Control Guard FCS
TABLE OF CONTENTS

Specifications .............................................................................................................................................. 3
Pre-Installation ........................................................................................................................................... 4
Installation ................................................................................................................................................ 4
Operation .................................................................................................................................................. 6
Programming ......................................................................................................................................... 7
Titration Graph ......................................................................................................................................... 11
System Wiring Diagram .............................................................................................................................. 12
Replacement Parts .................................................................................................................................... 13
Optional CT-550/600 ................................................................................................................................ 14-15
Ferrites for European Applications ......................................................................................................... 16
Warranty Information ................................................................................................................................. 16

CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical mfrs.

CAUTION: To avoid severe or fatal shock, always disconnect main power when servicing the unit.

CAUTION: When installing any equipment, ensure that all national and local safety, electrical, and plumbing codes are met.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Pumps</th>
<th>Wet End Mat'l</th>
<th>Flow Rate</th>
<th>Voltage</th>
<th>PSI Rating</th>
<th>Suction Lift</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP-5200</td>
<td>EPDM</td>
<td>16 oz/min</td>
<td>24 VDC</td>
<td>30 max</td>
<td>10 ft max</td>
</tr>
<tr>
<td>KP-8100</td>
<td>EPDM</td>
<td>34 oz/min</td>
<td>24 VDC</td>
<td>30 max</td>
<td>10 ft max</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Probes</th>
<th>Material</th>
<th>Probe Max Temp</th>
<th>Control Range</th>
<th>Cable Length</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductive</td>
<td>Polypropylene</td>
<td>180° F max</td>
<td>80 ms (max)</td>
<td>Order separately</td>
<td>7/8&quot; hole</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Material</th>
<th>Gasket</th>
<th>IP Rating</th>
<th>NEMA Class</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ABS or PC</td>
<td>EPDM</td>
<td>IP-65</td>
<td>1, 4, 4X, 12, 13</td>
<td>W 13.25&quot; x H 10.5&quot; x D 7.5&quot;</td>
</tr>
</tbody>
</table>

- Pollution Degree II
- Installation category I
- Altitude 2000m
- Humidity 5 to 95%
- Electrical supply 115VAC, 50/60Hz, 2A
- For Indoor Use Only
- Temperature 5°C to 40°C
- Mains supply voltage fluctuations are not to exceed 10% of the nominal supply voltage
- The unit shall not be positioned so that it is difficult to operate the power disconnecting means
- Protection is impaired if the product is used in a manner not specified by the manufacturer
- Replacement Fuse for 115V model: 2Amp, 250V, 6.3x32mm, Fast-Acting

## SAFETY SYMBOL EXPLANATIONS

Listed below are explanations of the safety symbols that appear either on the unit, in the instruction manual, or both. Please familiarize yourself with the meaning of each symbol.

- **GENERAL CAUTION:** This symbol indicates a general safety caution.
- **SHOCK HAZARD:** This symbol indicates that hazardous voltages are inside the enclosure.
- **READ MANUAL:** This symbol indicates to read the manual for important instructions and procedures related to safety.
PRE-INSTALLATION
(1) Check all applicable plumbing and electrical codes before installation. This will help to ensure that the system is installed in safe and suitable manner.
(2) Get a wiring schematic of the washmachine (provided by the machine mfr or may be on the machine itself).
(3) Check to make sure that all functions of the washer are operating properly. Including; timer, water solenoids, water level switch, pump motor, and drain valve.
(4) Check the proposed location for a 115 VAC power source.
(5) Check voltage of all washer chemical signals that will be used. Measure voltage between chemical signal and signal common with a voltmeter. Do not check signal voltage between supply signal and case (earth) ground.
(6) Check mounting location for chemical injection anti-siphon valves. Verify port size with fittings you have for installation.

Before beginning the installation, make sure you have the following tools and materials ready...
- Flat and Phillips screwdrivers.
- Drill and drill bits.
- Suitable wire for main power and signals (check local codes).
- Wire cutters, wire strippers, and pliers.
- Wire terminal connectors and a crimping tool.
- Voltmeter (or multi-meter).
- Dry wall inserts and mounting screws.
- Electrical tape and wire nuts.
- Chemical test kit.
- Injection check valves.
- Braided vinyl hose for 3/8" ID.

INSTALLATION
NOTE: For European installations, ferrites need to be installed on the signal cable. See page 16 for details.

