5400 and 7600 Series
Full Facepiece
Air Purifying
Respirators
Operating and Maintenance Instruction Manual
1 INTRODUCTION

North Air-Purifying respirators are intended to be used for respiratory protection against hazardous vapors, gases and/or particulate matter, depending on the air-purifying elements used and the contaminant concentration and/or toxicity, but only if there is sufficient oxygen present in the contaminated atmosphere to support life. These respirators are approved by the National Institute of Occupational Safety and Health (NIOSH) and are suitable for use in workplaces regulated by the Occupational Safety and Health Administration (OSHA). If you have converted this respirator to a supplied air respirator, use the Instructions for Use that accompanied the Airline Accessory.

1.1 IMPORTANT INFORMATION

This Operating and Maintenance Instruction Manual contains important information and must be completely read and understood by all persons who may use or maintain this respirator.

This Respirator should be used or maintained only by persons who understand the instructions contained within this manual.

1.1.1 TERMINOLOGY

Warnings, cautions and notes used in this manual have the following significance:

NOTE
Procedures and techniques that are considered important enough to emphasize.

CAUTION
Procedures and techniques which, if not carefully followed, will result in damage to the equipment.

WARNING
Procedures and techniques which, if not carefully followed, will expose the user to the risk of serious injury, illness or death.
1.1.2 GENERAL WARNINGS

1. Do not use this Operating and Maintenance Instruction Manual if you have converted this respirator to a supplied air respirator, use the instructions for Use that accompanied the Airline Accessory.

2. Failure to properly select the appropriate respirator for all the contaminants and their concentrations against which protection is required, or a failure to follow North’s instructions and warnings, may result in exposure to the hazardous material, exposing the user to the risk of serious injury, illness or death.

3. Do not use this respirator for protection against air contaminants other than those listed on the air-purifying elements and on the NIOSH Approval Label which is supplied with each respirator and/or replacement air-purifying element.

4. Do not use this respirator under any of the following conditions:
   a. While performing or observing abrasive blasting (sandblasting) operations.
   b. For fire fighting.
   c. In oxygen-deficient atmospheres (any atmosphere having less than 19.5% oxygen by volume at sea level).
   d. In atmospheres where the concentrations of toxic contaminants are unknown, or are immediately dangerous to life or health (IDLH). An IDLH atmosphere is any atmosphere which has a concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life, which would cause irreversible debilitating effects on health, or which would interfere with the ability to escape from a dangerous atmosphere.
   e. In atmospheres where the concentration of the contaminant exceeds the respirator’s Maximum Use Concentration. That is where the concentration of the contaminant exceeds:
      i. 100 times the contaminant’s permissible exposure limit (the maximum permissible 8-hour time weighted average (TWA) concentration) established by applicable OSHA or other government regulations, or by NIOSH or ACGIH publications; or
      ii. any lower Maximum Use Concentration for that contaminant (when using a full facepiece air purifying respirator) established by such OSHA or other government regulations (as in the case of asbestos) or NIOSH or ACGIH publications, or shown in the contaminant’s Material Safety Data Sheet (MSDS), in a pesticide label, or in the current edition of the North Respirator Selection Guide.
   f. In poorly ventilated areas, or confined spaces such as tanks, small rooms, tunnels or vessels, unless the confined space is well ventilated and the concentration of toxic contaminants is known to be, and will continue to be, below the Maximum Use Concentration recommended for the respirator.
   g. In atmospheres containing oil unless a NIOSH “R” or “P” filter class is used.

   • For protection against gas or vapor contaminants unless the air-purifying elements are equipped with End-of-Service-Life-Indicators for that contaminant; or a cartridge change schedule is implemented based on objective service data.
   • For protection against gases or vapors which generate high levels of reaction with the sorbent material in the cartridge.
   • For protection against gases or vapors which are not absorbed by the sorbent material in the cartridge (e.g. Methanol).

5. Do not use any air purifying respirator when conditions prevent a good facepiece-to-face seal: Examples of such conditions are:
   a. the growth of beards, bangs or sideburns which will pass between the facepiece sealing area and the face;
   b. the use of spectacles or other devices which interfere with the respirator;
   c. the use of head or face coverings which contain materials which will pass between the facepiece sealing area and the face; and
   d. missing teeth or dentures, facial deformities or deep scars.

