November 2019

# DIN EN 15182-2

ICS 13.220.10

Supersedes
DIN EN 15182-2:2010-04

# Portable equipment for projecting extinguishing agents supplied by firefighting pumps – Hand-held branchpipes for fire service use – Part 2: Combination branchpipes PN 16; English version EN 15182-2:2019, English translation of DIN EN 15182-2:2019-11

Tragbare Geräte zum Ausbringen von Löschmitteln, die mit Feuerlöschpumpen gefördert werden –
Strahlrohre für die Brandbekämpfung –
Teil 2: Hohlstrahlrohre PN 16;
Englische Fassung EN 15182-2:2019,
Englische Übersetzung von DIN EN 15182-2:2019-11

Equipement portable de projection d'agents d'extinction alimenté par des pompes à usage incendie –
Lances à main destinées aux services d'incendie et de secours –
Partie 2: Lances combinées PN 16;
Version anglaise EN 15182-2:2019,
Traduction anglaise de DIN EN 15182-2:2019-11

Document comprises 17 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.



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*A comma is used as the decimal marker.*

## National foreword

This document (EN 15182-2:2019) has been prepared by Technical Committee CEN/TC 192 "Fire and Rescue Service Equipment" (Secretariat: BSI, United Kingdom), Working Group WG 8 "Portable equipment for projecting extinguishing agents supplied by fire fighting pumps" (Secretariat: AFNOR, France).

The responsible German body involved in its preparation was *DIN-Normenausschuss Feuerwehrwesen* (DIN Standards Committee Firefighting and Fire Protection), Working Committee NA 031-04-04 AA "Hoses and fittings (national mirror committee for CEN/TC 192/WG 1 and WG 8)".

The previous editions of DIN EN 15182-2, together with DIN EN 15182-1 (Common requirements) and DIN EN 15182-3 (Smooth bore jet and/or one fixed spray jet angle branchpipes PN 16) had replaced the German Standards DIN 14200:1979-06, DIN 14365-1:1991-02, DIN 14365-2:1986-09 and DIN 14367:2002-07 which had been valid for the requirements and tests of multi purpose branch pipes and combination branchpipes since the 1930s and 1940s. These were replaced because the conflicting national standards are required to be withdrawn after the adoption of European Standards as national standards.

This European Standard does not contain requirements specifying couplings to be connected to delivery hoses as no European Standard dealing with the connection of couplings to delivery hoses currently exists. For this reason, attention is drawn to necessary agreements upon placing the order. To ensure the compatibility of all components of water systems for fire extinguishing in Germany, these have been brought in line with the specifications that have been valid until now. The couplings are listed below.

For combination branchpipes PN 16 according to DIN EN 15182-2, the following applies at a volume flow rate $Q$ of

a) up to 100 l/min at 6 bar inlet pressure: solid coupling DIN 14306-D,

b) more than 100 l/min and up to 235 l/min at 6 bar inlet pressure: solid coupling DIN 14307-C,

c) more than 235 l/min and up to 400 l/min at 6 bar inlet pressure: solid coupling DIN 14308-B[*)],

d) more than 400 l/min at 6 bar inlet pressure: solid coupling DIN 14308-B.

[*)] Possible, but unfavourable with regard to hydraulics: solid coupling DIN 14307-C.

**Amendments**

This standard differs from DIN EN 15182-2:2010-04 as follows:

a) a new type 5 has been added (automatic flow branchpipe);

b) terms and definitions have been updated;

c) each verification has been placed under the corresponding requirement;

d) in subclause 4.2.2, a test to measure the forces required to move the rotating elements which have detents has been added;

e) in subclause 4.3.2, the requirements for flow rates have been updated;

f) the verifications for leak-tightness (subclause 4.4) and hydrostatic behaviour (subclause 4.5) have been updated;

g) the standard has been editorially revised.

