RAH

Reco-Air by Halton - Recirculating kitchen extract units for all electric catering equipment.
NO requirement for ductwork to outside.

High efficient 3 stage filtration
Removes large and small grease particles as well as smoke

Coconut shell activated carbon
Removes odors

Filter monitoring
Constant control of the filter load

Fan monitoring control platform
Fan speed control (constant airflow)

Halton Touch Screen
Unique and intuitive LCD user interface for all systems

Halton Connect (Optional)
Faster commissioning and maintenance

Halton Care Services (Optional)
Smart maintenance & optimization services

Specification

Reco-Air by Halton RAH recirculating units are connected to Halton Capture Jet kitchen ventilation hoods serving all electric catering equipment and achieving complete recirculation of exhaust air with no requirement for ductwork to outside.

RAH units' highly efficient filter technology removes particulates and odors. The processed air is independently certified as clean to be re-introduced as supply air.

RAH units eliminate long ductwork to outside when they become too costly or when they simply are impossible to install. Technical constraints on buildings' structure, restrictions linked to listed activities or historic sites, co-ownerships opposed to the degradation of the facades aesthetic or to odor nuisance risk... all these challenges can easily be overcome with recirculation units.

In addition to providing opportunities to install kitchen operations in previously unfeasible locations, RAH units significantly reduce fire risk. They also simplify planning procedures.

Benefits of RecoAir by Halton

Standard Color Light grey **or** White

Optional colors also available based on RAL chart, consult factory

Cost effective

- RAH units reduce CAPEX investment. They eliminate the costly fire-rated duct work to atmosphere thus reducing the construction and installation costs.
- They also reduce the utility usage requirement with a compact design and an ease of assembly
- RAH units enable establishing a restaurant wherever you chose i.e. where it is of most value, whatever the technical or environmental challenges.

Reduced fire risk and emissions control

- The contaminants produced by catering kitchens and food preparation facilities are not any longer expelled to atmosphere contrary to traditional extract.

Remote monitoring (optional)

- Equipped with Halton Connect IoT (Internet of Things) platform with advanced 24/7 distant monitoring capabilities.
- Highest value of ownership thanks to Halton Connect & Care smart services offering.

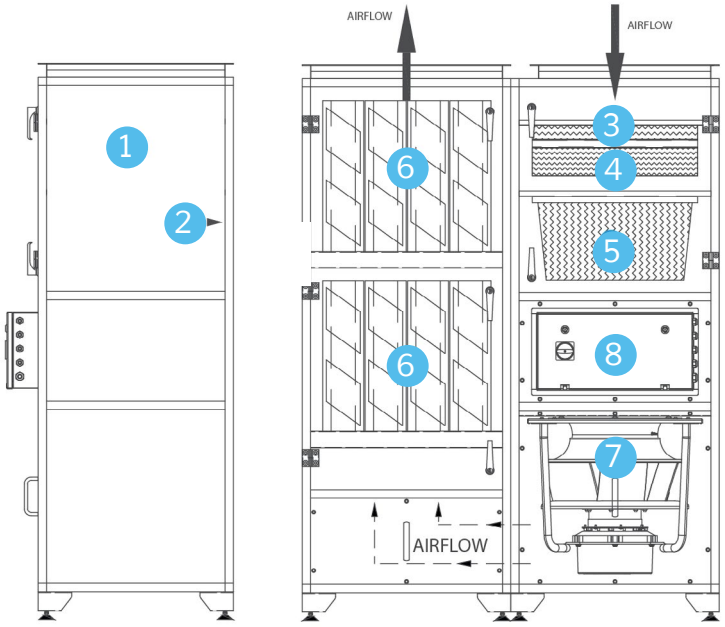
Design flexibility

- RAH units can be located internally adjacent to or remote from the kitchen. The unit can floor standing or can be hung horizontally within ceiling voids giving flexibility to equipment layout and also eliminating the requirement for certain planning processes.
- RAH units are easily retro-fitted or relocated.

