

March 2023

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LEARNING OBJECTIVES

1. Describe the role of washer-disinfector racks
2. List common and specialty racks used in healthcare
3. Identify ways to maintain washer-disinfector rack performance

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Washer-Disinfector and Cart Washer Racks

Using the right rack; choosing the right cycle; and servicing the washer-disinfector are critical to the success of cleaning.

by Manon Laflamme, Angela Ritchey

Automated washer-disinfectors and cart washers are staples of every sterile processing department. Their high-volume cleaning throughput allows sterile processing departments to keep up with the growing volumes of medical instrumentation that healthcare facilities need. What was once a straightforward way to clean multiple instruments simultaneously has become a complex process driven by the complexity of the medical instrumentation processed through the department. Using the right rack; choosing the right cycle; and servicing the washer-disinfector are critical to the success of cleaning.

Washer racks promote cleaning.

The goal of mechanical cleaning is to supply cleaning action to all surfaces of reusable medical instrumentation for enough time to remove soils. How quickly the cleaning process removes soils depends on the cleaning chemistry formulation, temperature of the solution, and the force at which it is delivered.

Mechanical washer-disinfectors and cart washers require the use of accessory racks to contain and hold reusable medical devices and surgical instruments through cleaning, rinsing, thermal disinfection, and drying. They support the mechanical cleaning action, flow lumens with cleaning solution, aid in drying instrumentation, and are designed to withstand thermal disinfection.

The most common rack is the multi-level or multi-manifold rack. The multi-level rack allows high volume processing of general instrumentation. Racks have 2 to 5 shelves each equipped with rotating spray arms that allow several trays of instruments to be processed simultaneously. The number of shelves dictates the height of the items

that can be processed. For example, one 2-level rack design offers a 15 ¾" clearance on the bottom level that can accommodate bowls, basins, and surgical trays. Conversely, a 5-level rack for the same washer disinfector would have a 3" clearance for each shelf accommodating 10 standard trays but not bowls or basins.

Some multi-level racks are equipped with lumen flushing connectors used to process suction or other cannulated devices. Designs range from individual flushing ports that connect to a single instrument to adapters that connect to specialized trays allowing flow through multiple instruments at once.

General purpose and multifunctional racks are single level racks that hold higher profile items. They may have dividers for separation and positioning of items. These types of racks typically hold container system bases, lids, and large procedural basins and bowls.

Complex surgical instruments, such as minimally invasive surgical (MIS) instruments, anesthesia and respiratory equipment, and robotic-assisted surgical instruments require specialty washer racks designed to properly position and flow lumens and cannulated instrumentation. In addition to the racks' distinctive design features, specialty racks often use a unique washer-disinfector cycle. Some may require a specific cleaning chemistry validated to work with the rack, washer-disinfector cycle, and instrumentation.

Collaboration between the instrument manufacturers and washer-disinfector manufacturers has led to the development of several specialty racks and cycles that maximize the cleaning performance and provide the highest degree of reliable,

repeatable, and dependable cleaning results. Validated cycles have also been shown to shorten cleaning time and decrease turn-around time of robotic-assisted surgical instrumentation.

Cart washers may also have instrument and container system racks. Like washer-disinfectors racks, cart washer racks have rotating spray arms to maximize cleaning efficacy of all items on each shelf. It is important to use the appropriate cart washer cycle for the selected rack.

Proper rack loading is more than instrument stringers.

The proper placement of items contained in the load allows for maximum exposure to the cleaning, rinsing, disinfection, and drying phases during the cycle. Use trays with mesh bottoms and sides to allow fluid to reach all surfaces and drain away. Instruments should be placed in such a way that all surfaces are accessible to the solutions. Instruments with hinges should be opened to give access to the box lock. Accessories, such as instrument stringers, help keep the open position of the instruments. Some instruments may require disassembly before mechanical washing. Be sure to follow all cleaning instructions provided by the instrument manufacturer's instructions for use.

Instrumentation with cannulas or lumens should be flushed during processing. Ensure that lumen devices are appropriately connected. Devices requiring specialty racks may have added instructions for positioning and placement. Be sure to review the rack instructions for use in addition to the instrument's instructions for use.

