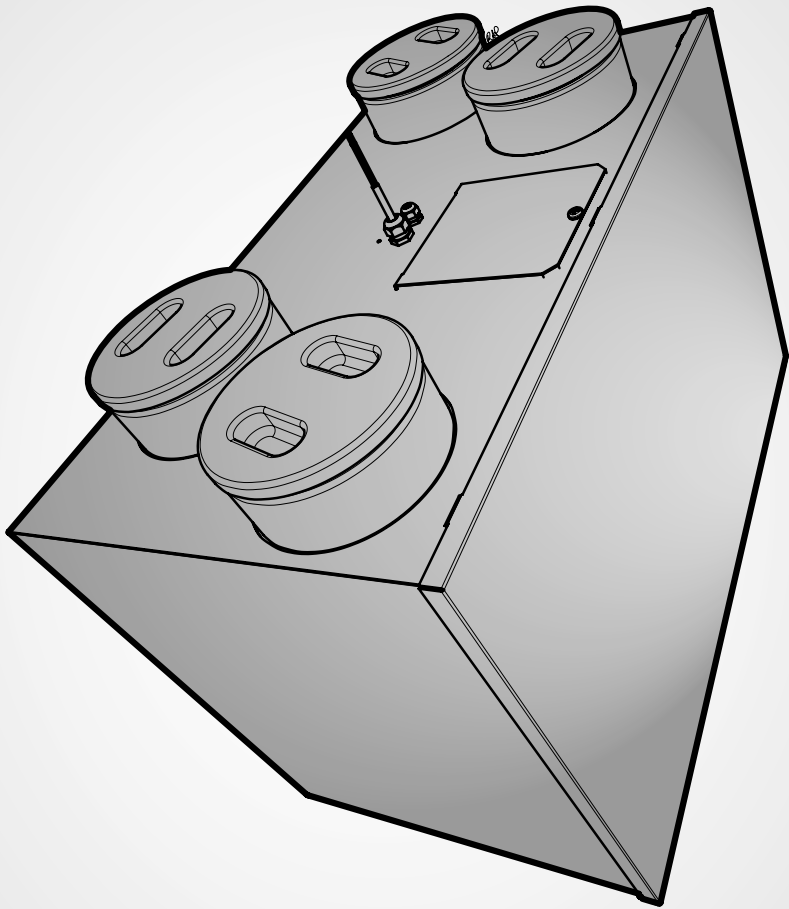


Titon  
HRV1 *Q Plus*  
HRV1.5 *Q Plus*  
HRV2 *Q Plus*  
Heat Recovery Ventilation Units





PCT Patent Application No PCT/GB2009/000114

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# Introduction

Interior comfort, air quality and energy efficiency are vitally important considerations in buildings today. The Titon HRV *Q Plus* range has been developed to meet these demands by providing clean fresh air whilst extracting stale polluted air from the building using state of the art technology to maximise energy efficiency.

## **For the home owner or occupant, this Product Manual explains:**

- Why ventilation is vital for the good health of your home and its occupants.
- How your Titon HRV *Q Plus* system works.
- How to operate and maintain your Titon HRV *Q Plus*.

## **For the professional installer, this Product Manual explains:**

- How to install the Titon HRV *Q Plus*.
- How to commission the unit.
- How to maintain the unit.

**It is important to read this Product Manual to ensure your ventilation system is installed, commissioned and used properly and continues to operate effectively. Failure to follow the guidance provided in this manual can have an adverse effect on health.**

# Ventilation is Vital

**C**onstruction methods used in older homes resulted in uncontrolled ventilation via air leaking through the building structure, such as small gaps around windows and doors or between walls and floors. These leaks allowed a large amount of air to move through a home largely unnoticed by the occupants. Other factors, such as open fireplaces, people being at home more often and opening windows to “air” rooms during daytime, all helped maintain reasonable levels of air quality in homes.

However, because this form of ventilation was uncontrolled, a large proportion of heat escaped to the outside and more energy was needed to make up for this loss.

Modern homes have greatly reduced air leaks and indoor air quality can deteriorate rapidly without the use of products made to control ventilation. Chemicals, gases and moisture produced by everyday products and activities may lead to the build up of excessive levels of pollutants which are harmful to the health of the occupants and may damage the building.

Poor ventilation can be a major contributory factor of heart disease, lung disease, mental illness and many more threats to our health.

The World Health Organisation and responsible Governments around the world recognise the vital importance of good indoor air quality. That is why building regulations govern the way homes are designed and built. Once homes are occupied it is the responsibility of the occupants to make sure they use and maintain the ventilation products following the guidance provided.



**Ventilation an essential ingredient**

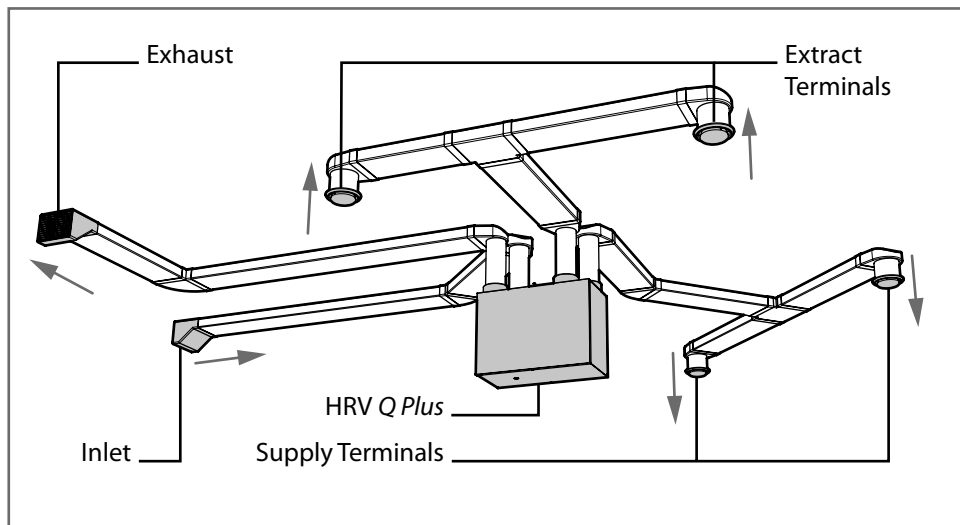
# How the System Works

The Titon HRV Q Plus works by extracting stale polluted air from rooms where most moisture is generated and providing fresh pre-warmed air taken from outside the house and delivering it to other rooms, creating a flow of fresh, clean air throughout the house.

