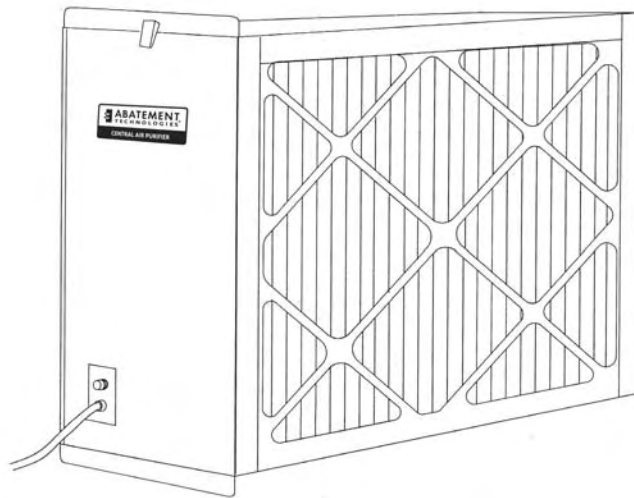




**CAP50 AND CAP100 SERIES IN-LINE UNITS
MODELS: CAP50UVP AND CAP50UV
CAP100UVP AND CAP100UV
INSTRUCTION MANUAL**



Abatement Technologies, Inc./HVAC Products Division

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Abatement Technologies, Inc CAP50 and CAP100 IN-LINE Central Air Purifier Series Models: CAP50UVP and CAP50UV, CAP100UVP and CAP100UV Instruction Manual

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Note:

- 1. Read and understand all operating instructions before installing and using the CAP50 and CAP100 In-Line units.**
- 2. This manual contains important information on the installation and operation of the units.**
- 3. Save this instruction manual for future reference.**

This manual provides important information on the installation and operation of the CAP50 and CAP100 units. These instructions must be carefully followed in order to install and operate the units safely and correctly. If you have any questions regarding the installation, use or maintenance of the units, call Abatement Technologies at 800-634-9091 (US) or 905-871-4720 (Canada) for assistance.

General Information

The CAP50 and CAP100 In-Line units are designed to filter household dust, dander, pollen, smoke particles, and other particulate matter from the air which circulates through the heating, ventilation, and air conditioning (HVAC) air duct system. Both units include a sturdy metal frame with a removable filter access door, a first-stage filter, a pleated air filter and a removable control module. The CAP50UV and CAP100UV include an ultraviolet germicidal irradiation (UVGI) bulb. Ultraviolet germicidal irradiation breaks down bacteria, molds, and viruses. The CAP50 UVP and CAP100UVP include a UVGI/Photolysis (UVGI/P) bulb. In addition to emitting UVGI, the bulb also creates a photolysis reaction, which is an oxidation process that neutralizes unpleasant odors and volatile organic compounds (VOC's).

Note: To maximize UVGI and UVGI/P bulb life, the unit's power switch should be left in the "ON" position, except when installing the bulb, replacing the filters, removing the control module (to replace the bulb), or servicing the unit.

Key Components and their Function – Refer to Figures A and E

- Frame- houses a first-stage filter, a pleated filter and a removable control module. The frame which includes a filter access door, is installed in the HVAC system's return air duct next to the furnace blower compartment.
- First-Stage Filter - removes large particulates (pollen) from the air stream inside the return air duct. Protects and extends the life of the pleated filter.
- Pleated Filter - removes smaller particulates (household dust, tobacco smoke, etc.) from the air stream in the return air duct.
- Removable Control Module - contains the following components:
 - Ultraviolet Germicidal Irradiation (CAP50UV and CAP100UV) bulb - irradiates filtered air and breaks down bacteria, molds, and viruses.
 - UVGI/Photolysis (CAP50UVP and CAP100UVP) bulb - emits UVGI and also creates a photolysis reaction.
 - Sight Glass - provides a means of checking the status of bulb.
 - Power Switch - rocker-arm style ON/OFF power switch which illuminates when it is in the "ON" position.
 - Fuse - 250 volt, 3 amp fuse which protects the unit's electrical components in case of electrical power surge or internal short circuit.
 - Interlock Switch - turns power to unit "OFF" if filter access door is removed while Power Switch is in the "ON" position. If a filter or bulb change is attempted without turning power to the CAP50 or CAP100 In-

Line units “OFF”, the interlock switch shuts the power “OFF” and prevents anyone from looking directly at UVGI rays that can cause temporary or permanent loss of vision and severe skin burns.

- Power Cord - number 18-3 AWG, 3-wire power cord with ground pin.
- Filter Access Door - removable door that provides access to First-Stage filter, Pleated filter and removable control module.

ELECTRICAL REQUIREMENTS

1. The CAP50 and CAP100 In-Line units require a minimum of 110 volts AC, 60 hz to operate properly; however, for maximum performance, the units require 115 volts AC. Make certain that any extension cord(s) used do not reduce power to less than 110 volts. Use of a voltmeter to confirm adequate voltage is recommended. For maximum safety, the units should be connected to a 3-prong, properly grounded outlet equipped with a ground fault circuit interrupt device (GFCI). A GFCI will trip the circuit and stop the flow of electricity if leakage of current is detected.
2. Power cords should never be exposed to water, heat, sharp or abrasive objects; in addition, they should never be kinked or crushed. Always replace damaged power cords immediately.
3. Extension cords must be the number 18-3 AWG, 3-wire type.
NOTE: Use of larger numerical gauge (lower capacity wire) power cord(s) may result in damage to the UVGI/P and UVGI bulbs and ballast. The extension cords must be in good condition, in continuous lengths (no splicing) and should not exceed a total of 100 feet in length. Use of too much cord can result in a voltage decrease and shorten the life of UVGI/P and UVGI bulbs and ballast.

CAUTION: To avoid damage to the CAP50 and CAP100 electrical systems, do not connect or disconnect units to power source unless the power switch is in the “OFF” position.

CAUTION: To reduce risk of electrical shock do not expose the CAP50 or CAP100 to water. Do not touch the electrical outlet or power cord(s) with wet hands or while standing on a wet surface.

WARNING: Risk of electrical shock! Can cause injury or death. Always turn the CAP50 and CAP100 units “OFF” and disconnect them from the power source before installing the bulb, replacing the filters, removing the control module (to replace the bulb), or servicing the units.

CAUTION: For General Ventilating Use Only. Do not use to exhaust Hazardous Or Explosive Materials And Vapors.

Warning: Any atmosphere that is combustible, flammable, explosive, oxygen deficient, and/or contains odors, vapors, gases or particulates that exceed permissible exposure levels should be evaluated by a certified industrial hygiene professional before being occupied. Such atmospheres may require the use of intrinsically safe equipment, specific engineering controls, and personal protective equipment in accordance with Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Canadian Standards Association (CSA), and other federal, state, provincial and local regulations.

