

Recommendations for the Use of:

Elastomeric Half-Face Respirators (EHFRs) During COVID-19

Background

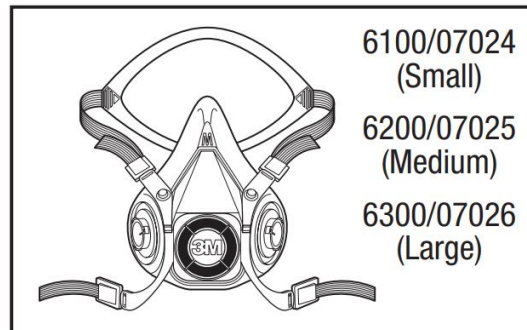
Use of an N95 respirator may be required if the healthcare professional is likely to be exposed to airborne infectious agents or when certain aerosol generating medical procedures are performed. While it remains a priority to ensure that N95 respirators are available and are used appropriately by healthcare professionals, a contingency plan for the use of reusable elastomeric half-face piece respirators (EHFRs) as alternative protection is being implemented in the event that the supply of disposable N95 respirator is experiencing a strain or shortage (as witnessed during H1N1 pandemic). This document provides guidance to support the implementation of EHFRs during the COVID-19 pandemic.

Table of Contents

Topic	Applicable to
1. Supply Requirements	Department Manager
2. EHFR Fit Testing Requirements	Department Manager, Fit Tester
3. Frequently Asked Questions	All
4. Daily Use Procedures	Department Staff, Department Manager
5. EHFR Implementation Guidelines	Department Manager, Safety Advisor
6. Fit Tester Instructions	Fit Tester

1. Supply Requirements (applicable to Department Manager)

The 3M 6000 series, along with 3M 7093 P100 particulate filters, are the EHFRs chosen for use during COVID-19 pandemic to replace N95s. Other 3M models may be used in cases where the user is unable to fit the 6000 series. These EHFRs are only compatible with 3M filter cartridges and cannot be fitted to those from other brands.



Item	Description	Amount	ePro Item ID
Transport U-Line Bins (or similar)	For EHFRs: <ul style="list-style-type: none"> 1 labelled “Dirty EHFRs” in dirty utility room 1 labelled “Clean EHFRs” in clean storage room 1 labelled “Out of Service” in dirty utility room For filter cartridges: <ul style="list-style-type: none"> 1 labelled “Dirty P100 filters” in dirty utility room 1 labelled “Clean P100 filters” in clean storage room 	5	N/A
Clear Re-sealable Bags	<ul style="list-style-type: none"> To store respirators during shift 9” x 13” or bigger 	As required	00125245 (10x12”) 00054765 (12x15”)
Accel Intervention Wipes (or equivalent)	<ul style="list-style-type: none"> For cleaning and disinfection of the respirator during and after the shift. 	As required	00066966
Permanent Markers	<ul style="list-style-type: none"> For labelling staff name onto re-sealable bag 	As required	N/A
3M Elastomeric Respirators	<ul style="list-style-type: none"> 3M 6100 – Small Respirator 3M 6200 – Medium Respirator 3M 6300 – Large Respirator 3M 7093 P100 Particulate Filter (P100) 	TBD	00106191 00123048 00123055 00121049

2. EHFR Fit Testing Requirements (applicable to Department Manager, Fit Tester)

- a. Fit testing is required for all EHFRs as per the VCH Respiratory Protection Standard. Previous fit tests to N95 respirators do not replace fit- testing for EHFRs.
- b. Users must be fit tested by a qualified fit tester before initial use and retested (every 2 years as per WorkSafeBC and Ministry of Health temporary change) to ensure the EHFR provides a good seal to the user's face.
- c. Both qualitative and quantitative fit testing methods can be used for EHFRs.
- d. For qualitative fit testing, participants must not smoke, eat, drink (except water), or chew gum within the 15 minutes preceding the test.
- e. Individuals must be clean shaven where the EHFR seals with the face.
- f. Once fit tested, the user must only use the EHFR model to which they have been fit tested to.
- g. Under no circumstance shall a worker be issued or be required to wear, an EHFR model which they has not been fit tested on, or for which the fit test failed.

3. Frequently Asked Questions (applicable to All)

What is a “reusable respirator”?

A reusable respirator is one that can be cleaned and disinfected in-between uses. These provide equivalent protection to an N95 respirator and in addition to being reusable, they are available in various sizes and have very effective seal checks so you can easily confirm you have donned it correctly every time.



