

STRANTROL® SYSTEM7 MECHANICAL ROOM CONTROLLER



USFilter

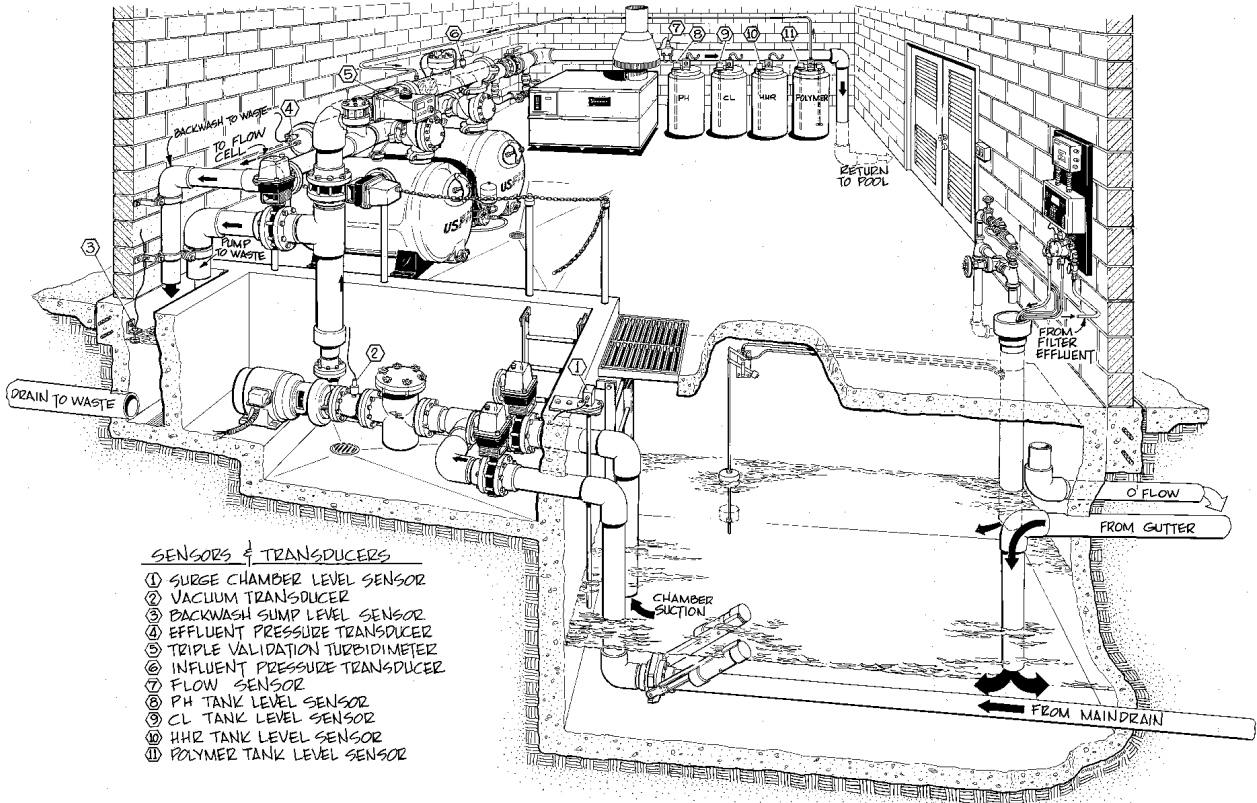
INSTALLATION, OPERATION & MAINTENANCE MANUAL

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Introduction

The Strantrol® System7 Mechanical Room Controller (MRC) controls the operation of all mechanical, electrical and water chemistry control devices used in the conditioning and treatment of your aquatic facility's water. The MRC can report data in either US (English) or metric units. Along with controlling, the MRC also stores events and readings to be downloaded and graphed by the WinSys™7 software for diagnosing problems or for record keeping. The following is a list of controls and features that the MRC can offer to your facility:

- Main recirculation pump
- Flow and volume instruments
- All filter functions
- pH and disinfection feed
- Chemical storage tanks display
- Surge and balance tanks display
- Backwash sump levels
- Energy saver mode



Mounting the Mechanical Room Control Device (MRC)

The MRC consists of a Strantronic System7 controller, a transformer module, and a flowcell with probes, all of which are mounted to a PVC backplate.

The MRC must be located in a serviceable area within the mechanical room, allowing 36" of clearance in front of the MRC, if possible. The MRC must **not** be installed out-of-doors (protect from weather) or in direct sunlight.



(Figure 1)

Once a location has been found, the PVC panel should be mounted to a wall using the four holes on the corners of the PVC panel. The weight of the controller, transformer, flowcell, wiring, conduit, sample tubing and valves can exceed 20 pounds. Select mounting hardware accordingly. Mounting hardware is not supplied by USFilter Stranco Products.

Select installation location based on accessibility to electrical power and plumbing requirements.

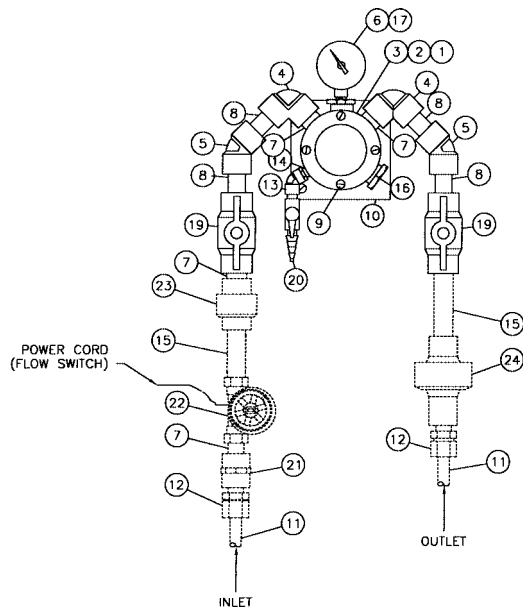
Assembling and Mounting the Flowcell

- Take contents out of bag. (The dashed portion of the flowcell in Figure 2 except for tubing or anything below the ball valves.)
- Threaded pipe fitting connections made in the field are to employ standard practices, i.e., 3 to 5 wraps of Teflon® tape, hand-tighten, followed by 1 to 1.5 turns with a wrench.
- Install the Paddlewheel Flow Switch in the sample stream. Make sure you only wrap the male fitting three times with Teflon® tape so as not to risk breaking the female fitting on the Paddle Wheel Flow Switch.



“Warning” Failure to incorporate a flow switch and flowcell into the sample stream of your USFilter chemical controller can result in injury or harm to swimmers in or around the pool if the recirculation pump should fail or shut down.

- Fasten-tight tubing connectors are employed, allowing for positive seal without the need for tightening with tools. When installing tubing into fittings, make sure tubing extends at least 1/8" beyond O-Ring. Care should be taken in handling stainless steel retainer; it is razor sharp and can cut you very easily.
- Once you have finished assembling the flowcell, close the valves.



(Figure 2)

Installing the Pressure Transducers

Pressure transducers are used to monitor the influent and effluent pressure of the filter system. The pressure transducers will be installed into the gauge panel spacer block.

Install the pressure transducer by wrapping the threaded fitting with 3 to 5 wraps of Teflon tape, hand-tighten, followed by 1/4 to 1/2 turn with a wrench.

The cord connectors are explained in the Electrical Section, Step 15 of this manual.



(Figure 3)

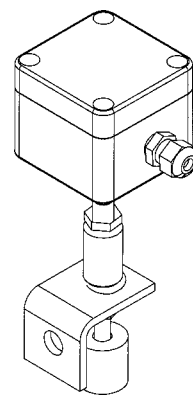


(Figure 4)

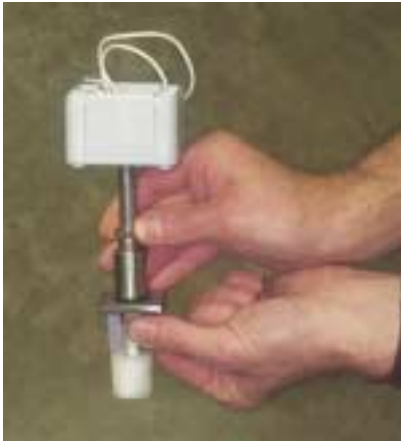
Installing the Backwash Level Switch

The backwash level switch will have an enclosure with terminals inside for electrical connections plus a metal bracket so the switch can be mounted to the side of the backwash tank. Using appropriate hardware (stainless steel is recommended), mount the level sensor to the backwash tank.

- Unscrew the switch from the mounting apparatus (Figure 6).
- Place the bolt through the hole of the mounting bracket (Figure 7).
- Secure bracket to side of backwash tank. Note: USFilter does not supply mounting hardware.



(Figure 5)



(Figure 6)

Holding the coupling assembly, unscrew the plastic float switch.



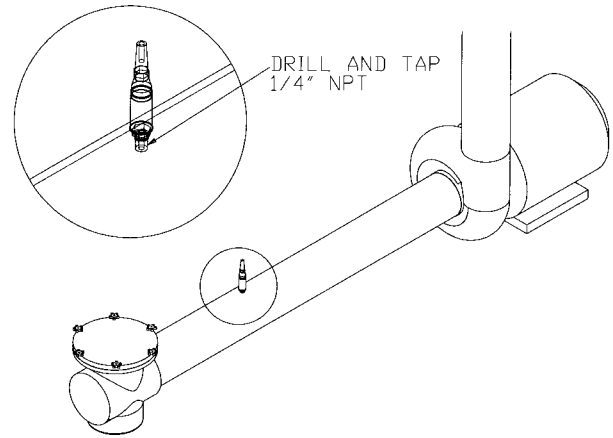
(Figure 7)

With the float switch out of the way, install bolt into bracket then wall anchor. Tighten securely.

- Reassemble level switch – hand-tighten plastic float followed by a ¼ turn with a wrench.

Installing the Vacuum Transducer

The Vacuum Transducer is to be installed between the effluent of the strainer and the influent of the recirculation pump (See Figure 8).



(Figure 8)

Drill and tap ¼" NPT between pump strainer and pump.

Installing the Level Indicator

- The level indicator will come in 8' or 16' lengths. To customize the level indicator to the length that fits your application:
 - Measure the height of the fluid in the tank or pit.
 - The fluid should not rise above the threaded coupling on the bottom of the level indicator.
 - Cut the level indicator (Figure 9) to the height of the tank or only as low as you need the level indicator to reach.



(Figure 9)

- Use PVC glue to attach a cap at the end of the level indicator (Figure 10). Make sure you have a tight seal or water will enter the level indicator and cause damage.

Installation



(Figure 10)

- Screw on the flange and insert the level indicator to the tank (Figures 11 & 12).

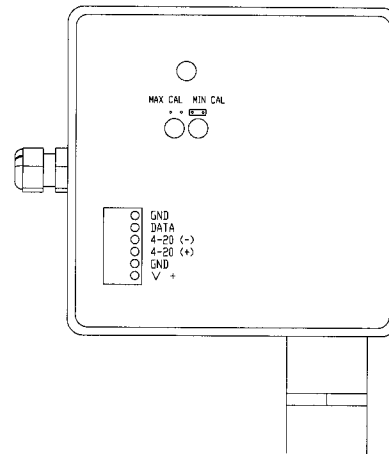


(Figure 11)



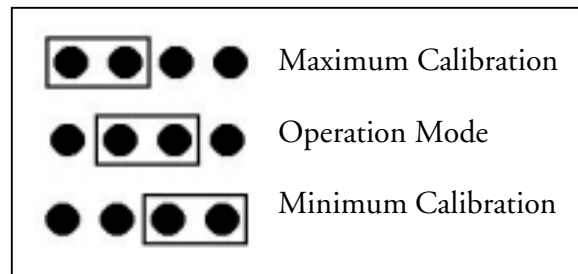
(Figure 12)

- If your application is a pit or the level indicator is longer than four feet, use the anchors provided to keep the level indicator steady.



(Figure 13)

The level sensor has three LEDs. One is a power LED that will come on when the unit is powered up and remain on solid as long as the sensor has valid calibration values. The other two LEDs are used to indicate that the sensor is in either a minimum calibration or a maximum calibration mode.



(Figure 14)

Operation Mode:

There is a set of four pins that is used to calibrate the sensor. If the jumper block is placed on the two middle pins the sensor will operate in normal mode, outputting a 4-20mA signal based on the level that is currently sensed (Figure 14).

Minimum Calibration:

If the jumper block is used to shorten the two right-most pins, then the sensor will enter minimum calibration mode (Figure 14). While in this mode, the sensor's current output will be 0mA. Lift the sensor so the liquid is at the lower end of the sensor or as low as you would like the liquid to get to trigger an alarm (Figure 11).

The minimum calibration LED will flash continuously while the calibration is taking place. The calibration process takes two minutes to allow the software filter's time constant to settle and to make sure that a sufficient number of samples have been run through the filter to come up with a good calibration value. If the jumper is removed before the calibration process is complete (while the min cal LED is still flashing), then the calibration will be aborted.

Once the calibration is completed, a check is done to make sure that the sensor has valid calibration values. If a valid calibration has been achieved, then the min cal LED will come on solid and remain on until the jumper block is removed from the min cal position. The sensor will return to normal mode when the jumper block is removed.

If the calibration values are not valid, then the power LED will start flashing and continue to flash until a valid calibration is done. The sensor's current output will be 0mA as long as the sensor does not have valid calibration values, even after the jumper block is removed from the minimum calibration position.

Maximum Calibration:

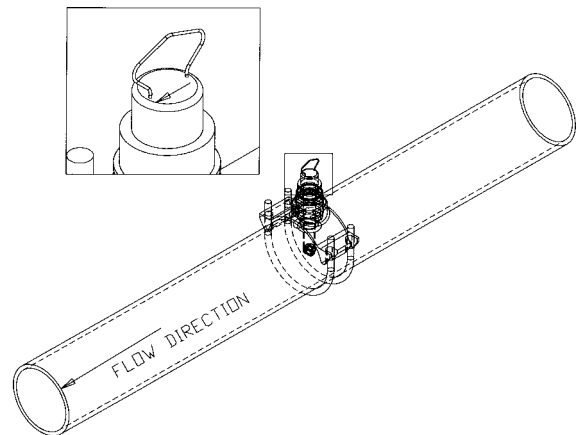
If the jumper block is used to short the two left-most pins, then the sensor will enter maximum calibration mode (*Figure 14*). While in this mode, the sensor's current output will be 0mA. Place the sensor so the liquid is at the upper end of the sensor or as high as you would like the liquid to be for 100% (*Figure 12*). The maximum calibration LED will flash continuously while the calibration is taking place. The calibration process takes two minutes to allow the software filter's time constant to settle and to make sure that a sufficient number of samples have been run through the filter to come up with a good calibration value. If the jumper is removed before the calibration process is complete (while the max cal LED is still flashing), then the calibration will be aborted.

Once the calibration is completed, a check is done to make sure that the sensor has valid calibration values.

If a valid calibration has been achieved, then the max cal LED will come on solid and remain on until the jumper block is removed from the max cal position. The sensor will return to normal mode when the jumper block is removed.

If the calibration values are not valid, then the max cal LED will come on solid and the power LED will start flashing and continue to flash until a valid calibration is done. The sensor's current output will be 0mA as long as the sensor does not have valid calibration values, even after the jumper block is removed from the maximum calibration position.

Installing and Checking Flow Sensor



(*Figure 15*)

Lubricate the sensor O-rings with a silicone lubricant. Do not use petroleum-based lubricant, which will attack the O-rings.

Using an alternating/twisting motion, lower the sensor into the fitting, making sure the installation arrows on the black cap are pointing in the direction of flow (*Figure 15*).

Engage one thread of the sensor cap, then turn the sensor until the alignment tab is seated in the fitting notch. **Hand-tighten the sensor cap. DO NOT** use any tools on the sensor cap or the cap threads and/or fitting flange threads will be damaged.

Installation

FLOW METER SENSOR (System7 Mechanical Room Control unit only)

Periodically inspect the flow meter sensor installed in the saddle assembly in the effluent line to ensure there are no obstructions or wear in the paddle assembly. Obstructions or wear of these parts will indicate lower than normal or no flow reading at the System7 controller.

Note: Before servicing the flow sensor, shut OFF power to the filter controller. Close all valves between the source water and the filter system.

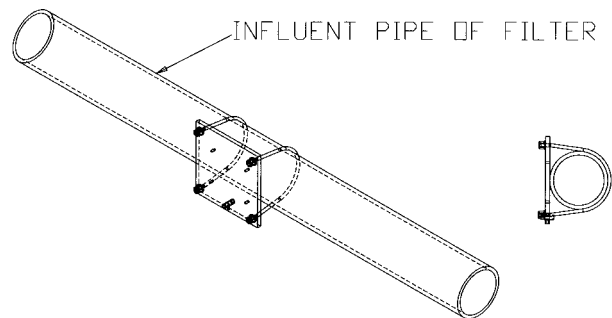
Remove Sensor

- Unscrew the sensor nut clockwise. Pull the sensor/nut assembly out of its pipe saddle adapter. Remove any obstructions. Check the paddle for free rotation movement.

