



Panther[™] Hip-Pac[™]

Pressure Demand Supplied Air Respirator with Escape Cylinder

Product Specification Sheet

I. Purpose

To establish minimum standards for combination supplied air respirator and open-circuit self-contained breathing apparatus (SCBA).

II. Type

The combination supplied air respirator and open-circuit self-contained breathing apparatus covered by this specification shall be of the type using compressed air.

III. Approvals

The apparatus shall be certified by the National Institute for Occupational Safety and Health (NIOSH) under Title 42, Part 84 of the Code of Federal Regulations.

IV. Facepiece

The facepiece shall be available in two configurations: the Classic[™] facepiece and the TwentyTwenty[®] Plus[™] facepiece.

A. If the SCBA is equipped with a Classic facepiece, the facepiece shall:

1. Be available in blue or black silicone rubber in two sizes to fit various facial shapes and sizes. The facepiece shall have a mask skirt sealing area of not less than 1-3/4" in width.
2. Contain a replaceable, non-shatter-type polycarbonate lens located to provide a satisfactory field of vision. The lens shall be constructed with a protective outer ridge to help prevent scratching and be coated on the outside surface to help prevent abrasion. The lens shall be secured in the facepiece by a stainless steel retainer.

3. Allow air to enter the facepiece in a manner that will reduce the possibility of moisture accumulation on the lens.
 4. Employ an adjustable 5-strap silicone rubber headband assembly held in place by stainless steel roller buckles designed to prevent inadvertent loosening. An optional 5-strap Headnet™ mesh-style assembly shall be available and shall be interchangeable with the silicone rubber headband.
 5. Contain an easily removable exhalation module which employs a silicone rubber exhalation valve designed for easy cleaning.
 6. Utilize a Kapton® material speaking diaphragm which is retained by the facepiece nozzle and is easily removable for cleaning and maintenance.
 7. Have field-replaceable components throughout.
 8. Employ a factory-installed, removable nose cup for use below 32°F. The nose cup shall be able to be removed and re-installed without special tools.
 9. Have provision for mounting corrective lenses inside the facepiece. The corrective lens kit shall not require tools for installation.
 10. Have a removable adapter, onto which the second stage regulator attaches, which has an opening that is small enough to be easily covered by one hand for a negative pressure fit check.
- B. If the SCBA is equipped with a TwentyTwenty Plus facepiece, the facepiece shall:
1. Be constructed (in the rims, nozzle cover, and exhalation valve access cover) of a super-tough material that will withstand a 30-foot drop onto concrete without sustaining breakage. The bottom of the nozzle cover shall have a molded lip to serve as an anchor point for flash hoods. Two wireforms that attach at the juncture of the upper and lower facepiece rims shall be available as an option, providing two additional flash hood anchor points.
 2. Be available in silicone rubber in three color-coded sizes to fit various facial shapes and sizes. The facepiece shall have a mask skirt sealing area of not less than 1½" in width.
 3. Contain a replaceable, non-shatter-type, polycarbonate, single-curve, conical-shaped lens located to provide a satisfactory field of vision. The lens shall be coated on the outside and inside surfaces to help prevent abrasion. The lens shall be secured in the facepiece by a durable plastic retainer.

4. Allow air to enter the facepiece in a manner that will reduce the possibility of moisture accumulation on the lens. Employ an adjustable 5-strap silicone rubber headband assembly held in place by buckles designed to prevent inadvertent loosening. An optional 5-strap Headnet™ mesh-style assembly shall be available and shall be interchangeable with the silicone rubber headband. It shall be necessary to tighten the chin straps and the temple straps to secure the Headnet to the face. The top strap shall be stationary. All straps for both the silicone headband assembly and the Headnet shall be attached to the rim of the facepiece, rather than the silicone skirt, to reduce distortion of the sealing surface when tightened.
5. Contain an easily removable exhalation module which employs a silicone rubber exhalation valve designed for easy cleaning.
6. Utilize a Kapton® material speaking diaphragm which is retained by the facepiece nozzle and is easily removable for cleaning and maintenance.
7. Have field-replaceable components throughout.
8. Employ a factory-installed, removable nose cup for use below 32°F. The nose cup shall be able to be removed and re-installed without special tools. The nose cup shall be available in three sizes.
9. Have provision for mounting corrective lenses inside the facepiece. The corrective lens kit shall not require tools for installation.
10. Have a removable adapter, onto which the second stage regulator attaches, which has an opening that is small enough to be easily covered by one hand for a negative pressure fit check.

