Washer-Extractors

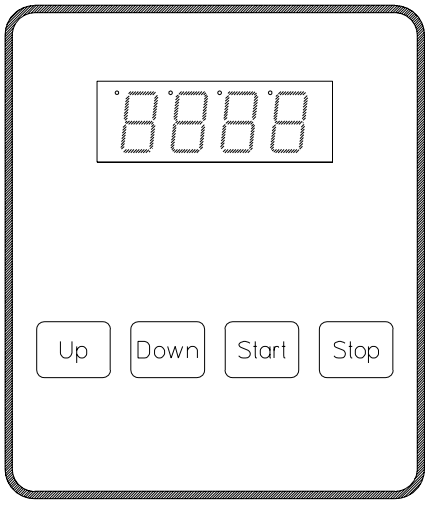
Pocket Hardmount

Variable-Speed
V-Series Microcomputer

Models UW100VV and UW125VV
For Designs 1-4

Operation/Programming

NOTA: El manual en español aparece después del manual en inglés.



PHM199R

Keep These Instructions for Future Reference.
(If this machine changes ownership, this manual must accompany machine.)

Alliance Laundry Systems

www.comlaundry.com

Part No. F232123R3
March 2006

Table of Contents

Safety

Anyone operating or servicing this machine must follow the safety rules in this manual. Particular attention must be paid to the **CAUTION**, **WARNING**, and **DANGER** blocks which appear throughout the manual.

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

SW025

WARNING

Dangerous voltages are present in the electrical control box(es) and at the motor terminals. Only qualified personnel familiar with electrical test procedures, test equipment, and safety precautions should attempt adjustments and troubleshooting. Disconnect power from the machine before removing the control box cover, and before attempting any service procedures.

SW005

The following warnings are general examples that apply to this machine. Warnings specific to a particular operation will appear in the manual with the discussion of that operation.

DANGER

Death or serious injury can result if children become trapped in the machine. Do not allow children to play on or around this machine. Do not leave children unattended while the machine door is open.

SW001

WARNING

This machine must be installed, adjusted, and serviced by qualified electrical maintenance personnel familiar with the construction and operation of this type of machinery. They must also be familiar with the potential hazards involved. Failure to observe this warning may result in personal injury and/or equipment damage, and may void the warranty.

SW004

CAUTION

Ensure that the machine is installed on a level floor of sufficient strength and that the recommended clearances for inspection and maintenance are provided. Never allow the inspection and maintenance space to be blocked.

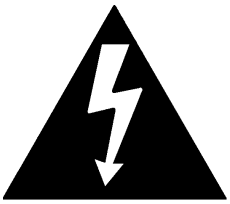
SW020

WARNING

Never touch internal or external steam pipes, connections, or components. These surfaces can be extremely hot and will cause severe burns. The steam must be turned off and the pipe, connections, and components allowed to cool before the pipe can be touched.

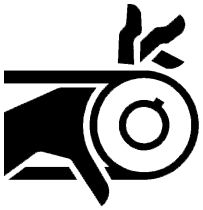
SW014

Key to Symbols



The lightning flash and arrowhead within the triangle is a warning sign indicating the presence of dangerous voltage.

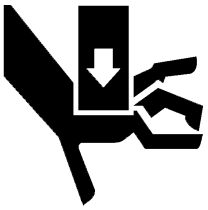
The exclamation point within the triangle is a warning sign indicating important instructions concerning the machine and possibly dangerous conditions.



This warning symbol indicates the presence of potentially dangerous drive mechanisms within the machine. Guards should always be in place when the machine is in operation.

This warning symbol indicates the presence of possibly dangerous chemicals. Proper precautions should be taken when handling corrosive or caustic materials.

This warning symbol indicates the presence of hot surfaces that could cause serious burns. Stainless steel and steam lines can become extremely hot and should not be touched.



This warning symbol indicates the presence of possibly dangerous pinch-points. Moving mechanical parts can crush and/or sever body parts.

Safety Decals

Safety decals appear at crucial locations on the machine. Failure to maintain legible safety decals could result in injury to the operator or service technician.

To provide personal safety and keep the machine in proper working order, follow all maintenance and safety procedures presented in this manual. If questions regarding safety arise, contact the factory immediately.

Use factory-authorized spare parts to avoid safety hazards.

Operator Safety

WARNING

NEVER insert hands or objects into basket until it has completely stopped. Doing so could result in serious injury.

SW012

To ensure the safety of machine operators, the following maintenance checks must be performed daily:

1. Prior to operating the machine, verify that all warning signs are present and legible. Missing or illegible signs must be replaced immediately. Make certain that spares are available.
2. Check door interlock before starting operation of the machine:
   a. Attempt to start the machine with the door open. The machine should not start with the door open.
   b. Close the door without locking it and attempt to start the machine. The machine should not start with the door unlocked.
   c. Close and lock the door and start a cycle. Attempt to open the door while the cycle is in progress. The door should not open.

