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| Factsheet: Cleaning and Disinfection of Respiratory Fit Testing Equipment |
| 2 September 2021 |
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# Introduction

This factsheet has been developed to inform health services on ways to minimise the risk of cross-contamination between fit test participants by providing cleaning and disinfection information for the PortaCount® and AccuFIT9000™ respirator fit testing machines and their accessories. The cleaning and disinfection information in this document is limited to quantitative respiratory fit testing.

**Health services should refer to manufacturer cleaning and disinfection guidelines and fit test machine instructions for use (IFU) for guidance regarding the frequency and cleaning process for equipment and accessories including the twin tubing.**

It is a health service organisation’s responsibility to evaluate and respond to infection risks for new and existing equipment, devices and products used within the organisation.

Exterior surfaces including the external part of the reusable twin tube are to be cleaned and disinfected between every subject. The internal part of the tube should be cleaned daily or as per the manufacturer’s recommendations or when visible moisture from condensation is present.

The alcohol cartridge and twin tubes must be dried properly before use.

All fit test equipment should be thoroughly inspected before use. Equipment is to be discarded and replaced if it shows any signs of damage or wear. Calibration of equipment may also lead to detection of equipment damage including damage to the twin-tubing.

Please note: This is a guidance document only and it is not the intention of this document to replace manufacturer guidelines or local health service infection prevention and control policies for cleaning and disinfection of re-useable equipment; but rather, to act as an adjunct to local policies and to provide guidance on the minimum infection prevention and control standards expected.

Key fit testing components relevant to this document

* Main unit (machine) - Reusable
* Twin Tubes - Reusable consumable
* Respirator (P2/N95) - Single use

# Infection Control

It is imperative that relevant infection prevention and control procedures are followed throughout the fit testing process. This includes minimising contact between staff, appropriate donning/doffing procedures, hand hygiene, plus cleaning and disinfection and single use item disposal protocols for equipment. The RPP program administrator should ensure that they work with local infection control consultants to ensure that fit testing procedures align with local infection control protocols and procedures.

Despite decades of use, there is a scarcity of studies or evidence that suggest that there is an increased risk of cross-contamination between fit testing participants.

**Potential risks**

There is a potential risk of shared body fluids between users from inhalation of previous persons expired air or inhalation of condensation moisture formed within the tubing from exhaled breath. Manufacturer testing of both the Portacount and AccuFIT, however, have found that it is not possible for a respirator wearer to inhale with sufficient force to reverse air flow direction within the twin tubing and inspire previously exhaled air or condensation.

Despite the absence of evidence demonstrating cross-contamination between users, and the advice from manufacturers that inhalation of expired air is not possible, if there is visible moisture within the tubing it is recommended to change the tubing between users and allow the tubing to dry before reuse and clean and disinfect the tubing as per manufacturer and health service guidelines.

Cleaning and disinfection of all reusable equipment should be undertaken in accordance with manufacturer’s instructions and AS/NZS 4187:2014, and aligned with the health service’s cleaning, disinfection, and sterilisation procedures.

Manufacturer Advice

* Manufacturers acknowledge that air exhaled by participants may cause some fogging and condensation within the twin tubing when the humid exhaled air comes into contact with the cool tubing.
* Manufacturer advice from both the AccuFIT9000™ and PortaCount® is that air flow within the twin tubing is unidirectional away from the participant towards the fit testing machine. Negative pressure generated by the fit testing machines that draws air away from the participant creates a flow rate that cannot be overcome by participant inhalation. This negative pressure gradient results in a very low risk of cross contamination occurring between participants.

Respiratory Fit Test Infection Prevention and Control Measures

A health service should have sufficient stock of replacement twin-tubing to maximise time efficiency between participants where changing the tubing is indicated, which in turn will reduce delays between participant fit tests.

