



ABN 68 547 176 720

***COOL BREEZE***

# **TECHNICAL MANUAL**

## **BOOK 3**

**2008 Edition**

**AIR GROUP AUSTRALIA MANUFACTURED UNITS ONLY**

**SERVICE GROUP AUSTRALIA  
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# INTRODUCTION

This document is designed as a guide only, and does not cover all possible faults that may occur. It is intended for use by technicians and trades people with fault finding skills and relevant qualifications. Its aim is to help identify failed components and assist in diagnosis of system faults. The guide has been set out in logical order, from the basic to the more complex faults. All faults should be approached in this order and all instructions followed to avoid incorrect fault identification and/or part replacement. It should be noted that all information provided in this guide is based on current designs. Variations to these designs will be encountered on earlier models, since modifications have occurred to the product.

## ABBREVIATIONS

<b>V</b>	Volt
<b>W</b>	Watt
<b>DC</b>	Direct Current
<b>AC</b>	Alternating Current
<b>R/Control</b>	Remote Control
<b>mm</b>	Millimetres
<b>KDU</b>	Keypad Display Unit
<b>R/U</b>	Roof Unit
<b>cct</b>	Circuit
<b>LED</b>	Light Emitting Diode
<b>MWL</b>	Magnetic Water Level System

# SAFETY NOTES

## Electrical & Rotary Machinery

- All electrical equipment should be isolated before work is performed. If 'live testing' is required all necessary safety precautions should be followed.

## Working at Heights

- When work is to be performed at heights all necessary safety precautions should be followed.

# INSTALLATION NOTES

## Motor & Fan

- A fan clipping two opposite points of the cowling indicates the dropper is 'out of square'. Diagonal dimensions of dropper must be equal, +/-5mm.
- Centralise the fan in the cowling by tightening the nearest 8mm motor mounting nut to the point of contact. This will only achieve several millimetres of movement due to fan and cowling tolerances.
- When replacing a Roof Unit circuit board or fan motor a 'minimum speed set-up' (see page 10 for details) should be performed to avoid damaging motors by operating below specified minimum RPM values.
- Fan blade pitch should not be altered from factory setting as significant changes in motor loading, airflow and noise characteristics will result.

## Plumbing

- Non-return type valves are **not required** as isolation valves in water supply. Back flow is not possible due to physical air gap created by water inlet design. Using a non-return type valve may result in a pressure lock between it and the solenoid valve due to water hammer or water expansion from heat.
- In installations where copper water supply piping is connected directly to water inlet solenoid elbow a slight 'humming' or 'buzzing' may be heard. This can be eliminated by connecting a length of flexible water pipe, immediately before the solenoid elbow.
- Drainage pipe size, position and discharge location must all conform to local regulations

## Electrical

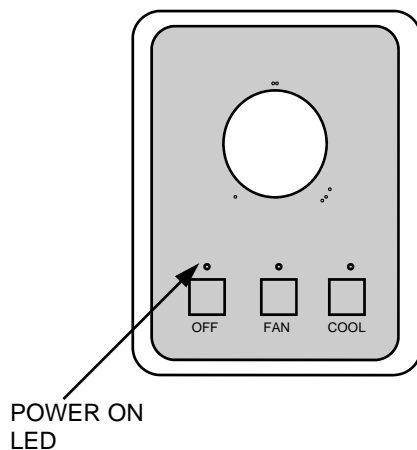
- All units should be powered from a dedicated circuit protected by a 10A or 15A re-wireable fuse or circuit breaker, (Ref: AS3000, 2.4.2). A GPO or socket outlet is not required and therefore RCD protection is not required. Flexible wiring can be joined to fixed wiring in a junction box, (Ref: AS3000, 3.7.2.7). Supplying a unit from an existing RCD protected power circuit may result in nuisance tripping of that device due to the sum of leakage current from all appliances on that circuit.
- Damage to equipment can occur if power is not isolated when connecting or disconnecting keypads, or appliances from Roof Units or MCU's.

## **“R” SERIES CONTROLLER**

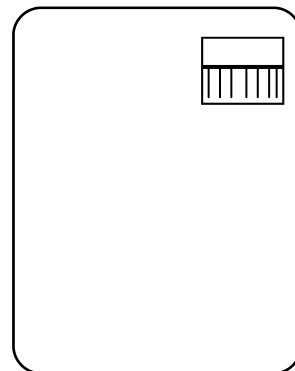
**2002 - 2005**

<b>Wall Control :</b>	“R” Series (SP3504)
<b>Roof Unit:</b>	CFRU Roof Unit (SP3510) backward compatible (Early version fitted with EC Roof Unit and Connector PCB)
<b>Control Cable:</b>	7-Pin Pre-terminated (SP5200)
<b>Fan Motor:</b>	600 W, 750 W, 1000 W
<b>Drainage:</b>	Bleed off (SP2082), Hydraulic (SP2064) or Counterweight Drain Value (SP2040)
<b>Pump:</b>	240 V Pump
<b>Solenoid:</b>	24 V Solenoid
<b>Modes of Operation:</b>	FAN - Ventilation with fresh air. COOL - Operates pump and fan for cooling.
<b>Fan Speed:</b>	Variable Potentiometer
<b>Other Functions:</b>	<ul style="list-style-type: none"><li>• Automatic wash and flush function in cool mode.</li><li>• Auto Drain Cycle</li></ul>

**R CONTROLLER FRONT PANEL**



**CONTROLLER REAR PANEL**

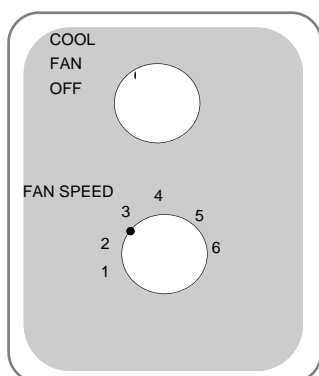


## **SIX SPEED TWIN “R” SERIES MANUAL CONTROLLER**

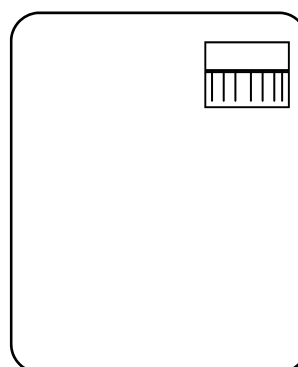
**2003 - 2005 No Longer available - Replaced by SP3504**

<b>Wall Control :</b>	Twin “R” (SP3508) (Obsolete) replace with “R” Controller (SP3504)
<b>Roof Unit:</b>	CFRU Roof Unit (SP3510) backward compatible (Early version fitted with EC Roof Unit and Connector PCB)
<b>Control Cable:</b>	7-Pin Pre-terminated (SP5200)
<b>Fan Motor:</b>	600 W, 750 W, 1000 W
<b>Drainage:</b>	Bleed off (SP2082), Hydraulic (SP2064) or Counterweight Drain Valve (SP2040)
<b>Pump:</b>	240 V Pump
<b>Solenoid:</b>	24 V Solenoid
<b>Modes of Operation:</b>	FAN - Ventilation with fresh air. COOL - Operates pump and fan for cooling.
<b>Fan Speed:</b>	Variable 6 way switch
<b>Other Functions:</b>	Auto Drain Cycle

**TWIN “R” FRONT PANEL**



**TWIN “R” REAR PANEL**

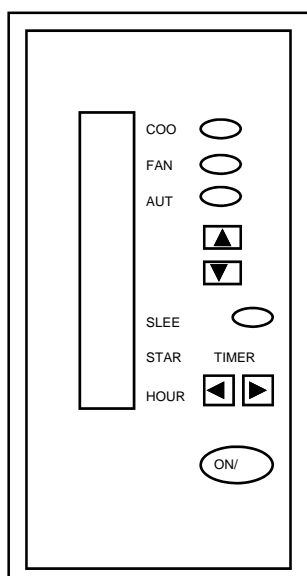


# **“L” SERIES CONTROLLER**

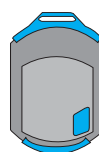
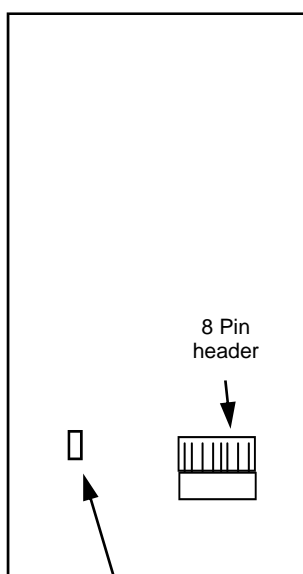
**2002 - 2005**

<b>Wall Control :</b>	“L” Series (SP3506) Remote Control Option
<b>Roof Unit:</b>	CFRU Roof Unit (SP3510) backward compatible (Early version fitted with EC Roof Unit and Connector PCB)
<b>Control Cable:</b>	7 pin Pre-terminated (SP5200) Terminated into keypad. With remote function terminated into Receiver
<b>Fan Motor:</b>	600 W, 750 W, 1000 W
<b>Drainage:</b>	Bleed off (SP2082), Hydraulic (SP2064) or Counterweight Drain Valve (SP2040)
<b>Pump:</b>	240 V Pump
<b>Solenoid:</b>	24 V Solenoid
<b>Modes of Operation:</b>	FAN - Ventilation with fresh air. COOL - Operates pump and fan for cooling. AUTO - Maintain desired temperature. TIMER - Countdown timer to switch air con on and off after times interval.
<b>Fan Speeds:</b>	10 Speed in all modes.
<b>Other Functions:</b>	Automatic wash and flush functions in cool mode. <ul style="list-style-type: none"><li>• Temperature sensor in keypad.</li><li>• Keypad on/off standby switch.</li><li>• Remote control compatible.</li></ul>

## **L SERIES CONTROLLER**



## **BACK OF KEYPAD CIRCUIT BOARD**



**REMOTE OPTION  
FOR L SERIES  
CONTROLLER  
(SP3522)**

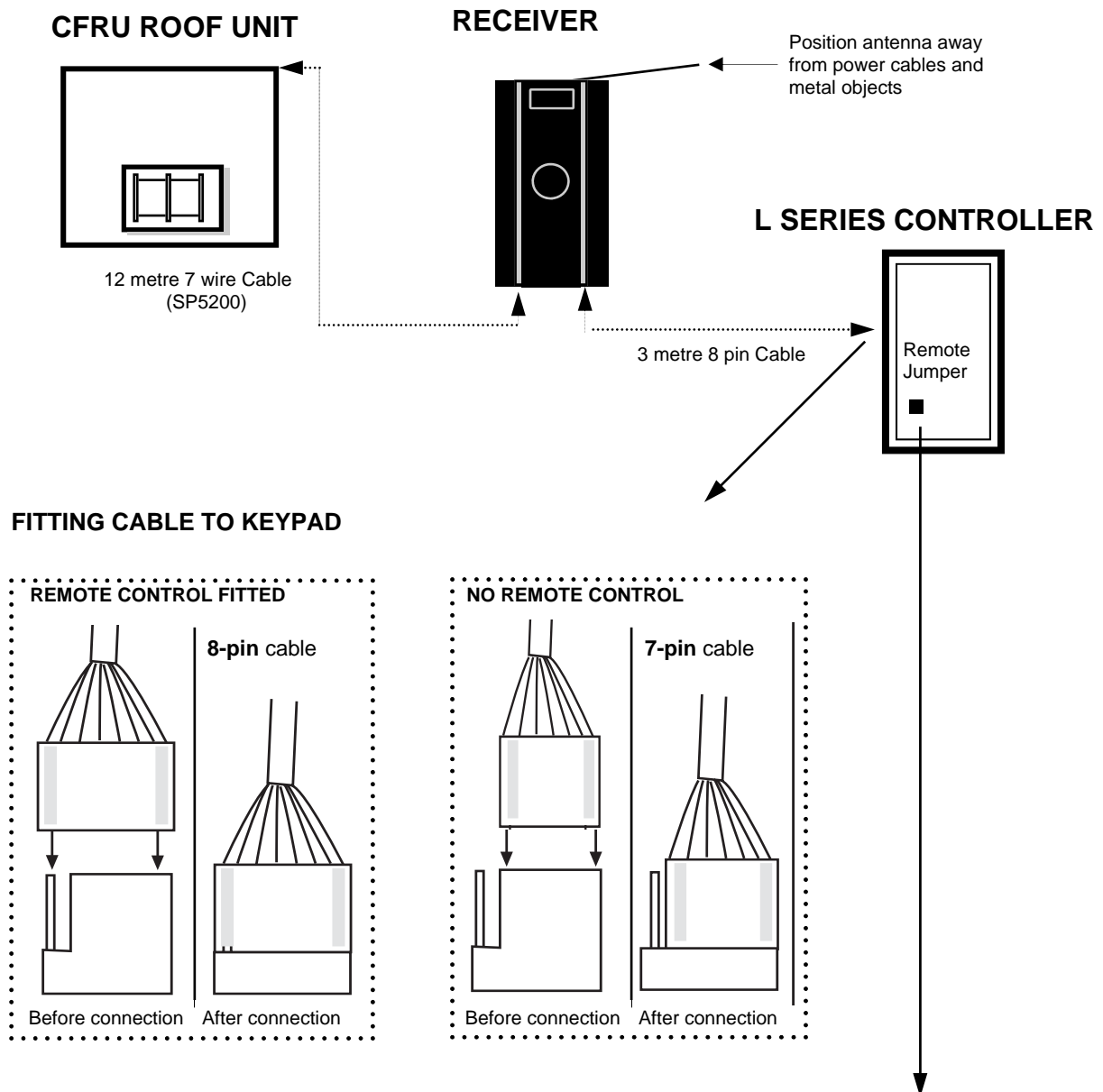
### **NOTE:**

**Airstream L Controllers** have a small connector cable with an RJ connector fitted to the board and an eight pin male connector. This can be fitted to either a roof unit control cable or to an eight core cable connected to a remote receiver

**JUMPER FOR REMOTE CONTROL**

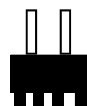


# L SERIES WITH REMOTE INSTALLATION DIAGRAM



## INSTALLATION OF L SERIES CONTROLLER

Insert the Remote Enable Key to connect the two exposed pins on the rear of the controller. The remote function will not operate unless the key has been fitted.



