

SURVIVAIR Opti-Fit™ Convertible Facepiece
Models 7540/7640/7740/7541/7641/7741
OPERATION and MAINTENANCE MANUAL

for Air Purifying Respirator (APR), Continuous Flow Supplied Air Respirator (CF-SAR), and Powered Air Purifying Respirator (PAPR) Configurations



**Air Purifying Respirator
Front Adapter Cap**



**Air Purifying Respirator
Low Profile Nozzle Plug**



**SURVIVAIR Opti-Fit™
Convertible Facepiece**



**Powered Air Purifying
Respirator Mask-mount Blower**



**Powered Air Purifying
Respirator Belt-mount Blower**

APR

PAPR

CF-SAR




**CF-Supplied Air Respirator
Side-mount Breathing Tube**



**CF-Supplied Air Respirator
Front-mount Breathing Tube**



**CF-Supplied Air Respirator
P100 Filter Escape**

 WARNING
<p><i>DO NOT USE your respirator until you read and completely understand this instruction manual. You are required to inspect the adapter prior to putting it into service. Please refer to the inspection procedures in this manual. Failure to comply with this warning may result in personal injury, illness, or death.</i></p>

NIOSH APPROVAL CAUTIONS AND LIMITATIONS

The Cautions and Limitations applicable to the air purifying respirator (APR), continuous flow supplied air respirator (CF-SAR), and powered air purifying respirator (PAPR) configurations are listed below:

Operating Configuration	Cautions and Limitations
Air Purifying Respirator (APR)	ABCHJLMNOPS
Continuous Flow Supplied Air Respirator (SAR)	ABCDEGHJLMNOPS
Powered Air Purifying Respirator (PAPR)	ABCFHIJLMNOPS

Cautions and Limitations Key:

- A - Not for use in atmospheres containing less than 19.5 percent oxygen.
- B - Not for use in atmospheres immediately dangerous to life or health.
- C - Do not exceed maximum use concentrations established by regulatory standards.
- D - Air line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality.
- E - Use only the pressure ranges and hose lengths specified in the User's Instructions.
- F - Do not use respirator if airflow is less than four cfm (115 lpm) for tight fitting facepieces or six cfm (170 lpm) for hoods and/or helmet.
- G - If airflow is cut off, switch to filter and/or cartridge and immediately exit to clean air.
- H - Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridges and canisters are replaced before breakthrough occurs.
- I - Contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.
- J - Failure to properly use and maintain this product could result in injury or death.
- L - Follow the User's Instructions for changing cartridges, canisters and/or filters.
- M - All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
- N - Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
- O - Refer to Users Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
- P - NIOSH does not evaluate respirators for use as surgical masks.
- S - Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instructions before donning.

TABLE OF CONTENTS

NIOSH APPROVAL CAUTIONS AND LIMITATIONS	i
TABLE OF CONTENTS	ii
I. INTRODUCTION	1
II. SAFETY PRECAUTIONS	1
III. DESCRIPTIONS OF RESPIRATOR OPERATING CONFIGURATIONS	1
A. Air Purifying Respirator (APR) Configuration	1
B. Supplied Air Respirator (CF-SAR) Configuration	1
C. Powered Air Purifying Respirator (PAPR) Configuration	2
IV. General Warnings for All Respirator Configurations	2
V. RESPIRATOR OPERATING CONFIGURATIONS SCHEMATIC	5
VI. PARTS LIST	6
Table 1. Air Purifying Respirator (APR) Filters and Cartridges	8
Table 2. Continuous Flow Supplied Air Respirator (CF-SAR) Air Hose Components	8
Table 3. Powered Air Purifying Respirator (PAPR) Belt-Mounted Cartridges	8
VII. FACEPIECE PREPARATION USING INCLUDED ITEMS	9
VIII. OPERATING INSTRUCTIONS FOR SPECIFIC RESPIRATOR CONFIGURATIONS	10
A. Air Purifying Respirator (APR) Configuration	10
1. Installing Chemical Cartridges and Particulate Filters	11
2. Donning Instructions for APR Configuration	12
3. Fit Check Instructions for APR Configuration	13
4. How to Use the Respirator	13
5. Doffing Instructions for APR Configuration	13
6. Chemical and Particulate Filter Service Life and Replacement	13
B. Continuous Flow Supplied Air Respirator (CF-SAR) Configurations	15
1. Air Supply	16
2. Quick Coupler Assembly	16
3. Breathing Tube Setup	17
4. Donning Instructions for CF-SAR Configurations	18
5. Fit Check Instructions for CF-SAR Configurations	19
6. How to Use the Respirator	20
7. Doffing Instructions for CF-SAR Configurations	21
8. Pressure Tables for Continuous Flow Supplied Air Respirator (CF-SAR)	21
9. P100 Filter Service Life and Replacement	22
C. Powered Air Purifying Respirator (PAPR) Configurations	22
1. Battery Pack Charging	22
2. Cartridge and Filter Installation	23
3. Pre-operational Flow Check	24
4. Donning Instructions for PAPR Configurations	26
5. Fit Check Instructions for PAPR Configurations	27
6. How to Use the Respirator	28
7. Doffing Instructions for PAPR Configurations	28
8. Chemical and Particulate Filter Service Life and Replacement	28
9. Decontamination	30
IX. MAINTENANCE	30
A. Cleaning	30
B. Inspection	31
C. Repair	32
D. Storage	32
X. SHIPMENT	32
XI. OVERHAUL FREQUENCY	32
XII. ADDITIONAL INFORMATION	32
XIII. WARRANTY AND LIMITATION OF LIABILITY	33
XIV. RESPIRATOR INSPECTION TABLES	34

I. INTRODUCTION

This manual provides instructions for the use and maintenance of the various respirator operating configurations achievable with the SURVIVAIR Opti-Fit™ Convertible full facepiece respirator models 7540, 7640, 7740, 7541, 7641, and 7741. The base configuration of the SURVIVAIR Opti-Fit facepiece allows use as an air purifying respirator (APR) in conjunction with S Series particulate filters, gas and vapor cartridges, and cartridge/filter combinations as required for specific contaminant protection. Additional components can be attached to the SURVIVAIR Opti-Fit Convertible to easily convert it to a front or side hose connection continuous flow supplied air respirator (CF-SAR) and mask or belt mounted powered air purifying respirator (PAPR) configurations.

Before using a respirator in a contaminated work place, you must, at a minimum, understand the elements of a respirator program, your work place, and the contaminants you are trying to protect yourself against. Determining the applicability of a respirator is difficult. You must be able to calculate the service life of the cartridges, determine the type and concentration of contaminants, and determine whether the contaminants have poor warning properties, etc. If you do not have a complete understanding of the use of respirators, you must seek the aid of a certified industrial hygienist or contact SPERIAN. You must read and understand this manual and be trained in the proper use of the respirator before wearing it in a contaminated atmosphere.

II. SAFETY PRECAUTIONS

The Warnings, Cautions, and Notes contained in this instruction sheet have the following significance

⚠ WARNING
<i>Maintenance or operating procedures and techniques that may result in serious personal injury, serious personal illness, or death if not carefully followed.</i>

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

NOTE

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

III. DESCRIPTIONS OF RESPIRATOR OPERATING CONFIGURATIONS

The SURVIVAIR Opti-Fit full facepiece contains two connectors on each side of the lens for attaching particle filters, gas/vapor cartridges or air hoses, as well as a front adapter for a supplied air breathing hose or powered air purifying blower. This range of connections

allows the SURVIVAIR Opti-Fit Convertible facepiece to be configured, through the use of additional components, as a supplied air respirator (CF-SAR) or powered air purifying respirator (PAPR).

The full facepiece is designed with a wide lip silicone skirt and five point head strap harness (models 7540, 7640, and 7740). The facepiece is also available with a Headnet™ retention system (models 7541, 7641, and 7741). All facepieces contain a lens treated with an abrasion resistant coating. The facepiece is available in three sizes, small, medium and large. While a nose cup is standard, the facepiece may be equipped with an optional spectacles kit, clear or tinted lens covers and neck strap kit.

The connection versatility of the SURVIVAIR Opti-Fit™ Convertible full facepiece and available components and accessories (see Section VI, Parts List) allow it to be assembled into the following operating configurations:

A. Air Purifying Respirator (APR) Configuration

The side port connectors are used to attach S series particulate filters, gas and vapor cartridges, and cartridge/filter combinations as required for a specific contaminant protection. The front adapter can be removed and replaced with a plug to reduce the front profile of the mask.

B. Continuous Flow Supplied Air Respirator (CF-SAR) Configuration

With one side port connector port capped with a supplied screw cap, a high volume, low pressure breathing tube can be attached to the second side connector to provide a constant flow of air to the facepiece when connected to an external air source. An alternate connection option uses a breathing tube connected to the front adapter with both side port connectors capped. An optional Vortex air cooler may also be connected in-line to provide cool air to the facepiece.

NOTE

The Vortex air cooler cannot be used in conjunction with ambient air pump supply systems.

The SURVIVAIR Opti-Fit™ Convertible can also be configured as a CF-SAR with P100 filter cartridges and the breathing tube connected to the front adapter. When the air line hose is disconnected from the air line quick coupler, a check valve in the air line couple assembly prevents leakage of contaminated air through the facepiece hose, and the wearer's air is drawn through the P100 filters. This feature allows for safe entry, exit or escape from a dangerous area in case of air supply failure.

For all CF-SAR configurations, when used at pressures specified in the tables in Section VIII, Part B.8, air is delivered to the facepiece at a rate between 115 and 425 liters per minute (4-15 cubic feet per minute [cfm]).

▲ WARNING
<p><i>The pressure within the full facepiece continuous flow supplied air respirator (CF-SAR) 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:</i></p> <ol style="list-style-type: none"> <i>1) the respirator is improperly worn,</i> <i>2) the respirator is not used in accordance with the instructions, or</i> <i>3) the respirator is over-breathed during heavy work rates. The respirator will provide reduced protection when operated in a negative pressure mode. Failure to comply with this warning may result in personal injury, illness, or death.</i>

The ANSI Z88.2-1992 assigned protection factor (APF) for full facepiece continuous flow atmosphere supplying respirators is 1000. An APF of 1000 means that this device, when properly used, will reduce exposure by a factor of 1000.

C. Powered Air Purifying Respirator (PAPR) Configuration

The SURVIVAIR Opti-Fit™ Convertible full facepiece can be configured into a mask-mounted or belt-mounted powered air purifying respirator. In the mask-mounted configuration, a high efficiency (HE) filter/blower mounts directly to the nozzle of the facepiece and delivers air to the facepiece at a flow rate greater than 115 liters per minute (4 cubic feet per minute). The blower is powered by a belt mounted rechargeable nickel cadmium battery pack equipped with an ON/OFF switch. This configuration is NIOSH approved and SPERIAN recommended for respiratory protection against dusts, fumes and mists, including asbestos-containing dusts and mists, particulate radionuclides, and radon daughters attached to dusts, fumes and mists.

The belt-mounted PAPR respirator uses the SURVIVAIR Opti-Fit™ Convertible facepiece, a rubber breathing tube, a belt mounted blower with three (3) cartridges or filters and a rechargeable Nickel Cadmium (NiCad) battery pack. Filtered breathing air is provided to the facepiece at a flow rate greater than 170 liters per minute (6 cubic feet per minute). To maintain NIOSH approval, only the equipment and accessories listed on the appropriate NIOSH approval label may be used together.

IV. GENERAL WARNINGS FOR ALL RESPIRATOR CONFIGURATIONS

The following general warnings must be observed for proper operation of all air purifying (APR), continuous flow supplied air (CF-SAR) and powered air purifying (PAPR) respirator configurations. Additional warnings for specific operating configurations are listed in Section VIII, Parts A, B, and C, and must also be observed for proper operation of the respective respirator configuration.

General Warnings for All Respirator Configurations:

▲ WARNING
<ul style="list-style-type: none"> • <i>Your employer (or you, if you do not have an employer) is responsible for establishing that this respirator is suitable for the user's application.</i> • <i>SPERIAN cannot predict what will happen to this respirator in every potential environment. Materials can be chemically attacked if exposed to the wrong environment and may exhibit excessive 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 respirator would be dangerous to use.</i> • <i>Before entering a hazardous environment while wearing this respirator, you must conduct safe, scientific tests to 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.</i> • <i>All persons using this SPERIAN breathing apparatus 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.</i> • <i>Do not use this respirator if anything comes between the facepiece and your face (e.g., hair, bandanna, head covering, etc.). This condition will prevent a good facepiece seal and may allow the leakage of contaminants into the facepiece.</i> • <i>Do not use this respirator in environments where the concentrations of contaminants are unknown or are immediately dangerous to life or health (IDLH). IDLH atmospheres are defined as:</i> <ol style="list-style-type: none"> <i>a. Those that the wearer could not breathe for short periods.</i> <i>b. Those from which the wearer could not escape without the aid of a respirator.</i> <i>c. Those which have an immediate or delayed adverse effect on health.</i> • <i>Do not use this respirator at ambient temperatures above 130°F (55°C).</i>

▲ WARNING—Continued

- *Do not use this respirator where environmental conditions could cause the respirator facepiece to be dislodged or slip.*
- *Immediately return to a non-contaminated area if:*
 - a. *You taste or smell contaminants, or if your eyes, nose, or throat become irritated.*
 - b. *Breathing becomes difficult.*
 - c. *The air you are breathing becomes uncomfortably warm.*
 - d. *You feel nauseous or dizzy.*
 - e. *You notice a loss or decrease in airflow.*
 - f. *The facepiece moves, slips, or leaks.*
- *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 hazardous rays or harmful noise. Always wear proper head and ear protection.*
- *This respirator must not be used underwater, for fumigation, interior structural fire fighting, abrasive blasting operations, or in areas where high heat, sparks, or flames could contact the respirator. If this respirator will be used during welding, it is the user's responsibility to obtain the proper equipment for protection against sparks, optical radiation, and impact. This respirator will not protect you against these hazards.*
- *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 procedures for evaluating air contaminants and selecting appropriate respirators; procedures for proper use of respirators; procedures for testing the facepiece 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 and care of respirators and in recognizing the hazards associated with contaminants in the work place.*

