U S Chemical

ChemMaster™

Laundry by: U S Chemical

Reference Manual

L000713

CMRM0216CLC
REV 051230

Table of Contents

ELECTRICAL CONNECTIONS

The following instructions should be read entirely before installing the ChemMaster™.

ALWAYS CHECK AND COMPLY WITH STATE AND LOCAL ELECTRICAL AND PLUMBING CODES.

Wiring should always conform to local electrical codes. This may require the use of sealtite, sealtite fittings and 600V insulated wire, 16 gauge or larger. (These items are not supplied by U S Chemical.)

The ChemMaster™ is designed to operate with low voltage “phone jack” style cable connections between the pump panel, control head and isolation module. In most cases, this eliminates the requirement for conduit or sealtite.

CHEMMASTER™ ELECTRICAL CONNECTION OVERVIEW

FIGURE 1 shows the ChemMaster™ control head. An explanation of the connections required for each detail follows.

FIGURE 1

DETAIL 1, CONSTANT POWER SOURCE CONNECTIONS

Turn off all power to the laundry machine prior to making any electrical connections. Lock and tag the power box.
For proper operation, the ChemMaster™ requires a 24 volt "constant power." U S Chemical recommends using our 24 volt AC plug in transformer. SKU NO. 011234. This transformer will be placed into a standard 115 VAC wall outlet that is near the laundry machine.

DETAIL 2, ISOLATION MODULE CONNECTIONS

The ChemMaster™ uses an isolation module to detect and isolate product signals produced by the laundry machine.
The isolation module was designed to be mounted inside the laundry machine control panel and can safely isolate signals ranging from 24 to 240 volts AC or DC. Isolated signals are reduced to 5 volt signals and transmitted through a phone cable to the ChemMaster™ controller.

MECHANICAL INSTALLATION

Securely mount the isolation module inside the laundry machine control panel using the large wire ties from the supplied hardware. Keep loose wires away from moving parts. Try to keep the isolation module unit and wires as far away from contacts and relays inside the control panel as possible. Secure the individual signal wires and signal cable with small wire ties.

ELECTRICAL CONNECTIONS

The design for the standard isolation module was chosen to give you the flexibility to use the ChemMaster™ with a wide variety of laundry machines. The diagrams and explanations that follow are three of the most commonly encountered situations.

PROGRAMMABLE MACHINES

In this instance, the laundry machine provides product signals that have a single "common" return connection.
The following wiring installation requirements must be completed:

1. Connect the individual signal wires from the isolation module to the corresponding product signal contacts of the laundry machine.
2. Unused signal wires should be capped separately with a wire nut or electrical tape and kept away from moving parts.
3. Join the two striped common return wires together, (white/red and white/orange) and connect them to the product signal "common."

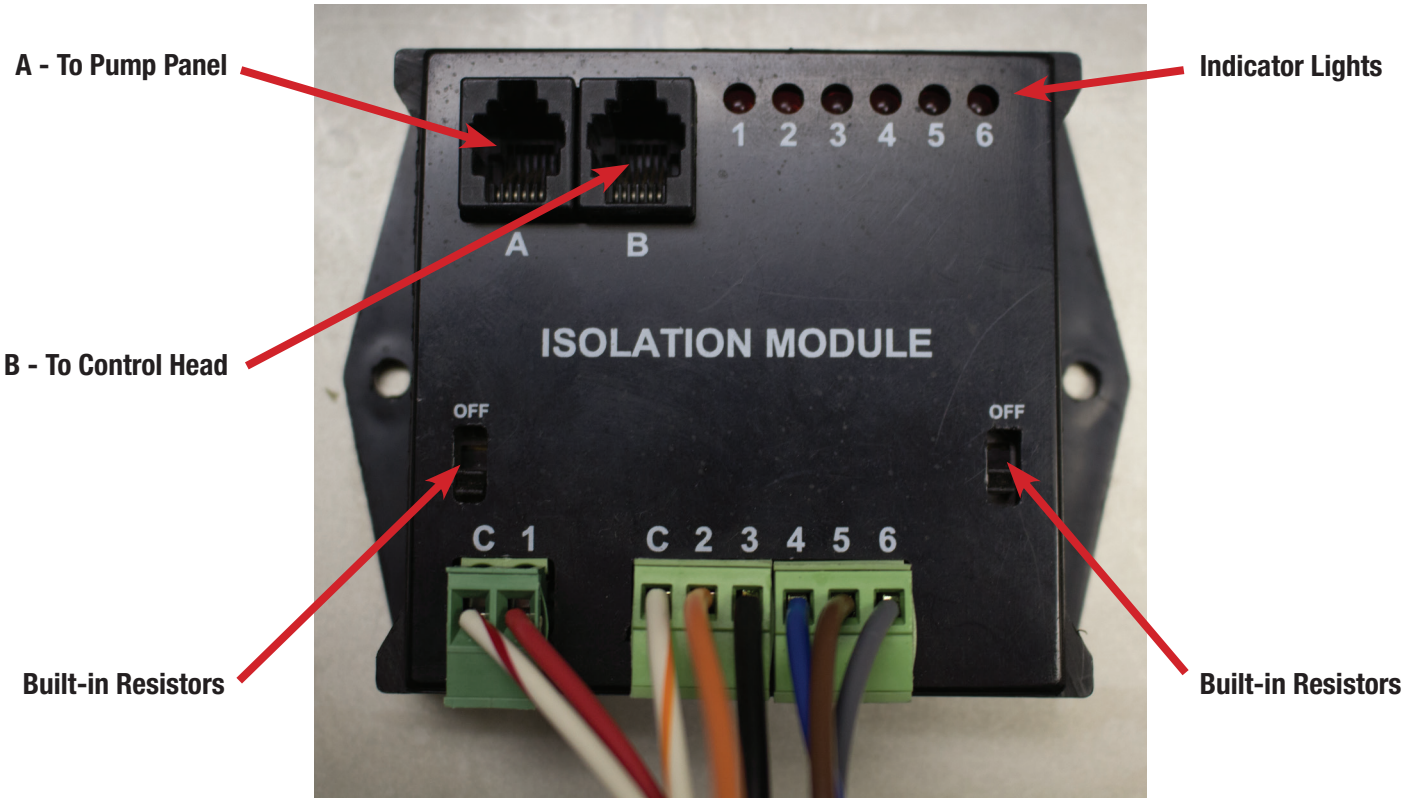


FIGURE 2

The Isolation Module is pre-wired. **Red** wire is signal 1, **Orange** wire is signal 2, **Black** wire is signal 3, **Blue** wire is signal 4, **Brown** wire is signal 5, and **Grey** wire is signal 6. The **Red/White** and **Orange/White** wires are signal commons.

When the Built-in Resistors are in the off position the ChemMaster™ will accept 24-240 volt signals. When turned on, stray voltage signals up to 60 volts will be blocked.

NON-PROGRAMMABLE MACHINE (STEP COUNT) USING DRAIN VALVE CONNECTIONS

This installation is used on laundry machines where product signals are not available. Instead, a "machine power" signal is used to signal the start of the wash cycle. The ChemMaster™ control module counts wash cycle steps using the drain valve signal as the step counter.

Since the step count is reset every time the machine power signal is turned off, you must be sure that the machine power signal comes on at the start of the wash cycle, remains on through-out the entire cycle and shuts off when the cycle is finished. The most common source of a "machine power" signal would be the "ON" light.

The following wiring installation requirements must be met:

1. Connect one of the terminals from a machine power signal to the "SIGNAL 1 / MACHINE POWER" WIRE, (red). Connect the other terminal to the signal 1 "COMMON" return wire (red/white striped).

2. Connect the orange wire from the isolation module to one of the contacts leading to the drain solenoid. Connect the orange/white striped wire to the other contact leading to the drain solenoid.

3. Unused signal wires (3-6) should be capped separately with a wire nut or electrical tape and kept away from moving parts.

