

# Grant SpiraVac Pellet Feed System For Grant Spira Boiler Pellet Hoppers Installation & User Instructions



Part No. DOC.43 Rev.07 – 17/05/17

## EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2004

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### Declare that

**Equipment:** Wood Pellet Vacuum System for Domestic Wood Pellet Boilers  
**Model Name/Number:** Grant BioVac System

### In accordance with the following EC Directives:

2006/42/EC Conforms with the requirements of the Machinery Directive.  
2006/95/EC Conforms with the safety objectives of the Low Voltage Directive and its amending Directives  
2004/108/EC Conforms with the essential protection requirements of the Electromagnetic Compatibility Directive and its amending Directives

### Has been designed and manufactured to the following Specifications:

EN60335-1:2012 Household and similar electrical appliances. Safety – General requirements.  
EN60335-2-2:2010 Household and similar electrical appliances. Safety. Particular requirements for vacuum cleaners and water suction cleaning appliances.  
EN55014-1:2006 Electromagnetic Compatibility. Requirements for household appliances.  
MCS008 Product Certification scheme requirements - Biomass



### Important Note for Installers

After installing the Grant SpiraVac system leave these Installation Instructions with the appliance. Also leave the Spira Installation and Servicing Instructions and the Spira User Instructions with the householder.

This appliance is deemed a controlled service and specific regional statutory requirements may be applicable.

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## 1. Introduction

These Installation instructions should be read carefully before installing the SpiraVac system and must be used in conjunction with the Grant Spira Installation & User instructions supplied with the boiler.

Installation of the Grant Spira boiler and Grant SpiraVac system must only be carried out by a Grant Approved Installer who has successfully completed the Grant Spira training course.

The Grant SpiraVac is a vacuum system for conveying wood pellets from a bulk store to the pellet hopper located adjacent to the Grant Spira boiler. It is designed specifically for use with the Grant Spira wood pellet boilers and should not be used with other wood pellet burning appliances. It is intended to convey 6mm diameter EN Plus A1 (BS EN ISO17225-2:2014) wood pellets only and should not be used for any other application.

Grant Engineering UK Ltd shall not be liable for any injury or damage arising from the incorrect use of this system. For correct usage, refer to these Installation and User instructions.

Installation of the Grant Spira wood pellet boiler, and the SpiraVac system, must be carried out by a competent person in accordance with all current legislation, codes of practice and local by-laws relating to the installation of solid fuel burning appliances.

The electrical installation must comply with the requirements of the Electricity at Work Regulations 1989 and BS7671:2008 - IET Wiring Regulations 17<sup>th</sup> Edition (including all amendments).

All installations of Grant Spira wood pellet boilers must comply with the relevant Building Regulations.

## 2. Technical Specification

### 2.1 Kit Contents

The Grant SpiraVac system is available in 4 different kits, containing the following:

- 1 x Auger unit
- 1 x Vacuum unit
- 1 x Pellet dam plate
- 4 x 'Jubilee' type pipe clips
- Flexible pellet tube (length dependant on kit – see table below)
- Metal pipe clips (quantity to suit tube length used – see table below)
- Installation & User Instructions

Note. The electrical cable required to connect the auger unit to the vacuum unit to be supplied by installer.

SpiraVac Kit Ref No.	Length of flexible tube (between auger unit and vacuum unit)	Number and lengths of tube supplied	Quantity of metal pipe support clips
WPVKIT5	5m	1 x 10m length	10
WPVKIT10	10m	2 x 10m length	20
WPVKIT15	15m	2 x 15m length	30
WPVKIT20	20m	2 x 20m length	40

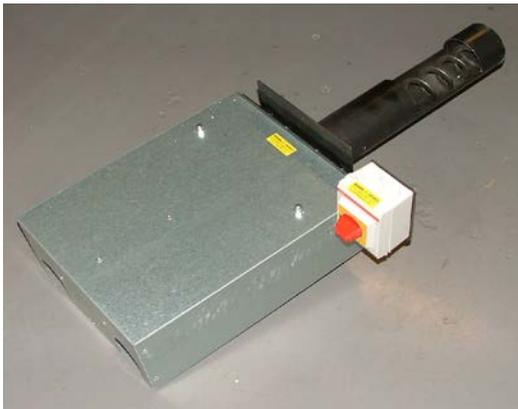


Figure 2-1. Auger unit



Figure 2-2. Vacuum unit



Figure 2-3. Flexible pellet tube



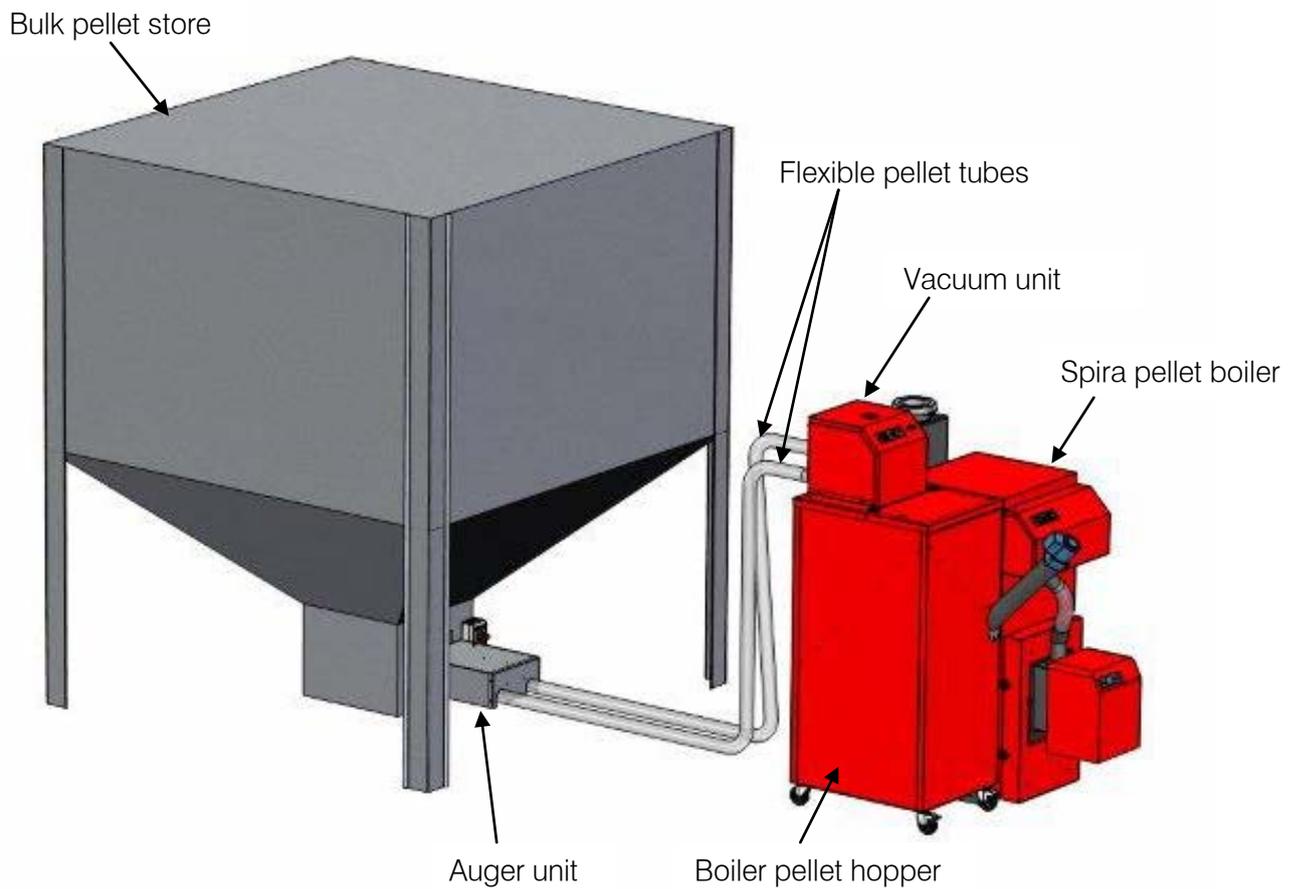
Figure 2-4. Pellet dam plate

## 2.2 Technical Data

	Auger unit	Vacuum unit
Weight	16.4kg	24kg
Supply Voltage	230V 50HZ 1ph 13A fused*	
Running Current	8.6A	
Power	1870W	

\*Refer to Section 5.2 for further details on fuse ratings required

## 2.3 SpiraVac System Arrangement



### 3. Description & Operation

The Grant SpiraVac pellet feed system consists of the following items

#### 3.1 Vacuum Unit

The vacuum unit is designed to be mounted on the top of either the single or double Spira pellet hopper. The pellet hopper, supplied with the boiler, has a removable cover on the top rear panel to allow fitting of the vacuum unit. Refer to Section 4 for vacuum unit installation details.

The vacuum unit can be fixed to the top rear panel of the pellet hopper to face in any one of three directions; with the control panel facing forwards, to the right or to the left.

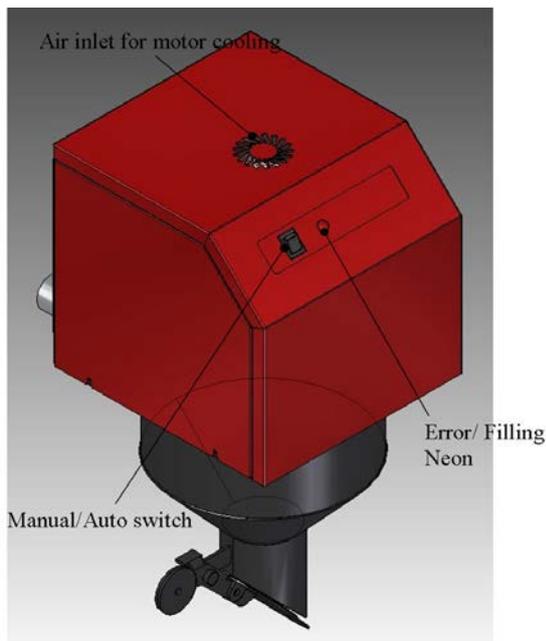


Figure 3-1. Front view of vacuum unit

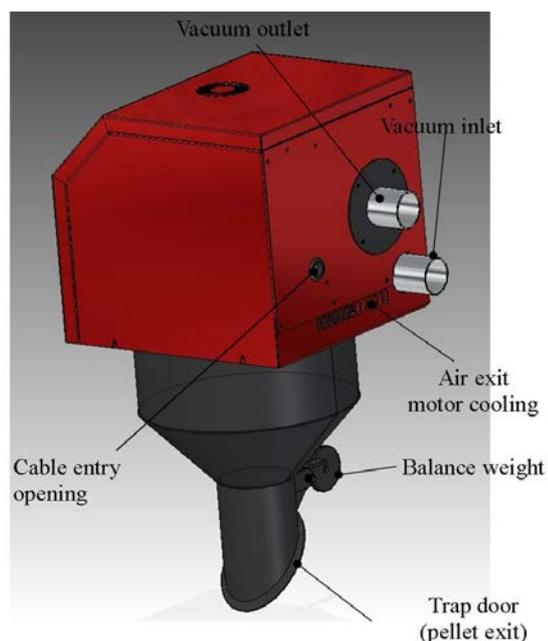


Figure 3-2. Rear view of vacuum unit

The vacuum unit contains a vacuum motor that pulls air through the cyclone. Air to cool the vacuum motor is drawn in through a vent in the top of the enclosure and exhausted through an opening in the rear. Refer to Figures 3-1 and 3-2.