**Previous editions**

DIN FEN 200: 1935-07
DIN 14040: 1948-03
DIN 14050: 1948-03
DIN 14200: 1940-06, 1965-10, 1979-06
DIN 14365-1: 1957-07, 1975-04, 1986-09, 1991-02
DIN 14365-2: 1961-12, 1975-04, 1986-09
DIN 14367: 2002-05, 2002-07
DIN EN 15182-2: 2007-05, 2010-04

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 15182-2

September 2019

ICS 13.220.10

Supersedes EN 15182-2:2007+A1:2009

English Version

# Portable equipment for projecting extinguishing agents supplied by firefighting pumps - Hand-held branchpipes for fire service use - Part 2: Combination branchpipes PN 16

Equipement portable de projection d'agents d'extinction alimenté par des pompes à usage incendie - Lances à main destinées aux services d'incendie et de secours - Partie 2: Lances combinées PN 16

Tragbare Geräte zum Ausbringen von Löschmitteln, die mit Feuerlöschpumpen gefördert werden - Strahlrohre für die Brandbekämpfung - Teil 2: Hohlstrahlrohre PN 16

This European Standard was approved by CEN on 10 June 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. EN 15182-2:2019 E

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## European foreword

This document (EN 15182-2:2019) has been prepared by Technical Committee CEN/TC 192 “Fire and rescue service equipment”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15182-2:2007+A1:2009.

Compared to EN 15182-2:2007+A1:2009 the following changes have been made:

— addition of new type 5 (automatic flow branchpipe) and addition of the corresponding flow control test (see 4.3.5);

— the definitions have been updated;

— each verification has been placed under the corresponding requirement;

— a test to measure the forces needed to move the rotating elements which have detents (4.2.2) has been added;

— the requirements for flowrates (4.3.2) have been updated;

— the verifications for leak-tightness (4.4) and hydrostatic behaviour (4.5) have been updated;

— improvement of the wording/editorial changes.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# 1 Scope

In addition to the requirements given in EN 15182-1:2019, this document applies to hand-held combination branchpipes (nozzles), with a nominal pressure of 16 bar (1,6 MPa) PN 16, with a maximum flow rate up to 1 000 l/min at a reference pressure of 6 bar (0,6 MPa). It deals with:

— safety requirements;

— performance requirements;

— test methods.

This document applies to branchpipes as defined in Annex A of EN 15182-1:2019.

# 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15182-1:2019, *Portable equipment for projecting extinguishing agents supplied by firefighting pumps — Hand-held branchpipes for fire service use — Part 1: Common requirements*

# 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15182-1:2019 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

**3.1**
**combination branchpipe**
branchpipe including a shut-off device and an adjustable pattern

Note 1 to entry: Branchpipe is defined in 3.1 of EN 15182-1:2019.

**3.1.1**
**combination branchpipe – type 1**
combination branchpipe with adjustable pattern at variable flow

Note 1 to entry: Changing pattern changes the flow at one given pressure.

**3.1.2**
**combination branchpipe – type 2**
combination branchpipe with adjustable pattern at fixed flow

Note 1 to entry: Changing pattern does not change the flow at one given pressure.

**3.1.3**
**combination branchpipe – type 3**
combination branchpipe with adjustable pattern at selectable fixed flow

Note 1 to entry: Changing pattern does not change the flow at one given pressure.

**3.1.4**
**combination branchpipe – type 4**
**automatic pressure branchpipe**
combination branchpipe with integrated pressure control device

Note 1 to entry: Changing pattern does not change the flow at one given pressure.

**3.1.4.1**
**combination branchpipe – type 4.1**
combination branchpipe with adjustable pattern at constant pressure

**3.1.4.2**
**combination branchpipe – type 4.2**
combination branchpipe with adjustable pattern and selectable flow at constant pressure

**3.1.5**
**combination branchpipe – type 5**
**automatic flow branchpipe**
combination branchpipe with integrated flow control device

Note 1 to entry: Changing pattern does not change the flow within a range of pressures.

