Powered Air Purifying Respirator (PAPR) Guide – April 16, 2021 1245

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Table of Contents

Introduction
  Protection 2
  Uses 2
  Limitations 2
  OSHA requirements 2

Tips for Success 3

Versaflo PAPRs
  Parts/ordering 3
  Startup procedure 5

PAPR Cleaning Procedure 7

PAPR Tracking Standard Work 7
Introduction to Powered Air Purifying Respirators (PAPRs)

Protection

A powered air purifying respirator is device that protects the wearer from breathing contaminated air. These types of respirators do not fit tightly to the face and use a blower to deliver filtered air to the wearer. The function of a PAPR protects the wearer in three ways. The first, is by drawing air from the surrounding area through a filter. This clean air is delivered through a tube to the hood, worn by the user. The second layer of protection is pressure of the delivered air as it leaves the hood. This helps remove exhaled carbon dioxide and prevents the contaminated room air from entering the hood. Lastly, the hood helps to protect the wearers eyes, nose, and mouth from splash and splatter of contaminated bodily fluids.

Uses

There are many uses for PAPRs throughout many industries. We use them in healthcare to help prevent against the contamination of our team members from contagious airborne diseases and fumes from hazardous medication spills.

Limitations

Our PAPRs do not deliver supplemental oxygen and cannot be used where oxygen levels are expected to be below 19.5%, normal room air level. PAPRs must be used with the parts and pieces they were designed and approved with to ensure proper protection. The exhaled air from the wearer is not filtered before being released from the hood, and therefore, the user must wear a procedure mask over their mouth and nose while wearing the PAPR. Additionally, to help prevent asymptomatic transmission, all team members wearing a PAPR should also wear a procedure mask.

OSHA Regulations

Under the United States Department of Labor, the Occupational Safety and Health Administration regulates the requirements for a respiratory protection program. OSHA standard 1910.134 addresses respiratory protection that includes many different respirators. Below are the key components, regarding PAPR usage:

- Each team member expected to wear a respirator must complete the OSHA respiratory questionnaire. This must be completed and reviewed by a physician prior to wearing a PAPR.
- This questionnaire must be completed on an annual basis, for those team members expected to need to wear a PAPR during their normal work routine, per Spectrum Health guidelines.
- If a respirator is required for use by the employer, the employer must provide a respirator to each employee expected to need one. Many team members will require the use of a respirator. Powered air purifying respirators should be reserved for those team members that cannot safely wear a tight-fitting respirator mask.
PAPR Tips for Success

- Team Members must have completed the annual respiratory questionnaire on Ready set and be reviewed by physician to use any respirator/PAPR
- PAPRs operate by filtered positive pressure flow, therefore a tight fit/seal is not needed or expected
- A procedure mask is required to be worn under the PAPR hood, to protect staff between users from contamination by asymptomatic team members
- 3M filters are good for 5 months in the unit unless visibility soiled or can no longer pass a flow test
- The TR-6530N, Purple and Yellow label, is required for hazardous medication spills/cleanup and is a onetime use item because of the charcoal filter protection needed
  - If needed for hazardous cleanup a new, in manufacture package filter should be obtained
- Inspect PAPR each use, checking for signs of damage and Battery level, if an issue is present report to the PPE Coach or designee
- A flow test (with flow meter) and an occlusion test with hand over the hose connection must be completed each time the PAPR is used
  - Flow Meter itself, not the PAPR unit must be level, up and down at eye level to complete flow test
  - The Occlusion test takes about 30 sec for unit to alarm then another 30 seconds for unit to recover self
- Put on PAPR unit, tighten straps to ensure correct fit/unit will not dislodge while in use
- If at any time unit alarms/turns off during use, leave environment immediately

If any part of PAPR fails inspection or is damaged and needs to be replaced DO NOT USE, contact the PPE coach or designee. Replacement parts can be obtained from Supply Chain following standard practice.

If you have any questions regarding correct use of PAPR or if the PAPR is approved for intended environment/use, reach out to the PPE coach or designee.

Ordering Replacement Parts

Spectrum Health currently uses two different models of the 3M Versaflo PAPR to provide respiratory protection against airborne diseases. The pictures below are representative of the parts of the Versaflo PAPR system. Following the pictures is an outline of the key differences of the two models (TR-600; TR-300+). 3M filters are good for 5 months from the date of manufacture, indicated by a sticker on the filter, or when they are visibly soiled or can no longer pass a flow test.

<table>
<thead>
<tr>
<th>Hoods for both models are interchangeable</th>
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<tbody>
<tr>
<td>SM/MED – ITM-1072772</td>
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<tr>
<td>LRG – ITM-1072773</td>
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<tr>
<td>Blower motors and filter assembly is a different size for each model.</td>
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<tr>
<td>The battery for each model is a different size and are not interchangeable</td>
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<tr>
<td>TR-600 – ITM-1023431</td>
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<td>TR-300 – ITM-1158501</td>
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<tr>
<td>Airflow tubing for both models is interchangeable</td>
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<td>ITM-1158893</td>
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For respiratory protection when cleaning up spills of hazardous medication, you need model number TR-6530N. This filter cartridge has two layers of protection. This first layer is a high efficiency particulate filter. The second layer is a charcoal filter, which protects against harmful vapors from the hazardous medication. You can easily identify this filter cartridge by its yellow and purple label and the model number, as shown below.

