

FILTER EFFICIENCY OF THE AESCULAP FLOW50 INSUFFLATOR REGARDING THE COVID-19 CRISIS

Dear valued customer,

SAGES and EAES have released recommendations concerning the use of laparoscopy during the current COVID-19 pandemic. The guidance entitled "[SAGES AND EAES RECOMMENDATIONS REGARDING SURGICAL RESPONSE TO COVID-19 CRISIS](#)" recommends to consider the possibility of viral contamination during laparoscopic surgery.¹ As a consequence SAGES and EAES further recommends the use of smoke evacuation devices with a suction and filtration system to help filter released particles during laparoscopic procedures.²

According to the current research the size of the SARS-CoV-2 virus is approximately 0.06 – 0.14 μm .³

B. Braun is pleased to offer the [AESCULAP® Flow50 Insufflator](#) with the following safety features relevant to the COVID-19 crisis:

■ SURGICAL SMOKE EVACUATION

This function uses an integrated vacuum pump, that extracts the surgical smoke using a single-use tube set and a surgical smoke evacuation filter cassette. The surgical smoke evacuation can be done at 6 l/min or 12 l/min suction rate.

The filter efficiency of this filter cassette for a particle size of 0,051 micron is 99,999993%. Smaller and larger particles are separated with a filter efficiency of >99,999993%. The filter meets the specification of an ULPA U17 filter (99,999995%) up to a flow rate of 9 l/min. At a flow rate of 12 l/min, the filter efficiency is 99,999993%.

■ AUTOMATIC OVERPRESSURE VENTING

In the case of an overpressure in the pneumoperitoneum of the patient, the insufflator will release the excess gas pressure through the insufflation tube set and out through a venting valve inside the unit. Before the gas enters the insufflator, it needs to pass through the filter located in the insufflation tube set.

For our single use heating tube set (PG096SU) a HEPA filter is used. This HEPA filter is able to filter particles down to 0,1 micron with an efficiency of at least 99,95%. The filtration efficiency for virus-contaminated droplets and aerosols down to 2,9 microns is at least >99,99998%.

For our single use tube set (PG012) and the reusable heating tube set (PG097 in combination with PG019) a HEPA filter is used as well. Tests have shown that these filters serve as a complete barrier to contaminated body fluids and have been validated to removal a range of clinically relevant bacteria and viruses, including, but not limited to Influenza A virus (H1N1: 0.08–0.12 μm), HIV (0.08 μm), Hepatitis C virus (0.8 μm), Adenovirus (0.07 μm), Cytomegalovirus (0.1 μm), Orthomyxovirus (0.12 μm) and Mycobacterium tuberculosis (1.0 μm).

Please note the filter efficiency of the above-mentioned products was not tested for the current situation and claims about specific viruses can't be made at this time.

Controlling and closing leakages e.g. at port sides or leaking trocars is an important additional measure to reduce escaping and potentially contaminated particles from the cavity. Studies have shown that the current best practice

for mitigating an infection transmission during a laparoscopic procedure is to use a multi-layered approach, which includes proper ventilation, appropriate PPE and smoke evacuation devices with a suction and filtration system (among other things).⁴ However, please note that there is no proven method to entirely reduce such exposure.

Please contact your local representative if you have questions about the above-referenced laparoscopic devices.

REFERENCES

1. <https://www.sages.org/recommendations-surgical-response-covid-19/>, 29.03.2020.
2. <https://www.sages.org/resources-smoke-gas-evacuation-during-open-laparoscopic-endoscopic-procedures/>, 29.03.2020.
3. China Novel Coronavirus Investigating and Research Team. Zhu N, Zhang D, Wang W1, Li X, Yang B, Song J, Zhao X, Huang B, Shi W, Lu R, Niu P, Zhan F, Ma X, Wang D, Xu W, Wu G, Gao GF, Tan W. N Engl J Med. 2020 Feb 20;382(8):727-733.
4. R S Parsa, N J Dirig, I N Eck, W K Payne III. Surgical Smoke and the Orthopedic Implications. The Internet Journal of Orthopedic Surgery. 2015 Volume 24 Number 1.