**3.2**
**narrow spray jet**
intermediate position between the straight jet and the wide spray jet providing both throw and protection

**3.3**
**wide spray jet**
jet solely providing protection for the operator(s)

**3.4**
**haptical device**
single mechanical device engaging detents

# 4 Requirements and verification

## 4.1 General

The branchpipes covered by this document shall comply with EN 15182-1:2019.

All the tests defined in this document are type tests.

Unless otherwise specified, tests shall be carried out, at the reference pressure $p_R$.

## 4.2 Mechanical characteristics

### 4.2.1 Dimensions and mass

The branchpipes (without inlet coupling) shall not exceed the dimensions and masses specified in Table 1.

**Table 1 — Dimensions and mass**

| **Maximum flow rate** l/min | **Dimensions** mm | **Mass** kg |
|---|---|---|
| ≤ 500 | 450 × 300 × 150 | 3,5 |
| > 500 | 600 × 350 × 200 | 5,5 |
| NOTE The maximum mass does not apply to branchpipes designed for special application (e.g. fire-fighting on sea-going vessels, disinfection, etc.). | | |

*Verification*

*Dimensions and mass shall be measured in accordance with Table 1.*

### 4.2.2 Operating and handling elements

The torques needed to move the operating elements shall not exceed the values given in Table 2 at pressures up to the nominal pressure.

**Table 2 — Maximum torques**

| **Type of operating element** | **Torque** Nm |
|---|---|
| Lever | 15 |
| Valve handle | 15 |
| Rotating operating elements | 10 |
| Rotating inlet elements for fixed couplings | 5 |

*Verification*

*The torques shall be measured in accordance with Table 2. This test shall be conducted with water only.*

The forces needed to move the rotating elements which have detents shall be between 15 N and 75 N.

*Verification*

*Measure the force of rotating elements which have detents in dry conditions without flowing.*

*Make the rotating element turn 300 cycles without flowing water.*

*NOTE A rotation means rotating the element fully in one direction and back to the starting point.*

*Measure the force without flowing water at the end of the previous test which shall remain in the range of 15 N to 75 N.*

For branchpipes that are opened and closed with a valve handle, the “closed” position shall be located in the direction of the flow. If a different operating element is used, with the exception of a trigger, the “closed” position shall be clearly identified by visual and/or haptical means.

*Verification*

*Visual inspection.*

It shall be possible to open any type of branchpipe in the wide spray position.

*Verification*

*Functional test (actuation).*

### 4.2.3 Flow adjustment positions

If a branchpipe has a device to select flow rate, then the flow rate's settings shall be easily identifiable by both visual and mechanical means (haptical device with corresponding numerical values).

If using a rotating operating element for flow adjustment, the adjustment shall be achieved by a rotation movement of a maximum of 180°.

*Verification*

*Visual inspection and functional test (actuation).*

### 4.2.4 Jet spray angles and adjustment positions

The adjustable jet positions shall be clearly marked.

*Verification*

*Visual inspection.*

The narrow spray jet position shall be easily identifiable by both visual and mechanical means (haptical devices).

Jet adjustment from a straight jet to a wide spray jet with a spray angle of at least 100° shall be achieved by a rotation movement of between 70° and maximum 180° for branchpipes with a maximum flow rate less than or equal to 500 l/min and between 70° and 270° for a maximum flow rate higher than 500 l/min.

NOTE For branchpipes with flow less than or equal to 500 l/min, this requirement is included in this document as a safety detail to provide the user with a means to produce a wide protective spray jet of at least 100° achieved within 180° rotation (one hand twist movement).

It shall be possible to open the branchpipe in a spray angle of at least 30°.