Warning: This equipment is not classified as “intrinsically safe” and should not be used in the following potentially hazardous locations as defined by the Underwriters Laboratories: Class I Division I, Class I Division 2, Class 1 Zone 0, Class 1 Zone 1, Class 1 Zone 2, Class II Division 1, Class II Division 2, Class III Division 1, Class III Division 2. Refer to the UL web site: <http://www.ul.com/hazloc/define.htm>.

Before Installing the CAP50 and CAP100 In-Line Units

Note: The CAP50 and CAP100 In-Line units are designed for indoor use only.

1. The CAP50 and CAP100 can be used with: gas, oil, and electric forced-air residential furnaces with airflows up to 1,600 CFM, and air conditioning compressors up to 3.5 tons. The units can be used with heat pumps,

provided the filters are changed regularly to prevent excessive pressure drop. **Do not use the units in conjunction with any HVAC systems where pressure drop may be critical.**

2. Since the units cannot remove existing dust and dirt from the air ducts, furnace blower, and evaporator coil, these major HVAC components should be thoroughly cleaned using source-removal techniques before installation.
3. The CAP50 or CAP100 must be installed in the return air duct, next to the blower compartment. This ensures that only filtered air will enter the furnace motor/blower assembly and evaporator coil. Keeping these HVAC components clean will reduce maintenance and energy costs. **Do not install either unit on the supply side of the HVAC system. Do not install the CAP50 or CAP100 within 3 feet of any HVAC system components (including filters) which are not resistant to ultraviolet light. Exposure to UV light causes degradation (such as cracking, discoloration, etc) of such components.**

Warning: Neither the CAP50 nor the CAP100 should be installed in the line of sight of any inlet/outlet grilles or openings. The UVGI and UVGI/Photolysis bulbs produce intense ultraviolet light and heat. Direct contact with ultraviolet light and bulbs can cause temporary or permanent loss of vision and severe skin burns. Never look at a UV lamp while it is illuminated. Never operate the CAP50 or CAP100 outside the duct.

4. Do not install the CAP50 or CAP100 where the air temperature will exceed the ratings for the filters. Refer to “**Specifications**” section for temperature ratings of filters.
5. In determining the location of either unit, be sure to allow at least 26 inches of clearance in front of the filter access door for removal and replacement of filters and control module.
6. Determine sheet metal requirements as follows:
 - **Transitions** are required when the CAP50 or CAP100 frame and return air duct are of different dimensions. To minimize air turbulence and maximize efficiency, the transition fittings on each side of the frame should not provide more than 20° of expansion. **Refer to Figure B-1.**
 - **Turning Vanes** should be added to a 90° elbow fitting if it connects directly to the upstream side of the CAP50 or CAP100. The vanes will ensure that air is distributed more evenly across the surfaces of the filters. **Refer to Figure B-2.**
 - An **Offset** is required when the return air duct (in a side installation) does not provide at least 9 1/2 inches of space for mounting the CAP50 or CAP100. **Refer to Figure B-3.** Check to ensure that all the necessary sheet metal components are available before beginning the installation process.

Installation

Note: The person installing the CAP50 or CAP100 In-Line units must be a licensed and trained HVAC technician.

Warning: Check to ensure that: a) the Power Switch for the CAP50 or CAP100 is turned “OFF”, and b) the unit is disconnected from electrical power source during installation process. Risk of electrical shock! Can cause serious injury or death. Always turn the electrical power switches and circuit breakers for furnace/air conditioning unit(s) “OFF” before installing the CAP50 or CAP100. The UVGI and UVGI/Photolysis bulbs produce intense ultraviolet light and heat. Direct contact with ultraviolet light and bulb can cause temporary or permanent loss of vision and severe skin burns. Never look at a UV lamp while it is illuminated.

Caution: When installing the CAP50 or CAP100, always wear the proper personal protective equipment (particularly eye and hand protection) in accordance with federal, state, and employer regulations. Be extremely careful when handling sheet metal during installation because serious injury could result from coming in contact with sharp edges.

Note: The following installation instructions are for a Highboy type furnace, which is commonplace. Installation procedures may have to be modified for other types and configurations of furnaces.

1. **Refer to Figures C-1 to C-6** for determining the optimum location of the CAP50 or CAP100 based on the various types and configurations of furnaces.
2. Before installing the CAP50 or CAP100, **refer to Figure D** for complete dimensions of the frames.
3. Check to ensure that a) the Power Switch for the CAP50 or CAP100 is turned “OFF” and, b) the unit is disconnected from electrical power source. Turn the electrical power switches and circuit breakers for furnace/air conditioning unit(s) “OFF”.
4. Remove the filter access door from the CAP50 or CAP100 as follows: (a) pull up on the latch mounted to the door, and (b) pull the latch through the circular opening in the frame.
5. Remove the filters from the frame and set them aside during the installation process.
6. Remove the four screws which secure the control module to the frame.
7. Remove the control module from the CAP50 or CAP100 frame and set it aside.
8. Remove any existing filter(s) from the HVAC system air ducts.
9. The CAP50 and CAP100 must be installed in the return air duct, upstream (in front) of the blower compartment. The frame must be oriented so that the first stage filter will be upstream of the pleated filter. The frame is reversible to ensure correct filter orientation.
10. Cut an opening in the side of the furnace equivalent in size and shape to the filter opening in the CAP50 or CAP100 frame. There are bendable flanges and tabs with pre-drilled holes in the frame to facilitate mounting. Bend the flanges and/or tabs 90° until they are flush against the mounting surface and use sheet metal screws to secure the frame in place.
11. Use Transitions, Turning vanes and an Offset, where required.
12. Once the CAP50 or CAP100 has been securely mounted, be sure to seal all joints with duct tape or caulk to prevent dust and dirt from entering the return air stream.
13. Remove the bulb from the corrugated tube and plug the 4 pin end all the way into the female socket which is affixed to the control module. Note: The 4 pins on the end of the bulb form a rectangle and align with the female socket in only two positions. **Do not touch the glass section of the bulb with bare hands because skin oils will reduce the effectiveness of the bulb.** Insert the other end of the bulb into the spring clip which is affixed to the control module. Place the control module back into the CAP50 or CAP100 frame. **Orient the control module so that the bulb will face the pleated filter. In addition, make sure the bottom edge of the bulb deflector fits into the slotted bracket which is attached to the frame.**
14. Replace and tighten the four screws which secure the control module to the frame.
15. Install the filters inside the CAP50 or CAP100 frame. Check the airflow direction arrows on the filters to ensure that: (a) the First-Stage filter is always upstream (in front) of the Pleated filter, and (b) the Pleated filter is always upstream of the return side of the blower compartment.
16. Replace the filter access door. Make sure that the door latch is seated firmly inside circular opening in the frame before pushing down on the latch to close it.
17. Connect the CAP50 or CAP100 to a 110 volt AC electrical outlet and turn the power switch to the “ON” position. Turn the circuit breakers and electrical power switches for furnace/air conditioning unit(s) “ON”.

Warning: Always turn the CAP50 or CAP100 In-Line units “OFF” and disconnect them from the power source before installing the bulb, replacing the filters, removing the control module (to replace bulb), or servicing the units. The UVGI and UVGI/Photolysis bulbs produce intense ultraviolet light and heat. Direct contact with ultraviolet light and bulb can cause temporary or permanent loss of vision and severe skin burns. Never look at a UV lamp while it is illuminated.

