

AIR-PURIFYING RESPIRATOR

Series 4000

FULL FACEPIECE

⚠ WARNING

DO NOT USE this respirator until you completely read and understand this instruction manual. You are required to inspect your respirator prior to putting it into field service. Please refer to the inspection procedures in this manual.

I. INTRODUCTION

This manual provides instruction in the use and maintenance of the SPERIAN Series 4000 Full Facepiece Air-Purifying Respirator. ***You must read and understand this manual and be trained in the proper use of this respirator before wearing it in a contaminated atmosphere.***

The following table lists the current models available.

Model	Description
410010	Small Facepiece, Blue, 4-Strap
410015	Small Facepiece, Blue, 5-Strap
410071	Small Facepiece, Blue, 4-Strap with Nose Cup
410075	Small Facepiece, Blue, 5-Strap with Nose Cup
410079	Small Facepiece, Black, 5-Strap with Nose Cup
410090	Small Facepiece, Black, 5-Strap
420010	Standard Facepiece, Blue, 4-Strap
420015	Standard Facepiece, Blue, 5-Strap
420071	Standard Facepiece, Blue, 4-Strap with Nose Cup
420075	Standard Facepiece, Blue, 5-Strap with Nose Cup
420079	Standard Facepiece, Black, 5-Strap with Nose Cup
420090	Standard Facepiece, Black, 5-Strap

II. SAFETY PRECAUTIONS

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

⚠ WARNING

Maintenance or operating procedures and techniques that will result in personal injury or death if not carefully followed.

CAUTION

Maintenance or operating procedures and techniques that will result in damage to equipment if not carefully followed.

NOTE

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

III. DESCRIPTION

This SPERIAN air purifying respirator consists of a full facepiece made of pliable silicone rubber with two threaded connectors for attaching particulate filters, gas and vapor cartridges, and cartridge/filter combinations as required for specific contaminant protection.

⚠ WARNING

- ***The employer is responsible for establishing that this respirator is suitable for the user's applications.***
- ***This facepiece must be worn and used as specified in SPERIAN's instructions.***
- ***Your SPERIAN respirator has been constructed of materials selected for their performance, safety, and durability. However, all materials have exposure limitations to extremes of heat and cold or to the many chemicals in use today, and could be degraded by exposure beyond their limitations, creating conditions in which this SPERIAN equipment would be dangerous to use.***
- ***Before entering an environment while wearing SPERIAN equipment, 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. SPERIAN cannot be responsible for damage to property, personal injury, or death in which environmental exposure is a contributing factor.

- *Do not use this respirator in environments where the concentrations of contaminants are unknown, or where the atmosphere is immediately dangerous to life or health (IDLH). IDLH atmospheres are defined as:*
 1. *Those which the wearer could not breathe for short periods.*
 2. *Those from which the wearer could not escape without the aide of the respirator.*
 3. *Those which have an immediate or delayed adverse effect on health.*
- *Never use this respirator without appropriate SPERIAN cartridges/filters identified on the NIOSH approval label securely threaded onto the face piece.*
- *This respirator does not supply oxygen and must not be used in the atmospheres containing less than 19.5% oxygen by volume.*
- *Our engineers cannot predict what will happen to this equipment in every potential environment. Materials can be chemically attacked if exposed to the wrong environment and may exhibit excessive corrosion or other forms of damage. Permeation of gases and liquids through the materials could be excessive. Extreme of temperature might cause thermal degradation. Each of these things, or a combination of them, could crated conditioning with this SPERIAN equipment would be dangerous to use.*
- *All persons using this SPERIAN breathing apparatus must be amde aware of its limitations. We cannot be responsible for any damage to property, personal injury, or dath in which environmental exposure is a contributing factor.*
- *Always read cartridge labels prior to use to be certain that you have cartridges and/or filters that will provide the required protection. Cartridges/filters labeled for protection against particulate only shall not be used for gases/vapors, and cartridges/filters labeled for protection against gases/vapor only shall not be used for particulates:*
- *Immediately return to a non-contaminated area if:*
 - a. *You taste or smell contaminates , or if your eyes, nose, or throat become irritated. blasting, underwater diving, or interior structural fire fighting.*
 - b. *Breathing becomes difficult.*
 - c. *The air you are breathing becomes uncomfortably warm.*
 - d. *You feel nauseous or dizzy.*
- *This respirator does not protect exposed areas of the body. Some contaminates can be absorbed directly through the skin while other may irritate exposed area.*
- *This respirator must not be used for abrasive blasting, underwater diving, or interior structural fire fighting.*



