

PANTHER HIP-PAC™
SUPPLIED-AIR RESPIRATOR, PRESSURE-DEMAND CLASS
AND
SELF-CONTAINED BREATHING APPARATUS
P9686 Series 10-Minute Escape
OPERATION MANUAL



WARNING

DO NOT USE this respirator until you completely read and understand this instruction manual. You are required to inspect your respirator prior to putting it into field service. Please refer to the inspection procedures in this manual. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

SURVIVAIR®

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Panther HIP-PAC

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I. INTRODUCTION

This manual provides instructions for the use and maintenance of the SURVIVAIR® Panther HIP-PAC™ pressure-demand supplied-air respirator and self-contained breathing apparatus, P9686 Series. The Panther HIP-PAC is intended for supplied-air entry into hazardous atmospheres, and emergency exit using the ten-minute cylinder in the event of a remote air supply failure. *You must read and understand this manual and be trained in the proper use of the Panther HIP-PAC before wearing it in a hazardous environment.*

II. SAFETY PRECAUTIONS

The Warnings, Cautions, and Notes contained in this manual have the following significance:

▲ WARNING

Maintenance or operating procedures and techniques that may result in serious personal injury, serious illness, or death if not carefully followed.

CAUTION

Maintenance or operating procedures and techniques that may result in damage to equipment and/or minor to moderate personal injury if not carefully followed.

NOTE

Maintenance or operating procedures and techniques or information considered important enough to emphasize.

III. DESCRIPTION

The SURVIVAIR Panther HIP-PAC consists of a refillable cylinder, valve and pressure gauge assembly, first stage regulator, second stage regulator, facepiece, harness, and regulator hose. The cylinder stores 17 cubic feet of air at 4500 psig for the 10-minute apparatus. The cylinder valve controls air pressure to the regulator, and houses a safety relief device and a cylinder pressure gauge. The regulators reduce the cylinder pressure or remote air pressure and supply a flow to the facepiece. A check valve in the low pressure air line hose prevents inward leakage of contaminated air when disconnected from the air supply.

NOTE

Please read and understand the COMPASS Operation Instructions (supplied separately).

▲ WARNING
<ul style="list-style-type: none"> • The employer is responsible for establishing that these respirators are suitable for the user's application. • No respirator can provide complete protection from all conditions. Use extreme care for all emergency operations. Do not use the Panther HIP-PAC for interior structural fire fighting, abrasive blasting, or under water. • The pressure within the Panther HIP-PAC remains positive under most working conditions, but as with all respirators, negative pressure excursions are possible. Conditions when a respirator can experience negative facepiece pressures include, but are not limited to: 1) the respirator is improperly worn, 2) the respirator is not used in accordance with the instructions, or 3) the respirator is over-breathed during heavy work rates. The HIP-PAC will provide reduced protection when operated in a negative pressure mode. • Your SURVIVAIR respirator has been constructed of materials selected for their performance, safety, and durability. However, all materials have limitations to exposure to extremes of heat and cold or to the many chemicals in use today, and could be degraded by exposure beyond their limitations, creating conditions in which this SURVIVAIR equipment would be dangerous to use. • Before allowing anyone to enter a hazardous environment while wearing SURVIVAIR equipment, the employer must conduct safe, scientific tests to

▲ WARNING—Continued

determine if the environment could render the equipment unsafe. Results of this testing should be well documented. Seek the help of a certified safety professional or industrial hygienist. **DO NOT USE** this equipment if the user would be endangered in any way through environmentally induced degradation of the materials in the apparatus.

- All persons using this SURVIVAIR respirator must be made aware of its limitations. We cannot be responsible for any damage to property, personal injury, or death in which environmental exposure is a contributing factor.
- SURVIVAIR cannot predict what will happen to this equipment in every potential environment. Materials can be chemically attacked if exposed to the wrong environment and may exhibit corrosion or other forms of damage. Permeation or penetration of gases, liquids, or particles through the materials could be excessive. Extremes of temperature might cause thermal degradation. Each of these things, or a combination of them, could create conditions in which this SURVIVAIR equipment would be dangerous to use.
- This respirator must be used in conjunction with a written respirator program meeting the requirements of the OSHA Standard for Respiratory Protection 29 CFR 1910.134, available from the U.S. Department of Labor, Occupational Safety and Health Administration. The program must include, but not be limited to, procedures for evaluating air contaminants and selecting appropriate respirators, procedures for proper use of respirators, procedures for testing the facepiece-to-face fit of respirators, procedures for cleaning, disinfecting, inspecting, maintaining, and storing respirators, procedures for determining if workers are physically and medically capable of wearing respirators, and procedures for training employees in the use of respirators and in recognizing the hazards associated with contaminants in the workplace.
- The air supply must meet the guidelines of the Compressed Gas Association (CGA) pamphlet G-7.1, Grade D Air, as appropriate.
- **DO not wear** this respirator if a satisfactory fit, as determined by a qualitative or quantitative fit test, cannot be obtained. See ANSI Z88.2, latest edition, and OSHA 1910.134. Beards and sideburns will prevent good facepiece seal. Do not use this respirator unless you are clean shaven.

▲ WARNING—Continued

- This respirator does not protect exposed areas of the body. Some contaminants can be absorbed directly through the skin while others may irritate exposed areas. This respirator does not provide protection from splash of hazardous liquids, flying objects, hazardous rays, or harmful noise. Always wear proper head, ear, and eye protection.
- The Panther HIP-PAC has a rated service time of 10 minutes. Under average conditions, you will have up to 10 minutes in which to escape from a toxic environment. Stress and exertion may cause extra air consumption and reduce the service time. Know escape routes in advance and the time required to travel them.
- Compressors, storage cylinders, valves, regulators, fittings, and other hardware must be large enough to deliver the air volume required by all users at peak demand.
- This respirator will reduce, but will not eliminate the inhalation of contaminants. Some sensitive individuals may experience health problems when exposed to even minute amounts of contaminants. This respirator will not prevent health problems for those individuals.
- Do not modify this respirator in any manner.
- This respirator must only be worn and used as specified in SURVIVAIR's instructions. Always read and follow the instructions listed in the Material Safety Data Sheet for the chemicals that are present in the work area. Selection and use of these respirators must be done in accordance with ANSI Z88.2, latest edition, and the applicable OSHA statutes.
- Do not use SURVIVAIR respirators, accessories, and associated equipment in atmospheres which may contain contaminant concentrations above the lower explosive limit (LEL). Intrinsic safety certification of electronic components does not eliminate potential danger from ignition in these atmospheres.
- Some individuals are sensitive to chemicals (e.g., isocyanates or paint hardeners, latex, oil mists, etc.) or may have some type of respiratory disorder (e.g., asthma, chronic obstructive airway disease, etc.). If you are sensitive to any chemical or have a respiratory disorder, you may have a severe reaction at contaminant levels well below accepted health levels, such as the OSHA Permissible

⚠ WARNING—Continued

Exposure Limit (PEL), AIHA Threshold Limit Value (TLV), or the NIOSH Recommended Exposure Limits (REL). Many chemicals (e.g., isocyanates, mercury, etc.) have no physical warning properties and you cannot taste or smell the contaminants even though they may be present in the respirator facepiece. This respirator will reduce, but will not eliminate the possibility of contaminants entering the facepiece and causing a severe reaction. Do not use this respirator if you have been sensitized from previous exposure or believe that you may be sensitive or allergic to any chemical until you obtain clearance from a medical doctor.