NOTE: If the paddle wheel shows signs of wear or does not rotate freely, replace the paddle wheel, pin and O-rings as follows:

- Gently spread the side paddle wheel supports with a screwdriver to release the pin engagement.
- Replace in the reverse order as disassembly. Refer to manufacturer's parts list for replacement parts.
- Lubricate O-rings and install sensor. Prior to installation, check the paddle wheel of the flow sensor. It should rotate freely when flicked, or by directing a stream of water or air across it to simulate liquid flow.
- Note the flow directional arrow on the top of the sensor head. Position the head into the pipe adapter saddle so that the arrows are pointing in the proper flow direction.
- Lubricate the O-rings of the sensor with a silicone lubricant. Insert the flow sensor into the saddle. Align the bail of the flow sensor parallel to the pipe. Make sure that the flow sensor is fully seated in the saddle fitting slots. The flow sensor fitting will not turn until it is properly installed.
- Hand-tighten the plastic cap to retain the flow sensor. **DO NOT USE ANY TOOLS ON THE CAP. HAND TIGHTEN ONLY TO AVOID DAMAGE.**

Installing Turbidimeter

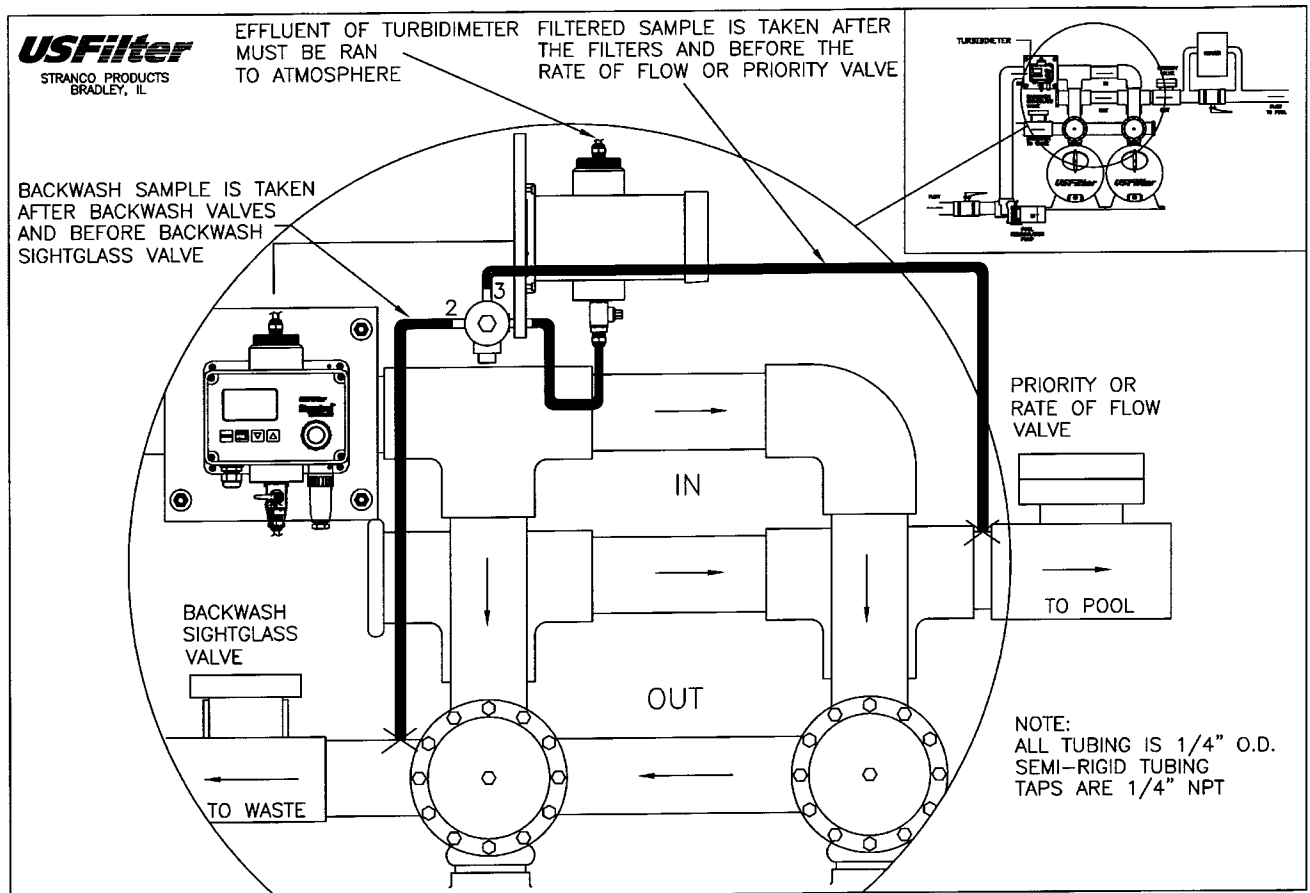


(Figure 16)

The turbidimeter will be mounted to the filter system. The turbidimeter needs to be mounted close to the filter because a long tube run will cause delay in turbidity readings. The turbidimeter can be mounted to the influent manifold, where the filter control console is mounted. The turbidimeter will be packed with two, 1/2" Polypropylene tubes with 3/8" Nylon all thread inside, straps and four PVC nuts.

- Locate the two, 1/2" Polypropylene tubes with 3/8" Nylon all thread inside.
- Locate the four PVC nuts.
- Take one of the 1/2" Polypropylene tubes with 3/8" Nylon all thread inside and one PVC nut.
- Insert one end of the 3/8" Nylon all thread through one of the holes in the panel.
- Fasten the PVC nut onto the 3/8" Nylon all thread until the end of the Nylon all thread and the PVC nut are flush.
- Take the other 1/2" Polypropylene tube with 3/8" Nylon all thread inside and one PVC nut.
- Insert one end of the 3/8" Nylon all thread through the other hole in the top of the panel.
- Fasten the PVC nut onto the 3/8" Nylon all thread until the end of the Nylon all thread and the PVC nut are flush.
- Mount the backplate to the pipe.
- Hold the backplate to the pipe.
- Wrap the tubes over the pipe and insert the Nylon all thread through the bottom hole.

- Fasten the PVC nut onto the Nylon all thread.
- Tighten the bottom PVC nuts to secure the backplate.
- Do the same for the other side (Figure 16).



Turbidimeter Influent

Plumbing

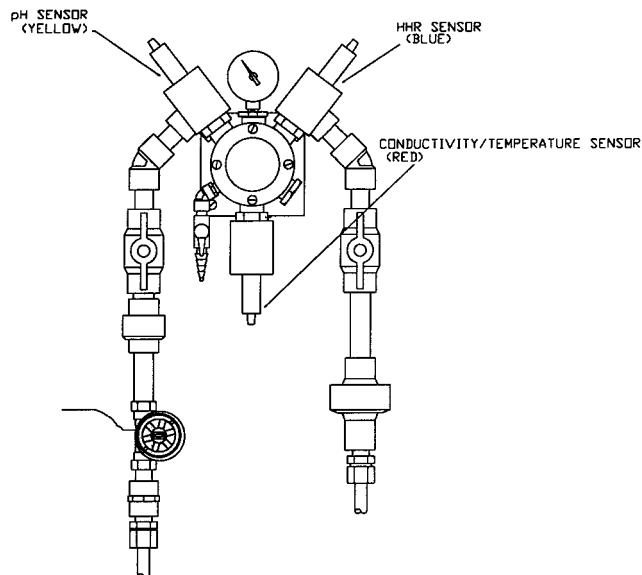
Plumbing the Flowcell

- ½" tubing is recommended for sample stream pickup and return. We have included two connector fittings with the flowcell if needed.
- For the sampling point of the flowcell, tap downstream (after) of filter and upstream (before) of heater and chemical injection points.
- For the discharge point of the flowcell, tap upstream (before) of recirculation pump.
- Remove the cap to the pH, HRR and Conductivity sensors. Clean tips with a toothbrush and dish soap and then a light (10 parts of water to 1 part of acid) acid.
- Screw pH, HRR, Temperature and Conductivity sensors into flowcell.

Checking Flowcell

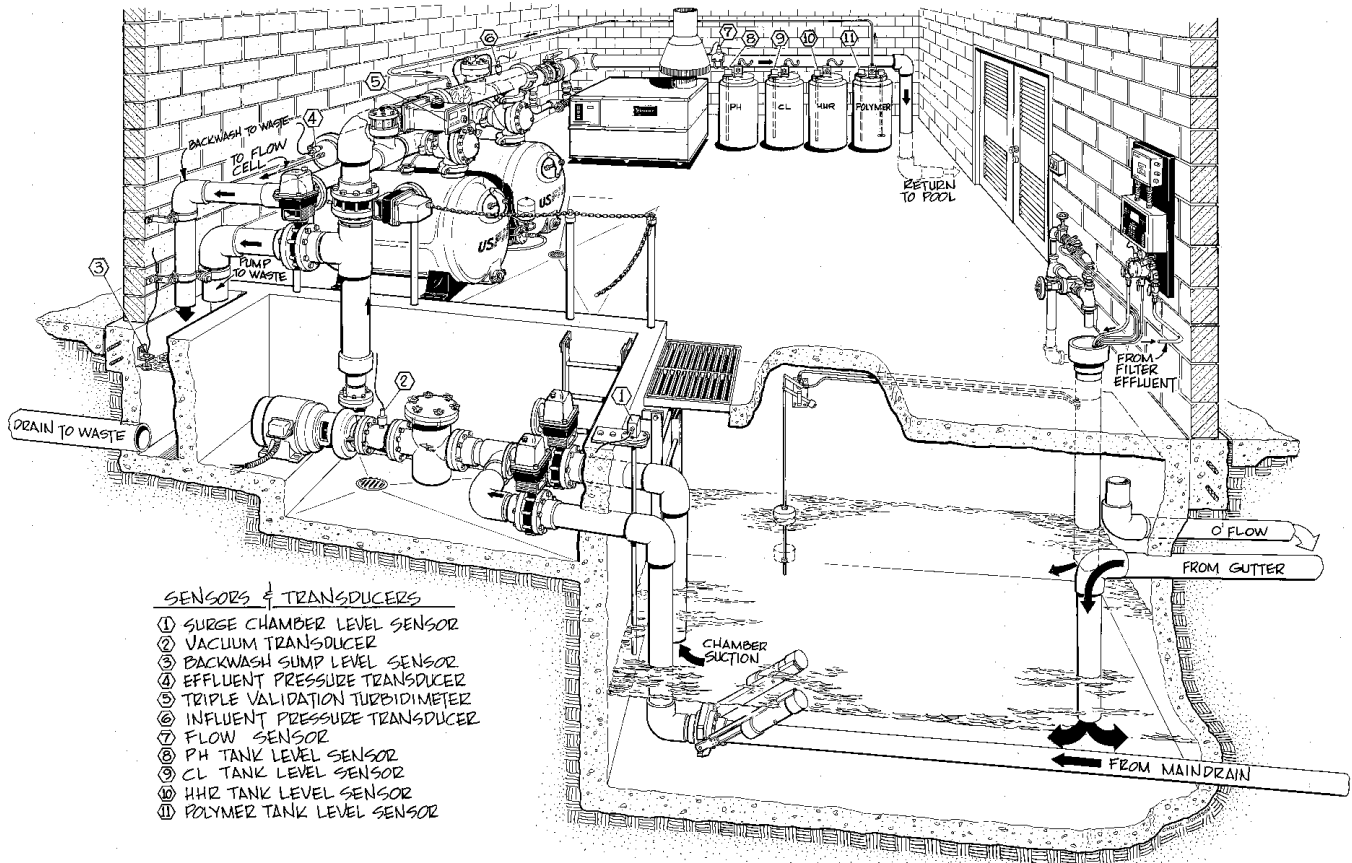
- Open the sample stream valves and check for leaks.
- Make sure the compound pressure gauge is showing a positive and steady pressure.
- Adjust the valves or relocate the sample stream point in the recirculation system to ensure constant positive pressure.
- Allow the sensors to rinse in the sample flowcell while you do the wiring.
- Open wet-test valve and make sure that it generates a vigorous stream.

NOTE: Make sure that sample stream is pressurized and is not operating under vacuum. Vacuum operation will cause sensor failure.



(Figure 17)

Chemical Injection Points



(Figure 18)

Electrical

Step1: Opening the Cover

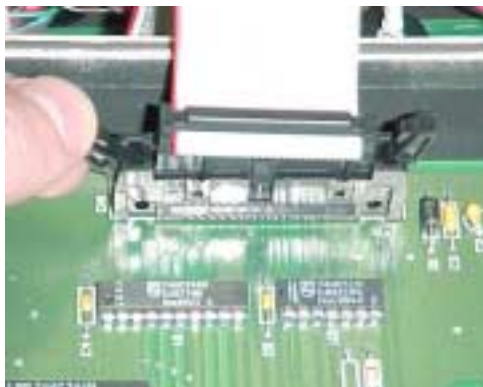
- You must open the cover to connect power.
- Remove the cover by loosening the six screws with a screwdriver as shown.

Note: The screws do not need to be totally removed, only loosened.

- Once the screws are loosened, carefully lift the top cover off the unit.
- The cover will still be connected to the base by the ribbon cable.
- Set the moisture-absorbent packet found inside to the side for now.

Step2: Disconnecting the Ribbon Cable

You may leave the ribbon cable attached while you wire the unit, but we recommend that you disconnect it.



(Figure 19)

- Spread the two holders at the end of the cable attached to the cover (Figure 19).
- Unplug the cable.
- Remove the cover.
- Set the cover aside for now.

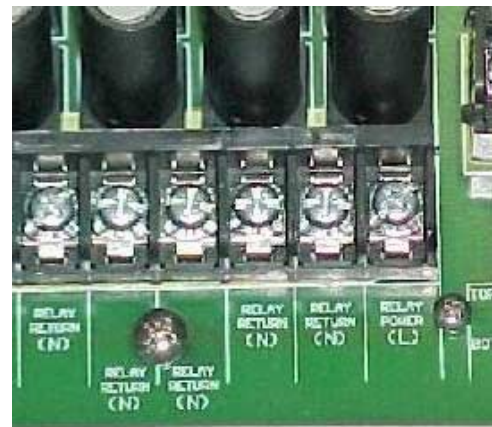
NOTE: Be sure to store the cover in a safe, dry place while you wire the unit.

Step 3: Connecting AC Line Power to Relays

TB3 is located in the center and bottom of the Main CPU PC Board.

NOTE: Use a separate power circuit for the Main controller power described as follows in Step13.

- Connect AC Line (main) wire connects to the terminal marked with “Relay Power (L)”. In North America, this is a black (Line) wire. In the rest of the world, this wire is color-coded as brown (main) (Figure 20).



(Figure 20)

- Connect the Neutral (white wire in North America, blue in the rest of the world) to the terminal on the TB3 marked “Relay Return (N)” (just to the left of the Relay Power (L)) (Figure 21).



(Figure 21)

- Connect the green Ground (Earth) wire to any of the terminals on the top or bottom row of TB4 labeled “Earth”.

Electrical

Step 4: Connecting AC Line Power to System7

TB4 is located at the far right and bottom of the Main CPU PC Board. TB4 has two rows. The bottom row is where you will do your AC Line, Neutral and Ground connections. The top row of TB4 is all Grounds.



(Figure 22)

NOTE: Main power must be on a separate circuit than the Relay Power.

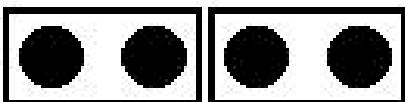
- Connect the AC Line (main) wire to the bottom row terminal marked with “Line” (Figure 22).
- Connect the Neutral wire to the bottom level terminal on the TB4 marked “Neutral” (just to the left of the Line Terminal) (Figure 22).
- Connect the green Ground (Earth) wire to any of the terminals on the top or bottom row labeled “Earth” (Figure 22).
- Refer to drawing (Figure 24).

Step 5: Setting the Line Voltage Switch

Before plugging in the unit, set the Line Voltage Jumpers to either 115 or 220 VAC.

Step 5a: Line Voltage Switch for 115 VAC

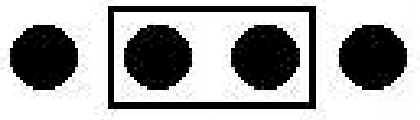
- Place a jumper over the left two pins.
- Place a jumper over the right two pins.



(Figure 23)

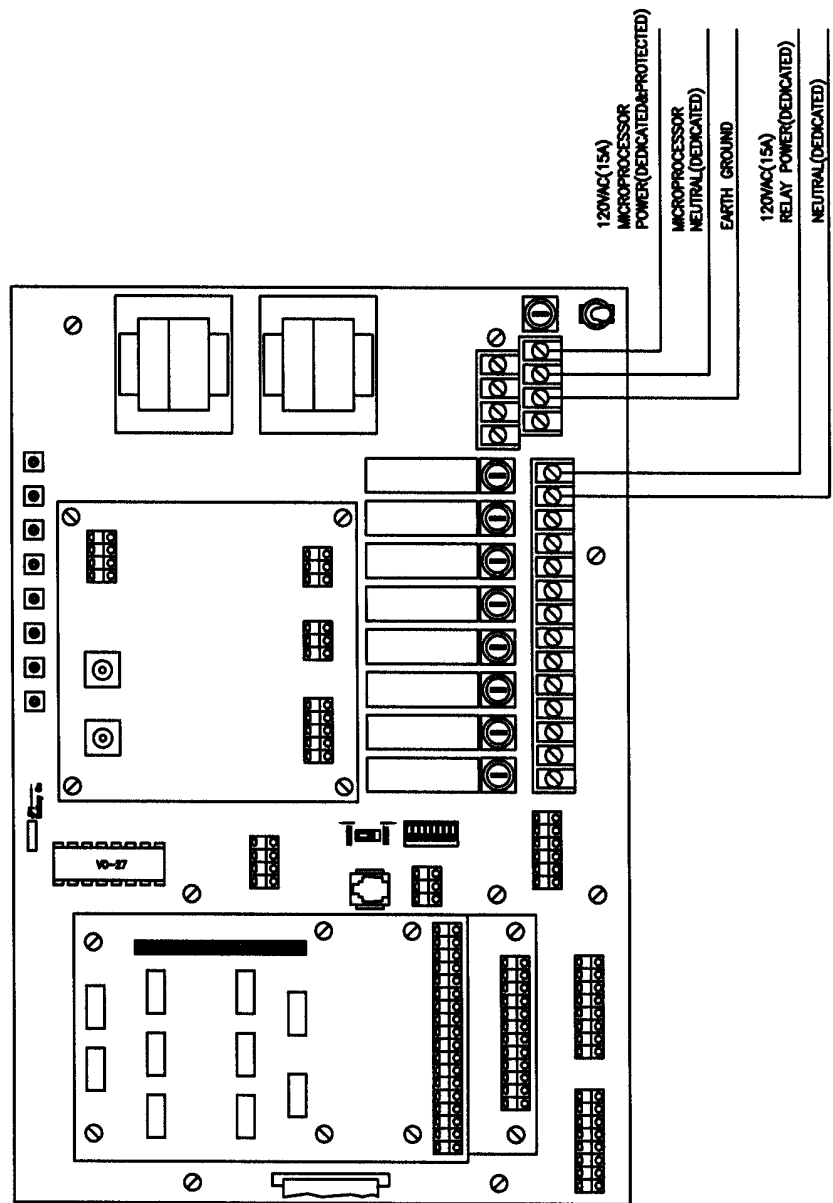
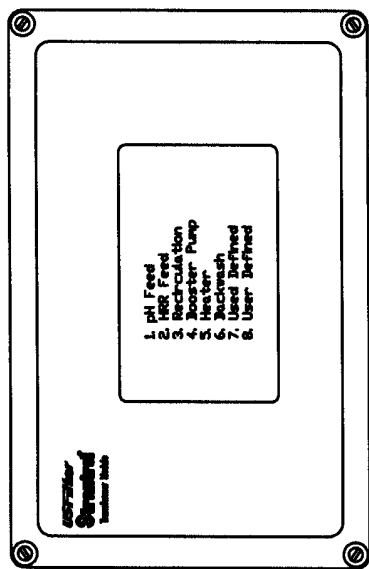
Step 5b: Line Voltage Switch for 220 VAC

- Place a jumper over the middle two pins.
- Leave the two outside pins without jumpers.



