

Troubleshooting Washer-Disinfector Performance

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Washer-disinfectors play a pivotal role in ensuring the safe and effective reprocessing of medical devices, but even well-maintained washer-disinfectors can occasionally produce unsatisfactory results. When residual soil or debris is found after a cycle, it can compromise patient safety, delay procedures, and prompt compliance concerns. Understanding the underlying causes—ranging from equipment malfunctions to improper loading techniques—is essential for identifying and resolving these issues efficiently.

Beyond troubleshooting, it's equally important to distinguish between true washer-disinfector performance problems and external factors that may mimic them, such as poor point of use

practices, inadequate manual cleaning, or water quality inconsistencies. Proactive planning, including routine maintenance, staff training, and workflow optimization, can significantly reduce the likelihood of performance failures. This article will guide readers through identifying common causes of residual contamination, differentiating between machine-related and non-machine-related issues, and implementing preventive strategies to maintain consistent washer-disinfector performance.

Common sources of poor equipment performance

Successful cleaning inside a washer-disinfector depends on key mechanical parts functioning properly so that water and detergent touch every

surface of the instruments. Spray arms play a critical role in the washer-disinfector by distributing water and detergent throughout the racks.

Rotating spray arms distribute fluids in multiple directions ensuring full coverage. When spray arms become blocked with organic debris, such as blood or tissue, or inorganic debris, such as pieces of locking clips, broken components, or container tags that were not removed, it can significantly reduce fluid flow and prevent rotation compromising cleaning effectiveness.

Clogged drain screens may slow drainage, causing fluid to remain in the chamber. The residual fluid can potentially recirculate recontaminating instruments with residual cleaning solution or soils. Common

Learning Objectives

1. List reasons for residual soil and debris after a washer-disinfector cycle
2. Distinguish between washer-disinfector performance issues and other causes
3. Prevent washer-disinfector performance issues through planning

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inorganic debris left in the drain screen includes instrument fragments (e.g., broken tips, wires, screws) and dislodged accessories (e.g., broken lock tags). For best performance and safety, the drain screen should be checked and cleaned at least daily, or more often if visibly soiled.

The effectiveness of the washer-disinfector process depends not only on mechanical function but also on *proper cleaning chemistry and cycle choice*. Instrument cleaning chemistries that are utilized in these cycles are specifically formulated to break down and remove organic and inorganic soil from medical devices. If the incorrect detergent is used, or if it is not compatible with the washer-disinfector settings, water temperature, or the type of soil present, residual debris may remain on instruments following the cycle.

Along with choosing the right detergent, selecting the proper cycle is just as important for effective cleaning. If the wrong cycle is used for instance, running a gentle cycle for orthopedic instruments with joints or reamers, it may not provide enough cleaning power, this can leave behind residual soil, especially in areas that are difficult to reach.

Delicate instruments (e.g., ophthalmic, or microsurgical instruments) require gentler spray distribution and low impingement cleaning. Running these instruments in high impingement with forceful sprays and water pressures can bend or misalign fine tips, break off small components, and distort hinges or locking mechanisms. This type of damage may bend hinges preventing

instruments from fully opening, which is necessary for thorough exposure to cleaning action.

Common sources of use errors affecting washer-disinfector performance

Overloading in a washer-disinfector is a major cause for residual soil and debris. When instruments are stacked too close or overlapping it can block the spray arms from reaching all surfaces and limits the mechanical action needed to remove contaminants. This creates areas of shadowing where water and detergent cannot effectively clean, leading to trapped debris, especially in hinges, joints, and between instruments.

Improper placement, such as closed hinged instruments or cannulated instruments without proper fluid flow, prevent contact with cleaning solutions and rinse waters. The medical

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device should be fully opened or taken apart so that all areas are properly exposed to the automated washer-disinfector for thorough cleaning.

Manual cleaning is a critical first step in the decontamination process when reprocessing medical devices. If this step is missed or not done properly, debris and dried blood can remain on instruments even after going through the washer-disinfector cycle.

