

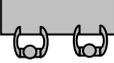
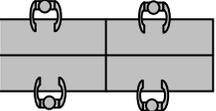
# Fume Extraction Planning Guide

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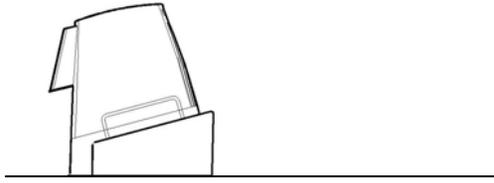


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## Which System Should I Buy?

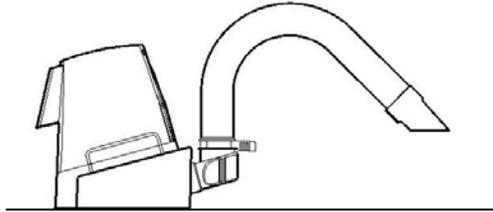
<b>Volume Extraction</b>	<b>Models with Pre / HEPA / Gas filtration</b> <i>Applications: soldering / solder pots / small ovens / lasers</i>	<b>Models with Pre / Gas filtration</b> <i>Applications: vapors from solvents, conformal coating, adhesives, etc.</i>
<p><b>Single User</b> <b>BVX-100 Series</b></p>  <p>75m<sup>3</sup>/h (45cfm) on plenum or BVX arm</p>	<ul style="list-style-type: none"> <li>• <b>BVX-101</b> - includes 1 BVX arm</li> <li>• <b>BVX-101-S</b> - plenum only</li> </ul>	<ul style="list-style-type: none"> <li>• <b>BVX-103</b> - includes 1 BVX arm</li> <li>• <b>BVX-103-S</b> - plenum only</li> </ul>
<p><b>Single User</b> <b>BVX-200 Series</b> with 1 Omniflex arm</p>  <p>140m<sup>3</sup>/h (85cfm) per Omniflex arm</p>	<ul style="list-style-type: none"> <li>• <b>BVX-201</b> and 1 Omniflex Arm connected via flexible hose</li> </ul>	<ul style="list-style-type: none"> <li>• <b>BVX-203</b> and 1 Omniflex Arm connected via flexible hose</li> </ul>
<p><b>Two Users less than 1 m (40") apart</b> <b>BVX-200 Series</b></p>  <p>75m<sup>3</sup>/h (45cfm) per BVX arm</p>	<ul style="list-style-type: none"> <li>• <b>BVX-201-KIT</b> includes 2 long BVX arms</li> </ul>	<ul style="list-style-type: none"> <li>• <b>BVX-203</b> and 2 long BVX arms</li> </ul>
<p><b>Two Users on separate tables</b> <b>BVX-200 Series</b></p>  <p>75m<sup>3</sup>/h (45cfm) per arm</p>	<ul style="list-style-type: none"> <li>• <b>BVX-201-KIT1</b> Kit includes 2 x <b>BVX-ARM, BVX-CH01</b> and <b>BVX-TB01</b></li> </ul> <p>Longer hoses available.</p>	<ul style="list-style-type: none"> <li>• <b>BVX-203</b> with two arm kits <b>BVX-ARM-K1</b>. Kit includes 1.8m (6') long hoses</li> </ul> <p>Longer hoses available.</p>
<p><b>Multi Users up to 8</b> <b>MFX-2200 Series</b></p>  <p>- with BVX arms for moderate fumes, 75m<sup>3</sup>/h (45cfm) per arm - with Omniflex arms for heavy fumes 140m<sup>3</sup>/h (85cfm) per arm</p>	<ul style="list-style-type: none"> <li>• <b>MFX-2206C-A</b> (analog control)</li> <li>• <b>MFX-2206C-D</b> (digital control)</li> </ul> <p>Up to 4 stations with Omniflex arms Up to 8 stations for BVX arms or Omniflex <b>EA1124</b>. Requires Y-piece.</p>	<ul style="list-style-type: none"> <li>• <b>MFX-2206G-A</b> (analog control)</li> <li>• <b>MFX-2206G-D</b> (digital control)</li> </ul> <p>Up to 2 Omniflex arms or 2 exhaust cabinets Up to 4 Omniflex arms with optimal lid <b>AC2202</b></p>
<p><b>4" exhaust port connection: exhaust cabinets, small ovens or lasers</b> <b>MFX-2200 Series</b></p>	<ul style="list-style-type: none"> <li>• <b>MFX-2206C-A</b> (analog control)</li> <li>• <b>MFX-2206C-D</b> (digital control)</li> </ul> <p>Requires optional lid <b>AC2204</b> for 100mm (4") diameter ports.</p>	<ul style="list-style-type: none"> <li>• <b>MFX-2206G-A</b> (analog control)</li> <li>• <b>MFX-2206G-D</b> (digital control)</li> </ul> <p>Standard lid has two 100mm (4") ports and 2 x 63mm ports</p>
<p><b>Tip Extraction up to 8 users</b></p>	<ul style="list-style-type: none"> <li>• <b>BTX-208</b></li> </ul>	<p>Not Applicable</p>