*Verification*

*A narrow spray jet position between straight jet and wide spray jet positions shall be provided on the branchpipe.*

*The narrow spray jet shall have a spray angle of at least 30°.*

*Arrange the branchpipe on a fixed support in a horizontal position 1,5 m above the ground, in a zone where the wind speed is lower than 2 m/s (see Figure 1). Set the branchpipe at the maximum flow rate position.*

*Arrange vertically a rule in the longitudinal axis of the extremity of the branchpipe at a distance of 1 m. This rule, of a height of 3 m, shall have three coloured zones symmetrically arranged on both sides of the longitudinal axis.*

*The outside diameters of the zones are defined in the Table 3.*

***Table 3 — Outside diameter of the zones***

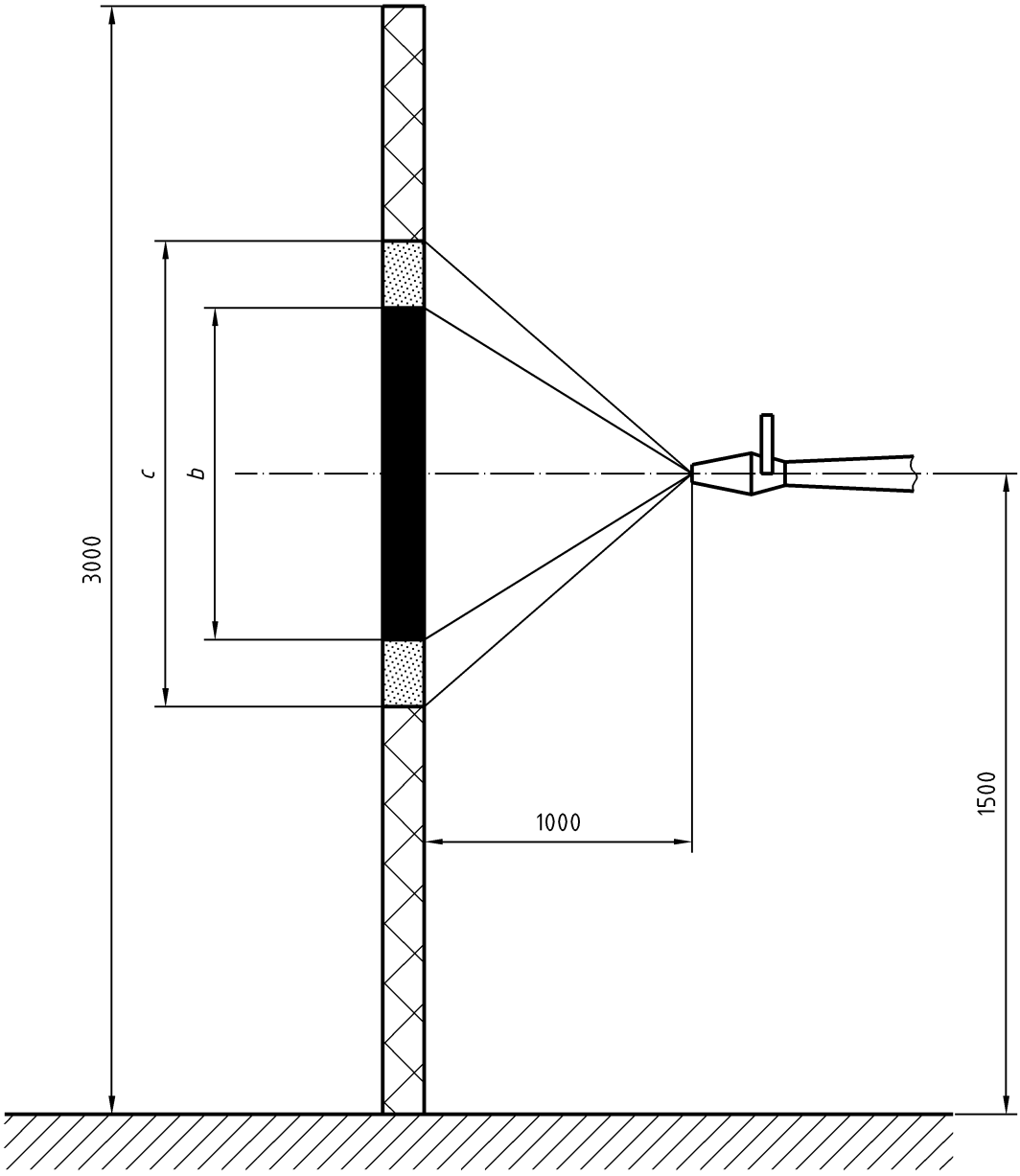
| ***Colour of the zone*** | ***Outside diameter*** *m* | ***Angle*** |
|---|---|---|
| *Black (b)* | *0,54* | *< 30°* |
| *Grey (c)* | *2,38* | *30° to 100°* |
| *White* | *Beyond* | *> 100°* |