Mounting
Mounting feet and screws are provided with the unit. Attach the mounting feet to the back of the unit by putting the screws into the brass inserts in the upper corners. Hang the unit on a wall in a suitable location that is close to the chemical containers and also the chemical injection point(s). Mounting height should be no more than 10' vertically above the chemical containers.

Main Power
Connect leads to a 115 VAC power source that is “on” when the machine is “on.” This will provide power for all pumps, however the system will only pump chemical when electrically signaled. Whenever possible, use the machine’s ON/OFF switch as the main power source. Avoid using the machine’s pump motor as main power. Check the voltage select switch on the circuit board to ensure its set for the correct main power voltage.

Pump 1 Signal
A trigger signal is required to activate the probe sensing operation, or to trigger the repeat cycle mode initial charge. For Probe mode, check the washer for a power source that is active during the wash cycle only, for example, the magnetic contactor that controls the wash pump motor. You can also jumper main power to the signal input when a constant power up condition is applicable. Connect leads to the pump 1 signal source. Signal voltage range is 14 - 240 VAC. For repeat cycle mode initial charge, check for a signal that will activate only when the machine is filled with a fresh tank of water.

Pump 2 Signal
In addition to running pump 2, the pump 2 signal triggers the recharge injection if repeat cycle mode is selected. For probe mode, check the washer for a signal source that is active when you want the pump to run. For repeat cycle mode, check the washer for a signal source that will be used to trigger the recharge injection. Connect leads to the pump 2 signal source. Signal voltage range is 14 - 240 VAC.
Conductive Probe Installation (optional)

(1) Install the probe in the wash tank below the water level. It should be away from incoming water supplies, near the recirculating pump intake, and 3 to 4 inches from corners, heating elements, or the bottom of the tank. If an existing mounting hole cannot be located, cut or punch a 7/8” hole.

(2) Use 18 AWG multi-stranded copper wire for the probe connection. Avoid running the wire near high voltage AC lines. Do not route wire through the same conduit as power and signals.

(3) Connect leads to the probe. Ring-type terminals are recommended (be sure to connect them to the probe terminals with “backing” nuts to prevent the probe tips from being pulled out of the probe). The ring terminals should be secured between the inner (backing) nuts and outer nuts.

Peristaltic Pump Connections

(1) Cut a suitable length of braided tubing and connect between the discharge (right) side of the pump’s squeeze tube and the injection point. Use barb fittings (supplied) and hose clamps to secure safely.

(2) Cut a suitable length of braided tubing and connect between the suction (left) side of the pump’s squeeze tube and the chemical pickup tube. Use of barb fittings and hose clamps is recommended.

(3) Insert pickup tube into chemical container.
OPERATION

Probe Mode

When the pump 1 signal is “on”, the probe senses chemical concentration. When concentration drops below the setpoint, the control automatically turns on chemical feed. As the chemical feeds, the control senses the rate at which the concentration is approaching the setpoint. The control then begins to pulse feed (intermittent on/off) to prevent over-use of chemical. The pulse feed rate will depend on how fast the setpoint is being approached.

The low product alarm will sound if the setpoint is not reached within the alarm delay time period. The alarm can be temporarily muted if desired (see button functions). A “feed limit” feature allows you to set the unit to automatically shut off the chemical feed when the alarm has been activated.

Repeat Cycle Mode

This type of operation controls chemical concentration without a probe, based on timed feed modes. The initial charge feeds chemical to bring the machine to working concentration when initially filled with fresh water. The initial charge feed is activated by a trigger signal, which also increments the initial charge counter for each activation.

Recharge time feeds chemical to maintain concentration strength as fresh water dilutes the machine. The recharge is triggered after a specified number of washes.

BUTTON FUNCTIONS

- ENTER: Holding the enter button for 3 seconds (approx.) switches between run and program modes. Enter also advances through programming menus.

- SCROLL: The scroll button moves the position of the cursor in menus where text or number changes are done. The scroll button will “wrap around” at the end of a line of characters, meaning that the cursor will advance to the beginning of the line automatically. The scroll button toggles between choices in menus that have selectable settings. The scroll button also shows the wash count and initial charge count during normal operation.

- UP (↑): Increases numeric values or advances upward through available characters. Hold the button down to rapidly advance. The UP button also acts as pump 2 prime during normal operation.

- DOWN (↓): Decreases numeric values or advances downward through available characters. Hold the button down to rapidly advance. The DOWN button also acts as satellite pump 1 prime during normal operation.

Alarm Mute

During operation, the low chemical alarm (probe mode) can be silenced by pressing the SCROLL and UP buttons simultaneously for 1 full second. The display will show “Alarm Muted” and the audio alarm will turn off for 5 minutes.

