AIRGROUP
Australia

ABN 68 547 176 720

COOL BREEZE

TECHNICAL MANUAL

BOOK 2

2008 Edition

AIR GROUP AUSTRALIA MANUFACTURED UNITS ONLY

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CONTENTS

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.

ABREVIATIONS

V	Volt
W	Watt
CZ	Coolzone
CO	Comfort
MX	Formerly “Maxima”
CZR	Coolzone Rotary
KDU	Keypad Display Unit
MCU	Master Control Unit
R/U	Roof Unit
cct	Circuit
DVT	Drain Valve Timer
PIR	Passive Infra-Red (detector)
LED	Light Emitting Diode
PIN	Personal Identification Number
MRU	Modular Roof Unit
MWL	Magnetic Water Level System
MS	Magnetic Sensor 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' should be preformed 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.
- The fan motor will not operate if the Motor Speed Key is not fitted to the keypad or MCU circuit board.

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.
- As of September 2002. All units except the 'E' series will be supplied with an isolation valve which incorporates a filter/strainer. The filter can be cleaned during a routine maintenance. 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). Supply ing 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.

CO (COMFORT) SERIES

(1994 - 2000)

Wall Control : CO Series 17vdc (SP3212) (Obsolete) replace with QA (SP3221)

Compatible Roof Unit: CO R/U (SP3006) or MRU (SP3000)

Control Cable: 7-pin 17 vdc pre-terminated (SP5200)

Fan Motor: 370 W, 600 W, 750 W

Drainage: 240v Electric Drain Valve (SP2062), Hydraulic Drain Valve (SP2064) or Bleed Off

Pump: 240v pump

Solenoid: 24v or Retro-Fit kit (on CO Roof Unit SP3006 only)

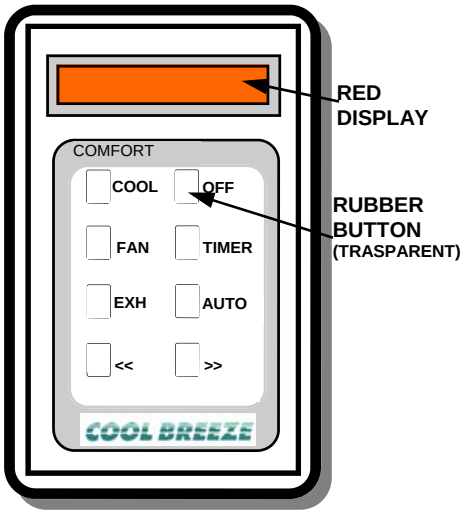
Display Reading	**Modes of Operation:**	
F	FAN	- ventilation with fresh air
E	EXHAUST	- to extract air
C	COOL	- for cooling
AC	AUTO	- fan speed and water regulated automatically according to 'set' temperature.
AF	AUTO FAN	- auto operation without cooling
00-00-30	TIMER	- countdown timer to switch unit on and off after timed interval

Fan Speed: 100 speed in all modes

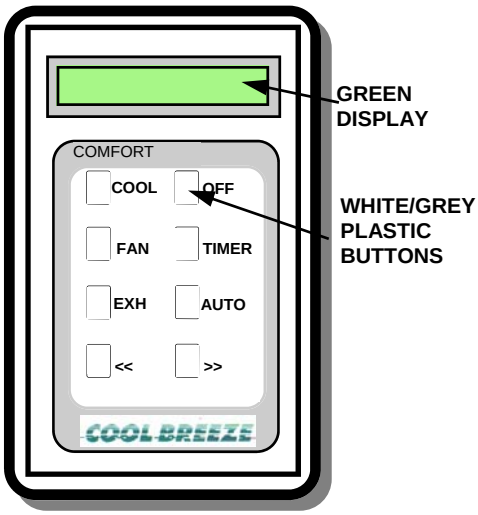
Other Features:

- Automatic wash and flush functions in Cool mode.
- Temperature sensor in keypad.
- Variable drain cycle - 0.5 to 99.5 hours.
- Keypad reset button - current version.
- Display illumination adjustable by pressing the arrow keys when in the off position.

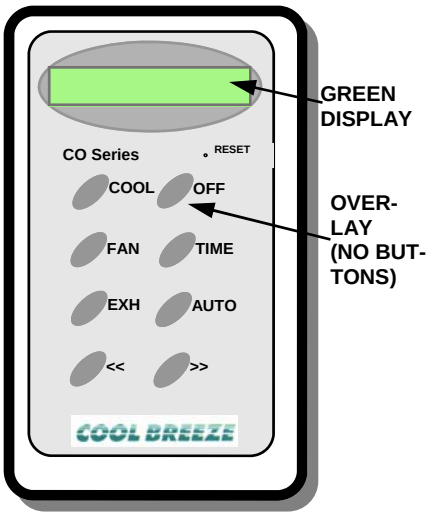
CO 94/95



CO 95/97



CO 97/00



CZ (COOLZONE) SERIES
(1995 - 2000)

Wall Control : CZ Series 17vdc (SP3211)(Obsolete) replace with CY (SP3214)

Compatible Roof Unit: Fused R/U (SP3003) (Obsolete) replace with MRU (SP3000)

Control Cable: 7-pin 17vdc pre-terminated (SP5200)

Fan Motor: 370 W, 600 W, 750 W

Drainage: 240v Electric Drain Valve (SP2062) or Bleed Off

Pump: 240v pump

Solenoid: 24v solenoid

Modes of Operation:

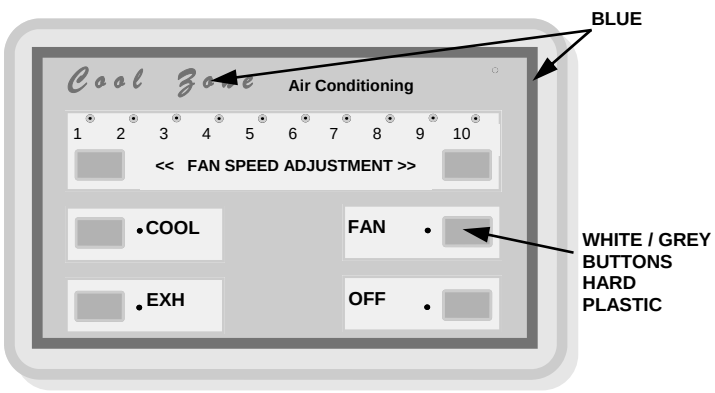
FAN - ventilation with fresh air
EXHAUST - to extract air
COOL - for cooling

Fan Speeds: 10 speeds in all modes

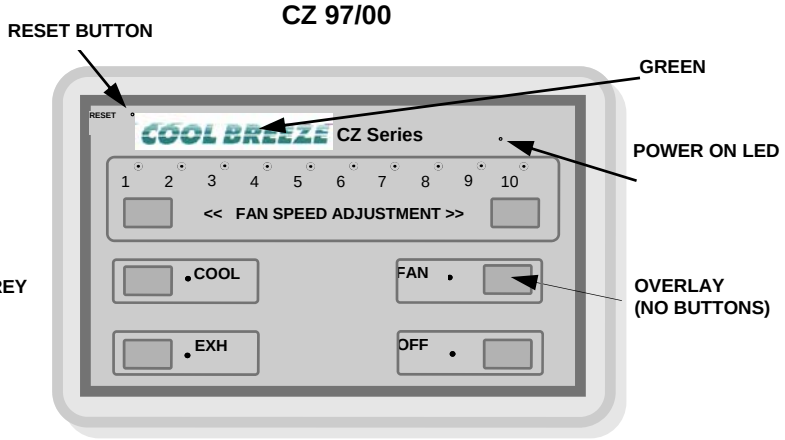
Other Features:

- 2.5 or 5 hour drain cycles (long jumper).
- Automatic wash and flush functions in Cool mode (drain jumper).
- Option of retaining or draining wash water (wash jumper).
- Display illumination adjustable by pressing the arrow keys when in the off position.
- Keypad reset button - current version.
- Power on LED indicator.

CZ 95/97

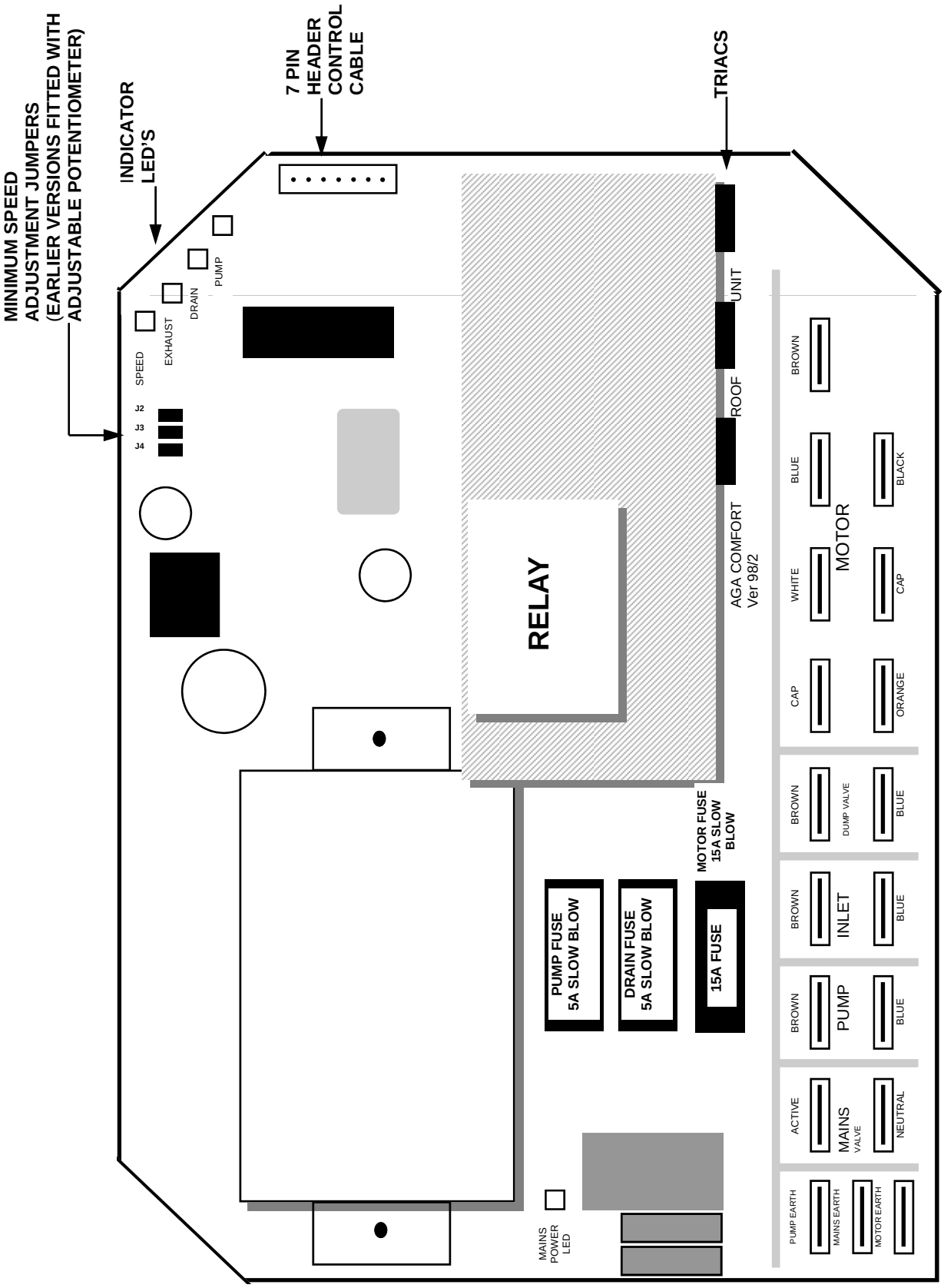


CZ 97/00



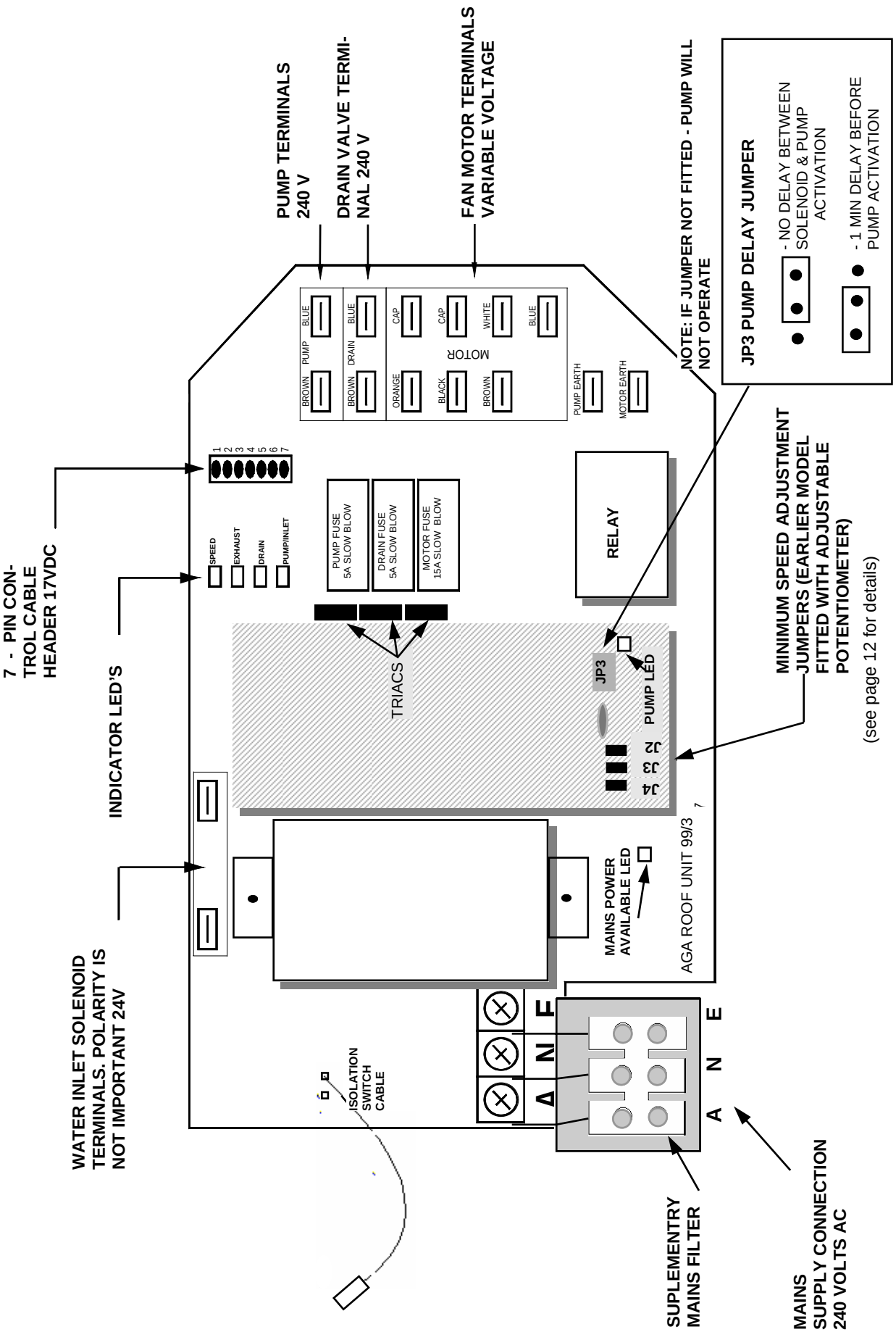
CO ROOF UNIT BOARD (SP3006)

