skan

Laboratory fume cupboard Workstation^{evo}

skan.com/puresolutions

e-loop

Together always one step ahead

Set up in **1968** as the trading arm for Scandinavian laboratory equipment – today's SKAN Pure Solutions division – SKAN is now the world's leading supplier of isolators for aseptic applications.

One of our core competencies is the manufacture of process isolators for aseptic pharmaceutical production. One in three vaccines administered is produced in a SKAN isolator.
Our experts can meet even the most complex demands, thanks to research in our in-house laboratories into innovative solutions covering every aspect of isolator technology. Our teams are working on pioneering techniques for hydrogen peroxide decontamination throughout the entire process isolator, including the filling line with all its various components. Scientific papers have been published in a host of journals by the Parental Drug Association (PDA) and the International Society for Pharmaceutical Engineering (ISPE), becoming internationally recognised and referenced master documents.
A comprehensive support programme is available to deliver the best possible customer support throughout the entire product life cycle. This is backed up by a global service network using in-house and external specialists. To guarantee the transfer of knowledge, we provide training for our employees, partners and customers at the SKAN Academy.

We are also able to supply integrated total solutions. Our focus is on horizontal and vertical integration of our systems into building technology, as well as systems in the field of data intelligence and VR/AR and digital twins. We currently employ around 1000 people from over 40 nations. More than half of our employees are based at our headquarters in Allschwil in Switzerland, while the rest are distributed across our subsidiaries in Stein (Switzerland), Germany, Belgium, Italy, Japan and the USA.

SKAN Pure Solutions

The Pure Solutions division supplies workplace solutions for pure air. Whether for decontamination, filtration or protected areas, we have the best systems for guaranteeing effective protection for products, users and the environment. With our many years of experience and innovative approaches, we are continually refining our solutions. This means we can ensure our products and services deliver the added value our customers need, both today and going forward.
Our product range is unique – it embraces applications in a wide variety of sectors and is geared towards the individual needs of our customers.
This know-how, along with our premium-quality service provision, has made us leaders in the industry.

Laboratory fume cupboard
Workstation[evo]

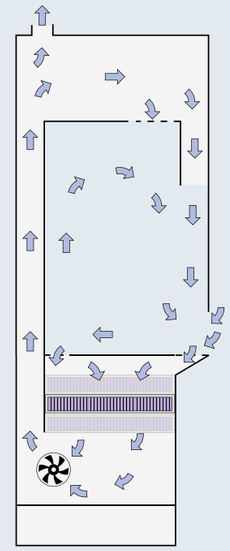
The ecological evolution

What you need

- Personal and environmental protection against chemicals, solvent fumes and active substances
- Low extract airflow, limited building duct capacity
- Energy-saving and resource-saving
- Nothing deposited in the outgoing airflow ducts

Our solution

The Workstation[evo] is a fume cupboard with partial airflow recirculation and an integrated filter system (activated carbon/HEPA).
E-loop technology achieves some of the lowest airflow consumption levels of any fume cupboard (approx. 60% less fresh and outgoing airflow volumes), which contributes to significant energy savings. The proven partial airflow recirculation system also boasts useful features which improve occupational safety. Operators can, for instance, use filter type detection to determine whether the filter installed is suitable for the application. Monitoring filter saturation eliminates the risk of a saturated filter being used. An optional electric front sash comes with a motion sensor. If the system is not in use, the front sash closes automatically and standby mode is activated.
The materials employed and the overall construction are designed to make cleaning as easy as possible.



How it works

Air is drawn in from the environment through the front opening. An air curtain at the opening prevents contaminants from escaping.
Fresh air mixes with contaminated air from the work zone and is extracted directly to the filters through the two air intake grilles on the work surface.
Cleaned and free of contaminants, all extract airflow first goes to the internal ventilation unit and then to the top section of the workstation. There the airflow is split: half is extracted into the building's extract airflow, the other half is returned to the work zone.
Extract airflow from the workspace is filtered constantly in both normal and reduced operating modes. Contaminants are therefore removed efficiently directly at source without contaminating the building's extract airflow.

