

## Supplement 1 - MK 21 Electric Valve

### Section 1

#### 1.0 Introduction

This supplement defines the maintenance and inspection requirements for the Ultramagic MK 21 double burner when fitted with the electric blast valve option. Sections 1 to 5 detail the maintenance procedures and the parts used. Section 6 details the annual / 100 hour inspection and test requirements.

The burner when fitted with the electric blast valve option uses many common components to the standard MK21 burner already detailed in the Maintenance Manual. Only those areas, which are different to the standard burner, are therefore described in this supplement. All other limitations, instructions and safety information contained in the Maintenance Manual remain applicable.

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

For U.S. operations, only the items listed in 14 CFR Part 43, Appendix A may be accomplished as Preventative Maintenance items.

For U.S. operations, maintenance must be performed in accordance with the requirements of 14 CFR Part 43.3 Persons authorized to Perform Maintenance, Preventative Maintenance, Rebuilding, and Alterations.

**For US operations please refer to Unit Conversion Table (Supplement 10), whenever necessary.**

#### 1.1 Applicability

The information contained in this supplement applies to the Ultramagic burner when fitted with the electric blast valve as defined by the following drawing number:

Double Burner: 2022/0000

#### 1.2 Replacement Parts and Procedures

See Maintenance Manual.

#### 1.3 Approved Maintenance and Inspection Personnel

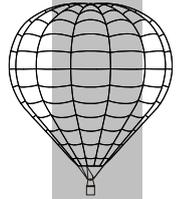
See Maintenance Manual.

#### 1.4 Welding and Welders

See Maintenance Manual.

#### 1.5 Maintenance Records

See Maintenance Manual



## 1.6 Technical Support

See Maintenance Manual.

## 1.7 Safety

The following safety instructions are additional to those already contained in the Maintenance Manual:

- The electric blast valve uses a 12V battery to power the solenoid valves fitted in the burner. This gives the potential to generate electrical sparks capable of igniting propane fuel. Before making or breaking any electrical connection and before carrying out any maintenance work, ensure that the transmitter is switched off and that the burner, transmitter and receiver are removed from any fuel storage areas or any explosive environments.
- When refuelling cylinders, ensure that the receiver unit is switched off and that the transmitter is safely stowed without the risk of inadvertent operation. Do not make or break any electrical connection whilst refuelling.
- Before initiating any maintenance work on the burner, ensure that the burner is fully vented of fuel and that it is disconnected from any fuel supply. Note that it is possible for fuel to remain between the Solenoid Valve and the Isolation valve even when the burner has been vented using the main and liquid valves. To ensure that this fuel is vented, close the Isolation Valves and operate the left and right solenoids using the transmitter buttons.

## Section 2

### 2.0 Airworthiness Limitations

#### 2.1 Approval Statement

This supplement provides the maintenance information for the MK21 burner when fitted with the electric blast valve option, as required by BCAR 31 section 31.82 and FAR 31 section 31.82.

#### 2.2 Mandatory Replacement Time

See Maintenance Manual.

#### 2.3 Inspection Interval

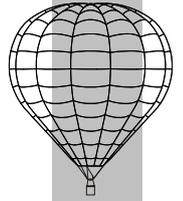
See Maintenance Manual.

Additional inspection requirements for the electric blast valve option are defined in Section 6 of this Supplement.

## Section 3

### 3.0 Technical Description

#### 3.1 General



The MK21 burner when fitted with the electric blast valve is very similar in construction to the standard burner. Many common components and assemblies are used and only those areas different to the standard burner are discussed below.

The equipment consists of the double burner fitted with special valve blocks housing the electrically activated solenoid valves, special main valves, Isolation Valves and electrical wiring and connection. The burner is connected to a receiver box via a wire link. A remote control transmitter is also provided.

The receiver box contains a printed circuit board necessary to process the transmitter signals and a 12V rechargeable lead-acid battery. The battery provides the power necessary to operate the printed circuit board and the solenoid valves.

When the controls on the transmitter are operated and the receiver box is switched on, the receiver box sends a signal to the appropriate solenoid valve (left or right burner or both) and the main valve is caused to open thus firing the burner. The burner configuration may be seen in Figure 1.

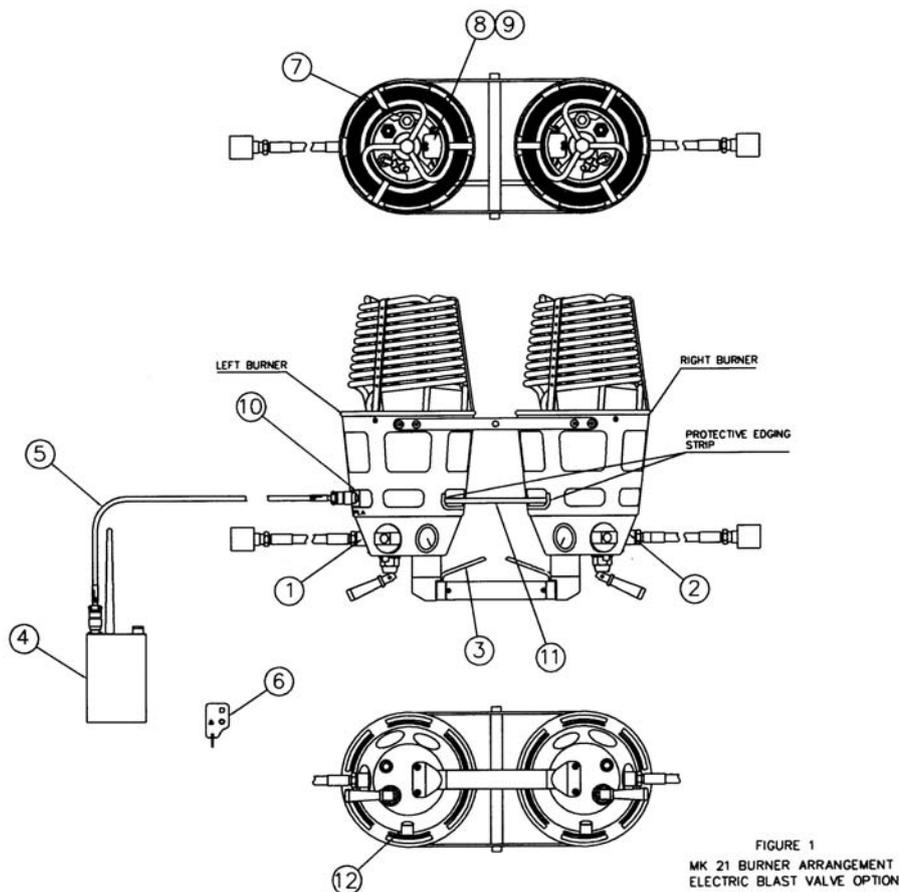
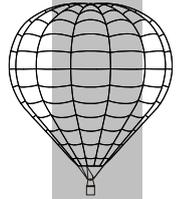


