



Standard Specification for Anesthetic Gas Scavenging Systems—Transfer and Receiving Systems¹

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1. Scope

1.1 This specification establishes requirements for transfer and receiving systems of active anesthetic gas scavenging systems (AGSS) intended to reduce the exposure of healthcare personnel to anesthetic gases and vapors. This specification also specifies requirements for AGSS in which the receiving system is integrated with the disposal system.

1.2 This specification does not specify requirements for non-active AGSS (passive AGSS), proximity gas extraction systems (see 3.1.17), and disposal systems (see 3.1.5).

NOTE 1—For requirements for “disposal systems” only, see NFPA 99, Standard for Healthcare Facilities.

2. Referenced Documents

2.1 ASTM Standards:

F 1054 Specification for Conical Fittings²

2.2 Other Documents:

CGA V-5: 2000 Diameter Index Safety System³

ISO 5356-2: 1987 Anaesthetic and Respiratory Equipment—Conical Connectors—Part 2: Screw-Threaded Weight-Bearing Connectors⁴

ISO 5359: 2000 Low-Pressure Hose Assemblies for Use with Medical Gases⁴

IEC 60601-1:1988 Medical Electrical Equipment—Part 1: General Requirements for Safety⁵

NFPA 99:1999 Standard for Healthcare Facilities⁶

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 active anesthetic gas scavenging system (AGSS),

n—AGSS in which the gas flow in the disposal system results from a power device.

3.1.2 *anesthetic gas, n*—vapor of a volatile agent or a gas used in anesthesia.

3.1.3 *anesthetic gas scavenging system (AGSS), n*—complete system which is connected to the exhaust port of a breathing system or to other equipment for the purpose of conveying expired or excess anesthetic gases, or both, to an appropriate place of discharge.

NOTE 2—Functionally, a complete system comprises three parts: a transfer system, a receiving system, and a disposal system (See Fig. 1). These three functionally discrete parts may be either separate or combined in part or in total. One or more parts of an AGSS may be combined with a breathing system component or other equipment.

3.1.4 *breathing system, n*—those inspiratory and expiratory pathways through which gas flows at respiratory pressures between the fresh gas inlet, the patient connection port and the exhaust valve or port.

NOTE 3—In practice, a breathing system usually extends from: (1) the point of supply of a gas mixture, for example, the fresh gas outlet of an anesthetic machine. In some situations, particularly in lung ventilators, this point may be inside a piece of equipment and should not be confused with a connection port fitted elsewhere, for example, on the casing of the ventilator; or (2) the fresh gas inlet of a circle system, lung ventilator, T-piece, and so forth; or (3) the fresh gas inlet of a manually operated resuscitator.

NOTE 4—The breathing system usually extends to the point at which the gas mixtures escapes to atmosphere or to an anesthetic gas scavenging system, for example, from an APL valve or the open end of a T-piece.

NOTE 5—The arrangement of any system and the method of use influences affect the composition of the inspired gas mixture.

NOTE 6—Gas pathways exclusively concerned with anesthetic gas scavenging systems are not regarded as a part of a breathing system.

NOTE 7—It is not possible to eliminate all ambiguity in defining the term “breathing system.” When this term is used in any standard or document, or other scientific publication, in which it could affect the precise interpretation thereof, the limits and configuration of any “breathing system” referred to therein should be clearly defined.

3.1.5 *disposal system, n*—that part of an AGSS by means of which the expired or excess anesthetic gases, or both, are conveyed from a receiving system to a point of discharge.

NOTE 8—In an active AGSS, the disposal system contains a power device which may either form part of a permanent disposal system installation or be installed within the operator’s working environment, either as a discrete device or integrated with the receiving system.

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² Annual Book of ASTM Standards, Vol 13.01

³ Available from Compressed Gas Association (CGA), 1725 Jefferson Davis Hwy., Suite 1004, Arlington, VA 22202-4102.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁵ Available from International Electrotechnical Commission (IEC), 3 rue de Varembe, P.O. Box 131, CH-1211, Geneva 20, Switzerland.

