



Designation: F 1054 – 87 (Reapproved 1994)

Standard Specification for Conical Fittings of 15-mm and 22-mm Sizes¹

This standard is issued under the fixed designation F 1054; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification defines dimensions, gages, and test methods for nominal 15-mm and nominal 22-mm male and female conical fittings, so that these conical fittings may find application where there is a need for interchangeable connections. This specification does not cover where 15 or 22-mm conical fittings are to be used, nor does it include requirements for specific applications. It deals only with the mating surfaces of those fittings. The requirements of this specification are not intended to deal with preventing accidental disconnection of fittings.

NOTE 1—The manufacture of 15-mm fittings with 14.5-mm minimum shoulder clearance and the manufacture of 22-mm fittings with 19.5-mm minimum shoulder clearance is permitted for two years after date of publication of this specification. See Fig. 1 and Fig. 2.

2. Referenced Documents

2.1 ISO Standard:

ISO 3040 Technical Drawings—Dimensioning and Tolerancing Cones²

3. Conical Fittings Made of Materials Other Than Metal

3.1 Conical fittings made of materials other than metal may have their dimensional tolerances varied from those given in Fig. 1 and Fig. 2, with the exception of the axial length, provided that they shall pass the appropriate gage (Fig. 3 and Fig. 4) checked with application of axial forces according to Table 1.

3.2 *Gage Check*—The diameter and axial length of male or female fittings shall be such that, when engaged with the appropriate gage (Fig. 3 and Fig. 4) using an axial force and twist according to Table 1, the end of the fitting shall be within the maximum and minimum steps. The fitting shall neither bottom nor shoulder when gaged.

4. Dimensions of Conical Fittings Made of Metal

4.1 *Conical Fittings of 15-mm Size*—Conical fittings of 15-mm size made of metal shall meet the dimensional requirements of Fig. 1 (1A, 1B, or 1C). The basic taper and diameter dimensions shall be determined by testing with the plug and ring gages shown in Fig. 5 and used in accordance with Section 4, or an equivalent or better method. The length of the taper may be determined by any commonly accepted method.

4.2 *Conical Fittings of 22-mm Size*—Conical fittings of 22-mm size made of metal shall meet the dimensional requirements of Fig. 2 (3A, 3B, or 3C). The basic taper and diameter dimensions shall be determined by testing with the plug and ring gages shown in Fig. 6 and used in accordance with Section 5, or an equivalent or better method. The length of the taper may be determined by any commonly accepted method.

5. Gage Check for Conical Fittings Made of Metal

5.1 Metal conical fittings when checked with the relevant gages (shown in Fig. 5 for 15-mm size and Fig. 6 for 22-mm size) shall satisfy the following requirements:

5.1.1 The basic taper and diameter dimensions of the male

**TABLE 1 Gage Test for Non-Metal Fittings:
Application of Axial Forces**

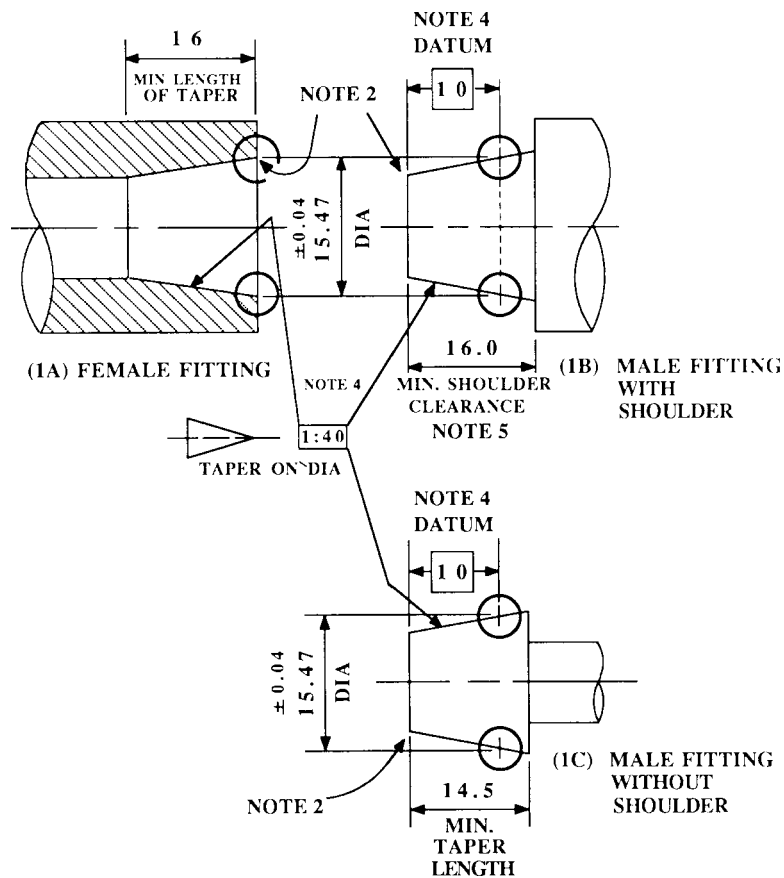
Size	Axial Engagement Force (Newtons)	Maximum Engagement Depth, mm (no bottoming out)
15 mm	35 ± 3.5	14.5
22 mm	50 ± 5	19.5
Up to 20° twist		

