Clean AiR PRODUCTS

SOLUTIONS BUILT TO YOUR SPECIFICATIONS

OPERATION & MAINTENANCE INSTRUCTIONS FOR

Series 301

Horizontal Laminar Flow Clean Bench

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Clean AiR PRODUCTS

Series 301

Horizontal Laminar Flow Clean Bench

The Series 301 is a general-purpose, horizontal flow clean bench ideally suited to many types of mechanical or processing work. It is designed to provide an ISO Class 5 (Class 100) or ISO Class 4 (Class 10) clean air environment suitable for laboratory work, testing, manufacturing, inspection and/or pharmaceutical operations.

The clean HEPA-filtered air flows outward from the cabinet. This horizontal laminar flow air washes out particulates and prevents contamination from entering the clean work zone. The cabinet features "clean edge" construction that puts the hood and table top in shear with the media edge of the HEPA filter. This reduces turbulence along the sides of the hood, improves the laminar flow, and prevents contamination infiltration around the perimeter of the hood.

Features

- FLEX DUCT provides a factory sealed clean laminar airflow system with simple front HEPA filter removal
- HEPA filter 99.99% efficient
- Formica tabletop
- Duplex outlet for auxiliary equipment
- Motor speed variable with solid state controller
- Protective grill for absolute filter
- Fiberglass prefilter easily removable
- "Clean edge" air-shear of the absolute filter
- Superior quality, excellent appearance, and ruggedness have been achieved through the use of new wrap-around structural design
- Vinclad steel or painted structural materials offer the ultimate in appearance and a surface resistant to abuse
- Shipped fully assembled, ready for operation, certified to meet or exceed ISO Class 5 of ISO Standard 14644-1 (Class 100 conditions of Federal Standard 209E)
- Selected sizes and options UL listed

For more information or to download or fax this product from the web, simply go to:
www.cleanairproducts.com/301

Series 301 Horizontal Laminar Flow Clean Bench

Overview

The Series 301 clean bench cabinet has all-metal construction with a Vinclad exterior.

The table work surface is fabricated of white plastic laminate over particle board. This surface provides a durable, cleanable and attractive surface.

Two white fluorescent lamps, with energy efficient ballast, are provided to illuminate the work area. An on/off switch is provided for lamp control.

The work area hood assembly is fabricated of clear polycarbonate. The hood provides a controlled work area and assists in directional air flow.

Standard floor to table top height is 30 inches. The length and height will depend on the process it is used for. Standard widths are 2-1/2 inches over nominal 3, 4, 5, 6, 8 foot increments and the interior depth (interior table or working space) of 21-1/2 inches. The overall cabinet width, depth and height will depend on the size of unit chosen.

Cabinet

The Series 301 cabinets feature heavy 18 gage white Vinclad (vinyl clad steel) exterior finish. The vinyl is 8 to 10 mils in thickness and is laminated to provide an attractive appearance and toughness. It is superior to paint and plastic laminate over board material. It is resistant to abrasion, corrosion, stains, and attacks by chemicals. Vinclad will not support combustion; it is resistant to scratching, scuffing, crazing or cracking and will not chip. Vinclad is peel-proof and has moderate acoustical control.

A unique "wrap-around" cabinet design is used to achieve excellent appearance and ruggedness through the exclusive use of metal components.

The clean HEPA filtered air flows horizontally from the cabinet. The cabinet puts the built-in table top in shear with the media edge of the HEPA filter.

The clean bench cabinet houses: blower, motor, the HEPA or ULPA filter, fluorescent lights, on/off switches, circuit breakers and electrical junction box.

Most sizes fit through standard doors and hallways. See the attached drawing and chart for sizes on your specific model. Consult factory for details.

Filter

The final filter is 99.99% effective on 0.3 micron and larger particles. Standard final filters have an aluminum anodized frame, painted white metal faceguard and mini pleated filter media construction. Filters are removable through the table top enclosure area. Optional ULPA filters, 99.999% on .12 micron are available.

Negative Pressure Plenum for Final Filters: HEPA or ULPA

The Series 301 utilizes the HEPA FLEX duct system to provide air flow from the blower to the HEPA filter. This ducting system in conjunction with the cabinet blower provides a negative pressure area on the cabinet interior. The negative pressure serves as a safety seal that prevents gasket leaks which can occur in positive pressured filter systems.

HEPA/ULPA Filter Replacement

The HEPA or ULPA filter is serviced from the front of the unit.

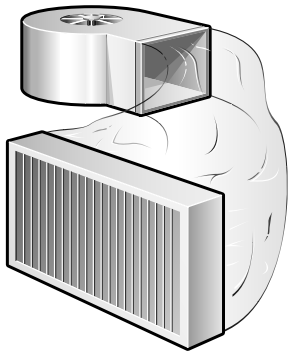
Prefilters

The 1.0 inch fiberglass prefilter is removable from the front lower cabinet and is accessible behind hinged prefilter grills.

The cabinet has a large prefilter area to keep the filtering efficiency high and to minimize the pressure drop across the prefilters. The prefilters are shipped in place. The cabinets have a commonly available 20x25x1 and 20x20x1 disposable prefilter style depending on its size. These prefilters are interchangeable in size with pre-filters of higher efficiency. The higher efficiency prefilters can be ordered with the unit or upgraded with the first prefilter change.

FLEX DUCT

The FLEX DUCT filter system provides a negative pressure area between the cabinet and the duct that gathers any contaminated air and recirculates it through the HEPA filter.



Air Flow

The air flow for the unit is factory set at an average filter face velocity of approximately 90 FPM. This velocity is maintained by adjusting blower speed as filter pressure increases with use.

Light Level

White fluorescent lamps are provided to illuminate the work area. An on/off switch is provided for lamp control. This will provide approximately 100 foot candle illumination 24 inches below the hood top.

The standard unit has T8 lamps. The new energy saving lamps and ballast are not available in all sizes. Consult factory for details.

See chart for the number of lamps in the selected unit.

Sound Level

The cabinets are designed for quiet operation. The typical sound level is approximately 65dbA. Larger size units and those with multiple blowers may have a slightly higher sound level. The sound levels are measured with ambient of 55dbA. The sound level of your particular unit may vary depending on the size of the unit, surrounding room size and acoustics.