Most of the heat is reclaimed from the extracted air is used to pre-heat incoming fresh air by a "heat exchanger" which is built into the unit. The ventilation system functions continuously so the air in the home remains free from harmful pollutants and excessive moisture, without wasting heat or energy unnecessarily.

The air travels from terminals built into the ceiling which are connected by hidden ducts to the unit. The unit is usually installed in a roof space or cupboard.

Most systems will also have a facility to boost the extraction rate at times when more moisture is being generated, such as when bathing or cooking. This may be done automatically by electronic sensors or by a conveniently located manually operated switch.



Typical system layout

**DO NOT switch off the unit; it is designed to run continuously. If the unit is switched off indoor pollutant and moisture levels may increase and become a danger to your health and damage the dwelling.**

# How to Use the System

The unit runs automatically and should not be switched off, except for maintenance or filter replacement. If a boost switch has been installed, it can be used to increase the extract ventilation rate at times when moisture or pollutant levels are considered excessive. Sensors which detect high levels of moisture and pollutants which boost the system automatically may be fitted to the dwelling.

All ventilation units require periodic maintenance and this must only be carried out by a suitably qualified and competent person. See the Maintenance section for further details.

## Product Features

- Easy installation mounting bracket.
- Standard 15mm fitting for condensate drain connection.
- Quick commission setting with 5 or 10 minute boost overrun.
- Full commission setting for ultimate efficiency with 5, 10, 15 or 20 minute boost overrun.
- HRV1 *Q Plus*, duct ports accept 100 and 125mm diameter ducting.
- HRV1.5 & 2 *Q Plus*, duct ports accept 125 and 150mm diameter ducting.
- Frost protection ensures that low temperatures do not damage the unit.
- Versatile boost control accept any one-way switched input, such as a PIR, humidistat or thermostat.
- The HRV2 *Q Plus* unit features constant volume fans, these automatically adjust in speed depending on the system resistance maintaining the required airflow.

## Safety and Guidance

**Important: read these instructions fully before the installation of this appliance**

- The electrical installation of the appliance **MUST** be carried out by a suitably qualified competent person and all wiring must be in accordance with current I.E.E. Regulations and all appropriate standards and applicable regulatory guidance.
- The appliance must be connected to a local isolation switch with a contact separation of at least 3mm.
- HRV1, 1.5 & 2 *Q Plus* are suitable for 230V ~ 50/60Hz single phase with a fuse rating of 3A.
- Ensure that external grills are located away from any flue outlet, in accordance with relevant Building Regulations.
- Always ensure ducting is free from blockages before switching the unit on.
- The condensation drain must be fitted.
- To prevent cross contamination a minimum distance of 2m between the external supply and exhaust is recommended.
- We recommend a minimum distance of 200mm between the appliance and any sharp bends in duct work.

**Installation of the appliance *MUST* be carried out by a qualified and suitably competent person and should be carried out in clean, dry conditions where dust and humidity are at minimal levels.**

**The appliance is not suitable for installation to the exterior of the dwelling.**

**For ducting recommendations see Ducting Best Practice.**

**Failure to comply with any of the above points will have an impact on the validity of your guarantee.**

## Transportation, Packaging & Storage

- Great care should be taken when transporting the appliance, DO NOT drop as damage may occur.
- The unit must always be stored in a clean and dry environment.
- Remove all packaging before installation but leaving duct port covers/bungs in place (if fitted) until connecting ducting.

## Inspection

- Inspect the appliance and electrical supply cord for damage. Any damage must be repaired by a suitable qualified and competent person.
- Check all accessories have been supplied.

## Parts List

- HRV *Q Plus* Unit x 1
- Wall Mounting Bracket x 2
- Safety Bracket x 1
- 15mm Drain Connector x 1
- M6x10mm Pan head screws x 4
- M6 washers x 4
- Product Manual x 1

