Pool Safety is our Top Priority

Instructional Manual
Model SR – 500
(Safety Vacuum Release System)

Version 3.3

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INTRODUCTION

Thank you for choosing to install the Stingl-Switch Model SR-500 on your swimming pool, hot tub, or spa. The enclosed information is designed to give you years of safe operation of your Stingl-Switch. Please closely review this important product information.

The Stingl-Switch Model SR-500 works by monitoring the vacuum on the influent side of the pool or spa pump. Whenever a blockage occurs in the pool drain or skimmers, the sudden rise in vacuum will cause the Stingl-Switch to immediately shut down pump operation and activate an audible alarm. The pump will remain off and the audible alarm will sound until manually reset.

The Stingl-Switch Model SR-500 provides a 30-minute **Maintenance/Cleaning** mode to allow pool vacuuming. Normally, the high vacuum generated by pool vacuuming would cause the Stingl-Switch to sense an entrapment condition and shut off the pump. However, in the **Maintenance/Cleaning** mode, the Stingl-Switch is **DEACTIVATED** and the pump is allowed to run under a high vacuum situation.

WARNING: DURING MAINTENANCE/CLEANING MODE VACUUM IS NOT MONITORED. A BLOCKAGE WILL GO UNDETECTED DURING THE 30-MINUTE CYCLE, INCREASING THE RISK OF ENTRAPMENT.

To prevent the system from being left accidentally in **Maintenance/Cleaning** mode, the audible alarm will be activated whenever the switch is in this mode. The pool, hot tub, or spa should not be used or left unattended while servicing or cleaning in the maintenance mode.

The Stingl-Switch Model SR-500 is designed to be easily retrofitted on all existing pools, hot tubs, and spas, and is easily installed during new pool and spa construction.

IMPORTANT INFORMATION

NOTE: This device has been designed to terminate pump operation in the event of a potential limb or body entrapment. This unit may not prevent evisceration. Stingl recommends additional layers of protection be employed.

Layers of Protection

The National Spa and Pool Institute (NSPI), the National Swimming Pool Foundation (NSPF), in cooperation with the U.S. Consumer Products Safety Commission have developed guidelines to help identify and address potential entrapment hazards in swimming pools, hot tubs, and spas. These guidelines include design standards and specific equipment that should be incorporated into every residential and commercial swimming pool, hot tub, and spa.

- Pools should have two drains per pump to minimize the amount of suction possible in a single-drain design
- Install an ANSI/ASME A112.19.8 approved anti-entrapment drain cover to help prevent all types of entrapment. Drains must have an ASME/ANSI approved anti-entrapment drain cover to prevent accidental entrapment of limbs or hair in drain. Check cover on a regular basis for damage or wear, and that it is properly secured.
- Make certain pump and hydraulic flow rates are appropriate for the installation
- Install Safety Vacuum Release System that monitors vacuum caused by clogged or blocked drain(s) and automatically shuts off the pump
- Install an Emergency Stop Button.
- Most important, educate everyone that uses the aquatic facility about safety and the need to avoid situations in which swimmers might become entrapped.

No Check Valves

ALL check valves must be removed from the influent and effluent sides of the filtration system. Check valves, in conjunction with the SVRS, can cause residual vacuum to remain on a line in an entrapment situation. It is important that all check valves be removed from the system before installation of the SR-500.

No Spring Loaded Hydrostatic Relief Valves in Main Drain Sumps

Spring-loaded hydrostatic relief valves must be removed and replaced with solid plugs. A spring-loaded check valve in the main drain sump can interfere with operations for the SR-500 (or any SVRS.) In an entrapment situation, the spring-loaded check valve can open, causing the SR-500 to trip later than normal, or not at all.

Do Not Use as Disconnect Means

The Stingl-Switch cannot be used/relied on as a disconnect means. Installer must follow all National Electric Code specifications and install a separate disconnect means.

Use ANSI/ASME A112-19.8 approved Drain Covers
To prevent hair entrapment we STRONGLY recommend that you use Anti-Entrapment drain covers that meet ANSI/ASME A112-19.8 standards. Anti-Entrapment drain covers are only effective to a specific flow rate. To be sure you are not exceeding the flow rate stamped on the cover, please contact your pool builder or pool service professional.

Pressure
As used in this document, the term "pressure" can refer to positive pressure (above atmospheric pressure) or negative pressure (vacuum below atmospheric pressure.)

Press a button
As used in this document, the term "press a button" means to momentarily press then release the button. In cases where a button needs to be held, the instruction will indicate this directly.

INSTALLATION

SR-500 Specifications

Technical Specifications – SR-500

Response Time:	under 3 seconds from event detection
Enclosure:	NEMA 3R (Intended for outdoor use. Provides a degree of protection against falling rain and ice formation. Meets rod entry, rain, external icing, and rust-resistance design tests.)
Visual Alarm:	Optional
Audible Alarm:	24V AC
Operating Environment:	-40 to 140 degrees F (-40 to 60 degrees C), 0-95% RH,
Size:	H = 9.0"; W = 5 1/2"; D =4.0"
Packaged Weight:	4 lbs.

Technical Specifications – Remote Alarm
Voltage: 24 V AC
Operating Environment: Suitable for Indoor\Outdoor
Size: H = 9.0"; Dia. = 3.0"
Weight: 1 lbs.

Note: Specifications subject to change without notice.

Pre-Installation

1. All Ports (drains, skimmers, vacuum lines, etc.) **MUST BE FREE OF DEBRIS PRIOR TO INSTALLATION**. Clogged ports will disrupt the normal vacuum level.
2. Backwash or otherwise clean filter as per manufacturer specification.
3. Clean pump trap basket and skimmer basket(s).
4. Inspect main drain cover. (Also Inspect Spa Drain if present) Drain covers must be free of obstruction, securely fastened w/ stainless steel screws, and in sound condition w/ no cracks or breaks.
5. Repair any leaks in circulation system before installation. Leaks will cause the formation of air bubbles that disrupt the normal vacuum level.
6. Set all valves to normal operating position. Vacuum port valve(s) should be closed and dedicated vacuum line(s) should be capped in pool. Installations with pool and spa combinations, with a single pump, we recommend you consult your pool builder or service professional about closing the spa drain line during regular filtration.
7. Pump should be run prior to installation and left in fully primed condition.
8. **ALL CHECK VALVES MUST BE REMOVED FROM SYSTEM!** Check values can cause a dangerous vacuum condition to remain even after pump shut off.

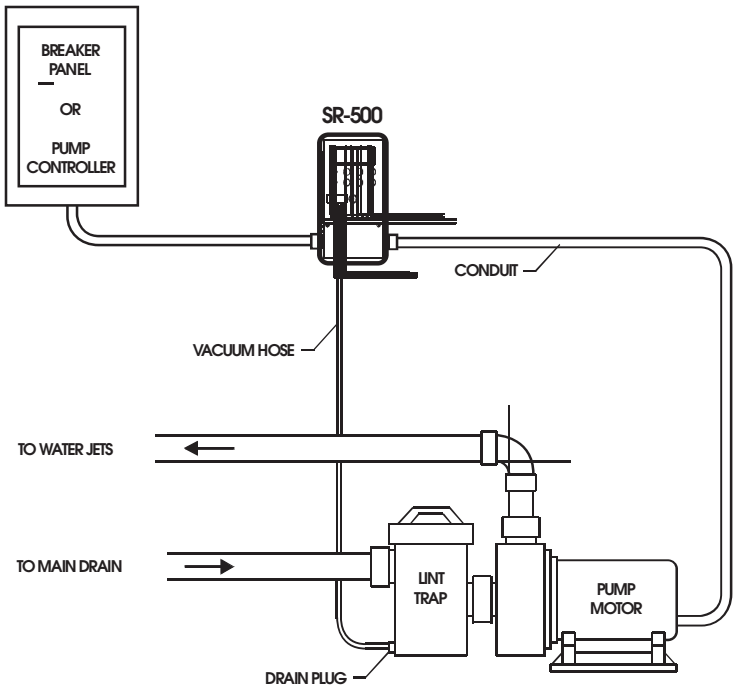

Fig.1: System Diagram

Switch Installation

Mounting

1. Mount the SR-500 in a suitable location within 8 feet of the pump.
2. Before mounting, remove SR-500 from its plastic enclosure by depressing tab in upper left and pulling top portion of SR-500. Slide SR-500 out from the top. At this point, record the serial number of your SR-500 on the warranty card.
3. Mount plastic enclosure using screws & anchors provided.
4. Install the hose fitting provided in the 1/2" **inner** knockout below the vacuum sensor. (Refer to Fig.2)
5. Re-install SR-500 into plastic enclosure. Slide the bottom of SR-500 into box; then press upper portion until SR-500 snaps into place.
6. **NOTE**: **Top portion of hose must be mounted onto vacuum sensor prior to connecting lower end to pump trap.**
7. Feed the vacuum hose through the hose fitting and connect to the vacuum sensor. Insure hose is snug onto vacuum sensor. Tighten the hose fitting securely to provide strain relief for the hose. Attach hose clamp (included) for additional strain relief (Refer to Fig.2.A). The vacuum hose MUST exit the box straight down without bends or kinks.
8. When routing the hose take care to avoid high-traffic areas where the hose can be stepped on or tripped over. Zip-tying the hose to the pump electric conduit is a good option. Excess hose can be trimmed, **but under no circumstances shall the existing hose be lengthened or a longer hose be used.**
9. Remove drain plug from pump trap. Install in its place the flare adapter, using Teflon tape (not included) to ensure a good seal.
10. Attach the free end of the hose to the flare adapter and tighten.
11. If no pump drain plug exists, plumb in a tee with a 1/4" FPT reducer bushing.