▲ WARNING—Continued

- *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 issue, and OSHA 29 CFR 1910.134, latest edition. Beards, stubble, or sideburns will prevent a good facepiece seal, and facial hair may interfere with valve function. Do not use this respirator unless you are clean shaven. Absence of one or both dentures can seriously affect the fit of the respirator.*
- *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 to those individuals.*
- *Use of components other than those listed on the NIOSH approval label and in this manual, or as authorized by SPERIAN, or modification of this respirator in any manner will void the NIOSH certification and invalidates all SPERIAN's warranties for the respirator.*
- *Always read and follow the instructions listed in the Material Safety Data Sheet for the chemicals that are present in the work area.*
- *Do not use if you have a preexisting skin condition (for example, folliculitis or vitiligo) until you obtain clearance from a medical doctor.*
- *This respirator must be worn and used as specified in SPERIAN's instructions. No respirator can provide complete protection from all conditions. Use extreme care for emergency conditions.*
- *Some individuals are sensitive to chemicals (e.g., isocyanates, 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 Exposure Limit (PEL), ACGIH 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*

▲ WARNING—Continued

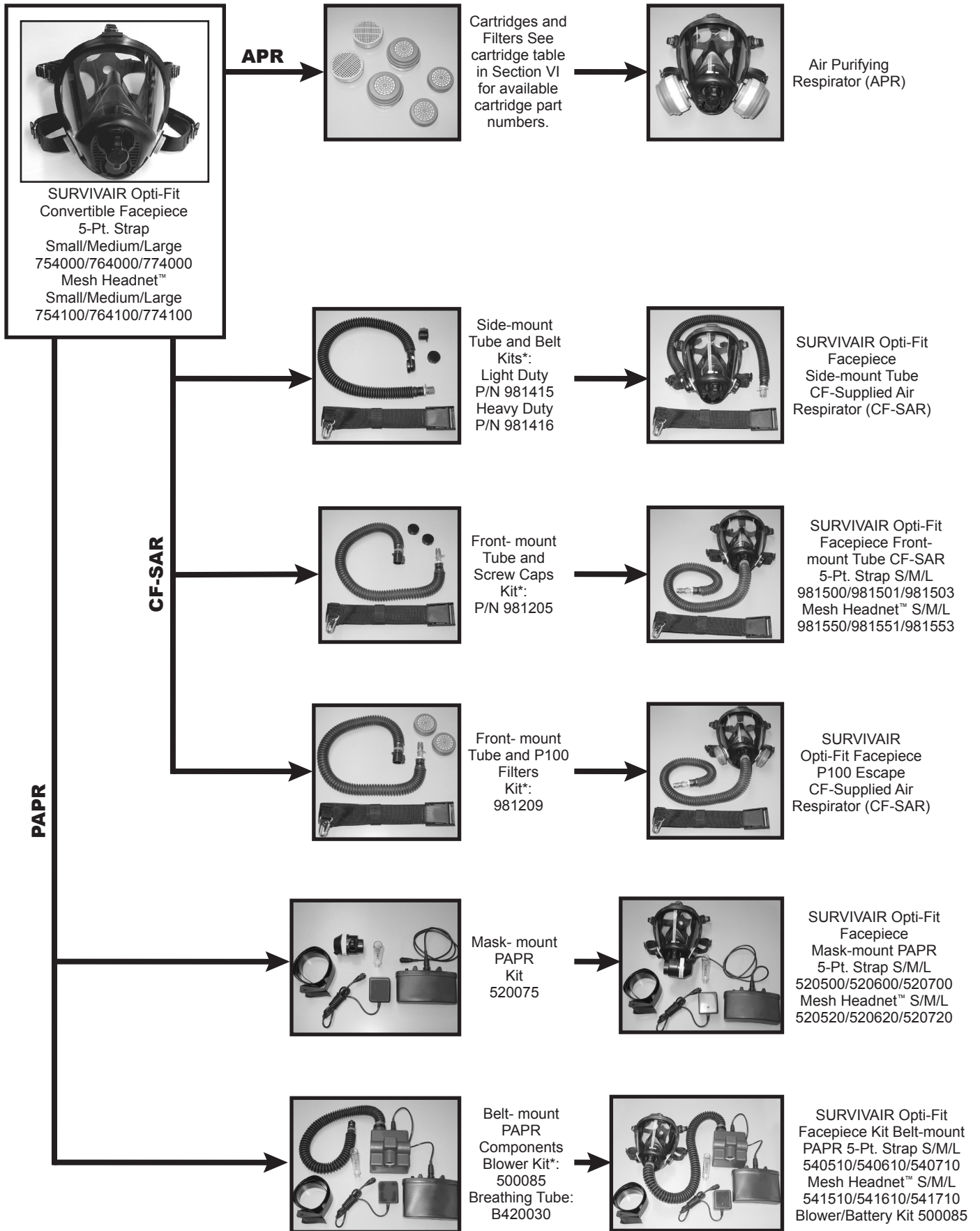
be present in the respirator facepiece. This respirator will reduce, but will not eliminate the possibility of contaminants entering the facepiece and causing a severe reaction. Do not use this respirator until you obtain clearance from a medical doctor.

- *Users must clean and maintain this respirator only in accordance with SPERIAN's instructions. Accessories not offered by SPERIAN 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.*
- *This product may provide less than adequate protection if improperly used, which may result in personal injury, illness, or death.*
- *For use by trained, qualified personnel only.*
- *Do not use this respirator if it has been left exposed in a contaminated environment as contaminants could collect on the inside of the facepiece and be inhaled when the gas mask is donned.*
- *Routinely used respirators must be inspected before and after each use. Stored emergency respirators must be inspected after each use and at least every 30 days. A written record must be kept of emergency respirator inspections.*

FAILURE TO OBSERVE ALL WARNINGS MAY RESULT IN PERSONAL INJURY, ILLNESS, OR DEATH.

SURVIVAIR Opti-Fit™ Convertible Facepiece

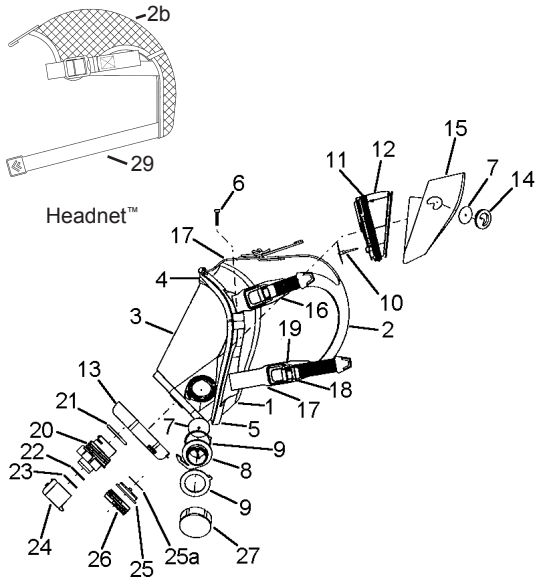
V. RESPIRATOR OPERATING CONFIGURATIONS SCHEMATIC



* All continuous flow supplied air respirator (CF-SAR) and powered air purifying respirator (PAPER) kit components are available individually. See Parts List in Section VI.

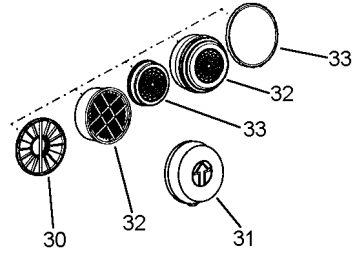
VI. PARTS LIST

A. Please refer the Parts List Matrix in Part B for component descriptions and identification of their use with the various operating configurations of the SURVIVAIR Opti-Fit Convertible Facepiece.



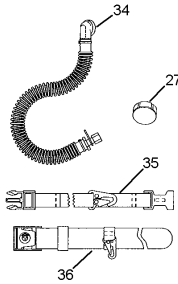
SURVIVAIR Opti-Fit Convertible Facepiece Models
5 Pt. Headstrap
7540/7640/7740
Mesh Headnet™
7541/7641/7741

APR

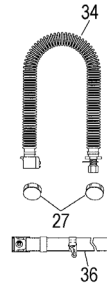


Air Purifying Respirator Cartridges

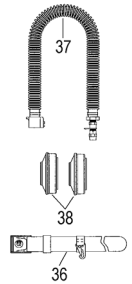
CF-SAR



CF-Supplied Air Respirator Side-mount Breathing Tube

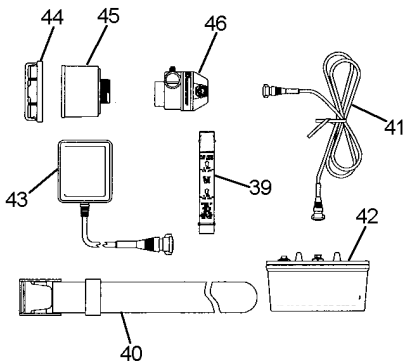


CF-Supplied Air Respirator Front-mount Breathing Tube

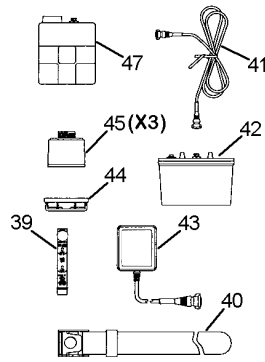


CF-Supplied Air Respirator P100 Escape

PAPR



Powered Air Purifying Respirator Mask-mounted Blower



Powered Air Purifying Respirator Belt-mounted Blower

SURVIVAIR Opti-Fit™ Convertible Facepiece

B. Parts List Matrix

Operational Category	ITEM	QTY	P/N	DESCRIPTION	Specific Configuration						
					Air Purifying Respirator	Supplied Air Respirator Side-mount Breathing Tube	Supplied Air Respirator Front-mount Breathing Tube	Supplied Air Respirator P100 Filter Escape	Powered Air Purifying Resp. Mask-mounted Blower	Powered Air Purifying Resp. Belt-mounted Blower	
SURVIVAIR Opti-Fit™ Convertible Facepiece Models 7540/7541, 7640/7641, 7740/7741 (S, M, L)	1	1	962157	Small Skirt	•	•	•	•	•	•	
		1	962167	Medium Skirt	•	•	•	•	•	•	
		1	962177	Large Skirt	•	•	•	•	•	•	
	2a	1	702009	Headstrap	•	•	•	•	•	•	
	2b	1	702090	Headnet	•	•	•	•	•	•	
	3	1	702007	Lens	•	•	•	•	•	•	
	4	1	962031	Upper Rim	•	•	•	•	•	•	
	5	1	962037	Lower Rim	•	•	•	•	•	•	
	6	2	839102	Screw	•	•	•	•	•	•	
	7	Pkg of 6	B140001	Inhalation Valve	•	•	•	•	•	•	
	8	Pkg of 2	702035	Connector	•	•	•	•	•	•	
	9	Pkg of 2	702037	Twin Seal	•	•	•	•	•	•	
	10	Pkg of 4	B140005	Exhalation Valve	•	•	•	•	•	•	
	11	1	820261	O-ring	•	•	•	•	•	•	
	12	1	702013	Nozzle	•	•	•	•	•	•	
	13	1	702048	Nozzle Cover	•	•	•	•	•	•	
	14	2	962090	Valve Holder	•	•	•	•	•	•	
	15	1	702023	Nose Cup	•	•	•	•	•	•	
	16	2	702016	Short Buckle Strap	•	•	•	•	•	•	
	17	3 (0)	702012	Long Buckle Strap	•	•	•	•	•	•	
	18	5 (2)	702011	Buckle	•	•	•	•	•	•	
	19	5 (2)	702008	Ring	•	•	•	•	•	•	
	20	1	702045	Adapter	•	•	•	•	•	•	
	21	1	820141	O-ring	•	•	•	•	•	•	
	22	1	824014	Leak Check O-Ring	•	•	•	•	•	•	
	23	1	824014	O-ring	•	•	•	•	•	•	
	24	1	420020	Nozzle Cap	•	•	•	•	•	•	
	25	1	763016	Nozzle Gasket	•	•	•	•	•	•	
	25a	1	763019	Nozzle Gasket Inhalation Valve	•	•	•	•	•	•	
26	1	962066	Nozzle Plug	•	•	•	•	•	•		
27	2	985020	Screw Cap	•	•	•	•	•	•		
28	1	910452	Christolube Lubricant (not shown)	•	•	•	•	•	•		
29	(1)	54140217	Strap, Mesh Harness	•	•	•	•	•	•		
Optional Accessories (not shown)			702019	Peel-away Lens Cover, Tinted (25)	•	•	•	•	•	•	
			702028	Peel-away Lens Cover, Clear (25)	•	•	•	•	•	•	
			962260	Spectacles Kit	•	•	•	•	•	•	
			951015	1 oz. Lens Anti-Fog Solution	•	•	•	•	•	•	
			951016	16 oz. Lens Anti-Fog Solution	•	•	•	•	•	•	
			981803	Wipe, Anti-Fog (Box of 100)	•	•	•	•	•	•	
			702089	Headnet Kit	•	•	•	•	•	•	
		702031	Neck Strap Kit	•	•	•	•	•	•		
APR	30	2	B140074	Filter Holder	•	•	•	•	•	•	
	31	2	140079	Filter Retainer	•	•	•	•	•	•	
	32		See Table 1	Cartridges	•	•	•	•	•	•	
	33		See Table 1	Filters	•	•	•	•	•	•	
SAR	34	1	981372	Breathing Tube, Rubber (heavy dty.)	•	•	•	•	•	•	
		1	981384	Breathing Tube, Plastic (light dty.)	•	•	•	•	•	•	
	35	1	981715	Waist Belt Assembly	•	•	•	•	•	•	
	36	1	985231	Waist Belt Assembly	•	•	•	•	•	•	
	37	2	981207	Breathing Tube Assy.	•	•	•	•	•	•	
	38	2	105001	P100 Filter	•	•	•	•	•	•	
	Optional Accessories (not shown)			981847	Vortex Air Cooler	•	•	•	•	•	•
				985237	Gasket, Air Line Hose	•	•	•	•	•	•
			See Table 2	Air Line Hose, 3/8 inch	•	•	•	•	•	•	
		See Table 2	Hose Quick Coupler Kits	•	•	•	•	•	•		
PAPR	39	1	580009	Flow Meter	•	•	•	•	•	•	
	40	1	520050	Waist Belt	•	•	•	•	•	•	
	41	1	520030	Power Cord	•	•	•	•	•	•	
		1	540030	Power Cord	•	•	•	•	•	•	
	42	1	520060	Battery Pack	•	•	•	•	•	•	
		1	540060	Battery Pack	•	•	•	•	•	•	
	43	1	520073	Battery Charger	•	•	•	•	•	•	
		1	540073	Battery Charger	•	•	•	•	•	•	
	44	1	981177	Filter Shower Cap (not shown)	•	•	•	•	•	•	
	45	1	108000	HE Filter	•	•	•	•	•	•	
	46	1	520020	Blower Assembly	•	•	•	•	•	•	
	47	1	540050	Blower Assembly	•	•	•	•	•	•	
	48	1	B420030	Breathing Tube	•	•	•	•	•	•	
	49		See Table 3	Cartridges	•	•	•	•	•	•	
Optional Accessories			520072	10-Unit Gang Charger	•	•	•	•	•	•	
			520033	Blower Gasket	•	•	•	•	•	•	

Tables 1, 2 and 3 on following page.