ONLY INSTALLED IN UNITS UP TO 1996

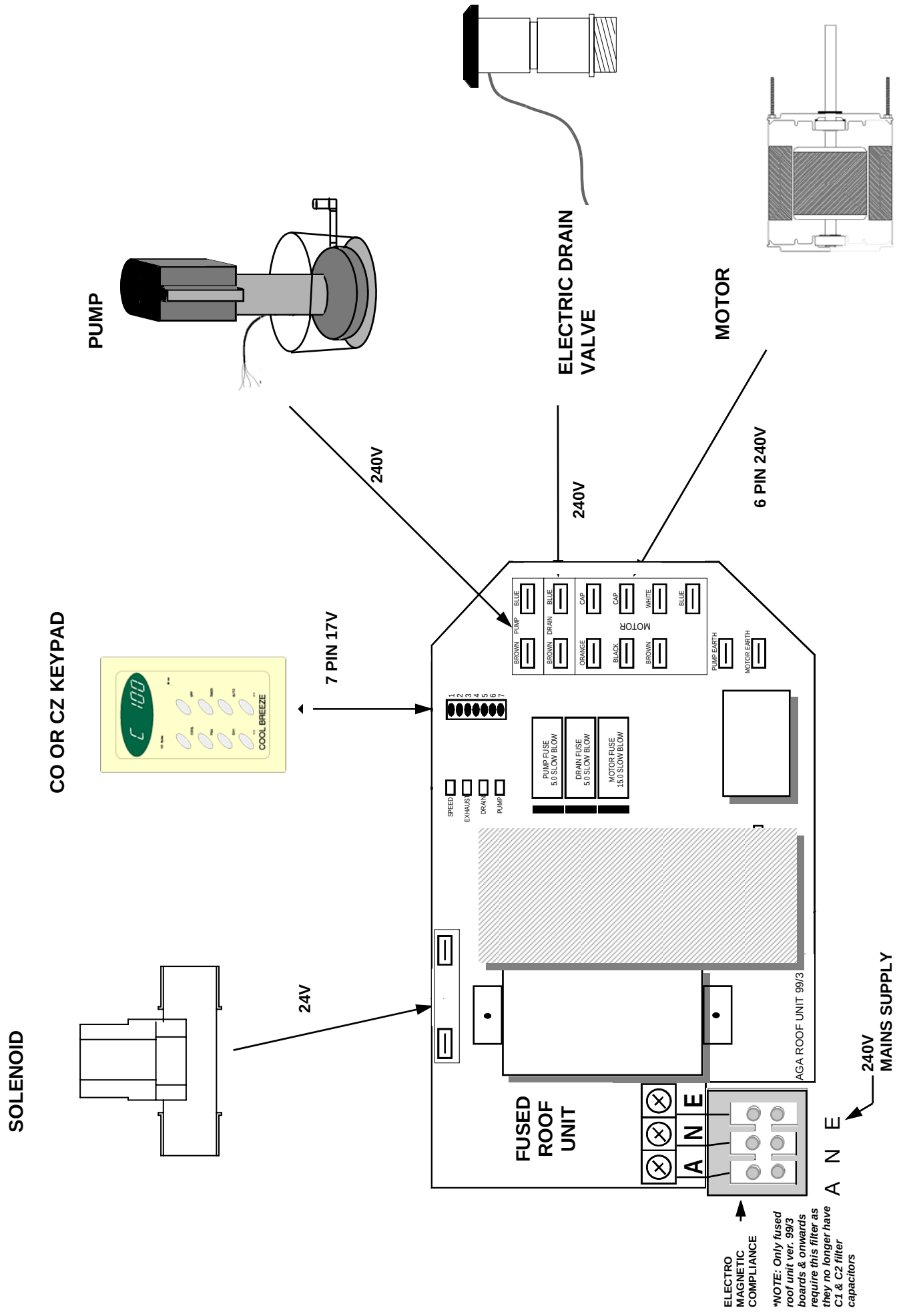


FUSED ROOF UNIT BOARD (SP3003)

(No longer available)



CO/CZ SCHEMATIC DIAGRAM



CO & CZ FAULT FINDING

NOTES

- R/U Indicator LED's display incoming control signals only. Outputs must be verified with a multimeter at appliance terminals.
- Resetting a CO KDU will reset to factory default any preset valves *e.g. drain cycle interval, auto mode temp*.
- Damage to equipment can occur if power is not isolated when connecting or disconnecting key-pads, or appliances from Roof Units.
- All version keypads with serial numbers larger than 30516 have internal timers fitted. Some of these will be identified by a fluorescent orange sticker stating 'FITTED WITH INTERNAL DRAIN VALVE TIMER'. All version keypads prior to the above serial number need to have an External Drain Valve Timer fitted.

EXTERNAL DRAIN VALVE TIMERS

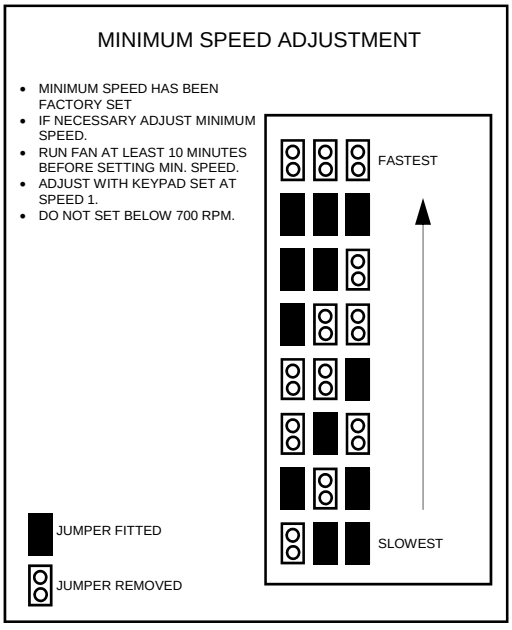
- The External Drain Valve Timer is to be fitted to the Roof unit (Always remove existing External Drain Valve timers fitted to roof unit before fitting new one). It is not necessary to remove any existing External Drain Valve Timer fitted to the keypad.
- The timers generate a 5 second ON and 15 second OFF duty cycle to increase durability of the drain valve. They do not affect the drain cycle times.

ROOF UNIT MOUNTED STYLE (SP3009)

IMPORTANT
ALWAYS REPLACE DRAIN VALVE TIMER WHEN REPLACING ELECTRIC DRAIN VALVE.

MINIMUM SPEED ADJUSTMENT

The minimum fan speed is adjusted by changing the configuration of the three jumpers on the Roof Unit circuit board, indicated on the drawing on page 10. It is important when setting speeds on 1000W, 750W and 600W motors that the minimum speed does not fall below 750 RPM.



CR SERIES
2000 - 2005
(Replaces CO Series)

Wall Control : CR Series 17vdc (SP3215)

Compatible Roof Unit: Modular R/U (SP3000)

Control Cable: 7-pin 17vdc pre-terminated (SP5200)

Fan Motor: 600W, 750W, 1000W

Drainage: 240v Electric Drain Valve (SP2062) or Counterweight Drain Valve (SP2040)

Pump: 240v pump

Solenoid: 24v solenoid

Display Reading: **Modes of Operation**

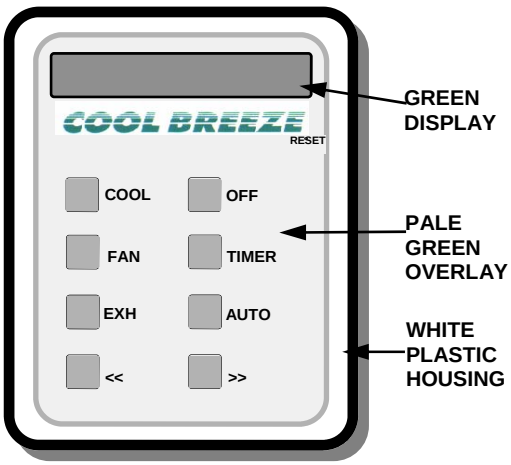
F	FAN	- ventilation with fresh air.
E	EXHAUST	- to extract air.
C	COOL	- operates pump & fan for cooling.
AC	AUTO	- fan speed and water regulated automatically according the 'set' temperature.
AF	AUTO FAN	- auto operation without cooling.
00-00-30	TIMER	- countdown timer to switch unit on or off after timed interval.

Fan Speeds: 100 speeds in all modes
Selected fan speed displayed when in manual mode

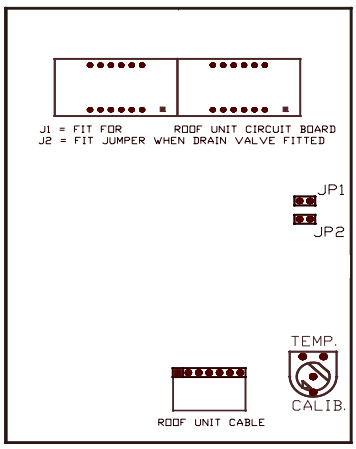
Other Features:

- Automatic wash and flush functions in Cool mode.
- Temperature sensor in keypad - Current room temp displayed when in standby/off mode.
- Variable drain cycle – 0.5 to 99.5 hours.
- Keypad reset button - current version.
- Display illumination adjustable by pressing the arrow keys when in the off position.

CR 00/04



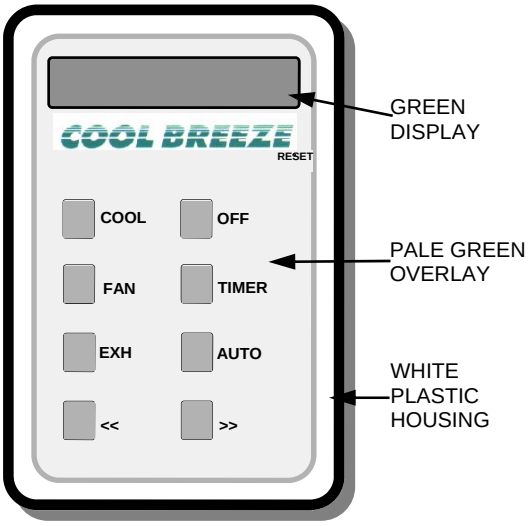
BACK OF KEYPAD CIRCUIT BOARD



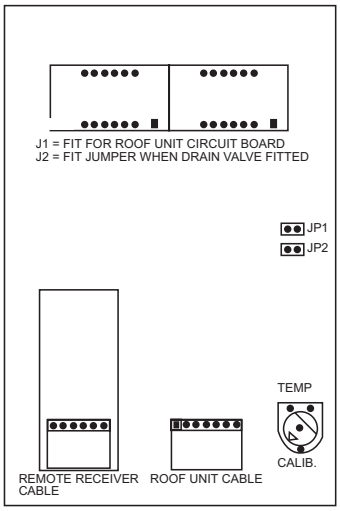
CRR SERIES (SP3216)
2002 - 2003

Wall Control : All functions same as CR

CR KEYPAD
2002 - 2003



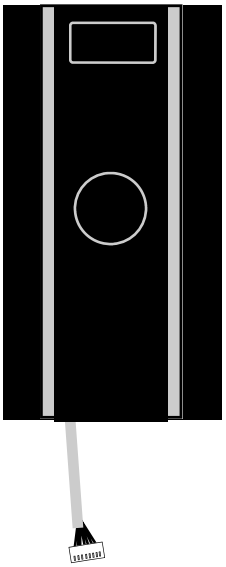
BACK OF KEYPAD CIRCUIT BOARD
2002 - 2003



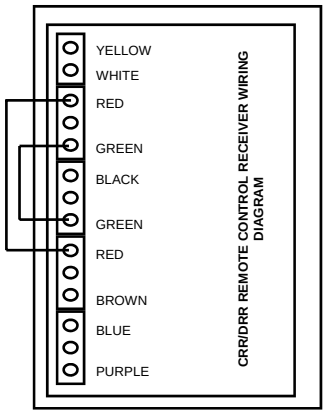
Fitted with Remote Receiver Header

Multifunction Receiver (SP3217)

- External receiver only used in 2002/2003 session.
- Internal receiver fitted to keypad 2003/2004 session.