Electrical

The electrical requirement is 120V, single-phase, 3-wire system with 8 foot flex power cord or hard wiring exiting the back side of the unit.

The motor speed is variable with Solid State controller.

The electrical outlet is a 15 amp duplex installed in the base right front under the table and is used for auxiliary equipment. The power available for this receptacle is 3 amps, unless otherwise specified.

The system provides independent motor and light on/off switches.

The direct drive motor and dynamically balanced blower assembly is isolated from cabinet by rubber mounts and by the HEPA FLEX DUCT connection.

The system meets requirements of the NEC electrical codes and includes UL recognized components.

Motor/Blower

The system utilizes a PSC direct drive motor with a dynamically balanced blower wheel. The assembly is double vibration isolated from cabinet to provide excellent vibration control. The motor is vibration isolated from the blower by multiple rubber isolation mounts. The blower/motor assembly is again vibration isolated from the cabinet by a second set of vibration isolation mounts. The FLEX DUCT connection between the blower and HEPA filter also serves to further reduce vibration.

Each cabinet has a blower/motor assembly sized for reserve capacity to ensure a long HEPA filter life. A motor speed control mounted on the side of the blower can be adjusted to compensate for extra pressure drop caused by loading or contamination build-up on the HEPA filter surface.

Blower, Motor, Electrical, and Filter Sizes

301-24	Blower	Motor	Fluorescent Lamp	Electrical*		HEPA Filters**		Prefilters	
324	(1) DD-10-4	1/3HP PSC	(2)	120V/60HZ	9.7 amp*	(1)	24x36x3**	(1)	20x20
424	(1) DD-10-6	1/3HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	24x48x3**	(1)	20x25
524	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(2)	24x30x3**	(2)	20x20
624	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	24x72x3**	(2)	20x25
824	(1) DD-10-6	1/3HP PSC	(4)	120V/60HZ	19.2 amp*	(2)	23-5/8x47-5/8x3**	(3)	20x25
301-30									
330	(1) DD-10-6	1/3HP PSC	(2)	120V/60HZ	9.7 amp*	(1)	30x36x3**	(1)	20x20
430	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	30x48x3**	(1)	20x25
530	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	30x60x3**	(2)	20x20
630	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	14.7 amp*	(1)	30x72x3**	(2)	20x25
830	(2) DD-10-8	1/2HP PSC	(4)	120V/60HZ	19.95 amp*	(2)	30x48x3**	(3)	20x25
301-36									
336	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	36x36x3**	(1)	20x20
436	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	12.5 amp*	(1)	36x48x3**	(1)	20x25
536	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	19.8 amp*	(1)	36x60x3**	(2)	20x20
636	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	19.8 amp*	(2)	36x36x3**	(2)	20x25
836	(2) DD-10-8	1/2HP PSC	(4)	120V/60HZ	19.95 amp*	(2)	36x48x3**	(3)	20x25
301-48									
448	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	14.3 amp*	(1)	47-1/4x47-5/8x3**	(1)	20x25
548	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	19.8 amp*	(2)	48x30x3**	(2)	20x20
648	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	19.8 amp*	(2)	48x36x3**	(2)	20x25
848	(2) DD-10-8	3/4HP PSC	(4)	120V/60HZ	19.95 amp*	(2)	47-1/4x47-5/8x3**	(3)	20x25

*Includes 3 Amp receptacle.

**3 in. dimension can vary depending on filter type used.

Work Area Top and End Enclosure Panels

There is an end panel at each end of the table top. The end panels are table top width and extend to the top of the unit where they join the top enclosure panel. (See enclosure height in working dimension section.) The top and end panels are attached together to form a one-piece enclosure. This enclosure is fastened to the cabinet along the edges of the top and the end panels.

Options

- Stainless steel table top
- Removable grill in front of HEPA filter
- Safety glass hood
- Extended table top/hood
- Ultraviolet germicidal lamps
- 36 in. table top height
- Electrical duplex outlet (additional)
- "Minihelic" 0 to 2 inch differential pressure gauge. (HEPA)
- Table top support legs
- Gas cock
- Bar and hooks for bottle hanging
- Yellow fluorescent lamps
- Fluorescent yellow lamp sleeves
- Conductive Formica top
- Ion bars and power supply
- Painted cabinet — color code, manufacturer and chip required
- Hood depth — extended (standard 21-1/2 inch)
- End panels — ___RH ___LH
- End panels — stainless steel
- Table top — rolled front edge
- Casters with locking brake
- 175 footcandles — 4 lamp fluorescent lighting at table top
- Hood — safety glass top with stainless steel end panels
- Drawers and storage trays
- Foot rest
- Cabinet shell — all stainless steel
- ULPA filter 99.999% on 0.12 micron particles
- Units can be coupled together to form a continuous work area
- Special designs upon request

Shipped fully assembled ready for operation and certified to meet or exceed ISO Class 5 of ISO Standard 14644-1 (Class 100 conditions of Federal Standard 209E).

Operations manual and test reports provided with unit at shipment.

Dimensions

Overall Width of Cabinet: Dimension "A"

___ 3 foot = 38-1/2 in.
___ 4 foot = 50-1/2 in.
___ 5 foot = 62-1/2 in.
___ 6 foot = 74-1/2 in.
___ 8 foot = 98-1/2 in.

Work Area Internal Width (distance between end panels): Dimension "B"

___ 3 foot = 34 in.
___ 4 foot = 46 in.
___ 5 foot = 58 in.
___ 6 foot = 70 in.
___ 8 foot = 94 in.

Work Area Internal Height (distance from top enclosure panel to table top surface): Dimension "C"

___ 22 in. (24 Series)
___ 28 in. (30 Series)
___ 34 in. (36 Series)
___ 46 in. (48 Series)

Overall Height of Cabinet (distance from floor to top of unit): Dimension "D"

(Add 6.0 inches for 36-inch high table top option.)

___ 58-1/2 in. (24 Series)
___ 64-1/2 in. (30 Series)
___ 70-1/2 in. (36 Series)
___ 82-1/2 in. (48 Series)

Overall Depth of Cabinet (front to back): 34 in.

(Power cord or hard electrical connection on the rear of the unit.)

Table Top Depth (table outside edge to cabinet HEPA filter): 21-1/2 in.

Deeper table top available but increases overall cabinet depth. With deeper table top, check door path or consult factory for removable table options.