Before Key Fitted



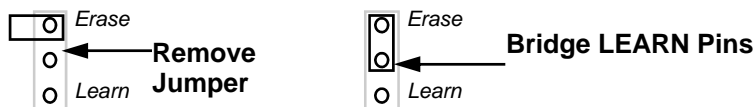
With Key Fitted

# L SERIES REMOTE

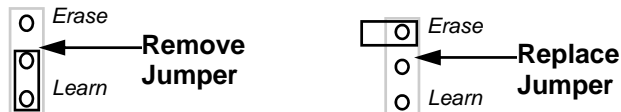
## PROGRAMMING EXTRA TRANSMITTERS

The receiver and transmitter supplied in the remote pack are pre-programmed. To install additional transmitters, program as follows:-

1. Connect power to the system.
2. Remove the cover from the receiver box and locate the 'LEARN' pins and jumper. (*Refer to Receiver Circuit Board Diagram for location*)
3. Remove the jumper from the top pin and bridge the 'LEARN' pins with the jumper. The red LED will illuminate.



4. Press each button on the transmitter once. The LED will flash once, indicating that the transmitter has been programmed.
5. Remove the jumper from the 'LEARN' pins and replace it on the top pin.



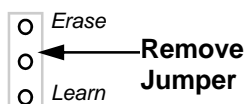
## RESOLVING A CONFLICT SITUATION

If the transmitter is operating other devices in the home (even a neighbour's home), or another remote transmitter operates the air conditioning, the transmitter will need to be replaced with a new one and then re-set and reprogrammed.

1. With the power connected, bridge the 'ERASE' pins with the jumper.



2. The LED will flash slowly 12 times, then stay on.
3. Remove the jumper. The LED will flash rapidly as the memory is erased.

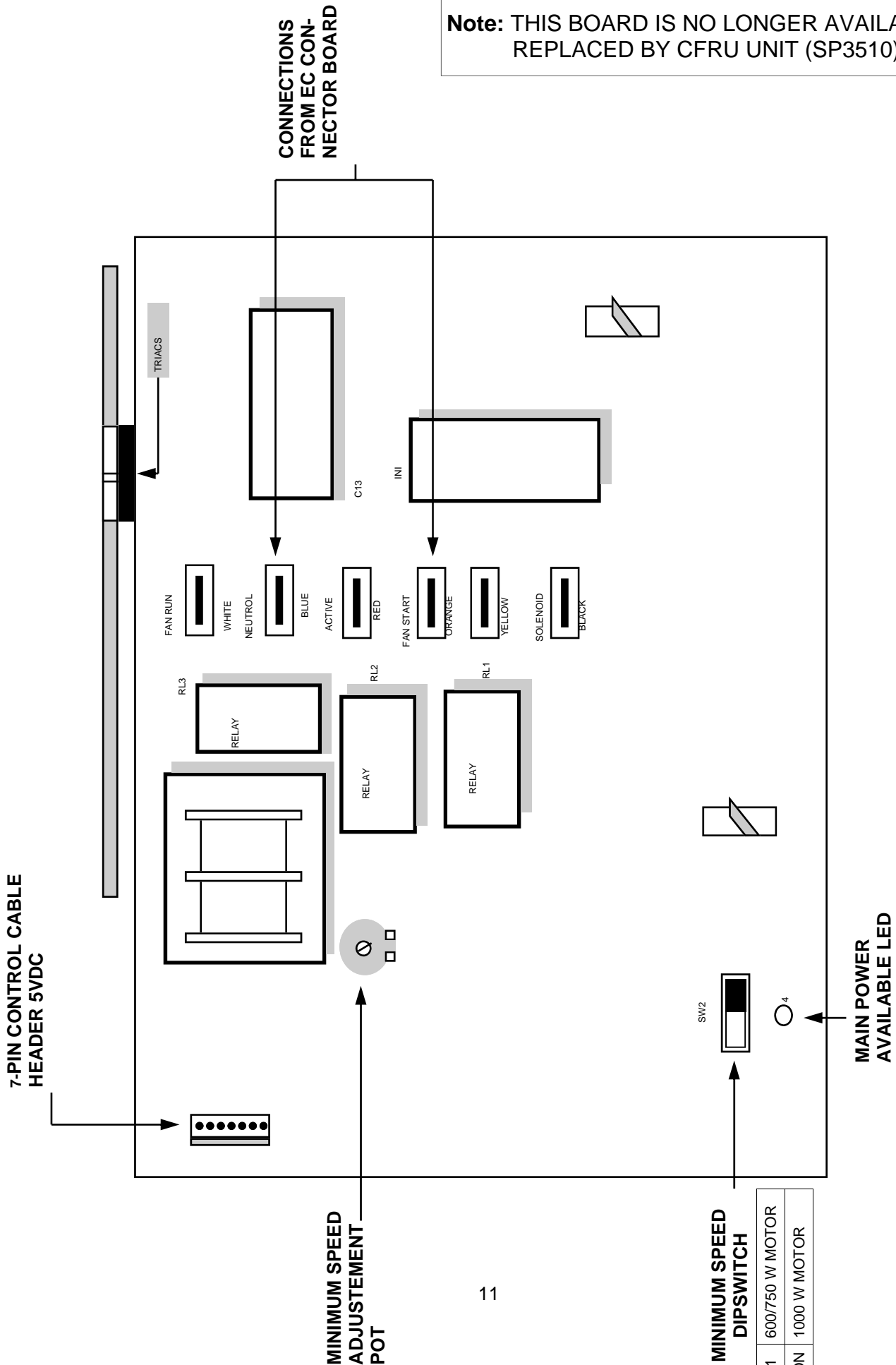


4. Select a new transmitter and repeat 'PROGRAMMING' extra transmitters steps 3 to 5.

# EC ROOF UNIT WIRING DIAGRAM

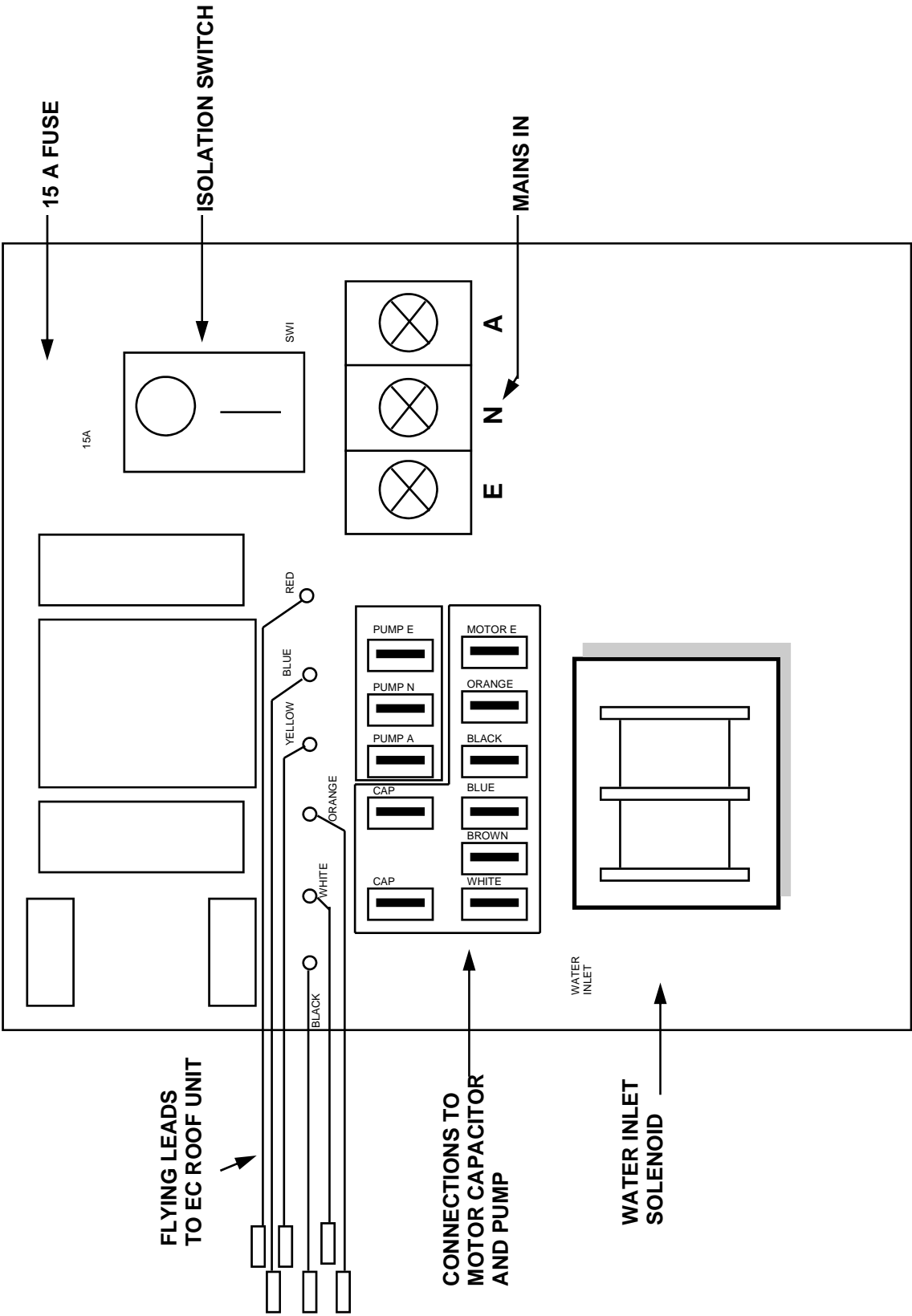
2002 - 2003

**Note:** THIS BOARD IS NO LONGER AVAILABLE  
REPLACED BY CFRU UNIT (SP3510)



**EC CONNECTOR BOARD WIRING DIAGRAM**  
**2002 - 2003**

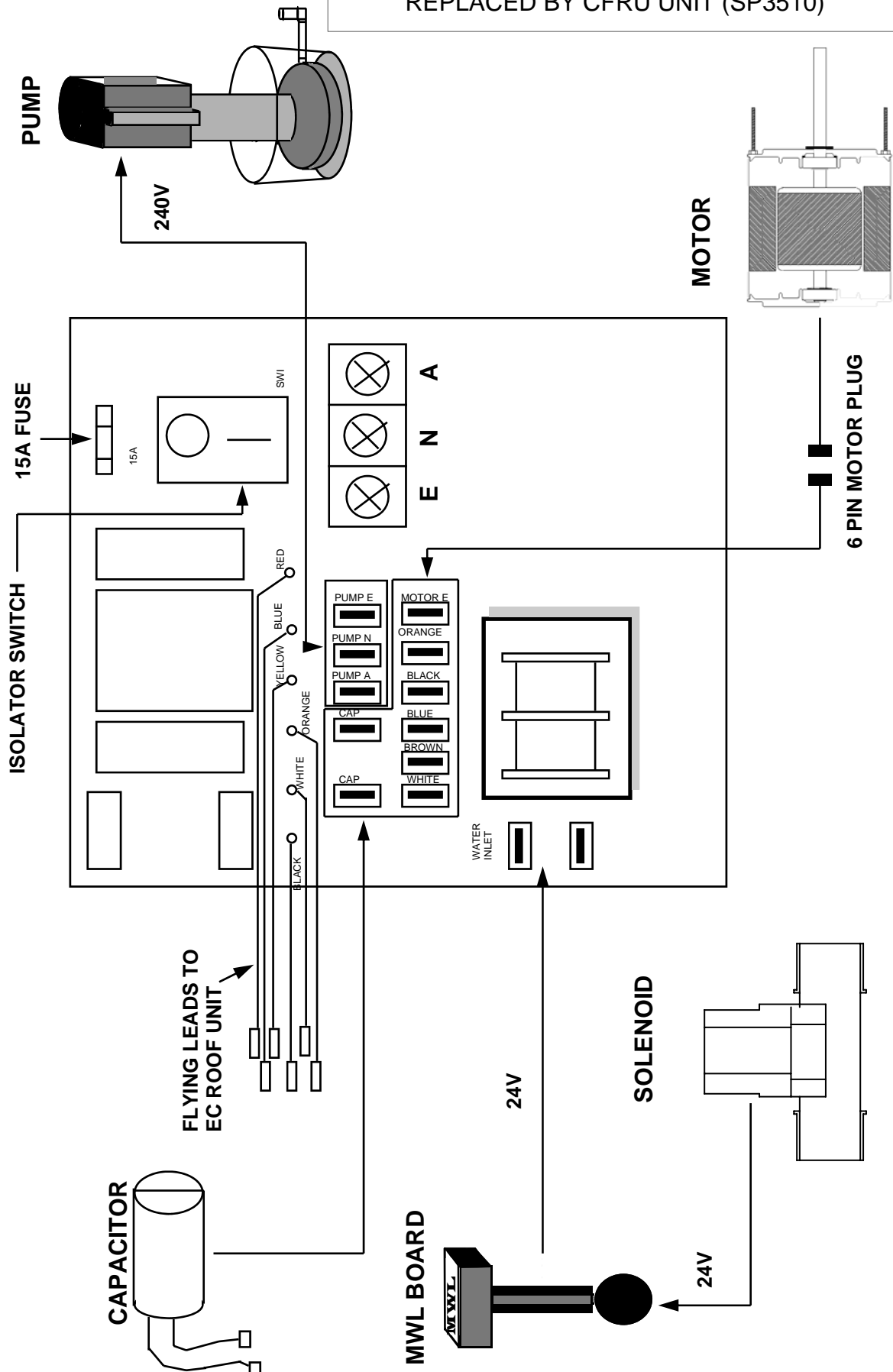
**Note:** THIS BOARD IS NO LONGER AVAILABLE  
REPLACED BY CFRU UNIT (SP3510)