*Check that the zones of colour are covered according to the following requirements:*

— *narrow spray jet position: grey zone shall be reached by the jet and the white zone shall not be reached by the jet;*

— *maximum spray jet position: white zone shall be reached by the jet.*

Dimensions in millimetres




**Key**

| | |
|---|---|
| | grey zone |
| | white zone |
| | black zone |
| *b* | black zone |
| *c* | grey zone |

**Figure 1 — Spray jet angle measurement**

## 4.3 Hydraulic characteristics

### 4.3.1 General

Unless otherwise specified, tests shall be carried out at the reference pressure $p_R$, after the tests specified in EN 15182-1:2019, in the following order:

— 4.2.4 jet spray angles and adjustment positions,

— 4.3.2 flow rates,

— 4.3.3 throw,

— 4.3.4 pressure control for type 4 branchpipes,

— 4.4 leak-tightness,

— 4.5 hydrostatic behaviour.

The following pressures shall be used for the determination of the hydraulic characteristics:

— reference pressure: $p_R$ = 6 bar ± 0,1 bar;

— median pressure for type 4 branchpipes: $p_m$;

— nominal pressure: $p_N$ = 16 bar;

— test pressure: $p_t$ = 25,5 bar;

— burst pressure: $p_B$ = 60 bar.

NOTE No requirements are given concerning water distribution as it was not possible to obtain interpretable and conclusive data with the test equipment available at the time this document was written.

### 4.3.2 Flow rates

All flow rates indicated on the branchpipe shall be measured at straight jet and at the maximum spray angle position.

Table 4 shall apply to the deviation in flow rates which can be set at the reference pressure $p_R$.

The deviation should also apply when the shape of the stream is altered.