- The charcoal portion of this filter deteriorates rapidly and should be considered unusable once finished with the spill cleanup.
# 3M Versaflo TR-600 & TR-300+ PAPR Startup

<table>
<thead>
<tr>
<th>Seq. No</th>
<th>Task Description:</th>
<th>Key Point / Image / Measure (what good looks like)</th>
</tr>
</thead>
</table>
| 1.      | Inspect the VERSAFLO PAPR system.  
         | • Motor/blower. Inspect for cracks, holes, damage to user interface panel and belt attachments.  
         | • Battery pack. Confirm case is intact. Press TEST button on pack to confirm charge is sufficient for duration of the work period.  
         | • Breathing tube. Examine breathing tube for tears, holes, or cracks. Bend the tube to verify that it is flexible and not showing signs of wear. Ensure the o-rings located at both ends of the breathing tube are present and intact.  
         | • Filter/cartridge. Closely inspect filter/cartridge plastic housing including the corners and latches, outer rectangular barrier, and inner circular filter seal gasket for cracks, tears, cuts, distortion, indentations, or debris. Replace filter/cartridge if damaged. If the filter/cartridge has been mishandled or dropped, re-inspect fully. If you have any concern, contact 3M Technical Service for guidance.  
         | • Headgear. Inspect the headgear for tears, cuts, loose stitching, cracks, discoloration, or other signs of damage. | ![Image of battery pack test button](image1)  
Push ‘Test’ button to confirm battery charge – 5 bars = 80-100%. |
| 2.      | Perform flow check.  
         | • Insert air flow indicator TR-971 into the outlet on the VERSAFLO motor/blower unit.  
         | • Start motor/blower. Run for 1 minute.  
         | • With the airflow indicator TR-971 in a vertical position, bottom of the floating ball must be at, or above, the minimum flow level indicated on airflow indicator chart for your ‘zone’. If not above minimum level, respirator system must not be used until evaluated and repaired. | ![Image of airflow indicator](image2)  
Turn on PAPR. Confirm LEDs flash on startup. Confirm audible and vibratory alarms sound.  
Confirm airflow is sufficient. Bottom of the ball above airflow indicator zone flow level. |
| 3. | • Attach motor/blower to belt or backpack.  
| | • Insert the end of the breathing tube with the two small prongs into slots in the motor/blower air outlet. Twist the breathing tube ¼ turn to the right (clockwise) to lock.  
| | • Attach breathing tube to headgear. Push the QRS end of the breathing tube (blue pinch clip) onto the air inlet of the headgear. Headgear will secure with a distinct click. Gently pull to confirm a secure connection.  

| 4. | **Don Versaflo system**  
| | • Turn on motor/blower by pressing and holding blue on/off button.  
| | • Use belt to attach PAPR to wearer.  
| | • Pull headgear overhead and adjust. Adjust following the user instructions for the specific headgear.  

**TR-600**  
- Low flow alarm check: Check the low airflow alarm by simulating a low airflow condition. With the motor/blower on:  
- Remove the airflow indicator and tightly cover the outlet of the motor/blower with the palm of your hand. The motor should automatically speed up, attempting to compensate for the low airflow condition.  
- Continue to press your palm tightly against the end of the outlet, making a tight seal.  
- **TR-600** In less than approx. 30 seconds, the unit will sound an audible and vibratory alarm, and the bottom bar on the filter loading/low flow indicator will flash red.  
- **TR-300+** In less than 30 seconds, the unit will sound an audible alarm and the red fan shape LED will flash.  
- Remove your hand from the outlet of the blower/motor. In less than approx. 30 seconds, the audible alarm and the flashing red LED should both stop when the motor returns to the selected speed.  
- NOTE: If the low airflow alarm fails to sound, do not use the unit. Contact 3M Technical Service.  

**TR-300+**
Cleaning Versaflo PAPR

1. Sanitize Hands
2. Don PPE
3. Prep cleaning area
4. Wipe outside of PAPR hood with approved hospital disinfectant, allowing for adequate kill time per disinfectant direction
5. Wipe inside of PAPR hood with a **NEW** approved hospital disinfectant wipe, hang cleaned hood to dry, allowing for adequate kill time per disinfectant direction
6. Wipe down PAPR hose/unit with hospital approved disinfectant allowing for adequate kill time
7. Placed cleaned PAPR unit in designated clean holding area
   a. Check PAPR battery for charge level, replace battery with fresh charged battery if less than 50% charged
8. Disinfect dirty PAPR holding area ie. pink basin with approved hospital disinfectant, allowing for adequate kill time per disinfectant direction
9. Doff PPE
10. Sanitize Hands

Daily PAPR Survey Standard Work

From the InSite Homepage, select the “COVID-19 Information Center” mosaic.
COVID-19 Information Center: The steps we are taking and resources for you

Select today’s date from the pop-up calendar.

Click the “Daily PAPR Survey” button.

Daily PAPR Survey
Select your hospital from the dropdown list.

Select your unit from the dropdown list.

Continued on next page.
If you have more than one unit to report, you will need to complete the survey for each unit separately.

Only submissions for the current day will be accepted.

Questions and comments can be directed to Kenneth.Shawl@spectrumhealth.org.