



भारतीय मानक ब्यूरो

(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)

BUREAU OF INDIAN STANDARDS

(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

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व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 22:2/टी-04

16 अगस्त 2024

तकनीकी समिति : अग्नि शमन विषय समिति, सीईडी 22

प्राप्तकर्ता :

- सिविल अभियांत्रिकी विभाग परिषद, सीईडीसी के सभी सदस्य
- अग्नि शमन विषय समिति, सीईडी 22 और इसकी उपसमितियों के सभी सदस्य
- रुचि रखने वाले अन्य निकाय।

महोदय/महोदया,

निम्नलिखित मानक का मसौदा संलग्न है:

प्रलेख संख्या	शीर्षक
सीईडी 22(26379)WC	अग्नि होज़ डिलिवरी कपलिंग, शाखा पाइप, नोजल, और नोजल स्पैनर – विशिष्टि (आईएस 903 पांचवां पुनरीक्षण) का भारतीय मानक मसौदा [आईसीएस 13.220.10]

कृपया इस मसौदे का अवलोकन करें और अपनी सममतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इन पर अमल करने में आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयां आ सकती हैं।

सममतियाँ भेजने की अंतिम तिथि: 15 सितंबर 2024

सममति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई-मेल द्वारा ced22@bis.gov.in पर या उपरलिखित पते पर, संलग्न फॉर्मेट में भेजें। सममतियाँ बीआईएस ई-गवर्नेंस पोर्टल, www.manakonline.in के माध्यम से ऑनलाइन भी भेजी जा सकती हैं।

यदि कोई सममति प्राप्त नहीं होती है अथवा सममति में केवल भाषा संबंधी त्रुटि हुई तो उपरोक्त प्रालेख को यथावत अंतिम रूप दे दिया जाएगा। यदि सममति तकनीकी प्रकृति की हुई तो विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रालेख को अंतिम रूप दे दिया जाएगा।

यह प्रालेख भारतीय मानक ब्यूरो की वेबसाइट www.bis.gov.in पर भी उपलब्ध है।

धन्यवाद।

भवदीय

ह/-

द्वैपायन भद्र

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संलग्न: उपरलिखित



भारतीय मानक ब्यूरो

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WIDE CIRCULATION DRAFT

Our Reference: CED 22:02/T-04

16 August 2024

TECHNICAL COMMITTEE: FIRE FIGHTING SECTIONAL COMMITTEE, CED 22

ADDRESSED TO:

1. All Members of Civil Engineering Division Council, CEDC
2. All Members of Fire Fighting Sectional Committee, CED 22 and its Subcommittees
3. All others interested.

Dear Sir/Madam,

Please find enclosed the following draft:

Doc No.	Title
CED 22(26379)WC	Draft Indian Standard Fire Hose Delivery Couplings, Branch Pipes, Nozzles, and Nozzle Spanners — Specification (<i>Fifth Revision of IS 903</i>) [ICS: 13.220.10]

Kindly examine the attached draft and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for comments: 15 September 2024

Comments if any, may please be made in the enclosed format and emailed at ced22@bis.gov.in or sent at the above address. Additionally, comments may be sent online through the BIS e-governance portal, www.manakonline.in.

In case no comments are received or comments received are of editorial nature, kindly permit us to presume your approval for the above document as finalized. However, in case comments, technical in nature are received, then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Yours faithfully,

Sd/-

Dwaipayan Bhadra

Scientist 'E' & Head

Civil Engineering Department

Email: ced22@bis.gov.in

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Encl: As above

FORMAT FOR SENDING COMMENTS ON THE DOCUMENT

[Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/ table/figure, etc, be stated on a fresh row. Information/comments should include reasons for comments, technical references and suggestions for modified wordings of the clause. **Comments through e-mail to ced22@bis.gov.in shall be appreciated.**]

Doc. No.: CED 22(26379)WC

BIS Letter Ref: CED 22:02/T-04

Title: Draft Indian Standard Fire Hose Delivery Couplings, Branch Pipes, Nozzles, and Nozzle Spanners Specification (*Fifth Revision of IS 903*) [ICS: 13.220.10]

Last date of comments: **15 September 2024**

Name of the Commentator/ Organization: _____

Sl No.	Clause/ Para/ Table/ Figure No. commented	Type of Comment (General/ Technical/ Editorial)	Comments/ Modified Wordings	Justification of Proposed Change
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NOTE- Kindly insert more rows as necessary for each clause/table, etc

BUREAU OF INDIAN STANDARDS

DRAFT STANDARD FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

Draft Indian Standard

FIRE HOSE DELIVERY COUPLINGS, BRANCH PIPES, NOZZLES, AND NOZZLE SPANNERS — SPECIFICATION

(Fifth Revision of IS 903)

