Spetec

Laminar Flow Systems

Operating Instructions

Operating Instructions

Thank you for your trust in the Spetec clean room systems! Your chosen system is ideally suited for use in industry and research.

Below you find instructions on the proper and value-preserving use of your system. We also provide you with information on servicing, maintaining and repairing your Spetec system.

Content

Environmental Compatibility

Spetec clean room systems comply with the RoHS directives and guidelines as amended.
(RoHS = Restriction of Hazardous Substances)

Disposal Number:

DE 66147005

Safety

IMPORTANT **Please be sure to read this!**

Please read all instructions carefully before using the clean room for the first time.

The instructions help you to use the equipment properly and point to possible hazards.

All warranty claims are void when damages are caused by the non-observance of these operating instructions. Spetec also does not assume any liability for such damages.

CAUTION **Safety Instructions**

1. Before starting up the equipment, ascertain that the supply voltage is identical to the voltage designation on the rating plate.
2. Connect the equipment only to a power outlet with protective earthing conductor.
3. Never reach into moving parts of the equipment.
4. Pull out the mains plug before replacing the fuse. Use the here mentioned types of fuses exclusively.

Safety of the Clean Room Cell

The top of the clean room cell is not laid out to carry a person. Do not step on the clean room cell cover.

Retrofitting or modifying the clean room cell is **permitted only after the written approval** by Spetec.

General Information and Equipment Use

General Information

If used properly your clean room system does not constitute any kind of health hazard. The clean room consists of engineered electronic devices, which must be treated with the customary caution and care.

Government safety organisations and/or trade cooperatives have established accident prevention regulations for the use of electrical equipment and production means. Commercial organisations must comply with these regulations.

Disregarding the here mentioned instructions or using the equipment for purposes other than the intended use may lead to damages or the destruction of the clean room. It may further compromise the safety of the equipment operator. The plug-in connection serves as the cut-off device.

Please use the provided mains connection cable exclusively. In the unlikely event of a speed control error, Spetec does not assume liability for equipment, which is connected either in the clean room or connected to it.

Environmental Conditions

Do not exceed the maximum input values as stated in the technical specifications.

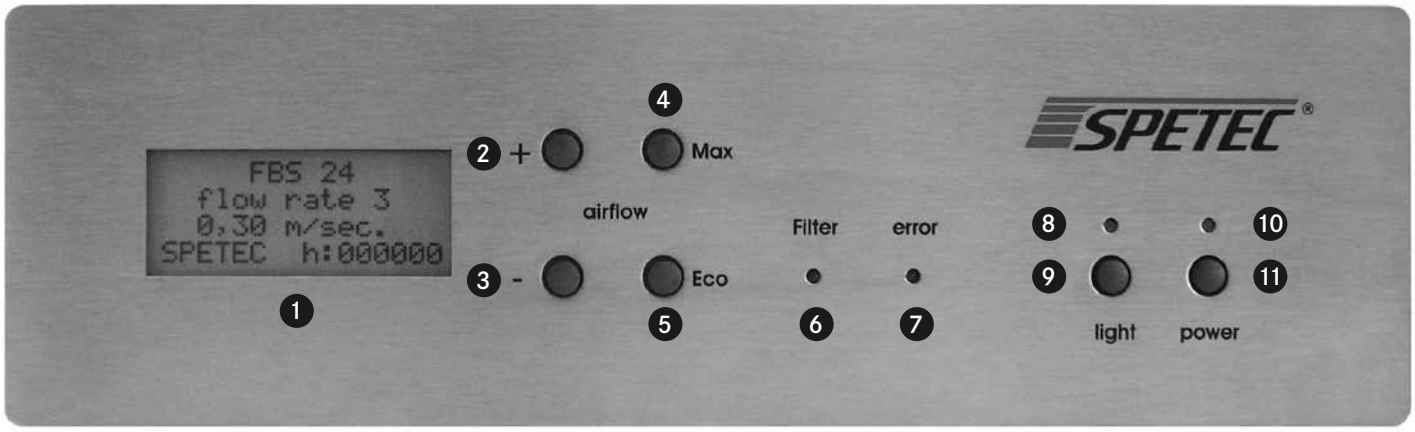
Lightning Arrester

Direct or nearby lightning strikes may lead to the destruction or malfunction of electrical/electronic devices. Spetec does not assume liability for lightning damages.

Operating the Clean Room

All Series

Front Control Panel

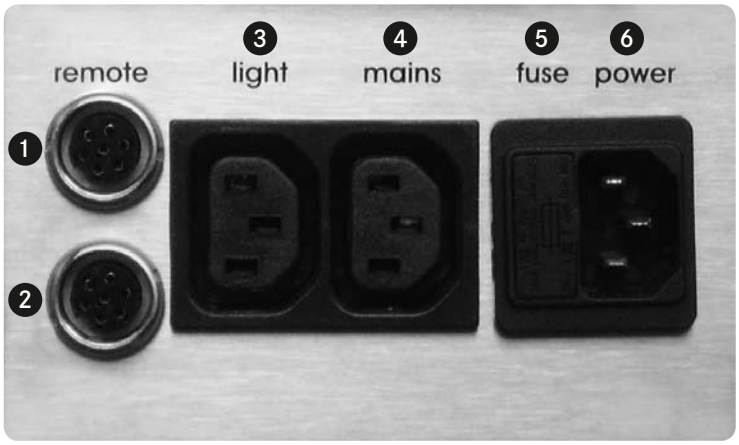


1. 4-digit LCD display
   - Type designation
   - Speed level
   - Flow rate display
   - Operating hour display
2. Flow rate up
3. Flow rate down
4. Maximum flow rate
5. Minimum flow rate
6. LED on: Change filter
7. LED on: malfunction/error
8. LED on: the lights are on
9. Push button: Lighting ON/OFF
10. LED on: Mains power on
11. Push button: Mains power ON/OFF

CAUTION **Safety Instruction**

Pull the mains plug before opening the device!