FIGURE 1  
MK 21 BURNER ARRANGEMENT  
ELECTRIC BLAST VALVE OPTION

ITEM	DESCRIPTION	PART NUMBER
1	LH VALVE BLOCK (ELECTRIC VALVE VARIANT)	2022-1725
2	RH VALVE BLOCK (ELECTRIC VALVE VARIANT)	2022-1625
3	FUEL ACTIVATED VALVE ASSY	2022-2100
4	RECEIVER ASSY	2022-2200
5	RECEIVER TO BURNER LOOM ASSY	2022-0003
6	TRANSMITTER	MA-EL-0220
7	SOLENOID VALVE ASSY	2022-1603
8	BARRIER STRIP	
9	BARRIER STRIP HEAT SHIELD	2022-1712
10	CONNECTOR BRACKET ASSY	2022-1704
11	LH BURNER LOOM ASSY	2022-1701
12	ISOLATION VALVE ASSY	2022-2300

### 3.1.1 Valve Bocks



Specially modified valve blocks are fitted to the left and right burners. The blocks are specific to the electric valve option. Thus it is not possible to fit the electric valve operation to the standard burner valve blocks.

The blocks are specially machined to accommodate the solenoid valves, isolation valves, electrical wiring and the special main burner valves.

The valve blocks are machined from solid aluminium and as such are extremely reliable.

### 3.1.2 Fuel Activated Valve Assembly

The Fuel Activated Valve Assembly replaces the main valve fitted in the standard burner. The valve may be operated manually or electrically. Manual operation is similar to that described for the main valve in the Maintenance Manual. The valve differs from the standard valve in several important ways.

The valve is provided with an additional chamber, which is occupied by a large piston integral to the valve stem. When the solenoid valve is energised, a small quantity of fuel is allowed into the chamber forcing the piston to move and causing the valve to open. When the solenoid valve is de-energised, the fuel in the chamber is vented out and the valve closes under spring action.

Fuel enters the main valve via a small port in the valve block adjacent to the main valve. Since it is critical that the ports in the valve and valve block align, the valve is fixed in position using three Allen screws. The valve is sealed to the block using two "O" seals.

### 3.1.3 Isolation Valve Assembly

An Isolation Valve is fitted in the valve block. The valve is positioned in the fuel supply to the solenoid valve and its operation enables or disables the flow of fuel to the solenoid valve. The function of the valve is to provide an additional safety feature by preventing the flow of fuel to the solenoid valve in the event of a solenoid failure.

Fuel enters the valve through a small port in the bottom of the valve body. Rotating the valve knob anticlockwise lifts a seal, allowing the flow of fuel through the valve and to the solenoid valve. Clockwise rotation of the valve knob closes the port and thus prevents the flow of fuel to the solenoid valve.

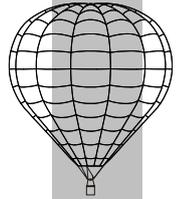
### 3.1.4 Receiver Assembly

The Receiver Assembly consists of a fabricated aluminium box containing a Printed Circuit Board, a 12V rechargeable lead-acid battery, a Circular Bayonet Connector enabling electrical connection to the burner and a Pushbutton ON / OFF Switch. The electrical circuit is fuse protected.

The Printed Circuit Board contains all the electronics necessary to decode the radio signals from the Transmitter and to distribute the electrical signals to the appropriate solenoid valves fitted in the left and right burners.

The battery is fitted in the lower half of the box and is restrained by a clamp. The battery provides all power necessary for the operation of the electronics and the solenoid valves.

A Pushbutton Switch is fitted on the upper surface of the box. The switch is an illuminated two position, latching pushbutton and is used to enable or disable all electrical operation of the equipment. When the switch is ON, the button is illuminated.



A Circular Bayonet Connector is fitted in the upper surface of the box. The connector is fitted with socket contacts and is polarised to prevent incorrect connection of the interconnection cable linking the box to the burner. The connector is provided with solder contacts allowing connection to the battery and to the electronics.

A panel-mount fuse holder is fitted in the upper surface of the Receiver Box. The fuse holder contains a fuse designed to protect the electrical equipment.

### 3.1.5 Receiver to Burner Loom Assembly

The Receiver to Burner Loom Assembly consists of a three-core electrical cable terminated at each end with a circular bayonet connector. The connectors are identified as PLA and SKA. The PL reference indicates that the connector is fitted with male contacts and the SK reference indicates that the connector is fitted with female contacts. The contact style allows connection to the Receiver Assembly and burner only one way round.

The loom is used to electrically link the Receiver Assembly to the burner and carries the power and common return necessary to operate the solenoid valves.

### 3.1.6 Transmitter

A “keyfob” style transmitter is provided to allow the pilot to electrically activate the solenoid valves. The Transmitter emits coded radio signals when the buttons are operated. The buttons are configured to be momentary action i.e. the signal remains active for as long as the button is depressed. The Receiver Assembly detects the signals, processes them and in turn, sends a 12V signal to the appropriate solenoid valve.

A small battery contained in the keyfob body powers the Transmitter.

### 3.1.7 Solenoid Valve Assembly

A 12V three-way Solenoid Valve is fitted to each of the burner valve blocks. When the valve is energised, the solenoid opens allowing the flow of fuel to the Fuel Activated Main Valve causing it to open. When the solenoid valve is de-energised, the inlet to the valve is closed off and the fuel in the Main Valve is allowed to vent out of the exhaust port in the top of the Solenoid Valve.

The Solenoid Valve is fitted in a specially machined port in the upper surface of the valve block. An “O” ring provides the seal between the valve and the block.

### 3.1.8 Barrier Strip

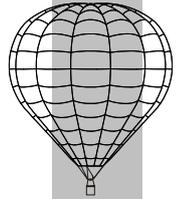
A “Barrier Strip” (so called as it is fitted with small barriers between terminals) is fitted to the upper surface of the valve block. The strip provides the means of electrically terminating the Solenoid Valve.

The strip is fitted with a stainless steel heat shield mounted on stand-offs. The shield provides protection to the strip and termination devices from the heat generated by the burner.

### 3.1.9 Heat Shield

A stainless steel Heat Shield is fitted over the Barrier Strips as described in Section 3.1.7.