WARNING

- *Do not use this respirator at temperatures below -30°F (-1°C) or above 130°F (71°C). 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 1992 and OSHA Standards for Asbestos and Lead. Beards, stubble, or sideburns will prevent a good facepiece seal. Do not use this respirator unless you are clean shaven. Absence of one or both dentures can seriously affect the fit of the facepiece.*
- *No respirator can provide complete protection from all conditions. Use extreme care for emergency operations. Do not use this respirator for applications involving exposure to high heat or direct flame.*
- *Accessories not offered by SPERIAN may degrade performance, and will void NIOSH certification.*
- *NEVER use this respirator without SPERIAN cartridges or filters securely threaded onto the facepiece. 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-to-face fit of respirators, procedures for cleaning, disinfecting, inspecting, maintaining, and storing respirators, procedures for determining if workers are physically and medically capable of wearing respirators, and procedures for training employees in the use of respirators and in recognizing the hazards associated with contaminants in the work place. When used with a written respirator program, this respirator will reduce, but not eliminate the inhalation of contaminants.*
- *SPERIAN respirators, accessories, and associated equipment should not be used in atmospheres which 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.*
- *FAILURE TO OBSERVE ALL WARNINGS MAY RESULT IN PERSONAL INJURY, SERIOUS ILLNESS, OR DEATH.*

IV. PARTS LIST

ITEM	QTY. (Ea.)	P/N	DESCRIPTION
1	1	941723	Headstrap, 4-Strap, Blue
		968424	Headstrap, 5-Strap, Black
		961094	Headstrap, 5-Strap, Blue
2	1	420002	Standard Skirt, 4-Strap, Blue
		420003	Standard Skirt, 5-Strap, Black
		420081	Standard Skirt, 5-Strap, Blue
	1	410002	Small Skirt, 4-Strap, Blue
		410003	Small Skirt, 5-Strap, Black
		410081	Small Skirt, 5-Strap, Blue
3	2	839102	Screw
4	2	941280	Rim
5	1	941712	Lens
6	1	940135	Strap Assy.
7	1	520039	Cover
8	2	955805	Screw
9	1	420020	Cap
10	1 pkg. of 6	140001	Inhalation Valve
11	1 pkg. of 2	140002	Threaded Connector
12	1	420008	Grill
13	Cartridges — See Table 1		
14	Filters — See Table 1		
15	1	140079	Filter Retainer
16	1	941759	Speaking Diaphragm Assy.
17	1	820031	O-ring
18	1	980081	Nozzle
19	1 pkg. of 4	140003	Exhalation Valve
20	1	824014	Leak Check O-ring
21	1	824014	Cap O-ring
22	1	981177	Filter Shower Cap