# EC CONNECTOR BOARD SCHEMATIC DIAGRAM

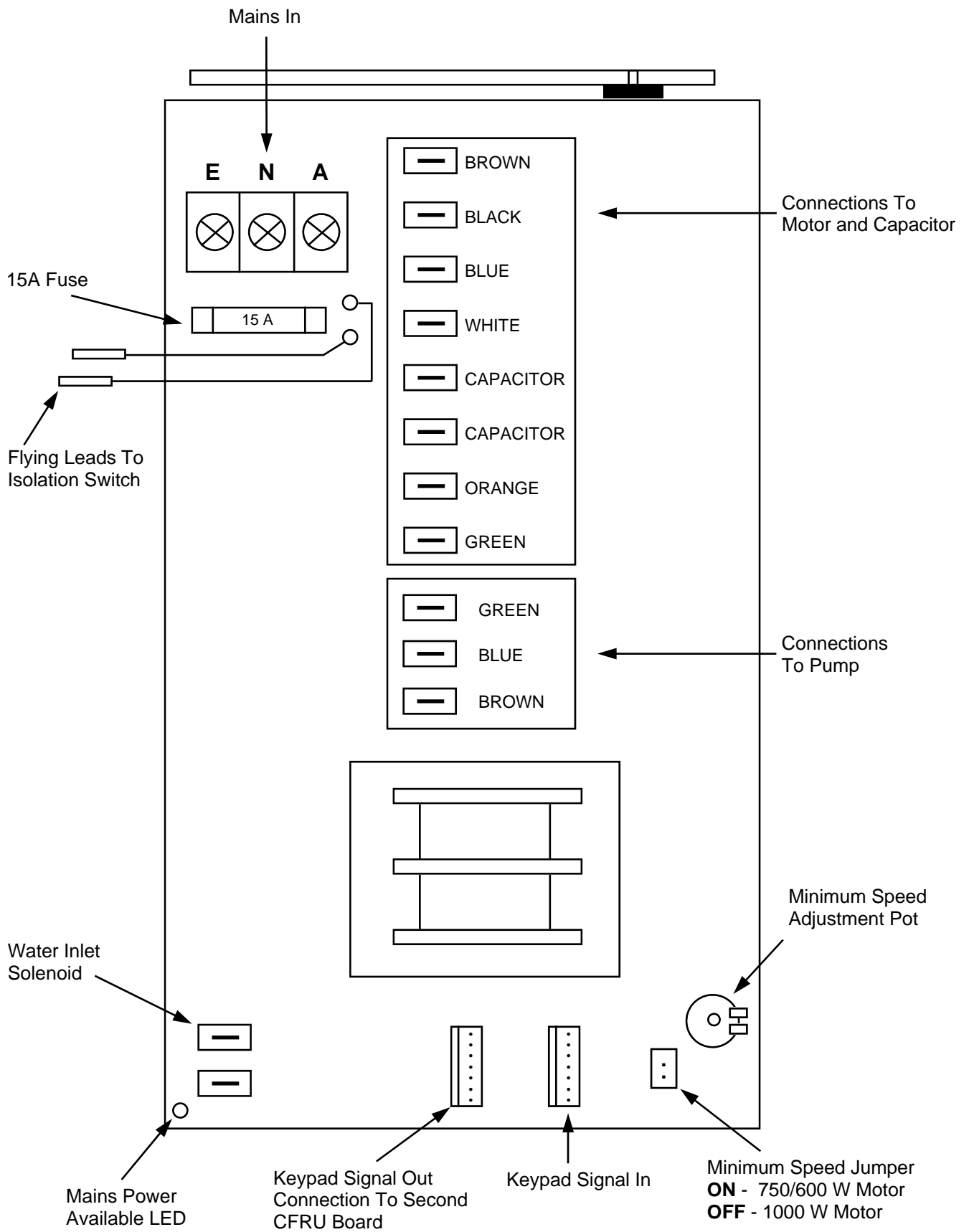
2002 - 2003

**Note:** THIS BOARD IS NO LONGER AVAILABLE  
REPLACED BY CFRU UNIT (SP3510)



# CFRU ROOF UNIT WIRING DIAGRAM (SP3510)

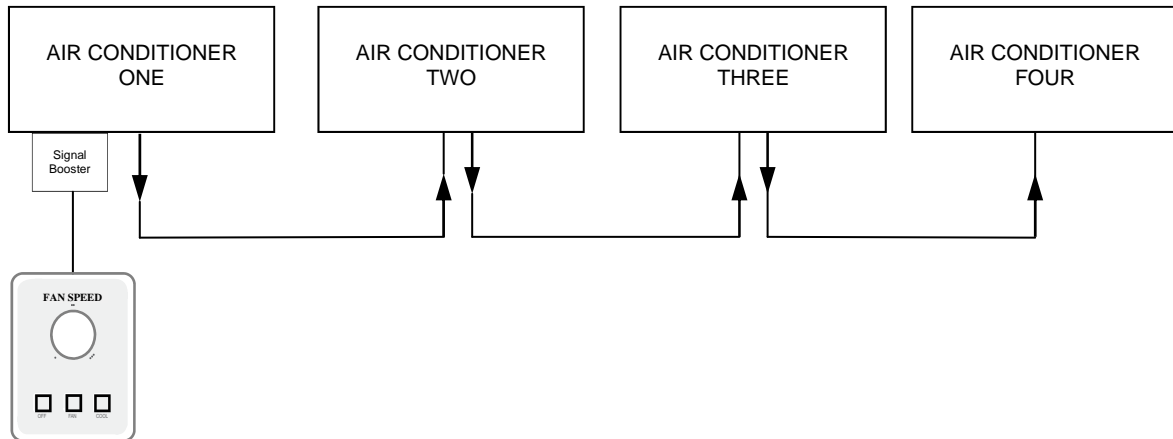
2003 - 2005



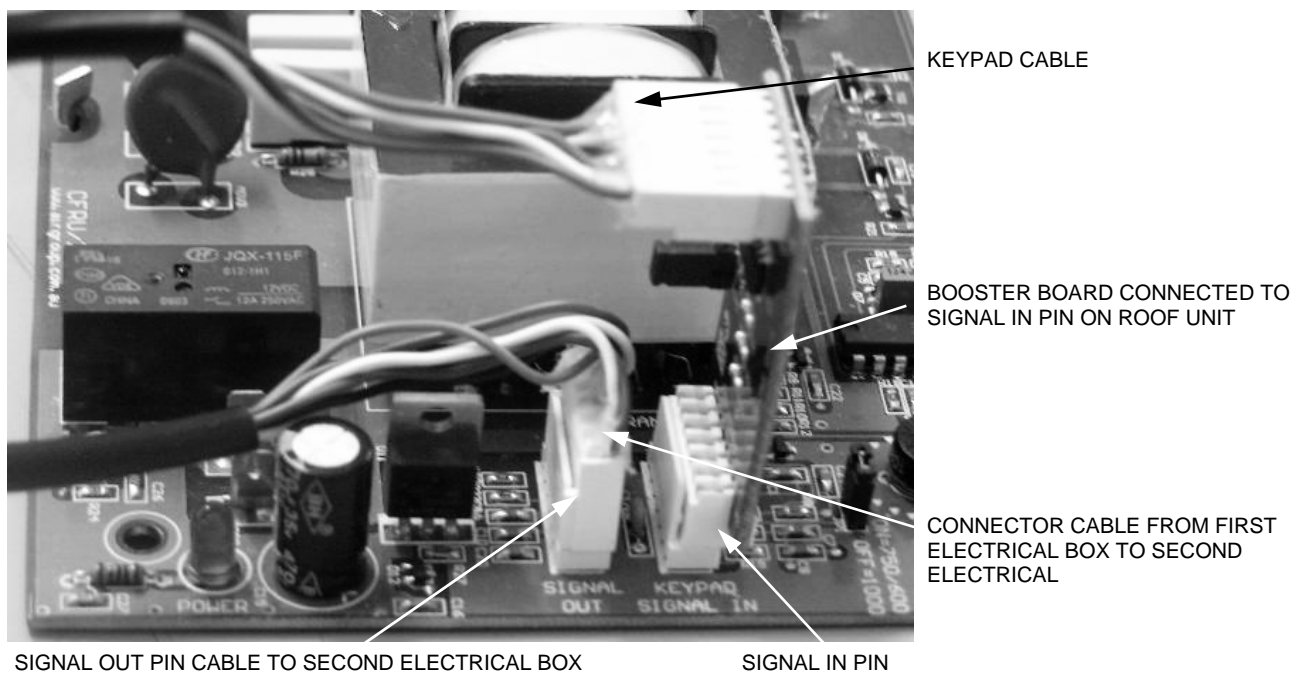
## CFRU BOOSTER BOARD OPTION

### MULTIPLE UNITS USING ONE KEYPAD

The following diagram and above picture shows correct wiring installation procedure where multiple units are installed using one keypad.