Lumened instruments are especially vulnerable to retained soil, particularly if allowed to dry before cleaning. Using brushes that are the wrong size, have inappropriate bristle type, or are worn or damaged can result in residual debris

Lesson:

Troubleshooting Washer-Disinfector Performance

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Quiz Answers:

1. B, 2. C, 3. B, 4. D, 5. C, 6. B, 7. B, 8. A, 9. D, 10. A

being left behind. Once dried, blood, protein, and tissue harden, making them much harder to remove in the washer-disinfector.

Deciphering the root cause for washer-disinfector performance

Identifying the root cause of washer-disinfector performance issues requires a systematic approach. Cleaning effectiveness can be compromised long before instruments reach the washer-disinfector—due to poor point-of-use treatment, inadequate manual cleaning, or insufficient supplies.

It can be easy to blame the equipment. While some issues stem directly from the washer-disinfector—such as faulty detergent injection, temperature deviations, or weak spray impingement—others may be misattributed, including improper instrument loading, incorrect detergent selection, or unsuitable cycle choice.

Items to investigate to rule out washer-disinfector issues:

- Spray arm rotation
- Spray clogs
- Drain screen debris
- Cleaning chemistry dosing
- Cleaning chemistry suitability

Items to consider that affect washer-disinfector performance:

- Cleaning cycle selected
- Instrument placement
- Rack loading
- Manual cleaning effectiveness
- Point-of-use treatment procedures
- Appropriate cleaning brushes

Prevent washer-disinfector performance issues

Preventing washer-disinfector performance issues begins with proactive planning that integrates routine monitoring, proper equipment setup, and staff training. One of the most effective strategies is the use of validated cleaning indicators that mimic clinical soil to routinely challenge the cleaning

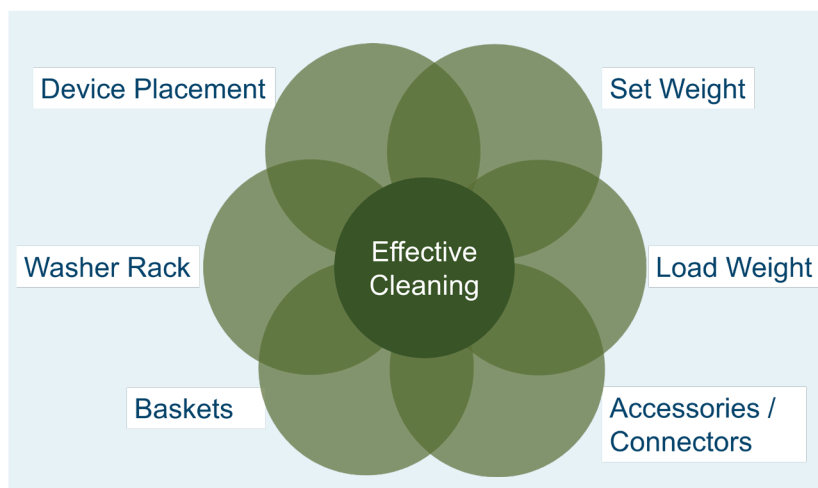


Figure field-begin/> SEQ Figure * ARABIC1: Many factors outside of washer-disinfector function affect cleaning effectiveness.

performance of the washer-disinfector and its racks. Monitoring every rack, rack level, and washer-disinfector cycle used ensures that no part of the washer-disinfector is overlooked, and that cleaning outcomes are uniform across all instrument sets.

To be effective, cleaning Indicators must be sensitive enough to detect failures such as detergent omission or incorrect temperature settings, while remaining fully cleanable under optimal conditions. Cleaning indicators which are designed to be visual and easy to read are ideal for daily use in Sterile Processing Departments (SPDs).

Remote service monitoring adds another layer of protection by tracking key parameters such as water temperature and detergent levels and alerting teams to maintenance needs. Daily maintenance tasks—like cleaning the drain screen, checking spray arms, and verifying detergent levels—should follow OEM instructions for use and be documented for regulatory compliance.