## BVX-100 Configurations



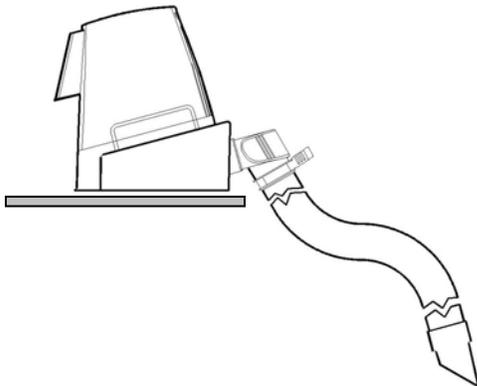
### On bench with plenum:

**BVX-101-S** Filter Unit, single user, plenum only



### On bench with BVX-Arm:

**BVX-101** Filter Unit, single user, with exhaust arm



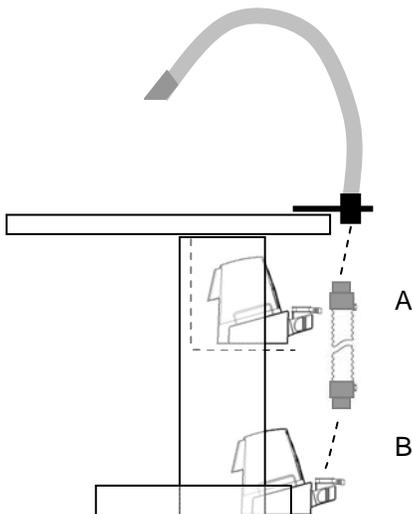
### On shelf with Inverted Adapter and BVX-Arm:

**BVX-101-S** Filter Unit, single user, plenum only

**BVX-IADT** Inverted arm adapter, ESD safe

**BVX-ARM** Flexible arm, ESD, 710mm (28") long  
Alternative arm:

**BVX-ARML** Flexible arm, ESD, 1220mm (48") long



### A) With Under Bench Bracket:

**BVX-101-S** Filter Unit, single user, plenum only

**BVX-BCK** Under bench bracket

**BVX-ADT** Arm adapter, ESD safe

**BVX-ARM-K1** Flexible arm kit, with bracket and 1.8m (6') long hose

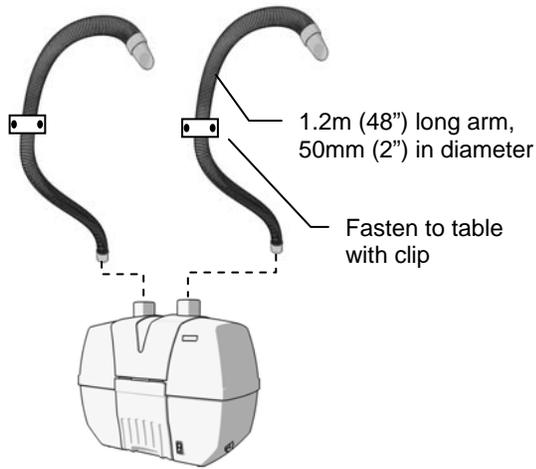
### B) Placed on floor:

**BVX-101-S** Filter Unit, single user, plenum only

**BVX-ADT** Arm adapter, ESD safe

**BVX-ARM-K1** Flexible arm kit, with bracket and 1.8m (6') long hose

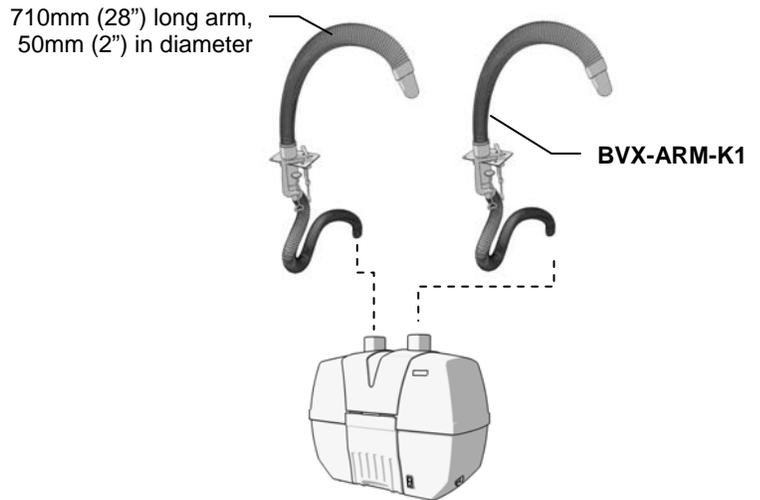
# BVX-200 Configurations



### BVX-201-KIT:

Exhaust arms are directly inserted into ports of filter unit.  
The arm can be fastened with a clip to the table for stability.

BVX-201-KIT Filter Unit with 2 flexible arms



### BVX-200-KIT1 Filter unit with flexible hoses, BVX arms and bracket:

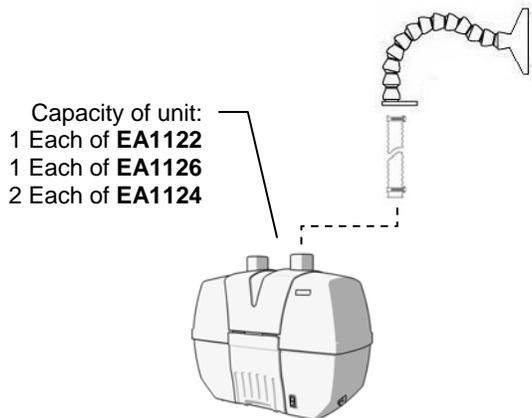
Uses flexible hoses for increased spacing between arms.

**BVX-201** Filter Unit Pre / HEPA / Gas  
or

**BVX-203** Filter Unit Pre / Gas

**BVX-ARM-K1** Arm kit with 1.8m (6') hose and table  
bracket

For longer hoses, do not order the arm kit, but individual  
components of kit.



### Individual BVX arm components:

**BVX-ARM** Flexible arm, ESD, 710mm (28") long  
**BVX-ARML** Flexible arm, ESD, 1220mm (48") long  
**BVX-TB01** Table bracket with 2 C-clamps  
**BVX-CH01** Connection hose, 1.8m (6') long  
**BVX-CH02** Connection hose, 3.6m (12') long

### BVX-200 with flexible hoses and Omiflex arm:

**BVX-201** Filter Unit Pre / HEPA / Gas  
or

**BVX-203** Filter Unit Pre / Gas

Omniflex arms:

**EA1122** Arm with rectangular nozzle

**EA1126** Arm with large rectangular hood

**EA1124** Arm with tapered nozzle

Flexible hoses:

**CH0251** Connection hose, 2.5m (8') long

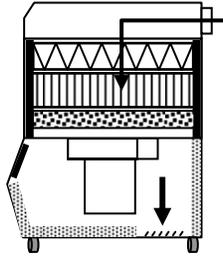
**CH0252** Connection hose, 3.5m (12') long

# MFX-2200 Configurations

## Pre / HEPA / Gas with Exhaust Arms

**MFX-2206C-A** Filter Unit P/H/G Analog  
**MFX-2206C-D** Filter Unit P/H/G Digital

Standard top cover has 4 air inlets 2.5" dia.