### 3.1.10 Connector Bracket Assembly



A Connector Bracket Assembly is fitted in the left-hand burner. The bracket is used to mount the mating circular bayonet connector fitted adjacent to one of the apertures in the burner can.

### 3.1.11 Left Hand Burner Loom Assembly

An electrical loom is fitted to the upper surface of the left-hand valve block. The loom is terminated at one end with the circular bayonet connector and by attachment to the barrier strips in the left and right burners. The loom distributes power and provides a common return to the solenoid valves fitted in the left and right burners.

The left and right burners are linked by passing the loom through the lower apertures in the burner cans.

## Section 4

### 4 Preventative Maintenance

#### 4.1 General

All preventative maintenance is as described for the standard burner in the Maintenance Manual with the following additions:

#### 4.2 Transmitter Battery Power

The Transmitter battery will require replacement from time to time. Note that it is possible to operate the burner manually without the need for electrical functionality and as such, a loss of Transmitter function is not dangerous. However, in order to maintain the equipment in full operational status, it is recommended that the Transmitter battery is changed every one hundred hours flight time or every year whichever is the sooner. In addition, the battery should be changed if it becomes clear that the Transmitter battery power is low. A fading of the red LED fitted in the Transmitter case indicates low battery power.

Battery replacement is covered in Section 5.

#### 4.3 Heat Shield

Every 50 hours flight or six months (whichever is the sooner) check that the heat shields fitted above the barrier strips are in place and that the fixings are secure.

#### 4.4 Wire Joints to Circular Bayonet Connector

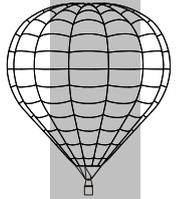
Before each flight, check that the protective sleeve covering the wire joints to the rear of the circular bayonet connector is in place and secure.

#### 4.5 Edging Strip

Before each flight, check that the protective edging strips fitted to the apertures in the burner cans (where the electric loom passes from left to right) are in place and secure.

#### 4.6 Cable Clamps

Every 50 hours flight or six months (whichever is the sooner), check that the saddle clamps at the rear of the circular bayonet connectors fitted on the receiver to burner loom are secure and that the cable is correctly restrained.



## Section 5

### 5 Repair and Maintenance

#### 5.1 General

This section describes the procedures necessary to enable the removal, repair and replacement of the various assemblies used within the burner which are different or additional to those already described in the Maintenance Manual.

Maintenance other than that detailed in the Section 4, (Preventative Maintenance) and Section 6, (Annual / 100 Hour Inspection) should not be carried out unless it is clear that there is a fault or there is a noticeable deterioration in the performance of any part of the burner functions.

Unless otherwise stated, maintenance specified in this section may only be carried out by Ultramagic or by a maintenance organisation approved by the airworthiness authority in the country of registration.

Whenever a part or assembly whose removal breaks the pressure integrity of the burner is removed and replaced, the re-assembled joint(s) must be subjected to a pressure test. Connect the burner to a 7Bar (100-psi) compressed air supply and test the joint using soapy water. If bubbles are detected during the test, there is a leak, which must be rectified before further burner use.

#### 5.2 Fuel Activated Valve Assembly

The Fuel Activated Valve is fitted in the bottom of the valve blocks as shown in Figure 2.

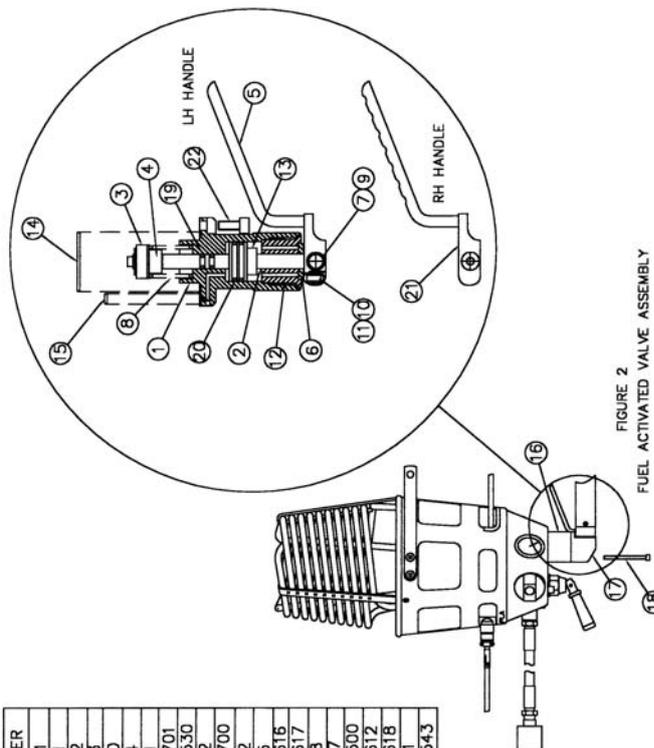
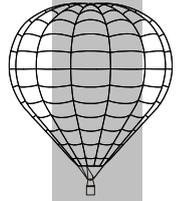
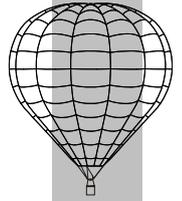


FIGURE 2  
FUEL ACTIVATED VALVE ASSEMBLY

ITEM	DESCRIPTION	PART NUMBER
1	FUEL ACTIVATED VALVE BONNET ASSEMBLY	2022-2101
2	FUEL ACTIVATED VALVE STEM	2022-2111
3	VALVE SEAT ASSY	2022-1102
4	VALVE SEAT SLEEVE	2022-1103
5	LH MAIN VALVE HANDLE ASSY	2022-1210
6	THRUST WASHER	2022-1114
7	PIVOT PIN (MAIN VALVE)	2022-1211
8	ST STL SPRING TYPE D22700	MA-FE-0701
9	#4 STANDARD EXTERNAL CIRCLIP TO DIN 471	MA-FE-0530
10	SPRING CAP	2022-1212
11	ST STL SPRING TYPE 20770	MA-FE-0700
12	FUEL ACTIVATED VALVE BUSH	2022-2112
13	VALVE SEAT SEAL	2022-1115
14	Ø30 ID x 1.5 HIGH NITRILE "O" SEAL	MA-FE-0616
15	Ø3 ID x 1.5 HIGH NITRILE "O" SEAL	MA-FE-0617
16	FUEL ACTIVATED VALVE POST SPACER	2022-1618
17	HYDRAULIC VALVE POST	2022-2017
18	M6 X 70 ST STL CAP HEAD SCREW	MA-FE-0500
19	Ø4 ID x 2 HIGH NITRILE "O" SEAL	MA-FE-0612
20	Ø18 ID x 2 HIGH NITRILE "O" SEAL	MA-FE-0618
21	RH VALVE MAIN VALVE HANDLE ASSY	2022-1401
22	M5 X 12 ST STL CAP HEAD SCREW	MA-FE-0543