**IMPORTANT:** Ensure that the cooling vents on the top and at the rear of the vacuum unit are not obstructed at any time.

The cyclone section of the vacuum unit is located below the enclosure (located within the top part of the pellet hopper when fitted). It is fitted with a counterbalanced trap door at the bottom. This door is drawn closed by the vacuum generated when the motor is running. When the motor stops, and the vacuum ceases, the weight of the pellets collected in the cyclone pushes the door open and the pellets are deposited into the hopper.

The unit also incorporates a vacuum switch, that is operated by the vacuum produced by the vacuum motor in order for the auger unit (located on the bulk pellet store) to run. Thus the auger motor can only run when the vacuum motor is operating.

The vacuum unit is lined with acoustic insulation to reduce the noise level.

Two steel connection spigots are provided, on the rear face of the unit, for connection of the vacuum system flexible tubes. Refer to Figure 3-2.

The vacuum unit has two factory-fitted flying leads with pre-wired plugs.

- The 6-way plug connects the vacuum unit to the pellet hopper, via the corresponding factory fitted flying lead and pre-wired 6-way connector (to be found within the electrical wiring enclosure at the rear of the pellet hopper).
- The 3-way plug provides the electrical connection for the remote auger unit. A suitably sized cable of the required length must be connected between the corresponding 3-way connector (supplied fitted to the plug) and the electrical isolator of the remote auger (mounted on the bulk pellet store). Refer to Figure 5-5.

The vacuum unit has a control panel fitted with a 'VACUUM SYSTEM' ON/OFF switch and indicator neon. Refer to Figure 3-3.



**Figure 3-3.** Vacuum unit control panel

For details on the operation of these controls, refer to the User Instructions in Section 8 of these Installation & User Instructions.

### 3.2 Auger Unit

The auger unit has been designed to be mounted directly onto the Grant bulk pellet store (with the fixings supplied on the store) using the holes already present around the rectangular outlet opening at the base of the store. It can also be fitted to other bulk pellet stores by drilling the required holes (using the auger mounting flange as a template) – refer to Section 4.1.

The unit consists of a 410mm long auger, driven by an electric motor, which delivers pellets into the suction chamber. Refer to Figure 3-5.

Two steel connection spigots are provided, on the end of the suction chamber, for connection of the vacuum system flexible tubes. Refer to Figure 3-5. The auger motor and suction chamber are enclosed beneath a removable steel cover, held in place by two nuts.

A 3-pole 16A isolator is factory fitted to the auger unit for local isolation of the auger motor when required. This isolator is pre-wired to the auger motor. An electrical supply, from the 3-way plug on the vacuum unit, must be connected by the installer to the input of the isolator. Refer to Section 5 for electrical connection details.



Figure 3-4. Auger unit with cover fitted



Figure 3-5. Auger unit with cover removed

### 3.3 Flexible Pellet Tubes

Two lengths of flexible tube (supplied with the SpiraVac system kit) are used to connect the vacuum unit (on the top of the pellet hopper) to the auger unit (mounted on the bulk pellet store).

The tube supplied is a 50mm diameter reinforced Polyurethane flexible tube with a copper anti-static wire moulded into the tube wall. When fitting the tube, this wire must be exposed and placed in contact with the steel connections (on the vacuum and auger units) at each end. Refer to Section 5.3 for details.

The maximum length of tube between the vacuum and auger units is 20 metres (i.e. 2 x 20 metres lengths - one each way). The maximum rise over that length is 5 metres. No reduction in this maximum allowance is required for any changes in the height of the tube over the length of run.

Both tubes are secured at each end, to the connections on the vacuum and auger units, using the four hose clips provided with the kit. Refer to Section 4.3 for details.

Any pellet tubes run against walls **MUST** be adequately supported at no more than 1 metre centres, and at either sides of a bend in the tube, using the 50mm metal pipe clips provided.

### 3.4 Operating Sequences

The vacuum unit has a 'VACUUM SYSTEM' ON/OFF switch on the control panel.

- When this switch is set to ON – the vacuum system operates in Automatic mode. Refer to Section 3.4.1 below.
- When this switch is set to OFF – the vacuum system operates in Manual mode. Refer to Section 3.4.2 below

#### 3.4.1 Automatic Mode

With the VACUUM SYSTEM switch is set to ON the SpiraVac vacuum system is operational.

In this condition the SpiraVac can function in one of two different automatic operating modes:

- **'Top-up' mode** – to automatically top-up the hopper when the weight of pellets in the pellet hopper falls below the minimum level, as detected by the contents diaphragm switch. Once the contents switch is activated, the vacuum motor and filling process will automatically start, as detailed below.

- **'24 hour' mode** – to automatically fill the hopper with pellets, up to the trap door of the vacuum unit trap door, every 24 hours starting when the ON/OFF switch on the SpiraVac control panel is first set to ON.

In both cases the operation of the vacuum unit is as follows – Refer to the flow diagram in Figure 3-6.

The vacuum motor will start and create a vacuum in the cyclone. This pulls closed the trap door at the base of the cyclone. The vacuum switch, inside the vacuum unit, is activated. Power is supplied to the pellet auger located in the base of the bulk pellet store.

The auger starts and pulls pellets into the suction chamber of the auger unit, where they are drawn into and through the flexible suction tube to the vacuum unit, and then deposited in the cyclone. The red indicator neon on the vacuum unit control panel will blink on and off during this process.

The pellet auger runs for **60 seconds** and is then automatically switched off. The vacuum motor runs on for a further **15 seconds** after the auger has stopped (to ensure no pellet build up in the tubes) before it is automatically switched off (i.e. a total vacuum motor running time of 75 seconds).

When the vacuum unit stops, the loss of the vacuum allows the weight of the pellets to open the trap door and the pellets fall into the hopper.

The vacuum system will deliver approximately 6kg of pellets in each operation, and will therefore have to operate several times to either top up or fill the pellet hopper.

#### **When the 'VACUUM SYSTEM' ON/OFF switch is first set to ON**

The vacuum system will operate repeatedly, as described above, until the hopper is filled with pellets up to the level of the trap door of the cyclone. In this condition the trap door will be prevented from closing by the pellets. This is intentional as further operation of the vacuum system is not required with this amount of pellets in the hopper.

**Thereafter the vacuum unit will operate automatically in one of the two following ways:**

#### **'Top-up' mode**

In this operating mode the SpiraVac system will only operate if the level of the pellets in the hopper falls below the minimum level monitored by the contents diaphragm switch.

The vacuum system will operate repeatedly to top-up the hopper until it is filled with pellets up to the level of the trap door of the cyclone as on the initial operation of the vacuum system. In this condition the trap door will be prevented from closing by the pellets.

If the pellet hopper contents switch has detected a low pellet level and the vacuum motor system is operating, but the pellet hopper contents switch is not satisfied after 26 attempts (e.g. due to the bulk pellet store being empty) then the system will go into 'fault' mode.

The indicator neon on the control panel will remain on constantly. The user can over-ride this by switching the 'VACUUM SYSTEM' switch to OFF and filling the pellet hopper manually (see Section 3.4.2 – Manual Mode below).

#### **NOTE**

When the 'VACUUM SYSTEM' switch is set to OFF the indicator neon will remain lit. When it is switched back to ON the indicator neon will now go out.

### **'24 hour' mode**

In this operating mode, the SpiraVac system will only operate after exactly 24 hours has elapsed since the 'VACUUM SYSTEM' ON/OFF switch on the SpiraVac control panel was last set to ON.

The vacuum system will operate repeatedly until the hopper is filled with pellets up to the trap door of the cyclone, as on the initial operation of the vacuum system.

It is possible to re-set the time that this '24 hour' operation occurs to a more suitable time (e.g. during the evening) to avoid the automatic operation of the vacuum system during the night time.

To do this, simply switch the 'VACUUM SYSTEM' switch to OFF, wait about 2 seconds and then switch it back to ON at the time you wish the '24-hour' operation to occur. This time will be automatically stored in the control system memory and the store will then fill at the same time every day (if required).

### **NOTE**

**If the power supply to the Spira Boiler and SpiraVac system is interrupted, either deliberately or otherwise (e.g. a power cut), the built-in timer function will stop for the duration of the power interruption.**

Whilst the SpiraVac system will automatically continue to operate in the '24 hour' mode when the power is reconnected, and the original time setting will be remembered, the actual time it will operate to fill the hopper will now be incorrect, i.e. delayed by the duration of the power interruption.

Example: If the '24hour' mode was originally set to operate at 6.00pm every day, but a power cut lasting 1 hour occurred, the '24hour' mode will now operate at 7.00pm after the power is reconnected.

It will therefore be necessary to reset the '24 hour' mode following a power interruption if the original '24 hour' mode operating time setting is still required. To do this, simply switch the 'VACUUM SYSTEM' switch to OFF, wait for about 2 seconds and then switch back to ON at the time you wish the '24-hour' operation to occur.

### **3.4.2 Manual Mode**

With the 'VACUUM SYSTEM' switch on the SpiraVac control panel set to OFF, the hopper will function as if no vacuum system is fitted.

In this setting, the pellet hopper can be fed with bagged pellets for as long as required.

The switched live to the boiler will be interrupted when the weight of pellets in the pellet hopper falls below the minimum level of the contents diaphragm switch, and the burner will shut down.

The burner control panel screen on the Spira boiler will show a 'WAIT BOILER THERMOSTAT' message until the pellet level in the hopper is topped up with at least an additional 20kg of pellets.

