

Operators Manual for Reco-Air

Manual provides
Operation, Maintenance and Service Instructions



RAH - RecoAir by Halton Recirculating Kitchen Extract Units for Electric
Appliances
RAH 1.0, RAH 1.5, RAH 2.0

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Safety Information

The instructions contained in this manual have been prepared to aid you in learning the proper procedures for installing and servicing your unit.

Throughout this manual, safety precautions are identified through the use of the safety alert symbol and three signal words: DANGER, WARNING, and CAUTION. All safety alert information precedes the step(s) to which they apply. Suggested, recommended, or other noteworthy information is identified through the use of NOTES. Additionally, certain words are used to indicate a specific meaning or to add emphasis.

The following words are used as indicated throughout the manual:

Shall: understood to be mandatory.

Should: understood to be advisory.

May: understood to be permissive.

Will: indicates a future event/condition to occur.



(Safety Alert Symbol)

Used in conjunction with signal words (DANGER, WARNING, or CAUTION) to alert you of potential personal injury hazards, immediately preceding precautionary measures that pertain to subsequent step(s). Obey all safety messages that follow this symbol to avoid possible injury or death. Failure to adhere to safety precautions identified by the safety alert symbol may also void the warranty.



- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Use of this is limited to the most extreme situations.



- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



- Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Also used to alert against unsafe practices.



- When used without the safety alert symbol, CAUTION indicates a potentially hazardous situation which, if not avoided, may result in equipment/property damage, and void the warranty.

NOTE:

- Identifies suggested, recommended, or other noteworthy information.

Specific Safety Precautions

For your safety, please observe the following precautions when operating or servicing your (Insert Name and Model of Hood here). Read the following important safety information to avoid personal injury and/or damage to the equipment.

DANGER

- Always disconnect the source of the main power before removing the service entrance box cover.
- Failure to ensure the Power switch is in the "OFF" position during servicing and when replacing filters could result in equipment damage, electrical shock and/or personal injury.
- Failure to comply with these **DANGER** notices will result in death or serious injury, equipment/property damage, and void the warranty.

WARNING

- DO NOT use or store flammable liquids or materials that produce flammable vapors in the vicinity of this or any other appliance!
- Consult a qualified electrician to ensure all electrical specifications have been met and the unit is properly grounded.
- Before installing or servicing this equipment, read the contents of this manual thoroughly.
- Improper installation, adjustment, alteration, service or maintenance could result in death or serious injury, equipment/property damage, and void the warranty.
- Failure to comply with these **WARNING** notices could result in death or serious injury and equipment or property damage.

CAUTION

- Exercise care when removing the wooden crating from around the unit.

CAUTION

- **DO NOT** operate the unit unless you fully understand the components and their intended function.
- Failure to comply with these **CAUTION** notices may result in minor or moderate injury, equipment or property damage, and void the warranty.

CAUTION

- The electronic components of the Control Panel are impact-sensitive. Exercise care around the Control Panel to maintain proper operation.
- During cleaning of Hood.
 - **DO NOT** use products containing chlorine.
 - **DO NOT** use abrasive products, steel wool or scouring pads.
- Failure to comply with these CAUTION notices may result in equipment/property damage and void the warranty.

NOTE:

- If upon receipt, the palletized unit shows any signs of damaged, immediately inspect the entire Hood and the included accessories, and promptly notify the freight company of any damages.
- To aid the electrician, an electrical wiring diagram is included with this manual. Refer to the wiring diagram during installation or servicing. A wiring diagram may be obtained from the factory by calling Halton at 270-236-5600
- Comply with all appropriate state and/or local health regulations regarding the cleaning and sanitation of equipment.
- For difficult areas with excessive particulate build up, a mild bio-degradable non-toxic degreaser (such as Clear Magic or Simple Green) may be used.
- Always ensure the unit is electrically grounded and installed in accordance with local codes, or in the absence of local codes, in accordance with the National Electrical Code ANSI/NFPA No. 70-1984.
- The Reco Air unit is to be used with hood(s) over electric appliances only.

NOTE:

- **An HVAC specialist may be required for some installations to confirm proper air exchange and the heat load capabilities of the on-site AC system.**

CAUTION

- Use suitable equipment to lift the hood and carefully move it away from the pallet. Take precautions not to damage to the hood. If possible, it is advisable to rig and lift the hood from the topside, utilizing the hood's hanging brackets.
- Exercise care when removing the wooden framing from around the unit.
- Failure to comply with these CAUTION notices may result in minor or moderate injury, equipment or property damage, and void the warranty.