Options:

**AC2204** Top cover w/ 2x4" & 2x2.5" inlets

Replacement Filters:

**FIL22P030** Prefilter pleated (2 per pack)

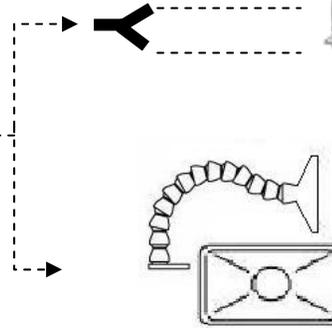
**FIL22H070** Combi Filter HEPA / Carbon



**CH0251** Hose 2.5" x 8' long  
**CH0252** Hose 2.5" x 12' long  
**CH0253** Hose 2.5" x 25' long

All hoses supplied with two clamps.

**AC2025**  
 Y-piece with clamps



**Up to 8 BVX-Arms per unit**  
**BVX-ARM-K2:** includes arm with mounting bracket and C-clamps

**Up to 8 Omniflex arms # EA1124**  
**EA1124** Arm with tapered nozzle including bracket and C-clamps

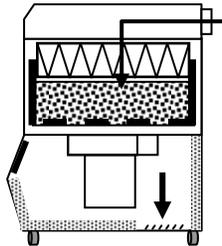
**Up to 4 Omniflex arms per unit**  
**EA1122** Omniflex w/ rect. nozzle  
**EA1126** Omniflex w/ large hood

All arms supplied with mounting bracket and two C-clamps.

## Pre / Gas with Exhaust Cabinet / Exhaust Arms

**MFX-2206G-A** Filter Unit P/G Analog  
**MFX-2206G-D** Filter Unit P/G Digital

Standard top cover has 2x4" & 2x2.5" inlets



Options:

**AC2202** Top cover w/ 4x2.5" inlets

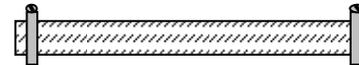
Replacement Filters:

**FIL22P040** Prefilter pleated (1 per pack)

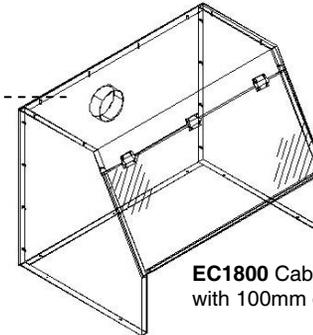
**FIL22G010** Carbon cartridge 25 lbs

**FIL22G020** Carbon refill kit 25 lbs

You can also connect Omniflex or BVX arms to the two 63mm (2.5") ports of the lid. See above.



**CH0047** Hose 4" x 8' long with two clamps



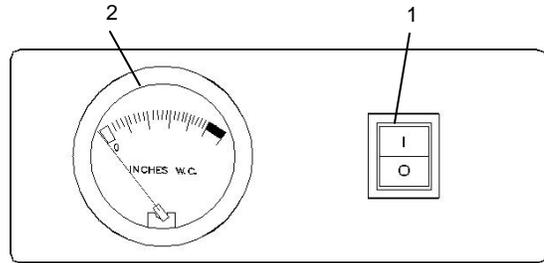
**EC1800** Cabinet, 760 x 510 x 560mm with 100mm connection flange

**Recommended Unit Capacity**  
 - 2 cabinets (EC1800)  
 - or 1 cabinet and 2 exhaust arms  
 - or 4 exhaust arms

## Selecting Control of MFX-2200

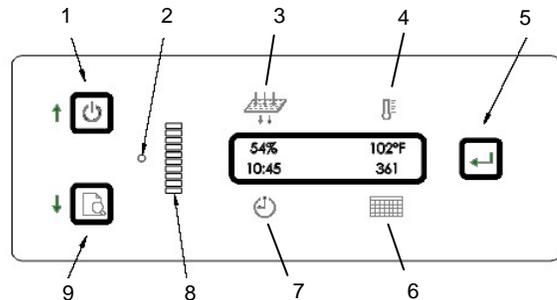
### Models with Analog Control

- ON / OFF switch (1)
- Gauge (2) indicates filter condition of particulate filter



### Models with Digital Control

- Displays all critical system parameters
- Alerts when critical conditions exist
- Allows quick-view of programmed settings
- Reset of factory default settings possible
- Programmable auto-shut-down (ASD) except for temperature



