

Cleaning and Disinfecting 3M Powered Air Purifying Respirators following Potential Exposure to Coronaviruses

3M™ Versaflo™ TR-300, TR-300+, TR-600, TR-800, and Jupiter Powered Air Purifying Respirator (PAPR) Assemblies

Description

During coronavirus outbreaks, some healthcare organizations may assign powered air purifying respirators (PAPRs) to workers providing care for patients with suspected cases of coronavirus. This document contains considerations related to cleaning and disinfecting PAPRs after potential exposure to coronaviruses.

The 2008 US Centers for Disease Control and Prevention (CDC) publication [Guideline for Disinfection and Sterilization in Healthcare Facilities](#)¹ (updated May 2019) includes information on disinfecting equipment and surfaces potentially contaminated by coronaviruses. The US CDC investigated many chemicals and cited several chemical germicides as being effective for coronaviruses, when used as indicated in the product user instructions. Of the chemicals listed by the CDC as being effective for coronavirus, only sodium hypochlorite (at free chlorine concentration of 5,000 ppm) can be used to clean the 3M PAPRs listed above per the 3M product *User Instructions* and the guidelines included in this document.

Effective after a 1-minute contact time:

- Sodium hypochlorite (at a free chlorine concentration of 5,000 ppm)

Your facility should review this information thoroughly prior to selecting this disinfecting product for your equipment and specific application. Follow the hygiene and infection control practices established by your employer for the targeted organisms, including coronaviruses. Please note that 3M has not evaluated the effectiveness of this agent with regards to inactivating viruses on 3M equipment.

Please always refer to the latest information from trusted sources such as the World Health Organization ([WHO](#)), the US Centers for Disease Control and Prevention ([US CDC](#)), the US Occupational Safety and Health Administration ([OSHA](#)) and the European Centres for Disease Prevention and Control ([ECDC](#)) regarding selection, use, maintenance and cleaning of personal protective equipment.

Note that components of PAPR respiratory systems may become damaged over time with prolonged or extended use of disinfecting products. As discussed in the product *User Instructions*, users must inspect the components of their PAPR respiratory systems following each disinfecting cycle and prior to re-use. If you discover any signs of damage, remove the component from service and either discard and replace or repair as appropriate, following the guidance in the product *User Instructions*.

1. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008; updated 2009. United States Centers for Disease Control. William A. Rutala, Ph.D., M.P.H., David J. Weber, M.D., M.P.H. and the Healthcare Infection Control Practices Advisory Committee (HICPAC). 2008. <https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf>

Cleaning, sanitizing and/or disinfecting the TR-300, TR-300+, TR-600, TR-800, and Jupiter PAPR Assembly

It is important to always read and follow the specific PAPR *User Instructions*. The following general guidelines can be utilized as an additional reference for cleaning, sanitizing, and/or disinfecting your TR-Series or Jupiter PAPR assembly. Please also refer to the 3M Technical Bulletin on [Inspection, Cleaning and Storage Procedures for 3M™ TR-300, TR-300+, and TR-600 PAPR Assemblies](#).

General

- 1) It is important to follow all steps.
- 2) Cleaning is recommended after each use. Nitrile or vinyl gloves should be worn during cleaning as well as other personal protective equipment (PPE) as indicated.
- 3) With any disinfecting agent, follow the *User Instructions* in regards to usability, application and contact time, and ensure all components are thoroughly rinsed with fresh, warm water and thoroughly dried before use or storage.

Initial Steps and Inspection

- 1) It is important to follow the *User Instruction* inspection procedures supplied with the TR-Series and Jupiter PAPR units and headgear to identify any damage, excessive wear, or deterioration of components and replace them as necessary.
- 2) Detach the battery pack, breathing tube, waist belt and headgear from the motor/blower.
- 3) Discard the breathing tube cover, if one is used.
- 4) Remove the filter from the PAPR blower assembly.

When to Change Powered Air Purifying Respirators (PAPRs) Filters Used for Airborne Biological Aerosols

Particulate filter change schedules for PAPRs are determined by two main considerations: filter loading (clogging of the filter from captured particulates) and a facility's infection control policy.

If the PAPR system is being used to help protect against airborne biological aerosols such as viruses or bacteria, the filter will not typically load from these particles to the point that they will affect the airflow for the PAPR as determined by the airflow indicator or the PAPR airflow indicator alarm. As a result, loading or clogging of PAPR filters is typically not an issue when used for biological aerosols.

In healthcare facilities, PAPR filter change schedules for airborne biological aerosols are primarily determined by the facility's infection control policy. The infection control policy should be developed based on applicable national, state, and local guidelines. Most healthcare organizations develop their filter use and reuse policy based on the biological agent of concern, likelihood of the filter becoming contaminated, and potential for patient-to-patient and patient-to-worker cross-contamination. While the outside filter body can be wiped down for cleaning, do not attempt to clean the filter media inside the filter body. When changing the PAPR filter, follow the hygiene and infection control practices established by your employer based on the specific contaminants to which the respirator assembly has been exposed and the cleaning agent used. Dispose of the filter according to your infection control policy and all applicable requirements.