Tested
Designed and tested to SN EN 14175-3

Applications

- Laboratories and research
- Biotech and life sciences
- Hospital and pharmacy

Additional products and options

- Combined activated carbon/HEPA H14 filters
- SafeChange filter system
- Media fittings
- Electric sash
- Motion sensor
- Glass or plastic work surface

e-loop Technology

The “e” in e-loop stands for economic as well as ecological. The SKAN design combines a host of technical innovations to achieve the partial airflow recirculation principle seen in the Workstation[evo], saving on both cost and resources.
Compared to conventional fume cupboards, there is no noticeable difference when working in terms of safety and ergonomics. The main differences are found in the unique airflow pattern and special filter technology.
Compared to conventional fume cupboards, the amount of outgoing airflow and energy used are reduced several times over. This makes better use of the building, saves on costs and is sustainable. Besides simpler requirements for the building infrastructure (such as potentially fewer intake and extract airflow regulator lines in the laboratory), investment costs can be lower all thanks to the Workstation[evo]. Furthermore, less room intake and extract airflow needs to be processed, which saves enormous operating costs and conserves resources over the long term.

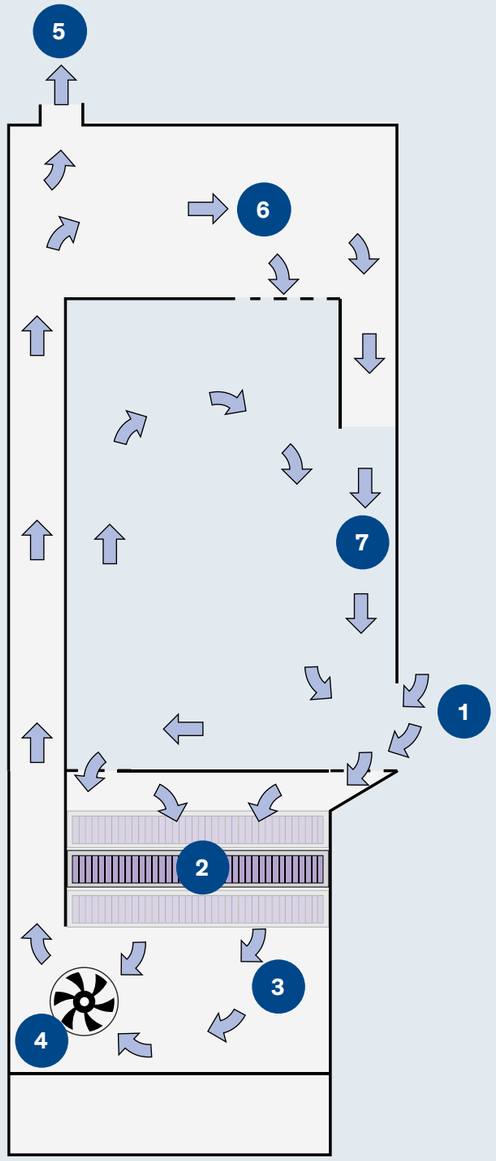
Fresh air supply

Fresh air enters the work chamber through the open sash. Contaminants in the work zone are carried along by the airflow, which is generated by a vacuum fan, and directed to the filters by suction at the front and rear surfaces. Contaminants are captured directly at source, captured in the filters and trapped. The surface suction is very effective; solvent fumes are efficiently extracted beneath the work surface. Filtering the outgoing airflow means contaminants are not deposited in the building ventilation ducts.

Outgoing airflow

Compared to conventional fume cupboards, the Workstation[evo] requires 60% lower outgoing airflow. The outgoing airflow stays constant regardless of whether the sash is open or closed. The extract airflow is set at a constant rate using a built-in flow rate regulator. Opening or closing the sash does not affect the room airflow balance in any way. This means that the laboratory intake and extract airflows do not have to be regulated separately, no matter how many workstations are in operation in any given room.

1 Intake airflow
2 Filter cartridges
3 Purified extract airflow
4 Ventilator
5 Purified outgoing airflow
6 Purified circulation airflow
7 Front air curtain



Model	Workstation[evo] 120	Workstation[evo] 150	Workstation[evo] 180
Outgoing airflow*	230 m³/h	240 m³/h	260 m³/h

*The air volumes are to be understood as guide values. In reality, these values are strongly influenced by the environment and the room.

Operation

Handling and settings

The LCD touchscreen significantly improves usability. The most important settings (such as lighting levels in the workspace) can be viewed and adjusted at a glance, thanks to clear navigation menus.
Eco mode makes even more energy savings.