To remove and strip down the Fuel Activated Valve, refer to Figure 2 and proceed as follows:

- Using a 5mm Allen key, undo and remove all the cap head screws (item 18) securing the valve post item 17 and the valve post spacer item 16 and burner handle to the valve block. Withdraw the handle and valve posts as a complete assembly.
- Using a 4mm Allen key, undo and remove the three cap head screws (item 22) securing the valve to the valve block.
- Carefully remove the two "O" Seals items 14 and 15 from the mating face of the valve. Do not use sharp or hard instruments to achieve this as this could result in damage to the sealing faces.
- The valve may now be stripped down for further maintenance if required. Using a pair of external crclip pliers, remove the circlip item 9 from the pivot pin item 7.
- Withdraw the Pivot Pin item 7 from the Handle Assembly item 5. Remove the handle. When removing the handle, take care to ensure that the spring item 11 and spring cap item 10 do not spring out of the recess in the valve handle cam.
- Remove the Thrust Washer item 6.
- Unscrew and remove the Valve Bush item 12 from the Valve Bonnet



- Compress the spring item 8 and remove the valve seat assembly item 3 and the valve seat sleeve item 4 from the valve stem.
- Remove the main spring item 8 from the valve stem.
- Remove the nylon thrust washer item 6 from the recess in the valve bonnet item 1.
- Withdraw the Valve Stem item 2 from the Valve Bonnet
- Check the inside of the valve bonnet bore for signs of scratching. If any scratches are noted, then the valve bonnet must be replaced.
- Check the two “O” seal grooves in the mating face of the valve bonnet. If any scratches are noted, the valve bonnet must be replaced. Check the condition of the “O” seals fitted in the grooves. If either of the seals show signs of deterioration or damage, they must be replaced.
- Check the rubber seal in the valve seat for signs of damage or shrinkage. A small circular witness mark on the seal surface is normal and indicates the position of contact between the seal and the valve block. If the seal is damaged or shows signs of shrinkage, it must be replaced. For safety, the seal is supplied as a complete assembly and no attempt should be made to replace the seal only.
- Check the valve stem for signs of scratches or damage. If the stem is scratched or damaged, it must be replaced. Check the condition of the “O” seals fitted to the stem. If any of the seals show signs of deterioration or damage, they must be replaced.
- Re-assembly of the valve is the reverse procedure of disassembly. Prior to re-assembly, apply a thin smear of silicon grease to the valve bore and to the valve stem seals. Always fit a new circlip item 9.
- After re-assembly of the valve into the block, the gap between the nylon thrust washer item 6 and the valve handle must be checked. A gap of between 0.25mm and 0.5 mm must be present. This gap may be achieved by selecting the correct thrust washer thickness. A range of thrust washers in different thicknesses may be obtained from Ultramagic. Failure to set this gap may result in a failure of the valve to switch off the main burner after operation.

When the valve has been re-assembled into the valve block, the valve to block joint and the position where the valve stem exits the valve body must be pressure tested. To achieve this, connect the burner to a 7 Bar (100 psi) air supply and check the joints using soapy water. If any bubbles are detected, then the problem must be rectified before further burner use.

### 5.3 Receiver Assembly

Due to the complex nature of the Receiver Assembly and the specialist knowledge required to service the electronics, maintenance is limited to the replacement of the battery and fuse. For all other maintenance and repair, the Receiver Assembly must be returned to the Ultramagic factory.

The Receiver Assembly is shown in Figure 3.

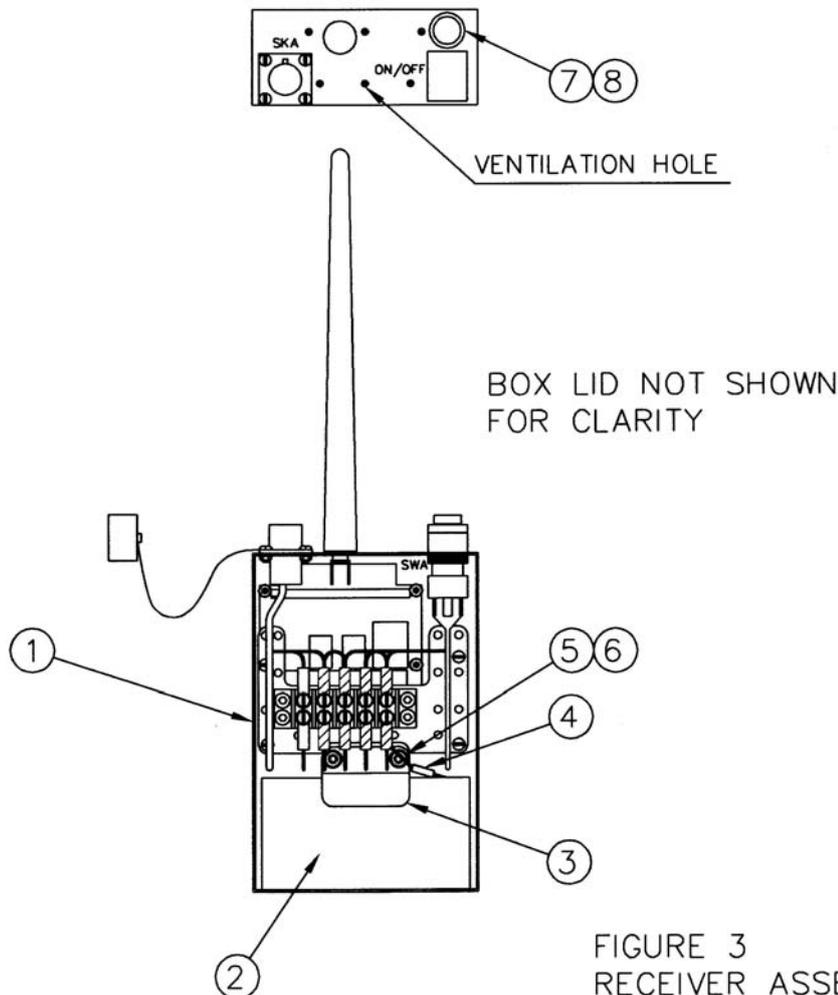
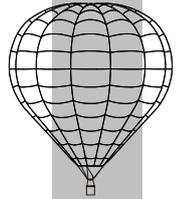