Why do we need to use reusable respirators?

Over the past few months, and the past several weeks in particular, there has been a significant increase in the number of N95s used, not just in VCH but in other BC Health Authorities and globally.

There have been multiple studies conducted to evaluate the use of Elastomeric Half-Facepiece Respirators (EHFRs) with particulate filters during pandemics and wide-scale outbreaks. As these respirators can be cleaned and disinfected between uses they represent an option to ensure ongoing access to respiratory protection.

Fraser Health conducted a research project in 2012 titled [Assessment and Determination of Practical Considerations for Wide-scale Utilization of Elastometric Half-facepiece Respirators During a Pandemic or Outbreak Situation](#). This research helped inform what process and supplies were needed in our Pandemic plan and stockpile. Surrey Memorial Hospital Intensive Care Unit and Medical Device Reprocessing participated in this research.

Will all staff be assigned their own reusable respirator?

In order to maximize the supply of EHFRs, individuals will not be assigned a specific EHFR. Departments will be provided with a pool of more than three times as many EHFRs as staff that work during each shift to ensure adequate supplies are always available. Each staff member will be assigned their own EHFR to be used for the duration of their shift. Between shifts, the EHFR will be cleaned and disinfected and added to the clean pool.

In order to use this alternative, you must be fit tested to ensure you know the correct size to use to get a proper fit and be protected. This will also ensure there are adequate supplies of each sized respirator needed.

Who will be cleaning these respirators?

Staff will be responsible for cleaning their respirator in-between uses during their shift. The Medical Device Reprocessing Department (MDRD) will clean and disinfect the respirators between shifts. The cleaning and disinfection procedures are based on manufacturer use instructions and the Provincial Infection Control Network (PICNet) recommendations for the use of reusable elastomeric half-facepiece respirators in healthcare settings. Education and training on how to maintain and clean these respirators during use will be provided during the fit test education sessions.

Were specific areas chosen for use of the reusable respirators?

Yes. This was done very carefully in order to limit the number of areas requiring the use of EHFRs and maximize the benefit of decreasing use of N95 respirators and ensuring supplies of respiratory protection are optimized across our organization. As a result, departments with the highest annual usage rate for N95s were identified as this limits the number of departments affected and the number of staff that would be required to be re-fit tested on the EHFR.

The departments chosen for use of the EHFRs at this time include VGH ICU, VGH T12, VGH T10, and VGH OR.

Why are we fit testing you again?

Fit testing ensures that the respirator effectively seals with the face. Fit testing is specific for each respirator model and size. We must fit test you to determine which size of EHFR fits your face best to ensure you are protected.

To ensure that you are properly protected against any airborne infectious agents, it is important that you wear the make and model of EHFR that you are fit tested on.

What if I do not fit a reusable respirator?

If you do not fit an EHFR, you will still have access to N95s that fit you. The regular models of N95s will still be supplied to your department, however in a limited quantity.

To ensure that all staff in your department has access to adequate respiratory protection, we are fit testing as many staff to the EHFRs as possible. Everyone fitted to an EHFR must use these whenever respiratory protection is required and leave the N95s for use by those that do not have a fit test on the EHFRs.

I have been fit tested on a regularly stocked N95 and an EHFR. Can I use either?

No. If you were fit tested and passed on an EHFR, it is important that you use only the EHFR. However if you are a Code Blue responder or work shifts outside of the EHFR target departments you may use the

regularly stocked N95 for Code Blue response and in other departments (this means you need to maintain a fit test (within the last 2 years) for both models

Why is it so important that once I am fit tested and passed on an EHFR that I only use the EHFR from that point on whenever possible?

Specific departments were chosen for use of EHFRs. Use of these alternatives in the target departments supports the overall plan to ensure that we can maintain a sufficient supply of regular N95s for staff in all other departments.

Do these respirators provide the same protection as N95s?

Yes, these EHFRs provide equivalent protection to N95 respirators. The P100 filters used on the EHFR actually have a higher level of filtration – more than is required.

During normal operations, if a staff member cannot achieve a successful fit on an N95 respirator, an EHFR is an option used and there are a number of staff who regularly use EHFRs across VCH.

These respirators must be used in accordance with Infection Prevention and Control guidelines. It is important that established procedures for inspection and cleaning are followed.

How will I remember which size/model of EHFR to use?