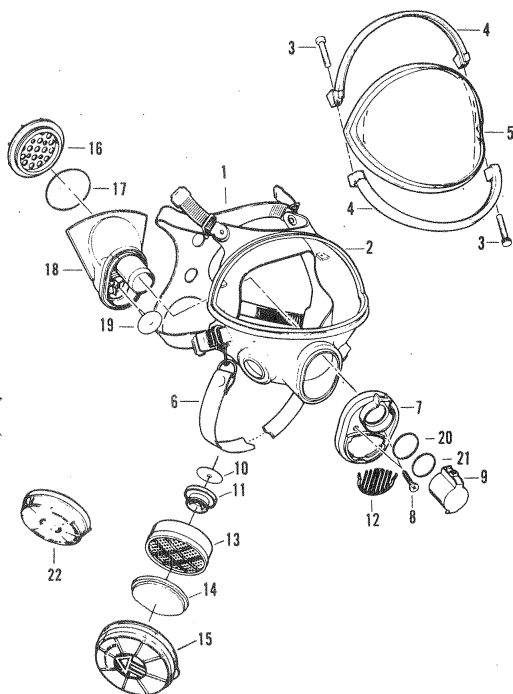


Figure 1. Series 4000 APR

ACCESSORIES	
P/N	DESCRIPTION
980003	Spectacles Kit
980017	Nose Cup Kit
140095	Lens Cover
951015	Anti-fog Solution (1 oz.)
951016	Anti-fog Solution (16 oz.)
430000	Welding Shield, Standard Welding Plate
430030	Welding Shield, Auto-Dark, Variable 9-12 Shade
430040	Welding Shield, Auto-Dark, Fixed 10 Shade
430005	Welding Bib, Lower
430010	Welding Bib, Upper

NOTE

Use only components with the part numbers listed on the NIOSH approval label. Use of any other components will void the approval.

TABLE 1. CARTRIDGES AND FILTERS

MODEL NO.	CARTRIDGES
100100	Organic Vapors
100200	Acid Gases: Sulfur Dioxide, Chlorine, Hydrogen Chloride, Formaldehyde
100300	Organic Vapors and Acid Gases: Organic Vapors; Sulfur Dioxide, Chlorine, Hydrogen Chloride, Chlorine Dioxide, Hydrogen Fluoride, Hydrogen Sulfide (Escape Only)
100400	Ammonia and Methylamine
109100	Combination Organic Vapors; HEPA; Dusts, Fumes, and Mists; Pesticides; and Mists of Paint, Lacquer, and Enamel
109200	Combination Acid Gases; HEPA; and Dusts, Fumes, and Mists: Sulfur Dioxide, Chlorine, Hydrogen Chloride; HEPA; Dusts, Fumes, and Mists
109300	Combination Organic Vapors; Acid Gases; HEPA; Dusts, Fumes, and Mists; and Pesticides: Organic Vapors; Sulfur Dioxide, Chlorine, Hydrogen Chloride, Chlorine Dioxide, Hydrogen Fluoride, Hydrogen Sulfide (Escape Only); HEPA; Dusts, Fumes, and Mists; Pesticides
109400	Combination Ammonia; Methylamine; HEPA; and Dusts, Fumes, and Mists
1091	Combination Organic Vapors and P100
1092	Combination Acid Gases and P100: Sulfur Dioxide, Chlorine, Hydrogen Chloride; and P100
1093	Combination Organic Vapors; Acid Gases; and P100: Organic Vapors; Sulfur Dioxide, Chlorine, Hydrogen Chloride, Chlorine Dioxide, Hydrogen Fluoride, Hydrogen Sulfide (Escape Only); and P100
1094	Combination Ammonia; Methylamine; and P100
	FILTERS
101000	Dusts and Mists when used with 100100, 100200, 100300, or 100400 cartridge, and 140079 retainer.
102000	Paint, Lacquer, and Enamel Mists, and Dusts & Mists when used with 100100 cartridge and 140079 retainer.
104000	Pesticides; Paint, Lacquer, and Enamel Mists; and Dusts, Fumes, and Mists when used with 100100 cartridge and 140079 retainer. Dusts, Fumes, and Mists when used with 100300 cartridge and 140079 retainer.
109000	HEPA; and Dusts, Fumes, and Mists
1090	P100
1195	P100 Disk

