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Publication No. ZZ 1586-3 April 2016

# **Q-VENT COMPACT-R** High Efficiency Ventilation System

with Heat Recovery



## INSTALLATION, COMMISSIONING & SERVICING INSTRUCTIONS

These instructions are to be left with the user





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In the interest of continuous development Johnson and Starley reserve the right to change specification without prior notice. Johnson and Starley prides itself on it's ability to supply spare parts quickly and efficiently.



### 2. GENERAL DESCRIPTION

- 2.1 The Q-Vent Compact-R System provides mechanical ventilation to the living/bedroom. The unit is designed to provide continuous low level extraction from the wet rooms via a system of fixed ductwork and grilles. Heat is recovered from the stale contaminated air drawn from the wet room and uses a high performance heat exchanger recovering the heat and transferring it to temper the incoming fresh air into the living/bedroom. The ventilation rate will increase when the wet room is being used for periods of time, in excess of 2 minutes and the unit switches to boost mode. The extracted air is then discharged to outside via a single duct and grille.
- 2.2 The case is constructed in aluminium/zinc coated steel. Internal faces of the casing are acoustically lined with flame retardant acoustic foam.
- 2.3 The unit is fitted with a Real Time Clock (RTC) PCB. This allows the unit to have a Sleep Mode between 22.00 and 05.00. The unit will not be able to go into boost mode during this time. It is fitted with a battery back up in case there is a loss of mains power. This will keep the current local time up to date on the RTC.

NOTE: For additional ancillary equipment (e.g. ducting, grilles etc.) contact the Sales Department.

## 3. CARTON CONTENT

TABLE 1	COMPONENT CHECK LIST	QTY
1	Q-Vent Compact-R Heat Recovery Unit	1
2	R/H & L/H Fixing Bracket & Screws	2
3	6mm x 19mm/21.3mm Condense Adapter	1
4	10mm Straight Hose Connector	1
5	Installation, Servicing & Maintenance Instructions	1



	EXPLODED FEATURES Suspended Unit Only
12	Condensate Tray
13	Magnetic Filter Cover
14	Filters
15	Front Cover Assembly
16	Access Cover to Controls
17	Front Cover Screws

		20 21	22
_			
	PCB & RTC PCB FEATURES		VERSION 2.0
18	RV1 Speed Adjuster		
19	RV2 Speed Adjuster	(18-→● •••	
20	Installer Mode Switch		
21	LED Light		
22	Real Time Clock Test Switch	Main PCB	RTC PCB

FIGURE 2. Q-VENT COMPACT-R with a cut out section showing the fans & PCB

### 4. BUILDING STANDARD & REGULATIONS

#### 4.1 BUILDING STANDARDS & INSTALLATION REGULATIONS

- Building Standards (Scotland Consolidation) Building Regulations
- Part F of the Building Regulations
- BS 5720 Mechanical Ventilation and Air Conditioning in Buildings
- BS 7671 Requirements for Electrical Installations. Wiring Regulations
- Institute of Electrical Engineers (I.E.E.) Regulations
- Good Practice Guide 268
- 4.2 The design material specification and installation must only be carried out by "competent persons".

#### 5. SAFETY, ELECTRICAL & WATER INFORMATION

- 5.1 Ensure the mains supply voltage, frequency, number of phases and power rating comply with details on the rating label unit.
- 5.2 All wiring must be in accordance with the appropriate standards. The equipment must be provided with a local triple pole isolator switch.
- 5.3 Ensure safety regulations and practices are adhered to when installing and using this equipment.
- 5.4 Do not install this appliance where it is liable to be subject to water spray or where ducted air ambient temperature may exceed 40°C.
- 5.5 When the unit is used to handle moist air, a suitable condensate trap and drainage system should be incorporated in the exhaust duct to ensure safe and healthy operating conditions as per the relevant standard.
- 5.6 DO NOT use this appliance where excessive moisture, excessive dust or fibres, grease or oil laden air.
- 5.7 When installing the unit, take care not to damage electrical or other hidden utilities.
- 5.8 Exhaust air must be vented to the outside.
- 5.9 The fan motors are fitted with sealed for life bearings and therefore does not require lubrication.