SYSTEM7

CONNECTIONS BETWEEN TRANSFORMER
MODULE AND MRC ARE WIRED AT THE FACTORY



(Figure 24)

Step 6: Connecting Chemical Feed Devices



(Figure 25)

NOTE: Relay 1 is pH control (feed up and feed down) and Relay 2 is HRR control (oxidizer).

Step 6a: Connecting pH Control Feed Device

- Connect 120 VAC out from terminal TB3 labeled “NO1” in the System7, to one side of a set of contacts in a magnetic starter. Connect the other side of the dry contact, in the magnetic starter, to the pump (outlet) (Figure 27).
- Connect Neutral from terminal TB3 labeled “Relay Return (N)” in the System7 to the neutral of the pump (outlet). It is recommended that the first “Relay Return (N)” terminal be used (from left to right).
- Connect Ground from terminal TB4 labeled “Earth” in the System7 to the pump ground. It is recommended that the second top row “Earth” terminal be used (from left to right).

Step 6b: Connecting HRR Control Feed Device

- Connect 120 VAC out from terminal TB3 labeled “NO2” in the System7, to one side of a set of contacts in a magnetic starter. Connect the other side of the dry contact, in the magnetic starter, to the pump (outlet) (Figure 27).
- Connect Neutral from terminal TB3 labeled “Relay Return (N)” in the System7 to the neutral of the pump (outlet). It is recommended that the first “Relay Return (N)” terminal be used (from left to right).
- Connect Ground from Terminal TB4 labeled “Earth” in the System7 to the pump ground. It

is recommended that the second top row “Earth” terminal be used (from left to right).

Step 7: Connecting Recirculation Pump

- The System7 will control the coil of a magnetic starter because the relay is unable to take the amp draw of the Recirculation Pump (Figure 27).
- Connect 120VAC output from terminal TB3 labeled “NO3” to the line side of both the recirculation pump starter coil and the separate magnetic starter coil for the chemical pumps and booster pump.
- Connect neutral output from terminal TB3 labeled “Relay Return (N)” to both the neutral side of the recirculation pump starter coil and the separate magnetic starter coil for the chemical pumps and booster pump. It is recommended that the second “Relay Return (N)” terminal be used (from left to right) (Figure 27).
- Connect Ground (green) to terminal TB4 labeled “Earth”. It is recommended that the second top row “Earth” terminal be used (from left to right).

Step 8: Connecting the Pressure Amplifier Pump

- The System7 will control the coil of a magnetic starter because the relay is unable to take the amp draw of the Pressure Amplifier Pump (Figure 27).
- Connect 120 VAC out from terminal TB3 labeled “NO4” in the System7, to the line side of the magnetic starter coil (Figure 27).
- Connect Neutral from terminal TB3 labeled “Relay Return (N)” in the System7 to the neutral side of the magnetic starter coil. It is recommended that the first “Relay Return (N)” terminal be used (from left to right).
- Connect Ground from terminal TB4 labeled “Earth” in the System7 to the pump ground. It is recommended that the second top row “Earth” terminal be used (from left to right).
- Connect 120 VAC from terminal TB3 labeled “Relay Power (L)” to one side of a set of contacts in the magnetic starter. Connect the other side of the dry contact, in the magnetic starter, to the pump.

- Connect Neutral from Terminal TB3 labeled “Relay Return (N)” in the System7 to the neutral of the pump.

Step 9: Connecting the Heater

- The System7 will control the coil of an external relay and you can run the heater signal through the contacts of the relay (*Figure 27*).
- Connect 120 VAC out from terminal TB3 labeled “NO5” in the System7, to a line of a magnetic starter coil.
- Connect Neutral from terminal TB3 labeled “Relay Return (N)” to the neutral side of a magnetic starter coil. It is recommended that the second “Relay Return (N)” terminal be used (from left to right) (*Figure 25*).
- Run the heater signal through the dry contacts of the magnetic starter (*Figure 27*).

Step 10: Connecting the Turbidity Switchover Valve

- The Turbidity Switchover Valve shares the Pressure Amplifier Pump relay “NO4”.
- The Turbidity Switchover Valve is a 24 VAC solenoid that is mounted to the Turbidity back panel (*Figure 26*).
- The 120 VAC going to the Pressure Amplifier Pump magnetic starter will be stepped down to 24 VAC by the transformer supplied by USFilter Stranco Products.
- Locate the DIN connector cable.
- Connect DIN connector to solenoid.
- If needed, use an extension cord to reach 24 VAC transformer.
- Cut the male end off of DIN cable or extension cord to wire into the 24 VAC transformer.
- Connect the two leads of the cable to the transformer.

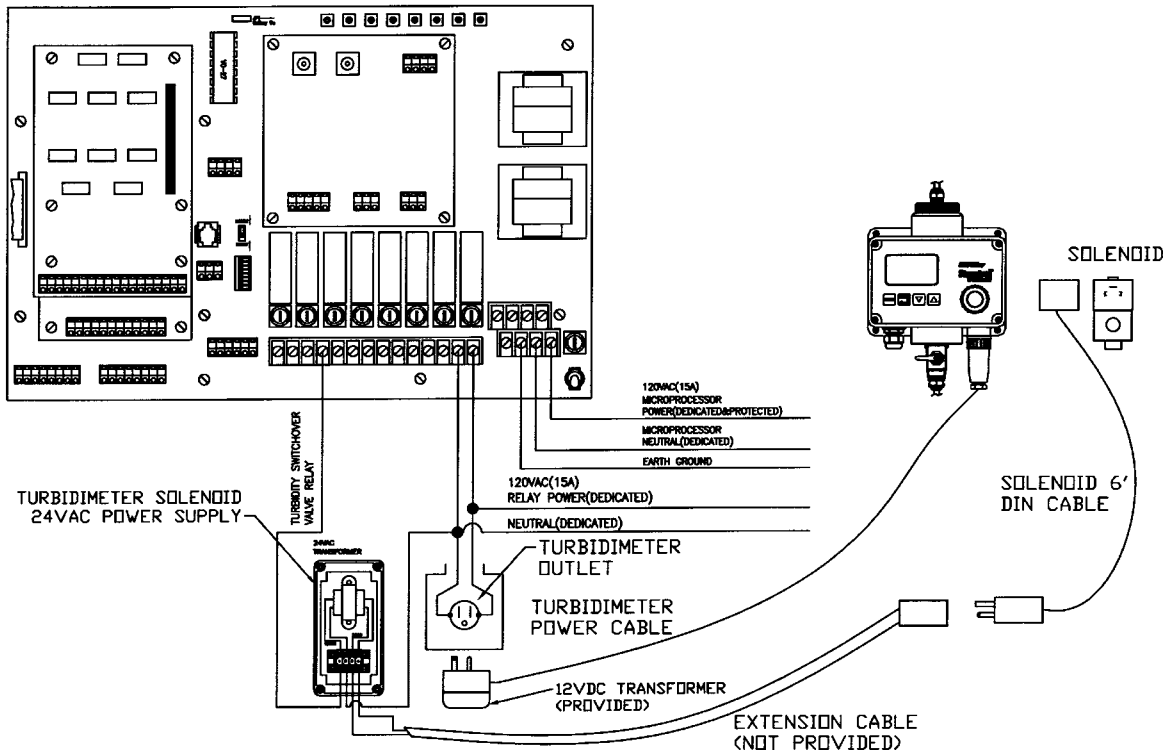
Step 11: Connecting the Filter Polymer Feed Device

- Connect 120 VAC out from terminal TB3 labeled “NO7” or “NO8” in the System7, to one side of a set of contacts of the feed pump magnetic starter. Connect the other side of the dry contact, in the magnetic starter, to the polymer feed pump (*Figure 27*).
- Connect Neutral from terminal TB3 labeled “Relay Return (N)” in the System7 to the neutral of the polymer pump. It is recommended that the fourth “Relay Return (N)” terminal be used (from left to right).
- Connect Ground from terminal TB4 labeled “Earth” in the System7 to the ground of the polymer pump. It is recommended that the fourth top row “Earth” terminal be used (from left to right).

Step 12: Wiring other pumps

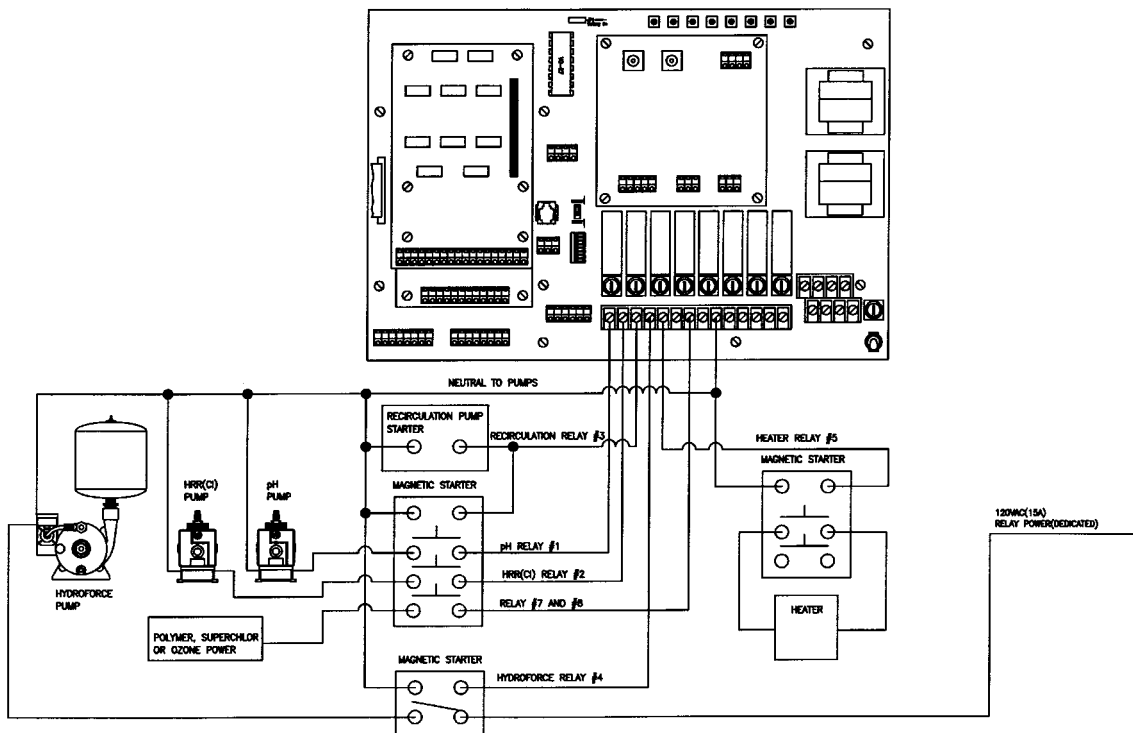
- The relay outputs that are available for programming are “NO7” and “NO8”.
- The two relays are equipped to take a load of 3 amps.
- If “NO7” and “NO8” are used for chemical feeds, you will have to interlock them through the recirculation pump (*Figure 27*).

CONNECTING POWER TO THE SWITCHOVER SOLENOID AND TURBIDIMETER



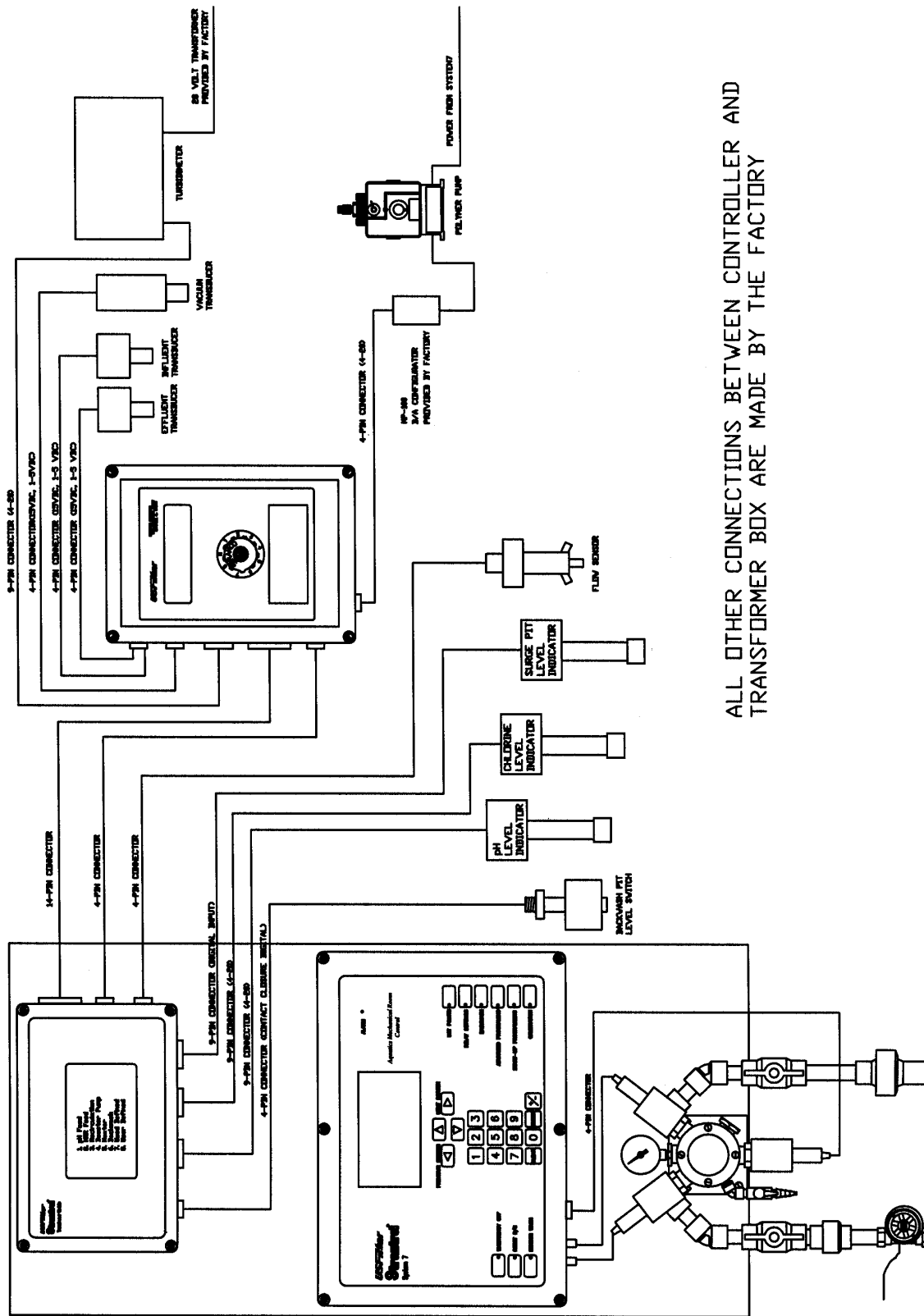
(Figure 26)

INTERLOCK WITH RECIRCULATION PUMP FOR CONTROL RELAYS



(Figure 27)

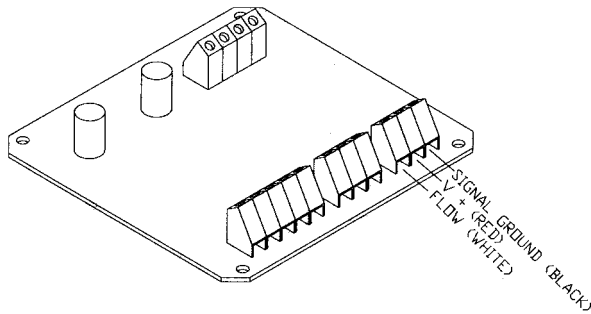
SYSTEM7 LOW VOLTAGE AND SIGNAL FIELD CONNECTIONS



ALL OTHER CONNECTIONS BETWEEN CONTROLLER AND TRANSFORMER BOX ARE MADE BY THE FACTORY

(Figure 28)

Step 13: Connecting the Flow Switch



(Figure 29)

CAUTION: Extra care must be taken to assure flow switch connections are correct, as any wiring errors could cause damage to the flow switch.



“Warning” Failure to incorporate a flow switch and flowcell into the sample stream of your USFilter chemical controller can result in injury or harm to swimmers in or around the pool if the recirculation pump should fail or shut down.

Note: The overall connection schematic can be seen in Figure 28 (page 19).

Step 14: Connecting the Sensors



(Figure 30)

Step 14a: pH Sensor (yellow sensor)

- Locate the BNCs on the bottom of the System7.
- Locate the BNC with the yellow pH sticker (left BNC).

- Plug the Yellow Sensor onto the BNC on the bottom of the System7.

Step 14b: HRR Sensor (blue sensor)

- Locate the BNCs on the bottom of the System7.
- Locate the BNC with the blue ORP sticker (right BNC).
- Plug the Blue Sensor onto the BNC on the bottom of the System7.

Step 14c: Temperature/Conductivity Sensor (red sensor)

- Locate the 4-pin quick connector on the bottom of the System7, next to the ORP connector.
- Locate the 4-pin quick connector on the Red Sensor.
- Plug the 4-pin from the Red Sensor into the 4-pin on the bottom of the System7.

Step 15: Connecting Influent Pressure Transducer

- Locate the two 4-pin quick connectors on top left side of the Filter Control Console.
- Locate the 4-pin quick connector that is closest to the back of the enclosure. Connect the influent pressure (MP001I) transducer into the connector closest to the back of the enclosure (Figure 31).



(Figure 31)

Step 16: Connecting Effluent Pressure Transducer

- Locate the two quick connectors on top left side of the Filter Control Console.
- Locate the 4-pin quick connector that is closest to front of the enclosure.
- Connect the effluent pressure (MP002E) transducer into the connector closest to the front of the enclosure (Figure 32).



(Figure 32)

Step 17: Connecting Backwash Sump Level Switch

- Locate the 4-pin connector on the bottom left of the transformer module.
- Locate the Backwash Sump Level Switch.
- Connect the 4-pin (LS001) connector into the 4-pin connector on the bottom left of the transformer module (Figure 33).



(Figure 33)

Step 18: Connecting Flow Sensor

- Locate the 4-pin connector on the right side bottom connector on the transformer module.
- Locate the Flow Sensor and 4-pin connector.
- Connect the Flow Sensor (FS001) to the transformer module (Figure 34).



(Figure 34)

Step 19: Connecting Motor for Multiport Valve

- Locate the 4-pin connector on the right side middle connector on the transformer module.
- Locate the 4-pin connector on the left side bottom connector on the filter control console.
- Connect the transformer module and the filter control console with the 4-pin cable with connectors on both sides (PS024V) (Figures 35 & 36).



(Figure 35)



(Figure 36)

Electrical

Step 20: Connecting Strainer Vacuum Transducer (optional)

- Locate the second from the top 4-pin quick connectors on the left side of the Filter Control Console.
- Connect the strainer vacuum transducer 4-pin (MP003S) connector into the 4-pin connector on the left side of the Filter Control Console (*Figure 37*).