**Table 4 — Deviation in the flow rate**

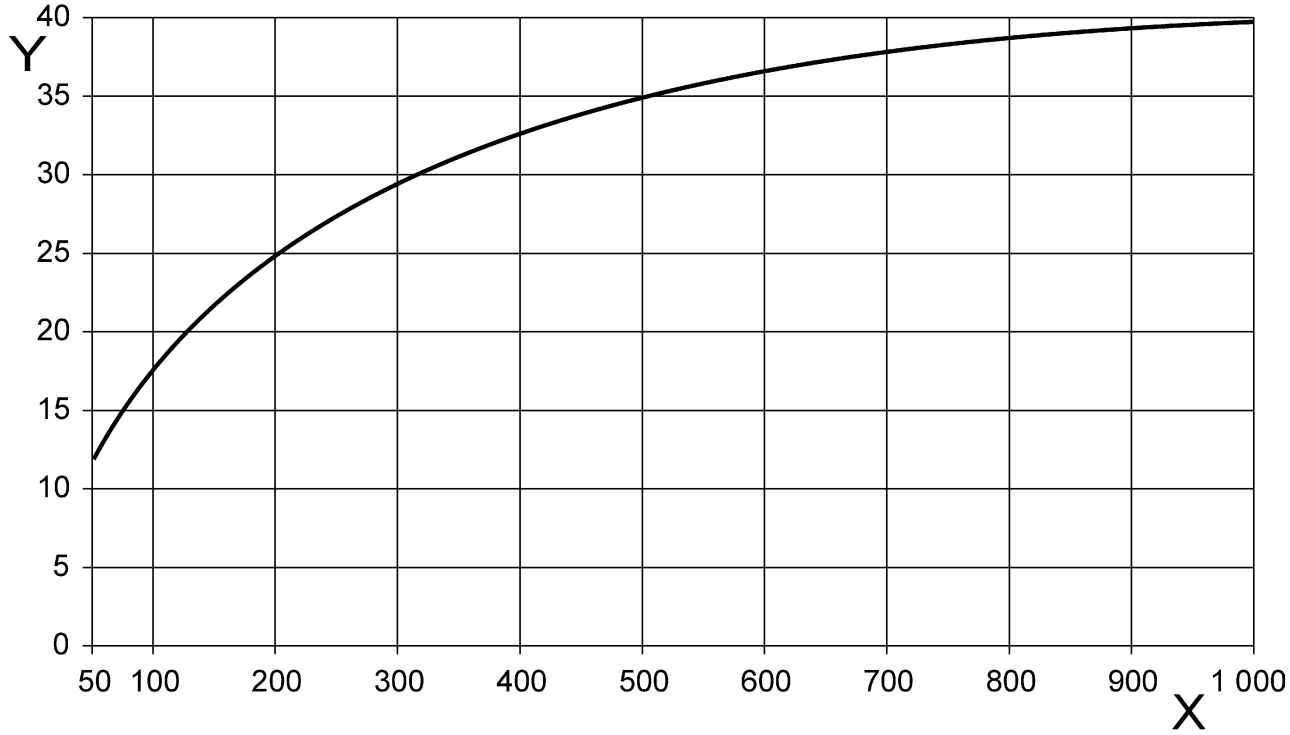
| **Flow rate** $Q$ l/min | **Deviation limit** |
|---|---|
| ≤ 50 | The flow rate shall be less than 75 l/min |
| > 50 to ≤ 250 | (-0/+25) l/min |
| > 250 | (-0/+10) % (of set rate) |

*Verification*

*Measurement.*

### 4.3.3 Effective throw

The combination branchpipes shall achieve, for each flow rate position above 50 l/min, an effective throw $d_{eff}$ as shown in Figure 2 when set to a straight jet at the reference pressure.




**Key**

X flow rate $Q$ in l/min

Y effective throw $d_{eff}$ in m

**Figure 2 — Effective throw**

*Verification*

*The effective throw shall be measured under the following conditions in compliance with Figure 3:*

— *effective throw: latest droplets - 10 % =* $d_{eff} = 0{,}9\ d_{max}$;

— *pressure at the inlet of the branchpipe:* $p_R$;