#### **TECHNICAL DATA** 6.

EU Regulations No. 1233/2014, Implementing Directive 2009/123/EC & supplementing Directive 2010/30/EU.

TABLE 2.	ErP TECHNICAL FICHE	Q-VENT COMPACT - R				
PRODUCT DATA		SYMBOL		VA	LUE	
Declared Typol	ogy	-		Bidirectional		
Type of Drive In	stalled	-		Three-	Speed	
Type of Heat Re	ecovery System	-		Recup	erative	
Thermal Efficier	ncy of Heat Recovery	%		87	7.7	
Maximum Flow	Rate	m³/h		1(	03	
Electrical Power	r Input at Maximum Flow Rate	W		7	'9	
Sound Power Le	evel	L <sub>wa</sub>		4	2	
Reference Flow	Rate	m³/h		7	2	
Reference Pres	sure Difference	Pa		5	0	
SPI		W/m³/h	0.500			
			CONTROL FACTOR		TYPOLOGY	
Control Factor a	and Control Typology	-	- 0.65 Local Demi		Demand Control	
			INTERNAL		EXTERNAL	
Declared Maxin	num Internal and External Leakage Rates	%	5 5		5	
Mixing Rate		-	N/A N/A		N/A	
Position and De	scription of Filter Warning	-	N/A			N/A
ADDITIONAL	DATA		COLD	AVERAGE WARM		WARM
Annual Electric	city Consumption	kWh	9.10	4.	04	3.28
Annual Heating	g Saved	kWh	90.88	46	.46	21.01
Specific Energ	y Consumption	kWh/m²/a	-76.86	-37.49		-12.80
SEC Class			A+ A		E	
TABLE 3.			1	FECHNIC		A
Volts		V ~ Hz	230V ~ 50Hz			
Input		W	6W Minimum - 86W Maximum			
Fuse Rate		А		;	3	
Weight		kg	9			

kg



#### 7. PREPARATION & POSITIONING

#### 7.1 DUCTING INFORMATION

- 7.1.1 It is an advantage to have all the compatible ductwork already installed and ready to connect to the appliance spigots.
- 7.1.2 Ducting passing through unheated roof voids must be insulated. Ducting runs should be as straight as possible and the horizontal exhaust ducting should always slope downwards from the Q-Vent Compact-R unit.
- 7.1.3 The recommended types of ducting are:- rigid plastic and spiral wound duct.
- 7.1.4 For any exhaust duct passing through a roof use a suitable Vertical Terminal or Ridge Terminal. For exhaust/ supply terminals in high rise applications a purpose designed, high rise terminal MUST be used. For details on Johnson & Starley 'high rise' terminal colours and sizes see Table 3.

FINISH	100mm (4")	123mm (5")	130mm* (6")
WHITE	1000-0004790	1000-00005350	1000-0005530
BEIGE	1000-0004810	1000-0005370	1000-0005550
BROWN	1000-0004800	1000-0005360	1000-0005540
TERRACOTTA	1000-0004820	1000-0005380	1000-0005560

TABLE 3. 'HIGH RISE' TERMINAL PART NUMBERS

\* Ensure gravity flaps are removed

#### 7.2 POSITIONING THE UNIT

- 7.2.1 Ensure there is adequate access for installation and maintenance. Ensure the selected electrical mains wiring has as an isolator near by for servicing.
- **NOTE:** The appliance is for suspended applications only.
- 7.2.2 This unit is typically installed in a ceiling void, but if this is not practicable it can be positioned in the loft or any other suitable location. Also make sure when choosing the location to take into consideration the accessibility of the control, the exhaust exit position, the electrical services, and the required RH path for the condense drain.
- 7.2.3 It is the responsibility of the installer to ensure that all aspects of the system design are taken into consideration. The system is designed as a ducted unit and should only be used in ducted situations. Ensure ductwork is supported throughout it's length.
- 7.2.4 The unit has 4 connection spigots and each one is labelled. Ensure that the correct duct is connected to the appropriate spigot.
- 7.2.5 Consideration must be given to access and servicing. The servicing of the fans and the cleaning of the heat exchanger should be carried out annually. Filters are to be cleaned as required.