Rear of the Equipment



1. Controls
2. Controls
3. Light output connected
4. Mains output connected
5. Device fuse
6. Power supply

PBS Series

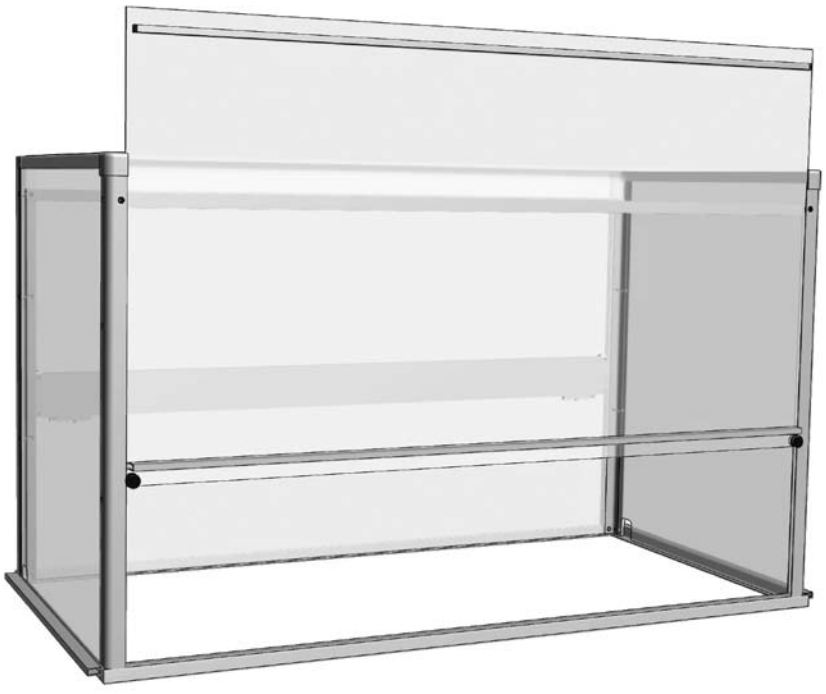
The protective box is meant for the dust-protected storage of items. The box consists of acrylic glass panes and plastic-coated stainless steel parts. The protective box is therefore resistant to acidic vapours.

A counterweight in the rear of the box ensures that the sliding front door of the box remains open in every position.

Die PBS series have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
PBS 24	678 x 440 x 800 (1150)	26
PBS 37	678 x 650 x 800 (1150)	33
PBS 56	983 x 650 x 800 (1150)	39
PBS 75	1288 x 650 x 800 (1150)	45
PBS 93	1593 x 650 x 800 (1150)	51
PBS 112	1898 x 650 x 800 (1150)	57

open door



FMS Series

You may suspend the Spetec laminar flow module from the ceiling, over a table top or work place. The module may however also be used in combination with a machine. The device works as a clean air shower and features an H14 filter to provide an ISO class 5 clean room atmosphere.

Technical Specifications

Supply voltage:	230V AC
Frequency:	50/60 Hz
Maximum Power Consumption:	
FMS 24 – FMS 56:	120W
FMS 75 – FMS 112:	240W
Safety Margin:	
FMS 24 – FMS 56:	1.60 at*
FMS 75 – FMS 112:	3.15 at*

* technical atmosphere = kgf/cm²

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of filters as well as wear and tear parts

Please contact Spetec in the event the controls or the electronic equipment do not work properly.

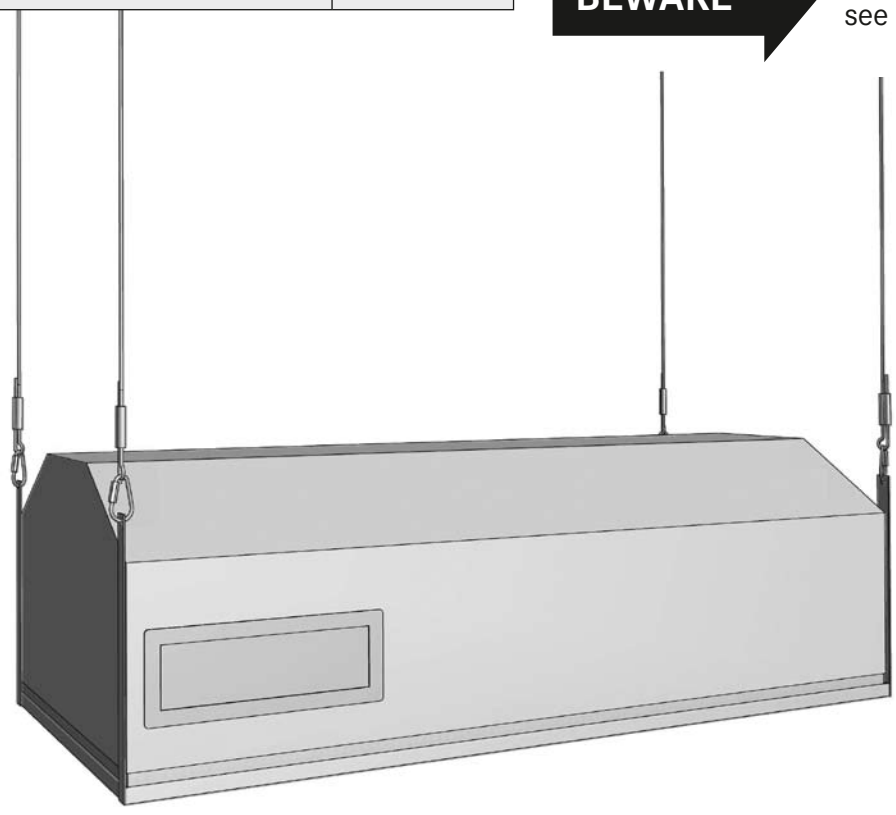
FMS series models have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
FMS 24	626 x 412 x 420	22
FMS 37	626 x 622 x 420	29
FMS 56	931 x 622 x 420	33
FMS 75	1136 x 622 x 420	42
FMS 93	1541 x 622 x 420	47
FMS 112	1846 x 622 x 420	52

BEWARE

For the bearing load please see the load table.