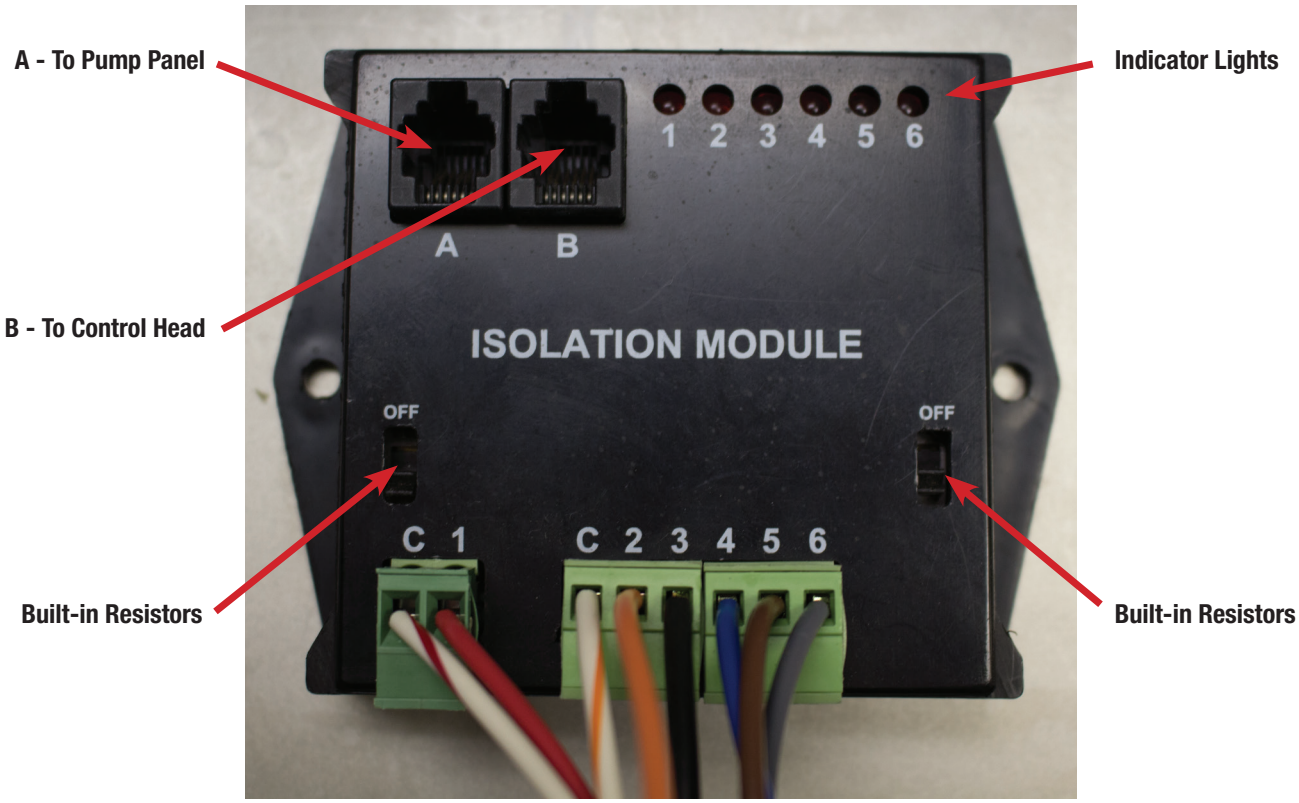


FIGURE 3

The Isolation Module is pre-wired. **Red** wire is signal 1, **Orange** wire is signal 2, **Black** wire is signal 3, **Blue** wire is signal 4, **Brown** wire is signal 5, and **Grey** wire is signal 6. The **Red/White** and **Orange/White** wires are signal commons.

NON-PROGRAMMABLE MACHINE (STEP COUNT) USING HOT AND COLD WATER VALVE

This installation is used on laundry machines where product signals are not available. Instead, a "machine power" signal is used to signal the start of a wash cycle and the ChemMaster™ control module counts each wash cycle step, using the hot and cold water solenoid valve signals as the step counter. (This method is used only when the drain valve signal is not available because water valves may be turned on at unpredictable times if the water level varies, due to a leaking drain etc.)

Since the step count is reset every time the machine power signal is turned off, you must be sure that the machine power signal comes on at the start of the wash cycle, remains on throughout the entire cycle and shuts off when the cycle is finished. The most common source of a "machine power" signal would be the "ON" light.

The following wiring installation requirements must be met:

1. Connect one of the terminals from a machine power signal to the "SIGNAL 1/ MACHINE POWER" wire, (red). Connect the other terminal to the signal 1 "COMMON" return wire (red/white striped).

2. Locate the return (common) terminal or wire for the cold and hot water solenoid valves. Connect the orange and white striped wire, to this common connection point.

3. Connect the signal 2 (orange) wire from the isolation module to the other terminal leading to the cold solenoid valve that is not common with the hot solenoid valve.

4. Connect the signal 3 (black) wire from the isolation module to the other terminal leading to the hot solenoid valve that is not common with the cold solenoid valve.

5. Unused signal wires (4-6) should be capped separately with a wire nut or electrical tape and kept away from moving parts.

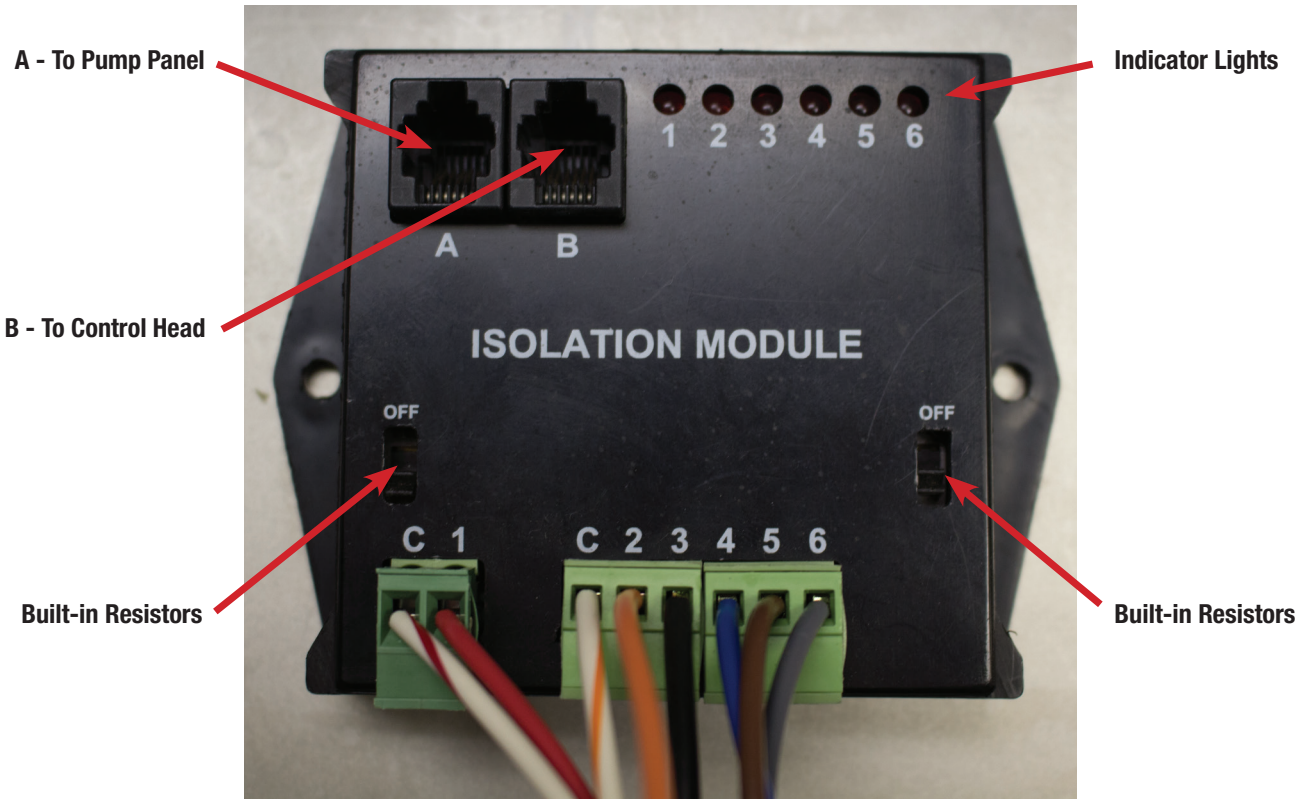


FIGURE 4

The Isolation Module is pre-wired. **Red** wire is signal 1, **Orange** wire is signal 2, **Black** wire is signal 3, **Blue** wire is signal 4, **Brown** wire is signal 5, and **Grey** wire is signal 6. The **Red/White** and **Orange/White** wires are signal commons.