For the implementation of this reusable respirator program, only the 3M 6000 series of EHFRs is used. 6100 is the small size, 6200 is medium, and 6300 is large. An “S”, “M”, or “L” symbol is also found on the front of the EHFR and darker shades of grey correspond to larger sizes.

Are the EHFRs latex-free?

Yes, the respirators are latex-free. The table below shows the materials for each component of the respirator.

Component	Material
Faceseal	Thermoplastic elastomer
Nosepiece	Polypropylene
Inhalation valve	Polyisoprene
Exhalation valve	Silicone
Head Harness – Straps	Synthetic polyisoprene elastic in cotton/polyester braid
Head harness – Cradle	Polypropylene
Buckles	Polypropylene
Valve Cover	Polypropylene
Bayonet gaskets	Silicone rubber foam (closed cell)

There is a build-up of condensation on the inside of the EHFR when I use it. Is this a problem?

Condensation inside the EHFR is normal due to the moisture from your breath cooling on the interior of the respirator. This is not an issue unless comfort or the seal of the respirator is affected. The seal may be affected if the respirator shifts around a lot on the face or if there is a lot of moisture build-up around the seal. If this is the case, the moisture needs to be removed and the respirator readjusted on the face to ensure a proper seal.


Where and when can I get fit tested?


Employee Safety is working with VGH ICU, VGH T12, and VGH T10 managers, Clinical Nurse Educators, Patient Care Coordinators, and departmental fit testers to schedule EHFR specific fit test sessions in these departments commencing March 20th. Fit testing session details will be disseminated by these managers, supervisors, and/or educators in the days ahead.

4. Daily Use Procedures (applicable to Department Staff, Department Manager)

Applicability: Departmental EHFRs issued to department staff for individual, full-shift use.

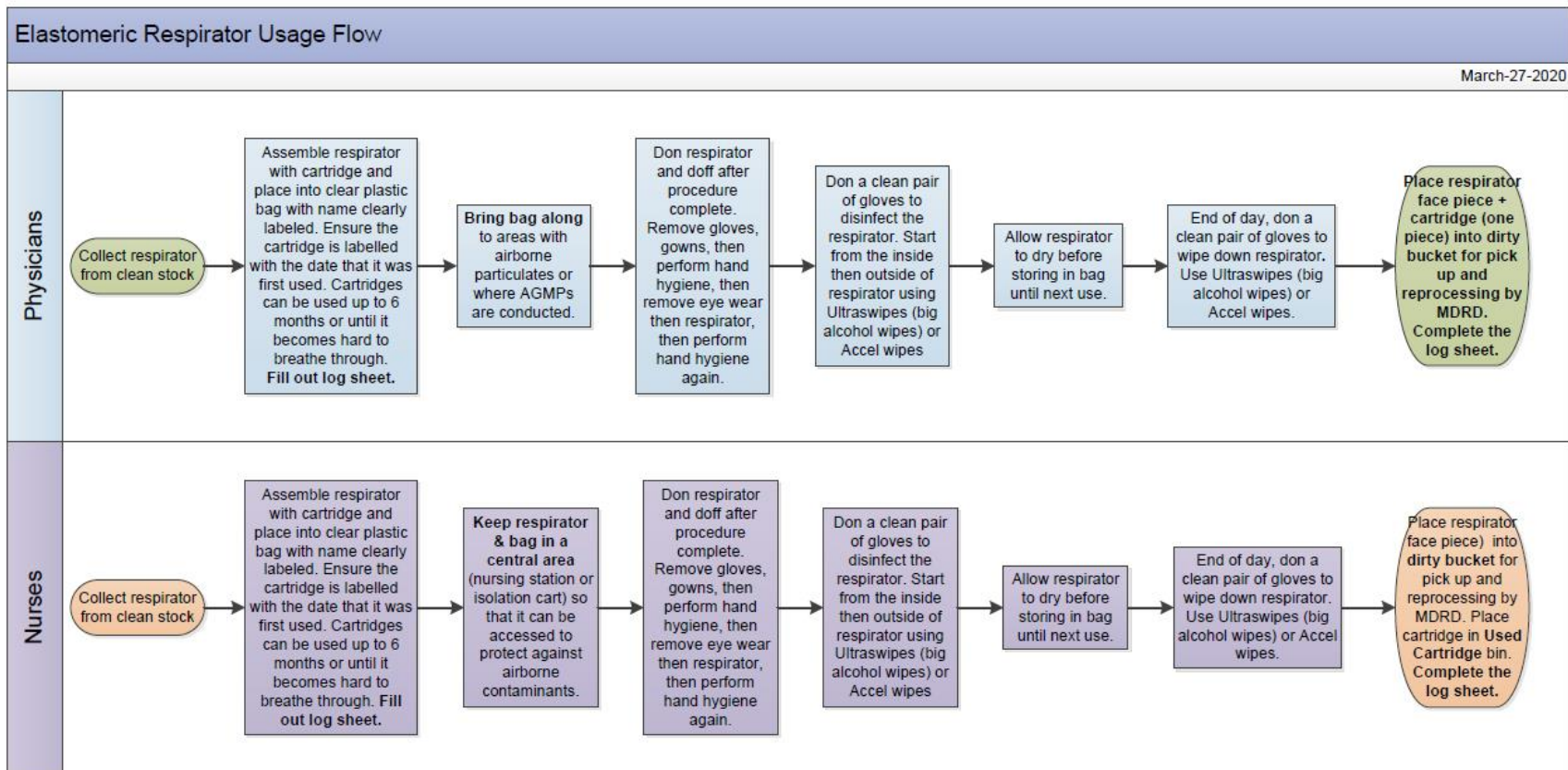
Scope: This applies to all departmental 3M 6000 series EHFRs and 3M 7093 P100 Particulate Filters.

