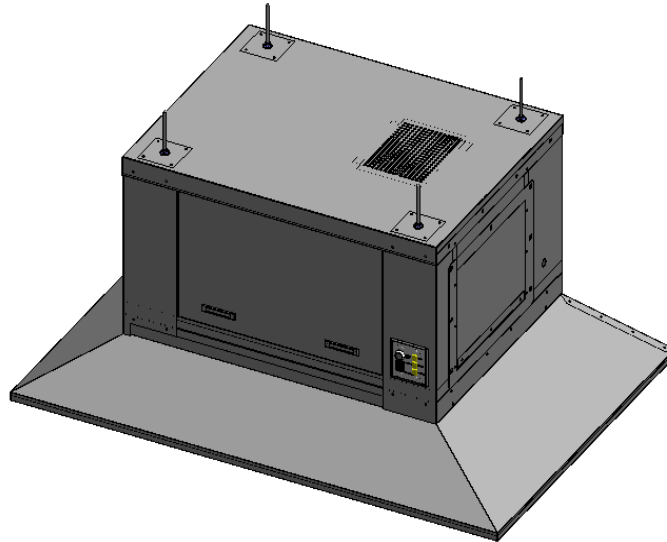


Recirculating Hood Installation, Operation, and Maintenance Manual



RECEIVING AND INSPECTION

Upon receiving unit, check for any interior and exterior damage, and if found, report it immediately to the carrier. Also check that all accessory items are accounted for and are damage free.

WARNING!!

Installation of this unit should only be performed by a qualified professional who has read and understands these instructions and is familiar with proper safety precautions. Read this manual thoroughly before installing or servicing this equipment.

Save these instructions. This document is the property of the owner of this equipment and is required for future maintenance. Leave this document with the owner when installation or service is complete.

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WARRANTY

This equipment is warranted to be free from defects in materials and workmanship, under normal use and service, for a period of 12 months from date of shipment. This warranty shall not apply if:

1. The equipment is not installed by a qualified installer per the MANUFACTURER'S installation instructions shipped with the product,
2. The equipment is not installed in accordance with federal, state and local codes and regulations,
3. The equipment is misused or neglected,
4. The equipment is not operated within its published capacity,
5. The invoice is not paid within the terms of the sales agreement.

The MANUFACTURER shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 12-month warranty period, upon examination by the MANUFACTURER, such part will be repaired or replaced by MANUFACTURER at no charge. The BUYER shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without MANUFACTURER'S prior authorization, and all returned equipment shall be shipped by the BUYER; freight prepaid to a destination determined by the MANUFACTURER.

LISTINGS

This hood is ETL listed to standard UL-710B and EPA test method 202 when installed in accordance with these installation instructions and National Fire Protection Association Standard “NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.”

INSTALLATION

It is imperative that this unit is installed and operated with the designed airflow, filters and construction in accordance with this manual. If there are any questions about any items, please call the service department at **1-866-784-6900** for warranty and technical support issues.

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTAINANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

WARNING: THIS PRODUCT IS NOT PROVIDED WITH AN INTEGRAL FIRE EXTINGUISHING SYSTEM. AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED AS TO THE REQUIREMENTS FOR THIS EQUIPMENT WITH RESPECT TO FIRE EXTINGUISHING SYSTEMS, SUCH AS THE NEED FOR FIELD INSTALLED SYSTEMS IN ACCORDANCE WITH NFPA 96.

Site Preparation

1. Provide clearance around installation site to safely rig and lift equipment into its final position. Consider general service and installation space when locating unit.
2. Thoroughly review the plans and specifications of the project.
3. Determine the exact location in which the cooking hood will be installed and verify that there are no interferences, which will prevent proper installation.
4. Verify that all overhead beams and angles are structurally strong enough to support the weight of the hood and hanging system. It is often necessary to strengthen existing structural beams, as they are not designed to carry the weight of a stainless steel hood. Refer to the project submittal drawing for hood weight(s). It may also be necessary to create a support structure suspended from the ceiling joists to better align with the desired hood location.
5. Determine if adequate room is available to install the hood with proper clearances from combustible material. IMC, NFPA96 and local authorities having jurisdiction call for a minimum clearance (typically 18 inches) between the cooking hood(s) and building materials, which are combustible. However, IMC and NFPA96 outline acceptable clearance reduction methods. It is important to check with the local authority having jurisdiction to determine that the installation method is satisfactory to meet their requirements prior to installing the equipment.