⚠ WARNING

*Following is a partial list of materials for which these respirators **MUST NOT** be used. This list is far from complete. Contact **SPERIAN** for information on other materials.*

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

V. USE INSTRUCTIONS

A. Filter/Cartridge Installation

1. Ensure that you have the correct filter and/or chemical cartridge for the specific contaminants in your work area. If you are not sure, consult your supervisor or safety professional.
2. Thread the P100 or HEPA filters or correct chemical cartridges onto the facepiece connectors.
3. Carefully hand-tighten, ensuring a good seal against the facepiece. Do not over tighten.
4. To install filter pads, insert the correct filter pad into the filter retainer with the side stamped with the part number facing the wearer.
5. Snap the filter retainer onto the chemical cartridge.
6. When using the transparent filter retainer, P/N 140079, inspect the assembly through the retainer and ensure that:
 - a. The edge of the filter makes contact with the entire retainer wall.
 - b. The filter is not bunched or folded.
 - c. The filter completely covers the top of the cartridge.

B. Donning

⚠ WARNING

Always read cartridge labels prior to use to be certain that you have cartridges and/or filters that will provide the required protection. Cartridges/filters labeled for protection against particulates only shall not be used for gases/vapors, and cartridges/filters labeled for protection against gases/vapors only shall not be used for particulates. Both cartridges/filters must be of the same type.

1. Inspect the respirator as described in section VI, paragraph B.
2. Adjust the top facepiece straps until one inch of strap extends through each buckle. Fully loosen the lower straps.
3. Place the neck strap around the back of your neck.
4. Place your chin against the chin cup and center the facepiece.
5. Grasp the facepiece with your hand, and pull the straps over your head.
6. Tighten the bottom straps until a good seal is obtained. Adjust the top straps if required.
7. For the 5-strap facepiece, tighten the lower straps, the temple straps, then the top strap, until all the headstraps lie flat on your head.

NOTE

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

C. Facepiece Fit Check

⚠ WARNING

If a leak-tight seal is not obtained during the following fit checks, do not wear the respirator. Ask your supervisor or safety professional for assistance.


1. Positive Pressure Fit Check
 - a. Hold your palm over the exhalation valve grill.
 - b. Exhale gently to create a positive pressure inside the facepiece.
 - c. If leakage occurs, readjust facepiece and straps until leak-tight. If you are unable to obtain a proper fit, consult your safety professional.
2. Negative Pressure Fit Check
 - a. Remove the filters and cover the filter inlets with your hands and inhale gently. Hold your breath for a few seconds. The facepiece should collapse on your face without leaking.
 - b. If the facepiece leaks, reposition, check straps, and repeat the leak check.
 - c. If a good fit was achieved, reinstall the filters.

D. Using the Respirator

To receive the maximum protection available from your respirator, you must 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

- *Never remove your respirator for any reason while you are in the work area.*
- *You must leave the work area immediately if the face piece seal is disturbed for any reason, such as:*

 Warning—Continued
<ul style="list-style-type: none"> a. <i>Slipping due to excessive sweating or excessive head movement.</i> b. <i>The facepiece becomes dislodged as a result of being knocked.</i> c. <i>You sneeze or cough while wearing the facepiece.</i> d. <i>You need to blow your nose, scratch covered areas of your face, or need to adjust your spectacles kit.</i> e. <i>For any other reason that would cause the facepiece seal to be disturbed.</i> <p>You must restore the facepiece seal and perform a fit check before reentering the work area.</p>

E. Doffing

CAUTION
<i>Always loosen the two lower headstraps completely prior to removing the facepiece.</i>

1. Loosen the two lower headstraps completely.

CAUTION
<i>Do not twist the nozzle when removing the facepiece</i>

2. Grasp the nozzle firmly and pull the facepiece upward over your head.
3. Remove the neck strap from around your neck.

F. Filter Replacement

SPERIAN recommends that the filters be changed at least daily, and more often if necessary. The filters must be replaced whenever they become contaminated with dust or water; if you smell or taste contaminants; if your eyes, nose, or throat become irritated; or if breathing becomes difficult. Filters must also be replaced if they show any sign of damage. Dispose of used filters in accordance with applicable local, state, and federal guidelines.