Filter Replacement

Note: Use only Abatement Technologies replacement filters. The filters in the CAP50 or CAP100 are not reusable; therefore, do not attempt to clean and reuse them. Use of non-Abatement Technologies replacement filters voids the warranty and all performance claims.

Caution: The H055UVR (for CAP50) or H105UVR (for CAP100) filter provided with this product is specially designed for safe and effective use with UVGI bulbs. Do NOT substitute other filters because these products may degrade, discolor, off-gas or produce unpleasant odors.

Inspect the First-Stage and Pleated filters monthly. If the filters appear loaded with dirt, dust or other particulate

matter, replace them. Typically, the service life of the First-Stage filter is one to two months. Timely replacement of the First-Stage filter will prolong the life of the Pleated filter.

To Replace the Filters:

1. Open the filter access door and remove filters. Visually inspect them for particulate loading.
2. Based on condition of the filters, install new ones or continue using existing filters. **The Pleated filter must be changed at least every six months (Part No. H055UVR for CAP50 and H105UVR for CAP100).**
When installing filters, check the airflow direction arrows on the filters to ensure that: (a) the First-Stage filter is always upstream (in front) of the Pleated filter, and (b) the Pleated filter is always upstream of the return side of the blower compartment. When filters are replaced, record the date on the sheet inside the filter access door.
3. Reattach the filter access door to the frame and close door latch.

Bulb Replacement

Warning: Both the UVGI and UVGI/P bulbs get extremely hot during operation. Unit must be turned “OFF” for at least 15 minutes before replacing or cleaning bulb. Touching the bulb immediately after turning unit “OFF” will result in severe skin burns. Never look at a UV lamp while it is illuminated.

The UVGI and UVGI/Photolysis bulbs each have a rated service life of approximately 1 year, provided they are **not**: a) dropped or otherwise damaged, and b) turned “ON” and “OFF” more than once every 8 hours. As stated in the General Information section of this instruction manual, “To maximize UVGI and UVGI/P bulb life, the unit’s power switch should be left in the “ON” position except when installing the bulb, replacing the filter(s), removing the control module (to replace the bulb), or servicing the unit.” If the CAP50 and CAP100 are used in the recommended manner, bulb life will closely approximate 1 year.

The sight-glass in the control module door provides a means of checking the status of the bulb. If a glow is not present when looking into the sight-glass while the power switch is “ON”, the bulb needs to be replaced.

Note: The bulb should be replaced once each year.

To Replace the UVGI/P or UVGI Bulb:

1. Turn the CAP50 or CAP100 “OFF” and disconnect it from the electrical power source.
2. Open the filter access door.
3. Remove the four screws which secure the control module to the frame.
4. Remove the control module from the CAP50 or CAP100 frame.
5. Remove the bulb from the spring clip at the far end of the control module.
6. Grasp the ceramic sections of the bulb and unplug the bulb from the female socket.
7. To install a new bulb, plug the 4 pin end of the bulb all the way into the female socket. Note: The 4 pins on the end of the bulb form a rectangle and align with the female socket in only two positions. **Do not touch the glass section of the bulb with bare hands because skin oils will reduce the effectiveness of the bulb.** Insert the bulb back into the spring clip.
8. Place the control module back into the CAP50 or CAP100 frame. Orient the control module so that the bulb is facing the Pleated filter. In addition, make sure the bottom edge of the bulb deflector fits into the slotted bracket which is attached to the frame.
9. Replace and tighten the four retaining screws which secure the control module to the frame.
10. Reattach the filter access door.

Note: The UV and UVP lamps contain mercury. Do not place used lamps in the trash. Contact the local waste disposal authority for instructions on the proper disposal of UV lamps. Refer to the website: <http://www.nema.org/lamprecycle/> for more information regarding the recycling of spent mercury-containing lamps.

Specifications

- *First-Stage filter (P/N H051 for CAP50 and P/N H101 for CAP100) media type
- *Pleated filter (P/N H055UVR for CAP50 and P/N H105UVR for CAP100) media type
- First-Stage filter temperature rating = 150°F (66°C)
- Pleated filter temperature rating = 200°F (95°C)
- Airflow capacity = 1600 CFM
- Shipping weight = 20 lbs for CAP50, 22 lbs for CAP100
- *The First-stage, and Pleated filters meet UL 900 Class 2 requirements for flammability.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	SOLUTION
Unit won't start when power switch is turned "ON".	Power cord.	Check all connections and condition of cord. DO NOT OPERATE UNIT WITH DAMAGED POWER OR EXTENSION CORD(S).
	Tripped circuit breaker.	Reset building breaker.
	Tripped GFCI.	Reset GFCI at power source.
Bulb doesn't glow.	Bulb connection.	Check connection between bulb and socket.
	Burned out bulb.	Refer to the section entitled "Bulb Replacement".
	Burned out ballast or interlock switch.	Call Abatement Technologies Technical Support Department for assistance.

NOTE: If the unit does not turn "ON" or malfunctions after carefully following the Troubleshooting Guide, call Abatement Technologies service department at 800-634-9091 (U.S.) or 905-871-4720 (Canada) for assistance.

Component Replacement

Occasionally a defective component will cause the unit to operate improperly or not at all. Any electrical device can fail. Refer to the WIRING SCHEMATIC AND WIRING DIAGRAM to diagnose the failure of any component. Diagnostics should only be performed by a qualified technician.

Care of the Unit

Warning: Both the UVGI and UVGI/P bulbs get extremely hot during operation. Unit must be turned "OFF" for at least 15 minutes before replacing or cleaning bulb. Touching the bulb immediately after turning unit "OFF" will result in severe skin burns.

Always remove filters and control module before cleaning unit. The frame for the CAP50 and CAP100 is powder-coated and should be cleaned with a damp cloth or a water-based cleaner/sanitizer. Do not use harsh chemicals or solvents to clean the frame. Replace filters after cleaning unit.

Inspect the UVGI or UVGI/Photolysis bulb every 6 months. If the bulb is soiled, clean the glass surface with a cotton ball and alcohol.