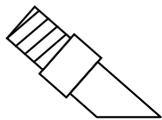
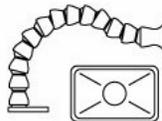
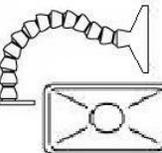
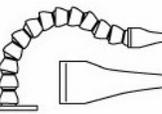
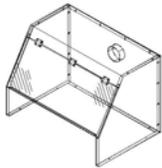
	Display Functions	Description
(1)	Start / Stop	Turns unit On and Off
(2)	Operation Indicator Light	Colour of indicator light displays operating condition of unit. If an alarm has been triggered, the critical system parameter will blink on the display.
(3)	Particulate Filter Condition – blockage in %	Measures the differential pressure across the filters and compares the value against a factory-set value.
(4)	Exhaust Air Temperature	Protects the equipment against over-heating due to very hot incoming air.
(5)	Setup Button	Used for programming of system parameters.
(6)	Time to Service	This feature allows to scheduling of mandatory service if required. When unit is commissioned, the Time-to-Service is reset to 365 days. Every calendar day (not 24 hrs operating time), the Time-to-Service is reduced by 1 day.
(7)	Actual Run Time	Displays the accumulated operating time. Can also be used as an alarm when setting a specific run time in Set-Up mode and turning the alarm feature to ON.
(8)	Particulate Filter Condition – Bar Graph	Displays graphically the particulate filter condition. If filter is in good condition, the bar graph colour is green. The colour changes with increasing saturation to yellow and then red.
(9)	Quick View Button	Displays programmed settings for (3), (4), (6) and (7)

## Selecting Exhaust Arms, Nozzles and Cabinets

The selection of the fume capture device should be guided by your application and work habits. Very often the user has a certain preference for a certain nozzle design. Review the "Application" column, nozzle styles and airflow ratings of the table below and select an exhaust arm / nozzle which suits best your needs.

All exhaust arms are made of ESD material and are supplied with a mounting bracket and two C-clamps. The universal design allows for mounting the arms to bench tops, rails or shelves.

Exhaust cabinets are recommended for the capture of volatile gases and strong odours.

Exhaust Arm	Arm Diameter mm / inch	Length cm / inch	Nozzle Sizes and Styles	Estimated Airflow m <sup>3</sup> /h (cfm)	Application
BVX-ARM	50 mm / 2"	71cm / 28"	<b>Round:</b> 40mm / 1.75" diameter 	75 m <sup>3</sup> /h / 45 cfm	Point and small area extraction for - Soldering - Gluing / bonding - Laser marking fumes
BVX-ARML	50 mm / 2"	122cm / 48"			
Omniflex Arm EA1122	63 mm / 2.5"	60cm / 24"	<b>Rectangular:</b> 150 x 88mm / 6" x 3.5" 	140 m <sup>3</sup> /h / 85 cfm	Area extraction for - Soldering - Gluing / bonding - Solder pots - solvent vapors
Omniflex Arm EA1126	63 mm / 2.5"	60cm / 24"	<b>Large rectangular hood:</b> 350 x 212mm / 14" x 8.5" 	140 m <sup>3</sup> /h / 85 cfm	Large area extraction for: - Soldering of large boards - Large solder pots - Gluing / bonding - solvent vapors
Omniflex Arm EA1124	63 mm / 2.5"	60cm / 24"	<b>Oval:</b> 30mm / 1.25" wide 	50 m <sup>3</sup> /h / 30 cfm	Point extraction for: - soldering under microscope - laser marking fumes
Exhaust Cabinet EC1800	100mm (4") port	N/A	760Wx510D x560mm (H) (30"Wx20"D x22"H) 	250 m <sup>3</sup> /h / 150 cfm	- volatile gases - toxic gases - odors

**Optional Accessories** for Omniflex arms are

- **AC1101** Damper / shut-off valve
- **AC1102** Extension 300mm (1') long
- **Q-AD426530** Replacement nozzle, Rectangular ESD 6" x 3.5" (Qty=1)
- **Q-AD426550** Replacement nozzle, Tapered pipe ESD (Qty=1)
- **Q-AD426560** Replacement nozzle, Large hood 14" x 8.5" ESD (Qty=1)