(ICS: 13.220.10)

Fire Fighting
Sectional Committee, CED 22

Last Date for Comments:
15 September 2024

FOREWORD

(Formal clauses shall be added later)

Fire hose delivery couplings, branch pipe, nozzles, and nozzle spanner are some of the important accessories used for firefighting operations. This standard was first published in 1958, revised subsequently in 1965, 1975, 1984, and 1993. This fifth revision incorporates all the amendments issued so far besides correcting the various figures according to the modifications decided by the concerned Technical Committee. In this revision, the following significant changes have been made:

- a) The standard has been made performance oriented.
- b) New clause **3** for terminology has been added.
- c) Grade (FNB) for hot forgings has been added.
- d) Salt spray test, and ammonia air stress cracking test have been incorporated.
- e) All the cross-referred standards have been made up to date.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

BUREAU OF INDIAN STANDARDS

DRAFT STANDARD FOR COMMENTS ONLY

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Draft Indian Standard

FIRE HOSE DELIVERY COUPLINGS, BRANCH PIPES, NOZZLES, AND NOZZLE SPANNERS — SPECIFICATION

(Fifth Revision of IS 903)

1 SCOPE

This standard specifies the requirements regarding material, shape, construction and test for instantaneous fire hose delivery couplings, branch pipes, nozzles, and nozzle spanner for use with firefighting delivery hose.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated at Annex A.

3 TERMINOLOGY

For the purpose of this standard the following definitions shall apply:

3.1 Instantaneous Delivery Couplings — coupling systems, where one half of the coupling is equipped with instantaneous connection systems such as spring mounted retractable plunger lugs, that lock on to other half of the coupling instantaneously.

3.2 Branch Pipe — fitting at the delivery end of a hose which reduces its diameter and thereby increases delivery velocity to the nozzle.

3.3 Nozzle — fitting at the delivery end of a hose or pipe which changes the cross-sectional area and thereby changes the velocity of the fire extinguishing medium

3.4 Coupling — device for connecting together hoses, branch pipes breechings etc, so as to secure continuity from the source of water supply to the delivery point.

3.5 Hose Coupling — means used to join two lengths of hose together or to connect other equipment to a hose

3.6 Delivery hose — hose used to pass water under pressure, usually on the delivery side of a pump

3.7 Jet — extinguishing medium, usually water, leaving a nozzle as a continuous stream, water spray, or water fog (mist).

4 WORKMANSHIP AND FINISH

All fittings shall be of good workmanship, finish and free from all burrs and sharp edges. The forgings and castings shall be sound and free from porosity, blowholes, scales, cracks and other imperfections and shall not be repaired or filled so as to hide casting defects. The waterway of the fittings shall have a smooth finish. Where welding is used, welds shall be free from lack of fusion, cracks, non-metallic inclusions, porosity and cavities.

5 INSTANTANEOUS DELIVERY HOSE COUPLINGS

5.1 Design

5.1.1 Instantaneous delivery hose couplings shall consist of a male half coupling and a female half coupling connected and held in position by means of a spring-operated retractable plunger lug, capable of enabling quick assembly and disassembly. Such couplings shall also be suitably provided with a washer so as to ensure fit and arrest leaks. A typical coupling is shown in Fig 1.