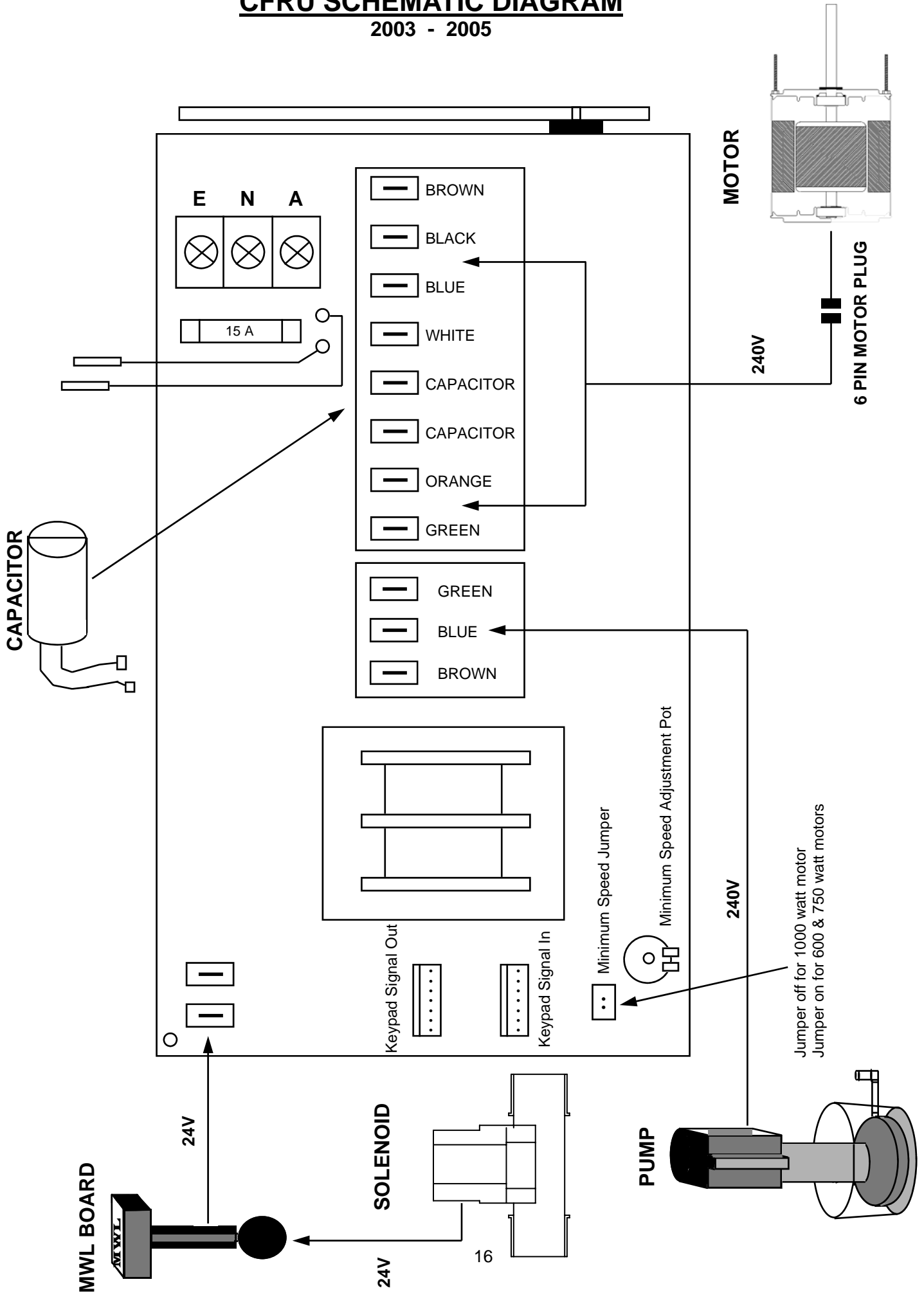


### CFRU ROOF UNIT WITH BOOSTER BOARD



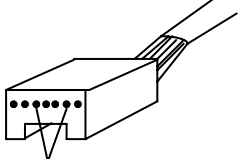
# CFRU SCHEMATIC DIAGRAM

2003 - 2005





# A, U, F, W, L, EZYCOOL & FC SERIES FAULT FINDING CFRU ROOF CONTROL

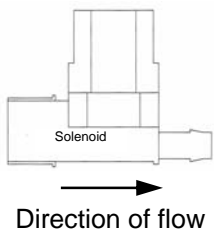
ELECTRICAL FAULTS			
FAULT	Ref	CAUSE	ACTION
1. NO DISPLAY AT KEYPAD	1.1	240V mains supply isolated .	Check mains fuse, or circuit breaker. Check CFRU or EC connector board.
	1.2	Keypad not connected.	Confirm continuity of 7 Pin keypad cable.
	1.3	No power to keypad.	 <p>Confirm 5vdc between terminals 2 &amp; 5 green &amp; brown wire.</p>
2. FAN NOT OPERATING	2.1	Keypad failure.	Confirm 240v between neutral and orange (fan start) on Roof Unit. Also 110 - 240v between neutral and Motor brown.
	2.2	Capacitor failure motor will buzz but not rotate.	Replace capacitor.
	2.3	Motor not powered.	Check 6-Pin Plug to motor.
	2.4	Motor seized.	Replace motor.
	2.5	Motor jammed in cowling.	Centralise fan in cowling.
FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
3. NO VARIATION OF FAN SPEED	3.1	Keypad or Roof Unit failure.	Adjust speed pot URI to minimum. If motor speed does not reduce, replace Roof Unit board.
			Confirm Voltage between 110 - 240v Measured between neutral and white (Fan Run) on the Roof Unit board.
4. FAN CUTS OUT	4.1	Loss of power to airconditioner.	Check display on keypad.
	4.2	Loss of power to motor.	Confirm keypad is in "ON" position.
	4.3	Motor Failure or Shutdown due to internal (motor) thermal protection (thermal overload).	Check ran current, if running at more than 120% of value on motor replace motor.

## A, U, F, W, L, EZYCOOL & FC SERIES FAULT FINDING CFRU ROOF CONTROL

WATER FAULTS			
FAULT	Ref	CAUSE	ACTION
<b>5. WATER NOT ENTERING UNIT</b>	5.1	Isolation tap closed or filter blocked.	Open tap and clean filter.
	5.2	No 240V from Roof Unit yellow terminal to EC Connector board.	Replace Roof Unit.
	5.3	No 24V from EC Connector board to MWL.	Confirm 240v between neutral and black wire on EC Connector board. Replace EC Connector board.
	5.4	No 24v from MWL to Solenoid.	Replace MWL.
	5.5	Solenoid mesh or strainer blocked.	Remove and clean mesh/strainer. Recommended replace solenoid.
	5.6	Solenoid coil open circuit.	Replace solenoid.
	5.7	Fluidmaster float valve stuck in raised position.	Replace diafragm inside, clean float valve or replace valve if faulty.
<b>6. WATER CONTINUALLY RUNNING FROM UNIT</b>	6.1	Solenoid passing water.	Replace solenoid.
	6.2	Water level set too high.	Adjust MWL float.
	6.3	<b>Counterweight drain valve.</b> a) Leaking from hoses or plastic Clips.	Replace plastic clips (SP2041) or Hose Kit (SP2042).
		b) Hoses incorrectly connected.	Replace Hose Kit (SP2042).
		c) Physical or mechanical fault of Counterweight Drain Valve.	Replace Drain Valve (SP2040).
	6.4	Square Section Blue "O" Ring faulty.	Replace "O" Ring (SP2043).
	6.5	<b>Hydraulic Drain Valve.</b> a) Split 6mm hose to drain valve	Replace 6mm hose (SP2067).
		b) Split hydraulic drain valve, valve not pressurizing and closing.	Replace hydraulic drain valve (SP2064).
<b>7. WATER not circulating</b> Select "COOL" and fault find as follows:	7.1	No 240V to pump	Replace CFRU or EC Roof Unit.
	7.2	Pump seized, impellor stripped or base cracked.	Replace pump.
	7.3	Pump strainer clogged.	Remove and clean strainer basket.
	7.4	Water distribution manifold blocked.	Remove and flush manifold of any blockage.

# WATER INLET

## REPLACEMENT BARBED SOLENOID (SP2031) 2004

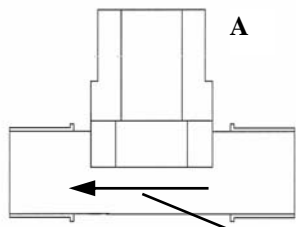


Barbed end to attach counterweight drain hose to.

**Note:** REPLACEMENT FOR SOLENOIDS USED IN UNITS WITH COUNTERWEIGHT DRAIN VALVES

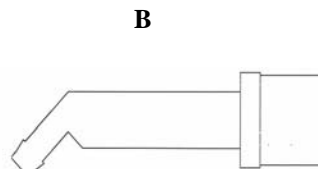
## REPLACEMENT SOLENOID KIT (SP2075) 2002 - 2004

### CONTENTS OF KIT:

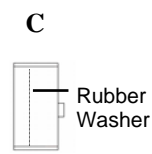


24V Solenoid

Directional Arrow for Water Flow



45° Nozzle



Water Restrictor



Inline Filter



Plastic Clip

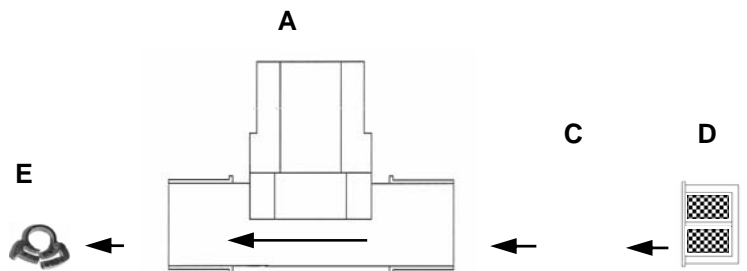
Care must be exercised to ensure the solenoid is fitted to follow the directional arrow for water flow on the solenoid body.

## POST 2000

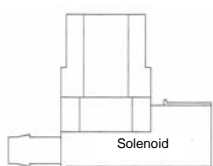
### Solenoid Assembly c/w 45° Nozzle



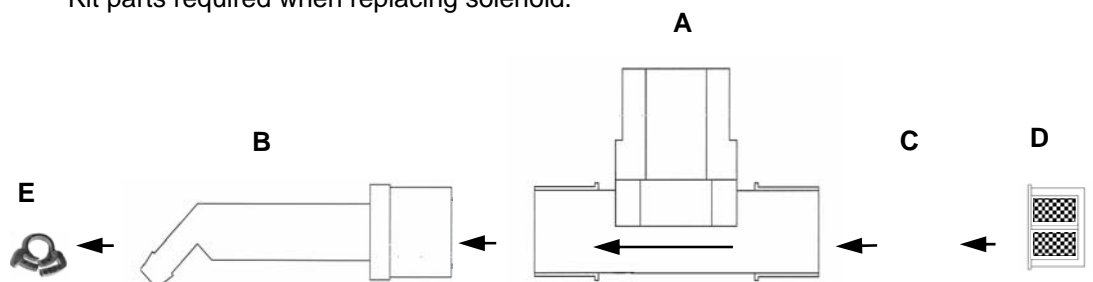
Kit parts required when replacing solenoid.



### Barbed Solenoid



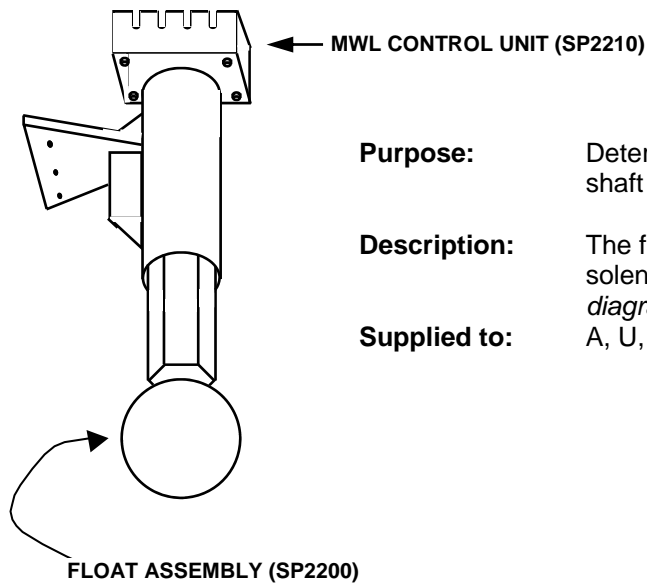
Kit parts required when replacing solenoid.



# WATER INLET

## MAGNETIC WATER LEVEL SYSTEM (MWL) (SP2210)

Introduced 2000



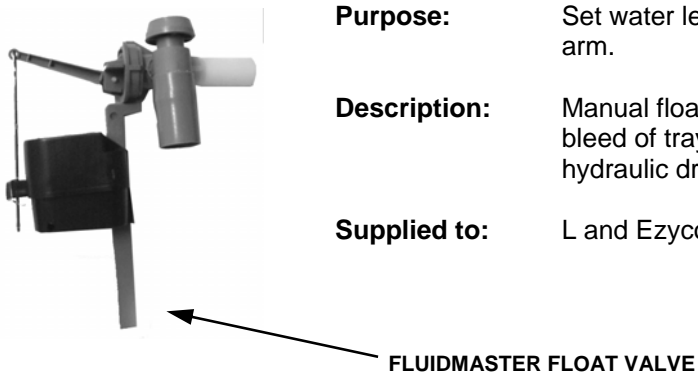
**Purpose:** Determine water level. Adjustable by holding float shaft and rotating ball float.

**Description:** The float assembly is wired in series with the solenoid on the 24vdc circuit. *A schematic wiring diagram of MWL system can be found on page 12.*

**Supplied to:** A, U, F, W & FC series unit.

## FLUIDMASTER FLOAT VALVE (SP2050)

Introduced Pre 2000



**Purpose:** Set water level inside sump. Adjustable by setting clip on float arm.

**Description:** Manual float valve not fitted to a solenoid valve when unit has a bleed of tray. Fitted to a solenoid when unit fitted with a hydraulic drain valve

**Supplied to:** L and Ezycool.

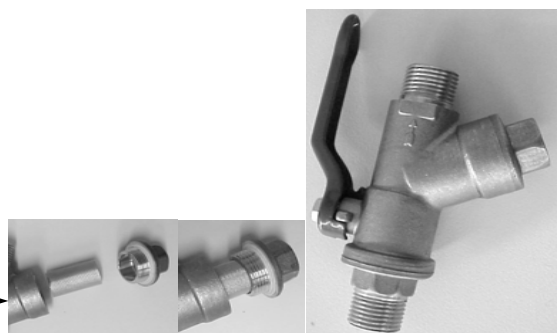
## TAP AND FILTER (SP2076)

Introduced 2002

**Purpose:** To filter and isolate water supply to unit.

**Description:** ½" brass ball valve with integral filter.

Filter →



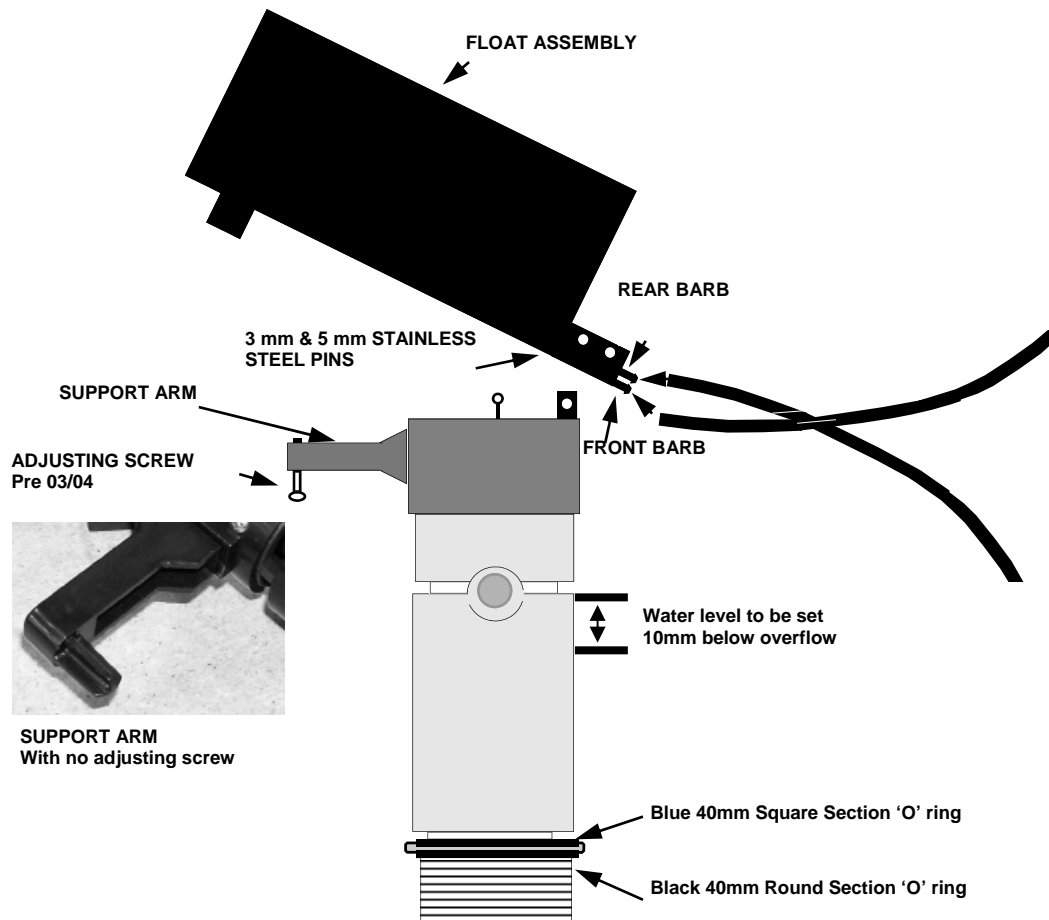
**Notes:-** When 1/4 turn valve is in line with pipe supply on.