**PLEASE NOTE:** A clear space of at least 500mm x 500mm is required to allow the cover to be removed and provide sufficient access for maintenance.

#### 7.3 SPIGOTS

- 7.3.1 The unit is supplied with 100mm/125mm spigots. For satisfactory operation of the unit, ensure ducting used is as detailed on the design drawing. Any deviation from the design drawing could lead to noise increase on boost.
- **NOTE:** In situations where it is either not possible or not desirable to use 125mm ducting, 100mm ducting can be used but it MUST be noted, in 'BOOST' mode, might increase noise levels.

#### 7.4 CONDENSATE

**IMPORTANT:** At times the unit will produce condensate which MUST be drained away. The unit is provided with a drain connection.

#### 7.4.1 When using the condense adapter, you **MUST** use Rigid PVC-U <sup>3</sup>/<sub>4</sub>"/19mm push fit pipe.

**IMPORTANT:** DO NO USE A SOLVENT WELD on this joint. This joint **has** to be disconnected when removing the heat exchanger for periodic servicing and maintenance.

- 7.4.2 When using 10mm flexible condense pipe, cut the condense adapter off and use the straight hose connector supplied. Do not leave any kinks in the condense pipe.
- 7.4.3 The unit has a condense anti flood device built in.

**NOTE:** Fan will stop and a red LED will flash once every 3 seconds if the condense drain path is blocked and unit goes into anti flood mode.



7.4.4 The drain pipe must have a continuous minimum fall of 6cm per 1m run.

7.4.5 A condensate connecting point will already be provided as part of the building design. The position of this point, relative to where the heat recovery unit is to be installed, is to be checked for any appreciable connection misalignment and necessary adjustment made before proceeding any further.

**NOTE:** The Q-Vent Compact-R unit is pre-configured for drainage.

**IMPORTANT:** There must be a sufficiently large visible gap between the condensate drain pipe termination and the collection point, to prevent ice buildup.



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## 8. DUCT & DUCT CONNECTIONS (Refer to design drawing)

- 8.1 Four 100mm/125mm nominal diameter spigots for connection of the ducting (see diagram for positioning of the spigots Figure 1). These must be connected to the supply and exhaust duct.
- 8.2 **NOTE:** Where rigid ducting is used it must fit outside the 1235mm spigots for 125mm ducting and on the inside of the 100mm spigots for 100mm ducting.

**IMPORTANT:** When inserting 100mm ducting into the spigots ensure it is no longer the 45mm.

- 8.3 Where rigid ducting is used, it should be installed using the least number of fittings to minimise resistance to air flow. Where possible, final connection from the rigid ducting to grilles and the unit should be made with a flexible connection.
- 8.4 The duct layout must be designed to suit the requirements for the ventilation/recovery system and building layout, and suitable fire dampers MUST BE FITTED to protect against fire being transmitted through the ducting, where specified.
- 8.5 The inlet for the fresh air supply can be direct from outside or from within a ventilated roof space. If the supply is direct from outside, it must have an external wall baffle fitted if supplied through a wall, or a recognised roof terminal if supplied through a roof.
- 8.6 The exhaust air must exit to outside through either a wall or a roof and must be protected by a wall baffle or recognised roof terminal.



FIGURE 5. AIRFLOW DIAGRAMS (Cross section view from below)



### 9. INSTALLATION INSTRUCTIONS

NOTE: The installation should be carried out by a competent person in accordance with the appropriate authority and conforming to all the statuary and governing regulations.

9.1 When location of the unit has been chosen, fix the unit using the 2 fixing brackets, (you must make sure you have the correct bracket on the fall side of the unit), use screws appropriate for the surface it is being fitted to. Ensure the unit is positioned with the fall side towards the correct handed condense drain point.



#### 10. ELECTRICAL

## WARNING: THIS APPLICATION MUST BE EARTHED. ALL WIRING MUST CONFORM TO INSTITUTE OF ELECTRICAL ENGINEERS (I.E.E.) REGULATIONS & BS 7671

- 10.1 The unit is suitable for a 230V, 50Hz single phase supply fused at 3A.
- 10.2 The unit needs a mains flexible cord (in compliance with BS 6500). Connect the cord to the terminal block and exit through a grommet and cable clamp.