Limited Warranty

Abatement Technologies, Inc (ATI) warrants that goods sold to the original user shall be free from defects in material and workmanship for a period of 5 years, except such as are commercially acceptable. The warranty on lamps is 1 year from purchase date. This warranty does not include useful filter life. **ATI does not warrant that the goods sold are merchantable or fit for any particular purpose. ATI makes no warranties other than as stated in this paragraph. All other warranties, guaranties, or representations, express or implied, by operation of law or otherwise, are expressly disclaimed.** Goods found by ATI to be defective or not to conform to specification shall upon return be replaced or repaired by ATI without any additional charges, or, at ATI's option, ATI may refund the purchase price of such goods. ATI will pay return transportation charges on returned goods not exceeding the transportation charges applicable to shipment from original destination unless the returned goods are free from defect and conform to specifications. Returned goods which are found by ATI to be free from defect and to conform to specifications shall be held for Purchaser's shipping instructions, which instructions Purchaser shall furnish promptly upon request. **ATI's liability shall in no event extend beyond replacement, repair or refund of the purchase price and ATI shall not be liable under any circumstances for special, contingent or consequential damages, nor for loss, damages, or expenses directly or indirectly arising from the use of the goods, including without limitation, warehousing, labor, handling and service charges, die, equipment, or machine breakage, nor for costs, lost profits or loss of good will. The use of substitute, non-ATI parts and/or filters, in any ATI product, voids all warranties and performance claims. The remedies set forth herein are exclusive.**

For warranty information and assistance contact Abatement Technologies' Customer Service Department at 800-634-9091 (U.S.) or 905-871-4720 (Canada.)