# WATER OUTLET

## COUNTERWEIGHT DRAIN VALVE (SP2040)

Introduced 2001

Counterweight drain valve shown in the normally open position (dry sump)



**Purpose:** To allow the unit to hold water whilst in operation and to drain water when turned off or during a house keeping cycle.

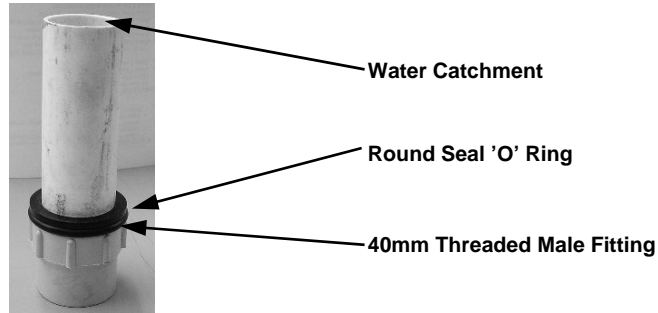
**Description:** Counterweight Drain Valve can be recognized by the large float assembly (box), which is positioned on top of the Drain Valve. This component is operated by the volume of water (weight), hence enabling it to be used in high and low water pressure areas. It does not require any electrical connections.

**Notes:** Valve operates by spring return open  
In operation water should be 10mm below overflow point.

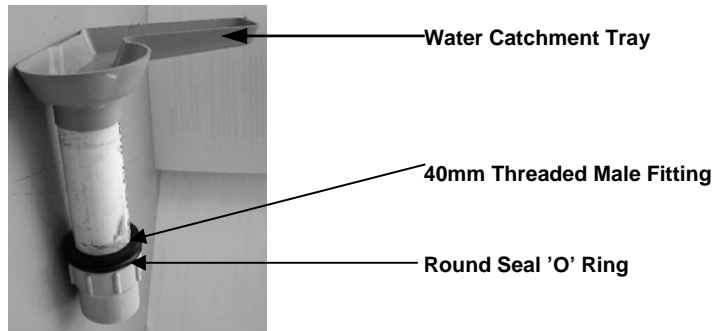
**IMPORTANT:** The Counterweight Drain Valve is not interchangeable with an Electric Drain Valve

# WATER OUTLET

## L SERIES BLEED OFF SYSTEM



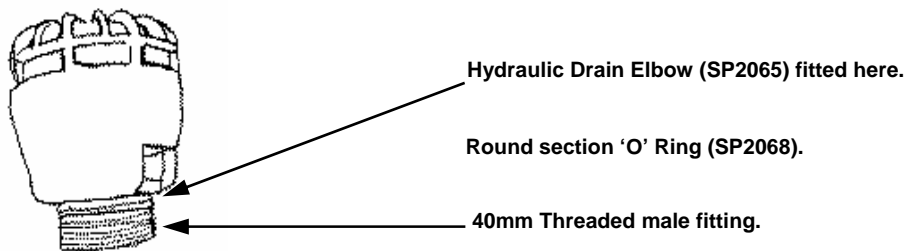
## EZYCOOL BLEED OFF TRAY



- Purpose:** To allow the unit to hold water at all times, and to drip water from the unit whilst operating.
- Description:** This device does not require electrical connections, it is simply installed under the units front filter pad to catch water. The amount of water recycled from the unit can be adjusted by rotating the catchment tray to capture more of less water from the filter pad.
- Supplied to:** L and Ezycool series units only.

## HYDRAULIC DRAIN VALVE (SP2064)

Introduced Pre 2000

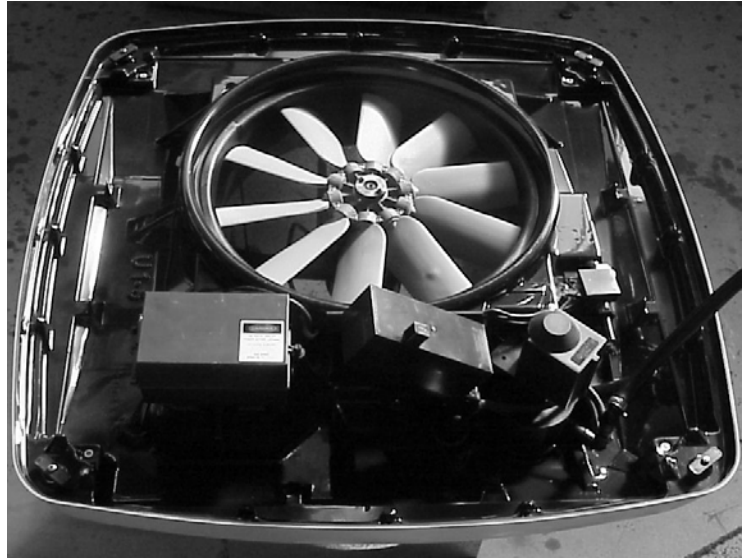


- Purpose:** To allow the unit to hold water whilst in operation and drain water when turned off or doing a house-keeping cycle.
- Description:** This component is operated directly from water pressure. The elbow fitted into the top of the drain valve is connected to a 6mm hose which is connected to the inlet solenoid. When the inlet solenoid is opened water pressure forces the hydraulic drain valve to close and seal water in the sump.
- Supplied to:** L series units only as an optional extra.

# A, U, F, W, L, EZYCOOL & FC SERIES SUMP & CASING SPECIFICATIONS

## U Series Sump

Physical Layout of Unit



## A/F Series Sump

Physical Layout of Unit



**A SERIES**



**NOTE:  
DIFFERENCE IN  
CORNER POSTS  
& LOUVRES**

**F SERIES**



# A, U, F, W, L, EZYCOOL & FC SERIES SUMP & CASING SPECIFICATIONS

## W & FC SERIES SUMP

Physical Layout of Unit

### CASCADE SUMP



MWL FLOAT ASSEMBLY FITTED  
BEHIND PUMP

RPE SOLENOID (SP2075)

ELECTRICAL BOX WITH CFRU BOARD LOCATED IN LID (BOX TOP SP3046, BOX TOP SP3045)

### Note: DIFFERENCE IN LOUVRES

W SERIES



FC SERIES





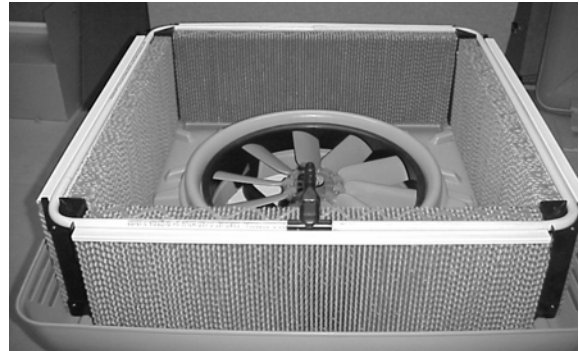
# L AND EZYCOOL SERIES SUMP & CASING SPECIFICATIONS

## L & EZYCOOL SERIES SUMP

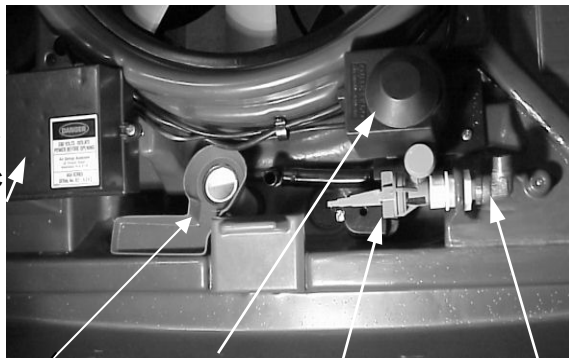
**Assembled L & Ezycool Series Unit**



**Physical Layout of Unit**



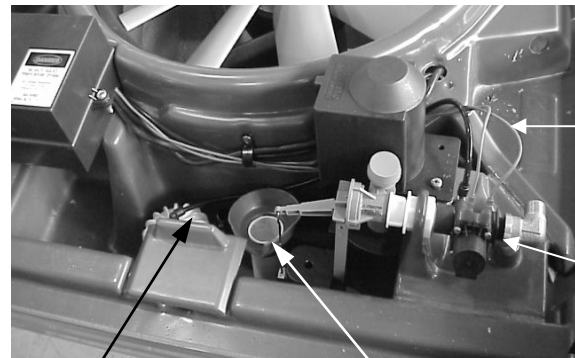
**Standard Bleed-Off System Ezycool**



BLEED-OFF TRAY & OVERFLOW

INLET-WATER CONNECTION

**Option Auto Drain System Ezycool**



**Standard Bleed-Off System L Series**

(Hydraulic drain valve system is available as an optional extra)

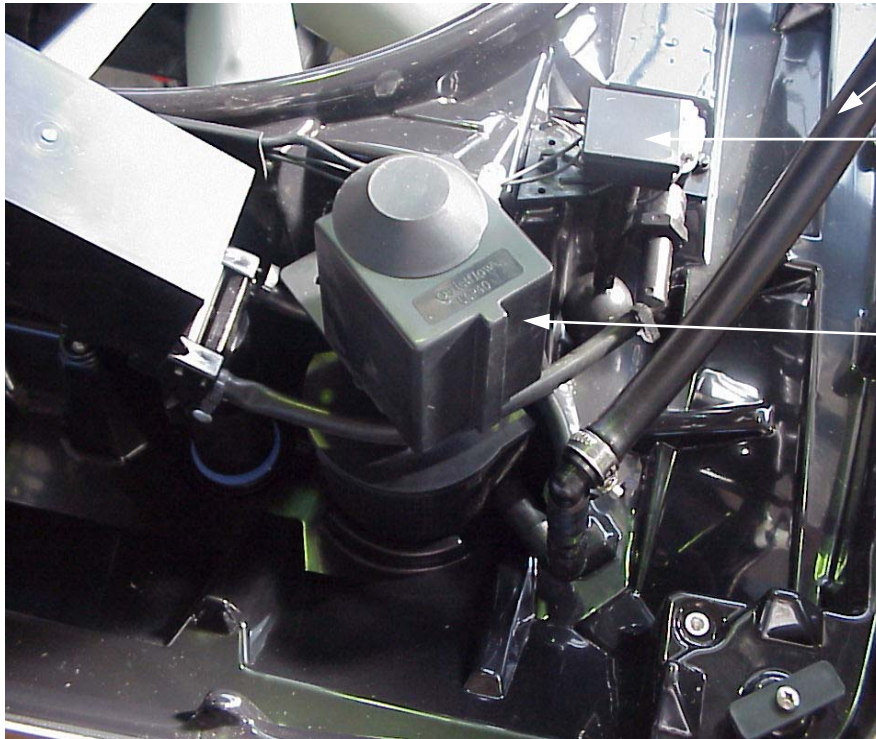


## U & A/F SERIES SUMP LAYOUT

### IMPORTANT

When reconnecting hoses on counterweight drain valve, ensure original hose configurations are used. Refer to pictures below for configuration options.