1. Return to an area with clean air.
2. Remove the filter retainer from the chemical cartridge. If using a P100 or HEPA filter, unscrew the used filters from the facepiece connectors and discard them.
3. Remove and discard the filter pad.
4. Clean the filter retainer if required.
5. Insert the correct filter pad into the filter retainer with the side stamped with the part number facing up.
6. Snap the filter retainer onto the chemical cartridge. If using a P100 or HEPA filter, securely install new filters onto the threaded facepiece connectors as described in section V, paragraph A.
7. Perform a fit check.

G. Cartridge Replacement

The cartridges must be replaced whenever you smell or taste contaminants, or if your eyes, nose, or throat become irritated. Cartridges must also be replaced if they show any sign of damage. Dispose of used cartridges in accordance with applicable local, state, and federal guidelines.


1. Return to an area with clean air.
2. Unscrew the used cartridges from the facepiece connectors and discard.
3. Securely install new cartridges onto threaded facepiece connectors as described in section V, paragraph A.

VI. 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 table in the back of this manual.

A. Cleaning

 WARNING
<i>Specialized processes are required to disinfect and decontaminate a respirator. You MUST follow the instructions of the manufacturer who supplies the disinfecting or decontamination equipment or chemicals.</i>

NOTE

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


1. Make a cleaning solution of warm water and a mild detergent.
2. Remove the cartridges/filters from the facepiece.
3. Immerse the facepiece top first in the solution until the exhalation valve is covered.
4. Agitate the facepiece and gently clean with a soft brush.
5. 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.
6. Disinfect the facepiece in a warm (48°C or 120°F maximum) suitable sanitizing solution such as a "hypochlorite solution" for 2 to 3 minutes. A hypochlorite solution can be made by mixing two (2) tablespoons of chlorine bleach per each gallon of water. Rinse thoroughly with fresh warm (48°C or 120°F maximum) water.
7. Allow the facepiece to drip dry. Warm air may be used to speed up drying.

NOTE

Cleaning solutions containing ammonia or repeated washing will remove the lens anti-fog coating. Recoat with SPERIAN Anti-Fog Solution, P/N 951015 (1 oz.), or 951016 (16 oz.).

8. After cleaning, apply three drops of anti-fog solution as required to the inner surface of the lens and spread with a lint-free cloth. Allow to dry for 15 minutes.
9. Hold the facepiece firmly against your face and exhale several times to ensure that the exhalation valve functions smoothly.

B. Inspection (See the Inspection Table in the Back of this Manual)

 WARNING
<i>Ensure that the o-ring, P/N 824014, is in the cap plug, P/N 420020, and that the cap plug is securely seated on the nozzle. Using the APR without the cap plug o-ring or without the cap plug securely seated could allow contaminants to leak into the facepiece, resulting in illness or death.</i>


NOTE

The leak check o-ring, item 20 of Figure 1, located between the cap plug (item 9) and the cover (item 7) is to allow the positive pressure fit check only.

C. Repair (See the Repair Table in the Back of this Manual)

Repair by the user is limited to replacement of components as listed on the NIOSH approval label. Disassembly should be performed only to the extent necessary to replace 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.

D. Storage

 WARNING
<i>This SPERIAN respirator does not have a defined storage life. Carefully inspect it before each use.</i>

CAUTION
<i>The maximum storage temperature for this device is 140°F (60°C). Long term exposure to elevated storage temperatures could cause premature deterioration.</i>

After inspection and cleaning, store your SPERIAN APR to protect it against dust, sunlight, extreme heat and cold, excessive moisture, or damaging chemicals.