4 Suspension points, 1 at each corner



FBS Series

The Spetec FBS series of laminar flow boxes are built to keep items safely under clean room conditions. The boxes also serve as hoods for work under clean room conditions. The laminar (vortex-free) air stream creates an invisible air curtain, which separates the clean room air inside the box from the ambient atmosphere. This makes it possible to work under clean room conditions even though the door of the laminar flow box may be open.

FBS series models have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
FBS 24	650 x 440 x 1210	45
FBS 37	650 x 650 x 1210	57
FBS 56	955 x 650 x 1210	64
FBS 75	1260 x 650 x 1210	74
FBS 93	1565 x 650 x 1210	81
FBS 112	1870 x 650 x 1210	89

Technical Specifications

Supply voltage:	230V AC
Frequency:	50/60 Hz
Maximum Power Consumption:	
FBS 24 – FBS 56:	120W
FBS 75 – FBS 112:	240W
Safety Margin:	
FBS 24 – FBS 56:	1.60 at*
FBS 75 – FBS 112:	3.15 at*

* technical atmosphere = kgf/cm²

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of filters as well as wear and tear parts

Please contact Spetec in the event the controls or the electronic equipment do not work properly.

CAUTION **Safety Instructions**

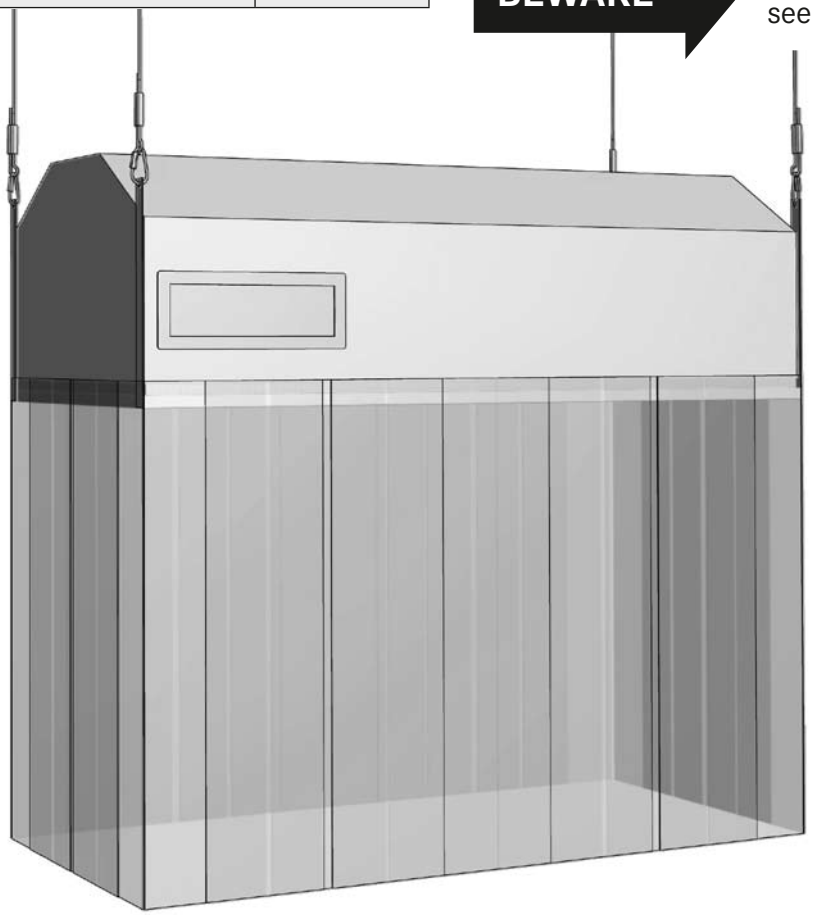
FBS-V-Serie

The Spetec FBS-V laminar flow systems are variations of the FBS series models. In the FBS-V series, the acrylic glass panes of the box are replaced with curtains of PVC slats (slat wall panels). The slats of these curtains overlap on both sides. This prevents ambient air from penetrating the PVC curtain in case there is an air movement or persons pass by the clean room cell.

Spetec will adjust the length of the PVC slat walls to your specifications. The standard slat length is 2,000 mm (78.74″). The guide markings make it quite easy to install the slats.

FBS-V series models have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
FBS-V 24	638 x 424	48
FBS-V 37	638 x 632	59
FBS-V 56	943 x 632	67
FBS-V 75	1148 x 632	77
FBS-V 93	1553 x 632	85
FBS-V 112	1858 x 632	93



Technical Specifications

Supply voltage:	230V AC
Frequency:	50/60 Hz
Maximum Power Consumption:	
FBS-V 24 – FBS-V 56:	120W
FBS-V 75 – FBS-V 112:	240W
Safety Margin:	
FBS-V 24 – FBS-V 56:	1.60 at*
FBS-V 75 – FBS-V 112:	3.15 at*

* technical atmosphere = kgf/cm²

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of filters as well as wear and tear parts

Please contact Spetec in the event the controls or the electronic equipment do not work properly.

BEWARE

For the bearing load please see the load table.

4 Suspension points, 1 at each corner

EFBS Series

The EFBS series models of Spetec laminar flow boxes provide clean room conditions for items and devices, which themselves generate pollutants or dirt. The laterally mounted suction device is connected to a telescoping arm (optional). This arm is positioned exactly over the spot where the pollutants are generated. The suction device is acid-proof. This allows it to suction off aggressive vapours without problem. A pipe connects the suction device to the building exhaust system.