Multifunction Receiver Wiring Diagram

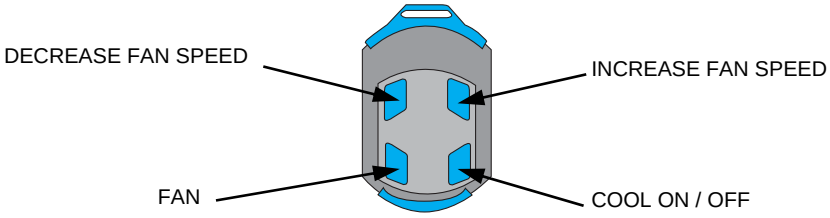


Multifunction Receiver PCB

8 core 3m Cable to Keypad

ADD/CLR Pins & Jumper

REMOTE TRANSMITTER (SP3218)



CRR SERIES (SP3219)

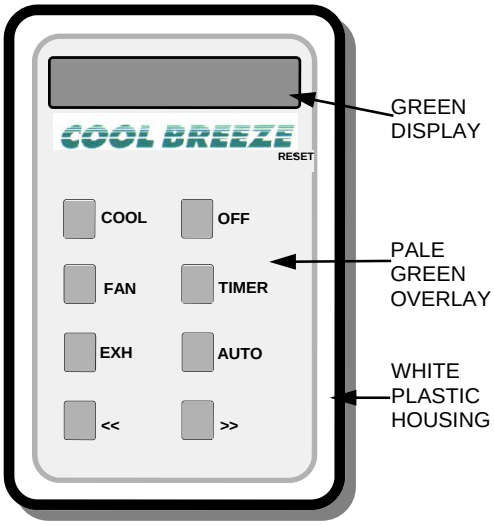
2003 - 2005

(Replaces CRR SP3216)

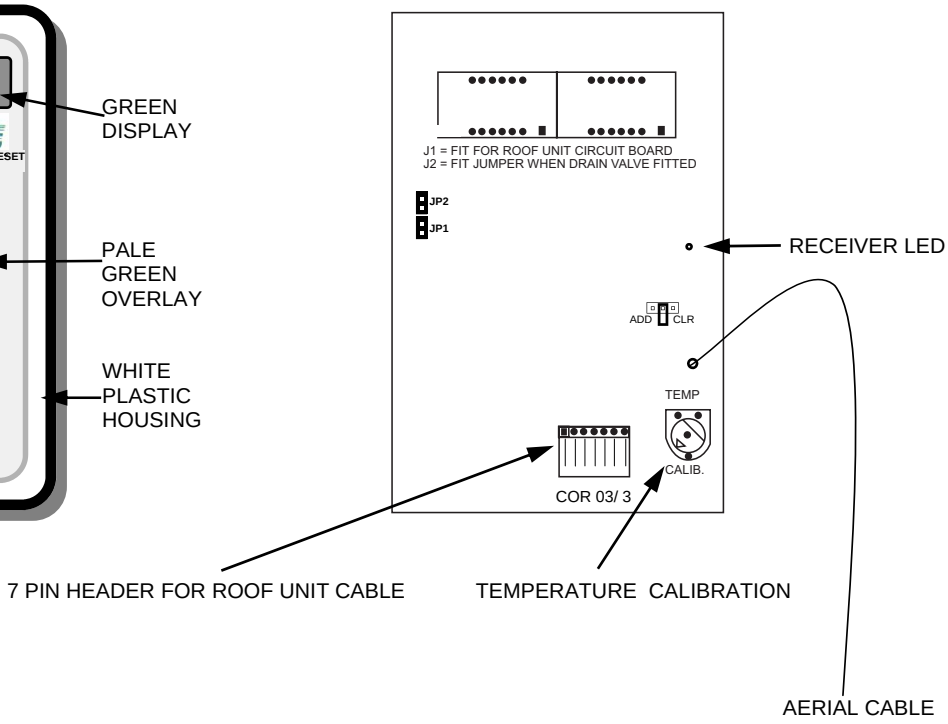
Wall Control

- All functions same as CR
- Receiver built into CRR Wall Controller

CR KEYPAD
2004 - 2005



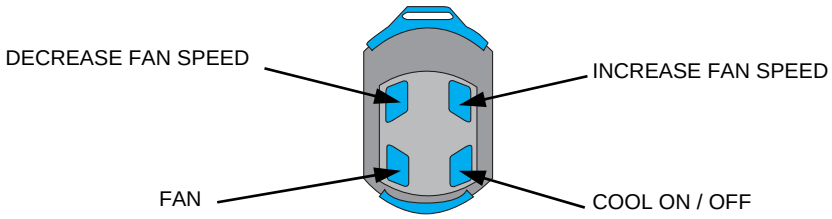
BACK OF KEYPAD CIRCUIT BOARD



Multifunction Receiver

- CRR Series keypad part number SP3219 has receiver fitted to keypad.

REMOTE TRANSMITTER (SP3218)



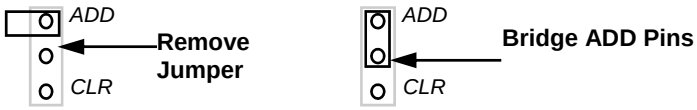
Fault Finding for SP3216 and SP3219

- Remove 8 pin remote control receiver cable from rear of keypad and fault find as per CO/CZ/CA/CR/CY.
- If fault is attributed to remote control then replace the transmitter and re-programme the receiver

Programming additional transmitters

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

1. Power to remain connected.
2. Remove the cover from the receiver box and locate the 'ADD' pins and jumper.
3. Remove the jumper from the top pin and bridge the 'ADD' 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 button press has been accepted
5. Remove the jumper from the 'ADD' pins and replace it on the top pin.

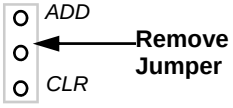
Resolving a conflict situation

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 the receiver re-programmed.

1. With the power connected, bridge the 'CLR' 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.

CY SERIES
2000 - 2005
(Replaces CZ Series)

Wall Control : CY Series 17vdc (SP3214)

Compatible Roof Unit: Modular R/U (SP3000)

Control Cable: 7-pin 17vdc pre-terminated (SP5200)

Fan Motor: 600W, 750W, 1000W

Drainage: 240v Electric Drain Valve (SP2062), or Counterweight Drain Valve (SP2040)

Pump: 240v pump

Solenoid: 24v solenoid

Modes of Operation:

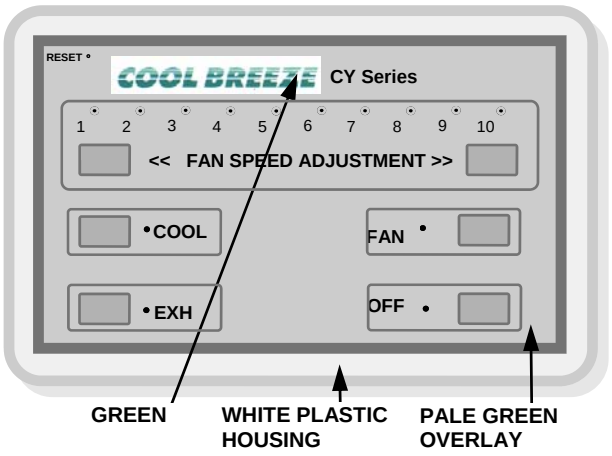
FAN - ventilation with fresh air
EXHAUST - to extract air
COOL - operates pump and fan for cooling

Fan Speeds: 10 speeds indicated by fan speed LED

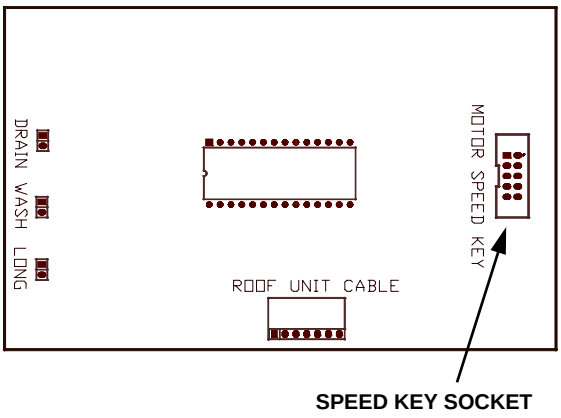
Other Features:

- 2.5 or 5 hour drain cycles (long jumper).
- Automatic wash and flush functions in Cool mode (drain jumper).
- Option of retaining or draining wash water (wash jumper).
- Display illumination is adjustable by arrow keys when in the off position.
- Keypad reset button.
- Power on LED indicator .

CY 00/05



BACK OF KEYPAD CIRCUIT BOARD



CA SERIES
2000 - 2005

Wall Control : CA Series 17vdc (SP3213)

Compatible Roof Unit: Modular R/U (SP3000)

Control Cable: 7-pin 17vdc pre-terminated (SP5200)

Fan Motor: 600W, 750W, 1000W

Drainage: 240v Electric Drain Valve (SP2062) or Counterweight Drain Valve (SP2040)

Pump: 240v Pump

Solenoid: 24v solenoid

Modes of Operation:

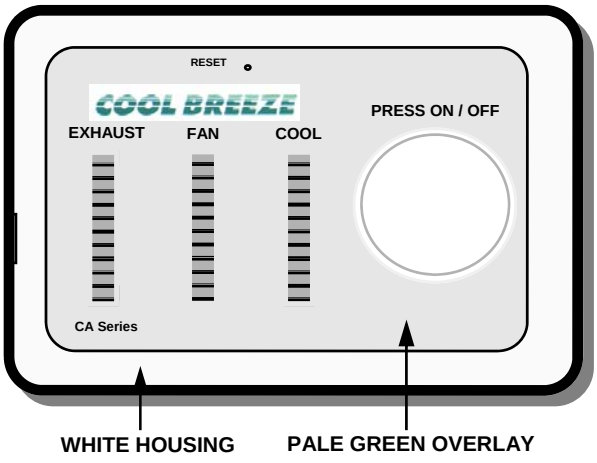
FAN	- fan only for ventilation with fresh air
EXHAUST	- reverse fan direction to extract air
COOL	- fan and pump both operate for cooling

Fan Speeds: Variable speed by illuminated columns

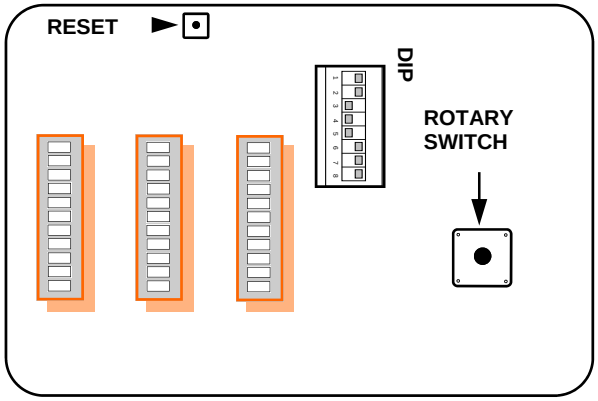
Other Features:

- Automatic wash & flush functions in cool mode.
- Variable drain cycle 2-8 hours.
- Keypad reset button.
- Display illumination is adjusted by rotation of the on/off knob when in the off mode.

