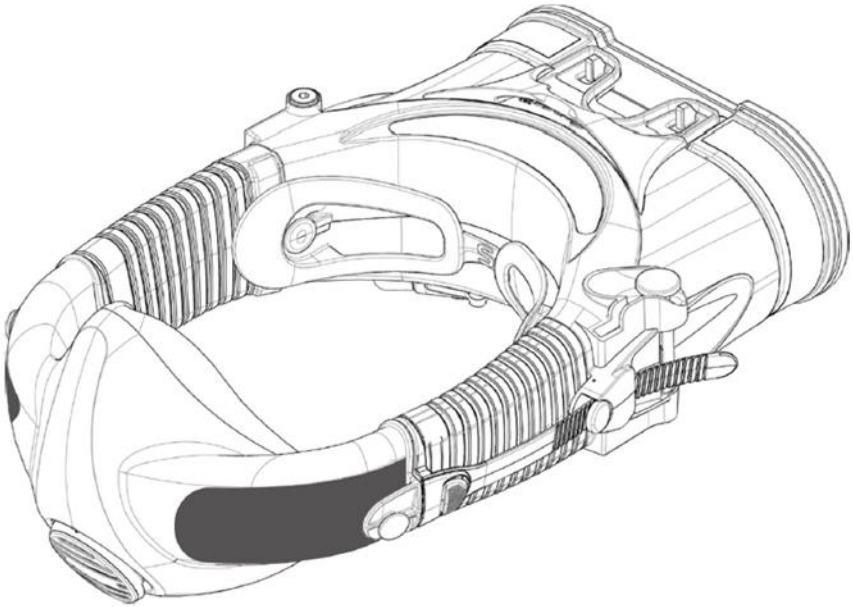
CleanSpace®

HEALTH & SAFETY

CleanSpace EX

Powered respirator

USA - English



Important! Before use, the wearer must read and understand these user instructions. Keep these user instructions for reference.

www.cleanspacetechnology.com

USER INSTRUCTIONS

1. Contents

Read these instructions in conjunction with the appropriate CleanSpace™ filters and accessories instructions.

WARNING

This product is part of a system that helps reduce exposure to certain airborne contaminants. Misuse may result in sickness. For proper use, consult an Occupational Health Specialist, these user instructions or contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

2. Foreword

Read all instructions and warnings before using this device. Keep these user instructions for reference. If you have questions regarding this system contact CleanSpace Customer Service by e-mailing support@cleanspacetechnology.com.

3. System Description

CleanSpace EX is a complete NIOSH approved respiratory protection system (“respirator”). When used in accordance with its NIOSH approval, the respirator helps reduce exposure to certain particulates. CleanSpace EX does not provide protection against vapors or gasses. See NIOSH Cautions and Limitations and the Approval Labels for CleanSpace EX.

The CleanSpace EX system holds multiple approvals for use in explosive atmospheres. See the Non-Respiratory Approvals Section of these user instructions for additional information on approvals. CleanSpace EX is not certified for mines use where MSHA approval is required.

The components of the CleanSpace EX system are shown in Section 10. The blower draws ambient air through the high efficiency filter and supplies filtered air to the wearer via the mask. CleanSpace EX is a breath responsive respirator which means that it blows harder during inhalation and more softly during exhalation. The device continuously adjusts fan speed to maintain positive pressure in the mask. Should the filter become blocked, an audible alarm will sound and the “Filter” light on the keypad will be illuminated. If the battery voltage falls below the minimum required to sustain the designed flow rate, an audible alarm will sound.

WARNING

Properly selected, used and maintained respirators help reduce exposure to certain airborne contaminants. It is essential to follow all instructions and government regulations on the use of this product, including wearing the complete respirator system during all times of exposure, in order for the product to help protect the wearer. Misuse of respirators may result in overexposure to contaminants and lead to sickness. For proper use, consult an Occupational Health Specialist, these user instructions or contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

4. List of Warnings within these User Instructions

This product is part of a system that helps reduce exposure to certain airborne contaminants. Misuse may result in sickness. For proper use, consult an Occupational Health Specialist, these user instructions or contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

Properly selected, used and maintained respirators help reduce exposure to certain airborne contaminants. It is essential to follow all instructions and government regulations on the use of this product, including wearing the complete respirator system during all times of exposure, in order for the product to help protect the wearer. Misuse of respirators may result in overexposure to contaminants and lead to sickness. For proper use, consult an Occupational Health Specialist, these user instructions or contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

Not all components and accessories shown in this manual carry IECEx / ATEX / ETL approval. When purchasing spare parts and accessories, always make sure of their proper approval if the equipment is to be used in an explosive atmosphere. See Section 22 for more information.

No Half Mask or Full Facepiece PAPR can fully protect you if you are not clean shaven. CleanSpace respirators are not suitable for users with facial hair.

The half mask and full-face mask neck support instructions are not interchangeable. The neck support when used with the half mask is critical to achieving a good mask fit. The neck support when used with the full-face mask simply provides additional comfort.

For the full-face mask, check that the mask seal does not cross your hairline. Check all the way around the mask seal, paying particular attention to your forehead and temples. The seal must not cross your hairline.

If a satisfactory quantitative fit factor or a passing qualitative test cannot be achieved with any of the masks, the respirator must not be used. A satisfactory quantitative fit factor is

Test Type	Half Mask	Full Face Mask
Power On	1000	1000
Power Off	100	500

Do not use compressed air or a brush to clean the filter! HE filters are very easily damaged by compressed air or by brushing. Misuse by cleaning the filter may result in overexposure to contaminants and lead to sickness.

Do not over-tighten the mask! If the front of the mask starts to become concave, it is too tight and may leak. Press the Adjust Buttons to loosen the mask a little.

If a satisfactory Seal Check cannot be achieved, do not enter the contaminated zone.

Be sure to remove the Seal Check Cap before entering the contaminated area. The Cap blocks the exhalation valve, making it more difficult for your exhaled air to be expelled from the mask. Failure to remove the cap will lead to increased levels of rebreathed Carbon Dioxide, and may result in headache or dizziness. Never leave the cap in place for more than 2 minutes!

If you cannot adjust the mask to avoid your hairline, the mask is not suitable for you and must not be worn.

Do not remove the respirator until you have vacated the contaminated area unless you have pressing health reasons to do so (for instance you are experiencing dizziness and believe removing the respirator while you leave the contaminated area may help).

It is essential that the correct filter type is selected for the chosen application.

If the blocked filter alarm is triggered (2 beeps, repeated every second, red LED flashes), leave the contaminated area immediately and replace the filter. Operating the respirator after the blocked filter alarm has sounded can cause the flow to fall below the manufacturer's minimum designed flow, which may result in overexposure to contaminants and lead to sickness.

When fitting a new filter the blocked filter alarm shall be tested before the respirator is put back into service. See the heading "Testing the Blocked Filter Alarm" below.

Use only NIOSH-approved CleanSpace filters. If used with other filters CleanSpace respirators are not NIOSH approved. Use of other filters may result in overexposure to contaminants and lead to sickness.

Always correctly use and maintain the internal lithium ion battery packs. Failure to do so may result in fire or explosion or could adversely affect respirator performance and result in injury, sickness or death. Do not charge the on-board battery with unapproved chargers, in enclosed cabinets without ventilation, near flammable liquids or gasses, or near sources of high heat. Do not immerse the device in water. Do not use, charge or store the device outside the recommended temperature limits.

The battery shall only be charged in non-hazardous areas. Move out of the hazardous area before charging.

Only charge your CleanSpace EX with either the EX Charger (PAF-0066) or the Universal Charger (PAF-1100). See the Approval Label on your CleanSpace EX respirator for more information.

If the battery alarm sounds (3 beeps, repeated every second), leave the contaminated area immediately and re-charge the battery. Operating the respirator after the low battery alarm has sounded can cause the flow to fall below the manufacturer's minimum designed flow, which may result in overexposure to contaminants and lead to sickness.

In the extremely rare circumstance that the battery is damaged and electrolyte comes in contact with eyes, flush with water immediately and seek urgent medical attention.

Never dry the mask or exhalation valve with a cloth that may leave behind lint. Lint contamination of the exhalation valve may cause it to leak, resulting in overexposure to contaminants and lead to sickness.

Using a full face mask with the rain cover raised can cause the exhalation valve to vibrate, which you may notice as a buzzing noise. Lower the rain cover for correct operation.

The blower contains a battery, sensitive electronics and a motor. NEVER immerse it in water or use anything wetter than a damp cloth to clean it.

The Steri-Plus Exhalation Filter (CS3039) is an electrostatic filter and its performance will be degraded by exposure to certain organic solvents including isopropanol (IPA), xylene and toluene. Always remove the Exhalation Filter before cleaning the mask. If there is a possibility that the Exhalation Filter has become contaminated with any solvent, replace it.

You must recalibrate the internal pressure sensor any time that your CleanSpace EX is exposed to changes in temperature of more than 36°F (20°C). It is best practice to also re-calibrate if the unit has been in storage, particularly if the storage temperature is not known.

To check that the test port plug is fitted correctly (after using the on-board fit test ports), a negative pressure Seal Check shall be performed – see page 25.

5. NIOSH – Approval, Cautions and Limitations

NIOSH APPROVAL

CleanSpace EX is a NIOSH-approved respirator system. Refer to these User Instructions and to the NIOSH approval label provided with each CleanSpace EX for a listing of components that can be used to form a NIOSH-approved respirator.

NIOSH CAUTIONS AND LIMITATIONS

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.
F - Do not use powered air-purifying respirators if airflow is less than four cfm (115 lpm) for tight fitting facepieces or six cfm (170 lpm) for hoods and/or helmets.
J - Failure to properly use and maintain this product could result in injury or death.
L - Follow the manufacturer's User's Instructions for changing cartridges, canister 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.

6. S - Special or Critical User Instructions

This respirator contains a system for synchronizing with your breathing and regulating mask pressure. **This system requires re-calibration whenever it experiences a change in temperature of more than 36°F (20°C). It is best practice to also re-calibrate if the unit has been in storage, particularly if the storage temperature is not known.**

For the most accurate battery charge indication, the respirator must be plugged into its charger. To be sure it is fully charged, plug in the charger and wait for **all 3 LEDs to light solidly without flashing**. If the 3rd LED is flashing rapidly, the battery is 95% charged.

When fitted with HE + Nuisance Odor filter PAF-1108 the respirator offers nuisance level relief from

- **organic vapors**
- **acid gases**
- **ammonia**

that are below the Permissible Exposure Limit (PEL). Nuisance level refers to concentrations not exceeding the OSHA PEL or other government occupational exposure limits, whichever is lower.

Note: NIOSH does not evaluate the effectiveness of Nuisance Odor Filters for the removal of Nuisance Odors.

7. Notes about Explosive Atmospheres Use

The IECEx / ATEX / ETL approvals apply only when all components are IECEx / ATEX / ETL approved. Therefore when purchasing spare parts and accessories, always make sure of their proper approval if the equipment is to be used in an explosive atmosphere.

The battery must not be charged whilst the respirator is located in an explosive atmosphere.

WARNING

Not all components and accessories shown in this manual carry IECEx / ATEX / ETL approval. When purchasing spare parts and accessories, always make sure of their proper approval if the equipment is to be used in an explosive atmosphere. See Section 22 for more information.

8. Limitations of Use

Use this respirator strictly in accordance with all instructions in these user instructions. Never modify or alter this product.

- **Do not remove the respirator until you have left the contaminated area**, unless you have pressing health reasons to do so (for instance you are experiencing dizziness and believe removing the respirator while you leave the contaminated area may help).
- Only suitable for use by clean-shaven personnel. Facial hair under the seal reduces protection and is not permitted.
- Only use your respirator with the parts and accessories listed on the Approval Label.
- Do not use the respirator unless it is powered and running normally.
- Do not use the respirator while it is being charged.
- Do not use in airborne contaminant concentrations above those specified in your national regulations.
- Do not use for respiratory protection against unknown atmospheric contaminants or when concentrations of contaminants are unknown or immediately dangerous to life or health (IDLH).
- Do not use in oxygen deficient or oxygen enriched atmospheres. Do not use in flammable or explosive environments.
- Only for use by trained personnel.
- Filters need to be changed regularly. The frequency of change depends on use and the concentration of contaminants in the atmosphere.
- Do not use for escape purposes. National regulations may impose specific limitations on the use of filters depending on the filter class and the facemask used.

