

## 6. MAINTENANCE (authorized personnel)

### 6.1 General Warnings

All maintenance operations must be carried out by professionally qualified personnel, authorized by PENSOTTI

The frequency of boiler maintenance is recommended to be carried out once a year.

In order to guarantee the long life of the appliance and in accordance with the current gas safety regulations, only use original replacement parts

Before carrying out any type of maintenance operation, disconnect the appliance from the electrical supply and shut off the gas valve.

**Warranty will not be offered if recommended maintenance is not followed.**

**Keep appliance area clear and free from combustible material, gasoline and other flammable vapors and liquids.**

**In order to safeguard all waterside components the supplied Fernox Commissioning Kit must be used in its entirety.**

### 6.2 Maintenance

**Periodic examination of the entire venting system is recommended. Make sure all the venting connections/joints are tight and in good condition where visible.**

Clean the burner cylinder using a non-metal brush and without damaging the ceramic fiber.

Clean the heat exchanger using a recommended detergent from PENSOTTI for the stainless steel. Do not wet the ceramic fiber coating.

**Visually inspect the burner flame. The flame must burn with a clear blue, stable flame. If the burner flame appearance is not satisfactory or debris is visible on the burners, remove and clean with a vacuum cleaner.**

All electric motors are permanently lubricated and do not need oiling. Remove the combustion air blower and clean wheel and housing with soft brush or vacuum.

Verify proper operation after any servicing.

Wipe the outside surface with a wet cloth; then dry the surface. Use a neutral detergent to clean any stains.

**Vent termination should be inspected for blockage during maintenance checks.**

Check for blockage at the drain pipe and condensate trap.

Clean condensate trap and check for correct level of water.

Check for water leaks from the equipment and piping.

**Warranty will not be offered if recommended maintenance is not followed.**

## 6.3 Boiler inspection

In order to ensure that the boiler operates efficiently and safely, it is recommended that the appliance is inspected by a suitably competent technician at least once a year.

The following operations should be carried out annually:

- Check the condition of the gas seals and replace where necessary.
- Check the condition of the water seals and replace where necessary.
- Visually inspect the condition of the combustion chamber and flame.
- Check that the combustion is correctly regulated and if necessary proceed in line with section "Commissioning the boiler".
- Remove and clean any oxidation from the burner.

**If a relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact a qualified plumber to correct this situation. DO NOT PLUG THE RELIEF VALVE.**

- Check that the seal of the room-sealed chamber is undamaged and positioned correctly.
- Check the primary heat exchanger and clean if necessary.
- Check the maximum and minimum modulation pressures and the modulation itself.
- Check the condition and operation of the ignition and gas safety systems. If necessary, remove and clean the scaling from the ignition and flame detection electrodes, paying particular attention to replace them at the correct distance from the burner.
- Check the heating safety systems: temperature limit safety thermostat, pressure limit safety device.
- Check the pre-fill pressure of the expansion tank (see expansion tank rating plate).
- For safety reasons, periodically check the integrity and operation of the exhaust system.
- Check that the connection to the mains electricity supply complies with that reported in the boiler's instruction manual.
- Check the electrical connections inside the control panel.
- Check the D.H.W flow rate and temperature.
- Check that the condensate drain system is working correctly, including any parts of the system outside the boiler such as condensate collection devices along the length of the exhaust vent and/or any acid neutralizing devices.
- Check that the condensate flows freely and that there are no exhaust fumes present within the appliance.

**Warranty will not be offered if recommended maintenance is not followed.**

## 6.4 Accessing the boiler

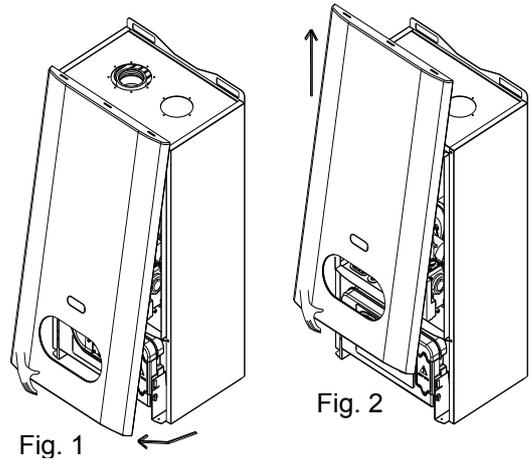
All maintenance operations require one or more of the appliance casing panels to be removed.