DETAIL 3, CONTROLLER CONNECTIONS

Mount the ChemMaster™ Control Head unit in a convenient location where the display can be easily read, and wiring to and from the controller does not interfere with normal laundry operations. The Control Head unit can be located up to 25 feet from the isolation module or the pump panel.

Mount the Control Head unit using the provided Velcro patch.
Connect one end of the Phone Cable to the Control Head unit at the plug-in point, this is “A”.
Connect the other end of the Phone Cable to the Isolation Module at the plug-in point, this is “B”.

FIGURE 6

Control Head

To “B” position on Isolation Module

Computer terminal connection for report generation.
See page 14

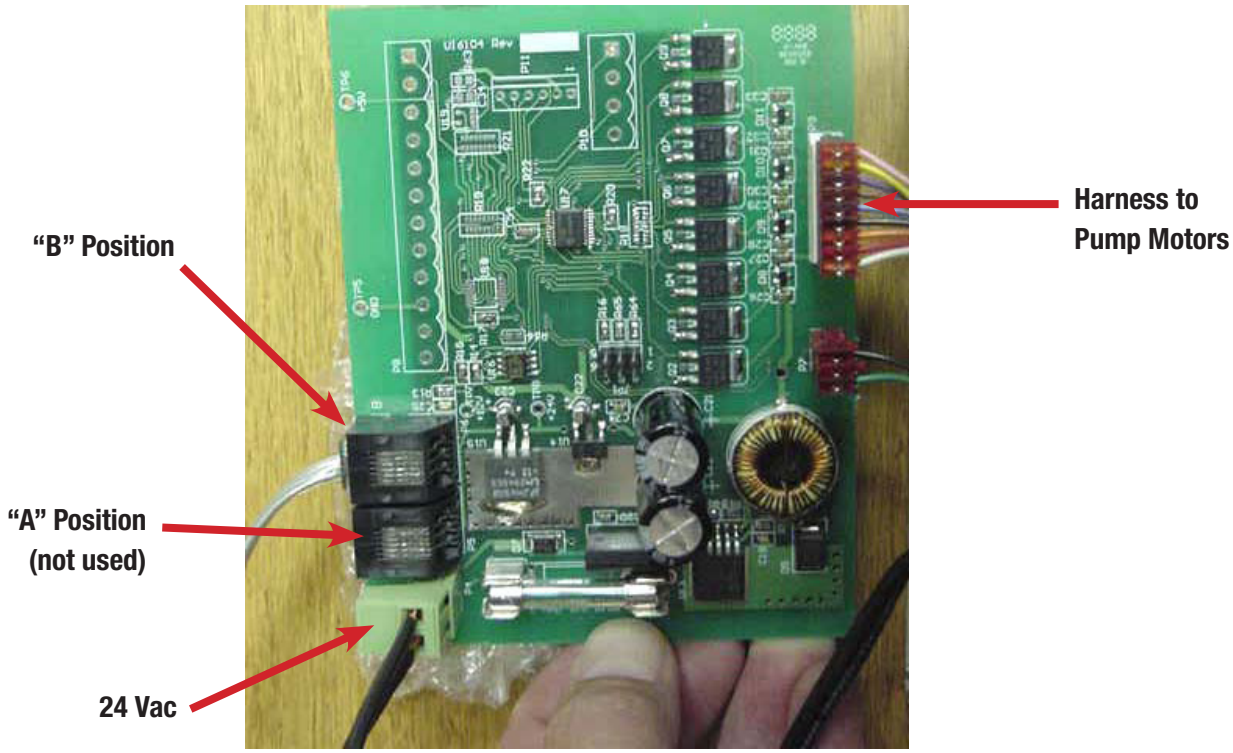
DETAIL 4, PUMP PANEL CONNECTIONS

Mount the ChemMaster™ pump panel to the wall in a convenient location.

1. Mount the pump panel using the hardware provided.
2. Remove the end cap on the left side of the pump panel.
3. Route the cables from the 24 VAC transformer and Isolation Module to the pump panel.
4. Feed both cables through the openings provided. Note: The circuit board may be slid out of the enclosure to make the electrical connections; however, there is a plug type connector that must be removed to accomplish this. When reinstalling the board, be careful to reinsert the board in the grooves (top and bottom) closest to the back of the panel. These grooves are marked red. Reconnect the plug type cable as it was originally connected.
5. Connect the 24 VAC power wires (from the transformer) to the quick connect terminal labeled “24 VAC." In the lower left corner of the board.
6. Connect the second piece of phone cable provided to the position marked “B” on the pump panel board.
7. Connect the other end of the second piece of the phone cable to the “A” position on the Isolation Module.
8. Check the quick connect contacts and be sure they are connected securely and not resting on the plastic casing.
9. Reinstall the left side pump panel end cap.

FIGURE 7

Pump Panel Connections



INSTALLATION OF PERISTALTIC PUMPS

Note: The interior rotor design has engraved markings for the position of the rollers. Position “A” is used for all laundry product applications. (See figure 8)

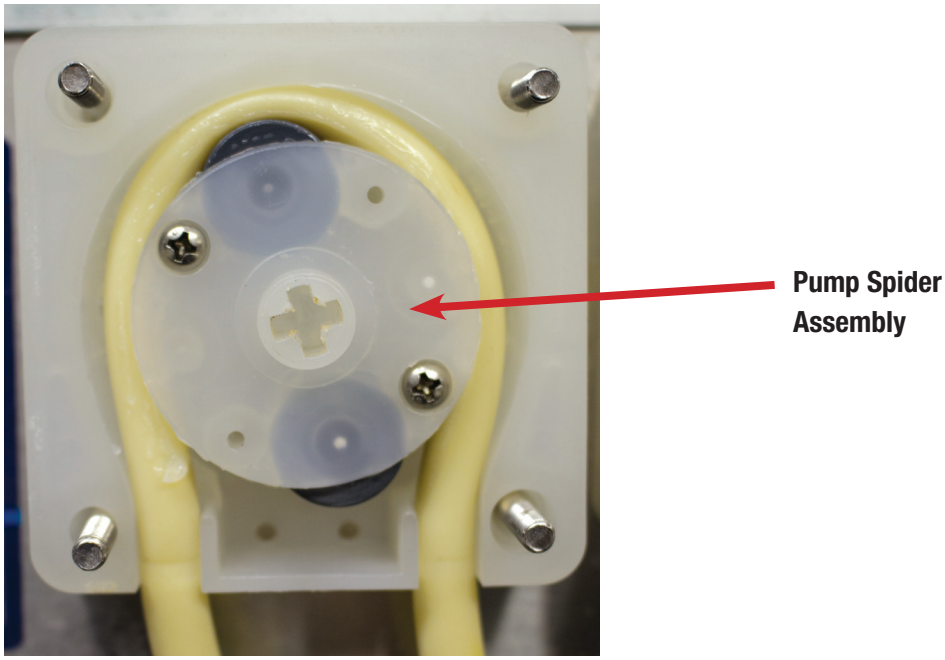


FIGURE 8

1. After removing the 4 thumb nuts holding the pump head, pull the entire assembly from the stand-off screws. Remove the faceplate from the pump head.
2. Assemble the pump head as illustrated in figure 8.
3. Generously grease the pump housing and peristaltic pump tubing with silicone grease. While rotating the spider clock wise, (a Phillips screwdriver works best) push the peristaltic pump tubing into the pump housing and center the tubing over the rollers on the spider.
4. Replace the faceplate. With the pump assembly in hand, rotate the spider several times to evenly distribute the grease.
5. Place the pump housing back onto the four stand-off screws. Rotate the spider with a Phillips screwdriver so that it falls into place with the motor’s drive shaft. Replace the four thumb nuts and tighten the thumb nuts finger tight while the pump is running to allow it to center over the motor shaft and distribute the silicone grease.
6. Product containers should be kept directly below the pumps. Standpipes are supplied with nine feet of suction tubing, which is the maximum length of tubing recommended for proper suction.

Always wear protective clothing and eyewear when handling or working in the vicinity of hazardous chemicals or other potentially harmful materials!

7. Slide the 1/4” polyflow tubing from the standpipes into the suction (left) side of the pump tubing and secure with a cable tie. (see figure 8).

8. Use the 1/4” polyflow tubing to connect the discharge (right) side of the pump head tubing to the injection point on the laundry machine. Secure the 1/4” poly flow and squeeze tube with a cable tie at the discharge side of the pump panel. This injection point could be the main fill line to the drum or a product dispensing hopper on the laundry machine.
9. Whenever possible, route the discharge tubing along a wall at a level lower than that of the injection point. Forming a loop in the discharge tubing will prevent products from draining into the machine at unwanted times, such as during an extraction cycle. (see figure 9)
10. You may also use the convenience of a manifold system.