E. Shipment

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

F. Overhaul Frequency

This SPERIAN respirator does not have an overhaul requirement other than that required in Section VI, Maintenance.

G. Additional Information

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

SPERIAN
3001 South Susan Street
Santa Ana, CA 92704
(714) 545-0410 or toll free 888-APR-SCBA
FAX (714) 850-0299

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

IF ANY OF THE DEFECTS LISTED BELOW ARE FOUND, HAVE THE RESPIRATOR REPAIRED BEFORE USE.

COMPONENT	LOOK FOR
FACEPIECE LENS	<ol style="list-style-type: none"> 1. Nicks, scratches, or abrasions which could impair visibility. 2. Deep gouges or cracks which could reduce impact resistance. 3. Anti-fog coating in need of replacement.
FACEPIECE RIMS	<ol style="list-style-type: none"> 1. Deformed, cracked, or broken. 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	<ol style="list-style-type: none"> 1. Abrasions or nicks. 2. Deterioration from age, heat, or contamination.
FACEPIECE BUCKLES	<ol style="list-style-type: none"> 1. Crushed, bent, or corroded. 2. Damaged or loose rivets.
FACEPIECE INLET NOZZLE	<ol style="list-style-type: none"> 1. Loose cover screws. 2. Heat or impact damage. 3. Nicks, cracks, or dents in the exhalation valve seat. 4. Nicks, cracks, tears, or creases in the exhalation valve. 5. Sticking exhalation valve. Exhale a few times to test. The valve must close after each exhalation. Valves that fail to close must be replaced.
SPEAKING DIAPHRAGM	Holes or tears. Do not remove to inspect.

VIII. REPAIR TABLE

COMPONENT	INSTRUCTIONS
HEADSTRAP REPLACEMENT	<ol style="list-style-type: none"> 1. Remove the old headstrap from the facepiece, noting the routing of the straps. 2. Install new headstrap.
NOSE CUP	<ol style="list-style-type: none"> 1. Unscrew the speaking diaphragm ring counterclockwise and remove it, along with the o-ring from the nozzle. NOTE: If the speaking diaphragm ring is too tight to remove by hand, use the Speaking Diaphragm Tool, P/N 980019. 2. Discard the old nose cup. 3. If removed, reinstall the o-ring on the speaking diaphragm ring. 4. Fit the speaking diaphragm ring into the nose cup. 5. Position the nose cup inside the facepiece with the locating pins seated in the exhalation valve hole. 6. Tighten the speaking diaphragm ring. 7. Perform a facepiece fit check as described in section V, paragraph C.
FACEPIECE LENS REPLACEMENT	<ol style="list-style-type: none"> 1. Use a 5/32 inch Allen wrench to remove the two rim screws. 2. Gently separate the rims from the facepiece. 3. Pull the facepiece skirt away from the lens. 4. Remove the old lens. 5. Match one corner of the new lens with the corner of the skirt. 6. Place the edge of the lens inside the lens channel of the skirt. 7. Knead the skirt until it fits evenly around the edge of the lens, and the corners of the skirt match the corners of the lens. 8. Install the two rims. Start both screws but do not tighten. CAUTION-Do not pinch the skirt between the rims. 9. Alternately tighten each screw until firmly tightened. <p>NOTE — The corners of the skirt should be centered between each rim when installation is complete.</p> <ol style="list-style-type: none"> 10. Perform a facepiece fit check as described in section V, paragraph C.
EXHALATION VALVE	<ol style="list-style-type: none"> 1. Remove the valve grill cover from the nozzle. 2. Remove and discard the old exhalation valve. 3. Insert a new valve and pull the valve stem until it snaps into place. 4. Replace the valve grill cover. 5. Perform a facepiece fit check as described in section V, paragraph C.
ACCESSORIES	Each modification kit and accessory purchased from SPERIAN has installation instructions. Use these instructions for removing and replacing any accessory.