(*Figure 37*)

Step 22: Connecting Surge Pit Level Indicator (optional)

- Locate the 9-pin receptacle on the bottom right of the transformer module.
- Locate the Surge Pit Level Cable (LS004).
- Connect the 9-pin plug into the 9-pin receptacle on the bottom left (*Figure 39*).
- Refer to Step 25 for wiring cable to level indicator.



(*Figure 39*)

Step 21: Connecting Turbidimeter (optional)

- Locate the third from the top 9-pin quick connectors on the left side of the Filter Control Console.
- Connect the turbidimeter 9-pin (MP004T) connector into the nine pin connector on the left side of the Filter Control Console (*Figure 38*).



(*Figure 38*)

Step 23: Connecting pH Level Indicator (optional)

- Locate the 9-pin receptacle on the bottom left of the transformer module.
- Locate the pH Level Cable (LS002).
- Connect the 9-pin plug into the 9-pin receptacle on the bottom right (*Figure 40*).
- Refer to Step 25 for wiring cable to level indicator.



(*Figure 40*)

Step 24: Connecting Chlorine Level Indicator (optional)

- Locate the 9-pin receptacle on the bottom middle of the transformer module.
- Locate the Chlorine Level Cable (LS003).
- Connect the 9-pin plug into the 9-pin receptacle on the bottom middle (*Figure 41*).
- Refer to Step 25 for wiring cable to level indicator.



(Figure 41)



(Figure 42)



(Figure 43)

Step 25: Wiring Cable to Level Indicator

- Locate the level indicator cable (LS002, LS003, LS004).
- Color connections are as follows;
 - Red wire to V+ in level indicator
 - Green wire to GND in level indicator
 - Brown wire to 4-20 (+) in level indicator
 - Blue wire to 4-20 (-) in level indicator
- Wires blue and white are not needed.

Step 26: Connecting Main Cable to System7 Transformer Module from Filter Control Console

- Locate the 14-pin connector on the right side, top connector on the transformer module.
- Locate the 14-pin connector on the left side, fourth connector down on the filter control console.
- Connect the 14-pin connectors with the 14-pin connector cable (PS014P) (*Figures 42 & 43*).

Step 27: Connecting a Telephone Line (optional)

Note: Telephone line must be analog.

The System7 may be connected to an IBM-compatible PC via the telephone and 33,600 baud modem.

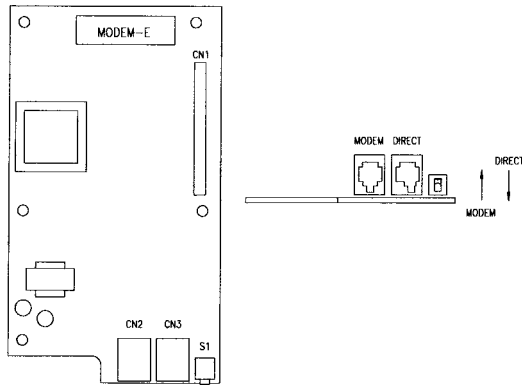
- Locate the modem that is the top board on the left.
- Locate the RJ-11 telephone jack, "CN2".
- Push the connector into the jack.
- Locate the dipswitch on the Main Power board labeled "Modem" or "Direct".
- Set switch in the "Modem" position.
- Locate the eight dipswitches on the Main Power board.
- Set switch 5 in the ON position.

Electrical

Step 28: Connecting the Computer Interface (RS-232C)

NOTE: Modem/Direct slide switch on the System7 CPU board must be in the Direct position for the RS-232C Connection.

- Locate the modem that is the top board on the left.
- Locate the offset RJ-11 female jack labeled "CN3" (Figure 44).
- The System7 is supplied with a 6' cable, which has an offset RJ-11 plug, and a 9-pin serial connector.
- Connect the cable offset RJ-11 jack into the System7 offset RJ-11.



(Figure 44)

Step 29: Reconnecting the Ribbon Cable

- Properly align the pins with the female cable end.
- Gently press the cable into place.
- The two locking arms should close in over the cable to secure it firmly (Figure 45).

NOTE: Never unplug or plug-in the ribbon cable with the power on.



(Figure 45)

Step 30: The Power Switch

- Check the main power for any incorrect wiring.
- Check the relay power for any incorrect wiring.
- Locate the power switch in the bottom right corner (Figure 46).
- Flip toggle switch to the ON position.



(Figure 46)

Step 31: Replacing the Cover

- Place the moisture packet back inside the unit (Figure 47).
- Place the cover back on the unit.
- Tighten the six screws to secure the cover in place.
- All six screws must be tightened to protect the inside from corrosion.



(Figure 47)

NOTE: System7 must have every hole plugged to protect inside from corrosion.

Following are the Relay Assignments:

- | | |
|----------|---|
| Relay 1: | pH control (pH feed up or feed down) |
| Relay 2: | HRR control
(oxidizer)/SuperChlor/Alternate HRR |
| Relay 3: | Recirculation Pump |
| Relay 4: | Pressure Amplifier Pump/Turbidity
Switchover Valve |
| Relay 5: | Heater |
| Relay 6: | Filter Backwash Motor |
| Relay 7: | Sensor Wash/Ozone/Polymer Feed
Device/Ozone/Alarm |
| Relay 8: | Sensor Wash/Ozone/Polymer Feed
Device/Ozone/Alarm |

SYSTEM7 Programming

NORMAL DISPLAY

The Normal Display consists of two sequential screens that show the pH, HRR, Cond, Temp, ppm, Turbidity, Filter Differential, Strainer Vacuum, Filter Flow Rate, Filter Flow Volume, Last Backwash Time, Last Backwash Started by, Last Backwash Ended by and alarm status.

SPECIAL KEYS

Before you begin operating the Strantrol System7, there are some features that are helpful to know. When your controller is showing one of the three Normal Display screens, if you press a hidden key behind the logo in the upper left corner of the face panel, the screen will 'Lock' on the current screen being displayed. The (Lock) designation will appear on the screen to remind the operator that the screen will not change without pressing the logo key again. None of the other keys will work when the screen is locked.

To jump to the start of the **Advanced Programming** or **Start-up Programming** options, just push those buttons. Even if you are currently in the middle of the start-up programming sequence, pressing **Start-up Programming** will jump back to the beginning of the sequence. Pressing **Previous Screen** will then revert back to the Normal Display.

Whenever a notation (1 of 2) or (1 of 5) shows up in the lower right half of the display, this indicates there are more screens with choices available by pressing the **Next Screen** button.

Refer to the Quick Reference Chart for explanations of the other buttons on the face panel of the System7.

START-UP PROGRAMMING

Listed below are the various programming screens and the pages upon which the directions for them can be found. Please consult this list to complete programming.

Please Note: The System7 will automatically exit start-up programming if no key has been pressed for 60 seconds. In the event that you need more time to answer a particular programming question, you may lock the unit to the current screen displayed by pressing the Strantrol logo key in the upper left-hand corner of the unit and selecting lock. When you are ready to unlock the screen, press the logo key again and select unlock.

ORDER OF SCREENS DISPLAYED IN START-UP PROGRAMMING

Screen	Pg.#	Path
Date Format	28	Start-Up Programming
Current Date	28	Start-Up Programming
Current Time	28	Start-Up Programming
Units	28	Start-Up Programming
pH Setup	28	Start-Up Programming
HRR Setup	29	Start-Up Programming
ppm Setup	30	Start-Up Programming
Conductivity Setup	30	Start-Up Programming
Temperature Setup	31	Start-Up Programming
pH Relay	31	Start-Up Programming
HRR Relay	33	Start-Up Programming
Alternate HRR Setpoint	33	Start-Up Programming/HRR Relay
Heater Relay	36	Start-Up Programming
Fireman Switch	37	Start-Up Programming/Heater Relay
Flow Sensor	37	Start-Up Programming
Filter Backwash	37	Start-Up Programming
Available Filters	38	Start-Up Programming/Filter Backwash
Filter Timing	38	Start-Up Programming/Filter Backwash
Timer Setting	38	Start-Up Programming/Filter Backwash
Turbidity Setting	38	Start-Up Programming/Filter Backwash
Pressure Settings	40	Start-Up Programming/Filter Backwash
Flow Rate	41	Start-Up Programming/Filter Backwash
Flow Volume	41	Start-Up Programming/Filter Backwash
BFFS Duration	41	Start-Up Programming/Filter Backwash
Inhibit Start	42	Start-Up Programming/Filter Backwash
Energy Saver	42	Start-Up Programming
Calculations	44	Start-Up Programming
Assign Relays	45	Start-Up Programming

Start-Up Programming

Initial Startup

Pressing the **START-UP PROGRAMMING** button on the face panel is an easy way for you to configure the Strantrol System7 for your specific needs. This button activates a sequence of programming screens that will guide you through the initial configuration of the Strantrol System7.

START-UP PROGRAMMING

<i>Start-Up</i>	/
1 <i>Date Format</i>	/
2 <i>Current Date</i>	/
3 <i>Current Time</i>	/
4 <i>Units</i>	/
5 <i>pH Setup</i>	/
6 <i>HRR Setup</i>	/
7 <i>ppm Setup</i>	/
8 <i>Conductivity</i>	/
9 <i>Temperature</i>	/
	/ (1 of 2)

Date Format

Use the arrow keys to highlight your choice or press either 1 or 2 to change the way the controller displays the date. Choose 2 for North America installations and 1 for all others.

<i>Date Format:</i>	/ <i>U. S. or European</i>
	/ <i>dating</i>
<i>Change to:</i>	/
1 <i>dd/mm/yyyy</i>	/
2 <i>mm/dd/yyyy</i>	/

Current Date

Enter the correct month day and year and then press the **ENTER** key.

<i>Current Date</i>	/ <i>Date now</i>
01-01-1993	/
	/
<i>Change to:</i>	/
01-15-2001	/

Current Time

Enter the current time of day as prompted, then press **ENTER** key.

<i>Current Time</i>	/ <i>Time now</i>
11:36 am	/
	/
<i>Change to:</i>	/
11:36 am	/

Metric/U.S. Units

The display screen will then change to the U.S. or Metric choice screen on the right. Choose your preference by selecting U.S. or Metric (Using the arrow keys or pressing the corresponding number).

<i>Units:</i>	/ <i>U. S. or Metric</i>
<i>Metric</i>	/
<i>Change to:</i>	/
1 <i>U. S.</i>	/
2 <i>Metric</i>	/

pH Setup

Use the number keypad to choose pH High Alarm, Low Alarm or Calibration.

<i>pH Setup</i>	/ <i>Contains High and</i>
1 <i>High Alarm</i>	/ <i>Low Alarms,</i>
2 <i>Low Alarm</i>	/ <i>Setpoint and</i>
3 <i>Calibration</i>	/ <i>Calibration.</i>
	/

pH High Alarm

Use the number keypad to choose the point where pH should activate a High Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. 0 can be entered if you would like to disable the alarm. (Range displayed will depend upon alarm settings.)

<i>pH Setup</i>	/ <i>Alarm is triggered</i>
<i>High Alarm</i>	/ <i>when pH reaches or</i>
8.0	/ <i>rises above this</i>
	/ <i>value.</i>
<i>Change to:</i>	/
08.0	/
	/
<7.0 to 14.0>	/

pH Low Alarm

Use the number keypad to choose the point where pH should activate a Low Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. 0 can be entered if you would like to disable the alarm. (Range displayed will depend upon alarm settings.)

<i>pH Setup</i>	/
<i>Low Alarm</i>	<i>/Alarm is triggered</i>
<i>7.0</i>	<i>/when pH reaches or</i>
	<i>/drops below this</i>
<i>Change to:</i>	<i>/value.</i>
<i>07.0</i>	/
	/
<i><0.0 to 7.0></i>	/

pH Calibration

Use the number keypad to choose the low point from your Signal Generator you want to calibrate pH. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>pH Setup</i>	/
<i>Calibrate</i>	<i>/Set the Signal</i>
<i>6.0</i>	<i>/Generator to a low</i>
	<i>/point and</i>
<i>Change to:</i>	<i>/standardize unit.</i>
<i>00.0</i>	/

pH Calibration (2nd Pt)

Now choose the high point from your Signal Generator you want to calibrate pH. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>pH Setup</i>	/
<i>Calibrate (2nd Pt)</i>	<i>/Set the Signal</i>
<i>9.0</i>	<i>/Generator to a high</i>
	<i>/point and</i>
<i>Change to:</i>	<i>/standardize unit.</i>
<i>00.0</i>	/

HRR Setup

Use the number keypad to choose HRR High Alarm, Low Alarm or Calibration.

<i>HRR Setup</i>	<i>/Contains High and</i>
<i>1 High Alarm</i>	<i>/Low Alarms, and</i>
<i>2 Low Alarm</i>	<i>/Calibration.</i>
<i>3 Calibration</i>	/

HRR High Alarm

Use the number keypad to choose the point where HRR should activate a High Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. -1000 will disable the alarm. (Range displayed will depend upon alarm settings.)

<i>HRR Setup</i>	/
<i>High Alarm</i>	<i>/Alarm is triggered</i>
<i>800 mV</i>	<i>/when HRR reaches</i>
	<i>/or rises above</i>
<i>Change to:</i>	<i>/this value.</i>
<i>800 mV</i>	/

HRR Low Alarm

Use the number keypad to choose the point where HRR should activate a Low Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. -1000 will disable the alarm. (Range displayed will depend upon alarm settings.)

<i>HRR Setup</i>	<i>/Alarm is triggered</i>
<i>Low Alarm</i>	<i>/when HRR reaches</i>
<i>700 mV</i>	<i>/or drops below</i>
	<i>/this value.</i>
<i>Change to:</i>	/
<i>700 mV</i>	/

HRR Calibration

Use the number keypad to choose the low point from your Signal Generator you want to calibrate HRR. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>HRR Setup</i>	/
<i>Calibrate</i>	<i>/Set the Signal</i>
<i>600</i>	<i>/Generator to a low</i>
	<i>/point and</i>
<i>Change to:</i>	<i>/standardize unit.</i>
<i>600</i>	/

Start-Up Programming

HRR Calibration (2nd Pt)

Now choose the high point from your Signal Generator you want to calibrate HRR. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>HRR Setup</i>	
<i>Calibrate (2nd Pt)</i>	<i>Set the Signal</i>
<i>900</i>	<i>Generator to a high</i>
	<i>point and</i>
<i>Change to:</i>	<i>standardize unit.</i>
<i>900</i>	

ppm Calibration

Use the number keypad to calibrate ppm to your water test. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>ppm Setup</i>	
<i>Calibrate</i>	<i>Calibrate ppm to</i>
<i>3.0</i>	<i>water test.</i>
<i>Change to:</i>	
<i>3.0</i>	

ppm Setup

Use the number keypad to choose ppm High Alarm, Low Alarm or Calibration.

<i>ppm Setup</i>	<i>Contains High and</i>
<i>1 High Alarm</i>	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	<i>Calibration.</i>
<i>3 Calibration</i>	

Conductivity

Use the number keypad to choose Conductivity High Alarm, Low Alarm or Calibration.

<i>Conductivity Setup</i>	<i>Contains High and</i>
<i>1 High Alarm</i>	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	<i>Calibration.</i>
<i>3 Calibration</i>	

ppm High Alarm

Use the number keypad to choose the point where ppm should activate a High Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. 0 will disable the alarm. (Range displayed will depend upon alarm settings.)

<i>ppm Setup</i>	
<i>High Alarm</i>	<i>Alarm is triggered</i>
<i>5.0 ppm</i>	<i>when ppm reaches</i>
	<i>or rises above</i>
<i>Change to:</i>	<i>this value.</i>
<i>5.0 ppm</i>	
<i><0.0 to 5></i>	

Conductivity High Alarm

Use the number keypad to choose the point where Conductivity should activate a High Alarm. The values under **Change to:** will show your entry. 0 will disable the alarm. Press the **ENTER** key.

<i>Conductivity Setup</i>	<i>Set high alarm.</i>
<i>High Alarm</i>	<i>Alarm is triggered</i>
<i>3500 µmho</i>	<i>when Conductivity</i>
	<i>reaches or rises</i>
<i>Change to:</i>	<i>above this value.</i>
<i>3500</i>	
<i><0 to 20000></i>	

ppm Low Alarm

Use the number keypad to choose the point where ppm should activate a Low Alarm. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed. 0 will disable the alarm. (Range displayed will depend upon alarm settings.)

<i>ppm Setup</i>	
<i>Low Alarm</i>	<i>Alarm is triggered</i>
<i>0.5 ppm</i>	<i>when ppm reaches</i>
	<i>or drops below</i>
<i>Change to:</i>	<i>this value.</i>
<i>0.5 ppm</i>	
<i><0.0 to 5.0></i>	

Conductivity Low Alarm

Use the number keypad to choose the point where Conductivity should activate a Low Alarm. The values under **Change to:** will show your entry. 0 will disable the alarm. Press the **ENTER** key.

<i>Conductivity Setup</i>	<i>Set low alarm.</i>
<i>Low Alarm</i>	<i>Alarm is triggered</i>
<i>500 µmho</i>	<i>when Conductivity</i>
	<i>reaches or drops</i>
<i>Change to:</i>	<i>below this value.</i>
<i>500</i>	
<i><0 to 20000></i>	

Conductivity Calibration

Use the number keypad to calibrate conductivity to your water test. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>Conductivity Setup</i>	/
<i>Calibrate</i>	/Calibrate
1500 <i>µmho</i>	/Conductivity to
	/water test.
<i>Change to:</i>	/
1500	/

Temperature

Use the number keypad to choose Temperature High Alarm, Low Alarm or Calibration.

<i>Temp Setup</i>	/Contains High and
1 <i>High Alarm</i>	/Low Alarms, and
2 <i>Low Alarm</i>	/Calibration.
3 <i>Calibration</i>	/

Temperature High Alarm

Use the number keypad to choose the point where Temperature should activate a High alarm. The values under the **Change to:** will show your entry. 32 will disable the alarm. Press the **ENTER** key.

<i>Temperature Setup</i>	/Set high alarm.
<i>High Alarm</i>	/Alarm is triggered
90°F	/when Temperature
	/reaches or rises
<i>Change to:</i>	/above this value.
090	/
	/
<32 to 212>	/

Temperature Low Alarm

Use the number keypad to choose the point where Temperature should activate a Low Alarm. The values under the **Change to:** will show your entry. 32 will disable the alarm. Press the **ENTER** key.

<i>Temperature Setup</i>	/Set low alarm.
<i>Low Alarm</i>	/Alarm is triggered
40°F	/when Temperature
	/reaches or drops
<i>Change to:</i>	/below this value.
040	/
	/
<32 to 212>	/

Temperature Calibration

The temperature in this menu is a two-point calibration and you will need a special RTD calibrator. If you want to do a single-point calibration, press the calibration button and calibrate temperature.