NOTE: If no external switch live is to be used, black wire is not connected.

- 10.3 A fused spur, or triple pole switch having a minimum contact separation of 3.0mm, must be used to provide isolation for the unit.
- 10.4 The unit is designed to be wired directly to the mains supply through a fused spur isolator which allows it to run continuously.

#### 10.5 ELECTRICAL WIRING OPTIONS

- 10.5.1 The unit is normally designed to ventilate continuously to give 8 l/s supply and intermittent exhaust boost (24 l/s).
- 10.5.2 A facility is included which boosts the duty as required. The boost is achieved by:- Connecting black wire (from the mains lead) to boost switch i.e. bathroom light switch.

#### 11. FAN PERFORMANCE GRAPH



## 12. CIRCUIT DIAGRAMS





#### **13. COMMISSIONING**

#### 13.1 PRE COMMISSIONING CHECK

Before commencing the commissioning procedure, refer to the design drawing for correct air flows. See Figure 5.

**NOTE:** Extract air and supply air volumes will not always be equal, therefore, when setting up, the extract system should be the datum.

13.1.1 Ensure that the exhaust and supply grilles or valves are open.

- 13.1.2 Check the airflow at the grilles or valves, and adjust to suit the design figures.
- 13.1.3 For bathroom extract this unit is factory set for 8 l/s in trickle mode and 24 l/s in boost mode, based on the system configuration in Figure 3.
- 13.1.4 Check the voltage of the RTC PCB battery. Refer to paragraph 14.8.3.

**NOTE:** If changes are required to meet differing system specifications the following on site adjustments can be made.

#### 13.2 FAN ADJUSTMENT FOR EXTRACT

At the start of any fan adjustment, you MUST check the trickle airflow rate and boost airflow rate before commencing.

#### 13.3 INSTALLER MODE

**NOTE:** The install mode has a time out function. If the unit has been powered up but not commissioned within 3 hours then you will not be able to access the installer mode without first turning the power supply off for 10 seconds and then back on again.

This function is there to allow for situations where the unit is not taken out of installer mode.

- 13.3.1 To start installer mode, press installer mode switch.
- 13.3.2 When installer mode is ready the red LED indicator will start flashing every second. Now extract and supply fans can be adjusted.
- 13.3.3 To set trickle see paragraph 13.4.4.
- 13.3.4 To set boost see paragraph 13.5.4.
- 13.3.5 Once both setting are correct press installer mode switch.
- 13.3.6 When out of installer mode the Red LED will stop flashing.
- **NOTE:** When switch live is OFF there is no switch live present. When switch live is ON switch live is present.

#### 13.4 TRICKLE AIRFLOW ADJUSTMENT ONLY

- 13.4.1 Trickle airflow rate needs to be 8 l/s. To adjust this the switch live should be OFF.
- **NOTE:** During the adjustment do not put switch live ON at any point.
- 13.4.2 Put unit into installer mode.
- 13.4.3 To adjust the TRICKLE setting turn RV1 (extract fan) and RV2 (supply air fan) clockwise U to increase the airflow rate and anti-clockwise U to decrease the airflow rate.
- 13.4.4 When it is set to 8 l/s, take the unit out of installer mode. Red LED will stop flashing.

#### 13.5 BOOST AIRFLOW ADJUSTMENT ONLY

- 13.5.1 Boost airflow rate needs to be 24 l/s. To adjust this switch live should be ON.
- NOTE: During the adjustment do not switch OFF the switch live at any point.
- 13.5.2 To adjust the BOOST setting turn RV1 (extract fan).
  - (In default mode only the extract fan will boost.)
- 13.5.3 When it is set to 24 l/s, take the unit out of installation mode. Red LED will stop flashing.

#### 13.6 SETTING SPEED POSITIONS



- 13.6.1 After setting the required airflows in auto mode turn the switch to position 1.13.6.2 Ensure unit is out of installer mode and switch live is OFF.
- 13.6.3 Rotate the potentiometer 1 (on reverse side of the switch) to the required position to provide the required airflow.