OPERATING PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass Code</td>
<td>0000</td>
<td>0 – 9, A – Z</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
<td>English, Spanish, French, German, Dutch, Italian</td>
</tr>
<tr>
<td>Pump 2 Speed</td>
<td>50%</td>
<td>0%-100% (of full speed)</td>
</tr>
<tr>
<td>Wash Time</td>
<td>10 sec</td>
<td>10 – 255 sec</td>
</tr>
<tr>
<td>Chemical Mode</td>
<td>Probe</td>
<td>Probe/Repeat Cycle</td>
</tr>
<tr>
<td>Chemical Type</td>
<td>Liquid</td>
<td>Liquid / Dry / Small Tank</td>
</tr>
<tr>
<td>Chemical Concentration</td>
<td>25 Knight Units 0 %</td>
<td>0 — 2500 Knight units 0 — 99.99 % 0 — 200 Millisiemens</td>
</tr>
<tr>
<td>Alarm Delay</td>
<td>180 sec</td>
<td>1 – 512 sec</td>
</tr>
<tr>
<td>Initial Charge</td>
<td>1 sec</td>
<td>1 — 128 sec</td>
</tr>
<tr>
<td>Recharge Time</td>
<td>1 sec</td>
<td>0 – 255 sec</td>
</tr>
<tr>
<td>Wash Count</td>
<td>0</td>
<td>0 – 65536</td>
</tr>
<tr>
<td>Repeat Cycle Interval</td>
<td>10</td>
<td>10 — 255 Washes</td>
</tr>
<tr>
<td>Feed Limit</td>
<td>On</td>
<td>On/Off</td>
</tr>
<tr>
<td>Detergent Run Time</td>
<td>0</td>
<td>9999 Minutes</td>
</tr>
</tbody>
</table>
PROGRAMMING
You may find it helpful to read through the programming instructions before getting started. This will better familiarize you with the operation of the Control Guard FCS, and will make the actual programming go much quicker. Be aware of the following notes.

- If you wish to return to normal operating mode at any point during programming, hold down the ENTER button for 3 seconds to exit the programming mode.
- While programming, if no buttons are pressed for approximately 2 minutes, the system will automatically return to normal operating mode.
- Programming changes can be made while the unit is operating — changes will take effect immediately. This allows you to make minor adjustments “on-the-fly” and fine tune the performance of your system.

When you’re ready to get started, hold down the ENTER button for about 3 seconds to go into the programming mode. Release the button when you see the following display...

<table>
<thead>
<tr>
<th>ENTER PASS CODE: 0000 PRESS ENTER</th>
<th>All new systems are shipped from the factory with the pass code set at 0000. If the system is new, press ENTER to continue. If the pass code has been changed from the default of 0000 (explained later in this manual) use ø/ö and SCROLL to type in your code, then press ENTER to continue.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT LANGUAGE: ENGLISH</td>
<td>If you wish to change the menu language, press SCROLL to advance through the available choices until your desired language name is shown on the display. Press ENTER to continue.</td>
</tr>
<tr>
<td>SET PUMP 2 SPEED: 50% OF FULL SPEED</td>
<td>Use ø/ö buttons to change the speed of pump 2. The pump will begin running when either button is pressed. When the desired setting has been reached, press ENTER — the pump will stop running, and you will advance to the next menu.</td>
</tr>
<tr>
<td>CHEMICAL MODE: PROBE</td>
<td>Use the SCROLL button to choose probe or repeat cycle chemical feed mode, then press ENTER to continue.</td>
</tr>
</tbody>
</table>

- If you chose to use PROBE mode, you will see the menu structure starting below.
- If you chose to use REPEAT CYCLE mode, go to page 9.

| CHEMICAL CONCEN: 25 KNIGHT UNITS | Chemical concentration is set in Knight Units, millisiemens, or percentage. A chart is provided on page 11 to show the relationship between Knight Units and conductivity. This chart can be used as a general reference for setting the desired concentration. Use ø/ö to change the concentration setting, then press ENTER to continue. |

Continue on next page
**Control Guard FCS Instructions**

**DISPLAY TEMP ON (F)**

*NOTE: The system can display wash tank temperature only when using an inductive probe supplied by the user. No special wiring is required for the inductive probe. It connects to the system per the wiring diagram.*

Use this menu to turn ON or OFF the wash tank temperature display. Use the scroll button to select degrees Fahrenheit or Centigrade, and to set your display choice, then press ENTER to continue.

