

Valves-Hydraulic Fountain Fittings

Technical document 197-03

Metallic butterfly valves

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MODIFICATION HISTORY

Revision no.	Date	Modifications
05	01/07/2017	<p>Update to the document introduction and reference.</p> <p>Basic modifications:</p> <p>Part 1:</p> <ul style="list-style-type: none">- Chapter 2: the standard references have been supplemented and updated.- Paragraph 4.3.2: the paragraph has been modified for consistency with the Technical Document 197-02- Paragraph 9.1: change to the acronym for the anticlockwise closing direction. <p>Part III:</p> <ul style="list-style-type: none">- Table 3: withdrawal of the bonding test and addition of the porosity test.
06	04/06/2021	<ul style="list-style-type: none">- Editorial update according to the structure in force following the creation of the Technical management appendix of the NF197 reference system rev. 07.

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I. APPLICATION RULES FOR STANDARD NF EN 593+A1 AND COMPLEMENTARY SPECIFICATIONS

Purpose

The purpose of this section is to clarify some clauses in standard NF EN 593+A1 using the same numbering and to complete this European baseline on quality criteria judged to be fundamental as part of the NF mark.

The extended, modified and added articles are identified in the title of each section.

1. Field of application

Metallic butterfly valves are characterised by:

- The design of the closing and tightness system;
- The DN (Nominal Diameter);
- The “Pression de Fonctionnement Admissible” (Allowable Operating Pressure);
- Operating systems;
- their usage (buried or above-ground).

2. Standard references

Standards NF E 29-430 and NF EN E 29-431 have been withdrawn and replaced by standard NF EN 539:2008, itself withdrawn and replaced by standard NF EN 593+A1:2011.

NF EN 558: 2017	Industrial valves and fittings - face to face and centre to face dimensions - PN and Class designated valves.
NF EN 1563: 2012	Founding - Spheroid graphite cast-iron
NF EN 1092-2: 1997	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated. Part 2: Cast iron flanges
NF EN 545: 2010	Ductile iron pipes, fittings, accessories and their assemblies for water pipes - Requirements and test methods
NF EN 12266-1:2012	Industrial valves and fittings - Tests on metal valves - Part 1: pressure tests, test procedures and acceptance criteria - Mandatory requirements

3. Terms and definitions

4. Requirements

4.1 Design

4.1.1 Construction

4.1.2 Materials

4.1.2.1 Cast-iron materials

Butterfly valves shall be able to be transported and installed with the least possible risk of damage by impacts. Moreover, their mechanical characteristics must be such that they can resist forces induced by the conduit to which they are connected. To achieve this, the characteristics of the spheroidal graphite cast iron casing must be as indicated in table 1 below:

Table 1

Material	Specification
Spheroid graphite cast-iron	<p>In compliance with one of the grades defined in Standard NF EN 1563;</p> <p>The minimal values shall be:</p> <ul style="list-style-type: none"> tensile strength: 350 MPa. elongation to break: 3 %.

4.1.2.2 Compatibility with the water carried (added)

Materials used in the manufacture of butterfly valves in contact with water intended for human consumption, shall not alter the quality of the water.

They shall conform to the French Regulations in force.

4.1.3 Pressure/temperature interdependence

4.1.4 Dimensions and tolerance

4.1.5 Operation

4.1.6 Permanent assembly

4.2 Functional characteristics

4.2.1 Applications

4.2.2 Mechanical strength

4.2.3 Flow characteristics

4.2.4 Tightness

4.3 Specific suitability for use (added)

4.3.1 Open and close times

Butterfly valves shall comply with a minimum of performances so as to be compatible with the particular applications, specific to water supply and distribution.

In particular, if butterfly valves are fitted with a multi-turn operating mechanism, minimum closing and opening times shall comply with the following to prevent water hammer while opening and closing:

- DN < 400: C/O time (in seconds) \geq DN / 10 (tolerance of - 10%);
- DN \geq 400: C/O time (in seconds) \geq DN / 10 (tolerance of - 10%); The manufacturer shall be capable of supplying variants with a larger number of turns, as a function of values notified by the customer (network architecture and flow).

This time will be verified assuming a manual operation of 15 turns per minute.

4.3.2 Leak detection

This chapter only concerns buried valves.

