

Introduction: Brushing is a major part of the cleaning process and is one of the most critical steps. Brushing requires the mechanics of friction and fluidics to clean an instrument ¹. It is essential to ensure that the correct type of brush is selected for the devices being cleaned. The concept of using the proper brush for the task at hand is supported throughout national standards, professional society guidelines, and recommendations and is found in the Instructions for Use (IFU) provided by the Original Equipment Manufacturer (OEM).

Examples of information and guidance provided include:

1. AAMI ST79 states to "clean lumened items with a brush of the recommended type, size (diameter and length), and bristle type and material, flush the lumen with the recommended cleaning solution, and then rinse the lumen, preferably with treated water (unless otherwise specified in the manufacturer's written IFU)." ²
2. AAMI ST79 also states to "use brushes and other cleaning implements intended for use on medical devices; brushes should be checked for visible soil and damage following each use and should be frequently cleaned and disinfected. If the device manufacturer specifies a specific brush or cleaning implement, the brush or an equivalent should be used." ²
3. Furthermore, ST79 states that "brushes and other cleaning implements should be cleaned and decontaminated as recommended by the manufacturer at least daily or, preferably, after each use. Whenever possible, single-use brushes and other cleaning implements should be used and then disposed of afterward." ²
4. According to AAMI ST91, "Clean all valve cylinders, openings, and forceps elevator housings with a cleaning brush of the length, width, and material designated in the endoscope manufacturer's written IFU." ³
5. The Food and Drug Administration (FDA) states to "have available appropriate size channel cleaning brushes."
 - a. FDA classifies endoscope cleaning brushes as Class I medical devices and as an accessory to a cleaning brush.⁴
6. The CDC and HICPAC (Rutala and Weber, 2008) suggest to "Use cleaning brushes appropriate for the size of the endoscope channel or port (e.g., bristles should contact surfaces). Cleaning items (e.g., brushes, cloth) should be disposable or, if they are not disposable, they should be thoroughly cleaned and either high-level disinfected or sterilized after each use." ¹
7. AORN, in their practice guidelines, asserts that "All accessible channels and the distal end of the endoscope should be cleaned with a cleaning brush of the length, width, and material recommended by the endoscope manufacturer." ⁵
8. SGNA states to "Have available appropriate size channel cleaning brushes; Use a brush size compatible with each channel; Endoscope cleaning brushes should be the appropriate size that assures contact with the surface (Peterson et al., 2011; Rutala et al., 2008)." ⁶

9. In an Olympus IFU, it is stated that for cleaning brushes and cleaning wire in the following reprocessing instructions, Olympus uses the terms "appropriate brush" and "appropriate surface brush."⁷

Background: Reprocessing staff should pick the appropriate size and type of brush or multiple brushes for the task of cleaning an instrument. To identify the correct brush, read the IFU from the manufacturer for each device to be cleaned. Depending on when the FDA cleared the instrument, the IFU for that device may be written very simply, such as stating to "use a soft bristle brush." Or it may be written very specifically, such as by stating to use a specific brush like an Orthopedic shaver brush. It is crucial to pick the correct brush regardless of whether it is the original OEM brush or one from a third-party manufacturer that has been demonstrated as equivalent or appropriate.

There are ASTM test methods that specify processes for brush manufacturers to perform to demonstrate that their generic brush is equivalent to the brush that is specified in the IFU from the OEM. Therefore, the brush's ability to clean and be stated as equivalent to the OER brush is based on actual test data, not just the manufacturer's wording.

In a peer-reviewed article by Basile et al., it is stated these ASTM test methods provide a means to quantitate the performance of brushes. They allow objective comparisons of similar designs from different sources and different designs of a brush to clean the same device. Quantifiable methods have now been developed for comparing two brushes that have been designed to clean the same target area(s). Thus, an OEM brush can be compared to another brush manufacturer's brush, and if the results of the data show they are equivalent they can be used in place of the OEM brush.⁸

The specific ASTM standards to reference as are as follows:

- F3275-19 - Standard guide for using a force tester to evaluate the performance of a brush part designed to clean the internal channel of a medical device
- F3276-19 – Standard guide for using a force tester to assess the performance of a brush part intended to clean the external surface of a medical device

Process of Selecting a Brush: Processing staff should have a method to ensure that they have selected the correct brush and that they are competent on how to use it. There is a simple method available to select brushes for the manual cleaning process, which can be used for any instrument found in the processing area. First, identify the type of surfaces to be cleaned on the instrument, such as external surfaces and their condition (rough, smooth, serrated, etc.). Next, identify the internal surfaces of the item, such as the diameter and length of the lumen and if there are open or dead-end lumens. Then, review the IFU for that specific instrument for guidance on the specifications of the brush. Finally, pick the correct type brush for the job from your inventory, ensuring that it matches the requirements for the proper size, surface type, single-use or reusable, etc.

Brushing Technique: Ensure that the brushing is performed with the proper technique. Consult both the instrument and brush IFU for guidance on recommended brushing methods. Several methods can be employed for brushing. They are:

1. Brush, flush, brush, inspect
2. Pull through method
3. Push through method
4. Other techniques as instructed by the brush manufacturer

General Brushing Considerations:

- The brush diameter must be greater than or equal to the diameter of the inner lumen being brushed.
- The brush bristles must fully extend and contact the surface of the inner lumen.
- The brush should move easily in and out of the instrument lumen.
- Tapered or irregular lumens may require the use of different brushes with different brush diameters.
- Brushing is a cleaning activity and is, therefore, to be performed only in the decontamination area, not on the clean or assembly side.
- Do not use a brush with metal bristles or any other types of bristle which can scratch and damage the instrument unless the IFU from the OEM states that a metal brush can be used.
- Only use brushes designated as being manufactured specifically for the purpose reprocessing of medical devices.

Determining Care and Handling Requirements of the Brush: For both pre- and post-cleaning of the instrument, consider proper storage of the brushes. For reusable brushes, ensure that they are cleaned and disinfected or sterilized at the appropriate intervals as recommended by the brush manufacturer.

Conclusion: Following the simple steps outlined in this document will allow staff to meet the IFU from the OEM while learning proper brushing techniques used in cleaning instruments.

Healthmark brushes are clinically relevant with evidence-based information, showing that they can be used to clean instruments. Many Healthmark brushes have demonstrated equivalence through the cited ASTM test methods. Healthmark has both peer and non-peer-reviewed articles along with webinars, podcasts, and other educational programs to support reprocessing staff in understanding the proper brushing process for instruments. Healthmark's goal is to provide the correct brushes for cleaning instruments while partnering with healthcare facilities to meet all needs.

In general, the standards and professional society guidelines referenced in this document do not state that the brush used to clean the instrument has to be the exact model number that is listed in the IFU. But, if not using that model, then it is the responsibility of the healthcare facility to ensure that the brush that is being used matches those specifications listed in the instrument IFU. Selecting the correct brush becomes even more important in that scenario. This document gives guidance on how to do that correctly and discusses the ASTM test methods that a manufacturer should use to demonstrate the equivalence of their brush.

References:

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8. Basile, R. J., Kulkarni, K., Clark, S. (2019). New ASTM Test Methods to Evaluate Performance of Medical Device Cleaning Brushes, *PANAMERICAN FORUM*, 1/2019. Pgs. 25-27.
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