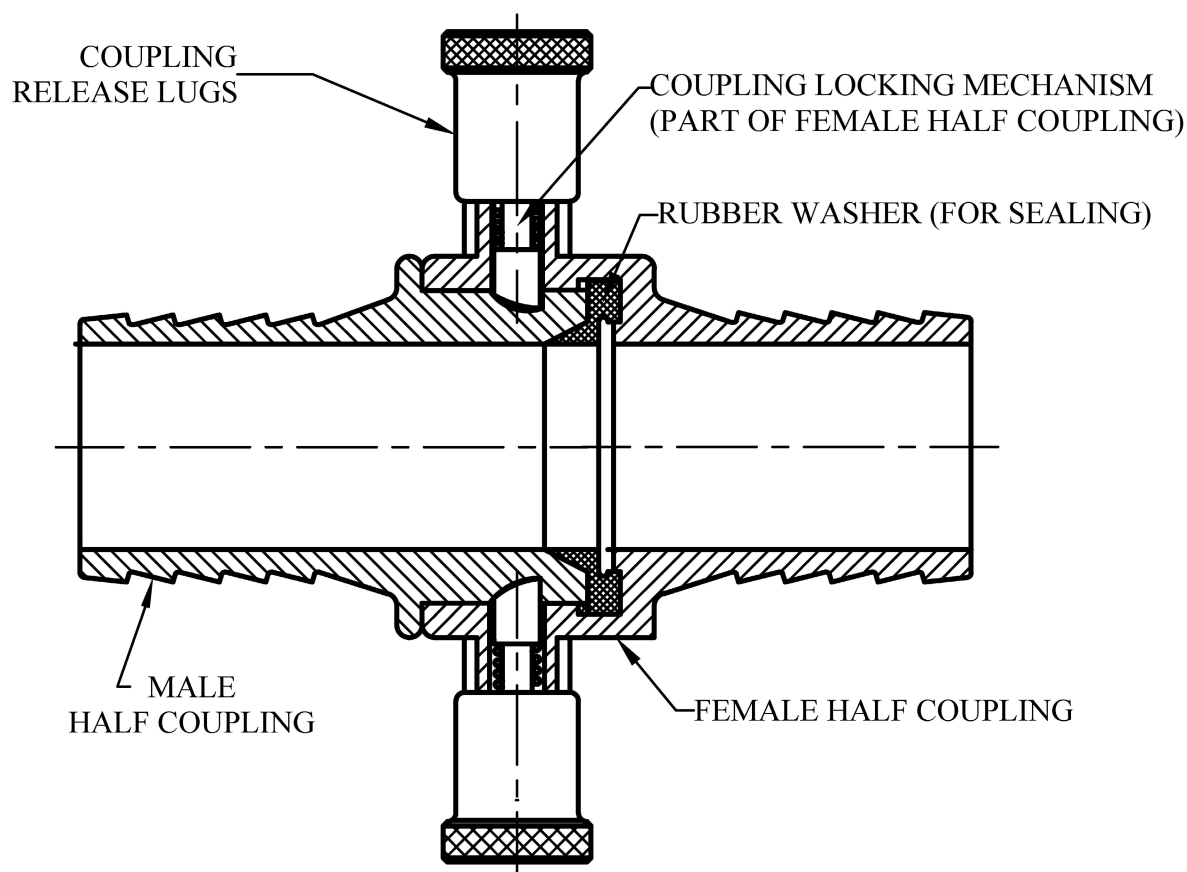
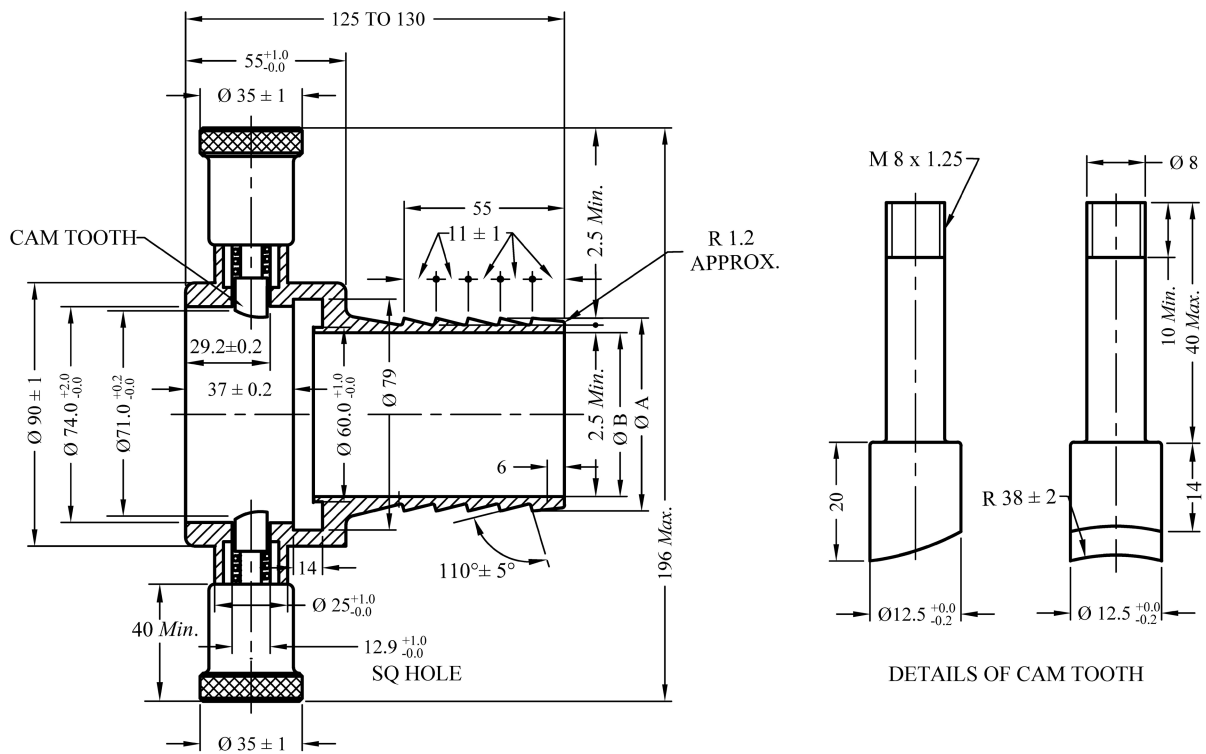