FOLLOW SMACNA GUIDES AND RECOMMENDATIONS FOR THE HANGING AND INSTALLATION OF HOODS.

Mechanical Installation

The following is a step-by-step procedure for installation of the Recirculating Hood:

1. Uncrate the hood, being very careful not to dent or scratch the outer surface. **NOTE: Report any damage to the delivering freight carrier and file a claim if appropriate.** Refer to the installation drawing for typical details of the ventilation system prior to hanging the hood. Check the nameplate on the equipment to make certain it meets the specifications provided by the architect and/or engineer. **If discrepancies exist, notify the manufacturer immediately.**
2. It's important that you have read and understand "Site Preparation" before continuing with the installation of the hood. **See Table 1 "Clearances."**
3. Determine the exact location of the hood. Ensure support beams are structurally strong enough to support the weight of the hood. **The structural integrity of the structural support system is the responsibility of the contractor and the structural engineer**
4. Use 5/16-18 threaded rod to hang the hood. Drill 3/8" holes in the structural support system or use Unistrut® to line up with the pre-punched holes on the hood. See **Figure 1** for details.
5. Each corner of the hood has a pre-punched hole. It is important that the 5/16-18 threaded rod that will be used to suspend the hood is secured at these locations. Each hole has a 14 gauge steel support plate that is riveted to the inside of the lid to strengthen the hood corners. Do not remove or relocate these plates.
6. Raise the hood into position using high lifts or equipment jacks at each end of the hood to ensure the hood is level. When the hood is elevated to the proper height, install 5/16-18 threaded rod between the hood support plates and the modified supports in the ceiling. Secure the threaded rod with 5/16-18 large flanged nuts and appropriate sized fender washers above and below hanging angles and hood support plates.
7. Make final adjustments as needed to ensure that the hood is level. Maintain tension on all the rods to ensure hood weight is evenly distributed. Make fine adjustments to the height of the hood by simply moving the hardware up and down the threaded rod.
8. For further information detailing installation and dimensional data. **See Figure 1 & 1A.**

Table 1 – Clearances

Equipment Type	Clearances
Ovens	6" maximum from hood skirt bottom to door top. 1" minimum from hood skirt bottom to oven top. 6" minimum hood skirt over hang to heated oven door.
Conveyor Ovens	30" maximum from hood skirt bottom to top of conveyor belt. 1" minimum from hood skirt bottom to oven top. 6" minimum hood skirt over hang to heated oven door.
Rotisseries	6" maximum from hood skirt bottom to door top. 1" minimum from hood skirt bottom to oven top. 6" minimum hood skirt over hang to heated oven door.

