

Valves-Hydraulic Fountain Fittings

Technical document 197-04

Pillar fire hydrants

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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> <ul style="list-style-type: none"> - Chapter 2: The standard references have been supplemented and updated. - Paragraph 4.3: The paragraph has been supplemented. - Paragraph 4.6.3: Correction to an error in standard NF EN 14384. - Paragraph 4.9: Extra detail for the operating procedure. - Paragraph 4.10.2: Information on the requirements after the resistance test. - Paragraph 4.14: Modification to the operating procedure. - Paragraph 4.17: Paragraph supplemented with a reminder of French regulations and addition of a table of authorised RALs. - Paragraph 8.1, line 2: 'or' is replaced by 'and'. - Paragraph 8.2.1: Modification to the minimum stock required. - Table 2 – Inspection operations during production: Extra details added for the pillar fire hydrant operating inspection. - Table 3 - Inspections carried out by the CSTB: Updating of inspection procedures.
06	08/04/2019	<ul style="list-style-type: none"> - Integration of the new version of the National Extension NF EN 14384/CN in the whole document. - Paragraph 4.10.1: addition of the modification carried out in Appendix C of standard NF EN 1074-2. - Paragraph 4.14: addition of the modification carried out in Appendix E of standard NF EN 1074-6. - Paragraph 4.17: withdrawal of the references of RAL listed in the last version of National Extension NF EN 14384/CN.
07	01/08/2020	<ul style="list-style-type: none"> - Paragraph 4: Further details regarding article 4.1 of National Extension NF EN 14384/CN. - Paragraph 4.11: Addition of a type profile regarding the stem square. - Paragraph 4.22: Addition of the modification made in Appendix B of Standard NF EN 1074-6.

08	04/06/2021	- Editorial update according to the structure in force following the creation of the Technical management appendix of the NF197 reference system rev. 07.
09	23/08/2021	- Paragraph 4.14: Modification of appendix E.

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I. RULES FOR THE APPLICATION OF STANDARD NF EN 14384 AND ADDITIONAL SPECIFICATIONS

Purpose

The purpose of this section is to clarify some clauses in standard NF EN 14384 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. Scope (extended)

The pillar fire hydrants are characterised by:

- The design of the closing and tightness system;
- The DN (Nominal Diameter);
- The reversibility or non-reversibility of the device.

They shall comply with the characteristics required for products intended to be installed on water systems intended for human consumption.

2. Standard references (extended)

In addition to standard NF EN 14384:

- NF 14384/CN: 2018 Pillar fire hydrants - National extension to standard NF EN 14384:2006
- NF EN 1563: 2012 Spheroid graphite cast-iron
- NF EN 545: 2010 Ductile iron pipes, fittings, accessories and their assemblies for piping systems

3. Terms and definitions

4. Design requirements

Further details regarding article 4.1 of National Extension NF EN 14384/CN:

This article specifies that: "The operating device and the movable part of the obturator shall be dismountable and accessible via the upper part of the pressurized pillar fire hydrant."

This does not mean that the dismantling operation shall be carried out under pressure.

The term "pressurized pillar fire hydrant" is the new designation of pillar fire hydrants.

The designation of a pillar fire hydrant supplemented with the term "pressurized" is used to make a distinction between "pressurized" and "vacuum actuated" pillar fire hydrants.

4.1. Dimensions

4.2. Jacket

4.2.1. Compatibility with the water carried

The materials of the pillar fire hydrants in the zone located upstream from the obturator, that are in contact with water intended for human consumption shall not be susceptible to altering the quality of the water.

They shall conform to the French Regulations in force.

4.2.2. Cast-iron materials

The pillar fire hydrants shall be able to be transported and installed with the least possible risk of damage due to impacts. For that purpose, the materials of the jacket of the products shall have a minimal strength and, for the cast-iron, shall be selected from among the cast-irons shown in Table 1 below:

Table 1: Materials

Component	Material	Specification
All the parts of the jacket subjected to pressure (body, inlets, upper shaft, lower shaft, check valvebox, ...)	Spheroid graphite cast-iron	In compliance with one of the grades defined in Standard NF EN 1563. The minimal values shall be: – tensile strength: 350 MPa. – elongation to break: 3 % min.
Lower shaft (variant possible)	Spheroid graphite cast-iron	In compliance with one of the grades defined in Standard NF EN 545; The minimal values shall be: – tensile strength: 420 MPa. – elongation to break: 10 % min.

4.3. Elastomers

Compliance with the chapter applies to all elastomers, including plug seals.