Independently tested

- Air Cleanliness Study by Validair.
- Acoustic survey report by Applied Acoustic Design.

Technical descriptions and operation



CODE DESCRIPTION

1 1" double skin panel, .20 lb/cubic inch density mineral wool insulation

2 Galvanized steel finish to interior

3 Large grease particle removal MERV 8

4 Fine grease particle removal MERV 11

5 Smoke removal MERV 16

6 Coconut Shell Activated Carbon Cylinders - Odor removal minimum dwell time shall be 0.2 seconds.

7 EC Plug Fan, 208/460/3/60hz, suitable for 0-10v signal control

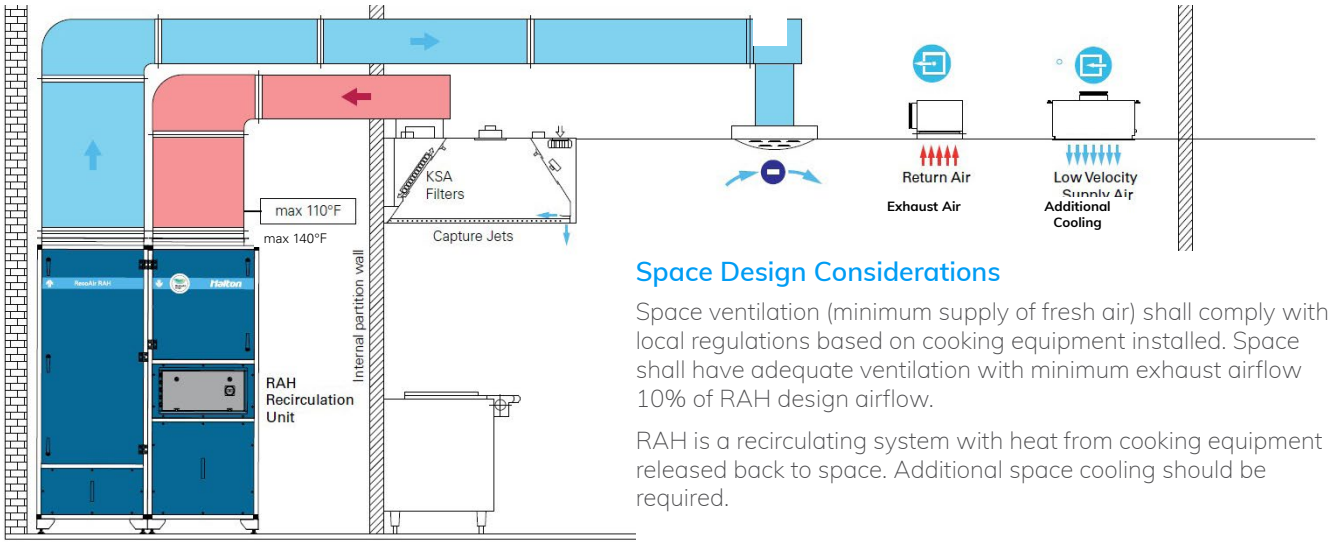
8 Control Box (ANSUL and Control Box can also bemounted on the exterior of the unit)

Note: When used with an Electric broiler, the following changes to the filter arrangement are made:

- Replace the V-Bank MERV 16 final filter with a 99.97% HEPA filter
- Adjust static pressure for HEPA

* Capture Jet Hoods will contain mesh secondary filters when paired with RecoAir by Halton units.

Note: Outdoor air rates for general ventilation must comply with IMC, ASHRAE 62.1, and local codes, and be at least 10% of total system capacity, as recommended by the manufacturer.



Space Design Considerations

Space ventilation (minimum supply of fresh air) shall comply with local regulations based on cooking equipment installed. Space shall have adequate ventilation with minimum exhaust airflow 10% of RAH design airflow.

RAH is a recirculating system with heat from cooking equipment released back to space. Additional space cooling should be required.

