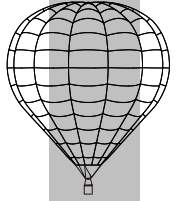


**Supplement 6 - MK 21 Burner Cruise Control Option****Section 1****1.0 Introduction**

This supplement defines the maintenance and inspection requirements for the Ultramagic MK 21 burner when fitted with the Cruise Control 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 Cruise Control 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 US 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 Cruise Control as defined by the following drawing numbers:

Single Burner:	2021/0000
Double Burner:	2022/0000
Triple Burner:	2023/0000
Quad Burner:	2024/0000
Cruise Control Assembly:	2022/2400

**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:

- 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.

## Section 2

### 2.0 Airworthiness Limitations

#### 2.1 Approval Statement

This supplement provides the maintenance information for the MK21 burner when fitted with the Cruise Control option, as required by EASA CS 31 HB.82 and FAR 31 section 31.82.

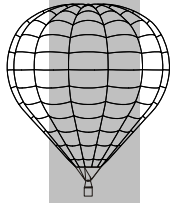
#### 2.2 Mandatory Replacement Time

See Maintenance Manual.

#### 2.3 Inspection Interval

See Maintenance Manual.

Additional inspection requirements for the Cruise Control option are defined in Section 6 of this Supplement.



## Section 3

### 3.0 Technical Description

#### 3.1 General

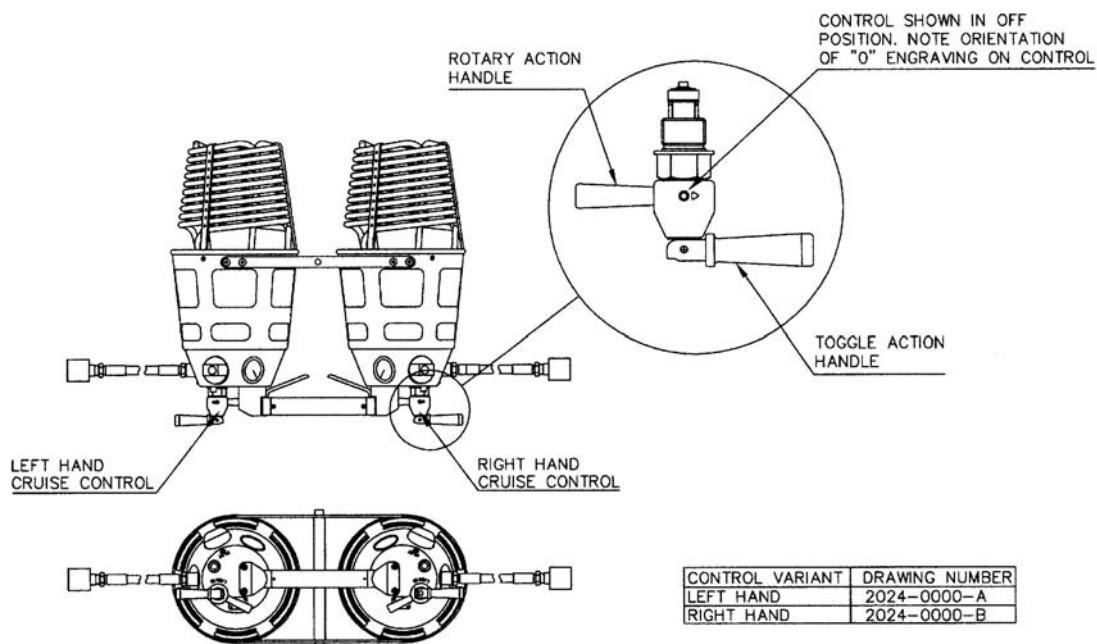
The MK21 burner when fitted with the Cruise Control is very similar in construction to the standard burner. Many common components and assemblies are used and only those areas different to the standard burner are discussed below.

The Cruise Control may be fitted to the Single, Double, Triple and Quad variants of the MK 21 burner. It may replace one or more of the existing Liquid Fire Valve Assemblies. Installation of the Cruise Control does not require any further modification to the burner other than replacing the existing Liquid Fire Valve Assembly with the Cruise Control Assembly.

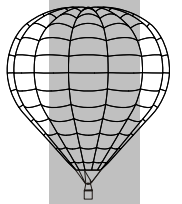
The Cruise Control incorporates a toggle action handle and a rotary action handle into the same assembly. Use of the toggle handle allows control of the Liquid Fire burner in the normal fashion. Use of the rotary action handle allows the Liquid Burner to be activated with a greater degree of control over the power output and "hands-free" operation.

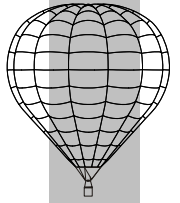
The control may be fitted in the left and right hand burners. Note however that due to the opposite direction of control rotation, the controls are supplied in left and right-handed variants.

The Cruise Control may be seen in Figure 1.