Shadowing occurs when something comes between the instrument and the spray arms. Shadowing prevents good cleaning and rinsing. Avoid stacking trays or instruments. Disassemble multi-layer instrument sets so that placing each layer on the rack. Avoid placing bowls, basins, and procedural trays directly over items on the same rack level.

Some devices, such as reusable anesthesia or respiratory care instrumentation, do not require further decontamination after the washer disinfectant cycle. They may go directly from the mechanical washers to drying cabinets, be reassembled, and sent to be used for patient care. These types of devices can be difficult to position given the length of tubing and oddly shaped cavernous components. Specialty racks help



Robotic Assisted Surgical Instrument Rack

ensure proper positioning and contact with all internal surfaces during processing. Be sure to follow the instrument manufacturer's instructions for use for cleaning and the rack's instructions for use for positioning.

Racks may have weight restrictions. Weight restrictions ensure safe usage of the rack and effectiveness of thermal processes. Overloading the racks or not using the correct rack can lead to residual soils or cleaning chemistries that can harm patients.

It is important to remember that racks must not be altered or modified by facilities to accommodate instrumentation. Modifying racks can change flow dynamics, manifold water pressures, and fluid distribution that can affect the cleaning efficacy of the rack placing instruments at risk for residual soil and chemistries which could harm patients. Instead of modifying a rack, plan to buy a rack that is suited for the facility's instrumentation needs.

Is it necessary to use the validated cleaning chemistry?

As mentioned previously, specialty racks address specific cleaning challenges for complex instrumentation. With the same considerations in mind, specialty cycles were developed to address cleaning challenges. Refer to the rack's IFU for the recommended cycle. Selecting the right cycle is critical for cleaning efficacy.

It is also important to use the validated cleaning chemistry. Cleaning chemistry formulations vary greatly and with it their performance. When a cleaning cycle indicates a specific cleaning chemistry, it usually means that the cycle and chemistry formulation have been fine tuned for optimal cleaning performance of the specialty rack and listed instrumentation. Validation testing with a specific cycle and chemistry

provides additional assurance to achieve optimal cleaning results; rigorous testing has been done to account for multiple scenarios and worst-case conditions. Using a non-validated cleaning chemistry can alter the efficacy of the system resulting in residual soils.

Maintain washer racks for best performance.

Washer racks require maintenance to ensure optimal cleaning performance. The operator's manual has recommendations for routine rack maintenance and decontamination, as well as a list of replacement parts and proper positioning for those parts. Sterile processing departments should establish a policy for rack cleaning and maintenance, including frequency and how the process is documented. In addition to establishing routine cleaning and maintenance for racks, it is best practice to check the rack each time it is used for possible defects or debris which may impede the cleaning action.

Inspect spray arms at least daily for free rotation and foreign material protruding from the spray arm holes. It is also good practice to confirm spray arm rotation after loading to check for items on the rack that might impede rotation. If either debris or poor rotation exists, the spray arm should be serviced prior to use. Many operator manuals describe the proper way to remove debris and service poorly rotating spray arms.

Take a moment during the processing cycle to watch the spray arms. Spray arms that do not rotate or rotate slower than others will not effectively clean. The spray arm may be stuck or the connection between the rack and wash-disinfectant could be faulty both requiring service and/or repair.

Flexible tubing and hoses used to connect to lumens should be regularly inspected for damage. Manufacturer operator manuals should indicate the frequency at which these should be replaced. Ensure that tubing, hosing and any other components requiring replacement at regular intervals is part of the preventative maintenance schedule.

Many standards recommend testing washer-disinfectors and cart washers daily with cleaning indicators to ensure effective cleaning. The cleaning indicators confirm that the washer-disinfectant, cleaning chemistries, and spray arms are delivering the necessary efficacy. But have you thought

about the racks? Each rack design may have specified requirements for washer indicator placement. All facilities have more racks than washer disinfectors. Daily testing of washer disinfectors requires a small part of these racks. Consider rotating the rack used in the test to ensure testing of every rack within a reasonable time.