⁶ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

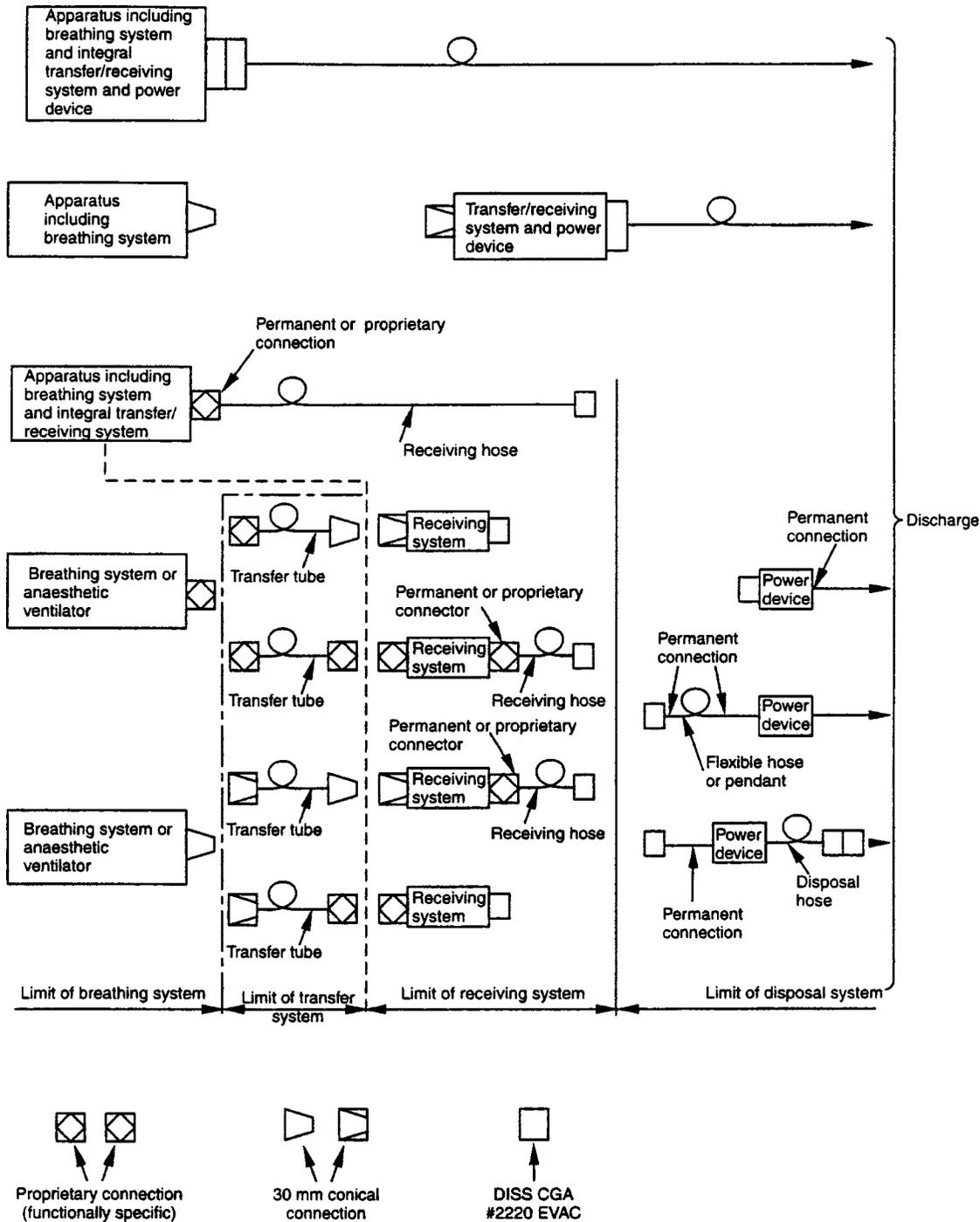


FIG. 1 Schematic Diagram of Typical AGSS Connections

3.1.6 *extract flow, n*—flow of gas from the transfer and receiving system of an AGSS at the entry to the disposal system.

3.1.7 *high-flow disposal system, n*—disposal system which can generate extract flows in excess of 50 L/min.

3.1.8 *induced flow, n*—flow at the inlet of the transfer system which is caused by the sub-atmospheric pressure generated in the AGSS.

3.1.9 *interchangeable, adj*—equipment or components, or both, with compatible interfaces and performance.

3.1.10 *legible, adj*—displayed qualitative or quantitative

information, values, functions, or markings discernible or identifiable to an operator with 6-6 (20/20) vision (corrected if necessary).

3.1.11 *low-flow disposal system, n*—disposal system which cannot generate extract flows in excess of 50 L/min.

3.1.12 *maximum extract flow, n*—highest flow of gas at the entry to the disposal system which under normal conditions can be accommodated without exceeding the limitations for induced flow.

3.1.13 *minimum extract flow, n*—lowest flow of gas at the entry to the disposal system which under normal conditions

ensures that spillage to atmosphere does not occur.

3.1.14 *normal condition, n*—condition in which all means provided for protection against safety hazards are intact.

3.1.15 *operator detachable, n*—equipment that can be connected or detached by the operator without the use of a tool.