Close consideration needs to be given to the policies and practices used for cleaning the PAPR. It is important to remember that a PAPR is used to filter out contaminants from the air, and therefore contaminants are concentrated on the filter/cartridge itself, and potentially on other surfaces of the PAPR system. Proper cleaning and maintenance of the PAPR systems can be found in the specific *User Instructions* for the product.

Headgear

- 1) Clean all parts of the headgear assembly with a clean soft cloth dampened with warm ~49 °C (120 °F) water containing a mild pH neutral (pH 6-8) detergent. Refer to the headgear specific *User Instructions* for cleaning details. Do not soak the headgear during cleaning.
- 2) Wipe the headgear with a clean soft cloth dampened with the disinfectant cleaner. Follow the *User Instructions* for the disinfectant. Do **not** soak the headgear.
- 3) Wipe all headgear components with a clean soft cloth dampened with clean warm ~49°C (120°F) water.

Motor/Blower Unit and Battery Pack

- 1) Do not allow liquid to enter the air outlet port or the motor housing area.
- 2) When cleaning the TR-Series PAPR units use caution if cleaning around the battery pack connector pins where the battery seats on the bottom of the motor/blower unit. Ensure this area and the pins are thoroughly dry before next use or storage.
- 3) Clean the outer surfaces of the TR-Series and/or Jupiter PAPR assembly and battery pack with a clean soft cloth dampened with warm ~49 °C (120 °F) water containing a mild pH neutral (pH 6-8) detergent. Refer to the PAPR *User Instructions* for cleaning details. Do **not** immerse the motor/blower or battery pack.
- 4) Wipe the outer surfaces of the motor/blower assembly and battery pack with a clean soft cloth dampened with the disinfectant cleaner. Follow the user instructions for the selected disinfectant. Do **not** soak the motor/blower assembly or battery pack.
- 5) Wipe all outer surfaces with a clean soft cloth dampened with clean warm ~49 °C (120 °F) water. When used with the TR-653 cleaning and storage kit in place, the TR-600 and TR-800 motor/blower and battery can be immersed in water for rinsing. Do **not** immerse the TR-300, TR-300+, or Jupiter motor/blower or battery pack in water during rinsing.

Breathing Tube

- 1) Clean the breathing tube by wiping it down with a soft cloth dampened with a warm ~49 °C (120 °F) water and mild pH neutral (pH 6-8) detergent solution. Alternatively, the breathing tube can be immersed in the cleaning solution.
- 2) Wipe the outer surfaces of the breathing tube with a clean soft cloth dampened with the disinfectant cleaner. Follow the *User Instructions* for the selected disinfectant.
- 3) Wipe all outer surfaces with a clean soft cloth dampened with clean warm ~49 °C (120 °F) water.
- 4) Allow the breathing tube to completely air dry prior to reuse or storage. Air dry in an uncontaminated atmosphere, temperature not to exceed ~49 °C (120 °F). Alternately, dry by connecting to the motor/blower unit and use it to force air through the tube until dry.

After Cleaning and Drying

- 1) Reassemble unit as described in the *User Instructions*.
- 2) Inspect the PAPR unit and headgear following the inspection procedures in the *User Instructions* for that item.

Glossary of Terms

Below is a glossary of terms used in this document^{1 2}:

Cleaning: Removal of all soil (organic and inorganic) and foreign material from objects and surfaces. This is typically accomplished with water and mechanical action. Detergents may be used to assist the process.

1. Rutala, WA. American Journal of Infection Control. APIC Guideline for Selection and Use of Disinfectants. Vol. 24, No. 4, pp. 313-342, August 1996.

2. Rutala, WA. CDC. Guideline for Disinfection and Sterilization in Healthcare Facilities. 2008.

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NOTE: Failure to remove foreign material (soil, face oils, etc.) from an object can make the disinfecting process ineffective.

Sanitizing: A process to reduce the number of microorganisms on an inanimate object to “safe” levels (but may not destroy disease-producing organisms). E.g., dishes and eating utensils are normally sanitized.

Disinfecting: A process of inhibiting or destroying disease-producing microorganisms (but may not kill bacterial spores). It usually involves the use of chemicals, heat, and/or ultraviolet light and is divided into three categories: high, intermediate and low-level disinfection.

Sterilizing: A validated process to render a product free of all forms of viable microorganisms, including bacteria, viruses, spores, and fungi.

NOTE: Items must be thoroughly cleaned before effective sterilization can occur.

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If you have any questions or concerns, please contact your local 3M representative.

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