

Installation - Maintenance

SERIES FMP

MULTIPLEX blown gas burner

The FMP burner range of compact industrial packaged gas burners covers outputs up to 150 therms, using a very stable “nozzle-mixing” combustion head and is suitable for use on Natural, LPG or Towns Gas (type must be specified at time of ordering). They are suitable for firing a wide range of industrial applications. Standard burners should not be used against a back-pressure, special versions are available to fire into a resistance.

BURNER MOUNTING

All burners are provided with a mounting flange which is pre-drilled to the dimensions given on the data sheet and all screwed studs or alternative fixings should be to these dimensions.

A suitable opening should be provided in the appliance wall for the combustion tunnel/ quarl.

When the burner is mounted to the appliance, a distance equal to the overall length of the burner including combustion tunnel should always be allowed at the rear of the burner unit to allow for withdrawal of the burner inner assembly.



VENTILATION

An adequate, dust-free supply of fresh air is required for the burner, at all firing rates, in accordance with the appropriate standards.

GAS AND ELECTRICAL CONNECTIONS

The gas supply to the burner must be constructed and installed to comply with local conditions and appropriate codes. When connecting a gas supply it is essential to install a manual shut-off valve, together with a suitable pipe union, at or near the burner. The burner assembly should not be used to support the incoming gas supply, suitable brackets or hangers should be used for this purpose. Care should be taken to ensure that the incoming gas piping is sized correctly to prevent excessive pressure drop (N.B: supply pipework is generally larger than the burner gas connection).

All electric wiring must be carried out to all applicable Codes and Standards.

Wiring of the burner should be in accordance with the appropriate wiring diagram. A suitable mains isolator should be placed in a convenient location, and the final electrical connections to the burner should be flexible conduits. It is vital that the live and neutral wires are connected to their appropriate terminals as shown on the wiring diagram, as reversal could present a hazard. Earth bonding must be checked, preferably by a “megger”.

The burners are all of the “expanding flame” type pilot system and normally use “intermittent” flame failure control boxes. The pilot valve remaining energised all the time that the main safety shut-off valves are energised. Interrupted flame failure control boxes, where the pilot valve is de-energised when the main safety shut-off valves are energised, can also be used.

COMMISSIONING

The procedure given below is given as a guide to commissioning which should be undertaken by a qualified engineer.

1. Before proceeding further, check that the appliance is in a proper state to be fired.
2. Check electricity is OFF.
3. Check gas is OFF.
4. Check gas and electric connections.
5. Check supply pipe has been correctly purged.
6. Release the spring pressure on the main gas governor to give minimum gas pressure.
7. Set air pressure switch to minimum and set air damper fully open.
8. Check that the overload setting is correct with FLC of motor.
9. Check that all instruments and switches in the burner control circuits are "calling for heat".
10. With the manual valve still closed, switch on the electricity supply and, if necessary, press the red reset button. Note the rotation of the fan, which should be anti-clockwise when viewed from the motor side. The direction can be observed by removing the rubber grommet in the fan scroll. Do not assume correct even if single phase motor. Switch off. If the fan is rotating in the wrong direction, isolate supply. On three phase motors, change over any two of the three phases feeding the motor. On single phase motors remove motor terminal cover plate and interchangeable wires as directed on cover plates. Re-check rotation.
11. Allow the control box to cycle through its start-up sequence, i.e. pre-purge (if the air is controlled on the burner then damper should move to open for purge and then move to a low position for start-up, ensure this low position is not fully closed), ignition, pilot valve open. The control box should then go to lockout (the manual gas valve being in the Off position).
12. Turn on the manual gas cock. Reset control box. The control box will re-cycle through its start-up sequence and the pilot should light. After a delay, the burner will proceed to main flame.
13. Check flame monitoring signal (see control box leaflet).
If the pilot flame is not reliably established the control will lock out. There may still be air in the pilot gas line, or the pilot rating may require adjustment.
Reset control and repeat sequence.
14. The pilot gas supply is controlled by a small, manual adjustable valve, together with a pilot governor. The pilot gas should be adjusted to the minimum flow which will reliably ignite and hold in the flame monitoring control. The main gas rate is set by screwing in the main governor spring to increase the rating to the desired value. Once the main gas rate is set the air damper can be adjusted to the appropriate position.
It is not possible to ascertain specific CO₂ and O₂ values, reference to the appliance manufacturer should be made as to whether on ratio or excess air firing is required. However, care should be taken against formation of carbon monoxide and aldehydes.
15. The rating of the burner should be checked by measuring the pressure drop across the main safety shut-off valve (but not across combined governor/shut-off valve) and then by reference to the valve data sheet.
16. The air pressure switch setting should now be increased until the burner shuts down. Note the scale reading and then slacken back the adjustment by 25%.

The unit should now run through several times to confirm that all systems are operating correctly.

HIGH/LOW & MODULATING BURNERS

There are a number of options available on FMP burners for control of burner output.

Gas Only Control

A motorised butterfly valve is fitted after the main safety shut-off valves. With the valve in the fully open position, high fire rate can be set on the main governor. When high fire has been set then the butterfly should be set to low fire and the low fire ratings set by adjustment of the screw which limits the travel of the butterfly valve.