FIGURE 3  
RECEIVER ASSEMBLY

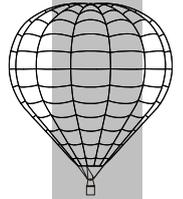
ITEM	DESCRIPTION	PART NUMBER
1	RECEIVER BOX DETAIL	2022-2210
2	12V RECHARGEABLE BATTERY	MA-EL-0260
3	BATTERY CLAMP ASSY	2022-2201
4	PUSH-ON CONNECTOR	
5	M4 X 8 ST STL PAN HEAD SCREW	MA-FE-0540
6	M4 ST STL CRINKLE WASHER	MA-FE-0542
7	FUSEHOLDER	
8	ø5 X 20, 2A FUSE	MA-EL-0270

To replace the battery, refer to Figure 3 and proceed as follows:

- Ensure that the ON / OFF switch is in the OFF position.
- Undo and remove the fixings in the side of the box lid securing the lid to the box chassis.
- Carefully disconnect the red and blue push-on terminals, item 4, from the battery. Ensure that the terminals are restrained and unable to make contact with the battery terminals.
- Using a flat bladed screwdriver, undo and remove the fixings (items 5 and 6) securing the battery clamp item 3. Remove the battery clamp.
- Carefully withdraw the battery.

Battery replacement is the reverse procedure of removal. However, when reconnecting the push-on terminals item 4, ensure that the red terminal is fitted to the battery positive (+) and that the

blue terminal is connected to the battery negative (-). Incorrect connection may cause significant damage to the Receiver Assembly.



To replace the fuse, refer to Figure 3 and proceed as follows:

Unscrew the cover on the Fuseholder and withdraw the fuse. Replace the fuse and cover.

#### 5.4 Receiver to Burner Loom Assembly

Due to the specialist nature involved in the manufacture of the loom, there are no maintainable items in the loom. All maintenance and repair must be carried out at the Ultramagic factory. However, the loom may be checked for electrical continuity using a resistance meter. If there is a loss of continuity between any of the contacts listed below, the loom must be replaced. Electrical continuity must exist between the following contacts:

PLA/A	SKA/A
PLA/B	SKA/B
PLA/C	SKA/C

#### 5.5 Transmitter

Maintenance of the Transmitter is limited to battery replacement. To replace the battery, undo and remove the two screws on the rear of the case using a Philips screwdriver. Remove and replace the battery ensuring that the correct polarity is maintained. The battery type is a GP23A (Ultramagic Part Number MA-EL-0230). Replace the two screws.

Replacement transmitters are available. However, in order to use a new transmitter, the Receiver Box must be re-set to accept the new transmitter code. This operation may only be performed by Ultramagic or by organisations approved by Ultramagic.

#### 5.6 Solenoid Valve Assembly

Solenoid Valve Assemblies are fitted to the upper surface of each valve block as shown in Figure 4.

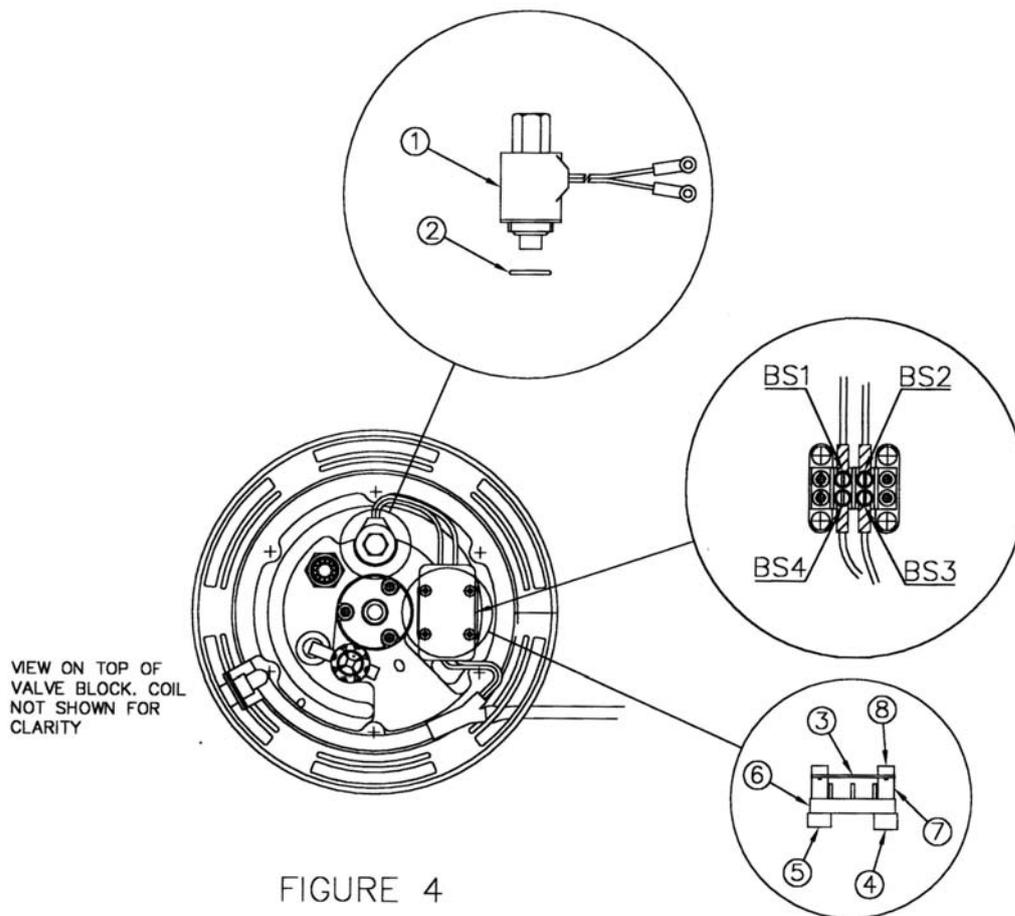
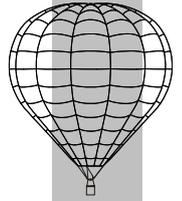
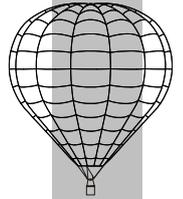


FIGURE 4  
SOLENOID VALVE ASSEMBLY

ITEM	DESCRIPTION	PART NUMBER
1	SOLENOID VALVE ASSEMBLY	2022-1603
2	SOLENOID VALVE "O" SEAL	MA-FE-0619
3	BARRIER STRIP HEAT SHIELD	2022-1712
4	BARRIER STRIP SPACER (OUTER)	2022-1714
5	BARRIER STRIP SPACER (INNER)	2022-1713
6	2-WAY BARRIER STRIP	MA-EL-0250
7	HEAT SHIELD SPACER	2022-1715
8	M4 X 5 ST STL CAP HEAD SCREW	MA-FE-0539

To remove the Solenoid Valve Assembly, refer to Figure 4 and proceed as follows:

- Using a 3mm AF Allen key and a 6mm AF open ended spanner, undo and remove the four cap head screws (item 8) securing the heat shield (item 3). Remove the heat shield.
- Undo and remove the two screws BS1 and BS2 from the Barrier Strip. Lift the Solenoid Valve wires clear from the Barrier Strip.
- Locate the screwdriver slot inside the tall hexagon nut on top of the solenoid valve. Using a flat bladed screwdriver, undo and remove the Solenoid Valve Assembly (item1). Take care when removing the valve, as the plunger and spring will be loose inside.
- Carefully withdraw the "O" seal (item 2) from the bore in the valve block. Check the condition of the "O" seal. If the seal shows signs of deterioration or damage, it must be replaced.