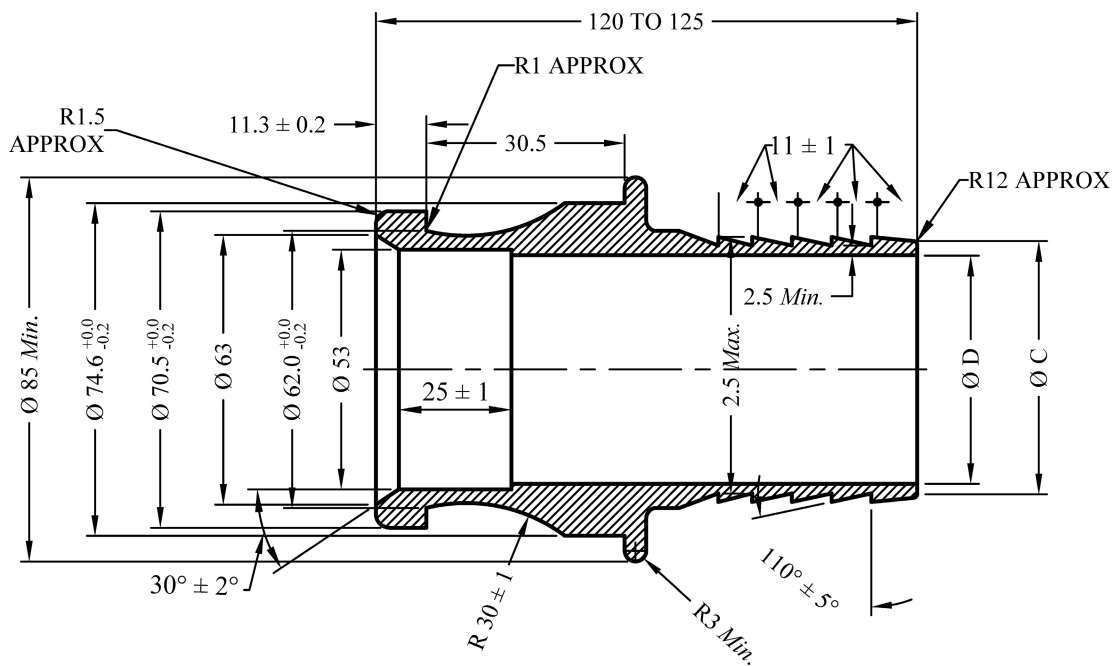
FIG. 1 ASSEMBLY OF DELIVERY HOSE COUPLINGS

5.2 Dimensions and Tolerances

5.2.1 Instantaneous delivery hose couplings shall be of three sizes: 38 mm, 63 mm and 70 mm. The shape, dimensions, and tolerances for these two sizes are given in Fig. 2A and Fig. 2B.



2A FEMALE HALF COUPLING



2B MALE HALF COUPLING

Size	Dimension			
	Female Half Coupling		Male Half Coupling	
	A (\varnothing)	B (\varnothing)	C (\varnothing)	D (\varnothing)
$\varnothing 38$	38	$28^{+0.0}_{-0.5}$	38	$28^{+0.0}_{-0.5}$
$\varnothing 63$	63	$53^{+0.0}_{-0.5}$	63	$53^{+0.0}_{-0.5}$
$\varnothing 70$	70	$60^{+0.0}_{-0.5}$	70	$60^{+0.0}_{-0.5}$

NOTE — Tolerance where not specified shall be ± 0.5 mm. The value of B in case of $\varnothing 70$ size shall be reduced to 53 mm for a length of 5 mm minimum at washer and reduced gradually by smooth curve after the serrated length of coupling.

All dimensions in millimetres.

FIG. 2 DETAILS OF DELIVERY HOSE COUPLING

5.3 Materials

The materials shall be as per **8**.