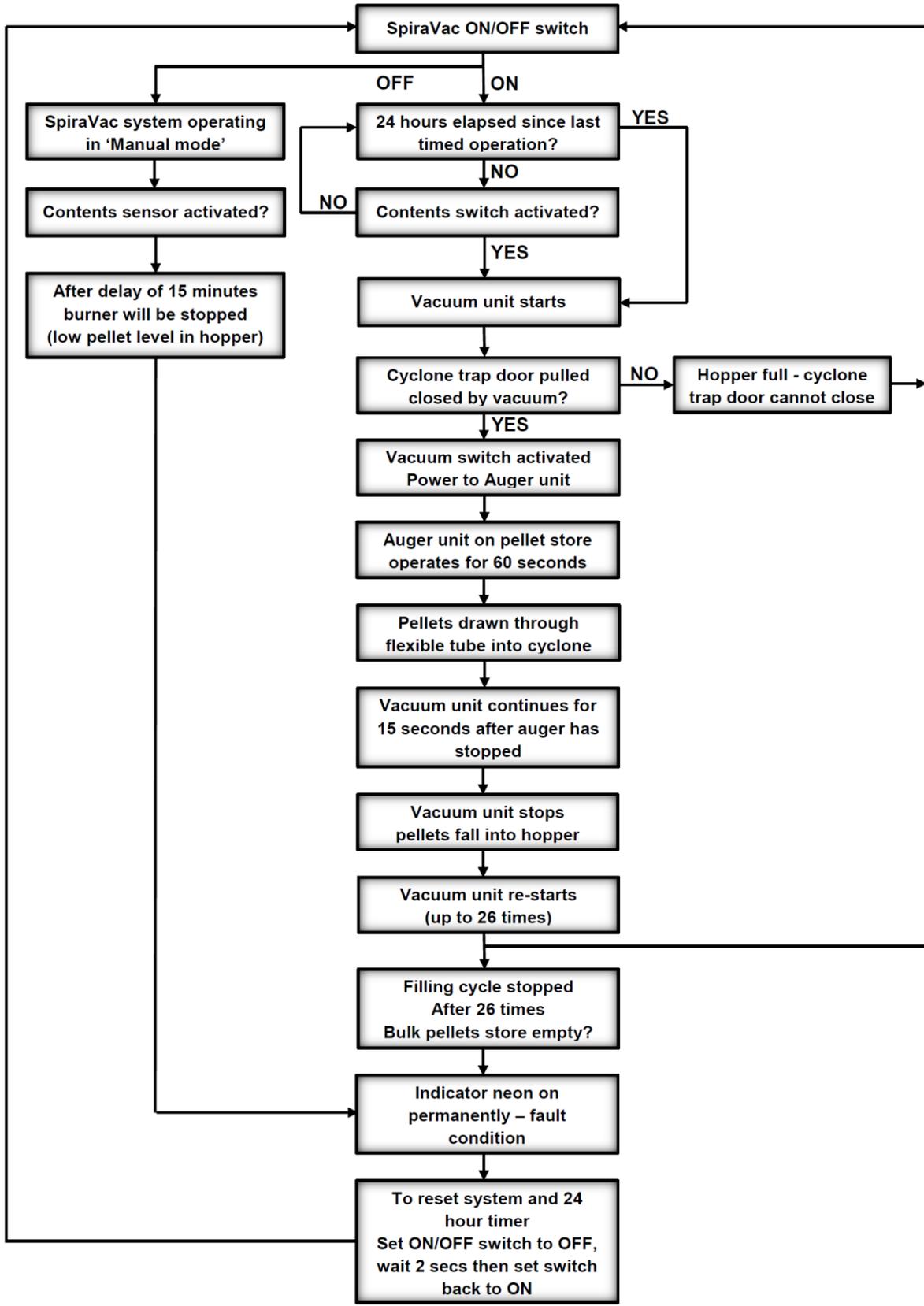


Figure 3-6. SpiraVac operation flow diagram

## 4. Installation

### 4.1 Auger Unit

1. To fit the auger unit to the Grant bulk pellet store, use the following procedure:  
Unscrew and remove the two domed nuts and remove the galvanised steel cover from the auger unit. Refer to Figure 4-1.
2. Unscrew and remove the four nuts holding the mounting flange to the auger unit and remove the flange over the auger. Refer to Figures 4-3 and 4-4. Leave the circular neoprene gasket in place on the auger.

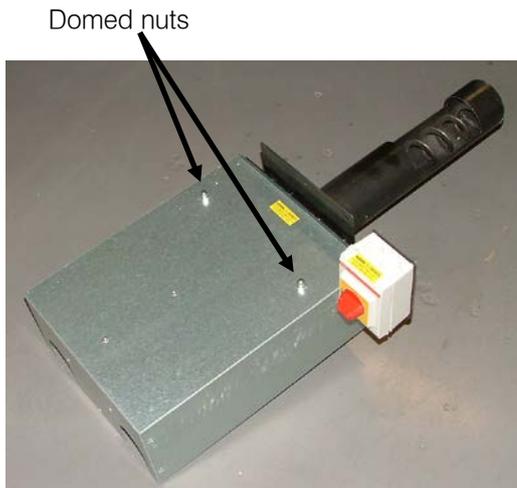


Figure 4-1A. Auger unit with cover fitted



Figure 4-2. Auger unit with cover removed

IMPORTANT: Take care not to strain the cable between the isolator (on the mounting flange) and the auger motor (in auger unit).



Figure 4-3. Auger unit flange fixings - left

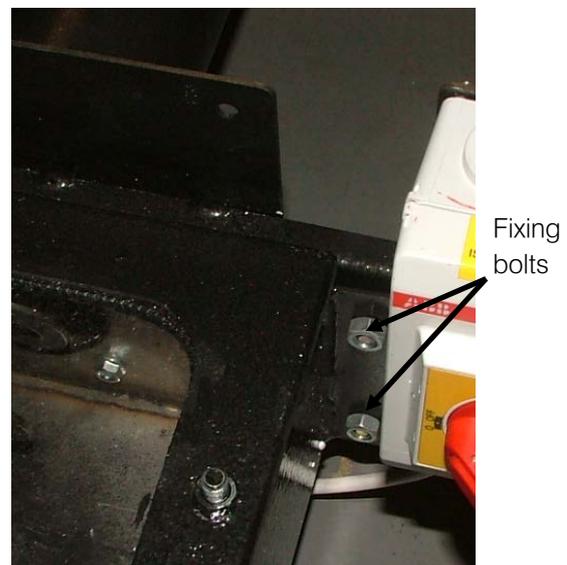


Figure 4-4. Auger unit flange fixings - right

3. On the bottom section of the bulk pellet store, unscrew and remove the eight M8 screws around the auger sleeve opening. Remove and discard the flange and auger sleeve but **keep the screws**. Refer to Figure 4-5. Ensure that the factory-fitted neoprene gasket is still in place around the opening and not damaged. Refer to Figure 4-6. The SpiraVac auger unit can be fitted to this opening as described in paragraph 5 below.

4. Alternatively, the SpiraVac auger unit can be fitted to the opening provided on the opposite face to the auger sleeve opening. This opening is lower on the store than the auger sleeve opening.

To do this, first remove the auger sleeve from the store as described above. Then unscrew and remove the eight M8 screws around the removable panel (on opposite face to auger sleeve). Remove the panel, fit it to the auger sleeve opening and secure in place with the screws previously removed. Ensure that the factory-fitted neoprene gasket is still in place around the opening and not damaged. Refer to Figure 4-6.



Figure 4-5. Bulk store flange/auger sleeve



Figure 4-6. Bulk store opening with gasket

5. Position the auger unit mounting flange over the outlet opening, aligning the holes in the flange with those around the opening. Ensure that the electrical isolator is correctly positioned to the right of the hole. Refer to Figure 4-7.

**IMPORTANT:** Ensure that the four fixing bolts are correctly fitted through the mounting flange (from the back) before fitting the flange to the bulk pellet store.



Figure 4-7. Auger unit mounting flange fitted



Figure 4-8. Auger unit mounted on store

6. Fasten the mounting flange to the bottom section of the pellet store using the eight M8 screws previously removed. Refer to Figure 4-7.

7. Check that the circular neoprene gasket is correctly fitted on the auger, against the back face of the suction chamber. Fit the auger through the round hole in the mounting flange and align the four bolts on the mounting flange with the four holes on the auger unit. Fit the four nuts to secure the auger unit to the bulk pellet store. Refer to Figure 4-8.

## 4.2 Vacuum Unit

To fit the vacuum unit to the Grant Spira pellet hopper, use the following procedure:

1. Open the hinged door on top of the pellet hopper. Disengage the door stay from the slot (on left hand side) and lay the door flat on the rear top section. Refer to Figure 4-9.
2. Unscrew and remove the six screws along the front and back edges of the grille and remove the grille from the front of the hopper. Refer to Figure 4-10.



Figure 4-9. Hopper door opened flat

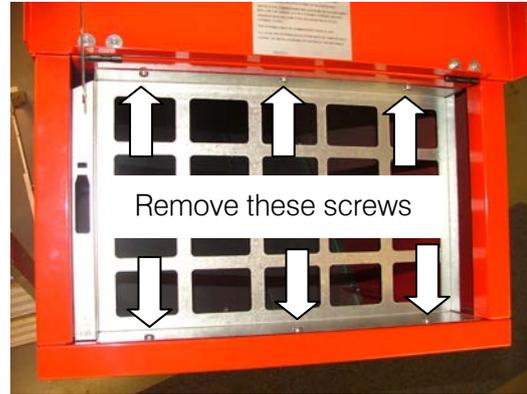


Figure 4-10. Hopper grille fixings

3. Close the door. Unscrew and remove the four screws holding the top rear panel to the hopper. Remove the complete top panel assembly (including hinged door) from the hopper.
4. Unscrew and remove the four nuts holding the square cover panel in place on the rear top panel of the hopper. Remove the cover panel from the hopper. Refer to Figure 4-11.



Figure 4-11. Hopper top panel



Figure 4-12. Panel and vacuum unit

5. Carefully place the vacuum unit, top down, on something to protect the paint finish. Remove the four fixing screws from the vacuum unit. Invert the top panel and place it over the cyclone of the vacuum unit. Position the top panel so that the vacuum unit faces in the required direction – forwards or to the left or right. Refer to Figure 4-12.
6. Fix the panel to the underside of the vacuum unit using the four screws supplied with the vacuum unit – screwing through the panel into the threaded inserts in the base of the vacuum unit.

7. Unscrew and remove the three screws and nuts holding the pellet deflector channel inside the rear of the hopper. Take care not to drop the small nuts into the hopper! Remove the deflector channel from the hopper and replace the screws and nuts to block off the holes. Refer to Figure 4-13.

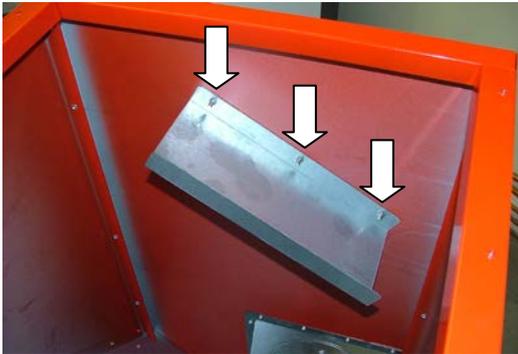


Figure 4-13. Pellet deflector channel



Figure 4-14. Vacuum unit on hopper

8. Re-fit the top panel (complete with vacuum unit) back on top of the hopper. Secure top panel using the four screws previously removed. Refer to Figure 4-14.