**Before each respiratory fit test:**

* If the fit tester and/or the participant have any signs or symptoms of COVID-19 or other infectious respiratory illness, then the fit testing **must not** proceed.
* Both the fit tester and the participant must perform hand hygiene prior to commencement of the test procedure
* Don PPE in line with health service policy
* Where practicable, maintain any recommended physical distancing practices
* Follow Government advice and local policy on the usage of masks indoors
* The fit tester must ensure that all external surfaces of the fit testing equipment including the tubing, and surrounding environment have been cleaned and disinfected prior to use and allowed to dry
* If visible moisture seen in twin tubing change before next use and clean and disinfect as per health service infection prevention and control policy.
* If the twin tubes have been changed between participants, consider re-calibrating the machine before the next fit test

**After completing EACH respiratory fit test:**

**Fit test participant:**

* Remove the respirator by following correct doffing technique – See [Personal Protective Equipment (PPE) – coronavirus (COVID-19)](https://www.dhhs.vic.gov.au/personal-protective-equipment-ppe-covid-19) for further information on donning and doffing PPE
* Remove the twin-tubing from the respirator probe
* Dispose used respirator and respirator probe
* Perform hand hygiene

**Fit tester:**

* Disconnect the twin tubing from the fit test machine (where applicable, do not split blue and clear twin tubes)
* Allow twin tube channel to dry before reuse. If extra tubing is available, consider changing tubing to facilitate faster turnaround times
* After completion of EACH participant’s test, use a TGA registered hospital grade cleaning and disinfectant product to clean by wiping the exterior of the twin-tubing assembly and all other exterior parts of the fit test equipment – allow to dry
* Check for the presence of visible moisture within the twin tubing.If condensation is present, the tubing should be changed and cleaned and disinfected in accordance with manufacturer guidelines and health service’s policy.

**DO NOT** attempt to dry the exhaled condensation within the twin tubes by injecting compressed air through the channels. This may aerosolise potentially hazardous pathogens from the previous participant.

* Clean and disinfect the surrounding environment (chairs, tables etc.)
* Perform hand hygiene
* Attach the zero-check filter to the twin tubing when the tubes are connected to the machine

**Please Note**: If cleaning and disinfection of the twin channel channels has been performed, compressed air may be injected through the channels to assist drying time

**Loan Equipment and Equipment returned from repair or maintenance:**

Fit testing equipment that has been introduced into circulation from repair, maintenance, or loan, should be cleaned and disinfected prior to use including disinfection of the twin channels (See below Options for cleaning and disinfecting twin tubing channel). Fit test operators should follow the health service’s loan equipment procedures for reusable equipment.

**At the end of the day:**

Follow machine prompts and recommendations based on product specifications for cleaning and disinfecting.

* Disconnect the twin tube from the fit testing machine (PortaCount/AccuFIT)
* Surfaces should be cleaned and disinfected using a clean cloth or paper towel (note: devices are not waterproof)
* All surfaces should be cleaned before being disinfected unless using an approved two in one cleaning and disinfectant wipe approved for medical equipment.
* A TGA registered cleaning and disinfectant wipe can be used to clean the external parts of the tubing and equipment
* Clean and disinfect the surrounding environment (desks/chairs etc)
* Follow manufacture cleaning and disinfection guidance for the relevant machine/s that the health service uses.
* Allow the tubing to dry completely before reuse
* Have spare tubes to allow tubes to dry completely before use
* (Select from a list of disinfectants registered with the TGA and as per manufacturer’s instructions)
* Store fit testing equipment in a clean and dry area

**Further information for cleaning and disinfecting twin tubing channel:**

* Refer to AS/NZS 1715:2009 Appendix C *Procedures for cleaning and disinfecting RPE* for guidance
* Refer to AS/NZS 4187:2014 *Reprocessing of reusable medical devices in health service organizations*
* If CSSD services are available, consider discussing cleaning and disinfection requirements with the CSSD manager
* Consider hanging the tubes after flushing to assist drying.
* If cleaning and disinfection has been performed in accordance with manufacturer instructions, compressed air may be injected through the channels to assist drying time
* In instances where fit testing is required to progress through several respirators for an individual, the fit tester should consider checking the tubing for condensation. This does not present an infection risk, however the condensation may affect the fitting results for that individual.

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