LEAVE THE CONTAMINATED AREA IMMEDIATELY IF:

- respirator warning lights and/or sounds activate for low battery or blocked filter
- any part of the respirator is damaged
- air flow into the mask decreases or stops
- breathing becomes difficult or increased resistance occurs
- you feel dizzy or your airway is irritated
- you can taste or smell contaminants.

Your respirator is suitable for use in the following atmospheric conditions:

- Temperature: 14°F to 113°F (-10°C to 45°C).
- Relative humidity: 0 to 90% non-condensing.

The respirator will stop functioning if its internal temperature rises above 140°F (60°C) or falls below 14°F (-10°C).

If the respirator has been used in an area that has caused it to become contaminated with a substance requiring special decontamination procedures it should be placed in a suitable container and sealed until it can be decontaminated.

Do not disassemble the respirator case. There are no user serviceable parts inside.

Failure to follow all instructions on the use of this product, and/or failure to use the respirator during times of exposure, may lead to adverse effects on the wearer's health and may render the warranty void.

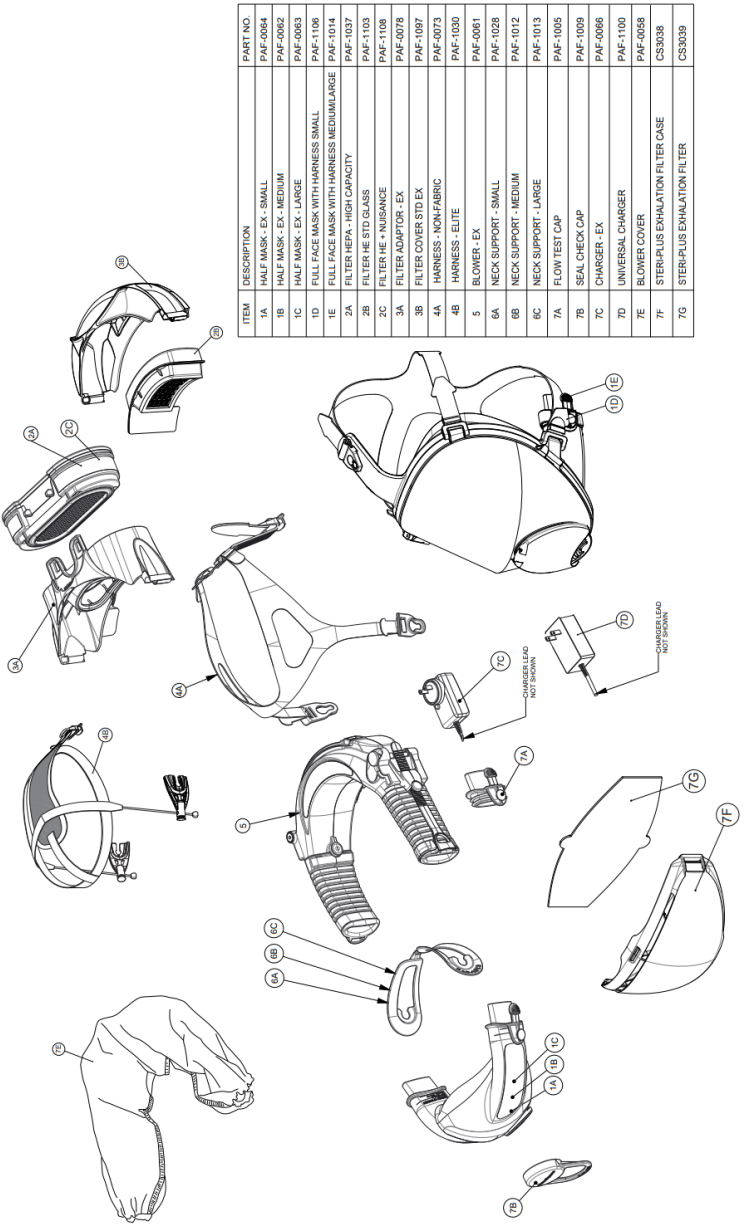
WARNING

This product is part of a system that helps reduce exposure to certain airborne contaminants. Misuse may result in sickness. For proper use, consult an Occupational Health Specialist, these user instructions or contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

9. Respirator Program Management

Occupational use of respirators must be in compliance with applicable health and safety standards. By United States regulation employers must establish a written respiratory protection program meeting the requirements of the Occupational Safety and Health Administration (OSHA) respiratory Protection standard 29 CFR 1910.134, Standard Practice for Respiratory Protection ASTM F3387 and any applicable OSHA substance specific standards. For additional information on this standard contact OSHA at www.OSHA.gov. In Canada, CSA standard Z94.4 requirements and/or the requirements of the applicable jurisdiction must be met. Contact an industrial hygienist or CleanSpace Technical Service with questions concerning the applicability of the respirator to your job requirements.

10. System Components

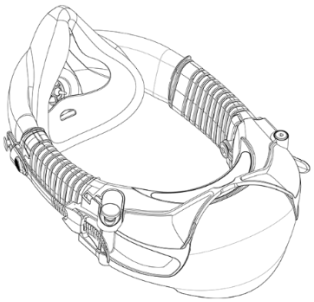
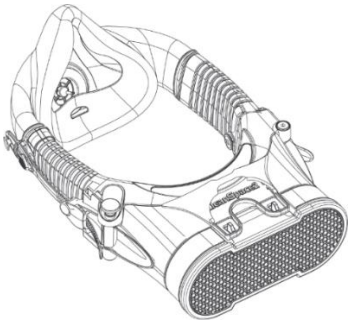


ITEM	DESCRIPTION	PART NO.
1A	HALF MASK - EX - SMALL	PAF-0064
1B	HALF MASK - EX - MEDIUM	PAF-0062
1C	HALF MASK - EX - LARGE	PAF-0063
1D	FULL FACE MASK WITH HARNESS SMALL	PAF-1106
1E	FULL FACE MASK WITH HARNESS MEDIUM/LARGE	PAF-1014
2A	FILTER HEPA - HIGH CAPACITY	PAF-1037
2B	FILTER HE STD GLASS	PAF-1103
2C	FILTER HE + NUISANCE	PAF-1108
3A	FILTER ADAPTOR - EX	PAF-0078
3B	FILTER COVER STD EX	PAF-1097
4A	HARNESS - NON-FABRIC	PAF-0073
4B	HARNESS - ELITE	PAF-1030
5	BLOWER - EX	PAF-0061
6A	NECK SUPPORT - SMALL	PAF-1028
6B	NECK SUPPORT - MEDIUM	PAF-1012
6C	NECK SUPPORT - LARGE	PAF-1013
7A	FLOW TEST CAP	PAF-1005
7B	SEAL CHECK CAP	PAF-1009
7C	CHARGER - EX	PAF-0066
7D	UNIVERSAL CHARGER	PAF-1100
7E	BLOWER COVER	PAF-0058
7F	STERI-PLUS EXHALATION FILTER CASE	CS3038
7G	STERI-PLUS EXHALATION FILTER	CS3039

Figure 1 - System Components

PARTS OF THE RESPIRATOR

Your respirator can be used with either a standard filter (PAF-1103) or with a range of high capacity filters (PAF-1037, PAF-1108). The standard filter is used with a filter cover (PAF-1097) whilst the high capacity filters are used with a filter adaptor (PAF-0078). Most functions of the respirator are the same regardless of which filter is being used. Where there are differences, they are explained in this manual. Throughout this manual the high capacity filter arrangement has been used for illustrative purposes.

Respirator with Standard Filter and Filter Cover	Respirator with High Capacity Filter and Filter Adaptor
	

Through this manual reference is made to various commonly-used components and features of the machine. Familiarize yourself with these parts before reading the rest of the manual. See Figure 2 and Figure 3 below.

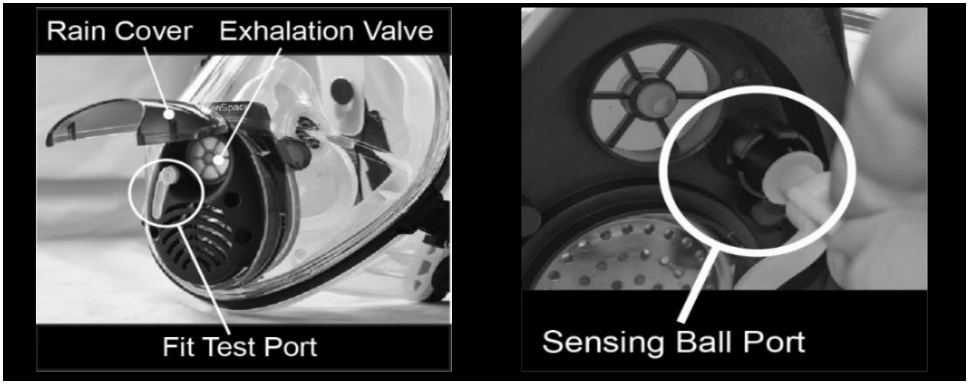


Figure 2 – Full Face Mask

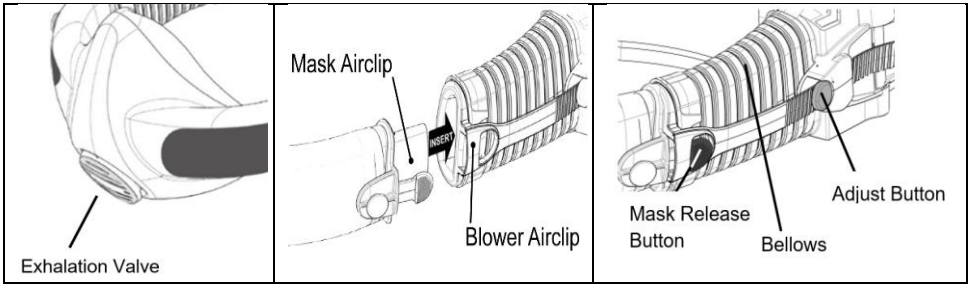


Figure 3 – a) EX Half Mask, b) Respirator AirClip, c) Respirator Buttons and Bellows

11. Controls and Indicators

POWER BUTTON

This button is used to switch between the three (3) operating Modes: "On", "Standby" and "Off" Mode.

i) ***Standby Mode*** is when the green battery indicator lights are on, the motor is not running and there is no airflow to the mask. The respirator will automatically switch to Standby Mode within ten (10) seconds of the user taking off the respirator. If the respirator is in Off Mode it will switch to Standby Mode when the Power button is pressed.

ii) ***On Mode*** is when the respirator is being worn, the motor is running and there is air flow to the mask. The motor will start (called On Mode) when the respirator detects a change in pressure in the mask triggered by your breathing. In On Mode you should hear the motor running and feel the airflow on your face. You can also switch to On Mode (start the motor) from Standby Mode by pressing the Power button once.

iii) ***Off Mode*** is when the green battery indicator lights are off and the motor is not running and there is no air flow to the mask. The respirator automatically switches into Off Mode three (3) minutes after the respirator has been removed from the user's face and the sensors detect that there is no breathing.

To conserve battery life, CleanSpace respirators are designed to automatically switch from On Mode to Standby then to Off Mode when not being worn.

Important: The respirator switches into On Mode when the respirator is in Standby Mode and the wearer starts to breathe. The respirator can only switch into On Mode from Standby Mode.

FLOW TEST BUTTON

This button is used to check that the respirator is able to deliver its minimum designed flow. Pressing it once, when the respirator is in Standby Mode (not ON Mode), starts the flow test which lasts about 5 seconds. **See Section 13 Step 3 for instructions on running the flow test.**

BATTERY INDICATOR LIGHTS

Your respirator is equipped with an indicator of battery charge. There are three (3) battery indicator lights. With the charger plugged in and three green lights lit, the battery is fully charged and typically has up to eight (8) hours of operating time. The respirator should be fully charged before use.

If you need to be sure the battery is 100% charged plug in the charger. Even if the battery is fully charged, the 3rd LED will flash for at least three minutes while the respirator checks its condition. Once **all 3 LEDs light solidly without flashing the battery is at 100%.**

For how to assess the level of charge, see Section 18.