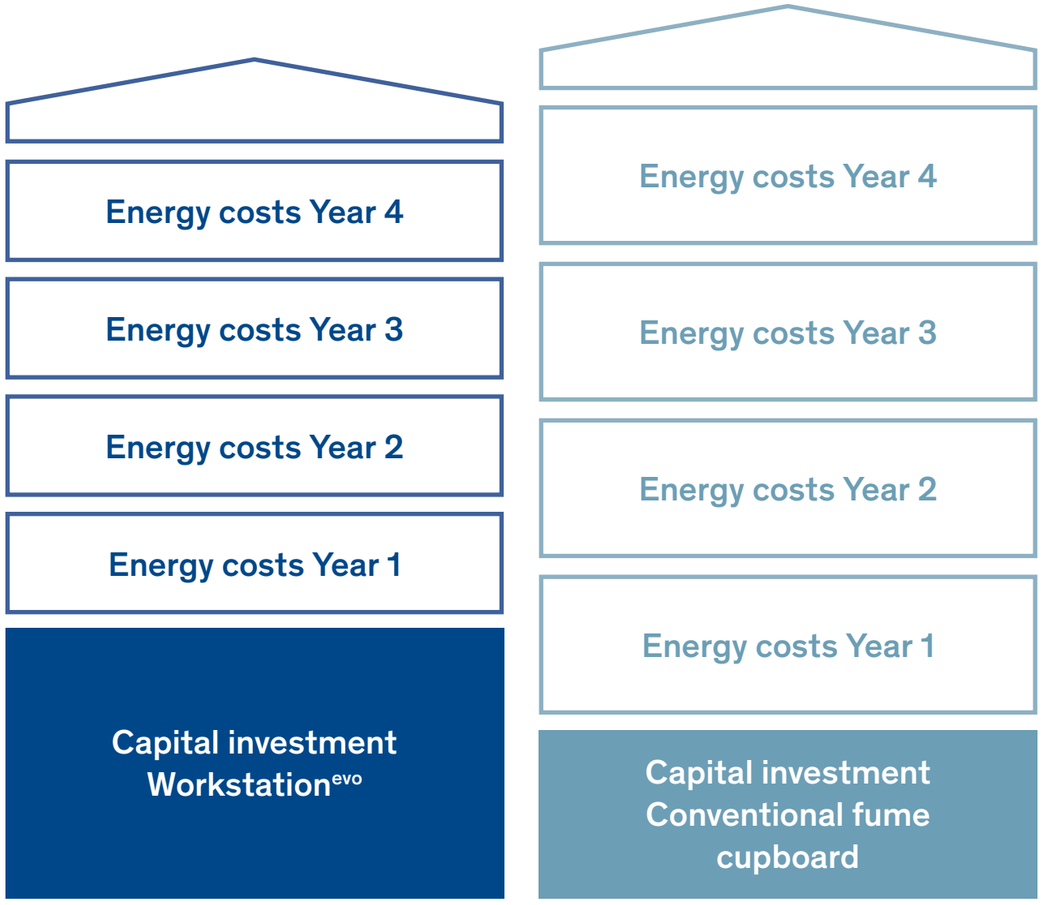
Operating mode: Sash open, light on, fan running at normal speed.

Eco mode 1 (with optional electric sash): Sash closed, light on, fan running at normal speed.

Eco mode 2 (with optional electric sash): Sash closed, light off, fan running at slow speed.

Energy costs

A detailed calculation of running costs reveals the huge potential for energy cost savings. Compared to a conventional fume cupboard, annual running costs are up to 70% lower. This makes it easy to write off capital investment over the short term.



Area of application

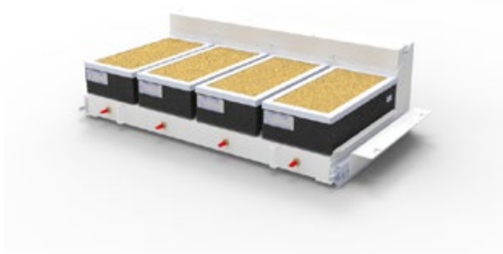
Integrated suction and filter technology mean the Workstation[evo] boasts a very wide range of applications, and safety levels when working with active or unknown substances are substantially improved. To remove contamination properly, it is essential to check the work planned for the system carefully and specify the correct filters.