6. Immediately leave the contained area if:
   a. breathing becomes difficult;
   b. dizziness or other distress occurs;
   c. you smell, taste or sense irritation from the contaminants;
   d. the air-purifying element is equipped with an End-of-Service-Life Indicator which has changed color to indicate expiration, or
   e. the respirator becomes damaged.

7. Any air purifying respirator, when properly selected and fitted, will significantly reduce, but will not completely eliminate, the breathing of contaminant(s) by the respirator wearer. When working in atmospheres containing substances which are reported to cause cancer in amounts below their permissible exposure limit, will obtain better protection from a continuous flow or positive pressure air supplied respirator, or self-contained breathing apparatus (SCBA).

8. This respirator does not provide protection to exposed areas of the body. If the contaminated atmosphere contains vapors, gases or airborne particulate matter which may either irritate or bum the skin, or can be absorbed by the body through penetration of the skin, the use of specialized hand and/or body coverings may also be required for protection.

1.1.3 USER REQUIREMENTS

To use this respirator you must know:

1) The contaminants and their concentrations. (Ask your Safety Director or Industrial Hygienist or follow the hazard determination steps as outlined in paragraph 7.22.1 of American National Standards Institute (ANSI) Standard Z88.2-1992, American National Standard for Respiratory Protection.)

2) That this is the respirator approved for use against those contaminants and at those concentration levels. (Carefully read the NIOSH Approval Label Summary booklet included with this facepiece. Make sure the part numbers on the respirator components match the component numbers on the NIOSH Approval Label or on the configuration chart. If you have any doubts prior to using the respirator, consult an Industrial Hygienist, or North Safety Products Customer Service in the United States at 1-800-430-4111 or 1-401-943-4400.)

3) That the contaminated atmosphere is not Immediately Dangerous to Life or Health (IDLH). For the definition of IDLH see Warning #4 of the preceding list of General Warnings.

4) That this respirator fits you properly. (See Warning #5 of the preceding list of General Warnings.)

5) That you do not have any physical limitations or illness which would preclude you from using this respirator or be aggravated by an increase in breathing resistance. (Ask your Safety Director or physician.)

You should not enter any potentially contaminated atmosphere unless you have confirmed all of these factors.

1.1.4 TRAINING PROGRAM

These brief written instructions cannot substitute for a formal Respirator Training Program. Such training should include an opportunity for you to handle the respirator, learn how to inspect it, have it properly fitted, test its facepiece-to-face seal, wear it in normal air for a long familiarity period, and finally, to wear it in a test atmosphere. The Training Program should be based on ANSI Z88.2-1992, and should familiarize you with OSHA Regulations 29 CFR Section 1910.134 and other regulations promulgated by various Regulatory Authorities.

1.1.5 FIT TESTING

A respirator should not be assigned to a person unless the person is given a qualitative or quantitative respirator fit test and the results of the test indicate that the facepiece of the respirator fits properly.

Both the 5400 Series and 7600 Series respirators are available in two sizes, medium/large and small. Most faces can be fit with the medium/large, however some persons with small faces may get a better fit with the small size.

Fit tests should be conducted at least annually or more frequently if there are factors such as weight change or dental surgery which may affect the fit of the respirator.

A fit test adapter is available for conducting quantitative fit tests. (See Accessories.)

Instructions for carrying out qualitative and quantitative respirator fit tests are given in OSHA 29 CFR §1910.134, and respirator manuals published by government agencies such as NIOSH, ERDA, and NRC.

1.1.6 PERIODIC SEAL CHECKS

Each time that the respirator is put on, before entering an area containing hazardous atmospheres, and periodically while wearing the respirator in the contaminated area, the respirator wearer should check the effectiveness of the seal of the facepiece to the wearer’s face by carrying out a negative or positive pressure seal check. Instructions for carrying out user seal checks on this respirator are given in Section 3 of this manual.