3.1.16 *power device, n*—that part of the disposal system of an active AGSS which generates the extract flow.

3.1.17 *proximity gas extraction system, n*—system used proximal (within 2 in.) to the patient or surgical site to extract gases, smoke, and particulate matter away from the surgical site.

NOTE 9—Proximity gas extraction systems sometimes discharge the extracted gas within the same room.

3.1.18 *receiving hose, n*—that part of an AGSS which transfers expired or excess gases, or both, from the receiving system to the disposal system.

3.1.19 *receiving system, n*—that part of an AGSS which provides an interface between a transfer system and a disposal system.

3.1.20 *single fault condition, n*—condition in which a single means for protection against a safety hazard in equipment is defective or a single external abnormal condition is present.

3.1.21 *spillage, n*—volume of expired or excess anesthetic gas, or both, which cannot be accommodated by the AGSS over the specified period.

3.1.22 *transfer tube, n*—that part of an AGSS transfer system which transfers gases from the breathing system to the receiving system.

3.1.23 *transfer system, n*—that part of an AGSS which transfers expired or excess anesthetic gases, or both, from the exhaust port of a breathing system to a receiving system.

4. Patient and Environmental Protection

4.1 Normal Operating Conditions:

4.1.1 *Pressure*—The pressure rise at the inlet of the AGSS shall not exceed 350 Pa (3.5 cm H₂O). Test for compliance by functional testing.

NOTE 10—Annex A1 describes an example of a testing method and test fixture arrangement.

4.1.2 *Induced Flow*—The effect of operating the AGSS at the maximum extract flow specified for the transfer and receiving systems shall be such that the induced flow does not exceed 50 mL/min. Test for compliance by functional testing.

NOTE 11—Annex A2 describes an example of a testing method and test fixture arrangement.

4.1.3 *Leakage*—The leakage rate of gas from the transfer and receiving systems shall be less than 100 mL/min. Test procedures used by the manufacturer should be presented in the instructions for use and shall be available upon request. Test for compliance by functional testing.

NOTE 12—Leakage may be increased under single fault condition.

4.1.4 *Sub-Atmospheric Pressure*—The sub-atmospheric pressure at the inlet of the transfer system shall not exceed 50 Pa (0.5 cm H₂O). Test for compliance by functional testing.

NOTE 13—Annex A3 describes an example of a testing method and test fixture arrangement.

4.2 Single Fault Condition:

4.2.1 *Pressure*—With a steady state flow of air to the inlet of the AGSS, the pressure rise at the inlet shall not exceed 1.5 kPa (15 cm H₂O) under any single fault condition. Test for compliance by functional testing.

NOTE 14—An example of a single fault is occlusion of the transfer tube.

NOTE 15—Annex A1 describes an example of a testing method and test fixture arrangement.

4.2.2 *Induced Flow*—The induced flow at the inlet to the AGSS shall not exceed 500 mL/min under any single fault condition. Test for compliance by functional testing.

NOTE 16—An example of a single fault is occlusion of any air-entrainment inlet.

NOTE 17—Annex A2 describes an example of a testing method and test fixture arrangement.

4.3 *Materials*—All components of the AGSS shall be made of materials that are compatible with the gases and anesthetic agents with which these components are designed to come into contact.

NOTE 18—These components should also be designed and manufactured from materials that minimize the leaching of substances during normal use.

5. Means of Pressure Relief

5.1 The means of pressure relief, if provided, shall be accessible for cleaning or servicing, or both.

NOTE 19—When the means of pressure relief is actuated, anesthetic gases may be spilled into the atmosphere.

6. Transfer Systems

6.1 *Inlet to Interchangeable Transfer Systems*—The inlet to an interchangeable transfer system shall be a 30 mm diameter female connector complying with 8.1 and 8.2 and shall incorporate a means of pressure relief complying with 4.1.1 and 4.2. Alternatively, in place of the pressure relief, the transfer system shall be so constructed (for example, wire-reinforced tubing) that by application of a force of 200 N (45 lbf), a total occlusion will not occur and the transfer system shall still comply with 4.2.1. Test for compliance by visual inspection and functional testing. Test for occlusion using the test set-up for occlusion found in ISO 5359: 2000.

6.2 *Inlet to Transfer Systems that are Not Interchangeable*—The inlet to a transfer system that is not interchangeable shall be either: (1) a proprietary fitting complying with 8.1 and 8.3, or (2) not operator detachable.

6.3 *Outlet of Interchangeable Transfer Systems*—For interchangeable transfer systems, the outlet of the transfer system shall be a 30 mm diameter male conical connector complying with 8.1 and 8.2.