The side panels can only be removed after the front panel has been removed.

### Front panel:

Remove the fixing screws at the lower edge of the front panel.

- Grasp the lower part of the panel and pull it outwards (see fig. 1) and then up (see fig. 2).

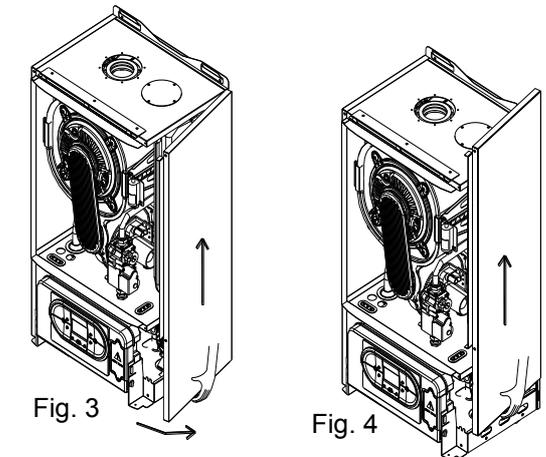


### Left and right side panel:

- Remove the fixing screws at the front and lower edge of the side panel to remove.
- Grasp the bottom of the panel, move it sideways and then upwards to remove it.

**To access the electrical connections of the control panel, proceed as follows:**

- Remove the front panel (see fig. 1 and fig. 2).
- Grasp the left and right control panel support brackets (see fig. 5) and pull them outwards, at the same time rotating the panel downwards.
- Unscrew the four fixing screws (see fig. 6) and remove the panel back piece.



## 6.5 Flushing out the primary side

Fill the boiler as per the filling instructions.

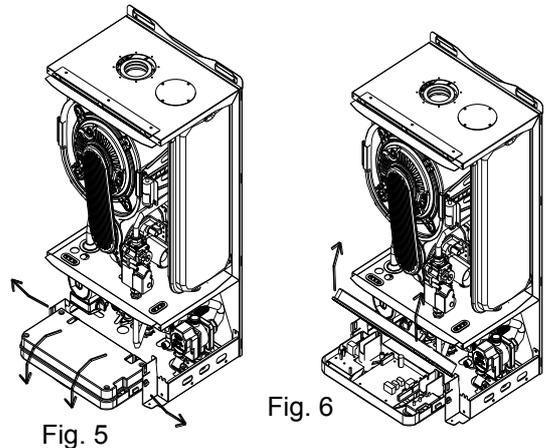
Using a drain off cock on the lowest point of the system allow the water to drain from the system and boiler.

In order to flush the system correctly, turn off all radiators or fan coils. Open the filling loop and drain cock simultaneously and allow the water to flow through the boiler.

Open each individual radiator or fan coil, allowing water to flow through. Then turn that radiator or fan coil off and repeat for all radiators or fan coil on the system.

Turn off the filling loop and close the drain cock open all radiators and open the filling to fill the system. Continue to fill the system until the pressure gauge reads in the Green section of the gauge (14.5 psi = 1 bar)

**In order to safeguard all waterside components the supplied Fernox Commissioning Kit must be used in its entirety.**



## 6.6 Draining the central heating system

If the need arises to drain the system, this can be done as follows:

- Switch the system to “HEAT” mode and ignite the boiler.
- Switch off the power supply to the boiler.
- Wait for the appliance to cool down.
- Connect a hosepipe to the system drain point **R** and locate the other end of the hose in a suitable drainage system.
- Open the system drain valve (fig. 1).
- Open the manual air vent located on the primary heat exchanger.
- Open the air vents on the radiators, starting with the highest and moving down the system to the lowest.
- When the system has been drained, close the radiator air vents and the drain valve.
- **If only the boiler needs to be drained, close the flow/return isolating valves on the heating circuit and open the drain valve R located at the bottom of the boiler on the pump manifold (see fig. 1 );**