**NOTE: THIS IS A JOB FOR TWO PERSONS AS THE VACUUM UNIT IS HEAVY!**

9. Open the hinged door on top of the pellet hopper and rest it against the front of the vacuum unit. To prevent the door from dropping closed whilst fitting the pellet dam plate, secure it to the vacuum unit using duct tape or similar.

10. Fit the pellet dam plate into the hopper with the bracket (on the back of the plate) facing toward the back of the hopper and the three fixing holes at the top. Refer to Figure 4-15.

Fix the pellet dam plate in place using three screws (previously removed) in the corresponding holes along the front edge of the hopper rear top panel. Refer to Figure 4-16.

**NOTE: Do not tighten these three screws but leave them with about 2 - 3mm of thread showing.**

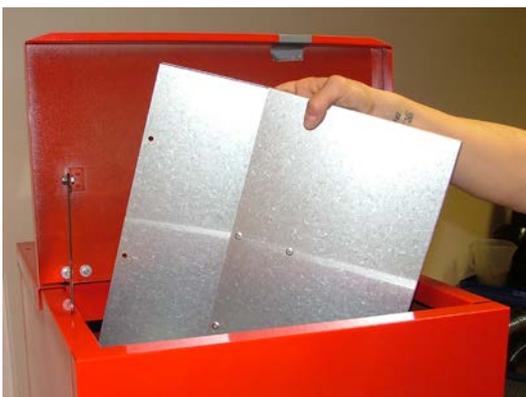


Figure 4-15. Pellet dam plate



Figure 4-16. Pellet dam plate fixings

11. Insert the grille into the hopper opening (with the door stay opening to the left). Align and engage the three 'keyhole' slots (in the rear edge of the grille) with the three corresponding grille fixing screws on the front edge of the hopper rear top panel. Refer to Figure 4-17.

12. Fit the three remaining screws (previously removed) in the holes along the front edge of the grille and tighten all six screws to secure the grille and pellet dam plate in position. Refer to Figure 4-18.

**IMPORTANT: ENSURE THAT SCREWS ARE NOT DROPPED INSIDE THE HOPPER!**



**Figure 4-17.** Secure dam plate and grille



**Figure 4-18.** Fix grille at front edge

13. Locate the door stay in the slot (on left hand side) and check the door opens and closes correctly. Refer to Figure 4-19.



**Figure 4-19.** Grille and pellet dam plate fitted

#### 4.3 Flexible Pellet Tubes

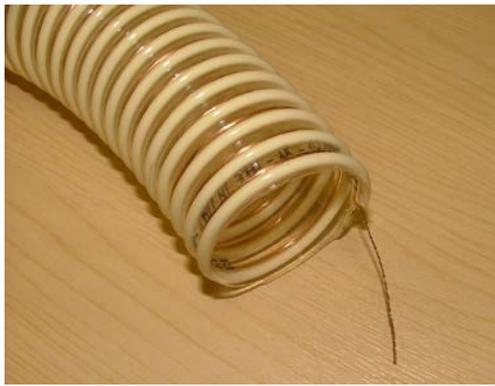
Two flexible tubes must be used to connect the Vacuum unit (on the pellet hopper) to the Auger unit (on the bulk pellet store).

##### **IMPORTANT:**

The connection marked 'VACUUM FLOW' on the auger unit **MUST** be connected to the corresponding 'VACUUM FLOW' connection on the vacuum unit. Similarly, the 'VACUUM RETURN' connections on the auger and vacuum units must be connected together.

All connections must be made using the following procedure:

1. Cut the two flexible tubes to the required length.
2. Cut back the tube at each end to expose approximately 40-50mm of the copper anti-static wire. Refer to Figure 4-20.



**Figure 4-20.** Anti-static wire exposed



**Figure 4-21.** Anti-static wire folded in

3. Place one of the jubilee clips provided over the end of the tube. Fold the anti-static wire back inside the tube. Refer to Figure 4-21.

4. Push the tube fully onto the 'VACUUM RETURN' connection spigot (on the vacuum unit), ensuring that the anti-static wire is in contact with the unpainted steel surface of the connection spigot. Tighten the jubilee clip to secure the tube in place and clamp the anti-static wire to the spigot. Refer to Figure 4-22.



**Figure 4-22.** Tube secured with clip

5. Connect the other end of the flexible tube to the 'VACUUM RETURN' on the auger unit.

6. Repeat this process using the second flexible tube to connect the 'VACUUM FLOW' connection (on the auger unit) to the 'VACUUM FLOW' connection (on the vacuum unit).

If the vacuum unit operates but no pellets are delivered to the hopper from the store:

- Switch the 'VACUUM SYSTEM' ON/OFF switch to OFF.
- Isolate the electrical supply to the boiler and SpiraVac system.
- Check that two flexible tubes between the vacuum unit and auger unit are correctly connected.
- Rectify any incorrect 'cross connections'
- Reconnect the power supply, Switch the 'VACUUM SYSTEM' ON/OFF switch to ON and check that the SpiraVac system operates correctly.

## 5. Electrical

### 5.1 General

The electrical installation, including internal and external wiring and supplementary earth bonding, must be installed by a competent person to comply with the requirements of the Electricity at Work Regulations 1989 and BS7671:2008 – IET Wiring Regulations 17<sup>th</sup> Edition (including all amendments).

### 5.2 Connection to Pellet Hopper

The electrical supply to the boiler (and SpiraVac system) is connected to the pellet hopper. Refer to either Figure 5-2 (for single boiler hopper) or Figure 5-3 (for double boiler hopper) for the electrical wiring diagram for the pellet hopper.

The Grant Spira pellet boiler and SpiraVac system requires a 230V ~ 50 Hz supply. This must be supplied via a 13A fused double pole isolator, providing complete electrical isolation for the heating control system, Spira hopper/boiler and SpiraVac system.

A second fused double pole isolator is required to provide a 5A fused supply to the boiler and heating control system only. Refer to Figure 5-6 for the wiring details with an S-plan type heating control system. The power supply cable to the hopper should be at least 1.5mm<sup>2</sup> PVC.

Refer to the main Installation Instructions, supplied with the boiler, for further details on the wiring of the electrical system controls and the other electrical connections on the boiler to be made during installation.

**Note:** The hopper is fitted with a selector switch (located inside the wiring centre). Ensure that this switch is set to the 'BULK STORE' position when connecting the 6-way pre-wired plug from the hopper to the Vacuum unit. See Figure 5-1.

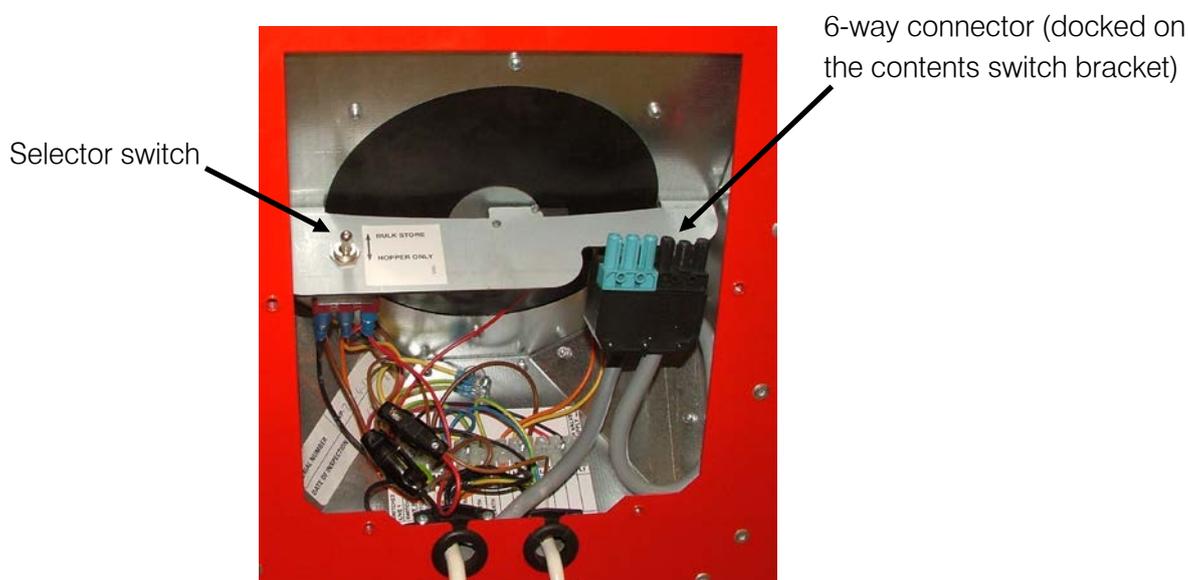


Figure 5-1. Location of selector switch (inside hopper wiring centre)

### 5.3 Connection of Vacuum Unit to Pellet Hopper

The vacuum unit is supplied with two factory-fitted flying leads with pre-wired plugs.

The 6-way plug and lead connects the vacuum unit to the pellet hopper. Connect this plug to the corresponding 6-way connector (to be found within the electrical wiring enclosure at the rear of the pellet hopper). Refer to Figure 5-1 for location of 6-way connector.

This connection provides the 230V 50 Hz electrical supply required to operate the Grant SpiraVAC system, and switched live (to start the vacuum system when the contents switch in the hopper detects a minimum pellet level).

To connect the hopper to the Vacuum unit:

- Remove the wiring centre cover from the rear of the hopper.
- Unclip the 6-way plug from diaphragm switch bracket.
- Pass the 6-way plug lead through the grommet just below the wiring centre cover.
- Set the selector switch on the diaphragm switch bracket to the 'BULK STORE' position. See Figure 5-1.
- Replace the wiring centre cover and fasten in place using the screws previously removed.
- Connect the 6-way plug to the corresponding 6-way connector on the pre-wired flying lead fitted to the Vacuum unit. Ensure that the plug and socket are fully pushed together until the small catch clicks into place.

#### **5.4 Connection of Vacuum Unit to Auger Unit**

The 3-way plug and lead provides the 230V electrical supply from the vacuum unit to the remote auger unit.

A corresponding 3-way connector is supplied fitted to the plug for connection of the cable to the remote auger unit

The auger unit is supplied with a factory fitted isolator, which is pre-wired to the auger motor.

The connection between the 3-way plug connection (at the vacuum unit) and the electrical isolator (on the auger unit) must be made using a suitable size and type of cable, dependant on the cable length and the route taken to the auger unit.