6.4 *Outlet of Transfer Systems that are Not Interchangeable*—The outlet of transfer system that is not interchangeable shall be either: (1) a proprietary fitting complying with 8.1 and 8.3, or (2) not operator detachable.

7. Receiving Systems

7.1 *Inlet to Interchangeable Receiving Systems*—The inlet of an interchangeable receiving system shall be a 30 mm diameter female conical connector complying with 8.1 and 8.2.

7.2 Inlet to Receiving Systems that are Not Interchangeable—The inlet to a receiving system that is not interchangeable shall be either: (1) a proprietary fitting complying with 8.1 and 8.3, or (2) not operator detachable.

7.3 Outlet of Receiving System—The outlet of the receiving system shall be one of the following: (1) a proprietary fitting complying with 8.1 and 8.3, or (2) not operator detachable, or (3) CGA DISS #2220.

7.4 Visual Indicator—A visual indicator shall be provided to indicate that the AGSS is working below the maximum extract flow, if any, specified by the manufacturer and above the minimum extract flow specified by the manufacturer.

7.5 Particle Filter—A particle filter, if provided, shall be located on the disposal side of the receiving system. It shall be removable without the use of a tool and its functional characteristics shall be disclosed by the manufacturer.

NOTE 20—If provided, the particle filter should be visible.

7.6 Hoses Used in the Receiving System—Hoses used in the receiving system shall comply with the requirements for hoses for vacuum services given in clauses 4, 4.4.6, and 5.7 of ISO 5359:2000 and shall have connectors complying with 8.1 and 8.3.

7.7 Extract Flow Adjustment—The receiving system shall be provided, if required, with a means to reduce the extract flow to within the range specified by the manufacturer.

8. Connectors

8.1 Connectors fitted to hoses or tubes, shall not be operator-detachable from the hose or tube.

8.2 Conical connectors of size 30 mm shall comply with Specification F 1054.

8.3 Connectors between subassemblies of AGSS transfer and receiving systems shall be designed to prevent mis-assembly. Such connections shall be incompatible with those used for medical gas pipeline systems, hose assemblies, breathing systems, and other AGSS components. Conical connectors shall not be compatible with any connector complying with Specification F 1054 or ISO 5356-2.

9. Extract Flow

9.1 Transfer and receiving systems intended for use with low-flow disposal systems shall meet the requirements of this specification with an extract flow not exceeding 50 L/min.

9.2 Transfer and receiving systems intended for use with high-flow disposal systems shall meet the requirements of this specification with an extract flow of 75 L/min.

9.3 The resistance to extract flow of a transfer and receiving system intended for use with a low-flow disposal system shall not exceed 2 kPa (20 cm H₂O) at 25 L/min, and not be less than 1 kPa (10 cm H₂O) at 50 L/min when tested as described in Annex A4.

9.4 The resistance to extract flow of a transfer and receiving system intended for use with a high-flow disposal system shall not exceed 2 kPa (20 cm H₂O) at 75 L/min when tested as described in Annex A4.

10. Electrical Requirements

10.1 Transfer and receiving systems that incorporate electrically-powered components shall comply with IEC 60601-1: 1988.

11. Information to be Supplied by the Manufacturer

11.1 The manufacturer shall provide the following information in the accompanying documents:

11.1.1 Operating instructions and details of functional tests to be carried out before use,

11.1.2 The maximum constant and intermittent flows to the receiving system before spillage occurs,

11.1.3 Warning statements and instructions to the operator to review the specifications of the AGSS transfer and receiving systems and the breathing system with which it is intended to be used, to ensure compatibility,

11.1.4 Warning statements and instructions to the operator to review the performance specifications of the disposal system with which the transfer and receiving systems are intended to be used, to ensure compatibility,

11.1.5 Installation instructions, if applicable,

11.1.6 Range of flows and, if possible, pressures of the disposal system(s) with which the transfer and receiving systems are intended to be used,

11.1.7 Recommended methods of cleaning, disinfection or sterilization,

11.1.8 Maintenance recommendations, including instructions for changing filters, if applicable,

11.1.9 Whether the equipment is suitable for use in a magnetic resonance imaging (MRI) environment and any related restrictions, and

11.1.10 The location of any latex-containing components.

12. Marking

12.1 The receiving system of an AGSS, if physically discrete, shall have permanently affixed, durable, and legible marking as specified in clause 6 of IEC 60601-1: 1988 that shall include at least the following:

12.1.1 The direction of flow, if applicable, for example, by means of an arrow,

12.1.2 An identification of the manufacturer/supplier,

12.1.3 If applicable, symbol number 14 specified in table D.1 of IEC 60601-1: 1988, and

12.1.4 An indication of suitability for use with high or low-flow disposal systems.

12.2 Legible indications, when viewed perpendicular to and including 15° above, below, left, and right, shall be correctly perceived by an operator with 6-6 (20/20) vision (corrected if necessary) from a distance of 1 m at a light level of 215 lx.