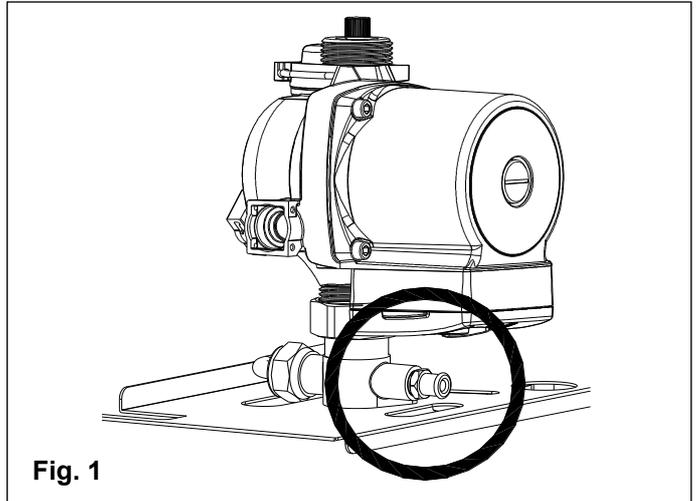


Fig. 1

### Draining the domestic hot water system

If there is a danger of freezing, the domestic hot water system should be drained. This can be done as follows:

- Close the main water supply valve.
- Joint the water draining pipe and open the cylinder draining tap (see fig. 2)
- Open all the hot and cold water taps.
- **On completion, close all the previously opened taps.**

### Freeze Protection

- ⚠ **Glycol must not be used in Domestic Hot Water applications.**

#### System winterization (non-operative system)

Because it may be impossible to completely drain the boilers heating circuit, D.H.W circuit and distribution system. Pensotti recommends the introduction of the proper type antifreeze to protect these systems from freezing damage. **Glycol must not be used in Domestic Hot Water applications.**

#### System winterization (operating system)

Pensotti boilers are certified for indoor use ONLY. Proper precautions for freeze protection are recommended for boilers and associated piping in areas where the danger of freezing exists. Do not use automotive antifreeze. Pensotti recommends the use of inhibited glycol concentrations between 20-35% glycol. Glycol products must be maintained properly so they do not become inactive or corrosive, consult glycol specifications for more information.

## 6.7 Maintenance operations

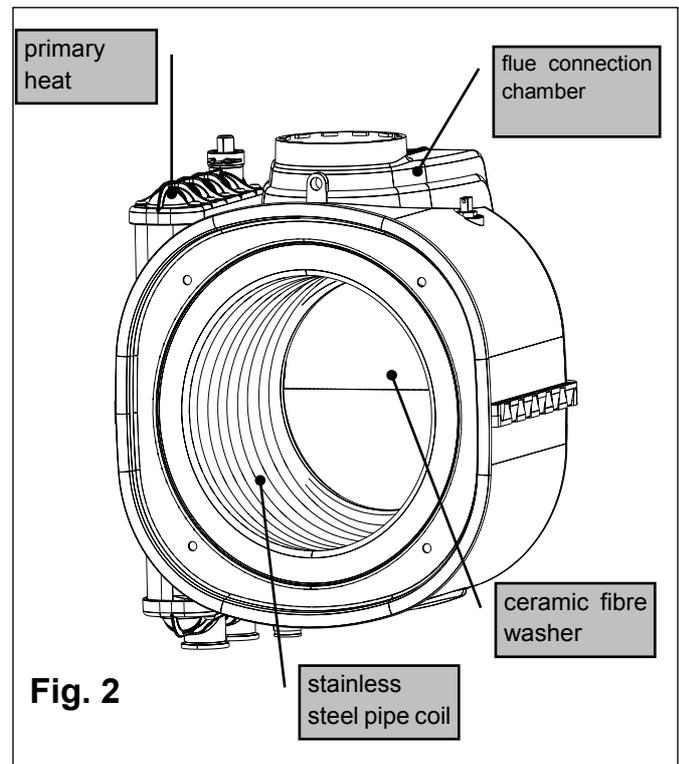
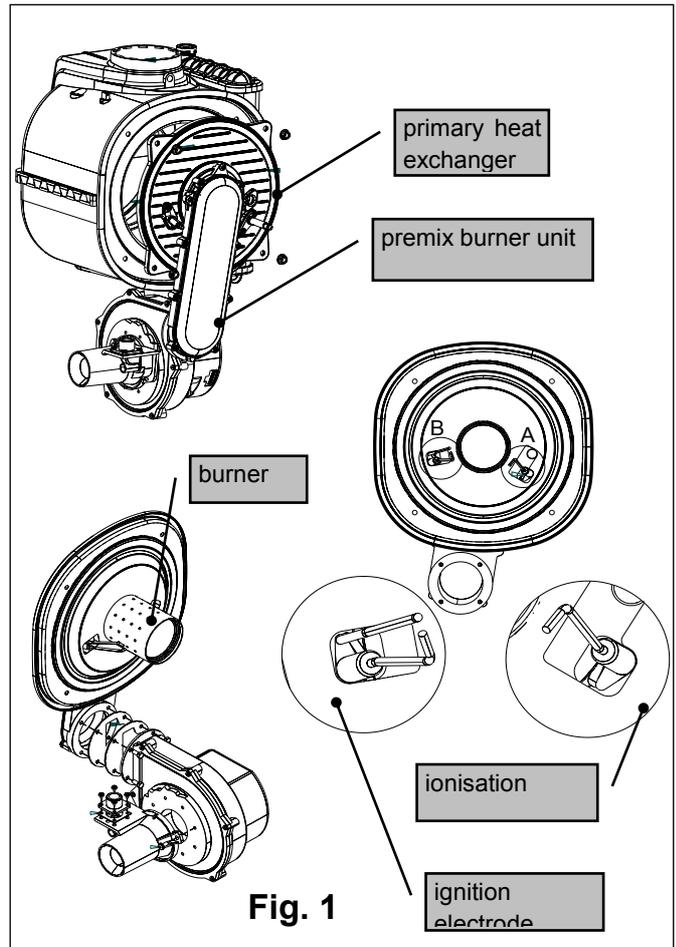
**⚠** Before carrying out any cleaning or part replacement operations, **ALWAYS** turn off the **ELECTRICITY**, **WATER** and **GAS** supplies to the boiler.