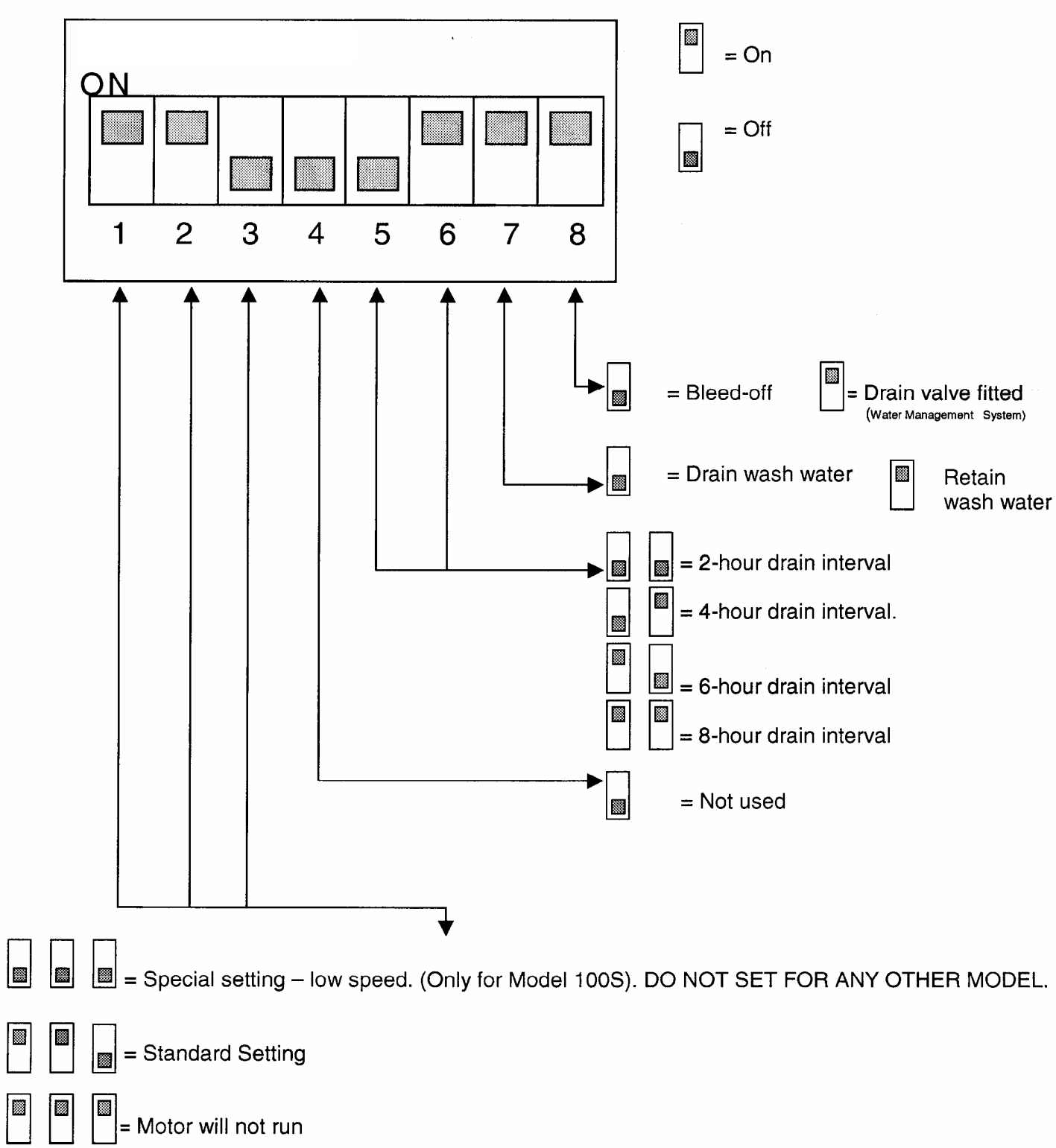
CA 00/05



FRONT OF KEYPAD CIRCUIT BOARD

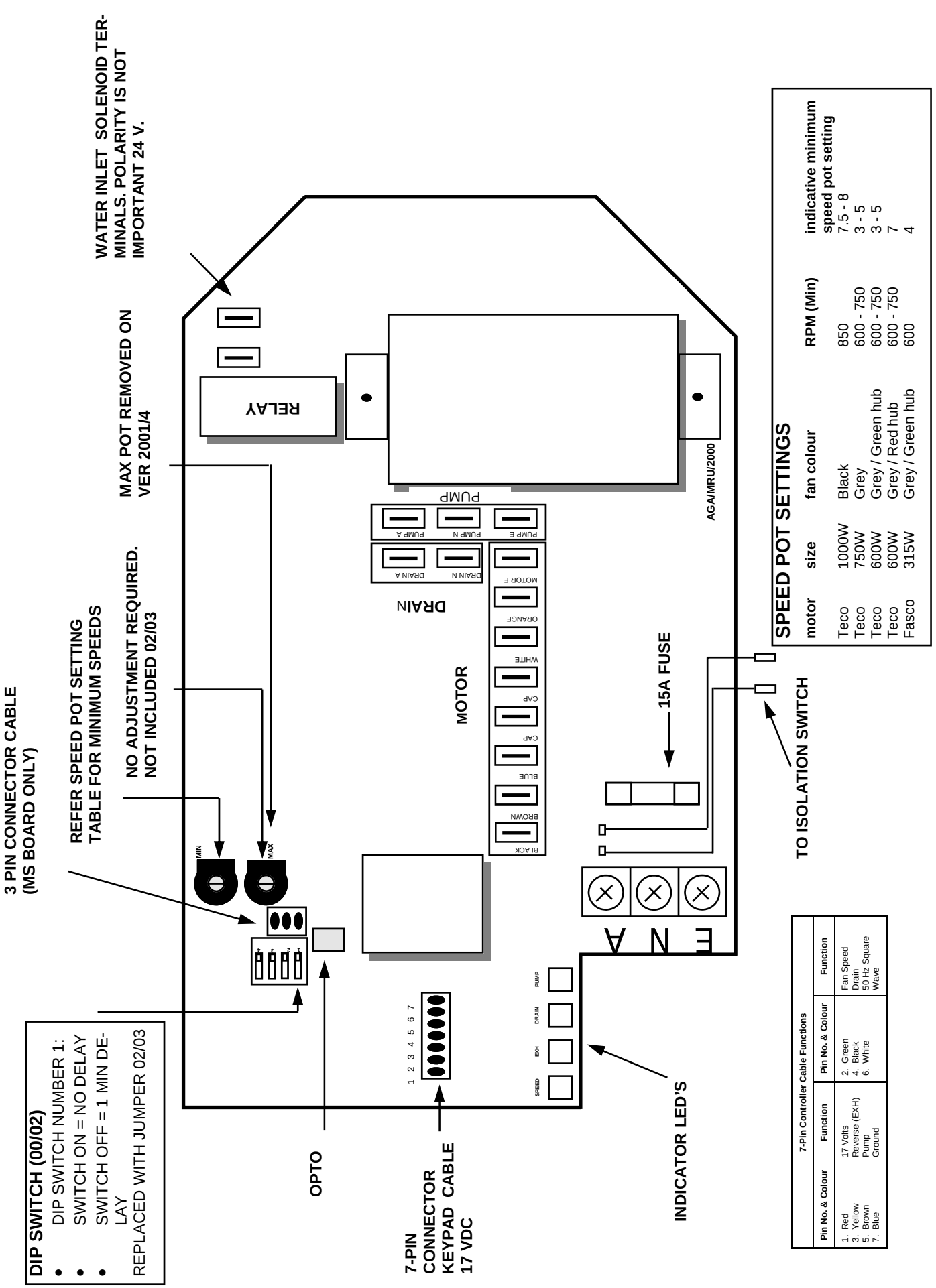


STANDARD SETTING OF DIP SWITCHES



MODULAR ROOF UNIT BOARD (MRU) (SP3000)

2000 - 2008



DIP SWITCH (00/02)

- DIP SWITCH NUMBER 1:
- SWITCH ON = NO DELAY
- SWITCH OFF = 1 MIN DELAY

REPLACED WITH JUMPER 02/03

SPEED POT SETTINGS

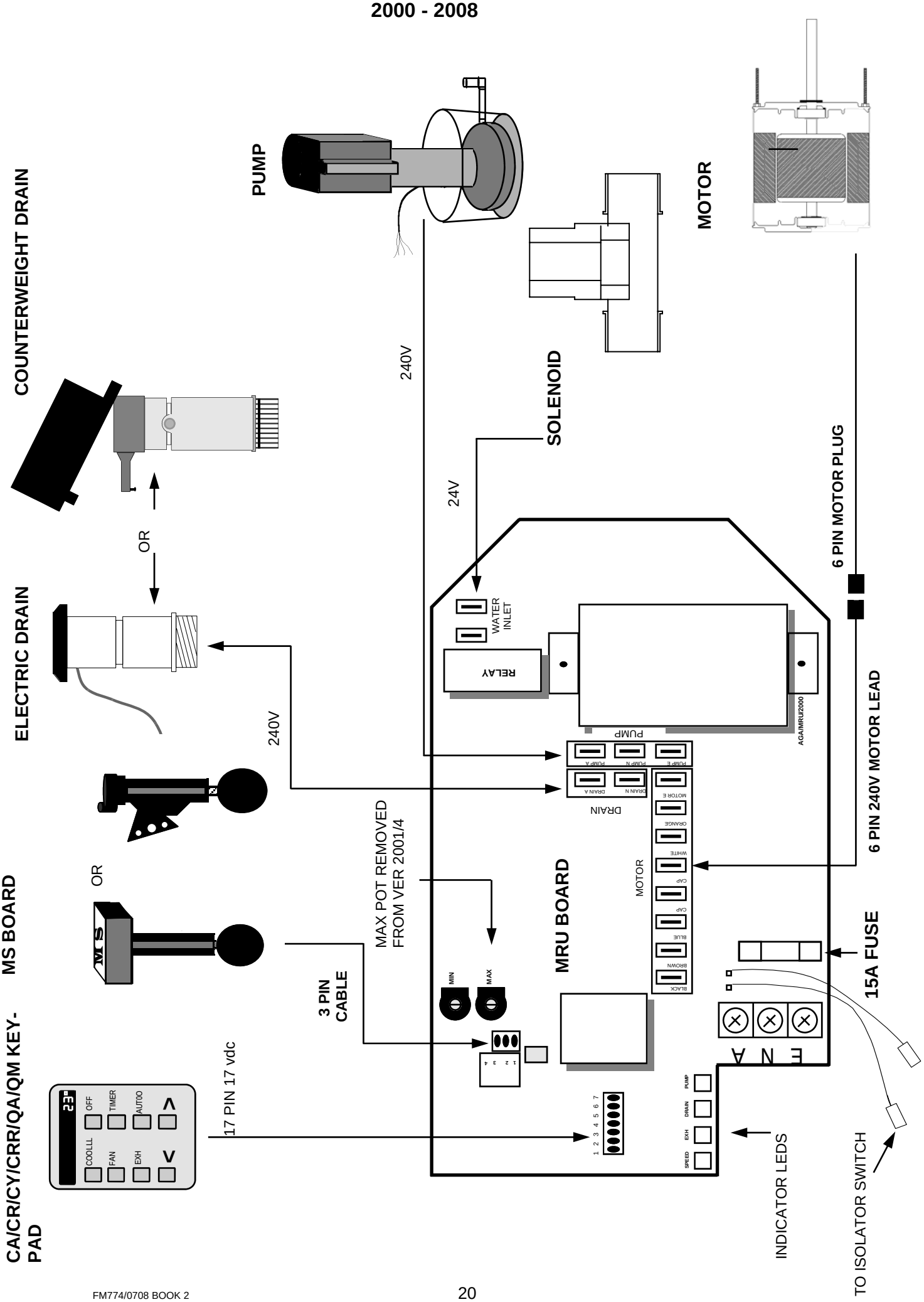
motor	size	fan colour	RPM (Min)	indicative minimum speed pot setting
Teco	1000W	Black	850	7.5 - 8
Teco	750W	Grey	600 - 750	3 - 5
Teco	600W	Grey / Green hub	600 - 750	3 - 5
Teco	600W	Grey / Red hub	600 - 750	7
Fasco	315W	Grey / Green hub	600	4

7-Pin Controller Cable Functions

Pin No. & Colour	Function	Pin No. & Colour	Function
1. Red	17 Volts	2. Green	Fan Speed
3. Yellow	Reverse (EXH)	4. Black	Drain
5. Brown	Pump	6. White	50 Hz Square Wave
7. Blue	Ground		

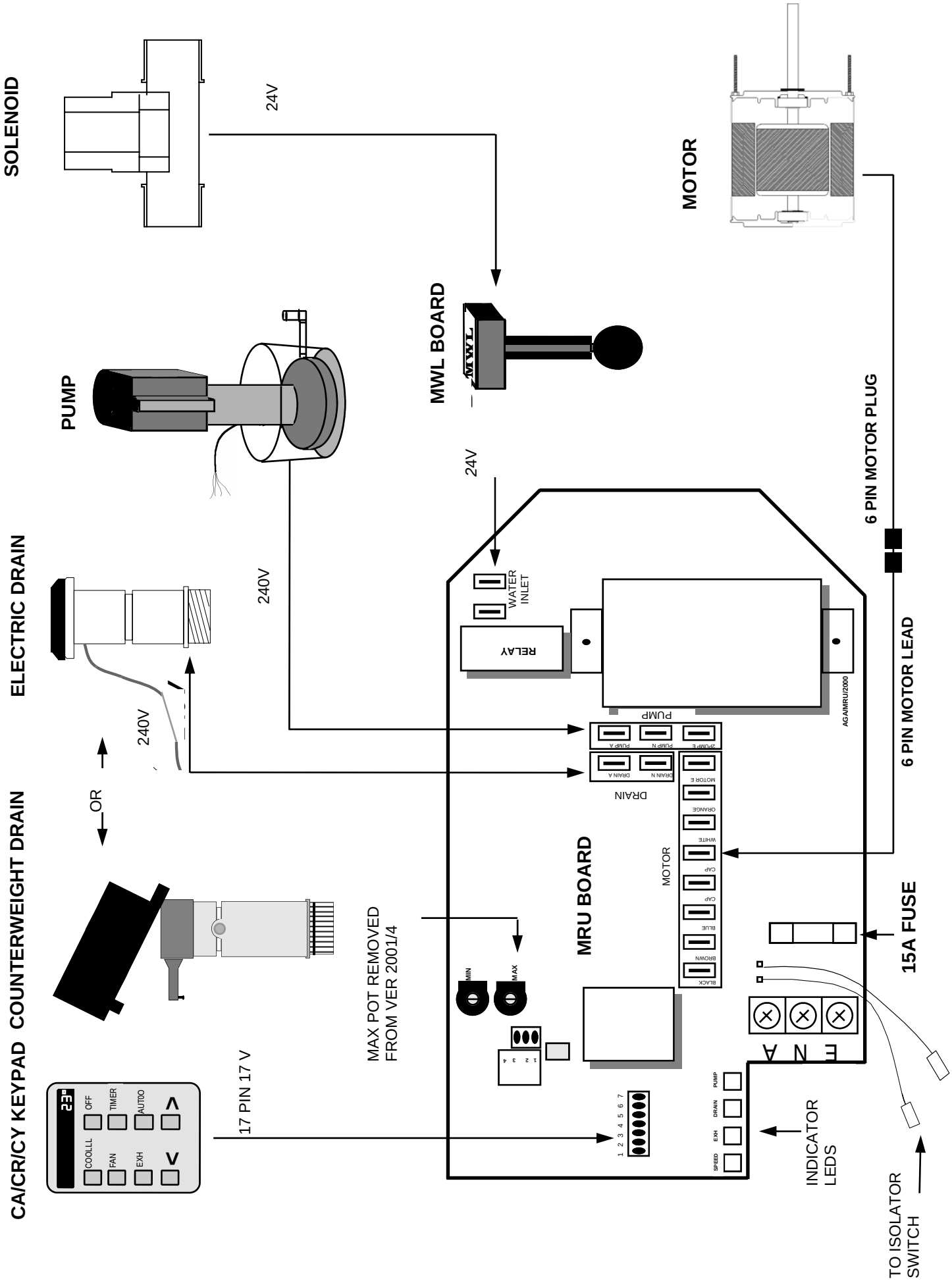
CA/CR/CY/QA/QM SCHEMATIC DIAGRAM - MS SYSTEM

2000 - 2008



CA/CR/CY SCHEMATIC DIAGRAM - MWL SYSTEM

2000 - 2005



WW SERIES
2000 - 2005

Wall Control : WW Controller (SP3225)

Communication Board : WW BMCU (SP3227)

Compatible Roof Unit: Modular R/U (SP3000)

Control Cable:

a) 7-pin 17vdc pre-terminated (SP5200) connection between R/U and BMCU board.

b) 7-pin 14vdc pre-terminated (SP5200) connection between BMCU and keypad.

c) 4-pin 14vdc pre-terminated (SP5202) connection between BMCU and keypad for temperature sensing.

d) 8-pin pre-terminated (SP3229) connection to remote receiver board.