When the battery approaches a level at which it would not be able to supply the Manufacturer's Minimum Design Flow, an alarm sounds (3 beeps, repeated once per second). All green battery lights are extinguished. **If the low battery alarm sounds you must leave the contaminated area immediately and recharge the battery.**

Operating time is strongly affected by work rate, altitude, and other factors. The operating times quoted above are average durations at moderate work rates at sea level. Actual operating times may vary widely from average durations.

FILTER WARNING ALARM

CleanSpace EX has a Filter Warning Alarm, which is triggered when the filter is blocked**. If the Filter Warning Alarm sounds** (two beeps, repeated once per second) or the Filter Warning Alarm light comes on, **you must move out of the contaminated area**, **and change the filter**.

12. Mask Fitting

Before you use your respirator you must determine the right mask for your face and know how to adjust the machine to achieve a good fit.

It is vital that your mask is the right size for your face and fits properly. **Mask fitting must be carried out by a specialist / designated mask fitter**. The fit must be confirmed by a **fit test** performed according to OSHA regulations 1910.134. A fit test must be performed during initial selection of a respirator, or whenever the user's face changes shape (for instance due to weight gain or loss) and at least annually.

Qualitative Fit Testing - To perform a **qualitative** fit test, follow the relevant standard and/or the instructions provided with the test substance. A qualitative test provides only a PASS/FAIL result, not a fit factor.

Quantitative Fit Testing - See Section 21.

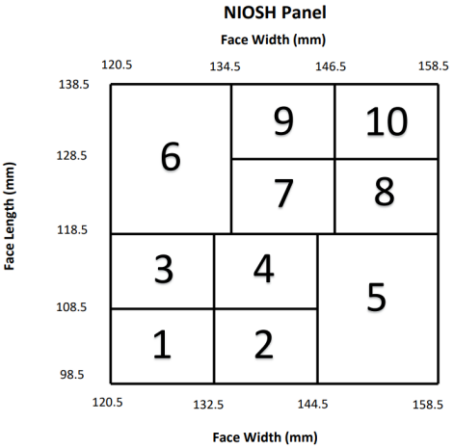
WARNING
No Half Mask or Full Facepiece PAPR can fully protect you if you are not clean shaven. CleanSpace respirators are not suitable for users with facial hair.

MASK SELECTION GUIDELINES

No set of guidelines can ensure that you have the right size mask for your face. You must confirm the fit with a fit test performed according to OSHA regulations 1910.134**.** However, the information below will help your mask fitting specialist to select the mask most likely to fit you and may therefore save time.

Description	Diagram
Face Width	
Face Length	

Using the above definitions of face width and length, the face size of a user can be determined by employing the NIOSH panel below.



Finally, the tables below specify the fitting sequence that should be employed based on the face size of the user. The 'fitting sequence' is simply the order in which the face masks should be checked for fit.

Half Mask Fitting Sequence

NIOSH Panel Number	First Try	Then Try
1-2	Small	Medium
3-7	Medium	Small OR Large*
8-10	Large	Medium

* If the medium mask fails initially, the mask fitting specialist will determine whether to try the small or large mask next.

Full Face Mask Fitting Sequence

NIOSH Panel Number	First Try	Then Try
1-4, 6	Small	Medium/Large
5, 7-10	Medium/Large	Small

SELECTING A NECK SUPPORT – HALF MASK

Selecting the right size of neck support is vital to achieving a good half mask fit. Your CleanSpace respirator is supplied with three sizes of neck support, "S", "M" and "L". "S" (Small) is for people with smaller necks and heads while "L" (Large) is for those with larger heads and necks. **As a general rule, use the smallest size neck support that is comfortable. Start with a size smaller than you think will be right and work up. A smaller neck support positions the blower further from your neck and will give you the greatest freedom of movement, particularly for looking up.** You should be able to fully tighten the half mask on your face and achieve a good seal **without using up all the travel in the respirator's adjustment system**. If you have to fully compress the bellows to achieve a good fit, change to a smaller neck support (for instance use the support marked "S" instead of "M" or "M" instead of "L"). If the mask is too tight around your neck even with the adjustment system at full extension change to a larger neck support (use the support marked "L" instead of "M" or "M" instead of "S").

SELECTING A NECK SUPPORT – FULL-FACE MASK

When using the full-face mask the neck support is for comfort only and does not form part of the seal. Nevertheless you may find that comfort is improved by selecting the right size neck support as explained below. In particular, if your job involves a lot of vigorous movement, selecting the right size neck support and adjusting the machine correctly will stabilize the respirator against your neck and reduce distracting movement. Your CleanSpace respirator is supplied with three sizes of neck support, "S", "M" and "L". "S" (Small) is for people with smaller necks and heads while "L" (Large) is for those with larger heads and necks.

WARNING

The half mask and full-face mask neck support instructions are not interchangeable. The neck support when used with the half mask is critical to achieving a good mask fit. The neck support when used with the full-face mask simply provides additional comfort.

CHECKING FIT BEFORE CONDUCTING A FIT TEST

Your mask fit must be confirmed by a **fit test** performed according to OSHA regulations 1910.134. But before carrying out that test, you can watch for some simple signs that the mask is not fitted correctly.

Evaluating mask fit is best done with a buddy to help you check adjustments and fit!

WARNING

For the full-face mask, check that the mask seal does not cross your hairline. Check all the way around the mask seal, paying particular attention to your forehead and temples. The seal must not cross your hairline.

No Gaps: *There should be no visible gaps between your face and the mask. Have your buddy check.*

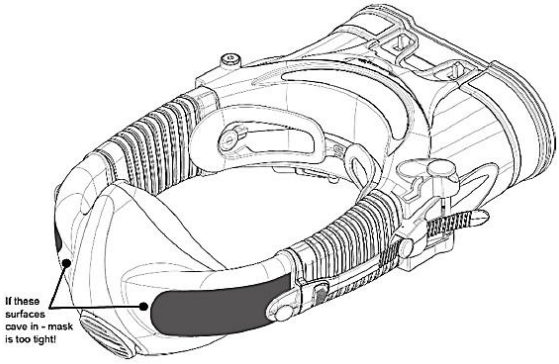
No Creases: *If the mask is pulled too tight, or is too large for the face, creases may develop at around the level of the mouth or on the centerline at the bottom of the cushion. Loosen the mask a little or try a smaller mask.*

Look Down: *Look down and have your buddy check for a gap between the bridge of the nose and the mask (half masks). Also check that the mask has not come loose around the chin. Try to fit the chin further into the mask. If that does not work, try a smaller mask.*

No air in the eyes: *With CleanSpace running, check no air leaks into your eyes (half masks). If it does, try tightening the mask, or loosen the harness a little (dropping the height of mask on the face). If those adjustments do not fix the problem, try a different size mask.*

Check for Distortion*: You should be able to achieve a good fit without the mask being uncomfortably tight.*

Beyond a certain point, tightening the mask makes the fit worse not better*: Check the outer surfaces of the mask. They should curve outwards. If they are curved in towards the face, you have the mask on too tight.*



Once you have achieved an acceptable mask fit and confirmed it with a fit test, record the mask size, neck support size (any) and, if a quantitative test has been performed, the fit factor achieved.

WARNING

If a satisfactory quantitative fit factor or a passing qualitative test cannot be achieved with any of the masks, the respirator must not be used. A satisfactory quantitative fit factor is

Test Type	Half Mask	Full Face Mask
Power On	1000	1000
Power Off	100	500

13. Using CleanSpace EX with HALF MASKS

Complete the following five steps each time you use your Half Mask respirator.

STEP 1 - INSPECT

Before each entry into a contaminated area, the following inspections must be performed:

- Visually check the entire respirator system including the blower, mask, harness, filter adaptor and filter. If parts are missing or damaged replace them only with approved parts before proceeding. Check the top and bottom case of the blower and the Filter Adaptor for cracks or other damage. Do not use the device if there is any damage.
- Remove the filter and check it carefully. The seal must be clean and free from damage of any kind. If necessary it can be cleaned with a cloth dampened with water. Examine the visible internal surfaces for any sign that dust has leaked past a damaged seal. If found, replace the filter. The body of the filter must not be cracked or show any sign of damage. Examine the filter carefully for any sign that it has sustained an impact or been scratched. If any sign of impact or scratching is found, discard the filter. Refit the filter (see Section 17).

WARNING

Do not use compressed air or a brush to clean the filter! HE filters are very easily damaged by compressed air or by brushing. Misuse by cleaning the filter may result in overexposure to contaminants and lead to sickness.

- Check that the battery is fully charged by pressing the power button. All three battery LEDs must light. See Section 18.
- Check both bellows for splits or holes. Check that the bellows have not become distorted so as to partially or fully close the air path to the mask.
- Check the mask to ensure that there are no cracks, tears or dirt; check the mask is not distorted and the conductive coating is undamaged.
- Check the exhalation valve for damage or dirt build up. If it is dirty, remove the Exhalation Valve Cover. Remove any dirt, hairs or anything else that could affect the seal of the valve against its seat. Check that the valve seat is clean. Reinstall the Valve Cover. If the valve is damaged, replace the mask.
- Check the harness is intact and is not frayed or damaged. It must be adjusted to support some of the weight of the respirator.

STEP 2 – CALIBRATE

This respirator contains a system for synchronizing with your breathing and regulating mask pressure. **This system requires re-calibration whenever it experiences a change in temperature of more than 36°F (20°C). It is best practice to also re-calibrate if the unit has been in storage, particularly if the storage temperature is not known. To re-calibrate:**

1. Remove the mask (if fitted). The Flow Test Cap must not be fitted.
2. **Remove the filter from the respirator.** Leave the Filter Adaptor in place. Place the respirator on a stable surface such as a table.
3. With the respirator in standby mode (one or more green LEDs lit), press and hold both the Power button and the Flow Test button.

   If no LEDs are lit, press the Power button once to enter standby mode.
4. When both the blue and red LEDs light, release both buttons. Do not touch or move the respirator.
5. After 5 – 10 seconds the motor will start and run for 5 – 10 seconds.
6. When the motor stops, calibration is complete.
7. Re-fit the filter.

Important Note: Failure to remove the filter prior to calibration will result in poor battery life. In order to restore performance of the respirator, calibration must be performed again with the filter removed.

STEP 3 – TEST FLOW RATE

This test checks that the machine is able to deliver the Manufacturer's Minimum Design Flow of 115 liters/minute. This check must be completed before entry into a contaminated area.

If no LEDs are lit, press the Power button once to enter standby mode.

1. Remove the mask from the respirator. **Leave the filter in place.**
2. Fit the yellow Flow Test Cap to the left bellow. See Figure 4.

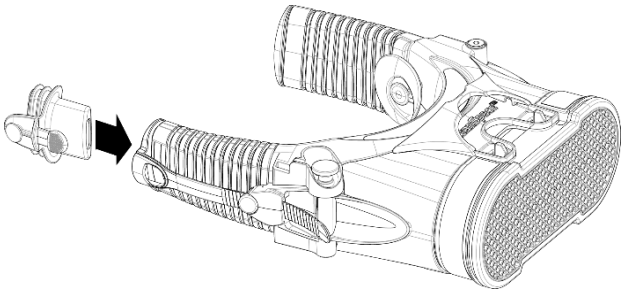


Figure 4 - Flow Test

To avoid unnecessary filter changes, it is important to fit the Flow Test Cap to the LEFT bellow.

No air flows out of the right bellow. Fitting the Flow Test Cap to the right bellow will result a FAIL result, even if the filter is clean and battery fully charged.

3. Make sure nothing is blocking the Flow Test Cap or the filter inlet. Place the respirator flat on a table or other support.
4. Press and release the button marked "Flow Test".
5. The respirator automatically runs the Flow Test. The motor will run fast and air will be discharged from the Flow Test Cap.
6. After 2 seconds the respirator reports the result of the test using the LEDs on the keypad. Use the table below to interpret the LEDs.

LIGHTS	Meaning
3 LEDs:	PASS (Excellent: flow >180 l/min)**
2 LEDs:	**PASS (Good)****
1 LED:	**PASS (Acceptable)**
ALL LEDs FLASH	**FAIL (Flow <115 l/min)** **Do not use the respirator until a new filter has been fitted and / or battery charged and the test has been repeated with a PASS result.** *Reset the respirator by pressing the Power button. Fully charge the battery and / or replace the filter. Repeat the flow test. If filter is new and battery fully charged but the respirator fails the test, contact CleanSpace and do not use until it has been evaluated*

***** This test is not a battery charge test. Three LEDs means that, as of the moment it is tested, the unit can deliver high flow. It does not mean the battery is full. You must check the battery condition separately. See Section 18.***

7. Remove the yellow Flow Test Cap and store for later use.

STEP 4 - DON THE RESPIRATOR AND HALF MASK

NOTE: Please read STEP 4 all the way through before beginning to don CleanSpace PAPR.

