Dear Valued Customer,

During the current COVID-19 pandemic the following recommendations of SAGES and EAES concerning the use of laparoscopy have been released:

**SAGES and EAES Recommendations Regarding Surgical Response to COVID-19 Crisis**

“[...] For procedures deemed urgent and necessary, it is strongly recommended that consideration be given to the possibility of viral contamination during laparoscopy. Such risk should be individually weighted against the benefit of laparoscopy for a patient’s health and recovery. While it is unknown whether coronavirus shares these properties, it has been established that other viruses can be released during laparoscopy with carbon dioxide. Erring on the side of safety would warrant treating the coronavirus as exhibiting a similar property. **For laparoscopic procedures, use of devices to filter released CO2 for aerosolized particles should be strongly considered. [...]**”


**KARL STORZ Portfolio**

KARL STORZ is offering single-use smoke evacuation filters (ULPA filters) as well as devices for smoke evacuation management.

**Do KARL STORZ filters protect against SARS-CoV-2?**

Test results of the following viruses revealed:

**Smoke Evacuation Filters**

Bacteriophage X174 which has a diameter of about 0.027 µm:

**Filter efficiency of more than 99.999 %** against the challenge tested.¹

HIV-1 which has a diameter of about 0.12 µm:

**Filter efficiency of 100 %** against the challenge tested.³

The size of the Corona virus SARS-CoV-2 is around 0.06 – 0.14 µm.⁴
Due to the existing test results with other viruses and the size of SARS-CoV-2, we assume that our filters do also protect against SARS-CoV-2. But of course, no tests with real SARS-CoV-2 have ever been performed.

It is important to understand that not the smallest particles are most difficult to trap by the filter. The particles most difficult to trap have a size of 0.1 – 0.3 µm (Most Penetrating Particle Size).\(^5\)

For this reason, also particles of the size 0.1 – 0.3 µm were used to test and proof the high filter efficiency of KARL STORZ filters. For the detailed test results, please see annex.\(^6,7\)

**KARL STORZ Single-Use Smoke Evacuation Filters**

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**031110-10**

Smoke Evacuation Filter Set, with 50 cm tube with male Luer-Lock, sterile, for single use, package of 10, for use with trocars with Luer-Lock connectors

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**031111-10**

Smoke Evacuation Filter, for single use, unsterile, package of 10, for use with S-PILOT and 031447-10 tubing.

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**KARL STORZ Smoke Evacuation Management**

KARL STORZ offers with the S-PILOT\(^\text{®}\) a modular solution for smoke evacuation management. Its modular design offers a smooth, cost-efficient and customizable integration into existing systems. It can be used in combination with a third-party suction system or the central suction.

An automatic activation of suction is possible with KARL STORZ high-frequency surgical units but also with third-party equipment. Individual control via footswitch is possible at any time. Please contact your local KARL STORZ representative for a solution that meets your individual needs or for any further questions.
UP501S1
S-PILOT®, including footswitch, power supply 100 - 240 VAC, 50/60 Hz, consisting of:
UP 501 S-PILOT®
20014130 One-Pedal Footswitch
031447-03 Tubing Set Suction, sterile, for single use, package of 3
20090170 SCB Connecting Cable, length 100 cm

031447-10
Tubing Set, for the suctioning of smoke, gas and fluid, with connector for second suction tube, sterile, for single use, package of 10, for use with KARL STORZ S-PILOT® (LAP)

Stay safe and healthy,
KARL STORZ Endoscopy-America, Inc.

Annex

KARL STORZ Single-Use Smoke Evacuation Filters - Detailed Test Results

The filter efficiency of KARL STORZ ULPA filters was tested by the most common tests with microorganism known as “Virus Filtration Efficiency (VFE)” and “Bacterial Filtration Efficiency (BFE)”. These kinds of tests are considered to be most similar to clinical scenarios. A challenge aerosol with a mean particle size of 3 +/- 0.3 µm and a virus bacteriophage ϕX174 of 0.027 µm (at VFE) or bacteria Staphylococcus aureus (at BFE) was used. Test results confirmed a filter efficiency of more than 99.999 %.

The Most Penetrating Particle Size is typically in a range of 0.1 – 0.3 µm. These particles are most difficult to trap by the filter. Therefore, for the non-microbiological testing the test aerosol DEHS (= Di-2-Ethylhexyl-Sebacat) with a size of 0.3 µm was used. A filter efficiency of more than 99.99 % has been achieved.

The size of the Corona virus SARS-CoV-2 is around 0.06 – 0.14 µm.

We need to be aware of the fact that filter efficiency is not automatically higher for larger particles. This is due to the Most Penetrating Particle Size. Larger and smaller particles are trapped more likely due to physical effects. Because of the physical effect “diffusion”, particles smaller than 0.1 µm are easier to be filtered. These particles are affected by the Brownian movement and do not follow the flow line.
References:

7. Nelson Laboratories Inc., Salt Lake City, UT, USA: “Sodium chloride aerosol testing of breathing system filters (BSF)” Lab n°: 399951A.1 Amended, Jan. 15, 2008 (internal reference: SAP ID 300000338077)