Fan Motor: 600W, 750W, 1000W

Drainage: Counterweight Drain Valve (SP2040)

Pump: 240V pump

Solenoid: 24V solenoid

Modes of Operation

FAN - ventilation with fresh air.
EXHAUST - to extract air.
COOL - operates pump & fan for cooling.
AUTO - control unit to maintain constant pre-set temperature
TIMER - WAKE/SLEEP countdown timer to switch unit on or off after timed interval.
DAILY ON / DAILY OFF TIMERS

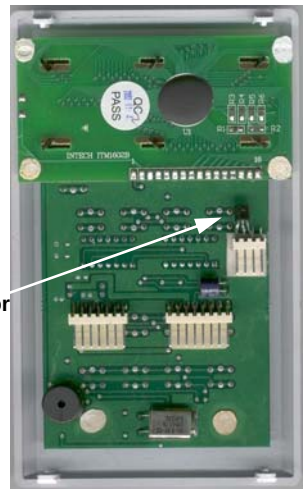
Fan Speeds: 100 speeds in all modes

Other Features:

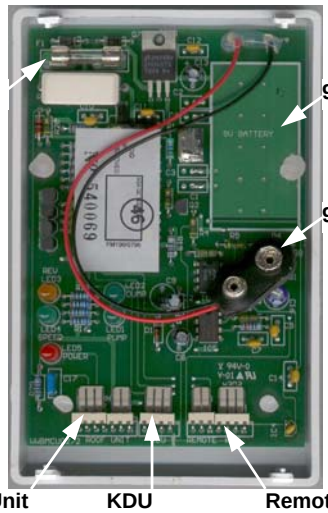
- Automatic wash and flush functions in Cool mode.
- Temperature sensor in keypad - Current room temp displayed when in standby mode.
- Variable drain cycle – 1 to 24 hours.
- Keypad reset button.
- Digital display.
- Time display.

WW Keypad

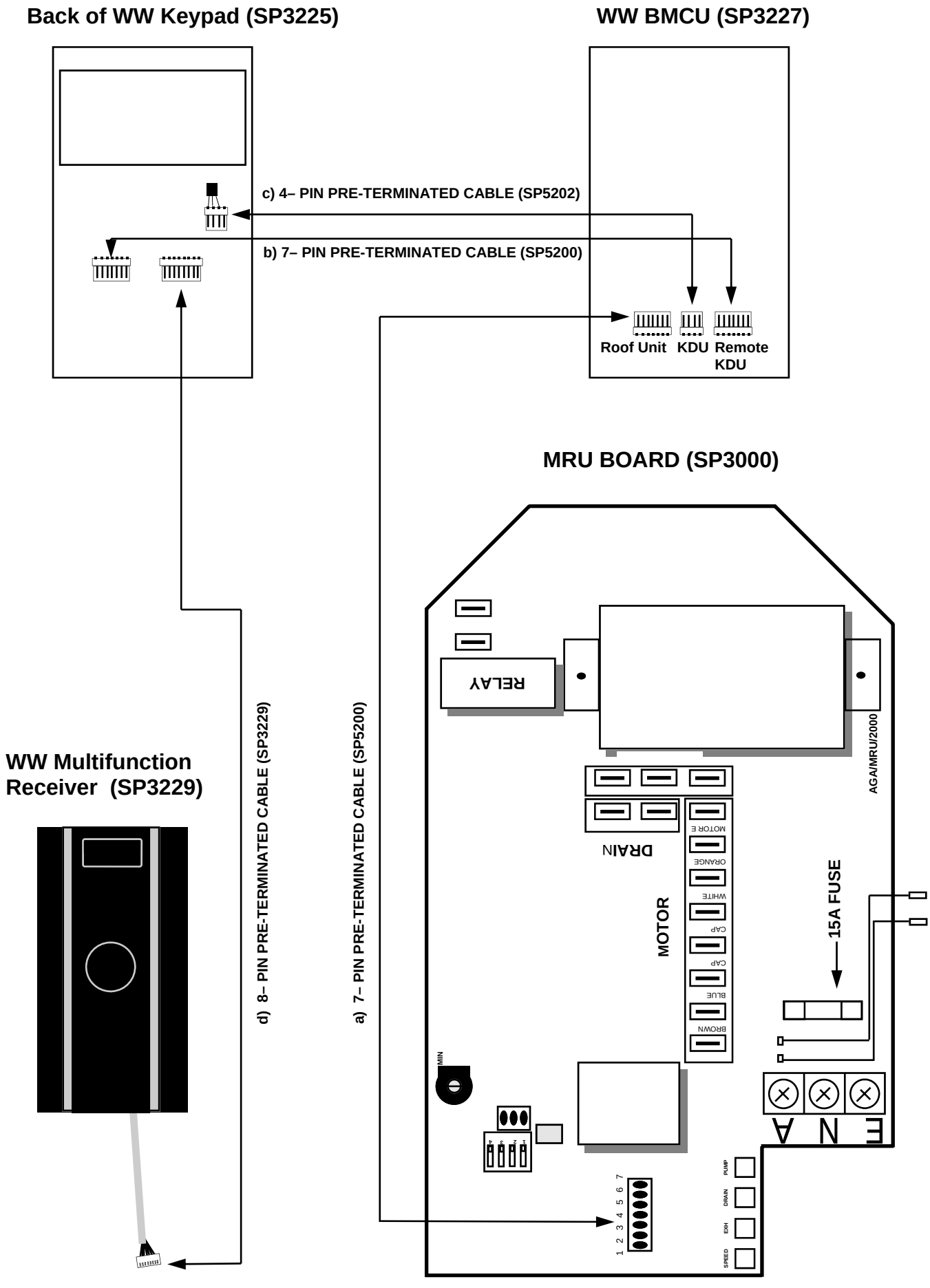
Back of WW Keypad



WW BMCU Board

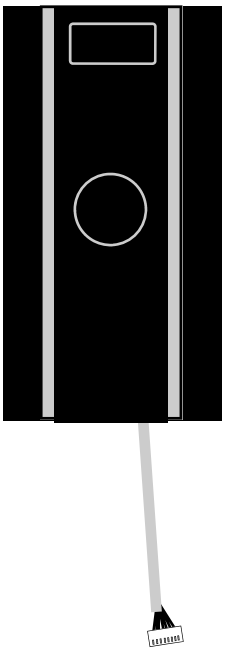


WW SERIES SCHEMATIC DIAGRAM
2000 - 2005

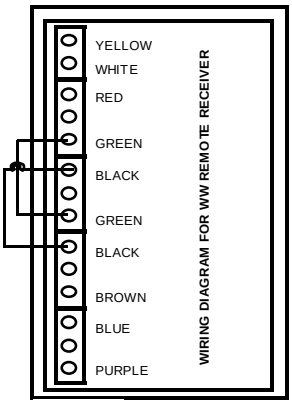


WW SERIES
2003 - 2005

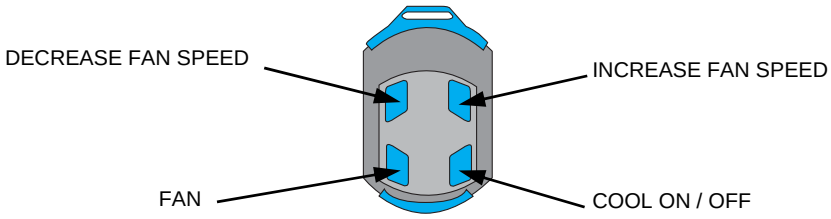
WW Multifunction Receiver (SP3229)



WW Multifunction Receiver Wiring Diagram



WW Multifunction Transmitter (SP3223)



Note: Conflict situations refer to CRR series page 15

CO/CZ/CA/CR/CY/WW/EX/I/QA/QM FAULT FINDING

ELECTRICAL FAULTS			
FAULT	**Ref**	**CAUSE**	**ACTION**
1. NO DISPLAY AT KEYPAD	1.1	Display illumination level set too low. (Excludes WW)	Whilst in **'OFF'** 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 **'RESET'** button on keypad.
	1.5	MRU failure.	If 17 vdc not present between pins **1 and 7** 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.
	1.6a	BMCU failure.	Verify control signal from BMCU with indicator LEDS on MRU.
2. NO RESPONSE FROM WALL CONTROL	2.1	Keypad failure.	Check appropriate LED on MRU and / or BMCU with function selected.
	2.2	MS board failure **(If MS float is fitted).**	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**
3. FAN NOT OPERATING *Select **'FAN'** at keypad and fault find as follows*	3.1	Speed key not fitted - JP3.	Check keypad to see if speed key is required. If so, fit. Refer to pg 15
	3.2	Keypad failure keypad or BMCU failure no signal to MRU.	If **Speed** LED not lit on MRU suspect keypad, cable or BMCU fault.
	3.3	MS board failure (if MS float is fitted).	Remove 3-pin MS cable and confirm motor operation.
	3.4	Capacitor failure (motor will buzz but not rotate).	Replace capacitor.
	3.5	Motor not powered.	Check 6-pin plug to motor. Refer to pg 19-20.
	3.6	Motor seized.	Replace motor.
	3.7	Fan jammed in cowling.	Centralise fan in cowling.
	3.8	MRU failure.	Verify output with voltmeter between blue & black motor spade terminals.
	3.9	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.
4. FAN WILL NOT OPERATE IN EXHAUST *Select **'EXHAUST'** at keypad and fault find as follows*	4.1	Any of the above **FAN** faults.	Check to **3.1 to 3.8** above.
	4.2	Keypad or BMCU failure no signal to roof unit.	If **Exhaust** LED is not lit on MRU suspect keypad, cable or BMCU fault.
	4.3	MRU failed or locked up.	If **Exhaust** LED is lit yet motor direction has not reversed replace MRU
5. FAN CONSTANTLY RUNNING	5.1	MRU triac shorted.	If fan runs with keypad **'OFF'** or unplugged replace MRU.

CO/CZ/CA/CR/CY/QA/QM/WW/EX/I FAULT FINDING

FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
6. FAN COMES ON BY IT-SELF (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.
	8.3a	BMCU board not signalling roof unit. Drain LED not lit.	Replace BMCU
	8.4	No 24vac output Water Inlet on MRU.	Replace MRU. Refer pg 19-20.
	8.5	No 24vac output at MWL board.	Replace MWL board.
	8.6	MS board failure (If MS float is fitted).	Remove 3-pin MS cable if no voltage to solenoid replace MRU.
	8.7	Solenoid mesh strainer blocked.	Remove solenoid & clean mesh strainer & check water quality. Recommend replace solenoid.
	8.8	Solenoid coil open circuit or failed.	Replace solenoid.
	8.9	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. (If MS float is fitted.)	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 either Fluidmaster Float valve, MS or MWL float level. 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 (Refer to pg 39)	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).

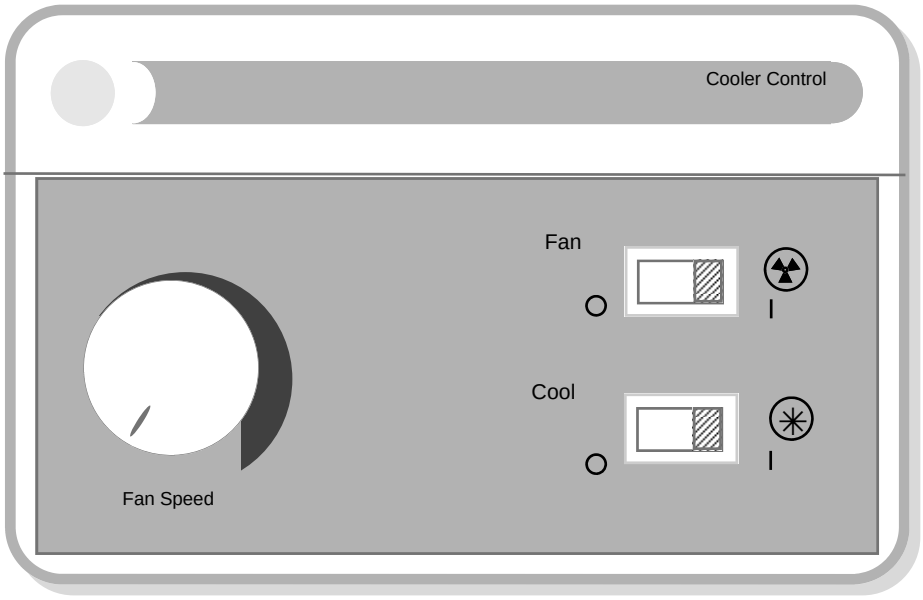
CO/CZ/CA/CR/CY/QA/QM/WW/EX/I FAULT FINDING

WATER FAULTS			
FAULT	**Ref**	**CAUSE**	**ACTION**
10. WATER NOT DRAINING FROM UNIT	10.1	Unit may be in AUTO mode **(CR or WW only).**	Check system mode at keypad. Refer pg 12.
	10.2	Electric drain valve failed and/or roof unit triac shorted as a result.	If 240v present at drain terminals when OFF selected - replace roof unit. Recommend replace Electric Drain Valve.
	10.3	**DRAIN** jumper not fitted to keypad - JP2. (Excludes WW & CA)	Check position of jumper is correct for system set-up. Refer pg. 12.
	10.4	Drain Interval set too long **(CR only).**	Remove 7-pin cable from rear of keypad, defaulting drain interval to 5 hours.
	10.4a	Drain internal set too long (WW only).	Set drain interval on keypad. Press SET and COOL)
	10.5	**Counterweight drain valve** a) Stuck in closed position	Replace drain valve (SP2040).
		b) Blockage in components	Replace drain valve (SP2040).
11. WATER DRAINING OUT OF CYCLE	11.1	**Drain** jumper not fitted to keypad - JP2. (Excludes WW & CA)	Check position of jumper is correct for system set-up.
	11.2	**Wash** jumper not fitted to keypad **(CY only).** Refer pg. 15.	Check position of jumper is correct for system set-up.
	11.3	**Long** jumper in incorrect position **(CY only).** Refer pg. 15.	Check position of jumper is correct for system set-up.
	11.4	Dip switches in incorrect position **(CA only).**	Refer to setting of dip switches on pg. 17.
12. WATER NOT CIRCULATING *Select "**COOL**" and fault find as follows*	12.1	Keypad failure - Display reading "C" refer pg. 12.	If **pump** LED on MRU not lit suspect keypad, cable or BMCU 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 **(if MS float fitted).**	If **pump** 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.

