

Biological safety cabinets

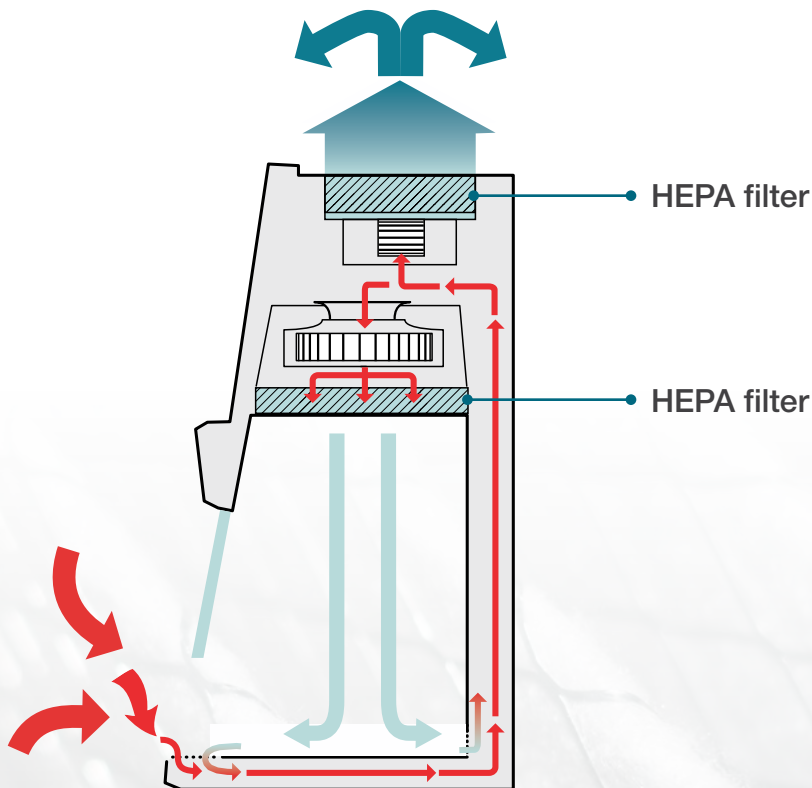
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**Question: How do I extend the filter life of my biological safety cabinet (BSC)?**

**Answer:**

To maximize your filter life, you should optimize air volume, laboratory air quality, size of BSC HEPA filters, BSC motor reserve capacity, and usage.

Traditionally, HEPA filter life for a BSC has been estimated at 5-7 years. However, recent studies and surveys of real-life usage show filter life to be significantly longer due to improved laboratory air quality and revised usage assumptions. The filter life of a Thermo Scientific™ BSC is equal to or exceeds that of a traditional Class II BSC because of its unique design advantages, which ultimately saves the lab significant time and money from decontamination, filter change, and re-certification.



Class II biological safety cabinet – Schematic of airflow system

### Yesterday's approach

Many manufacturers increase only the BSC motor reserve capacity to achieve longer filter life. Using larger motors to achieve longer filter life can have a negative cost and environmental impact because larger motors can consume up to twice the energy of optimized motors. This approach also ignores other equally important variables such as size of HEPA filter, air volume, and usage. In addition, because supply and exhaust HEPA filters are replaced at the same time, the benefits of greater motor reserve capacity could be diminished if one filter loads faster than the other due to an imbalance of airflow, as is often seen in BSCs with single motor design.

### Why Thermo Scientific BSCs?

Thermo Scientific BSC design considers all parameters to increase filter life without sacrificing BSC performance or energy efficiency.

Instead of using higher energy-consuming motors, Thermo Scientific BSCs employ larger HEPA filters with a mini-pleat design that doubles the HEPA media to capture more particles. The supply and exhaust filters are sized for balanced loading to avoid premature replacement. Through these design advantages, Thermo Scientific BSCs are able to achieve 10% longer filter life than some traditional Class II BSCs.

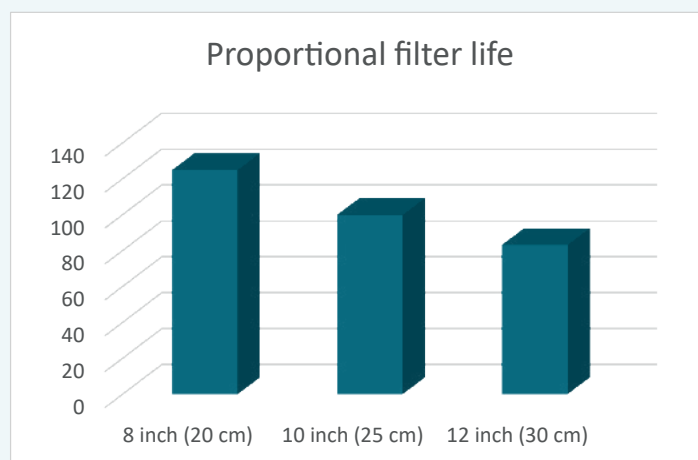
Our BSCs also offer features that reduce the volume of air pushed through the HEPA filters. An 8-inch high work aperture draws 20% less air through the HEPA filters than 10-inch apertures. Thermo Scientific™ Herasafe™ 2030i Biological Safety Cabinets and other models with aerosol tight standby modes essentially eliminate filter loading when in standby.

Thermo Scientific BSCs are equal to or exceed other competitive models in filter life because of their unique design advantages.

### BSC features affecting filter life

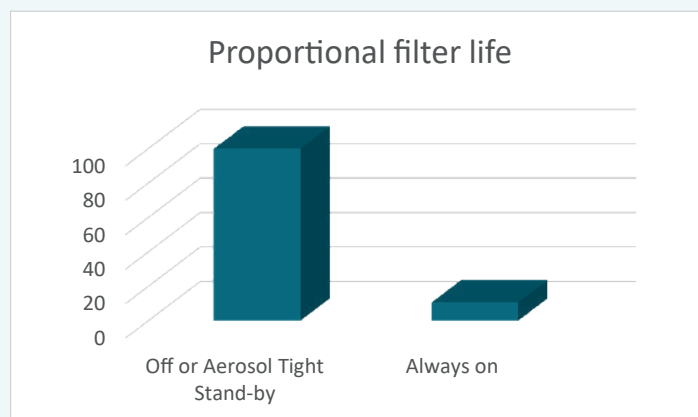
#### Height of window opening

The height of the front work opening is typically either 8 to 10 inches (20 to 25 cm) but can be as much as 12 inches (30 cm). As the volume of inflow air is the greatest source of particles loading the BSC filters, work opening height is inversely proportional to filter life.



#### Non-operational usage

Most BSCs are not used constantly. In a published article, average use at a North American university was approximately 18 hours per week. Whether or not the BSC is off, in an aerosol tight standby mode or fully operational when not in use also affects filter. See the comparison below assuming weekly use at 18 hours.



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