**All shortages or damage must be reported to the supplier.**

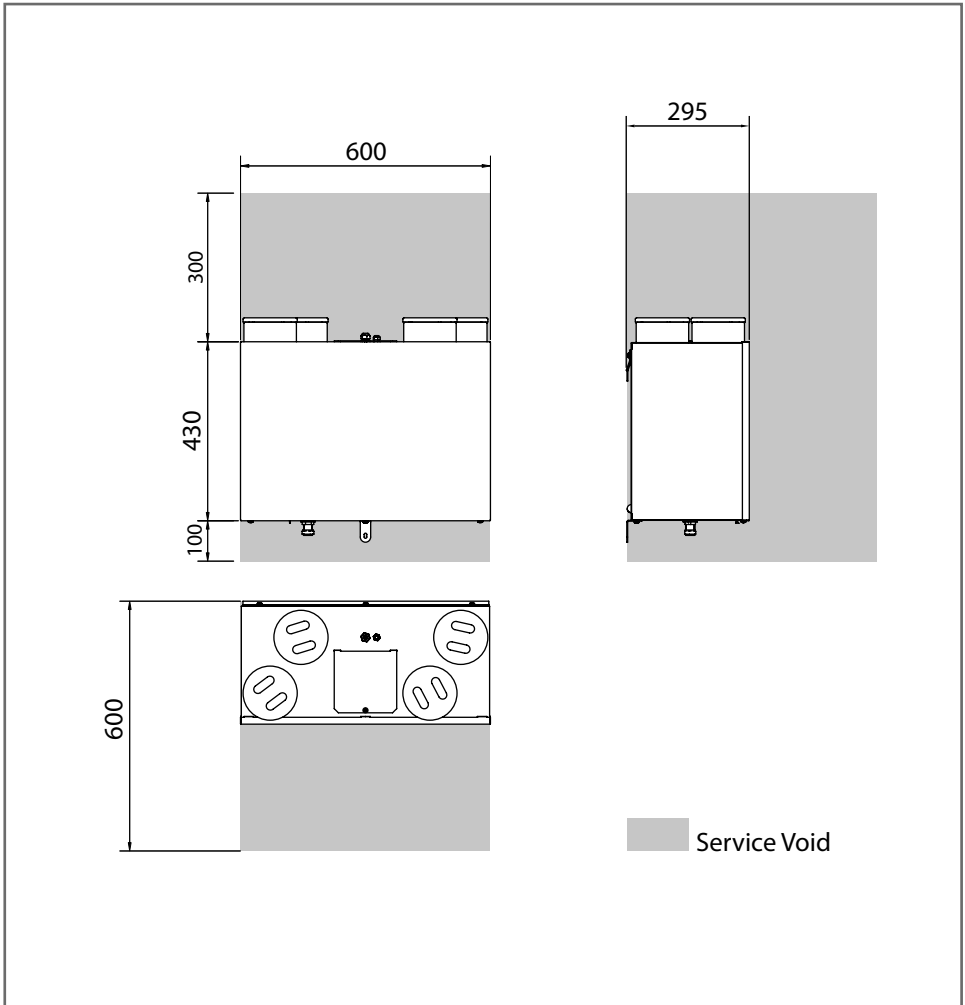
## Preparation

- NEVER install a HRV *Q Plus* in an area which does not have sufficient access for future maintenance (see Dimensions).
- DO NOT 'box-in' the unit, as the area may subsequently be surface finished making access to the unit difficult.
- NEVER install the appliance in an environment which contains:
  - Excessive oil or a grease laden environment.
  - Hazardous gases, liquids or vapours that are flammable or corrosive.
  - Ambient temperatures above 40°C or below -5°C.
  - Humidity levels above 90% or a wet environment.

# Installation

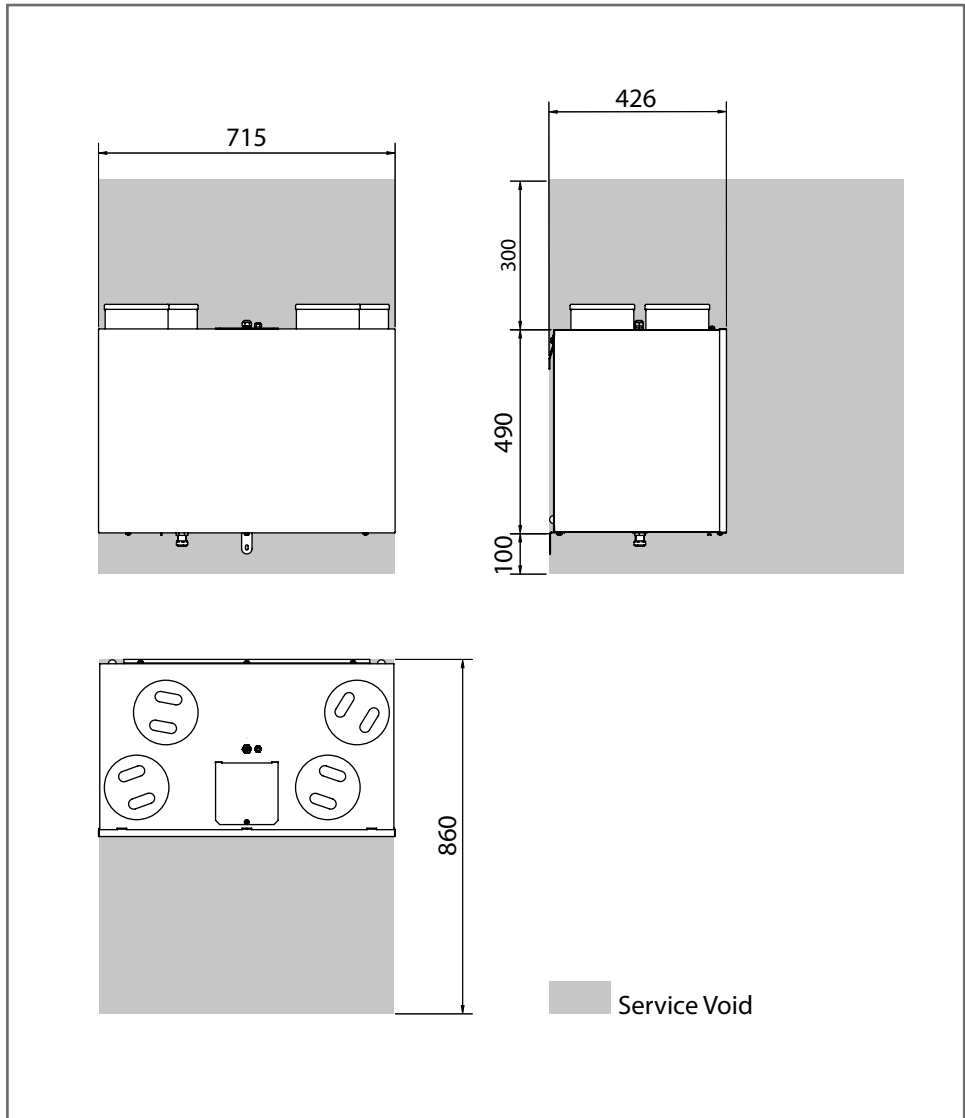
## Dimensions HRV1 Q Plus

These diagrams show the overall sizes of the units, and the additional space required around the units once installed to allow for future servicing and maintenance.