Pensotti LLC will not be held responsible for damage to any of the boiler's components caused by non-compliance with this instruction.

For all maintenance operations requiring removal of the boiler casing, refer to the procedures described in paragraph 6.4 "Accessing the boiler".

Cleaning the main exchanger module and combustion unit (fig. 1)

- Disconnect the electrical connections of the electric fan.
- Disconnect the joint and remove the pipe linking the gas valve to the injector unit (venturi).
- Disconnect the joint and remove the gas feed pipe from the gas valve.
- Un-plug the ignition electrode and flame detection wires from the ignition control unit.
- Unscrew the ring-nut at the bottom of the room-sealed chamber and remove the gas valve.
- Unscrew the nuts securing the burner unit (consisting of a fan, manifold and burner) to the primary heat exchanger.
- Remove the burner unit, paying particular attention not to remove the ceramic fibre protection from the bottom of the heat exchanger.
- Check that the burner is not affected by deposits, scaling or excessive oxidation. Check that all the holes in the burner are free.
- Clean the electrodes carefully without altering their positions with respect to the burner.
- Clean the burner cylinder using a non-metal brush and without damaging the ceramic fibre.
- Check the integrity of the gasket on the cover of the burner.
- Clean the heat exchanger using a household detergent for stainless steel, distributing the product on the spirals of the exchanger using a brush. Do not wet the ceramic fibre coating. Wait a few minutes then remove the deposits using a non-metal brush. Then remove the residues under running water.
- Remove the pipe clip, remove the condensate drainpipe and clean under running water.
- Unscrew the joint to the condensate trap, remove the trap and wash under running water.
- With the cleaning completed, re-assemble the components following the above procedure in reverse order.
- Finally, check the appliance to make sure that all gas and exhaust joints are tight.



## Annual Maintenance

In order to ensure that the boiler operates efficiently and safely, it is **required** that the appliance is inspected by a suitably competent technician at least once a year.

The following is a minimum recommendation of service that should be carried out annually:

- Check the condition of the gas seals and replace where necessary.
- Check the condition of the water seals and replace where necessary.
- Visually inspect the condition of the combustion chamber and flame.
- Remove and clean any oxidation from the burner.
- Check that the seal of the room-sealed chamber is undamaged and positioned correctly.
- Check the primary heat exchanger and clean if necessary using a soft nylon brush and subtitle vacuum. It is important the spaces between the heat exchanger tubes be cleaned. Use a nonabrasive piece of plastic to scrap between the sections, removing any build up. Do not use a razor blade.
- Check the condition and operation of the ignition and gas safety systems.
- Remove and clean the scaling from the ignition and flame detection electrodes, paying particular attention to place them at the correct distance from the burner. Fig 1.
- Check the pre-fill pressure of the integral expansion tank
- Check the presence of air intake/permanent ventilation openings correctly sized according to the boiler installed and in respect with current law.
- Check the integrity and operation of the flue gas exhaust system.
- Check the integrity of the gas piping system.
- Check that the connection to the electricity supply complies with that reported in the boiler's instruction manual.
- Check the electrical connections inside the control panel.
- Check Fernox inhibitor integrity
- Check and clean if necessary the dirt separator
- Check for and remove any combustible or flammable materials that are in the vicinity of the boiler
- Lubricate the 3-way valve using a TPF E aerosol lubricant. Fig 2
- Check Relief Valve or proper operation
- Check the High Fire CO<sub>2</sub> and (if necessary) Low Fire CO<sub>2</sub> using a combustion analyser. See Section 5.3.
- Check that the combustion is correctly regulated and if necessary make adjustments according to section 4.4 "Starting the boiler".
- Check all heating safety systems. Ex; temperature safety limit, air pressure switch, flame failure, etc.