FIGURE 9
ChemMaster™
with Flush Manifold

MANIFOLD INSTALLATION
Always check and comply with state and local plumbing and electrical codes.
A backflow preventor may be required in your area.

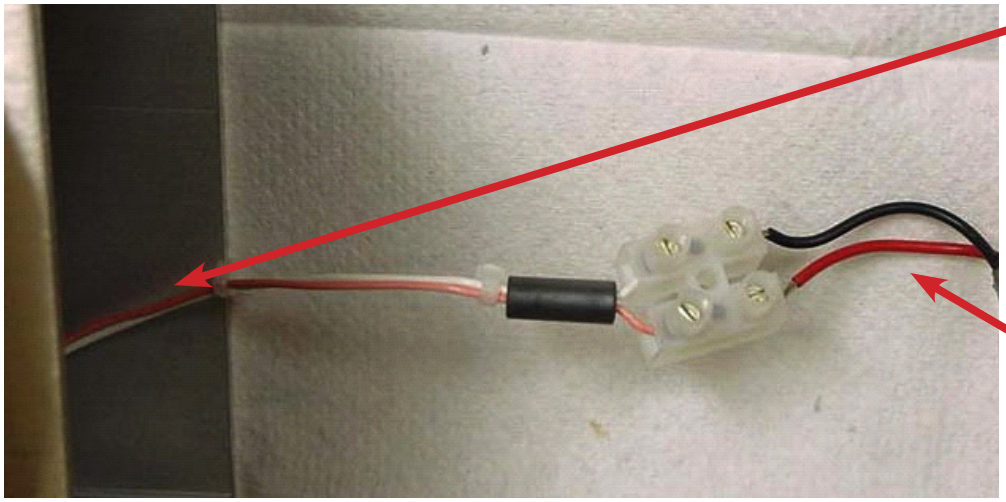
A manifold is a convenient way to dispense products into the laundry machine using only 1 discharge hose routed to the machines' injection point. This manifold uses a 24 volt DC solenoid coil. **This solenoid coil is not interchangeable with our old 24 volt AC solenoid. The coil on the DC solenoid is black, while the coil on the AC solenoid is blue.**

To use the manifold, the following must be met:

1. The manifold feature must be selected in the INITIAL SET UP. If you answer NO to the manifold system, the operational features will remain the same as if there were no flush manifold in use.
2. Once the manifold feature has been selected, you will be asked to select the flush time of 5 – 120 seconds. This time refers to a running (or flushing period) after the last pump has finished in each formula. We recommend a minimum one second flush time per foot of delivery.

3. The use of a needle valve is recommended to control the water flow rate into the injection point of the laundry machine. Adjust the needle valve to produce a flow of approximately 300 to 350 mls of water in 15 seconds.
4. Connect the 2 conductor wire to the terminal that is located inside of the pump panel on the right-hand side. Run the other end of the 2 conductor wire to the manifolds solenoid valve and connect using the slide-on terminals provided.
5. To prime or flush the manifold, select Prime Line in the Setup Menu.

FIGURE 10



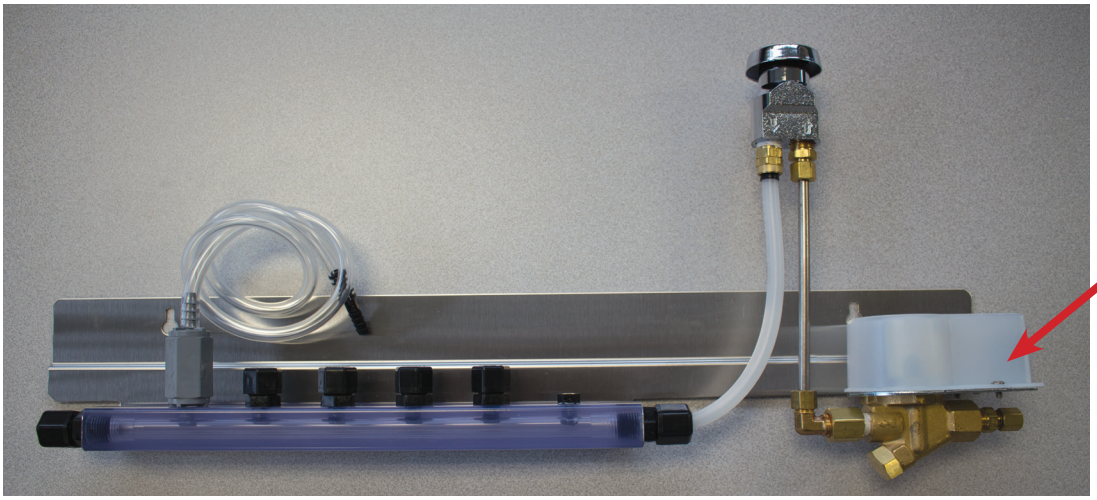


FIGURE 11
Flush Manifold

DIAGNOSTICS

The ChemMaster™ has a built in Diagnostics Menu, which allows you to individually test its subsystems, including the Controller, Isolation Module, Pump Panel and Printer Interface.

To perform diagnostics:

1. From the SUPERVISOR MENU, select DIAGNOSTICS.
2. From the DIAGNOSTIC MENU, choose the subsystem you want to test.
    A. Set TIME/DATE. This should only have to be done once. Time is set in military style.
    B. Test Signals. Use while running a load. Display will show "Input Signals_____."
    C. Test Pumps. This enables the Prime Pump feature.
    D. Test Printer. Connect laptop to ChemMaster™ with cable #D4114638 to assure correct interface. "Report Capture" program must be loaded into computer. (Note: if your computer does not have serial port, order both cables #D4114638 & #D4997936.)
    E. Reset Memory and Clear Formulas. This erases all memory – Be sure this is what you want to do!

Use the results of the diagnostics to help with trouble shooting problems that may occur in the field.

TO DOWNLOAD REPORTS

Connect the ChemMaster™ interface cable (SKU #D4114638) to the ChemMaster™ and a computer with the Report Capture program installed. (Note: If your computer does not have a serial port you will need to order an additional cable, #D4997936 interface cable USB Port adapter to serial cable.)

Open the Report Capture program

In the ChemMaster™ Supervisor's Menu, scroll to the Report Menu. Then scroll to "Print Formula Report". There are four separate reports, and any or all of them can be downloaded. Press the STOP button to download each report as it is displayed on the screen, or scroll past to the next report.

Use the icons on the top of the screen to save and/or print desired reports. It may be convenient to have folders prepared for each account, and to save the reports to the appropriate folder. The second icon from the left allows the screen to be cleared for the next use of the Report Capture program.

NEW CHEMMASTER™

SUPERVISOR MENU – PROGRAMMING INSTRUCTIONS

- Power "ON" to machine.
- The ChemMaster™ defaults to the Operator's list of formulas.
- Press and hold "STOP" until "OPERATOR MENU: SELECT FORMULA" appears on the display screen.
- Press ▲ and ▼ together to enter the "SUPERVISOR MENU".
- The SERIAL NUMBER of the control head will display briefly.
- Display screen will then read: "ENTER ACCESS CODE: 5555" (default)
- If your personal access code has been previously entered, scroll ▲ or ▼ to it, 1-9999.
- Otherwise, move to the next step.
- Press STOP.
- "CHANGE ACCESS CODE: 5555" appears on the display screen.
- Scroll ▲ or ▼ to enter - or change - your personal access code.
- Be sure to make a note of it!

SUPERVISOR MENU – PROGRAMMING INSTRUCTIONS (cont'd)

- Press "STOP" to enter the SUPERVISOR MENU.
- Scroll ▲ or ▼ to find these menu options:
  - SETUP MENU
  - FORMULA MENU
  - REPORT MENU
  - DIAGNOSTICS
  - SUPERVISOR MENU: EXIT
- Press "STOP" to enter any of these menu options.
- Thereafter, "STOP" will move you from one menu item or question to the next.
- ▲ or ▼ will enable you to answer the display screen questions, and/or enter values or names.
- The ChemMaster™ will retain whatever settings or values you set, regardless of whether its power supply is interrupted, unless you choose to delete them.