EFBS series models have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
EFBS 24	825 x 440 x 1210	52
EFBS 37	825 x 650 x 1210	64
EFBS 56	1130 x 650 x 1210	71
EFBS 75	1435 x 650 x 1210	81
EFBS 93	1740 x 650 x 1210	88
EFBS 112	2045 x 650 x 1210	96

Technical Specifications

Suction:
brushless DC motor (electronically commutated motor [ECM])

Supply voltage:	230V AC
Frequency:	50/60 Hz
Power consumption:	20 W
Safety margin:	1.60 at*
Maximum suction output:	60 m^3/h
Exhaust vent, diameter:	100 mm

* technical atmosphere = kgf/cm^2

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years except filters as well as wear and tear parts

System:

Supply voltage:	230V AC
AC Frequency:	50/60 Hz

Maximum Power Consumption:

EFBS 24 – EFBS 56:	140W
EFBS 75 – EFBS 112:	260W

Safety Margin:

EFBS 24 – EFBS 56:	1.60 at*
EFBS 75 – EFBS 112:	3.15 at*

* technical atmosphere = kgf/cm^2

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of filters as well as wear and tear parts

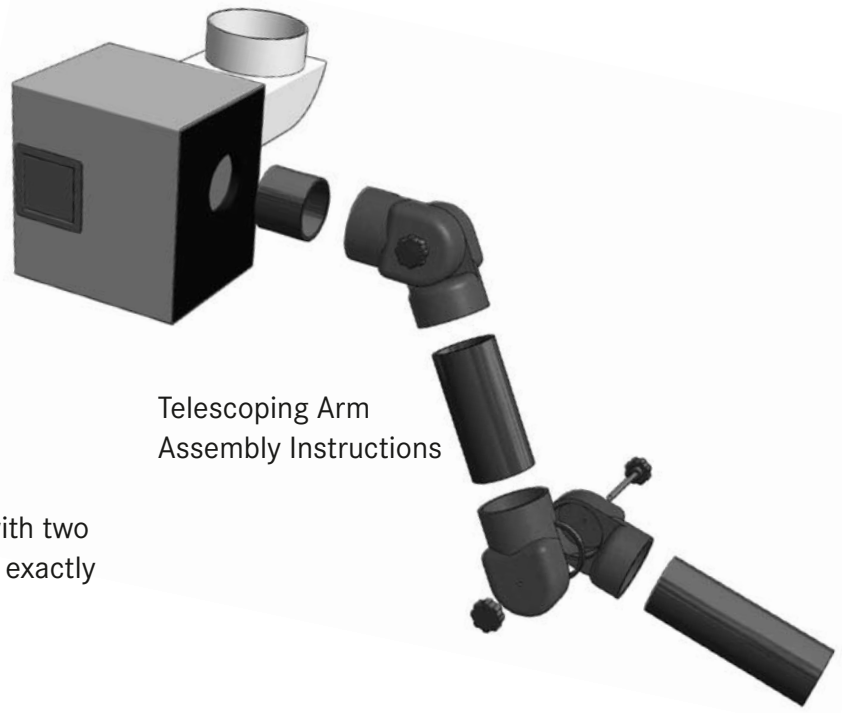
Please contact Spetec in the event the controls or the electronic equipment do not work properly.

Controls:

1. Mains Switch
2. Continuous Suction Adjustment

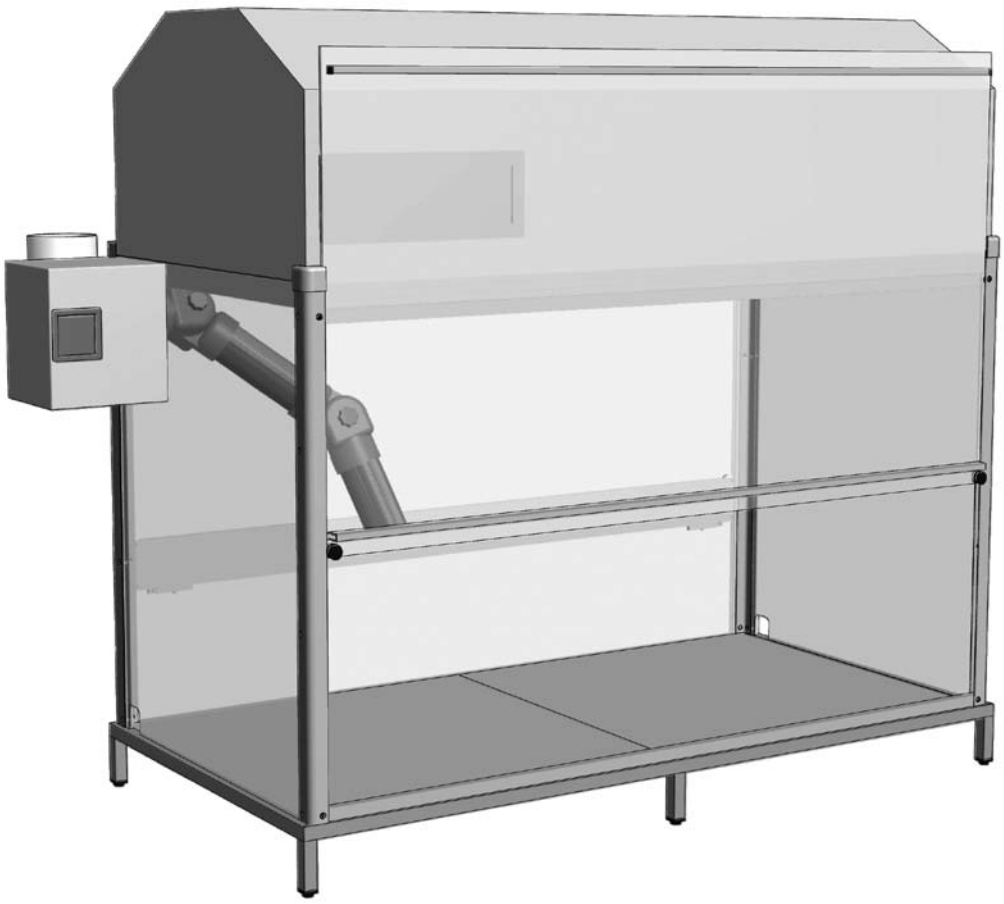
CAUTION **Safety Instructions**

You must comply with all legal provisions and regulations when connecting the acid-proof suction device to the building exhaust system.



Telescoping Arm
Assembly Instructions

Located inside the device is a suction arm with two joints. The joints allow it to position the arm exactly over the place where suction is required.



EFBS-V Series

The Spetec EFBS-V laminar flow systems are variations of the EFBS series models. In the EFBS-V series, the acrylic glass panes of the boxes are replaced with curtains of PVC slats (slat wall panels). The slats of these curtains overlap on both sides. This prevents ambient air from penetrating the PVC curtain in case there is an air movement or persons pass by the clean room cell.