Hanging Dimensions

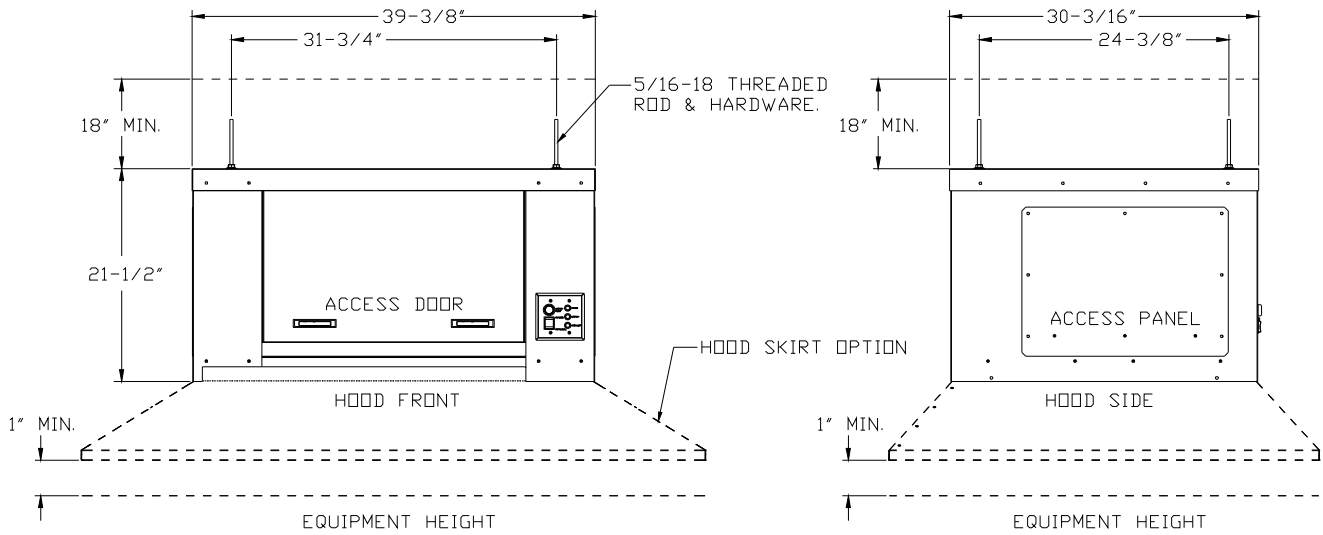


Figure 1

Hanging Details

ROD, NUTS AND WASHERS ARE SUPPLIED
BY INSTALLING CONTRACTOR.

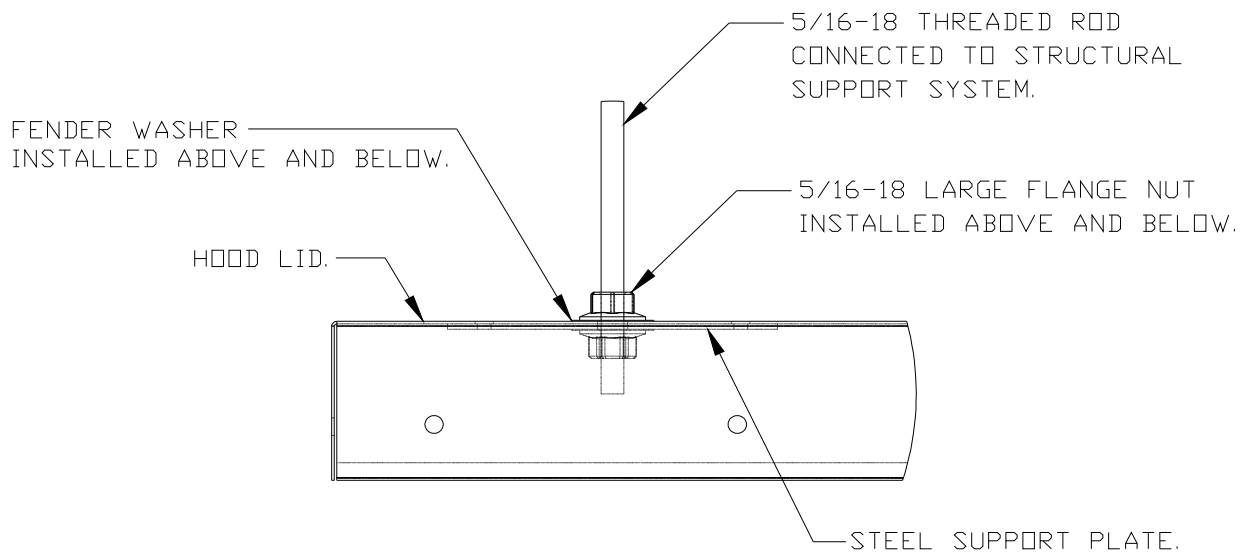


Figure 1A

Electrical

Before connecting power to the hood, read and understand the entire section of this document. As-built wiring diagrams are furnished with each hood by the factory and are attached to the inside of rear access door of the hood. Electrical wiring and connections should be done in accordance with local ordinances and the National Electric Code, ANSI/NFPA70. Be sure the voltage and phase of the power supply and the wire amperage capacity is in accordance with the unit nameplate.

WARNING!!

Disconnect power before installing or servicing hood. High voltage electrical input is needed for this equipment. This work should only be performed by a qualified electrician.

Electrical Connections

1. Always **disconnect power** before working on or near this hood. Lock and tag the disconnect switch or breaker to prevent accidental power up.
2. A 7/8" knockout has been provided in the hood so conduit or electrical drops can be connected to an appropriate power source.
3. Make certain that the power source is compatible with the requirements of your hood. The hood wiring schematic identifies the **proper phase and voltage** of the hood.
4. Interlocks between the electrical appliance and the hood may be provided. Interlocks will be identified on the as built wiring diagram; failure to connect interlocks will adversely affect performance of the hood and appliance.
5. Before connecting hood to power source, verify power line wiring is de-energized.
6. Terminals H and N have been left open on the terminal strip for incoming power.
7. Secure the power cable to prevent contact with sharp objects.
8. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces or chemicals.
9. Before powering up the hood make sure that the interior of the hood is free of loose debris or shipping materials, and that all wire connections have been inspected.
10. If any of the original wire supplied with the hood must be replaced, it must be replaced with type TW wire or equivalent.