4.4. Obturator – main obturator

4.5. Materials including lubricants in contact with water for human consumption

4.6. Leak tightness and mechanical strength

4.6.1 General

4.6.2 Jacket and all components under pressure

4.6.3 Obturator

Error in Standard NF EN 14384.

The leak-tightness is checked in accordance with Chapter 5.2.2 in standard NF EN 1074-1: 2000

4.7 Components of the operating system

4.8 Closing direction

4.9 Opening turns

Number of full opening turns: The pillar fire hydrant will be closed and opened without pressure under a torque of 80Nm applied to the obturator's operating unit control key.

Number of idle turns: Once closed under a torque of 80Nm, the pillar fire hydrant is put under a pressure of 16 bars. Open the obturator until a flow becomes apparent.

4.10 Mechanical strength of pillar fire hydrants in resisting operating forces

4.10.1 Maximum Operating Torque (MOT) when operating forces are applied

The appendix C of standard NF EN 1074-2 is modified as follows:

APPENDIX C

Test method for the operation of valves (see 5.2.3)

C.1 General

The test shall be performed at ambient temperature on a valve in its delivery state.

The test shall begin with the obturator in the fully open position.

C.2 Test procedure

Fill both sides of the test assembly with water and vent the air.

Close the obturator and apply a torque at least equal to MOT.

On one side of the obturator, increase the water pressure until it reaches PFA maintaining it at least 1 minute.

Under pressure, open the obturator ensuring that the operating torque does not exceed MOT. Once the pressure evacuated, continue the opening during ten turns.

Note the maximum torque required during the test and check that it does not exceed MOT.

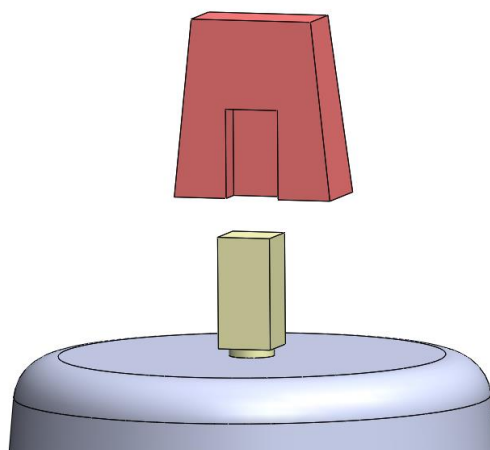
4.10.2 Minimum Strength Torque (mST)

Following the test, no damage shall be detected and the number of turns determined during verification in new condition shall not be modified by more than 10%.

/! : As indicated in Appendix A of standard EN1074-1, the obturator's seal is checked under high and low pressure.

4.11 Operating device

Type profile for an operating device:



4.12 Input connections

For the DN80 pillar fire hydrants, it is allowable to extend the certification mark to products, the inlet opening of which is equipped with a DN 65 ISO PN 16 flange (4 holes or 8 holes as requested by the customer).

4.13 Output orifices

4.14 Drain and purge devices (supplemented)

This article clarifies Chapter 4.14 in standard NF EN 14384 and the operating procedure in Appendix E: Test method to determine the performance of the drainage system from standard NF EN 1074-6.

In all its sections, this fitting is made of rust resistant metal or of material that cannot be altered by water.

An air inlet device is provided to enable the flow of the drain when a leaktight seal plug is in place. This fitting shall automatically be closed when the riser is full of water.

Drainage system performance test:

The test must be performed with the outlet ports fitted with their plugs.

The drain time is measured starting when water appears at the drain until there is approximately a 10-second interval between drips.

The appendix E of standard NF EN 1074-6 is modified as follows:

APPENDIX E

Test method for the performance of draining system

E.1 - General

The test fluid shall be water at a temperature in the range of service temperatures given in 4.4 of EN 1074.1:2000.

The test shall be carried out on a pillar fire hydrant or fire hydrant in its delivery state.

The test shall begin with the obturator in the fully opened position and the outlet opened.

E.2 - Test procedure

Connect the pillar fire hydrant or fire hydrant to a water supply and fill it completely, water pouring out of the outlet.

Close the pillar fire hydrant or fire hydrant obturator with a torque at least equal to MOT maintaining a water pressure.

Close the outlet.

Measure the time elapsed between complete closure of the valve and the last drop pouring from the draining device. This time shall not exceed the value given in 5.6.

Dry completely the inside parts of the pillar fire hydrant or fire hydrant, then close the obturator.

The obturator remaining closed, pour a recorded quantity of water (e.g. 1 l) into the pillar fire hydrant or fire hydrant through the open outlet.