NOTE:
 1) Use only components having part numbers listed on the NIOSH approval labels. Use of any other components voids the approval.
 2) Quantities in parentheses are for respirators with headnet only.

Table 1. Air Purifying Respirator (APR) Filters and Cartridges

Part No.	Protection/Description
Filters	
1050	P100
1060	Filter Pad, N95
1070	Filter Pad, N99/R95
1190	P100 Slimline
1195	P100 Disk
Cartridges	
100100	Organic Vapors
100200	Acid Gases
100300	Organic Vapors and Acid Gases
100400	Ammonia and Methylamine
100600	Mercury Vapor and Chlorine
100800	Multi-contaminant
1051	Combination Organic Vapors and P100
1052	Combination Acid Gases and P100
1053	Combination Organic Vapors, Acid Gases, and P100
1054	Combination Ammonia, Methylamine, and P100
1056	Combination Multi-contaminant and P100
1058	Combination Multi-contaminant and P100


Table 2. Continuous Flow Supplied Air Respirator (CF-SAR) Air Hose Components

Part No.	Item Description
930861	High performance hose—25 feet (requires quick coupler kit)
930862	High performance hose—50 feet (requires quick coupler kit)
930864	High performance hose—100 feet (requires quick coupler kit)
930801	Light weight hose—25 feet (requires quick coupler kit)
930802	Light weight hose—50 feet (requires quick coupler kit)
930804	Light weight hose—100 feet (requires quick coupler kit)
985241	Light weight hose with OBAC couplings—25 feet
985242	Light weight hose with OBAC couplings—50 feet
985244	Light weight hose with OBAC couplings—100 feet
930810	Quick coupler kit—style: Foster
930820	Quick coupler kit—style: Schrader
930830	Quick coupler kit—style: Hansen
930840	Quick coupler kit—style: OBAC

Table 3. Powered Air Purifying Respirator (PAPR) Belt-Mounted Cartridges

Part No.	Item Description
150100	OV Cartridge
150200	AG Cartridge
150300	OV/AG Cartridge
150400	AM/MA Cartridge
158100	OV/HEPA Cartridge
158200	AG/HEPA Cartridge
158300	OV/AG/HEPA Cartridge
158400	AM/MA/HEPA Cartridge
108000	HEPA Filter

APR Cartridge Considerations:

 WARNING
<p><i>The following is a partial list of materials that have either poor warning properties, will develop high heats of reaction with the sorbent in the canister, have extremely short service times, or will not be absorbed at all. Respirators cannot be used to protect you against many of these chemicals. Contact a certified industrial hygienist or SPERIAN if you have any of these materials present in the work place. The use of a respirator for these materials may lead to personal injury, illness, or death.</i></p>

Acroline	Carbonyls	Hydrogen Selenide	Ozone
Aniline	Cyanogen	Isocyanates: TDI, HDI, MDI	Phosgene
Arsine	Dimethylaniline	Methanol	Phosphine
Boron Hydrides	Dimethyl Sulfate	Methyl Bromide Methyl Chloride, Methylene Chloride	Phosphorous Trichloride
Bromine	Ethyl Cyanide	Nitro Compounds: Nitrogen Oxides	Stibine
Carbon Dioxide	Fluorine	Nitroglycerin Nitrobenzene Nitromethane	Sulfur Chloride
Carbon Monoxide	Hydrogen Cyanide		Vinyl Chloride

VII. FACEPIECE PREPARATION USING INCLUDED ITEMS

The SURVIVAIR Opti-Fit Convertible is shipped with side connector port screw caps and a nozzle plug kit that must be used to configure the facepiece for the various operating configurations as detailed below.

A. Air Purifying Respirator (APR)

The SURVIVAIR Opti-Fit Convertible is shipped from the factory with the nozzle adapter (item 20, P/N 702045) installed in the facepiece nozzle. This adapter must be capped using the included adapter cap (item 24, P/N 420020) for the facepiece to be used as an APR respirator. When attaching the adapter cap, an audible click should be heard (Figure 1).



Figure 1. Adapter Cap

If a low profile nozzle setup is desired, the nozzle adapter can be removed from the facepiece and the nozzle plug kit installed in its place. Unscrew the nozzle adapter from the facepiece by pressing down on the adapter locking tab from inside the lens and turning the adapter counterclockwise (Figures 2 and 3). Insert the nozzle gasket (item 25, P/N 763016) into the nozzle port (Figure 4). Thread in the nozzle plug (item 26, P/N 962066), using a quarter or similar item in the molded slot to hand-tighten (Figure 5).



Figure 2. Push Down on Adapter Locking Tab



Figure 3. Remove Adapter



Figure 4. Insert Nozzle Gasket into Facepiece



Figure 5. Tighten Nozzle Plug with Coin in Molded Slot

<p>⚠ WARNING</p> <p><i>The included screw caps (item 27, P/N 985020) are not to be used on the facepiece side ports when using the SURVIVAIR Opti-Fit Convertible in the air purifying respirator (APR) configuration. See Section VIII, Part A.1 for installing chemical cartridges and particulate filters to the facepiece side connector ports. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>
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B. Continuous Flow Supplied Air Respirator(CF-SAR)

1. Side-mounted Breathing Tube

When using the SURVIVAIR Opti-Fit Convertible as a supplied air respirator (CF-SAR) with side-mounted breathing tube, the nozzle adapter and the side port not in use by the breathing tube must be capped for proper operation. Attach the nozzle adapter cap (item 24, P/N 420020) to the nozzle adapter, making sure to hear an audible click has the cap is pushed into place (Figure 1).

If a low profile nozzle setup is desired, the nozzle adapter can be removed from the facepiece and the nozzle plug kit installed in its place. Unscrew the nozzle adapter from the facepiece by pressing down on the adapter locking tab from inside the lens and turning the adapter counter-clockwise (Figures 2 and 3). Insert the nozzle gasket (item 25, P/N 763016) into the nozzle port (Figure 4). Thread in the nozzle plug (item 26, P/N 962066), using a quarter or similar item in the molded slot to hand-tighten (Figure 5).

Thread one of the provided screw caps (item 27, P/N 985020) onto the side connector port not in use by the side-mounted breathing tube and hand-tighten (Figure 6).



Figure 6. Thread Screw Cap onto Side Connection Port (CF-SAR and PAPR Only)

2. Front-mounted Breathing Tube and P100

Escape

When using the SURVIVAIR Opti-Fit Convertible as a supplied air respirator (CF-SAR) with front-mounted breathing tube, both of the side connector ports must be capped with the included screw caps (item 27, P/N 985020). Thread the screw caps onto the side connector ports and hand-tighten (Figure 6). If the facepiece is to be configured as an CF-SAR with P100 escape, the screw caps are not required, and a P100 filter cartridge (item 38, P/N 105001) should be screwed onto each side connector port. Use of the nozzle adapter is necessary for connecting the breathing tube and therefore the low-profile nozzle plug kit cannot be used.

C. Powered Air Purifying Respirator (PAPR)

Both the mask-mounted and belt-mounted powered air purifying respirator (PAPR) configurations require both side connector ports to be capped with the included screw caps (item 27, P/N 985020). Thread the screw caps onto the side connector ports and hand-tighten (Figure 6). Use of the nozzle adapter is necessary for connecting the mask-mounted blower or breathing tube and therefore the low-profile nozzle plug kit cannot be used.

<p>⚠ WARNING</p> <ul style="list-style-type: none"> • <i>Do not attempt to use the SURVIVAIR Opti-Fit Convertible with both the nozzle adapter and the side connector ports capped.</i> • <i>Failure to securely cap unused threaded side port connectors and/or the front adapter port for the APR, CF-SAR or PAPR configuration you are using can allow contaminants to leak into the respirator and cause personal injury, illness, or death.</i>

VIII. OPERATING INSTRUCTIONS FOR SPECIFIC RESPIRATOR CONFIGURATIONS

A. Air Purifying Respirator (APR) Configuration

In addition to the General Warnings listed in Section IV, the following warnings apply to air purifying respirator (APR) configurations:

<p>⚠ WARNING</p> <ul style="list-style-type: none"> • <i>When using this respirator for protection against any gas or vapor, including gases or vapors with poor warning properties (e.g., HDI, MDI, or TDI isocyanates, paint hardeners, etc.), OSHA 29 CFR 1910.134 requires the canister to have an end-of-service-life indicator (ESLI). If the canister does not have an ESLI, OSHA requires the canister be changed at intervals derived from a change-out schedule that is based on objective information or data that ensures the canister is changed before the end of its service life.</i> • <i>Do not use for protection against gases or vapors which generate high heats of reaction with the sorbent material or against gases or vapors which are not readily absorbed by the sorbent (e.g., methanol).</i> • <i>There are gases and vapors (e.g., acetone, acetaldehyde, etc.) that have a boiling point below 149°F (65°C). Gas masks should not be used for protection against these chemicals</i>

▲ WARNING—Continued

for more than 8 hours or one shift, even though the calculated service life estimate is greater than 8 hours or one shift. These contaminants can migrate through the canister even when the canister is not in use (e.g., overnight) and collect in the facepiece.

- *Do not use this respirator without the appropriate SPERIAN cartridges and/or filters securely attached onto the facepiece. Always read cartridge labels prior to use and be certain that you have cartridges and/or filters that will provide the required protection. This respirator must be used for protection against only those air contaminants listed on the air purifying cartridge, filter and/or the NIOSH approval label. Respirators labeled for protection against particulates only shall not be used for gases/vapors. Respirators labeled for protection against gases/vapors only shall not be used for particulates.*
- *This respirator does not supply oxygen. Do not use the respirator in atmospheres containing less than 19.5% oxygen by volume.*
- *Failure to comply with this warning may lead to personal injury, illness, or death.*

1. Installing Chemical Cartridges and Particulate Filters

a. Mercury Vapor Cartridges

Special or Critical User's Instructions: The mercury vapor cartridges incorporate passive end-of-service-life indicators (ESLI). Each ESLI, yellow in color when new, turns gray when exposed to mercury vapor. Do not use these cartridges unless you can distinguish between the safe and discard colors of the ESLI. The indicators must be visible when wearing the respirator without having to manipulate either the facepiece or the indicator. If the indicators cannot be seen, do not wear the respirator. The cartridges must be replaced when the ESLI change color from yellow to gray, when the ESLI become dirty or damaged, after 30 days of use, or if removed from their original packaging and not used within 30 days. Never enter or remain in a hazardous atmosphere if one or more of the ESLI is gray.

b. Particulate Filters

Before using a particulate filter, you must confirm the atmosphere is non-IDLH and not oxygen deficient, the contaminant is a particulate hazard, and you must determine the hazard ratio (hazard concentration/exposure limit). If the hazard ratio is less than 10, you may use a half mask respirator with a filter efficiency of 95% or

higher. If the hazard ratio is less than 20, you may use a full facepiece respirator with a filter efficiency of 95% or higher. If the hazard ratio is less than 100, you may use a full facepiece respirator with a filter efficiency of 99% or higher. If the hazard ratio is greater than 100, you must use another type of respirator.

N-series filters must only be used for non-oil containing aerosols or particulates. R or P-series filters can be used if the atmosphere contains oil (e.g., lubricants, cutting fluids, glycerin, etc.). An R-series filter used in an oil-containing atmosphere must be replaced after each 8-hour shift. A P-series filter can be used for more than one 8-hour shift. Please refer to Section VIII, Part A.6, Chemical and Particulate Filter Service Life and Replacement, for important additional information. Refer to the NIOSH publication Guide to the Selection and Use of Particulate Respirators Certified Under 42CFR 84 for additional guidelines on use limitations for filters.

▲ WARNING


Filters improperly used or improperly assembled to the facepiece could cause leakage, which could lead to personal injury, illness, or death.

c. Cartridge/Filter Installation

Ensure that you have the correct cartridge and/or filter type for the contaminants in your work area. If you are not sure, consult your supervisor or safety professional.

- i. Install cartridges and filters by threading them onto the facepiece connectors and hand tightening. Do not overtighten.
- ii. If using filter pads, insert the appropriate pad into the filter retainer so that the side stamped with the model number will face towards the facepiece when installed. Completely snap the filter retainers onto the cartridges or filter holders.
- iii. Inspect the filter through the retainer to ensure that the entire edge of the filter is making contact with the retainer and the filter is not bunched or folded. The outer edge of the pad must be compressed between the top edge of the cartridge or filter holder and the inner sealing rings of the retainer. Install filter holders in the same manner as cartridges.

2. Donning Instructions for APR Configuration

 WARNING
<ul style="list-style-type: none"> ● <i>Your employer (or you, if you do not have an employer) is responsible for establishing that this respirator is suitable for the user's application.</i> ● <i>Always read cartridge labels prior to use to be certain that you have cartridges and/or filters that will provide the required protection. Filters labeled for protection against particulates only shall not be used for gases/vapors, and cartridges labeled for protection against gases/vapors only shall not be used for particulates. Both cartridges/filters must be of the same type.</i> ● <i>Ensure that the o-ring (Item 23, P/N 824014), is in the cap (Item 24, P/N 420020) and the cap plug is securely seated on the adapter. If the nozzle plug (Item 26, P/N 962066) is to be used instead of the cap, be sure that the Nozzle Gasket (Item 25, P/N 763016) is installed with an inhalation valve.</i> ● <i>The failure to comply with this warning may lead to personal injury, illness, or death.</i>

1. Inspect the respirator as described in Section IX, Part B.
2. Verify that unused ports are capped as detailed in Section VII for the APR operational configuration.
3. Verify that two filters and/or cartridges are attached to the threaded side connectors of the facepiece.
4. Adjust the top straps until one inch of strap extends through each buckle. Fully loosen the lower straps. For respirators featuring a Headnet, fully loosen all straps.
5. Place the neck strap (if installed) over your head.
6. Place your chin against the chin cup and center the facepiece on your face. See Figure 7.



