 7.3.2.3 Requirements (modified)

This article has been modified as follows:

The stop valves shall show no permanent, **visible** deformation, rupture or breakage. For this test, leakage is permitted.

### 7.3.3 Flow capacity

It should be reminded that the flow rate classes are specified in Standard NF EN 1213.

- V<sub>A</sub>: applies to straight pattern stop valves with the same nominal diameter as that of the angle pattern stop valve.
- V<sub>B</sub>: applies to oblique pattern stop valves (with the same nominal diameter as that of the straight pattern stop valve).

#### 7.3.3.1 Principle

#### 7.3.3.2 Test

### 7.4 Acoustic tests and requirements (modified)

This article has been modified as follows:

This test applies only to angle pattern stop valves.

### 7.5 Endurance test (supplemented)

This article has been supplemented as follows:

This test only applies to the nominal diameters DN ≤ DN25.

#### 7.5.1 Principle

#### 7.5.2 Test installation

#### 7.5.3 Test (modified)

This article has been modified as follows:

- circulation 1 hour (+10/0) minutes at 90 (+5/0) °C
- number of cycles: **10 000**
- temperature: 65 (-5/0) °C
- opening at least equal to 75% of the full opening
- complete closing with a maximum torque as a function of the DN and according to Table 2
- circulating flow: as a function of the DN (see Table 2)

Table 2: Circulating flow and closing torque

DN	Flowrate Q (l/s)	Maximum closing torque (Nm)
DN ≤ 25	0.07 ≤ Q ≤ 0.1 4 l/min ≤ Q ≤ 6 l/min	3

For valves whose tightness of the stem is ensured by a gland, one single re-tightening action is permitted.

#### 7.5.4 Requirements

### 8 Design requirements (supplemented)

This article has been supplemented with the requirements of Standard NF P 43-000, article 3.

### 9 Marking (supplemented)

Table 3 supplements and summarises the markings that shall appear on the body and/or head of the product:

Table 3 : Marking and location

<div>Marking</div> <div>Location</div>	Manufacturer's name or logo	DN	Arrow (direction of flow)	Certification logo	Identification of the date of manufacture (*)
Body	X	X	X	X	X
Head	X	X	NA	X	X

NA: Not Applicable

(\*) body or head

Within the framework of certification, although the acoustic class does not have to be marked on the body, it shall be mentioned in the technical and commercial documents.

As regards the marking of the logo of this certification, refer to the certification rules concerned.

### 10 Presentation at delivery (added)

Preferably, after production, the valves or taps should be stored and delivered in appropriate conditions to protect the threaded ends and coated surfaces (article 10.2 of Standard NF P 43-015).

### 11 Test sequence (added)

Where applicable, the tests set out in Table 4 shall be performed according to the specified sequence.

The test sequence shall be carried out on the same test specimen, except in the event of a complementary test.

The marking and appearance of visible surfaces (article 2.1 of Standard NF P 43-000) shall be verified on all the products tested.

Table 4: Test distribution

Sequence	Name of the sequence and test order
1.	<b>Dimensions</b> 6.2 Body materials (ACS) 4.4 The end connections (supplemented) 4.5 Overall length (added) 8 Design requirements (supplemented)
2.	<b>Hydraulics</b> 7.3.3 Flow capacity 7.3.2 Pressure resistance
3.	<b>Endurance</b> 7.3.1 Leaktightness 6.1 Chemical and hygienic characteristics (Disinfection) 7.5 Endurance test (supplemented) 7.3.1 Leaktightness
4.	<b>Mechanical strength</b> 7.3.1 Leaktightness 7.2.1 Torque test of the body (supplemented) 7.3.1 Leaktightness 7.2.2 Bending moment 7.3.1 Leaktightness
5.	<b>Acoustics</b> 7.4 Acoustic tests and requirements (modified)