Copper Wire Ampacity

Wire Size AWG	Maximum Amps
14	15
12	20
10	30
8	50
6	65
4	85

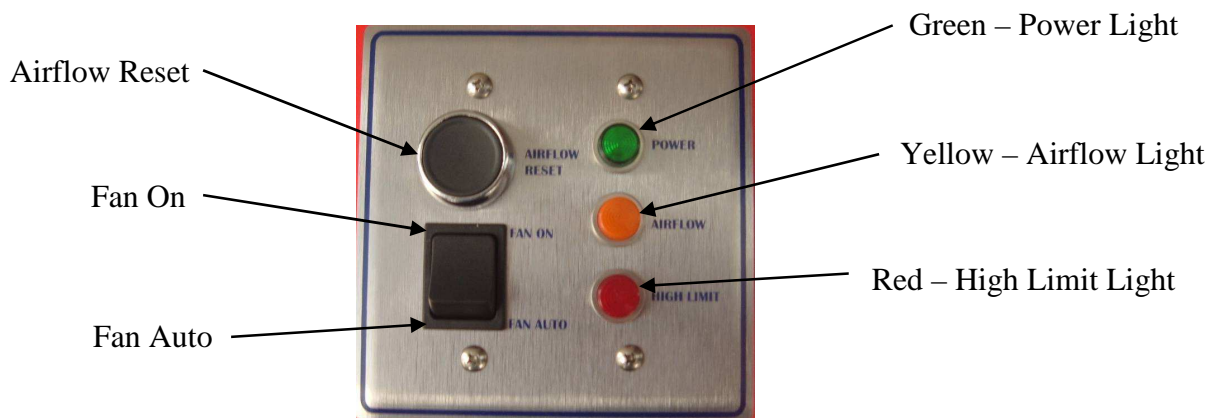
OPERATION

Start Up Procedure

1. Work area should be free from debris.
2. Hood top should never be used for storage.
3. Check all electrical connection for tightness and continuity.
4. Check connection between the hood and the appliance being covered if interlocks are provided.
5. Use filters specified in this guide only. **Failure to do so will void the warranty.**
6. Make sure filters are in place and secure per instructions listed below.
7. Make sure blower wheel is secure and free from obstruction.
8. Inspect the airstream for obstruction; intake and discharge should be free and clear.
9. Inspect airflow tubes and high limit bulb as they should be secure.
10. Ensure timers are set correctly; “on delay” and “off delay” timer details are listed below.
11. Set high limit thermostat. Details are listed below.
12. Make sure access panels and access doors are secure.
13. Start the hood by turning the external disconnect switch to the **ON** position. The (GREEN) power light will light up indicating power. Check motor amperage per the as built wiring diagram. The motor should not exceed FLA (full load amps). The other lights on the switch plate should remain off. The lights will only come on to indicate failure.
14. The (YELLOW) light indicates an issue with airflow. Details are listed below.
15. The (RED) light indicates an issue with temperature. Details are listed below.
16. If the (YELLOW) and (RED) lights remain off, then the hood is operating correctly.
17. There should be no excessive vibration or noise coming from the hood. Ensure heat and effluent is being captured by the hood. Due to the triple pass filtration, the exhaust should be smoke and odor free.

Components

Hood Switch Plate



Fan On Switch

Turns the fan **ON**. The hood will continue to run even if the appliance being covered is turned off.

Fan Auto Switch

Turns the fan **OFF** when the hood is not interlocked with the appliance being covered by the hood. Fan Auto can be used in conjunction with the off delay timer. When this interlock is being used the hood blower will continue to run for a preset time after the appliance is turned off. This allows the hood to continue exhausting heat, steam and effluent away from the cooking appliance even after the appliance has been turned off.

Airflow Light

This light indicates that there is a low or high airflow condition. Incorrect airflows are a result of clogged filters, loose access panels, intake or discharge blockage. For more details refer to "AIRFLOW RESET" or "AIRFLOW SWITCH."

Airflow Reset Button

If there is a low or high airflow condition, the airflow light will come on indicating the fault. Incorrect airflows are a result of clogged filters, loose access panels, intake or discharge blockage. Make sure the power is **OFF** before identifying the problem; correct the problem turn the power **ON** and push the reset button. Once the reset button has been pushed, the internal airflow switch will prove the airflow and the yellow light will go out. For more details refer to "AIRFLOW SWITCH."