Figure 7. Place Chin in Chin Cup

7. Hold the facepiece against your face and pull the straps over your head.
8. Tighten the two lower straps, temple straps, then the top straps until a good seal is obtained and all straps lie flat on your head. Do not overtighten the straps. See Figure 8a. For respirators with a Headnet, tighten the two lower straps and the temple straps until a good seal is obtained and all straps lie flat on your head. Flatten the Headnet with a wiping motion toward the back of your head. See Figure 8b. Retighten straps as necessary. Do not overtighten.



Figure 8a. Adjust Lower Straps First



Figure 8b. Flatten Headnet with Wiping Motion

NOTE

When properly adjusted, the head strap hub should be centered on the back of your head and the lower straps should be below your ears. See Figure 9a. For the Headnet version, the backstrap should be at the nape of the neck. The Headnet should lie flat on the head and not bunch up. See Figure 9b.




Figure 9a. Properly Center Head Strap Hub



Figure 9b. Properly Fitted Headnet

3. Fit Check Instructions for APR Configuration

You must perform the following fit check each time the respirator is worn or before entering the contaminated area.

 WARNING
<p><i>If a leak-tight seal is not obtained during the following fit check, do not wear the respirator. Ask your supervisor or safety professional for assistance. The failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

Negative Pressure Fit Check


Cover the inlet of the cartridges and/or filters with the palms of your hands or another suitable item, such as a thin sheet of plastic or rubber. When the respirator is equipped with cartridges, filter retainers may be used as an aid. Alternatively, the cartridges may be removed to perform the fit check. If removed, SPERIAN recommends someone other than you reinstall them after a leak-tight fit is achieved. It is difficult for the wearer to reinstall the cartridges without disturbing the face seal and to determine

whether the cartridges are correctly seated against the facepiece. It is your responsibility to ensure that the face seal is not disturbed when reinstalling the cartridges and that each cartridge is sealed against the facepiece.

Inhale gently and hold your breath to slightly collapse the facepiece. If air leakage occurs, readjust the facepiece and head strap, then retest. If filter retainers are used, do not remove them after the fit check is completed. Removing the filter retainers may shift the facepiece and break the face seal.

4. How to Use the Respirator

To receive the maximum protection available from your respirator, you must read, understand, and follow all the warnings, limitations, and instructions contained in this manual and follow your employer's instructions on the use and maintenance of the respirator. Read and understand the following warnings prior to using the respirator.

 WARNING
<ul style="list-style-type: none"> • Never remove the respirator for any reason while in the work area. • You must leave the work area immediately if the facepiece-to-face seal is disturbed for any reason such as: <ol style="list-style-type: none"> a. <i>Slippage due to sweating or excessive head movement.</i> b. <i>The facepiece becomes dislodged as a result of being knocked.</i> c. <i>Sneezing or coughing while wearing the facepiece.</i> d. <i>You need to blow your nose, scratch your face or adjust your spectacles.</i> • For any other reason that would cause the facepiece seal to be disturbed. • You must restore the facepiece-to-face seal and perform a fit check in a non-hazardous environment before re-entering the work area. • Failure to comply with this warning may lead to personal injury, illness, or death.

5. Doffing Instructions for APR Configuration

1. Loosen the two lower head straps completely (for five strap head harness or Headnet).
2. Grasp the nozzle firmly, and pull the facepiece upward over the head.

6. Chemical and Particulate Filter Service Life and Replacement

- a. Chemical Cartridge Service Life and Replacement

▲ WARNING

- **OSHA allows the use of air purifying respirators for protection against contaminants with poor warning properties. You must replace cartridges when the end-of-service-life indicator (ESLI) has changed color or in accordance with an OSHA compliant cartridge change-out schedule that is based on objective information or data that ensures the cartridges are changed before the end of their service life.**
- **You must immediately leave the contaminated area if you taste or smell contaminants, or if your eyes or throat become irritated. Replace cartridges and/or filters before re-entering the contaminated area.**
- **Establishing the cartridge service life for mixtures of contaminants is a complex task, and one that requires considerable professional judgment to create a reasonable change-out schedule. OSHA provides a “rule-of-thumb” method for determining the cartridge service life for mixtures. The method addresses two situations. The first is where the individual compounds of the mixture have similar breakthrough times (i.e., within one order of magnitude). In this case, OSHA recommends adding the concentrations of all the components of the mixture to determine a “total concentration,” then determine the mixture service life by applying the total concentration to the component with the shortest service life. The second is where the individual compounds have breakthrough times that vary by two orders of magnitude or greater. In this case, OSHA recommends the mixture service life be based on the contaminant with the shortest breakthrough time. The OSHA rule-of-thumb methods may not be applicable for all mixtures. In some cases, the actual mixture service life may be much lower than the one calculated. For this reason, SPERIAN recommends that the cartridge service life for mixtures be determined using experimental methods. If you are unsure of how to determine the cartridge service life for mixtures, please contact SPERIAN.**
- **Failure to comply with this warning may lead to personal injury, illness, or death.**

The cartridge service life depends on the user's breathing rate, the characteristics of the contaminant, and the environmental conditions such as temperature and humidity. Saturated cartridges will leak trace amounts of contaminant to the wearer, which may be detected by odor, taste, and/or irritation. Replace cartridges when the end-of-service-life indicator (ESLI) has changed color, at the first trace of the characteristic contaminant odor or taste, at regularly scheduled intervals recommended by your safety professional, if they show any signs of damage, or in accordance with an OSHA compliant cartridge change-out schedule. The service life of the cartridge can be estimated using SPERIAN's cartridge service life estimation program, available from SPERIAN. Always replace cartridges in pairs.

Replace cartridges as follows:

1. Return to fresh air.
2. Remove cartridges by turning counter-clockwise. Dispose of used cartridges in accordance with Federal, state, and local guidelines.
3. Install new cartridges, taken only from sealed packages, as described in Section VIII, Part A.1.C.
4. Perform a facepiece fit check as described in Section VIII, Part A.3.

b. Particulate Filter Service Life and Replacement

▲ WARNING

You must replace the filters when breathing becomes uncomfortable or difficult. As particulates collect on the filter surface, the breathing resistance of the facepiece increases. If you wait too long to replace the filters, the particulates may leak past the face seal instead of being collected on the filters. Therefore, SPERIAN strongly recommends that the filters be changed at least daily. Failure to comply with this warning may lead to personal injury, illness, or death.

The service life of the filter depends on the filter series, the way in which the filter captures the contaminant (either mechanically or by electrostatic means), the characteristics of the contaminant, the user's breathing rate, and the environmental conditions such as humidity, temperature, etc. SPERIAN's N95, N99, R95 and Slimline P100 filters use electrostatic charges to capture particles. High humidity and temperatures, as well as contact with oil or non-oil based liquid aerosols, may affect the capture of contaminants by these filters. All new SPERIAN filters must be maintained in factory sealed bags and must only be removed when

they are to be used. Used filters must be stored in a protective bag, and in a clean, dry environment. Detailed guidelines for each filter series are provided below.

1. N-Series Filters

These filters are only NIOSH approved for use against solid and water-based particulates and must not be used in any area that contains oil aerosols. N-series filters capture particles using electrostatic charges, and these types of filters may be subject to some loss of efficiency if they are exposed to certain liquid aerosols. The N-series (N95 and N99) filters must be replaced immediately whenever:

- they are damaged, soiled, soaked with liquids such as water or alcohol, or appear to be suspect or damaged in any manner, or
- the user notices an increase in breathing resistance such that the respirator becomes uncomfortable to wear.

If none of the above occurs and there is a respiratory protection program per OSHA 29 CFR 1910.134 in place, then these filters may be used continually, but only for a maximum of 30 days or 40 total hours, whichever comes first. However, SPERIAN recommends that all filters be replaced daily because the user may be unable to detect small defects resulting in a loss of filter efficiency, and the determination of when breathing resistance becomes too uncomfortable is subjective. Further, SPERIAN recommends that these filters be replaced daily when there are any liquid aerosols present and there is no respirator program in place.

2. R-Series Filters

These filters are NIOSH approved for use against any type of particulate, except that for atmospheres that contain oil. The filters can only be used for 8 hours or a single shift, whichever comes first. When used in either oil-containing or non-oil containing atmospheres, these filters must be replaced immediately whenever:

- they are damaged, soiled, soaked with liquids such as water or alcohol, or appear to be suspect or damaged in any manner, or
- the user notices an increase in breathing resistance such that the respirator becomes uncomfortable to wear.

If none of the above occurs, the filter is used in an area that does not contain oil, and there is a respiratory protection program per OSHA 29 CFR 1910.134 in place, then these filters may be used continually, but only for a maximum of 30 days or 40 total hours, whichever comes first. Even when used in non-oil containing atmospheres, SPERIAN recommends that all filters be replaced daily because the user may be unable to detect small defects


resulting in a loss of filter efficiency, and the determination of when breathing resistance becomes too uncomfortable is subjective.

3. P-Series Filters

These filters are NIOSH approved for long duration use against any type of particulate. When used in either oil-containing or non-oil containing atmospheres, these filters must be replaced immediately whenever:

- they are damaged, soiled, soaked with liquids such as water or alcohol, or appear to be suspect or damaged in any manner, or
- the user notices an increase in breathing resistance such that the respirator becomes uncomfortable to wear.


If none of the above occurs and there is a respiratory protection program per OSHA 29 CFR 1910.134 in place, then these filters may be used continually, but only for a maximum of 30 days or 40 total hours, whichever comes first. However, service time for the Model 1050 P100 filter can be extended if filter performance to 42 CFR Part 84 can be demonstrated. Whether used in oil-containing or non-oil containing atmospheres, SPERIAN recommends that all filters be replaced daily because the user may be unable to detect small defects resulting in a loss of filter efficiency, and the determination of when breathing resistance becomes too uncomfortable is subjective.

 WARNING
<p><i>Failure to properly assemble filter pads to cartridges or filter holders can cause leakage, which could lead to personal injury, illness or death.</i></p>

1. Return to fresh air.
2. Remove cartridges or P100 filters by turning them counterclockwise. Dispose of used cartridges and filters in accordance with Federal, state, and local guidelines.
3. If using filter pads, remove the filter retainers from the cartridges or filter holders. Remove the used filter pads and dispose of them in accordance with Federal, state, and local guidelines. Clean the filter retainer and cartridge or holder if necessary.
4. Install new P100 filters or filter pads, taken only from sealed packages, as described in Section VIII, Part A.1.C.
5. Perform a facepiece fit check as described in Section VIII, Part A.3.


B. Supplied Air Respirator (CF-SAR) Configurations

In addition to the General Warnings listed in Section IV, the following warnings apply to supplied air respirator (CF-SAR) configurations:

 WARNING
<ul style="list-style-type: none"> ● <i>SPERIAN respirators, accessories, and associated equipment should not be used in atmospheres that may contain contaminant concentrations above the lower explosive level (LEL). Intrinsic safety certification of electronic components does not eliminate potential danger from ignition in these atmospheres.</i> ● <i>Do not exceed maximum use concentrations established by regulatory standards.</i> ● <i>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.</i> ● <i>Use only the pressure ranges and hose lengths specified in these user instructions.</i> ● <i>Do not use this respirator in confined spaces.</i> ● <i>For the P100 escape configuration: Never use this respirator without two SPERIAN Model 1050 P100 filters securely threaded onto the facepiece.</i> ● <i>For the P100 escape configuration: The P100 escape filter functionality of the P100 escape CF-CF-SAR configuration is not to be used in atmospheres containing less than 19.5% oxygen.</i> ● FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

1. Air Supply (applicable to side-mounted tube, front-mounted tube and P100 escape configurations)

The following warnings regarding air supply are applicable to all continuous flow supplied air respirator (CF-SAR) configurations (side-mounted tube, front-mounted tube, P100 escape), and should be followed for safe operation of a supplied air respirator.

 WARNING
<ul style="list-style-type: none"> ● <i>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.</i> ● <i>You are responsible for air quality and compliance with safety and health codes applicable to your area.</i> ● <i>See the tables in Section VIII, Part B.8 for hose length, air supply pressure, and quick coupler requirements.</i> ● <i>Do not mix hose types or coupler assemblies except as specified in the tables in Section VIII, Part B.8.</i> ● <i>Be sure that all respirable air system piping, tubing, fittings, and couplings are incompatible with non-respirable gas systems.</i> ● <i>If an air pump or compressor is used to supply breathing air, the following precautions must be taken:</i> <ol style="list-style-type: none"> 1. <i>The air pump or compressor intake must not be located in an area that could possibly contain contaminants, such as but not limited to engine exhaust, spray booth exhaust, or other toxic gases.</i> 2. <i>The air pump or compressor must have intake and exhaust filters capable of removing dirt, carbon dust, oil, oil vapor, and excess water mist that may be present in the area of the intake or may be generated within the air pump or compressor itself. Carbon monoxide alarms should be installed on oil lubricated compressors and in any other situation where carbon monoxide may be present.</i> 3. <i>Frequently test the purity of the air delivered by the air pump or compressor. Air pumps and compressors deteriorate with age, as does the quality of the air they deliver.</i> 4. <i>Set the pressure regulator and/or relief valve to maintain the pressure within the range specified in the tables in Section VIII, Part B.8.</i> ● FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

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.

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

2. Quick Coupler Assembly (applicable to side-mounted tube, front-mounted tube and P100 escape configurations)

A male plug from one of the air line coupler kits listed in the Parts List, Section VI, must be assembled to the open end of the breathing tube. This operation requires a torque wrench.

⚠ WARNING

Do not use pipe thread sealing tape on the quick coupler or air line hose threads. The tape could restrict air-flow or tape fragments could enter the air system. Failure to comply with this warning may lead to personal injury, illness, or death.