Application	Suitability Workstation[evo]	Recommendation
Analytical (organic) chemistry	Suitable	Workstation[evo] Recommended filter: Activated carbon
Weighing involving active substances (Micro and semi-micro range)	Suitable	Workstation[evo] Recommended filter: HEPA, activated carbon, SafeChange
Chemical research	Suitable	Workstation[evo] Recommended filter: Activated carbon
Synthesising chemical substances	Suitable	Workstation[evo] Recommended filter: Activated carbon
Highly odorous substances	Suitable	Workstation[evo] Recommended filter: Activated carbon + HEPA
Small preparative-scale quantities of toxic substances (such as chlorine)	Suitable	Workstation[evo] Recommended filter: Activated carbon
Pathology applications	Suitable	Workstation[evo] Recommended filter: Activated carbon
Radioactive substances (depending on type of isotope, radiation, dose)	Potentially suitable	Special fume cupboard with activated carbon and fine dust filter required
Preparative-scale synthesis, pilot plant	Potentially suitable	Special fume cupboard
Acid or corrosive gases	Potentially suitable	Closed system
Hydrogen	Not authorised	Hydrogenation laboratory
Releasing large amounts of heat (evaporation of strong inorganic acids, for instance)	Not suitable	Special fume cupboard/evaporation fume cupboard
Hydrofluoric acid, perchloric acid	Not suitable	Special fume cupboard
Larger quantities of highly toxic chemicals (such as hydrogen cyanide)	Not suitable	Special fume cupboard
Larger quantities of inorganic acids, ammonia, etc.	Not suitable	Special fume cupboard
Personal and product protection when dealing with micro-organisms	Not authorised	Microbiology safety cabinet

Filters and filter combinations

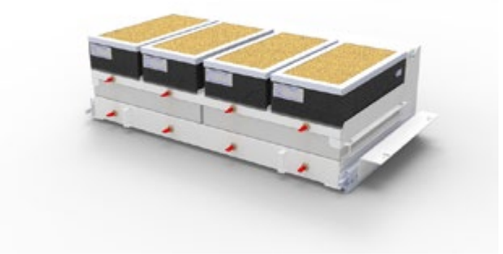
Activated carbon filter

Solvent fumes and odours are efficiently captured at source. Activated carbon filters are available as standard for the following applications: general organic compounds, acids, aldehydes. The activated carbon mixture can also be tailored to individual requirements.



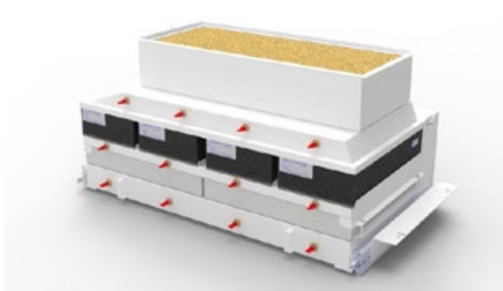
Combined HEPA and activated carbon filter

The combination of activated carbon and HEPA filter provides double the level of security.



SafeChange combined filter

The activated carbon filter is sandwiched between two HEPA filter stages. A BagOut system is used to prevent carry-over during the filter change. The first HEPA filter can be removed from the system with minimal contamination.



Overview filter

The following is an overview of the individual filter types used in the workstation[evo].
The filter package is customised according to the customer's application.

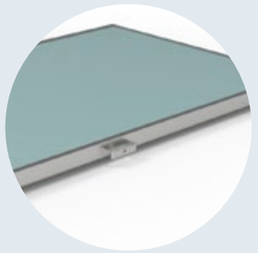
Filter	Resistance
Activated carbon filter AC	General organic compounds (iodine compounds, solvents, odours, etc.)
Activated carbon filter ACID	Acids (and general organic substances)
Activated carbon filter FORM	Aldehydes (and general organic substances)
HEPA 14	> 99.995 % of particles and suspended matter

Features

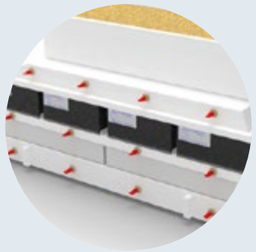
Outgoing airflow
Up to 60% lower outgoing airflow, saving energy consumption and running costs.

Electric sliding front glass (optional)
With movement sensors for eco mode and anti-crush protection.

Extraction at the source
Efficient surface extraction, even of heavy fumes.



Work surfaces
Stainless steel, glass or plastic, depending on application.



Filter cartridge
There is a whole variety of filters and filter combinations to choose from.

e-loop
For sustainable, cost-effective operation.

Touch screen
For simple, intuitive operation.

Filter saturation
The display shows the saturation level of the activated carbon filter.

Filter type
Displaying the filter type in use provides additional security: is the filter compatible with this application?

Media fittings
For substances or additional airflow connections.

Accessories and options

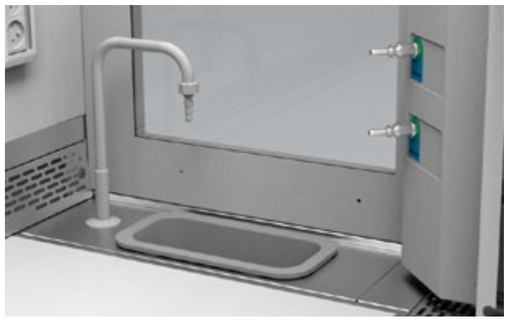
It has always been a strength of SKAN Pure Solutions that systems – whether laboratory fume cupboards or safety cabinets – can be configured and adapted to suit specific user requirements.
So Workstation[evo] accessories offer plenty of options.