FIGURE A: CAP50 and CAP100 IN-LINE UNITS - KEY COMPONENTS

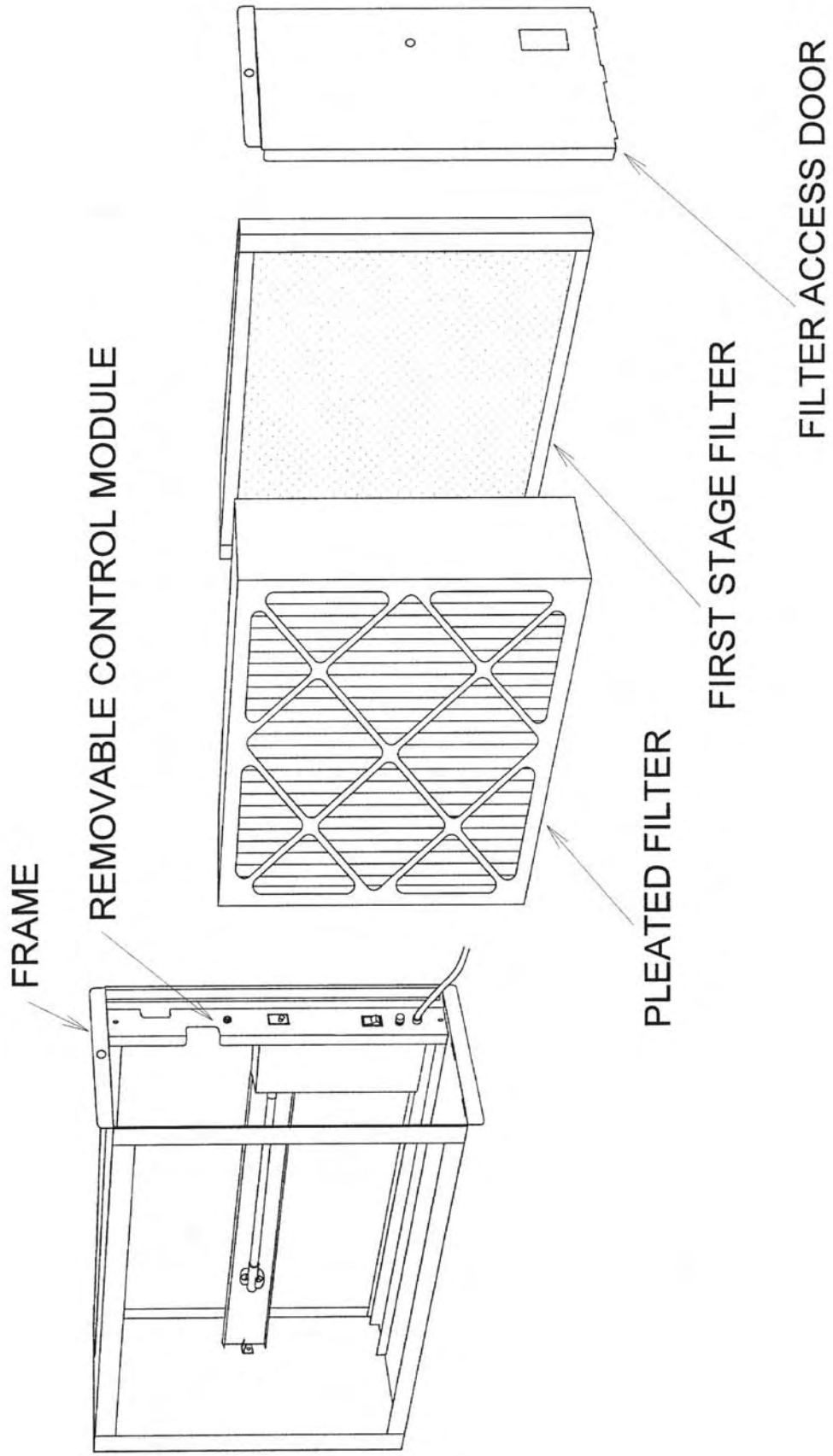


FIGURE B-1 TRANSITIONS

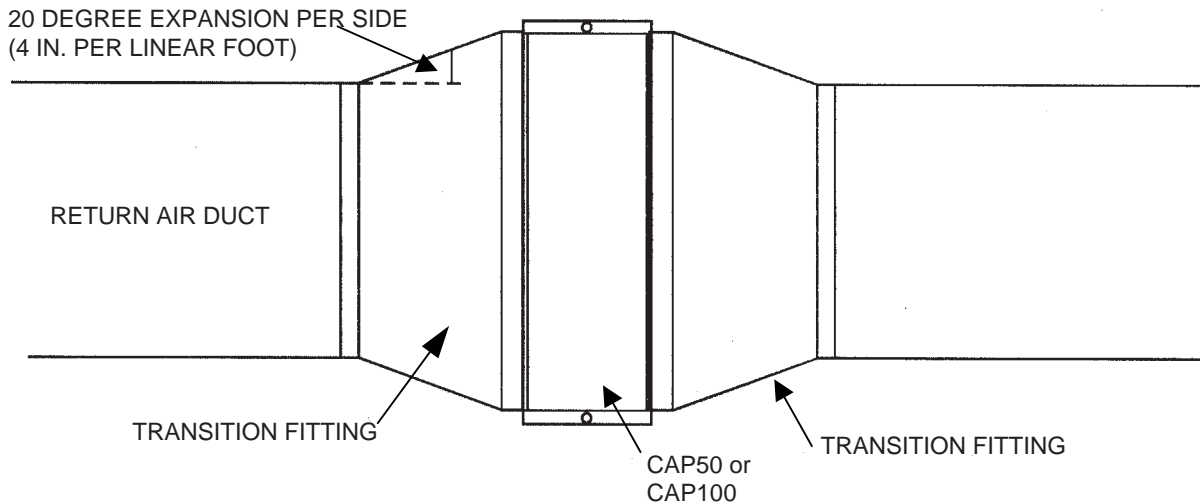


FIGURE B-2 TURNING VANES

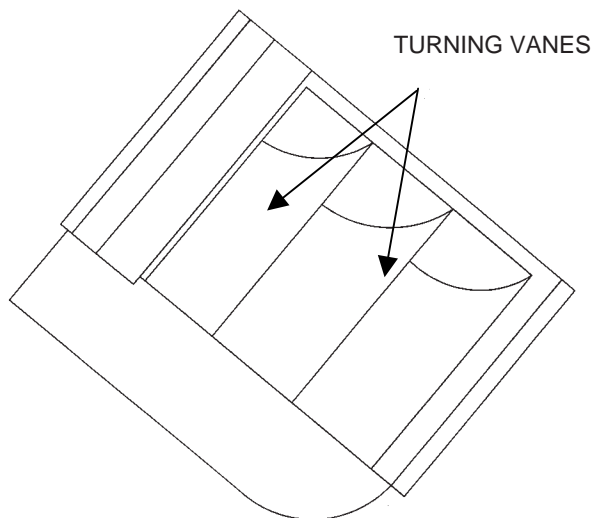
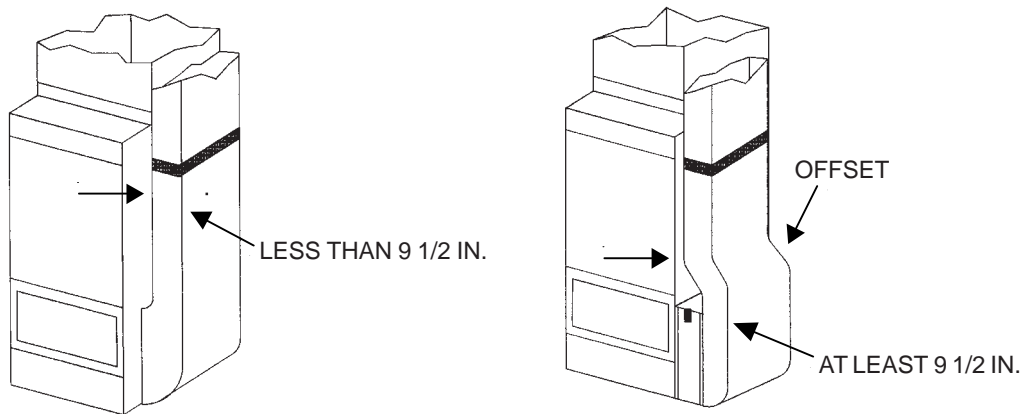
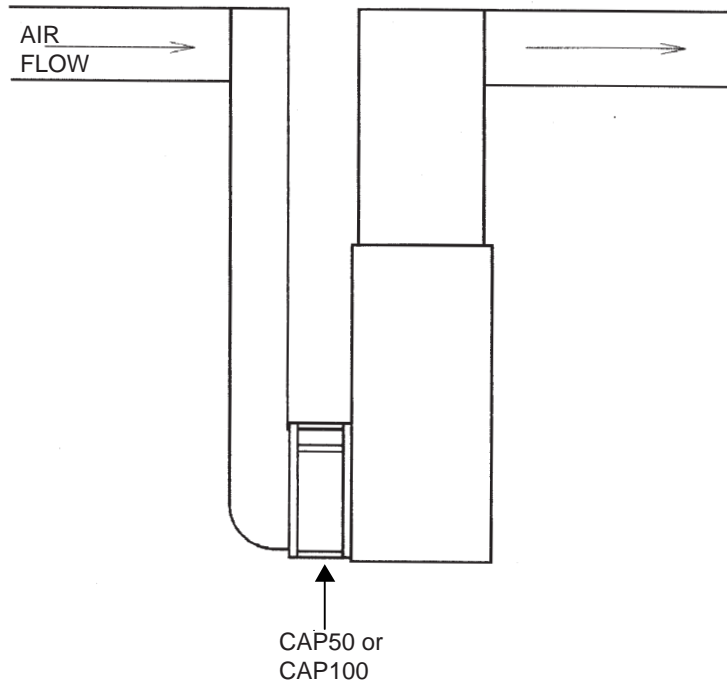