Gas and Air Control (using a proportionator)

Refer to manufacturers data sheet.

Gas and Air Control (using KLER cable link)

Refer to manufacturers data sheet.

MAINTENANCE

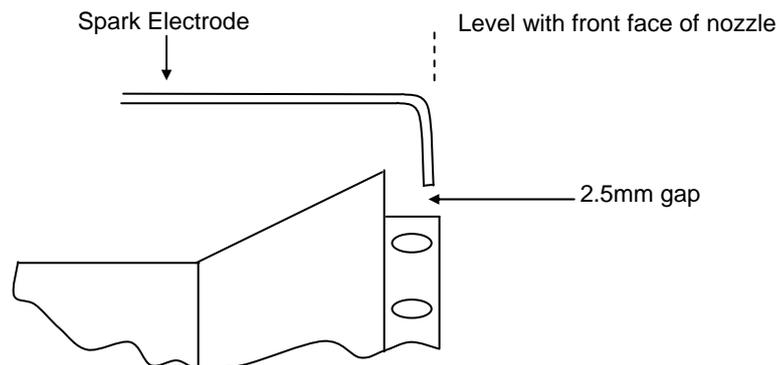
Maintenance must be carried out only by qualified and experienced personnel.

The following procedure should be adopted at six-monthly intervals or every 1000 hours, whichever is the shorter. Local conditions or requirements may require some of this work to be carried out more frequently.

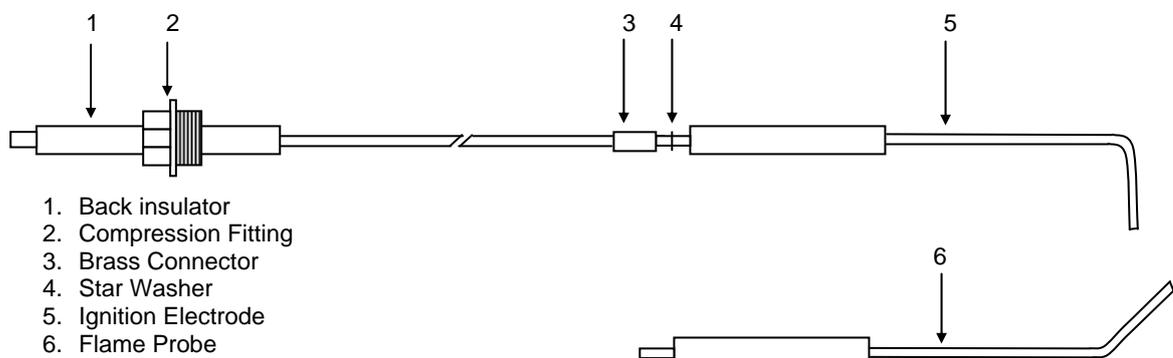
1. Turn off gas and electricity supplies.
2. Clean the burner, in particular the combustion air fan (avoid damaging fan blades).
3. Check the electrodes, make sure they are clean and set correctly, as follows:-

Electrodes

These are pre-bent at the factory and should be set with the inner assembly of the burner removed. Withdraw the assembly by removing four or eight screws in the backplate casting, after disconnecting the gas supply at the burner union. Gap should nominally 2.5mm.



Spark and flame failure electrodes are built up as follows:-



Replacement of end section can be achieved by unscrewing the final bent section with insulation from the front (nozzle end) of the burner.

The compression fittings use a metal olive and it is important that the olive has a slot cut approximately 2mm wide, at an angle of 45°. The compression fitting should not be over-tightened as this may crack the porcelain insulator.

VALVE & PIPEWORK CHECK

Check all gas pipes and electrical connections.

Connect a manometer to the test point between the incoming manual gas cock and the first safety shut-off valve.

Turn the manual gas cock 'On' and then 'Off'. Mains gas pressure is then established between the valves and this pressure will be indicated on the manometer.

Open test nipple between main safety shut-off valves. Any leakage of the gas past the first main or pilot safety shut-off valves, or from a pipe joint will reduce the indicated pressure. If this pressure remains constant over a period of one minute, no leakage is taking place.

Remove manometer, close test nipple and turn on incoming gas valve.

Connect the manometer between the two main safety shut-off valves and turn the burner On.

With the burner firing first turn off the manual valve which is situated after the main safety shut-off valves, and then the pilot manual valve. The burner should lock out. Gas will have been trapped at pressure between the main safety shut-off valves, and this will be indicated on the manometer.

Now open the manual valves. The indicated pressure should remain constant over a period of one minute. If it decreases then the second main valve or the pipework between the valves is leaking.

If any leaks are found they should be investigated and corrected before the burner is used again.

Check all test nipples are fully closed.

Start the burner and check the flame signal as detailed on control box data sheet.

SAFETY CONTROL CHECK

Restrict the air inlet. The burner should lock out under the action of the air pressure switch.

With the burner running, close the manual gas cock. The burner will go to lockout and any alarms (if fitted) should operate. Reset the control box.

On high/low burners, check that the linkage adjustments are tight and operate correctly.

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