CAUTION

- **DO NOT MODIFY, ALTER OR ADD ATTACHMENTS TO THIS EQUIPMENT**



General Description

Introduction

The Reco-Air unit was developed as a means of facilitating Commercial Cooking Exhaust Air Extraction, without the need to discharge to atmosphere cooking effluent, laden with grease, smoke and odor.

The Reco-Air unit is, in simplistic terms, an Air Filtration / Fan unit, which incorporates 4 stages of filtration and a single inverter driven EC plug fan.

The four filtration stages include:

Grade G4	Aeropleat Units	Large Grease Particulate Capture
Grade F6	Ecopleat Units	Fine Grease Particulate Capture
Grade H10	Durafil Units	Smoke Removal
Food Grade	Activated Carbon Canisters	Odor Remove (discharge side of the fan)

In most instances, Exhausted Air is drawn from the canopy, passed through the Reco-Air Unit and ducted back to the Cookline Canopy as return air.

Typically, 20% of this 'Clean / Filtered' air is ducted either direct to outside or into the general extraction system for the Diner / Restaurant. This helps create a negative air pressure at the canopy to help contain smells within the cookline.

Filter usage is very much dependent upon type of cooking / menu, number of covers, operating hours, style of cooking and even Chef habits. However; Reco-Air guidelines show filters become due for change with the following frequency:

- 2 x F1 - 2 to 3 months.
- 2 x F2 - 2 to 3 months.
- 2 x F3 - 4 to 5 months.

The Activated Carbon Filters are required to be changed, generally, every 9 – 12 months

TIP: Use a 15/16" 6 point socket when changing the carbon filters. The filter has a hex pattern in the end of it and the socket helps with rotating the filter to remove it or to lock it in place after reinstalling.

The Reco Air unit is to be used with hoods over electric appliances only. The hood(s) are to be connected to the Reco Air unit with NFPA 96 compliance grease duct. All national and local codes apply to the construction and installation of the ductwork.

The maximum length of the exhaust duct between the hood(s) and the Reco Air unit should not exceed 35 feet typically. The driver for the maximum length of the duct is the external static pressure (of the hood(s) and ductwork combined). The maximum external static pressure of the hood(s) and ductwork should not exceed 1.3 inches of water column. The smaller RAH 1.0 has a maximum external static pressure of 1.0 inches of water column.

Process Overview

Emergency Shut Off

The Reco-Air control panel provides the facility to interlock the system with an Emergency Shut Off Button(s). When any Emergency Shut Off Button is not in run position the Reco-Air unit will be prevented from running.

Fire Damper Interlock

The Reco-Air control panel provides the facility to interlock the system with a building fire damper(s). A 24vac supply is available from the Reco-Air control panel to power a spring return fire damper actuator(s). An auxiliary switch incorporated within the fire damper, can then be used to provide a feedback signal to the Reco-Air control panel. When the fire damper is not in run position the Reco-Air unit will be prevented from running and the corresponding alarm lamp will be illuminated.

System Enable

The Reco-Air unit system enable, has several factors that affect if the unit is allowed to start. The control system is enabled from the HMI (Human Machine Interface - Touch Screen) on main control panel or remote start/stop enable. The unit will not start if any fault condition exists. A list of the unit start interlocks can be found below:

- A) Fire Alarm Interlock Must Be in run position
- B) Emergency Knock Off Button Must Be in run position
- C) Fire Damper Interlock Must Be in run position
- D) Unit must be set to "ON"
- E) The Reco Fan Fault Monitoring Must read No Motor Faults
- F) The Door Monitoring Micro Switches Must Be "Made"
- G) Filter 1, Filter 2 and Filter 3 Must Not Be Dirty beyond the Filter Dirty Set Points (See Filter Monitoring Below).

If ALL of the above steps are met, the Reco-Air system will enable.

Note: A remote interface switch plate can be provided if the Reco-Air control panel is to be mounted away from the cooking area. Please refer to the Optional Extras Section Below.