WIRE REF	DESTINATION
L1 RT1	BS4
L1 RT2	BS3
L1 RT3	BS3
SV RT1	BS2
SV RT2	BS1

LEFT BURNER

WIRE REF	DESTINATION
L1 RT5	BS3
L1 RT4	BS4
SV RT2	BS2
SV RT1	BS1

RIGHT BURNER

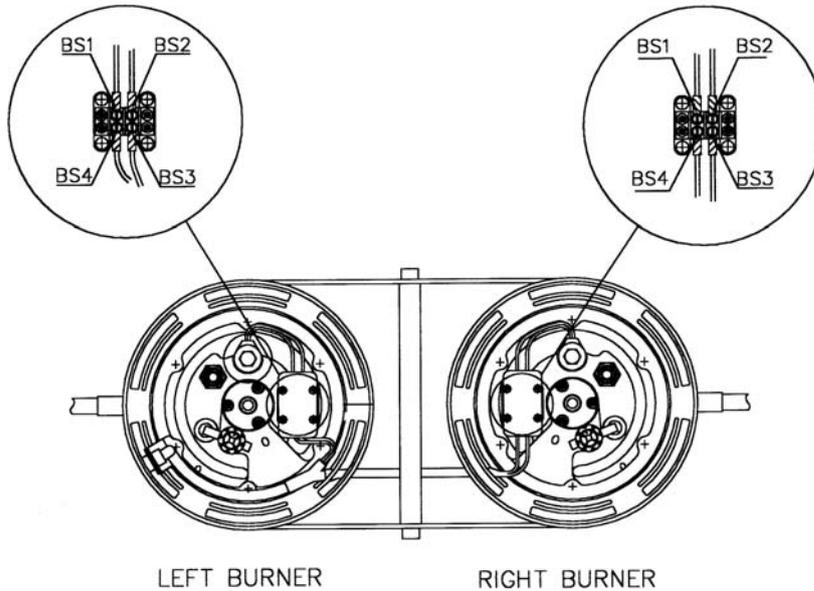


FIGURE 5  
WIRE CONNECTIONS

Replacement of the Solenoid Valve Assembly is the reverse procedure of removal. **Note: Do not use a spanner to tighten the solenoid valve in position. Use only the screwdriver.** Make sure that the plunger, spring and "O" seal are in position. Ensure that the wires are re-connected to the Barrier Strip as shown in Figure 4.

If a new Solenoid Valve Assembly is to be fitted, it may be necessary to re-align the wire outlet from the solenoid body. To achieve this, loosen the nut at the top of the solenoid body. Rotate the body to the required position and re-tighten the nut. Do not over-tighten.

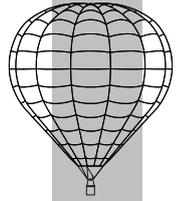
### 5.7 Barrier Strip

To remove the Barrier Strip, refer to Figure 4 and proceed as follows:

- Remove the Heat Shield as described in Section 5.6.
- Undo and remove the four screws BS1, BS2, BS3 and BS4 from the Barrier Strip. Lift all wires clear from the Barrier Strip.
- Using a 6mm AF open-ended spanner, undo and remove the four Heat Shield Spacers (item 7).
- The Barrier Strip may now be removed.

Replacement is the reverse procedure of removal. Ensure all screw threads are locked using Loctite 222.

When re-connecting the wires to the Barrier Strip, ensure that the connections are made in accordance with Figure 5.



### 5.8 Heat Shield

Removal and replacement of the Heat Shield is described in Section 5.6.

### 5.9 Connector Bracket

The Connector Bracket is mounted in the left burner as shown in Figure 6.

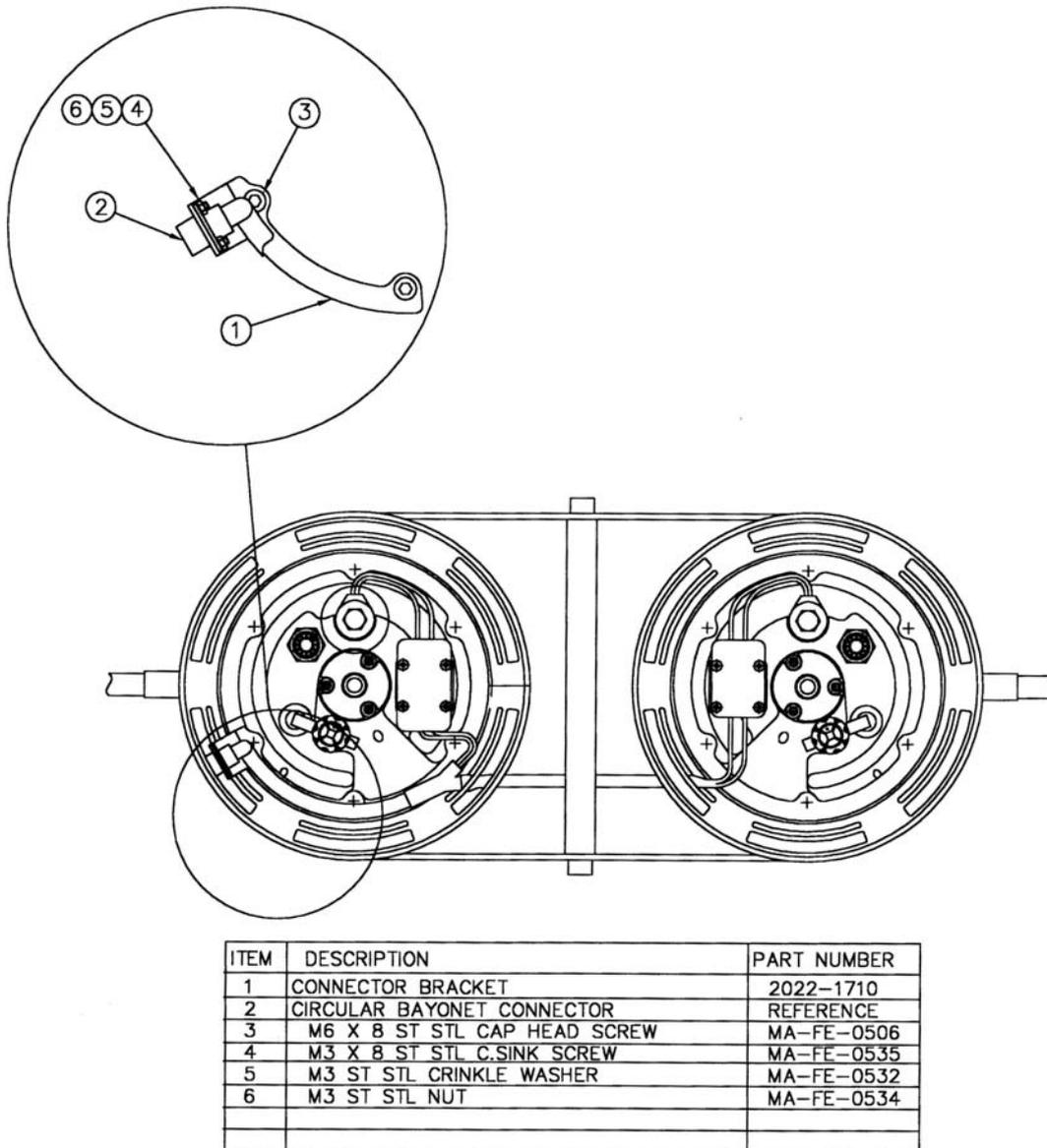
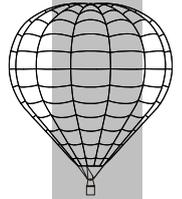