Recommended Additional Cooling Tons

Cooling capacity required (sensible heat only). ***Halton offers support with load calculations on a site-by-site basis.***

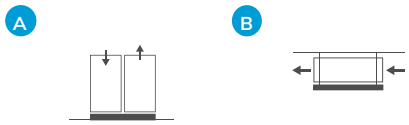
	Tons
RAH.1.0	2
RAH 1.5	2.6
RAH 2.0	3.9

Consult with your Mechanical Engineer or your Halton Representative on the most effective way to address this additional load.

Ventless hood systems recirculate the heat generated by the cooking appliances back into the space. Consequently, it is essential to ensure that the HVAC design includes sufficient cooling capacity (tonnage) to handle this added heat gain.

Quick selection data

General in Inches



	CFM	Min. Oudoor Air CFM	Static Pressure	Fan Size [in]	208/460 [Amps]	Hood L (1) [in]	A W	A D	A H	B W	B D	B H
RAH.1.0	1900	190	1.0"	14	16/8	112	59	27.5	78.9	140.9	34.4	27.5
RAH 1.5	2550	255	1.3"	14/17	16/8	153	60.2	44.4	78.9	140.9	35.2	44.4
RAH 2.0	3800	380	1.3"	17	16/8	228	60.2	56.2	78.9	140.9	35.2	56.2

General in mm

	CFM	Min. Oudoor Air CFM	Static Pressure	Fan Size [mm]	208/460 [Amps]	Hood L (1) [mm](1)	A W	A D	A H	B W	B D	B H
RAH.1.0	1900	190	1.0"	355	16/8	2845	1500	700	2005	3580	875	700
RAH 1.5	2550	255	1.3"	355/ 432	16/8	3886	1540	1130	2005	3580	895	1130
RAH 2.0	3800	380	1.3"	432	16/8	2791	1540	1430	2005	3580	895	1430

(1) Max hood length typically connected to the unit. Final design exhaust airflow rate to be calculated based on the cooking appliances.
(2) UL listed models.

Weight and number of filters

	RAH 1.0	RAH 1.5	RAH 2.0
A [lbs]	1199	1662	1980
B [lbs]	1360	1892	2251

F1	MERV 8	23 x 11x 2 inches	592 x 287 x 48 mm		1	
	Coarse 60-70% (ISO 16890)	23 x 23 x 2 inches	592 x 592 x 48 mm	1	1	2
F2	MERV 11	23 x 11 x 4 inches	592 x 287 x 96 mm		1	
	ePM2.5 50% - Coarse 85% (ISO 16890)	23 x 23 x 4 inches	592 x 592 x 96 mm	1	1	2
F3(1)	MERV 16	23 x 11 x 12 inches	592 x 287 x 296 mm		1	
	85% MPPS (EN 1822)	23 x 23 x 12 inches	592 x 592 x 296 mm	1	1	2
F4			f154 H620 mm	32	48	64