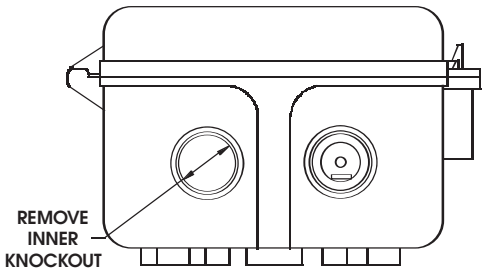

Fig. 2: 1/2" Knockout

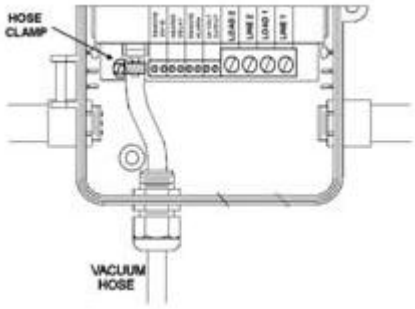

Fig. 2.A: Hose Clamp

Wiring

NOTE: THE STINGL-SWITCH CANNOT BE USED/RELIED ON AS AN ELECTRICAL DISCONNECT MEANS. A SEPARATE DISCONNECT MEANS MUST BE PROVIDED. A CERTIFIED ELECTRICIAN IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE MUST COMPLETE ALL ELECTRICAL WORK.

Line Voltage Option 1
High Voltage 120/240V Single Phase 3 HP Pumps (20AMP) or less
(See Fig. 3 for terminal locations)

1. Determine the operating input voltage of the pump, 120V or 240V. Set the red input switch (located on the right side of SR-500) accordingly.
2. Wire incoming voltage to line terminals (#10 & #12)
3. Wire pump to load terminals (#9 & #11)
4. Connect line & load grounds to the green ground pigtail with wire nut.
5. For this scenario see Fig. 4.A & Fig. 4.B

Line Voltage Option 2
High Voltage 240/480/600 Triple Phase 3.5 HP pumps (20AMPS) or greater.

1. Set the red input switch (located on the right side of SR-500) to 115V
2. For this scenario see Fig. 5

Low Voltage (See Fig. 3 for terminal locations)

1. Heater delay circuit – connect heater delay circuit to contacts (#3 & #4) on terminal strip. **NOTE: Heater delay must be enabled in set up menu – see operating instructions**
2. Remote powered alarms can be connected to terminals (#5 & #6), or the SR-500 can power 24V alarms by jumping terminals (#6 & #7), and wiring alarm to terminals (#5 & #8).
3. Remote interfaces such as Jandy® or ComPool®, pneumatic or solid-state controls and external timer systems are connected to terminals (#1 & #2). **NOTE: The remote mode must be enabled in the on/start menu for remote interfaces to operate properly.**

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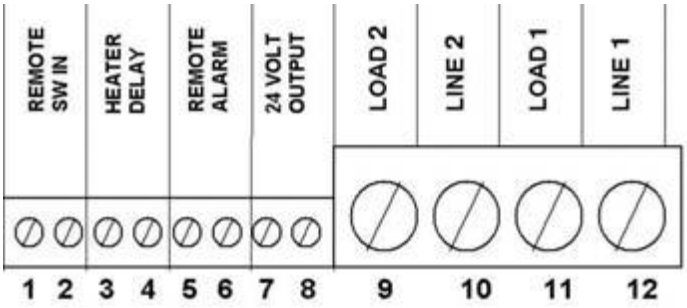


Fig. 3: Terminal Diagram

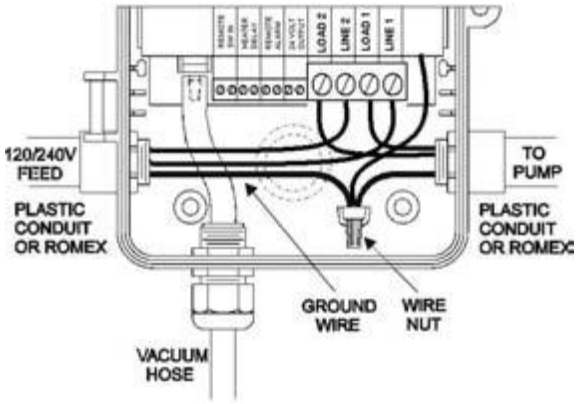


Fig. 4.A Wiring with Non-Metallic Conduit

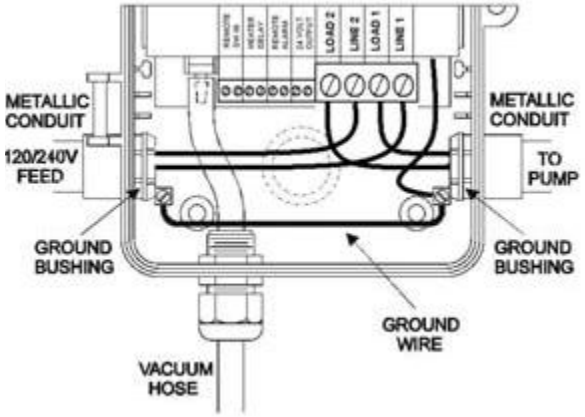


Fig. 4.B Wiring with Metallic Conduit

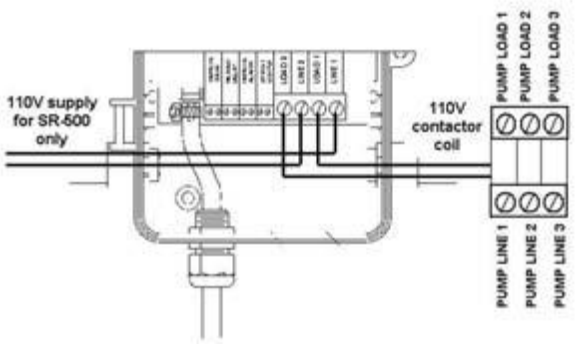


Fig. 5 Out of Phase or Triple Phase

OPERATING INSTRUCTIONS

Front Panel

The SR-500 front panel features a two-line by 16-character backlit liquid crystal display and six momentary pushbutton switches implemented in a membrane label.

Switches

OFF/STOP – Immediately stops pump operation. Also silences any active alarms.
ON/RUN – Toggles between timed, continuous run, and remote modes.
MAINT/CLEAN – Initiate **Maintenance/Cleaning mode**, where the pump will operate continuously for 30 minutes.

WARNING: DURING MAINTENANCE/CLEANING MODE VACUUM IS NOT MONITORED. A BLOCKAGE WILL GO UNDETECTED DURING THE 30-MINUTE CYCLE, INCREASING THE RISK OF ENTRAPMENT.

SET – Used to initiate set-up modes for time, date, and pump operating schedule.
+/YES and **-/NO** – Used to answer yes/no questions, and increment or decrement the value of a displayed selection, (i.e. date and time).

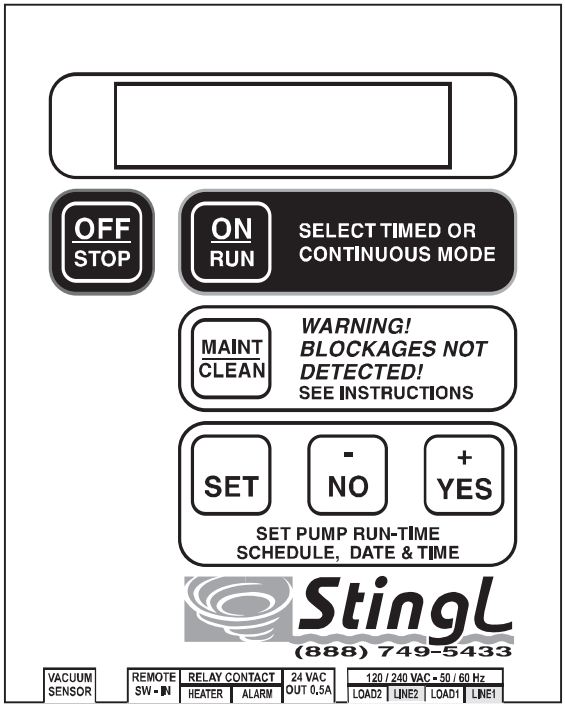


Fig. 5: Membrane Switch

Getting Started

IMPORTANT! Before AC power is applied to the SR-500, the plumbing connection must be made properly. At the time of installation, or whenever the plumbing has been reconfigured or changed in any way, the unit will need to perform vacuum level measurements. At these times, the pool system must be as "perfect" as it can be – drains unclogged, skimmers cleaned, etc., since the system will use these vacuum measurements as a reference for all subsequent operation. After the plumbing is complete and everything checks out "OK", it's time to apply power.

NOTE: Before applying power, make sure that voltage selector switch is set to the correct AC line voltage – 115VAC or 230VAC.

When power is applied, the unit will perform a quick self-check and verify the stability of the AC line. The unit will check the reference pressure values that were set at the time of installation; if these values are not set, the unit will display the error message "SET-UP REQUIRED." Pressing and holding the SET button will put the unit into the SERVICE MODE, intended for use by service technicians only. Pressing any other button will have no effect.

Once the clock is set and the pump is primed, the unit is ready for normal operation.

NOTE: The unit must be properly set-up in order to function: failing to successfully perform the PRIME PUMP function will prevent the unit from operating. Until the PRIME PUMP function is executed, you will continue to see the 'SET-UP REQUIRED' message when you attempt to exit the SERVICE MODE. No other operating modes may be selected.

SERVICE MODE (AUTHORIZED PERSON (S) ONLY!)