SETUP MENU

- Press STOP. Display will read "EDIT INITIAL SETTINGS."
- Scroll ▲ or ▼ to find the other SETUP MENU options:
  - INSTALL PUMP TUBES
  - PRIME PUMPS
  - CALIBRATE PUMPS
  - EXIT SETUP MENU
- Scroll to the desired option and press STOP.
- Thereafter, use ▲ or ▼ to answer display questions or to set values.
- Let's look at "EDIT INITIAL SETTINGS."
- Press STOP. Display asks the following questions:
- "MEASURING SYSTEM" - This can be in either ounces or milliliters
- Use ▲ or ▼ to select, then press STOP.
- "ENABLE USER PUMP PRIMING?"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- "MACHINE TYPE:" PROGRAMMABLE - or - NONPROGRAMMABLE
- Use ▲ or ▼ to select, then press STOP.
- Display reads: "NUMBER OF PUMPS?"
  - Use ▲ or ▼ to select 1 – 6 pumps, then press STOP.
- Display reads: PUMP 1 DISPENSES BREAK"
  - Use ▲ or ▼ to select one of the 12 preloaded product names. See Slide #24 for the selections.
  - Or, scroll to "NEW PRODUCT NAME". Press STOP.
  - Display reads: "ENTER NEW NAME". Use ▲,▼and STOP to spell out a customized name with the alpha/numeric list.
  - Scroll ▲ and enter a product name for each remaining pump.
- Press STOP. Display reads: "PUMP LOCKOUT #1 – PUMP
- Use ▲ or ▼ to select the number (left to right) of the first of two pumps that should never run into the same wash cycle. Example: DESTAINER.
- Press STOP. Display reads: "PUMP LOCKOUT #2 – PUMP
- Use ▲ or ▼ to select the number (left to right) of the second of two pumps that should never run into the same wash cycle. Example: SOUR.
  NOTE: The PUMP LOCKOUT feature eliminates the possibility of two incompatible products from ever pumping into the same machine cycle bath, even if there is a formula programming mistake!
- "FLUSH MANIFOLD IN USE?" Is a flush manifold going to be used?
  - Use ▲ or ▼ to answer YES or NO, then press STOP.
- "ADDED FLUSH TIME" # of secs. manifold runs after pump stops.
  - Use ▲ or ▼ to enter 5-120 seconds, then press STOP.
- "PRESSURE SWITCH INSTALLED?" This feature is being reviewed it is not currently available.
- Use ▲ or ▼ to answer "NO", then press STOP.
- "MINIMUM SIGNAL ON TIME:" How long is a real signal?
  - Use ▲ or ▼ to enter 5-15 seconds, then press STOP.

SETUP MENU – EDIT INITIAL SETTINGS (cont'd)

- "SAME DELAY FOR ALL PUMPS?" This sets the pump delay times. Multiple pumps for the same cycle should start at staggered times.
  - If you use ▲ to answer YES, press STOP and the display will ask:
  - "PUMP SIGNAL DELAY TIME:" Use ▲ or ▼ to enter the desired delay time in seconds (0-120) for all the pumps. Then press STOP.
  - If you use ▲ to answer NO, the display will ask:
  - "PUMP 1 SIGNAL DELAY TIME:" Use ▲ or ▼ to enter the desired delay time in seconds (0-120) for PUMP 1. Press STOP to repeat these steps for each pump, and to move ahead when the desired delay times have been entered for all of the pumps.
- "HOW MANY SIGNALS?" Use ▲ or ▼ to enter the # of signals used.
- "WHICH SIG. TURNS ON PUMP 1? SIG 1"
- Use ▲,▼and STOP to enter the signal that turns on each pump.
- "ENABLE MENU TIMEOUT?" Automatically returns the display to the formula list in the OPERATOR MENU. (In case you forget!)
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- "ENABLE BACKLIGHT TIMEOUT?" Automatically reduces power consumption of the display when the machine is not in use.
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- "ENABLE WATER USE TRACKING" Water use, based on gallons used/load entered in the FORMULA MENU. This information will then be included in the REPORT MENU printouts.
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- "MACHINE LOAD CAPACITY" What is the capacity of the machine
- Use ▲ or ▼ to enter the machine size in lbs, then press STOP.
- " LANGUAGE:" Formula names from the list in the FORMULA MENU can be displayed in either English or both Spanish and English.
- Use ▲ or ▼ to select, then press STOP.
- "INSTALL PUMP TUBES" Remembers the date when pump tubes were last changed. Press STOP, and the display will show: "TUBE 1 INSTALLED" (date) CHG?" Use ▲ for YES or NO.
- "NO" leaves the date as it was. "YES" changes it to today's date.

SETUP MENU – PRIME PUMPS

- Press STOP to scroll through the remaining pumps, and use ▲ to change pump tube installation dates, as appropriate.
- When completed, press STOP to move ahead.
- "PRIME PUMPS" This enables you to prime the pumps in preparation for pump calibration.
- Press STOP. Display screen will read: "PRIME PUMP #1" "(STOP TO PRIME)"
- Press STOP to prime the lines for PUMP #1.
- Use ▲ to move to "PRIME PUMP #2" and repeat the process.
- After the last pump is primed, the next display reads:
- "PRIME LINE"
- "(STOP TO PRIME)"
- Use STOP to activate the flush manifold solenoid. Fill the line.
  - 10 psi or 350 ml/15 seconds is recommended.
- Use ▲ to move ahead. Press STOP to "EXIT PUMP PRIME".

SETUP MENU – CALIBRATE PUMPS

- Display reads: "CALIBRATE PUMPS". Formula product quantities are set by measuring each pump's product output for 30 seconds.
- Press STOP. Display reads: "PUMP 1 _____" (date of last calibration) "_____ oz. (or ml.) CHG? YES or NO"
- Use ▲ to answer.
- If "NO" is selected, the display moves to PUMP 2 for calibration.
- If "YES" is selected, be prepared for the calibration sequence to begin. Product lines should be primed and a measuring device available to capture the output of Pump #1.

SETUP MENU – CALIBRATE PUMPS (cont.)

- Press STOP. Following display directions, press STOP again.
- Display screen shows a calibration countdown, 5-4-3-2-1. Then the pump will automatically start running, for 30 seconds.
- When complete, the display reads: “ENTER CAL VOLUME”
- Use ▲ or ▼ to enter the ounces (or mls) of product pumped during the 30 second calibration.
- Press STOP to move to the next pump calibration.
- Repeat this process until all dispenser pumps are calibrated.
- Press STOP. Display will briefly show “END OF PUMP CALIBRATION” followed by “EXIT SETUP MENU”.
- Use ▲ or ▼ to return to any setting in the SETUP MENU.
- If setup is complete, press STOP.
- Display returns to the SUPERVISOR MENU.

FORMULA MENU - Options

- Use ▲ to get to the FORMULA MENU. Press STOP.
- The FORMULA MENU has these options:
  - PROGRAM NEW FORMULA
  - REVIEW CHANGE FORMULA
  - DELETE FORMULA
  - EXIT FORMULA MENU
- Use ▲ or ▼ to select an option.
- Press STOP. Display reads “PROGRAM NEW FORMULA”.

FORMULA MENU – PROGRAM NEW FORMULA

  - Entering a Formula Name -
- Press STOP. Display asks “PROGRAM FORMULA # ”
- Use ▲ to indicate the formula number (1-32) being entered.
- Press STOP. Display asks “FORMULA # NAME:” (see **Note)
  - Use ▲ to scroll through 28 preloaded formula names. (Slide #23) When the desired name appears, press STOP.
- Or, use ▼ to find and enter a “NEW FORMULA NAME”.
- **Note: If the Display asks “OVERWRITE FORMULA?” there is already all or part of a formula entered under that formula number.
  - “YES” lets you change the existing formula.
  - “NO” takes you back to “PROGRAM FORMULA # ”
- Press STOP. Display reads “ENTER NEW NAME”
- Use ▲ and ▼ to scroll to each letter and/or number of the desired new formula name and pressing STOP to move to the next space.
- When the new name is complete , press STOP and ▼ to “END TEXT”
- Press STOP. Display reads: “ENTER ALT NAME”. This only appears if the Spanish/English display option has been selected.
- If you know the Spanish (or other) translation for the new formula name, enter it here. It will display when this formula number is selected by the Operator, if the Spanish/English option has been selected in the SETUP MENU. Enter this name as described above.