Power Light

This light indicates that there is power to the hood. When inspecting or maintaining the hood make sure the power is turned **OFF**; the light will go out indicating the hood is safe to work on.

High Temp Light

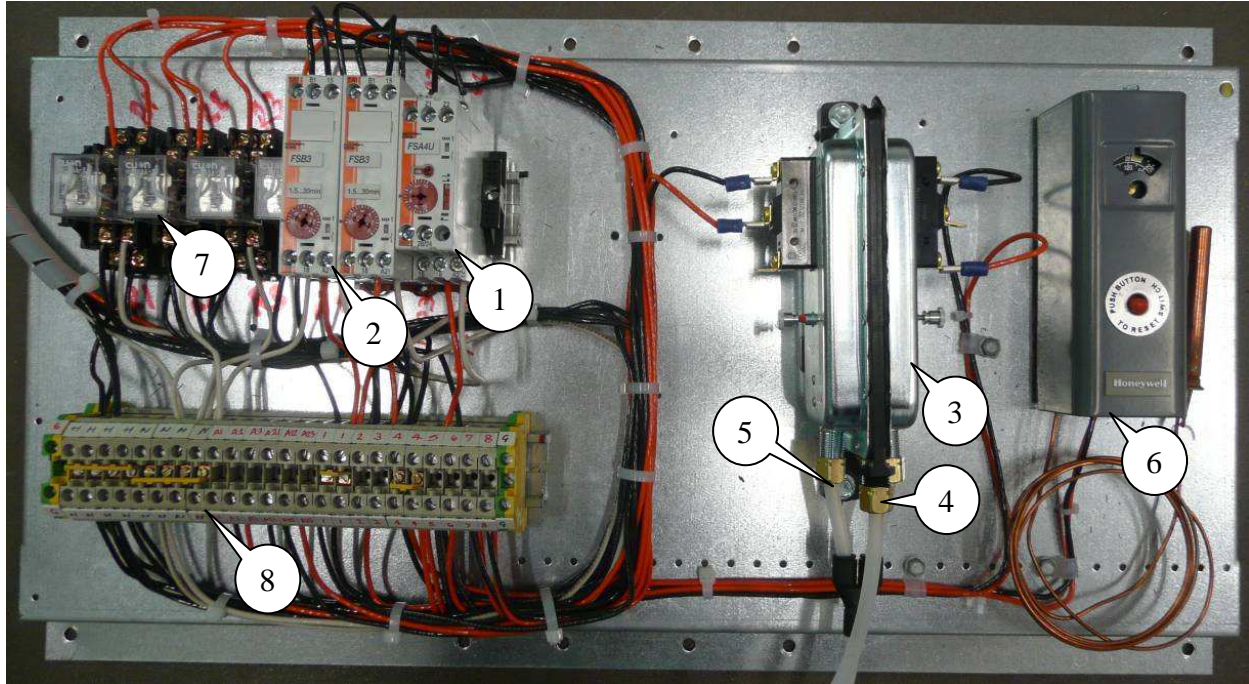
This light indicates that the internal temperature of the hood has exceeded the temperature set point on the thermostat. If this light turns on the heat source must be turned off. Once the internal temperature is lower than the set point, the manual reset button on the thermostat can be reset and the light will go out. For details refer to "THERMOSTAT."

Lights & Interlocks

The yellow & red lights on the switch plate identify a change in the operating conditions of the hood. There are two basic conditions that are monitored "AIRFLOW" and "TEMPERATURE." The controls that monitor these conditions are interlocked with the cooking appliance. If there is a change in either condition, the heat source at the appliance is turned **OFF**. The heat will not come back on until issue has been resolved and the hood has been reset to its normal operating condition. Interlocks are identified on the as built wiring diagram; diagram can be found on the inside of the control access door. Wiring diagrams should never be removed from the hood. Interlocks are discussed further under control details.

Electrical Board

The following image and list outlines the hood components and their functions. More detailed information is listed below with regards to these specific components and settings.



1. **On-Delay Timer** – Preset time allows the airflow switch to prove (Preset at 5 seconds)
2. **Off-Delay Timer** – Preset time allows the hood to continue running when the cooking appliance is shut down (Preset at 30 minutes)
3. **Airflow Switch** – A safety device insuring proper airflow during operation (.15 to .65 in. w.c.)
4. **High Pressure Airflow Probe** – Measures pressure in the plenum
5. **Low Pressure Airflow Probe** – Measures pressure after the filters
6. **Manual Reset High Temperature Limit** – Safety device that prevents hood from overheating
7. **Relay** – A relay is an electrical switch that opens and closes under the control of another electrical circuit
8. **Terminal Strip** – Central location to terminate control wiring and should be used for troubleshooting.