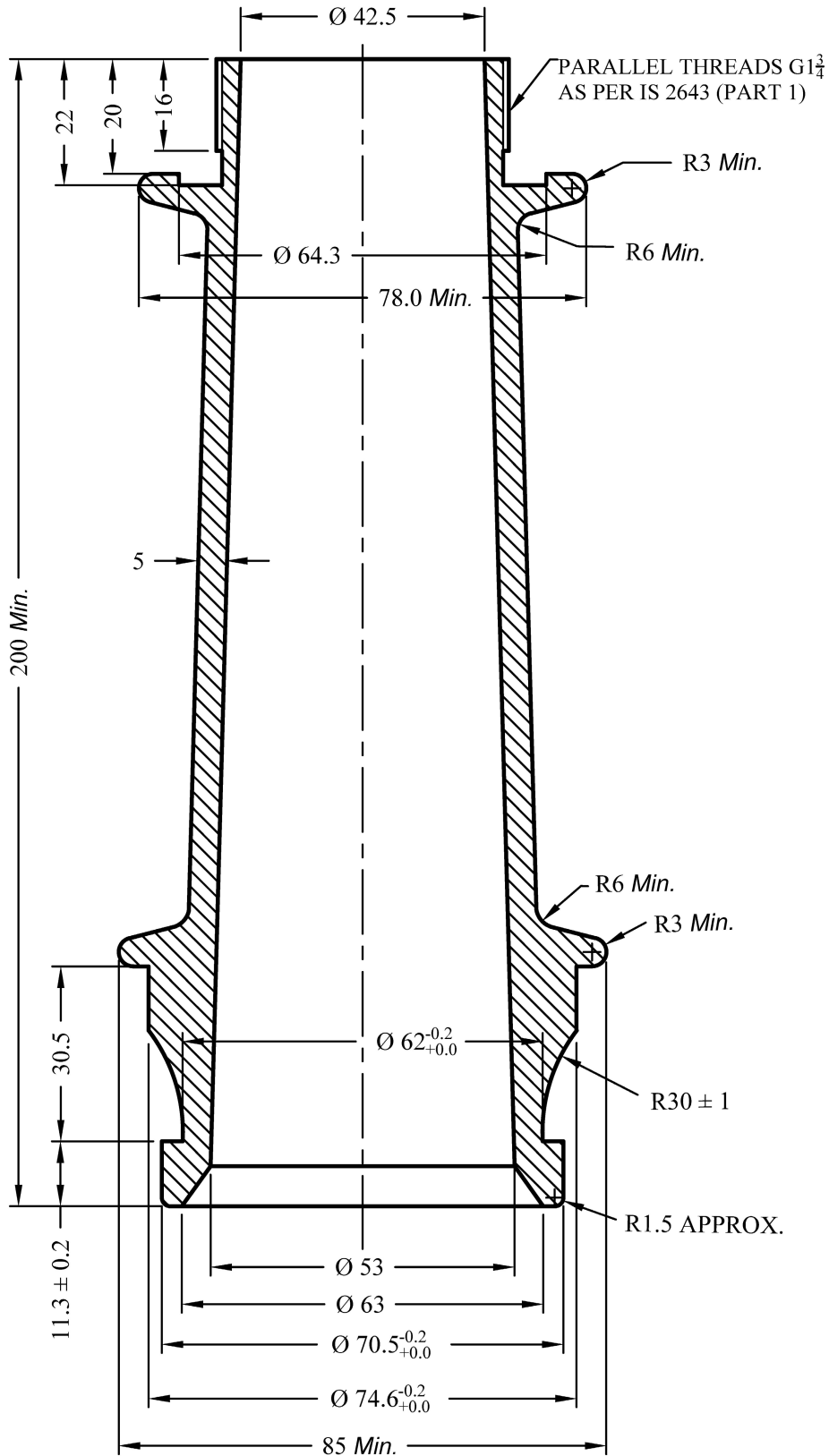
5.4 Testing

The testing shall be done as per **9**.

6 BRANCH PIPE

6.1 A typical design of a branch pipe is given in Fig 3. The branch pipe shall be suitable for use with the female instantaneous half coupling on one end and with parallel threads of Class A and $G1\frac{3}{4}$ of IS 2643 at the other end for fitment of nozzle.

6.2 The dimensions and tolerances of branch pipes shall be as given in Fig 3.



NOTE — Tolerance where not specified shall be ± 0.5 mm

All dimensions in millimetres.
FIG. 3 BRANCH PIPE

6.3 Materials

The materials shall be as per 8.