Table Top Height: 30.0 in. from floor (-0.25 in. or +3 in. with leg leveler adjustment)

Estimated Weight

301*24

324 = 370 lb.
424 = 400 lb.
524 = 450 lb.
624 = 500 lb.
824 = 750 lb.

301*30

330 = 400 lb.
430 = 450 lb.
530 = 500 lb.
630 = 550 lb.
830 = 770 lb.

301*36

336 = 450 lb.
436 = 500 lb.
536 = 550 lb.
636 = 600 lb.
836 = 800 lb.

301*48

448 = 570 lb.
548 = 650 lb.
648 = 750 lb.
848 = 900 lb.

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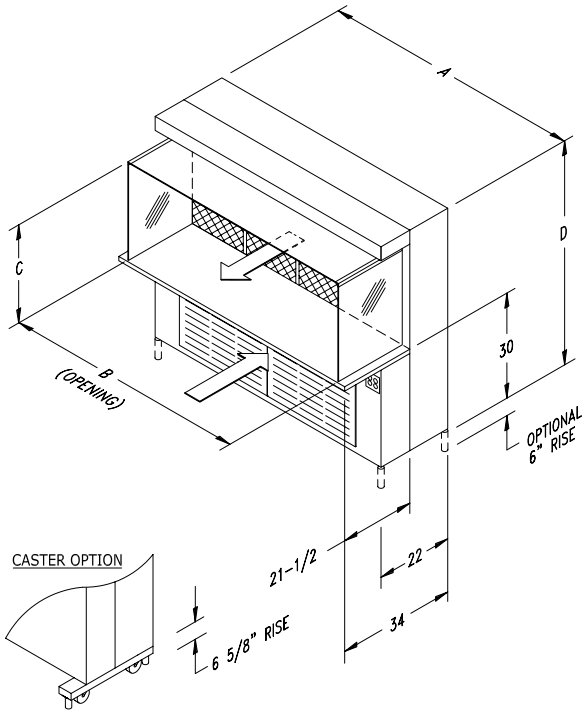

Standard Models

	(in inches)			
MODEL	**A**	**B**	**C**	**D**
CAP 301-324-30H	38 1/2	34	22	58 1/2
CAP 301-330-30H	38 1/2	34	28	64 1/2
CAP 301-336-30H	38 1/2	34	34	70 1/2
CAP 301-348-30H	38 1/2	34	46	82 1/2
CAP 301-424-30H	50 1/2	46	22	58 1/2
CAP 301-430-30H	50 1/2	46	28	64 1/2
CAP 301-436-30H	50 1/2	46	34	70 1/2
CAP 301-448-30H	50 1/2	46	46	82 1/2
CAP 301-524-30H	62 1/2	58	22	58 1/2
CAP 301-530-30H	62 1/2	58	28	64 1/2
CAP 301-536-30H	62 1/2	58	34	70 1/2
CAP 301-548-30H	62 1/2	58	46	82 1/2
CAP 301-624-30H	74 1/2	70	22	58 1/2
CAP 301-630-30H	74 1/2	70	28	64 1/2
CAP 301-636-30H	74 1/2	70	34	70 1/2
CAP 301-648-30H	74 1/2	70	46	82 1/2
CAP 301-824-30H	98 1/2	93	22	58 1/2
CAP 301-830-30H	98 1/2	94	28	64 1/2
CAP 301-836-30H	98 1/2	94	34	70 1/2
CAP 301-848-30H	98 1/2	93	46	82 1/2

Note - Units are shipped assembled in one piece. Check all the dimensions to make sure the unit will fit through all doorways. Units can be constructed to fit through a smaller opening, but must be specifically ordered with that option.

Standard units shipped F.O.B. factory by padded van.

Equipment specification, dimensions and upgrades are subject to change without notice.

Guarantee

A written 1 year Warranty is furnished with each cabinet.

Specifications subject to change. Please contact factory for details.

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Clean AiR PRODUCTS

Series 301 Horizontal Laminar Flow Clean Bench

Technical Data

General Description

The Series 301 horizontal flow clean bench is specifically designed to create a free standing ultra clean environment. This clean bench is available in various sizes with various options. These varied sizes and options provide excellent solutions to many air filtration applications.

Systems can be one single vertical flow bench with open interiors to numerous units coupled together to form a continuous work area with complex accessories.

Cabinet

The Series 301 cabinets consist of heavy 18 gauge white Vinclad (vinyl clad steel) exterior finish. The vinyl is 8 to 10 mils in thickness and is laminated to provide an attractive appearance and toughness. It is superior to paint and plastic laminate over board material. It is resistant to abrasion, corrosion, stains, and attacks by chemicals. Vinclad will not support combustion; it is resistant to scratching, scuffing, crazing or cracking and will not chip. Vinclad is peel proof and has moderate acoustical control.

A unique "Wrap-Around" cabinet design is used to achieve excellent appearance and ruggedness through the exclusive use of metal components.

The clean HEPA filtered air flows horizontally from the cabinet. The cabinet puts the built-in table top in shear with the media edge of the HEPA filter.

The clean bench cabinet houses blower, motor, the HEPA or ULPA filter, fluorescent lights, on/off switches, circuit breakers and electrical junction box.

Most sizes fit through standard doors and hallways. See the attached drawing and chart for sizes on your specific model.

Features

The Series 301 clean bench cabinet is an all-metal construction with a Vinclad exterior.

The table work surface is fabricated of white plastic laminate over particle board. This surface provides a durable, cleanable and attractive surface.

Two white fluorescent lamps, with energy efficient ballast, are provided to illuminate the work area. An on/off switch is provided for lamp control.

The work area hood assembly is fabricated of clear acrylic. The hood provides a controlled work area and assists in directional air flow.

Standard floor to table top height is 30 inches. The length and height will depend on the process it is used for. Standard widths are 2-1/2 inches over nominal 3, 4, 5, 6, 8 increments and the interior depth (interior table or working space) of 21-1/2 inches. The overall cabinet width, depth and height will depend on the size of unit chosen.

Electrical

The electrical requirement is 120V, single-phase, 3-wire system with 8 foot flex power cord (up to 15 amps) or hard wiring exiting the back side of the unit.

The motor speed is infinitely variable with Solid State controller.