All dimensions in mm

## Dimensions HRV1.5, 2 Q Plus



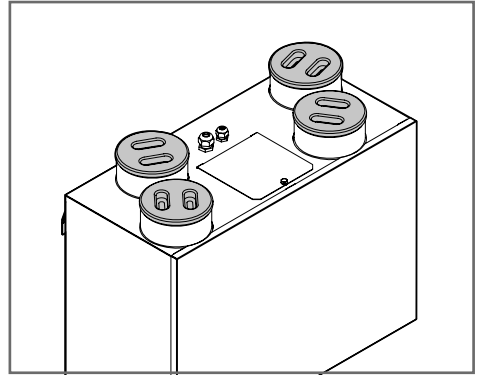
All dimensions in mm

# Installation

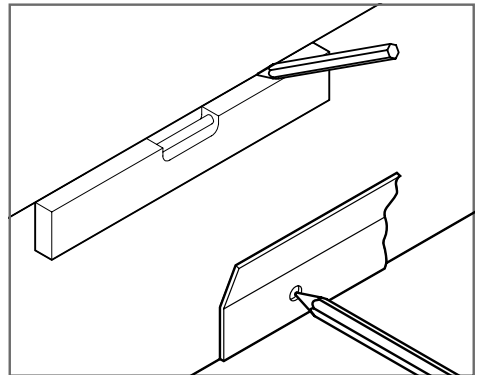
## Fixing

Do not remove the transport bungs until connecting ducting. Transport bungs are fitted to prevent debris falling into the unit and causing blockages and damage.

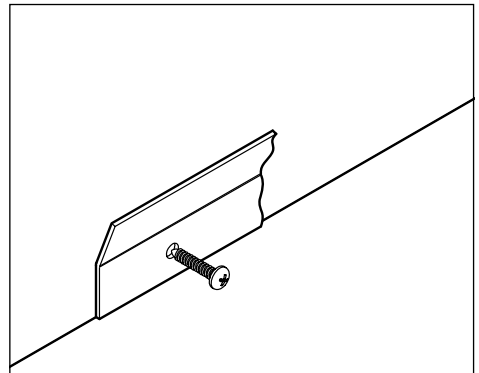
**The Unit Must be mounted Plumb/Level Front to Back and Side to Side.**



1. Mark a horizontal line on the wall using a spirit level. This line will be approximately 95mm below the location of the top face of the unit when fitted (excluding duct ports).
2. Use one of the mounting brackets as a template to mark the three fixing hole centres.

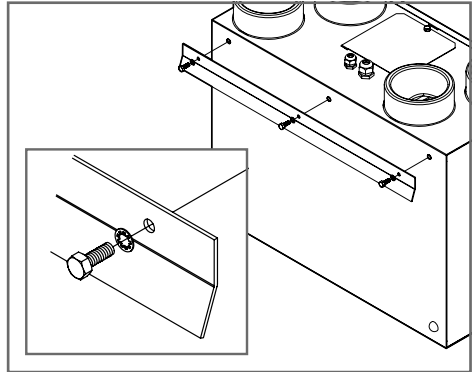


3. Drill holes for fixings, always use a fixing suited to the wall type.
4. Mount one fixing bracket to the wall ensuring the interlocking side is at the top, as shown.

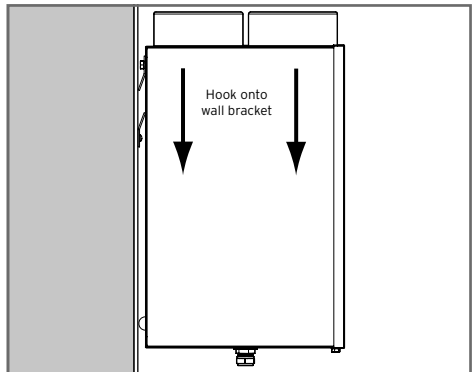


## Fixing

1. Fix the remaining bracket to the unit using the M6 screws and washers provided, ensuring the interlock side is at the bottom. Do not over-tighten.

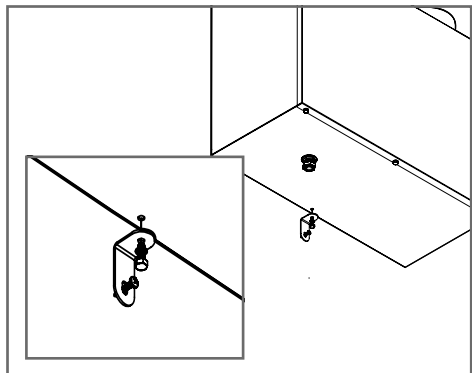


2. Mount the unit by locating the two mounting brackets together. Ensure a positive location is made between the two mounting brackets.



3. Fix the lower safety bracket as shown using the remaining M6 screw, washer and suitable wall fixing.

**Packing to be used as required behind the Safety Bracket to ensure Unit is level.**

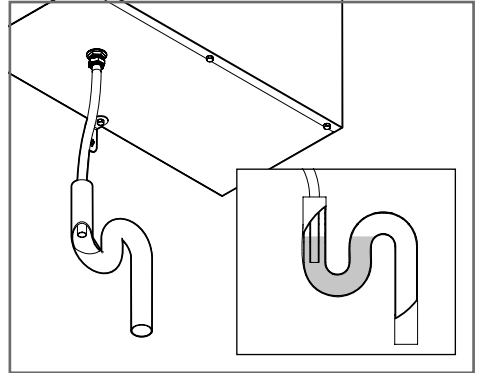


# Installation

## Condensate Drain

A drain must be connected to allow condensation to be removed from the unit and discharge into the household drainage system incorporating a U-bend, which must act as an air lock.

The drain connection is made via the 15mm connection on the base of the unit.