**DISPLAY CHM CON: K**

This setting allows you to choose which chemical concentration unit of measure you wish to use. The available choices are “Knight Units” (K), Millisiemens (mS) or percentage (%) concentration.

Use SCROLL to select the concentration units that will be used, then press ENTER to continue.

**NEW DATA POINT? NO**

You will only see this menu prompt if you chose percentage (%) as your unit of measure for displayed chemical concentration. Choose yes if you are initially setting up the system, or if you wish to change the calibration value. Use SCROLL to choose yes or no, then press ENTER to continue.

**P1X: 0.00 MSIEMENS**

If selecting % Concentration for controlling/displaying concentration values you will need to temporarily set the control to mS 00:00 to establish the P1X and P2X Data points. These data points are needed to teach the Control Guard the % Concentration range you want to control. Follow these steps to determine P1X and P2X:

1. Determine total tank size in gallons or liters.
2. Determine the % concentration (by volume) of chemical needed to clean/treat.
   
   **Example:**
   - Tank Size = 300 Gallons (38,400 ounces)
   - Desired Concentration = 1.25 %
   - Chemical % @1.25% = 480 ounces
3. Divide 480 ounces by 4 (result is 120 ounces -or- .31%). This will be amount of chemical you will manually place into the washer to determine value P1X.
4. Fill the system with water (with control in mS 00:00 mode) then pour in the 120 ounces of chemical. Once the chemical concentration is stable (mS 00:00) program this number as your P1X and enter the % concentration value as .31%.
5. To determine P2X multiply 480 ounces by 1.5. This will be the amount of chemical you will manually place in the washer to determine P2X.
6. Place 720 ounces of chemical into the same wash tank and note concentration value in mS 00:00. Enter this value as P2X and program the % concentration as 1.87%.

*Continue on next page*
Control Guard FCS Instructions

CHEMICAL CONCEN: ON
This setting allows you to choose if you wish to see the actual concentration reading on the display during normal operation. Use SCROLL to turn the concentration display on or off, then press ENTER to continue.

ALARM DELAY: 180 SEC
Alarm delay is a time frame that the chemical setpoint is expected to be reached within. If the setpoint is not achieved within the set time, the alarm will sound intermittently until the problem is resolved or power is cycled.
This setting should be slightly longer than the time it takes for the unit to achieve the setpoint with a fresh tank of water. Use $/\_/$ to choose from 1 to 512 seconds, then press ENTER to continue.

DET RUN TIME 0000 MIN
This display shows the total accumulated run time for pump #1. This feature tracks the total chemical output from the pump in minutes. Press SCROLL if you wish to reset accumulated run time. Press ENTER to continue.

PUMP 1 FEED LIMIT ON
Chemical feed limit works in conjunction with alarm delay. When this feature is “on”, and the concentration setpoint is not reached within twice the alarm delay, the alarm will become continuous and chemical feed will be halted until the problem is resolved or power is cycled. Use SCROLL to turn the feed limit on or off, then press ENTER to continue.

- If you are done programming PROBE mode, go to page 10.
- If you chose to use REPEAT CYCLE mode instead of PROBE mode, you will see the following menu structure...

INIT PMP1 CHARGE 01 SEC
The initial charge feeds chemical to achieve working concentration when the machine is initially filled with a fresh tank of water. The available timing range is 1 to 128 seconds. Use $/\_/$ to set the initial charge time, then press ENTER to continue.

DET RUN TIME 0000 MIN
This display shows the total accumulated run time for pump #1. This feature tracks the total chemical output from the pump in minutes. Press SCROLL if you wish to reset accumulated run time. Press ENTER to continue.

PMP1 RECHARG TIM 01 SEC
The recharge feeds chemical to maintain the working concentration as fresh water dilutes the washtank. The available timing range is 0 to 255 seconds. Use $/\_/$ to set the recharge time, then press ENTER to continue.

INTERVAL MULTIPL 01:
This setting allows you to choose how many washes will be counted before triggering the recharge feed. The range is 1 to 99 racks. Use $/\_/$ to set recharge wash count, then press ENTER to continue.
‘DOWN’ KEY TO RESET CYCLE COUNT

You will only see this display if using repeat cycle operation. If you wish to clear the cycle counter, press the DOWN button. The display will briefly flash the cycle counter screen to show that it was set back to zero, and will then return to the display at left. Press ENTER to continue.