FIGURE 6  
CONNECTOR BRACKET ASSEMBLY

To remove the Connector Bracket Assembly, refer to Figure 6 and proceed as follows:



- Using a flat bladed screwdriver and a 5.5 mm AF open ended spanner, undo and remove the four countersink screws (item 4) securing the circular bayonet connector (item 2) to the bracket.
- Carefully withdraw the connector from the bracket.
- Undo and remove the two cap head fixings (item 3).
- Remove the Connector bracket Assembly.

Replacement of the bracket is the reverse procedure of removal.

#### 5.10 Left Hand Burner Loom Assembly

The Left Hand Burner Loom Assembly is secured in the left-hand burner but crosses from the left burner to the right burner. There are no maintainable items in the loom and repair is by replacement only. However, the loom may be checked for electrical continuity using a resistance meter. If there is no continuity between any of the contacts listed below, the loom must be replaced. Continuity may be tested in the burner by accessing the circular connector contacts and the contacts fitted to the Barrier Strips. Refer to Figure 5 and check the electrical continuity between the following terminals:

Circular Connector PLA/A	LH Burner BS4
Circular Connector PLA/B	LH Burner BS3
Circular Connector PLA/C	RH Burner BS3
LH Burner BS3	RH Burner BS4

To remove the loom, refer to Figures 5 and 6 and proceed as follows:

- Remove all loom connections to the Barrier Strips as described in section 5.7. Note that it is not necessary to remove the wires connected to the Solenoid Valves.
- Remove the four fixings securing the Circular Bayonet Connector to the Connector Bracket Assembly as described in section 5.9.
- Release the loom from all restraint fixings.
- Carefully withdraw the loom from the burner.

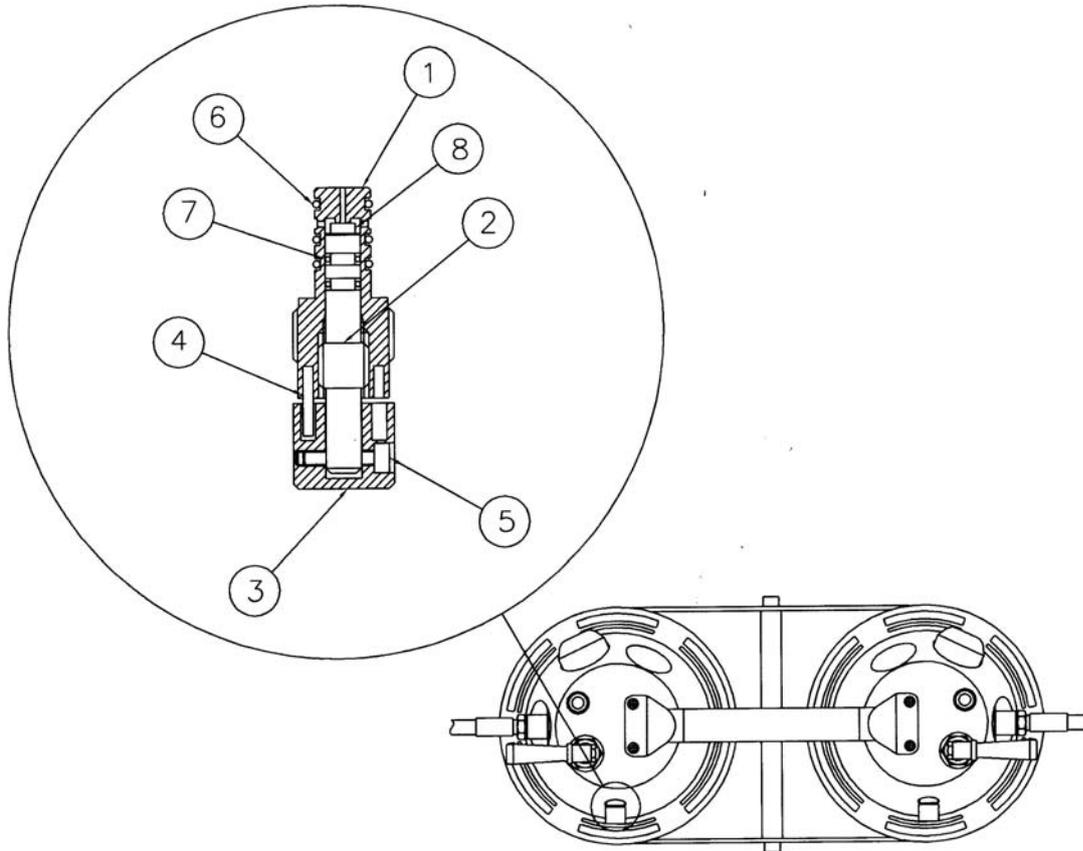
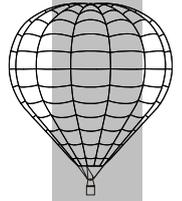
Replacement is the reverse procedure of removal. After replacement, check for electrical continuity as described above. Fully assemble the equipment and test fire the burner checking for correct electrical operation of the burner using the transmitter.

