

Reprocessing information for Servo ventilators for emergency use during COVID-19

In view of the situation with the Coronavirus disease COVID-19, we hereby want to provide guidance on the reprocessing of Servo ventilators, i.e. the cleaning and disinfection between patients.

The methods and instructions in the Cleaning and Maintenance User's Manual (hereafter Cleaning Manual) are the recommended reprocessing alternatives for Servo ventilators.

However, in a situation where none of the methods or disinfection agents described in the Cleaning Manual are obtainable, the following information provide guidance when choosing emergency reprocessing methods for short-term usage during the COVID-19 pandemic. Please switch to one of the recommended methods in the Cleaning Manual as soon as they become available.

The instructions for reprocessing of the ventilator surfaces and the expiratory cassette may contain the same active ingredient but with different concentrations. Always perform a pre-use check after reprocessing.

Surface reprocessing

The materials used on the external surfaces of Servo ventilators including hardware accessories as stated in the Cleaning Manual, tolerate the active substances listed below.

Active ingredient	Details
Alcohol	Up to 70% ethanol and/or isopropanol.
Quaternary ammonium	Up to 0.5% Quaternary ammonium chloride compounds
Quaternary ammonium/Alcohol	Mixtures of up to 0.5% Quaternary ammonium chloride compounds with up to 55% isopropanol
Hydrogen peroxide	Up to 0.5% Hydrogen peroxide
Sodium hypochlorite	Up to 5% Sodium hypochlorite
Potassium peroxymonosulfate	Up to 0.55% Potassium peroxymonosulfate in disinfecting solution

The US Environmental Protection Agency (EPA) keeps a database of disinfection agents that meet EPA's criteria for use against SARS-CoV-2, the virus that causes COVID-19. The list can be organized or searched based on the active ingredient:

- <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

Different brands have different stabilizing agents, additives and surfactants. These are not expected to damage the surface during short-term usage, but may cause permanent discoloration. Discoloration will not be covered by the warranty. When utilizing other disinfectants than stated in the Cleaning Manual, it is important to wipe off traces of disinfectant with a soft, lint-free cloth moistened in water to minimize long-term exposure to chemicals.

Expiratory cassette

For cleaning, the expiratory cassette can withstand detergents that contain enzymes, water softeners, corrosion inhibitors, surfactants, emulsifiers and chelating compounds.

For disinfection, the expiratory cassette can tolerate the active substances listed below.

Chemical groups	Details
Orto-phtalaldehyde	Up to 0.55% Orto-phtalaldehyde
Alcohol	Up to 70% ethanol or isopropanol.
Hydrogen peroxide	Up to 7.5% hydrogen peroxide
Peracetic acid/Hydrogen peroxide	Mixtures of up to 0.15% Peracetic acid* with up to 3.0% hydrogen peroxide

* Peracetic acid is sometimes called Peroxyacetic acid

Different brands of cleaning agents and disinfectants have different stabilizing agents, additives and surfactants. These are not expected to damage the expiratory cassette during short-term usage, but may cause permanent discoloration. Discoloration will not be covered by the warranty. Rinse the parts thoroughly in water to remove all traces of disinfectant, as described in the Cleaning Manual.

The expiratory cassette can tolerate the following temperature/time combinations of automated reprocessing methods (see Cleaning Manual for proper procedure):

Method	Details
Thermal disinfection in washer-disinfector	The expiratory cassette can be thermally disinfected for: <ul style="list-style-type: none">• At least 200 cycles at 90 °C (194 °F) for 1-5 minutes.
Steam sterilization	The expiratory cassette can withstand steam sterilization for: <ul style="list-style-type: none">• At least 100 cycles at 132-135 °C (269-275 °F) for up to 5 minutes• At least 30 cycles at 132-135 °C (269-275 °F) for 18-20 minutes This covers normal programs used e.g. 4 min at 132°C or 3 min at 134 °C The expiratory cassette can be sterilized with or without sterilization pouches or wrappings.

A pre-use check shall always be performed after reprocessing and will alarm if the expiratory cassette is non-functioning.

Yours sincerely,

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