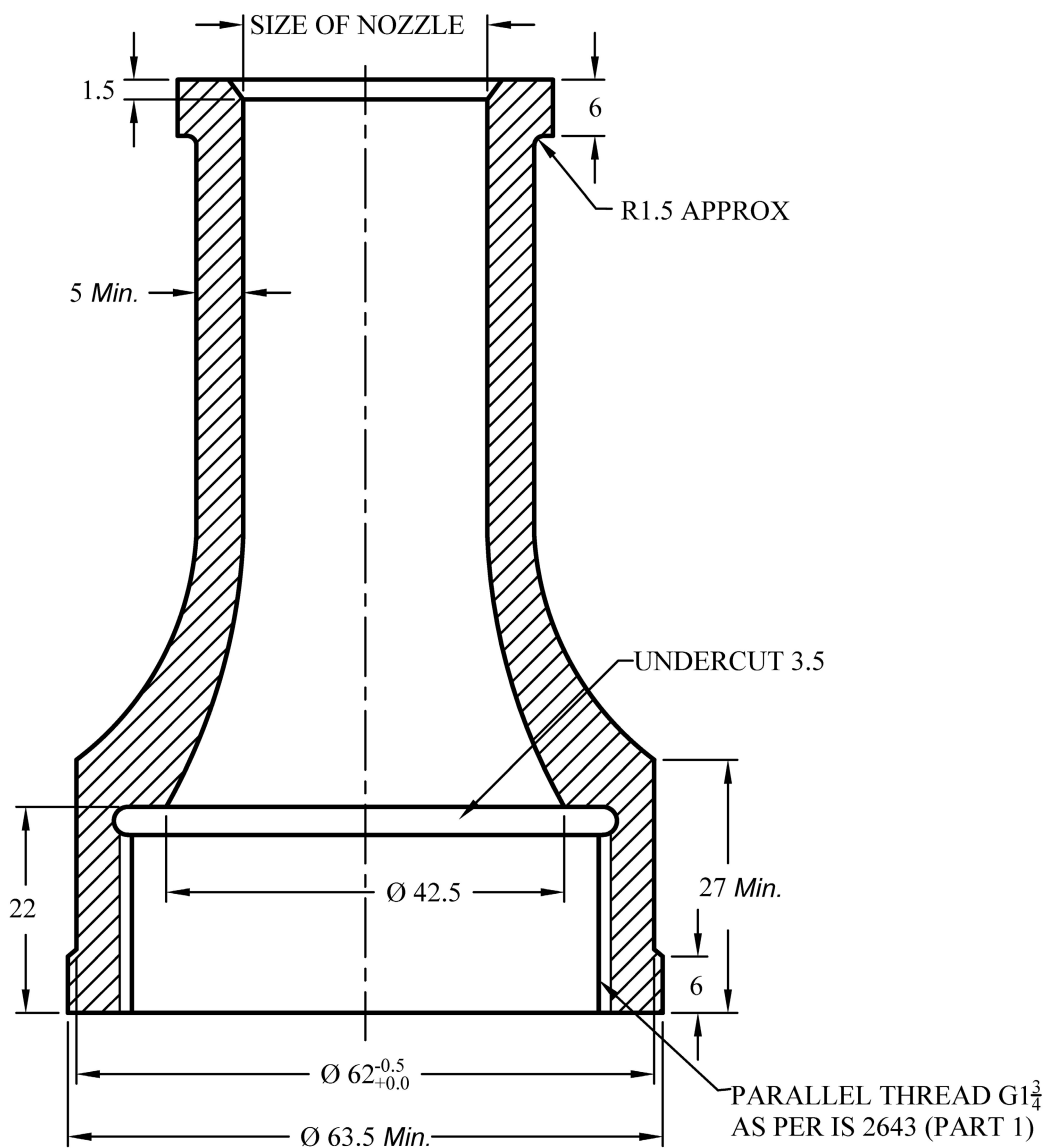
6.4 Testing

The testing shall be done as per 9.

7 NOZZLES

7.1 A typical design of a nozzle is given in Fig 4. The nozzle shall be with parallel threads of Class A and $G1\frac{3}{4}$ of IS 2643 for fitment onto the branch pipe.

7.2 The size of nozzles shall be 6 mm, 12 mm, 15 mm, 20 mm, 25 mm, and 30 mm and shall conform to dimensions as shown in Fig 4.



All dimensions in millimetres.

NOTE — Tolerance where not specified shall be ± 0.5 mm

FIG. 4 NOZZLE

7.3 Materials

The materials shall be as per **8**.

7.4 Testing

The testing shall be done as per **9**.

8 MATERIALS

8.1 Copper alloys used for castings or forgings shall conform to the requirements given in Table 1.

Table 1 Copper Alloys Used for Castings or Forgings
(Clause 5.2.1)

Sl. No	Type of Casting/Forging	Criteria for Conformity
(1)	(2)	(3)
i)	Sand Castings	Grade LTB 2 of IS 318 or Grade HTB 1 of IS 304
ii)	Die Castings	Grade LCB 2 of IS 292
iii)	Hot Forgings	Grade FNB of IS 6912 with: Fe: <i>Max.</i> 0.1% Other elements: max. 0.1% and Zinc: Balance.