Filter Monitoring

The Reco-Air system contains four sets of filters internal to the Reco-Air unit and the cooking canopy hood itself contains grease filters. Filtration stages 1, 2, and 3 are Monitored via the Reco-Air controller. If any of these filters are removed the unit will shut down. This shut down will take place five (5) minutes after filter removal. The fourth set of filters are Carbon and are not monitored by the unit controller. The fifth set of filters are mounted in the cook-line canopy hood and are monitored by the Controller for a 'filter missing' state only. Once the unit is operational and the Reco-Air unit start-up grace time has elapsed, then the unit will shut down if the canopy filters are not in place. This is achieved by a differential pressure switch mounted on the exhaust plenum of the cooking canopy hood.

The Reco-Air filter monitoring settings are as follows:

- Filter 1 Transducer Set Point: = Clean - 0.28" w.c., Dirty - 0.56" w.c., 100% Dirty - 0.61" w.c.
- Filter 2 Transducer Set Point: = Clean - 0.37" w.c., Dirty - 0.74" w.c., 100% Dirty - 1.5" w.c.
- Filter 3 Transducer Set Point: = Clean - 0.64" w.c., Dirty - 1.28" w.c., 100% Dirty - 1.5" w.c.
- Canopy Filter Differential Set Point: = 0.2" w.c.

In the case of Filter 1, 2 and 3; As each filter loads from unit operation, the differential pressure across the filter will increase. This differential pressure is monitored via a transducer, with the readings being monitored by the Controller and compared to the above critical alarm set points. Once a filter hits 80% of the filter critical alarm set point an alarm is shown on the HMI. If the pressure reading increases past the set point, a display on the HMI will indicate the filter requires replacement.

The carbon filters are not monitored and should be changed based on operational time/ run hours as prescribed by Reco-Air guidelines.

The canopy filters are not monitored for a clean / dirty state as general the canopy filters are replaced daily/ weekly as required by the cooking operation; however, the canopy filters are monitored via a Differential Pressure Switch (DPS) mounted on the canopy exhaust plenum. The canopy filters are cleaned each day prior to the start of cooking, and must be in place if the unit is allowed to carry on running after the start up grace period. If the unit is started without the canopy filters installed, the unit will create an 'Airflow Proving Switch Not Made' alarm and the unit will shut down as a fault condition is present.

Fan Control

The Reco-Air system fan is controlled from the control panel via a 0-10vdc signal. The fan pressure is monitored via a pressure transducer and compared to a set point which is determined by the unit air volume requirements. These set points are variable, by Halton. As the filters become dirty the fan will speed up in order to keep the correct volume of air being extracted by the cooking canopy. The following settings are the commissioned values for the Reco-Air system.

Fan Pressure Set = 1.06" w.c.
Point Volume @ Fan Set Point = 2542.5 cfm

The fan is also monitored for a fault condition. If a fault occurs the unit will shut down and raise an alarm.

There are also door micro switches which are monitored and will prevent the unit from running if any door is not fully closed.

Start Up and Reset Procedure

It is important to note that, the Reco-air system must be switched off when the canopy filters are being replaced. If the filters are removed whilst the unit is running, then a 'Filter Missing' alarm will be raised and the unit will 'lock out' in a fault condition. The fault condition can only be reset from the control panel located on the Reco-Air unit in the service corridor.

If a fault should occur, it can be reset from the control panel, most alarms can be reset by clearing the alarm then cycling the unit to ON/OFF.

If an alarm condition exists, then a visual alarm indicator on the HMI screen. The alarm indicator will remain until the fault condition/alarm is cleared/ reset.

Cook-Line Interlock

The Reco-Air Unit design incorporates a secondary airflow switch that is mounted on the exhaust plenum of the canopy hood. Once the Reco-Air unit is running, the secondary airflow switch will detect airflow to the canopy. When airflow is proven and all other aspects of the unit are healthy, then a contact within the Reco-Air controls is closed. This volt free contact (max rating 230vac 5 Amps) can be used to switch in and out the cookline supply, preventing the cookline being used when the canopy extract system is not healthy and airflow has not been proven. To prevent rapid switching of any external electrical circuits, there is a delay timer. If the delay timer is satisfied that airflow has been established for greater than 30 seconds, then the cook-line will be enabled. If at any point, airflow proving is lost or any other faults with the Reco-Air system are detected, then the cook-line will be disabled.

Optional Extras

The Reco-Air system control is flexible in its nature and customer requirements can be accommodated to suit. Please contact Halton if any specific design criteria are required.