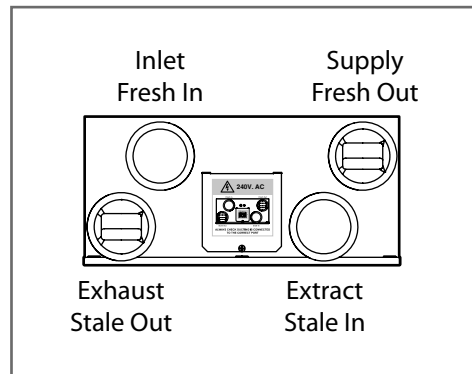


1. Attach a 15mm condensate pipe using compression fitting



## Ducting

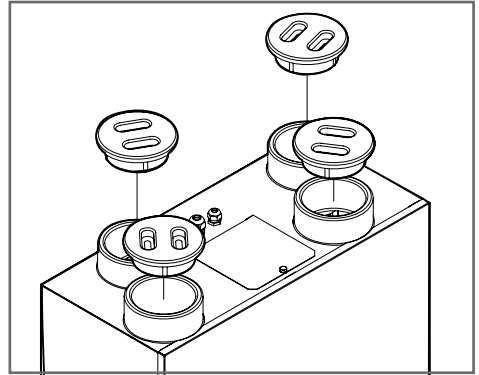
- The use of flexible ducting must be kept to a minimum and it should always be pulled taut.
- If applicable, Fire Dampers must be fitted to duct work at appropriate locations in accordance with Building Regulations.
- Ducting must be installed in such a way that resistance to airflow is minimised.
- Ducting terminal for Inlet and Exhaust must be to the external air outside the building envelope.
- All ducting in unheated spaces must always be fully insulated to prevent condensation forming within the ducting.
- All ducting joints including those to the HRV unit's spigots must be permanently sealed with ducting tape and or silicone type sealant.
- Ducting must be securely fixed to the HRV unit's spigots.
- A ducting condensate drain must be fitted to the Exhaust Stale Out duct work.
- To prevent cross contamination a minimum distance of 2m between the external supply and exhaust is recommended.
- A minimum distance of 200mm between the appliance and any sharp bends in duct work is recommended.
- Additional guidance can be found in the Residential Ventilation Association Installation Good Practice Guide and Approved Document Part F.



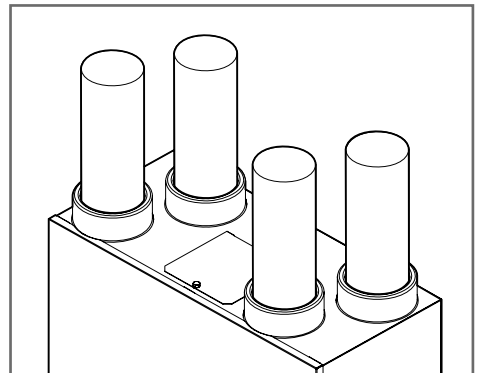
# Installation

## Ducting Connection

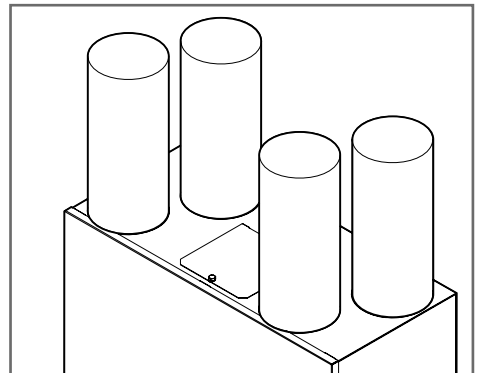
- Once the unit has been installed and you are ready to connect ducting to the unit, remove the transport bungs from the duct ports.



- HRV1 *Q Plus* 100mm
- HRV1.5, 2 *Q Plus* 125mm
  - ducting fits inside the duct ports.



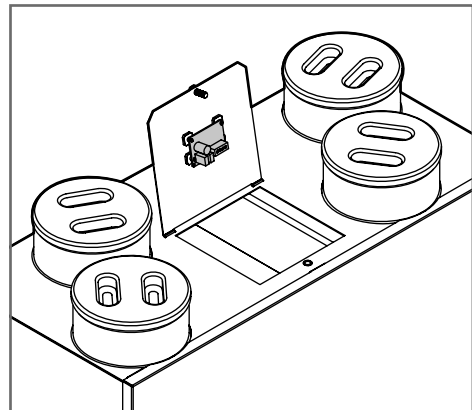
- HRV1 *Q Plus* 125mm
- HRV1.5, 2 *Q Plus* 150mm
  - ducting fits the outside the duct ports



## Wiring

**WARNING: The unit MUST be earthed. All wiring must conform to current I.E.E. Wiring Regulations and all applicable standards and Building Regulations.**

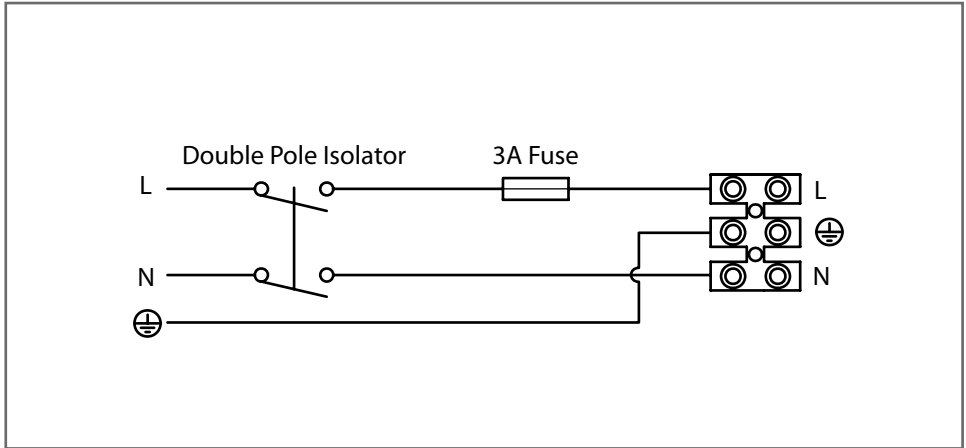
- The HRV1, 1.5 & 2 *Q Plus* units are suitable for 230V~50Hz Single phase supply fused at 3A.
- The unit is supplied with a mains rated 3 core flexible cord (PVC sheathed, brown, blue and green/yellow 0.75mm<sup>2</sup>).
- A double pole isolation switch with contact separation of at least 3mm must be used to connect the appliance to the fixed wiring.
- Boost controls must not be located within 1 metre of a cooker or where they may be affected by excessive heat or moisture
- Boost controls should be clearly identified and conveniently located.
- The boost switch wiring must not be connected to the mains supply.
- The boost switch wiring is connected to the control board (which is located under the access panel on top of the HRV *Q Plus*).
- The boost switch wiring cable access is via a cable gland which is suitable for 3-6mm diameter cable.
- The boost switch wiring connection to be made by the 5V+ and SW terminals on the control board.
- The boost overrun can be triggered by any device which provides a one-way switch, such as a PIR, thermostat, humidistat or a standard one-way switch.