— *inclination: (30 ± 0,5)°;*

— *height: (1 ± 0,01) m (as per drawing);*

— *maximum wind speed: 2 m/s (Beaufort scale 3).*

*The measurement shall be carried out when the system is stabilized.*

*The maximum throw shall be given in the instruction handbook.*

Dimensions in millimetres

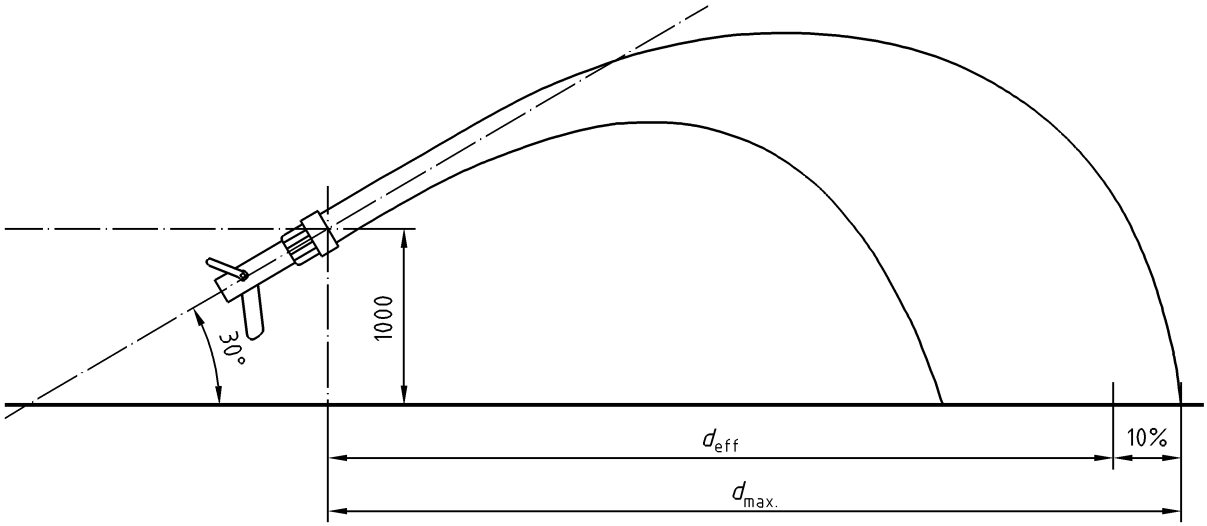



**Figure 3 — Measurement of the effective throw**

### 4.3.4 Pressure control test for type 4 branchpipes

For type 4 branchpipes, the manufacturer shall give the regulation range (pressure at the beginning of the range and pressure at the end of the range), from which the median pressure is calculated.

The pressure shall not deviate from the median pressure by more than 30 %.

*Verification*

*With the open branchpipe, the flow should be set at both the minimum and maximum flow and the pressure shall be read.*

*Check that the pressure does not deviate from the median pressure by more than 30 %. This information shall be provided in graphic format as shown in EN 15182-1:2019, Annex C.*

### 4.3.5 Flow control test for type 5 branchpipes

For type 5 branchpipes, the manufacturer shall give the regulation range (flow at the beginning of the range and flow at the end of the range), from which the median flow is calculated.

A pressure range shall be given by the manufacturer in which the fixed flow shall not deviate from the median flow by ±25 l/min for branchpipes with a flowrate ≤ 250 l/min, ±10 % for branchpipes with a flowrate > 250 l/min.

*Verification*

*With the open branchpipe, the pressure should be set at both the minimum and maximum pressure and the flow shall be read.*

*Check that the flow does not deviate from the median flow by ±25 l/min for branchpipes with a flowrate ≤ 250 l/min, ±10 % for branchpipes with a flowrate > 250 l/min. This information shall be provided in the data sheet.*

## 4.4 Leak-tightness

The branchpipe shall be constructed to ensure it does not leak during normal operation.

*Verification*

*The closed branchpipe with the exit orifice not obstructed shall show no leakage for 1 min at the test pressure $p_t$ = 25,5 bar.*

*Once the branchpipe is closed at 25,5 bar it shall not be operated anymore until the end of the test.*

*The opened branchpipe shall show no leakage between the inlet and the outlet for 1 min at the nominal pressure $p_N$ = 16 bar.*

*NOTE No leakage means no visible weeping or drop formation.*

## 4.5 Hydrostatic behaviour

The branchpipe shall be constructed to ensure it resists the effects of water hammer.

*Verification*

*With the closing device of the branchpipe maintained in the closed position and the exit orifice not obstructed, the branchpipe shall be mounted on a device capable of exerting a hydrostatic pressure of at least 60 bar (burst pressure $p_B$). All air shall be bled out of the system.*

*The pressure shall be increased by 3 bar increments and held for 30 s at each pressure up to pB.*

*This maximum pressure shall be held for 1 min without rupturing the branchpipe.*