- Users must clean and maintain this respirator only in accordance with SURVIVAIR's instructions. Accessories not offered by SURVIVAIR may degrade performance, and will void NIOSH certification.
- The respirator facepiece assembly contains natural rubber latex which may cause allergic reactions in some individuals. Discontinue use if you experience an allergic reaction.
- Discontinue use if you experience skin irritation or discoloration.
- **FAILURE TO OBSERVE ALL WARNINGS MAY RESULT IN SERIOUS PERSONAL INJURY, SERIOUS ILLNESS, OR DEATH.**



Figure 1. HIP-PAC

IV. PARTS LIST (See Figure 1)

	P/N	QTY	DESCRIPTION
1	961090	1	Classic Facepiece, Standard, Blue
	961096	1	Classic Facepiece, Small, Blue
	968416	1	Classic Facepiece, Standard, Black
	968417	1	Classic Facepiece, Small, Black
	202010	1	TwentyTwenty Facepiece, Small, Blue, Regular Nose Cup
	202011	1	TwentyTwenty Facepiece, Small, Blue, Large Nose Cup
	202012	1	TwentyTwenty Facepiece, Small, Black, Regular Nose Cup
	202013	1	TwentyTwenty Facepiece, Small, Black, Large Nose Cup
	202020	1	TwentyTwenty Facepiece, Medium, Blue, Regular Nose Cup
	202021	1	TwentyTwenty Facepiece, Medium, Blue, Large Nose Cup
	202022	1	TwentyTwenty Facepiece, Medium, Black, Regular Nose Cup
	202023	1	TwentyTwenty Facepiece, Medium, Black, Large Nose Cup
	202030	1	TwentyTwenty Facepiece, Large, Gray, Regular Nose Cup
	202031	1	TwentyTwenty Facepiece, Large, Gray, Large Nose Cup
	202032	1	TwentyTwenty Facepiece, Large, Black, Regular Nose Cup
	202033	1	TwentyTwenty Facepiece, Large, Black, Large Nose Cup
	222021	1	TwentyTwenty Plus Facepiece, Medium, Blue, Large Nose Cup
	222023	1	TwentyTwenty Plus Facepiece, Medium, Black, Large Nose Cup
	222010	1	TwentyTwenty Plus Facepiece, Small, Blue, Medium Nose Cup
	222011	1	TwentyTwenty Plus Facepiece, Small, Blue, Large Nose Cup
	222012	1	TwentyTwenty Plus Facepiece, Small, Black, Medium Nose Cup
	222013	1	TwentyTwenty Plus Facepiece, Small, Black, Large Nose Cup
	222020	1	TwentyTwenty Plus Facepiece, Medium, Blue, Medium Nose Cup
	222022	1	TwentyTwenty Plus Facepiece, Medium, Black, Medium Nose Cup
	222030	1	TwentyTwenty Plus Facepiece, Large, D. Gray, Medium Nose Cup
	222031	1	TwentyTwenty Plus Facepiece, Large, D. Gray, Large Nose Cup
	222032	1	TwentyTwenty Plus Facepiece, Large, Black, Medium Nose Cup
	222033	1	TwentyTwenty Plus Facepiece, Large, Black, Large Nose Cup
	222038	1	TwentyTwenty Plus Facepiece, Small, Blue, Small Nose Cup
	222053	1	TwentyTwenty Plus Facepiece, Small, Black, Small Nose Cup
	222040	1	TwentyTwenty Plus Facepiece, Medium, Blue, Small Nose Cup
	222041	1	TwentyTwenty Plus Facepiece, Medium, Black, Small Nose Cup
	222042	1	TwentyTwenty Plus Facepiece, Large, D. Gray, Small Nose Cup
	222043	1	TwentyTwenty Plus Facepiece, Large, Black, Small Nose Cup
	968005	1	Hood-Style Facepiece, Standard, Orange, Small
	968006	1	Hood-Style Facepiece, Standard, Orange, Medium
	968007	1	Hood-Style Facepiece, Standard, Orange, Large
	2	964683	1
3	961793	1	Second Stage Regulator
4	968686	1	Harness Assy.
	968680	1	Harness Assy. for use with COMPASS
5	968713	1	Intermediate Pressure (IP) Hose (Not Shown)
6	917250	1	Cylinder/Valve
7	964914	1	COMPASS Kit
	964916	1	COMPASS Kit with Auxiliary Coupler
8	961289	1	Regulator Receiver

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Lightweight 3/8" Air Supply Hose w/out Quick Connects	
930801	25 Feet
930802	50 Feet
930804	100 Feet
High Performance 3/8" Air Supply Hose w/out Quick Connects	
930870	10 Feet
930861	25 Feet
930862	50 Feet
930864	100 Feet
Quick Connect Assemblies - female/male coupler for 3/8" hoses	
930810	Foster
930820	Schrader
930830	Hansen
945007	Hansen Stainless Steel, Two-way Shutoff
Accessories	
985237	Gasket for 3/8" hose
980003	Spectacles Kit, Classic Facepiece
962260	Spectacles Kit, TwentyTwenty Facepiece and TwentyTwenty Plus Facepiece
140095	Lens Cover, Classic Facepiece
951015	Anti-fog Solution (1 oz.)
951016	Anti-fog Solution (16 oz.)
981805	Anti-fog Wipe
140096	Mask Wipes (100 ea.)
140098	Fit Test Ampule Kit
940172	Neck Strap Kit, Classic Facepiece
962232	Neck Strap Kit, TwentyTwenty Facepiece
962869	Neck Strap Kit, TwentyTwenty Plus Facepiece
961600	Classic Radio Communication Kit
961609	Classic Mask-Mounted Push-to-Talk Radio Communication System
962300	TwentyTwenty Radio Communication System Kit
963050	TwentyTwenty Plus Radio Communication System
962301	TwentyTwenty SmallTalk® Voice Amplifier Kit
963070	TwentyTwenty Plus SmallTalk Voice Amplifier Kit
962302	TwentyTwenty Radio Communication/SmallTalk Kit
963080	TwentyTwenty Plus Radio Communication/SmallTalk Kit
962305	TwentyTwenty Radio Communication System with Remote Push-to-Talk Kit
963073	TwentyTwenty Plus Radio Communication System with Remote Push-to-Talk Kit
962306	TwentyTwenty Radio Communication/SmallTalk with Remote Push-to-Talk Kit
963074	TwentyTwenty Plus Radio Communication/SmallTalk with Remote Push-to-Talk Kit
962307	TwentyTwenty Remote Push-to-Talk Upgrade Kit
961608	Classic SmallTalk Voice Amplifier
961710	Headnet™ Kit, Regular, Classic Facepiece
961730	Headnet Kit, Small, Classic Facepiece
962270	Headnet Kit, TwentyTwenty Facepiece and TwentyTwenty Plus Facepiece
968461	Bypass Upgrade Kit
P968453/73	SAR Upgrade Kit
P968452/72	SCBA Conv. Kit
961194	Large Nose Cup Kit, Classic Facepiece
962266	Large Nose Cup Kit, TwentyTwenty Facepiece and TwentyTwenty Plus Facepiece
962264	Small Nose Cup Kit, TwentyTwenty Facepiece and TwentyTwenty Plus Facepiece
962265	Medium Nose Cup Kit, TwentyTwenty Facepiece and TwentyTwenty Plus Facepiece
430000	Welding Shield, Classic Facepiece
430005	Lower Welding Bib, Classic Facepiece
430010	Upper Welding Bib, Classic Facepiece

962244	AIR KLIC Removal Tool, TwentyTwenty Facepiece
962900	APR Adapter/Qualitative Fit Test Adapter
962920	Quantitative Fit Test Adapter (For Use with 962900)

NOTE

The respirator and the 9308 series hose assemblies are supplied without quick couplers. The desired quick coupler assemblies must be purchased separately. Instructions for assembling quick couplers and hoses are provided below in paragraph V, B, "Quick Coupler Assembly."