**Omniflex Arm Features:**

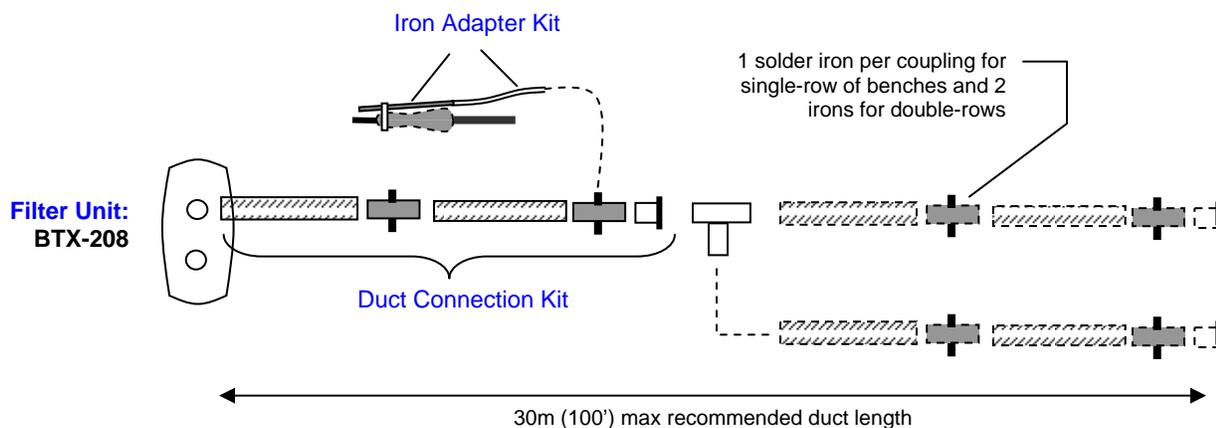
A "ball / socket" design which allows to make the arm shorter or longer by just simply removing or adding Omniflex components.

## Tip Extraction

The BTX-208 is an electric driven tip extraction unit which can provide fume extraction for up to 8 stations. The filter unit itself and the connection accessories are designed for easy planning and installation.

Steps:

- Plan facility layout in groups of up to 8 stations
- Select a duct connection kit, based on
  - number of stations
  - layout of stations: single row or double row of benches
  - length of ducting
- If needed, supplement the connection kit with individual components, as for example additional length of hose.
- Select the iron adapter kit which includes the vacuum tubing from the iron to the main duct.



Description		Connection Kits		
		BTX-CK2-25	BTX-CK4-50	BTX-CK4-75
Max number of stations	single-row bench	2	4	4
	double-row bench	4	8	8
		<b>Qty</b>	<b>Qty</b>	<b>Qty</b>
Flexible hose Ø 35mm (1.375")		2.5m (8')	5.0m (16')	7.5m (25')
Coupling with two glands 5.6mm		2	4	4
End plug		1	2	2
T-piece connector for 35mm hose		0	1	1
Pipe clip		2	5	5
Roll of vinyl tape		1	1	1

The connection kits are provided with 1 piece of flexible hose and with the length as specified above. When installing, the hose needs to be cut at site into the various section lengths as needed. This assures the most economical use of the hose.

If needed, the connection kits can be supplemented with individual components as listed in the following table.

**Individual parts of Connection Kits:**

Part Number	Description
CH0121	Flexible hose Ø 35mm x 2.5m (8') long
CH0122	Flexible hose Ø 35mm x 5m (16') long
CH0123	Flexible hose Ø 35mm x 7.5m (25') long
AC-TX001-4	Couplings with two glands 5.6mm 4-pack
AC-TX002-2	T-piece connector for Ø35mm hose 2-pack
18566S-5	End plug 5-pack
19115S-10	Pipe clip 10-pack

**Iron Adapter Kits:**

Part#	Description
AC-FX1	Universal Iron Adapter Kit
DS03-929	Metcal STSS/MX/RM3E/ - Hakko 907/936/937 Adapter Kit - 5.6mm
DS03-930	Metcal SP-HC1 (SP200 Base) Iron Adapter Kit - 5.6mm
DS03-931	OK International PS-900 Iron Adapter Kit 5.6mm
18863S-5	Plastic Clip for Metcal MX-RM3E (5 per pack)
18864S-5	Plastic Clip for Metcal SP200 (5 per pack)
18865S-5	Plastic Clip for OK International PS-900 (5 per pack)
DS03-965-10	Spring Strain Relief for 5.6mm 10-pack
DS03-910-5	Brush Brass for tip ext tube 5-pack

The length of the vacuum hose on the iron adapter kits is 1.2m (48").