On-Delay Timer

The On-Delay Timer is used to allow the airflow switch to prove. When supply voltage is applied, output contacts change state after time. The set point for this timer is factory set at 5 seconds. The smaller of the two dials sets the amount of time seconds, minutes, hours (this should be set to 10 seconds). The larger of the two dials sets the percentage of time shown on the smaller dial (this should be set to .5). Using these set points the timer has been set to 5 seconds (10 seconds x .5 = 5 seconds). To the right of the dials is a slide, which should be in the down position. The timer is wired per the as built wiring diagram, which can be found on the inside of the access door.



On-Delay Timer

Off-Delay Timer

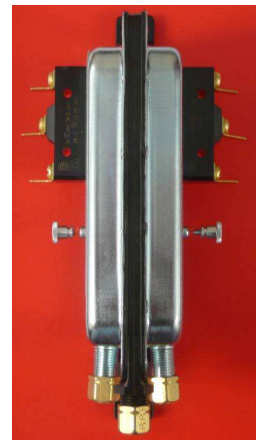
The Off-Delay Timer allows the hood to be interlocked with the cooking appliance. With the "Fan Auto" selected, the hood shut down is delayed for the pre-set time after the cooking appliance is shut down. The range on the timer is 1.5 to 30 minutes; the large dial in the middle of the timer sets the off delay time based on percentage. To set the timer, simply divide the desired time for off delay by the maximum time on the timer. The timer is factory set to 30 minutes however, if you want to change the off delay time to 15 minutes ($15 / 30 = .5$), set the large dial to .5. The timer is wired per the as built wiring diagram, which can be found on the inside of the access door.



Off-Delay Timer

Airflow Switch

The airflow switch in the hood is used to restrict operation of the cooking appliance if there is an incorrect amount of airflow. The hood is interlocked with the cooking appliance to shut down the heat source of the cooking appliance if proper conditions are not met. If there is an incorrect amount of airflow, the "Yellow Light" on the switch cover will illuminate indicating the condition. Correct the airflow problem first by starting with the intake and discharge of the unit. All of the filters should be in place per the instructions in this guide and access panels should be secure. Once the problem has been corrected, push the "Airflow Reset Button" on the switch cover. There are both high and low airflow switches contained within one housing to measure the pressure drop across the filters. This is to ensure proper airflow through the hood (.15 in. w.c. to .65 in. w.c.) at the same time monitoring clogged filters, open access panels and blocked intake or discharge.



Airflow Switch

High Temperature Limit

The high temperature limit switch is a mechanical thermostat that measures the temperature inside the hood. If the factory set temperature of 250°F is exceeded, it will signal the heat source at the cooking appliance to shut down. A “Red Light” on the switch cover will indicate the high limit has tripped. The hood will continue to run to discharge the hot air and to help bring the temperature down so the thermostat can be reset. The manual reset button is on the thermostat. Once pushed, the cooking appliance will start to heat.

High Temperature Limit



Filters

The hood is provided with a three stage air purification system, which consists of grease rated high efficiency baffle filter or Captrate Solo baffle filter, HEPA filter and odor control filter. This hood has been tested and complies with EPA test method 202, Determination of Condensable Particulate Emissions from Stationary Sources. Use only the filters listed. **Failure to use listed filters will void the warranty of the hood.** Filters must be installed per this guide, and filters must be in place and positioned as intended. Please see Figure 1B.