V. USE INSTRUCTIONS

A. Air Supply



WARNING

- Compressors, storage cylinders, valves, regulators, fittings, and other hardware must be large enough to deliver the air volume required by all users at peak demand.
- You are responsible for air quality and compliance with safety and health codes applicable to your area.
- Air hose length is limited to 300 feet (91.4 meters), using no more than three lengths of hose.
- The NIOSH approval applies only when supplied with 80 to 125 psig air pressure through 10 to 300 feet of approved SURVIVAIR air line hose lengths.
- Do not mix hose types or coupler assemblies.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Ensure that the air supply is Type 1, Grade D, or better, as described in the Compressed Gas Association Commodity Specification for Air, G-7.1. Moisture content, expressed as dewpoint, shall be maintained at -65°F (-53.9°C) or lower, or less than 24.0 ppm by volume.

2. Set relief valves at a maximum pressure of 150 psig (1.03 MPa).

B. Quick Coupler Assembly

A male coupler from one of the air line coupler kits listed in the parts list, paragraph IV, must be assembled to the open end of the respirator hose. This operation requires a torque wrench.

⚠ WARNING

Carefully inspect and clean all threads to remove foreign material. Foreign material entering the air line can restrict or block air flow to the user. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Respirator Hose

- a. Remove the shipping cap plug from the respirator hose.
- b. Hold the female threaded fitting with a wrench or vise.
- c. Apply thread sealant completely around the male threads of the coupler.

⚠ WARNING

Do not allow the thread sealant to extend past the last thread of the coupler. Thread sealant that extends past the coupler threads can restrict or block air flow to the user. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

- d. Thread the male coupling into the female fitting on the respirator hose. Torque to 90 ±5 in-lb.
- e. Pressurize and check for leaks with a bubble-type leak detector.
- f. If leaks are detected, disassemble and repeat steps a through e.
- g. If the leaks persist, remove the hose from service and have repairs made by a SURVIVAIR-certified technician.

2. Air Supply Hose - Each length of hose is equipped with a 1/4 inch female NPT swivel nut at each end and a male-to-male 1/4 inch NPT adapter. The male-to-male adapter may be used to connect two lengths of hose or connect the hose to the air supply. Four approved methods of connecting hose lengths and air supply are illustrated in Figure 2.

3. When assembling the quick disconnect fittings of the coupler or the male-to-male adapters to the hose, verify that the hose gaskets are in place and torque to 90 ±5 in-lb. Thread sealant is not required.

4. The air supply connection using the 1/4 inch male-to-male adapter illustrated in Method 2 is also approved for use with Methods 3 and 4.

- a. Method 1 is preferred when only one length of hose is required, since it allows the hose to be disconnected from the air supply.
- b. Method 3 is preferred when multiple lengths of hose (maximum of three) are required, elimi-

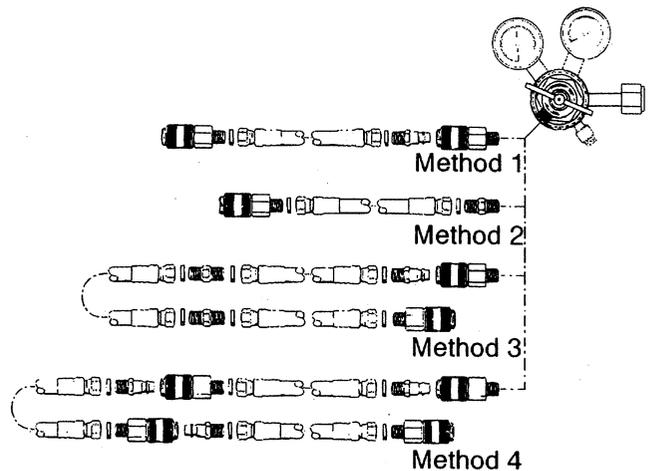


Figure 2. Hose Connections

nating the cost of quick-disconnect couplers at the hose junctions.

5. Pressurize and check for leaks with a bubble-type leak detector. If leaks are detected:
 - a. Disassemble and repeat steps 3 through 5.
 - b. If the leaks persist, remove the hose from service and have repairs made by a SURVIVAIR-certified technician.

⚠ WARNING

Always verify that the swivel nut gaskets are in place and undamaged before assembly. Missing or damaged swivel nut gaskets may allow contaminants to leak into the system causing illness or death.

C. Donning

⚠ WARNING

- Always don, remove, and fit check the respirator in a safe, uncontaminated area.
- The regulator must be attached to the Panther HIP-PAC air cylinder before connecting the air line hose to the air supply. Using the supplied air line without the regulator being attached to the cylinder could result in loss of air, causing illness or death.
- Verify that the air cylinder valve is turned off before connecting to the air supply. Using the Panther HIP-PAC with the air cylinder turned on while connected to the air supply will cause loss of air in the cylinder, resulting in reduced escape time in case of an emergency.

▲ WARNING—Continued

- Always disengage the regulator from the facepiece and return it to the waist belt-mounted receiver when not in use. This will prevent contaminants from entering the regulator outlet port. Dirt, dust, and water may enter the regulator, causing it to malfunction.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Verify that the air cylinder valve is turned off.
2. Verify that the bypass is in the OFF position and that the cylinder gauge reads full.
3. Depress the shutoff button on the second stage regulator.
4. Ensure that the waist belt and hip pad are properly positioned on the tank mounting bracket.
5. Ensure that the regulator receiver is attached to the waist belt just behind the snap hook.
6. Ensure that the waist belt is laced properly through the D-ring slide and the snap hook.
7. Unhook the shoulder strap from the D-ring. Open the shoulder strap to its maximum position. Place the shoulder strap over the left shoulder and position the shoulder pad on the top of the left shoulder. Attach the shoulder strap to the D-ring. Adjust the shoulder strap to raise the cylinder, and to raise the waist belt into position around the waist.
8. Position the cylinder so that the cylinder is located slightly behind the right hip, latch the belt buckle, and adjust both the waist and shoulder straps (if used) for comfort. Pull the D-ring end of the waist strap to tighten.
9. Insert the second stage regulator into the regulator receiver on the waist belt.
10. Connect the air line hose to the remote air supply.

NOTE

When using Hansen or Foster fittings, always ensure that the locking sleeves are rotated to the locked position.

11. Tighten the AIR KLIC on the facepiece by turning it clockwise.
12. Verify that the AIR KLIC is secured by trying to turn it counterclockwise.

▲ WARNING

The AIR KLIC must be held securely in the nozzle by the ratchet-and-pawl mechanism. If it is necessary to use a respirator that has been stored at a temperature below freezing (32°F or 0°C) prior to using, then **DO NOT** exhale into the facepiece until the facepiece has been properly donned with the nose cup situated properly on the face and the regulator installed and activated. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

13. There are two methods, depending upon which head harness is used, to secure the TwentyTwenty® Plus facepiece to the user. Both methods are described below.

- a. Standard silicone headstrap:
 - i. Fully loosen the headstraps.
 - ii. If your SCBA is equipped with a neck strap, place the neck strap over your head.
 - iii. Grasp the lower headstraps as shown in Figure 3.



Figure 3. Grasp Lower Headstraps

- iv. Place your chin in the chin cup and pull the straps over your head.
- v. Center the facepiece and flatten the headstrap hub on the back of your head.
- vi. Tighten the two lower straps. Do not overtighten.
- vii. Tighten the temple straps (Figure 4), then the top strap, until all the headstraps lay flat on your head.
- viii. Perform a leak check as described below.

NOTE

When properly adjusted, the headstrap hub should be centered on the back of your head, and the lower straps should be below your ears. Make sure that your chin is properly recessed in the chin cup.

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Figure 4. Tighten Upper Straps

b. Optional Headnet™

i. Inspection

Ensure that the locking fabric strap located at the top of the facepiece is fully inserted into its slot in the rim and that the locking flap prevents the strap from pulling out of the slot.

ii. Place your chin in the chin cup, pull the elastic adjustment strap over your head, and tighten by pulling evenly on the upper and lower straps. See Figure 5.