**POSITION 2** 



- 13.6.4 Turn switch to position 2.
- 13.6.5 Ensure unit is out of installer mode and switch live is OFF.
- 13.6.6 Rotate the potentiometer 2 (on the reverse side of the switch) to the required position to provide the required airflow.

**NOTE:** In manual modes 1 & 2, if the switch live is turned ON, both fans turn to the setting which was set in the auto mode.



FIGURE 12. POTENTIOMETERS ON REVERSE OF SWITCH COVER

TABLE 4	AUTO	1	2	BY-PASS
SWITCH POSITION	% OF FULL SPEED	% OF FULL SPEED	% OF FULL SPEED	SWITCH LIVE NOT ACTIVATED
EXTRACT	10-35%	13-53%	53-99%	Extract Fan Returns to Commissioning Speed
SUPPLY	10-35%	13-53%	53-99%	Supply Fan Runs at Switch Position 2 Speed
				SWITCH LIVE ACTIVATED
EXTRACT BOOST SWITCH LIVE	30-98%	Returns to Commissioning Speed	Returns to Commissioning Speed	Extract Fan Returns to Commissioning Speed
SUPPLY BOOST SWITCH LIVE30-98%Returns to Commissioning SpeedReturns to Commissioning Speed		Returns to Commissioning Speed	Supply Fan Returns to Commissioning Speed	
				NOTES
GENERAL	Commissioning Speed Set in Installer Mode	Both Supply and Extract Track Together at Set Speed	Both Supply and Extract Track Together at Set Speed	In By-Pass mode the supply air fan runs at the speed set at switch position 2 with the Extract fan running at the speed set at position Auto. When switch live has been activated both fans return to the commissioning speed set at position Auto.

#### 13.7 WATER DETECTION IN CONDENSE TRAY

- 13.7.1 If the condensate build up is unable to flow out of the drain pipe and the water rises above a predetermined level it will be detected by the sensors in the condense tray and the red LED will flash every 3 seconds until the condense tray is drained.
- 13.7.2 The fans will stop to prevent any further water to build up.
- 13.7.3 If you are running in installer mode, you will not be able to continue with fan speed adjustments.
- 13.7.4 The LED will revert back to flashing every second after water level has dropped below predetermined level the fans will restart.
- 13.7.5 If condition persists, investigate the cause and rectify.

#### 13.8 HANDING

This unit is delivered configured for right hand configuration.

#### 13.9 THERMAL BY-PASS

The thermal by-pass is manually operated by turning the remote users control to By-Pass position. In By-Pass mode the supply air flow rate increases and the extract flow rate decreases lowering the thermal heat recovery through the heat exchanger, lowering the supply air temperature.

## NOTE: If fans do not boost with mains present at the switched live terminal block then press blue switch on the RTC PCB.



FIGURE 13. PCB BOARD (default settings)

TABI	TABLE 6 SWITCH FUNCTIO		nform	nation Only)
SWITCH	SWITCH POSITION	DEFAULT SETTINGS	SWITCH POSITION	
1	ON	Both fans externally controlled at the same time	OFF	Single fan externally controlled (supply fan with CTA linked to CTB)
2	ON	Condensate detection mode ON	OFF	Condensate detection mode OFF
3	OFF	Extract Boost Delayed for 2 minutes with Switch Live Present	ON	Extract fan boost speed not delayed with Switch Live present
4	ON	Supply Fan 1 boosts with Switch Live Present	OFF	Supply Air Fan 2 stays at trickle speed with Switch Live present

### 14. SERVICING & MAINTENANCE

**IMPORTANT:** Before commencing any servicing or component replacement. Ensure the ELECTRICAL SUPPLY to the unit is ISOLATED.

**NOTE:** This unit is suspended and care MUST be taken when removing the access panel. Take care no components fall out.

- 14.1 All filters must be cleaned first before commencing servicing and maintenance. See Figure 15.
- 14.2 Remove the magnetic strips and remove the filters. See Section 15 for cleaning.
- 14.3 The supply and extract fans and heat exchanger need cleaning annually. See Paragraph 14.5 & 14.7.