Media fittings

Fittings for various media are available, such as nitrogen, oxygen, vacuum, compressed air. All media valves are provided with a standardised colour code.
Fine pressure fittings for different control control ranges are also available as a special option. Thanks to an epoxy coating, the valves are fittings are particularly resistant.

Colding water

The cooling water module consists of the regulator in the media column, the sink and the outlet arch in the working area. The regulator is used to switch the cooling water flow on and off and to dosing the cooling water flow.

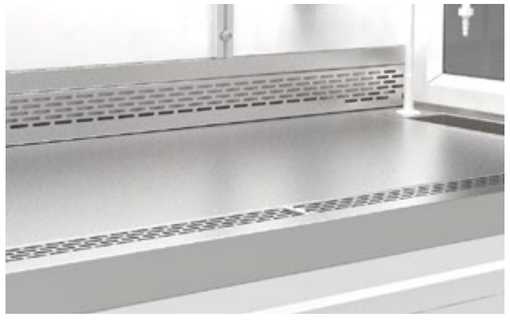


Power sockets

Besides the external sockets on the control panel, it is also possible to fit sockets internally. This makes it easier to place equipment in the workspace.

Work surfaces

Stainless steel, glass or plastic, depending on requirements. Side panels are available in PET or glass.



Electric sliding front glass

The electric front sash with built-in motion sensor for standby mode has built-in infrared crush/pinch protection.

Standards and occupational health

Testing according to SN EN 14175

The design of the Workstation[evo] is based on the SN EN 14175 standard. This sets out standard criteria for testing the performance of fume cupboards. Fume cupboards should therefore meet the following basic criteria:

- Contaminants should not escape into the room from the fume cupboard (filter retention capacity)
- Contaminants should be removed efficiently in order to avoid a hazardous atmosphere in the fume cupboard (air exchange capacity)
- The sash should protect the user from splashes and splinters.

In terms of energy savings, the Workstation[evo] far exceeds the requirements of the standard.
This means that the laboratory intake and extract airflows are not regulated separately, no matter how many Workstations are in operation in any given room.

The practical containment test, developed by SKAN

The innovative "SKAN conttest" determines the amount of pollutants that escape froma a half-open systen and thus provides information about the level of occupational safety of laboratory fume hoods.
The test dynamically simulates a user's body with typical movements. Installations and equipment within the fume hood are taken into account.
The new outbreak test has been completely newly developed by SKAN and is therefore difficult to compare with existing test methods.
In a series of tests, the comparability with the SF6 tracer gas test for laboratory fume hoods according to the EN 14175-3 standard was confirmed and validated (Validation report available on request).