<i>Temperature Setup</i>	/Set RTD calibrator
<i>Calibrate</i>	/to low point and
	/standardize unit.
85°F	/
	/
<i>Change to:</i>	/
085	/

Use the number keypad to enter in the number that you have set on your RTD calibrator. This will be a higher value than your first calibration point. The values under **Change to:** will show your entry. Press the **ENTER** key to proceed.

<i>Temperature Setup</i>	/Set RTD calibrator
<i>Calibrate (2nd Pt)</i>	/to high point and
	/standardize unit.
100°F	/
	/
<i>Change to:</i>	/
100	/

Press the **Next Screen** to view page 2 of the Start-Up Programming Screen.

<i>Start-Up</i>	/
1 <i>pH Relay</i>	/
2 <i>HRR Relay</i>	/
3 <i>Heater Relay</i>	/
4 <i>Flow Sensor</i>	/
5 <i>Filter Backwash</i>	/
6 <i>Energy Saver</i>	/
7 <i>Calculations</i>	/
8 <i>Assgn Relays</i>	/
	/(2 of 2)

pH Relay

Select the type of relay control you want for pH and use the keypad to select the type of relay control desired. To begin our examples, we'll select 1 On/Off control. Complete explanations of the choices are listed below.

<i>pH Relay</i>	/Contains type of
1 <i>pH Control</i>	/control (On/Off,
2 <i>Setpoint</i>	/Time-Base
3 <i>Failsafe</i>	/Proportional)
4 <i>Feed Direction</i>	/

Start-Up Programming

pH Control

Select the type of relay control you want for pH and use the keypad to select the type of relay control desired. *To begin our examples, we'll select 1 On/Off control. Complete explanations of the choices are listed below.*

<i>pH Control</i>	<i>/ Contains type of</i>
<i>On/Off</i>	<i>/ control (On/Off,</i>
<i>Change to:</i>	<i>/ Time-Base</i>
<i>1 On/Off</i>	<i>/ Proportional)</i>
<i>2 Time-based Prop.</i>	<i>/</i>

Types of relay control:

On/Off – (Feed down or up) When the signal is above or below setpoint, the chemical feed is off. When the Sensor signal crosses this setpoint value, the chemical feed activates, and feeds continuously until the Sensor returns to a point below or above setpoint.

Time-based Proportional (TBP): (Feed down or up) This type of control will adjust the feed of chemical proportionately based upon how far the sensor is above or below setpoint. This is done by turning on and off feeder power for portions of a one-minute time-base. When the sensor is above or below setpoint, the feeder is held off. When the sensor rises below or above the setpoint, the feeder will turn on for a few seconds, then remain off for the remainder of the one-minute time base. As the sensor rises or falls even further from setpoint, the ratio of on and off times changes to increase the amount of chemical per minute dispensed.

pH On/Off or Time-based Proportional (TBP)

After making the selection, then the screen will change to look like either a screen for on/off control or Time-based Proportioning. Use the keypad to enter the setpoint, bandwidth, Time-base, Failsafe Timer or Feed Direction.

<i>pH Relay</i>	<i>/</i>
<i>1 pH Control</i>	<i>/</i>
<i>2 Setpoint</i>	<i>/</i>
<i>3 Bandwidth</i>	<i>/ (TBP)</i>
<i>4 Time-base</i>	<i>/ (TBP)</i>
<i>5 Failsafe Timer</i>	<i>/</i>
<i>6 Feed Direction</i>	<i>/</i>

pH Set Point

Use the keypad to enter the setpoint. This is the sensor reading that you want the Strantrol System7 to maintain. Your entry will be shown in the area under the **Change to:**. Press the **ENTER** key.

<i>On/Off</i>	<i>/ Desired water test</i>
<i>Setpoint:</i>	<i>/ kit reading.</i>
<i>7.5</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>07.5</i>	<i>/</i>

pH Bandwidth

Use the Keypad to enter the bandwidth. The bandwidth is the range from setpoint that you want the System7 to use TBP control. Your entry will be shown in the area under the **Change to:**. Press the **ENTER** key.

<i>Bandwidth</i>	<i>/ The offset from</i>
<i>0.5</i>	<i>/ setpoint that the</i>
<i>Change to:</i>	<i>/ time-based</i>
<i>00.5</i>	<i>/ proportioning will</i>
	<i>/ engage</i>
	<i>/</i>

pH Time-Base

Use the keypad to enter the Time-Base. The on and off times of the feed device will be a fraction of the time-base which is the total time. Your entry will be shown in the area under the **Change to:** Press the **ENTER** key.

<i>Time-Base</i>	<i>/ The offset from</i>
<i>60 sec</i>	<i>/ setpoint that the</i>
<i>Change to:</i>	<i>/ time-based</i>
<i>060</i>	<i>/ proportioning will</i>
	<i>/ engage</i>

pH Failsafe Time

The Failsafe Time refers to the maximum amount of time you will allow the feeder to attempt to achieve the desired setpoint. This is a safety feature of the Strantrol System7 designed to alert the operator to chemical feed problems, minimize problems associated with chemical feed systems, or to minimize excessive chemical feed when it occurs. The Failsafe timer starts whenever the

channel is feeding, and resets whenever the channel stops feeding. This means the Failsafe timer will only activate if the feeder has run continuously for the selected time period. After this time has elapsed and the controller feed has not turned off, the controller will alarm and disable the feed of chemical (on this relay) until the **RESET F/S** button is pushed. Press the **ENTER** key after you select an appropriate time. To disable, set time to 00:00.

<i>On/Off</i>	<i> When the relay is</i>
<i>Failsafe Timer</i>	<i> on for this period</i>
<i>04: 00 hm</i>	<i> of time without</i>
	<i> achieving setpoint,</i>
<i>Change to:</i>	<i> a failsafe alarm</i>
<i>04: 00</i>	<i> engages and the</i>
	<i> relay is stopped.</i>
<i><0: 00 to 18: 00></i>	<i> </i>

pH Feed Direction

The screen below will prompt for the entry of the feed direction. Feed-Up refers to a system which will increase the sensor reading when the relay is activated. Examples of Feed-Up systems would be Caustic feed (pH increases). Examples of Feed-Down systems would be acid-feed (pH decreases).

<i>On/Off</i>	<i> Specifies which</i>
<i>Feed Direction:</i>	<i> type of pH control</i>
<i>Feed Down</i>	<i> (i. e. acid or</i>
	<i> caustic soda)</i>
<i>Change to:</i>	<i> </i>
<i>1 Feed Up</i>	<i> </i>
<i>2 Feed Down</i>	<i> </i>

HRR Relay

Select the type of relay control you want for HRR and use the keypad to select the type of relay control desired. *For this example, we'll select Number 2 Time-based Proportional Control. Complete explanations of the choices are listed in the previous section labeled "Types of relay control".*

<i>Start-Up Prog.</i>	<i> Contains type of</i>
<i>HRR Relay</i>	<i> control (On/Off,</i>
<i>On/Off</i>	<i> Time-Base</i>
<i>Change to:</i>	<i> Proportional)</i>
<i>1 HRR Control</i>	<i> </i>
<i>2 Alternate HRR</i>	<i> </i>
<i>3 Setpoint</i>	<i> </i>
<i>4 Failsafe Timer</i>	<i> </i>

Time-Based Proportional Control Options

The following screen examples will assume that the choice for HRR control was Time-Based Proportional, and will progress through the options for Time-Based Proportional control. Any of the Sensor-controlled relays can be configured for Time-Based Proportional control.

HRR Time Based Proportional

After making the selection, then the screen will change to look like this one. Use the Keypad to enter the HRR Control, Alternate HRR, Setpoint, Bandwidth, Time-Base or Failsafe Timer.

<i>Time Based Prop.</i>	<i> Control parameter</i>
<i>Change to:</i>	<i> </i>
<i>1 HRR Control</i>	<i> </i>
<i>2 Alternate HRR</i>	<i> </i>
<i>3 Setpoint</i>	<i> </i>
<i>4 Bandwidth</i>	<i> </i>
<i>5 Time-Base</i>	<i> </i>
<i>6 Failsafe Timer</i>	<i> </i>

Alternate HRR

The Alternate HRR is used in cases when you want to keep the water at a different oxidation rate at other times of the day or days of the week. Press 1 for **4Event 28Day Timer**

<i>Alternate HRR</i>	<i> Select different</i>
<i>1 4Event 28Day Timer</i>	<i> HRR setpoint.</i>
<i>2 Setpoint</i>	<i> </i>
	<i> </i>

4Event 28Day Timer

The Alternate HRR Setpoint function works on a 4-week 4-event (28-day) calendar. This allows you to select four different times that you want the System7 to start the Alternate HRR Setpoint function. Make your selection using the number keypad. *For this Example, select Event 1.*

<i>4Event 28Day Timer</i>	<i> Selection of week</i>
<i>1 Event 1</i>	<i> and day of function</i>
<i>2 Event 2</i>	<i> </i>
<i>3 Event 3</i>	<i> </i>
<i>4 Event 4</i>	<i> </i>

Start-Up Programming

Event 1

This screen allows you to select the week, day, start time and duration of the Alternate HRR Setpoint function. Make your selection using the number keypad. *For this Example, select Week(s).*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Week (1 of 2)

The first of 2 screens shows the selections for the weeks the Alternate HRR Setpoint event(s) should occur during the 4-week cycle. To access the second screen (2 of 2) press the NEXT SCREEN. That screen is shown below. Make your selection using the number keypad. *For this Example, select 1st week.*

Event 1 Week/Day	Select the week(s)
(Week):	for which the
Di s a b l e d	day(s) selected
Change to:	should engage the
1 1st week	relay.
2 2nd week	
3 3rd week	
4 4th week	
5 Odd week	Current week/day:
6 Even week	1st/Fri day
7 Every week	(1 of 2)

Event 1 Week (2 of 2)

Event 1 Week/Day	Select the week(s)
(Week):	for which the
Di s a b l e d	day(s) selected
Change to:	should engage the
1 Di s a b l e d	relay.
	Current week/day:
	1st/Fri day
	(2 of 2)

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Day(s).*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Day (1 of 2)

The screen below will prompt for the entry of the days of the week the event should occur. There is a second screen of choices. Pressing the NEXT SCREEN button accesses the second screen. That screen is shown below. Use the keypad to select the desired day or every day for the Alternate HRR Setpoint event. *For this Example, select Monday.*

Event 1 Week/Day	Select the day(s)
(Day):	for each week
1st/Fri day	selected which
Change to:	should engage the
1 Sunday	relay.
2 Monday	
3 Tuesday	
4 Wednesday	
5 Thursday	Current week/day:
6 Fri day	1st/Fri day
7 Saturday	(1 of 2)

Event 1 Day (2 of 2)

Event 1 Week/Day	Select the day(s)
(Day):	for each week
1st/Monday	selected which
Change to:	should engage the
1 Every day	relay.
2 Di s a b l e d	
	Current week/day:
	1 st /Monday
	(2 of 2)

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Start Time.*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Start Time

Select the time of day this event is to start on the day and week selected. Use the number keypad to select the time. *For this Example, select 12:00.*

You may enter up to 4 events.

Event 1 Start Time:	Select the start
12:00 am	time for the begin-
	ning of the cycle
Change to:	for the week(s)/
12:00 am	day(s) selected for
	this event.

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Duration.*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Duration

Select the length of time the event is to be engaged. Use the number keypad to select the length of time. *For this Example, select 12:00.*

The Alternate HRR Setpoint is set to start on Monday of the 1st week of every 4-week cycle at 12:00 a.m. for 12 hours.

Event 1	Function will be
Duration	initiated for this
01:00 hm	length of time.
Change to:	
12:00	
<0:00 to 18:00>	

Alternate HRR Setpoint

Use the Keypad to enter the setpoint for Alternate HRR control. This is the sensor reading that you want the Strantrol System7 to maintain. Your entry will be shown in the area under the **Change to:**. Press the **ENTER** key after you select a setpoint.

Alternate HRR	Allows for second
Setpoint	HRR setpoint for
750 mV	different
	disinfecting needs.
Change to:	
000 mV	

HRR Setpoint

Use the keypad to enter the Sensor reading you wish to maintain with automatic control. The value under the **Change to:** line will show the numbers entered. Press the **ENTER** key to proceed.

NOTE: Ranges displayed will vary based upon alarm settings.

Time-Based Prop	Enter primary
HRR Setpoint:	disinfecting
800 mV	setpoint
Change to:	
0800	

HRR Proportional Bandwidth

Proportional control systems need a way to determine the “sensitivity” of the control system, (or how drastically it will react to changes at the Sensor). This we call *Proportional Bandwidth*. Simply, the wider the value entered, the less sensitive the controller is to changes detected by the sensor. Press the **ENTER** key after you select an appropriate bandwidth.

Time-Based Prop.	The offset from
Bandwidth:	setpoint that the
30 mV	time-based
	proportioning will
Change to:	engage
0030	

Start-Up Programming

HRR Time-Base

If the System7 is taking too long to sense the chemical change, lengthen the time-base. This allows the System7 to sense longer before starting another feed cycle. Press the **ENTER** key after you select an appropriate time-base.

<i>Time-Based Prop.</i>	<i> The total time on</i>
<i>Time Base</i>	<i> and off during the</i>
<i>60</i>	<i> proportional mode.</i>
<i>Change to:</i>	<i> </i>
<i>0030</i>	<i> </i>
	<i> </i>

HRR Failsafe Time

The Failsafe Time refers to the maximum amount of time you will allow the feeder to attempt to achieve the desired setpoint. This is a safety feature of the Strantrol System7 designed to alert the operator to chemical feed problems, minimize problems associated with chemical feed systems, or to minimize excessive chemical feed when it occurs. The Failsafe timer starts whenever the channel is feeding, and resets whenever the channel stops feeding. This means the Failsafe timer will only activate if the feeder has run continuously for the selected time period. After this time has elapsed and the controller has not turned off, the controller will alarm and disable the feed of chemical (on this relay) until the **RESET F/S** button is pushed. Press the **ENTER** key after you select an appropriate time. To disable, set time to 00:00.

<i>Time-Based Prop</i>	<i> When the relay is</i>
<i>Failsafe Timer</i>	<i> on for this period</i>
<i>04:00 hm</i>	<i> of time without</i>
	<i> achieving setpoint,</i>
<i>Change to:</i>	<i> a failsafe alarm</i>
<i>04:00</i>	<i> engages and the</i>
	<i> relay is stopped.</i>
<i><0:00 to 18:00></i>	<i> </i>

Heater Control

After making the selection, then the screen will change to look like this one. Use the Keypad to enter the Alternate Temp, Setpoint, Failsafe Timer, or Fireman Switch.

<i>Heater</i>	<i> Program temperature</i>
<i>1 Alternate Temp</i>	<i> parameters.</i>
<i>2 Setpoint</i>	<i> </i>
<i>3 Failsafe Timer</i>	<i> </i>
<i>4 Fireman Switch</i>	<i> </i>

Alternate Temperature Setpoint

The Alternate Temperature Setpoint is used in cases when you want to keep the water at a different temperature at other times of the day or days of the week. Press 1 for **4Event 28Day Timer**

<i>Alternate HRR</i>	<i> Select different</i>
<i>1 4Event 28Day Timer</i>	<i> Temperature</i>
<i>2 Setpoint</i>	<i> setpoint</i>
	<i> </i>
	<i> </i>

4Event 28Day Timer

The Alternate Temperature Setpoint function works on a 4-week 4-event (28-day) calendar. This allows you to select four different times that the System7 will start the Alternate Temperature Setpoint function. Make your selection using the number keypad. *For this Example, select Event 1.*

<i>4Event 28Day Timer</i>	<i> Selection of week</i>
<i>1 Event 1</i>	<i> and day of function</i>
<i>2 Event 2</i>	<i> </i>
<i>3 Event 3</i>	<i> </i>
<i>4 Event 4</i>	<i> </i>
	<i> </i>
	<i> </i>

Event 1

This screen allows you to select the week, day, start time and duration of the Alternate Temperature Setpoint function. Make your selection using the number keypad. *For this Example, select Week(s).*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Week (1 of 2)

The first of 2 screens shows the selections for the weeks the Alternate Temperature Setpoint event(s) should occur during the 4-week cycle. To access the second screen (2 of 2) press the NEXT SCREEN. That screen is shown below. Make your selection using the number keypad. *For this Example, select 1st week.*

Event 1 Week/Day	Select the week(s)
(Week):	for which the
Di sabled	day(s) selected
Change to:	should engage the
1 1st week	relay.
2 2nd week	
3 3rd week	
4 4th week	
5 Odd week	Current week/day:
6 Even week	1st/Fri day
7 Every week	(1 of 2)

Event 1 Week (2 of 2)

Event 1 Week/Day	Select the week(s)
(Week):	for which the
Di sabled	day(s) selected
Change to:	should engage the
1 Di sabled	relay.
	Current week/day:
	1st/Fri day
	(2 of 2)

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Day(s).*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Day (1 of 2)

The screen below will prompt for the entry of the days of the week the event should occur. There is a second screen of choices. Pressing the NEXT SCREEN button accesses the second screen. That screen is shown below. Use the keypad to select the desired day or every day for the Alternate Temperature Setpoint event. *For this Example, select Monday.*

Event 1 Week/Day	Select the day(s)
(Day):	for each week
1st/Fri day	selected which
Change to:	should engage the
1 Sunday	relay.
2 Monday	
3 Tuesday	
4 Wednesday	
5 Thursday	Current week/day:
6 Fri day	1st/Fri day
7 Saturday	(1 of 2)

Event 1 Day (2 of 2)

Event 1 Week/Day	Select the day(s)
(Day):	for each week
1st/Monday	selected which
Change to:	should engage the
1 Every day	relay.
2 Di sabled	
	Current week/day:
	1 st /Monday
	(2 of 2)

Start-Up Programming

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Start Time.*

Event 1	First programmed
1 Week(s)	event of function
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Start Time

Select the time of day this event is to start (on the day and week selected). Use the number keypad to select the time. *For this Example, select 12:00.*

You may enter up to 4 events.

Event 1 Start Time:	Select the start
12:00 am	time for the begin-
	ning of the cycle
Change to:	for the week(s)/
12:00 am	day(s) selected for
	this event.

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Duration.*

Event 1	First programmed
1 Week(s)	event of function.
2 Day(s)	
3 Start Time	
4 Duration	

Event 1 Duration

Select the length of time the event is to be engaged. Use the number keypad to select the length of time. *For this Example, select 12:00.*

The Alternate Temperature Setpoint is set to start on Monday of the 1st week of every cycle at 12:00 a.m. for 12 hours.

Event 1	Function will be
Duration	initiated for this
01:00 hm	length of time.
Change to:	
12:00	
<0:00 to 18:00>	

Alternate Temperature Setpoint

Use the Keypad to enter the setpoint for Alternate Temperature control. This is the sensor reading that you want the Strantrol System7 to maintain. Your entry will be shown in the area under the **Change to:**. Press the **ENTER** key after you select a setpoint.