The electrical outlet is a 15 amp duplex installed in the base right front under the table and is used for auxiliary equipment. The power available for this receptacle is 3 to 5 amps, unless otherwise specified.

The system provides independent motor and light on/off switches.

The direct drive motor and dynamically balanced blower assembly is isolated from cabinet by rubber mounts and by the HEPA Flex Duct connection.

The system meets requirements of the NEC electrical codes and includes UL recognized components.

Motor/Blower

The system utilizes a PSC direct drive motor with a dynamically balanced blower wheel. The assembly is double vibration isolated from cabinet to provide excellent vibration control. The motor is vibration isolated from the blower by multiple in shear

Series 301

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rubber isolation mounts. The blower/motor assembly is again vibration isolated from the cabinet by a second set of shear rubber vibration isolation mounts. The Flex Duct connection between the blower and HEPA filter also serves to further reduce vibration.

Each cabinet has a blower/motor assembly sized for reserve capacity to ensure a long HEPA filter life. A motor speed control mounted on the side of the blower can be adjusted to compensate for extra pressure drop caused by loading or contamination build-up on the HEPA filter surface.

Fluorescent Lighting

White fluorescent lamps are provided to illuminate the work area. An on/off switch is provided for lamp control. This will provide approximately 100 foot candle illumination 24 inches below the hood top.

The standard unit has T12 lamps. Selected units are available with T8 lamps and energy saving electronic ballast. The new energy saving lamps and ballast are not available in all sizes. T8 lamps must be specifically ordered. Consult factory for details.

See chart for the number of lamps and lamp type in the selected unit.

Work Area Top and End Enclosure Panels

There is an end panel at each end of the table top. The end panels are table top width and extend to the top of the unit where they join the top enclosure panel. (See enclosure height in working dimension section.) The top and end panels are attached together to form a one-piece enclosure. This enclosure is fastened to the cabinet along the edges of the top and the end panels.

Air Flow

The air flow for the unit is factory set at an average filter face velocity of approximately 90 FPM. This velocity is maintained by adjusting blower speed as filter pressure increases with over period of use.

Sound Level

The cabinets are designed for quiet operation. The typical sound level is approximately 65dbA. Larger size units and those with multiple blowers may have a slightly higher sound level. The sound levels are measured with ambient of 55dbA. The sound level of your particular unit may vary depending on the size of the unit, surrounding room size and acoustics.

Final Filters: HEPA or ULPA

The final filter is 99.99% effective on 0.3 micron and larger particles. Standard final filters have an aluminum anodized frame, painted white metal faceguard and mini pleated filter media construction. Filters are removable through the table top enclosure area. Optional ULPA filters, 99.999% on .12 micron are available.

Negative Pressure Plenum for Final Filters: HEPA or ULPA

The Series 301 utilizes the HEPA FLEX duct system to provide air flow from the blower to the HEPA filter. This ducting system in conjunction with the cabinet blower provides a negative pressure area on the cabinet interior. The negative pressure serves as a safety seal that prevents gasket leaks which can occur in positive pressured filter systems.

Flex Duct

The negative internal pressure is created by the blower drawing (sucking) air into the cabinet through the prefilters. The differential pressure drop across the prefilters is what creates the internal negative pressure. The entire interior of the cabinet, including the area that surrounds the HEPA filter and flexible ducting, are also under negative pressure. This negative pressure prevents any gasket seal leaks from entering the work area. If a leak does occur, it is "sucked" back to the blower where it is then ducted back to the HEPA filter.

HEPA/ULPA Filter Replacement

The HEPA or ULPA filters are serviced from the front of the unit.

Prefilters

The 1.0 inch fiberglass prefilter is removable from the front lower cabinet and is accessible behind hinged prefilter grill.

The cabinet has a large prefilter area to keep the filtering efficiency high and to minimize the pressure drop across the prefilters. The prefilters are shipped in lace. The cabinets have a commonly available 20x25x1 and 20x20x1 disposable prefilter style depending on its size. These prefilters are interchangeable in size with prefilters of higher efficiency. The higher efficiency prefilters can be ordered with the unit or upgraded with the first prefilter change.

Series 301 Horizontal Laminar Flow Clean Bench

Technical Data continued

Electrical, Filter and Blower Sizes

301-24	Blower	Motor	Fluorescent Lamp	Electrical		HEPA Filters	Prefilters
324	(1) DD-10-4	1/3HP PSC	(2)	120V/60HZ	7.9 amp	(1) 24x36x3	(1) 20x20
424	(1) DD-10-6	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 24x48x3	(1) 20x25
524	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(2) 24x30x3	(2) 20x20
624	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 24x72x3	(2) 20x25
824	(1) DD-10-6	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 23-5/8x47-5/8x3	(3) 20x25
301-30							
330	(1) DD-10-6	1/3HP PSC	(2)	120V/60HZ	7.9 amp	(1) 30x36x3	(1) 20x20
430	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 30x48x3	(1) 20x25
530	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 30x60x3	(2) 20x20
630	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	12.4 amp	(1) 30x72x3	(2) 20x25
830	(2) DD-10-6	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 30x48x3	(3) 20x25
301-36							
336	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 36x36x3	(1) 20x20
436	(1) DD-10-8	1/2HP PSC	(2)	120V/60HZ	9.4 amp	(1) 36x48x3	(1) 20x25
536	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	12.4 amp	(1) 36x60x3	(2) 20x20
636	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 36x36x3	(2) 20x25
836	(2) DD-10-6	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 36x48x3	(3) 20x25
301-48							
448	(1) DD-10-8	3/4HP PSC	(2)	120V/60HZ	12.4 amp	(1) 47-1/4x47-5/8x3	(1) 20x25
548	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 48x30x3	(2) 20x20
648	(2) DD-10-8	1/2HP PSC	(2)	120V/60HZ	17.4 amp	(2) 48x36x3	(2) 20x25
848	(2) DD-10-6	3/4HP PSC	(2)	120V/60HZ	23.4 amp	(2) 47-1/4x47-5/8x3	(3) 20x25

Overall Dimensions

Overall Width of Cabinet: Dimension "A"

___ 3 foot = 38-1/2 in.
___ 4 foot = 50-1/2 in.
___ 5 foot = 62-1/2 in.
___ 6 foot = 64-1/2 in.
___ 8 foot = 98-1/2 in.

Overall Depth of Cabinet (front to back): 34 in.