FIGURE 14. REMOVING FILTERS

#### 14.4 GAINING ACCESS TO THE UNIT

- 14.4.1 To gain access to the unit, remove the 2 magnetic filter strips then remove the filters. See Figure 14.
- 14.4.2 To remove the cover panel release the 2 screws securing the left of the cover plate access panel, slide off the locating slots and remove. See Figure 15.
- 14.4.3 Swivel the clear plastic insulator away from the PCB boards. See Figure 16.





#### 14.5 HEAT EXCHANGER, CONDENSE TRAY REMOVAL AND SERVICING

- 14.5.1 Disconnect the flexible pipe from the condense adapter, be aware the condense pipe may contain water.
- 14.5.2 Withdraw the heat exchanger and condense tray assembly by pulling on the securing strap and remove from the unit. Take care to avoid damaging the heat exchanger air passages. See Figure 17 & 18.
- 14.5.3 Be aware, the condensate tray may contain water.
- 14.5.4 Check all the air passages in the heat exchanger are free from obstruction. If not clean by vacuuming or with a light brush.

#### NOTE: DO NOT USE WATER OR ANY OTHER FLUIDS.

- **NOTE:** Under no circumstance must any sharp implements which are likely to distort or puncture the heat exchanger air passage walls, be used.
- 14.5.5 Wipe clean the condensate tray.



#### 14.6 SERVICING CARRIED OUT WITH FANS IN PLACE (recommended)

- 14.6.1 Remove all dust etc. from both the impellor and the motor, taking care not to disturb the balance of the fan.
- 14.6.2 Refit or replacement is in reverse order.

#### 14.7 FAN CASE ASSEMBLY REMOVAL & SERVICING

- 14.7.1 Referring to section 14.4 and 14.5 remove the heat exchanger and condense tray assembly. Remember there may be water in the condensate tray.
- 14.7.2 Disconnect the PCB board and fan cables from the terminal.
- 14.7.3 Push the twin fan case assembly towards the void and down to remove.
- 14.7.4 Clean fans through the holes in the casing where necessary, use a soft brush or vacuum.





- **NOTE:** Do not break open the fan case assembly as this will void the warranty.
- 14.7.3 Replace fan assembly and refit in reverse order.

#### 14.8 REAL TIME CLOCK (RTC) BATTERY CHECKS

- 14.8.1 The battery needs to be checked at regular intervals to make sure there is always a back up power in case of a mains power loss.
- 14.8.2 Remove the unit cover, see paragraph 14.4.
- 14.8.3 Check the voltage of the battery by connecting test point 'A' on the SW1 switch and the battery casing then read off the meter reading. If the reading is below 2.3V the battery will need to be replaced.
- 14.8.4 To replace the battery use an 'L' shaped tool, push the battery out of the casing and replace with new.
- 14.8.3 If there is no power from the mains and battery and the unit is dead. Replace the battery before using the RTC Kit to set the time. This will set the RTC to the current local time.For further information contact Johnson & Starley on Telephone 01604 762881.



#### 14.9 SYSTEM MAINTENANCE: CHECK OWNER REGIME FOR FREQUENCY

- 14.9.1 Clean unit filters and any inline filters that may be fitted in accordance with the filter's manufacturers instructions.
- 14.9.2 Clean the filter grille mesh in the extract grille if fitted.

#### **15. CLEANING THE FILTER**

- 15.1 Remove the magnetic strips and remove the filter.
- 15.2 Remove all debris with a soft brush or vacuum cleaner. NOTE: DO NOT USE WATER OR ANY OTHER FLUIDS.

## 16. DIMENSIONS





## 18. SPARES LIST

ITEM	PART No.	DESCRIPTION	QTY
1	HR34-0119005	Air Circulation Fan Assembly (Complete)	1
2	HR30-0119005	Heat Exchanger & Condense Tray Assembly (Complete)	1
3	HR34-0120005	Front Cover Assembly	1
4	1000-0523605	Fan Control PCB Board	1
5	1000-0530355	Real Time Clock PCB Board	1
6	1000-0026755	Filters	2



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