At regular intervals as defined by the rack's operator manual, disinfection and descaling may be needed. Ensure that every rack is on a preventative maintenance schedule as defined by the manufacturer's preventative maintenance instructions.

Establishing a method for keeping track of each rack can be helpful particularly for racks which are used infrequently. Having maintenance records allows everyone to

know which rack is next in line to receive maintenance. A sterile processing department should also keep extra parts for often used racks, such as the pieces of the spray arms, to keep racks in service. Failure to maintain racks could create backlogs in decontamination, which can alter the ability to prepare, package, and sterilize instruments in a timely manner, and ultimately can impact patient care if the affected instruments are not available for use when needed.

Conclusion

Washer racks have evolved. There are more options available to efficiently reprocess complex reusable medical devices and surgical instruments that will save time and

supply reliable, repeatable, and dependable results. Sterile Processing departments can benefit from new washer rack technologies and options that improve workflow efficiency and reprocessing capabilities if they are used as intended and maintained for optimal cleaning performance. **HPN**

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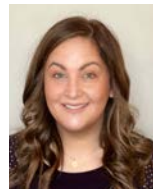
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About the Authors


Manon Laflamme joined the STERIS team in 2017 as the Clinical Education Specialist for Eastern Canada and covers the Ontario, Québec, Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, and Labrador regions. Manon began her career in 1988 at the Ottawa Hospital as a medical device reprocessing technician. Over the 35 years of working in the medical device reprocessing field she thrived as a technician, supervisor, training coordinator, manager, and educator. She worked in a small community hospital and a major healthcare facility. She is MDRT certified through HSPA she is certified Quality Improvement Associate and is certified as a Yellow Belt Six Sigma. Manon is a member of MDRAO and HSPA.



Angela Ritchey joined the STERIS team in 2022 as the Clinical Education Specialist for Nebraska, North Dakota, South Dakota, Wyoming, and Montana. Angela worked in the Sterile Processing Department for more than 14 years as a Tech, Lead, Associate Manager, and most recently as a Market Manager for eight hospitals in the Midwest. She is also an adjunct instructor in the Graduate Nursing program at a healthcare college where she teaches the Essentials of Scholarly Writing. Angela holds a Bachelor of Arts in English from the University of Nebraska-Lincoln and a Master of Arts in English from the University of Nebraska at Omaha. She is certified as a CRCST and CIS and is a member of HSPA, ASQ, SGNA, AORN, and APIC.




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CONTINUING EDUCATION TEST • MARCH 2023**Washer-Disinfector and Cart Washer Racks**

Circle the one correct answer:

- Why do multitier racks come in a variety of shelf numbers?**
 - To accommodate different tray and medical device heights
 - To process complex instrumentation
 - To accommodate low volume facilities
 - To accommodate spray arms
- Which is an example of a specialty rack?**
 - Five tier multi-level rack
 - General purpose rack
 - Robotic-assisted surgical instrument rack
 - Multi-manifold rack
- Which is true of specialty racks?**
 - Provide irrigation or flushing
 - Have specific washer cycles
 - May require specific cleaning chemistries
 - All the above
- Some cart washer/disinfector racks can be used to reprocess.**
 - Sterilization containers
 - Wheelchairs
 - Surgical instruments
 - All of the above
 - A and C
- Which method can prevent shadowing?**
 - Stacking trays
 - Placing lids on trays
 - Disassembling multi-level instrument sets
 - Connecting cannulas to flushing tubes
- When loading racks during high volume times you should.**
 - Skip manual washing
 - Stack easy to clean instruments on top of each other
 - Keep multi-level sets fully assembled
 - Require proper loading and preparation of contents
- How can facilities benefit from using validated racks, cycles, and cleaning chemistries?**
 - Clean simple instrumentation
 - Reduce chemistry usage
 - Maximize cleaning performance for complex instruments
 - None of the above
- When should spray arms be inspected?**
 - Prior to each use
 - Once a day
 - Once a week
 - Never
- What should be considered when using washer indicator tests?**
 - Rotation of racks
 - The time of day
 - The technician
 - Age of the rack
- Routine rack maintenance requires**
 - Keeping maintenance records
 - Inspection
 - Keep a frequent part replacement inventory
 - All of the above

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