Equally important is ensuring staff are trained and can demonstrate competence in using these tools and maintaining equipment. Competency-based training helps prevent errors and ensures consistent cleaning outcomes.

When combined with remote diagnostics and rack-level monitoring, these strategies enable real-time issue detection and support a robust preventive maintenance program that enhances compliance, minimizes downtime, and strengthens infection control.

Closing the loop on washer-disinfector performance

Ensuring the consistent performance of washer-disinfectors is critical to

Competency-based training helps prevent errors and ensures consistent cleaning outcomes.

safe and effective instrument reprocessing. Visible residue or debris on instruments is a clear sign that the cleaning process has failed—whether due to equipment issues, improper loading, or missed manual cleaning steps. By identifying the root causes and distinguishing between equipment-related and process-related errors, healthcare teams can implement targeted corrective actions.

Proactive strategies such as validated cleaning indicators, remote service monitoring, and strict adherence to daily maintenance protocols empower facilities to maintain high standards in sterile processing. By adhering to established procedures and ensuring equipment operates as designed, facilities can consistently achieve high standards of cleanliness, instilling confidence in the reprocessing workflow and ensuring instruments are safe for patient care. **HPN**

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Troubleshooting Washer-Disinfector Performance - Practice Quiz

1. **Why might debris still be present on instruments after a washer-disinfector cycle?**
 - A. The sterilizer did not reach the correct temperature.
 - B. The instruments were not manually cleaned before the washer-disinfector cycle.
 - C. The washer-disinfector is designed to sterilize not clean.
 - D. Staff should air-dry the Instruments before proper loading into the washer-disinfector.
2. **Why is proper instrument placement in the washer-disinfector important?**
 - A. To allow for faster sterilization
 - B. To prevent items from getting lost
 - C. To ensure effective spray arm coverage
 - D. To keep the washer-disinfector looking organized
3. **What could happen if the spray arms in the washer-disinfector are blocked or not rotating properly?**
 - A. Instruments will dry faster.
 - B. It will significantly reduce water and detergent flow.
 - C. The washer-disinfector will use less water.
 - D. Cleaning will be more efficient.
4. **What is a washer-disinfector performance issue rather than an external cause?**
 - A. Improper instrument loading
 - B. Incorrect cycle selection
 - C. Inadequate detergent choice
 - D. Malfunctioning detergent injection
5. **What is a common mistake when evaluating washer-disinfector performance?**
 - A. Using cleaning indicators
 - B. Focusing on cleaning outcomes
 - C. Assuming one cycle fits all instruments
 - D. Monitoring each rack and cycle
6. **What is one benefit of using validated cleaning indicators?**
 - A. They eliminate the need for manual cleaning
 - B. They simulate real-world soiling conditions
 - C. They replace OEM maintenance tasks
 - D. They reduce the need for staff training
7. **Which daily maintenance task is recommended by OEMs for washer-disinfectors?**
 - A. Replacing cleaning indicators
 - B. Cleaning the drain screen
 - C. Running extra cycles
 - D. Reprocessing unused instruments
8. **Why is monitoring each washer-disinfector rack important in washer-disinfector performance?**
 - A. To ensure uniform cleaning outcomes across all instrument sets
 - B. To check water pressure
 - C. To speed up the thermal disinfection process
 - D. To avoid using cleaning indicators
9. **What is one key benefit of integrating remote diagnostics with washer-disinfector monitoring?**
 - A. It eliminates the need for OEM maintenance
 - B. It reduces the need for documentation
 - C. It replaces the need for cleaning indicators
 - D. It allows facilities to identify performance issues in real time
10. **What should be considered when selecting a cleaning indicator for washer-disinfector performance testing?**
 - A. Its sensitivity to detect failures like detergent omission
 - B. Its ability to clean all instruments regardless of cycles
 - C. Its compatibility with visual inspection only
 - D. Its cost-effectiveness over performance