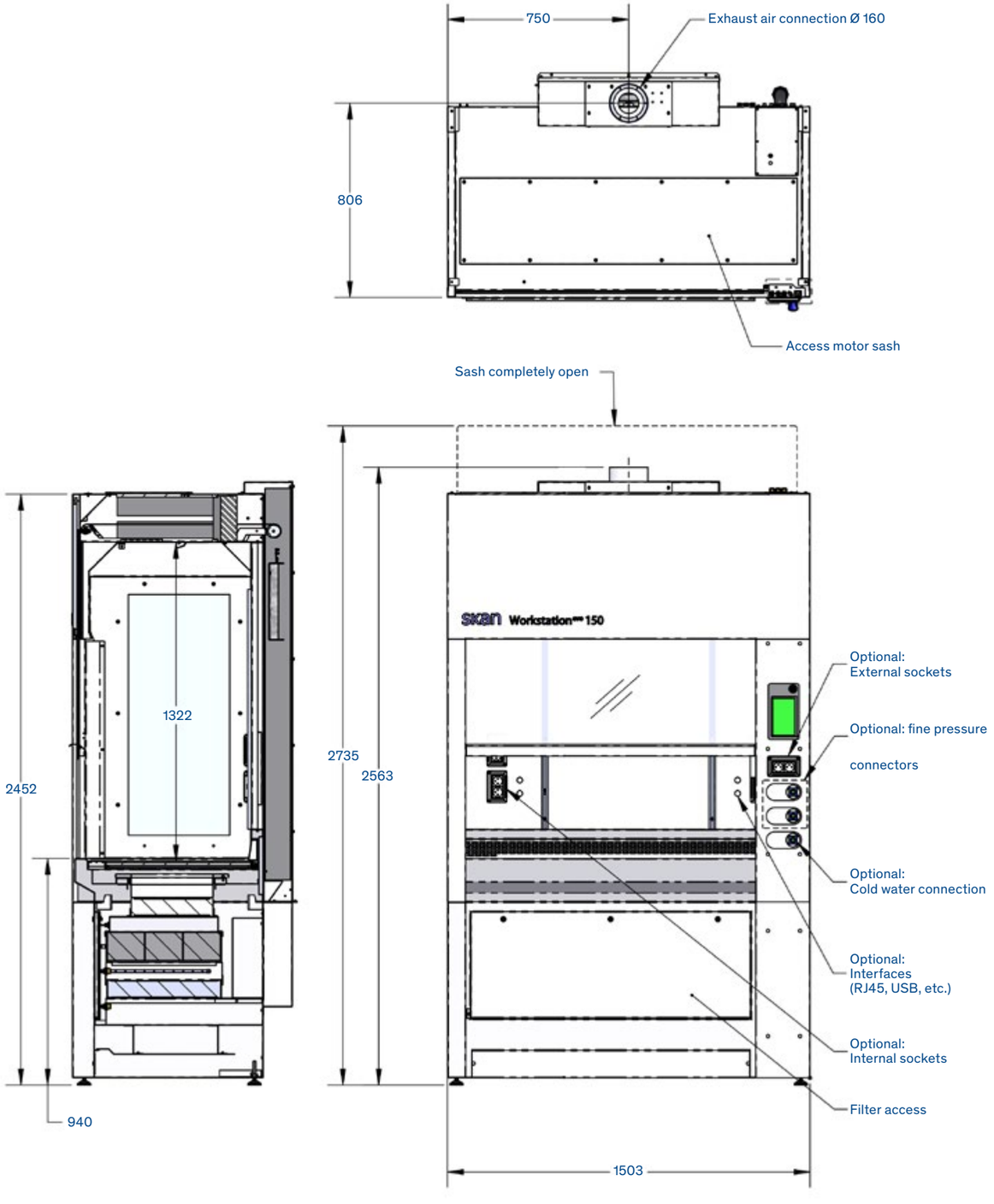
Technical data

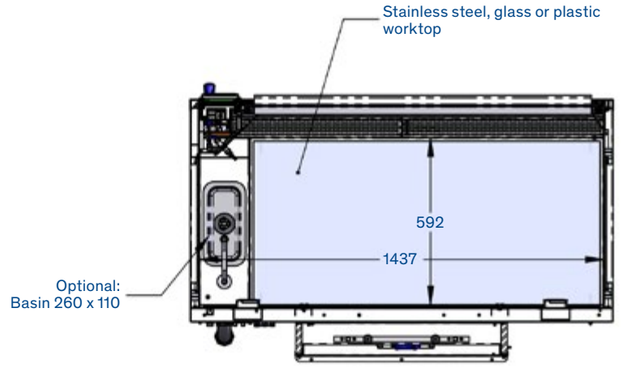
Type	Workstation[evo] 120	Workstation[evo] 150	Workstation[evo] 180
Total width	1203 mm	1503 mm	1803 mm
Total depth without connection ports	945 mm	945 mm	945 mm
Total height without outgoing airflow connectors	2452 mm	2452 mm	2452 mm
Total height with outgoing airflow connectors	2563 mm	2563 mm	2563 mm
Total height with sash open	2735 mm	2735 mm	2735 mm
Workspace width	1137 mm	1437 mm	1737 mm
Workspace depth	592 mm	592 mm	592 mm
Workspace height	1322 mm	1322 mm	1322 mm
Working surface height	940 mm	940 mm	940 mm
Weight	ca. 580 kg	ca. 724 kg	ca. 869 kg
Total airflow volume*	419 m^3/h	528 m^3/h	598 m^3/h
Outgoing airflow volume*	230 m^3/h	240 m^3/h	260 m^3/h
Circulation airflow volume*	189 m^3/h	288 m^3/h	338 m^3/h
Outgoing airflow connections	NW 160	NW 160	NW 160
Power consumption (operating mode)	0,23 kW	0,25 kW	0,27 kW
Packing dimensions (W× H× D)	1360 × 2080 × 1140 mm + 1360 × 1070 × 1090 mm	1660 × 2080 × 1140 mm + 1660 × 1070 × 1090 mm	1960 × 2080 × 1140 mm + 1960 × 1070 × 1090 mm
Smallest dimension for insertion +/- 5 mm (W×H×D)**	1203 × 1692× 792 mm + 1203 × 758,5× 792 mm	1503 × 1692 × 792 mm + 1503 × 758,5 × 792 mm	1803 × 1692 × 792 mm + 1803 × 758,5 × 792 mm