Spetec will adjust the length of the PVC slat walls to your specifications. The standard slat length is 2,000 mm (78.74″).

EFBS-V series models have the following dimensions:

Type	Dimensions W x D x H	Weight (kg)
EFBS-V 24	823 x 424	55
EFBS-V 37	823 x 632	66
EFBS-V 56	1128 x 632	74
EFBS-V 75	1333 x 632	84
EFBS-V 93	1738 x 632	92
EFBS-V 112	2043 x 632	99

Technical Specifications

Suction:
brushless DC motor (electronically commutated motor [ECM])

Supply voltage:	230V AC
Frequency:	50/60 Hz
Power consumption:	20 W
Safety margin:	1.60 at*
Maximum suction output:	60 m^3/h
Exhaust vent, diameter:	100 mm

* technical atmosphere = kgf/cm^2

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years except filters as well as wear and tear parts

System:

Supply voltage:	230V AC
Frequency:	50/60 Hz

Maximum Power Consumption:

EFBS-V 24 – EFBS-V 56:	140W
EFBS-V 75 – EFBS-V 112:	260W

Safety Margin:

EFBS-V 24 – EFBS-V 56:	1.60 at*
EFBS-V 75 – EFBS-V 112:	3.15 at*

* technical atmosphere = kgf/cm^2

Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of filters as well as wear and tear parts

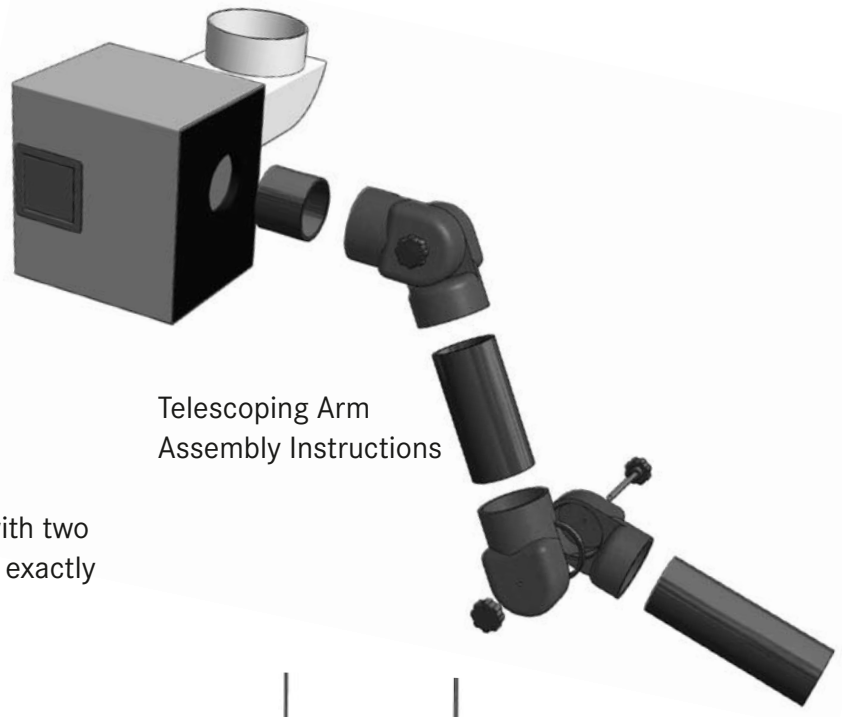
Please contact Spetec in the event the controls or the electronic equipment do not work properly.

Controls:

1. Mains Switch
2. Continuous Suction Output

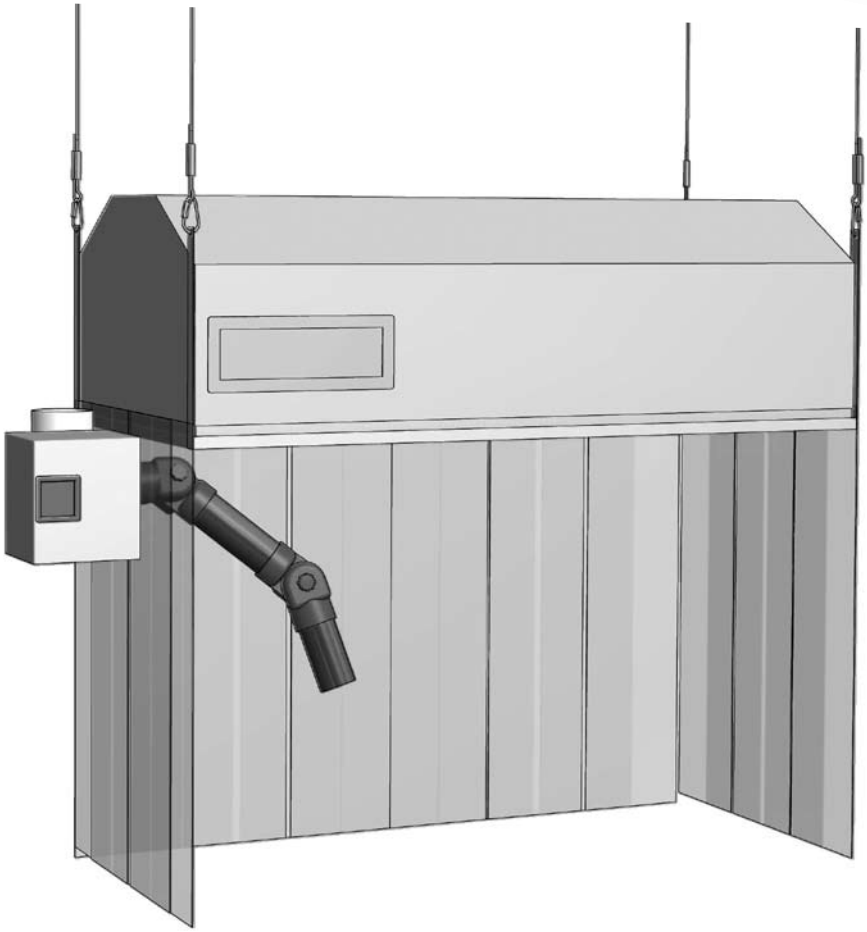
CAUTION **Safety Instructions**

You must comply with all legal provisions and regulations when connecting the acid-proof suction device to the building exhaust system.