Alternate Temp	Second Temperature
Setpoint	Setpoint
32°F	
Change to:	
000	
<32 to 104>	

Temperature Setpoint

Use the keypad to enter the temperature reading you wish to maintain with automatic control. The value under the **Change to:** line will show the numbers entered.

Press the **ENTER** key to proceed.

Temperature	Enter primary
Setpoint:	temperature
50°F	setpoint
Change to:	
050	
<32 to 104>	

NOTE: Ranges displayed will vary based upon alarm settings.

Temperature Failsafe Time

The Failsafe Time refers to the maximum amount of time you will allow the feeder to attempt to achieve the desired setpoint. This is a safety feature of the Strantrol System7 designed to alert the operator to chemical feed problems, minimize problems associated with chemical feed systems, or to minimize excessive chemical feed when it occurs. The Failsafe timer starts whenever the channel is feeding, and resets whenever the channel stops feeding. This means the Failsafe timer will only activate if the feeder has run continuously for the selected time period. After this time has elapsed and the controller has not turned off, the controller will alarm and disable the heat (on this relay) until the **RESET F/S** button is pushed. Press the **ENTER** key after you select an appropriate time. To disable, set time to 00:00.

<i>Temperature Failsafe Timer</i>	<i>/When the relay is on for this period of time without achieving setpoint, a failsafe alarm engages and the relay is stopped.</i>
<i>04:00 hm</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>04:00</i>	<i>/</i>
<i><0:00 to 18:00></i>	<i>/</i>

Fireman Switch

The Fireman Switch is designed to shut down your heater before a backwash to let it cool down for a designated length of time. If this is not done, your heater will be damaged.

<i>Heater Fireman Switch</i>	<i>/Time the Recirculation Pump will shut off after the heater shuts down.</i>
<i>20:00 min/sec</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>20:00</i>	<i>/</i>
<i><0:00 to 60:00></i>	<i>/</i>

Flow Sensor

The System7 will backwash your filter on the Flow Rate of the Recirculation System. Flow will not show K Factor or Buffer Max until “sensor installed” is changed to yes.

<i>Start-Up Prog.</i>	<i>/Flow Sensor</i>
<i>Flow Sensor</i>	<i>/Parameters</i>
<i>1 Sensor Installed?</i>	<i>/</i>
<i>2 K Factor</i>	<i>/</i>
<i>3 Buffer Max</i>	<i>/</i>

K Factor

Enter in the K Factor for your pipe size.

<i>Flow Sensor</i>	<i>/Enter flow sensor K</i>
<i>K Factor</i>	<i>/factor for pipe</i>
<i>8.00</i>	<i>/size</i>
<i>Change to:</i>	<i>/</i>
<i>08.00</i>	<i>/</i>
<i><0.50 to 15.00></i>	<i>/</i>

Buffer Max

The Buffer Max slows down the read out of the Flow Sensor. Each number is equal to 12 seconds of buffer. 1 = 12 seconds.

<i>Flow Sensor</i>	<i>/Enter number of 12</i>
<i>Buffer Max</i>	<i>/second count</i>
<i>1</i>	<i>/buffers to average</i>
<i>Change to:</i>	<i>/together. Larger</i>
<i>01</i>	<i>/number = slower</i>
	<i>/response to changes</i>
	<i>/in flow rate.</i>

Filter Backwash

Backwash the available filters to your programmed specifications.

<i>Filter Backwash</i>	<i>/System7 will</i>
<i>1 Available Filters</i>	<i>/backwash available</i>
<i>2 Filter Timing</i>	<i>/filters to your</i>
<i>3 Turbidity Settings</i>	<i>/programmed</i>
<i>4 Timer Settings</i>	<i>/specifications</i>
<i>5 Pressure Settings</i>	<i>/</i>
<i>6 Flow Rate Settings</i>	<i>/</i>
<i>7 Flow Vol Settings</i>	<i>/</i>
<i>8 FFS Duration</i>	<i>/</i>
<i>9 Motor Dwell Count</i>	<i>/</i>
<i>10 Inhibit BW Start</i>	<i>/</i>

Screen 2

<i>Filter Backwash</i>	<i>/System7 will</i>
<i>1 Motor Dwell Count</i>	<i>/backwash available</i>
<i>2 Inhibit BW Start</i>	<i>/filters to your</i>
	<i>/programmed</i>
	<i>/specifications</i>
	<i>/</i>

Start-Up Programming

Filter Backwash Available Filters

The System7 will backwash up to eight filters. Enter the number of filter tanks in your system and press the **ENTER** key.

```
Filter Backwash / Select the number
Available Filters / of filters you wish
      8          / to backwash
Change to:      /
      0          /
```

Filter Timing

Each filter to be backwashed has its own backwash on time and dwell time. *For this Example, press 1 for Filter 1.*

```
Filter Timing / Lists filter(s) to
1 Filter 1    / be programmed
2 Filter 2    /
3 Filter 3    /
4 Filter 4    /
5 Filter 5    /
6 Filter 6    /
7 Filter 7    /
8 Filter 8    /
```

Filter 1

We will program the times for Filter 1. Press 1 for **On Time**.

```
Filter 1 / Program on time and
1 On Time / dwell time
2 Dwell Time /
      /
```

On Time

The On Time for the backwash is in seconds. Currently, this Filter is backwashing for 60 seconds or 1 minute. Press the **ENTER** key after you select an appropriate time.

```
Filter 1 / Backwash time for
On Time / this filter
      60 sec /
Change to: /
      000 /
```

Dwell Time

The Dwell Time after the backwash is in seconds. The Dwell Time is the time that it takes your Backwash Sump to drain before starting another backwash. Currently, this Dwell Time is for 60 seconds or 1 minute. Press the **ENTER** key after you select an appropriate time.

```
Filter 1 / The time between
Dwell Time / filter backwashes.
      60 sec /
Change to: /
      000 /
```

You have set Filter 1 to backwash for 60 seconds or 1 minute and the time it takes for the Backwash Sump to drain before another tank is backwashed is 60 seconds or 1 minute.

Turbidity Settings

The System7 will allow you to start and stop backwashing your filters on the turbidity of your water.

```
Filter Backwash / Program Turbi di ty
Turbidity Settings / Control
1 Start BW Enable /
2 BW Start Setpoint /
3 BW Start Delay /
4 End BW Enable /
      /
```

Backwash Start Turbidity

Enable starting Turbidity Backwash Setpoint

```
Turbidity Settings / Enable or di sabl e
Start BW Active / turbidi ty to trigger
      No / backwash
Change to: /
1 Yes /
2 No /
```

Backwash Start Turbidity Setpoint

Select a turbidity you wish to start the backwash cycle.

```
Turbidity Settings / Desired turbidi ty
BW Start Setpoint / reading to trigger
      0.70 NTU / backwash.
Change to: /
      00.70 /
<0.00 to 1.00> /
```

Turbidity Delay

This will delay the backwash for the selected amount of time before activating a backwash.

```

Turbidity Settings / Time Turbidity
BW Start Delay / reading must remain
    2:00 min/sec / above setpoint
Change to: / before it can
    2:00 / trigger a backwash
/
<0:00 to 15:00> /
    
```

Backwash End Turbidity

Activate Ending Turbidity Backwash Setpoint.

```

Turbidity Settings / Program Turbidity
End BW Active / Control
    No /
Change to: /
    1 Yes /
    2 No /
    
```

Timer Settings

The System7 will allow you to backwash your filters during certain times of the day. Press 1 for Active.

```

Timer Settings / Select Backwash to
    1 Active / run off time
    2 4Event28Day Timer /
/
/
/
    
```

Active

You will need to activate this option for the System7. Default is No. Press 1 for Yes.

```

Timer Settings / Activates or
Active / Deactivates Timed
    No / Backwash
Change to: /
    1 Yes /
    2 No /
    
```

4Event 28Day Timer

The Timed Backwash function works on a 4-week 4-event (28-day) calendar. This allows you select four different times that you want the System7 to start Backwashing. Make your selection using the number keypad. *For this Example, select Event 1.*

```

4Event 28Day Timer / Function can be
    1 Event 1 / programmed for
    2 Event 2 / four
    3 Event 3 / separate, day
    4 Event 4 / specific events.
/
    
```

Event 1

This screen allows you to select the week, day and start time of the Backwash. Make your selection using the number keypad. *For this Example, select Week(s).*

```

Event 1 / First programmed
    1 Week(s) / event of function.
    2 Day(s) /
    3 Start Time /
/
    
```

Event 1 Week (1 of 2)

The first of 2 screens shows the selections for the weeks the Backwash event(s) should occur during the 4-week cycle. To access the second screen (2 of 2) press the NEXT SCREEN. That screen is shown below. Make your selection using the number keypad. *For this Example, select 1st week.*

```

Event 1 Week/Day / Select the week(s)
(Week): / for which the
    Di sabl ed / day(s) selected
Change to: / should engage the
    1 1st week / relay.
    2 2nd week /
    3 3rd week /
    4 4th week /
    5 Odd week / Current week/day:
    6 Even week / 1st/Fri day
    7 Every week / (1 of 2)
/
    
```

Start-Up Programming

Event 1 Week (2 of 2)

```
Event 1 Week/Day | Select the week(s)
(Week):          | for which the
  Di sabl ed     | day(s) selected
Change to:       | should engage the
1 Di sabl ed     | relay.
                 |
                 |
                 | Current week/day:
                 | 1st/Fri day
                 | (2 of 2)
```

Event 1

The screen at right will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Day(s).*

```
Event 1          | First programmed
1 Week(s)       | event of function.
2 Day(s)        |
3 Start Time    |
```

Event 1 Day (1 of 2)

The screen below will prompt for the entry of the days of the week the event should occur. There is a second screen of choices. Pressing the NEXT SCREEN button accesses the second screen. That screen is shown below. Use the keypad to select the desired day or every day for the Backwash event. *For this Example, select Monday.*

```
Event 1 Week/Day | Select the day(s)
(Day):           | for each week
  1st/Fri day    | selected which
Change to:       | should engage the
1 Sunday        | relay.
2 Monday        |
3 Tuesday       |
4 Wednesday     |
5 Thursday      | Current week/day:
6 Fri day       | 1st/Fri day
7 Saturday      | (1 of 2)
```

Event 1 Day (2 of 2)

```
Event 1 Week/Day | Select the day(s)
(Day):           | for each week
  1st/Monday     | selected which
Change to:       | should engage the
1 Every day     | relay.
2 Di sabl ed    |
                 |
                 | Current week/day:
                 | 1st/Monday
                 | (2 of 2)
```

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Start Time.*

```
Event 1          | First programmed
1 Week(s)       | event of function.
2 Day(s)        |
3 Start Time    |
```

Event 1 Start Time

Select the time of day this event is to start (on the day and week selected). Use the number keypad to select the time. *For this Example, select 12:00.*

You may enter up to 4 events.

```
Event 1 Start Time: | Select the start
12:00 am            | time for the begin-
                    | ning of the cycle
Change to:          | for the week(s)/
12:00 am            | day(s) selected for
                    | this event.
                    |
```

You have just programmed backwash to start the 1st Monday of every cycle at 12:00 a.m.

Differential Pressure

Pressure Settings

The System7 will allow you to backwash your filters off of differential pressure. Press 1 for Active.

```
Pressure Settings | Select Backwash of
1 Active          | Filter to be
2 Setpoint        | initiated off
                  | differential
                  | pressure
```

Active

You will need to activate this option for the System7. Default is No. Press 1 for Yes.

```
Pressure Settings | Activates or
Active            | Deactivates Timed
No                | Backwash
Change to:       |
1 Yes             |
2 No              |
```

Setpoint

Select a pressure differential setpoint for the System7 to initiate a backwash. Press the **ENTER** key after you select an appropriate pressure differential.

<i>Pressure Settings</i>		<i>Select Differential Setpoint</i>
15 psi		<i>pressure setpoint to activate backwash</i>
Change to:		
0000		

Flow Rate Settings

The System7 will allow you to backwash off flow rate. Press 1 for active.

<i>Filter Backwash</i>		<i>Configures Flow Rate Settings</i>
1 Active		<i>triggering backwash off of flow rate</i>
2 Setpoint		

Flow Rate Activate

Activate the Flow Rate backwash option.

<i>Flow Rate Settings</i>		<i>Activate or Deactivate rate</i>
No		<i>initiation</i>
Change to:		
1 Yes		
2 No		

Flow Rate Setpoint

Select a flow rate setpoint for the System7 to initiate a backwash. Press the **ENTER** key after you select an appropriate flow rate.

<i>Flow Rate Settings</i>		<i>Select flow rate setpoint to activate backwash</i>
300.0 gpm		
Change to:		
0350.0		
<0.0 to 1500.0>		

Flow Volume Settings

The System7 will allow you to backwash off flow volume. Press 1 to activate.

<i>Filter Backwash</i>		<i>Select Backwash Flow Rate Settings</i>
1 Active		<i>Filter to be initiated off flow volume</i>
2 Flow Vol Incrmnt		

Flow Volume Activate

Activate the Flow Rate backwash option.

<i>Flow Volume Settings</i>		<i>Activate or Deactivate volume</i>
No		<i>initiation</i>
Change to:		
1 Yes		
2 No		

Flow Volume Setpoint

Select a flow volume setpoint for the System7 to initiate a backwash. Press the **ENTER** key after you select appropriate flow volume.

<i>Flow Vol Settings</i>		<i>Enter Volume Flow Vol Incrmnt</i>
100.000 k-gals		<i>increment to trigger backwash</i>
Change to:		
0350.0		

Backwash Frequency Failsafe (BFFS) Duration

The Sytem7 will backwash the filters, but in the event the System7 calls for another backwash, the BFFS Duration will not allow another backwash to occur before the time period specified. Press the **ENTER** key after you have set the BFFS.

<i>Filter Backwash</i>		<i>Backwash Frequency BFFS Duration</i>
00:02 hm		<i>Failsafe</i>
Change to:		
00:02		
<0:00 to 4:00>		

Start-Up Programming

Motor Dwell Count

The System7 will allow you to change the time that the motor stops for the dwell position. In most cases, the Motor Dwell Count should be 14. The Motor Dwell Count is $\frac{1}{4}$ of the time that is entered. Example: At the default of 14, the number of seconds will be $14 \div 4 = 3.5$ seconds. In most cases this value will be 0.

```
Filter Backwash |Enter the number
Motor Dwell Count |of ¼ seconds to
14 |delay stopping
|motor while
Change to: |moving to dwell
00000 |position.
|
```

Press the NEXT SCREEN button to see the Inhibit option.

```
Start-Up Prog. |System7 will
Filter Backwash |backwash available
1 Inhibit BW Start |filters to your
|specifications
|
```

Inhibit Backwash Start

The Inhibit Backwash Start function allows you to program the System7 to only backwash during a certain window of the day. To see all the options, you must enable this option. Press #1 to enable.

```
Filter Backwash |Enable/Disable
Inhibit Start |backwash available
1 Enable/Disable |filters to your
2 Start Time |specifications
3 End Time |
```

Inhibit Backwash Start Time

Select the time of day you wish to start your window of backwash.

```
Inhibit Start BW |Inhibit backwash
Start Time |start time.
8:00 AM |
|
Change to: |
08:00 AM |
+/- toggles AM/PM|
```

Inhibit Backwash End Time

Select the time of day you wish to end your window of backwash.

```
Inhibit Start BW |Inhibit backwash
End Time |end time.
5:00 PM |
|
Change to: |
05:00 PM |
+/- toggles AM/PM|
```

Energy Saver

The System7 will allow you to shut down the system for a period of time, when everything has been satisfied. The System7 will start everything after a certain amount of time and check all the parameters then shut down again. The System7 won't start-up and shut down until the Energy Saver time has stopped.

```
Energy Saver |
1 4Event 28Day Timer|
2 Enable |
3 Sleep Duration |
4 Sampling Delay |
|
```

Enable Energy Saver

This will allow you to enable or disable the Energy Saver option.

```
Energy Saver |
Enable EnergySaver |
No |
Change to: |
1 Yes |
2 No |
```

4Event 28Day Timer

The Energy Saver function works on a 4-week 4-event (28-day) calendar. This allows you to select four different times that you want the System7 to start Energy Saver. Make your selection using the number keypad. *For this Example, select Event 1.*


```
4Event 28Day Timer |Function can be
1 Event 1          |programmed for
2 Event 2          |four separate,
3 Event 3          |day-specifi c
4 Event 4          |events.
|
```

Event 1

This screen allows you to select the week, day and start time of the Energy Saver. Make your selection using the number keypad. *For this Example, select Week(s).*

```
Event 1            |First programmed
1 Week(s)         |event of
2 Day(s)          |functi on.
3 Start Time     |
```

Event 1 Week (1 of 2)

The first of 2 screens shows the selections for the weeks the Energy Saver event(s) should occur during the 4-week cycle. To access the second screen (2 of 2) press the  NEXT SCREEN. That screen is shown below. Make your selection using the number keypad. *For this Example, select Every week.*

```
Event 1 Week/Day |Select the week(s)
(Week):          |for which the
Di sabl ed       |day(s) selected
Change to:       |shoul d engage the
1 1st week       |rel ay.
2 2nd week       |
3 3rd week       |
4 4th week       |
5 Odd week       |Current week/day:
6 Even week      | 1st/Fri day
7 Every week     |(1 of 2)
|
```

Event 1 Week (2 of 2)


```
Event 1 Week/Day |Select the week(s)
(Week):          |for which the
Di sabl ed       |day(s) selected
Change to:       |shoul d engage the
1 Di sabl ed     |rel ay.
|
|
|
|Current week/day:
| 1st/Fri day
|(2 of 2)
|
```

Event 1

The screen below will prompt for the entry of the next selection. Make your selection using the number keypad. *For this Example, select Day(s).*

```
Event 1            |First programmed
1 Week(s)         |event of functi on.
2 Day(s)          |
3 Start Time     |
```

Event 1 Day (1 of 2)

The screen below will prompt for the entry of the days of the week the event should occur. There is a second screen of choices. The second screen is accessed by pressing the  NEXT SCREEN button. That screen is shown below. Use the keypad to select the desired day or every day for the Energy Saver event. *For this Example, select Every day.*

```
Event 1 Week/Day |Select the day(s)
(Day):           |for each week
1st/Fri day     |selected whi ch
Change to:       |shoul d engage the
1 Sunday        |rel ay.
2 Monday        |
3 Tuesday       |
4 Wednesday     |
5 Thursday      |Current week/day:
6 Fri day       | 1st/Fri day
7 Saturday      |(1 of 2)
```

Start-Up Programming

Event 1 Day (2 of 2)

```
Event 1 Week/Day | Select the day(s)
(Day):           | for each week
 1st/Monday     | selected which
Change to:      | should engage the
1 Every day    | relay.
2 Di sabl ed   |
                |
                |
                | Current week/day:
                | 1st/Monday
                | (2 of 2)
```

Event 1

The screen below will prompt for the entry of the next selection. Using the number keypad, make your selection. *For this Example, select Start Time.*

```
Event 1          | First programmed
1 Week(s)       | event of functi on.
2 Day(s)        |
3 Start Time    |
```

Event 1 Start Time

Select the time of day this event is to start (on the day and week selected). Use the number keypad to select the time. *For this Example, select 08:00.*

You may enter up to 4 events.

```
Event 1 Start Time: | Select the start
12: 00 am           | time for the
                    | beginning of the
Change to:          | cycle for the
08: 00 p. m.       | week(s)/day(s)
                    | selected for this
                    | event.
```

Sleep Duration

This is the time that the Energy Saver will shut down before starting up again to check the water and other parameters. Sleep Duration is in minutes. Press the **ENTER** key after you have set the Sleep Duration Time.

```
Energy Saver      | Length of the
Sleep Durati on  | energy saver
 0160 mi n       | sleep cycle
Change to:        |
0000             |
```

Sampling Delay

When the Energy Saver starts the recirculation system up again, the System7 will delay its sensing for a period of time before trying to correct any of the parameters.

```
Energy Saver      | Time to wait
Sampling Delay    | before reacting
 600 sec          | to sensor inputs
Change to:        | after waking up
0000             |
```

You have just programmed the System7 to sleep every day at 08:00 p.m.