Enter the SERVICE MODE by *pressing and holding* the SET button when the unit is in the OFF MODE. As soon as the SET button is pressed, you will see this message in the display. Continue to hold the SET button for another four seconds until you see the next message. Once you see the SERVICE MODE message, release the SET button to continue.

For any of the SERVICE MODE functions, pressing the SET button serves two purposes – it saves whatever function value was changed, and it also causes the unit to skip to the next function in the SERVICE MODE.

The SERVICE MODE can be exited at any time by pressing the OFF/STOP button. Exiting by pressing OFF/STOP will not save any changes to the currently displayed function.

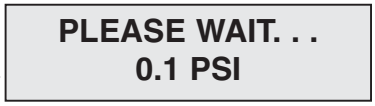
The SERVICE MODE does not automatically time-out.

FIRMWARE VERSION: The first selection in the SERVICE MODE is FIRMWARE VERSION, which merely displays the version information of the firmware programmed into the SR-500's microcontroller. There is nothing to set or change. Press the SET button to skip to the next function.

INITIALIZE UNIT: This function will completely re-initialize the SR-500's nonvolatile EEPROM memory to its factory settings. Press the YES button to proceed; press the NO button to skip to the next function. A successful initialization is indicated with a message. Press SET to skip to the next function, or OFF/STOP to exit the SERVICE MODE.

NOTE: **After initializing the unit, all SERVICE MODE information must be re-done or the unit will not operate!**

SET SENSOR ZERO: This is an automated procedure that is used to set the zero reference for the vacuum sensor. When the SR-500's vacuum sensor line is exposed to normal atmospheric pressure, the display should show zero pressure or vacuum – plus 0.2 PSI or minus 0.2 "Hg. If this is not the case, the unit may need to have its sensor zero calibrated.



Press the YES button to proceed with the calibration; press the NO button to skip to the next function.

NOTE: **This measurement is made with the vacuum sensor exposed to normal atmospheric pressure – it must NOT be connected to the pool plumbing system for this measurement to succeed!**

PRIME PUMP: This is an automated procedure that is used to set the reference values for system pressures with the pump running and after the pump is stopped. Once set, these reference values will be used to determine both under and over-suction alarm conditions.

NOTE: Before running the PRIME PUMP function, make sure that the filter is clean, all drains are clear, and all valves are open. All Ports (drains, skimmers, vacuum lines, etc.) MUST BE FREE OF DEBRIS. The reference vacuum measurements should be made on a system as "perfect" as it can be.

Pressing the YES button causes the pump to start immediately. The display shows the real-time pressure/vacuum measurement. Pressing NO causes the pump to stop and the unit will revert back to the beginning of the PRIME PUMP function. Once the pump is primed and vacuum has stablized, pressing the YES button again causes the unit to save the current vacuum reading as the running reference vacuum; the pump then shuts-off and a short delay begins. If neither button is pressed, the pump will run for 60 seconds and then shut off. The unit will revert back to the PRIME PUMP function.

PUMP PRIMED? Y/N RUNNING 7.5 "Hg

PLEASE WAIT. . . 2.3 "Hg

After the delay ends, the unit measures the stopped reference vacuum. If there is insufficient difference between the running vacuum and the stopped vacuum measurements, the unit will show the following error message:

DELTA-P TOO LOW! SET TO TRY AGAIN

If this occurs, press SET button to go back to the beginning of the PRIME PUMP function.

If the PRIME PUMP function has executed successfully, with a difference (delta - P) of at least 0.5 " Hg between the running and stopped vacuum levels, the unit will skip to the next function automatically.

REFERENCE VACUUM DELTA-P 5.2 "Hg

REFERENCE VACUUM DELTA-P: This is the difference between the measurement made when the pump is running and the pump is stopped. This value cannot be edited with the (-/+) buttons; it can only be changed by running the PRIME PUMP function again. Press the SET button to skip to the next function.

Record this number here and on your warranty card: _____

Reference Vacuum (Delta-P)

REFERENCE VACUUM STOPPED 2.3 "Hg

REFERENCE VACUUM (STOPPED): The next selection in the SERVICE MODE is REFERENCE VACUUM measured when the pump is STOPPED. This value cannot be edited with the (-/+) buttons; it can only be changed by running the PRIME PUMP function again. Press the SET button to skip to the next function.

Record this number here and on your warranty card: _____

Reference Vacuum (Stopped)

REFERENCE VACUUM (RUNNING): The next selection in the SERVICE MODE is REFERENCE VACUUM measured when the pump is RUNNING. This value cannot be edited with the (-/+) buttons; it can only be changed by running the PRIME PUMP function again. Press the SET button to skip to the next function.

REFERENCE VACUUM RUNNING 7.5 "Hg

Record this number here and on your warranty card: _____

Reference Vacuum (Running)

VACUUM CUTOFF THRESHOLD: The next selection in the SERVICE MODE is the VACUUM CUTOFF threshold setting. This value sets the over-suction alarm threshold, and can be adjusted from 1.0"Hg to 5.0"Hg above the reference vacuum (running) measurement. The default vacuum cut off threshold is 3.0" Hg. This should not be changed without factory consultation. Once the desired value is selected, press the SET button to save the value and skip to the next function.

VACUUM CUTOFF AT 03 "Hg ABOVE REF

Record this number here and on your warranty card: _____

Reference Vacuum (Cutoff)

HEATER CONTROL: This value set to 'YES' or 'NO' determines whether or not the unit is configured to control a gas heater with its heater relay contacts. Choosing "yes" will enable the delay circuit and turn off heater 15 minutes before pump. Once the desired value is selected, press the SET button to save the value and skip to the next function.

HEATER CONTROL (Y/N) : NO

DEFAULT RUNNING MODE: This selects the SR-500's operating mode when AC power is restored after a long (more than one day) power outage. When power is restored, the unit will automatically execute whichever operating mode is selected. The choices are:

DEFAULT RUNNING MODE : NONE

- NONE – The unit simply enters the OFF state. The pump will not run under any circumstances.
- TIMED RUN – the pump will turn on and off according to the set start and stop times. For freeze protection, activating the REMOTE SW-IN will cause the pump to start.
- CONT. RUN – the pump will start and run continuously until manually interrupted by the user (or some alarm condition is encountered).
- REMT. RUN – the pump will be under direct control of the external REMOTE SW-IN function.

NOTE: If 'NONE' is selected as the default operating mode, freeze protection via the external "REMOTE SW-IN" will not function!

To exit the SERVICE MODE, press the OFF/STOP button.

Set-Up Mode

Enter the SET-UP MODE by pressing the SET button when the unit is in the OFF MODE. As soon as the SET button is pressed, you will see this message in the display. Release the SET button to continue.

** SET-UP MODE **
RELEASE FOR NEXT

For any of the SET-UP MODE functions, pressing the SET button serves two purposes – it saves whatever function value was changed, and it also causes the unit to skip to the next function in the SET-UP MODE.

The SET-UP MODE can be exited at any time by pressing the OFF/STOP button. Exiting by pressing OFF/STOP will not save any changes to the currently displayed function.

NOTE: if the unit is placed into the SET-UP MODE, it will automatically return to the OFF MODE after 60 seconds of button inactivity. Any changes to the currently displayed function will not be saved.

PUMP START TIME: The first selection in the SET-UP MODE is pump start time. The unit defaults to an 8:00AM start time. To change the start time, press the (-) and (+) buttons. Holding the buttons will make the time change faster. Changing the pump start time causes the pump stop time to be preset to 12 hours later than the selected pump start time. Once the desired pump start time is selected, press the SET button to save it, and skip to the next function.

SET START (-/+)
TIME 08:00 AM

PUMP STOP TIME: The next selection in the SET-UP MODE is pump stop time. The unit defaults to an 8:00PM stop time. To change the stop time, press the (-) and (+) buttons. The time will change in 15-minute increments. Holding the buttons will make the time change faster. Once the desired pump stop time is selected, press the SET button to save it, and skip to the next function.

SET STOP (-/+)
TIME 08:00 PM

NOTE: The pump stop time cannot be set closer than FIFTEEN (15) minutes to the pump start time. If the stop time value shown stops changing when you are pressing the (-/+) buttons, you are getting close to the start time.

TIME-OF-DAY CLOCK: The next selection in the SET-UP MODE is the time-of-day clock time. The unit defaults to 12:00PM (noon). To change the time-of-day clock time, press the (-) and (+) buttons. Holding the buttons will make the time change faster. Once the desired time-of-day clock time is selected, press the SET button to save it, and skip to the next function.

SET CLOCK (-/+)
TIME 12:00 PM

SET DATE - YEAR: The next selection in the SET-UP MODE is the year. The unit defaults to 05, for 2005. To change the year, press the (-) and (+) buttons. Holding the buttons will make the value change faster. Once the desired year value is selected, press the SET button to save it and skip to the next function.

SET DATE (-/+)
YEAR (00-99) 05

SET DATE – MONTH: The next selection in the SET-UP MODE is the month. The unit defaults to 01 for January. To change the month, press the (-) and (+) buttons. Holding the buttons will make the value change faster. Once the desired month value is selected, press the SET button to save it and skip to the next function. Setting the month will cause the day value to reset to 01.

SET DATE (-/+)
MONTH (01-12) 01

SET DATE – DAY: The next selection in the SET-UP MODE is the day of the selected month. The unit defaults to 01 for the day. To change the day, press the (-) and (+) buttons. Holding the buttons will make the value change faster. Once the desired day value is selected, press the SET button to save it and exit back to the OFF MODE. **NOTE: The maximum day count will change for different months, e.g., 31 days in January, 28 days in February, etc. The unit does not account for leap years, where there are 29 days in February.**

SET DATE (-/+)
DAY (01-31) 01

UNIT SUCCESSFUL!
SET TO CONTINUE

Off/Stop Modes

Select the OFF/STOP MODE by pressing the OFF/STOP button. The pump and heater are shut off immediately, and remain off indefinitely. In the OFF/STOP mode, the static pressure or vacuum level is displayed continuously, as is the date and time.