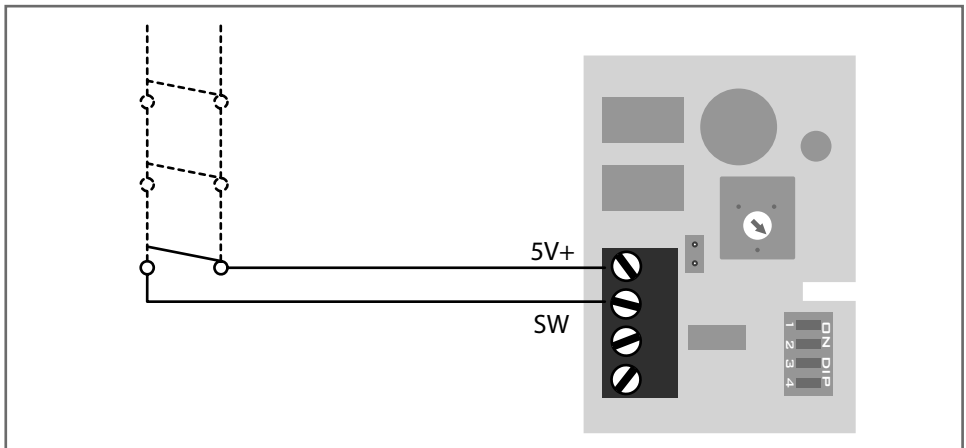
**Control Board Access**

# Installation

## Wiring



Supply Wiring Diagram 230V~50Hz



Boost Control Wiring Diagram, Low Voltage Only

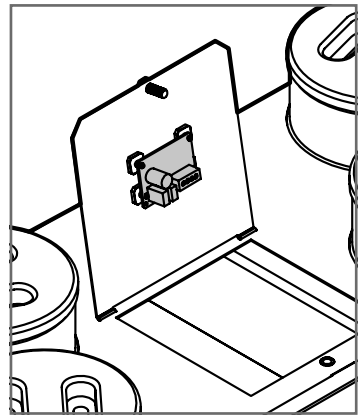
The speed of the Titon HRV *Q Plus* will require adjustment to ensure the flow rates achieved provide adequate ventilation in accordance with all relevant Building Regulations and applicable Standards. The Titon HRV *Q Plus* has two commissioning modes

- Quick Commission Mode For easy installation and setup.
- Full Commission Mode For optimum efficiency and system performance.

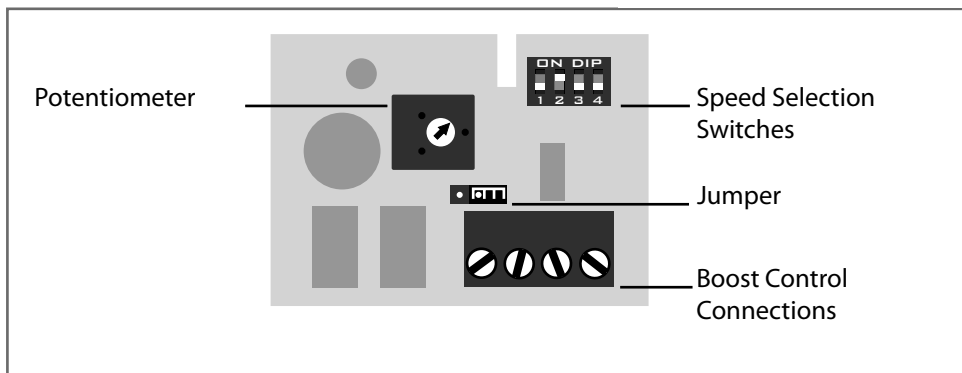
**Ensure filters are clear of dust and particles before commencing commissioning.**

## Quick Commission Mode

1. Power up the Titon HRV *Q Plus*.
2. Gain access to the control board located under the COVER, (see diagram).
3. Select required speed setting using switches 2 to 4 on the Speed Selection Switch, (See overleaf).
4. Select required boost overrun using switch 1 on the Speed Selection Switch, (See overleaf).
5. Check boost activation by triggering the remote boost switch device.