1.2 RESPIRATOR DESCRIPTION

This device is an air-purifying respirator consisting of a full facepiece assembly and a pair of replaceable air-purifying elements which provide respiratory protection against hazardous vapors, gases and/or particulate matter, depending upon the type of air-purifying elements used.

When the respirator wearer inhales, the contaminated air is drawn through the air-purifying elements, which, depending upon their type and class, remove the hazardous vapors, gases and/or particulate matter from the air before it enters the lungs. During inhalation, the inhalation valves in the facepiece open and the exhalation valve closes to prevent contaminated air from entering the facepiece. During exhalation, the exhalation valve opens, and the inhalation valves close to prevent exhaled air from passing back through the air-purifying elements.

This respirator is approved by NIOSH to protect against, and reduce exposure to the type of air contaminants specified on the air-purifying elements and in the approval label supplied with the respirator or the air-purifying elements. Use of the Back Pack accessory allows the wearer to place the air-purifying elements on his back. See Section 10 for a list of approved accessories.
2 PRE-USE INSTRUCTIONS

⚠️ WARNING

The respirator facepiece and air-purifying elements may be sold separately. Do not use this respirator unless the proper air-purifying elements are attached. See the NIOSH Approval label included in the air-purifying element packaging for a list of the approved components, or check with your Safety Director or Industrial Hygienist or North Safety Products Customer Service in the United States at 1-800-439-4110 or 1-401-943-4400.

2.1 FACEPIECE

Remove the facepiece assembly from its container and visually check the facepiece to make sure that the sealing flange is not distorted, that all components including the exhalation valve flap are in place, in good condition and secure.

⚠️ WARNING

Apply an anti-fog compound to the inside of the lens if the respirator will be used at temperatures below 32°F (0°C). This will reduce fogging on the inside of the facepiece lens so the user can continue to see through it.

Do not use the 5400 Series facepieces without the oral/nasal cup installed. Use without the oral/nasal cup will result in a greater tendency for the lens to fog and increase the carbon dioxide level inside the facepiece resulting in worker fatigue.

2.2 FILTERS

If replaceable pad style filters are required, they should be assembled to the cartridges or filter holders before the cartridges or filter holders are attached to the facepiece. Follow the directions on the filter for proper orientation. Place the filters in the appropriate filter covers so that the entire outer edges of the filters are seated evenly and securely against the inner wall of the filter covers. (See Figure 1.)

Snap the filter covers, with the filters seated evenly and securely, to the cartridges. (See Figure 2.)

2.3 ASSEMBLING THE RESPIRATOR

Assemble the respirator by screwing the two appropriate air-purifying elements onto the inhalation connectors mounted on the facepiece lens. Check to be sure that each air-purifying element is effectively sealed against the grommet on the facepiece lens (See Figure 3). Inspect to make certain that the respirator has not been damaged.

If using the Back Pack Accessory, assemble the respirator by screwing the breathing tubes to the inhalation connectors mounted on the facepiece lens. Screw the two appropriate air-purifying elements onto the inhalation connectors located on the Back Pack plate. Check to be sure that each air-purifying element is effectively sealed against the grommet on the Back Pack back plate. Inspect to make certain the respirator and Back Pack have not been damaged.

2.4 CORRECTIVE LENSES

Contact lenses may be worn when using this respirator, provided the user is accustomed to wearing contact lenses. Spectacles may not be worn when using this respirator, however spectacle kits which can be used to hold individual corrective lenses are available. (See Accessories.)

⚠️ WARNING

To avoid compromising the facepiece-to-face seal only North spectacle kits should be used.

3 TO PUT ON THE RESPIRATOR

The following should be performed in an area with uncontaminated air:

1) Visually check the unit to make certain that all major components are in place and in good condition. Make sure all components on facepiece are secure.

2) Adjust all the facepiece head straps to their full outward position. (See Figure 4.)

3) Put on the facepiece by grasping the head strap harness and with your thumbs through the straps, spread outward place the Back Pack breathing tubes (if so equipped) over your head. (See Figure 5 and 5A.)

4) Push the harness top up your forehead, brushing your hair upward from the seal area. Continue up and over your head until the harness is centered at the rear of your head, and your chin fits into the chin cup. (See Figure 6.)
5) Make sure the facepiece is centered on your face and pull both lower head straps at the same time toward the rear. (See Figure 7.)