DOWN TO RESET INIT CHARGE CNT

You will only see this display if using repeat cycle operation. If you wish to clear the initial charge counter, press the DOWN button. The display will briefly flash to the counter to verify that it was set back to zero, and will then return to the display at left. Press ENTER to continue.

‘SCROLL’ TO CHANGE DISPLAY NAME

This menu item allows you to change the display name. Press the SCROLL button once and you will see a screen with the current display name showing. Use ø/ô to change the selected character (the one that is underlined) and SCROLL to advance to the next character. When finished, press ENTER to continue.

CHANGE PASS CODE

This menu item allows you to change the pass code. Use ø/ô to change the selected character (the one that is underlined) and SCROLL to advance to the next character. When finished, press ENTER to continue.

ARE YOU SURE?

If you changed the pass code in the previous menu, you will be prompted to confirm your choice. If you wish to pick a different number, press SCROLL to return to the previous menu, otherwise press ENTER to continue.

0000 IS NEW CODE

INIT CHRG LOKOUT

You will only see this display if using repeat cycle operation. This setting locks out the initial charge for the time specified (from the previous initial charge). This prevents over-use of chemical if the trigger signal energizes unexpectedly during operation. Use ø/ô to choose from 0 to 120 minutes, then press ENTER to continue.

01 MINUTES

REPEAT CHRG INTE

You will only see this display if using repeat cycle operation. The Repeat Cycle Interval is the time between chemical recharge events. As long as a signal to pump #1 input is present, this timing interval will cycle the pump to recharge your system. Use ø/ô to choose from 10 to 255 seconds, then press ENTER to continue.

RV EVERY: 10 SEC

Continue on next page
CHEMICAL TYPE: LIQUID
Use SCROLL to choose liquid or dry as the type of chemical, then press ENTER to continue.

There is also a “SMALL TANK” setting that can be selected for special applications to enhance dry chemical feed in probe mode (does not apply to repeat cycle). If SMALL TANK is selected, the chemical feed rate will be more aggressive when the concentration reading is within 5 Knight units of the setpoint. Additionally, the alarm (delay) function will be by-passed when the concentration reading is within 3 Knight units of the setpoint.

PUMP 2 RUNS WITH: PMP 2 INPUT SIGNAL
Use SCROLL to choose whether you wish to have pump 2 run (simultaneously) with pump 1, or when triggered with its own independent signal, then press ENTER to continue.

SCROLL & DOWN TO RESET EVERYTHING
You will be prompted if you wish to reset the system. This function is recommended for new installations and allows you to clear all memory and set the unit back to default parameters.

Hold down on the SCROLL and DOWN buttons until you see the message “RESETTING EVERYTHING” then release both buttons. After a few seconds, the memory will be cleared and the display will return to the display at left. Press ENTER to continue.

Control Guard FCS Concentration (ms) vs. Knight Units

Note: The chart shown above should be used as a guide only. Actual titration testing of your chemical concentration is recommended to achieve the desired setpoint.
# REPLACEMENT PARTS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7140566</td>
<td>Main Control Circuit Board</td>
</tr>
<tr>
<td>7140567-01</td>
<td>Pump Circuit Board</td>
</tr>
<tr>
<td>7164257-1</td>
<td>Transformer With Plug</td>
</tr>
<tr>
<td>7010261</td>
<td>Gearmotor (for 500 series pump)</td>
</tr>
<tr>
<td>7018051</td>
<td>T-50-E Squeeze Tube (for 500 series pump)</td>
</tr>
<tr>
<td>7020148</td>
<td>Hose Clamp (for 500 series pump)</td>
</tr>
<tr>
<td>7501311-BK</td>
<td>500 Series Pump Body (black)</td>
</tr>
<tr>
<td>7502312</td>
<td>500 Series Pump Face Plate</td>
</tr>
<tr>
<td>750345</td>
<td>500 Series Pump Roller Block Assy</td>
</tr>
<tr>
<td>1600747</td>
<td>1/4” Barb X 1/4” Barb Fitting</td>
</tr>
<tr>
<td>7010116</td>
<td>Gearmotor (for 800 series pump)</td>
</tr>
<tr>
<td>7018068</td>
<td>T-66-E Squeeze Tube (for 800 series pump)</td>
</tr>
<tr>
<td>7020144</td>
<td>Hose Clamp (for 800 series pump)</td>
</tr>
<tr>
<td>7630330</td>
<td>800 Series Pump Face Plate</td>
</tr>
<tr>
<td>7631331</td>
<td>800 Series Pump Body (black)</td>
</tr>
<tr>
<td>7633330</td>
<td>800 Series Pump Roller Block Assy</td>
</tr>
<tr>
<td>1600713</td>
<td>3/8” Barb x 3/8” Barb Fitting</td>
</tr>
<tr>
<td>7005190</td>
<td>Conductive Probe</td>
</tr>
<tr>
<td>0200503</td>
<td>Strobe Alarm</td>
</tr>
<tr>
<td>7140586</td>
<td>CT-550 Circuit Board Assembly</td>
</tr>
<tr>
<td>7141600</td>
<td>CT-600 Circuit Board Assembly</td>
</tr>
</tbody>
</table>
OPTIONAL CT 550/600 CONTROL