Where this is external to the building this cable must be of a suitable specification, e.g. UV stabilised PVC sheath, SWA cable, etc. depending on the application.

Refer to Figure 5-5 for details of the plug and socket connection between the vacuum unit and the auger unit.

## 5.5 Wiring Diagrams

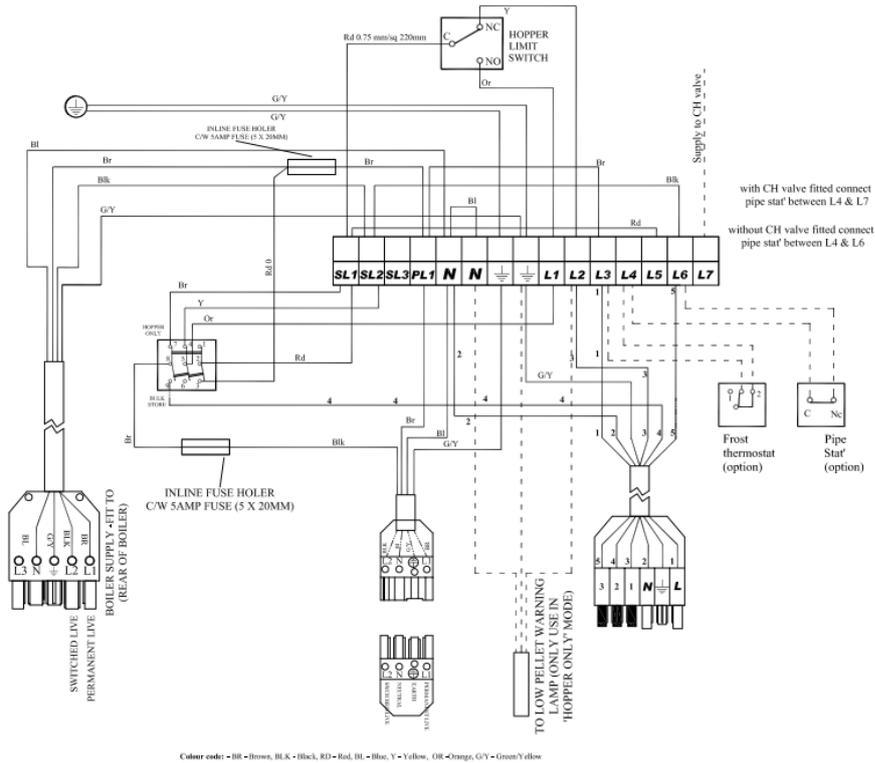


Figure 5-2. Spira pellet hopper wiring diagram – single hopper.

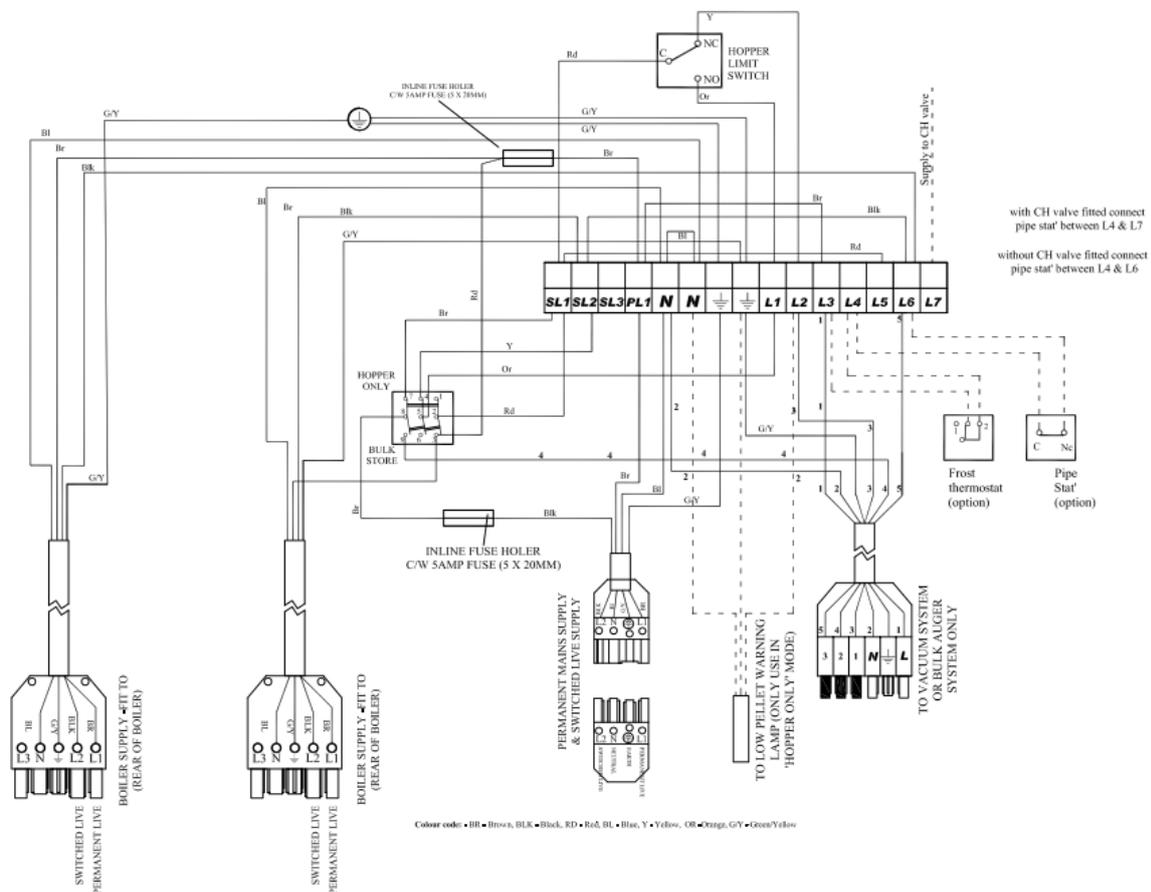


Figure 5-3. Spira pellet hopper wiring diagram – double hopper.

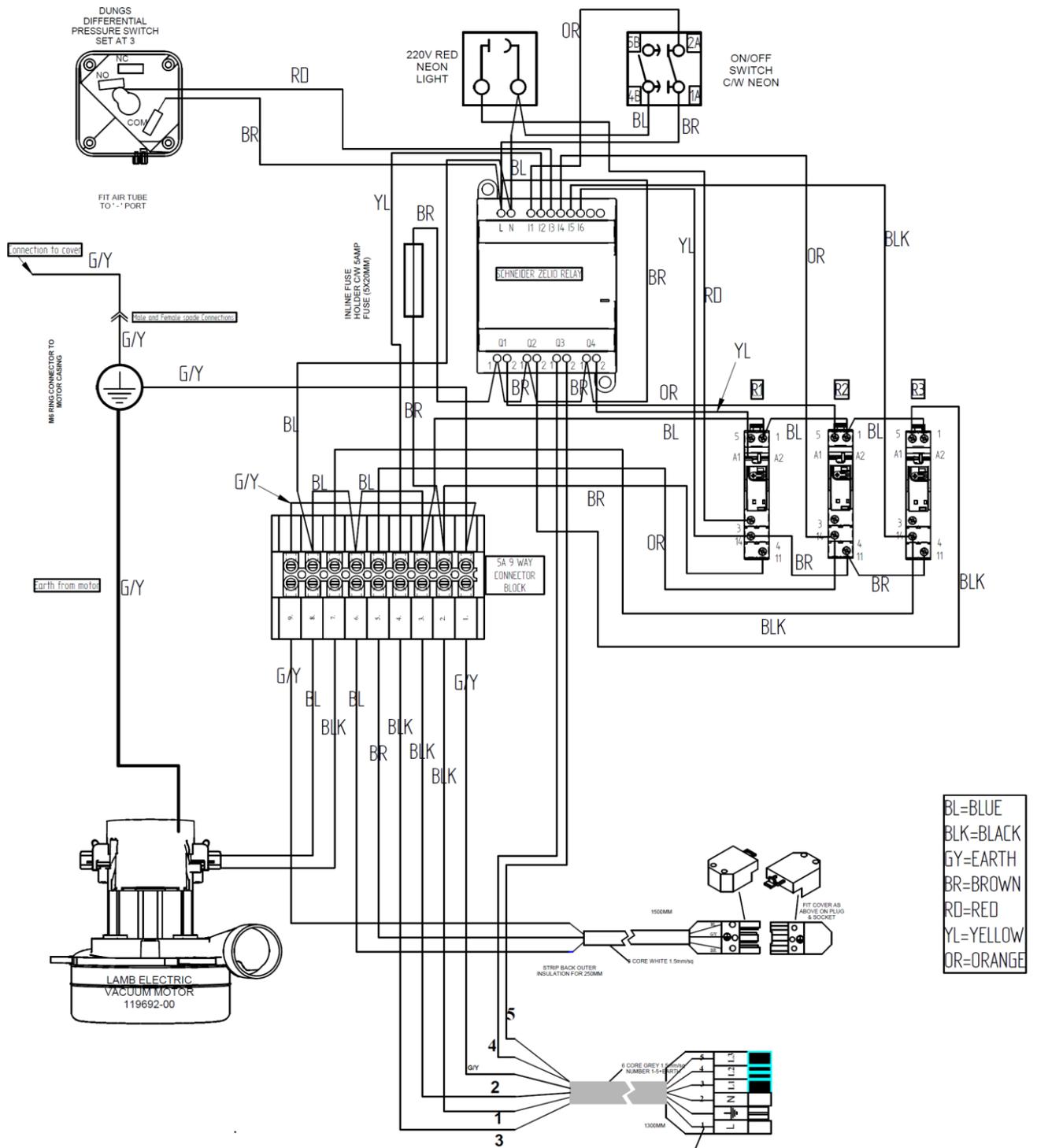


Figure 5-4. Vacuum unit wiring diagram.