13. Identification

13.1 If color coding is used to identify components as being specific for use with AGSS, the components of the transfer system and the connector of the receiving system that connects with the transfer system shall be color coded magenta.

(Mandatory Information)

A1. TEST FOR PRESSURE RISE AT INLET TO AGSS

A1.1 Apparatus

A1.1.1 *Flow Measuring Device*—Accurate to within $\pm 5\%$ of actual reading.

A1.1.2 *Pressure Measuring Device*—Accurate to within $\pm 5\%$ of actual reading.

A1.2 Test Procedure

A1.2.1 Set up the test apparatus and AGSS as shown in Fig. A1.1 or Fig. A1.2, but do not connect the inlet of the AGSS at X-X.

A1.2.2 Render the means of pressure relief, if provided, inoperative.

A1.2.3 Adjust the air flow to 30 L/min and record the pressure.

A1.2.4 As shown in Fig. A1.1 or Fig. A1.2, connect the inlet of the transfer system to the test apparatus at X-X and the outlet of the receiving system to an active disposal system as recommended by the manufacturer in the accompanying documents, or to a test device simulating the performance of the recommended disposal system.

A1.2.5 Record the pressure, and calculate the pressure difference by subtracting the pressure recorded in A1.2.3 from that recorded in A1.2.4.

A1.2.6 Disconnect the receiving system hose, if any, from the disposal system or test device, or switch off the power device, and repeat the test procedure described in A1.2.3-A1.2.5 inclusive.

A1.2.7 Repeat the test procedure described in A1.2.3-A1.2.6 inclusive, but with an air flow of 75 L/min.

A1.2.8 Disconnect the AGSS at X-X. Return the means of pressure relief, if provided, to the operative condition.

A1.2.9 Repeat the test procedure described in A1.2.3-A1.2.5 inclusive, introducing single faults, one at a time.

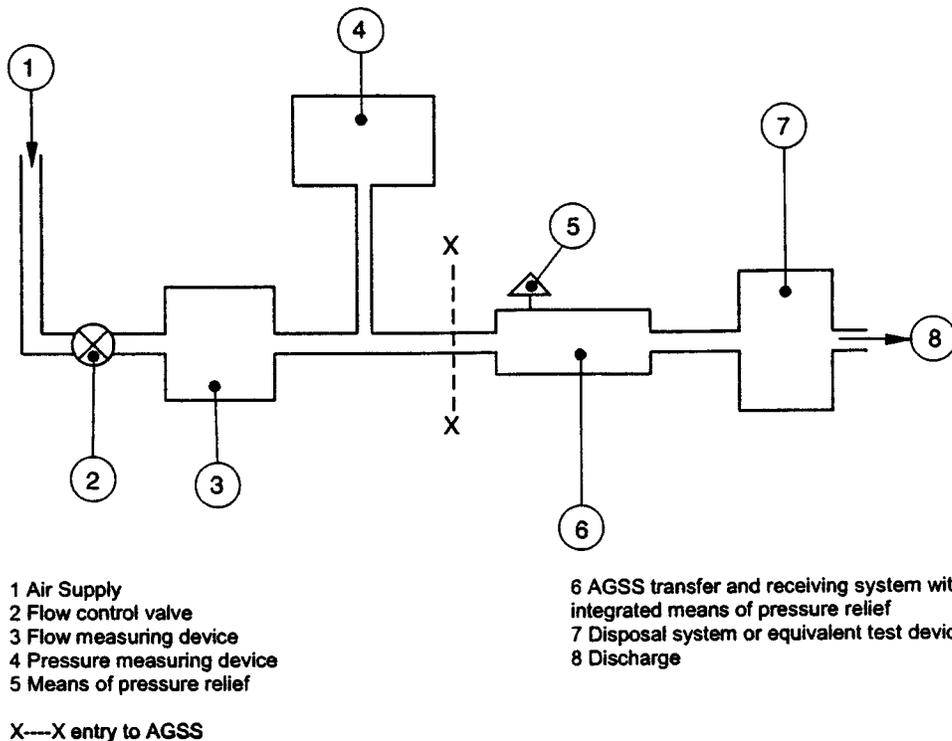
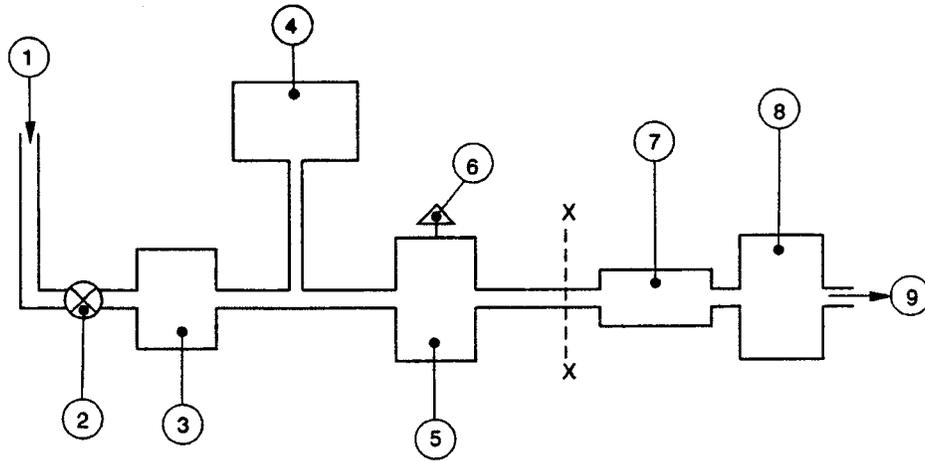