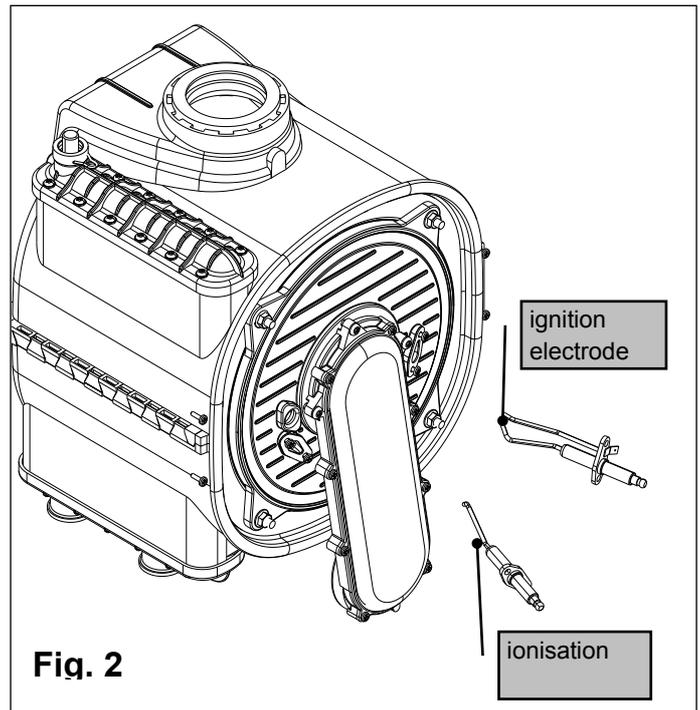
Part replacement:

**Ignition and/or flame detection electrodes**

(see fig. 2)

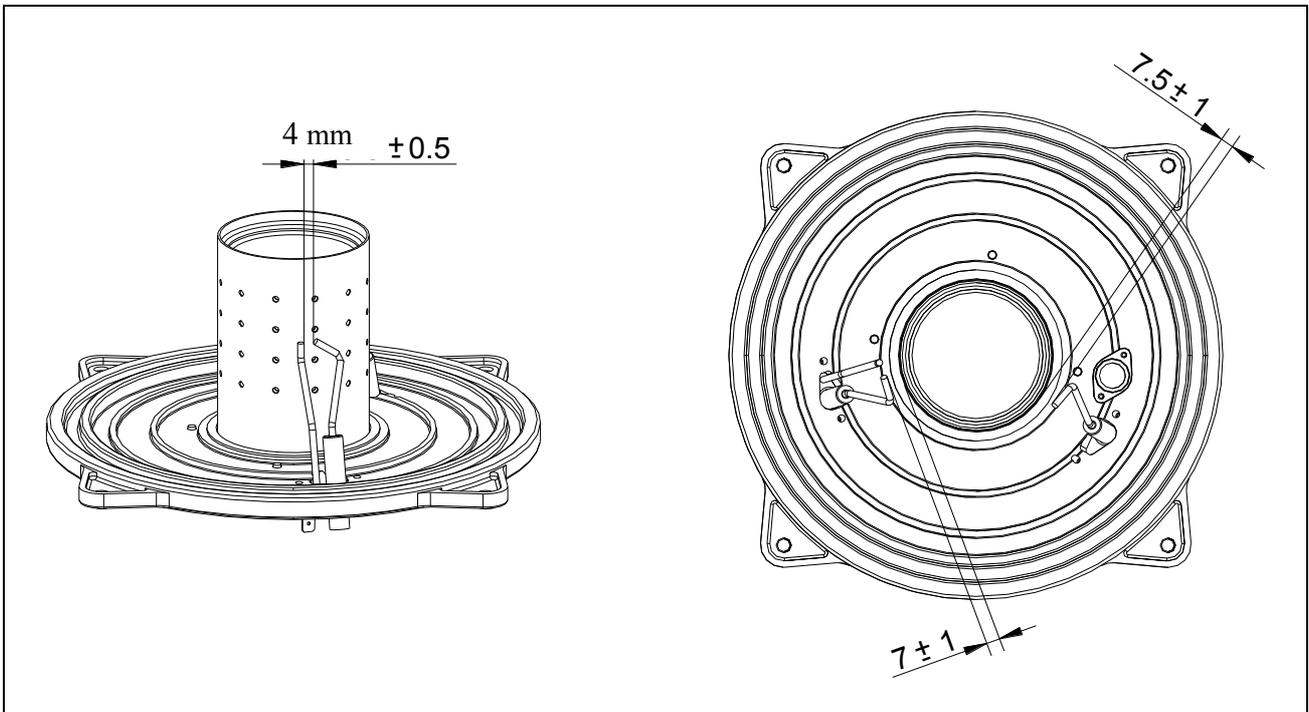
- **Un-Plug the electrode wires;**
- Slacken the fixing screws;
- Remove the electrodes. When fitting the new ones, check that the seals are not damaged. Replace if necessary;
- Reconnect the wires and re-assemble the components following the above procedure in reverse order;
- Switch on the power supply and restart the appliance;