CM, V, VS, E, EC (TEKELEK) SERIES
(Heritage only)

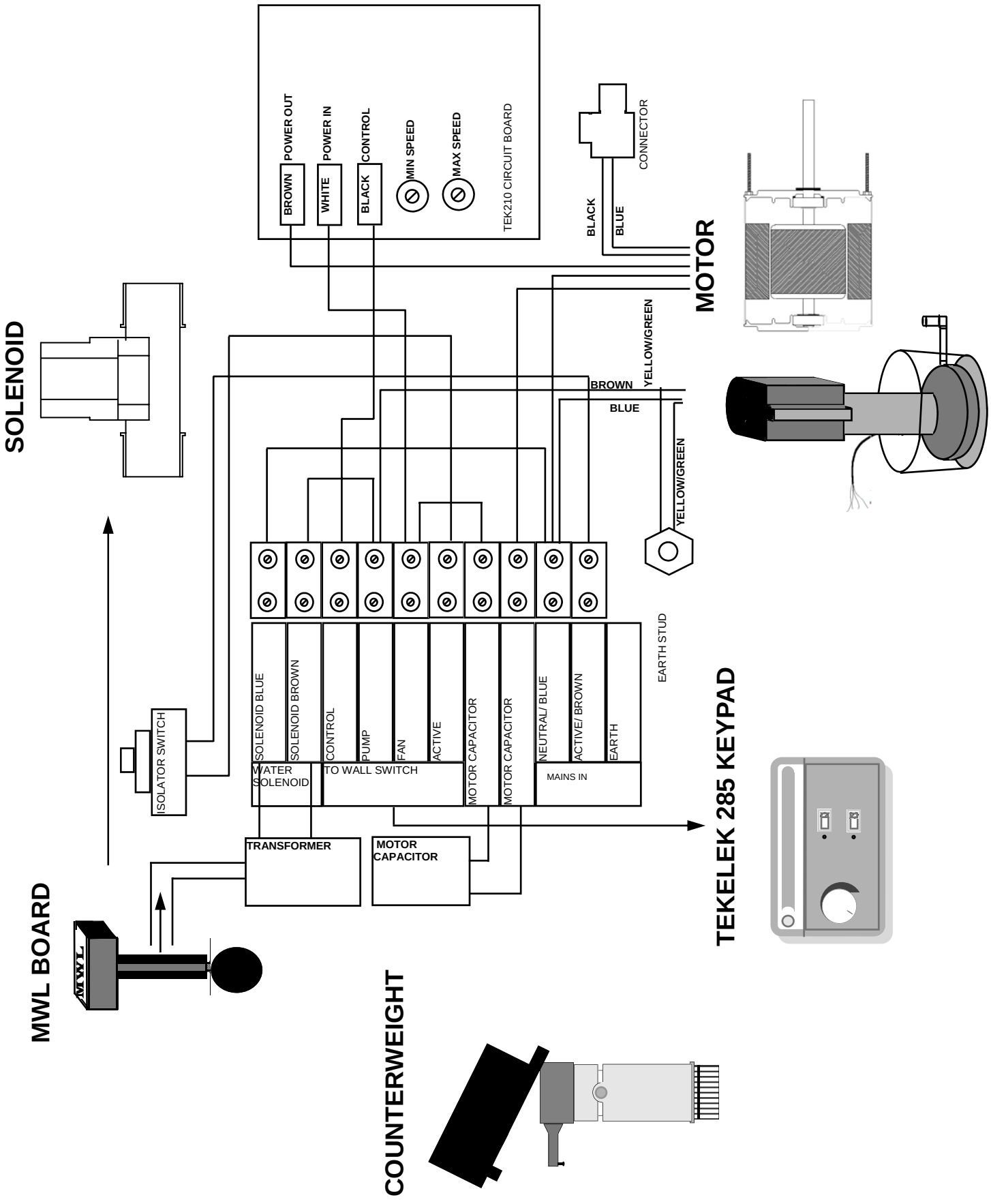
Wall Control :	TEKELEK 285 or 240v Controller (SP 3016)
Compatible Roof Unit:	TEKELEK 210 Speed Control Circuit board (SP 3014)
Control Cable:	4 conductors, insulated wire rated at 240v 5 amp
Fan Motor:	370W, 600W, 750W, 1000W
Drainage:	Hydraulic Drain Valve (SP2064) and/or Bleed Off and/or Counterweight Drain Valve (SP2040)
Pump:	240v pump
Solenoid:	If fitted 24v with retro-fit kit
Modes of Operation:	FAN - ventilation with fresh air COOL - pad wash FAN & COOL - operates pump and fan for cooling
Fan Speeds:	Variable potentiometer
Other Features:	Replaceable 'fusible link' in wall control for circuit protection. Spares mounted on back of wall control.