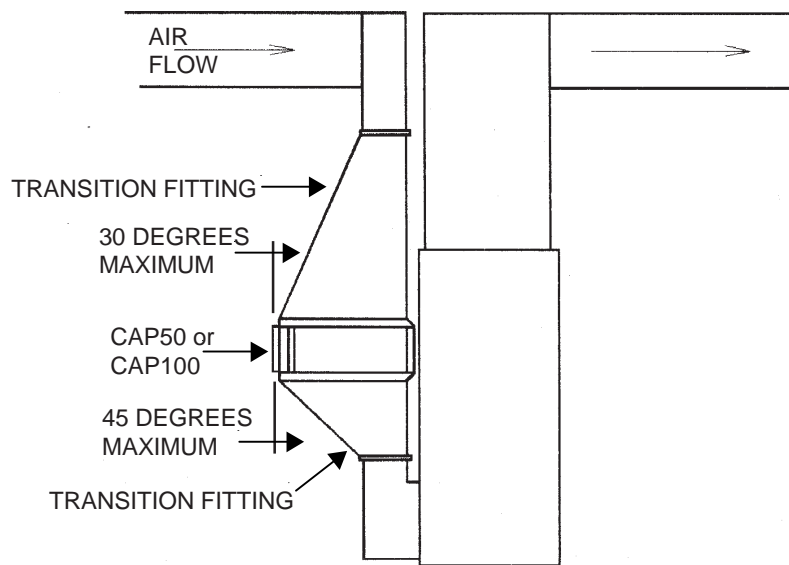
FIGURE B-3 OFFSET



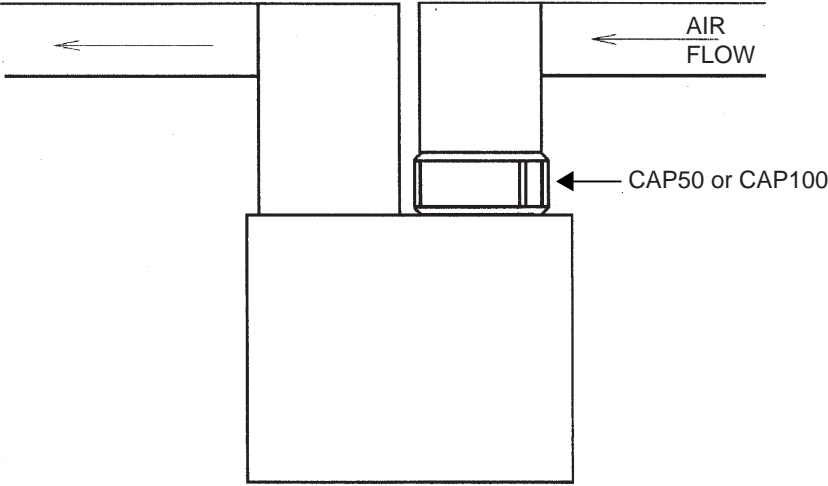
**FIGURE C-1 HIGHBOY FURNACE - SIDE INSTALLATION
(NO TRANSITION)**



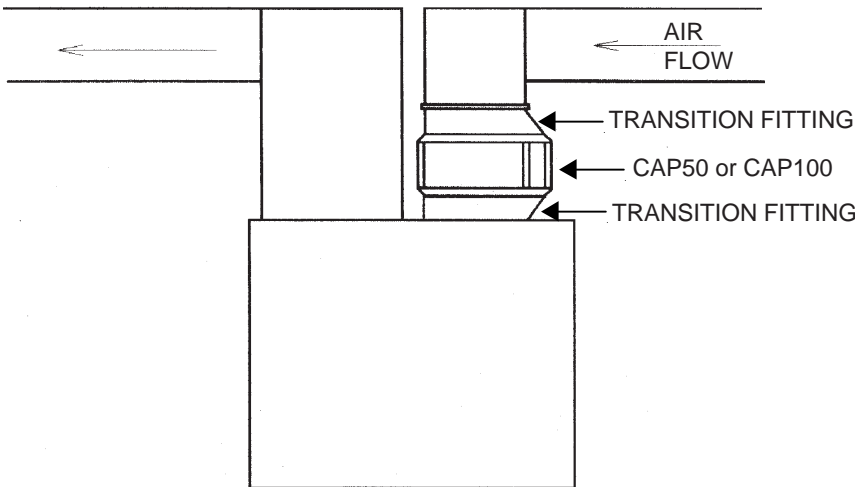
**FIGURE C-2 HIGHBOY FURNACE - SIDE INSTALLTION
(WITH TRANSITION)**



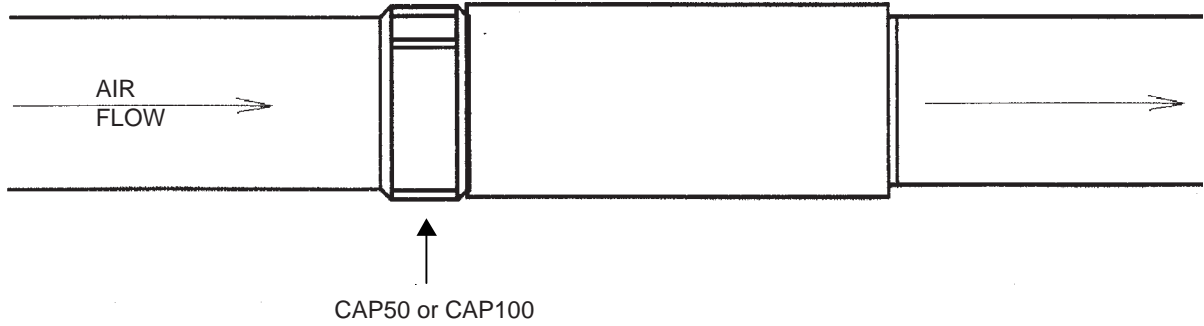
**FIGURE C-3 LOWBOY FURNACE - TOP INSTALLATION
(NO TRANSITION)**



**FIGURE C-4 LOWBOY FURNACE - TOP INSTALLATION
(WITH TRANSITION)**



**FIGURE C-5 HORIZONTAL FURNACE - SIDE INSTALLATION
(NO TRANSITION)**



**FIGURE C-6 HORIZONTAL FURNACE - SIDE INSTALLATION
(WITH TRANSITION)**

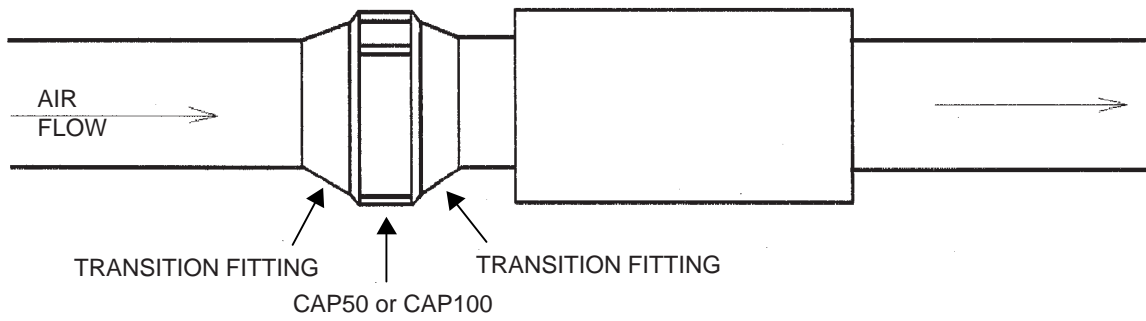


FIGURE D-1 CAP50 FRAME DIMENSIONS (IN INCHES)

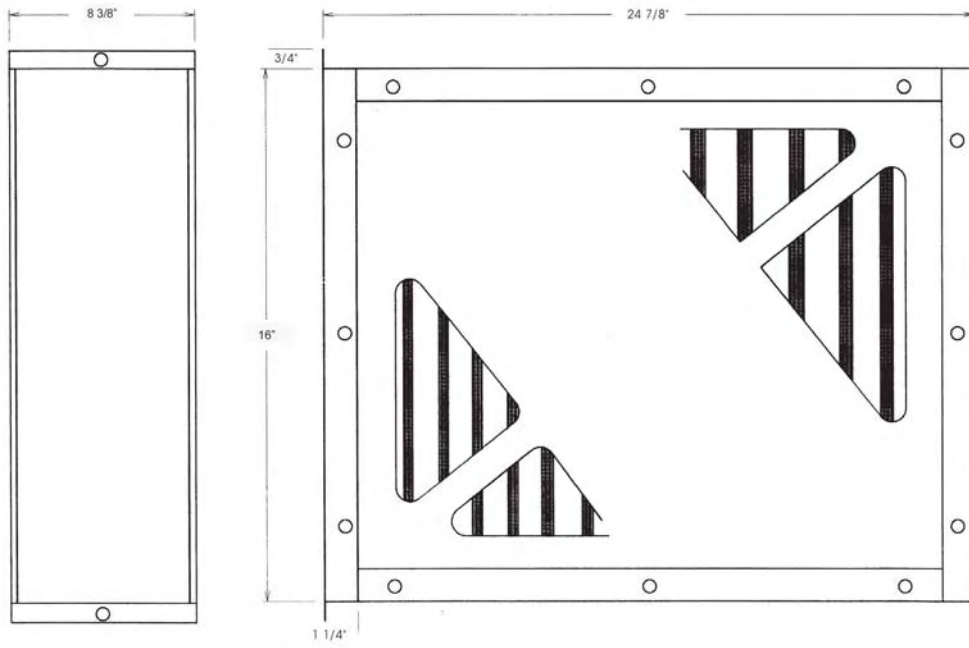


FIGURE D-2 CAP100 FRAME DIMENSIONS (IN INCHES)