FORMULA MENU – PROGRAMMABLE INSTALLATION

- (If you are doing a “Step Mode” or nonprogrammable installation, skip to Slide #13.)
- When the desired formula name is entered, press STOP.
- The display will show the name of the product previously selected for PUMP 1, and 00.00 oz. (or mls.)
- Use ▲ or ▼ to scroll to the desired product quantity for the formula currently being entered.
- Press STOP, and repeat these steps for the remaining products.
- The next display reads: “PUMP 1” “COUNTS LOADS”
- Use ▲ to enter the number (left to right) of the pump that will be used to count loads for this formula.

FORMULA MENU – STEP MODE INSTALLATION

- Press STOP. If this is a nonprogrammable machine or a "Step Mode" installation, the display asks:
  - "HOW MANY STEPS?" This number = how many times the drain solenoid is powered "on" in the current formula. The drain is normally open, and the solenoid gets powered "on" to close it.
  - Use ▲ or ▼ to enter the correct number of steps (1-9).
- Press STOP. The next few displays will be asking which step turns on what pump(s), followed by the product quantity for that formula.
- For example:
  - "DOES STEP 1 TURN ON PUMP 1 ?" (pumps are numbered L to R)
- Use ▲ or ▼ to answer YES or NO.
- Press STOP.
- "NO" moves display to the next pump question.
- "YES" moves display to the product quantity question. For example: "BREAK" "PUMP 1 – 00.0 oz." (or ml)
- Use ▲ or ▼ to enter the desired product quantity.
- Continue to scroll through and answer all the STEP, PUMP and PRODUCT QUANTITY questions on the display screen.

FORMULA MENU - (cont'd)

- Press STOP. If "ENABLE WATER USE TRACKING" was selected in the SETUP MENU, display asks: "WATER USED IN LOAD: ____ gal"
  - Use ▲ or ▼ to enter the total number of gallons for this formula.
- Press STOP. Display asks:
  - "PROGRAM ANOTHER FORMULA?"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- If "YES", Press STOP and follow the steps above to enter new formula information.
- If "NO", Press STOP. Display returns to the FORMULA MENU.
  - Use ▲ or ▼ to scroll through FORMULA MENU options. Press STOP to select the next desired option, as follows:
  - "REVIEW CHANGE FORMULA"
- Press STOP. Display asks "REVIEW FORMULA 01?"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
  - If "NO", press STOP. Follow these steps to find the desired formula to review and/or change.
  - If "YES", press STOP and answer the display questions.

FORMULA MENU – REVIEW CHANGE FORMULAS

- Display asks: "CHANGE NAME"
  - Use ▲ or ▼ to answer YES or NO, then press STOP.
  - If "YES", press STOP.
  - Use ▲ to scroll through the list of 27 preloaded formula names. When the desired name appears, press STOP.
  - Or, use ▼ to enter a "NEW FORMULA NAME" Use ▲ or ▼ and STOP to enter the new formula name.
  - For programmable installations, display shows product quantities. Use ▲ or ▼ to change. Press STOP to move to the next product.
- For a step mode installation, display asks: "HOW MANY STEPS?"
  - Use ▲ or ▼ to enter the correct number of steps (1-9).
  - Press STOP. The STEP, PUMP and PRODUCT QUANTITY questions will display. Use ▲ or ▼ to complete.
- Press STOP. Display asks:
  - "REVIEW ANOTHER FORMULA?"
  - Use ▲ or ▼ to answer YES or NO, then press STOP.
  - If "YES", use ▲ or ▼ to the desired formula, and proceed as above.
  - If "NO", press STOP to return to the FORMULA MENU options.

FORMULA MENU – DELETE FORMULA

- Use ▲ or ▼ to scroll through FORMULA MENU options, and press STOP to select the next desired option, as follows:
- "DELETE FORMULA"
  - Press STOP. Display asks:
- "DELETE FORMULA 01?"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- If "NO", press STOP. Display moves to the next formula.
- If "YES", press STOP. Display asks "ARE YOU SURE"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- If "NO", press STOP to move to the next formula number. The formula will be retained intact.
- If "YES", press STOP. The formula is deleted, and the display will ask about deleting the next formula.
- When finished scrolling through the list of formulas, the display will briefly read "END OF FORMULAS" and then return to the FORMULA MENU options. The last option is "EXIT FORMULA MENU".

SUPERVISOR MENU – REPORT MENU

- Upon exiting the FORMULA MENU, the display will return to the main SUPERVISOR MENU.
- Use ▲ or ▼ to scroll through SUPERVISOR MENU options. (slide #4)
- The next SUPERVISOR MENU option is the "REPORT MENU"
- Press STOP.
- Use ▲ or ▼ to scroll through REPORT MENU options, including:
  - "EDIT ACCOUNT INFORMATION"
  - "EDIT MACHINE MODEL NUMBER"
  - "EDIT PRODUCT INFORMATION"
  - "EDIT SHIFT INFORMATION"
  - "VIEW SUMMARY REPORT"
  - "PRINT FORMULA REPORT"
  - "PRINT FORMULA REPORT WITH COST"
  - "PRINT SUMMARY REPORT"
  - "PRINT SUMMARY REPORT WITH COST"
  - "RESET LOAD COUNTS"
  - "EXIT REPORT MENU"
  - Press STOP to enter any of these options.

REPORT MENU – EDIT ACCOUNT INFORMATION

- Display reads: "ENTER NAME" (default name is U S Chemical).
  - Use ▲ or ▼ and STOP to enter the laundry customer's company or facility name. It will appear on the reports described later.
- Press STOP. Display reads: "EDIT MACHINE MODEL NUMBER".
  - Either use ▲ or ▼ to move to another REPORT MENU option…
  - Or, press STOP to enter this option.
  - For "EDIT MACHINE MODEL NUMBER":
- Press STOP. Use ▲ or ▼ and STOP to enter the machines make and model, such as "MILNOR EP-PLUS".
- Press STOP to move to "EDIT PRODUCT INFORMATION…"
- Press STOP. Display reads: "PUMP 1 DISPENSES BREAK"
  - Use ▲ or ▼ and STOP to enter or change the product names.

NOTE: This is identical to the steps on Slide # 11. The last names entered in either location will be in effect. If the correct names are already entered, proceed to the next entry. If you entered a customized product name, "CHANGE NAME: NO" will appear. If you want to change this product name, use ▲ to answer "YES."

- Then select or spell out the new name as described on page 17 - Formula Menu.

REPORT MENU – EDIT PRODUCT INFORMATION

- After entering the desired product name, press STOP.
- Display reads: "PUMP 1 PRODUCT - COST/GAL: $_____"
  - Use ▲ and ▼ to enter the cost per gallon of this product.
- Press STOP. The display moves to PUMP 2. Repeat previous steps.
- Press STOP. Display asks: "WATER COST PER 100 GAL: $_____"
  - Use ▲ or ▼ to enter the account's cost per 100 gallons of water.
- Press STOP. The display reads: "EDIT SHIFT INFORMATION"
- Press STOP. Display asks: "NUMBER OF SHIFTS".
  - Use ▲ or ▼ to enter the number of shifts (1-3) during which laundry is washed at the account being installed.
  - Press STOP. Display asks: "SHIFT 1 START TIME _____"
  - Note: Time is set in military style. For example, 5:30 PM is 17:30. Use ▲ or ▼ and STOP to enter starting time for the first shift.
  - Press STOP. If appropriate, enter the start times for other shifts.
- Press STOP. Use ▲ or ▼ to move to another REPORT MENU option. Press STOP again to enter the selected option.
- Display reads: "VIEW SUMMARY REPORT"
- Press STOP. Display shows the last time you "LOAD COUNT RESET".
- Press STOP. Use ▲ or ▼ to "CHECK FORMULA LOAD COUNTS", "CHECK SHIFT RESULTS" and/or "CHECK PRODUCT COSTS".
- Press STOP. Display reads: "PRINT FORMULA REPORT"
  - To save or print reports, a computer must be connected by either cable #D4114638(serial) or #D4278229(USB) to the ChemMaster™ head.
  - The computer must have the ChemMaster™ "Report Capture" program loaded. 4 reports are available.
  - Specific directions on how to review, download and save reports can be found in the new ChemMaster installation manual.
- The next display reads: "RESET LOAD COUNTS".
  - Press STOP to enter this option.
  - Display asks: "ARE YOU SURE?"
- Use ▲ or ▼ to answer YES or NO, then press STOP.
- If "YES", all load counts – or report data – saved in the ChemMaster™ memory will be reset to zero. Be sure!
- If "NO", the load counts won't be reset to zero.
- The display reads "EXIT REPORT MENU".
- Use ▲ or ▼ to select another REPORT MENU option, if desired.
- Or, press STOP to exit and return to SUPERVISOR MENU.