Figure 5. Adjust Headnet

iii. Center the facepiece and flatten the Headnet with a wiping motion toward the back of your head.

iv. Retighten the elastic adjustment straps. Do not overtighten.

v. Perform a leak check as described below.

NOTE

When properly adjusted, the headnet should be centered on the back of your head, and the lower straps should be below your ears.

Hood-Style Facepiece



WARNING

The wearer must assure that the neck seal is not compromised by hair or clothing when in use. Failure to comply with this warning may lead to serious personal injury, serious illness, or death.

- Fully loosen the suspension straps.
- Grasp the hood-style facepiece by the neck seal and pull the neck seal over your head.
- Position the nose cup on your face, then simultaneously tighten the two suspension straps.

D. Fit Check



WARNING

- Conduct fit checks only in a safe, uncontaminated environment.
- Do not use this respirator in a contaminated atmosphere if you do not obtain a satisfactory seal during the fit check. If a seal was not obtained, reposition the facepiece, check the straps, and perform the fit check again. Failure to obtain a satisfactory seal could allow contaminants to leak into the facepiece, causing illness or death. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Place the palm of your hand over the AIR KLIC as shown in Figure 6.



Figure 6. Fit Check

2. Inhale and hold your breath for a few seconds. The facepiece should collapse on your face without leaking.
3. If the facepiece leaks, reposition, check the straps, and repeat the fit check.

- When a satisfactory fit is obtained, verify that the respirator hose is connected to the air line hose and the air line hose is connected to an air source set for the correct pressure.
- Remove the second stage regulator from the waist strap regulator holder by pressing the two release buttons.

 WARNING
<p>Always close the regulator receiver cover to prevent contaminants from collecting in the receiver. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.</p>

NOTE

The second stage regulator release buttons must be pressed simultaneously to remove the regulator from the holder.

- Insert the regulator into the AIR KLIC on the facepiece and press firmly until you hear both release buttons snap into place.

NOTE

- A CLICK will be heard when each AIR KLIC button is properly engaged.
- Do not press the release buttons when installing the regulator.

 WARNING
<p>Rotate and tug the regulator to ensure that both release buttons are properly engaged in the AIR KLIC. Do not push the release buttons while verifying the engagement of the regulator. Do not press the release buttons unless you intend to remove the regulator from the facepiece. Pressing both release buttons during or after installation onto the facepiece could result in inadvertent regulator disengagement, causing serious injury or death.</p>

- Take a sharp, deep breath to activate the regulator.
- Take several breaths to check the flow of air.
- Press the black rubber override button on the second stage regulator to ensure that it is operating properly.
- Quickly open and close the bypass valve to ensure that it is operating properly.
- The Panther HIP-PAC is now ready for use.

 WARNING
<ul style="list-style-type: none">Entry into hazardous atmospheres with the Panther HIP-PAC must be done while connected to the air line. Do not use the escape cylinder air supply for entry.Ensure that the escape cylinder is full.The Panther HIP-PAC has a rated service time of 10 minutes. Under average conditions, you will have up to 10 minutes in which to escape from a toxic environment. Stress and exertion may consume extra air and reduce service time. Know escape routes in advance and the time required to travel them.Always follow established safety procedures when exposed to atmospheres that are hazardous or immediately dangerous to life or health.Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

E. Emergency Exit

- If the air line supply is cut off while the user is in a hazardous atmosphere, turn the cylinder valve of the Panther HIP-PAC counterclockwise at least one full turn to start the flow of air from the cylinder.
- If required for escape, disconnect the air line hose from the Panther HIP-PAC respirator hose.
- Proceed immediately to fresh air.
- When in a safe environment, remove the facepiece and turn the cylinder valve clockwise to shut off air from the cylinder.

F. Emergency Operation

- PROBLEM:** Restricted or interrupted air flow
 - Open the bypass valve by turning the red knob on the second stage regulator counterclockwise until the desired constant air flow is achieved.

 WARNING
<p>Activating the bypass valve rapidly depletes your air supply. Immediately exit to a safe area. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.</p>

- IMMEDIATELY** exit to a safe area.
- Have the HIP-PAC inspected and/or repaired by a certified repair technician before reuse.

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2. PROBLEM: First-Breath-On failure
 - a. Press the black rubber manual override button on the front of the regulator to start air flow.
 - b. IMMEDIATELY exit to a safe area.
 - c. Have the second stage regulator inspected and/or repaired by a certified repair technician before reuse.
3. PROBLEM: Free flow
 - a. If the regulator will not shut off (free flows) during extremely heavy breathing, exhale forcefully. The regulator should return to normal flow.
 - b. If the free flow continues, open and close the bypass once, or depress the manual override button once.
 - c. If the problem persists, IMMEDIATELY exit to a safe area.
 - d. Have the HIP-PAC inspected and/or repaired by a SURVIVAIR-certified repair technician before reuse.

G. Optional Auxiliary Coupler

WARNING

- Buddy breathing is a life saving operation. The potential dangers of using this method of emergency egress cannot be overemphasized. These dangers include, but are not limited to: both users running out of air, both users falling, one user panicking, loss of positive pressure in the HIP-PAC, etc. It is to be used only for last ditch emergency egress, and not to extend the available time in oxygen deficient or toxic atmospheres.
- A training program must be implemented by the authority having jurisdiction over the HIP-PAC training program. This training must include, as a minimum, actual practice with the auxiliary coupler system while under simulated conditions expected during use of the HIP-PAC. These conditions would include, but not be limited to: darkness, smoke, heat, cold, dust, moisture, etc. All training programs should follow the guidelines of the National Fire Protection Association Standard 1404, Fire Department Self-Contained Breathing Apparatus Program, latest edition.
- Use of the auxiliary coupler reduces the service time of the active breathing apparatus. Consequently, the NIOSH certification on the apparatus is void when buddy breathing is initiated.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Communicate your need for assistance to your buddy.
2. Remove the dust cap from the female coupler on your buddy's auxiliary coupler.
3. Disconnect your second stage regulator inlet hose from the female coupler of your HIP-PAC.

WARNING

Air supply will stop when the hose is disconnected. HOLD YOUR BREATH. Inhalation with a disconnected hose may cause hazardous substances to be inspired or ingested, causing serious personal injury, serious illness, or death.

NOTE

There will be resistance to coupling the male adapter to the female coupler because of the pressure in the hose line.

4. Using both hands, carefully insert the male adapter of your hose into your buddy's spare female coupler. Push slowly and firmly to make the connection.
5. Immediately escape to a safe location.

H. Doffing

WARNING

- Follow all appropriate decontamination procedures before doffing the Panther HIP-PAC.
- Doff the Panther HIP-PAC only in a safe area.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Press the second stage regulator shutoff button.
2. Press the two release buttons and remove the regulator from the facepiece.

WARNING

Always disengage the regulator from the facepiece and return it to the waist belt-mounted receiver when not in use. This will prevent contaminants from entering the regulator outlet port. Dirt and dust may enter the regulator, causing it to malfunction. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

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3. Disconnect from the remote air source, or close the cylinder valve.
4. Press the override button on the second stage regulator to vent air from the Panther HIP-PAC.
5. Push the second stage regulator into the waist strap-mounted regulator holder until it clicks.
6. Place your thumbs under the headstrap buckles, loosen the lower straps, and remove the facepiece.
7. Unsnap the waist strap buckle and remove the Panther HIP-PAC.
8. Prepare the Panther HIP-PAC for storage.

VI. MAINTENANCE



WARNING

Specialized processes are required to disinfect and decontaminate a respirator. You **MUST** follow the instructions of the manufacturer who supplies the disinfecting or decontamination equipment or chemicals. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

CAUTION

- DO NOT clean the facepiece with the regulator attached.
- You must ensure that this respirator is not damaged when using disinfecting or decontamination equipment or chemicals.
- The facepiece lens can be scratched through careless or abusive handling. DO NOT use abrasive cleaners or pads. DO NOT towel dry.