Filter Stages

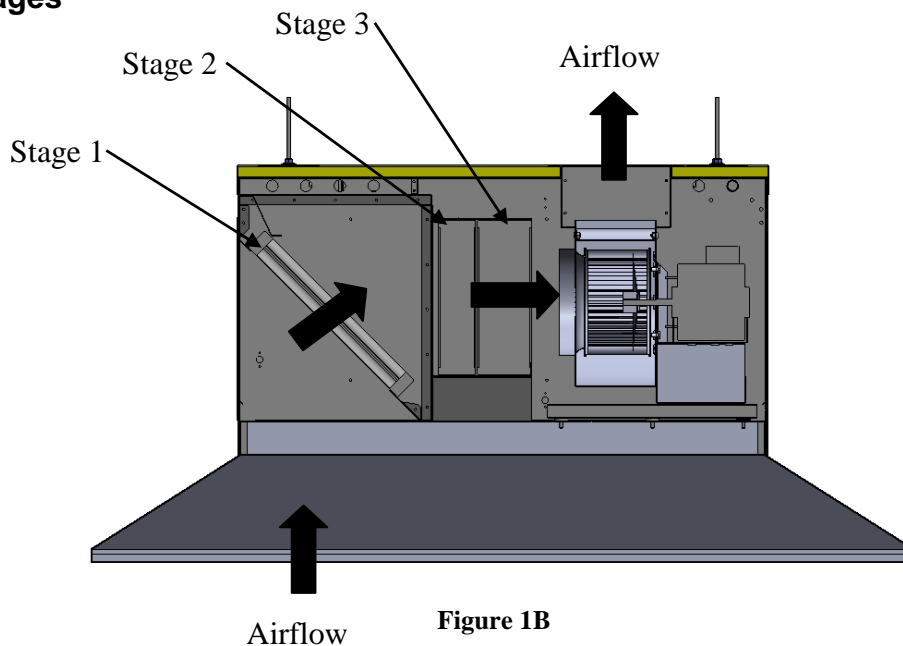


Figure 1B

Filter Part Numbers

Stage	Description	Part Number	Filter Size
1	HIGH EFFICIENCY BAFFLE FILTER	HESS1616	16 X 16 X 2
1	CAPTRATE SOLO FILTER	CSF1616	16 X 16 X 2
2	HEPA FILTER	12X12X4 BPSL	11 3/8 X 11 3/8 X 2 3/4
3	CHARCOAL FILTER	2698952	11 3/8 X 11 3/8 X 3 3/4

Stage 1 – High Efficiency Baffle Filter

Stage 1 can be a high efficiency baffle filter that is used to capture larger particulates. Stainless steel construction provides added durability and corrosion resistance. This filter protects blower equipment and prolongs motor life. This filter is UL listed and meets the requirements of NFPA96 when properly installed. The stage 1 baffle filter should be kept clean. Inspect this filter weekly and clean if necessary; cleaning will depend on the cooking load. Keeping this filter clean will also prolong the life of the more expensive HEPA filter. **Do not substitute this filter for another brand. Failure to use this listed filter will void the warranty of the hood.**

HE Baffle Filter



Stage 1 – Captrate Solo Baffle Filter

Or Stage can be a Captrate Solo baffle filter that is used to capture larger particulates. Stainless steel construction provides added durability and corrosion resistance. This filter protects blower equipment and prolongs motor life. This filter is UL listed and meets the requirements of NFPA96 when properly installed. The stage 1 baffle filter should be kept clean. Inspect this filter weekly and clean if necessary; cleaning will depend on the cooking load. Keeping this filter clean will prolong the life of the more expensive HEPA filter. **Do not substitute this filter for another brand. Failure to use this listed filter will void the warranty of the hood.**

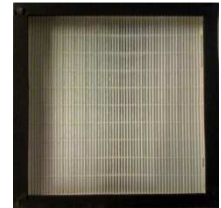
Captrate Solo Baffle Filter



Stage 2 – HEPA Filter

HEPA filters are used to capture smaller particulates. The HEPA filter in this hood is rated 99.9995% @ .12 Micron PSL/Laser. This filter must be in place per **Figure 1B**, shown above. The stage 2 HEPA filter cannot be washed. The life of this filter will depend on cooking loads and should be replaced as needed. **Do not substitute this filter for another brand. Failure to use this listed filter will void the warranty of the hood.**

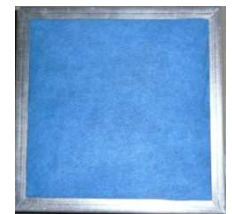
HEPA Filter



Stage 3 – Charcoal Filter

Charcoal filters are used for odor control. The filter used in this hood contains high quality, virgin coconut shell with superior pore size distribution specifically selected for its wide absorptive capacity. The filter must be in place per **Figure 1B**, shown above. The stage 3 odor filter cannot be washed. The life of this filter will depend on cooking loads and should be replaced as needed. **Do not substitute this filter for another brand. Failure to use this listed filter will void the warranty of the hood.**

Charcoal Filter



Troubleshooting

The following table lists causes and corrective actions for possible problems with exhaust hoods. Review this list prior to consulting manufacturer.