8.2 Aluminium alloys shall be used in die casting only and shall conform to designation 4225, 4450, or 4600 of IS 617. Exposed aluminium surfaces shall have an anodized finish and all threaded parts of aluminium alloy components shall be coated with molybdenum listed grease.

8.3 Zinc-aluminium alloy (copper 0.5 to 1.5 percent, aluminium 10.5 to 11.5 percent, magnesium 0.015 to 0.03 percent and balance zinc) may be used and shall be die cast.

8.4 Springs used in the plunger lugs in case of copper alloy couplings shall be made from phosphor bronze wire and shall conform to IS 7608.

8.5 Springs used in the plunger lugs in case of aluminium alloy, zinc alloy and stainless-steel couplings shall be made from stainless steel wire and shall conform to IS 6528.

8.6 Plunger springs shall be of such stiffness that they can be compressed to a length sufficient to free the plunger from engagement by a force of not less than 45 N and not greater than 65 N.

8.7 The washers used in the coupling/branch pipe shall conform to Type A of IS 937.

8.8 When stainless steel is used for the manufacture of hose delivery couplings, branch pipes and nozzles, it shall conform to Grade 1 or Grade 4 of IS 3444.

8.9 Material of construction shall be declared by the manufacturer.

NOTES

1 The possibility of corrosion, especially that of bi-metallic corrosion may be given due regard in the choice of materials. Temporary, occasional contact of different metals connected during use do not typically pose problems. However prolonged contact is known to cause severe corrosion in some metals, such as that of aluminium and its alloys corroding in contact with copper or its alloys. Where it is imperative that different such materials have to be used in combination and prolonged contact is anticipated, suitable measures should be taken to prevent corrosion.

2 The possibility of corrosion due to environmental conditions may also be given due regard. Particular care should be exercised in the selection of materials for use in marine environments where the water to be used in the fire hose might be seawater.

3 Materials should be free from toxic substances and should not give rise to taste, odour, cloudiness or discolouration of the water or foster any microbiological growth.

9 PERFORMANCE TESTS

9.1 Hydraulic Test

Delivery couplings, branch pipes, and nozzles shall be separately subjected to hydraulic test at a pressure of 2.1 N/mm^2 (21 kg/cm^2) (increasing at a rate not more than 1 N/mm^2 per minute) for a period of 150 seconds after the pressure is obtained. There shall be no sign of leakage or sweating.

9.2 Salt Spray Test

9.2.1 Fittings made from brass, bronze or ferrous metals shall be exposed to 240 hours salt spray exposure in a salt chamber as per IS 11864.

9.2.2 Fittings constructed from metallic materials other than brass, bronze or ferrous metal shall be exposed to 720 hours of salt spray exposure as per IS 11864.

9.2.3 Instantaneous couplings shall be tested in disassembled condition. Nozzles and branch pipes shall be tested in assembled condition along with female half coupling.

9.2.4 After exposure the fittings shall show no sign of leakage or sweating when subjected to hydraulic test as per **9.1**. When dissimilar metals or alloys are used in combination, the components shall not show any visible galvanic corrosion. The surfaces of the samples having no protective coating shall not show any visible damage.

9.3 Ammonia Air Stress Cracking Test

9.3.1 For the purpose of this test, fittings shall be exposed to aqueous ammonia of specific gravity 0.94 in a suitable closed container. The sample shall be positioned by a suitable mechanism, such that, the lowest point of the sample shall not be more than 38 mm above the surface of the ammonia solution. The chamber shall be maintained at ambient temperature and pressure.