¹ This specification is under the jurisdiction of ASTM Committee F-29 on Anesthetic and Respiratory Equipment and is the direct responsibility of Subcommittee F29.10 on Anesthesia Workstations.

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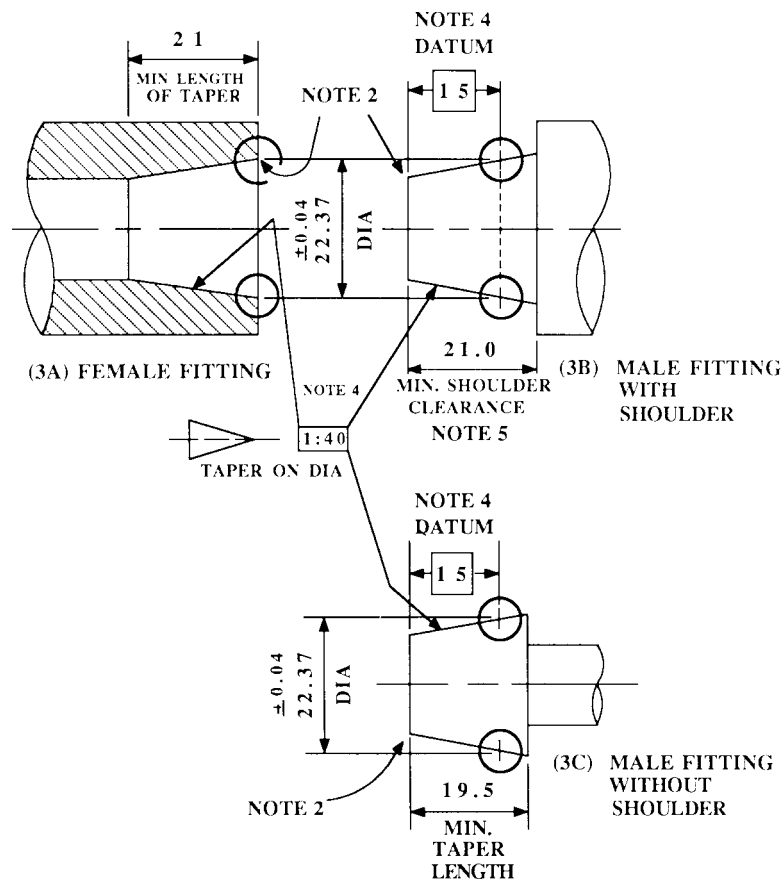
² Available from International Standards Organization, 1 Rue de Varembe, Case Postale 56, CH-1211, Geneva 20, Switzerland.

or female fittings shall be such that, when lightly wrung together with the mating gage, the leading end of the fitting shall lie within the maximum and minimum steps. The fitting shall not bottom nor shoulder when gaged.

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**Notes:**

1. All dimensions given in millimetres.
2. The outer leading edge of the male fitting and the inner leading edge of the female fitting may be relieved to a maximum axial distance of 0.5 mm.
3. This figure is drawn in accordance with ISO 3040, entitled "Technical Drawings—Dimensioning and Tolerancing Cones," Section 3.2 entitled "Method I: Basic Taper Method," paragraph 5.2.5, Figure 8.
4. Boxed dimensions and the diameter with tolerance define the tolerance zone.
5. The manufacture of fittings with 14.5 mm minimum shoulder clearance is permitted for 2 years after the date of publication of this specification.

FIG. 1 15-mm METAL CONICAL FITTING

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Notes:

1. All dimensions given in millimetres.
2. The outer leading edge of the male fitting and the inner leading edge of the female fitting may be relieved to a maximum axial distance of 0.5 mm.
3. This figure is drawn in accordance with ISO 3040, entitled "Technical Drawings—Dimensioning and Tolerancing Cones," Section 3.2 entitled "Method I: Basic Taper Method," paragraph 5.2.5, Figure 8.
4. Boxed dimensions and the diameter with tolerance define the tolerance zone.
5. The manufacture of fittings with 19.5 mm minimum shoulder clearance is permitted for 2 years after the date of publication of this specification.

FIG. 2 22-mm METAL CONICAL FITTING