Locate your blower, mask, neck support and harness. **Make sure the mask and neck support are of the size that you used for your last successful fit test.**

Donning is best done with a buddy to help you check adjustments and fit!

Fit a Neck Support to the respirator

The neck support has keyhole openings at each end which snap over buttons on the respirator case. Place the neck support in position against the buttons and then press firmly backwards (towards the respirator) to engage the buttons in the keyholes.

If using EX with the PAF-1108 Nuisance filter, you have the option of installing the Steri-Plus Exhalation Filter. If you choose to install the Steri-Plus, assemble it using the directions below. Otherwise, skip this step and continue with the Donning procedure.

First, insert a new filter to the outer case, making sure that the filter tabs are positioned in the case slots to hold the filter in place (see Figure 5). The filter is 'reversible' and can be oriented in either direction.

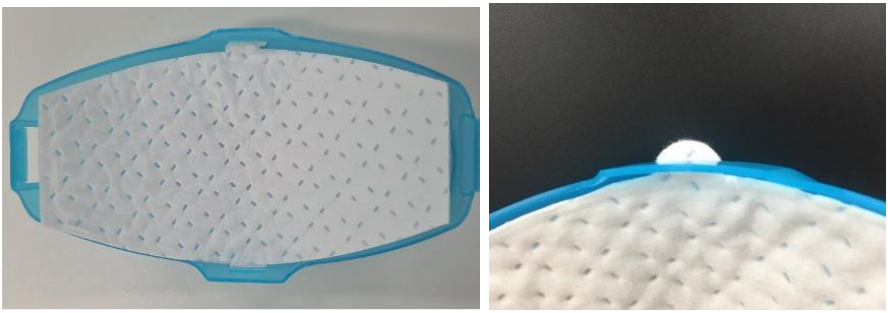


Figure 5 – Inserting Filter into Outer Case

Then, place the inner case over the filter. Align the end (A) to slot in and then close and clip the case shut (B). This is shown below in Figure 6.

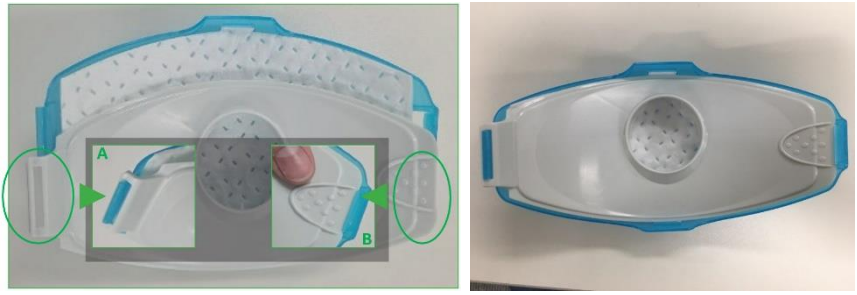


Figure 6 – Connecting Inner and Outer Case

Fit a Mask to CleanSpace EX

- *Examine the mask AirClips. One is open and one is closed. Find the one that is open. Seen from above it is on the left-hand side.*
- *Locate the left-hand blower AirClip. It is on the same side of the blower as the "POWER" button.*
- The figure to the right shows the Left-hand (OPEN) mask AirClip.

Join the AirClips, so that the mask is attached to the blower. See Figure 7 and Figure 8.

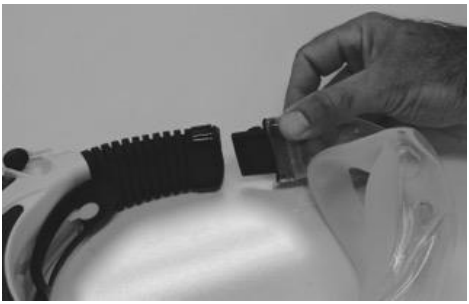
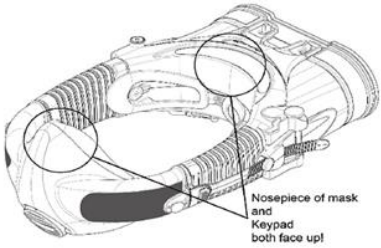


Figure 7 – Join AirClips

Figure 8 – Mask attached to respirator

IMPORTANT: Check that the mask is the right way up. The pointed, nose section of the mask must face up, in the same direction as the keypad. See Figure at right. Leave the other mask arm and bellow free until you are fitting the respirator.



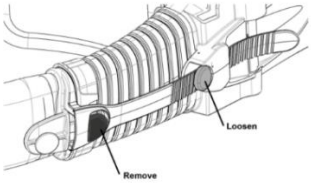
Fit the Harness to the mask

Orient the harness so there is a clip with a keyhole next to each arm of the mask and the rear harness strap is close to the respirator.

Clip the harness to the mask and arrange it in front of the mask.

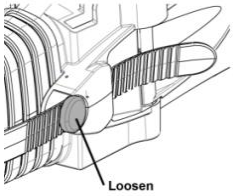
Familiarize yourself with the Adjust Buttons and the Mask Release Buttons.

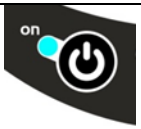
Mask Release Button and Adjust Button.



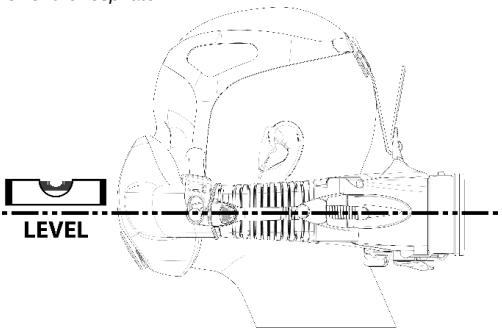
Loosen both bellows to their widest opening.

Press the adjust button on the blower and pull on the bellows to loosen and extend the bellows.



Place the machine in Standby Mode. *Press the Power button once. The GREEN lights of the Battery Indicator should come on.*	
Don the respirator and start to breathe. *Place the blower behind your neck with the bellows and mask hanging down one side.*	
Join the right-hand Mask AirClip to the right-hand respirator AirClip.	
Find the harness rear strap and the harness rear clip on the end of it. Holding the rear strap pull it back over your head.	
Locate the hook on the bottom end of the strap. Snap the hook onto the hoop on the filter adaptor so that the rear strap supports the weight of the respirator.	

Adjust the height of the respirator. *The Harness should take a little of the weight of the mask and support the blower so that the CleanSpace Respirator system sits level on your head. If necessary adjust the rear strap to raise or lower the respirator.*



Tighten the mask on your face. *Tighten the mask until you do not feel any leaks between the mask cushion and your face.*

To tighten the mask, place one hand against the back of the blower and the other over the front of the mask. Push the blower forwards and the mask back, tightening the fit. You will hear a series of clicks as the mask is tightened. Be careful to tighten each side by the same amount.

STEP 5 – CHECK MASK SEAL

It is essential to do a positive pressure Seal Check every time you wear a CleanSpace Respirator.

(With the mask on and the respirator running…)

Locate PAF-1009, the red Seal Check Cap. Fit Seal Check Cap over the exhalation valve in the mask. The Cap should snap into place. See Figure 9 below.

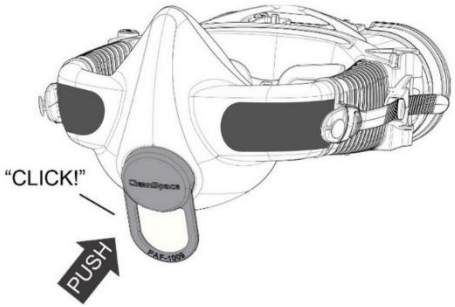


Figure 9 – Fitting Seal Check Cap

- Check that no air is flowing from the exhalation valve. Breathe normally.
- Using your fingers, feel around the perimeter of the mask for leaks. You will feel any leak as a cool flow of air over your finger. For greater sensitivity breathe out gently to raise the mask pressure. Wetting your fingers will make it easier to feel tiny leaks.
- If necessary, tighten the mask. To tighten the mask, place one hand against the back of the blower and the other over the front of the mask. Push the blower forwards and the mask back, tightening the fit. You will hear a series of clicks as the mask is tightened.
- Be careful to tighten each side by the same amount.

WARNING
Do not over-tighten the mask! If the front of the mask starts to become concave, it is too tight and may leak. Press the Adjust Buttons to loosen the mask a little.

After each tightening, feel for leaks again.

Tilt your head down (look at the ground) and up (look at the sky). Check that there are still no leaks. Look right and left, checking for leaks. Adjust if necessary.

Once you can feel no leaks from the mask, the seal check is complete.

WARNING
If a satisfactory Seal Check cannot be achieved, do not enter the contaminated zone.

Remove the Seal Check Cap by gently **twisting** the handle so that one side of the cap comes loose from the exhalation valve. Be careful not to dislodge the exhalation valve cover. See Figure 10.

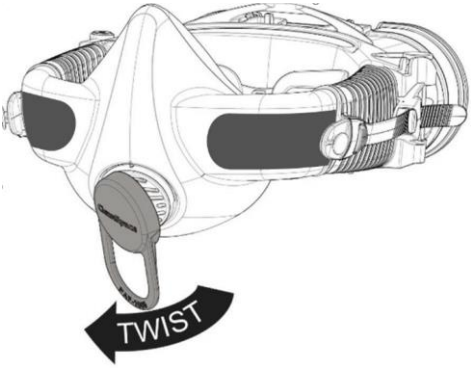


Figure 10 – Removing Seal Check Cap

WARNING
Be sure to remove the Seal Check Cap before entering the contaminated area. The Cap blocks the exhalation valve, making it more difficult for your exhaled air to be expelled from the mask. Failure to remove the cap will lead to increased levels of rebreathed Carbon Dioxide, and may result in headache or dizziness. Never leave the Cap in place for more than 2 minutes!

STEP 6 – INSTALL STERI-PLUS EXHALATION FILTER (OPTIONAL)

Remove the respirator and align the assembled case and filter to the valve cover so that the vents on the outer case are at the bottom of the mask. Push the assembled case onto the exhalation valve until it clicks into place as shown in Figure 11.

Figure 11 – Installing Steri-Plus Assembly

The CleanSpace EX respirator is now ready to be re-donned for use. Re-don the respirator, repositioning the harness on your head and tighten the mask bellows so the mask feels the same on your face as prior to fitting the Steri-Plus Exhalation Filter. Ensure the mask fits snugly and that there are no leaks by feeling around the perimeter of the mask for leakage while exhaling firmly.

14. Using CleanSpace EX with FULL FACE MASKS

Complete the following six steps each time you use your Full Face Mask respirator.

STEP 1 - INSPECT

Before each entry into a contaminated area, the following inspections must be performed:

- Visually check the entire respirator system including the blower, mask, harness, filter cover and filter. If parts are missing or damaged replace them only with approved parts before proceeding. Check the top and bottom case of the blower and the Filter Cover for cracks or other damage. Do not use the device if there is any damage.
- Remove the filter and check it carefully. The seal must be clean and free from damage of any kind. If necessary it can be cleaned with a cloth dampened with water. Examine the visible internal surfaces for any sign that dust has leaked past a damaged seal. If found, replace the filter. The body of the filter must not be cracked or show any sign of damage. Examine the filter carefully for any sign that it has sustained an impact or been scratched. If any sign of impact or scratching is found, discard the filter. Refit the filter (see Section 17).

WARNING

Do not use compressed air or a brush to clean the filter! HE filters are very easily damaged by compressed air or by brushing. Misuse by cleaning the filter may result in overexposure to contaminants and lead to sickness.

- Check that the battery is fully charged by pressing the power button. All three battery LEDs must light. See Section 18.
- Check both bellows for splits or holes. Check that the bellows have not become distorted so as to partially or fully close the air path to the mask.
- Check the mask to ensure that there are no cracks, tears or dirt.
- Check the exhalation valve for damage or dirt build up. If it is dirty, lift the rain cover. Remove any dirt, hairs or anything that could affect the seal of the valve against its seat. Check that the valve seat is clean. Lower the rain cover. If the valve is damaged, replace it with a new one.
- Check the harness is intact and is not frayed or damaged. It must be adjusted to support some of the weight of the respirator.