The CT-550/600 circuit board is a cycle timer that controls a pump by repeatedly cycling the “on” time at the end of every “off” time (interval time). The CT-550 version has a 24 VDC pump output, whereas the CT-600 version has a relay that switches power to a 115 or 230 volt motor (or other device). The board has the option to have the pump operate as soon as power is applied (“on” first) or after the “off” interval has expired (“off” first). See details below.

On-First / Off-First

DIP switch #7 is used to select on-first/off-first operation. Which setting you choose will be based on your application requirements and how you wish for the pump to operate. In the examples shown below, if the interval time is 10 minutes and the on time is 1 minute, then the pump will run every 10 minutes when the interval time expires. The first activation of the pump is based on DIP switch #7 setting.

- When set to “ON FIRST”, the pump will begin running for the on-time immediately when powered up.
- When set to “OFF FIRST”, the pump will start counting down the interval time when powered up (before running the pump).

Priming

The pump can be primed manually while the interval time is counting down (LED flashing). Ensure that the power is on, then press and hold the START button to prime the pump. The pump will run for as long as the button is pressed.

A remote prime switch can be connected to the START terminals on the circuit board if desired. This may be helpful in applications where the pump is not easily accessible.

Setting “On” Time

The maximum ON time is 12 minutes and 42 seconds. The on time must always be shorter than the interval time for the system to “cycle” properly. If the on time is inadvertently set longer than the off time, then the pump will run continuously and will not cycle off.

1. Locate the DIP-switch pack on the circuit board — set switch #8 to PROGRAM.
2. Using a measuring cup or beaker, press Start switch and release when pump starts. Let the pump run until desired amount of chemical is dispensed then press Start switch again to stop. The on time is now programmed.
3. Set mode switch #8 to RUN MODE.

Setting “Off” (Interval) Time

The maximum OFF time (interval time) is 63 minutes. The interval time is set by selecting a combination of DIP switches 1 – 6. All switches that are turned ON will be added up to determine the total interval time. For example, if you wish to set a 20 minute interval time, set switches #3 and #5 to ON with all other switches OFF.

- For maximum off time (63 min) set all switches ON.
- When the interval time expires, it resets and begins counting down again. The pump runs for the duration of the on-time each time the interval time resets.
CT 550/600 WIRING DIAGRAM

CT-550 CIRCUIT BOARD

PUMP 2 - INTERNAL DC GEAR MOTOR PUMP ASSEMBLY (24 VDC)

SEE SYSTEM WIRING DIAGRAM FOR ALL OTHER CONNECTIONS

CT-600 CIRCUIT BOARD

PUMP 2 - EXTERNAL AC GEAR MOTOR PUMP ASSEMBLY (115 OR 230 VAC)

SEE SYSTEM WIRING DIAGRAM FOR ALL OTHER CONNECTIONS
ATTACHING FERRITES (EUROPEAN APPLICATIONS ONLY)

Ferrites can be ordered separately for European applications. They are to be installed on the signal input cable, inductive probe cable, and electric pump (EDP) cables. Only use the ferrites as needed for your application—not all applications will utilize an inductive probe, or electric pumps. All of the ferrites are to be located inside of the control box except for the inductive probe which will have the ferrite outside of the control box.

Signal Input (use ferrite 1600273)

(1) Route the signal cable through one of the small strain relief fittings on the bottom of the case.

(2) Inside of the control box, close the two halves of the ferrite around the cable and snap the halves shut.

(3) Attach the signal wires to the appropriate terminals on the circuit board.

DISCLAIMER

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

FOOTNOTE

The information and specifications included in this publication were in effect at the time of approval for printing. Knight, LLC reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.

WARRANTY

For complete product terms and conditions scan the QR code below or enter the following URL into your browser:
http://cfstech.info/t-and-c