6) Tighten the two upper head straps. (See Figure 8.)

7) For the 7600 Series, tighten the forehead head strap. (See Figure 9.)

8) Conduct a positive or negative seal check as follows:

To conduct a negative pressure seal check, place the palms of your hands over the openings in the cartridges or filter covers (if so equipped), or unscrew the air-purifying elements from the respirator and place the palms of your hands over the inhalation connectors, inhale and hold your breath for about 5 seconds. (See Figure 10.) If the facepiece collapses slightly and no air leaks between the facepiece and your face are detected, an effective seal has been obtained. If air leaks are detected, reposition the facepiece on your face and/or readjust the tension of the head harness and repeat the negative pressure check until an effective seal is obtained.

To conduct a negative pressure seal check with the Back Pack accessory, grasp each breathing tube and squeeze a tight fold in each, inhale and hold your breath for about 5 seconds. (See Figure 10A.) If air leaks are detected, reposition the facepiece on your face and/or readjust the tension of the head harness and repeat the negative pressure check until an effective seal has been obtained.

If the air-purifying elements were removed, once an effective facepiece-to-face seal is obtained, a co-worker or a representative of the Safety or Industrial Hygiene Department must assist you by screwing the air-purifying elements onto the inhalation connectors mounted on the facepiece. (This must be done without removing the facepiece from your face.) Check to be sure that each air-purifying element is effectively sealed against the grommet on the facepiece lens. (See Figure 10 and 10A.)

To conduct a positive pressure seal check, block the openings in the exhalation valve guard using the palm of your hand and simultaneously exhale. If the facepiece bulges slightly and no air leaks between the facepiece and your face are detected, an effective seal has been obtained. If air is detected to be leaking out between the facepiece and your face, reposition the facepiece on your face and/or readjust the tension of the head harness to eliminate the leakage. This check must be repeated until an effective seal of the facepiece to face is obtained. (See Figure 11.)

4 USE

WARNING

If the air-purifying elements have End-Of-Service-Life Indicators (ESLI), you must be able to see the End-of-Service-Life Indicators without manipulation of the cartridges or facepiece while wearing the respirator.

Refer to specific user instructions supplied with cartridges for additional ESLI information.

Do not use the Back Pack accessory with air-purifying elements that have End-Of-Service-Life Indicators, because you will not be able to see the End-of-Service-Life Indicators while wearing the respirator.

If you cannot see the indicators, do not use the respirator because you will not know when the cartridge has expired. Should this occur, and you remain in the contaminated work area, you risk exposure to hazardous quantities of the air contaminant which can result in serious injury, illness or death.

You are now ready to enter the use environment for which the air purifying respirator is intended.

WARNING

Immediately leave the work area and replace the respirator if:

i. breathing becomes difficult;

ii. dizziness or other distress occurs;

iii. you smell, taste or sense irritation from the contaminants in the work area;

iv. the air purifying element is equipped with an End-of-Service-Life Indicator which has changed color to indicate expiration, or

v. the respirator becomes damaged.

Should any of these occur, and you remain in the contaminated work area, you risk exposure to hazardous quantities of the air contaminant which can result in serious injury, illness or death.
The service life of this respirator will vary depending on the work environment.

4.1.1 CARTRIDGES
When you are using a gas or vapor cartridge respirator which does not have End-Of-Service-Life Indicators, you must establish a change out schedule that will result in cartridges being changed before the end of their useful life. North provides EZ GUIDE™ software for assisting the user in establishing a change out schedule.

If the respirator has End-Of-Service-Life Indicators, the cartridges must be changed when the color of either one of the indicators match the color standard indicated on the cartridge.

4.1.2 PARTICULATE FILTERS
When you are using a particulate filter respirator, or a gas or vapor respirator with filters attached, the filters should be replaced when breathing becomes difficult.

Any ‘RI’ class filter if used in an oil environment must be replaced after 8 hours of total use, or sooner, regardless of breathing resistance.

5 TO TAKE OFF THE RESPIRATOR
1) Go to an area with uncontaminated breathable air.
2) Loosen head bands and remove the facepiece.