**Control Board location**





**Control Board component identification**

# Quick Commissioning

<p>Speed 1</p>  <p>12.5%</p>	<p>Speed 2</p>  <p>25%</p>	<p>Speed 3</p>  <p>37.5%</p>	<p>Speed 4</p>  <p>50%</p>
<p>Speed 5</p>  <p>62.5%</p>	<p>Speed 6</p>  <p>75%</p>	<p>Speed 7</p>  <p>87.5%</p>	<p>Speed 8</p>  <p>100%</p>

Speed setting percentages relate to the total capacity of the Unit

**Speed selection switch settings in Quick Commission Mode**

<p>5 minute</p> 	<p>10 minute</p> 
---	--

**Boost Overrun switch settings in Quick Commission Mode**

# Full Commissioning

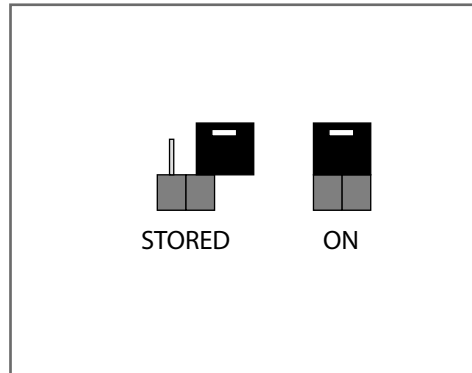
## Full Commission Mode

**To fully commission the unit for optimum efficiency, each step below MUST be followed in sequence:**

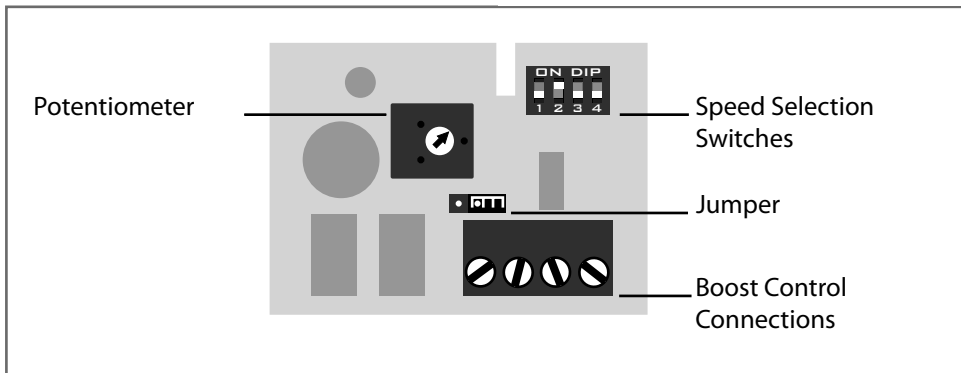
1. Power up the Titon HRV *Q Plus*.

## Continuous Speed Setting

2. Gain access to the control board located under the COVER.
3. Move the jumper from the STORED position to the ON position.
4. Ensure the controller is in Continuous mode, switch 1 OFF.
5. Select required setting for continuous speed using switches 2 to 4 on the Speed Selection Switch.



**Jumper Positions**



**Control Board**

# Full Commissioning

Continuous Mode



Continuous Mode switch setting in Full Commission Mode

Speed 1



12.5%

Speed 2



25%

Speed 3



37.5%

Speed 4



50%

Speed 5



62.5%

Speed 6



75%

Speed 7



87.5%

Speed 8



100%

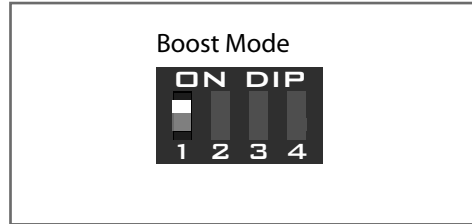
Speed setting percentages relate to the total capacity of the Unit

Continuous Speed selection switch settings in Full Commission Mode

# Full Commissioning

## Boost Speed Setting

6. Select Boost mode on switch 1 ON.
7. Select required range for boost speed using switches 2 to 4 on the speed selection switch.
8. Fine adjustment within each speed range can be carried out using the potentiometer (POT) on the control board.



**Boost Mode switch setting in Full Commission Mode**

**Do not return switch to continuous mode as this will change the boost speed.**

Speed 1	Speed 2	Speed 3	Speed 4
0-12.5%	12.5-25%	25-37.5%	37.5-50%
Speed 5	Speed 6	Speed 7	Speed 8
50-62.5%	62.5-75%	75-87.5%	87.5-100%

Speed setting percentages relate to the total capacity of the Unit

Potentiometer positions

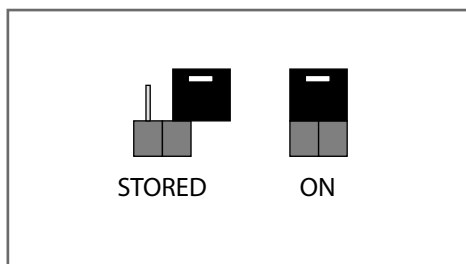
High	Mid	Low

**Boost Speed selection switch & POT positions in Full Commission Mode**

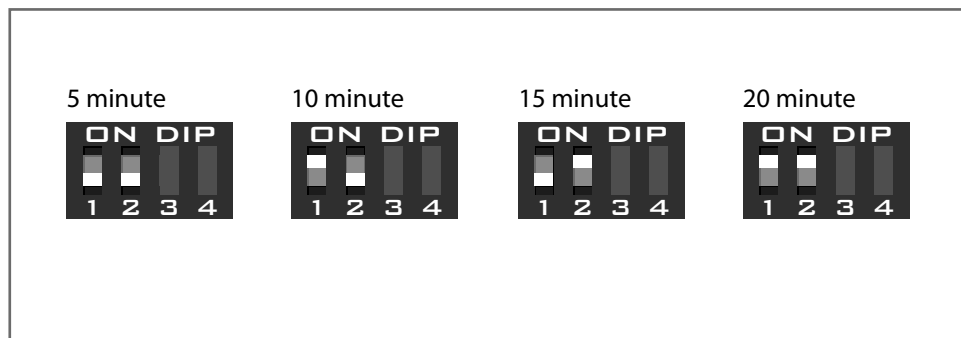
# Full Commissioning

## Boost Speed Settings

9. Once the Continuous and Boost speeds have been set, remove the jumper and return to the stored position.
10. Select required boost overrun using switch 1 and 2 on the speed selection switch.
11. Check boost activation by triggering the remote boost switch device.



**Jumper Positions**



**Boost Overrun selection switch settings in Full Commission Mode**

## Resetting the Controller

If necessary the controller can be reset into the Quick commissioning mode.