STEP 2 – CALIBRATE

This respirator contains a system for synchronizing with your breathing and regulating mask pressure. **This system requires re-calibration whenever it experiences a change in temperature of more than 36°F (20°C). It is best practice to also re-calibrate if the unit has been in storage, particularly if the storage temperature is not known. To re-calibrate:**

1. Remove the mask (if fitted). The Flow Test Cap must not be fitted.
2. **Remove the filter from the respirator.** Close the Filter Cover. Place the respirator on a stable surface such as a table.
3. With the respirator in standby mode (one or more green LEDs lit), press and hold **both** the Power button and the Flow Test button.

   If no LEDs are lit, press the Power button once to enter standby mode.
4. When both the blue and red LEDs light, release both buttons. Do not touch or move the respirator.
5. After 5 – 10 seconds the motor will start and run for 5 – 10 seconds.
6. When the motor stops, calibration is complete.
7. Re-fit the filter.

STEP 3 – TEST FLOW RATE

This test checks that the machine is able to deliver the Manufacturer's Minimum Design Flow of 115 liters/minute. This check must be completed before entry into a contaminated area.

If no LEDs are lit, press the Power button once to enter standby mode.

1. Remove the mask from the respirator. **Leave the filter in place.**
2. Fit the yellow Flow Test Cap to the left bellow. See Figure 12.

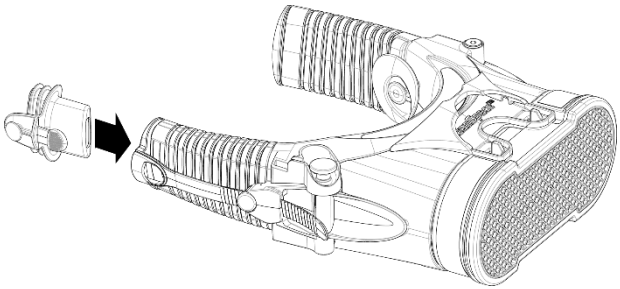


Figure 12 - Flow Test

To avoid unnecessary filter changes, it is important to fit the Flow Test Cap to the LEFT bellow.

No air flows out of the right bellow. Fitting the Flow Test Cap to the right bellow will result a FAIL result, even if the filter is clean and battery fully charged.

3. Make sure nothing is blocking the Flow Test Cap or the filter inlet. Place the respirator flat on a table or other support.
4. Press and release the button marked "Flow Test".
5. The respirator automatically runs the Flow Test. The motor will run fast and air will be discharged from the Flow Test Cap.
6. After 2 seconds the respirator reports the result of the test using the LEDs on the keypad. Use the table below to interpret the LEDs.

LIGHTS	Meaning
3 LEDs:	PASS (Excellent: flow >180 l/min)**
2 LEDs:	**PASS (Good)****
1 LED:	**PASS (Acceptable)**
ALL LEDs FLASH	**FAIL (Flow <115 l/min)** **Do not use the respirator until a new filter has been fitted and / or battery charged and the test has been repeated with a PASS result.** *Reset the respirator by pressing the Power button. Fully charge the battery and / or replace the filter. Repeat the flow test. If filter is new and battery fully charged but the respirator fails the test, contact CleanSpace and do not use until it has been evaluated*

***** This test is not a battery charge test. Three LEDs means that, as of the moment it is tested, the unit can deliver high flow. <u>It does not mean the battery is full</u>. You must check the battery condition separately. See Section 18.***

7. Remove the yellow Flow Test Cap and store for later use.

STEP 4 - DON THE MASK

Donning is best done with a <u>buddy</u> to help you check adjustments and fit!

If you have long hair, it is recommended you tie the hair back so that it does not interfere with the seal between the mask and your face.

Loosen all five straps on the mask harness to their fullest extent. Hold the mask in one hand while you use the other hand to pull the harness back and away from the mask.	
Place your chin in the cup of the mask face seal. *Then, pull the harness over your head.*	
Adjust the top strap so that the hanger for the rear strap sits about an inch above your ears.	

Settle your face into the mask face seal. Gently tighten each harness strap in turn, starting with the bottom straps. As you pull each strap, use your other hand to steady the mask on your face.

Continue to adjust the straps, loosening and tightening as necessary, until the mask face seal presses evenly on your face around its entire length.

If necessary, adjust the mask up or down so that the inner mask sits comfortably around your nose.

CHECK THAT THE MASK SEAL DOES NOT CROSS YOUR HAIRLINE

Check all the way around the mask seal, paying particular attention to your forehead and temples. ***The seal must not cross your hairline****.*

WARNING
If you cannot adjust the mask to avoid your hairline, the mask is not suitable for you and must not be worn.

STEP 5 – SEAL CHECK

Carry out a negative pressure seal check

Using your thumb, cover the air inlet (on the left-hand mask air clip). Breathe in sharply. You should not be able to draw any air into the mask. The mask should be sucked in towards your face as you inhale. Listen for squeaking or whistling noises which indicate air is leaking past the seal.

Hold your breath for 10 seconds. The mask should stay collapsed against your face. If the mask seal slowly recovers (mask moves away from your face) there is a leak. Readjust the mask fit and repeat the negative pressure seal check.

Resume normal breathing and proceed to the next step.

WARNING
If a satisfactory Seal Check cannot be achieved, do not enter the contaminated zone.

STEP 6 – DON THE RESPIRATOR

NOTE: Please read STEP 4 <u>all the way through</u> before beginning to don CleanSpace PAPR.

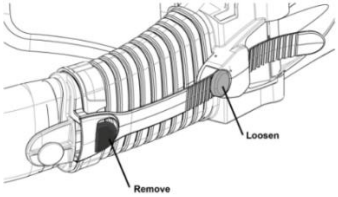
Locate your blower and neck support. **Make sure neck support is of the size that you used for your last successful fit test.**

Fit a neck support to the respirator

The neck support has keyhole openings at each end which snap over buttons on the respirator case. Place the neck support in position against the buttons and then press firmly backwards (towards the respirator) to engage the buttons in the keyholes.

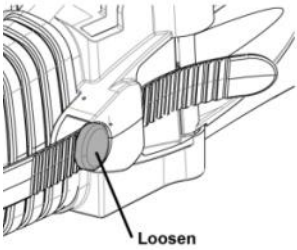
Familiarize yourself with the Adjust Buttons and the Mask Release Buttons.

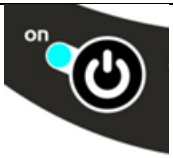
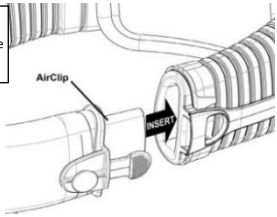
Mask Release Button and Adjust Button.



Loosen both bellows to their widest opening

Press the adjust button on the blower and pull on the bellows to extend them.



Place the machine in Standby Mode. *Press the Power button once.*	
Install the PAF-0058 Blower Cover (optional). *Open one end of the Blower Cover and stretch the elastic over the end of the Blower. Slide the Blower Cover over the Blower making sure to leave the AirClips uncovered as shown.*	 
Don the respirator and start to breathe. *Place the respirator behind your head, resting on your shoulders.* ***Note that the hoop on the Filter Cover must be facing upwards.*** *Grasp the left-hand mask AirClip in one hand and the left-hand respirator AirClip in the other. Join them. Pulling down on the mask AirClip to move it away from the harness makes this process easier.*	 

Breathe normally. The CleanSpace Respirator should start.
If the motor does not start, it was not in Standby Mode. Take the respirator off, press the Power button to activate Standby Mode and don it again as described above.
Join the AirClips on the right-hand side.

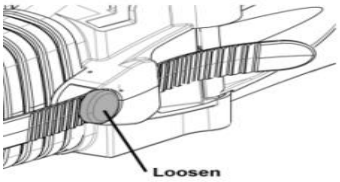
NOTE! If you cannot connect the air clips on both sides because the respirator pulls up tight against the back of your neck, swap to a neck support suited to a larger head size – see above. Then start the respirator donning process again.

Finally, reach behind your head and find the harness rear strap. Locate the hook on the bottom end of the strap. Snap the hook onto the hoop on the Filter Cover of the CleanSpace Respirator so that the rear strap supports the weight of the respirator.

If using the Blower Cover, simply attach the hook and hoop in the same way.

Adjust the respirator vertical position.
Adjust the rear strap to set the height of the respirator. The CleanSpace Respirator should sit roughly level. If your job involves looking up a lot (for instance sanding a ceiling) you may prefer to tighten the strap more to raise the respirator and give yourself more space for head movement.

You can set how close the CleanSpace Respirator sits to your neck by adjusting the bellows on either side of the respirator. If your job involves a lot of rapid movement (for instance running upstairs) you may wish the respirator to sit snugly against your neck. If you will be looking up a lot, you may find it more comfortable with the respirator set well back from your neck.

To move the respirator forward: steady the mask with one hand and press on the back of the respirator with the other. You will hear clicking as the adjust mechanism moves to the new position. Be careful to adjust each side by the same amount. To move the respirator backwards, press the adjust buttons on each side and if necessary pull backwards on the respirator.	

15. Entering and Exiting the Contaminated Area

Prior to entering the contaminated area, complete the inspections and checks listed in these user instructions.

1. Ensure Seal Check has been done and motor is responding to your breathing.
2. Check that none of the alarms are sounding.
3. Remember that if your workplace is very noisy you may not be able to hear the device alarms**. In this case, you must follow the special precautions set out in Section 16.**
4. Enter the work area.
5. Do not remove the respirator until you have left the contaminated area, unless you have pressing health reasons to do so (for instance you are experiencing dizziness and believe removing the respirator while you leave the contaminated area may help).
6. Leave the contaminated area immediately if any of the following conditions occur:
    a. Any part of the system is damaged.
    b. Airflow into the mask decreases or stops.
    c. The battery of filter alarms are triggered (even if only the audible or only the visible alarm triggers).
    d. Breathing becomes difficult.
    e. You feel dizzy or your vision is impaired.
    f. You smell or taste contaminants.
    g. Your face, eyes, nose or mouth become irritated.
    h. You suspect the concentration of contaminants may have reached levels at which this respirator may no longer provide adequate protection.
7. Follow the exiting and decontamination procedures as documented in the workplace Respiratory Protection Program.

To remove the respirator, find the Mask Release Button (see Section 14) and press to release the mask from the blower. See Figure 13. **The mask release button has a rough, dimpled finish that you can feel with your fingertips. All the other buttons are smooth.**

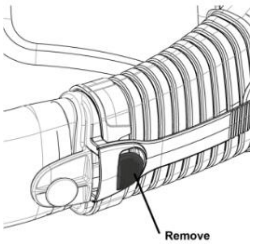


Figure 13 - Mask Release Button

Note: The respirator motor will automatically switch off and go into Standby Mode in approximately 10 seconds when no breath is detected. In Standby Mode, if after three (3) minutes no breath is detected, the respirator will automatically go into Off Mode. In Off Mode, all the battery indicator lights will be off and the motor will not be triggered by the wearer's breathing.

WARNING

Do not remove the respirator until you have vacated the contaminated area unless you have pressing health reasons to do so (for instance you are experiencing dizziness and believe removing the respirator while you leave the contaminated area may help).

16. Working in Noisy Environments

In most noisy environments, the respirator alarms are still clearly audible to the wearer. But if there is a chance you will not hear the alarms, you must take the following extra precautions:

- Never enter the contaminated zone unless all three green battery indicator lights are illuminated.
- Never work in the high noise area for more than four (4) hours. At the end of four hours, leave the contaminated zone and check that
    - the filter blocked light is not illuminated; AND
    - all three green battery indicator lights are still illuminated.
- If two or fewer green battery indicator lights are illuminated, recharge battery until 3 lights are showing again (and the 3rd one has stopped flashing).
- If the filter blocked light is illuminated, change the filter.
- Be particularly aware of difficulty breathing or of the air flow stopping. If these things happen, exit the contaminated zone immediately.

17. Fitting & Changing the Filter

Before using the respirator, you must ensure that you are using the correct filter type for the environment you are working in.

WARNING

It is essential that the correct filter type is selected for the chosen application.