(Power cord or hard electrical connection on the rear of the unit.)

Overall Height of Cabinet (distance from floor to top of unit): Dimension "D"

(Add 6.0 inches for 36-inch high table top option.)

___ 58.0 in. (24 Series)
___ 64.0 in. (30 Series)
___ 70.0 in. (36 Series)
___ 82.0 in. (48 Series)

Work Area Dimensions

Table Top Depth (table outside edge to cabinet HEPA filter): 21-1/2 in.

Table Top Height: 30.0 in. from floor ±.75 in. with leg levelers

Work Area Internal Height (distance from top enclosure panel to table top surface): Dimension "B"

___ 22 in. (24 Series)
___ 28 in. (30 Series)
___ 34 in. (36 Series)
___ 46 in. (48 Series)

Work Area Internal Width (distance between end panels): Dimension "C"

___ 3 foot = 34 in.
___ 4 foot = 46 in.
___ 5 foot = 58 in.
___ 6 foot = 70 in.
___ 8 foot = 94 in.

Optional Accessories

___ "Minihelic" 0 to 2 inch differential pressure gauge. (HEPA)
___ Stainless steel table top
___ Table top support legs
___ Gas cock
___ Electrical duplex outlet (additional)
___ Bar and hooks for bottle hanging
___ Gold fluorescent lamps
___ Fluorescent gold lamp sleeves
___ Safety glass hood
___ 36 inch table top height
___ Conductive Formica top
___ Anti-static grid and power supply
___ Painted cabinet – color code, manufacturer and chip required
___ Hood depth – extended (standard 21-1/2 inch) (front leg supports are recommended)
___ End panels – ___RH ___LH
___ End panels – stainless steel
___ Table top – rolled front edge
___ Casters with locking brake
___ Metal plenum vs. standard Flex Duct
___ 175 foot-candles – 4 lamp fluorescent lighting at table top
___ HEPA filter grill – perforated stainless grill – removable
___ Hood – safety glass top with stainless steel end panels
___ Drawers and storage trays
___ Foot rest
___ Cabinet shell – all stainless steel

Shipped fully assembled ready for operation and certified to meet or exceed Class 100 conditions of Federal Standard 209D.

Operations manual and test reports provided with unit at shipment.

Estimated Weight

301*24
324 = 370 lb.
424 = 400 lb.
524 = 450 lb.
624 = 500 lb.
824 = 880 lb.

301*30
330 = 400 lb.
430 = 450 lb.
530 = 500 lb.
630 = 550 lb.
830 = 770 lb.

301*36
336 = 450 lb.
436 = 500 lb.
536 = 550 lb.
636 = 600 lb.
836 = 800 lb.

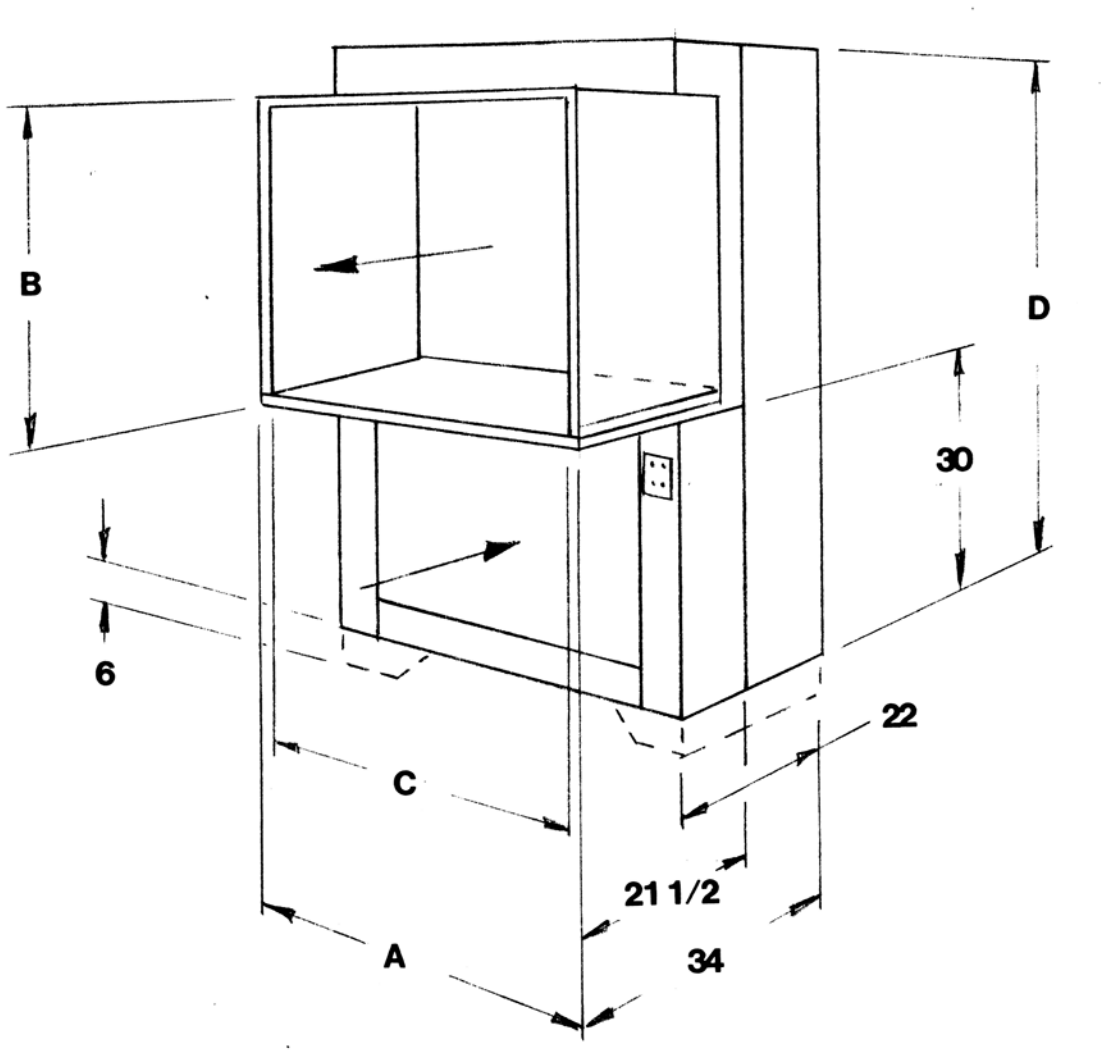
301*48
448 = 570 lb.
548 = 650 lb.
648 = 750 lb.
848 = 900 lb.

