

Bid Specifications



GENERAL REQUIREMENTS

This respiratory breathing apparatus shall be an open circuit, self-contained breathing apparatus (SCBA) consisting of the following major components: (1) a cylinder and valve assembly for storing breathing air under pressure; (2) a full facepiece assembly; (3) a removable, facepiece-mounted, positive pressure breathing regulator with an air saver switch and purge valve; (4) a backframe and harness assembly for supporting the equipment on the body of the wearer; and (5) a shoulder strap mounted, remote gauge indicating cylinder pressure.

The SCBA shall be NIOSH certified and shall conform to the Code of Federal Regulations, Title 42, Part 84. This apparatus shall meet OSHA requirements.

The successful bidder agrees to provide, at his own expense, a factory-trained instructor for such time as the respirator user shall require for complete instruction in the operation and maintenance of the respirator. Any exceptions to these specifications must be detailed in a separate attachment. Failure to do so will automatically disqualify the bidder. The successful bidder must be a sales distributor, authorized by the factory, to sell the equipment specified herein.

OPERATIONAL REQUIREMENTS

Cylinder and Valve Assembly

The SCBA shall be available with a choice of a 2216 psig or 4500 psig cylinder and valve assembly.

The 2216 psig cylinder and valve assembly shall be in accordance with Department of Transportation (DOT) specifications, have a working pressure of 2216 psig and a duration of 30 minutes as rated by the National Institute of Occupational Safety and Health (NIOSH). The cylinder shall be available in all aluminum or a lightweight composite cylinder consisting of an aluminum inner lining and a full wrap of resin impregnated fiberglass or carbon filament. Each 30-minute cylinder shall have a water capacity of 523 cubic inches and a free gas capacity of 45 cubic feet.

The 4500 psig cylinder and valve assembly shall be in accordance with Department of Transportation (DOT) specifications and have a working pressure of 4500 psig. Durations for the 4500 psig cylinders shall be 30-minute, 45-minute or 60-minutes as rated by NIOSH. The 30-minute cylinder shall be available in a lightweight composite cylinder consisting of an aluminum inner lining and a full wrap of resin impregnated fiberglass, Kevlar® or carbon filament. The 45-minute cylinder shall be available in a lightweight composite cylinder consisting of an aluminum inner lining and a full wrap of resin impregnated fiberglass or carbon filament. Each 45-minute cylinder shall have a water capacity of 412 cubic inches and a free gas capacity of 66 cubic feet.

The 60-minute cylinder shall be available in a lightweight composite cylinder consisting of an aluminum inner lining and a full wrap of resin impregnated fiberglass or carbon filament. Each 60-minute cylinder shall have a water capacity of 547 cubic inches and a free gas capacity of 87 cubic feet.

General Cylinder Requirements

The cylinder threads shall be straight with an O-ring or quad-ring gasket type seal. The cylinder valve shall be a fail open type constructed of forged aluminum and designed such that no stem packing or packing gland nuts are required. It shall contain an upper and lower seat such that the pressure shall seal the stem on the upper seat, thus preventing leakage past the stem. No adjustment shall be necessary during the life of the valve. The cylinder valve outlet shall be the Compressed Gas Association (CGA) standard threaded connection number 346 for lower pressure 2216 and 3000 psig cylinders and number 347 for high pressure 4500 psig cylinders.

The valve shall be constructed such that damage will not occur if the coupling is over-torqued by hand. Each cylinder valve shall consist of the following: 1) a hand activated valve mechanism with a spring loaded, positive action, ratchet type safety lock and lock-out release for selecting "lock open service" or "non-lock open service"; 2) an upstream connected frangible disc safety relief device; 3) a dual reading pressure gauge indicating cylinder pressure at all times; 4) an elastomeric bumper; and 5) an angled outlet. Each cylinder and valve assembly shall be equipped with a hanger bracket for positive locking attachment of the assembly to the backframe.

Facepiece Assembly

The SCBA shall be made available with tight fitting full facepieces. The full facepiece assemblies shall fit persons of varying facial shapes and sizes with minimal visual interference. The facepiece shall be available in four (4) color-coded sizes; small (green), large (black), large Comfort Seal™ (black) and extra large (red). The color-coded facepiece shall be constructed of an EPDM/natural rubber blend or silicone rubber. The facepiece shall be secured by a U-shaped channel frame that is retained to the lens using five (5) fastener assemblies, four (4) of which shall serve as attachment points for the head harness.

The lens shall be a single, replaceable, modified cone-shaped configuration constructed of a non-shattering polycarbonate material. The lens shall also be designed to meet the impact and penetration requirements of a face shield as specified in ANSI Z87.1, paragraphs 5.2.8.1 and 5.2.8.2. The lens shall have a silicone-based coating to resist abrasion and chemical attack as well as an anti-fog coating.

The facepiece shall be made available with or without multi-directional voicemitters installed into the lens on two sides of the facepiece. The facepiece containing the voicemitters shall have the voicemitters ducted directly to a silicone nose cup to enhance voice transmission. The nose cup shall be an integral part of the facepiece and shall serve to minimize lens fogging. The voicemitters and nose cup shall be removable for cleaning without the need for special tools.