Process	Steps
1. Inspection of respirator before donning	<ol style="list-style-type: none"> Ensure hand hygiene is performed prior to handling respirators and its components. Obtain respirator from “Clean EHFRs” bin. Check that respirator and components are dry. Visually inspect the face piece for cracks, deformities, tears, and dirt. Check head strap for elasticity. Check that the exterior orange inhalation valve O-rings are sitting properly and in good condition. Check inhalation and exhalation valves and valve covers for distortion, cracking or tearing. If any checks are failed, remove from service by placing into the “Out of Service” bin. 
2. Assembling respirator	<ol style="list-style-type: none"> Obtain a clear plastic re-sealable bag and label name on the bag. Obtain a pair of P100 respirator cartridges from the “Clean P100 filters” bin. Be careful not to touch the interior of the cartridge’s filter with your finger. Ensure that the date that the cartridges have been opened on has not exceeded 6 months. Assemble the respirator with the respirator cartridge. Ensure cartridge is securely locked onto the respirator.
3. Sign out the respirator & cartridge	<ol style="list-style-type: none"> Fill out the sign out form for the respirator and cartridge obtained.
4. Donning respirator	<ol style="list-style-type: none"> Perform hand hygiene. Don gown as per regular donning techniques. Place respirator over nose and mouth with bottom straps unfastened.

	<ul style="list-style-type: none"> d. Pull the top strap over your head, placing the head cradle on the crown of your head. e. Hook the bottom straps together behind your neck. f. Adjust straps as needed to ensure a secure fit. <p><i>(If a donning assistant is available, they can help by taking a look to ensure all PPE is worn correctly. For example: checking that the straps are not twisted.)</i></p>
<p>5. Seal check</p>	<ul style="list-style-type: none"> a. Positive seal check: cover exhalation valve by covering it with the palm of your hand. Gently exhale and hold for 10 seconds. The mask should inflate and no air should leak out. b. Negative seal check: close the inlet of both cartridges by pressing them (below). Gently inhale and hold for 10 seconds. The mask should collapse and no air should enter. 
<p>6. Doffing respirator</p>	<ul style="list-style-type: none"> a. Ensure you are no longer in the vicinity where airborne contaminants are present when doffing elastomeric respirator. b. Remove gloves and gowns and conduct hand hygiene prior to handling headgear. c. Eyewear is to be removed first by the side straps. d. Remove elastomeric by straps only. e. Perform hand hygiene.
<p>7. Cleaning and disinfecting between patients</p>	<ul style="list-style-type: none"> a. Don new gloves to perform cleaning and disinfecting. b. Wipe interior and exterior of respirator and cartridges with Accel wipes or equivalent. c. Place into sealed bag in between use.
<p>8. Full clean at end of day</p>	<ul style="list-style-type: none"> a. Remove respirator from sealed bag. b. Wear gloves and perform a wipe down of the respirator and cartridge. c. Disassemble the respirator from the cartridges and place the face piece into “Dirty EHFRs” bin for reprocessing. Be careful not to touch the interior of the cartridge’s filter with your finger. d. Place the cartridges into the “Dirty P100 filters” bin.
<p>9. Sign the log</p>	<ul style="list-style-type: none"> a. Sign underneath the “Returned” section of the log sheet.