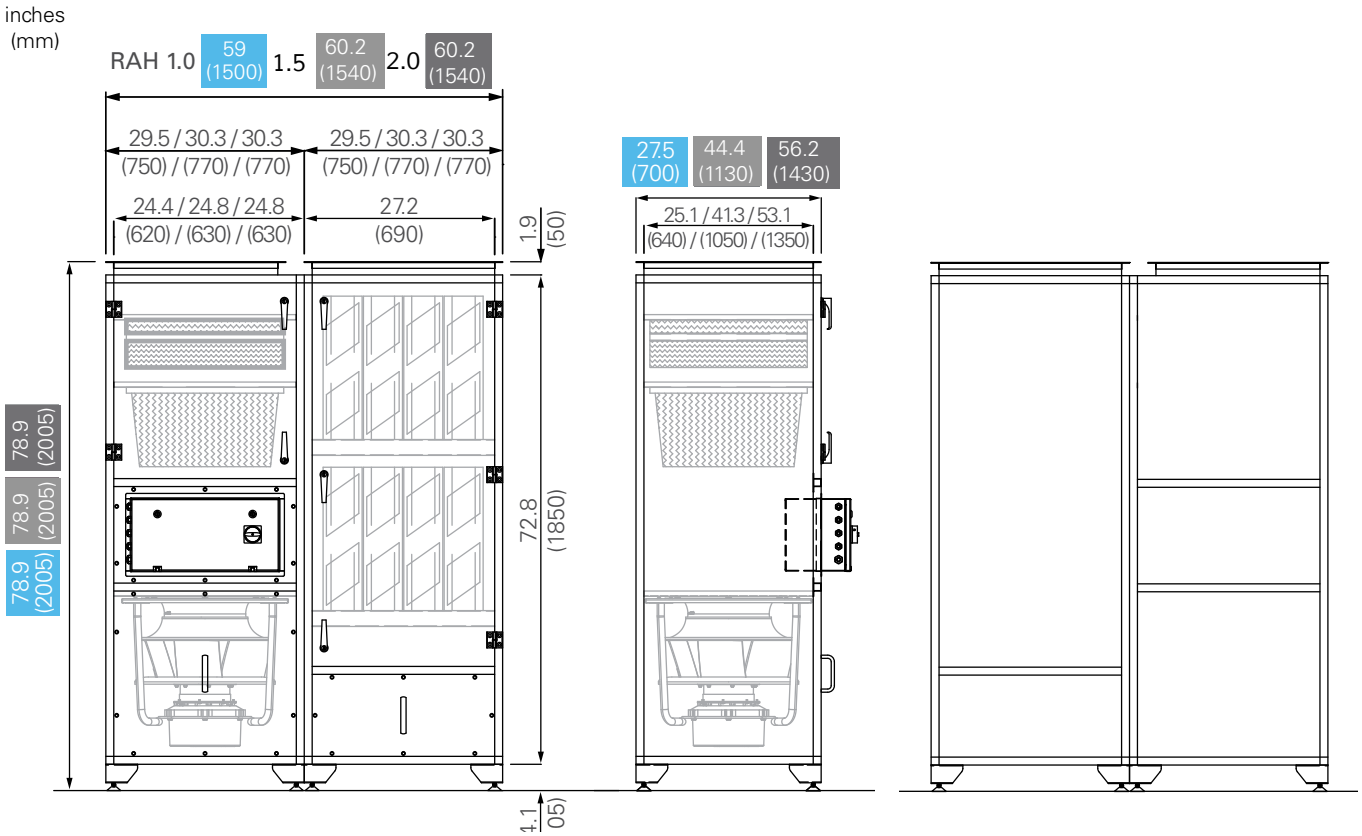
(1) F3 incorporates a 0.10" (25 mm) header & sealing gasket. Enhanced grades of filter are available upon request.