Calculations

The System7 will calculate the LSI, Ryznar and Dosage for your pool to be balanced to prevent scaling or corrosion on pipes.

```
Calculations     | LSI, Ryznar and
1 LSI            | Dosage
2 Dosage         |
```

Enter Parameters

To calculate the LSI and Ryznar, you need to select Enter Parameters. You can wish to use a TDS if desired. The TDS will be taken from the Conductivity sensor. The Enter Parameters selection will allow you to enter your alkalinity and calcium.

```
Calculations
LSI
1 Based on mm/dd/yy01/01/2000
2 Calculated LSI 0.3
3 Calculated Ryznar 6.5
4 Use TDS? No
5 Enter Parameters
```

Dosage Setup

The Dosage needs a volume of your pool. Recommendations will be given once the parameters are given to calculate the LSI and Ryznar.

```
Calculations / Volume of pool
Dosage /
1 Volume of Pool /
2 Recommendations /
```

Assign Relays

You can assign Relays 7 and 8 to any of these selections. There are two ways to assign a relay:

1. Assign a feature to an unassigned relay
2. Assign a feature to an assigned relay

```
Assign Relay to /
Change to: /
1 Sensor Wash /
2 Polymer feed /
3 SuperChlor /
4 Ozone /
5 Alarm /
```

The first thing you want to do is press the **Relay Settings** button. Then write down what feature is assigned to Relay 7 and Relay 8.

Unassigned relay (Example: Ozone)

The path you want to take is Start-Up Programming/Assigning Relays/Ozone. Select which relay you want to assign the feature or in this case ozone. If you see only Relay 7 or Relay 8 displayed, that means the missing relay has already been assigned.

```
Assign Relay for / Volume of pool
Ozone /
Change to: /
1 Relay 7 /
2 Relay 8 /
3 Disable Function /
```

Assigned Relay (Example: Ozone)

The path you want to take is Start-Up Programming/Assigning Relays/Ozone. If you see the screen to your right, then Relays 7 and 8 are already taken.

```
Assign Relay for / Volume of pool
Ozone /
Change to: /
1 Disable Function /
```

To unassign a relay, select the feature that is assigned to either Relay 7 or Relay 8 and then select disable function.

```
Assign Relay for / Volume of pool
Sensor Wash /
Change to: /
1 Relay 7 /
2 Disable Function /
```

This concludes the Start-up Programming for the System7.

ADVANCED PROGRAMMING

Listed below are the various programming screens and the pages upon which the directions for them can be found. Please consult this list to complete programming.

Please Note:

The System7 will automatically exit start-up programming if no key has been pressed for 60 seconds. In the event that you need more time to answer a particular programming question, you may lock the unit to the current screen displayed by pressing the Strantrol logo key in the upper left-hand corner of the unit and selecting lock. When you are ready to unlock the screen, press the logo key again and select unlock.

ORDER OF SCREENS DISPLAYED IN START-UP PROGRAMMING

Screen	Pg.#	Path
Preamp Inputs	50	Advanced Programming
pH Setup	50	Advanced Programming/Preamp Inputs
HRR Setup	50	Advanced Programming/Preamp Inputs
ppm setup	50	Advanced Programming/Preamp Inputs
Conductivity	50	Advanced Programming/Preamp Inputs
Temperature	50	Advanced Programming/Preamp Inputs
Show Cl/Br	50	Advanced Programming/Preamp Inputs
Other Inputs	51	Advanced Programming
Filter Pressure	51	Advanced Programming/Other Inputs
Strainer Out	51	Advanced Programming/Other Inputs
Turbidity	51	Advanced Programming/Other Inputs
pH Inventory	52	Advanced Programming/Other Inputs
Cl Inventory	53	Advanced Programming/Other Inputs
Surge Pit Level	54	Advanced Programming/Other Inputs
Relay Outputs	55	Advanced Programming
pH Relay	55	Advanced Programming/Relay Outputs
HRR Relay	55	Advanced Programming/Relay Outputs
Heater	55	Advanced Programming/Relay Outputs
Polymer	55	Advanced Programming/Relay Outputs
System Config	56	Advanced Programming
Baud Rate	57	Advanced Programming/System Config
Callout Setup	57	Advanced Programming/System Config
Datalogging	57	Advanced Programming/System Config
User Setup	57	Advanced Programming/System Config
Location	58	Advanced Programming/System Config/User Setup
Operator Code	58	Advanced Programming/System Config/User Setup
Manager Code	58	Advanced Programming/System Config/User Setup
Rep Code	58	Advanced Programming/System Config/User Setup
Factory Defaults	58	Advanced Programming/System Config
Access Menu	58	Advanced Programming

Advanced Programming

Pressing the **ADVANCED PROGRAMMING** button on the face panel is an easy way for you to configure the Strantrol System7 for your specific needs. This button activates a sequence of programming screens that will guide you through the advanced configuration of the Strantrol System7.

ADVANCED PROGRAMMING

<i>Main Menu</i>	/
<i>1 Preamp Inputs</i>	/
<i>2 Other Inputs</i>	/
<i>3 Relay Outputs</i>	/
<i>4 Calculations</i>	/
<i>5 System Config.</i>	/
<i>6 Access Menu</i>	/

Preamp Inputs

Use the arrow keys to point to your choice or press 1 through 6 for your choice.

<i>Preamp Inputs</i>	/	<i>Contains High and</i>
<i>1 pH Setup</i>	/	<i>Low Alarms, and</i>
<i>2 HRR Setup</i>	/	<i>Calibration for:</i>
<i>3 ppm Setup</i>	/	<i>pH, HRR,</i>
<i>4 Conductivity</i>	/	<i>Temperature, and</i>
<i>5 Temperature</i>	/	<i>Conductivity</i>
<i>6 Show Cl/Br</i>	/	

pH Setup

Refer to Page 28 in Start-up Programming. Selection 4 Lockout: enables the user to choose what type of chlorine lockout they wish to utilize. Full Lockout (lockout on both high and low pH alarm), Feed direction (lockout on one alarm depending on feed direction) or disable (chlorine does not lockout).

<i>pH Setup</i>	/	<i>Contains High and</i>
<i>1 High Alarm</i>	/	<i>Low Alarms,</i>
<i>2 Low Alarm</i>	/	<i>Setpoint and</i>
<i>3 Calibration</i>	/	<i>Calibration.</i>
<i>4 Lockout</i>	/	

HRR Setup

Refer to Page 22 in Start-up Programming

<i>HRR Setup</i>	/	<i>Contains High and</i>
<i>1 High Alarm</i>	/	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	/	<i>Calibration.</i>
<i>3 Calibration</i>	/	

ppm Setup

Refer to Page 30 in Start-up Programming

<i>ppm Setup</i>	/	<i>Contains High and</i>
<i>1 High Alarm</i>	/	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	/	<i>Calibration.</i>
<i>3 Calibration</i>	/	

Conductivity Setup

Refer to Page 30 in Start-up Programming

<i>Conductivity Setup</i>	/	<i>Contains High and</i>
<i>1 High Alarm</i>	/	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	/	<i>Calibration.</i>
<i>3 Calibration</i>	/	

Temperature Setup

Refer to Page 31 in Start-up Programming

<i>Temperature Setup</i>	/	<i>Contains High and</i>
<i>1 High Alarm</i>	/	<i>Low Alarms, and</i>
<i>2 Low Alarm</i>	/	<i>Calibration.</i>
<i>3 Calibration</i>	/	

Show Cl/Br

Use the number keypad to choose ppm display or not. Choose "Yes" or "No" then press the **ENTER** key to proceed.

<i>Sensor Inputs</i>	/	<i>Enable or Disable</i>
<i>Show Cl/Br</i>	/	<i>displaying Cl/Br</i>
<i>No</i>	/	<i>concentrations</i>
<i>Change to:</i>	/	
<i>1 Yes</i>	/	
<i>2 No</i>	/	

When you are finished, press the **Previous Screen** to view the Main Menu Screen and select the next option.

<i>Main Menu</i>	/
<i>1 Preamp Inputs</i>	/
<i>2 Other Inputs</i>	/
<i>3 Relay Outputs</i>	/
<i>4 Calculations</i>	/
<i>5 System Config.</i>	/
<i>6 Access Menu</i>	/

Other Inputs

Use the arrow keys to point to your choice or press 1 through 7 for your choice.

<i>Other Inputs</i>	<i>Set the</i>
1 <i>Filter Pressure</i>	<i>Calibration, High</i>
2 <i>Strainer Out</i>	<i>and Low alarms</i>
3 <i>Turbidity</i>	<i>for differential</i>
4 <i>pH Inv.</i>	<i>pressures and</i>
5 <i>Chlorine Inv.</i>	<i>levels</i>
6 <i>Surge Pit Level</i>	
7 <i>Flow Sensor</i>	

Differential Pressure Alarm

The System7 will Alarm when a backwash has not satisfied the Differential Pressure. Press the **ENTER** key after you have selected a Differential Pressure Alarm.

<i>Filter Press Setup</i>	<i>Pressure across the</i>
<i>Diff Press Alarm</i>	<i>Filters.</i>
15.0 psi	
Change to:	
00.0	

Filter Pressure

After installing the Influent and Effluent pressure transducers, you can calibrate them to the readings on the pressure gauges on the Multiport Valve Panel. Press 1 for **Cal. Filter In**

<i>Filter Press</i>	
1 <i>Cal. Filter In</i>	
2 <i>Cal. Filter Out</i>	
3 <i>Diff Pressr Alarm</i>	

Strainer Out

After installing the Strainer vacuum transducer, you can set the High Alarm and Calibrate if needed. Press 1 for **High Alarm**.

<i>Other Inputs</i>	
<i>Strainer Out</i>	
1 <i>Sensor Installed?</i>	
2 <i>High Vac Alarm</i>	

Calibrate Filter Influent

Calibrate the Filter Influent to the Gauge on the Multiport Valve Panel. Press the **ENTER** key after you have calibrated Filter Influent.

<i>Filter Press Setup</i>	
<i>Cal. Filter In</i>	
13.0 psi	
Change to:	
00.0	

Strainer Out High Alarm

The System7 will Alarm when the Strainer Vacuum has reached the Alarm **and will shut down the recirculation pump**. Press the **ENTER** key after you have selected a Strainer High Alarm.

<i>Strainer Out</i>	
<i>High Alarm</i>	
20 "Vac	
Change to:	
20	
<0 to 30>	

Calibrate Filter Effluent

Calibrate the Filter Effluent to the Gauge on the Multiport Valve Panel. Press the **ENTER** key after you have calibrated Filter Effluent.

<i>Filter Press Setup</i>	
<i>Cal. Filter Out</i>	
10.0 psi	
Change to:	
00.0	

Turbidity

After installing the Turbidimeter, you can set the High Alarm and Calibrate if needed. Press 1 for **High Alarm**.

<i>Other Inputs</i>	<i>Turbidity High</i>
<i>Turbidity</i>	<i>Alarm and</i>
1 <i>Sensor Installed?</i>	<i>Calibration</i>
2 <i>High Alarm</i>	
3 <i>Calibrate</i>	

Advanced Programming

Turbidity High Alarm

The System7 will Alarm when the Turbidity alarm has been reached. Press the **ENTER** key after you have selected a Turbidity High Alarm.

<i>Turbidity</i>	<i>/Alarm is triggered</i>
<i>High Alarm</i>	<i>/when Turbidity</i>
<i>1.00 NTU</i>	<i>/reaches or rises</i>
	<i>/above this value.</i>
<i>Change to:</i>	<i>/</i>
<i>01.00</i>	<i>/</i>
<i><0.00 to 20.00></i>	<i>/</i>

Turbidity Calibration

This calibration is a two-point calibration and is done with a 4-20mA transmitter. Before a two-point calibration, set your input range. If you have a 4-20mA transmitter, select calibrate and set transmitter to 4mA. Enter 00.00 into the MRC, then press enter. Set transmitter to 20mA and enter the input range that you set the MRC to earlier. Press the **ENTER** key after you have selected a Turbidity Calibration.

<i>Turbidity</i>	<i>/</i>
<i>Calibrate</i>	<i>/</i>
<i>0.00 NTU</i>	<i>/</i>
	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>00.00</i>	<i>/</i>
<i><0.00 to 20.00></i>	<i>/</i>

Input Range

The input range is the highest point the MRC will display. The input range is also the number that is 20mA from your transmitter.

pH Inv.

The System7 will track pH inventory. Press 1 for **Sensor Type**.

<i>Other Inputs</i>	<i>/pH Inv. Sensor type</i>
<i>pH Inv.</i>	<i>/and alarms</i>
<i>1 Sensor Type</i>	<i>/</i>
	<i>/</i>
	<i>/</i>
	<i>/</i>

pH Inv.

The System7 has two types of sensing. 4-20mA is a continuous reading with an alarm at the low alarm and the Contact Switch will display an alarm when switch is closed. Select a **Sensor Type**.

<i>pH Inv.</i>	<i>/Type of Sensor</i>
<i>Sensor Type</i>	<i>/Installed</i>
<i>Not Installed</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>1 4-20mA Inputs</i>	<i>/</i>
<i>2 Contact Switch</i>	<i>/</i>
<i>3 Not Installed</i>	<i>/</i>
	<i>/</i>

pH Inv. 4-20mA

The System7 4-20mA needs to be programmed.

<i>Other Inputs</i>	<i>/pH Inv. Sensor type</i>
<i>pH Inv.</i>	<i>/and alarms</i>
<i>1 Sensor Type</i>	<i>/</i>
<i>2 Level or Weight</i>	<i>/</i>
<i>3 4-20mA Low Alarm</i>	<i>/</i>
<i>4 Calibrate 4-20mA</i>	<i>/</i>

pH Inv. 4-20mA

Select type of measurement.

<i>pH Inv.</i>	<i>/</i>
<i>Level or Weight</i>	<i>/</i>
<i>Level</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>1 Level</i>	<i>/</i>
<i>2 Weight</i>	<i>/</i>

pH Inv. 4-20mA

Select Low Alarm.

<i>pH Inv.</i>	<i>/</i>
<i>4-20mA Low Alarm</i>	<i>/</i>
<i>0.0 ft</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>00.0</i>	<i>/</i>
<i><0.0 to 50.0></i>	<i>/</i>

pH Inv. 4-20mA Calibration (Low)

Calibrate 4-20mA. The Calibration is a two-point calibration. First be sure to calibrate level sensor before calibrating MRC. Take the Level Indicator out of the liquid and wait for 30 seconds. Enter 0.0 then press enter. Press the **ENTER** key after you have Calibrated low point.

```
pH Inv. /
Calibrate /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

pH Inv. 4-20mA Calibration (High)

Calibrate 4-20mA. The Calibration is a 2-point calibration. Submerge level indicator to the level where the liquid will be full. Enter the distance in feet. Press the **ENTER** key after you have Calibrated high point.

```
pH Inv. /
Calibrate (2nd pt) /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

Chlorine Inv.

The System7 will track Chlorine inventory. Press 1 for **Sensor Type**.

```
Other Inputs /Chlorine High and
Chlorine Inv. /Low alarms
1 Sensor Type /
/
/
```

Chlorine Inv.

The System7 has two types of sensing. 4-20mA is a continuous reading with an alarm at the low alarm and the Contact Switch will display an alarm when switch is closed. Select a **Sensor Type**.

```
Chlorine Inv. /Type of Sensor
Sensor Type /Installed
  Not Installed /
Change to: /
1 4-20mA Inputs /
2 Contact Switch /
3 Not Installed /
```

Chlorine Inv. 4-20mA

The System7 4-20mA needs to be programmed.

```
Other Inputs /Chlorine Inv. Sensor
Chlorine Inv. /type and alarms
1 Sensor Type /
2 Level or Weight /
3 4-20mA Low Alarm/
4 Calibrate 4-20mA/
```

Chlorine Inv. 4-20mA

Select type of measurement.

```
Chlorine Inv. /
Level or Weight /
  Level /
Change to: /
1 Level /
2 Weight /
```

Chlorine Inv. 4-20mA

Select Low Alarm.

```
Chlorine Inv. /
4-20mA Low Alarm /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

Advanced Programming

Chlorine Inv. 4-20mA Calibration (Low)

Calibrate 4-20mA. The Calibration is a two-point calibration. Take the Level Indicator out of the liquid and wait for 30 seconds. Enter 0.0 then press enter. Press the **ENTER** key after you have Calibrated low point.

```
Chlorine Inv. /
Calibrate /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

Chlorine Inv. 4-20mA Calibration (High)

Calibrate 4-20mA. The Calibration is a two-point calibration. Submerge level indicator to the level where the liquid will be full. Enter the distance in feet. Press the **ENTER** key after you have Calibrated high point.

```
Chlorine Inv. /
Calibrate (2nd pt) /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

Surge Pit Level

The System7 will track Surge Pit Level. Press 1 for **Sensor Type**.

```
Other Inputs /High and
Surge Pit Level /Low alarms
1 Sensor Type /
```

Surge Pit Level

The System7 has two types of sensing. 4-20mA is a continuous reading with an alarm at the low alarm and the Contact Switch will display an alarm when switch is closed. Select a **Sensor Type**.