1. Place the jumper in to the ON position.
2. Switch the power to the unit OFF for at least 1 minute.
3. Switch the power to the unit back ON. The unit will now run at 50% capacity by default.
4. Remove the jumper and place it back into it stored position.

**The controller will now be in the Quick Commissioning mode.**

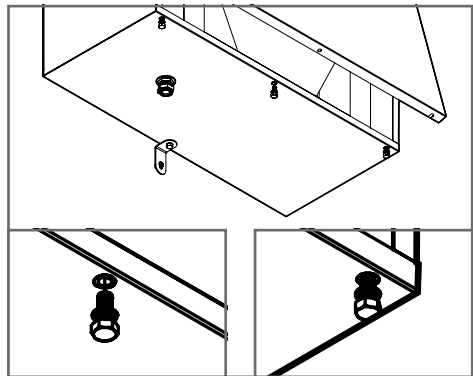
The air filters and heat exchanger of the Titon HRV *Q Plus* should be cleaned regularly by a suitably qualified person (the frequency of cleaning will vary depending on the environment). Filters should be replaced after a maximum of 3 cleaning cycles.

**WARNING: The unit uses a 230V ~ supply and contains rotating mechanical parts.**

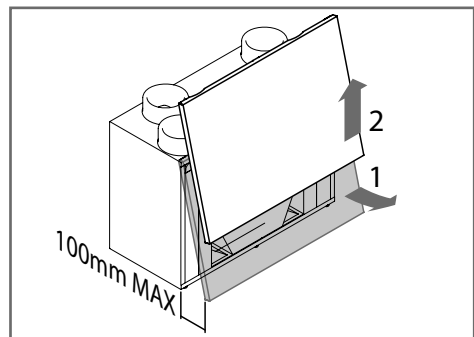
**ISOLATE the unit from mains power supply and allow sufficient time for all moving parts to stop before undergoing any Servicing or Maintenance.**

## Cover Removal:

1. Loosen the two corner screws located on the bottom front of the unit.
2. Completely remove the centre screw.



3. Completely remove the front cover by pulling it away from the unit at the bottom and lifting.



## Cleaning

1. Remove the front cover.
2. Slide out the filters that are fitted either side of the heat exchanger as shown.
3. Clean the filters carefully using a vacuum cleaner.
4. Carefully remove any dust from the face of the heat exchanger using a vacuum cleaner.
5. Never use water or any other fluids to clean the heat exchanger.
6. Replace the front cover and ensure it is securely located at the top before tightening all screws.
7. Power to the unit can now be restored.



**After servicing, always complete the service record.**

## Filter Replacement

Filters should be replaced annually or after a maximum of 3 cleaning cycles. Replacement filters are available from Titon, call us on +44 (0) 1206 713800 or use our website [www.titon.com](http://www.titon.com)

- If the Condensate drain is split a replacement must be ordered and Fitted.
- HRV1 Q Plus  
Part No. XP40042/012
- HRV1.5 & 2 Q Plus  
Part No. XP40142/012



**Condensate Tray**

# Declaration of Conformity

We declare that the equipment detailed below conforms to the requirements of EC council directives relating to electro-magnetic compatibility and safety of electrical equipment.



Equipment type:	Titon HRV1 <i>Q Plus</i>
Description of equipment:	Mechanical heat recovery ventilation unit
Relevant EC Council Directives:	2006/95/EC (LVD), 2004/108/EC (EMC)
Applied Harmonised Standards:	EN 60335-1:2002/A2:2006 EN 60335-2-80:2003/A1:2004 EN 50366:2003
Manufacturer:	Titon Hardware Limited

Signature of manufacturer representatives

A handwritten signature in black ink, appearing to read 'N C Howlett'.

**22 October 2008**

N C Howlett  
Development and Sustainability Director

A handwritten signature in black ink, appearing to read 'P S Cowell'.

**22 October 2008**

P S Cowell  
Research and Testing Manager  
BEng (Hons) CEng MCIBSE

A handwritten signature in black ink, appearing to read 'R Brighton'.

**22 October 2008**

R Brighton  
Managing Director - Manufacturing Division

International House, Peartree Road, Stanway, Colchester, Essex CO3 0JL

# Declaration of Conformity

We declare that the equipment detailed below conforms to the requirements of EC council directives relating to electro-magnetic compatibility and safety of electrical equipment.



Equipment type:	Titon HRV1.5 <i>Q Plus</i>
Description of equipment:	Mechanical heat recovery ventilation unit
Relevant EC Council Directives:	2006/95/EC (LVD), 2004/108/EC (EMC)
Applied Harmonised Standards:	EN 60335-1:2002/A2:2006 EN 60335-2-80:2003/A1:2004

Manufacturer: Titon Hardware Limited

Signature of manufacturer representatives

N C Howlett

A handwritten signature in black ink, appearing to read 'N C Howlett', written in a cursive style.

**1 September 2009**

Development and Sustainability Director

P S Cowell

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**1 September 2009**

Research and Testing Manager

BEng (Hons) CEng MCIBSE

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**1 September 2009**

R Brighton

Managing Director - Manufacturing Division

International House, Peartree Road, Stanway, Colchester, Essex CO3 0JL

# Declaration of Conformity

We declare that the equipment detailed below conforms to the requirements of EC council directives relating to electro-magnetic compatibility and safety of electrical equipment.



Equipment type:	Titon HRV2 Q Plus
Description of equipment:	Mechanical heat recovery ventilation unit
Relevant EC Council Directives:	2006/95/EC (LVD), 2004/108/EC (EMC)
Applied Harmonised Standards:	EN 60335-1:2002/A2:2006 EN 60335-2-80:2003/A1:2004

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R Brighton  
Managing Director - Manufacturing Division

International House, Peartree Road, Stanway, Colchester, Essex CO3 0JL



Installed by



**Ensure this booklet is passed to the householder once installation and commissioning of the ventilation system is complete. This Product Manual must be kept in the Home Information Pack and used as a service record.**



**MARKETING DIVISION**

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