Design duty, SFP, dwell time & noise breakout

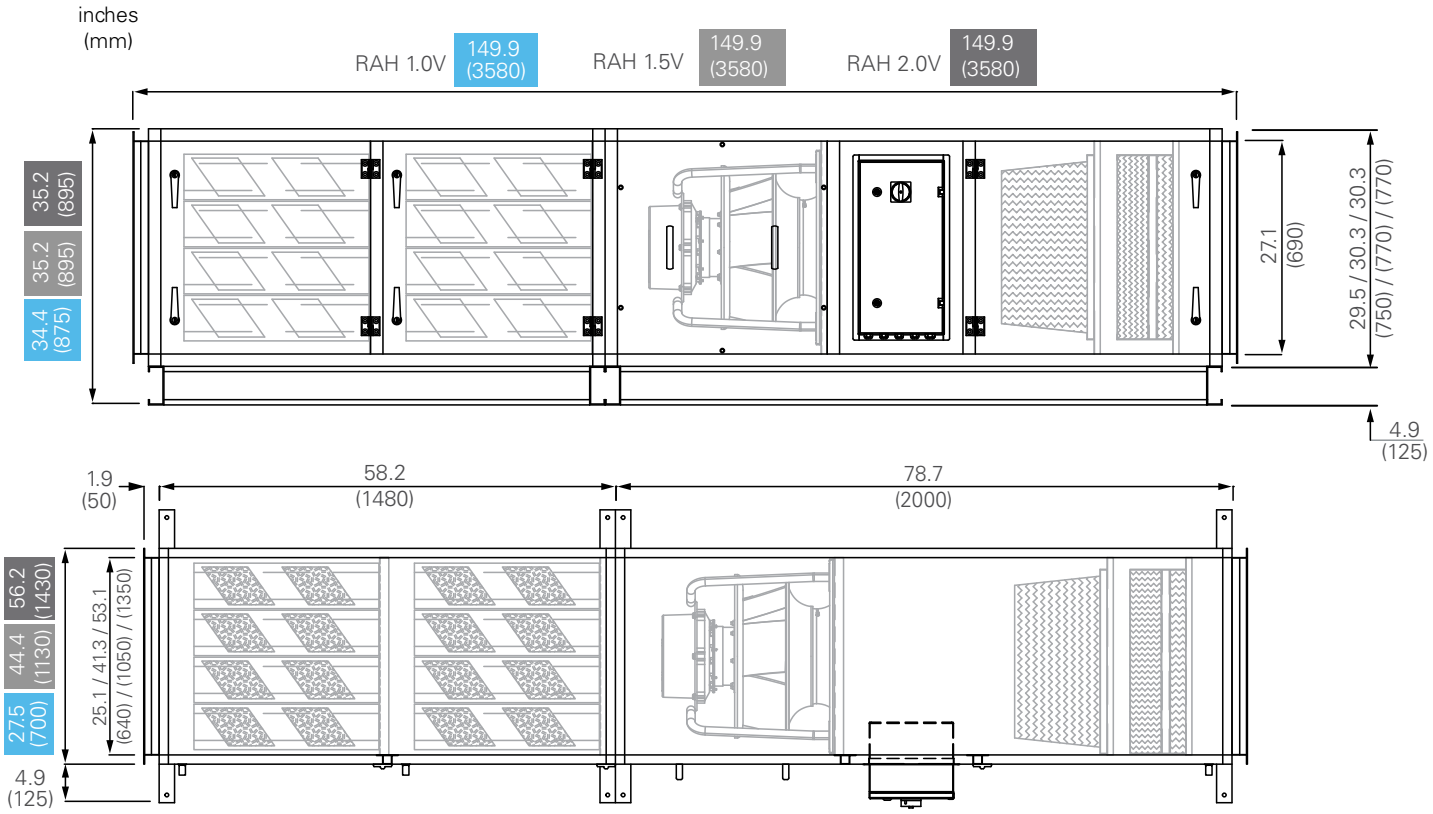
	CFM	Min. Oudoor Air CFM	External Static Pressure	Specific Fan Power [Clean Filters kW]	Carbon filters dwell-time [s]	Casing Breakout [dB(A)] @ 1 m Free Field	
						Filter Clean	Filters Dirty
RAH.1.0	1900	190	1.0"	1.48	0.203	57	64
RAH 1.5	2550	255	1.3"	1.27	0.228	53	62
RAH 2.0	3800	380	1.3"	1.27	0.203	53	60

Specific Fan Power (filters clean and dirty) (2) Casing breakout @1 m free-field (filters clean and dirty)

Dimensions (floor units)



Dimensions (ceiling void units)



Suggested specification

RAH Reco-Air recirculating kitchen extract unit. The recirculating extract unit shall be Halton Brand, Reco-Air by Halton RAH range. It is equipped with a full air treatment system to remove grease, steam, smoke and odors from the extract air.

Ventless hood systems recirculate the heat generated by the cooking appliances back into the space. Consequently, it is essential to ensure that the HVAC design includes sufficient cooling capacity (tonnage) to handle this added heat gain. Consult with your Mechanical Engineer or your Halton Representative on the most effective way to address this additional load.

The Reco-Air by Halton unit is to be used with Halton Capture Jet 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. RecoAir units have been tested as a Component to applicable sections of UL 710B, including filtration and emissions requirements. RecoAir units are recognized as a Hood and Duct Accessory under UL 710. It is up to the local authorities to grant approval, so checking if recirculating hoods are accepted is recommended. The final decision rests with the local Authority Having Jurisdiction (AHJ).