sheet for the respirator & cartridge	
--------------------------------------	--

General Daily Use Information	
Storage	<ul style="list-style-type: none"> a. Keep in a sealed bag with personal name on it for your shift. b. Do not crush the face piece, it may warp or damage the respirator. c. Keep the “Clean EHFRs” bin lid closed when not in use. d. Cartridges must be stored at a cool and dry location away from any contaminants in either a sealed container or bag. Cartridges should be stored in a way that prevents debris from inadvertently entering the inside of the filter.
Cartridge change out	<ul style="list-style-type: none"> a. Cartridges are estimated to last 6 months. b. The dates of cartridges will be written on them, check the date to ensure it is still valid.
Assignment of EHFRs	<ul style="list-style-type: none"> a. Respirators are not to be shared between individuals during a shift. b. Whether the respirator is permanently assigned to an individual or whether the respirator is only shared between shifts, the respirator must undergo the End of Day Cleaning and Disinfection Process at the end of the shift. c. Individuals must receive biennial (temporary change) education, training, and fit testing in order to use any of the respirators listed in this document.



Fully Assembled Respirator



Particulate Cartridge - Reusable for up to 6 months



Hand Hygiene is critical when donning & doffing PPE. When in doubt, wash your hands again.

5. EHFR Implementation Guidelines (applicable to Department Manager, Safety Advisor)

Tracking of EHFRs

- Number of EHFRs implemented in the department should be tracked to ensure supply of EHFR is consistent.
- A sign-out sheet will be used by staff members to check out the respirator and cartridge at the beginning of shift.
- All EHFRs are to be returned at the end of shift; the sign-out sheet will be used to track any EHFRs that are not returned.
- Used EHFRs will be placed into the **“Dirty EHFRs”** bin and used P100 filters into the **“Dirty P100 filters”** bin.
- All damaged EHFRs shall be tagged out of service and placed into the **“Out of Service”** bin.
- Out of service EHFRs shall be evaluated by Super Users and/or Employee Safety to determine if replacement parts can be ordered.
- MDRD will come at the end of shift to pick up and reprocess the respirators. With two cycles of respirators, this should ensure a clean stock is always available on the unit.

Tracking of Cartridges

- All cartridges provided to the department shall be tracked by marking the underside of the cartridge of the DATE OPENED. Labels are recommended.
- Cartridges which exceed the 6 months of DATE OPENED shall be disposed of.
- All cartridges are to be returned at the end of shift and a sign-out sheet will be used to track any cartridges that are not returned.
- The individual cartridges will be cleaned and disinfected with Accel wipes then placed into a **“Clean P100 Filters”** box following end of day decontamination.
- If the DATE OPENED marking fades after cleaning, ensure it is remarked.
- Cartridges in the **“Dirty P100 filters”** bin should be wiped using Accel wipes then placed into the **“Clean P100 Filters”** bin.
- Cartridges do not need to be reprocessed.

Implementation Checklist

- N95 respirators shall be removed or limited from service at the department. Personnel which require N95 respirators shall be provided direction on how to obtain the N95 respirators.
- Super Users of the EHFR and Department Manager will be educated by the Safety Advisor on the EHFR components and program.
- Education on EHFR components, cleaning process, and administration process to be provided to staff.
- Documents and posters describing the flow and safe use of EHFRs shall be posted.
- Safety Advisor to actively support the EHFR program during the first 5 days of roll out and subsequently on an as needed basis. To assist with signing out and return of EHFRs and provide onsite education/support.
- At start of shift, Super Users and the Safety Advisor shall ensure staff collect the EHFRs from the “Clean EHFRs” bin and cartridge from the “Clean P100 Filters” and place them into a new re-sealable bag to distribute to staff.
- Super Users and Safety Advisor shall ensure staff utilize the sign-out sheet every time a respirator is taken.
- Designate area for clean storage and area for dirty storage. Note: larger departments may have multiple areas to assign & return respirators.
- Use the sign-out sheet to track any missing EHFRs or cartridges.