Before changing the filter, move out of the contaminated area and remove the respirator. Used filters should be disposed of responsibly and treated as non-recyclable hazardous* waste (* dependent on the contaminant being filtered). Filters need to be regularly changed. The frequency of change depends on use and concentration of contaminants in the atmosphere.

BLOCKED FILTER ALARM

All CleanSpace respirators have a Filter Blocked alarm, which is triggered when the filter requires replacement (2 beeps, repeated every second).

WARNING

If the blocked filter alarm is triggered (2 beeps, repeated every second, red LED flashes), leave the contaminated area immediately and replace the filter. Operating the respirator after the blocked filter alarm has sounded can cause the flow to fall below the manufacturer's minimum designed flow, which may result in overexposure to contaminants and lead to sickness.

(Pressing the Power button once will mute the Filter Blocked alarm, allowing you to concentrate while you exit the contaminated zone. After 15 minutes, if the filter has not been changed, the alarm will resume).

WHEN TO CHANGE THE PARTICULATE FILTER

Change the filter

- When the Blocked Filter Alarm sounds.
- If the Flow Test indicates that the respirator is not able to produce the Minimum Design Flow.
- If there is any sign of damage to the filter.
- When the filter reaches its expiry date (marked on the filter label).
- When the outside of the filter is heavily soiled.
- When the filter is wet.
- If there is any sign of dust or contaminants on the inside surface of the filter.

A respirator with a clean filter will run for much longer than one with a filter that is dirty. To maximize your work time between battery charges, it is best to change the filter more often. CleanSpace™ filters cannot be cleaned.

WARNING

Do not use compressed air or a brush to clean the filter! HE filters are very easily damaged by compressed air or by brushing. Misuse by cleaning the filter may result in overexposure to contaminants and lead to sickness.

WHEN TO CHANGE THE PAF-1108 NUISANCE ODOR FILTER

In addition to the triggers listed above, you should change the nuisance odor filter if you notice any smell of gas in the mask.

WHEN TO CHANGE THE STERI-PLUS EXHALATION FILTER

CS3039 Steri-Plus Exhalation Filter should be changed

- If there is a possibility that it has been splashed with contaminant.
- If there is a possibility that it has been exposed to organic solvents (for instance isopropanol, xylene or toluene) as organic solvents will degrade its performance.
- Do not fit a filter if its expiry date (which is marked on the filter packaging) has passed.

CHANGING THE STANDARD FILTER (PAF-1103)

If the PAF-0058 Blower Cover is installed, first remove this by opening one end of the Blower Cover and sliding it off. To unlock the filter cover, lift the pin located on the end of the filter cover. The filter cover will swing open exposing the used filter. Remove the filter as shown in Figure 14. Check that the area where the filter sits is clean. If necessary wipe it with a clean cloth or CleanSpace Cleaning Wipe. Fit a new filter. Swing the filter cover back into closed position and hold it firmly against the body of the respirator with one hand. Press the pin down until clicked back into place. Check that the blocked filter alarm is working, as described below. If using the Blower Cover re-install as described in Section 14 Step 6.

Note: The Blower Cover cannot be cleaned. Used Blower Covers should be disposed of responsibly and treated as non-recyclable hazardous* waste (*dependent on the contaminant).

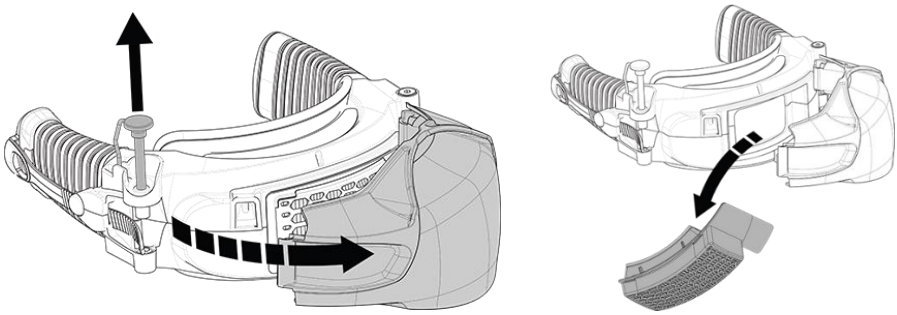


Figure 14 – Changing the Standard Filter

WARNING

When fitting a new filter the blocked filter alarm shall be tested before the respirator is put back into service. See the heading "Testing the Blocked Filter Alarm" below.

CHANGING THE HIGH CAPACITY FILTERS (PAF-1037, PAF-1108)

STEP 1. Removing the filter from the filter adaptor

- Turn the respirator upside down. Using your thumb, move the Latch Lock out of the way and then pull the Latch firmly away from the filter. The filter can now be removed. See Figure 15.

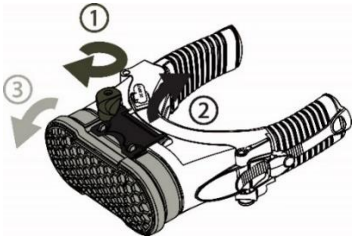
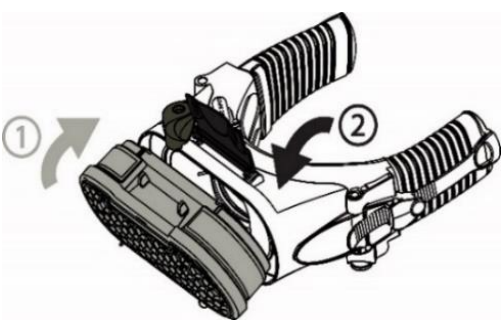


Figure 15 - Removing HE Filter

STEP 2. FITTING A NEW FILTER TO THE FILTER ADAPTOR

- Clean the sealing surfaces on the adaptor and on the filter.
- Hold the new filter so that the blue seal is facing the adaptor. Locate 2 ribs on the filter body into the slots in the top of the filter adaptor and rotate the filter into place. See Figure 16a.
- **If using PAF-1108 HE + Nuisance filter, check that it is the right way up, with the air openings at the bottom.** (The "CleanSpace" text on the cover of the filter must be the right way up when you are wearing the respirator). See Figure 16b.
- Snap the latch firmly over the 2 ribs on the bottom of the filter body. You will hear 2 clicks when the filter is positioned correctly. **Note: The latch lock will move to one side automatically.** See Figure 16a**.**
- The filter is now sealed to the respirator and ready to use.
- Check the blocked filter alarm as described below.



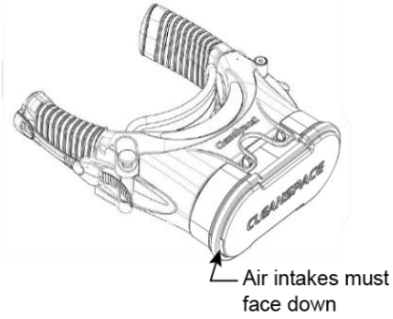


Figure 16 – a) Fitting a new HE Filter, b) HE + Nuisance Filter Orientation

WARNING

Use only NIOSH-approved CleanSpace filters. If used with other filters CleanSpace respirators are not NIOSH approved. Use of other filters may result in overexposure to contaminants and lead to sickness.

WARNING

When fitting a new filter the blocked filter alarm shall be tested before the respirator is put back into service. See the heading "Testing the Blocked Filter Alarm" below.

CHANGING BETWEEN THE STANDARD FILTER (PAF-1103) AND THE HIGH CAPACITY FILTERS (PAF-1037, PAF-1108)

Different filter holders are used to secure the different filters in place. In order to switch between the standard and the high capacity filters these filter holders must first be swapped. To swap between the filter cover (for PAF-1103) and the filter adaptor (for PAF-1037, PAF-1108), open the cover and remove the filter as described in the 'Changing the Standard Filter' heading above. Then, remove the filter cover by unscrewing the bolt with the hex key, which is housed in the filter adaptor. Fit the filter adaptor and tighten the bolt. Store the hex key back in the filter adaptor for later use and then swing the open end of the filter adaptor closed and push the pin downwards to secure it in place. Finally, attach the high capacity filter.

Figure 17 – a) Removing the Filter Cover, b) Attaching the Filter Adaptor

The process for switching between the filter adaptor and the filter cover is essentially the same as described above but with the order reversed.

CHANGING THE STERI-PLUS EXHALATION FILTER CS3039

To remove the Steri-Plus Exhalation Filter, first remove the exhalation filter and cover assembly from the half mask. The best way to do this is to squeeze the mask with one hand whilst pulling the filter/cover assembly off using a twisting motion. This is shown below in Figure 18.

Figure 18 – Removing the Exhalation Filter Assembly from a Half Mask

Then, unclip the two parts of the filter case by placing your thumb on the end of the case with the dimpled thumb print. Pull outwards on the outer case (as if trying to straighten it) and it will unclip from the inner case. Once unclipped the filter case will swing open and the filter can then be easily removed and replaced as shown in Figure 19. See Section 13 for detailed information on how to insert a new filter and how to attach it to the EX half mask.

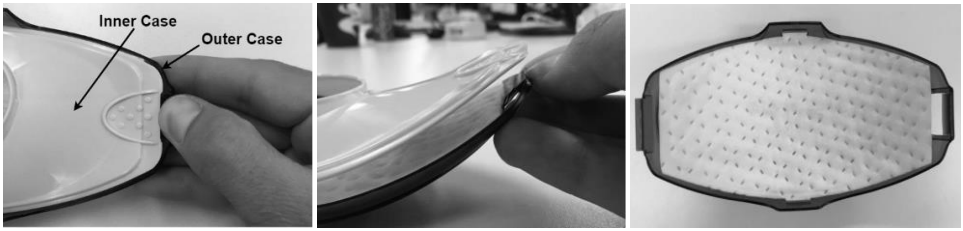


Figure 19 – Replacing Steri-Plus Exhalation Filter

TESTING THE BLOCKED FILTER ALARM

After changing the filter, check that the Blocked Filter Alarm is audible and the Filter LED is working. Do not fit the Flow Test Cap for this test.

1. To prepare for this test you must completely block the entry to the filter.
    a. If using a standard filter, open the filter cover and place your hand to completely cover the filter grille (see Figure 20a).
    b. If using the high capacity filter PAF-1037, stand the machine on a flat surface so that the inlet to the filter is completely blocked (see Figure 20b).
    c. If using the HE + Nuisance Odor filter PAF-1108, use both palms to cover the air intake slots on the cover of the filter so that they are completely blocked (see Figure 20c).
2. With the respirator in Standby mode (one or more green LEDs lit), press and release the Power button. The blue LED will light and the respirator starts blowing.

    If no LEDs are lit, press the Power button once to enter Standby mode.
3. After about 5 seconds, the red Filter LED will light and the blocked filter alarm will sound (2 beeps, repeated every second).
4. Reset the machine by pressing the Power button.

    If the red Filter LED does not light or the alarm does not sound, check that the inlet of the filter is ***completely*** *blocked.* ***If the Filter LED and/or audible alarm are still not working, do not enter the contaminated zone****. Contact CleanSpace for assistance.*

Figure 20 – a) Blocking the Standard Filter, b) Blocking the High Capacity Filter, c) Blocking the Nuisance Filter

18. Battery Information

WARNING

Always correctly use and maintain the internal lithium ion battery packs. Failure to do so may result in fire or explosion or could adversely affect respirator performance and result in injury, sickness or death.

- Do not charge the on-board battery with unapproved chargers, in enclosed cabinets without ventilation, near flammable liquids or gasses, or near sources of high heat.

- Do not immerse the device in water.

- Do not use, charge or store the device outside the recommended temperature limits.

ASSESSING STATE OF CHARGE

The three LEDs on the control panel indicate the level of charge. When the unit is in use (not on charge) they work like a fuel gauge allowing you to estimate your remaining work time. When the unit is on charge, the 3rd LED turns on solidly (no flashing) only when the battery is fully charged (100%), making it easy for you to tell when the unit is 100% charged.

If you need to be sure the battery is 100% charged plug in the charger. Even if the battery is fully charged, the 3rd LED will flash for at least three minutes while the respirator checks its condition. Once **all 3 LEDs light solidly without flashing the battery is at 100%.**

With the unit NOT on charge		
Green LEDs	Charge	Approximate Run Time*
●●●	85 - 100%	4 – 8 hours
●●	15 – 85%	1 – 4 hours
●	5 – 15%	Recharge! (20min to 1 hour)

* ***Operating time is strongly affected by work rate, altitude, and other factors. The operating times quoted above are average durations at moderate work rates at sea level. Actual operating times may vary widely from average durations.***

CHARGING THE INTERNAL BATTERY

WARNING
The battery shall only be charged in non-hazardous areas. Move out of the hazardous area before charging.