```
Surge Pit Level /Type of Sensor
Sensor Type /Installed
  Not Installed /
Change to: /
1 4-20mA Inputs /
2 Contact Switch /
3 Not Installed /
```

Surge Pit Level 4-20mA

The System7 4-20mA needs to be programmed.

```
Other Inputs /Alarms and
Surge Pit Level /Calibration
1 Sensor Type /
2 Level or Weight /
3 4-20mA Low Alarm/
4 Calibrate 4-20mA/
```

Surge Pit Level 4-20mA

Select type of measurement.

```
Surge Pit Level /
Level or Weight /
  Level /
Change to: /
1 Level /
2 Weight /
```

Surge Pit Level 4-20mA

Select Low Alarm.

```
Surge Pit Level /
4-20mA Low Alarm /
  0.0 ft /
Change to: /
  00.0 /
<0.0 to 50.0> /
```

Surge Pit Level 4-20mA Calibration (Low)

Calibrate 4-20mA. The Calibration is a two-point calibration. Take the Level Indicator out of the liquid and wait for 30 seconds. Enter 0.0 then press enter. Press the **ENTER** key after you have Calibrated low point.

```
Surge Pit Level /
Calibrate /
0.0 ft /
Change to: /
00.0 /
<0.0 to 50.0> /
```

Surge Pit Level 4-20mA Calibration (High)

Calibrate 4-20mA. The Calibration is a two-point calibration. Submerge level indicator to the level where the liquid will be full. Enter the distance in feet. Press the **ENTER** key after you have Calibrated high point.

```
Surge Pit Level /
Calibrate (2nd pt) /
0.0 ft /
Change to: /
00.0 /
<0.0 to 50.0> /
```

Relay Outputs

Use the arrow keys to point to your choice or press 1 through 6 for your choice.

```
Relay Outputs /Set the
1 pH Relay /Calibration, High
2 HRR Relay /and Low alarms
3 Heater /for differential
4 Polymer Control /pressures and
5 Filter Backwash /levels
6 Energy Saver /
```

pH Relay

Refer to pH relay in the Start-up Programming section in this manual.

HRR Relay

Refer to HRR relay in the Start-up Programming section in this manual.

Heater

Refer to Heater Relay in the Start-up Programming section in this manual.

Polymer Control

The System7 will control polymer feed to the filter with a 10-minute cycle timer.

```
Relay Outputs /System7 will add
Polymer Control /Polymer to filter
1 High Setpoint /for better
2 Low Setpoint /filtration
3 On Time /
4 Trigger Delay Time/
5 Failsafe Timer /
```

Polymer High Setpoint

Use the number keypad to choose the turbidity point where polymer should start feeding. The values under the **Change to:** will show your entry. Press the **ENTER** key.

```
Polymer Control /Turbidity reading
High Setpoint /which will trigger
0.50 NTU /Polymer feed cycle
Change to: /
00.50 /
<0.00 to 1.00> /
```

Advanced Programming

Polymer Low Setpoint

Use the number keypad to choose the turbidity point where polymer should stop feeding. The values under the **Change to:** will show your entry. Press the **ENTER** key.

<i>Polymer Control</i>	<i> Turbidity reading</i>
<i>Low Setpoint</i>	<i> which will end</i>
<i>0.20 NTU</i>	<i> Polymer feed cycle</i>
	<i> </i>
<i>Change to:</i>	<i> </i>
<i>00.20</i>	<i> </i>
	<i> </i>
<i><0.00 to 1.00></i>	<i> </i>

Failsafe Timer

Use the number keypad to choose how much “on” time the polymer has to feed without achieving setpoint. The values under the **Change to:** will show your entry. Press the **ENTER** key.

<i>Polymer Control</i>	<i> When the relay is</i>
<i>Failsafe Timer</i>	<i> on for this period</i>
<i>00:30 hm</i>	<i> of time without</i>
	<i> achieving setpoint,</i>
<i>Change to:</i>	<i> a failsafe alarm</i>
<i>00:30</i>	<i> engages and the</i>
	<i> relay is locked out</i>
<i><0:00 to 2:00></i>	<i> </i>

On Time

Use the number keypad to choose how much “on” time you want out of a 10-minute cycle. The values under the **Change to:** will show your entry. Press the **ENTER** key.

<i>Polymer Control</i>	<i> Length of on time</i>
<i>On Time</i>	<i> during each 10</i>
<i>05:00 min/sec</i>	<i> minute cycle</i>
	<i> </i>
<i>Change to:</i>	<i> </i>
<i>05:00</i>	<i> </i>
	<i> </i>
<i><0:00 to 10:00></i>	<i> </i>

Filter Backwash

Refer to Filter Backwash in the Start-up Programming section in this manual.

Energy Saver

Refer to Energy Saver in the Start-up Programming section in this manual.

Assign Relays

Refer to Assigned Relays in the Start-up Programming section in this manual.

Trigger Delay Time

Use the number keypad to choose how much time you want the System7 to delay polymer feed after the high setpoint has been reached. The values under the **Change to:** will show your entry. Press the **ENTER** key.

<i>Polymer Control</i>	<i> Time turbidity</i>
<i>Trigger Delay Time</i>	<i> reading must remain</i>
<i>05:00 min/sec</i>	<i> above setpoint</i>
	<i> before it starts</i>
<i>Change to:</i>	<i> polymer feed.</i>
<i>05:00</i>	<i> </i>
	<i> </i>
<i><0:00 to 30:00></i>	<i> </i>

Calculations

Refer to Calculations in the Start-up Programming section in this manual.

System Config.

The System7 will communicate and datalog information. You can configure your System7 to datalog and communicate to fit your needs.

<i>System Config.</i>	<i> Baud Rates,</i>
<i>1 Communication</i>	<i> Datalogging, Units,</i>
<i>2 Datalogging</i>	<i> Date Format, User</i>
<i>3 Date, Time & Units</i>	<i> Setup, Call-Out,</i>
<i>4 Name and Location</i>	<i> Factory Defaults</i>
<i>5 User Setup</i>	<i> </i>
<i>6 Factory Defaults</i>	<i> </i>

Communication

This is where you can set your communication rate for a direct or a modem connection. You can also setup for the System7 to call-out in the event of an alarm.

```

Communication      | Direct and Modem
1 Direct Baud Rate | Baud Rate. Speed of
2 Modem Baud Rate | Communication
3 Call-Out Setup   |
                   |
                   |
    
```

```

System Config.     |
Call-Out Setup     |
1 Pre-Delay #4     |
2 Phone #4         |
3 Pre-Delay #5     |
4 Phone #5         |
5 Pre-Delay #6     |
6 Phone #6         |
                   |
                   |
                   | (2 of 2)
    
```

Baud Rates

Select the type of communication and then select the speed you wish to communicate with the System7.

Call-Out Setup

The MRC will call a telephone, pager and fax machine in the event of an alarm. The MRC will stay in its call-out mode until someone enters an access code either through WinSys7 or at the MRC.

Call-Out Active will enable or disable feature.

Call Start Time is the time of the day you want the System7 to start calling-out.

Call End Time is the time of day you want the System7 to stop calling-out.

Pre-Delay #1 is how long you want the System7 to be in alarm before calling-out.

Phone #1 is the first number you want the System7 to call-out.

Pre-Delay #2 - #6 is how long you want the System7 to wait before calling the next number.

Phone #2 - #6 are the numbers you want the System7 to call out if previous numbers do not stop call-out.

```

System Config.     |
Call-Out Setup     |
1 Call Out Active  |
2 Call Start Time  |
3 Call End Time    |
4 Pre-Delay #1     |
5 Phone #1         |
6 Pre-Delay #2     |
7 Phone #2         |
8 Pre-Delay #3     |
9 Phone #3         | (1 of 2)
    
```

Datalogging

The System7 will save information into the memory. You can change the time frequency that the System7 saves the parameters. Remember, the more frequently you save, the more often you will have to download, because the memory is used up faster.

```

System Config.     | Datalog Frequency
Datalogging        |
1 Datalog Frequency|
                   |
                   |
    
```

Date, Time & Units

Current Date

Refer to Page 20 in Start-up Programming.

Current Time

Refer to Page 20 in Start-up Programming.

Units

Refer to Page 15 in Start-up Programming.

Name, Location and System ID

Enter the customer name. Enter the location of the MRC. Enter the System ID. This may be the MRC serial number or anything that distinguishes the MRC from another. If you have more than one MRC, you can use this number at the end of the phone number when calling a pager so you know which MRC is calling.

```

Name and Location |
1 Customer Name   |
2 Location        |
3 System ID       |
    
```

Advanced Programming

User Setup

The System7 will save information that is specific to this site, such as, Customer Name, Location, Operator and Manager Access Codes.

<i>System Config.</i>	<i>/Date, Time,</i>
<i>User Setup</i>	<i>/Customer Name,</i>
<i>1 Current Date</i>	<i>/Location, Operator</i>
<i>2 Current Time</i>	<i>/Access, Manager</i>
<i>3 Customer Name</i>	<i>/Access,</i>
<i>4 Location</i>	<i>/Representative</i>
<i>5 Oper. Access Codes</i>	<i>/Access Codes</i>
<i>6 Mgrs Access Codes</i>	<i>/</i>
<i>7 Rep Access Codes</i>	<i>/</i>

User Setup

This screen will allow you to enter the access codes to be used by the operators, managers and representatives. If you only enter 3 of the 6 operator codes and leave the other access codes at 000, 000 will be an access code. Therefore, it is recommended that you change the access codes that aren't being used to a number that is only known by you.

Operator Access Codes

6 operator codes are available for 6 different operators to enter in their individual code.

<i>User Setup</i>	<i>/Select Operator</i>
<i>Oper. Access Codes</i>	<i>/</i>
<i>1 Op 1</i>	<i>/</i>
<i>2 Op 2</i>	<i>/</i>
<i>3 Op 3</i>	<i>/</i>
<i>4 Op 4</i>	<i>/</i>
<i>5 Op 5</i>	<i>/</i>
<i>6 Op 6</i>	<i>/</i>

Manager Access Codes

2 manager codes are available for 2 different managers to enter in their individual code.

<i>User Setup</i>	<i>/Select Manager</i>
<i>Mgrs Access Codes</i>	<i>/</i>
<i>1 Mgr 1</i>	<i>/</i>
<i>2 Mgr 2</i>	<i>/</i>

Rep Access Code

Once the rep code is entered, this feature will not show up unless the user is in the rep code. To enter the rep access code screen, the user must press 9 then rep access code.

<i>User Setup</i>	<i>/Three-digit number</i>
<i>Rep Access Codes</i>	<i>/</i>
<i>***</i>	<i>/</i>
<i>Change to:</i>	<i>/</i>
<i>100</i>	<i>/</i>
	<i>/</i>

Factory Defaults

The System7 will reset the parameters to original settings from the factory.

<i>System Config.</i>	<i>/Reset System7 to</i>
<i>Factory Defaults</i>	<i>/Original parameters</i>
<i>Change to:</i>	<i>/</i>
<i>1 Preamp Inputs</i>	<i>/</i>
<i>2 Other Inputs</i>	<i>/</i>
<i>3 ChemFeed & Heater</i>	<i>/</i>
<i>4 Polymer & Backwash</i>	<i>/</i>
<i>5 Relay Config</i>	<i>/</i>
<i>6 Energy Saver</i>	<i>/</i>
<i>7 System Config.</i>	<i>/</i>
<i>8 All Settings</i>	<i>/</i>

Access Menu

Enter your access code to gain the ability to change certain parameters. Access code must be entered in the User Setup section for access lockouts to occur.

If the rep wants to gain access and no other access codes have been entered, the Access Menu option must be selected and then press 9 to enter the rep code.

<i>Access Menu</i>	<i>/</i>
<i>1 Oper Access Code</i>	<i>/</i>
<i>2 Mgr Access Code</i>	<i>/</i>

QUICK KEYS

The System7 allows you to change certain parameters by pressing the Quick Keys: **SET POINTS** **RELAY SETTINGS** **BACKWASH CALIBRATION** **EMERGENCY OFF** **FAILSAFE**

SETPOINTS

This Quick Key will allow you to change the setpoints of pH, HRR, Alternate HRR, Temp, Alternate Temp, Polymer High and Polymer Low.

<i>Set Points</i>	
1 pH	7.5
2 HRR	750 mV
3 Alternate HRR	750 mV
4 Temp	50 °F
5 Alternate Temp	32 °F
6 Polymer High	0.5 NTU
7 Polymer Low	0.2 NTU

RELAY SETTINGS

This Quick Key will allow you to change your relays to Auto, Off, or Manual of pH, HRR, Recirc Pump, Temp, or Polymer. This Quick Key will also give you the status of the relay ON/OFF.

<i>Relay Settings</i>		
1 r1 pH	Auto	Off
2 r2 HRR	Auto	Off
3 r3 Recirc Pump	Auto	On
r4 Pres Amp Pump		Off
4 r5 Temp	Auto	Off
r6 BW Motor		Off
5 r8 Polymer	Auto	Off

BACKWASH

This Quick Key will allow you to start or stop a backwash manually.

<i>Backwash Operation</i>	
1	Start
2	Stop

CALIBRATION

This Quick Key will allow you to do a single-point calibration of pH, HRR, Conductivity, Temperature, Filter In, Filter Out, and Strainer Out, plus give you current readings.

<i>Single-point Calibration</i>	
1 pH	7.5
2 HRR	755 mV
3 Conductivity	1500 µmho
4 Temperature	83 °F
5 Filter In	25 psi
6 Filter Out	20 psi
7 Strainer Out	20 "Vac

EMERGENCY OFF

This Quick Key allows you to shut every relay off by just pressing the **EMERGENCY OFF** key. To enable the relays, just press the **EMERGENCY OFF** key again.

FAILSAFE

This Quick Key allows you to reset any Failsafes. Press 1 to reset and the System7 will reset the Failsafes.

<i>Fail safe Operation</i>	
1	Reset

Cleaning the Sensors

Cleaning the Sensors

1. Isolate the Flowcell, then remove the sensors.
2. Clean the tips with HRR Cleaning Solution (or liquid dish soap) and a toothbrush.
3. If HRR cleaning solution is used, skip to Step 5. Otherwise proceed to Step 4.
4. Rinse sensors with water.
5. Use a toothbrush and clean sensor with a 10-to-1 acid-to-water solution.
6. Check Teflon sealing tape on threads.
7. Shake sensor down, like a thermometer. Push liquid down to Teflon junction.
8. Reinstall sensor.
9. Open valves and let sensors rinse 10 to 15 minutes in sample stream water before making any adjustments.

Note: If the sample stream is shut down for more than a short time (particularly in freezing temperatures), remove the sensors from the flowcell and unplug the System7. Store the sensors in a heated, secure area, with the sensor caps in place or with the tips immersed in any small container of water to prevent them from drying out.

Control Panel

System7 (MRC)	6389923
ECS System7 (MRC)	6389924
Full Filter Control Console (FFCC)	9589107

PCB Board

Pre-Amp Board.....	6967001
1-5 Input Board.....	6489017
4-20 Input Board.....	6489016

Pre-Amp Fuses

1 Amp	4429007
3/10 Amp	4429011

Conductivity/Temp Probe	7044009
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Transducers

Filter Influent	K2870003I
Filter Effluent	K2870003E
Strainer Vacuum.....	7830006

Liquid Level Sensor for Surge, Chlorine and pH tanks	7829002
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Turbidimeter.....	7830003
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Turbidity free calibrating solution	8109007
Turbidity 10 NTU calibrating solution	8109008
Power Supply for turbidimeter.....	6920014
Mounting Straps.....	RM7609061
Fiberglass nuts	6020291

Flow Sensor

Flow Sensor .5"-4"	7830002
Flow Sensor 5"-8"	7830005
Flow Sensor 10" and up.....	7830004
Iron Saddle .5"-4"	7741012
Iron Saddle 6"	7741013
Iron Saddle 8"	7741014
Iron Saddle 10"	7741015
Iron Saddle 12"	7741016
Iron Saddle 14"	7741017
Iron Saddle 16"	7741018
Iron Saddle 18"	7741019

Cables

Backwash Pit (LS001).....	1989024
Strainer Vacuum (MP003S)	1980025
24-Volt (PS024V)	1989026
Polymer (PS001S)	1989027
Flow Sensor (FS001)	1989028
Surge Tank (LS004)	1989029
pH Tank (LS002).....	1989030
Chlorine Tank (LS003)	1989031
Turbidimeter (MP004T)	1989032
Main (PS014P).....	1989033

Extension Cables (50 ft)

Backwash Level Switch (LS001/PS024V)	1989034
24 volt (LS001/PS024V)	1989034
Main Signal (PS014PX).....	1989036
Strainer Vacuum (MP003S)	1980025
Level sensors (LS002/LS003/LS004)	1980035
Polymer (PS001S)	1989027

Warranty

USFilter Stranco Products Series Filter System Limited Warranty

FULL ONE- (1) YEAR WARRANTY

What is Covered?

Any defect in workmanship or materials in your USFilter Stranco Products filter system.

For How Long?

One (1) year from the date of the original installation.

What Will USFilter Stranco Do?

Repair, or if repair is not possible, replace the defective part or parts of your Stranco filter system.

To Qualify for fifteen (15) year warranty: A warranty registration form must be completed by a factory-authorized service technician and USFilter Stranco Products must receive the registration form.

LIMITED WARRANTY ON PARTS FOR THE SECOND THROUGH FIFTEENTH YEAR

What is Covered?

Any defect in workmanship or materials in your USFilter Stranco Products filter system.

For How Long?

From the start of the 2nd year, after date of original installation, until the end of the 15th year.

What Will Stranco Do?

Provide on a Pro-Rata cost basis, at the factory, replacement parts, but not labor to install parts.

PRO-RATING SCHEDULE

A discount will be given based on a percentage of the current published trade price of the faulty part. The discount will be given only for the purchase of a new replacement part for the original filter system.

**If Your Stranco Filter Experiences a Failure
Due to a Manufacturing Defect During the:**

Stranco will Discount as Follows:

2 nd year	70%
3 rd year	65%
4 th year	60%
5 th year	55%
6 th year	50%
7 th year	45%
8 th year	40%
9 th year	35%
10 th year	30%
11 th year	25%
12 th year	20%
13 th year	15%
14 th year	10%
15 th year	5%

How to Get Service: Contact USFilter Stranco Products, P. O. Box 389, Bradley, Illinois 60915

Your Rights Under State Law: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. USFilter Stranco Products disclaims all liability for damage during transportation, for consequential damage of whatever nature, for damage due to handling, installation, or improper operation, or damage from other causes beyond USFilter Stranco Products' control. USFilter Stranco Products makes no warranties either expressed or implied, including any warranty of merchantability or fitness for particular purpose, other than these stated. No representative has authority to change or modify this warranty in any respect.

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STRANTROL SYSTEM7

Mechanical Room Controller

Installation, Operations & Maintenance Manual

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