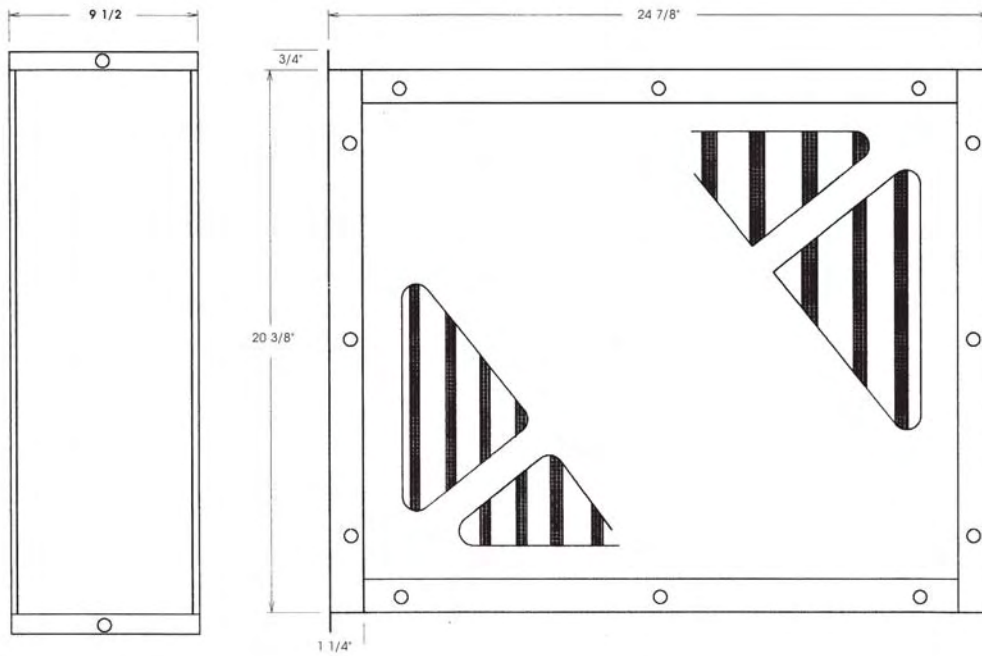
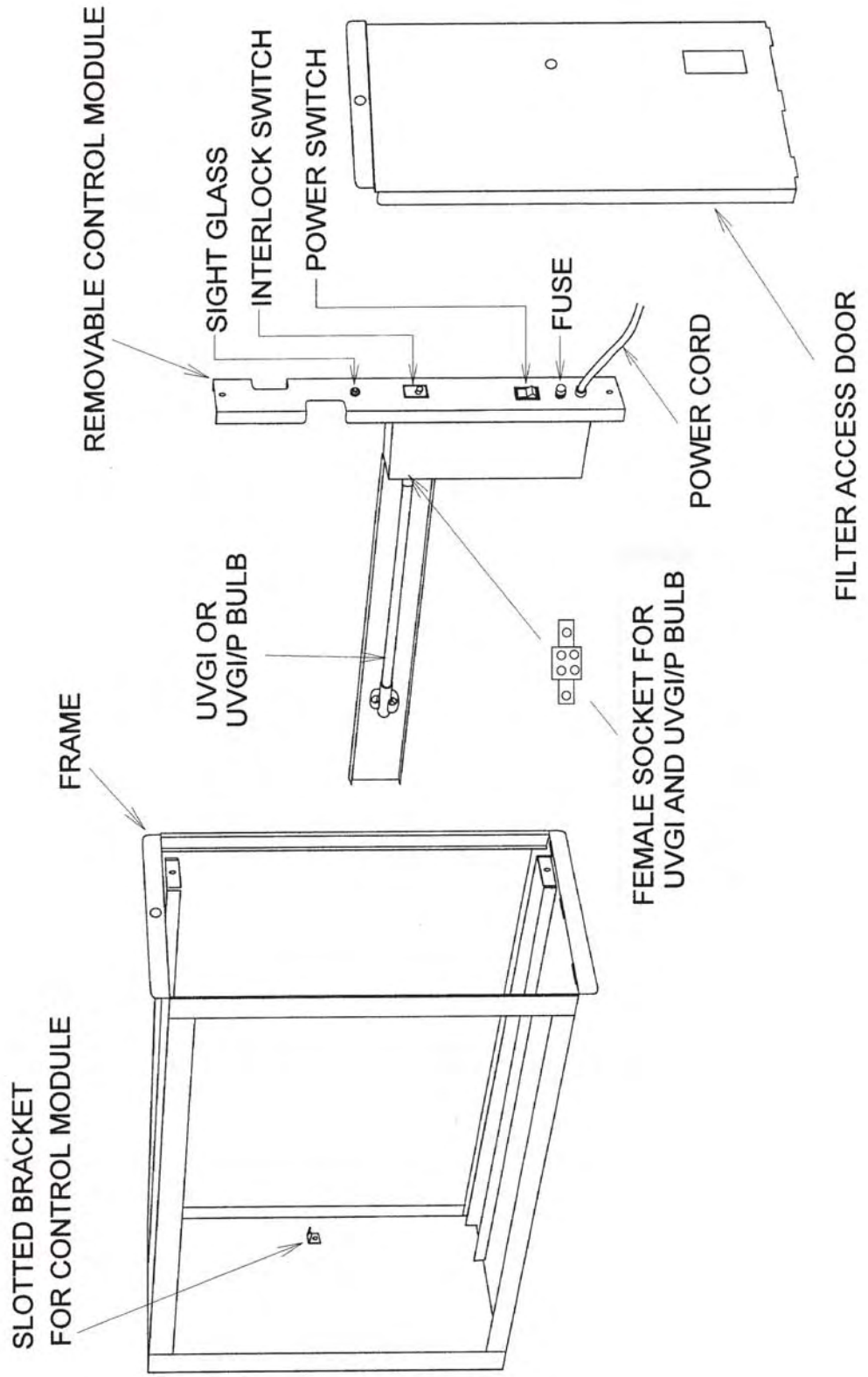
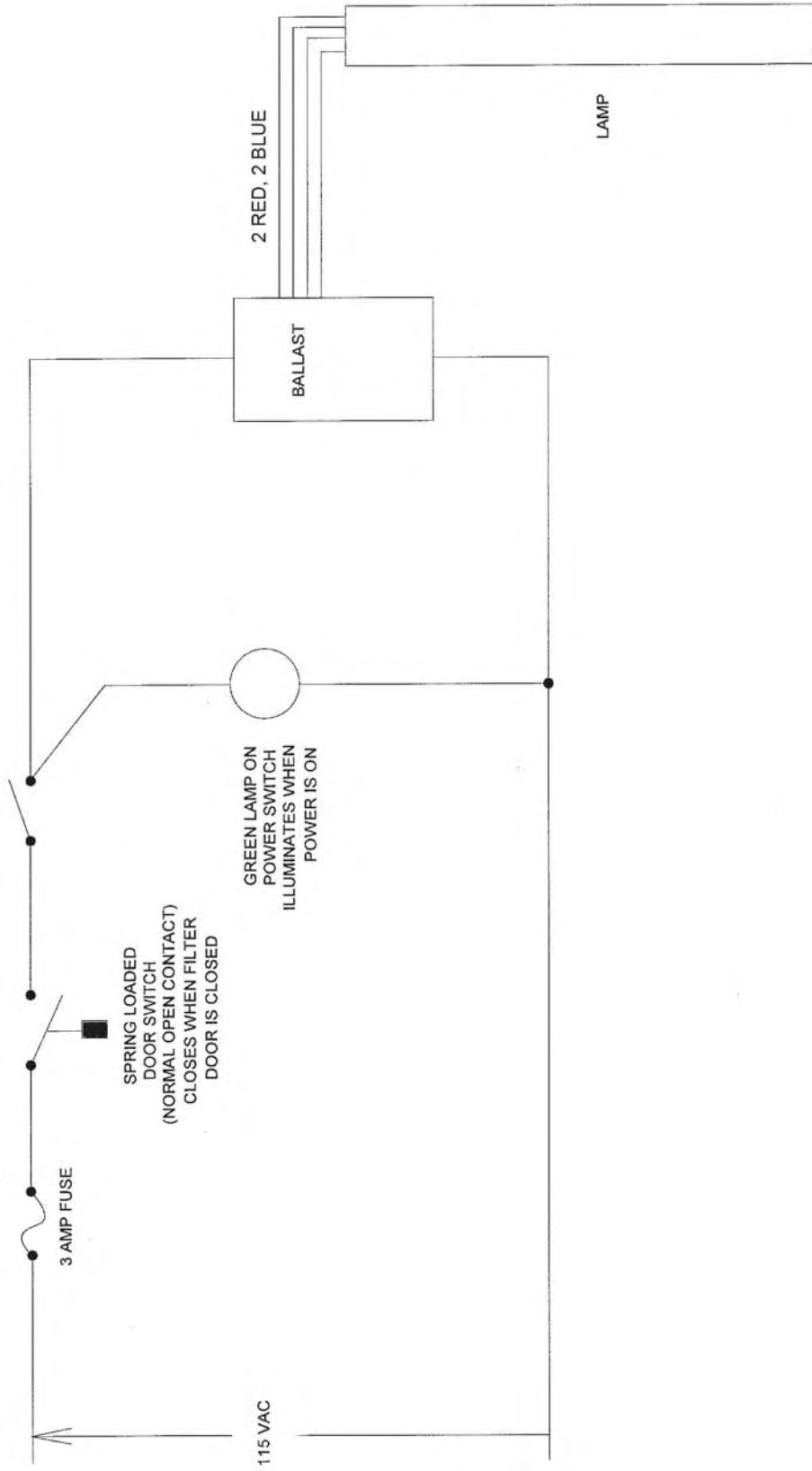