The steps and considerations required for completing the Quick Coupler assembly are as follow:

1. Breathing Tube

- a. Apply Loctite No. 567 PST pipe sealant or equivalent to the ¼ NPT threads of the male quick coupler plug. Ensure that no sealant enters the quick coupler or air line hose.
- b. Thread the male plug into the female fitting on the breathing tube. Torque to 150 ±5 in-lb.

⚠ WARNING

- **The full facepiece is NIOSH approved only when supplied with respirable breathing air through no more than three (3) lengths of 9308 Series hose, or two (2) lengths of 9852 Series air line hose at the pressures listed in Tables I and II, located in Section VIII, Part B.8. Do not mix hose types from different columns.**
- **The third pressure column in Table I should be used when using a low pressure ambient air pump. No more than two (2) lengths of 9852 Series air line hose may be used. The air supply must be coupled to the air source and the breathing tube with the OBAC couplers and plugs.**
- **FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.**

CAUTION

Do not exceed the maximum continuous duty or maximum intermittent duty operating pressure of the low pressure ambient air pump. Refer to your pump user manual.

NOTE

The Vortex air cooler is not approved for use with the low pressure ambient air pump.

2. Air Supply Hose

Each length of hose is equipped with a ¼ inch female NPT swivel nut at each end and a male to male ¼ 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 10.

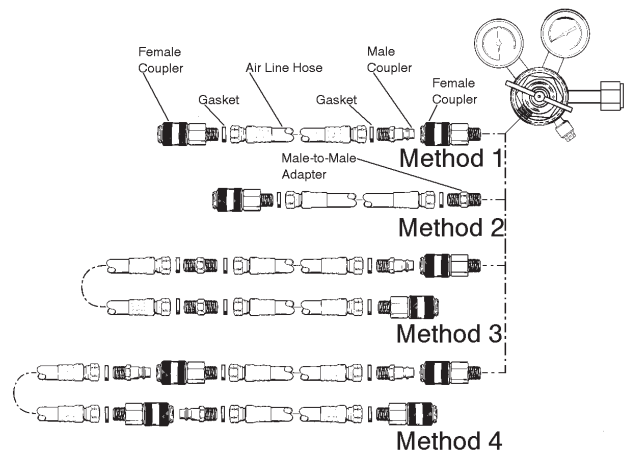



Figure 10. Methods of Hose Connection

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 ¼ inch male to male adapter illustrated in Method 2 is also approved for use with Methods 3 and 4.
 - Method 1 is preferred when only one length of hose is required since it allows the hose to be disconnected from the air supply.
 - Method 3 is preferred when multiple lengths of hose (maximum of three) are required, eliminating 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:
 - Disassemble and repeat steps 3 through 5.
 - If the leaks persist, remove the hose from service and have repairs made by a SPERIAN certified technician.
 - Disassemble and repeat steps 3 through 5.
 - If the leaks persist, remove the hose from service and have repairs made by a SPERIAN certified technician.

 WARNING
<p><i>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.</i></p>

3. Breathing Tube Setup (applicable to side-mounted tube, front-mounted tube and P100 escape configurations)

1. Inspect the equipment as described in Section IX, Part B.
2. Verify that the O-ring is installed at the base of the nozzle inlet. See Figure 11.



Figure 11. Inlet O-ring

3. Verify that unused ports are capped as detailed in Section VII for the applicable CF-SAR operational configuration.
4. Verify that the o-ring is installed into the end of the breathing tube as shown in Figure 12.

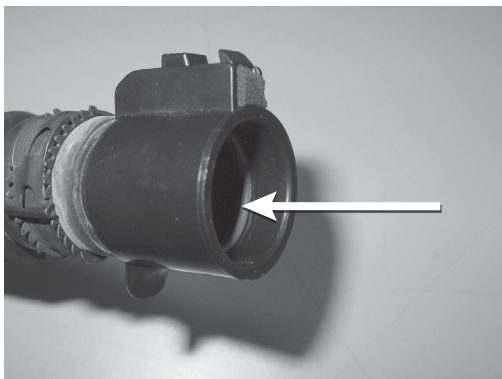


Figure 12. Breathing Tube O-ring

5. Attach the breathing tube to the facepiece.


- For side-mounted tube CF-SAR configuration: Thread one end of breathing tube onto one side connector of the facepiece. Verify that the other side connector is securely capped with a screw cap.
- For front-mounted tube and P100 escape CF-SAR configurations: An audible click should be heard when attaching the breathing tube to the front adapter port on the facepiece nozzle. See Figure 13.



Figure 13. Front Adapter Port and Screw Caps

6. Connect the air line hose to the air supply.
7. Adjust the regulator at the air supply to the proper pressure. Refer to the tables in Section VIII, Part B.8 for determining the required pressure.
8. Don the waist belt, positioning the snap hook over the left hip. Tighten snugly.
9. Attach the waist belt snap hook to the breathing tube clip.
10. Plug the male quick coupler of the breathing tube into the air line quick coupler, and verify that breathing air flows into the facepiece. From the inside of the facepiece, you can verify air-flow by placing your hand near the back side of the nozzle inlet.
11. With the air flowing, verify that the air supply pressure is within the appropriate pressure range listed in the tables in Section VIII, Part B.8. Adjust if necessary.
12. Disconnect the breathing tube quick coupler from the air line and proceed with donning the facepiece.

4. Donning Instructions for CF-SAR Configurations

 WARNING
<p><i>Always don, remove, and fit check the respirator in a safe, uncontaminated area. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

SURVIVAIR Opti-Fit™ Convertible Facepiece

1. Inspect the respirator as described in Section IX, Part B.

NOTE

If the waist belt was not previously donned during the Breathing Tube Setup procedure of Section VIII, Part B.3, don the waist belt now. Position the snap hook over the left hip and attach it to the breathing tube.

2. Verify that unused ports are capped as detailed in Section VII for the applicable CF-SAR operational configuration. (See Figure 14 for a representation of the side-mounted tube CF-SAR configuration).



Figure 14. Place Chin in Chin Cup

3. Adjust the top straps until one inch of strap extends through each buckle. Fully loosen the lower straps. For respirators featuring a Headnet, fully loosen all straps.
4. Place the neck strap (if installed) over your head.
5. Place your chin against the chin cup and center the facepiece on your face. See Figure 14.
6. Hold the facepiece against your face and pull the straps over your head.
7. Tighten the two lower straps, temple straps, then the top straps until a good seal is obtained and all straps lie flat on your head. Do not overtighten the straps. See Figure 15a. For respirators with a Headnet, tighten the two lower straps and the temple straps until a good seal is obtained and all straps lie flat on your head. Flatten the Headnet with a wiping motion toward the back of your head. Retighten straps as necessary. Do not overtighten the straps. See Figure 15b.



Figure 15a. Adjust Lower Straps



Figure 15b. Flatten Headnet with a Wiping Motion

NOTE

When properly adjusted, the head strap hub should be centered on the back of your head and the lower straps should be below your ears. See Figure 16a. For the Headnet version, the backstrap should be at the nape of the neck. The Headnet should lie flat on the head and not bunch up. See Figure 16b.

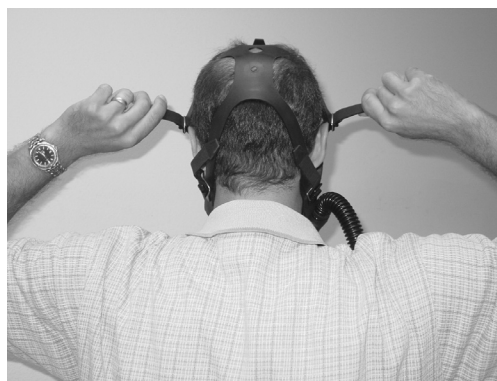



Figure 16a. Properly Center Head Strap Hub



Figure 16b. Properly Fitted Headnet

5. Fit Check Instructions for CF-SAR Configurations

You must perform the following fit checks appropriate for the CF-SAR configuration you are using each time the respirator is worn or before entering the contaminated area.

 WARNING
<p><i>If a leak-tight seal is not obtained during the following fit check, do not wear the respirator. Ask your supervisor or safety professional for assistance. The failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

A. Positive Pressure Fit Check for Side-mounted Tube CF-SAR Configuration

Hold the palm of your hand gently over the exhalation valve outlet of the nozzle cover as shown in Figure 17 and cover the open end of the breathing tube with your other hand. Do not distort the natural shape of the facepiece. Exhale gently and hold your breath to create and maintain a slight positive pressure inside the facepiece. If air leakage occurs, readjust the facepiece and head straps, then retest.



Figure 17. Positive Pressure Fit Check

If a good fit was achieved, attach the breathing tube to the air line hose. The continuous flow supplied air respirator (CF-SAR) is now ready for use.

NOTE

The negative pressure fit check detailed below can be performed as an alternate (or additional) fit check method for the side-mounted tube CF-SAR configuration.

B. Negative Pressure Fit Check for Side-mounted Tube, Front-mounted Tube, and P100 escape CF-SAR Configurations

- **For all CF-SAR configurations:** Plug the end of the breathing tube with a suitable plug.
- **For P100 escape CF-SAR configurations:** Cover the inlets of the filters with the palms of your hands or another suitable item such as a thin sheet of plastic or rubber.


NOTE

Alternatively, the P100 filters may be removed to perform the fit check. If removed, SPERIAN recommends someone other than you reinstall them after a leak-tight fit is achieved. It is difficult for the user to reinstall the filters without disturbing the face seal and to determine whether the filters are correctly installed. It is your responsibility to ensure that the face seal is not disturbed when reinstalling the filters and that each filter is installed correctly.

Inhale gently and hold your breath to slightly collapse the facepiece. The facepiece should remain collapsed on your face without leaking. If the facepiece leaks, reposition, check the straps, and repeat the fit check.

If a good fit was achieved, remove the plug from the breathing tube. If using the P100 escape CF-SAR configuration, reinstall the P100 filters.

Attach the breathing tube to the air line hose. The continuous flow supplied air respirator (CF-SAR) is now ready for use.

 WARNING
<p><i>Never use this respirator unless the quick connect is fully engaged in the locked position. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

6. How to Use the Respirator

Before entering the work area for the first time, or for re-entry, you must verify proper operation of the respirator in accordance with Section VIII, Parts B.1, B.2, and B.3, and follow the donning and fit checking procedures described in Section VIII, Parts B.4 and B.5.

To receive the maximum protection available from your respirator, you must read, understand, and follow all the warnings, limitations, and instructions contained in this manual and follow your employ-

er's instructions on the use and maintenance of the respirator. Read and understand the following warnings prior to using the respirator.

If you are using an ambient air pump, turn off the pump when the respirator is not in use. Operating the pump without a connected supply hose and respirator will cause the pump to overheat. Turn the pump on before reentering the work area and verify that the pump outlet pressure is correct (See Tables I and II), and that the respirator is providing air as described in Section VIII, Part B.8.

▲ WARNING
<ul style="list-style-type: none"> ● <i>The respirator consists of a full facepiece constructed of silicone with a polycarbonate lens, EPDM or EVA breathing tube, and PVC or rubber air line hoses. It is the user's responsibility to verify the respirator materials are acceptable for their intended use. If you are unsure, consult your local safety professional to verify that no possible contaminants and/or liquids will permeate through any of the respirator materials.</i> ● <i>Do not don, doff, or store the respirator in an area where contaminants can contact or accumulate inside any component of the respirator. Contaminants inside the facepiece, breathing tube, or air line hoses may be inhaled or absorbed upon reuse of the respirator.</i> ● <i>Never remove the respirator for any reason while in the work area.</i> ● <i>You must leave the work area immediately if the facepiece-to-face seal is disturbed for any reason such as:</i> <ol style="list-style-type: none"> <i>1. Slippage due to sweating or excessive head movement.</i> <i>2. The facepiece becomes dislodged as a result of being knocked.</i> <i>3. Sneezing or coughing while wearing the facepiece.</i> <i>4. You need to blow your nose, scratch your face, or adjust your spectacles.</i> <i>5. For any other reason that would cause the facepiece seal to be disturbed.</i> ● <i>You must restore the facepiece-to-face seal and perform a fit check in a non-hazardous environment before re-entering the work area.</i> ● <i>FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.</i>

7. Doffing Instructions for CF-SAR Configurations

- a. Loosen the two lower head straps completely (for five strap head harness or Headnet).
- b. Grasp the nozzle firmly, and pull the facepiece upward over the head.

S – Special or Critical User's Instructions

8. Pressure Tables for Supplied Air Respirators (SAR)

Table I in Section VIII, Part B.8 provides the pressure range settings for the air supply regulator for the SURVIVAIR Opti-Fit Continuous Flow Supplied Air Respirator. Refer to Table II when using the vortex air cooler. Refer to Section VI, Parts List, for a listing of the approved air line hose types and coupler kits. No more than three (3) lengths of 9308 Series hose or two (2) lengths of 9852 Series hose at the listed pressures may be used. Do not mix hose types from different columns.

▲ WARNING
<ul style="list-style-type: none"> ● <i>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.</i> ● <i>You are responsible for providing CGA G-7.1, Type 1, Grade D or better air and ensuring compliance with safety and health codes applicable to your area.</i> ● <i>FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.</i>

CAUTION
<p><i>Do not exceed the maximum continuous duty or maximum intermittent duty operating pressure of the low pressure ambient air pump. Refer to your pump user manual.</i></p>

NOTE

- The third column in Table I should be used when using a low pressure ambient air pump. No more than two (2) lengths of 9852 Series air line hose may be used. The air supply line must be coupled to the air source and the breathing tube with OBAC couplers and plugs.
- The vortex air cooler is not approved for use with the low pressure ambient air pump.

TABLE I


SURVIVAIR Opti-Fit Full Facepiece			
Hose Length (feet)	Pressure (psig)		
	9308 Series Hose w/OBAC Couplings	9308 Series Hose w/Foster/Hansen/Schrader Couplings	9852 Series Hose
0*	1 to 4*	2 to 14*	—
25	5 to 12	9 to 12	(985241)2.5 to 8
50	7 to 17	13 to 23	(985242)3.6 to 12
75	10 to 22	17 to 30	—
100	15 to 25	20 to 25	(985244)6.3 to 21
150	19 to 35	25 to 35	—
200	19 to 35	25 to 25	—
250	20 to 45	30 to 45	—
300	20 to 50	30 to 50	—

*Indicates the pressure range required when no supplied air line hose is being used, and the respirator breathing tube is connected directly to the air supply source. The breathing tube must be connected to the air supply with a quick-disconnect fitting.