FIG. A1.1 Test Apparatus for Measurement of Pressure Rise at the Inlet of Interchangeable AGSS with Integrated Means of Pressure Relief



- | | |
|---|---|
| 1 Air Supply | 6 Means of pressure relief |
| 2 Flow control valve | 7 Not interchangeable AGSS |
| 3 Flow measuring device | 8 Disposal system or equivalent test device |
| 4 Pressure measuring device | 9 Discharge |
| 5 Breathing system with integrated means of pressure relief | |

X---X entry to AGSS

FIG. A1.2 Test Apparatus for Measurement of Resistance to Flow of Non-Interchangeable AGSS with a Means of Pressure Relief Integrated into the Breathing System

A2. TEST FOR INDUCED FLOW

A2.1 Apparatus

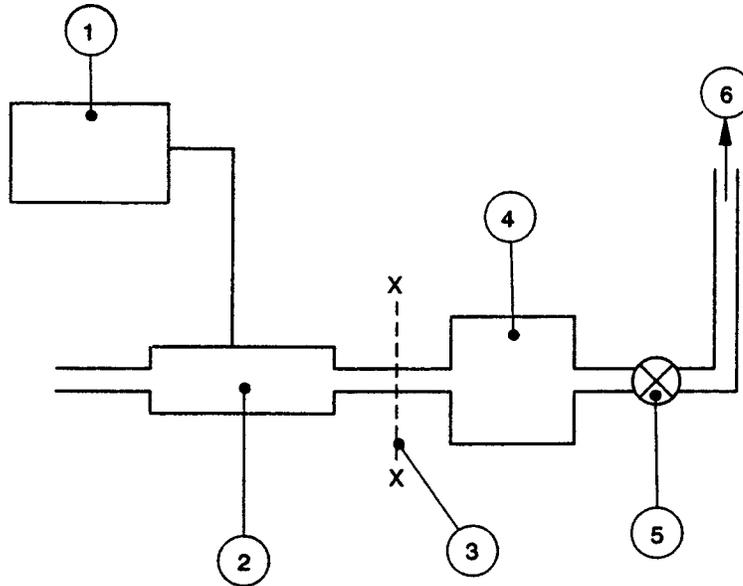
A2.1.1 Flow measuring device, accurate to within ± 10 mL/min.

A2.2 Test Procedure

A2.2.1 Connect the flow measuring device to the inlet of the AGSS at X-X as shown in Fig. A2.1. Test at the maximum

extract flow specified by the manufacturer for the AGSS transfer and receiving system. If no maximum outlet flow is specified, test at 50 L/min or 75 L/min according to whether it is designed for use with a low or high-flow disposal system.

A2.2.2 Measure the induced flow.



1 Recording instrument
 2 Flow measuring device
 3 Inlet of AGSS
 4 AGSS transfer and receiving system
 5 Flow control valve
 6 Suction flow

FIG. A2.1 Test Apparatus for Induced Flow

A3. TEST FOR SUB-ATMOSPHERIC PRESSURE LIMITATION

A3.1 Apparatus

A3.1.1 A pressure measuring device accurate to within ± 6 Pa at 30 Pa.

A3.2 Test Procedure

A3.2.1 Connect the pressure measuring device to the inlet of the transfer system as shown in Figs. A1.1 and A1.2 as

appropriate and connect the receiving and transfer system(s) to the disposal system, but with the flow control valve fully closed. Operate the power device at the maximum extract flow. Measure the sub-atmospheric pressure.