SYS OFF 2.3 “Hg
01/01/04 12:00

NOTE: Freeze protection via the external “REMOTE SW-IN” will not function!

On/Run Modes

With the unit in the OFF/STOP MODE, select between the three run modes (timed, continuous, or remote) by pressing the ON/RUN button. The TIMED MODE is selected first, where the pump runs according to the chosen pump start and stop times. Pressing the ON/RUN button again selects the CONTINUOUS MODE, where the pump runs continuously until shut off by pressing the OFF/STOP button. Of course, a fault condition or an under or over-suction alarm condition will cause the unit to exit the selected RUN MODE and shut down. Pressing the ON/RUN

button again selects the REMOTE MODE, allowing the unit to be run by an external controller.

In the TIMED MODE, the display shows the current clock time, the pump status, and the current vacuum or pressure level.

```
TIMED    12:00 PM
PMP OFF  2.3 “Hg
```

When the pump is scheduled to start, the display shows the STARTUP message. The pump is not merely turned on; instead, a series of measurements are made to verify proper system operation. First, the vacuum is measured while the pump is off. After a 30 second delay, the vacuum is measured again. There should be a significant difference between the first and second vacuum measurement. The pump will start properly and the display will show the PUMP ON message. The unit is now monitoring the vacuum, looking for under or over-suction conditions. Once the pump has been started, the heater relay will close, allowing the heater to operate.

```
TIMED    12:00 PM
STARTUP  2.3 “Hg
```

```
TIMED    12:00 PM
PUMP ON  7.5 “Hg
```

The heater relay will open 10 minutes prior to the scheduled pump stop time, allowing the heater to cool.

NOTE: During the STARTUP phase, blockages will not be detected! Blockages will be detected only in the PUMP ON phase.

Three attempts will be made to properly start the pump. If there is not a significant difference (minimum of 0.5”Hg) between the vacuum measurements with the pump stopped and the pump running, the pump didn’t start or there is air in the plumbing. In either case, a fault condition is noted. The internal and external alarms will sound for one second on, three seconds off. Press the OFF/STOP button to clear the alarm and error message, and return to the OFF/STOP mode.

```
SYSTEM ERROR: 16
DELTA-P TOO LOW
```

```
SYSTEM ERROR: 016
HIT OFF TO CLEAR
```

There are other problems that may prevent the pump from starting. Please see the section on ERROR MODE for more information.

Remote Mode

If the SR 500 is to be used in conjunction with a remote device such as a Jandy® or Compool® system, a pneumatic switch, solid-state controls, or a remote timer, the remote mode should be selected. This will disable the time cycle & place the SR-500 under control of your remote device wired to the remote terminals (#1 & #2)

Maintenance Mode

With the unit in the OFF/STOP MODE, select the MAINTENANCE MODE by pressing the MAINT/CLEAN button. This mode is used while operating a manual vacuuming system, or during trouble shooting procedures. The pump will start immediately; the heater is shut off. The internal and external alarms will sound for one second on, three seconds off. The MAINTENANCE MODE runs for 30 minutes, and then the unit reverts to the OFF/STOP MODE. A countdown of minutes/seconds shows the remaining time. Pressing either the MAINT/CLEAN or the OFF/STOP buttons exits the MAINTENANCE MODE and returns the unit to the OFF/STOP MODE.

MAINTENANCE MODE
ENDS IN 29:59

WARNING: DURING MAINTENANCE/CLEANING MODE VACUUM IS NOT MONITORED, INCREASING THE RISK OF ENTRAPMENT. A BLOCKAGE WILL GO UNDETECTED DURING THE 30-MINUTE CYCLE. THE POOL, HOT TUB, OR SPA SHOULD NOT BE USED OR LEFT UNATTENDED WHILE SERVICING OR CLEANING IN THE MAINTENANCE MODE.

Error Mode

Whenever the SR-500 detects an error condition, the pump and heater will be shut off. Internal and external alarms will sound for one second on, three seconds off. The cause or type of error will be displayed on two alternating messages.

SYSTEM ERROR: 16
DELTA-P TOO LOW

Press the OFF/STOP button to clear the alarm and error message, and return to the OFF/STOP mode.

SYSTEM ERROR: 16
HIT OFF TO CLEAR

Some errors will require more than clearing a clogged drain and pressing ON/RUN. In these cases, press and hold the SET button to enter the SERVICE MODE.

Set-Up Verification Procedure

Proper operation of the SR-500 must be verified by restricting flow to the pump while running in any of the normal operating modes (timed, continuous, and remote). Begin testing by covering the main drain sump with a rubber mat. This will cause the pump to pull through the skimmer line(s) only, resulting in a higher operating vacuum. It may be possible to cover the drain and not increase the operating vacuum past the cut-off threshold. In these cases it will be necessary to close the skimmer valve(s) to create the vacuum necessary to create an alarm condition.

NOTE: Repeat this test 3 times to verify proper installation.

NOTE: Stingl Products does not recommend testing the main drain with an influent valve, due to the possibility of eliminating variables such as spring-loaded hydrostatic valves, and leaking or collapsing lines. Covering the sump with a mat ensures that the entire line is tested from the sump to pump.

PARTS LIST

Part #	Part Description
SR -500	SR-500
SR-500-1001	Hose
SR-500-2001	Hardware Kit • (1) Pump Fitting • (3) Anchor bolts & screws • (1) Hose Fitting
SR-500-3001	Instructional Manual
SR-500-4001	Freeze Protection Kit(Optional)
SR-500-5001	Remote Alarm Kit(Optional)
E-Stop	Emergency Stop Button

TROUBLE SHOOTING

Problem	Possible Cause	Solution
No Power (No display)	Breaker off/tripped or improper wiring	Check and/or reset breaker Verify that wiring is correct
Wrong power (error message displayed)	SR-500 switch not set properly	Verify that incoming power and switch setting are the same
High Vacuum (system error: 15 or 17	Clogged baskets or pump trap, blocked drain, improper valve setting	Remove debris/clean baskets Verify valves are set for normal operation
Low Vacuum (system error: 16 or 17)	Stuck skimmer weir, water level too low, high filter pressure	Verify that weirs function smoothly, top off to regular operating level, backwash or clean filter as needed

The SR-500 will display several different error messages:
System Error 11 – Possible fused relay or Hydraulic Imbalance
System Error 12 – STP VACUUM LOW (reserved)
System Error 13 – STP VACUUM HIGH (reserved)
System Error 14 – RUN VACUUM LOW (reserved)
System Error 15 – RUN VACUUM HIGH – a condition exists that caused the pump to pull more than 20" of Hg upon start up, (such as a packed pump trap or clogged line).

System Error 16 – DELTA-P TOO LOW – a condition exists that caused the pump to pull less than the recorded reference vacuum upon start up (such as water level too low or a stuck skimmer weir)
System Error 17 – DELTA-P OFF REF – Measured running vacuum is more than +/- 3" Hg off of the reference vacuum recorded during the PRIME PUMP function. If the SR-500 senses a measured running vacuum level outside +/- 3 Hg of the normal (reference vacuum), it assumes there is a problem with the pump that is preventing normal flow, (such as the pump having lost prime, or a clogged impeller).
System Error E9 – Usually caused by incorrect initialization procedure, re-initialize and re-calibrate unit. Please set the date and time even if you are operating in continuous mode.
Power Fault BF – **"AC Line Too Low"** possible causes include insufficient wire gauge, excessive wire length, additional loads on circuit, excessive incoming impedance, excessive pump load.

ADDITIONAL OPERATIONAL NOTES:
To successfully execute the PRIME PUMP function, the following conditions must be met:
1. The minimum difference between vacuum measurements made when the pump is stopped and the pump is running must be greater than 0.5" Hg.
2. The measured running vacuum must be less than 20" Hg

To achieve a successful pump start-up during normal operation, the following conditions must be met:
1. The minimum difference between vacuum measurements made when the pump is stopped and the pump is running must be greater than 0.5" Hg
2. Current measured running vacuum must be within +/- 3" Hg of reference vacuum recorded during the PRIME PUMP function.
3. The running vacuum must be less than 20" Hg

The pump will shut off and the alarm will sound if any of the following conditions are detected:
1. If the current running vacuum measurement falls 3"Hg below the reference vacuum measured during the PRIME PUMP function.
2. If the current vacuum measurement rises 3" Hg above the reference running vacuum measured during the PRIME PUMP function.
3. If the current vacuum measurement exceeds 20" Hg.

NOTE: The 3" Hg under-suction cutoff may not function properly in systems where the pump has a flooded suction (below grade). Example: If normal running vacuum is less than or equal to 3" Hg.

OPTIONAL EQUIPMENT

Remote Alarm: A stack alarm device with an audible and visual alarm. Wired directly to the 24V remote terminal in the SR-500.

Freeze Protection: For the pool or spa that remain open year round. A freeze protection device that engages the pump when temperatures drop to near freezing.