6 TURNAROUND MAINTENANCE

NOTE
It is good hygiene practice to replace the air-purifying elements after a single day of use even if the service life of the air-purifying elements has not expired.

⚠️ WARNING
Always replace air-purifying elements after water spray decontamination. Excessive moisture can damage the air-purifying elements and expose the user to the risk of serious injury, illness or death.

After each use, the respirator should be examined by trained personnel.

NOTE
The replacement of air-purifying elements must be done in a safe area containing uncontaminated breathable air.

6.1 AIR-PURIFYING ELEMENT REPLACEMENT

6.1.1 FILTERS
To replace pad style filters, detach the filter cover from the cartridge or filter holder, discard the old filters and replace them with new ones. Follow the directions printed on the filter for proper orientation. Check to ensure that the entire outer edge of the filters are seated evenly and securely against the inner wall of the filter covers. Snap the filter covers with the filters to the cartridges or filter holders. (See Figures 1 and 2.)

6.1.2 CARTRIDGES
To replace gas, particulate or combination cartridges, unscrew them from the inhalation connectors, which are mounted on the facepiece, and discard them. Screw on new air-purifying elements effectively to insure an effective seal between each air-purifying element and the grommet on the facepiece lens. (See Figure 3.)

6.2 INSPECTION
Visually inspect all components for damage or wear, especially rubber parts. Replace parts where needed.

If needed, clean and sanitize the facepiece assembly. (See Section 8: Periodic Maintenance.

7 STORAGE
Store in a clean dry area in the respirator storage bag provided with the facepiece.

CAUTION
Rubber and elastomeric parts must be stored in a manner which will prevent them from taking an abnormal set. Do not expose this device, during storage, to excessive heat (above 140 °F/60 °C), moisture, contaminating gaseous substances or airborne particulates. Excessive heat may distort the facepiece resulting in the inability to achieve a proper fit. Moisture and contaminated air can damage the air purifying elements. Either of these conditions will expose the wearer to the risk of serious injury, illness or death.

8 PERIODIC MAINTENANCE
As needed, remove, inspect and clean facepiece and breathing tube assembly.

CAUTION
All O-Rings and gaskets must be replaced at least once a year.

8.1 CLEANING AND SANITIZING

⚠️ WARNING
Never allow air-purifying elements to come in contact with water or cleaning and sanitizing solutions. Excessive moisture can damage the air-purifying elements and expose the user to the risk of serious injury, illness or death.

1) Remove air-purifying elements from connectors.
2) Remove breathing tubes if so equipped
3) Inspect the head straps and clips for wear. Check all elastomer and rubber parts for pliability and signs of deterioration. (See Figure 12.)

CAUTION

FIGURE 12
Inspecting the Facepiece

4a) For the 7600 Series, unscrew and remove the exhalation valve guard, valve and seat. (See Figure 13.)

For the 5400 Series, Remove the Oral/Nasal Cup by pulling it from the mask, push and twist the exhalation housing assembly counterclockwise and remove. (See Figures 15 and 13A.)

FIGURE 13
Removing the Exhalation Valve on the 7600 Series

b) Remove the threaded plastic flange which held the exhalation valve seat from the inside of the oral/nasal cup. (See Figure 14.)

c) Remove the oral/nasal cup assembly by pulling it from the mask. (See Figure 15.)

d) Unscrew the nut retaining the speech diaphragm and remove the diaphragm and O-Ring. Inspect O-Ring for damage, replace if necessary. (See Figure 16.)

FIGURE 14
Removing the Plastic Flange on the 7600 Series

FIGURE 15
Removing the Oral/Nasal Cup

FIGURE 16
Removing the Speech Diaphragm on the 7600 Series
e) Remove the speech diaphragm housing and O-Ring from the facepiece by unscrewing the nut on the outside. Inspect the O-Ring for damage, replace if necessary. (See Figure 17.)

7) Prepare a solution of cleaner/sanitizer (North Catalog number 80992) according to the cleaner/sanitizer instructions.

8) Wash the facepiece assembly in cleaning solution.

CAUTION
Do not use abrasive cleaners on the lens. Abrasives can remove the protective coating from the lens making it susceptible to scratching and chemical degradation.