A4. TEST FOR RESISTANCE TO EXTRACT FLOW

A4.1 Apparatus

A4.1.1 Test apparatus as shown in Fig. A4.1.
 A4.1.2 Flow and pressure measuring devices as specified in Annex A1.

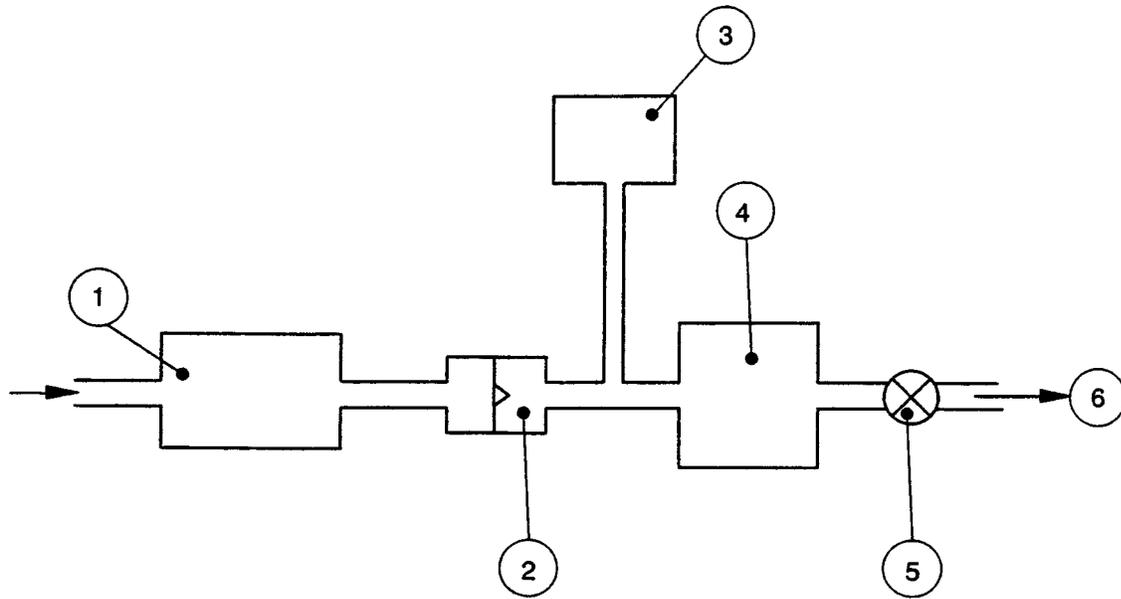
A4.2 Test Procedure

A4.2.1 Assemble the test apparatus as shown in Fig. A4.1, but do not connect the transfer and receiving system.
 A4.2.2 Adjust the air flow to 25 L/min and record the pressure.
 A4.2.3 Connect the transfer and receiving system to the test apparatus.
 A4.2.4 Readjust the air flow to 25 L/min and record the pressure.

A4.2.5 Subtract the pressure measured in A4.2.2 from the pressure measured in A4.2.4, and verify that the pressure drop complies with the appropriate requirement in 9.3.
 A4.2.6 Disconnect the transfer and receiving system from the test apparatus.
 A4.2.7 Repeat the procedure described in A4.2.2-A4.2.5 inclusive with an air flow of 50 L/min and verify that the pressure drop complies with the requirement in 9.3.

A4.3 Test Procedure for High-Flow Transfer and Receiving Systems

A4.3.1 Carry out the test procedure described in A4.2.1-A4.2.5 inclusive with an air flow of 75 L/min and verify that the pressure drop complies with the requirement in 9.4.



- 1 Inlet to AGSS
- 2 Outlet of receiving system/inlet to disposal system (see 7.3)
- 3 Pressure measuring device
- 4 Flow measuring device
- 5 Flow control device
- 6 Suction flow

FIG. A4.1 Test Apparatus for Measurement of Resistance to Flow

APPENDIX

(Nonmandatory Information)

X1. RATIONALE

X1.1 General Requirements:

X1.1.1 An anaesthetic gas scavenging system is defined in this specification as the complete system connected at the exhaust port of a breathing system for the purpose of conveying expired or excess anesthetic gases, or both, to an appropriate place of discharge. This specification is intended to establish requirements for only two components of the total anesthetic gas scavenging system—the transfer system and the receiving system. The requirements for other parts of the complete system (breathing system and disposal system) are covered by other standards, which in some cases are not under the jurisdiction of this ASTM subcommittee.