## VACUUM AUGER UNIT

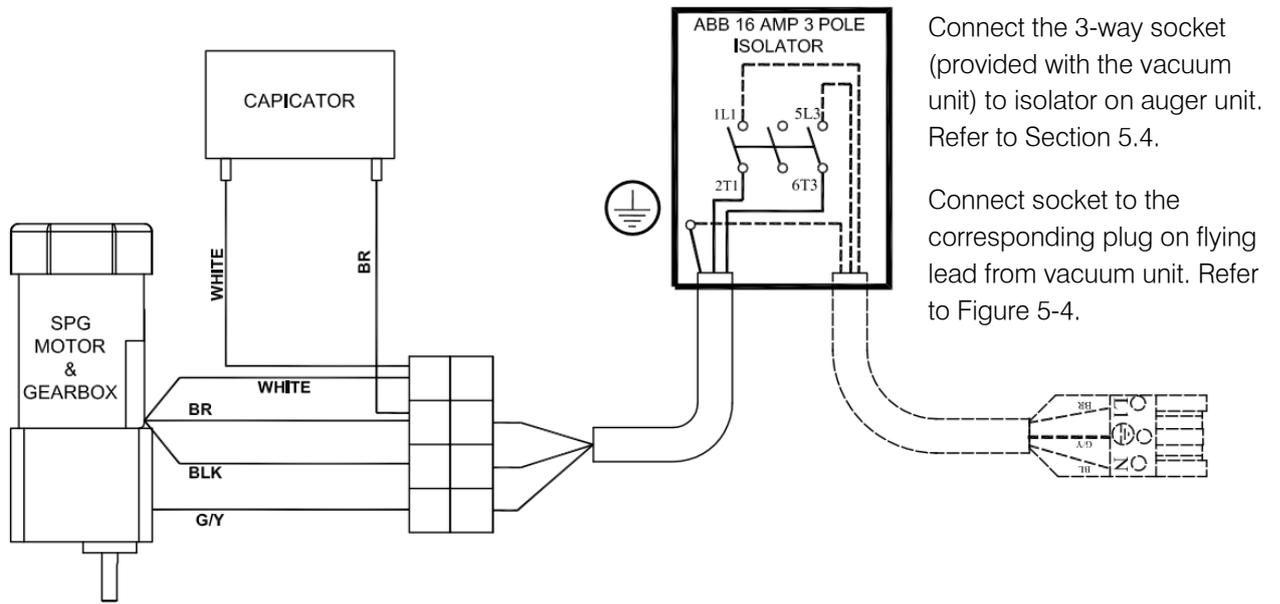


Figure 5-5. Connection between vacuum unit and auger unit.

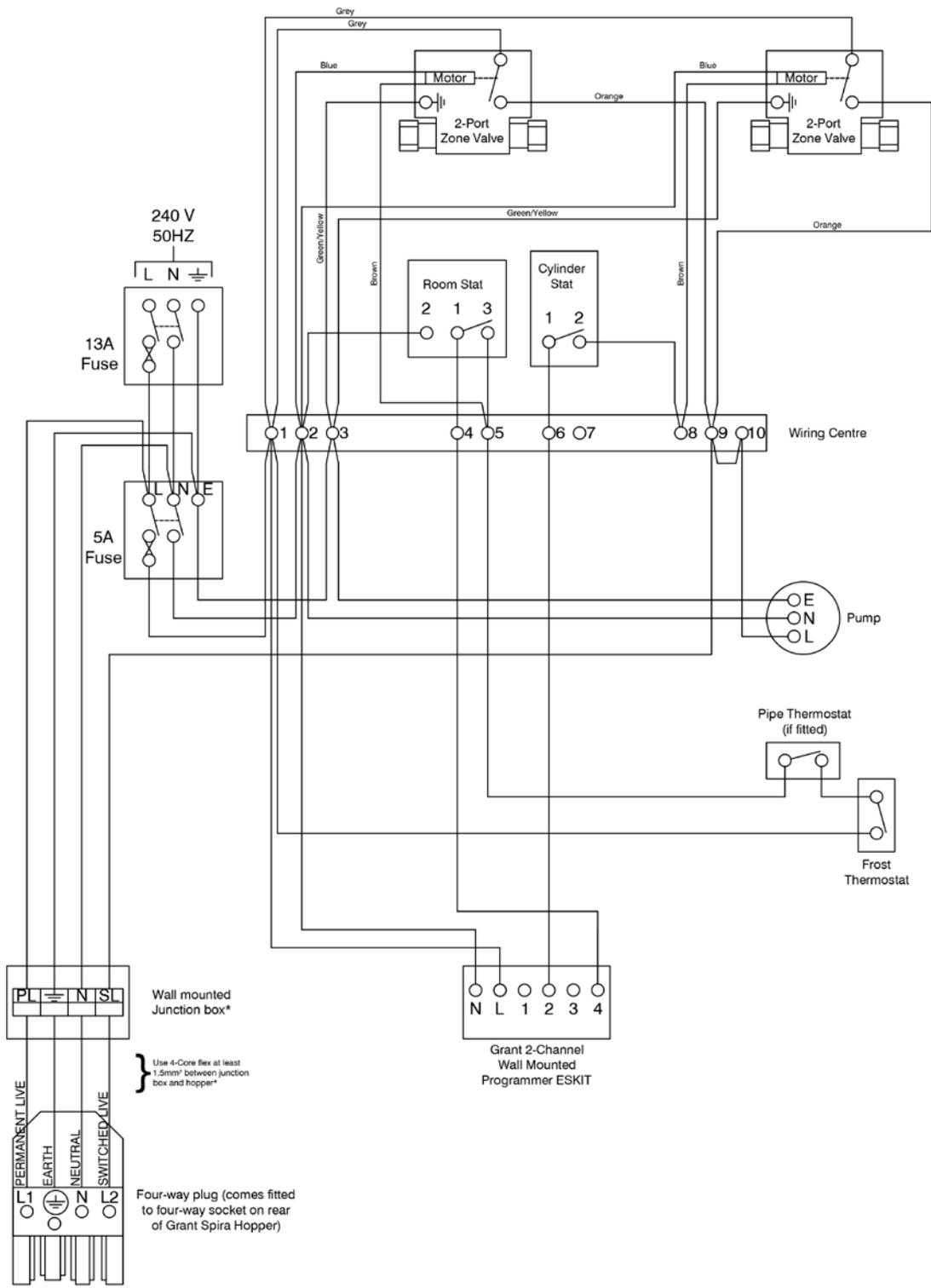


Figure 5-6. Heating system controls – S-plan type system connection diagram.

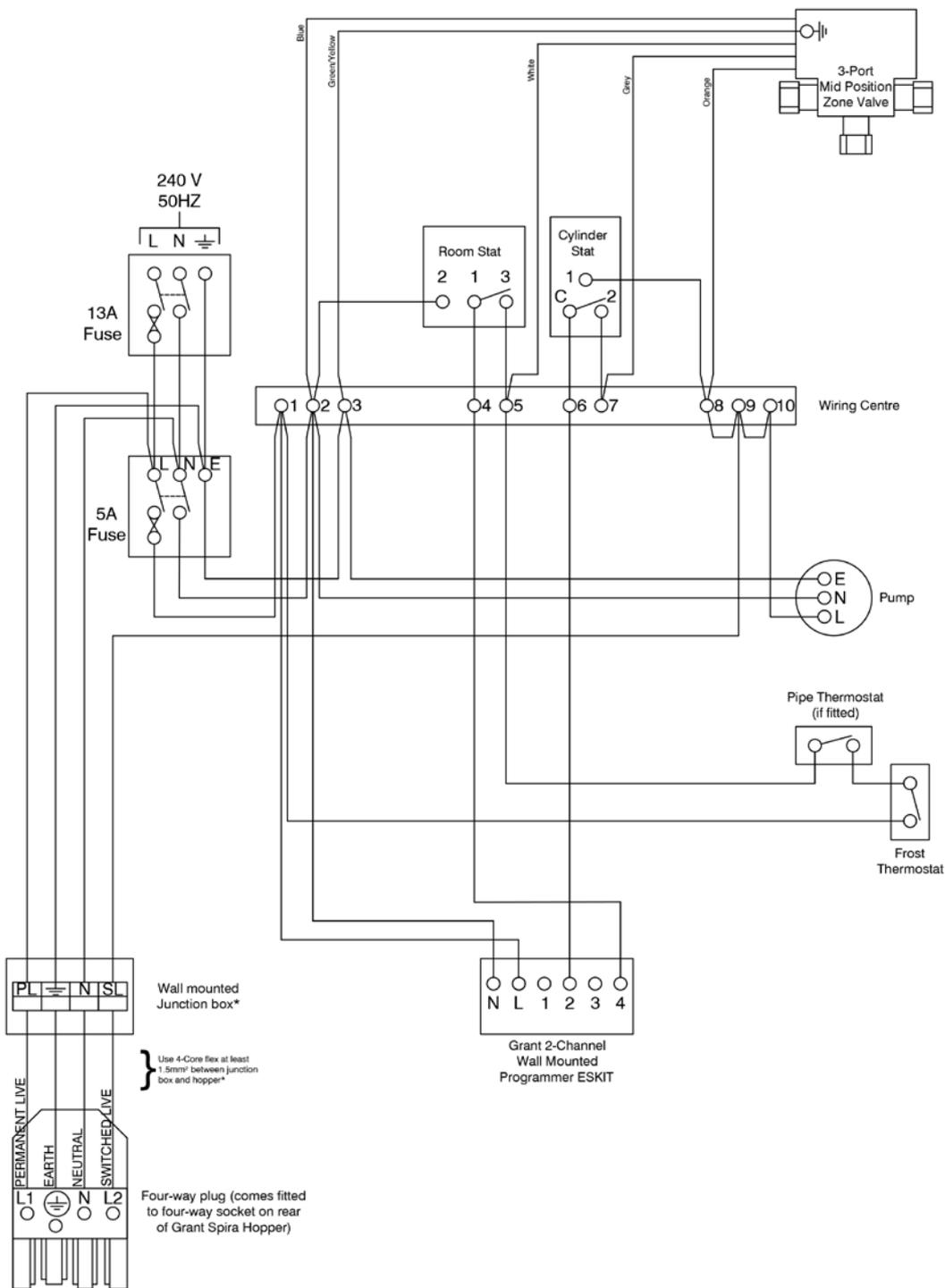


Figure 5-7. Heating system controls – Y-plan type system connection diagram.

## 6. Commissioning

### 6.1 General

The Grant SpiraVac system should be commissioned as part as the overall commissioning of the Grant Spira boiler to which it is fitted. Reference must be made to Section 10 of the main Installation instructions supplied with the boiler.

#### IMPORTANT

BEFORE attempting to prime the pellet hopper auger (as covered in Section 10.7 of the Installation & Servicing instructions provided with the boiler) it is essential to first transfer pellets from the bulk store into the pellet hopper using the SpiraVac system

### 6.2 Procedure

To commission the vacuum system for the first time follow the procedure below:

1. Check the electrical supply to the hopper/boiler is isolated, i.e. switched off at the fused isolator.
2. Check the boiler ON/STANDBY switch to STANDBY.
3. Set the 'VACUUM SYSTEM' switch (on the SpiraVac control panel) to OFF.
4. Check that both flexible system tubes are correctly fitted between the vacuum unit and auger unit. Refer to Section 4.3 for details.
5. Check that there is a sufficient quantity of pellets in the bulk pellet store.
6. Switch the electrical isolator (on the auger unit) to ON.
7. Switch on the electrical supply to the hopper/boiler at the fused isolator.
8. Switch the 'VACUUM SYSTEM' switch to ON. The vacuum unit should now start and pellets will delivered to the pellet hopper from the bulk store. Refer to the User Instructions (in Section 8 of these Instructions) for further details.