TABLE II

SURVIVAIR Opti-Fit Full Facepiece with Vortex Air Cooler (P/N 981847)		
Hose Length (feet)	Pressure (psig)	
	9308 Series Hose w/Foster/ Hansen/Schrader/ OBAC Couplings	9852 Series Hose
25	45 to 75	(985241) 40 to 75
50	45 to 80	(985242) 40 to 80
75	50 to 80	—
100	50 to 85	(985244) 40 to 85
150	55 to 85	—
200	55 to 90	—
250	60 to 100	—
300	60 to 100	—

9. P100 Filter Service Life and Replacement

 WARNING
<p><i>You must replace the filters when breathing becomes uncomfortable or difficult. As particulates collect on the filter surface, the breathing resistance of the facepiece increases. If you wait too long to replace the filters, the particulates may leak past the face seal instead of being collected on the filters. Therefore, SPERIAN strongly recommends that the filters be changed at least daily. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

Before using a particulate filter, you must confirm that the atmosphere is non-IDLH and not oxygen deficient, the contaminant is a particulate hazard, and you must determine the hazard ratio (hazard concentration/exposure limit). If the hazard ratio is less than 100, you may use a full facepiece respirator with a filter efficiency of 99% or higher. If the hazard ratio is greater than 100, you must use another type of respirator.

The service life of the filter depends on the characteristics of the contaminant, the user's breathing rate, and the environmental conditions such as humidity, temperature, etc. All new SPERIAN filters must be maintained in factory sealed bags and must only be removed when they are to be used. Used filters must be stored in a protective bag, and in a clean, dry environment.

SPERIAN Model 1050 P100 filters are NIOSH approved for long duration use against any type of particulate. When used in either oil-containing (e.g., lubricants, cutting fluids, glycerin, etc.) or non-oil-containing atmospheres, these filters must be replaced immediately whenever:

- they are damaged, soiled, soaked with liquids such as water or alcohol, or appear to be suspect or damaged in any manner, or
- the user notices an increase in breathing resistance such that the respirator becomes uncomfortable to wear.

If none of the above occurs, and there is a respiratory protection program per OSHA 29 CFR 1910.134 in place, then these filters may be used continually, but only for a maximum of 30 days or 40 total hours, whichever comes first. However, service time for the Model 1050 P100 filter can be extended if filter performance to 42 CFR Part 84 can be demonstrated. Whether used in oil-containing or non-oil containing atmospheres, SPERIAN recommends that all filters be replaced daily because the user may be unable to detect small defects resulting in a loss of filter efficiency, and the determination of when breathing resistance becomes too uncomfortable is subjective.

- a. Return to fresh air.
- b. Unscrew the used P100 filters from the facepiece connectors and discard them in accordance with applicable local, state and Federal guidelines.
- c. Securely install new P100 filters onto the facepiece threaded connectors as described in Section VIII, Part B.3.
- d. Perform a facepiece fit check as described in Section VIII, Part B.5.

C. Powered Air Purifying Respirator (PAPR) Configurations

In addition to the General Warnings listed in Section IV, the following warnings apply to powered air purifying respirator (PAPR) configurations:

<p>⚠ WARNING</p>
<ul style="list-style-type: none"> • <i>SPERIAN respirators, accessories, and associated equipment should not be used in atmospheres that may contain contaminant concentrations above the lower explosive level (LEL). Intrinsic safety certification of electronic components does not eliminate potential danger from ignition in these atmospheres.</i> • <i>This respirator does not supply oxygen. Do not use the respirator in atmospheres containing less than 19.5% oxygen by volume.</i> • <i>For the mask mounted blower configuration: NEVER use this respirator without a SPERIAN HE filter, P/N 108000, securely threaded into the blower.</i> • <i>For the mask mounted blower configuration: The respirator does not protect against gases or vapors. It is only for protection against particulate contaminants.</i> • FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

1. Battery Pack Charging (Mask-mounted and Belt-mounted PAPR Configurations)

The battery pack must be charged before the first use and should be recharged after each use.

<p>⚠ WARNING</p>
<ul style="list-style-type: none"> • <i>The SPERIAN PAPR chargers, both individual and gang-type, are for indoor use only and must not be exposed to outdoor elements.</i> • <i>Battery pack charging must be done in a safe, non-hazardous location. Failure to do so may result in injury or death.</i> • <i>Only SPERIAN P/N 520060 or 522000 Nickel-Cadmium battery packs can be charged with a SPERIAN P/N 520073 charger. Charging other types of batteries could cause explosions resulting in injury or death.</i> • FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

<p>CAUTION</p>
<p><i>SPERIAN recommends that the battery pack be charged at temperatures between 40°F and 80°F (4.5°C and 26.7°C). Charging at higher temperatures may cause a reduction in capacity and may reduce battery pack life.</i></p>

NOTE

- The battery switch may be left in the ON or OFF position during charging.
- The battery is equipped with an automatic fault protection circuit; no fuse is required.

1. Plug the battery charger into a 110 to 120 VAC power outlet.
2. Connect the charger outlet cable to the battery pack. The red light on the battery charger will illuminate when an electrical connection to the battery is made. If the light does not come on, the charger or battery pack may be damaged.
3. Allow the battery pack to charge for 14 to 16 hours. The charger light will remain on whenever the battery is being charged.

NOTE

SPERIAN does not recommend charging the battery for more than 24 hours. Charging the battery pack for longer periods will not normally damage the battery pack but may reduce the life of the battery

4. If the charger (and light) cycles on and off, there is a problem with the battery pack and it should be replaced.

2. Cartridge and Filter Installation

- a. Mask-mounted PAPR Configuration – Filter Installation

<p>⚠ WARNING</p>
<ul style="list-style-type: none"> • <i>Use only SPERIAN HE filters, P/N 108000. Use of any other filter will void the equipment's NIOSH approval and may allow leakage that could result in serious illness or death.</i> • <i>Never use the PAPR without the blower inlet gasket (Figure 18) in place. Use of the PAPR without the blower inlet gasket could allow contaminants to leak into the facepiece, resulting in illness or death.</i> • <i>Use only components identified in this manual and on the NIOSH approval label. Substitute components will void approval and may result in illness or death.</i>

1. Verify that the rubber gasket is in place at the bottom of the threaded blower inlet as shown in Figure 18.



Figure 18. Blower Inlet Gasket

2. Install a SPERIAN HE Filter, P/N 108000, and hand tighten. A SPERIAN shower cap, P/N 981177, may be fitted over the filter inlet.

b. Belt-mounted PAPR Configuration—
Cartridge and Filter Installation

<p>⚠ WARNING</p>
<ul style="list-style-type: none"> • <i>Always read cartridge labels prior to use to be certain that you have cartridges and/or filters that will provide the required protection. Filters labeled for protection against particulates only shall not be used for gases/vapors, and cartridges labeled for protection against gases and vapors only shall not be used for particulates.</i> • <i>Only use three (3) cartridges or filters of the same type.</i> • <i>Never use the PAPR without all four (4) blower inlet gaskets in place (Figure 19). Use of the PAPR without the blower inlet gasket could allow contaminants to leak into the facepiece.</i> • FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

1. Verify that the rubber gaskets are in place at the bottom of the threaded blower inlets as shown in Figure 19.

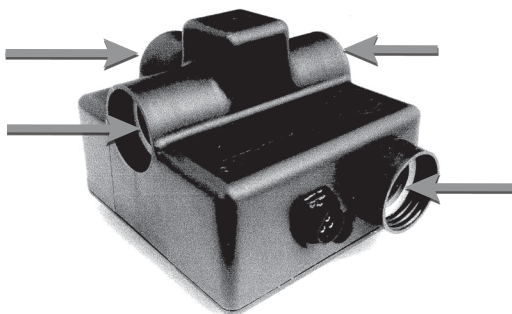


Figure 19. Blower Inlet Gaskets

2. If installing chemical cartridges, remove the screw cap and plug from each cartridge. Retain for reuse.
3. Install the three (3) cartridges or filters and hand tighten.
4. Connect the power cord between the blower and battery pack.

3. Pre-operational Flow Check

- a. Mask-mounted PAPR Configuration—Pre-operational Flow Check

<p>⚠ WARNING</p>
<p><i>Flow check, facepiece fit check, donning, and doffing must be done in a safe, uncontaminated area. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

The airflow must be verified before each use. Use the following procedure to verify that the blower is supplying adequate airflow.

1. Detach the blower from the facepiece by pressing down the catch on top of the blower and pulling the blower away from the facepiece. See Figure 20.

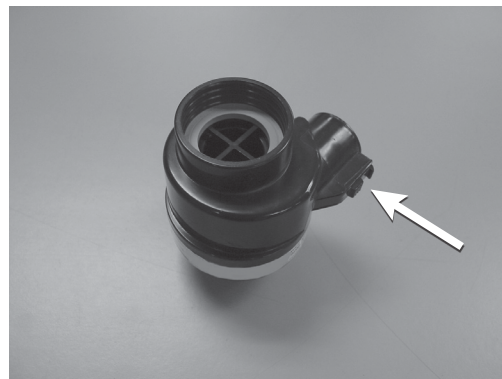


Figure 20. Blower Catch

2. Connect the power cord to the battery pack and blower assembly and start the blower by pressing the battery ON/OFF switch.
3. With the blower outlet facing upward, insert the Flow Meter, P/N 580009, with the arrow pointing upward, being careful not to cover the slots in the side of the flow meter tube. See Figure 21.

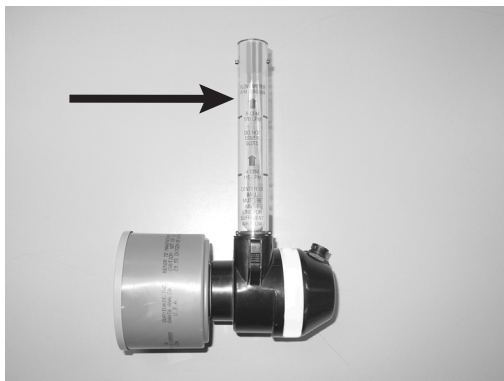


Figure 21. Flow Meter Attached to Mask-mounted Blower

4. If the ball rises above the line on the flow meter indicating that the flow exceeds 4 cubic feet per minute, proceed to the step 6.

⚠ WARNING

If the flow meter ball does not rise above the line, DO NOT USE the PAPR until the cause can be determined and corrected. Use of a PAPR with a low flow may result in illness or death.

5. If the ball is below the line indicating low flow, the most probable causes are:
 - a. The filter is blocked by dust or water. Replace with a new SPERIAN HE filter, P/N 108000.
 - b. Low battery voltage. Recharge the battery for 14 to 16 hours.

Identify and correct any low flow problems before proceeding to step 6.

6. Remove the flow meter and detach the power cord from the battery pack. Reattach the blower to the facepiece, ensuring that the catch snaps into the slot on the facepiece nozzle.
7. Slip the belt through the loops on the battery pack and adjust the battery pack so that the belt rides comfortably on the hips. Tighten the belt.
8. Attach the power cord to the battery pack.

⚠ WARNING

If changing the filter and/or recharging the battery pack does not restore normal airflow, DO NOT USE the PAPR. Have the PAPR repaired by the SPERIAN factory repair center. Using a PAPR that is operating improperly may result in illness or death.

- b. Belt-mounted PAPR Configuration—Pre-operational Flow Check

⚠ WARNING

Flow check, facepiece fit check, donning, and doffing must be done in a safe, uncontaminated area. Failure to comply with this warning may lead to personal injury, illness, or death.

The airflow must be verified before each use. Use the following procedure to verify that the blower is supplying adequate airflow.

1. Verify the tightness of all three (3) cartridges or filters.
2. Insert the Flow Meter, P/N 580009, into the blower outlet with the arrow pointing upward as shown in Figure 22.

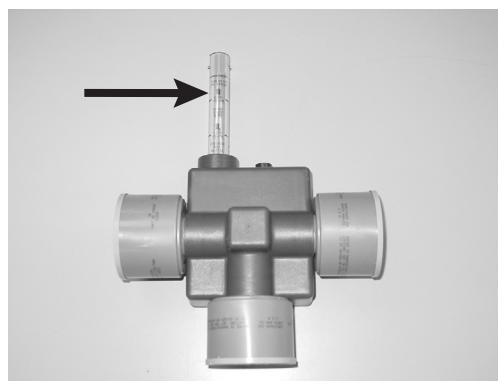


Figure 22. Flow Meter Attached to Belt-Mounted Blower

3. Connect the power cord to the battery pack and blower assembly, and start the blower by pressing the battery ON/OFF switch.

NOTE

Do not cover the inlet area of any cartridges, filters, or slots in the side of the flow meter tube when performing the airflow check.

4. Verify the airflow is greater than 170 liters per minute (6 cfm) at the blower outlet as shown in Figure 22. The flow meter is designed so that a reading of 170 lpm or greater at the blower outlet will ensure the airflow is greater than 115 lpm at the full facepiece. If the ball rises above the line on the flow meter indicating that the flow exceeds 170 lpm, proceed to step 6.

⚠ WARNING

If the flow meter ball does not rise above the line, DO NOT USE the PAPR until the cause can be determined and corrected. Use of a PAPR with a low flow may result in illness or death.

5. If the ball is below the line indicating low flow, the most probable causes are:
 - a. The filter is blocked by dust or water. Replace with a new SPERIAN HE filter, P/N 108000.
 - b. Low battery voltage. Recharge the battery for 14 to 16 hours.
- Identify and correct any low flow problems before proceeding to step 6.
6. Remove the flow meter from the blower housing.
 7. Slip the belt through the loops on the blower, then through the loops on the battery pack. If you prefer to have the battery pack located on your left side, feed the belt through the battery pack first.
 8. Attach power cord to the battery pack.

NOTE

Do not attach the breathing tube to the blower at this point. Instructions for attaching the breathing tube to the blower are listed in the Fit Check instructions found after the instructions for donning the respirator.

⚠ WARNING

If changing the filter and/or recharging the battery pack does not restore normal airflow, DO NOT USE the PAPR. Have the PAPR repaired by the SPERIAN factory repair center. Using a PAPR that is operating improperly may result in illness or death.