### U SERIES



FEEDER PIPE

MWL FLOAT

PUMP

### A / F SERIES



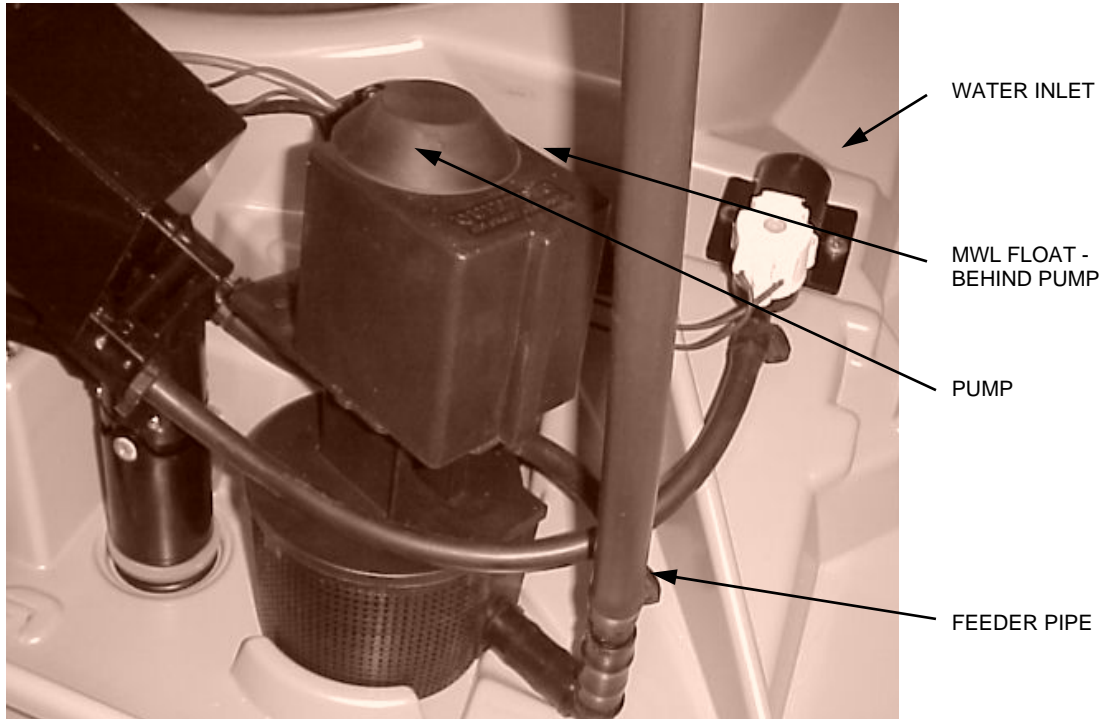
WATER INLET

MWL FLOAT

FEEDER PIPE

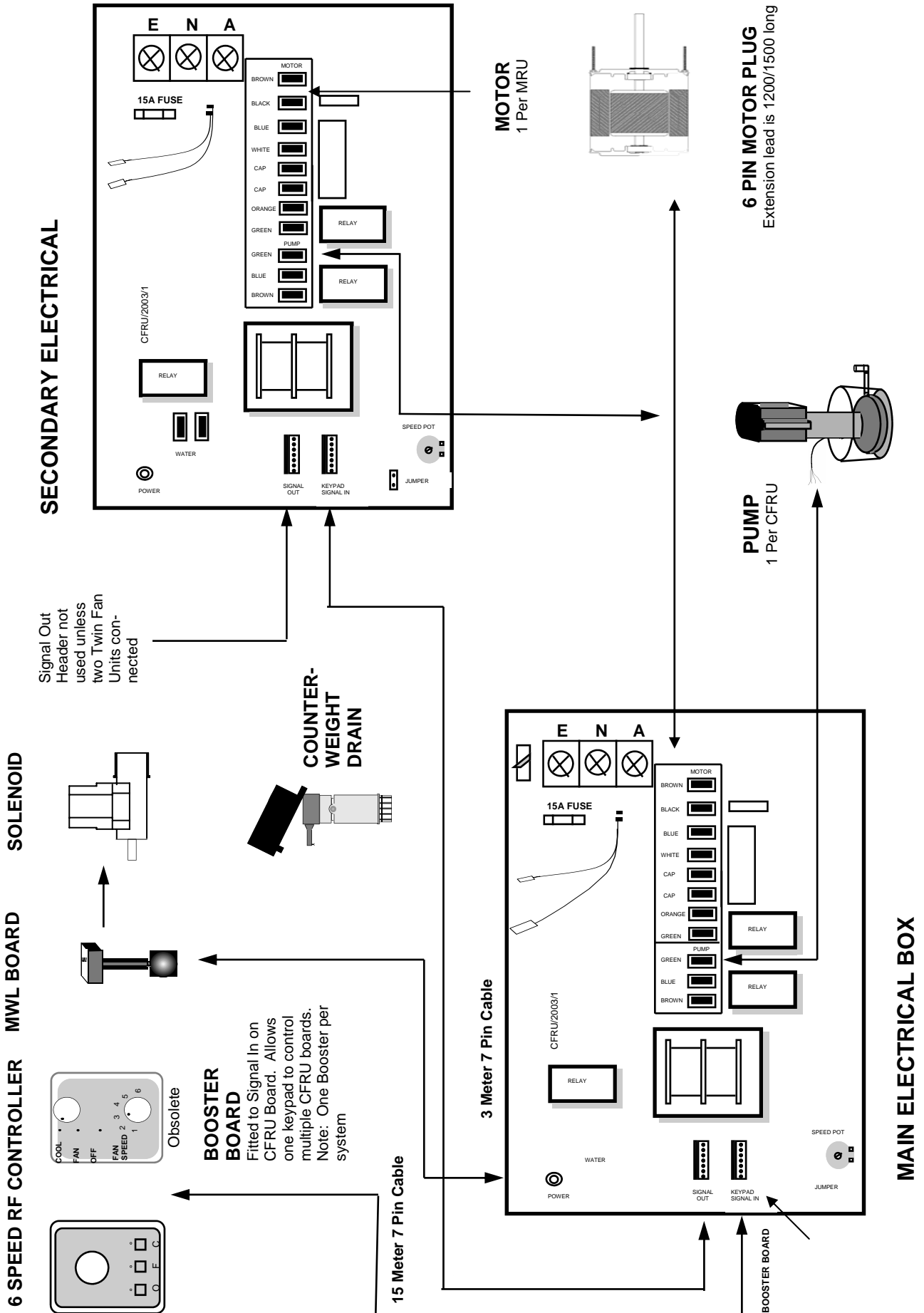
# W & FC SERIES SUMP LAYOUT

## W & FC SERIES



# TWIN FAN CFRU ROOF UNIT BOARD SCHEMATIC

2003 - 2006



**TWIN FAN UNIT CASING AND LAYOUT**  
**CFRU ROOF CONTROL - R SERIES KEYPAD**  
2003 - 2006

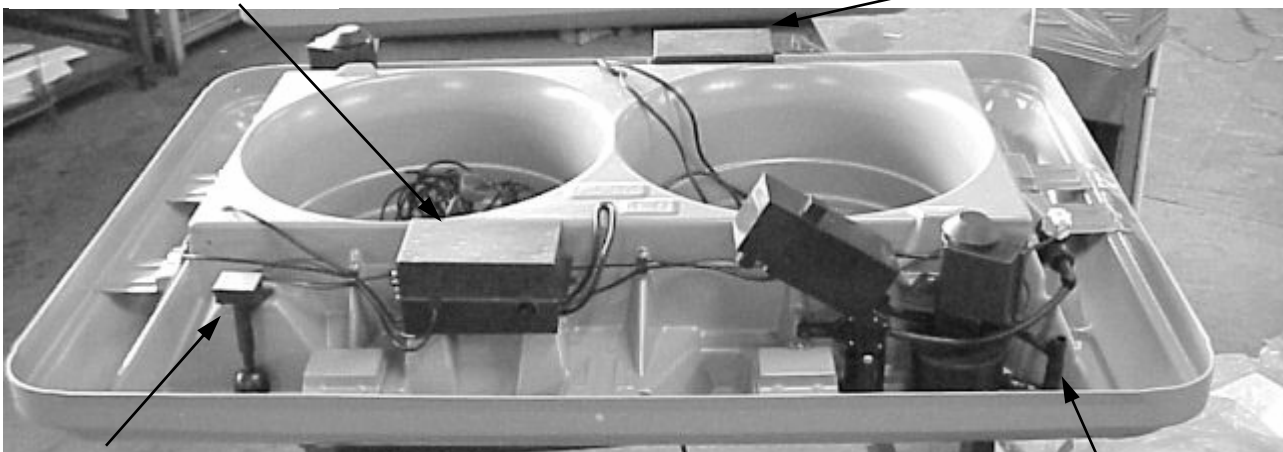
**Assembled Unit**



**Front view of Unit**

MAIN ELECTRICAL BOX

SECONDARY ELECTRICAL BOX



MWL ON FRONT OF UNIT

PUMP WITH T PIECE OUTLET

**Back view of Unit**

SECONDARY ELECTRICAL BOX

MAIN ELECTRICAL BOX



PUMP WITH 100MM OUTLET

CASCADE CABLE

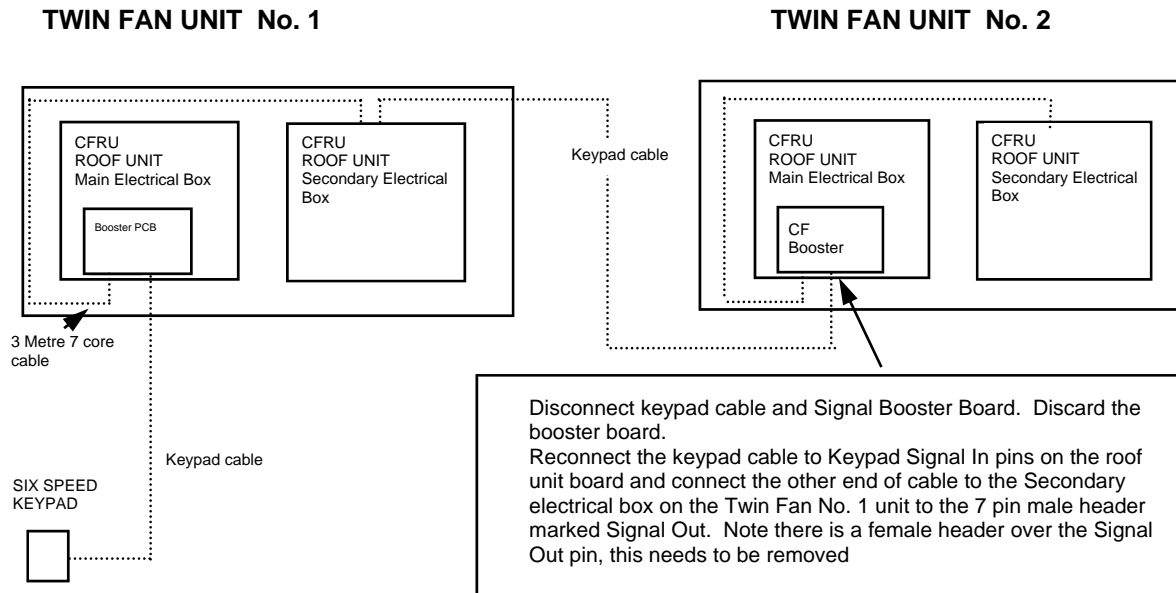
# BOOSTER BOARD INSTALLATION AND APPLICATIONS

## CFRU ROOF CONTROL - R SERIES KEYPAD

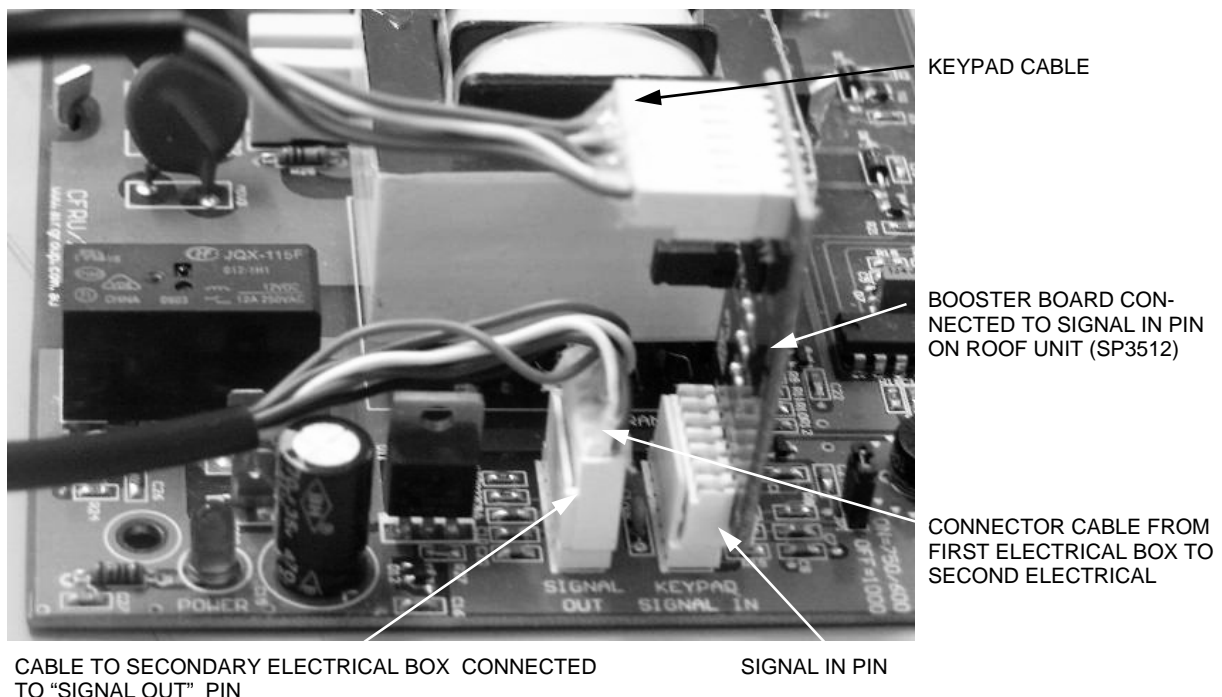
2003 - 2006

### MULTIPLE TWIN FAN UNITS USING ONE KEYPAD

The following diagram and picture shows correct wiring installation procedure where multiple units are installed using one keypad.