The first time the Grant SpiraVac system is switched on, as described above, it will operate several times until the hopper is filled with pellets up to the level of the counterweighted trap door of the vacuum unit. In this condition the trap door will be prevented from closing by the pellets. This is intentional as further operation of the vacuum system is not required with this amount of pellets in the hopper. Once this has been done the vacuum system will automatically stop.

The SpiraVac system is now operational and will automatically operate to re-fill the pellet hopper when the pellet level in the pellet hopper falls to the minimum level.

#### NOTE

Every time the 'VACUUM SYSTEM' switch is switched OFF and then back to ON, the SpiraVac system will operate and fill the pellet hopper up to the level of the counterweighted trap door of the vacuum unit, irrespective of the pellet level in the hopper at that time.

### **'24 hour' operation**

The Grant SpiraVac system will then always automatically operate and fill the hopper every 24 hours starting from the time it is first switched on using the 'VACUUM SYSTEM' ON/OFF switch on the SpiraVac control panel. This is the automatic '24-hour' operating mode of the SpiraVac system.

It is possible to re-set the time that this '24 hour' operation occurs to a more suitable time (e.g. during the evening) to avoid the automatic operation of the vacuum system during the night time.

To do this, simply switch the 'VACUUM SYSTEM' switch to OFF wait for about 2 seconds and then switch back to ON at the time you wish the '24-hour' operation to occur. This time will be automatically stored in the control system memory and the store will then fill at the same time every day (if required).

### **NOTE**

If the power supply to the Spira Boiler and SpiraVac system is interrupted, either deliberately or otherwise (e.g. a power cut), the built-in timer function will stop for the duration of the power interruption.

Whilst the SpiraVac system will automatically continue to operate in the '24 hour' mode when the power is reconnected, and the original time setting will be remembered, the actual time it will operate to fill the hopper will now be incorrect, i.e. delayed by the duration of the power interruption.

Example: If the '24hour' mode was originally set to operate at 6.00pm every day, but a power cut lasting 1 hour occurred, the '24hour' will now operate at 7.00pm after the power is reconnected.

It will therefore be necessary to reset the '24 hour' mode following a power interruption if the original '24 hour' mode operating time setting is still required. To do this, simply switch the 'VACUUM SYSTEM' switch to OFF, wait for about 2 seconds and then switch back to ON at the time you wish the '24-hour' operation to occur.

### **Priming the Auger**

The pellet hopper auger can now be primed. Follow the procedure given in Section 10.7 of the Installation & Servicing Instructions provided with the boiler.

After the pellet hopper auger is fully primed, leave the 'VACUUM SYSTEM' switch set to ON.

## 7. Servicing

**IMPORTANT** Before commencing any service work on the Grant SpiraVac system, ensure that the electrical supply from the pellet hopper is isolated, as follows:

- Set the 'VACUUM SYSTEM' switch on the SpiraVac control panel to OFF.
- Disconnect the 6-way connector between the pellet hopper and the vacuum unit.

This will enable the boiler to be left operating whilst the SpiraVac system is serviced.

On completion of the service work, re-connect the electrical supply from the pellet hopper using the reverse of the above procedure.

### 7.1 Vacuum Unit

1. Remove the cover from the vacuum unit, as follows:

- Unscrew and remove the four upper outer screws at the rear of the vacuum unit. Refer to Figure 7-1.

**IMPORTANT** Do NOT remove the four screws at the bottom rear of the vacuum unit.

- Slacken off the four screws – two on each side, at the bottom of the cover sides. Refer to Figure 7-2.
- Carefully lift the cover up and off the vacuum unit taking care to disconnect 'in-line' connection in the earth wire before completely removing the cover from the vacuum unit. Refer to Figure 7-3.



Figure 7-1. Cover fixing screws - rear



Figure 7-2. Cover fixing screws - sides



Figure 7-3. Earth wire connector



Figure 7-4. Vacuum unit without cover

2. Carefully clean out any dust and fluff from within the vacuum unit enclosure. In particular ensure that the air inlet to the vacuum motor is clear. Refer to figure 7-4.
3. Check the vacuum unit cover, remove any dust and fluff from the inner surfaces taking care not to damage the acoustic lining. Check that the inlet grille in the top surface is clear.
5. Check the condition of the pressure switch tube.
6. Replace the vacuum unit cover using the reverse of the removal procedure.

**IMPORTANT: Ensure that the 'in-line' connection of the earth wire is remade before fitting the cover. Refer to Figure 7-3.**

## 7.2 Auger Unit

1. Isolate the electrical supply to the auger motor using the remote isolator mounted on the auger unit. Set the isolator to OFF and lock it off.
2. Unscrew and remove the two domed nuts and remove the galvanised steel cover from the auger unit. Refer to Figure 7-5.
3. Inspect the suction chamber through the glass panel. Check for any signs of blockage that could interfere with the operation of the auger. Refer to Figure 7-6.
4. If necessary, unscrew and remove the two nuts and remove the top cover from the suction chamber. Check the seal on the underside of the cover. When replacing the cover ensure that it is correctly fitted before tightening the nuts.

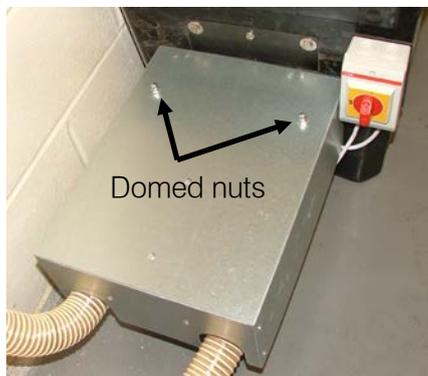


Figure 7-5. Auger unit with cover



Figure 7-6. Suction chamber window

## 7.3 Flexible Pellet Tubes

1. Where possible, check along the entire length of both flexible pellet tubes for any signs of damage or wear – either internal or external and any signs of blockage. Rectify as necessary.
2. Check that BOTH pellet tubes are securely connected to the spigot connectors at BOTH ends, i.e. at the vacuum unit and at the auger unit. Check that the anti-static wire is in contact with the unpainted steel surface of the connection spigot. Refer to Section 4.3 for details.
3. If necessary, tighten the 'jubilee' hose clip to secure the tube in place and clamp the anti-static wire to the spigot. Refer to Figure 4-22.

## 8. User Instructions

### 8.1 Introduction

This information is intended to assist the User in the operation of the Grant SpiraVac wood pellet supply system when used in conjunction with a Grant Spira wood pellet boiler.

These instructions must be read and used in conjunction with the User Instructions supplied with the Grant Spira wood pellet boiler.

The Installers information for the installation and maintenance of this vacuum system is covered in Sections 1 to 7 of these Installation & User Instructions.

### 8.2 About the Grant SpiraVac system

The vacuum unit (mounted on the top of the pellet hopper) is connected to the auger unit (mounted on the bulk pellet store) by two flexible tubes.

When the level of the pellets in the pellet hopper falls to a minimum level the contents switch (built into the hopper) is activated. This in turn starts the vacuum motor in the vacuum unit and also the auger in the auger unit. The auger pulls pellets from the base of the pellet store and the vacuum draws the pellets through the suction flow tube to the vacuum unit.

Here the pellets are collected in the cyclone unit (beneath the vacuum unit - within the pellet hopper). After running for 75 seconds the vacuum motor stops. The trap door at the base of the cyclone opens and the pellets stored within fall into the hopper.

This process will be repeated several times until the hopper is filled with pellets up to the level of the trap door of the cyclone. In this condition the trap door will be prevented from closing by the pellets. This is intentional as further operation of the vacuum system is not required with this amount of pellets in the hopper. Refer to the flow diagram in Figure 3-6 for further information on the Grant SpiraVac operation.

### 8.3 Controls

The vacuum unit has a control panel with fitted with a 'VACUUM SYSTEM' ON/OFF switch and RED INDICATOR NEON. Refer to Figure 8-1.



Figure 8-1. Vacuum system control panel

#### Vacuum system ON/OFF Switch

When the 'VACUUM SYSTEM' switch is set to ON the small red neon (on the switch) will be lit. The vacuum system is operational and will automatically start when the contents switch (in the hopper) detects the minimum pellet level.

When the 'VACUUM SWITCH' is switch is set to OFF the small red neon on the switch will not be lit and the vacuum system will NOT be operational.

## RED INDICATOR NEON

The red INDICATOR NEON indicates one of three operating conditions, depending on the setting of the 'VACUUM SYSTEM' switch, as follows:

### With the 'VACUUM SYSTEM' switch is set to OFF

When the INDICATOR NEON is lit it indicates that the vacuum system is on standby, i.e. it will NOT operate automatically when the contents switch in the pellet hopper detects the minimum level of pellets.

If the INDICATOR NEON is not lit, this indicates a problem with the power supply to the boiler and/or the Vacuum system. Please contact your installer or service engineer for assistance.

### With the 'VACUUM SYSTEM' switch is set to ON

When the INDICATOR NEON is not lit it indicates that the vacuum system is ready to operate automatically when the contents switch in the pellet hopper detects the minimum level of pellets.

If the INDICATOR NEON is lit it indicates that there is a fault with the vacuum system. Please contact your installer or service engineer for assistance.

Vacuum System Switch Setting	Vacuum system Switch Neon	Red Indicator Neon	Vacuum System Status
OFF	OFF	ON	Vacuum system is on standby but will not automatically operate
OFF	OFF	OFF	No power to vacuum system
ON	ON	OFF	Vacuum system ready to operate when pellet level in hopper is at minimum
ON	ON	ON	Fault with vacuum system

## 8.4 Starting the system

Switch the 'VACUUM SYSTEM' switch to ON. The vacuum system will operate until the hopper is filled with pellets up to the level of the trap door of the cyclone. In this condition the trap door will be prevented from closing by the pellets. This is intentional as further operation of the vacuum system is not required with this amount of pellets in the hopper.

The SpiraVac system is now operational and will automatically operate to re-fill the pellet hopper when the pellet level in the pellet hopper falls to the minimum level.

### NOTE

Every time the 'VACUUM SYSTEM' switch is switched OFF and then back to ON, the SpiraVac system will operate and fill the pellet hopper up to the level of the counterweighted trap door of the vacuum unit, irrespective of the pellet level in the hopper at that time.

## 8.5 '24 Hour' operation

The Grant SpiraVac system will always automatically operate and fill the hopper every 24 hours starting from the time it is first switched on using the VACUUM SYSTEM ON/OFF switch on the control panel. This is the SpiraVac system '24 Hour' operating mode.