**⚠** *If the appliance does not restart, check the positions of the electrodes (especially the ignition electrode). Make sure that original position and distances between the electrodes and the burner are respected to avoid a malfunction).*



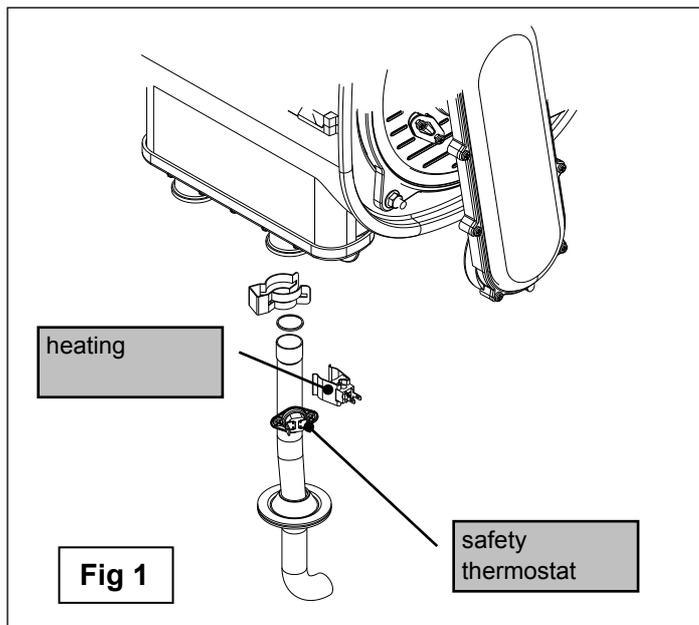
**Fig. 2**

**POSITIONING THE IGNITION ELECTRODE AND THE IONISATION ELECTRODE (mm)**



**Safety thermostat (see fig. 1)**

- **Disconnect the connecting wire;**
- Unscrew the fixing screws and remove the thermostat;
- Replace the thermostat and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and restart the appliance.



**Heating sensor (see fig. 1)**

- **Un-Plug the connecting wire;**
- Replace the sensor and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies, open the shut-off valves and fill the central heating circuit. Then restart the appliance, remembering to discharge any air that may be trapped in the system;

**Gas valve (see fig. 2)**

- **Unscrew the screws connecting the gas valve to the venturi.**
- Disconnect the gas feed pipe and valve ring-nut at the bottom of the room-sealed chamber.
- Remove the flanged elbow coupling of the existing valve and fit it to the new valve; also fit a new cork washer and a new fiber gasket.
- Replace the gas valve and re-assemble the components following the above procedure in reverse order.
- Replace all the gas seals.
- Fully tighten the gas connections.
- Switch on the electricity, water and gas supplies and check for any gas leaks using a soapy solution or leak detector spray;