X1.1.2 The primary reason for using an AGSS is to reduce the exposure of healthcare personnel to anesthetic gases and vapors. During the creation of this specification, the subcommittee recognized that there are many factors affecting conditions within the working environment of healthcare workers that are outside the control of manufacturers of anesthetic gas scavenging systems. These include the room ventilation, leakage from equipment, and many different clinical treatment

procedures. Furthermore, the amount of pollutant taken up by of personnel is affected by other factors such as the duration of exposure and their position in relation to the sources of pollution. Recommendations on permissible levels of atmospheric pollution by anesthetic gases have not been included in this specification because they are the subject of considerable discussion, and opinions differ as to the limits which should be allowed in the healthcare workers environment.

X1.1.3 The requirements appearing in this specification are those that the subcommittee believes will reduce the risk to patients that the introduction of a transfer system and receiving system of an anesthetic gas scavenging system might introduce. Where applicable, the subcommittee addresses these risks under both normal conditions and single fault conditions. The following rationales are intended to help the reader understand the specific risks addressed by the different requirements found within this specification.

X1.2 Pressure Limits (see 4.1.1, 4.1.4, and 4.2.1):

X1.2.1 The location and performance of devices to limit

pressure have been specified because as they are essential for limiting or preventing harmful pressure changes in the breathing system during normal condition and for providing protection against excessive pressure under single fault conditions.

X1.2.2 The subcommittee chose to limit the pressure rise at the inlet of the AGSS under normal conditions to less than 350 Pa (3.5 cm H₂O), since the addition of the AGSS transfer and receiving system under normal conditions should not add excessive amounts of resistance to patient breathing. The subcommittee chose a positive pressure limit under single fault conditions of 1.5 kPa (15 cm H₂O), since the most likely scenario to cause pressure rise to occur at the inlet to the transfer system of the AGSS would be the partial or complete occlusion of the transfer tube/system. The subcommittee recognizes that designs exist where a partial or complete occlusion of the transfer tube/system may not be considered possible. However, for those systems where this is not the case, the subcommittee believes that limiting the pressure rise at the inlet to transfer tube/system to less than 1.5 kPa (15 cm H₂O) under single fault conditions will not cause serious patient injury in all but the extremely rare cases. Also, the value has been the acceptable limit for a number of years in the United States, and there are no known reports of adverse incidents.

X1.2.3 The subcommittee chose to limit the sub-atmospheric pressure at the inlet to the AGSS under normal conditions to less than 50 Pa (0.5 cm H₂O). Sub-atmospheric pressure within the AGSS is reported to have raised the opening pressure on some adjustable pressure-limiting valves and lowered it on others. These changes in opening pressure may collapse the reservoir bag, thereby altering the delivered anesthetic concentrations and the ability to assist ventilation.

X1.3 *Induced Flow* (see 4.1.2 and 4.2.2):

X1.3.1 Experience has shown that sub-atmospheric pressure at the inlet to the AGSS may induce a gas flow from the breathing system under specific conditions. This may be hazardous to the patient since it may reduce the gas flow available to below the minimum required for the patient, by altering the composition of the inspired gas mixture, or by affecting the proper functioning of disconnection alarms and other respiratory measuring equipment. Unfortunately it is

impractical to design an AGSS system to prevent the generation of this flow in all conditions. Therefore the subcommittee chose to impose limits on this flow under both normal and single fault conditions.

X1.4 *Connections/Interface* (see Sections 6-8):

X1.4.1 The subcommittee established requirements for both interchangeable transfer systems and interchangeable receiving systems, as well as transfer systems and receiving systems that are not interchangeable. These requirements were thought necessary since it should be expected that interchangeable transfer tube/systems should be provided with the required pressure relief regardless of what device/system it is connected with.

X1.4.2 Transfer systems and receiving systems that are not interchangeable are required to have inlet and outlet connections that are either permanently attached or proprietary, so as to avoid misconnection.

X1.4.3 The subcommittee recognized that there are a wide variety of proprietary terminal units and probes that will provide the connection from receiving system to the disposal system including a DISS 2220 connector.

X1.5 *Markings and Accompanying Documents* (see Sections 11 and 12):

X1.5.1 The requirements for marking in this specification are intentionally minimal, since the equipment will most likely not be large in size. The subcommittee recognizes that statements in the accompanying documents are most likely the least effective method of reducing risks. However, providing the operator with the necessary information to properly set-up, test, and use the equipment properly is considered a necessity. Many of the requirements for accompanying documents are generic statements and subject to determination of applicability and interpretation.

X1.6 *Color Coding* (See Section 13):

X1.6.1 When color coding is used, “magenta” was chosen as the color code for AGSS systems and components, since this is already used internationally.

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