NOTE

Inspect the Panther HIP-PAC for defects before and after each use, and at least once monthly if not used. Repair as necessary, clean and disinfect after each use, and store properly to assure that the Panther HIP-PAC is maintained in satisfactory working condition. Keep a record of inspection and repair dates and results. Refer to the inspection table in the back of this manual.

A. Facepiece Cleaning

NOTE

Silicone and rubber parts of the facepiece may be cleaned between washings with SURVIVAIR Mask Wipes, P/N 140096.

1. Make a cleaning solution of warm water and a mild detergent.

2. Fully immerse the facepiece in the solution.
3. Agitate the facepiece and gently clean with a soft brush.
4. Thoroughly rinse the facepiece in fresh water, paying particular attention to removal of all soap residue from the exhalation valve. If possible, direct running water onto the exhalation valve.
5. Allow the facepiece to drip dry. Warm air may be used to speed up drying.

NOTE

Repeated cleaning may require reapplication of anti-fog coating to the facepiece lens. Use only SURVIVAIR Anti-Fog Solution, P/N 951015 (1 oz.), or P/N 951016 (16 oz.).

6. After cleaning, three drops of anti-fog solution may be applied to the inner surface of the lens with a lint-free cloth. Allow the coating to dry for 15 minutes before using the facepiece.
7. Hold the facepiece firmly against your face and exhale several times to ensure that the exhalation valve functions smoothly.

Hood-Style Facepiece Cleaning



WARNING

After each use and/or cleaning and disinfecting, anti-fog solution (SURVIVAIR P/N 951015, 951016, or 981805) must be applied to the inside of the lens. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Make a cleaning solution of warm (120°F or 48°C maximum) water and a mild detergent.
2. Immerse the hood-style facepiece in the solution until the exhalation valve is covered.
3. Agitate the hood-style facepiece and gently clean with a soft brush.
4. Thoroughly rinse the hood-style facepiece in fresh water, paying particular attention to removal of all soap residue from the exhalation valve. If possible, direct running water onto the exhalation valve.
5. Disinfect the hood-style facepiece using one of the following sanitizing products: ARI Sanitizer Deodorizer—ARI, Orchard Hill, GA; Lysol Disinfectant; or Simple Green All Purpose Cleaner.
6. Allow the hood-style facepiece to drip dry. Warm air may be used to speed up drying.

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7. Hold the hood-style facepiece inner mask firmly against your face and exhale several times to ensure that the exhalation valve functions smoothly.

8. After cleaning and disinfecting the hood-style facepiece, liberally apply SURVIVAIR anti-fog solution (SURVIVAIR P/N 951015, 951016, or 981805) to the inside of the lens, and allow it to dry thoroughly.

B. Second Stage Regulator Cleaning

WARNING

- Do not allow water or cleaning solutions to enter the breathing system or the regulator. Dirt, dust, or soap residue could degrade regulator performance causing it to fail, possibly resulting in injury or death.
- Do not submerge the regulator in water or cleaning solutions. It may be partially submerged only as instructed in step 6 below.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

NOTE

- Always hold the regulator with the outlet facing downward during washing and rinsing.
- The Protective Cleaning Cap, P/N 873004, may be used to seal the Panther second stage regulator to prevent contaminants from entering the regulator outlet. See Figure 7.

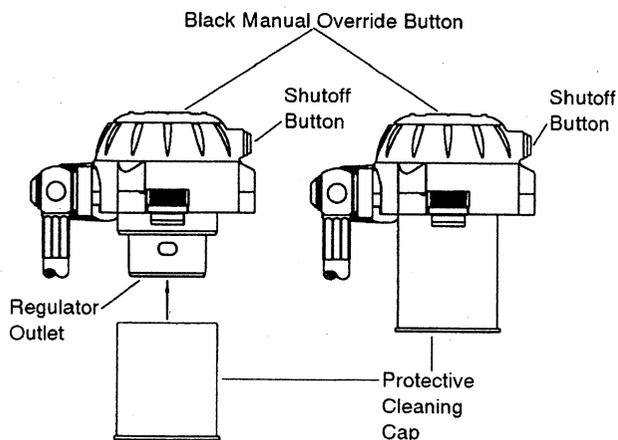


Figure 7. Protective Cleaning Cap

1. Make a cleaning solution of warm water and a mild detergent.

2. Have a bucket of fresh water available for rinsing.

3. With the regulator facing downward, clean the exterior surfaces and the interior of the outlet tube with a soft brush.

4. With the regulator facing downward, immediately rinse the exterior surfaces and the interior of the outlet tube with fresh water. Scrub excess soap away with the brush.

5. Dry with a clean cloth or with low pressure (15 psig maximum) clean (breathing grade) air.

6. If dirt or debris interferes with the First-Breath-On mechanism, clean it as follows:

- a. Lift the edge of the rubber manual override button with a small, flat-blade screwdriver, and peel it off.
- b. Place the protective cap over the outlet tube.
- c. Hold the regulator with the cover facing downward and rinse in a shallow bucket of fresh water.
- d. Allow the water to drain, and dry with low pressure air (15 psig maximum).
- e. Replace the manual override button.

C. Exterior Surfaces Cleaning

CAUTION

The hoses, backpack harness, frame, and cylinder and valve assembly may be cleaned with a damp cloth or a mild soap and warm water solution. Rinse thoroughly and air dry or wipe with a clean cloth.

D. Inspection (see page 15)

E. Repair (see page 16)

WARNING

Before disassembly, make sure that all air is bled from the lines. Shut off or deplete the air supply to prevent equipment damage or personal injury. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

CAUTION

User repair of the Panther HIP-PAC is limited to replacement of components listed on the NIOSH approval label and repairs described in this section. Disassembly should be performed only to the extent necessary to replace the components. To protect your warranty and the NIOSH certification on the equipment, all other repairs must be done only by

CAUTION—Continued

SURVIVAIR-certified technicians. If there are none at your facility, consult your SURVIVAIR distributor for the repair facility nearest you.

NOTE

All SURVIVAIR-certified Technicians are required to remain current on new procedures and parts through SURVIVAIR's published Technical Bulletins, technical manual revisions, and certification seminars.

F. Functional Testing (see page 18)

Perform functional tests after cleaning or repair. After testing, fill the cylinder and store the Panther HIP-PAC.

G. Cylinder Maintenance and Recharging

▲ WARNING

- You must read and understand all warnings and instructions provided on the cylinder DOT warning label and in instruction manuals before using the cylinder/valve assembly.
- Only trained personnel may store, fill, service, maintain, handle, use, or dispose of cylinders used with this HIP-PAC. Follow the guidelines of the Compressed Gas Association (CGA) pamphlets P-1, C-1, C-2, C-6, C-6.1, C-6.2, G-7, and G-7.1, as appropriate. Always follow established safety precautions when recharging cylinders.
- Do not alter cylinders used with this HIP-PAC.
- Fill only to the stamped service pressure. Do not overfill.
- Do not fill a leaking cylinder. Depressurize immediately.
- Do not tamper with the safety pressure relief device. Rapid depressurization when the safety pressure relief device activates will cause excessive noise. During rapid depressurization, cylinders may become ballistic and cause injury. Stay clear of cylinders when the safety relief device is activated.
- Do not fill the cylinder if unraveling or charring of composite fibers occurs.
- Do not fill or use the cylinder if you have any doubt about its suitability for recharge. Return it to a certified hydrostatic test facility.
- Do not expose cylinders used with this HIP-PAC to open flame or heat sources which may heat the cylinder to 350°F. Cylinders damaged by fire or heated to 350°F must be destroyed.