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 for RAH size 1.5 and 2.0. Maximum external static of RAH size 1.0 should not exceed 1 inch of water column.

The unit shall be supplied complete, fully pre-wired from factory and ready to be installed. The following specifications shall be fully observed.

General Unit Construction

- Unit shall be constructed of 25 mm double walled, galvanized steel panels with internal and external powder coat finish. They shall be insulated using .20lb/in^3 density mineral wool to ensure good acoustic performance & thermal properties.
- Access doors to the main filter sections shall be lift off or mounted on hinges, equipped with lockable black handles for an access by Authorized Personnel only. Fan(s) access door(s) shall be screwed.

Specific Requirements

- As a minimum requirement, each unit shall incorporate the following grade filter media:
  - Large grease particle removal MERV 8
  - Fine grease particle removal MERV 11
  - Smoke removal MERV 16
  - Coconut Shell activated carbon Cylinders - Odor removal minimum dwell time shall be 0.2 seconds.
- As a minimum requirement, each unit shall incorporate the following fan assembly (voltage to be verified when sending for review):
  - EC Plug fan, 208 or 460 V (depending on unit capacity).
  - Three phase, suitable for 0 to 10V signal control.
  - Max. working temperature to suit specific applications.
  - Each fan shall be Inverter Controlled, so fan speed ramps up as the filter pressure increases to maintain a constant air volume flow rate at the cook line/hood.

Fire Suppression

Reco-Air unit to be factory supplied with complete wet chemical fire system compliant with U.L. 300 standards. The system shall include factory pre-pipe, tanks, regulators and fusible links.

Automatic actuation shall be by means of fusible link rated for the cooking duty. The system shall be furnished and installed by a certified distributor in accordance with manufacturer's instructions and the authority having jurisdiction.

Microswitches shall be furnished as part of the fire protection system for tie in of building alarm and for make-up air/fire/fuel shut down. Shunt trip breakers by others.

If applicable, the Building Alarm System Contractor is to furnish a control relay to detect the operation of the system by connection to the microswitches supplied. The Electrical Contractor is to furnish and install all wiring required for the system specified.

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Control platform & Interface Requirements

- The control platform shall include a unique LCD user interface common to all technologies of the manufacturer.
- Optional Halton Connect shall also have advanced remote monitoring capabilities enabling future premium services, including predictive maintenance of the systems.
- The control platform shall ensure the unit ceases to function if any of the following scenarios arise:
  - A unit filter access door is left open or slightly open.
  - Filters are removed or left out of the unit.
  - The Fire Alarm system is activated.
  - The registered filter pressure drop across any of the primary 3 sets of filters exceeds pre-set warning levels & reaches critical levels.
  - The unit Isolator is turned Off.
  - A system Timeclock - external controls - is not calling for system activation.
  - A remote Shut-off safety feature - external controls
    - has been activated.
- An electrical interlock system shall be incorporated to disable all essential cooking equipment whenever a
  'No Air Flow' status is present.

Air Commissioning / Testing

- The unit(s) shall be delivered pre-commissioned from factory.
- On completion of any Reco-AirAir unit installation, the air volume flow rates to extract & return air ductwork must be verified by a suitably qualified commissioning engineer & a report produced as point of record.
- All test points are sealed with proprietary plugs on completion of this operation.

Measures for unit's Service & Maintenance

- When planning the installation of the recirculation
  unit – however configured - adequate clearance must be allowed to facilitate safe operative replacement of the filter media & fan(s).
- To comply with Specific Landlord / Authority approvals – a Service Contract is required. It is highly recommended to use a suppliers' accredited service partner.
- Evidence of same must be made available prior to formal approval being acknowledged.

Reco-Air Unit Noise Breakout

- In normal 'Internal' instances, breakout noise from the unit shall not exceed 64 dB(A) when measured at 1 metre (free field).
- Where Specific Authorities enforce lower noise levels, the unit construction shall be modified accordingly.

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