V. Regulator System and Intermediate Pressure Hose

The regulator system shall be designed to operate in two independent stages. The first stage reducer shall be mounted directly on the escape cylinder valve. There shall be no hoses or links carrying high pressure. The second stage shall be designed to provide positive pressure in the facepiece at a respiratory minute volume of 100 liters per minute.

A. The first stage regulator shall:

1. Thread directly onto the cylinder valve without the need of special tools.
2. Contain a pressure reducer to reduce pressure from the cylinder to 90-150 psig.

B. The second stage regulator shall:

1. Be constructed of a super-tough material that will withstand a 30-foot drop onto concrete without sustaining breakage. The upper portion of the regulator, including the shutoff button, shall be covered by a rubber boot for impact absorption. Be a "pilot valve" type. It shall contain a spring-biased diaphragm, responsive to respiration demand, to actuate a pilot valve which, in turn, operates a flexible main valve to meet the user's flow demand during inhalation.
 2. Reduce pressure from 90-150 psi to .036-.054 psi.
 3. Produce a static pressure in the facepiece of 1.0 to 1.5 inches of water.
 4. Contain a 40-mesh metal screen filter at the outlet port to prevent entrance of particles into the regulator.
 5. Contain a bypass valve that provides a separate flow path around the regulator primary demand valve. In the event of a failure or blockage of the primary, the bypass valve shall be operable by either of the user's gloved hands.
 6. Employ a two-point fastening system which allows the regulator to be quickly mounted into the facepiece in any orientation by pushing the regulator until the two fasteners attach to the facepiece adapter. Once installed, the regulator shall be able to swivel 360° without detaching from the facepiece. The regulator shall remain secured to the facepiece should one of the fasteners inadvertently be released.
 7. Employ a first-breath-on feature which allows the user to actuate regulator flow by inhaling after the regulator is secured to the mask.
 8. Contain a safety override button which allows the wearer to manually start the regulator flow.
 9. Not obstruct the wearer's downward vision.
 10. Contain a manual shutoff button to prevent loss of air after removal from the mask.
- C. The second stage regulator intermediate pressure hose shall:
1. Be attached to the second stage regulator with a swivel connector.
 2. Attach directly to the first stage regulator assembly or, optionally, attach to the first stage regulator intermediate pressure hose by a two-step push-pull quick-disconnect fitting designed to prevent accidental release.
 3. Contain a metal screen inlet filter to retain particles of 120 microns or greater.
-

VI. Cylinder

- A. The 5-minute cylinder shall be constructed of aluminum and be fully charged to 2216 psig.
- B. The 10-minute cylinder shall be constructed of aluminum and be fully charged to 3000 psig.
- C. The 15-minute cylinder shall be a hoop-wrapped design, constructed of a deep-drawn, seamless aluminum liner wound with high-strength fiberglass filaments impregnated with epoxy resin. It shall be fully charged to 3000 psig.
- D. The cylinder shall contain a closing valve which incorporates a pressure gauge to indicate the cylinder pressure at all times.

VII. Cylinder Valve

The cylinder valve outlet shall conform with the Compressed Gas Association (CGA) standard for threaded connection for low pressure, number 346.

VIII. Harness

The harness shall be readily adjustable for various wearer sizes and shall include the following components:

- A. Harness straps of Kevlar/Nomex[®] composite construction to provide maximum resistance to high temperatures and abrasion. The harness shall have an aluminized coating to prevent the straps from becoming limp. The removable shoulder strap shall have thick Nomex-covered neoprene padding attached for added user comfort.
- B. A Kevlar/Nomex waist strap, adjustable from both sides, with a heavy-duty snap-hook and D-ring fastener.
- C. A holder for the second stage regulator so that the regulator may be kept actuated in a stand-by mode during use, and so that the regulator may be stored protected from the environment when not in use. The holder shall have a provision for relief of excess pressure when the regulator is actuated, and it shall prevent the regulator from being accidentally actuated upon removal from the holder.
- D. A padded cylinder bracket for user comfort.

IX. Storage Case

If specified, a molded storage case shall be provided to retain the complete apparatus and instruction card or booklet.

X. Instruction Card or Booklet

An instruction card or booklet shall be provided with each apparatus. Instructions shall contain complete operation and maintenance procedures.

XI. Warranty and Overhaul Cycle

The apparatus shall carry a warranty of not less than twelve (12) years. The overhaul cycle for the apparatus, including the regulators, shall be a period of not less than six years.

XII. Accessories

The following NIOSH-certified accessories shall be available for the apparatus:

- A. Anti-fog solution.
- B. Radio communication system.
- C. Mask-mounted voice amplification system.
- D. Haz-mat suit pass-through fitting.
- E. Lens cover.
- F. Neck strap.