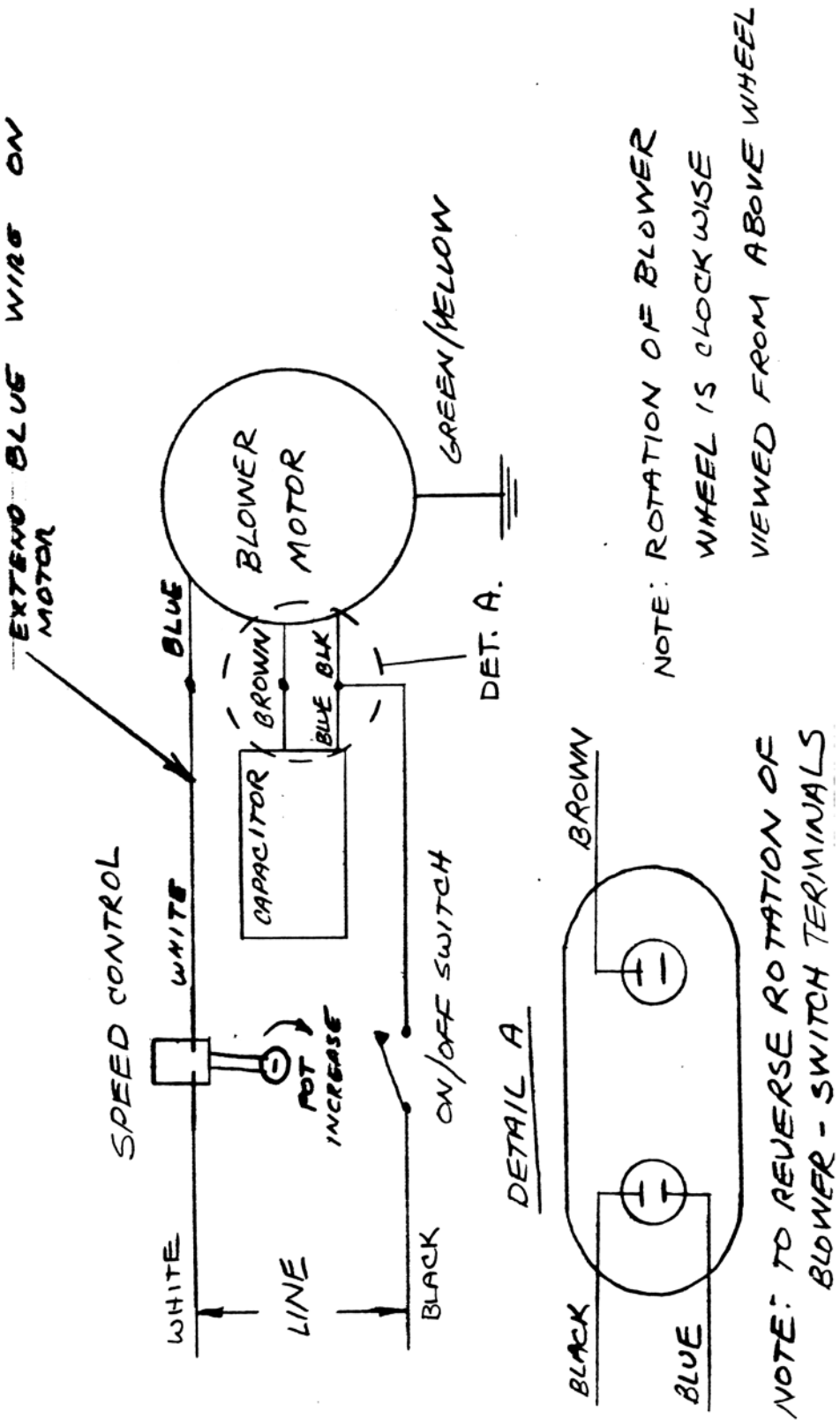
Standard units shipped F.O.B. factory by padded van.

Equipment specification, dimensions and upgrades are subject to change without notice.

Series 301 Horizontal Laminar Flow Clean Bench

Series 301





Clean Air Products' Series 109 (CAP109BL) Wiring Drawing

Set-Up & Operation

Your new cabinet is designed to be put into operation with a minimum of labor and time.

CAUTION - Do not push or pull on clear plastic hood

1) Move the cabinet into the general area where it is to be used with the shipping skid in place. This will keep damage caused by moving to a minimum. Do not push or pull on the cabinet's clear plastic hood.
2) Remove the shipping skid by removing the bolts that attach it to the bottom of the cabinet. Screw in the leveling glides until about 1/8 inch of the threads show.
3) Slide the cabinet into the place where it is to be used. Level the cabinet by adjusting the leveling glides. Exact leveling is not required for hood operation.
4) Remove wrapping from bench front. Reattach the hood to the bench. Note that right and left side acrylic panels are not the same. Be sure which is right and left. See drawing A41852.9001 for assembly.
5) The cabinet should be located away from areas where drafts might occur, such as doorways, heat ducts or aisles where people walk rapidly. The drafts can disturb the air flow from the cabinet and blow contaminants into the hood.
6) Plug the power cord into an electric outlet of 120 volt AC 20 amp rating or of adequate power to operate the cabinet and all auxiliary equipment. The cabinet interior wiring is protected by circuit breakers.
7) Remove any remaining wrapping and clean the cabinet. The cabinet interior, except the HEPA filter, may be cleaned with an alcohol solution. Caution should be used not to get the solution on the HEPA filters. The filter may become damaged. Frequent repeated use of alcohol on the clear plastic hood, over a long period, will cause the plastic to discolor to a cloudy condition. Use soft materials to clean the clear plastic. A hard abrasive material will scratch the plastic. Frequent cleaning of the plastic interior will not be necessary if the cabinet runs continuously. The vinyl material may be cleaned with mild household detergent. Stainless may be cleaned with detergents or alcohol. Abrasive materials will scratch the surface of the stainless.
8) Turn the motor switch on and let the unit run for approximately 2 hours the first time to purge the HEPA filter of possible foreign materials.
9) The unit is now ready for use.