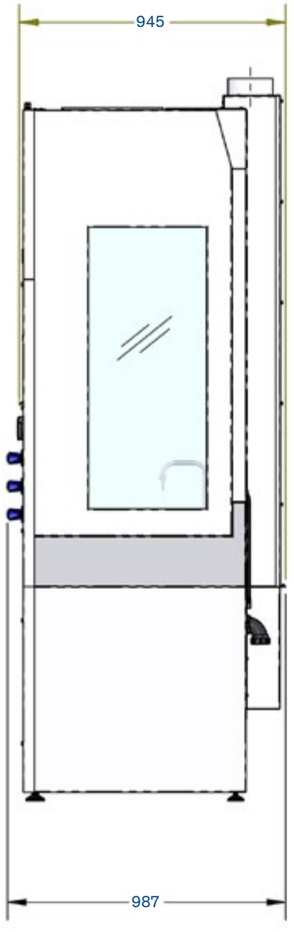
*The air volumes are to be understood as guide values. In reality, these values are strongly influenced by the environment and the room.
** To achieve these dimensions, various parts (such as fans, fittings, drains, levelling feet) must be dismantled. The cost of dismantling will be invoiced.

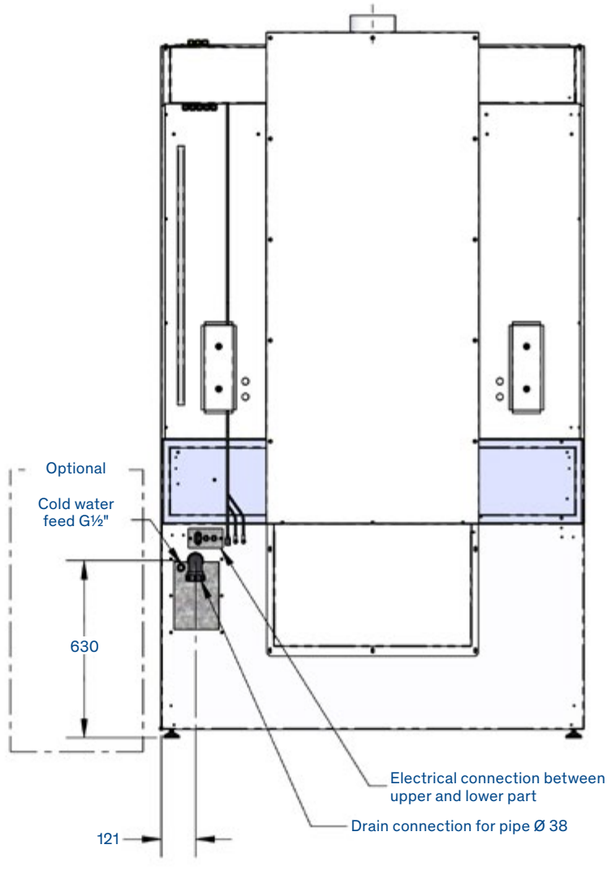
Drawing/Layouts

Workstation^{evo} 150 - all dimensions in mm.









Installation

The most important points for a smooth installation process are listed below. This information is intended to support the ventilation technician, the plumbing fitter and the electrician in their work. Of course, this information does not replace a conversation in person and exact explanations before starting. Please get in touch if there are any queries.

Instructions for the installation

Before each installation, SKAN will check the route on side. Please note the following aspects for prior clarification:

- ⟶ Dimensions of the Workstation^{evo} according to the technical data on page 17.
- ⟶ Door widths of > 800 mm (+/- 5 mm) can be passed, on the condition of the removal of some parts (additional work will be charged)
- ⟶ Particular attention must be paid to suspended lighting and exhaust air pipes.

Weight of the largest item:

- ⟶ Workstation^{evo} 120: ca. 209 kg
- ⟶ Workstation^{evo} 150: ca. 254 kg
- ⟶ Workstation^{evo} 180: ca. 280 kg

Airflow connections and regulation of outgoing airflow into the building network are done on site. Utility supply connections must also be done on site.