The '24 Hour' operating mode can be set to automatically fill the pellet store with sufficient pellets, at a

suitable time (e.g. during the evening), to avoid the automatic operation of the vacuum system during the night time.

To do this, simply switch the 'VACUUM SYSTEM' switch (on the vacuum unit) to OFF and then back to ON at the time you wish the store to be pre-loaded.

This time will be automatically stored in the memory of the system control and the store will then fill at the same time every day (i.e. at 24 hour intervals).

The vacuum system will operate until the hopper is filled with pellets up to the level of the trap door of the cyclone. In this condition the trap door will be prevented from closing by the pellets. This is intentional as further operation of the vacuum system is not required with this amount of pellets in the hopper.

If you wish to change the time the store is pre-loaded by the '24 Hour' operation of the SpiraVac system, then simply repeat the process at a different time and then this filling operation will be repeated at this new time every 24 hours.

Once the vacuum system has filled the hopper with sufficient pellets to prevent operation during the night time period, the vacuum system will stop.

#### NOTE

If the power supply to the Spira Boiler and SpiraVac system is interrupted, either deliberately or otherwise (e.g. a power cut), the built-in timer function will stop for the duration of the power interruption. Whilst the SpiraVac system will automatically continue to operate in the '24 hour' mode when the power is reconnected, and the original time setting will be remembered, the actual time it will operate to fill the hopper will now be incorrect, i.e. delayed by the duration of the power interruption.

Example: If the '24hour' mode was originally set to operate at 6.00pm every day, but a power cut lasting 1 hour occurred, the '24hour' will now operate at 7.00pm after the power is reconnected.

It will therefore be necessary to reset the '24 hour' mode following a power interruption if the original '24 hour' mode operating time setting is still required. To do this, simply switch the 'VACUUM SYSTEM' switch to OFF, wait for about 2 seconds and then switch back to ON at the time you wish the '24-hour' operation to occur.

### 8.6 Manual operation

If you run out of pellets in your bulk pellet store the vacuum system cannot operate as there are no pellets to deliver to the pellet hopper. Until the pellet store can be re-filled, the pellet hopper can be hand fed with bagged pellets.

To do this, set the 'VACUUM SYSTEM' switch (on the vacuum unit) to OFF. The pellet hopper will now operate as if no vacuum system is installed.

#### NOTE

**With the SpiraVac system fitted, the pellet hopper will not have a reduced maximum capacity.**

The level of pellets in the hopper needs to be monitored and topped up as necessary to keep the boiler in operation. If the level of pellets in the hopper falls to the minimum level the contents switch (built into the hopper) will automatically switch the boiler off. In this case simply put more pellets (at least an additional 20kg) into the hopper to satisfy the contents switch and the boiler will start again.

## 9. Guarantee

### The Grant SpiraVac Guarantee

You are now the proud owner of a SpiraVac vacuum system from Grant Engineering (UK) Limited, which has been designed to give years of reliable, trouble free, operation.

Grant Engineering (UK) Limited guarantees the manufacture of the SpiraVac including all electrical and mechanical components for a period of **twelve months from the date of installation**<sup>4</sup>, provided that the SpiraVac has been installed in full accordance with the installation and servicing instructions issued.

This will be extended to a total period of **two years** if the wood pellet boiler and SpiraVac is registered with Grant Engineering (UK) Limited **within thirty days of installation**<sup>4</sup> and it is serviced at twelve month intervals<sup>3</sup>. See main Terms and Conditions below.

### Registering the product with Grant Engineering (UK) Limited

Please register your SpiraVac with Grant Engineering UK Limited **within thirty days of installation**<sup>4</sup>. To do so visit [www.grantuk.com](http://www.grantuk.com) and follow the links to the 'Homeowners Zone', where you can register your boiler and SpiraVac for a further **twelve months** guarantee (giving **two years** from the date of installation). This does not affect your statutory rights<sup>1</sup>.

### If a fault or defect occurs within the manufacturer's guarantee period

If your SpiraVac should fail within the guarantee period, you must contact Grant Engineering (UK) Limited who will arrange for the repair under the terms of the guarantee, providing that the boiler and the SpiraVac has been correctly installed, commissioned and serviced (if the appliance has been installed for more than twelve months) by a competent person and the fault is not due to tampering, running out of fuel, the use of unapproved wood pellets, contamination, debris, system water contamination, misuse, trapped air or the failure of any external components not supplied by Grant Engineering (UK) Limited, e.g. motorised valve, etc.

**This two year guarantee only applies if the boiler and SpiraVac is registered with Grant Engineering (UK) Limited within thirty days of installation<sup>4</sup> and is serviced after twelve months<sup>3</sup>.**

### In the first instance

Contact your installer or commissioning engineer to ensure that the fault does not lie with the system components or any incorrect setting of the system controls that falls outside of the manufacturer's guarantee otherwise a service charge could result. Grant Engineering (UK) Limited will not be liable for any charges arising from this process.

### If a fault covered by the manufacturer's guarantee is found

Ask your installer to contact Grant Engineering (UK) Limited Service Department on +44 (0)1380 736920 who will arrange for a competent service engineer to rectify the fault.

### Remember - before you contact Grant Engineering (UK) Limited:

- Ensure the boiler and SpiraVac has been installed, commissioned and serviced by a competent person in accordance with the installation and servicing instructions.
- Ensure there is an adequate quantity of the approved type of pellets in the hopper (and bulk store if fitted) to supply the burner.
- Ensure the problem is not being caused by the heating system or its controls. Consult the installation and servicing instructions supplied with the SpiraVac for guidance.

### Free of charge repairs

During the **two year** guarantee period no charge for parts or labour will be made provided that the boiler and SpiraVac has been installed and commissioned correctly in accordance with the manufacturer's installation and servicing instructions, it was registered with Grant Engineering (UK) Limited within thirty days of installation<sup>4</sup> and, for boilers and a SpiraVac over twelve months old, details of annual service is available<sup>3</sup>.

The following documents must be made available to Grant Engineering (UK) Limited on request:

- Proof of purchase
- Commissioning Report Form
- Service documents

## Chargeable repairs

A charge may be made (if necessary following testing of parts) if the cause of the breakdown is due to any fault(s) caused by the plumbing or heating system. See 'Extent of manufacturer's guarantee' below.

### Extent of manufacturer's guarantee:

The manufacturer's guarantee does not cover the following:

- If the SpiraVac has been installed over **two years**.
- If the boiler and SpiraVac has not been installed, commissioned, or serviced by a competent person in accordance with the installation and servicing instructions.
- The serial number has been removed or made illegible.
- Fault(s) due to accidental damage, tampering, unauthorised adjustment, neglect, misuse or operating the boiler or SpiraVac contrary to the manufacturer's installation and servicing instructions.
- Damage due to external causes such as bad weather conditions (flood, storms, lightning, frost, snow, ice), fire, explosion, accident or theft.
- Fault(s) due to incorrectly sized expansion vessel(s), incorrect vessel charge pressure or inadequate expansion on the system.
- Fault(s) caused by external electricians and external components not supplied by Grant Engineering (UK) Limited.
- Problems caused by lack of pellets, the use of unapproved pellets or faults with the pellet storage and supply system (if not supplied by Grant Engineering (UK) Limited).
- Removing any pellet store or hopper contamination or blockages in the pellet augers, pellet hopper or bulk pellet store.
- Removal of dust from the pellet augers, pellet hopper or bulk pellet store.
- Boiler and SpiraVac servicing, de-scaling or flushing.
- Checking or replenishing system pressure.
- Electrical cables and plugs, heating system controls not supplied by Grant Engineering (UK) Limited.
- Heating system components, such as radiators, pipes, fittings, pumps and valves not supplied by Grant Engineering (UK) Limited.
- Instances where the SpiraVac has been un-installed and re-installed in another location.
- Installations where the SpiraVac is not installed with a Grant Engineering (UK) Limited wood pellet boiler.
- Use of spare parts not authorised by Grant Engineering (UK) Limited.
- Consumable items.

### IMPORTANT

Do not wait until your wood pellet supply runs out before you re-order.

Dust in the bottom of the pellet store or hopper may prevent the supply of pellets to the burner. It is important that this is checked for and, if dust is present, removed on an annual service to prevent nuisance stoppage of the boiler and SpiraVac.

### Terms of manufacturer's guarantee:

- The Company shall mean Grant Engineering (UK) Limited.
- The SpiraVac must be installed by a competent installer and in full accordance with the relevant Codes of Practice, Regulations and Legislation in force at the time of installation.
- The SpiraVac is guaranteed for **two years** from the date of installation<sup>4</sup>, providing that after twelve months the annual service has been completed<sup>3</sup> and the SpiraVac registered with the Company within thirty days of installation. Any work undertaken must be authorised by the Company and carried out by a competent service engineer.
- This guarantee does not cover breakdowns caused by incorrect installation, neglect, misuse, accident or failure to operate the SpiraVac in accordance with the manufacturer's installation and servicing instructions.
- The SpiraVac is registered with the Company within thirty days of installation<sup>4</sup>. Failure to do so does not affect your statutory rights<sup>1</sup>.
- The balance of the guarantee is transferable providing the installation is serviced prior to the dwelling's new owners taking up residence. Grant Engineering (UK) Limited must be informed of the new owner's details.
- The Company will endeavour to provide prompt service in the unlikely event of a problem occurring,

but cannot be held responsible for any consequences of delay however caused.

- This guarantee applies to Grant Engineering (UK) Limited SpiraVac purchased and installed on the UK mainland, Isle of Wight, Channel Islands and Scottish Isles only<sup>2</sup>. Provision of in-guarantee cover elsewhere in the UK is subject to agreement with the Company.
- All claims under this guarantee must be made to the Company prior to any work being undertaken. Invoices for call out/repair work by any third party will not be accepted unless previously authorised by the Company.
- Proof of purchase and date of installation, commissioning and service documents must be provided on request.
- If a replacement SpiraVac is supplied under the guarantee (due to a manufacturing fault) the product guarantee continues from the installation date of the original SpiraVAC, and **not** from the installation date of the replacement<sup>4</sup>.
- The replacement of a SpiraVac under this guarantee does not include any consequential costs.

**Foot notes:**

<sup>1</sup> Your statutory rights entitle you to a one year guarantee period only.

<sup>2</sup> The UK mainland consists of England, Scotland and Wales only. Please note that for the purposes of this definition, Northern Ireland, Isle of Man and Scilly Isles are **not** considered part of the UK mainland.

<sup>3</sup> We recommend that your SpiraVac is serviced every twelve months (even when the guarantee has expired) to prolong the lifespan and ensure it is operating safely and efficiently.

<sup>4</sup> The guarantee period will commence from the date of installation, unless the installation date is more than six months from the date of purchase, in which case the guarantee period will commence six months from the date of purchase.



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