Measure the quantity of water collected through the draining device.

Calculate the difference between the quantity poured in and the quantity collected.

That difference shall not exceed the values given in Table 3.

Record the test conditions and tests results, noting the calibration status of all measuring devices used.

4.15 Safety box

4.16 Resistance to internal and external corrosion

The interior surfaces that are in permanent contact with the system's water as well as all the exterior surfaces of the pillar fire hydrant (including the nuts and bolts) that are in contact with the ground or with the surrounding atmosphere, shall resist corrosion and weathering and meet the requirements of Technical document 197-01.

4.17 Colour

The colour of the pillar fire hydrants must comply with:

- decree No. 2015-235 of 27th February 2015 relating to the external protection against fire as appearing in the *Official Journal* of 1st March 2015
- article 4.1 of National Extension NF EN 14384/CN.

4.18 Resistance to disinfection products

4.19 Pillar fire hydrants for systems supplied with non-drinking water

4.20 Hydraulic characteristics

The pillar fire hydrants shall have minimal performances, so as to be compatible with the particular extreme applications, specific to fire fighting.

Therefore, to prevent water hammer, in case of rapid positioning, the pillar fire hydrants shall have flows that increase gradually at opening and decrease gradually at closing.

At half-opening, the Kv of the pillar fire hydrants shall be:

- greater than 0.25 Kv at full opening (Kv measured on the pillar fire hydrant);
- less than 0.8 Kv at full opening (Kv measured on the pillar fire hydrant).

4.21 Anti-pollution device (added)

In its technical documentation and in the product's designation, the manufacturer shall indicate whether the pillar fire hydrant is equipped with an antipollution system.

The antipollution systems incorporated in the pillar fire hydrant shall hold the NF mark - ANTIPOLLUTION OF WATER INSTALLATIONS or it shall comply with these technical requirements.

4.22 Resistance of pillar fire hydrants to bending and any force applied above ground level (added)

The appendix B of the standard NF EN 1074-6 is modified as follows:

APPENDIX B of standard NF EN 1074-6

B.1 - General

The test fluid shall be water at a temperature in the range of service temperatures given in 4.4 of EN 1074-1:2000.

The test shall be carried out on a test assembly as shown on Figure B.1, with a pillar fire hydrant in its delivery state.

Dimensions in millimetres

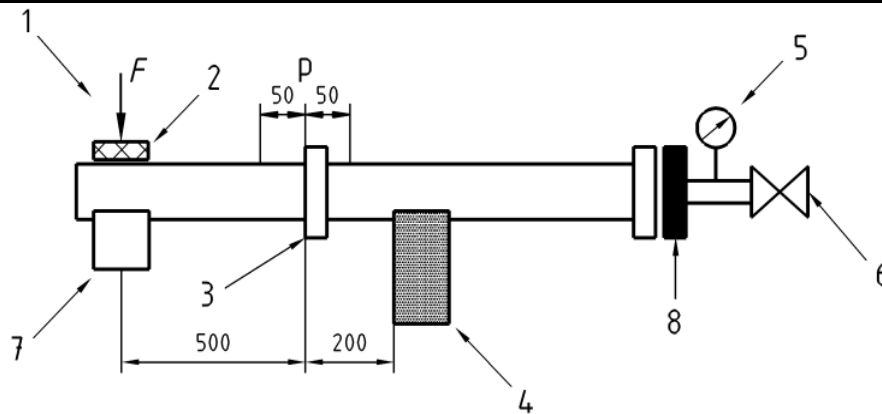


Figure B.1 Test assembly

Key

- 1 Force device
- 2 Hard bloc (100/100) mm, covered with plastic or elastomer
- 3 Breaking system
- 4 Support at ground level
- 5 Manometer
- 6 Water supply at PFA
- 7 Outlet(s)
- 8 Fixing point

B.2 – Test procedure for pillar fire hydrants not equipped with a breaking system

Position the hydrant on the supports, connect the inlet fitting of the pillar fire hydrant to the water supply device.

Fill the hydrant with water, the obturator being in a partially open position, and vent the air.

Close the obturator by application of the torque MOT, ensuring that the internal pressure does not exceed PFA at the upstream of the obturator.

Raise the upstream pressure until it reaches the required test pressure (PFA).

Apply progressively the force F up to the value given in Table 1.

Maintain this force for 10 minutes and check the leaktightness of the valve throughout the duration of the test.

Release the force F and the pressure, terminate the test and record the test conditions and test results.