Telescoping Arm
Assembly Instructions

Located inside the device is a suction arm with two joints. The joints allow it to position the arm exactly over the place where suction is required.



The markings aid in mounting the slat curtain.

EBS Series

The EBS series devices are strictly table top fume hoods. A flue is laterally mounted on the box and continuously suctions the air out of the EBS box. The fume hood is entirely made of plastic components. The motor is completely enclosed so that even aggressive vapours (acids) can be suctioned off without problems.

EBS series models have the following dimensions:

Type	Dimensions WxDxH	Weight (kg)
EBS 24	838 x 440 x 800 (1150)	33
EBS 37	838 x 650 x 800 (1150)	40
EBS 56	1143 x 650 x 800 (1150)	46
EBS 75	1448 x 650 x 800 (1150)	52
EBS 93	1753 x 650 x 800 (1150)	58
EBS 112	2058 x 650 x 800 (1150)	64

open door

Technical Specifications

Brushless DC motor (electronically commutated motor [ECM])

Supply voltage:	230V AC
Frequency:	50/60 Hz
Power consumption:	20 W
Safety margin:	1.60 at*
Maximum suction output:	60 m^3/h
Exhaust air vent, diameter:	100 mm

* technical atmosphere = kgf/cm^2

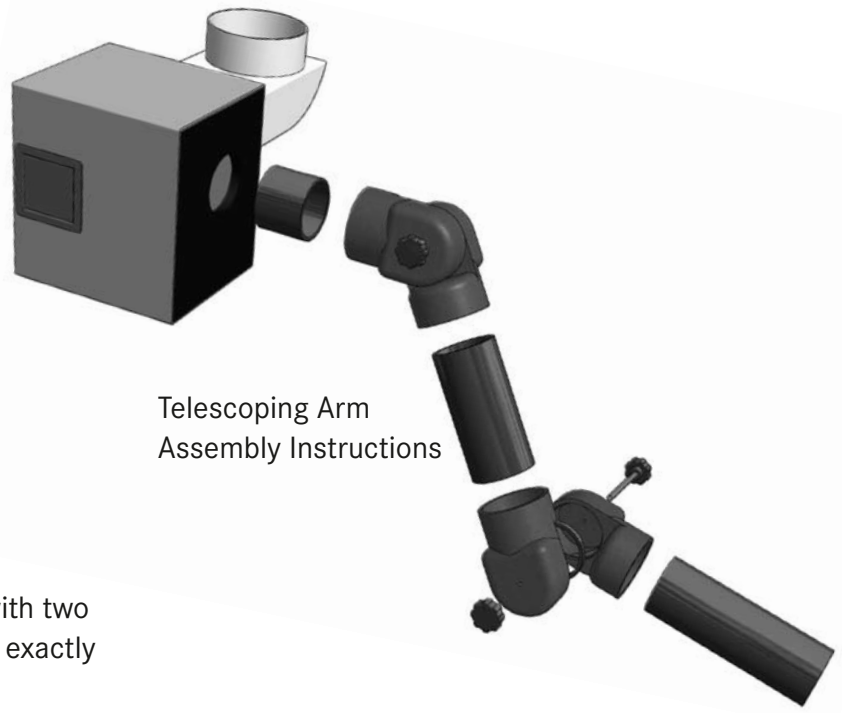
Temperature Range:	+10 to +50 °C
Humidity:	20 to 100 % non-condensing
Warranty Period:	two (2) years with the exception of wear and tear parts

Controls:

1. Mains Power Switch
2. Continuous Suction Rate Adjustment

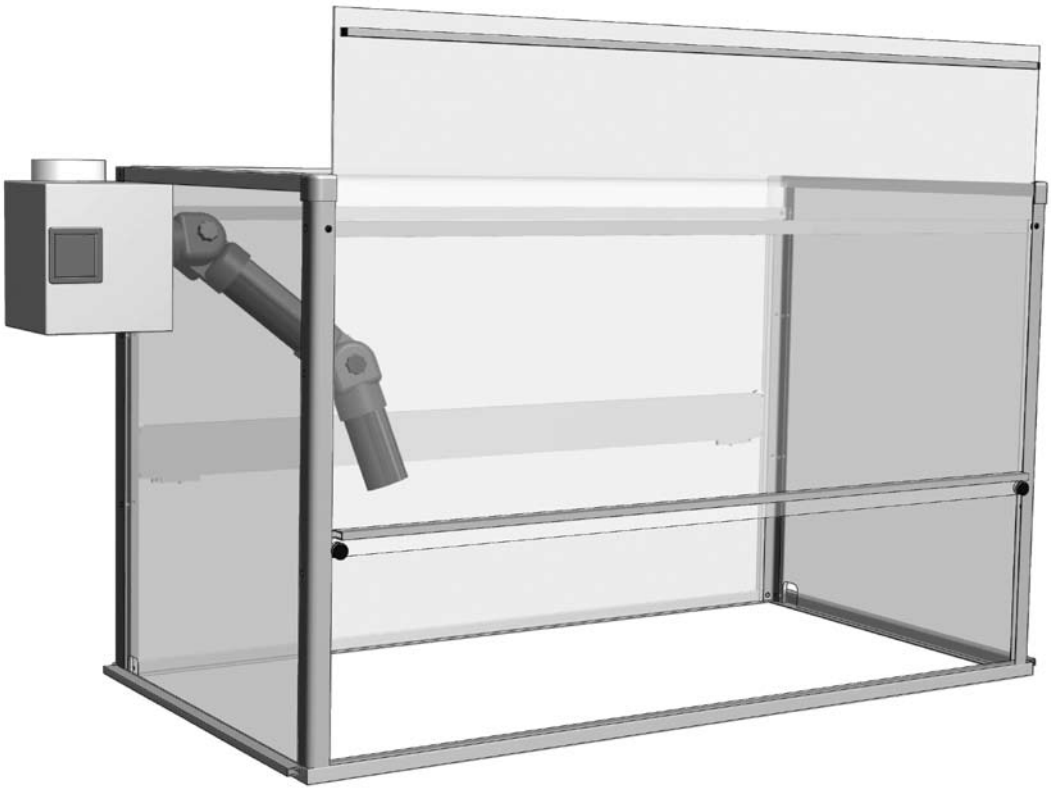
CAUTION **Safety Instructions**

You must comply with all legal provisions and regulations when connecting the acid-proof suction device to the building exhaust system.