▲ WARNING—Continued

- Repainted or refinished cylinders must be hydrostatically tested before reuse.
- Do not fill a composite cylinder if it is not marked as being hydrostatically tested within three (3) years. Do not fill an aluminum cylinder if it is not marked as being hydrostatically tested within five (5) years.
- Do not fill or use composite cylinders older than 15 years. Depressurize and destroy these cylinders.
- Inspect cylinders before each filling. Remove cylinders from service which have cuts, gouges, dings, bulges, corrosion, etc. A special internal and external visual inspection of cylinders must be completed at least every hydrostatic test. Follow the guidelines of CGA 6.2.
- Do not fill with oxygen.
- Do not use caustic paint strippers or corrosive cleaners.
- Do not remove, obscure, or alter any labels on HIP-PAC cylinders.
- Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

1. Inspection

After each use and prior to recharging, each air cylinder shall be subjected to a thorough visual inspection:

▲ WARNING

Do not fill any cylinders that are damaged, you suspect may be damaged or unsafe, or are out of conformance with applicable hydrostatic test dates. Damaged cylinders must be inspected by an approved hydrostatic test facility and repaired as required before being filled. Failure to comply with this Warning may lead to serious personal injury, serious illness, or death.

a. Aluminum Cylinders

Ensure that no more than five years have elapsed since the last hydrostatic test has been performed, as indicated by the most recent date stamped into the cylinder shoulder. Inspect the exterior of the cylinder for dents, gouges, or rusted areas, and evidence of exposure to high temperature such as darkened or blistered paint, charred decals, melted or distorted gauge lens, etc.

b. Composite Cylinders

Ensure that no more than three years have elapsed since the last hydrostatic test has been performed, and that the cylinder is less than 15

years old. Inspect the exterior of the cylinder for dents, gouges, or cuts which have penetrated and caused separation or unraveling of the composite overwrap. Watch for evidence of exposure to high temperature, such as darkened or blistered paint, charred overwrap or decals, melted or distorted gauge lens, etc.

c. Cylinder Valve

The cylinder valve should also be examined for obvious external damage such as a deformed handwheel, inaccurate or inoperative pressure indicator, damaged threads on the outlet connection, or other evidence of impact or exposure to extreme heat. If internal contamination is suspected, remove the cylinder valve and inspect the interior of the cylinder. The cylinder valve overhaul cycle should be as follows. For steel or all aluminum cylinders, overhaul the valve at every hydrostatic retest (5 year cycle). For composite cylinders, overhaul the valve at every other hydrostatic retest (6 year cycle).

d. Additional Information

i. Additional information on cylinder inspection and maintenance can be found in CGA pamphlet C-6, "Standards for Visual Inspection of Compressed Gas Cylinders," CGA pamphlet C-6.1, "Visual Inspection of High Pressure Aluminum Cylinders," or CGA pamphlet C-6.2, "Guidelines for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders," available from the Compressed Gas Association, Inc. If there is any doubt about the suitability of a cylinder to recharge, it should be returned to a certified hydrostatic retest facility for expert examination and retesting.

ii. A comprehensive listing of all licensed hydrostatic test stations is available from the Department of Transportation.

2. Filling Procedure

a. Air Purity

Unless safety and health codes in your area specify otherwise, air cylinders should be refilled with compressed air meeting the purity requirements for Type 1, Grade D Gaseous Air as specified by the Compressed Gas Association Commodity Specification for Air, publication G-7.1. The moisture content, expressed as dewpoint, shall be maintained at -65°F (-53.9°C) or lower, or less than 24.0 ppm by volume moisture content. **UNDER NO CIRCUMSTANCES SHALL AN AIR CYLINDER BE FILLED OR PARTIALLY FILLED WITH OXYGEN.**

b. Maximum Fill Pressure

Determine the service pressure of the cylinder prior to filling. Composite and aluminum cylinders may be filled **only** to the service pressure indicated on the cylinder label. Composite and aluminum cylinders must **never** be filled to a

pressure greater than the marked service pressure.

c. Filling Procedure

i. The fill station must be constructed and equipped in accordance with applicable state industrial safety codes.

ii. The cylinder may be partially immersed (DO **NOT** submerge the cylinder valve) in a water bath to minimize the temperature rise that occurs as the cylinder is filled. The fill hose should be equipped with a restraining cable to prevent uncontrolled "whipping" in case of hose failure.

iii. After connecting the fill hose, open the cylinder valve fully. A separate metering valve must be used to control the fill rate. Fill the cylinder slowly, at a rate not exceeding 500 psig per minute. (Use caution if faster recharging rates are used.) After the initial filling, allow the cylinder to cool to room temperature, then "top off" the cylinder to achieve full service pressure.

iv. Use particular care to ensure that an air cylinder is never connected to a source capable of supplying air at a pressure greater than the maximum service pressure of that cylinder.

v. Close the cylinder valve when the cylinder is full.

vi. Slowly bleed pressure from the filling lines.

vii. Disconnect the filling line.

viii. Let the cylinder cool and check the gauge reading. Top off if necessary.

d. Storage

Air cylinders should be recharged as soon as practical after use. Cylinders should not be stored partially charged, for two reasons:

i. If used without recharge, the service duration of the apparatus is reduced.

ii. The safety relief device is designed specifically to protect a fully charged cylinder from the effects of a fire.

For maximum safety, the cylinders should be stored fully charged.

If the cylinder is stored empty and the valve is inadvertently left open, humid atmospheric air may enter the cylinder and result in interior corrosion.

If a HIP-PAC is to be maintained in "standby" mode, i.e., available for immediate emergency usage, the cylinder pressure gauge should be checked at least once a month to assure that the cylinder is charged to full service pressure. Place the cylinder in a suitable safety sleeve or filling area.

H. Storage

Inspect, clean, and repair as required before storing.

1. Firmly hand tighten the first stage regulator to a fully charged air cylinder.

2. Secure the air cylinder to the waist belt.

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3. Check that the bypass is closed.
4. Press the override button on the second stage regulator.
5. Fully loosen the facepiece lower headstraps; adjust the top headstraps so that approximately one inch protrudes through the buckles.
6. Place the facepiece in a plastic mask bag.
7. Store away from dust, sunlight, extremes of heat and cold, excessive moisture, or damaging chemicals.

I. Overhaul Frequency

1. Each year the Panther HIP-PAC must be cleaned, the in-line filter must be changed (kit P/N 968462), and the HIP-PAC must pass a performance flow test.
2. Overhaul must be performed at least every six years, even with infrequent use. Panther HIP-PACs subjected to severe service such as heavy use, extreme temperatures, or exposure to chemicals require more frequent servicing.

J. Additional Information

If you need assistance or additional information on any SURVIVAIR product, consult your local distributor or contact:

SURVIVAIR
A Bacou-Dalloz Company
3001 South Susan Street
Santa Ana, CA 92704
(714) 545-0410 or (800) 821-7236
FAX (800) 201-4407

ALL RETURNED PRODUCTS MUST BE DECONTAMINATED PRIOR TO SHIPMENT. PRODUCTS CONTAMINATED WITH DANGEROUS SUBSTANCES WILL BE REFUSED AND RETURNED FREIGHT COLLECT.

VII. WARRANTY AND LIMITATION OF LIABILITY

LIMITED WARRANTY: SURVIVAIR® warrants this product to be free from defects in materials and workmanship for 12 years from the date of purchase. During this period, SURVIVAIR will repair or replace defective parts, at SURVIVAIR's option. Freight charges to and from the SURVIVAIR factory shall be paid by the purchaser.

EXCLUSIONS: NOTWITHSTANDING ANY CONTRARY TERM IN THE PURCHASER'S PURCHASE ORDER OR OTHERWISE, THE ONLY WARRANTY EXTENDED BY SURVIVAIR IS THE EXPRESSED LIMITED WARRANTY DEFINED ABOVE. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.

CONDITIONS: To maintain this warranty this product must be used, maintained, and inspected as prescribed in the owner's instruction manual, including prompt replacement or repair of defective parts and such other necessary maintenance and repair as may be required. Normal wear and tear, and parts damaged by abuse, misuse, negligence, or accidents are specifically excluded from this warranty.