Indoor Use

Altitude up to 2000 m or above 2000 m if specified by the manufacturer (see Clause D.9 for further information).

Temperature 0 to 40°C.

Maximum relative humidity 80 percent for temperatures up to 31°C decreasing linearly to 50 percent relative humidity at 40°C.

Mains supply voltage fluctuations not to exceed ±10 percent of the nominal voltage.

Other supply voltage fluctuations as stated by the manufacturer.

Transient overvoltages according to Installation Categories (Overvoltage Categories) I, II and III (see Annex J). For mains supply the minimum and normal category is II.

Pollution Degree 1 or 2.

Read and Save these Instructions!

Please observe the following information related to the product:

1) Read this guide before installing and/or operating the unit.
2) Keep this guide to make references to the safety and operating instructions in the future.
3) Observe warnings associated with handling, installing, using, and maintaining the CAP301.
4) Follow all instructions for set-up, operation, and use.
5) Operate ONLY from the type of power source indicated. If you are unsure of the type of power available to you, contact your dealer or power company.
6) This unit may be equipped with a polarized alternating current (AC) plug with one blade wider than the other. This plug will only fit into the power outlet in one way for safety reasons. If the plug does not fit, call an electrician to replace the outlet. DO NOT REMOVE THE ROUND GROUNDING TERMINAL. THIS UNIT MUST BE GROUNDED FOR SAFETY REASONS AND FOR PROPER OPERATION.
7) Do not place power cords (optional) where they will have things placed on or against them, be walked upon, or be pinched, especially near the outlet, the plug, or where the power cord exits the unit.
8) Overloading outlets and/or extension cords can result in fire and/or electrical shock.
9) ONLY use parts supplied or authorized by the manufacturer. Substitutions may result in fire, electrical shock, or other safety hazards.

Safety Warnings

1) NEVER expose the assembly to moisture or rain.
2) If the unit gets wet, disconnect the power at the source and have an authorized service inspection before using it again.
3) Do not pull on the optional power cord to unplug the unit, and never handle the cord with wet hands.
4) Do not clean the unit with flammable chemicals.
5) Do not expose to explosive or hazardous vapors or materials.
6) Make sure the unit is well supported to prevent falling.
7) Do not block airflow to the unit.
8) Disconnect the power before servicing.
9) Do not operate below 0 degrees Fahrenheit or above 110 degrees Fahrenheit.
10) This unit is designed to operate in a non-hazardous (non-explosive) environment with non-condensing air.
11) NEVER put objects into the blower.
12) Do not operate without metal blower guard.
13) Review application with your safety commissioner for proper use.

Daily Operation

The factory recommends that the unit be run continuously. The normal HEPA filter life is a number of years when the hood runs continuously, and it will assure a clean work area.

1) When the cabinet runs continuously, it is ready to use at all times. The work surface will require cleaning which will depend upon its use. The clear plastic hood will only require occasional cleaning on the inside with alcohol. The hood outside is to be cleaned with a plastic cleaner and soft material. Alcohol will make the clear plastic turn a milky color over a long period of time. Use sparingly, and only when needed.

2) The Formica table top may be cleaned with strong household cleaners. Stainless may be cleaned with detergents or alcohol. Abrasive materials will scratch the surface. The vinyl material on the hood may be cleaned with mild household cleaners. Chlorinated or strong cleaners will turn the vinyl yellow. The top of the clear plastic hood may easily be cleaned by removing the front shield panel.

3) When the cabinet is shut off for a short period of time and is turned on, the hood interior is to be wiped clean. The hood should run for 5 to 10 minutes before use when off for intervals of 1 or 2 days.

4) When the cabinet is to be off for 3 to 4 days or more, a plastic drape should be attached to the front of the hood as tightly as possible to prevent dust from entering the hood and getting into the HEPA filter. When the cabinet has not been used for 2 weeks or more, the filter should be purged 1 to 2 hours.

5) A short interval should be allowed each time an object is set into the hood to allow loose material to be washed off the object.

6) Avoid fanning papers, books, arms, coats and fast walking in front of the hood. Air currents will enter the hood and contaminate the interior. Many organizations have a 6-inch line marked on the table top. All work is performed behind this line to minimize contamination due to drafts.

7) The lights may be on or off when the blower is running. The lights have no affect on horizontal flow cabinets.

8) Spills should be cleaned up immediately. Sponge the liquid near the HEPA filter first to keep the liquid away from the filter. Should liquid splash onto the HEPA filter, DO NOT attempt to wipe the filter. Wiping the filter will cause filter leaks. The liquid will dry, discolor and plug a small area of the filter in front. The filter is nearly 4 inches deep, and a small plugged area will have little or no affect on the air flow.

9) Do not use the hood for storage of large objects. Large objects will disrupt the smooth laminar air flow, causing turbulent air flow behind them and contaminated room air may be drawn into the hood. Objects should not be placed between the HEPA filter and any point where the clean environment must be maintained. A good practice is to place materials on platforms to allow air movement under, as well as around, the object. All work should be performed with the operator's hands downstream of the critical process points.

Shipments

Clean Air Products takes every reasonable precaution to ensure that your laminar air flow cabinet arrives without damage. However, damage can occur in any shipment, and it is important that you note visible damage immediately with a notation on the consignee's copy of the freight bill. Terms are F.O.B. factory, unless otherwise stated. Your inspection of either visible or concealed damage is the basis of filing your claim (which you must do at once) against carrier. An inspection then must be made to verify the claim against the carrier.

Performance Specifications

All equipment is thoroughly inspected at the Clean Air Products' factory at the time of shipment. Quality control is maintained by constant surveillance over the product, beginning at receipt of purchased material and concluding with a final inspection which certifies performance to Class 100 conditions of Federal Standard 209d, as well as to the unique requirements of each project. In all instances where product quality cannot easily be assessed on the end item, the product is inspected during subassembly fabrication. All electrical components are UL approved; all mechanical components are fabricated or purchased and inspected to performance requirements before assembly into the final product.