4. Donning Instructions for PAPR Configurations**⚠ WARNING**

- ***Always don, remove, and fit check the respirator in a safe, uncontaminated area.***
- ***Prior to donning the SPERIAN mask-mounted PAPR, ensure that the blower inlet gasket is in place (Figure 18), and that the blower o-ring is in place in the blower outlet. Use of the PAPR without the blower inlet gasket and/or blower o-ring in place could allow contaminants to leak into the facepiece, resulting in illness or death.***
- ***Prior to donning the SPERIAN belt-mounted PAPR, ensure that the blower outlet gasket is in place, and that the connector O-ring is in place in the breathing tube (Figure 24). Use of the PAPR without the blower outlet gasket and /or connector o-ring in place could allow contaminants to leak into the facepiece, resulting in illness or death.***
- ***When the PAPR is used in a contaminated environment, both screw caps (Item 27, P/N 985020) must be securely installed on the gray threaded connectors as shown in figure 1. For the mask-mounted PAPR, the HE filter, P/N 108000, must be installed on the blower assembly. Improperly installed screw caps or filter could allow contaminants to leak into the facepiece, causing illness or death.***

1. Inspect the respirator as described in Section IX, Part B.
2. Verify that unused side connector ports are capped as detailed in Section VII for the PAPR operational configuration. See Figure 23.



Figure 23. O-ring and Screw Caps

SURVIVAIR Opti-Fit™ Convertible Facepiece

- For belt-mounted setup: Also detach the breathing tube from the facepiece, if attached, and verify that an o-ring is installed at the base of the adapter inlet. See Figure 24.

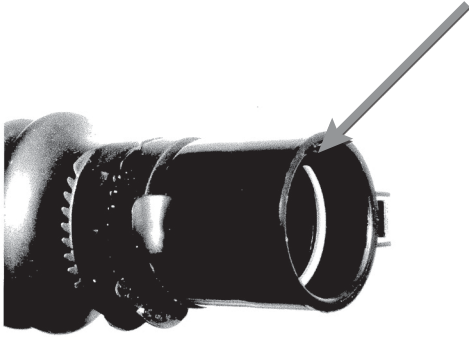


Figure 24. Breathing Tube O-ring

3. Verify that the power cord is connected between the battery pack and blower.
4. If the waist belt was not donned while performing the pre-operational flow check, don the waist belt now and tighten snugly. Secure any excess belt length.
5. Slide the battery pack and blower into position around your waist.
 - For mask-mounted setup: Position the battery pack to your right or left side.
 - For belt-mounted setup: Position the blower around to your back and the battery pack to your right or left side.
6. Adjust the top straps until one inch of strap extends through each buckle. Fully loosen the lower straps. For respirators with a Headnet, loosen all straps.
7. Place the neck strap (if installed) over your head.
8. Place your chin against the chin cup and center the facepiece on your face. See Figure 25.



Figure 25. Place Chin in Chin Cup

Hold the facepiece against your face and pull the straps over your head.

9. Tighten the two lower straps, temple straps, then the top straps until a good seal is obtained and all straps lie flat on your head. See Figure 26a. For respirators with a Headnet, tighten the two lower straps, then the temple straps, until a good seal is obtained and all straps lie flat on your head. Flatten the Headnet with a wiping motion toward the back of your head. Retighten straps as necessary. Do not overtighten the straps. See Figure 26b.



Figure 26a. Adjust Lower Straps



Figure 26b. Flatten Headnet with a Wiping Motion

NOTE

When properly adjusted, the head strap hub should be centered on the back of your head and the lower straps should be below your ears. See Figure 27a. For the Headnet version, the backstrap should be at the nape of the neck. The Headnet should lie flat on the head and not bunch up. See Figure 27b.



Figure 27a. Properly Center the Head Strap Hub



Figure 27b. Properly Fitted Headnet

5. Fit Check Instructions for PAPR Configurations

You must perform the following fit check each time the respirator is worn or before entering the contaminated area.

▲ WARNING

If a leak-tight seal is not obtained during the following fit check, do not wear the respirator. Ask your supervisor or safety professional for assistance. The failure to comply with this warning may lead to personal injury, illness, or death.

1. Turn off the blower

For mask-mounted setup: Remove the filter from the blower.

For belt-mounted setup: Remove the breathing tube from the facepiece nozzle.

2. Cover the blower inlet with your hand and inhale gently, slightly collapsing the facepiece.
3. Hold your breath for approximately 5 seconds. The facepiece should remain slightly collapsed. If it does not, readjust the facepiece and perform the fit check again. If a seal is still not achieved, do not wear the respirator. Ask your supervisor or safety professional for assistance.

4. If a good fit was achieved:

For mask-mounted setup: Reattach the filter onto the blower assembly and press the ON/OFF switch on the battery pack to start the blower.

For belt-mounted setup:

- Attach the breathing tube to the facepiece nozzle: Push the facepiece connector end of the breathing tube onto the nozzle of the facepiece. Align the catch on the connector with the slot in the nozzle. Push the connector until the latch completely engages with the nozzle.
- Screw the breathing tube into the blower outlet and tighten securely.
- Press the ON/OFF switch on the battery pack to start the blower.

NOTE

In the event of a decrease or loss of airflow from the blower for both the mask-mounted and belt-mounted PAPR configurations, the wearer can safely breathe through the blower/filter assembly until reaching an uncontaminated area.

▲ WARNING

Verify that the blower is providing air to the facepiece before entering a hazardous environment. You should feel air blowing onto your face. Improper airflow may result in inhalation of contaminants. The failure to comply with this warning may lead to personal injury, illness, or death.

6. How to Use the Respirator

Before entering the work area for the first time or re-entering for any reason, you must verify proper operation of the respirator in accordance with the Pre-operational Flow Check procedure of Section VIII, Part C.3, and also follow the donning procedures described in Section VIII, Part C.4.

To receive the maximum protection available from your respirator, you must read, understand, and follow all the warnings, limitations, and instructions contained in this manual and follow your employer's instructions on the use and maintenance of the respirator. Read and understand the following warnings prior to using the respirator.

▲ WARNING

- *The respirator consists of a full facepiece constructed of silicone with a polycarbonate lens, blower, filter, battery, power cord, and a belt. It is the user's responsibility to verify that the respirator materials are acceptable for their intended use. If you are unsure, consult you local safety professional to verify that no possible contaminants and/or liquids will permeate through any of the respirator materials.*
- *Do not don, doff, or store the respirator in an area where contaminants can contact or accumulate inside any component of the respirator. Contaminants inside the facepiece may be inhaled or absorbed upon reuse of the respirator.*
- *Never remove the respirator for any reason while in the work area.*

▲ WARNING—Continued

- *You must leave the work area immediately if the facepiece-to-face seal is disturbed for any reason, such as:*
 - a. *Slippage due to sweating or excessive head movement.*
 - b. *The facepiece becomes dislodged as a result of being knocked.*
 - c. *Sneezing or coughing while wearing the facepiece.*
 - d. *You need to blow your nose, scratch your face, or adjust your spectacles.*
 - e. *For any other reason that would cause the facepiece seal to be disturbed.*
- *You must restore the facepiece-to-face seal and perform a fit check in a non-hazardous environment before re-entering the work area.*
- **FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.**

7. Doffing Instructions for PAPR Configurations

1. Loosen the two lower head straps completely (for five strap head harness or Headnet).
2. Grasp the nozzle firmly, and pull the facepiece upward over the head.

8. Chemical and Particulate Filter Service Life and Replacement

1. Chemical Cartridge Service Life— Belt-mounted PAPR Configuration

▲ WARNING

- *OSHA allows the use of air purifying respirators for protection against contaminants with poor warning properties. You must replace cartridges when the end-of-service-life indicator (ESLI) has changed color or in accordance with an OSHA compliant cartridge change-out schedule that is based on objective information or data that ensures the cartridges are changed before the end of their service life.*
- *You must immediately leave the contaminated area if you taste or smell contaminants, or if your eyes or throat become irritated. Replace cartridges and/or filters before re-entering the contaminated area.*


▲ WARNING—Continued

- *Establishing the cartridge service life for mixtures of contaminants is a complex task, and one that requires considerable professional judgment to create a reasonable change-out schedule. OSHA provides a “rule-of-thumb” method for determining the cartridge service life for mixtures. The method addresses two situations. The first is where the individual compounds of the mixture have similar breakthrough times (i.e., within one order of magnitude). In this case, OSHA recommends adding the concentrations of all the components of the mixture to determine a “total concentration,” then determine the mixture service life by applying the total concentration to the component with the shortest service life. The second is where the individual compounds have breakthrough times that vary by two orders of magnitude or greater. In this case, OSHA recommends the mixture service life be based on the contaminant with the shortest breakthrough time. The OSHA rule-of-thumb methods may not be applicable for all mixtures. In some cases, the actual mixture service life may be much lower than the one calculated. For this reason, SPERIAN recommends that the cartridge service life for mixtures be determined using experimental methods. If you are unsure of how to determine the cartridge service life for mixtures, please contact SPERIAN.*
- **FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.**

The cartridge service life depends on the user's breathing rate, the characteristics of the contaminant, and the environmental conditions such as temperature and humidity. Saturated cartridges will leak trace amounts of contaminant to the wearer, which may be detected by odor, taste, and/or irritation. Replace cartridges when the end-of-service-life indicator (ESLI) has changed color, at the first trace of the characteristic contaminant odor or taste, at regularly scheduled intervals recommended by your safety professional, if they show any signs of damage, or in accordance with an OSHA compliant cartridge change-out schedule. The service life of the cartridge can be estimated using SPERIAN's cartridge service life estimation program, available from SPERIAN. Always replace all cartridges at the same time.

Replace cartridges as follows:

1. Return to fresh air.
 2. Remove cartridges from the blower by turning counterclockwise. Dispose of used cartridges in accordance with Federal, state, and local guidelines.
 3. Install new cartridges, taken only from sealed packages, as described in Section VIII, Part C.2.B.
 4. Perform a pre-operational flow check as described in Section VIII, Part C.3.B
2. Particulate Filter Service Life– Mask-mounted and Belt-mounted PAPR Configurations

 WARNING
<p><i>You must replace the combination cartridges or HE filters in a non-contaminated area when they become contaminated such that they do not permit adequate flow during the flow check or while in use. As particulates collect on the filter surfaces, the resistance of the filter increases, causing the flow of clean air into the facepiece to decrease. If you wait too long to change the combination cartridges or filters, particulates may leak past the face seal instead of being collected on the filters. Therefore, SPERIAN strongly recommends that combination cartridges or filters be changed at least daily. Failure to comply with this warning may lead to personal injury, illness or death.</i></p>

The combination cartridge and HE filter are NIOSH approved for long duration use against any type of particulate. When used in either oil-containing (e.g., lubricants, cutting fluids, glycerin, etc.) or non-oil-containing atmospheres, the combination cartridges or filters must be replaced immediately whenever:

- they are damaged, soiled, soaked with liquids such as water or alcohol, or appear to be suspect or damaged in any manner, or
- the user notices an increase in breathing resistance such that the respirator becomes uncomfortable to wear.
- they become contaminated such that they do not permit adequate flow during the flow check or while in use.

Replace the combination cartridges or HE filter as follows:

1. Return to fresh air.
2. Remove the combination cartridges or HE filter from the blower by turning counterclockwise. Dispose of used cartridges in accordance with Federal, state, and local guidelines.

3. Install new cartridges, taken only from sealed packages, as described in Section VIII, Part C.2.A or Part C.2.B.
4. Perform a pre-operational flow check as described in Section VIII, Part C.3.A or Part C.3.B.

9. Decontamination – Mask-mounted and Belt-mounted PAPR Configurations

CAUTION
<ul style="list-style-type: none"> • <i>Do not allow water to enter the blower. If water is allowed to remain in the blower for more than a few minutes, permanent damage will occur. Should water accidentally enter the blower, start the blower and shake the water out. Before storing the PAPR, allow the blower to run for a least ten (10) minutes. Verify that the PAPR is dry.</i> • <i>To prevent water from entering the blower during decontamination, leave the blower attached to the facepiece, and the filter securely attached to the blower.</i> • <i>Cartridges and/or filters that have been soaked cannot be used.</i> • <i>Ensure that water does not enter the blower from inside the facepiece during removal or decontamination.</i> • <i>The battery cable must remain attached to the blower and battery pack during decontamination to prevent water from entering the battery pack case or blower.</i>

NOTE

For mask-mounted PAPR setup: Leave the blower attached to the mask and the filter securely attached to the blower. Inhaled air will be drawn through the filter during decontamination.

1. Adjust the shower caps (Item 44, P/N 981177) on the filters so that the opening is pointing away from the water spray.
2. Proceed through the shower, following approved decontamination methods.

IX. MAINTENANCE

NOTE

Inspect this respirator 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 respirator is maintained in satisfactory working condition. Keep a record of inspection and repair dates and results. Refer to the Inspection Tables in Section XIV of this manual.

A. Cleaning (applicable for all APR, SAR, and PAPP configurations)

Clean respirators after each day's use by washing with mild soap and warm water. Then disinfect the respirators with a suitable sanitizing solution. OSHA 1910.134, latest edition, and ANSI Z88.2, latest edition, also provide information and guidelines on the cleaning and sanitizing of respirators.

 WARNING
<ul style="list-style-type: none"> ● <i>It is the user's responsibility to ensure that the cleaning process chosen provides adequate decontamination and disinfection.</i> ● <i>Specialized processes are required to disinfect and decontaminate a respirator. You must follow the instructions of the manufacturer of the equipment and chemicals.</i> ● <i>In the absence of a commercial sanitizing product, the hypochlorite solution described below will eliminate many, but not all biohazards.</i> ● FAILURE TO COMPLY WITH THIS WARNING MAY LEAD TO PERSONAL INJURY, ILLNESS, OR DEATH.

CAUTION
<ul style="list-style-type: none"> ● <i>For PAPP Configurations: DO NOT place the battery pack, blower assembly, or battery cord in water or solvents. Damage to the equipment will result.</i> ● <i>Do not use ultrasonic cleaners to clean respirators equipped with speaking diaphragms.</i> ● <i>Do not use gasoline, organic based solvents, or chlorinated degreasing fluids to clean any part of this respirator.</i> ● <i>Do not clean the facepiece with the blower attached.</i> ● <i>You must ensure that this respirator is not damaged when using disinfecting or decontamination equipment or chemicals.</i> ● <i>The facepiece lens can be scratched through careless or abusive handling. Do NOT use abrasive cleaners or pads. Do not towel dry.</i>

NOTE

Silicone and rubber parts of the facepiece may be cleaned between washings with SPERIAN mask wipes, P/Ns 140096 and 140082.