LIMITATION OF LIABILITY: No other oral warranties, representations, or guarantees of any kind have been made by SURVIVAIR, its distributors, or the agents of either of them, that in any way alter the terms of this warranty. EXCEPT AS HEREIN PROVIDED, SURVIVAIR SHALL HAVE NO LIABILITY FOR ANY LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL, TO ANY PURCHASER OR USER OF THIS PRODUCT ARISING FROM THE SALE, USE, OR OPERATION OF THIS PRODUCT.

WARNING

The failure to use and maintain this equipment in strict conformance with the applicable instruction manual may result in serious personal injury, serious illness, or death. The equipment's use in any manner that is not expressly authorized pursuant to the applicable instruction manual may result in severe adverse impacts to human health.

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VIII. INSPECTION TABLE

IF ANY OF THE DEFECTS LISTED BELOW ARE FOUND, HAVE THE PANTHER HIP-PAC REPAIRED BEFORE USE.

COMPONENT	LOOK FOR
FACEPIECE LENS	<ol style="list-style-type: none"> 1. Nicks, scratches, or abrasions which could impair visibility. 2. Deep gouges or cracks which could reduce impact resistance. 3. Anti-fog coating in need of replacement.
FACEPIECE RIMS	<ol style="list-style-type: none"> 1. Deformed, cracked, or broken rims. 2. Loose rim screws. (Do not overtighten.)
FACEPIECE SKIRT	<ol style="list-style-type: none"> 1. Cuts, gouges, or punctures. 2. Tears or nicks in the sealing area. 3. Deterioration from age, heat, or contamination.
FACEPIECE HEADSTRAP, BUCKLE STRAPS (TWENTYTWO)	<ol style="list-style-type: none"> 1. Abrasions or nicks. 2. Deterioration from age, heat, or contamination.
FACEPIECE BUCKLES (CLASSIC FACEPIECE)▲	<ol style="list-style-type: none"> 1. Crushed, bent, or corroded. ▲2. Damaged or loose rivets.
FACEPIECE INLET NOZZLE (CLASSIC FACEPIECE)▲	<ol style="list-style-type: none"> ▲1. Loose nozzle cover screws. 2. Heat damage to the nozzle body and cover. 3. AIR KLIC not seated and locking pawl not engaged. 4. Dirt and debris in the exhalation module. 5. Exhalation valve sticking closed. (Exhale a few times to test.) 6. Exhalation valve sticking open under positive pressure. (Test with regulator.) 7. Damaged exhalation valve seat.
SECOND STAGE REGULATOR AND HOSE	<ol style="list-style-type: none"> 1. Cracks or heat damage to housing or cover. 2. Faulty operation of bypass valve, First-Breath-On, AIR KLIC, or override buttons. 3. Dirt and debris in the outlet port; screen and grill cracked. 4. Hose or fittings corroded, cracked, or leaking. 5. Sticking release and shutoff buttons.
FIRST STAGE REGULATOR	<ol style="list-style-type: none"> 1. Hose and fittings corroded, cracked, or leaking. 2. Abrasion of hose. 3. Damaged female threads on CGA handwheel. 4. Damaged o-ring or groove on CGA nipple. 5. Loose inlet nipple. 6. Missing o-ring. 7. Loose retaining rings on hose connectors. 8. Dents or damage to housing.
AIR CYLINDER AND VALVE	<ol style="list-style-type: none"> 1. Dents, gouges, blisters, or cuts. 2. External damage to cylinder valve. 3. Smooth operation of valve handwheel. 4. Damaged threads on valve outlet. 5. Cylinder pressure gauge lens scratched; pointer deformed or stuck. 6. Gauge reading incorrectly. 7. Hydrostatic test date within five years for aluminum cylinders and three years for fiberglass composite cylinders.
AIR LINE HOSES/RESPIRATOR HOSE	<ol style="list-style-type: none"> 1. Hose or fittings corroded, cracked, or leaking. 2. Abrasion of hose. 3. Loose connectors and quick couplers. 4. Swivel nut gaskets damaged or missing.
HARNESS	<ol style="list-style-type: none"> 1. Webbing color change; excessive wear or fraying; cuts, nicks, or broken stitching. 2. Buckles damaged or corroded. 3. Loose hardware. 4. Legibility of NIOSH label.

NOTE

• Inspection guidelines for cylinders are prescribed in pamphlets C-6, C-6.1, and C-6.2 of the Compressed Gas Association. These pamphlets may be obtained from the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202.

• If there are any items not listed above that appear to be defective, have the HIP-PAC repaired before use.

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IX. REPAIR TABLE

COMPONENT	INSTRUCTIONS
HEADSTRAP REPLACEMENT	<ol style="list-style-type: none"> 1. Remove the old headstraps. 2. Install new headstraps.
EXHALATION MODULE (CLASSIC FACEPIECE)▲ (TWENTYTWENTY FACEPIECE)★ (TWENTYTWENTY PLUS FACEPIECE)◆	<ol style="list-style-type: none"> ▲1. Turn the exhalation module counterclockwise to remove it from the facepiece. ▲2. Carefully pull each leg of the spring retainer until it separates from the exhalation valve housing. ▲3. Remove the spring retainer. ▲4. Remove the large coil spring. ▲5. Remove the diaphragm plate. ▲6. Remove and inspect the exhalation diaphragm. ▲7. Clean or replace the exhalation diaphragm and seat. ▲8. Insert the diaphragm square peg into the exhalation valve seat, ensuring that the exhalation damping spring rests in tension on a flat side of the square peg. ▲9. Position the diaphragm plate, large coil spring, and retainer on the diaphragm and snap the three legs of the retainer into place on the housing. ▲10. Reinstall the exhalation module in the facepiece. CAUTION—Do not cross-thread and do not overtighten. ★11. Remove the valve cover. ★12. Remove the retainer/spring/valve assembly from the facepiece. ★13. Disassemble the retainer/spring/valve assembly. ★14. Clean or replace the valve, stem, spring, retainer, or valve seat. ★15. Reassemble the retainer/spring/valve assembly, ensuring the valve diaphragm is correctly positioned on the valve stem and spring. ★16. Insert the valve stem into the nozzle. ★17. Snap the retainer into the nozzle, ensuring the spring is rotated only 45° clockwise. ★18. Replace the valve cover. ◆19. Remove the nozzle cover by pressing the ratchet ring with a finger and unscrewing the AIR KLIC. ◆20. Remove the valve assembly by squeezing the legs of the spring retainer. ◆21. Clean or replace the valve assembly. ◆22. Replace the valve assembly by guiding the valve stem into the opening in the nozzle, ensuring that the exhalation damping spring rests in tension on a flat side of the square peg. ◆23. Insert the spring retainer legs into the openings on the nozzle. ◆24. Reassemble the nozzle cover and AIR KLIC. 25. Fit the facepiece over your face and cycle the exhalation valve by blocking the AIR KLIC opening with your palm and exhaling several times. 26. Perform a leak check as described in OPERATION INSTRUCTIONS, or conduct a facepiece leak test on the SURVIVAIR Portable Test Console.
NOSE CUP (CLASSIC FACEPIECE)▲ (TWENTYTWENTY FACEPIECE)★ (TWENTYTWENTY PLUS FACEPIECE)★	<ol style="list-style-type: none"> ▲1. Unscrew and remove the exhalation module. ▲2. Remove the speaking diaphragm with the speaking diaphragm tool, P/N 980019. 3. Gently remove the nose cup from the facepiece. 4. Inspect, clean, or replace the nose cup. ▲5. Align the holes in the nose cup and the nozzle, and start the threads of both the speaking diaphragm and exhalation module. ▲6. Fully tighten both the speaking diaphragm and the exhalation module. ★7. Replace the nose cup on the nozzle, aligning the slot on the nose cup with the tab on top of the nozzle.
FACEPIECE LENS REPLACEMENT (CLASSIC FACEPIECE)▲ (TWENTYTWENTY FACEPIECE)★ (TWENTYTWENTY PLUS FACEPIECE)◆	<ol style="list-style-type: none"> 1. Use a 5/32 inch Allen wrench to remove the rim nuts and screws. 2. Gently separate the rims from the facepiece. 3. Pull the silicone skirt away from the lens. ▲4. Remove the old lens. ▲5. Match one corner of the new lens with a corner of the skirt. ▲6. Place the lens edge inside the lens channel of the skirt. ▲7. Knead the skirt until the silicone fits evenly around the lens edge, and the corners of the skirt match the corners of the lens. ★8. Remove the valve cover. ★9. Remove the retainer/spring/valve assembly. ★10. Remove the nose cup. ★11. Using AIR KLIC removal tool P/N 962244, remove the AIR KLIC by depressing the ratchet ring with the tool and unscrewing the AIR KLIC. ★12. Remove the nozzle cover. ★13. Remove the nozzle. ★14. Place the nozzle into the new lens. ★15. Place the nozzle cover on the lens. ★16. Install the AIR KLIC, tightening until the nozzle, lens, and cover are secure. ★17. Install the nose cup.