CONTACT INFORMATION

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Pool Safety is our Top Priority

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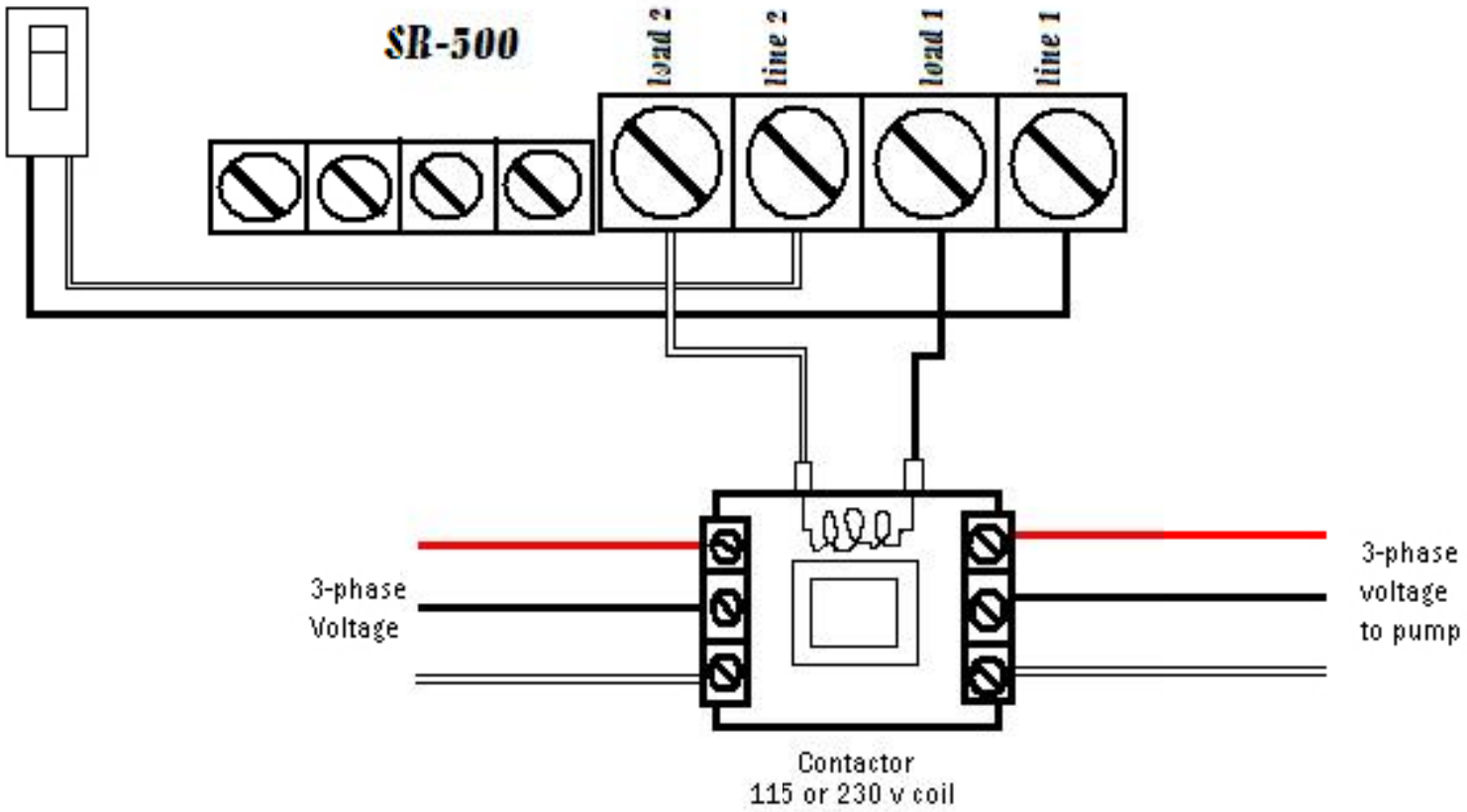
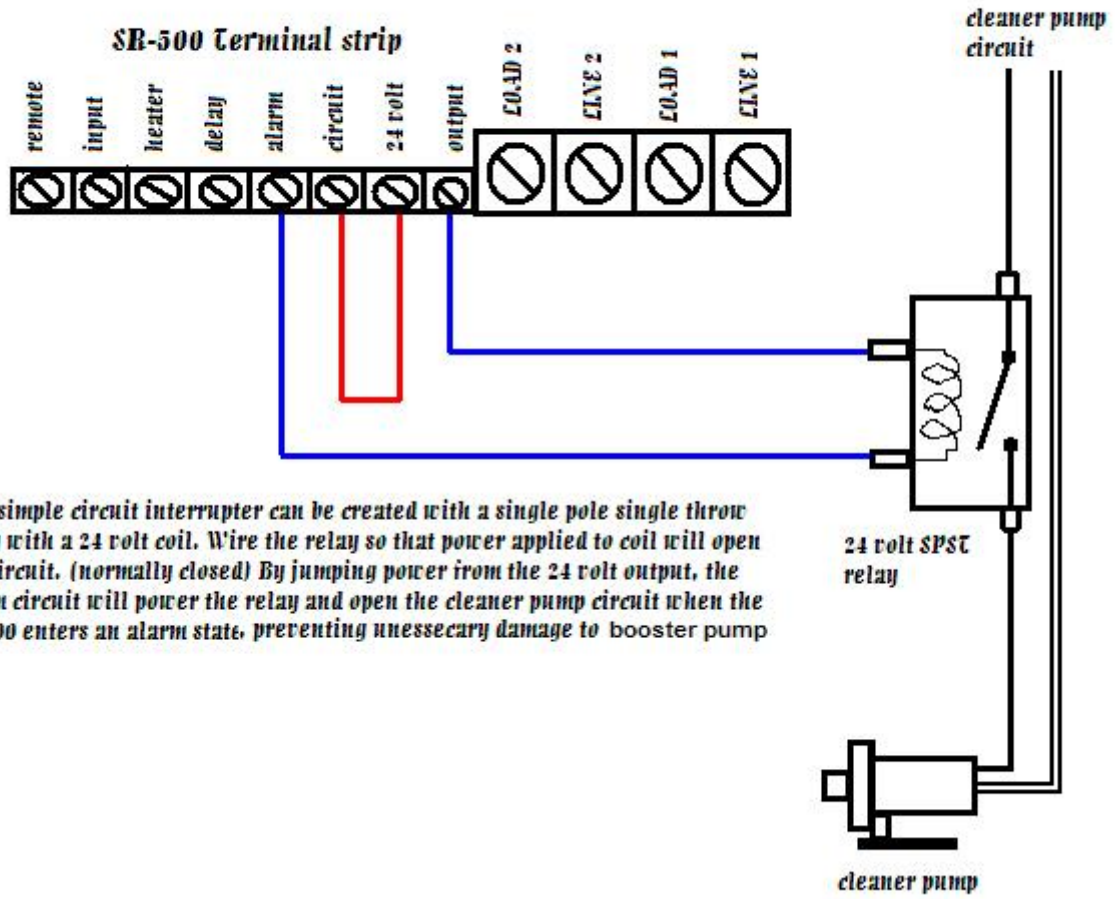
3-phase pump interface

Dedicated
single-phase circuit
(115 or 230 volt)



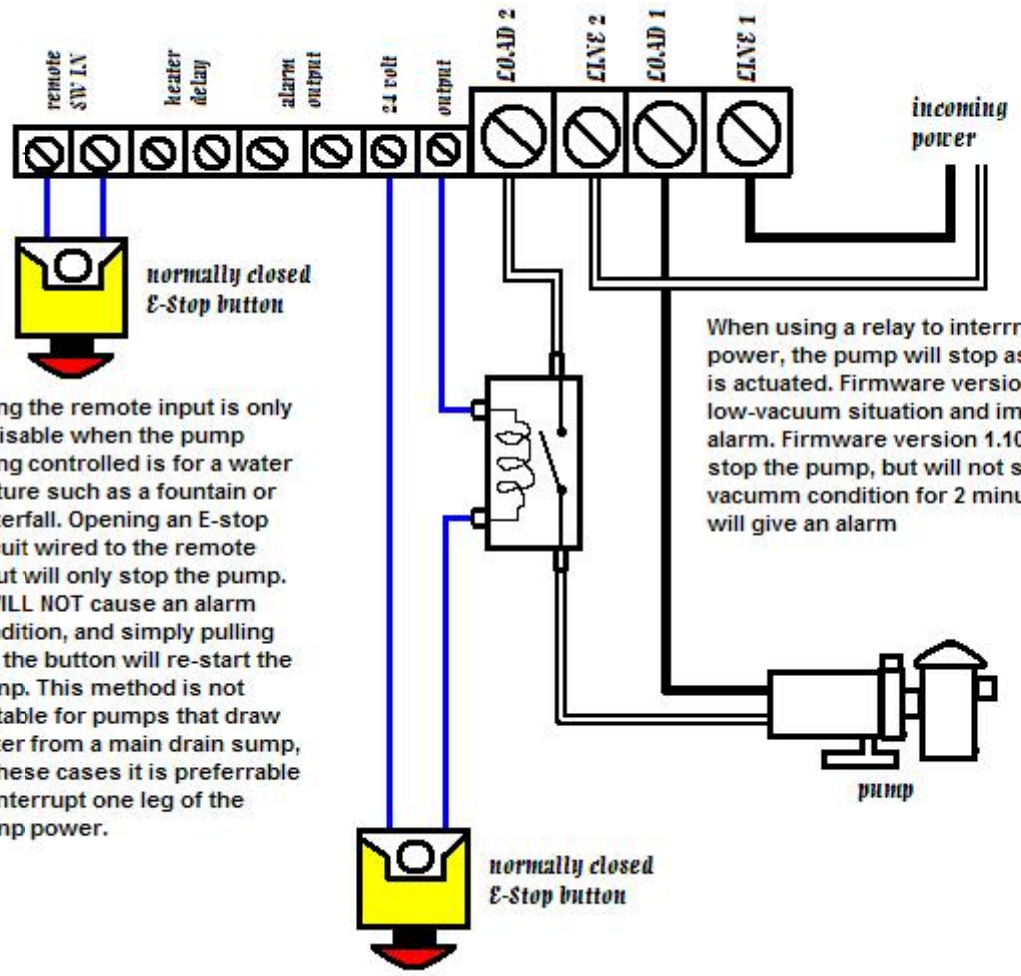
For pump loads greater than 3hp/20 amp or 3-phase pumps. Carry the pump load w/ an external contactor (or use the start contactor in some 3-phase pumps) Supply the SR500 w/ 115 or 230 via separate dedicated circuit