SUPERVISOR MENU – DIAGNOSTICS

- Press STOP. The display screen will briefly display the version and date when the circuit board was produced.
- Press STOP. Display reads: "SET TIME/DATE…"
- Press STOP. Use ▲ or ▼ and STOP to set the current time.
- Note: The time is set in military style. For example, 5:30 PM is 17:30.
- Press STOP. Use ▲ or ▼ and STOP to set the current date. (mm/dd/yy)
- Press STOP, then ▲ to "TEST SIGNALS".
- Press STOP. Display reads "INPUT SIGNALS: __ __ __ __ __ __" When running a load, the numbers show what programmable installation signals are actually being received by the isolation module from the machine.
- Press STOP, then ▲ to "TEST PUMPS".
- Press STOP. The "PRIME PUMP" feature is now available.
- Check pump and manifold operation as described above. (Slide #8)
- Press STOP, then ▲ to "TEST PRINTER". Computer must be connected to the ChemMaster™ head with appropriate cable.
- Press STOP. Display reads "PRINTER TEST" with a timer readout.
- Follow directions found the ChemMaster™ Installation Manual.

SUPERVISOR MENU – DIAGNOSTICS (cont'd)

- Press STOP, then use ▲ to "RESET MEMORY & CLEAR FORMULAS"
- Press STOP.
- Display asks: "ARE YOU SURE?"
  - Use ▲ or ▼ to answer YES or NO, then press STOP.
  - "NO" returns you to the "RESET" screen. All memory and formulas remain intact.
  - "YES" deletes all formulas and clears the ChemMaster memory.
  - Be 100% sure this is what you want to do!
  - Use ▲ or ▼ to move to another DIAGNOSTICS MENU option, or to exit and return to the SUPERVISOR MENU.
- Use ▲ or ▼ to move to another SUPERVISOR MENU option.
- If all programming is complete, scroll to "EXIT" and press STOP to return to the list of formulas in the OPERATOR'S MENU.

NEW CHEMMASTER™ 28 PRELOADED FORMULA NAMES

- TABLE LINEN COTTON
- TABLE LINEN COTTON/POLYESTER
- SHEETS – WHITE
- SHEETS – COLOR
- TOWELS – WHITE
- TOWELS – COLOR
- NAPERY – WHITE
- NAPERY – COLOR
- BLANKETS/SPREADS
- PERSONALS
- DELICATES
- HEAVY SOIL WHITE
- MEDIUM SOIL WHITE
- LIGHT SOIL WHITE
- HEAVY SOIL COLOR
- MEDIUM SOIL COLOR
- LIGHT SOIL COLOR
- RAGS AND MOPS
- PADS AND DIAPERS
- TABLE LINEN STARCH
- UNIFORMS WHITE
- UNIFORMS COLORED
- NO BLEACH
- MEDICINAL
- BLOOD/SURGICAL
- RECLAIM WHITES
- RECLAIM COLORS
- DRAPES & CURTAINS

NEW CHEMMASTER™ REPORT MENU - 12 PRODUCT NAMES

- BREAK
- BUILT DETERGENT
- COMBO
- DESTAINER
- RUST REMOVER
- SIZING
- OXYGEN BLEACH
- SOUR
- SOFT
- SOUR/SOFT
- SUDS
- WATER CONDITION

TROUBLESHOOTING GUIDE

SPECIFIC PROBLEMS, START-UP

PROBLEM: No display is present on the control head or solid rows of cursor blocks appear.

SOLUTION: Make sure electrical connections are correct, try a different set of phone cables.

SOLUTION: Measure the voltage on the 24 volt. AC terminal pins. Make sure voltage is present. If not, check to see that the 24 volt. adapter is plugged in and is operational. Also, measure the voltage on the wall outlet to make sure power is available.

SOLUTION: Check the fuse on the power supply board. If blown, replace with a 2 amp Slo-Blow fuse. (#D011269).

SOLUTION: Unplug the ChemMaster™ transformer and wait approximately 10 seconds and then reconnect.

SOLUTION: Faulty pump panel board. Replace the board.

SOLUTION: Faulty controller. Replace the controller.

SPECIFIC PROBLEMS, PROGRAMMING

PROBLEM: Cannot get into the system.

SOLUTION: Press both arrow keys simultaneously. The serial number of the unit will appear and then you must enter an access code. For first time users, the access code will be 5555.

SOLUTION: If you have forgotten an access code and need to get into the system, call U S Chemical at 1-800-424-1075. Be ready to give the technician the last three digits of the pre-programmed serial number of the system. To get the programmed serial number, press both arrow keys simultaneously. Enter the backdoor code given by the technician. When the "CHANGE ACCESS CODE" appears, toggle to yes (Y). Change the access code to one easily remembered and make a note of it.

PROBLEM: Cannot seem to find the way through the various menus.

SOLUTION: There are (2) types of menus. The SUPERVISOR and the OPERATOR. Under the SUPERVISOR menu, there is the SET UP MENU. You must press the stop key to gain access. Press the stop key again to gain access to individual categories.

Under the SUPERVISOR menu, you will be able to do an INITIAL SET-UP which allows you to choose a measur ing system, enable auto pump correction, enable user pump priming, choose machine type, select number of pumps, enable the manifold option, select a minimum signal on time, select a delay time for all the pumps, choose the amount of signals used and assign pumps to signals. You can also INSTALL TUBE (which asks for a date of tubing installation), PRIME THE PUMPS and CALIBRATE THE PUMPS.

Under the SUPERVISOR menu, there is the PROGRAM MENU. Under this category, you will PROGRAM NEW FORMULAS, REVIEW / CHANGE FORMULAS and DELETE FORMULAS.

Under the SUPERVISOR menu, there is the REPORT MENU. Under this category, you will Edit Account Information, Edit Machine Number, Edit Product Information, Edit Shift Information, Review Report Data, Print Formula report, Print Formula Report W/Cost, Print Summary Report, Print Summary Report W/Cost, and Reset Load Counts. Under the SUPERVISOR menu, there is the DIAGNOSTICS TEST. Under this category, you will be able to TEST the CONTROLLER, TEST the ISOLATION MODULE, TEST the PUMP PANEL and TEST THE PRINTER.

SPECIFIC PROBLEMS, PROGRAMMING (CONT.)

The OPERATOR menu is generally used for laundry personnel. It allows the employee to SELECT FORMULAS, GET LOAD COUNTS and PRIME THE PUMPS. (Priming of pumps is only available to the laundry personnel if enabled in the INITIAL SET UP.)

PROBLEM: A wrong value or choice has been entered.

SOLUTION: The flashing cursor means that there are several options which can be changed with the arrow keys and selected with the STOP key. It pays to go slowly through the menus. Once a wrong choice has been made, many applications ask you if your selection is correct. If not, change to the correct data. In some instances, you may be forced to start at the beginning of the particular operation to correct it.

PROBLEM: In reviewing the formulations, you discover that you have the controller set up to work with a PROGRAMMABLE machine and the machine is really NON-PROGRAMMABLE or vise versa. All wash formulations are programmed and they are not making any sense.

SOLUTION: When the machine type is changed and the formulas aren't changed, the result is that formulations will be wrong. You will have to DELETE ALL of the formulas and then reprogram them. Be sure to double check the calibration after doing so.

SPECIFIC PROBLEMS, OPERATION

PROBLEM: Fuse in pump panel blows when the pumps start.

SOLUTION: Make sure pump heads are centered on gear motor shaft. Loosen the 4 thumb nuts that hold the pump, prime the pump until the pump is centered over the gear motor shaft. Also make sure to lubricate the interior of the pumps generously with silicone grease.

SOLUTION: Make sure there are no stray wires touching together on the power supply boards quick connect terminals.

SOLUTION: Check delay times for individual pumps. If more than 2 pumps are turned on by the same signal, alter the delay time so that the pumps do not start at the same time.

SOLUTION: When trying to prime a pump and the fuse blows, try priming this pump without the pump tube installed. If the fuse still blows, check connection at the motor for shorts. If their are no shorts found, replace the motor.

PROBLEM: Pumps do not turn freely, operate at all or run for only a split second.