1. To Clean the Facepiece:

- a. Make a cleaning solution of warm water and mild detergent.
- b. Disconnect the blower assembly from the facepiece by depressing the hook latch and pulling the blower free of the facepiece. Take care not to lose the o-ring inside the blower connector.
- c. Immerse the facepiece top first in the solution until the exhalation valve is covered.
- d. Agitate the facepiece and gently clean with a soft brush.
- e. 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.
- f. Disinfect the facepiece in a warm, (120°F or 48°C maximum), suitable sanitizing solution, such as "hypochlorite solution" for 2 to 3 minutes. A 50 ppm hypochlorite solution can be prepared by mixing 2 tablespoons (0.13 ounce) of chlorine bleach per each gallon of water. Rinse thoroughly with fresh warm (120°F or 48°C maximum) water.
- g. Allow the facepiece to drip dry, or dry with a lint-free cloth. Warm air may be used to speed up drying.

NOTE

Washing the lens will remove any user applied anti-fog coating. Recoat with SPERIAN Anti-fog solution, P/N 951015 (1 oz.), or 951016 (16 oz.), or use SPERIAN single use anti-fog wipes, P/N 981803.

- h. After cleaning, apply three drops of anti-fog solution as required to the inner surface of the lens and spread with your finger. Buff with a lint-free cloth. If using an anti-fog wipe, follow the instructions on the wipe packet.
- i. Hold the facepiece firmly against your face and exhale several times to ensure that the exhalation valve functions smoothly.
- j. Carefully inspect the respirator as described in Section IX, Part B.
- k. Reconnect breathing tube or cartridges to the facepiece before use.

For APR Configurations: Reconnect cartridges and/or filters to threaded side connectors.

For CF-SAR and PAPP Configurations: Reconnect the breathing tube to either threaded side connector or front adapter on the facepiece. For breathing tubes connected to the front adapter on the facepiece nozzle, make sure the latch locks firmly when reconnecting the tube.

2. To Clean Breathing Tubes and Blowers:

- a. Wash the breathing tube, avoiding wetting the inside of the tube as much as possible.

- b. Clean the blower assembly, battery, and battery cord with a brush or damp cloth, then dry with a clean, lint-free cloth. Do not allow water to enter the blower.

CAUTION
<ul style="list-style-type: none"> ● <i>To prevent mildew, ensure that the inside of the breathing tube is completely dried after washing.</i> ● <i>If the possibility exists that water may have entered the blower, run the blower for a least 10 minutes afterward to dry the inside. The filter should remain on the unit whenever the blower is operating in an atmosphere with a high water content.</i>

B. Inspection (applicable for all APR, SAR, and PAPR configurations)

Inspect the respirator before and after each use as described in the Inspection Tables of Section XIV and replace any damaged component. See Section IX, Part C for repair instructions.

▲ WARNING
<ul style="list-style-type: none"> ● <i>Do not use the respirator with damaged or improperly operating valves.</i> ● <i>Ensure that the twin seal is in the o-ring groove between the lens and connector. Ensure that the part number tab on the o-ring is visible and in the notch provided on the lens.</i> ● <i>For APR and CF-SAR side-mounted hose configurations: Ensure that the o-ring (See Figure X in Section VIII, Part A.2) is in the adapter cap (item 24, P/N 420020) and the cap is securely seated on the adapter. Using the facepiece in applicable configurations without the adapter cap securely seated could allow contaminants to leak into the facepiece.</i> ● <i>For PAPR configurations: Do not attempt to disassemble the blower or battery pack. Disassembly by other than SPERIAN certified technicians might render the equipment unsafe or void NIOSH approvals and your warranty.</i> ● <i>Failure to comply with this warning may lead to personal injury, illness or death.</i>

C. Repair (applicable for all APR, SAR, and PAPR configurations)

Repair by the user is limited to replacement of components listed in the Repair Tables of Section XV and as listed on the NIOSH approval level. Disassembly should be performed only to the extent necessary to re-

place the components. To protect your warranty and the NIOSH certification of the equipment, all other repairs must be done only by authorized SPERIAN technicians and repair centers. Consult your SPERIAN distributor for the one nearest you. You must perform a fit check as described in this user manual after any repair and before respirator use.

▲ WARNING
<p><i>For CF-SAR and PAPR Configurations: Do not disassemble this respirator until the air supply has been disconnected or shut off. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

D. Storage (applicable for all APR, SAR, and PAPR configurations)

After inspection and cleaning, store your SURVIVAIR Opti-Fit facepiece to protect it against dust, sunlight, extreme heat and cold, excessive moisture, or damaging chemicals.

▲ WARNING
<p><i>The respirator does not have a defined storage life. Carefully inspect the respirator before each use. Failure to comply with this warning may lead to personal injury, illness, or death.</i></p>

CAUTION
<p><i>The maximum storage temperature for the respirator is 140°F (60°C). Long-term storage at elevated temperatures may cause premature deterioration.</i></p>

For PAPR Configurations:

- a. Before storing the PAPR, allow the blower to run at least 10 minutes. Check to ensure that the PAPR is dry. After inspection and cleaning, the SPERIAN Mask Mounted PAPR should be stored to protect it against dust, sunlight, extreme heat and cold, excessive moisture, or damaging chemicals.
- b. Follow the charging instructions after removing the PAPR batteries from long term storage.

X. SHIPMENT

All products returned to SPERIAN's factory, distributors, or repair centers must be decontaminated prior to shipment.

<p>PRODUCTS CONTAMINATED WITH DANGEROUS SUBSTANCES WILL BE REFUSED AND RETURNED FREIGHT COLLECT.</p>

XI. OVERHAUL FREQUENCY

The SPERIAN air purifying, supplied air and powered air purifying respirator (APR, SAR, PAPR) configurations do not have an overhaul requirement other than that required in Section IX, Maintenance.

XII. ADDITIONAL INFORMATION

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

SPERIAN

3001 S Susan Street

Santa Ana, CA 92704

Tel: (714) 545-0410 or (888) APR-SCBA

FAX: (714) 850-0299


XIII. WARRANTY AND LIMITATION OF LIABILITY

LIMITED WARRANTY: SPERIAN warrants this product to be free from defects in materials and workmanship for one (1) year from the date of purchase. During this period, SPERIAN will repair or replace defective parts, at SPERIAN's option. Freight charges to and from the SPERIAN factory shall be paid by the purchaser.

EXCLUSIONS: NOT WITH STANDING ANY CONTRARY TERM IN THE PURCHASER'S PURCHASE ORDER OR OTHERWISE, THE ONLY WARRANTY EXTENDED BY SPERIAN 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; parts damaged by abuse, misuse, negligence, or accidents; and batteries or damage from battery leakage are specifically excluded from this warranty.

LIMITATION OF LIABILITY: No other oral warranties, representations, or guarantees of any kind have been made by SPERIAN, its distributors, or the agents of either of them, that in any way alter the terms of this warranty. **EXCEPT AS HERE IN PROVIDED, SPERIAN 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
<i>The failure to use and maintain this equipment in strict conformance with the applicable instruction manual may result in personal injury, 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.</i>

SURVIVAIR Opti-Fit™ Convertible Facepiece

XIV. RESPIRATOR INSPECTION TABLES

General Inspection Table

The following table lists general inspection steps to be followed for all respirator configurations (APR, SAR, PAPR).

COMPONENT	LOOK FOR
FACEPIECE LENS	<ol style="list-style-type: none"> 1. Nicks, scratches, or abrasions that 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. 2. Loose 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 AND BUCKLE STRAPS	<ol style="list-style-type: none"> 1. Abrasions or nicks. 2. Deterioration from age, heat, or contamination.
FACEPIECE BUCKLE	Crushed, bent, broken, or corroded.
FACEPIECE INLET NOZZLE AND NOZZLE ADAPTER	<ol style="list-style-type: none"> 1. Heat or impact damage. 2. Nicks, cracks, tears, or creases in the exhalation valve. Remove the valve cover to inspect the exhalation valve. 3. Nicks, cracks or dents in the exhalation valve seat. 4. Sticking exhalation valve. Exhale a few times to test. The valve must close after each exhalation. Valves that fail to close must be replaced. 5. Cuts, nicks, abrasions, or excess stretching to the Nozzle Adapter O-rings.
O-RINGS/TWIN SEALS	Cuts, nicks, abrasions, or excess stretching.
CARTRIDGE CONNECTORS	<ol style="list-style-type: none"> 1. Cracks, heat, or impact damage. 2. Cuts, nicks, or abrasions on connector sealing flange.
HEADNET	<ol style="list-style-type: none"> 1. Signs of deterioration, weakening, and wear in the the Headnet and straps. 2. Unraveled or loose stitching.

Additional Inspection Table for Supplied Air Respirators (SAR)

For supplied air respirators (SAR), the following inspection steps should be followed in addition to the general inspection steps listed in the General Inspection Table above.

COMPONENT	LOOK FOR
BREATHING TUBE (ALL CF-SAR CONFIGURATIONS)	<ol style="list-style-type: none"> 1. Cuts, nicks, cracks, punctures, or tears that may reduce the level of protection. 2. Age or heat induced cracking, checking, or hardening. 3. Crushed, broken, or cracked connectors. 4. Tube is securely attached to the connectors and the hose clamps are tight.
Air Line Hoses (all CF-SAR configurations)	<ol style="list-style-type: none"> 1. Fittings corroded, cracked, or leaking. 2. Cuts, nicks, cracks, punctures, age or heat induced cracking, checking, abrasions, blistering, holes, crushing, kinking, or hardening. 3. Tightness of connectors and quick couplers. 4. Swivel nut gaskets in place and undamaged.
Belt (all CF-SAR configurations)	<ol style="list-style-type: none"> 1. Webbing color change, excessive wear, fraying, cuts, nicks, or broken stitching. 2. Buckle damaged or corroded. 3. Loose hardware.

SURVIVAIR Opti-Fit™ Convertible Facepiece

XIV. RESPIRATOR INSPECTION TABLES—Continued

Additional Inspection Table for Powered Air Purifying Respirators (PAPR)

For powered air purifying respirators (PAPR), the following inspection steps should be followed in addition to the general inspection steps listed in the General Inspection Table above.

COMPONENT	LOOK FOR
Blower (mask-mounted and belt-mounted PAPR)	<ol style="list-style-type: none"> 1. Cracked or nicked gasket 2. Missing gaskets. 3. Loose cover screws. 4. Test for leaks and cracks in the unit by equipping the blower with three (3) OV cartridges, P/N 150100, donning the unit and facepiece, turning on the blower, and passing a fit test ampule, P/N 140098, near the facepiece, breathing tube, and blower. If the wearer detects the banana oil odor, a leak is detected.
Battery and Cord (mask-mounted and belt-mounted PAPR)	<ol style="list-style-type: none"> 1. Cord or connector cracked or broken. 2. Loose battery case lid or damaged connector. 3. Properly working battery switch.
Belt (mask-mounted and belt-mounted PAPR)	<ol style="list-style-type: none"> 1. Webbing color change, fraying, cuts, nicks, or broken stitching. 2. Buckle damaged or corroded. 3. Loose hardware.
Breathing Tube (belt-mounted PAPR)	<ol style="list-style-type: none"> 1. Cuts, nicks, cracks, punctures, or tears that may reduce the level of protection. 2. Age or heat-induced cracking, checking, or hardening. 3. Crushed, broken, or cracked connectors. 4. The tube is securely attached to the connectors and the hose clamps are tight.

SURVIVAIR Opti-Fit™ Convertible Facepiece

XV. RESPIRATOR REPAIR TABLES

General Repair Table

The following repair table lists general repair steps to be followed for all respirator configurations (APR, SAR, PAPR).

COMPONENT	INSTRUCTIONS
Head Strap/Headnet	Remove the old head strap from the facepiece, noting the routing of the straps. Install new head strap/Headnet.
Twin Seal/Connector	<ol style="list-style-type: none"> 1. To remove, rotate the connector clockwise. Lift the connector hook and rotate the connector counterclockwise, and pull outward. 2. Remove the twin seal o-ring from the groove in lens. 3. To install, gently separate the o-ring and gasket halves of the new twin seal. A small part number tab should remain attached to each half. Do not use the o-ring if it is damaged. 4. Place the o-ring into the groove on the lens with the part number tab aligned with the slot. 5. Align the three lugs on the underside of the connector with the three slots in the lens. Insert the connector into the lens port and rotate clockwise. An audible click should be heard. 6. Install the new gasket onto the connector. The gasket must be seated in the groove in the connector.
Nozzle Cover	<ol style="list-style-type: none"> 1. To remove, pinch the two lower latches while lifting the lower tab. 2. Disengage the upper hook by lifting the cover upward. 3. To install, engage the cover on the nozzle upper hook. 4. Rotate cover downward until both lower latches engage the cover. An audible click should be heard.
Nozzle	<ol style="list-style-type: none"> 1. Remove the nozzle cover as described above. 2. Grasp the outside of the lens with both hands so that both thumbs can push the latches inward and downward. 3. To install, verify that the nozzle o-ring is free from debris and install the o-ring onto the nozzle. 4. Apply Christolube lubricant, SPERIAN P/N 910452, or equivalent, to o-ring. 5. From the inside of the lens, align the top and bottom ribs on the front of the nozzle with the notches in the lens. 6. Push the nozzle inward until both latches engage the lens. An audible click should be heard. 7. Inspect the installed nozzle o-ring for proper installation and seal. If the o-ring appears twisted, pinched, or extruding out of the o-ring groove, remove the nozzle, relubricate the o-ring, and reinstall the nozzle. 8. Install the nozzle cover as described above.
Nozzle Adapter	<ol style="list-style-type: none"> 1. Slightly rotate the Adapter clockwise (tightening) to allow the latch to spring up and down freely. 2. From the inside of the mask, locate the word "PUSH" on the Adapter latch. Push the latch down and unscrew the Adapter from the Nozzle. 3. Install a new front (small) and rear (large) o-ring onto the Adapter. 4. Apply Christolube lubricant, SPERIAN P/N 910452, or equivalent, to the larger rear o-ring. 5. Screw the Adapter back into the nozzle until an audible click is heard.

