



Ministry of Health
Sultanate of Oman

Guidance on the use of Powered Air Purifying Respirator (PAPR)



MOH/DGDSC-DIPC/ PAPR Guideline /Vers 01/ May 11, 2020

1. Introduction:

A powered air-purifying respirator (PAPR) is a type of respirator, that protect users by filtering the air and use battery operated blower that provides clean air to the user through tight respirator, a loose-fitting hood or helmet. PAPR is equipped with high efficiency particulate air (HEPA) filters provide 99.97% particulate filtration efficiency. Many healthcare facilities (HCF) assign PAPRs to health care workers (HCWs) providing care for patients confirmed or suspected to have airborne disease (e.g. TB, measles and chickenpox). The WHO and CDC have recommended airborne precaution for HCWs when performing aerosol generating procedure (AGP)* in patients with suspected or known cases of COVID19, MERSCov, and Influenza. This document is guidance for usage of PAPR for HCWs in HCF.

*AGP: Intubation, extubation, open suctioning, CPR, post-mortem procedures, dental procedure, invasive and non-invasive ventilation and induction of sputum.

2. Indication:

2.1. Alternative to N95 mask for HCWs who are looking after patients on airborne setting or performing AGP and they;

- Failed N95 fit test **or**
- Not been fit tested **or**
- with Beard

2.2. Alternative when N95 mask is unavailable for all HCWs providing care to patients with airborne infection or performing AGP



3. Advantages:

- Doesn't require fit testing
- Completely covers the face and neck
- Most components are reusable

4. Airflow Testing must be prior each use⁴: (See annex 1)

1. Connect the airflow indicator tube to the air supply outlet in turbo unit;
2. Turn ON the PAPR, hold turbo unit and flow meter in a vertical position and at eye level
3. Floating ball inside the airflow indicator tube should rise above the appropriate marking (typically 6 CFM), the airflow is sufficient. Do not use the PAPR if this test failed.

5. Donning and Doffing procedure⁵:

- Follow illustrated instruction in annex 2
- Please note: The PAPR can be used alone OR with other personal protective equipment (PPE) according to the risk exposure as directed by your facility IPC team

6. Consideration for Filter change:

- There is airflow blockage alarm either by sound alarm or change in the colour **or**
- Visibly dirty, wet or damaged **or**
- The unit does not pass the airflow test with a full charged battery **or**
- After 30 days from initial use

7. Decontamination Procedures:

1. While wearing gloves, disconnect all component parts of PAPR; battery pack, breathing tube and head hood from the turbo unit. Inspect all parts for damage.
2. Clean the external surfaces (head-hood, turbo unit, battery pack) if visibly dirty with a clean soft cloth dampened with warm water containing a mild pH neutral (pH 6-8) detergent. Do not soak the items during cleaning.
3. Change the plastic cover of breathing tube after each use and can be immersed in water for cleaning if visibly dirty or contaminated.
4. Disinfect all component parts by using antimicrobial wipes or by applying the disinfectant to a cloth. Do not spray the turbo unit directly.
5. Do NOT clean cartridges/filters as damage may result.
6. If the hood/helmet is shared, wipe the inside of the hood with an antimicrobial wipe.
7. Allow turbo unit, breathing tube, battery pack, and hood/helmet to air dry.

8. Storage:

- Store in a clean, contaminant free environment, protected from prolonged exposure to heat, sunlight, radiation and chemicals.
- For prolonged storage, the motor/blower should be run at least once per year for 5 minutes to ensure continued proper lubrication of the motor.
- PAPR filters should not be stored long-term on the motor/blower as this may damage the filter gasket.
- The battery must be charged after each use. Connect the battery to the battery charger and then plug in the charger into an outlet to recharge the battery pack.

Reference:

1. Versaflo-powered-air-purifying-respirator-tr-300-user-instructions
www.3m.com/3M/en_US/worker-health-safety-us/all-stories/full-story-detail/?storyid
2. Cleaning Reusable Respirators and Powered Air Purifying Respirator Assemblies
<https://multimedia.3m.com/mws/media/7749490/inspection-cleaning-and-storage-procedures-for-3m-tr-300-papr-assemblies-technical>
3. Aerosol Generating Procedures
<https://www.rdash.nhs.uk/wp-content/uploads/2017/08/Appendix-46-Aerosol-Generating-Procedures>
4. Video link for airflow check <https://www.youtube.com/watch?v=rUXEAiLQt04>
5. Video link for donning and doffing procedure
<https://www.youtube.com/watch?v=Mr3MMZ6HUJg>

Annex1: Airflow check:



a. Connect the airflow indicator tube to the air supply outlet in turbo unit









b. Turn ON the PAPR, hold turbo unit and flow meter in a vertical position



c. Floating ball inside the airflow indicator tube should rise above the appropriate marking level

Annex2: Sequence of donning and doffing PAPR use:

PAPR Donning	
1. Assemble and inspect PAPR prior each use <ul style="list-style-type: none"> • Check battery charge level • Check the HEPA filter is clean and have been properly installed • Check the airflow with the airflow indicator and by closing air supply outlet using hand • Inspect the head hood and breathing tube for any damage 	
2. Connect breathing tube to turbo unit Insert breathing tube into plastic cover and connected properly to air turbo unit until an audible click is heard.	
3. Put Turbo around waist Buckle the waist belt with the powered air turbo around the waist.	
4. Switch turbo ON Switch the powered air turbo on by pressing on the power button of the turbo for several seconds until an audible beep is heard.	
5. Connect the breathing tube to the head hood Hold the head hood attachment in one hand and insert into the open end of the breathing tube until an audible click is heard.	
6. Fit the Head hood to the head <ul style="list-style-type: none"> • Place the respirator hood over the head and secure the headband and ensure the hood is above the coverall or gown. • Verify adequate supply of airflow • You may now enter the patient's room 	

PAPR Doffing

1. Remove your head hood

- Remove a PAPR only outside a contaminated room
- Whilst bending over slightly, grasp the back of the head hood with both hands. And remove it off gently.
- Release the left hand grip, whilst continuing to firmly hold with the right hand. Hold the head hood away from the body in the right hand.



2. Disconnect the breathing tube from the head hood and place it in designated area for decontamination.



3. Unbuckle turbo waist belt then take the powered air turbo from around the waist.



4. Disconnect breathing tube from the turbo then carefully remove plastic cover and dispose it off prior to decontaminating the breathing tube.



5. Switch OFF the turbo

Switch the powered air turbo off and disinfect with antimicrobial wipes