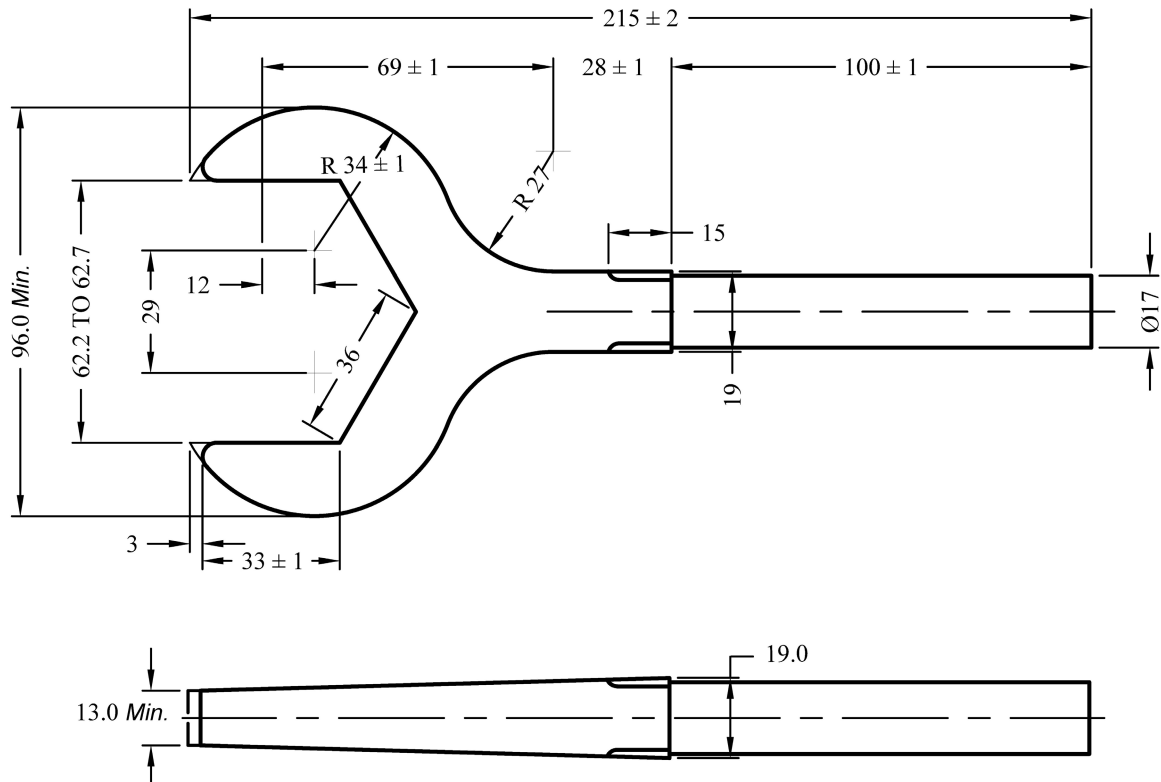
9.3.2 The sample shall be continuously exposed to the moist ammonia – air mixture for 14 days. After exposure, the fittings shall be examined at 25 times magnification

for any cracking. The sample shall then be subjected to hydraulic test as per **9.1** at four times the operating pressure. There shall be no sign of cracking, leakage, or sweating.

10 NOZZLE SPANNER

10.1 The nozzle spanner shall be made of steel of Grade 35C4 and 40C8 of IS 1570 (Part 2/ Sec 1).

10.2 The shape and dimension of the spanner shall be as given in Fig. 6.



All dimensions in millimetres.

NOTE — Tolerance where not specified shall be ± 0.5 mm.

FIG. 6 NOZZLE SPANNER

10.3 The nozzle spanner shall be given anti corrosive treatment by plating with chromium (see IS 1337) or zinc (see IS 1573).

10.4 Deflection Test Requirement

The spanner shall be fitted to a hexagonal bar of the appropriate size. A weight of 35 kg shall then be applied to the handle, at horizontal position, at a distance of 17 cm from the centre line of the spanner jaw. There shall be no visible damage or permanent deflection to the spanner.

11 MARKING

11.1 Each fitting shall be separately, clearly and permanently marked with the following information:

- a) Manufacturer's name or trademark,
- b) Size (where applicable)
- c) Material of construction, and
- d) Month and Year of manufacture.

11.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the revolving branches may be marked with the Standard Mark.

ANNEX A
(Clause 2)
LIST OF REFERRED INDIAN STANDARD

<i>IS No.</i>	<i>Title</i>
IS 291: 1989	Naval brass rods and sections for machining purposes — specification (<i>third revision</i>)
IS 292: 1983	Specification for leaded brass ingots and castings (<i>second revision</i>)
IS 304: 1981	Specification for high tensile brass ingots and castings (<i>second revision</i>)
IS 318: 1981	Specification for leaded tin bronze ingots and castings (<i>second revision</i>)
IS 617: 1994	Cast aluminium and its alloys — ingots and castings for general engineering purposes — specification (<i>third revision</i>)
IS 937: 1981	Specification for washers for water fittings for fire fighting purposes (<i>second revision</i>)
IS 3444: 1999	Corrosion resistant high alloy steel and nickel base castings for general purposes — specification (<i>third revision</i>)
IS 6528: 1995	Stainless steel wire – specification (<i>first revision</i>)
IS 6912: 2005	Copper and copper alloys forging stock and forging — specification (<i>first revision</i>)
IS 7608: 1987	Specification for phosphor bronze wires for general engineering purposes (<i>first revision</i>)