WARNING
Only charge your CleanSpace EX with either the EX Charger (PAF-0066) or the Universal Charger (PAF-1100). See the Approval Label on your CleanSpace EX respirator for more information.

- **Make sure you are not in an explosive atmosphere.**
- To charge the internal battery, turn the respirator upside down, and locate the charging port. See Figure 21.
- Lift off the flexible polymer charging port cover. Slide the charger cable connector into the charging port. Ensure the charger is plugged into a power socket.

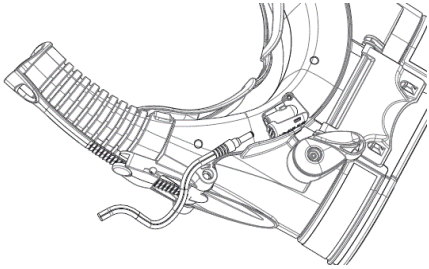


Figure 21 - Charging Port

Turn the respirator over and **check that one of the green LEDs on the keypad is flashing**. If none of the LEDs is flashing, the unit is not charging. Check that the charger is plugged into the wall socket and the charger cable is plugged securely into the socket on the underside of the respirator. If the respirator is still not charging, contact CleanSpace Technology Customer Support on sales@cleanspacetechnology.com or the website: cleanspacetechology.com/welcome/

- **Charging is complete when the blower shows three (3) green solid lights.** If the third green LED is flashing rapidly, charging is 95% complete.
- When the respirator is fully charged, disconnect the charger cable from the blower charging port. IMPORTANT Ensure you replace the charging port cover to prevent dirt and contaminants getting into the port.

- Note: The battery can only be charged at temperatures between 32°F and 95°F (0°C and 35°C). Outside this temperature range no charging will occur.

Do not charge the battery in electro-magnetically noisy environments, such as near welding machines.

LOW BATTERY ALARM

Your respirator has a low battery alarm, which is triggered when the battery has approximately 5 minutes' life remaining (3 beeps, repeated every second). You cannot mute the low battery alarm except by connecting the respirator to its charger or by stopping the motor (doff the respirator and either press the Power Button once or allow the respirator to detect that there is no breathing and stop).

When the battery voltage becomes extremely low, the motor will stop.

WARNING

If the battery alarm sounds (3 beeps, repeated every second), leave the contaminated area immediately and re-charge the battery. Operating the respirator after the low battery alarm has sounded can cause the flow to fall below the manufacturer's minimum designed flow, which may result in overexposure to contaminants and lead to sickness.

GENERAL BATTERY INFORMATION

Your respirator has an internal lithium ion (Li-ion) polymer battery. Lithium ion (Li-ion) batteries have the highest energy density of all battery types, and are widely used today in portable electronic devices across many different industries. The commonly available Li-ion polymer batteries are similar to Li-ion batteries, except they are packaged in a soft polymer film as opposed to the metal case commonly used for Li-ion cells. The soft packaging allows the cells to expand slightly under extreme heat, making them safer in fault conditions. CleanSpace respirators use quality Li-ion polymer batteries and are designed to be viable over a minimum of 500 complete charge and discharge cycles while still maintaining at least 70% of their specified full capacity.

RESPIRATOR STORAGE

To maintain the integrity of the internal battery, the respirator must be stored under the following conditions when not being used:

Long term storage (> 30 days)	30% - 50% RH, 65°F to 82°F (18°C to 28°C)
Short term storage (< 30 days)	30% - 50% RH, 14°F to 95°F (-10°C to 35°C)

The following precautions must be followed during use:

- Avoid mechanical shocks or impacts from any sharp or hard objects.
- Do not use or place the respirator in extreme heat, such as in direct sunlight, near heat sources, etc. The battery will be damaged if its temperature rises above 212°F (100°C). Note: The respirator will stop functioning if its internal temperature rises above 140°F (+60°C) or falls below 14°F (-10°C).
- Do not dispose of the respirator in a fire.
- Do not allow it to get wet or immersed in liquid.
- Do not disassemble the blower case, there are no user serviceable parts inside.
- Do not use the respirator if there are any signs of severe mechanical damage.

WARNING

In the extremely rare circumstance that the battery is damaged and electrolyte comes in contact with eyes, flush with water immediately and seek urgent medical attention.

19. Cleaning

We recommended that you clean your respirator after every use. The mask, blower, neck support and harness need to be cleaned separately. Disassemble the mask and neck support from the blower before cleaning. The full face mask harness can be left attached to the mask, while the half mask harness should be removed.

CLEANING THE HALF MASK

Before washing the mask, remove the Valve Cover. To do this, locate the snap feature on the cover that secures it to the valve seat. This feature is located on the bottom edge of the valve seat. Using your thumb nail or a small blunt object such as a pen, press on the snap until the cover springs free of the valve seat. This is shown in Figure 22.

To refit the Standard Valve Cover, locate the small prong on the Valve Cover into the matching hole in the valve seat. Rotate the Valve Cover towards the mask until the snap on the Valve Cover engages the matching opening in the valve seat.

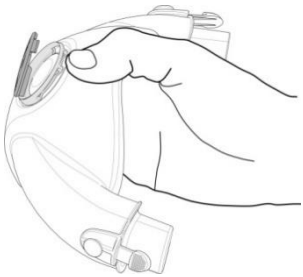


Figure 22 - Removing Exhalation Valve Cover

There are two methods for cleaning the mask.

1. CleanSpace Non-Alcohol Wipes

- CleanSpace Cleaning Wipes are impregnated with benzalkonium chloride, a bactericidal solution ideally suited for silicone face pieces.
- To clean the exhalation valve, remove the valve cover (using the instructions above), gently wipe the leaf edge. Replace the valve cover before use.

2. Hand wash in warm soapy water

- Wash the mask thoroughly with a mild detergent in warm water (less than 122°F (50°C)).
- A soft brush or sponge can be used to remove any stubborn dirt or grit.
- To clean the exhalation valve, gently wash the warm water solution through the valve and use a sponge to gently clean the valve surface.
- Rinse the mask and valve well in warm running water. IMPORTANT: If the mask is not rinsed thoroughly, residue from cleaning solution may irritate the wearer's skin or cause the valve to stick. Replace the valve cover before use.

Drying the mask

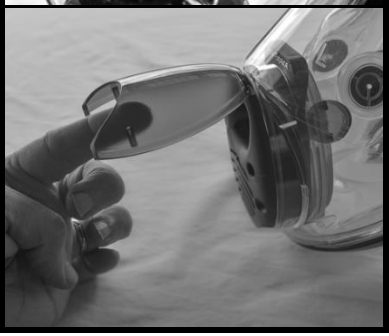
After cleaning, allow the mask to air dry in a clean environment, valve up to prevent water pooling. Note: Do not dry the mask by exposing directly to heat i.e. hair dryers or heaters. The mask can also be hand-dried with a clean, lint-free cloth. IMPORTANT: Cleaning can cause the exhalation valve leaf to stick. Before use, check that the exhalation valve leaf operates freely by gently lifting the valve. Replace the valve cover before use.

WARNING

Never dry the mask or exhalation valve with a cloth that may leave behind lint. Lint contamination of the exhalation valve may cause it to leak, resulting in overexposure to contaminants and lead to sickness.

CLEANING THE FULL FACE MASK

Carrying out the following steps prior to cleaning the mask improves access.

Remove the inner mask Pinch the two inner mask snaps together and pull the top of the inner mask back. Withdraw the inner mask from the main mask.	
Raise the rain cover	

There are two methods for cleaning the mask.

1. CleanSpace Non-Alcohol Wipes

- CleanSpace Cleaning Wipes are impregnated with benzalkonium chloride, a bactericidal solution ideally suited for silicone face pieces.
- Clean all surfaces of the mask with a wipe.
- To clean the exhalation valve, lift the rain cover, clean the valve leaf and seat and lower the rain cover again.

2. Hand wash in warm soapy water

- Wash the mask thoroughly with a mild detergent in warm water (less than 122°F (50°C)).
- A soft brush or sponge can be used to remove any stubborn dirt or grit.
- To clean the exhalation valve, lift the rain cover, gently wash the warm water solution through the valve from the inside and use a sponge to gently clean the valve surfaces. Remember to lower the rain cover again when done.
- Rinse the mask and valve well in warm running water. IMPORTANT: If the mask is not rinsed thoroughly, residue from cleaning solution may irritate the wearer's skin or cause the valve to stick.

Drying the mask

After cleaning, allow the mask to air dry in a clean environment, valve up to prevent water pooling. Note: Do not dry the mask by exposing directly to heat i.e. hair dryers or heaters. The mask can also be hand-dried with a clean, lint-

free cloth. IMPORTANT: Cleaning can cause the exhalation valve leaf to stick. Before use, check that the exhalation valve leaf operates freely by gently lifting the valve.

WARNING
Never dry the mask or exhalation valve with a cloth that may leave behind lint. Lint contamination of the exhalation valve may cause it to leak, resulting in overexposure to contaminants and lead to sickness.

Reassembling the Mask

Refit the inner mask

The frame of the inner mask has two ribs on the bottom. Fit these into the slots in the bottom of the main valve block.

Push the top of the inner mask firmly forwards until both snaps engage, holding it in place against the main valve block.

Lower the rain cover

WARNING
Using a full face mask with the rain cover raised can cause the exhalation valve to vibrate, which you may notice as a buzzing noise. Lower the rain cover for correct operation.

CLEANING THE BLOWER

WARNING
The blower contains a battery, sensitive electronics and a motor. NEVER immerse it in water or use anything wetter than a damp cloth to clean it.

- After removing the mask, remove the neck support. Leave the filter in place to prevent any dust or liquids from getting into the blower.

WARNING
Do not use compressed air or a brush to clean the filter! HE filters are very easily damaged by compressed air or by brushing. Misuse by cleaning the filter may result in overexposure to contaminants and lead to sickness.

- Using CleanSpace Cleaning Wipes, wipe down the outside of the blower. The blower can also be cleaned with a damp cloth.
- Allow the blower to air dry in a clean environment. The blower can also be hand-dried with a clean lint-free cloth. Note: **Do not dry the blower by exposing to heat (i.e. hair dryers or heaters) or compressed air**.

CLEANING THE HARNESS AND NECK SUPPORTS

The harness and neck supports can be washed in warm soapy water or machine washed. After cleaning, allow the harness and neck supports to air dry in a clean environment.

Note: Do not dry the harness or neck supports by exposing directly to heat i.e. hair dryers or heaters.

CLEANING THE CS3038 STERI-PLUS EXHALATION FILTER CASE

The Steri-Plus Exhalation Filter Case can be cleaned using the methods described for the half mask; or disposed of and replaced with a new one, depending on the disinfection policies of the user.

DISPOSING OF THE CS3039 STERI-PLUS EXHALATION FILTER

The Steri-Plus Exhalation Filter cannot be cleaned. Dispose of after use.

WARNING

The Steri-Plus Exhalation Filter (CS3039) is an electrostatic filter and its performance will be degraded by exposure to certain organic solvents including isopropanol (IPA), xylene and toluene. Always remove the Exhalation Filter before cleaning the mask. If there is a possibility that the Exhalation Filter has become contaminated with any solvent, replace it.

20. Periodic Maintenance & Checking

Recalibration

WARNING

You must recalibrate the internal pressure sensor any time that your CleanSpace EX is exposed to changes in temperature of more than 36°F (20°C). It is best practice to also re-calibrate if the unit has been in storage, particularly if the storage temperature is not known.

See Using CleanSpace EX (above) for how to calibrate your respirator.

21. Appendix - Performing a Quantitative Fit Test

PERFORMING A QUANTITATIVE FIT TEST WITH A HALF FACE MASK

To carry out a quantitative fit test for a half mask your specialist mask fitter will require **PAF-0025 PortaCount Adaptor** and the accompanying **S005-7174 Quantitative Fit Test Instructions.** The PortaCount Adaptor is an accessory that fits between the mask and the exhalation valve and allows the air in the mask to be sampled. It comes with detailed instructions on how to carry out a fit test.