9) Rinse the facepiece completely in clean warm water, then air dry in a clean area.

10) Visually inspect the exhalation valve for damage, replace if necessary.

11) Check the oral/nasal cup and its inhalation valves system for distortion, damage and completeness.

12) Reassemble the facepiece. Follow steps 2 through 8 above, in reverse order. Make sure all O-Rings are in place.

13) An anti-fog coating may be applied to the lens of the facepiece only after the lens area has dried (North Catalog Numbers 80944 or 80945). This is mandatory when the respirator will be used in temperatures below 32 F (0 C).

8.2 PREPARE FOR USE

1) Install a new pair of air-purifying elements.

2) Perform a seal check to make sure that components are functioning properly.

9 REPLACEMENT PARTS

9.1 7600 REPLACEMENT PARTS (See Figure 20)

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COMPONENTS, 7600 SERIES

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FIGURE 17
Removing the Speech Diaphragm Housing on the 7600 Series

FIGURE 18
Removing the Exhalation Housing on the 5400 Series

FIGURE 19
Removing the Inhalation Connector
9.2 5400 REPLACEMENT PARTS (See Figure 21.)

COMPLETE ASSEMBLIES, 5400 SERIES

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COMPONENTS, 5400 SERIES

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<td>Oral/Nasal Cup</td>
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<td>7700-17</td>
<td>Assembly</td>
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<td>80814</td>
<td>Valve Seal, Inhalation</td>
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10 ACCESSORIES

7600 SERIES ACCESSORIES

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<tr>
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<td>Fit Test Adapter</td>
<td>80944</td>
<td>Antifog Pad</td>
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<td>7600-22</td>
<td>Spectacle Assembly (metal, less lenses)</td>
<td>80945</td>
<td>Antifog Cloth</td>
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<td>Seal check / Filter Cover</td>
<td>80992</td>
<td>Cleaner / Sanitizer Powder</td>
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<tr>
<td>8404</td>
<td>Welding Shield Kit</td>
<td>EZ GUIDE™</td>
<td>EZ GUIDE™ CD/ROM</td>
</tr>
<tr>
<td>80100</td>
<td>Spectacle Assembly (plastic, less lenses)</td>
<td>BP1002</td>
<td>Back Pack Accessory</td>
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<td>80836</td>
<td>Peel-off Window</td>
<td>CF2007</td>
<td>Interchangeable Breathing Tube</td>
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<td>8405</td>
<td>Welding Shield Kit</td>
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5400 SERIES ACCESSORIES

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11 KEY TO CAUTIONS AND LIMITATIONS CONTAINED IN NIOSH APPROVAL LABELS

A – Not for use in atmospheres containing less than 19.5 % Oxygen.
B – Not for use in atmospheres immediately dangerous to life or health.
C – Do not exceed maximum use concentrations established by regulatory standards.
H – Follow established cartridge or canister change schedules or observe ESLI to ensure that cartridge and canisters are replaced before breakthrough occurs.
J – Failure to properly use and maintain this product could result in injury or death.
K – The Occupational Safety and Health Administration regulations require gas-proof goggles to be worn with this respirator when used against formaldehyde.
L – Follow the manufacturer’s 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 User’s 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.

11.1 S - SPECIAL USER’S INSTRUCTIONS

Apply an anti-fog compound to the inside of the lens if the respirator will be used at temperatures below 32 F (0 C). This will reduce fogging on the inside of the facepiece lens so the user can continue to see through it.

If the air-purifying elements have End-Of-Service-Life Indicators, you must be able to see the End-Of-Service-Life Indicators without manipulation of the caricards or facepiece while wearing the respirator.

Refer to specific user instructions supplied with cartridges for additional ESLI information. Do not use the Back Pack accessory with air-purifying elements that have End-Of-Service-Life Indicators, because you will not be able to see the End-Of-Service-Life Indicators while wearing the respirator.

If you cannot see the indicators, do not use the respirator because you will not know when the cartridge has expired. Should this occur, and you remain in the contaminated work area, you risk exposure to hazardous quantities of the air contaminant which can result in serious injury, illness or death.