**Figure 1**  
**Cruise Control Installation**





## 4 Preventative Maintenance

### 4.1 General

All preventative maintenance is as described for the standard MK 21 Burner in the Maintenance Manual.

## 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 and components used within the construction of the Cruise Control.

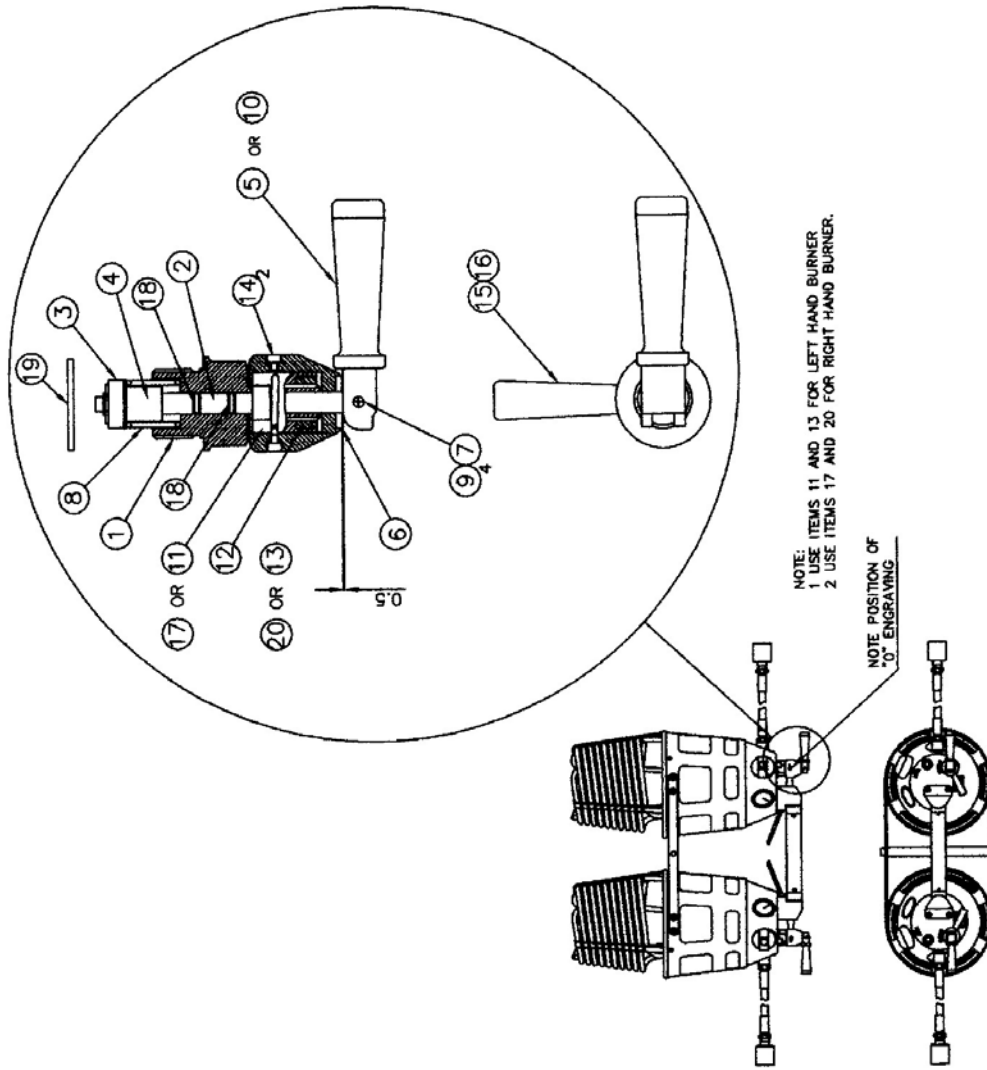
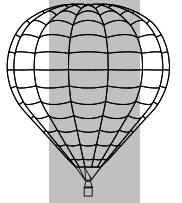
Maintenance other than that detailed in the Section 4, (Preventative Maintenance) and Section 6, (Annual / 100 Hour Inspection) should not be carried out unless it is clear that there is a fault or there is a noticeable deterioration in the performance of any part of the burner functions.

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 Cruise Control Assembly

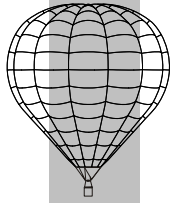
The Cruise Control is fitted directly in the Valve Block Assembly and directly replaces the standard Liquid Fire Valve Assembly. The Cruise Control Assembly may be seen in Figure 2.