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<p>FACEPIECE LENS REPLACEMENT (CLASSIC FACEPIECE)▲ (TWENTYTWENTY FACEPIECE)★ (TWENTYTWENTY PLUS FACEPIECE)◆ (Continued)</p>	<p>★18. Insert the valve stem into the nozzle. ★19. Snap the retainer into the nozzle, ensuring the spring is rotated 45° clockwise. ★20. Replace the valve cover. ★21. Place the lens edge inside lens channel of the skirt, centering the lens so that the facepiece-to-face seal is not distorted. ◆22. Remove the nozzle cover by pressing the ratchet ring with a finger and unscrewing the AIR KLIC. ◆23. Remove the nozzle by pushing it from the front of the facepiece. Use thumbs to press the locking tabs at the sides of the nozzle. (DO NOT push on the spring retainer.) ◆24. Place the nozzle into the new lens. ◆25. Reassemble the nozzle cover and AIR KLIC. ◆26. Install the nose cup. ◆27. Place the lens edge inside the lens channel of the skirt, centering the lens so that the facepiece-to-face seal is not distorted. 28. Install the skirt rims; start the screw on one side; then start the screw on the other side. CAUTION—Do not pinch the silicone between the rims. 29. Alternate tightening each screw until firmly tightened. ★NOTE—The corners of the skirt should be centered between each rim when installation is complete. 30. Perform a leak check as described in OPERATION INSTRUCTIONS.</p>
<p>HARNES REPLACEMENT</p>	<p>1. To remove the old harness, remove the D-ring slide and the snap hook. Remove the hose restraint and the regulator receiver. 2. Slide the waist belt through the belt clip on the tank bracket. 3. To replace a portion of or all of the shoulder strap, unsnap the portion to be replaced from the tank bracket. 4. To replace the hip pad, remove the waist belt. 5. Installation is the exact reverse of removal.</p>
<p>FIRST STAGE CGA O-RING</p>	<p>1. Remove the old o-ring. 2. Ensure that the o-ring seat is undamaged and free of debris. 3. Lightly lubricate a new o-ring with Christolube and install the o-ring on the o-ring seat.</p>
<p>ACCESSORIES</p>	<p>Each modification kit and accessory purchased from SURVIVAIR has installation instructions. Use these instructions for removing and replacing any accessory.</p>

NOTE

Make appropriate entries on equipment record cards.

Panther HIP-PAC

X. FUNCTIONAL TESTING TABLE

IF ANY DEFECTS ARE FOUND, HAVE THE PANTHER HIP-PAC REPAIRED BEFORE USE.

COMPONENT	INSTRUCTIONS
FACEPIECE	<ol style="list-style-type: none"> 1. Don and adjust the facepiece. 2. Block the AIR KLIC opening with the palm of your hand. 3. Inhale gently. The facepiece must "collapse" slightly and hold for a few seconds without leaking. 4. Exhale with the AIR KLIC opening covered. The exhalation valve must not stick.
SYSTEM FUNCTION TEST	<ol style="list-style-type: none"> 1. Disconnect the HIP-PAC from the air supply line. WARNING—after performing the following test, steps 2-11, refill or top off the air cylinder. 2. Turn the cylinder valve on. 3. Listen for leaks at the end of the quick-disconnect nipple. 4. Listen to the second stage regulator; it should not flow. 5. Listen for leaks at all hose connections. 6. Don the facepiece. 7. Connect the facepiece to the second stage regulator and inhale. The regulator must deliver air on inhalation without excessive effort, and must not free flow or flutter. 8. Turn the bypass on to verify that it functions, then turn the bypass off. 9. Hold your breath for 5 seconds. The second stage regulator must make no noise. 10. While continuing to breathe, attach the HIP-PAC respirator hose to an air line with a minimum of 80 psig pressure. 11. Turn off the HIP-PAC cylinder valve. Breathing must continue to be easy. The regulator must deliver air on inhalation without excessive effort, and must not free flow or flutter. 12. Doff the HIP-PAC and refill the cylinder.

NOTE

Results of tests should be kept in a written record.

Panther HIP-PAC

XI. CAUTIONS AND LIMITATIONS

NOTE

This section must be read in conjunction with the NIOSH approval label in this user's manual. Failure to observe these cautions and limitations voids NIOSH approval.

1. Air line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA-7.1, Grade D or higher quality.
2. Use only the pressure ranges and hose lengths specified in the user's instructions.
3. This respirator contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by NIOSH.
4. Failure to properly use and maintain this product could result in injury or death.
5. All approved respirators shall be selected, fitted, used, and maintained in accordance with OSHA, and other applicable regulations.
6. Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration specified by the manufacturer.
7. Refer to user's instructions and/or maintenance manuals for information on use and maintenance of these respirators.

Special Use

8. Special or critical operation instructions and/or specific operation limitations apply. Refer to the user's instructions before donning.
9. This respirator is approved for use above 0°F. For temperatures below 32°F, use anti-fog solution P/N 951015 or 951016.
10. This respirator is approved for respiratory protection during entry into and escape from oxygen-deficient atmospheres, gases, and vapors when using the air line supply. It is approved for escape only when using the self-contained air supply.
11. This device is approved only when the compressed air cylinder is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7.1 for Type 1, Grade D air and having a moisture content, expressed as dewpoint, of -65°F or lower. The cylinder shall be marked "Fill With Compressed Air Only" and shall meet applicable DOT specifications.
12. When using this respirator at temperatures between 0 and 32°F, the first stage regulator must be wrench tightened on the cylinder valve.
13. When using the 9649 Series hose, this approval applies only when the respirator is supplied with respirable breathing air through no more than 6 lengths of hose with a combined hose length of 50 to 300 feet, at a pressure of 80 to 125 psig, or from the self-contained air supply. If the supplied air fails, open the cylinder valve and proceed to fresh air immediately.
14. When using the 9304 or 9308 Series hose, this approval applies only when the respirator is supplied

with respirable breathing air through no more than 3 lengths of hose with a combined hose length of 10 to 300 feet, at a pressure of 80 to 125 psig, or from the self-contained air supply. If the supplied air fails, open the cylinder valve and proceed to fresh air immediately.

15. **DEATH OR SERIOUS INJURY** may result if instructions are not carefully followed.
16. **READ AND UNDERSTAND** all instructions, limitations, and other warnings found on the respirator and in the instruction manuals.
17. **USE WITH ADEQUATE SKIN PROTECTION.** This apparatus does not protect against gases and vapors that poison through the skin (for example, hydrocyanic acid gas.)
18. This respirator is to be used at temperatures between 0 and +160°F.