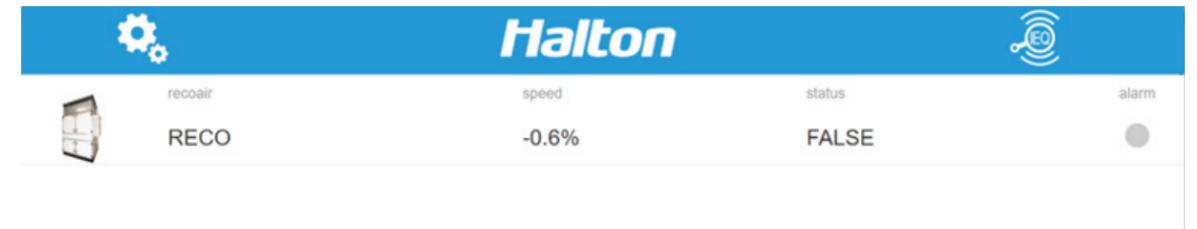
Remote Interface Panel

The Reco-Air remote interface panel, allows for easy access to enable the unit remotely should the control panel have to be located away from the cooking location. The panel comes with an HMI Touch Screen display that will show unit functions and alarms.

Description of the HMI Touch Screen Pages

Home Screen

Pressing the "Power" icon cycles the unit's power on and off. This screen shows the unit identifier, the fan speed in percentage of full speed, the unit "status" - False is "Off" and True is "On", and if there is an Alarm active.



Filter Status Screen

Pressing the icon of the Reco Unit in the Home Screen opens up a display of the unit's detailed status. This screen shows additional aspects of the unit's operation. "False" means "Off or "not operating", "True" means "On" or "currently operating". The "Status" indicator at the far right of the screen shows green if the status is OK, or red if there is a problem or issue with that operation.

name	value	setpoint	status
Exhaust VFD Start	FALSE		
MUA VFD Speed	0.0%		
Exhaust VFD Speed	-0.6%		
Filter 1 Status	Clogged		

Scroll down in this screen to see more information:

name	value	setpoint	status
Filter 1 Remaining Life	100.0%		
Filter 2 Status	Clogged		
Filter 2 Remaining Life	100.0%		
Filter 3 Status	Clogged		
Filter 3 Remaining Life	100.0%		

Scroll down to see more information (end of screen).

name	value	setpoint	status
Filter 3 Status	Clogged		
Filter 2 Remaining Life	100.0%		
Airflow	0.0 cfm		
Remote Start Demanded	FALSE		
RECO Start	FALSE		

Alarm Screen

Click on alarm bell at bottom left of page to see alarms

name	value
Exhaust VFD Start	FALSE
MUA VFD Speed	0.0%
Exhaust VFD Speed	-0.6%
Filter 1 Status	Clogged
Filter 1 Remaining Life	100.0%

Schedule Screen

If a schedule was programmed into the controller it would be shown here.

Filter Quantities per Unit

RAH 1.0

Filter 1	24" x 24" x 2"	- Quantity 1	Halton Part # 10821
Filter 2	24" x 24" x 4"	- Quantity 1	Halton Part # 12855
Filter 3	24" x 24" x 12"	- Quantity 1	Halton Part # 11146
Carbon Cylinders		- Quantity 32	Halton Part # 12856

RAH 1.5

Filter 1	24" x 24" x 2"	- Quantity 1	Halton Part # 10821
	24" x 12" x 2"	- Quantity 1	Halton Part # 10820
Filter 2	24" x 24" x 4"	- Quantity 1	Halton Part # 12855
	24" x 12" x 4"	- Quantity 1	Halton Part # 12854
Filter 3	24" x 24" x 12"	- Quantity 1	Halton Part # 11146
	24" x 12" x 12"	- Quantity 1	Halton Part # 11145
Carbon Cylinders		- Quantity 48	Halton Part # 12856

RAH 2.0

Filter 1	24" x 24" x 2"	- Quantity 2	Halton Part # 10821
Filter 2	24" x 24" x 4"	- Quantity 2	Halton Part # 12855
Filter 3	24" x 24" x 12"	- Quantity 2	Halton Part # 11146
Carbon Cylinders		- Quantity 64	Halton Part # 12856

Maintenance

Reco-Air Filter Replacement Instructions

Open the door to the three-stage filter section



Remove 1st stage of filters by pulling them out. Replace with new filters.



Remove 2nd stage of filters by pulling them out. Replace with new filters.