V 00/04

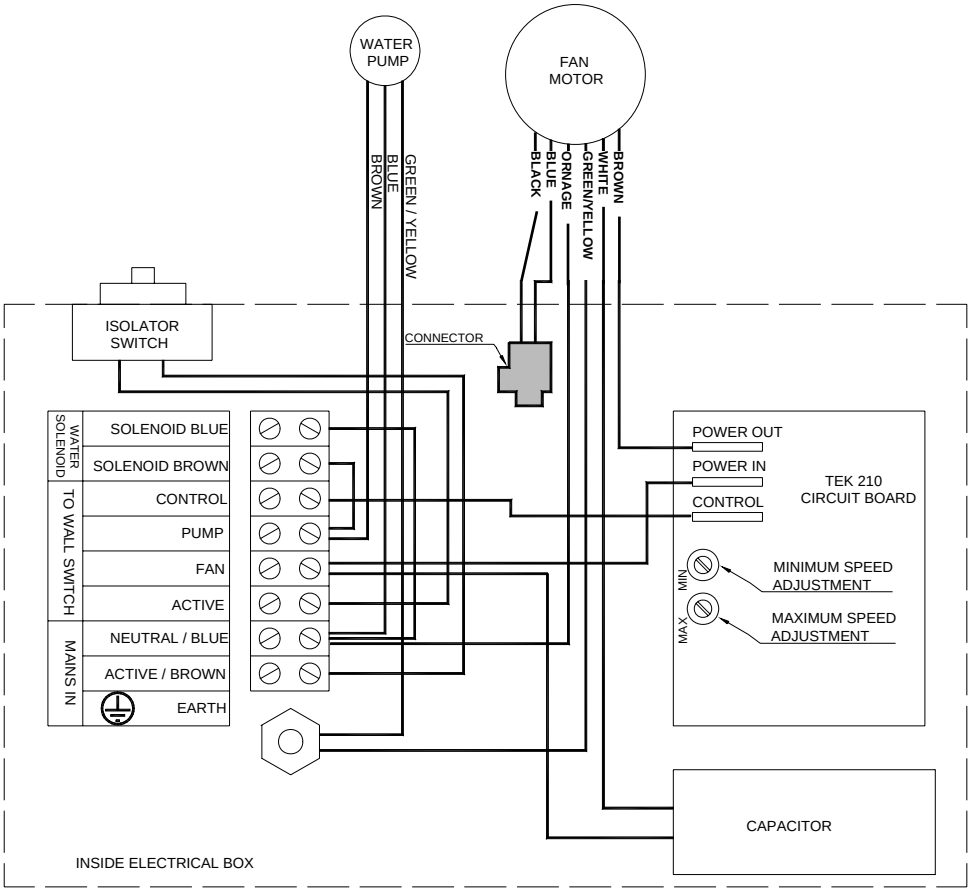


V, VS, E, EC (TEKELEK) SCHEMATIC DIAGRAM - MWL SYSTEM

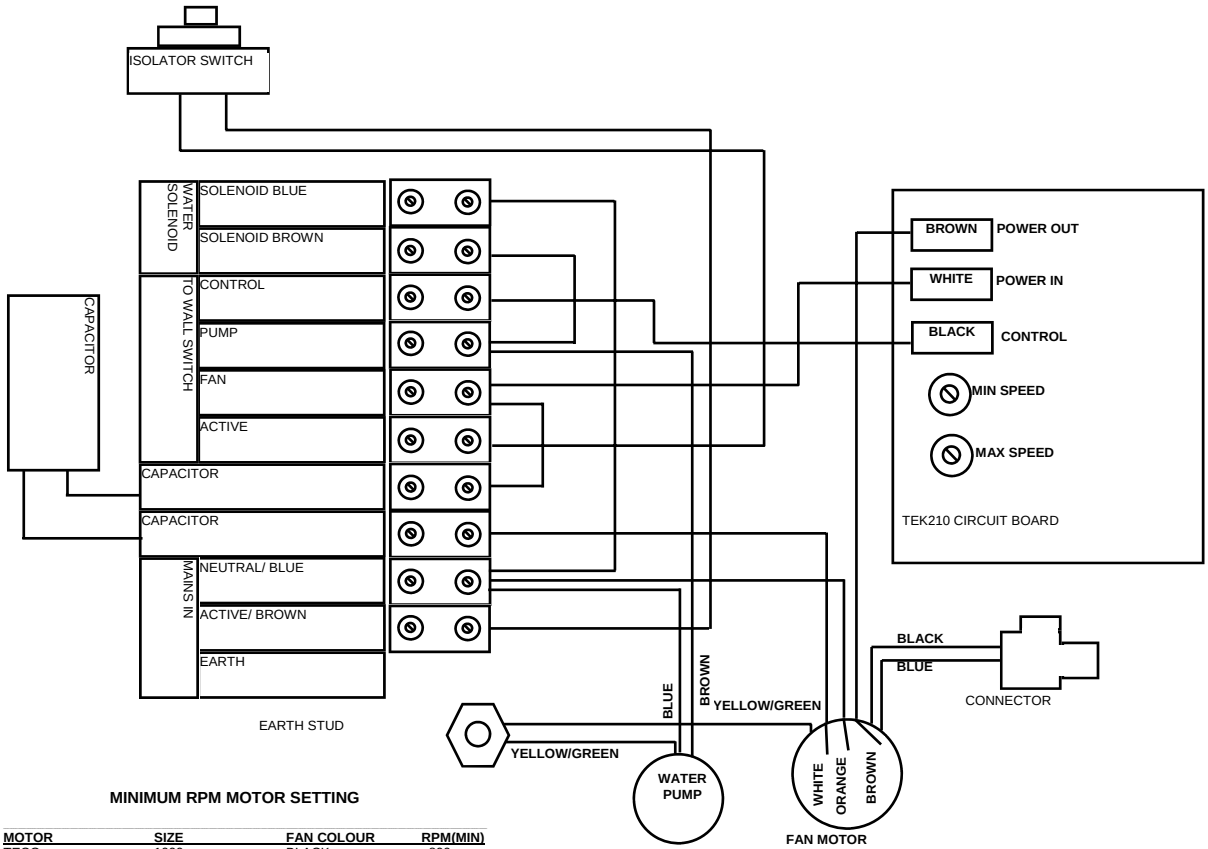
2000 - 2004



CM (TEKELEK) SERIES WIRING DIAGRAM
PRE 2000



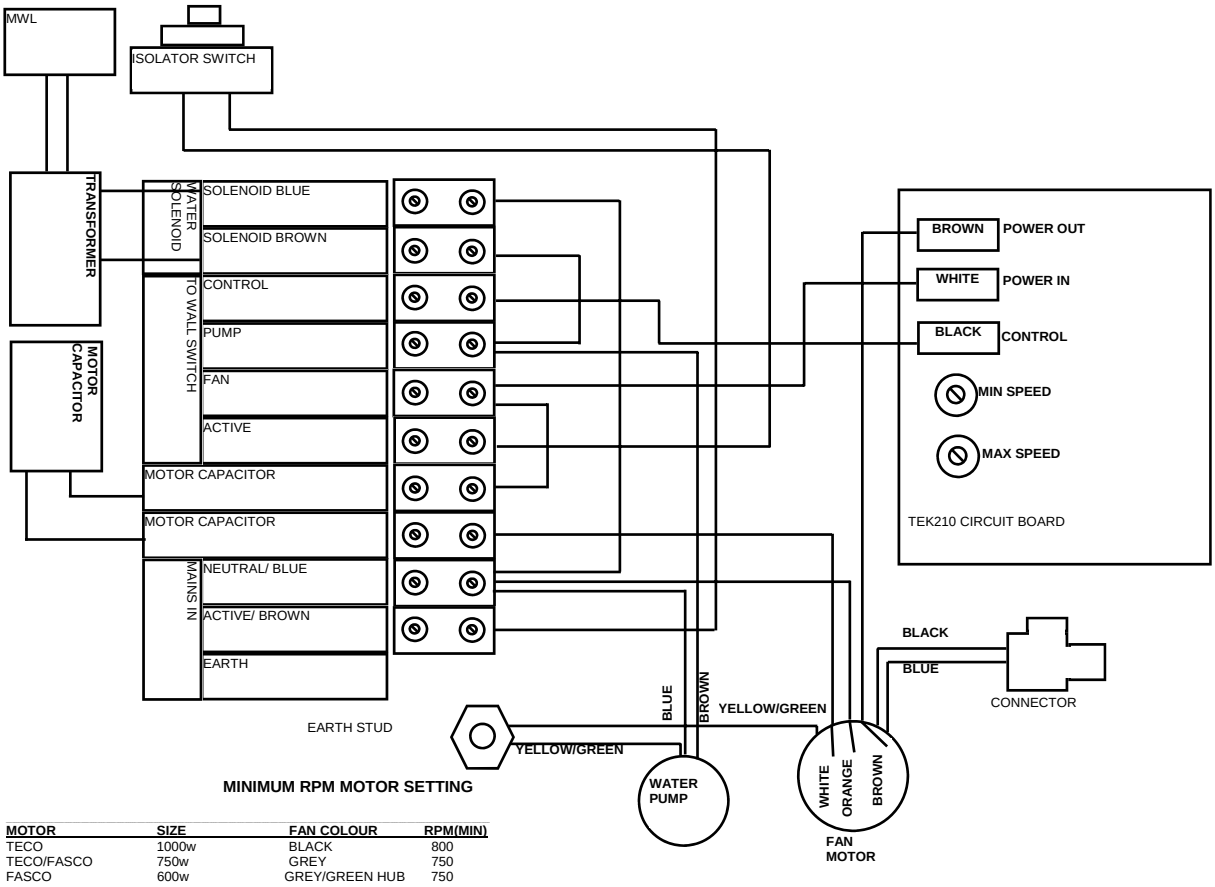
V, VS (TEKELEK) SERIES WIRING DIAGRAM
2000 - 2001



MINIMUM RPM MOTOR SETTING

MOTOR	SIZE	FAN COLOUR	RPM(MIN)
TECO	1000w	BLACK	800
TECO/FASCO	750w	GREY	750
FASCO	600w	GREY/GREEN HUB	750

V, VS, E, EC (TEKELEK) SERIES WIRING DIAGRAM
2000 - 2004



MINIMUM RPM MOTOR SETTING

MOTOR	SIZE	FAN COLOUR	RPM(MIN)
TECO	1000w	BLACK	800
TECO/FASCO	750w	GREY	750
FASCO	600w	GREY/GREEN HUB	750

CM, V, VS, E, EC (TEKELEK) SERIES FAULT FINDING

ELECTRICAL FAULTS			
FAULT	Ref	CAUSE	ACTION
1. WALL CONTROL NOT POWERED	1.1	No mains supply to roof unit.	Check mains fuse, circuit breaker & unit isolation switch.
	1.2	Wall control wiring fault.	Check all electrical connections.
2. NO RESPONSE FROM WALL CONTROL	2.1	Fuse blown or circuit breaker tripped.	Check for short or earth fault in system or arcing in 6-pin motor plug.
FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
3. FAN NOT OPERATING Select 'FAN' and fault find as follows	3.1	No mains supply to roof unit.	Check mains fuse, circuit breaker or unit isolation switch.
	3.2	No 240vac supply to wall Control.	Check all electrical connections.
	3.3	Fusible link open circuit or failed.	If fan starts but will not continue to run - replace fusible link.
	3.4	Wall control failure - potentiometer open circuit.	Check for a potential difference of 0v to 100v between active and control (depending on pot position).
	3.5	Speed control board failure.	If no power out voltage to motor replace board.
	3.6	Motor not powered.	Check continuity through 6-pin motor plug.
	3.7	Capacitor failure - motor will buzz but not rotate.	Replace capacitor.
	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
	3.9	Motor seized.	Replace motor.
	3.10	Fan jammed in cowling.	Centralise fan in cowling.
4. FAN SPEED WILL NOT VARY	4.1	Min & max speed adjust pots cancelling each other.	Adjust potentiometers to allow variation in motor speed.
	4.2	Wall control potentiometer fault.	Test potentiometer for continuity and variation & replace if required.

CM, V, VS, E, EC (TEKELEK) SERIES FAULT FINDING

WATER FAULTS			
FAULT	Ref	CAUSE	ACTION
5. WATER NOT ENTERING UNIT	5.1	Mains isolation tap closed.	Open tap.
	5.2	Solenoid mesh strainer blocked.	Remove solenoid, clean mesh strainer and check water quality.
	5.3	Solenoid coil open circuit or failed.	Replace solenoid.
	5.4	No 240v off board to transformer.	Replace roof unit.
	5.5	No 24v to MWL.	Replace transformer.
	5.6	No 24v to solenoid.	Replace MWL.
	5.7	Pressure lock between solenoid & non-return type isolator valve.	Relieve pressure and fit standard isolation tap.
6. WATER CONTINUALLY RUNNING FROM UNIT	6.1	Correct operation for bleed-off is a slow trickle.	Ensure bleed-off rate set as required.
	6.2	Water level set too high.	Adjust float valve setting.
	6.3	Mains water pressure too low to operate hydraulic drain valve.	Suggest bleed-off system be used.
	6.4	Hydraulic Drain Valve seeps some water during operation.	If leaking is excessive or valve body cracked replace.
	6.5	Solenoid leaking due to failed diaphragm coil.	Replace solenoid.
	6.6	Float Valve or diaphragm failed.	Replace diaphragm or float valve.
	6.7	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 (Refer to page 39)	Replace hoses kit (SP2042).
		c) Physical or mechanical impairment of drain valve body	Replace drain valve (SP2040).
	6.8	Square section blue ‘O’ ring faulty.	Replace ‘O’ ring.
7. WATER NOT DRAINING FROM UNIT AT SHUT DOWN	7.1	Correct operation for bleed-off unit.	Ensure bleed-off rate is set as required.
	7.2	Faulty Hydraulic Drain Valve.	Replace Drain Valve.
	7.3	Counterweight Drain Valve a) Stuck in closed position	Replace drain valve (SP2040).
		b) Blockage in components	Replace drain valve (SP2040).
8. WATER NOT CIRCULATING	8.1	Pump failure.	Replace pump.
	8.2	Pump strainer basket clogged.	Remove & clean strainer basket.
	8.3	Water distribution manifold blocked.	Remove & flush manifold of any blockages.

MOBILE FAULT FINDING (M 240)

FAN FAULTS			
FAULT	Ref	CAUSE	ACTION
1. FAN NOT OPERATING Select 'FAN' and fault find as follows	1.1	No mains supply to control board.	Check mains fuse, circuit breaker or isolation switch.
	1.2	Control board failure.	If no power out voltage to motor re-place board.
	1.3	Motor not powered.	Check continuity through 6-pin plug - motor.
	1.4	Capacitor failure - motor will buzz but not rotate.	Replace capacitor.
	1.5	Motor failure or shutdown due to in-ternal (motor) thermal protection (thermal overload).	Check run current, if running at more than 120% of value on motor name plate - replace motor
	1.6	Motor seized.	Replace motor.
	1.7	Fan jammed in cowling.	Centralise fan in cowling.
2. FAN SPEED WILL NOT VARY	2.1	Control board failure.	Confirm voltage between supply neu-tral and brown motor wire 130-240V if present replace motor.
WATER FAULTS			
FAULT	Ref	CAUSE	ACTION
3. WATER NOT ENTERING UNIT	3.1	Mains isolator tap closed.	Open tap.
	3.2	Fluidmaster diaphragm jammed.	Replace diaphragm.
4. WATER CONTINUALLY RUNNING FROM UNIT	4.1	Water level set too high.	Adjust float valve setting.
	4.2	Float Valve or diaphragm failed.	Replace float valve or diaphragm.
5. WATER NOT CIRCULATING Select 'COOL' and fault find as follows	5.1	Pump failure.	Confirm 240v present at pump termi-nals - replace pump.
	5.2	Pump strainer basket clogged.	Remove and clean strainer basket.
	5.3	Water distribution manifold blocked.	Remove and clean manifold.

ADDITIONAL PRODUCT SPECIFICATIONS

HERITAGE SUMP

2000-2001

WMS FLEXIBLE HOSE (SP2202) FITTED UNDER SUMP

MS FLOAT ASSEMBLY (SP2212)
or
MWL FLOAT ASSEMBLY (SP2210)

ELECTRIC DRAIN VALVE (SP2062)

2001-2002

SLOW CLOSE SOLENOID (SP2045)

COUNTERWEIGHT DRAIN (SP2040)

HERITAGE SUMP

2002-2008

SHROUDED MOTOR RING (SP6025)

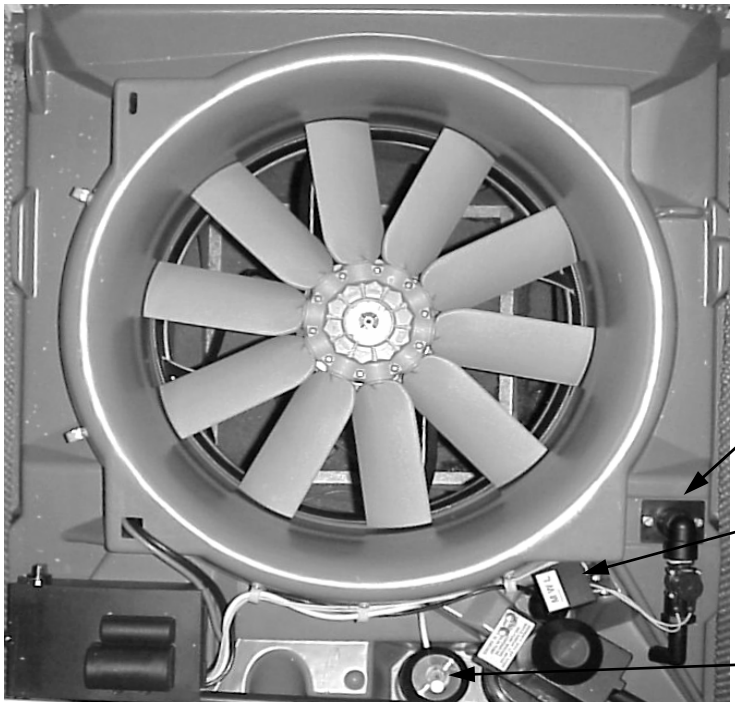
530mm FAN BLADE ASSEMBLY
10 BLADE (SP6054)
9 BLADE (SP6056)

RPE SOLENOID (SP2075)

ELECTRICAL BOX SHAPE REDESIGNED MRU NOW LOCATED IN LID.
(BOX TOP (SP3046) BOX BASE (SP3045)

CASCADE SUMP

2000-2001



WATER INLET FLEXIBLE HOSE (SP2202) FITTED UNDER SUMP.

MS FLOAT ASSEMBLY (SP2212)
OR
MWL FLOAT ASSEMBLY (SP2210)

ELECTRIC DRAIN VALVE (SP2062)

2001-2002

SLOW CLOSE SOLENOID ASSEMBLY (SP2045)

COUNTERWEIGHT DRAIN (SP2040)

CASCADE SUMP

2002 - 2005

ILLUSION SUMP

2004 - 2005

EX SERIES SUMP

2002 - 2005

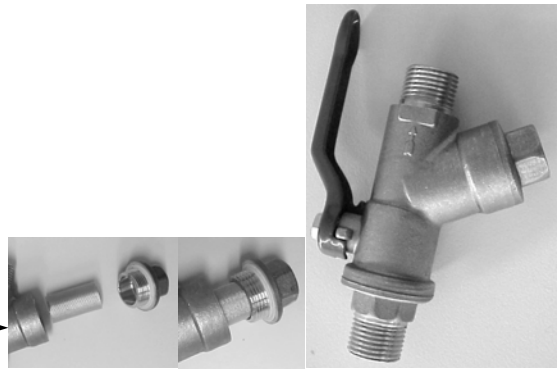
EX Series Sump

WATER INLET

TAP AND FILTER (SP2076)
Introduced 2002

Purpose: To filter and isolate water supply to unit.

Description: ½" brass ball valve with integral filter.



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

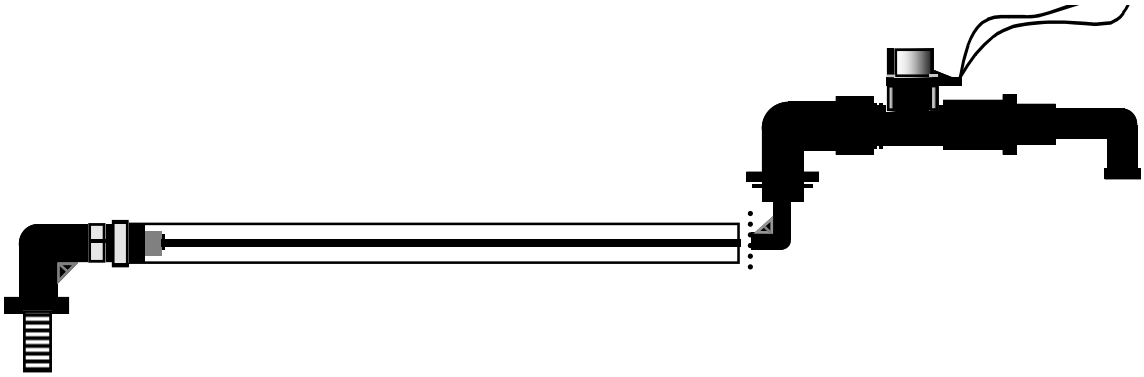
WMS FLEXIBLE HOSE (SP2202)

Introduced 2000 - 2001 (Discontinued 2001/2002)

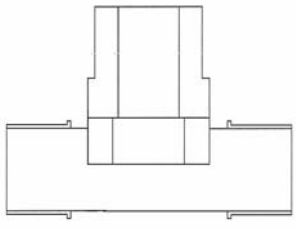
Purpose: To assist the plumber in connecting to water supply pipe.