All Clean Air products have been certified to meet or better the following specifications:

HEPA Filter System

The HEPA Filter System consists of two basic members: the absolute HEPA filter and a flexible duct to form a modular component. All HEPA filters purchased by Clean Air Products have been PSL tested to meet Mil Standard 282 and are tested for leakage for 99.99% removal of all particulate contaminants greater than 0.3 micron. The CAP FLEX Filter is proof-tested for leaks in the installation to ensure the continued integrity of the HEPA and of the assembly. PSL 0.3 micron particle size is introduced into the air, and the air flow is scanned with a light scattering photometer for leaks. All laminar flow equipment must meet or exceed Class 100 Federal Spec 209E.

Prefilter

The Prefilter is made of 1-inch thick disposable, non-woven framed fiberglass media, a nominal efficiency of 40% by NBS Test Method using atmospheric dust.

Air System

The blower has been adjusted at the factory to provide 90 FPM across the face of the filter. The motor/blower are dynamically balanced, direct drive centric unit with the motor mounted in-scroll in a resilient cradle. The motor is a permanent split capacitor type with automatic-reset-thermal overload; it is lubricated for life. The standard motor operates at 120 volt, single phase, 60 Hz power. Motor speed is controlled by a Solid State TRIAC speed control mounted on the blower and available either through the prefilter grill or on the front panel, recessed to prevent tampering. The motor/blower has been chosen to provide a flow of a minimum of 100 FPM (to meet Federal Standard 209d) and sized to provide 1.2 inches of water pressure drop over the HEPA filter at 90 FPM.

For best utilization of the workstation, the air velocity should be checked once every 6 months and speed control adjustment made, if necessary, to retain the desired are velocity (usually 90 ± 20 FPM).

Lighting

The intensity of the lighting is a minimum of 80-foot candles at the work surface level on standard equipment. The lights are single or double pin, rapid start, T-12, white lamps, unless stated otherwise. They operate within the workstation or cabinet on 120 volt, single phase, 60 Hz power. The cabinet light switch will turn on the lights for bench operation. Cabinets with ultra violet lights are wired UV light or white light on. Both may not be on at the same time.

Sound Level

The sound level is less than 65 dBa against an ambient of 55 dBa. Efficient air diffusion and the use of acoustical blankets provide for quiet operation.

Vibration

The vibration level will be less than 100 micro-inches on the work surface. A special vibration control system provides extraordinary attenuation of blower induced vibration and sound.

Operation Guidelines

Operate the laminar flow workstation continuously. The unit will then remain in its initially clean condition. If, for any reason, the unit is turned off, the interior should be cleaned. Turn the unit on and permit it to operate for 5 to 10 minutes before resuming operation.

Allow only essential items in the workstation. Objects should not be placed between the HEPA filter and any point where the clean environment must be maintained.

Particular care must be exercised in placing equipment within the workspace. Where possible, equipment should be placed on platforms to allow air movement under, as well as around the object.

All work should be performed with the operator's hands downstream of the critical process points.

Movement in the workstation should be kept to a minimum.

Maintenance Procedures

Fluorescent Lamp Replacement:

Unplug the lighting housing. Lift up and turn upside down. Bulbs are now accessible. When reinstalling on the bench, make sure the light housing is firmly sitting on the hood.

HEPA Flex Replacement: (Please refer to exploded parts drawing on your model.)

To replace the HEPA filter, remove the clear plastic hood from the cabinet by removing the screws that hold it to the table top and cabinet shell. Lift the hood from the cabinet and set to one side. Remove the strap that attaches the plastic duct to the blower and free the duct from the blower (tape may be used to hold the duct). Remove the narrow panel at the top of the HEPA filter. On each side of the filter is a filter support; remove the screws from the support and tip the filter forward. When the filter is face down on the table top, lift the filter from the cabinet. The Flex Duct and filter supports may be attached to a new filter. Replacement filters from Clean Air Products come with a new Flex Duct and supports, ready for installation. All filters from Clean Air Products are leak checked for 99.99% with 0.3 micron PSL. The reverse procedure is followed to reassemble the filter into the cabinet.

Warranty for Cleanroom & Equipment

Clean Air Products Corporation warrants that it will repair FOB its factory or furnish without charge FOB its factory a similar part to replace any material in its equipment within one year after the date of sale if proved to the satisfaction of the company to have been defective at the time it was sold provided that all parts claimed defective shall be returned, properly identified to the company at its factory, freight charges prepaid. Factory installed equipment of accessories is warranted only to the extent guaranteed by the original equipment manufacturer, and this warranty shall not apply to any portion of the equipment modified by the user. Claims under this warranty should be directed to Clean Air Products, 8605 Wyoming Avenue North, Brooklyn Park, MN 55445, setting forth in detail the nature of the defect, the date of the initial installation, and the serial number and model number of the equipment.

HEPA filters are warranted to have their given efficiency at the time of shipping.

Parts shipped to replace warranty items shall be invoiced out with 60 day terms. Credit shall be issued when defective parts are returned to Clean Air Products' factory. (Contaminated materials shall be credited after receipt of proper disposal is sent to Clean Air Products.)

When special shipping containers are used to ship out new product, defective parts are to be returned in the same container. This shall be so stated on the Bill of Lading sent with the replacement parts.

Contaminated Parts and Equipment

Clean Air Products must be notified if defective parts, or other materials supplied to the purchaser are contaminated with hazardous chemicals or carcinogenic materials that are considered hazardous or carcinogenic by the EPA or other regulatory agencies. These parts are not to be shipped back to Clean Air Products' factory. The purchaser shall be responsible for proper disposal and all costs associated with the disposal and/or storage of the defective contaminated equipment. Prior to their disposal, Clean Air Products may require inspection of said defective materials.

The user and purchaser shall each be responsible and be back charged for cleanup and disposal of all contaminated materials shipped back to Clean Air Products' factory.

Cleanroom Solutions Made Easy!

Laminar Flow Clean Benches

Modular Cleanrooms — Vertical Flow HARDWALL

Dust Containment Cabinets

Fume Hoods

We Build Hassle-Free

Modular Cleanrooms — Vertical Flow SOFTWALL

Wet Process Stations

Coat Racks

Formica Tables

Stainless Steel Tables

Cleanroom Solutions

Filters

Gowning Benches

Desiccator Cabinets

Storage Cabinets

Air Showers

Pass Thru Air Locks

Wall & Ceiling Modules

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