Telescoping Arm
Assembly Instructions

Located inside the device is a suction arm with two joints. The joints allow it to position the arm exactly over the place where suction is required.



The Clean Room Cell

Assembly Sequence

1. **Mounting the Base Frame**
   Mount the base frame on level ground (surface). The profiles are labelled with numbers, which indicate their assembly sequence.

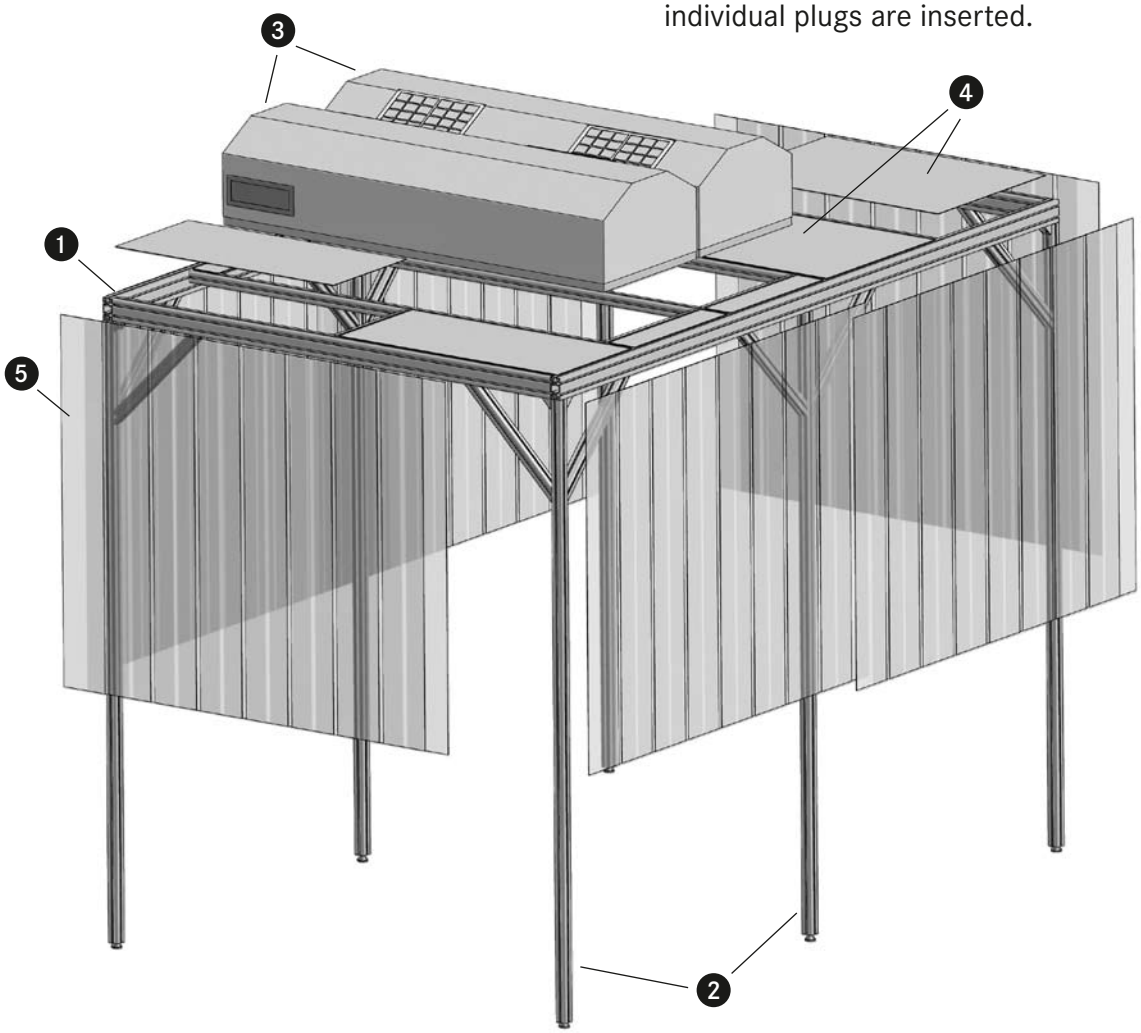
2. **Mount the Feet**
   When attaching the feet please lift and support one side of the base frame to accommodate the height of the feet. You can now attach the feet as indicated.
   Then lift and support the opposite side and mount the remaining feet.

3. **Mount the Module atop the Frame**
   Put the module on top of the profiles. The profiles are delivered with rubber seals. The module sits on 10 mm of the frame on all sides.

4. **Cover the Clean Room with Plates**
   The covering plates (sheet metal or acrylic panels) are labelled according to their assembly sequence. They rest on 10 mm of the profiles. With the panels in place, use masking tape to hold the panels in place.

5. **Mount the Side Panels**
   The side panels are also mounted according to their assembly sequence indicated by the number on the label. Secure the side panels with the provided limiters and nuts.

6. **Remote Control**
   Mount the remote control in a convenient place on one of the feet and connect the cable to one of the two modules. Now connect both modules with the 7-pin connecting cable (remote).
   The two 7-pin plugs are internally connected in parallel. It therefore does not matter where the individual plugs are inserted.



Replacement Parts

Micro-fuse 1.60 A	40-0040 (Series 24 to 56)
Micro-fuse 3.15 A	40-0070 (Series 75 to 112)
Device Service Connection	42-0025
Radial Fan Assembly	22-0209
Front Components	06-0045
Rear Components	06-0048
Pre-filter, 200 x 400 mm	11-0620
H14 Filter FMS 24	11-0302
H14 Filter FMS 37	11-0303
H14 Filter FMS 56	11-0304
H14 Filter FMS 75	11-0305
H14 Filter FMS 93	11-0306
H14 Filter FMS 112	11-0307

Declaration of Conformity

Pursuant to **EU Low Voltage Directive No. 2006/95/EC**
and **EU Machinery Directive No. 2006/42/EC**
and **EU Directive on Electromagnetic Compatibility (EMC) No. 2004/108/EC**

we hereby declare that the design of the distributed product named below complies with the basic requirements of the abovementioned EU Directives.