## Commonly Asked Questions

### Are fumes hazardous to my health?

Yes, most industrial fumes contain more dangerous chemicals than cigarette fumes. Solder fumes, for example can cause minor respirational symptoms but also occupational asthma, and skin allergies. Lead-free solders often contain fluxes made up even of harsher chemicals. Check the safety data sheets which identify these health hazards.

### Should I buy a volume extraction system with exhaust arms or a tip extraction unit?

Exhaust arms (volume extraction) as well as tip extraction are efficient in removing fumes when used properly. This is a choice of personal preferences. Pros and Cons are:

	Volume Extraction	Tip Extraction
Pro	<ul style="list-style-type: none"><li>• No attachments on solder iron needed</li><li>• No maintenance on tubing required</li></ul>	<ul style="list-style-type: none"><li>• Effective fume extraction when properly maintained</li><li>• Less expensive in most cases</li></ul>
Con	<ul style="list-style-type: none"><li>• Requires to work within the extraction envelope of the exhaust arm or repositioning of the arm</li></ul>	<ul style="list-style-type: none"><li>• Extraction tube on solder iron may hinder the work</li><li>• Requires periodic cleaning of vacuum tubes</li></ul>

### Which exhaust arms should I buy - BVX-arms or Omniflex arms?

BVX-arms are in general suitable for most solder applications such as repair work.

Omniflex arms have almost double the airflow capacity and are better suited when you have larger volumes of fumes and if you need a larger extraction envelope.

### How long of a connection hose can I use?

Our recommendations are:

- BVX-200 systems: max. 3.6m (12')
- MFX-2200 systems:
  - max. 7.5m (25') when using all connection ports
  - max. 15m (50') when using only 3 or less of the connection ports
- BTX-208: max. 30m (100')

The airflow rate is best with short hoses and declines with longer hoses. When staying within the above parameters the rate of decline is within approximately 10%.

### When do I need a HEPA filtration and when Activated Carbon filtration?

HEPA filters are needed if the air contaminants are mostly particulates. Solder fumes are to 95% particulates. Activated carbon is used to absorb gases in molecular form such as vapors from solvents, adhesives, etc. These vapors cannot be filtered by HEPA filtration.

### When do I need to change my filters?

Pre-filters and HEPA filters do not lose their filtration efficiency when in use. These particulate filters however clog up and reduce the airflow and thus the fume removal. When you notice that the fume removal is no longer sufficient, replace first the pre-filter and then the HEPA filter. Most of our units have also a monitor the filter condition and indicate when a certain filter blockage is reached.

Carbon filters cannot be accurately monitored by low-cost sensors. In the case of nuisance applications, change the filter when noticing an odor. In the case of applications where the concentration levels are exceeding *permissible exposure levels*, consult your safety engineer.

**Do I need to use a pre-filter?**

A pre-filter is highly recommended as it prolongs the life of the more expensive HEPA filter.

**Will your unit filter the chemicals from the supplied list?**

If the chemical is in a particulate form, the HEPA filter will remove it efficiently to safe levels. If the chemical is a gas, we recommend to check the chemical against a list of substances which have been tested for absorption by activated carbon. This list provides an absorption efficiency guide for many common chemicals. A specific answer is complex and may require the consultation of a chemist in this field and possibly field testing.

**How long do the filters last?**

That is difficult to predict as we do not know how much of contamination is going into the filters or how many hours and shift you work. As a general rule, our filters for solder applications last 6 to 12 months. Pre-filters should be changed more frequently.

**Are “used” filters hazardous waste?**

That depends on the chemical composition of the captured pollutants. Filters from hand solder applications are in general not considered hazardous, as most of the pollutants are organics and not toxic like lead. Spent activated carbon can be hazardous as often used for the filtration of flammable substances. Follow your local regulations for the disposal of filters.