Cleaner Booster pump cut-off circuit



This simple circuit interrupter can be created with a single pole single throw relay with a 24 volt coil. Wire the relay so that power applied to coil will open the circuit. (normally closed) By jumping power from the 24 volt output, the alarm circuit will power the relay and open the cleaner pump circuit when the SR-500 enters an alarm state, preventing unessecary damage to booster pump

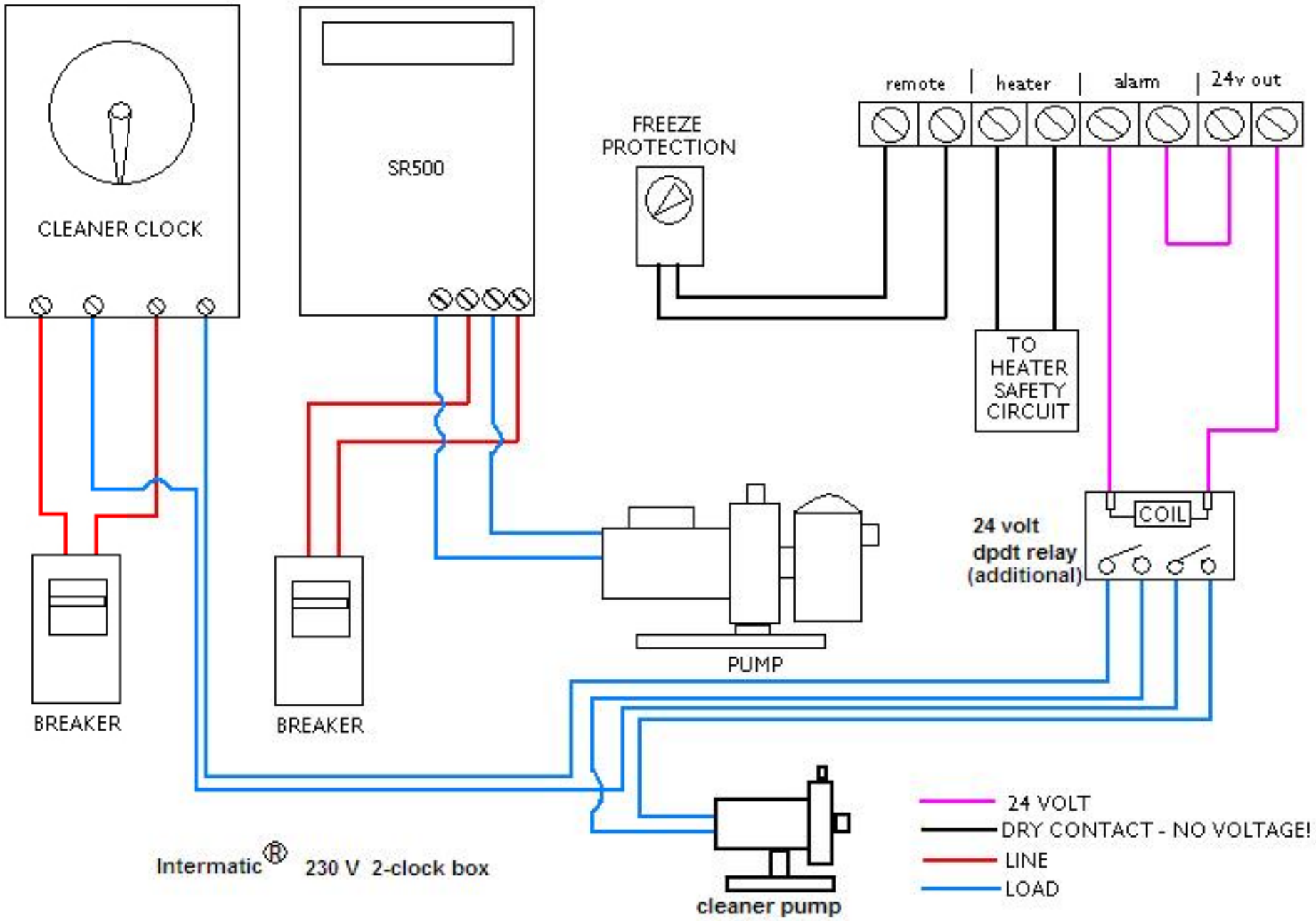
Emergency Stop Button Interface

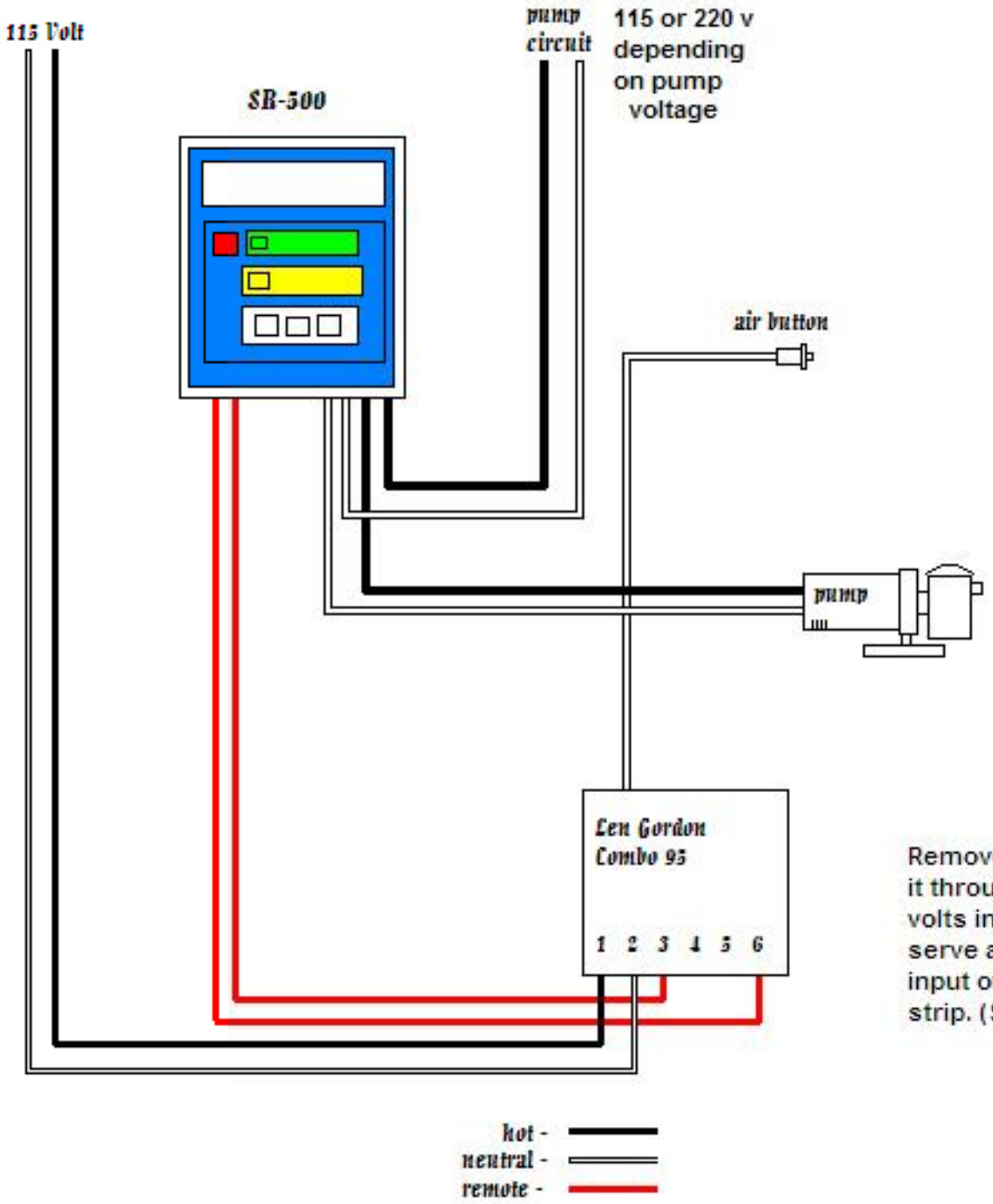


Using the remote input is only advisable when the pump being controlled is for a water feature such as a fountain or waterfall. Opening an E-stop circuit wired to the remote input will only stop the pump. It WILL NOT cause an alarm condition, and simply pulling out the button will re-start the pump. This method is not suitable for pumps that draw water from a main drain sump, in these cases it is preferrable to interrupt one leg of the pump power.