Product Designation:	**FMS24-112**
Product Description:	**Flow Module**

Specifically Applied Standards:

Safety:	EN60950-1:2006 EN60204-1:2009 with amendments A1:2009 and 1:2010

EMC:	EN55011:2009, Category 1, Class B EN61000-3-2:2006+A1:2009+A2:2009, Class A EN61000-6-2:2005

This declaration is issued on behalf of the manufacturer

Manufacturer: **Spetec GmbH**
Berghamer Str. 2
D-85435 Erding (Germany)

declared by: Karl Mairoth
Position in the Company: Product Manager

Erding (Location) 29.10.2010 (Date)  (Legally Valid Signature)

Spetec

Laminar Flow Systems

Maintenance and Service

Maintenance and Service

Regular maintenance is essential to assure the proper functioning and the lasting quality of your Spetec clean room system.

We recommend having a Spetec service technician service your system three years after you have started using it. This maintenance call is however due at the very latest when the display shows the message ‘call service’. Afterward, you should repeat this maintenance regularly every two years. We will keep you aware of this regular maintenance schedule.

The maintenance work includes the following:

- Particle counts according to DIN ISO 14644-1
- Replacing the pre-filter
- Replacing the main filter if required
- Engineering tests and repairs if necessary
- Certification including the confirmation of the clean room class and a record of the particle counts inside and outside the Spetec clean room system

Filter Change

Changing the Pre-Filter
You should visually inspect the pre-filter for cleanliness on a regular basis. The pre-filter must be changed dependent on how dirty it is, but at least once every year of operation. The Spetec technician can do this for you during regular maintenance.

You can also easily change the pre-filter yourself. Pre-filters are available at Spetec (item # **11-0620**).

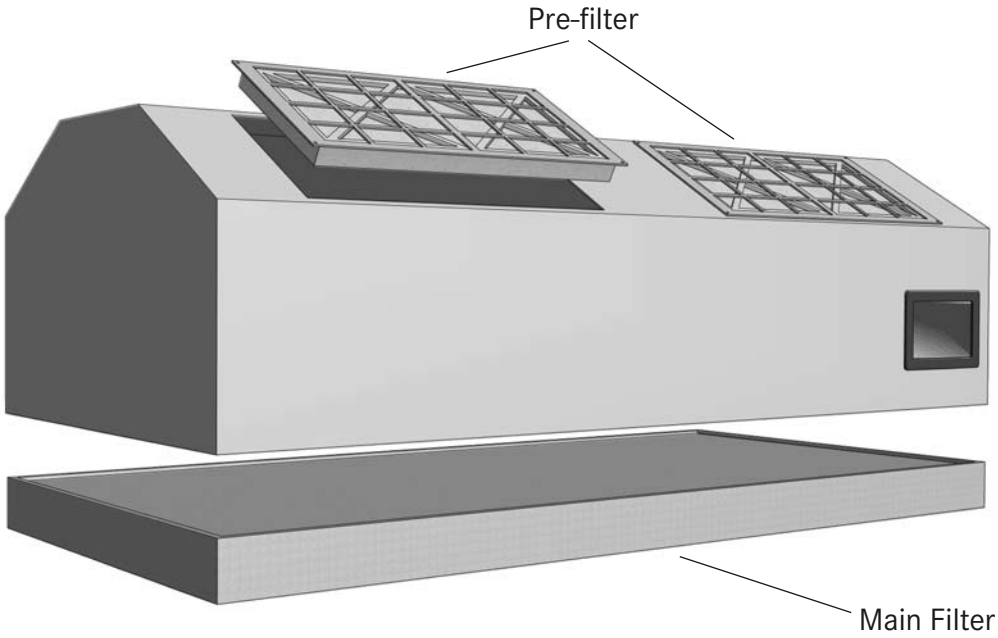
In the laminar flow modules you find the pre-filter behind the angularly slanted rear panel. Please remove the four corner screws to remove the pre-filter. Then install the new filter using the reverse procedure.

Changing the Main Filter
The main filter is a class H14 high-efficiency submicron particulate air filter (HEPA filter). The main filter is inserted without the use of screws.
To remove the filter, turn the module 180° and lift up the filter.

CAUTION **Safety Instructions**

Always pull the mains plug before opening the device.

Before changing the pre-filter or the main filter, you must separate the module from its power source (the mains socket) to avoid possible injuries caused by moving fan blades.



Care

To care for the plastic-coated module parts we recommend cleaning them with special wipes and cleaners.

Under no circumstances should you clean the acrylic glass panes or the PVC slats using regular household rags. These rags would scratch the surface.

Service Memo Display

Please contact our customer service as soon as you see the memo '**call service**' in the module's display.

Telephone: **+49-8122/99533**
Email: spetec@spetec.de

Recommended Accessories

To improve your clean room's value and performance for you we offer you an assortment of clean room accessories:

- Clean room wear, washable, overalls, lab coats, gowns, caps
- Disposable wear, overalls, lab coats
- Disposable booties
- Face masks
- Latex and nitrile gloves
- Polyamide stretch gloves
- Dust control mats, re-generable and as peelable adhesive mats
- Clean room wipes for various purposes

www.spetec.de

If you like to discuss your applications with us in detail please contact us. We will be glad to offer you solutions with no obligation on your part.

Maintenance Book

Model: ______________________ **Serial-No.:** ______________

Power-On Hours					
Pre-Filter Change:					
H 14 Filter Change:					
Particle Count:					
Miscellaneous:					
Date:					
Engineer					

Power-On Hours					
Pre-Filter Change:					
H 14 Filter Change:					
Particle Count:					
Miscellaneous:					
Date:					
Engineer					

Power-On Hours					
Pre-Filter Change:					
H 14 Filter Change:					
Particle Count:					
Miscellaneous:					
Date:					
Engineer					

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