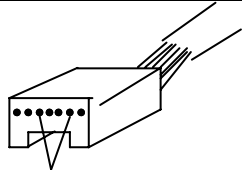
### CFRU ROOF UNIT WITH BOOSTER BOARD



# TWIN FAN SERIES (FD400 & FD500)

## FAULT FINDING 2003 -2006 - GENERAL

### CFRU ROOF CONTROL

ELECTRICAL FAULTS			
FAULT	Ref	CAUSE	ACTION
<b>1. NO DISPLAY AT KEYPAD</b>	1.1	240V mains supply isolated .	Check mains fuse, or circuit breaker.
	1.2	Keypad not connected.	Confirm continuity of 7 Pin keypad cable.
	1.3	No power to keypad.	 <p>Confirm 5vdc between terminals 4 &amp; 6 black &amp; white wire.</p>
<b>2. FAN NOT OPERATING</b>	2.1	Keypad failure.	Confirm 240v between white and orange (fan start) on Roof Unit. Also 110 - 240v between brown and orange (fan run) on Roof Unit.
	2.2	Capacitor failure motor will buzz but not rotate.	Replace capacitor.
	2.3	Motor not powered.	Check 6-Pin Plug to motor.
	2.4	Motor seized.	Replace motor.
	2.5	Motor jammed in cowling.	Centralise fan in cowling.
	2.6	Booster board fitted to "Signal Out"	Fit Booster board to "Signal In"
FAN FAULTS			
<b>3. NO VARIATION OF FAN SPEED</b>	3.1	Keypad or Roof Unit failure.	Adjust speed pot to minimum. If motor speed does not reduce, CFRU Roof Unit is faulty.
			Confirm Voltage between 110 - 240v Measured between neutral and brown (Fan Run) on the CFRU Roof Unit.
<b>4. FAN RUNNING CONSTANTLY</b>	4.1	Break in black wire (pin 4 in the control loom	Replace control loom
<b>5. FAN SPEEDS CAN-NOT BE SET OR IS TOO SLOW</b>	5.1	Booster board not fitted to Signal In on CFRU board	Fit Booster Board in Main Electrical box and set speed pots on all CFRU boards with tachometer
<b>6. FAN SPEED IS TOO SLOW/TOO FAST</b>	6.2	Motor speed jumpers on CFRU boards not set the same	Set both CFRU boards to have same speed settings

# TWIN FAN SERIES (FD400 & FD500)

## FAULT FINDING 2003 - 2006 - GENERAL

### CFRU ROOF CONTROL

WATER FAULTS			
FAULT	Ref	CAUSE	ACTION
7. FAN CUTS OUT	7.1	Loss of power to motor.	Confirm keypad is in "FAN" position.
	7.2	Motor Failure or Shutdown due to internal (motor) thermal protection (thermal overload).	Check ran current, if running at more than 120% of value on motor name plate - replace motor.
8. FAN SLOW OR HUMMING	8.1	Green wire in the control cable damaged	Replace loom
9. WATER NOT ENTERING UNIT	9.1	Isolation tap closed or filter blocked.	Open tap and clean filter.
	9.2	No 24V from CFRU Connector board to MWL.	Replace CFRU board
	9.3	No 24v from MWL to Solenoid.	Replace MWL.
	9.4	Solenoid mesh or strainer blocked.	Remove and clean mesh/strainer. Recommended replace solenoid.
	9.5	Solenoid coil open circuit.	Replace solenoid.
	9.6	No pump operation	Break in blue wire in the control cable
	9.7	No solenoid operation	Break in yellow wire in the control cable
11. WATER CONTINUALLY RUNNING FROM UNIT	11.1	Solenoid passing water.	Replace solenoid.
	11.2	Water level set too high.	Adjust MWL float.
	11.3	<b>Counterweight drain valve.</b> a) Leaking from hoses or plastic Clips.	Replace plastic clips (SP2041) or Hose Kit (SP2042).
		b) Hoses incorrectly connected.	Replace Hose Kit (SP2042).
		c) Physical or mechanical fault of Counterweight Drain Valve.	Replace Drain Valve (SP2040).
	11.4	Square Section Blue "O" Ring faulty.	Replace "O" Ring (SP2043).



**TWIN FAN SERIES (FD400 & FD500)**  
**FAULT FINDING 2003 - 2006 - SPECIFIC**  
**CFRU ROOF CONTROL**

<b>FAULT</b>	<b>Ref</b>	<b>CAUSE</b>	<b>ACTION</b>
If fan connected to the board B is not running		Secondary roof unit fault	Replace
If fan connected to the board B is not turning off		Secondary roof unit fault	Replace
If fan connected to the board A is not running		Main roof unit fault	Replace
If fan connected to the board A is not turning off		Main roof unit fault	Replace
If both fans are not running		Either keypad or booster board	Replace booster and check if fault remains if fault remains replace keypad
If both fans are running continuously		Either keypad or booster board	Replace booster and check if fault remains if fault remains replace keypad
If both fans are running continuously when the keypad is not activated		The booster board may have been incorrectly connected on to the 7 pin header on the Roof Unit (right hand pin not connected)	This action will have damaged the booster. Replace.
If both pumps are running continuously even when the keypad is Off		The booster board may have been incorrectly connected on to the 7 pin header on the Roof Unit (left hand pin not connected)	Remove booster board and re-connect making sure that all pins are correctly engaged

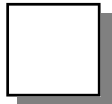
# TWIN FAN MRU BOARD UNIT SCHEMATIC DIAGRAM

December 2006 - 2008

7 PIN CABLES

INDICATOR  
LEDS

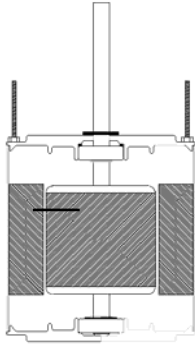
GREEN  
BLUE  
BROWN  
PINK



BROWN  
BLACK  
CAP  
CAP  
WHITE  
ORANGE  
MOTOR



MOTOR  
1 per MRU

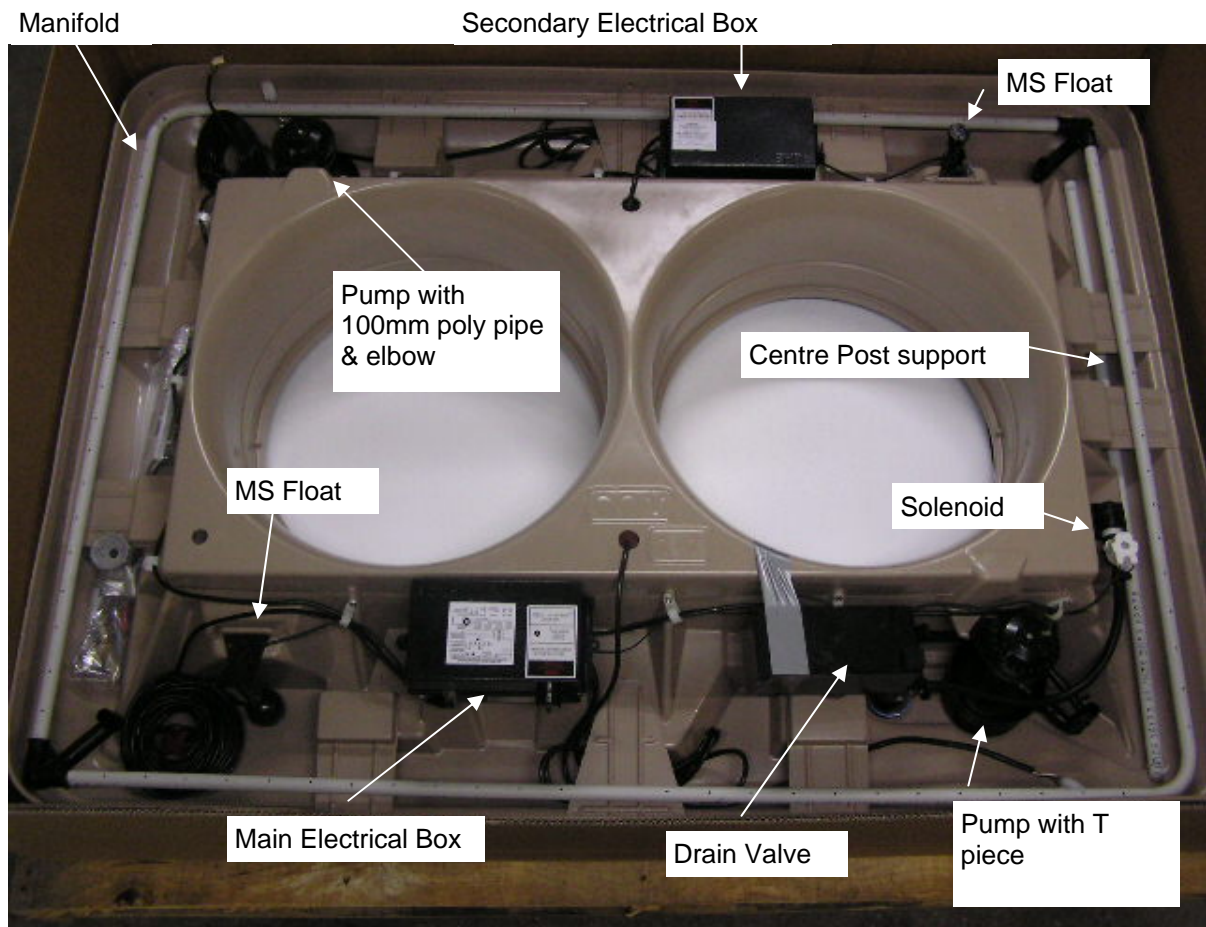


TO ISOLATOR  
SWITCH

15A

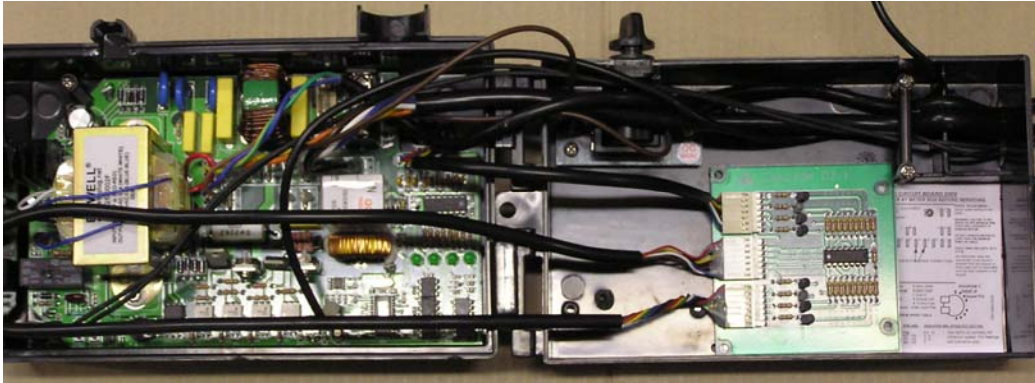
**TWIN FAN UNIT (D400 & D500)  
CASING AND LAYOUT  
MRU ROOF CONTROL - QA OR QM SERIES KEYPAD  
December 2006 - 2008**

**Assembled Unit**

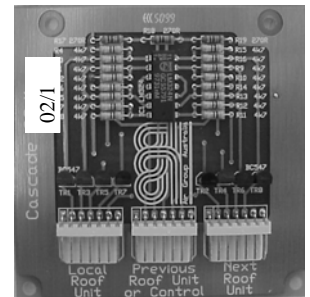


# CONNECTING MULTIPLE TWIN FAN (D400 & D500) UNITS TOGETHER IN A STRING USING MRU CASCADE BOARD, MRU ROOF UNIT CONTROL & QA/QM KEYPAD December 2006 - 2008

Each Twin Fan unit has a Cascade board fitted into the base of the main electrical box which links the main and secondary electrical boxes. When multiple twin fans are installed using one controller , Cascade boards are fitted in each of the secondary electrical boxes.