PERFORMING A QUANTITATIVE FIT TEST WITH A FULL FACE MASK

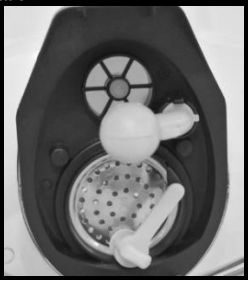
Mask fitting must be carried out by a specialist / designated mask fitter. A quantitative fit test must be performed during initial selection of a respirator, whenever the user's face changes shape (for instance due to weight gain or loss) and at least annually. The test is performed using a machine that compares the concentration of particles in the mask with that in the surrounding atmosphere. One example is the PortaCount Respiratory Fit Tester, made by TSI Incorporated. CleanSpace Full Face Masks come with a built-in sampling port and a sampling ball accessory which make it quick and easy to carry out a fit test.

To set up for the test, do the following. **Firstly, we recommend you remove the inner mask as that makes access easier.**

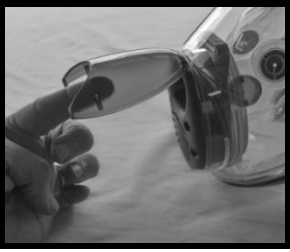
With the mask off your face, pull the orange plug from the Sensing Ball socket.

Locate the Sensing Ball which was supplied with your mask.

Fit the Sensing Ball. Push it all the way in. Note that there are small fins on the stem of the ball to ensure the correct orientation.



Raise the rain cover.



Remove the sealing plug from the fit test port.

Fit the mask sensing tube to the fit test port (on a TSI PortaCount it is the clear tube).

Re-fit the inner mask! The inner mask is an essential part of the device and you will need it to complete the fit test. Don the mask and begin the test, following the protocol provided with the fit testing machine**. A CleanSpace respirator with the blower on should achieve a fit factor above 1000**. If your result is below 1000 adjust the mask and try again.

WARNING

If a satisfactory quantitative fit factor or a passing qualitative test cannot be achieved with any of the masks, the respirator must not be used. A satisfactory quantitative fit factor is

Test Type	*Half Mask*	*Full Face Mask*
Power On	*1000*	*1000*
Power Off	*100*	*500*

At the end of the fit test, do the following to prepare you mask for use

Remove the Sensing Ball from the Sensing Ball socket. **Refit the orange plug to the Sensing Ball Socket. Push it all the way in.**

Remove the sensing tube from the fit test port. **Refit the plug to the fit test port.**

Lower the rain cover.

WARNING

To check that the test port plug is fitted correctly (after using the on-board fit test ports), a negative pressure Seal Check shall be performed – see page 25.

WARNING

Using a full face mask with the rain cover raised can cause the exhalation valve to vibrate, which you may notice as a buzzing noise. Lower the rain cover for correct operation.

22. Non-Respiratory Approvals

CleanSpace EX is a NIOSH-approved respirator system. For details of respiratory approvals see NIOSH Cautions and Limitations and the Approval Labels for CleanSpace EX.

Non-respiratory approvals are listed below.

APPROVAL AGENCIES

ETL
Intertek Testing & Certification Limited
1809 10th Street, Suite 400
Plano, TX 75074
USA

IECEx
TestSafe Australia (IECEx TSA 13.0024X)
PO Box 592
Richmond NSW 2753 Australia

ATEX
Intertek Testing & Certification Limited
(ITS14ATEX27939X)
Cleeve Road, Leatherhead, Surrey, KT22 7SB
United Kingdom

PROTECTION AGAINST WATER AND DUST INGRESS

IP RATING 66

EXPLOSIVE ATMOSPHERES APPROVALS

Conforms to ANSI/UL Standards UL 60079-0:2019, UL 60079-11:2014 **Certified to CAN/CSA Standards CSA 60079-0:2019, CSA 60079-11:2014** Class I, Division 2, Groups C and D, T4 Class I, Zone 1, AEx ib IIB T4 Gb	**Key to ETL markings:** Class I, Division 2 Explosive Atmosphere (gas or vapour), Area classification (Not likely to occur during normal operations, but may occur for short periods) Groups C and D Gas group (Ethylene and Propane) T4 Temperature class (Maximum surface temperature 135°C/275°F) Class I, Zone 1 Explosive Atmosphere (gas or vapour), Area classification (Present intermittently) AEx Explosion Protected approved to US Standards Ib Type of ignition protection (intrinsic safety, high protection) IIB Gas Group Ethylene Gb Equipment protection class (high)
IEC60079.0:2011, IEC60079.11:2011 Ex ia I Ma, Ex ib IIB T4 Gb	**Key to IECEx markings:** Ex Explosion protected ia Type of ignition protection (intrinsic safety, very high protection) ib Type of ignition protection (intrinsic safety, high protection) I Gas Group (Methane) IIB Gas Group Ethylene Ma Equipment protection level for underground mining (very high) T4 Temperature class (Maximum surface temperature 135°C/275°F) Gb Equipment protection class (high)
	Key to ATEX markings: Explosive area symbol I Equipment Group (underground mines) II Equipment Group (explosive atmospheres other than underground mines)

EN 60079-0:2018, EN 60079-11:2012 Ⓔx I M1 Ex ia I Ma Ⓔx II 2 G Ex ib IIB T4 Gb	2G Equipment category (2 = High level of protection, zone 1. G = gas) Ex Explosion protected ia Type of ignition protection (intrinsic safety, very high protection) ib Type of ignition protection (intrinsic safety, high protection) IIB Explosion Group Ethylene T4 Temperature class (Maximum surface temperature 135°C/275°F) Gb Equipment protection class (high)

COMPONENTS WITH IECEX AND ATEX AND ETL APPROVAL

Any combination of these components carries the explosive atmospheres approvals listed above.

Power Unit & Filter Adaptor

Product Code	Description
PAF-0061	Blower Unit – CleanSpace EX
PAF-0078	Filter Adaptor - EX

Filters – For Particulates

Product Code	Description
PAF-1037	Particulate Filter HEPA / HE High Capacity

Masks

Product Code	Description
PAF-0064	Half Mask EX - Small
PAF-0062	Half Mask EX - Medium
PAF-0063	Half Mask EX - Large

Accessories & Spares: Harness, Neck Supports & Battery Charger

Product Code	Description
PAF-0073	Harness – Non Fabric
PAF-1028	Neck Support – Small
PAF-1012	Neck Support – Medium
PAF-1013	Neck Support – Large
PAF-0066	Battery Charger EX

COMPONENTS WITHOUT IECEX AND ATEX AND ETL APPROVAL

Product Code	Description
PAF-1097	Filter Cover Std EX
PAF-1103	Filter HE Std Glass
PAF-1106	Full Face Mask with Harness – Small
PAF-1014	Full Face Mask with Harness – Medium/Large
PAF-0058	Blower Cover
PAF-1100	Universal Charger
PAF-1108	Filter HE + Nuisance
PAF-1030	Harness – Elite
CS3038	Steri-Plus Exhalation Filter Case
CS3039	Steri-Plus Exhalation Filter

ACCESSORIES FOR WHICH IECEX / ATEX / ETL CERTIFICATION IS NOT REQUIRED

The accessories listed below are used outside the hazardous area and can be used with CleanSpace EX without impacting its explosive atmospheres certifications.

Accessories

Product Code	Description
PAF-0032	CleanSpace Cleaning Wipes (100 packs)
PAF-1005	Flow Test Cap (for checking filter condition and battery charge)
PAF-0025	Adaptor for Fit Testing
PAF-1009	Seal Check Cap (for positive pressure seal tests)

23. Specifications

Air Flow	Greater than 115 liters/minute. *Breath-responsive, with max inflow to mask 115 – 200 liters per minute, dependent on altitude, filter and battery condition.*
Operating Temperature Range	14°F to 113°F (-10°C to 45°C). *The motor will shut down while the temperature of the battery pack remains above 140°F (60°C) or falls below 14*°F (-10°C).
Operating Humidity Range	Zero to 90%, non-condensing.
Operating Altitude Range	Approximately sea level to 10,000 feet (3000m).
Charging Temperature Range	32°F to 95°F (0°C to 35°C). *Below 32°F (0°C) and above 95°F (35°C) the battery will not accept charge.*
Storage Conditions	**Short term storage under 30 days:** Out of direct sunlight, in a clean, dry environment (30%-50% RH), 14°F to 95°F (-10°C to 35°C). *To maintain the integrity of the internal battery, the respirator must be stored under the following conditions when it will not be used for longer than 30 days.* **Long term storage (> 30 days):** Out of direct sunlight, in a clean, dry environment (30% - 50% RH), 65°F to 82°F (18°C to 28°C).
Battery Type	Lithium Ion Polymer.
Run Time	Approximately 4.5 – 8 hours. *Run time is strongly influenced by work rate, filter condition, altitude and other factors. The run time specified above assumes moderate work rates at sea level with a clean filter. Different conditions will produce widely varying run times.*
Recharge Time	2 hours (to 95%).
Low Battery Voltage Alarm	Triggers when the remaining run time is around 5 to 10 minutes. *Audible alarm, 3 beeps, repeated every second, 75dB(A) at ear.*
Filter Blocked Alarm	Triggers when the filter requires replacement. *Audible alarm sounds until a key is pressed, 2 beeps repeated every second, 75dB(A) at ear plus red filter LED flashes. When the alarm first sounds, and if the battery is almost completely run flat, the maximum flow that can be delivered has been reduced to about 140 liters/minute.*
Charger	Input: 100 – 240VAC, 50 – 60 Hz. Output: 14.7 VDC, 24 Watts.
Weights	PAF-0061 blower with Filter Adaptor EX PAF-0078, PAF-1012 Neck Support Medium and PAF-1037 HEPA Filter fitted: 25.93 oz. (735 gram). PAF-0061 blower with Filter Cover Std EX PAF-1097, PAF-1012 Neck Support Medium, PAF-1103 Standard Glass Filter and PAF-0058 Blower Cover: 19.4 oz. (550 gram). Half Masks: 4.2 to 5.3 oz. (120 to 150 gram). Full Face Masks: 25.4 oz. (745 gram).

24. Product Warranty

This product has been manufactured using quality parts and processes.

CleanSpace Technology Pty Ltd warrants that the product is free from defective workmanship and parts for a period of two (2) years from the date of original purchase provided the product has been used, cleaned and maintained in accordance with these instructions and CleanSpace's recommendations. This warranty does not include consumable parts, such as filters and face masks, which must be replaced regularly by the user. Consumable parts are warranted up to the point of use, provided they have been stored correctly and are within their expiry date.

This warranty does not cover:

- Where the product has been used for industrial purposes outside the recommendations of CleanSpace Australia Pty Ltd;
- Where damage has been caused by misuse, neglect, accident, or excessive wear and tear.

Any claim under this warranty must be made within two (2) years of the date of purchase of the product. All warranty claims must be made by returning the defective product to your supplier together with the proof of purchase. The purchaser is responsible for all freight. In the event that any part of the product is found by CleanSpace to be defective, CleanSpace will either repair or at its discretion replace the faulty part.

This warranty is given by:

CleanSpace Australia Pty Ltd
Unit 5, 39 Herbert Street, St. Leonards,
NSW 2065 Australia;
E. sales@cleanspacetechnology.com

This warranty is provided in addition to other rights and remedies you have under law. You are entitled to replacement or refund for a major failure. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Disclaimer:

Whilst CleanSpace has made every effort to ensure that the details and information given in both our printed and online publications are accurate at the time of issue, full technical specifications are not necessarily included. Furthermore CleanSpace has a policy of continuous improvement and the right is reserved to alter details and information as the need arises. Accordingly the Customer should check any details and information they wish to rely on with CleanSpace at the time of purchase. CleanSpace cannot accept liability in respect of any errors or omissions herein contained or for any loss or damage malfunction or consequential loss arising from reliance upon our publication.

The Customer will be responsible for any risk to health or safety from goods in the Customer's possession and/or control. The Customer's attention is drawn to the fact that statutory regulations and recognized codes of practice exist covering the use and handling of some goods (including safety products). The Customer must ensure that persons who use the goods receive adequate training and safety literature.

CleanSpace Technology Pty Ltd

Unit 5, 39 Herbert Street, St. Leonards, NSW 2065 Australia

E: sales@cleanspacetechnology.com

S006-708 REV 6, 31 March 2021
Released on Change Note ECN1514