

Recommendations by the Quality Task Group (92)

Optimization of Medical Device Positioning for Automated Cleaning and Disinfection

Part 1: Non-lumened medical devices

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Introduction

The main factors affecting the cleaning process were described by Herbert Sinner (surfactant chemist 1900–1988) and are today often known as "Sinner's Circle". In addition to Chemistry, Temperature and Time, the → **MECHANICS** plays a major role. Modern washer-disinfectors (WDs) are equipped with a spray system that in all cleaning cycles is responsible for the → **WATER DISTRIBUTION** and for ensuring that all the items being cleaned are in (direct or indirect) contact with the cleaning solution. The optimum cleaning efficacy is determined by the following factors:

- The construction/design of the WD and spray system
- The water supply, water amount and pressure
- The design and material composition of the wire mesh trays, inserts and positioning supports
- Appropriate positioning of the supplies, avoidance of spray shadowing and overloading

→ **MECHANICS** play a major role in the cleaning process.

→ **THE WATER DISTRIBUTION** in the WD is determined by a spray system.

Mechanics, water supply and effects

→ **SPRAY SHADOWING** can adversely affect the efficacy of the individual cleaning and disinfection steps and must therefore be avoided by ensuring optimum positioning of the supplies.

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To assure optimum mechanical action, the → **SPRAY ARMS AND NOZZLES** must be inspected at least once daily for problem-free functioning.

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That applies not just to the WD spray arms but also to the loading rack spray arms.

Blocked nozzles must be cleaned and then properly refitted.

Filters must be cleaned at least once daily to prevent solid residues being deposited on the cleaned supplies.

Daily inspection must be documented.

The water distribution and spray direction are determined by the rotational speed of the spray arms, the pressure as well as the design and direction of the nozzles, and must have contact with all areas on every level. Changes in the rotational speed and cleaning pressure have a negative impact on the water distribution and mechanics. Often, such changes are caused by blocked nozzles.

Positioning non-lumened MDs – water distribution

The effect exerted by the type of → **WIRE-MESH TRAYS** used on the cleaning efficacy was already addressed in Recommendations No. 33 and 35. However, often the tray on its own is not able to assure optimum and secure positioning. Additional inserts and positioning supports are used.

→ **THE TYPE OF WIRE MESH TRAYS USED** also affects cleaning.

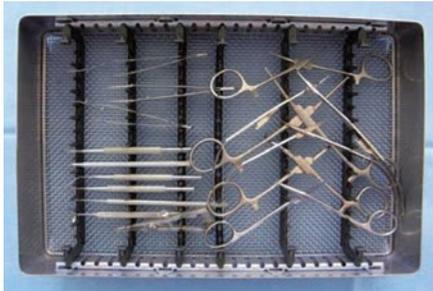


Fig. 1: Unsuitable for microinstruments – use with thin terminal strips



Fig. 2:

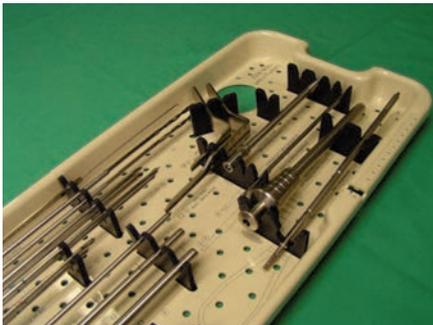


Fig. 3

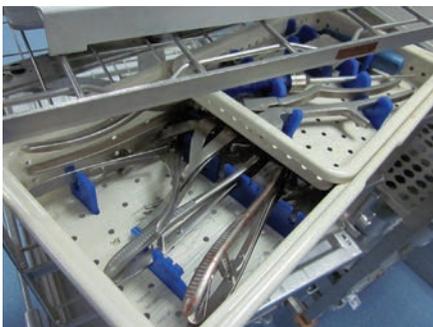


Fig. 4

In all cases it must be ensured that the MDs are positioned such that they can be accessed from all sides to ensure they are properly cleaned and rinsed free of chemical residues. Movement of delicate MDs, e. g. microinstruments, should be restricted to avoid damage. Clamps, burlled supports, etc. can be used to that effect (Fig. 1).

Thick synthetic clamps are not suitable since they cover surfaces and also impede drying. Burlled mats that cover the entire surface are not suitable since the water is unable to penetrate the mats and the small holes in the mats prevent proper drainage of the water, thus creating a "bathtub effect". It may be useful to use burlled bars/strips (Fig. 2). Synthetic transport trays are not suitable positioning systems when cleaning MDs. The MDs to be cleaned must be removed from such trays and placed in suitable wire mesh trays.

Plastic trays are often used for loan instruments and are reprocessed in separate cycles (Figs. 3 and 4).

Special inserts/supports are supplied for certain devices, e.g. for kidney dishes, or specifically for plastic trays (without MDs!) (Fig. 5).

The reference tray loads represent an important part of performance qualification (validation). A "worst-case scenario" does not mean: overloading or loading in an untidy manner (Fig. 6).

Instruments with hinges must be opened at a 90° angle. Modular instruments must be dismantled as instructed by the manufacturer.

Performance requalification must be carried out in the event of major changes to the load composition or different positioning systems used.

Conclusion

The purpose of cleaning and disinfection is to produce impeccable results and thus assure patient safety. This calls for, in addition to well-trained and experienced staff, optimum positioning of medical devices in the WD.

The range of medical devices to be reprocessed continues to grow. The CSSD is continuously facing the challenge of reprocessing newly developed and ever more complex instruments. This in turn highlights the importance of unrelenting progress in developing new positioning systems. What is needed is highly flexible systems that can be tailored to meet the new demands.

Practical solutions that gain widespread acceptance among staff are important for implementation. ■



Fig. 5



Fig. 6