Description: 1.2m, reinforced hose and water inlet assembly.

Notes: This WS Hose System is suited to Electric Drain only.
Version Three WS Hose to replace all previous versions.



24v SOLENOID ASSEMBLY (SP2057)
Introduced 2001



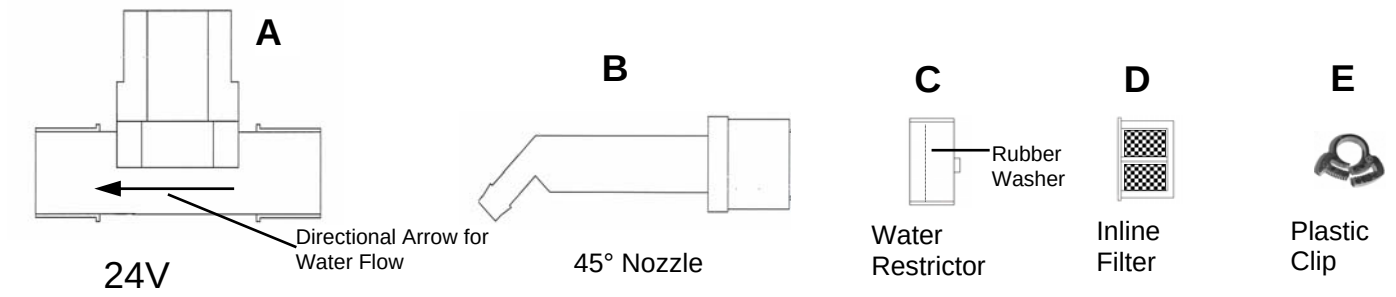
Purpose: To replace Water Inlet Flexible Hose.

Description: Introduced in conjunction with the Counterweight Drain, this water inlet has a Slow Close Solenoid designed to reduce water rush, hence replacing the hose.

Notes: This WS system suits units installed with a Counterweight Drain Valve and 24V Solenoid.
Product run 01/02 - Slow Close Solenoid.
Product run 02/05 - RPE Solenoid.

REPLACEMENT SOLENOID KIT
2002 - 2004

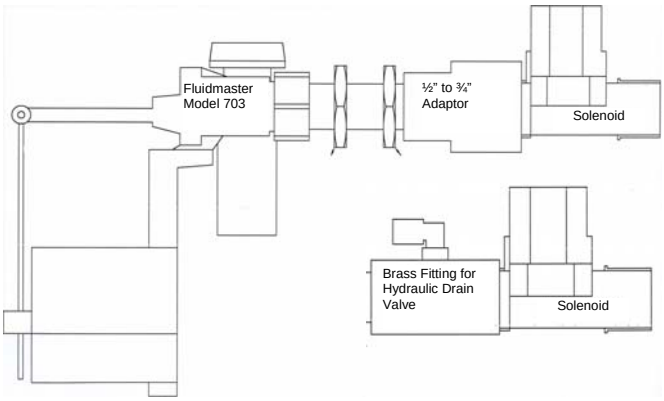
CONTENTS OF KIT:



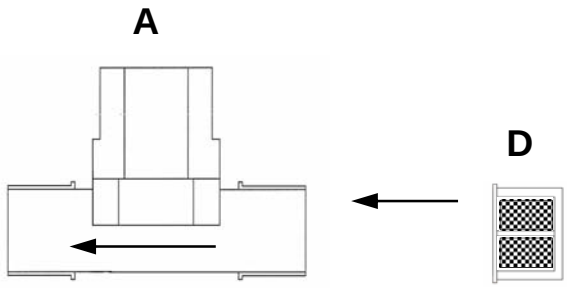
Care must be exercised to ensure the solenoid is fitted to follow the directional arrow for water flow on the solenoid body.

PRE 2001

Solenoid Assembly

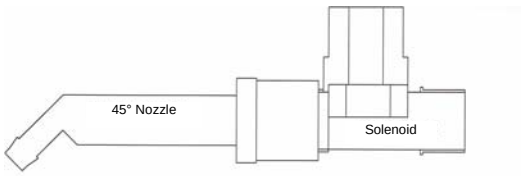


Kit parts required when replacing solenoid.

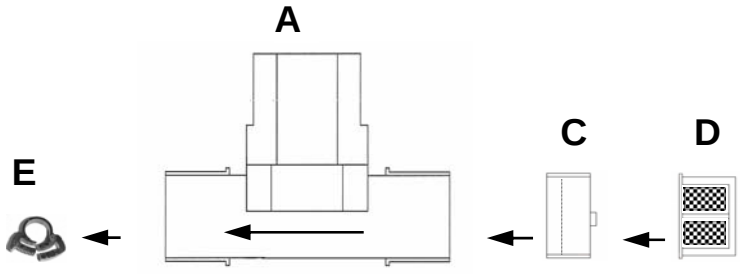


POST 2000

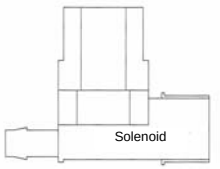
Solenoid Assembly c/w 45° Nozzle



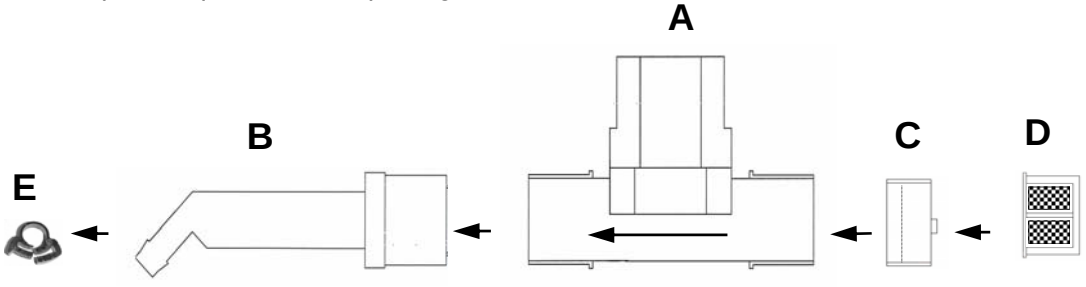
Kit parts required when replacing solenoid.



Barbed Solenoid (SP2031)



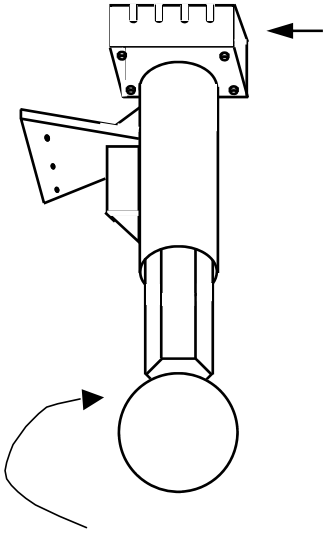
Kit parts required when replacing solenoid.



WATER INLET

MAGNETIC WATER LEVEL SYSTEM (MWL)

Introduced 2000



MWL CONTROL UNIT (SP2210)

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 24v circuit. *A schematic wiring diagram of MWL sys tem can be found on page 20.*

FLOAT ASSEMBLY (SP2200)

MAGNETIC SENSOR WATER LEVEL SYSTEM (MS)

Introduced 2000-2002

MS CONTROL UNIT (SP2212)

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

Description: This float assembly is connected by a pre-assembled 3 pin cable directly onto the roof unit. For testing purposes it is easier to remove this cable from MRU, so testing each compo nent. It must be remembered when doing this there is no control over the water level. *A schematic wiring diagram of MS system can be found on page 19.*

Notes: **A faulty MS board can cause several faults which point to MRU failure. It is important to be aware of these to avoid unnecessary MRU replacement.**

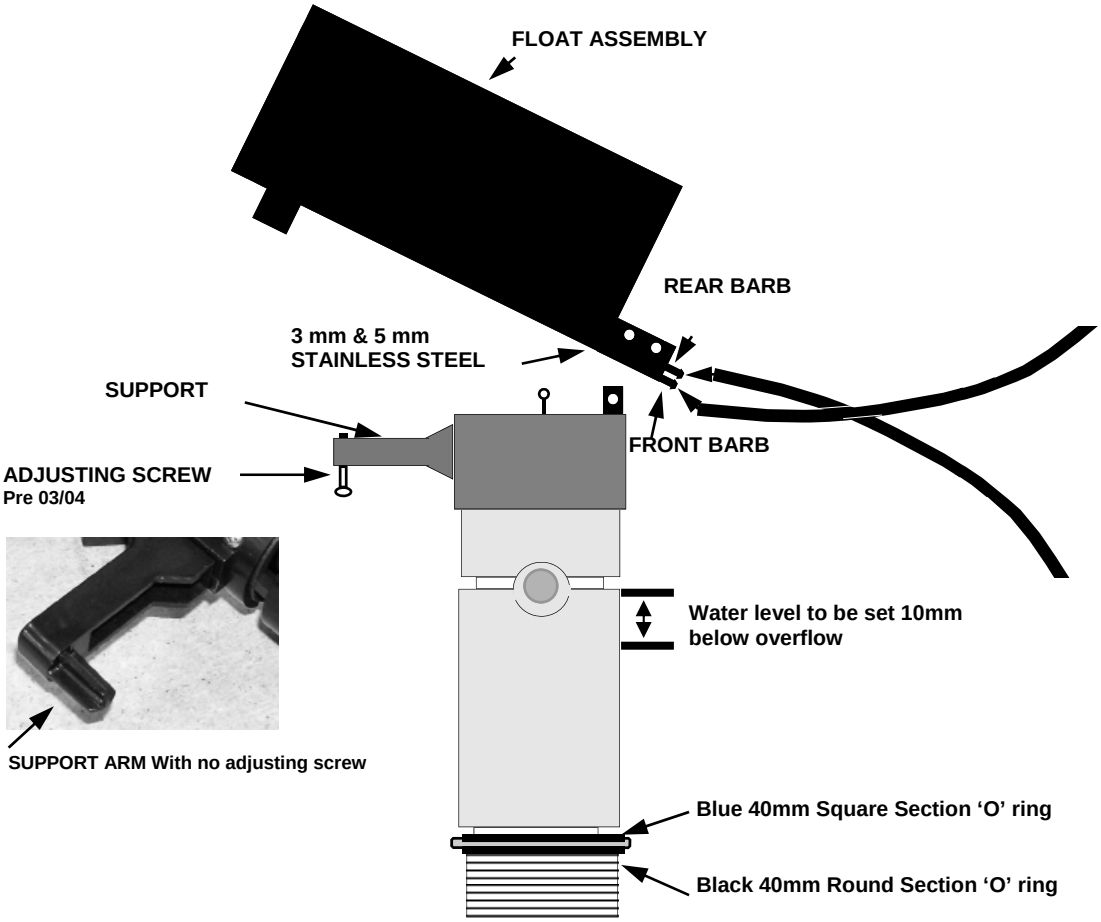
MS FLOAT ASSEMBLY (SP2200)

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 re quire any electrical connections, therefore the active and neutral pins on the MRU are not used.

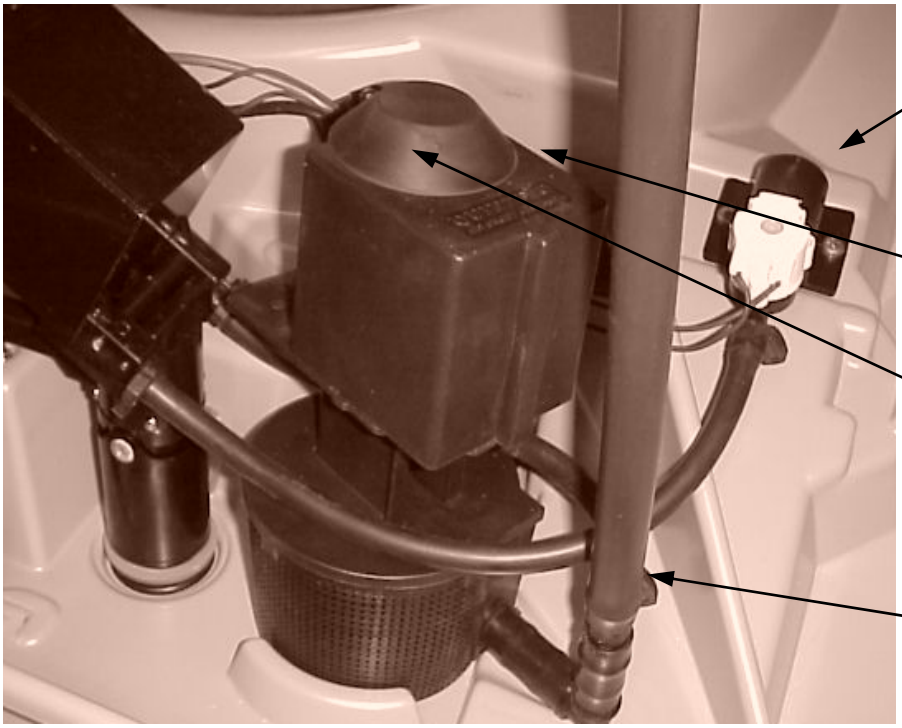
Notes: Valve operates by spring return open
In operation water should be 10mm below overflow point.

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

IMPORTANT

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

CASCADE



HERITAGE

IMPORTANT: Do not re-use clips

NOTES