When using a relay to interrrupt one leg of pump power, the pump will stop as soon as the button is actuated. Firmware version 1.04 will detect a low-vacuum situation and immediately give an alarm. Firmware version 1.10 will immediately stop the pump, but will not sense an under-vacumm condition for 2 minutes, at which point it will give an alarm

Intermatic® 2-clock box - 230 volt

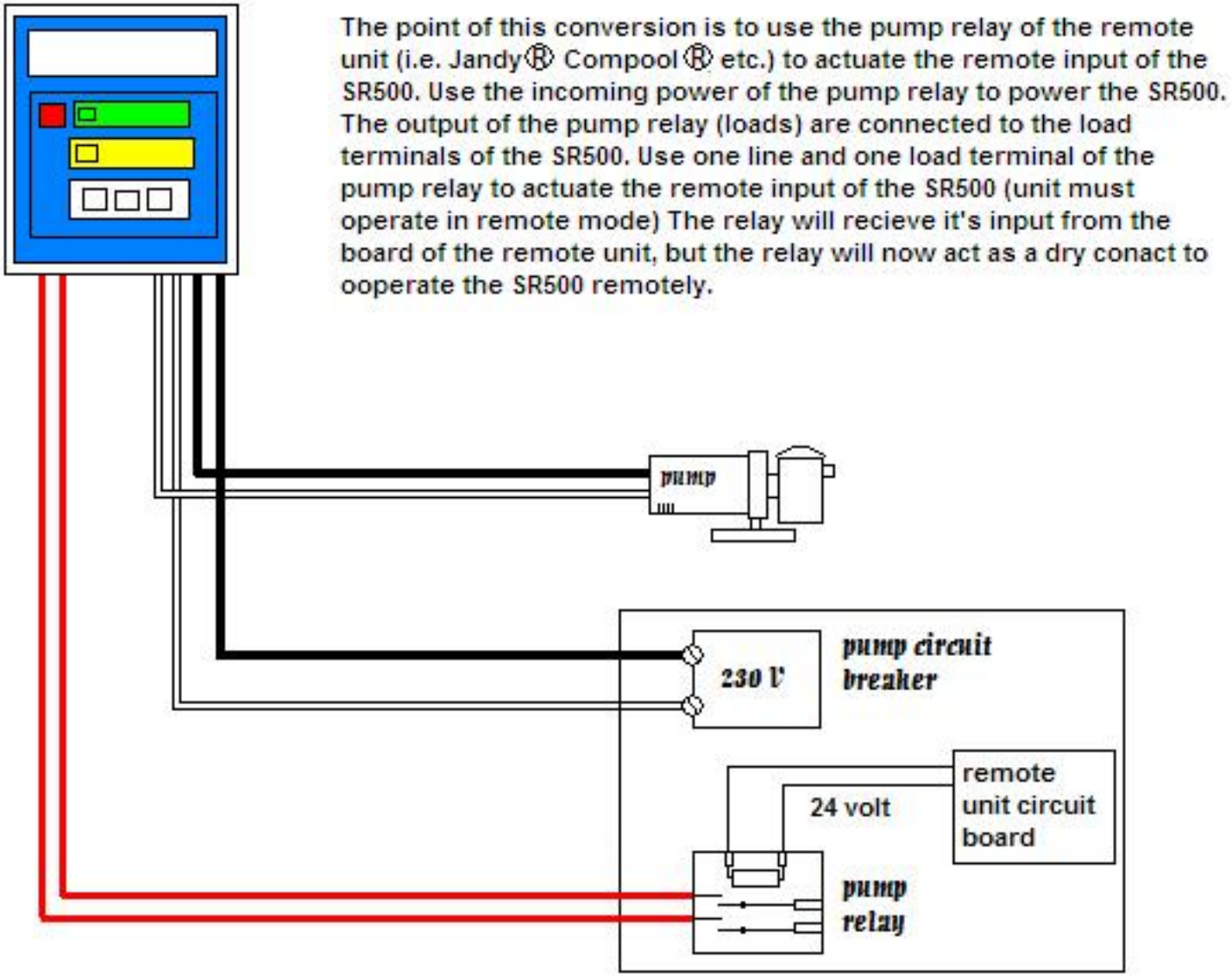




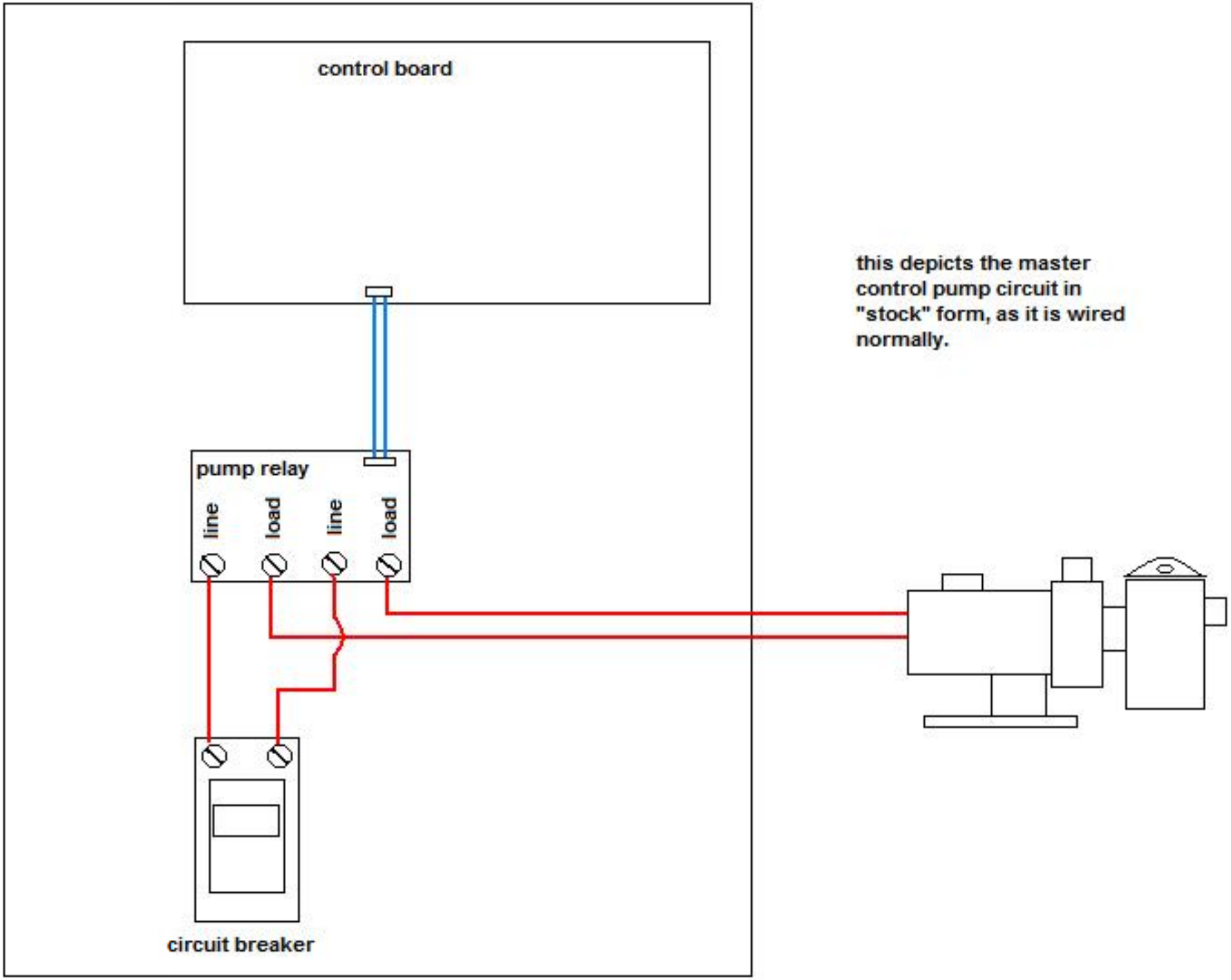
Len Gordon® Combo 95® Remote Timer

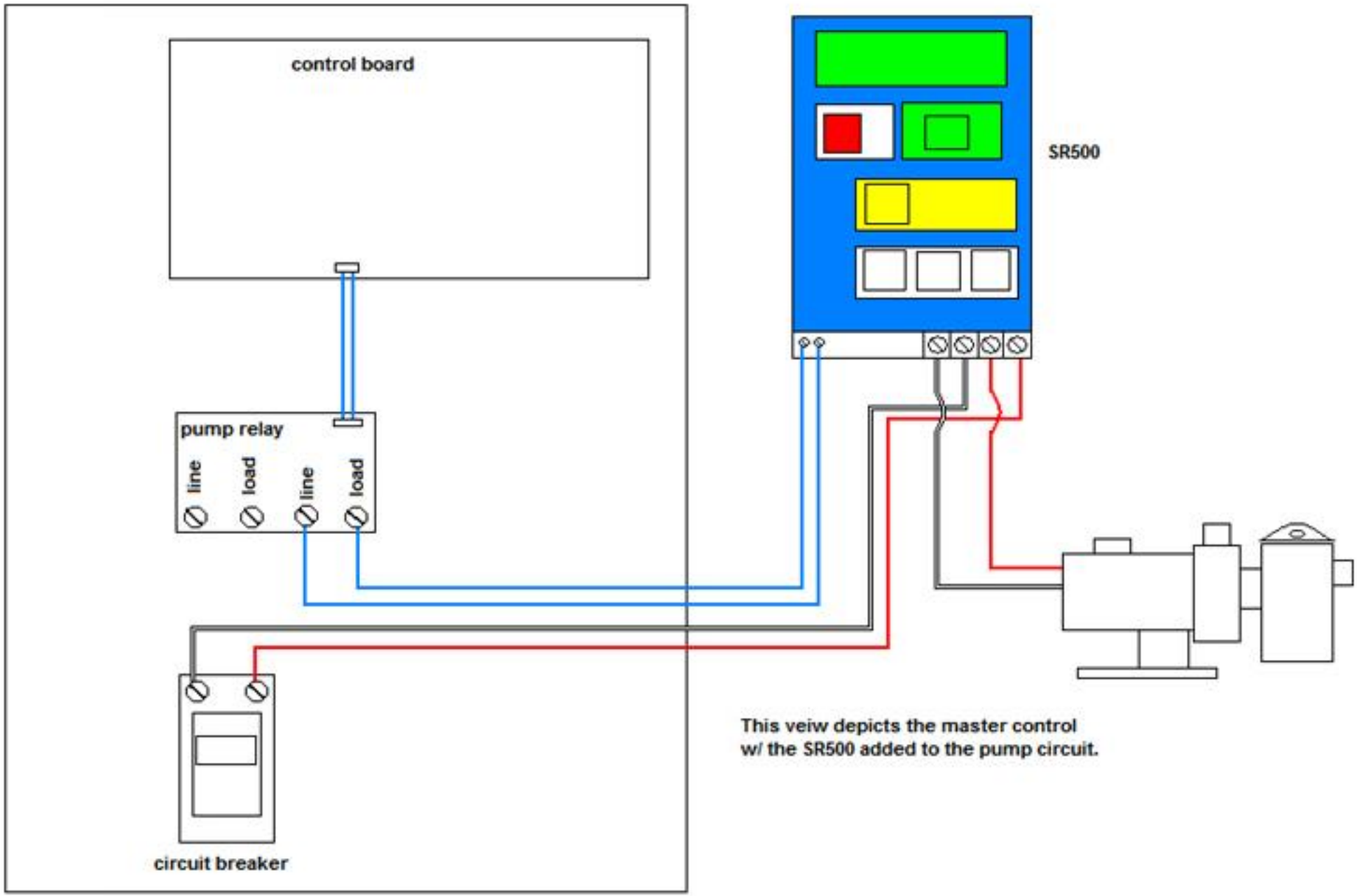
Remove the pump load from the Combo 95® and run it through the SR500. Supply the Combo 95® With 115t volts into terminals 1 and 2. Terminals 3 and 6 will then serve as the dry contact circuit for the Remote SW input of the SR500, Terminals 1 and 2 on the low-viltage strip. (SR500 must operate in Remote Mode)