The gate valves shall enable the transmission of the vibrations from the pipe, created by a water leak. This transmission is provided by a metal-metal contact between the anchoring point of the valve on the pipe and the extremity of the operating device upon which the vibration sensor is to be installed.

To optimally receive that vibration, the contact surface of the operating square key shall enable the installation of a sensor, at least 20 mm in diameter via a direct and precise magnetic contact on a rigorously flat surface, whether continuous or not (example: fixing hole for the square key).

The positioning key must be:

- in maximum direct metal to metal contact with the valve shaft
- firmly attached, making it rigid and stand-alone.

5. Test operating procedures

5.1 Pressure test

5.2 Operating test

5.3 Other tests

6. Declaration of conformity

7. Designation

8. Marking and preparation for storage and transport

8.1 Marking

8.2 Preparation for storage and transport

8.3 Delivery condition (added)

Unless otherwise specified at order-stage, the gate valve shall be delivered ready-to-use with identification of the operating direction and equipped with one of the following operating devices:

For above-ground valves:

- notched handle, reduction gear ...

For buried valves:

- square key, 30 x 30, installed on the butterfly valve;

These accessories must be fitted on the butterfly valve or provided with protection for the operating stem if it is not mounted in the butterfly valve.

8.4 Ease of use (added)

For flanged butterfly valves, the distance of the sealing plane from the clamping face shall be equal to at least the thickness of the flange of the pressure class equivalent to the valve, to prevent any risk of damage to the butterfly and its seating.

For butterfly valves without flanges, the position of the butterfly and the packaging shall minimise the risk of damage to the seal and the seating.

9. Complementary service-related specifications

To meet the needs of the users of the systems in keeping their installation operational, the holder shall ensure a minimal service level.

9.1 Families of products

The holder shall propose at least the complete range of butterfly valves to be inserted or flanged with the DN's (nominal diameters) defined below, in at least one of the face-to-face type series defined in the reference standard:

Butterfly valves to be inserted

Nominal Diameter (DN)	40 to 300
Closing type	<ul style="list-style-type: none"> • Closing direction Clockwise (FSH); • Anti-clockwise closing (FAH)

Flanged valves

Nominal Diameter (DN)	300 to 600
Closing type	<ul style="list-style-type: none"> • Closing direction Clockwise (FSH); • Anti-clockwise closing (FAH)

9.2 Availability of the products

9.2.1 New valves

To ensure continuity of water distribution service, for each valve intended to be installed on metropolitan French territory, the holder shall have a logistics system making it possible to deliver in less than 24 hours during working days.

These deliveries shall be made from one or several depots, located on metropolitan French territory, based on a minimal overall inventory of:

- Flanged butterfly valves DN300 to 600: minimum global stock of 10 parts for each description
- Butterfly valves to be inserted DN40 to 600: minimum global stock of 10 parts for each description.

At admission, the holder has a period of two months to meet this requirement.

9.2.2 Spare parts

The holder shall keep the following available to the applicant:

- books in which the list of spare parts and the list of any special tools are given
- and notes about maintenance instructions.

These documents may be written in several languages, necessarily including French, and they must be available in paper form at least.

The holder must justify that he has a special organisation for processing orders and for supplying requested spare parts for urgent repairs, for parts that could affect product functions:

- either by having a minimum stock of 5 units of spare parts that cannot be manufactured on the production site (seals, sets of fasteners, etc.)
- or by being capable of fabricating them in 24 hours.

These parts must be made available to the shipper within 24 working hours.

The holder shall be responsible for management of parts that do not affect product functions.

The holder commits itself to provide this service during at least 10 years after the sale of the products.

9.2.3 Technical and sales documentation

The holder shall keep documentation in French available for the butterfly valves covered by the mark. This specification applies to all butterfly valve variants, particularly for different types of mechanisms and motor drives.

The documentation shall include, as a minimum:

- a presentation drawing of the butterfly valve;
- the dimensional characteristics;
- weight information;
- the hydraulic characteristics;
- the Allowable Operating Pressure (PFA) and dimensions of ISO PN flanges when they are fitted on the valve;
- application precautions;
- reference to the applicable French and European Standards;
- the information given in paragraph 2.5.2.3 of the NF197 Certification reference system - Part 2.

The holder shall include a range of manual or electrical actuators in their catalogue.