6. Fit Tester Instructions (applicable to Fit Tester)

1. Employee Safety Trained Fit Testers

- a. Only fit testers who have undergone [Fit Testing - Train the Tester](#) course are certified to conduct fit testing for staff.
- b. For those who are interested in becoming Fit Testers, please contact [Employee Safety](#) to schedule a training session.

2. Ensure participants are ready for fit testing

- a. Participants must be clean shaven prior to testing (facial hair that does not impede on the seal is acceptable).
- b. Participants has not eaten, smoked, drank (except water), or chewed gum at least 10-15 minutes prior to tests.
- c. Have participants complete fit testing form. The same fit testing form and procedures can be used to fit test an elastomeric as a N95.

3. Points of discussion for EHFRs:

- a. Fit Test Validity
 - i. Elastomeric respirators fit tests are valid for 2 years (temporary change)
- b. Information on EHFRs
 - i. These are reusable respirators and will be fully processed and disinfected by MDRD on a daily basis.
 - ii. Wipe down EHFR with Accel Wipes in between use during the shift and allow to fully dry.
 - iii. Respirator and filters are reusable – do not dispose of them after a single use.
 - iv. Cartridges provided are only used for particulates and not suitable for chemical environments.
 - v. Individuals will keep their EHFR for the duration of their shift and will return it to the dirty stock when shift is over.
 - vi. Staff must be clean shaven when using the respirator.
 - vii. Review donning and doffing procedure with participants – taking care to only touch straps.

4. Additional Information

- a. EHFR must be wiped down thoroughly with Accel wipes following each fit test
- b. If staff cannot be fit tested using the qualitative method, please contact [Employee Safety](#) to schedule a quantitative fit test.
- c. Guideline: [Use, Cleaning, Maintenance and Storage of Reusable Elastomeric Respirators](#)

DONNING OF ELASTOMERIC HALF-FACE RESPIRATORS (EHFRS)

HAND HYGIENE

INSPECTION OF RESPIRATOR BEFORE DONNING

- Check that respirator and components are dry.
- Visually inspect face piece for cracks, deformities, tears, and dirt.
- Check head strap for elasticity.
- Check that the exterior orange inhalation valve O-rings are sitting properly and in good condition.
- Check inhalation and exhalation valves and valve covers for distortion, cracking or tearing.

If any checks fail, remove from service and place in “Out Of Service” bin located at the Control Desk.



- White gaskets
- Turquoise gasket
- Check face piece for cracks, tears or dirt

- Check orange O-rings are intact and in good condition
- Check inhalation and exhalation valves

- Check straps for elasticity

ASSEMBLING RESPIRATOR

- **Do not touch the interior of cartridge's filter with your finger.**
- Ensure dates of opened cartridges do not exceed 6 months.
- Assemble the respirator with the respirator cartridge.
- Ensure Cartridge is securely locked onto the respirator.



Assembled respirator

DONNING RESPIRATOR & SEAL CHECK

HAND HYGIENE

- Don gown as per regular donning techniques.
- Place respirator over nose and mouth with bottom straps unfastened.
- **Pull** top straps over your head, placing head cradle on the crown of your head.
- **Hook** bottom straps together behind your neck.
- Adjust straps as needed to ensure a secure fit.
- **Positive seal check:** cover exhalation valve by covering with the palm of your hand and gently exhale and hold for 10 seconds. The mask should inflate and no air should leak out.
- **Negative seal check:** close the inlet of both cartridges by pressing them. Gently inhale and hold for 10 seconds. The mask should collapse and no air should enter.



Pull top straps over head

Hook bottom straps together

Positive seal check

Negative seal check

Elastomeric Half –Face Respirators (EHFRs)

Cleaning and Disinfecting: Full Clean at End of Day

At EHFRs Cleaning Station

1. Remove respirator from sealed bag or Doff respirator, place respirator on table cartridge side down, and perform Hand Hygiene
2. Don new gloves and perform cleaning and disinfecting of the respirator and cartridge with Accel wipes:
 - a. Wipe interior of mask (make sure to clean under white gaskets)
 - b. Wipe exterior of respirator, straps, and cartridges
3. Disassemble the respirator from the cartridges and place the face piece into “Dirty EHFRs” bin for reprocessing, located at control desk hopper. Be careful not to touch the interior of the cartridge’s filter with your finger
4. Place the cartridges into the “Dirty P100 filters” bin
5. Wipe down cleaning station surface
6. Perform hand hygiene