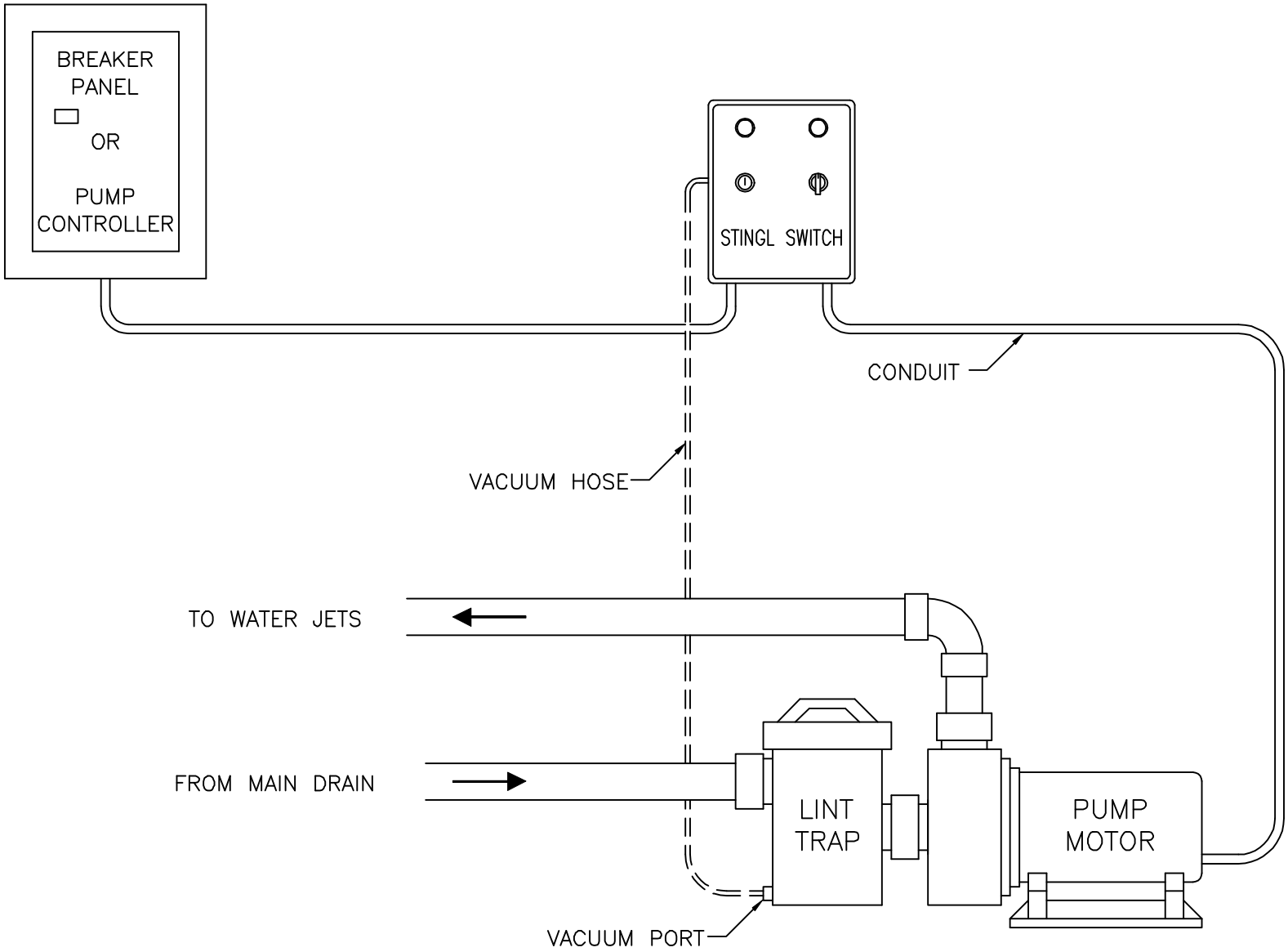
Remote System Interface



The point of this conversion is to use the pump relay of the remote unit (i.e. Jandy® Compool® etc.) to actuate the remote input of the SR500. Use the incoming power of the pump relay to power the SR500. The output of the pump relay (loads) are connected to the load terminals of the SR500. Use one line and one load terminal of the pump relay to actuate the remote input of the SR500 (unit must operate in remote mode) The relay will recieve it's input from the board of the remote unit, but the relay will now act as a dry conact to ooperate the SR500 remotely.


control board
pump relay
line
load
line
load
circuit breaker
this depicts the master control pump circuit in "stock" form, as it is wired normally.


control board
SR500
pump relay
line
load
line
load
circuit breaker
This veiw depicts the master control
w/ the SR500 added to the pump circuit.



STINGL SWTICH INSTALLATION

8/31/99

Initial Calibration Instructions – SR 500

The purpose of these instructions is to provide information on how to get the SR-500 operating on your pool or spa after the electrical wiring is completed. These instructions are to be used WITH your instructional manual. Please read your instructional manual PRIOR to installing and calibrating the SR-500.

Calibration Instructions:

1. Push and hold "set" button – Screen will change from "set up mode" to "service mode" - release set button – screen will read "firmware version"
2. Push "set" button – screen will read "initialize unit – format EE" This step formats the eeprom and microprocessor – push "yes" – screen reads "init successful – set to continue
3. Push "set" button – screen will read "set sensor zero" – The sensor MUST be open to atmosphere (no hose attached) to properly zero. Push the "yes" button to zero the sensor – screen will read "zero successful"
4. Push "set" button – screen will read "prime pump?" Pushing yes at this point will start the pump for a 60 second block of run time, during which it will read the vacuum level created by the pump. (screen will read "full prime? y/n") Therefore, it is imperative that the pump be primed and ready to run, all baskets and the filter be clean, and the system be set up for normal operation at this time. To properly calibrate the unit, get the pump running at a full head, then push "yes" before the 60 second run block ends. If it takes longer than 60 seconds to reach full prime, push "yes" again to start another block. This step sets the unit's operational vacuum parameters which it will refer to every time it starts the pump, so it is important that the pump be fully primed and running at it's full potential and the system be set up as it will normally run before "yes" is pressed, otherwise your calibration will be inaccurate and operational difficulties will result. Screen will read "please wait" while it saves the vacuum data, and will display the stopped vacuum level.
5. Screen will read "reference vacuum – Delta P – xx.x" this value is the vacuum difference between the pump running and stopped.
6. Push "set" button – screen will read "reference vacuum stopped – xx.x" this is the vacuum level when the pump is not running.
7. Push "set" button – screen will read "reference vacuum running – xx.x" this is the vacuum level while system is in operation. Save this value for future reference.
8. Push "set" button – screen will read "vacuum cutoff at 3" above reference" This is the upper threshold, or how much of a vacuum "spike" will cause an alarm state. It can be made as sensitive as 1" or as broad as 5". Usually the 3" default setting is sufficient for most systems, however, in cases of extreme debris collection due to location of pool or season of the year, the upper threshold can be raised to 5" to accommodate the changes in vacuum caused by baskets filling with debris.

9. Push “set” button – screen will read “heater control (y/n) no”. This activates the heater delay circuit, which will shut down the heater 15 minutes before the pump shuts down when operating in Timed mode. If you are using the heater delay circuit in the unit you will need to activate it here by setting to “yes”. If you are not using the heater delay, leave at “no”.
10. Push “set” button – screen will read “default running mode: none” This is the mode the unit will return to in the event of a power outage. Set this parameter for the run mode you will normally operate in (usually “timed” for residential applications, “cont.” for commercial applications, and “remote” for systems using an automated controller or spa jet pumps controlled by an air switch or spring-wound timer.)
11. Push “set” – screen will read “firmware version”
12. Push “off” to exit service mode