Ventilation technology

Connection for outgoing airflow:

- ⟶ Workstation^{evo} 120: Connection NW 160, up to 230 m^3/h vacuum*
- ⟶ Workstation^{evo} 150: Connection NW 160, up to 240 m^3/h vacuum*
- ⟶ Workstation^{evo} 180: Connection NW 160, up to 260 m^3/h vacuum*

Minimal vacuum source:

- ⟶ -40 Pa

The connection must be fitted with an adjustable valve or a volume regulator to regulate the amount of outgoing airflow; the valve and bends must be located at a distance of at least 40 cm from the system's outgoing airflow connection in order not to disturb outgoing airflow monitoring. Connection with hose or sleeve, flexible (allow at least 30 mm flexible length).

Waste water and utility supplies

Waste water connection:

- ⟶ See drawings/layouts

Water, special gases, vacuum:

- ⟶ R3/8 ID cyl.

Supply from the ceiling, connection on site preferred. Port connections supplied by SKAN.

Electrical

Connection:

- ⟶ 1x 230 V, 50 Hz, single phase power socket type T13, fused 16 A. Within a radius of 2 m around the unit.
- ⟶ An additional external power connection is required for each plug splitter in the workspace. This is regardless of whether the plug splitter has one or two sockets.

Power connection:

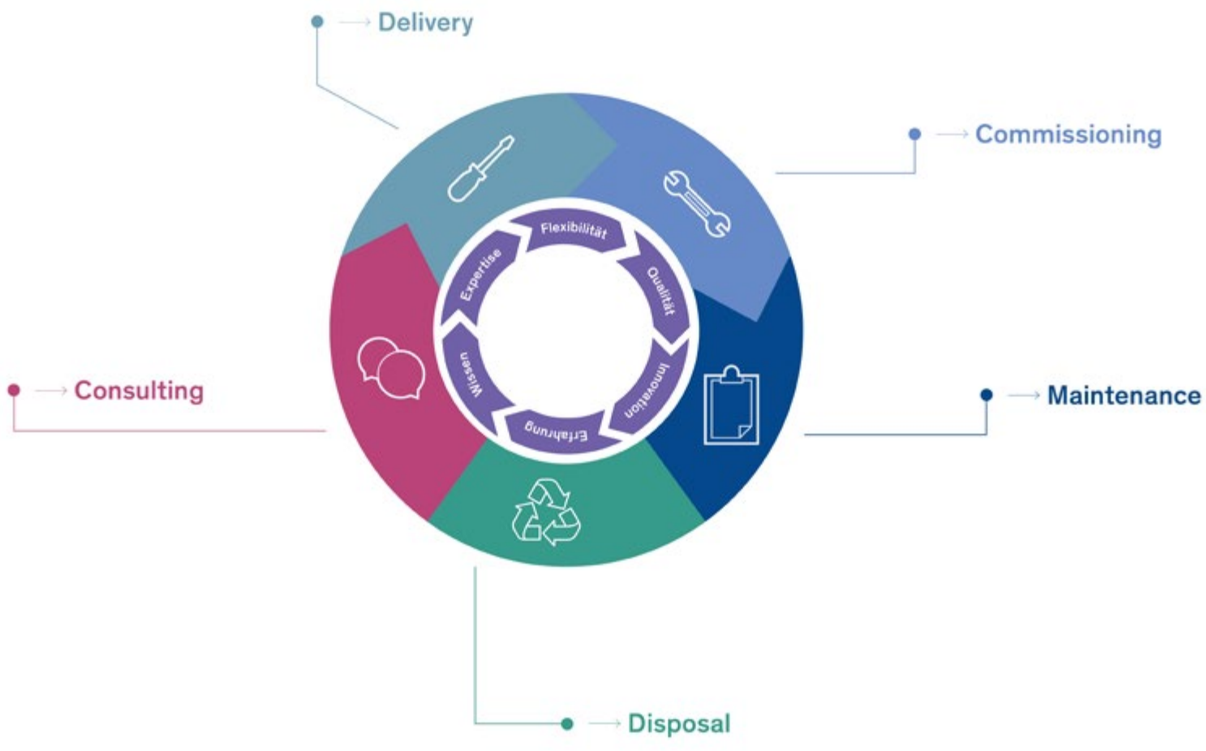
- ⟶ Ca. 0.15 kW
  For ventilation, light and monitoring (with no plug splitters).

*The air volumes are to be understood as guide values. In reality, these values are strongly influenced by the environment and the room.

360° service for complete safety

With their expertise and practical experience, SKAN's highly trained specialists make sure the job is carried out smoothly. If anything unexpected happens, they will find a solution.
We go the famous extra mile: because it's important to us to offer an extensive range of services and innovation, we not only meet, but exceed the customer's expectations.

SKAN service hotline: +41 61 485 45 55



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