B.3 – Test procedure for pillar fire hydrants equipped with breaking system

Position the pillar fire hydrant on the supports, connect the inlet fitting of the pillar fire hydrant to the water supply device.

Fill the pillar fire hydrant with water, the obturator being in a partially open position, and vent the air.

Close the obturator by application of the torque MOT, ensuring that the internal pressure does not exceed PFA at the upstream of the obturator.

Raise the upstream pressure until it reaches the required test pressure (PFA).

Apply progressively the force F .

During the test the pillar fire hydrant shall remain leak-tight.

The pillar fire hydrant shall break between the values given in Table 1.

Check visually the lower section of the pillar fire hydrant has not been damaged and make sure that the obturator remains tight.

Record the test conditions and test results.

The force F will be applied in any position relative to the outlet orifices, respecting the dimensions given in figure B.1 in Appendix B.

5 Test Methods

5.1 General

5.2 Overall dimensions

5.3 Flow characteristics

6 Description, marking and supplementary data

6.1 Description

The pillar fire hydrants are described according to the description in Standard NF EN 14384/CN and in the following indications:

- The method for connecting the inlet opening – fixed or orientable flange.

Example description for DN 100 pillar fire hydrants fitted with a DN 100 connection flange:

*Pillar fire hydrant **DN 100** with visible inlets, NF EN 14384/CN, Type C – reversible with automatic drain, torque 1, **with fixed flange**, DN 100, 1x100 & 2x65, Pc 1000, Drinking water.*

Example description for DN 80 pillar fire hydrants fitted with a DN 65 connection flange:

*Pillar fire hydrant **DN 80**, visible inlets, NF EN 14384/CN, Type C - reversible with automatic drain, torque 1, **with fixed flange** DN65, 1x 65, Pc 1000, Drinking water.*

6.2 Marking (supplemented)

The information concerning the opening direction and the number of turns for opening shall appear indelibly in the metal on the cover.

6.2.1 CE Marking

To be eligible for this certification mark, the pillar fire hydrants shall be marked CE.

6.3 Additional data for the pillar fire hydrants

6.4 Delivery condition (added)

The pillar fire hydrant shall come ready to use with operating direction identified.

Each pillar fire hydrant shall come with an installation manual in French indicating the risks of pollution of drinking water systems by feedback of contaminated fluids.

The above ground part shall be protected to avoid damage during manipulation of the pillar fire hydrants either during storage or during transportation, using a rigid protection.

For the pillar fire hydrants fitted with a housing, it is allowable to deliver the housing separately from the pillar fire hydrant.

7 Assessment of compliance

8 Additional specifications regarding service (added)

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

8.1 Families of products

As a minimum, the holder shall propose the complete range of pillar fire hydrants in the DN's specified below:

Pillar fire hydrants

Nominal Diameter (DN)	100 - 150
With and without reversibility device	yes
With or without box	yes
Cover height (or Depth)	1 m

8.2 Availability of the products

8.2.1 New pillar fire hydrants

To ensure continuity of the service, for all products intended to be installed on the territory of metropolitan France, the holder shall have a logistics system making it possible to deliver in less than 24 hours on working days.

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

- DN 100: 200 pillar fire hydrants;
- or 10% of sales from the previous calendar year
- for every other DN: 10% of sales from the previous calendar year

During the 12 months following admission, the holder will build their stock in line with their sales in order to meet the above requirements.

8.2.2 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 20 units of spare parts that cannot be fabricated 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 30 years after the sale of the products.

8.2.3 Technical and sales documentation

The holder shall keep documentation in French available for the pillar fire hydrants covered by the mark.

Any variant of the pillar fire hydrants covered by the mark shall also be accompanied by appropriate documentation in French.

This document shall include, as a minimum:

- overall drawing of the pillar fire hydrant;
- the dimensional characteristics;
- weight information;
- curve of the evolution of the Kv as a function of the opening;
- allowable operating pressure (PFA) and the dimensions of the ISO PN flanges;
- installation and use precautions;
- existence or not of a backflow prevention system;
- reference to the NF EN 14384 and NF EN 14384/CN product standards;
- reference to any applicable French and European Standards;
- the information given in § 2.5.2.3 of NF197 Certification reference system - Part 2.

In its catalogue, the holder shall propose S-shaped adjusting implements for connecting the pillar fire hydrants to conduits, the cover heights of which are from +0.5 m to -0.5 m with relation to the height specified for the pillar fire hydrant alone, while ensuring the correct positioning of the pillar fire hydrant with relation to ground level.