ITEM	DESCRIPTION	PART NUMBER
1	VALVE BONNET (CRUISE CONTROL)	2022-2410
2	VALVE STEM (CRUISE CONTROL)	2022-2411
3	VALVE SEAT ASSY	2022-1102
4	VALVE SEAT SLEEVE	2022-1113
5	LIQUID VALVE HANDLE	2022-1116
6	THRUST WASHER	2022-1114
7	PIVOT PIN	2022-1117
8	STAINLESS STEEL SPRING TYPE D22700	MA-FE-0701
9	M2.5 x 3 ST STL FLAT POINT GRUB SCREW	MA-FE-0503
10	LIQUID VALVE HANDLE (DEAD MAN'S)	2022-1119
11	CAM (LEFT HAND)	2022-2412
12	LOCK NUT	2022-2414
13	CAM FOLLOWER (LEFT HAND)	2022-2413
14	MODIFIED SCREW	2022-2415
15	HANDLE LEVER	2025-0610
16	M6 X 45 ST STL CAP HEAD SCREW	CR-08-0010
17	CAM (RIGHT HAND)	2022-2416
18	4 ID X 2 THICK HIGH NITRILE O <sup>2</sup> SEAL TYPE 204-004-5575	MA-FE-0612
19	3/4" BSP HIGH NITRIL BONDED WASHER TYPE 400-027-5590-41	MA-FE-0603
20	CAM FOLLOWER (RIGHT HAND)	2022-2417

Figure 2. Cruise Control Assembly

To remove and strip down the Cruise Control Assembly, refer to Figure 2 and proceed as follows:



- Before removing the Cruise Control Assembly, make a note of the position of the rotary handle relative to the valve block when the handle is in the off position.
- Using a 28mm AF open-ended spanner, undo and remove the Cruise Control Assembly from the Valve Block.
- Using a 2mm AF Allen key, undo, and remove the two locking Allen screws (Item 9) situated in the underside of the Liquid Valve Handle Item 5. Loosen and retract the next two grub screws. Withdraw the Pivot Pin Item 7.
- Remove the Thrust Washer Item 6.
- Using a 2.5mm AF Allen key, undo and retract (but do not remove) the two Modified Screws, Item 14. Withdraw the Cam Follower Item 13.
- Using a 19mm open-ended spanner and a pair of external circlip pliers, loosen the Lock Nut item 12 from the Cam Item 11. Remove the Lock Nut and the Cam.
- Withdraw the Valve Seat, Valve Seat Sleeve, Spring and Valve Stem as a complete assembly by extracting it from the front of the Valve Bonnet.
- Remove the Spring Item 8.
- Withdraw the Valve Seat Sleeve Item 4.
- Remove the Valve Stem (Item 2) from the Valve Seat Assembly (Item 3).
- 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 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.
- Check the condition of the Bonded Washer item 19. Replace if necessary.
- Re-assembly of the valve is generally 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. Prior to replacing the Cam Follower, apply graphite grease to the tracks in the Cam.
- Note that the valves are handed. When re-assembling the left hand valve, ensure that the left hand Cam and Cam Follower are used. When re-assembling the right hand valve, ensure that the right hand Cam and Cam Follower are used.
- Note that when replacing the assembly in the valve block it will be necessary to set the position of the cam such that the rotary handle is positioned as shown in Figure 2. The position of the tracks in the Cam side, govern the final handle position. To set the Cam position, screw in the complete assembly excluding the Cam, Cam Follower and Liquid Valve Handle.
- Screw the Cam into position on the Valve Bonnet. Set the position of the tracks so that the Handle Lever will be positioned as in Figure 2. Hold the Cam in position and screw the Lock Nut onto the Valve Bonnet. Using the



19mm open-ended spanner and the circlip pliers, tighten the Cam and Lock Nut together. This will cause the Cam to become locked in position on the Valve Bonnet.

- Replace the Cam Follower and tighten the two Modified Screws Item 14.
- Note that the assembly is designed to operate correctly when the gap between the Liquid Valve Handle and the Thrust Washer is 0.5mm. Set this gap by selecting the required thickness of Thrust Washer. Thrust Washers of different thickness are available 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 Cruise Control Assembly has been re-assembled into the valve block, the valve to block joint and the position where the valve stem exits the valve bonnet 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.

## Section 6

### 6.0 Annual / 100 Hour Inspection Requirements

#### 6.1 General

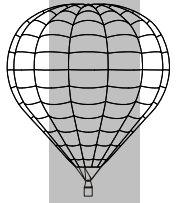
The burner must be subjected to an inspection by an inspector approved by the national airworthiness authority in the state of registration. The inspection must be carried out every 12 months or 100 hours use, whichever is the sooner.

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

#### 6.2 Functional Test

Carry out all functional tests as specified in the Maintenance Manual. In addition, check the following:

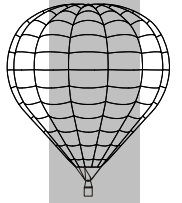
- Check the function of the rotary handle. Ensure that the handle is free to rotate fully in both directions and that rotation fires and turns off the Liquid Fire Burner correctly.
- Check the toggle handle function and that it fires and turns off the Liquid Fire Burner Correctly.



**APPENDIX 1****Cruise Control**

Annual / 100 Hour Burner Inspection Checklist

REQUIREMENT	REFERENC E	OKAY	COMMENTS
<u>Rotary Handle Function</u>	6.2		
Toggle Handle Function	6.2		



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