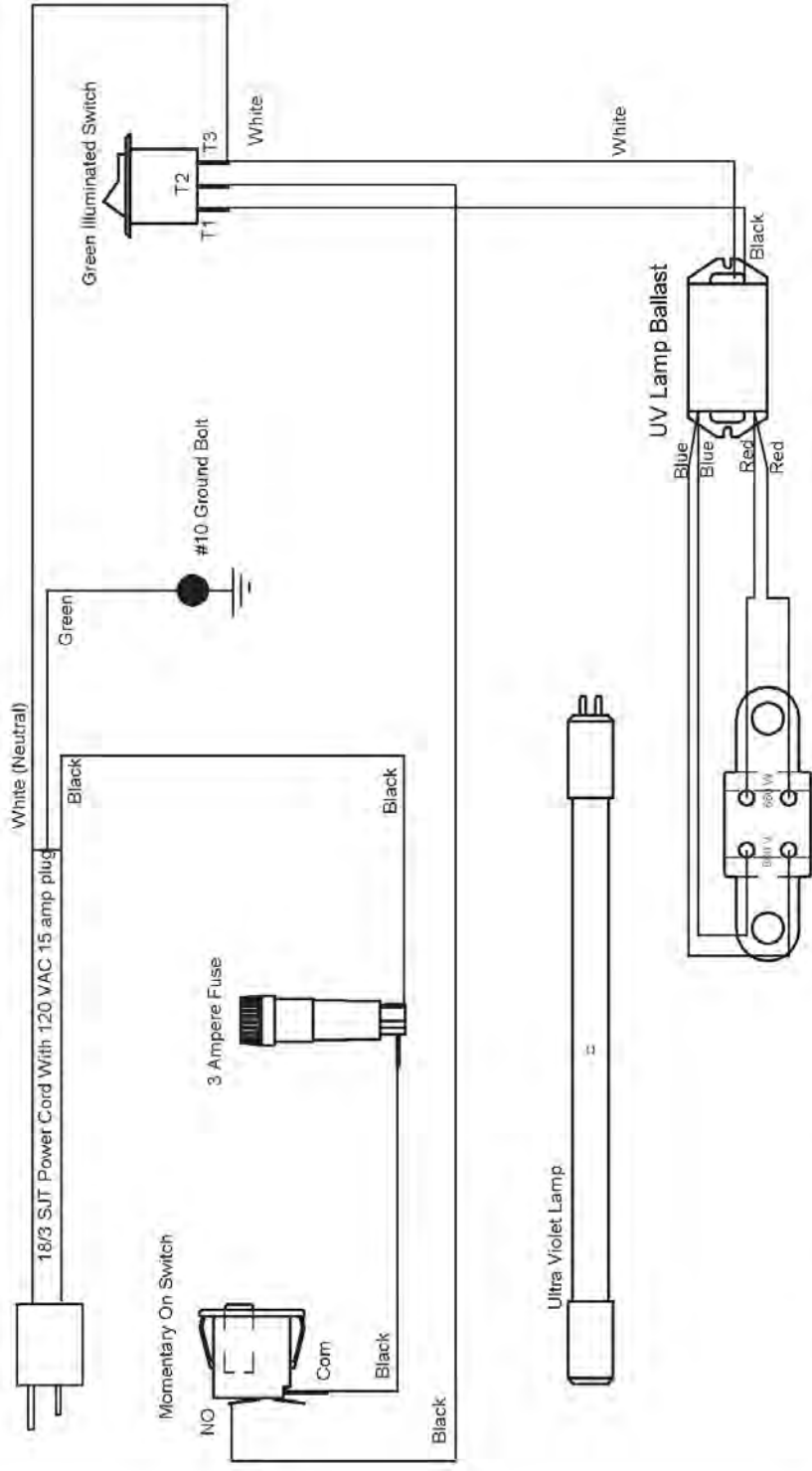
FIGURE E



WIRING SCHEMATIC FOR CAP50 AND CAP100 SERIES IN-LINE UNITS



WIRING DIAGRAM FOR CAP50 AND CAP100 SERIES IN-LINE UNITS



Warning: Ultra Violet light can be harmful to the eyes and skin.
Warning: Disconnect power to unit before servicing.
Harmful voltage can cause injury or death.

TITLE: CAP50-UV / UVP & CAP100-UV / UVP Wiring Diagram		SIZE: A - WIDE	DWG NO.:	REV#:
Material:	NAME: Dan	DATE: 02/01/05	DESC:	
DRAWN:	SCALE:	WEIGHT:	SHEET 2 OF 1	