The head harness shall have a four-point suspension made of a Kevlar® or polyester net hood or an EPDM/natural rubber blend. The EPDM/natural rubber blend head harness shall be available two ways; 1) The head harness shall be attached with a threaded screw and nut; or 2) shall have a series of five (5) snap nuts that will integrate with the five (5) snaps located on the full facepiece. The EPDM/natural rubber blend head harness shall be made so there is minimal interference between securing the facepiece and the wearing of head protection. Two (2) straps, attached to the lens in four (4) locations, shall provide adjustment for proper face sealing.

The facepiece shall have a large diameter inlet serving as the female half of a quarter (1/4) turn coupling which mates with the positive pressure breathing regulator.

Pressure Reducer

The pressure reducer shall be mounted on the backframe and be coupled to the cylinder valve through a short length of internally armored high pressure hose with a hand coupling for engagement and sealing within the cylinder valve outlet.

The outlet manifold of the pressure reducer shall have incorporated a reseatable over-pressurization relief valve which shall prevent the attached low pressure hose and facepiece mounted breathing regulator from being subjected to high pressure. An optional outlet manifold shall also have provision for connection of an airline supply for extended duration use while reserving the cylinder supply for egress.

The airline supply hose length shall be up to 300 feet including 12 segments when used with a Hansen, Schrader or Foster airline hose fitting and up to 150 feet including 6 segments with a Hansen HK airline hose fitting. The inlet pressure range for the airline hose length shall have a range of 60 to 115 psig, depending on the length of supply hose used. A check valve within the outlet manifold shall prevent the external release of cylinder air in the event the airline supply is either not used or disconnected. Switching from the airline supply to cylinder supply shall be accomplished manually by the user when opening the cylinder valve.

Facepiece Mounted Positive Pressure Regulator

The facepiece mounted positive pressure breathing regulator shall supply and maintain breathing air to the tight-fitting full facepiece to satisfy the needs of the user at a pressure greater than the atmospheric pressure by no more than 1.5 inches of water column. The breathing regulator shall maintain this positive pressure during flows of up to 500 standard liters per minute. The regulator shall also meet or exceed a dynamic flow requirement of remaining positive while supplying a minute volume of 160 liters.

The breathing regulator shall have attached a low-pressure hose, which shall be fed through the left shoulder strap to couple to the pressure reducer mounted on the backframe. An optional regulator shall be available with a quick connect coupling in line for personal issue. The quick connect coupling shall be easily connected and disconnected with a gloved hand and/or in low light conditions. The coupling shall also be guarded against inadvertent disconnect during use of the equipment.

The breathing regulator outlet port shall be configured as the male half of a quarter (1/4) turn coupling that mates with the facepiece and shall be equipped with a doughnut shaped gasket that provides the seal against the mating surface of the facepiece. The regulator cover shall be fabricated of a flame resistant, high impact plastic. The breathing regulator shall have a demand valve to deliver air to the user and shall be activated by a diaphragm that is responsive to respiration. The demand valve shall use an extended temperature range dynamic O-ring seal composed of a fluoro silicone elastomer. This diaphragm shall include the system's exhalation valve and shall be constructed from a high strength silicone elastomer.

A purge valve shall be situated at the inlet of the breathing regulator and shall be capable of delivering between 125 liters per minute (lpm) and 225 lpm. The components of the breathing regulator shall be constructed of materials that are not vulnerable to corrosion. The flame resistant cover shall contain an air saver switch and pressure demand bias mechanism. It shall reactivate and supply air only in the positive pressure mode when the wearer effects a face seal and inhales. This device shall not affect the breathing flow through the system while in operation.

Harness and Backframe Assembly

A lightweight, adjustable, lumbar support style harness and backframe assembly shall be used to carry the cylinder and valve assembly and the pressure reducer assembly. The backframe shall be a corrosion resistant wire form structure.

A cam-over-center, adjustable, tri-slide fixture fabric strap and double locking latch shall secure the cylinder and valve assembly. The cylinder and valve assembly shall be positioned on the backframe by the combination of a guarded hook on the backframe and a hanger bracket on the cylinder and valve assembly.

The harness assembly shall be arranged so that the bulk weight is carried on the hips. The harness shall be attached to the backframe by use of threaded fasteners. The harness assembly shall have a flexible waist belt and two shoulder straps. The waist belt shall have a two-piece polymer buckle for easy connection and separation and two web adjusters, one on each side. Adjustment of the waist belt shall be accomplished by simultaneously pulling forward on the free end of the web at each hip located adjuster. Each shoulder strap shall connect to the rear section of the waist belt at one end and to the rigid section of the backframe at the other end. Each shoulder strap shall have an alligator style web adjuster for quick adjustment and release of the shoulder straps.

Pressure Gauge

The self-contained breathing apparatus shall be equipped with a remote pressure gauge that shall contain a retro-reflective dial.

Weights

With 2216 psig cylinders

Aluminum – 30 minute – 29.7 pounds (13.50 kilograms)

Carbon – 30 minute - 19.1 pounds (8.68 kilograms)

With 4500 psig cylinders

Carbon – 30 minute – 18.3 pounds – (8.32 kilograms)

Carbon – 45 minute – 22.5 pounds – (10.32 kilograms)

Carbon – 60 minute – 25.6 pounds – (11.64 kilograms)

APPROVALS

NIOSH approval numbers maintained for the 4500 psig self contained breathing apparatus – TC# 13F-400, TC# 13F-402, or TC# 13F-403.

NIOSH approval number maintained for the 2216 psig self contained breathing apparatus – TC# 13F-401.

WARRANTY

The ISCBA unit shall have a five-year warranty.

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