Troubleshooting Chart

Problem	Potential Cause	Corrective Action
Smoke is not being Captured/Low Exhaust	Filters are clogged	Clean Filters
	Exhaust Fan Operating in Incorrect Direction	Check motor wiring to wiring diagram located on fan motor
	Hood overhang on appliance is not correct	Hood should overhang cooking appliances adequately
No Exhaust	Exhaust Fan Not Running	Turn Fan Switch On Check Circuit Breaker/Voltage
	Exhaust Fan Running Backwards	Wheel Should Turn Per Rotation Arrow On Blower
		1 Phase Motors Must Be Wired Per Their Label
Exhaust Air Motor Cycles on and off	Motor Over Amping	Make Sure Motor Amperage Is Below FLA Of Motor Label Ensure Motor Wiring Is Adequately Sized
	Exhaust Air Temperature Too High	Increase Exhaust Airflow Or Use Higher Temperature Rated Motor
Grease Dripping From Hood	Hood Not Being Cleaned Often Enough	Clean Surface Of Hood More Frequently
	Exhaust Rate Too Low	Clean Or Replace Filters
Hood is Vibrating	Vibrating Exhaust Blower	Find Source Of Vibration In The Blower And Correct. A Rag Or Other Debris May Be Stuck In Blower Wheel
High Limit Indicator	High Temperature Limit	Decrease The Temperature Of The Hood And Push The Reset Button On The Thermostat
		Thermostat Temperature Is Set Too Low, Temperature Set Point Should Be Factory Set For 250°F
Airflow Indicator	Incorrect Amount Of Airflow	Access Panels/Doors Not In Place
		Filters Missing Or Clogged
		Intake Or Discharge Is Blocked
		Airflow Reset Button Hasn't Been Pushed
		On-Delay Timer Not Set Correctly, Should Be Factory Set For 5 Seconds

MAINTENANCE

To guarantee trouble free operation of this hood, the manufacturer suggests following these guidelines. Most problems associated with hoods are directly related to poor service and maintenance, such as not replacing or cleaning filters.

Please record any maintenance or service performed on this fan in the documentation section located at the end of this manual.

General Maintenance

1. Proper operation of the hood depends on how well the hood is maintained. All surfaces should be kept free of grease build-up for sanitation reasons and to reduce the risk of fire.
2. Grease filters must always be installed and clean to reduce build-up of grease in the exhaust duct and to allow for proper exhaust airflow.
3. Maintain all motors and electrical connections on fans attached to the hood.

Weekly Maintenance

1. Remove the grease baffle filters and clean in a dishwasher weekly.
2. Clean hood plenum weekly while baffle filter is removed for cleaning.
3. Carefully wipe away gritty substances clinging to stainless steel surfaces to avoid scratching.
4. Dilute ½ cup of laundry detergent (e.g. Tide) with one (1) gallon of warm water.
5. Soak a clean cloth in the water detergent solution and wring out the excess water.
6. Wipe the hood surfaces moving in the direction of the grain and periodically rinsing cloth in detergent solution.
7. Using a different clean cloth soaked in clean warm water, wipe the hood surfaces to remove all traces of the detergent solution.
8. Wipe hood surfaces dry with a clean, dry cloth.
9. Reapply stainless steel polish.

CAUTION

DO NOT use iron wool (Brillo or SOS pads), scrapers, or spatulas to clean hood!

DO NOT use the following substances on or around the hood:

1. Chlorine or chlorine based substances.
2. Acids (e.g. acetic, hydrochloric, sulfuric).
3. Chloride based substances (e.g. mercuric chloride, ferric chloride).

Vapors of the above substances can corrode stainless steel!

Quarterly Maintenance

1. Inspect the hood for grease or air leaks and repair leaks where required.
2. Clean hood plenum to prevent a mass accumulation of grease.
3. Replace HEPA filter.
4. Replace Charcoal filter.
5. Inspect the motor and blower, remove any grease or debris.

Start-Up and Maintenance Documentation

START-UP AND MEASUREMENTS SHOULD BE PERFORMED AFTER THE SYSTEM HAS BEEN AIR BALANCED (Warranty will be void without completion of this form)

Job Information

Job Name	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Purchase Date	

Service Company	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Start-Up Date	

Hood Information

Refer to the start-up procedure in this manual to complete this section.

Name Plate and Unit Information		Voltage	
Model Number		High Limit Settings	
Job Number		Filters In Place	

Maintenance Record

Date	Service Performed

Date	Service Performed

Factory Service Department

Phone: 1-866-784-6900

Fax: 1-919-554-9374