SOLUTION: Check the pump panel harness assembly from the pump panel to the power supply board. Make sure it is seated properly and placed on the correct pins (not shifted over).

SOLUTION: Loosen the 4 thumb nuts that hold the pump and prime the pump until the pump is centered over the gear motor drive shaft. Re-tighten finger tight only.

SOLUTION: Check the Isolation Module connections. Make sure the "commons" have been connected properly (see manual diagrams). In many instances, there has been a misunderstanding about the two striped wires having been connected together, but not to a "common" on the laundry machine.

SOLUTION: Make sure the signals have been properly assigned to the pumps.

SOLUTION: Check the INITIAL SET UP and be sure that the proper number of pumps and signals were programmed.

SOLUTION: Make sure the signals from the laundry machine are functional. Use the "ISOLATION MODULE TEST", in the DIAGNOSTICS CATEGORY under the SUPERVISOR menu.

SPECIFIC PROBLEMS, OPERATION (CONT.)

SOLUTION: Make sure the pumps have been calibrated. When the controller comes from assembly, the value for the calibration is purposely programmed at 50 oz. If the pumps are not calibrated, then they will run for only a split second.

SOLUTION: Check the delay times for individual pumps. If more than two pumps are turned on by the same signal, alter the delay time so that the pumps do not start at the same time.

PROBLEM: Pump volumes seem to be wrong.

SOLUTION: Make sure that the pumps were properly calibrated. Some people think that they should enter the volume that they want the pump to pump, and they should, of course, enter the volume that the pump actually pumped during the measurement in the calibration cycle.

SOLUTION: Make sure that the pumps are calibrated. When the system comes from assembly, the calibration is purposely programmed at 3 oz.

PROBLEM: The pumps are running backwards.

SOLUTION: The pump panel wire harness connector on the power supply board is shifted over and is not seated on the correct pins, or the wire harness connector is placed on backwards.

PROBLEM: When attempting to run a pump, the display fades out and comes back on with the OPERATOR MENU display appearing.

SOLUTION: The constant power source voltage is dropping far below the 115 volt. AC or 220 volt. U S Chemical recommends using our 24 volt AC plug in transformer #D011234. This transformer will be placed into a standard 115 volt wall outlet that is isolated from the laundry machine.

SOLUTION: To protect against stray voltage signals (up to 60 volts) use the built in resistors on the isolation module. Turn them on when signal voltage is 110 volts or higher.

PROBLEM: Load counts are wrong.

SOLUTION: Make sure that the load counter is set to an operational pump in the formula during the wash cycle.

SOLUTION: Make sure that the “Load Counting Pump” runs ONCE and only ONCE during the wash cycle. The load counting pump should also be one that runs towards the end of the wash cycle.

SOLUTION: The laundry personnel are short cycling loads, and the load counter pump never gets a chance to run.

SOLUTION: With non-programmable machines, the load counter is activated every time the “machine power signal” is turned on. If the laundry personnel start a cycle momentarily and then stop and restart it later on a regular basis, the load counts will be inflated.

PROBLEM: The Control Head Display is locked up and you cannot get anywhere.

SOLUTION: Disconnect the power source to the ChemMaster™ Control Head for approximately 10 seconds and restore power back to the system. Try different phone cables.

PROBLEM: Water from the manifold is being flushed into the product containers.

SOLUTION: REGULATE THE WATER PRESSURE FLOW INTO THE SOLENOID WITH A NEEDLE VALVE. ADJUST THE NEEDLE VALVE TO PRODUCE A FLOW OF APPROXIMATELY 300 TO 350 MLS. OF WATER IN 15 SECONDS.

PROBLEM: Products are mixing together and creating an odor when using a manifold.

SOLUTION: Have the flush time set for the manifold to at least 30 seconds. (This is the amount of time that the manifold will flush after the last pump has stopped pumping.)

SKU NO'S/PARTS LIST

Included in the *NEW* ChemMaster™ Controls are a Display Control Head, an Isolation Module, a Power Supply Board, a Pump Panel with tubes, two phone cables @ 25', and a 110 to 24 volt AC plug in transformer.

D4167650	ChemMaster™ 4 Pump Control
D4167668	ChemMaster™ 5 Pump Control
D4167676	ChemMaster™ 6 Pump Control

Install Kits need to be ordered separately and matched to your pump configuration.
They include 100' 1/4" poly flow tube, mounting hardware with product tags, and standpipes.

D011819	4 Pump Installation Kit with 5 gallon standpipes
D011839	4 Pump UA Installation Kit with 2 1/2 gallon standpipes
D011820	5 Pump Installation Kit with 5 gallon standpipe
D011840	5 Pump UA Installation Kit with 2 1/2 gallon standpipe
D011821	6 Pump Installation Kit with 5 gallon standpipes
D011844	6 Pump UA Installation Kit with 2 1/2 gallon standpipes

Options:

D4964763	Flush manifold 4-6 products with vaccum breaker
D4114638	Laptop cable interface
D4997936	Lapton cable (USB port) - (Note - if your computer has a serial port, only cable D4114638 is needed. If your computer only has USB ports, you need both cables.

Spare Parts:

D4195247	Control Head
D3405708	Power supply board
D4166876	Isolation module
D4166622	25' phone cable
D011234	110 volt to 24 volt AC plug in transformer
D4167641	2" x 4" Velcro patch
D015235	50' roll of Tygon 900 pump tubing
D015236	9" section of Tygon 900 tube
D011486	100' roll 1/4" ID x 3/8" vinyl tubing
D011479	100" roll of 1/4" poly flow tubing
D011786	Laundry Parts Kit "only"
D014499	5 gallon standpipe w/1/4" poly flow
D014311	2 1/2 gallon standpipe
D011976	Laundry standpipe tag set
D4167705	Nexus Installation Kit
D4267597	Nexus Docking Station

Spare parts:

D011269	2 amp fuse Slo-Blow
D011429	1/4" hose barb for vinyl tubing
D011422	1/4" barbed tee for vinyl tubing
D014433	1 ounce silicone grease
D011015	6" pull tie (bag of 100)
D5722491	Delivery cap angles barb
D6081606	Delivery cap straight barb
D5209356	3100 mL 2 product metal rack
D5209372	3100 mL 3 product metal rack
D5344216	MicroTech 1 product bracket
D5344195	MicroTech locking 1 product bracket
D5344241	MicroTech 2 product bracket
D5344259	MicroTech 3 product bracket

LAUNDRY MACHINE MANUFACTURERS

If difficulties arise in finding the product signals or a constant power source, contact the laundry machine manufacturer listed below for assistance.

American Laundry Machinery (Huebsch, American).....(513) 731-5500
Cincinnati, OH

G.A. Braun Inc.....(315) 475-3123
Syracuse, NY

Cook Machinery Co.....(214) 421-2135
Dallas, TX

Ellis Corp .....(312) 250-9241
Chicago, IL

Milnor.....(504) 467-9591
Kenner, LA

Speed Queen .....(414) 748-3121
Ripon, WI

The Dexter Co.....(515) 472-5131
Fairfield, IA

The Edro Corp. (Dyna Wash).....(203) 828-0311
East Berlin, CT

Unimac Company Inc. (Uniwash, Unimac).....(800) 343-1116
Marianna, FL

Washex Machinery Corp .....(817) 855-3990
Wichita Falls, TX

Wascomat Inc. (Wascomat, Wascator) .....(516) 371-0700
Inwood, NY

Zanussi Corp .....(212) 938-1966
New York, NY

WARRANTY

U S Chemical guarantees the equipment to perform as advertised for one year when properly installed and maintained. If a unit malfunctions, the distributor should remove the malfunctioning unit and return it to U S Chemical Equipment Division for repair. As a matter of policy, U S Chemical will not issue credit for any product used while equipment is malfunctioning.

When returning equipment, the distributor must call for a return authorization. Call customer service for more information 1-800-424-1075.

This U S Chemical Equipment warranty is valid only when dispensing U S Chemical products.

This U S Chemical Equipment warranty is valid only on systems manufactured by U S Chemical.

NOTE: FOR SAFETY REASONS, PLEASE REMOVE ANY TUBING CONTAINING LAUNDRY PRODUCTS, BEFORE RETURNING THE EQUIPMENT TO U S CHEMICAL FOR REPAIR!

U S Chemical

Providing Exceptional Quality Since 1962

316 Hart Street • Watertown, WI 53094 • Phone: (800) 424-1075