Remove 3rd stage of filters by pulling them out. Replace with new filters.



Open the door to the carbon filter section



Remove each carbon filter by turning them counterclockwise unlocking the pins and pull them out one by one starting from the front row and working towards the back.

Caution: You can pull the tray out as needed to reach the back filters but be careful not to pull it all the way out until it is empty because the tray is designed to be removed for cleaning.



Starting in the back and working your way to the front install each replacement carbon filter by inserting the tabs in the holes and turning them clockwise locking the pins.

For service to the Fan/Blower assembly, please contact the Halton Service Network. See contact information below.

Parts or Service

To Re-Order Parts or for Service for your Reco-Air by Halton unit please contact the Halton Service Network at:

For Parts: parts.us@halton.com

For Service: service.us@halton.com or call 1-800-4HALTON and ask for Parts or Service

Warranty Form

This form must be completed and returned to Halton in order for your warranty to be valid.

Job & Location Information:

Job Name: _____

Street Name: _____

City: _____ State: _____ Zip Code: _____

Equipment Start-Up Date: _____ Product Serial Numbers: _____

Contact Information:

Contact Name: _____

Title: _____

Chef, Kitchen Mgr/Facility Mgr/Property Mgr/etc.

Facility Management Company Name (if applicable): _____

Email: _____

Phone Number: _____ Cell Number: _____

Fax completed form to:

Halton Company
Attention: Service Department
service.us@halton.com
Fax: (270) 237-5700

Halton Indoor Climate Systems
Attention: Service Department
service.ca@halton.com
Fax: (905) 624-5547

OM-041.082024/rev3/EN

Halton Limited Warranty

Halton ("Manufacturer"). Warrants only to its direct purchasers and to no others, that all products manufactured by the Manufacturer shall be free from defect in materials and workmanship for a period of twelve (12) months from the date of the original installation and start-up or eighteen (18) months from date of shipment, whichever occurs first. All products sold but not manufactured by Manufacturer will be warranted for a period of twelve (12) months from date of shipment.

For products manufactured by the Manufacturer we agree to pay any reasonable labor costs necessary to repair or replace, at Manufacturers option, defective parts or materials for a period of twelve (12) months from date of original installation and start-up or eighteen (18) months from date of shipment, whichever occurs first. All labor costs subject hereto shall be performed during standard work hours at straight-time rates.

For products sold but not manufactured by the Manufacturer we agree to pay any reasonable labor costs necessary to repair or replace, at Manufacturers option, defective parts or materials for a period of (90) days from date of original installation and start-up or (12) months from date of shipment, whichever occurs first. All labor costs subject hereto shall be performed during standard work hours at straight time rates.

All warranty claims that include labor requires pre-approval by Halton. Halton, at its discretion, will authorize field warranty work through its own service network or certified third party. No claims for labor charges will be approved for payment if work commences without prior authorization by Halton.

Purchaser shall pay incurred premium labor charge, including overtime, weekends and holidays. Travel time, service charges, miscellaneous tools, material charges, and labor charges resulting from inaccessibility of equipment will not be paid by Manufacturer.

This LIMITED WARRANTY SHALL APPLY ONLY to products that have been installed and maintained in accordance with the installation and Care Instruction Manuals. Purchaser shall be solely responsible for adhering to the instructions and procedures set forth in the said instruction manuals.

This LIMITED WARRANTY SHALL NOT BE APPLICABLE to any damage or defect resulting from fire, flood, freezing or any Act of God, abuse, misuse, accident, neglect or failure to adhere to all instructions set forth in the installation and Care Instruction Manuals. Furthermore, this limited warranty shall not apply to any product that has been altered, unless such alteration has been approved in writing by a duly authorized representative of the manufacturer. In no event shall the manufacturer be liable for any loss, expense, personal injury or consequential damage, of any kind or character, as may result from a defect in material, and/or workmanship, however caused.

EXCEPT AS IS EXPRESSLY SET FORTH IN THIS LIMITED WARRANTY, MANUFACTURER MAKES NO WARRANTY OF MARKETABILITY FOR FITNESS OR ANY PARTICULAR PURPOSE. NEITHER DOES MANUFACTURER MAKE ANY WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO PRODUCTS SOLD BY MANUFACTURER OR AS TO THE USE THEREOF.

Continuous product improvement is a Halton policy, therefore specifications and design are subject to change without notice.

Halton Company

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