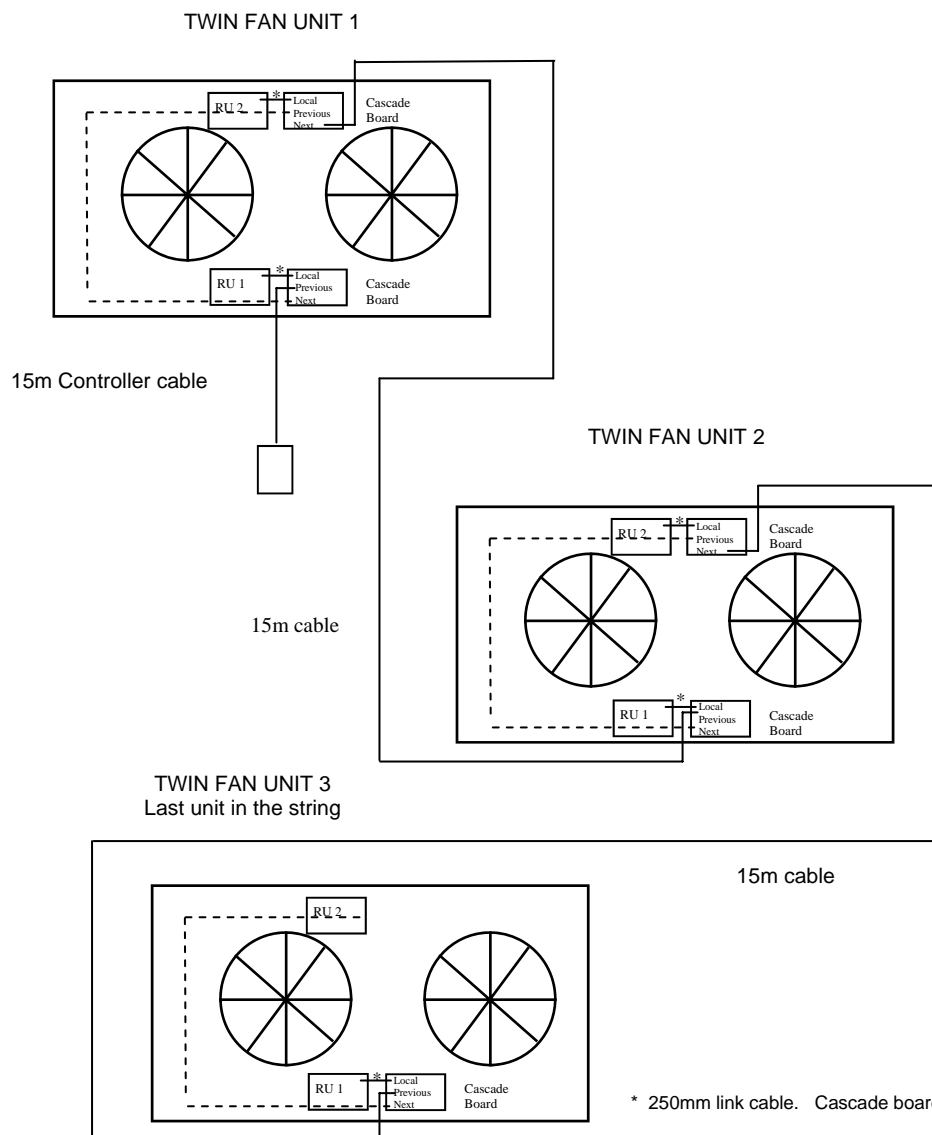


Top View



SP3007

Electrical box with Cascade board fitted into the base using double sided tape



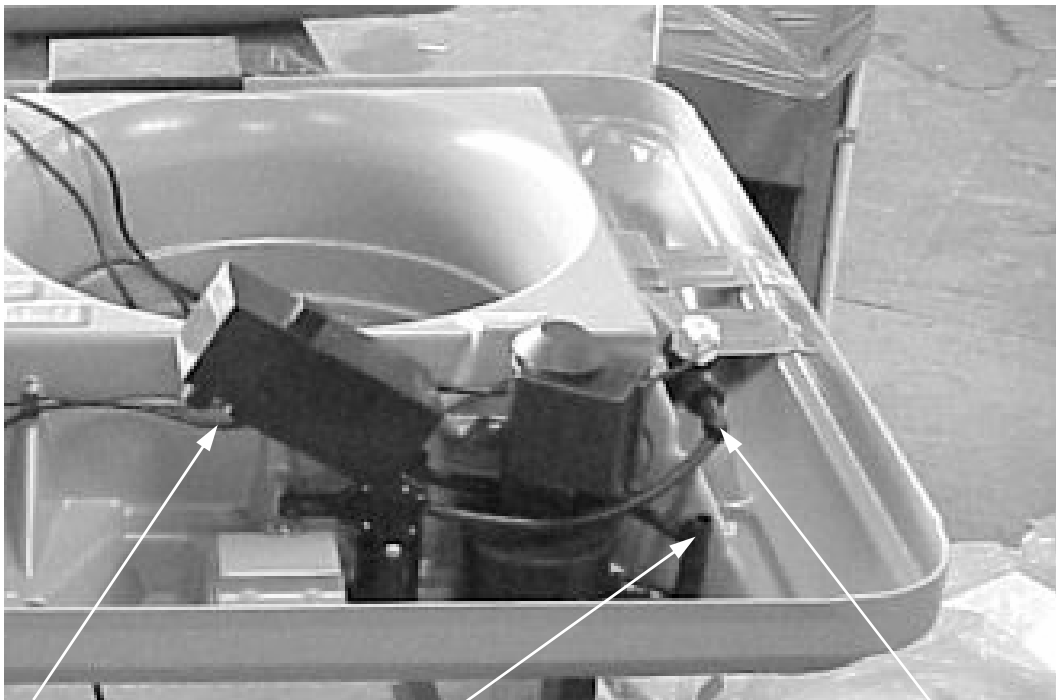
# **TWIN FAN (D400 & D500) UNIT SUMP LAYOUT**

## **2003 - 2008**

### **MRU ROOF CONTROL**

#### **IMPORTANT**

When reconnecting hoses on counterweight drain valve, ensure original hose configurations are used. Refer to pictures below for configuration options.



COUNTERWEIGHT HOSE  
TO PUMP OUTLET

CONNECTED FEEDER PIPE HERE

SOLENOID WITH COUNTERWEIGHT  
HOSE CONNECTED

# TWIN FAN (D400 & D500) SERIES

## FAULT FINDING 2006 - 2008 - GENERAL

### MRU ROOF CONTROL

ELECTRICAL FAULTS			
FAULT	Ref	CAUSE	ACTION
<b>1. NO DISPLAY AT KEYPAD</b>	1.1	Display illumination level set too low. (Excludes WW)	Whilst in ' <b>OFF</b> ' mode adjust illumination with speed > (increase) button, or the dial on the CA keypad.
	1.2	240v mains supply isolated.	Check mains fuse, circuit breaker, unit isolation switch or MRU.
	1.3	Keypad not connected.	Check 7-pin cable connection and continuity.
	1.4	Keypad locked up.	Push ' <b>RESET</b> ' button on keypad.
	1.5	MRU failure.	If 17 vdc not present between pins <b>1 and 7</b> replace MRU. Refer to pg. 19-20.
	1.6	Keypad failure.	Verify control signal from keypad with indicator LED's on MRU and /or BMCU. Check using substitute keypad.
<b>2. NO RESPONSE FROM WALL CONTROL</b>	2.1	Keypad failure.	Check appropriate LED on MRU
	2.2	MS board failure	Remove 3 pin MS cable from MRU & check unit operation.
	2.3	MRU failure. No output to selected components.	Replace MRU.
FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
<b>3. FAN NOT OPERATING</b> <i>Select '<b>FAN</b>' at keypad and fault find as follows</i>	3.1	Keypad failure keypad	If <b>Speed</b> LED not lit on MRU suspect keypad, cable or BMCU fault.
	3.2	MS board failure	Remove 3-pin MS cable and confirm motor operation.
	3.3	Capacitor failure (motor will buzz but not rotate).	Replace capacitor.
	3.4	Motor not powered.	Check 6-pin plug to motor.
	3.5	Motor seized.	Replace motor.
	3.6	Fan jammed in cowling.	Centralise fan in cowling.
	3.7	MRU failure.	Verify output with voltmeter between brown & orange motor spade terminals.
	3.8	Motor failure or shutdown due to internal (motor) thermal protection (thermal overload).	Check run current, if running at more than 120% of value on motor name plate - replace motor.
<b>4. FAN WILL NOT OPERATE IN EXHAUST</b> <i>Select '<b>EXHAUST</b>' at keypad and fault find as follows</i>	4.1	Any of the above <b>FAN</b> faults.	Check to <b>3.1 to 3.8</b> above.
	4.2	Keypad failure	If <b>Exhaust</b> LED is not lit on MRU suspect keypad, cable.
	4.3	MRU failed or locked up.	If <b>Exhaust</b> LED is lit yet motor direction has not reversed replace MRU
<b>5. FAN CONSTANTLY RUNNING</b>	5.1	MRU triac shorted.	If fan runs with keypad ' <b>OFF</b> ' or unplugged replace MRU.

# TWIN FAN (D400 & D500) SERIES

## FAULT FINDING 2006 - 2008 GENERAL

### MRU ROOF CONTROL

FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
6. FAN COMES ON BY ITSELF (AND CAN BE TURNED OFF AT KEYPAD)	6.1	Unit has sustained an electrical spike on supply cable.	Confirm unit is wired on its own dedicated supply.
	6.2	Unit has sustained an electrical spike on the low voltage keypad cable.	Fit a spike filter on both end of the low voltage keypad cable.
7. FAN CUTS OFF	7.1	Loss of power to air-conditioner.	Check display on keypad if keypad illuminated suspect thermal overload.
	7.2	Loss of power to motor.	Confirm keypad is in 'ON' position.
	7.3	Motor failure or shutdown due to internal (motor) thermal protection (thermal overload).	Check run current, if running at more than 120% of value on motor name plate—replace motor
WATER FAULTS			
8. WATER NOT ENTERING UNIT Select "COOL" and fault find as follows:	8.1	Isolation tap closed or filter blocked.	Open tap and clean filter.
	8.2	Solenoid time delay active.	Wait 1 min for drain valve to close & delay to end.
	8.3	Keypad not signalling roof unit- Drain LED not lit.	Replace keypad.
	8.4	No 24vac output Water Inlet on MRU.	Replace MRU. Refer pg 19-20.
	8.5	MS board failure.	Remove 3-pin MS cable if no voltage to solenoid replace MRU.
	8.6	Solenoid mesh strainer blocked.	Remove solenoid & clean mesh strainer & check water quality. Recommend replace solenoid.
	8.7	Solenoid coil open circuit or failed.	Replace solenoid.
	8.8	Pressure lock between solenoid & non-return type isolation valve.	Relieve pressure & fit standard isolation tap.
9. WATER CONTINUALLY RUNNING FROM UNIT Select "COOL" and fault find as follows	9.1	Keypad or BMCU failure.	If Drain LED not lit suspect 7-pin cable and/or keypad and/or BMCU.
	9.2	Electric drain valve failure. (If MWL float fitted.)	If 240v at drain terminals replace drain valve or if no voltage at drain terminals replace MRU.
	9.3	MS board failure.	Remove 3-pin MS cable from MRU. If 240v at drain terminals replace drain valve. If no voltage at drain terminals replace MRU.
	9.4	Solenoid passing water/ continuously.	Strip & clean solenoid diaphragm & seating. Recommend replace solenoid.
	9.5	Water level set too high.	Adjust MS Float valve. Check for water in float.
	9.6	Counterweight Drain Valve a) Leaking from hoses or plastic clips	Replace plastic clips (SP2041) or hoses kit (SP2042). Do not re-use clips.
		b) Hoses Incorrectly connected.	Replace hoses kit (SP2042).
		c) Physical or Mechanical impairment of counterweight drain valve body	Replace drain valve (SP2040).
	9.7	Square section blue 'O' ring faulty	Replace 'O' ring (SP2043).

# TWIN FAN (D400 & D500) SERIES

## FAULT FINDING 2006 - 2008 - GENERAL

### MRU ROOF CONTROL

WATER FAULTS			
FAULT	Ref	CAUSE	ACTION
<b>10. WATER NOT DRAINING FROM UNIT</b>	10.1	Unit may be in AUTO mode	Check system mode at keypad.
	10.2	<b>DRAIN</b> jumper not fitted to keypad - JP2.	Check position of jumper is correct for system set-up.
	10.3	Drain Interval set too long ( <b>CR / QA only</b> ).	Remove 7-pin cable from rear of keypad, defaulting drain interval to 5 hours.
	10.5	<b>Counterweight drain valve</b> a) Stuck in closed position	Replace drain valve (SP2040).
		b) Blockage in components	Replace drain valve (SP2040).
<b>11. WATER DRAINING OUT OF CYCLE</b>	11.1	<b>Drain</b> jumper not fitted to keypad - JP2. (Excludes WW & CA)	Check position of jumper is correct for system set-up.
	11.2	<b>Wash</b> jumper not fitted to keypad ( <b>CY only</b> ). Refer pg. 15.	Check position of jumper is correct for system set-up.
	11.3	<b>Long</b> jumper in incorrect position ( <b>CY only</b> ). Refer pg. 15.	Check position of jumper is correct for system set-up.
	11.4	Dip switches in incorrect position ( <b>CA only</b> ).	Refer to setting of dip switches on pg. 17.
<b>12. WATER NOT CIRCULATING</b> <i>Select "COOL" and fault find as follows</i>	12.1	Keypad failure - Display reading "C".	If <b>pump</b> LED on MRU not lit suspect keypad, cable fault.
	12.2	Pump time delay is active, normal operation.	Wait 1 min after solenoid operation for pump to start.
	12.3	Roof unit failure - no 240v supply to pump.	If Pump LED on MRU lit and 240v not present at terminals - replace roof unit.
	12.4	MS failure ( <b>if MS float fitted</b> ).	If <b>pump</b> LED on MRU lit remove 3-pin MS cable from MRU. If 240v at pump replace MS.
	12.5	Pump seized, impellor stripped or base cracked.	Replace pump.
	12.6	Pump strainer basket clogged.	Remove & clean strainer basket.
	12.7	Water distribution manifold blocked.	Remove and flush manifold of any blockages.