#### 5.11 Isolation Valve Assembly

An Isolation Valve Assembly is fitted in the side of each valve block. The valve is used to enable or disable the flow of fuel to the solenoid valves.

**Note: It is possible that a small quantity of fuel under pressure may remain between the Isolation Valve and the Solenoid Valve even when the burner has been manually vented using the main or liquid valves. To ensure that burner is completely vented, disconnect from the fuel supply, open the Isolation Valve and vent off using the main or liquid valves in the usual manner.**

To remove and strip down the Isolation Valve, refer to Figure 7 and proceed as follows:



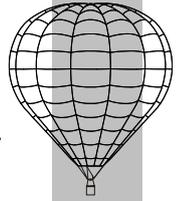
ITEM	DESCRIPTION	PART NUMBER
1	ISOLATION VALVE BODY	2022-2310
2	ISOLATION VALVE STEM	2020-2311
3	ISOLATION VALVE KNOB	2020-2312
4	#2 X 14 ST STL ROLL PIN	MA-FE-0802
5	M3 X 14 ST STL CAP HEAD SCREW	MA-FE-0533
6	#8 ID X 1.5 THICK HIGH NITRILE O SEAL	MA-FE-0616
7	#4 ID X 1.5 THICK HIGH NITRILE O SEAL	MA-FE-0617
8	ISOLATION VALVE SEAT SEAL	2022-2313

FIGURE 7  
ISOLATION VALVE ASSEMBLY

- Fully vent the burner (see above).
- Using a 2.5mm AF Allen key, undo and remove the cap head screw (item 5) from the side of the knob (item 3). Remove the knob.
- Using Ultramagic tool MA-TO-0003, undo and remove the valve body (item 1) from the valve block.
- Unscrew and remove the valve stem item 2 from the valve body.
- Check the inside of the valve body bore and the valve stem for signs of scratching. If any scratches are detected, the part must be replaced.
- Check the condition of the "o" seals on the outside of the valve body and the valve stem. If the seals show any signs of deterioration, they must be replaced.

Re-assembly is generally the reverse process of disassembly. However, the following additional steps must be incorporated:

- When fitting the stem inside the body, apply a thin smear of silicone grease to the inside of the body bore and to the stem seals.
- Prior to assembling the stem into the body, ensure that the seat seal (item 8) is in position.
- Apply silicone grease to the body seals prior to inserting the body into the valve block.
- Apply Loctite 222 to the body thread prior to screwing into the valve block.
- Tighten the body to a torque of ???Nm.



- When fitting the knob, make sure that the knob is positioned relative to the stem such that a complete turn of the knob is possible from the fully off to the fully on position.

Having re-assembled the valve into the valve block, the valve must be pressure tested. Attach a 7 bar air line to the valve block. Open the valve. Using soapy water, check the joints between the valve body and the valve block and the valve stem and valve body.

In addition to the pressure test, the valve function must be checked. To check the valve function, proceed as follows:

- Close the isolation valve. It is important to do this before the air line is attached.
- Attach a 7 bar air line to the valve block.
- Using the electrical system, operate the appropriate pushbutton on the transmitter to activate the solenoid valve. The main valve should not open.
- Open the Isolation Valve.
- Operate the transmitter pushbutton. The main valve should now open.

If the valve fails to function as described above, it must be removed and the problem rectified.

## Section 6

### 6.0 Annual / 100 Hour Inspection Requirements

#### 6.1 General

The burner must be subjected to an inspection by an inspector approved by the national airworthiness authority in the state of registration. The inspection must be carried out every 12 months or 100 hours use, whichever is the sooner.

**The inspection requirements detailed below are additional to those already specified in the Maintenance Manual.**

#### 6.2 Pre-functional Checks

##### 6.2.1 General

- Carry out all non-functional checks detailed in the Maintenance Manual
- Carry out all non-functional checks detailed in Section 4 (Preventative Maintenance) of this supplement.
- Open the Receiver Box and visually check that all wiring is secure and that the battery is securely clamped in position.

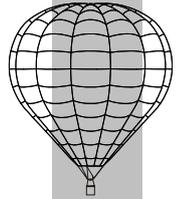
#### 6.3 Functional Test

Carry out all functional tests as specified in the Maintenance Manual.

##### 6.3.1 Electrical Main Burner Function

Fully assemble the burner and connect the burner to a suitable fuel supply. Operate the left main burner using the transmitter button. Check for a good flame. Check that the ignition is immediate upon operating the button. Check that the flame is quickly extinguished upon releasing the button.

Repeat this test for the right main burner and for both burners.



### 6.3.2 Isolation Valve Function.

Check that when the left Isolation Valve is in the off position, the function of the associated solenoid valve is disabled. Open the valve and check that the function of the appropriate solenoid valve is enabled.

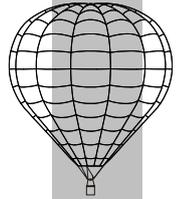
Repeat this test for the right Isolation Valve

### 6.4 Pressure Test

Carry out all pressure tests as specified in the Maintenance Manual.

In addition, check the following joints:

- The joint between the Fuel Activated Main Valves and the valve blocks.
- The point where the valve stem exits the fuel Activated Main Valve bonnet
- The joints between the Solenoid Valve Assemblies and the valve blocks.
- The Solenoid Valve Assembly exhaust ports.
- The joint between the Isolation Valve body and the valve block.
- The joint between the Isolation Valve body and the stem.

**APPENDIX 1**

## Annual / 100 Hour Burner Inspection Checklist

REQUIREMENT	REFERENCE	OKAY	COMMENTS
Non-functional checks in Maintenance Manual	4.1		
Transmitter battery	4.2		
Heat Shield	4.3		
Wire joints to circular connector	4.4		
Edging Strip	4.5		
Cable Clamps	4.6		
Receiver Box visual	6.2.1		
Functional tests specified in Maintenance manual	6.3		
Electrical Main Burner function	6.3.1		
Isolation Valve function	6.3.2		
Pressure tests specified in Maintenance Manual	6.4		
Fuel Activated Valve to Valve Block	6.4		
Fuel Activated Valve Stem	6.4		
Solenoid Valves to Valve Blocks	6.4		
Solenoid Valve exhaust ports	6.4		
Isolation Valve body to valve block	6.4		
Isolation Valve body to stem.	6.4		

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