   If the door lock and interlock are not functioning properly, call a service technician.
3. Do not attempt to operate the machine if any of the following conditions are present:
   a. The door does not remain securely locked during the entire cycle.
   b. Excessively high water level is evident.
   c. Machine is not connected to a properly grounded circuit.

Do not bypass any safety devices in the machine.

WARNING

Never operate the machine with a bypassed or disconnected balance system. Operating the machine with severe out-of-balance loads could result in personal injury and serious equipment damage.

SW039

Safe Operating Environment

Safe operation requires an appropriate operating environment for both the operator and the machine. If questions regarding safety arise, contact the factory immediately.

Environmental Conditions

- *Ambient Temperature*. Water in the machine will freeze at temperatures of 32°F (0°C) or below.

  Temperatures above 120°F (50°C) will result in more frequent motor overheating and, in some cases, malfunction or premature damage to solid state devices that are used in some models. Special cooling devices may be necessary.

  Water pressure switches are affected by increases and decreases in temperature. Every 25°F (10°C) change in temperature will have a 1% effect on the water level.
- *Humidity.* Relative humidity above 90% may cause the machine's electronics or motors to malfunction or may trip the ground fault interrupter. Corrosion problems may occur on some metal components in the machine.

  If the relative humidity is below 30%, belts and rubber hoses may eventually develop dry rot. This condition can result in hose leaks, which may cause safety hazards external to the machine in conjunction with adjacent electrical equipment.
- *Ventilation*. The need for make-up air openings for such laundry room accessories as dryers, ironers, or water heaters must be evaluated periodically. Louvers, screens, or other separating devices may reduce the available air opening significantly.
- *Radio Frequency Emissions*. A filter is available for machines in installations where floor space is shared with equipment sensitive to radio frequency emissions.
- *Elevation*. If the machine is to be operated at elevations of over 3280 feet (1000 meters) above sea level, pay special attention to water levels and electronic settings (particularly temperature) or desired results may not be achieved.
- *Chemicals*. Keep stainless steel surfaces freeofchemical residues.

DANGER

Do not place volatile or flammable fluids in any machine. Do not clean the machine with volatile or flammable fluids such as acetone, lacquer thinners, enamel reducers, carbon tetrachloride, gasoline, benzene, naptha, etc. Doing so could result in serious personal injury and/or damage to the machine.

SW002

- *Water Damage*. Do not spray the machine with water. Short circuiting and serious damage may result.

Machine Location

- *Foundation*. The concrete floor must be of sufficient strength and thickness to handle the floor loads generated by the high extract speeds of the machine.
- *Service/Maintenance Space*. Provide sufficient space to allow comfortable performance of service procedures and routine preventive maintenance.

  This is especially important in connection with machines equipped with an AC inverter drive.

Consult installation instructions for specific details.

CAUTION

Replace all panels that are removed to perform service and maintenance procedures. Do not operate the machine with missing guards or with broken or missing parts. Do not bypass any safety devices.

SW019

Input and Output Services

- *Water Pressure*. Best performance will be realized if water is provided at a pressure of 30 – 85 psi (2.0 – 5.7 bar). Although the machine will function properly at lower pressure, increased fill times will occur. Water pressure higher than 100 psi (6.7 bar) may result in damage to machine plumbing. Component failure(s) and personal injury could result.
- *Steam Heat (Optional) Pressure*. Best performance will be realized if steam is provided at a pressure of 30 – 80 psi (2.0 – 5.4 bar). Steam pressure higher than 125 psi (8.5 bar) may result in damage to steam components and may cause personal injury.

  For machines equipped with optional steam heat, install piping in accordance with approved commercial steam practices. Failure to install the supplied steam filter may void the warranty.
- *Compressed Air.* For machines requiring compressed air service, best performance will be realized if air is provided at a pressure of 80 – 100 psi (5.4 – 6.7 bar).
- *Drainage System*. Provide drain lines or troughs large enough to accommodate the total number of gallons that could be dumped if all machines on the site drained at the same time from the highest attainable level. If troughs are used, they should be covered to support light foot traffic.
- *Power*. For personal safety and for proper operation, the machine must be grounded in accordance with state and local codes. The ground connection must be to a proven earth ground, not to conduit or water pipes. Do not use fuses in place of the circuit breaker. An easy-access cutoff switch should also be provided.

WARNING

Ensure that a ground wire from a proven earth ground is connected to the ground lug near the input power block on this machine. Without proper grounding, personal injury from electric shock could occur and machine malfunctions may be evident.

SW008

Always disconnect power and water supplies before a service technician performs any service procedure. Where applicable, steam and/or compressed air supplies should also be disconnected before service is performed.

AC Inverter Drive

Machines equipped with the AC inverter drive require special attention with regard to the operating environment.

- An especially dusty or linty environment will require more frequent cleaning of the AC inverter drive cooling fan filter and of the AC inverter drive itself.
- Power line fluctuations from sources such as uninterruptible power supplies (UPS) can adversely affect machines equipped with the AC inverter drive. Proper suppression devices should be utilized on the incoming power to the machine to avoid problems.
- A clean power supply free from voltage spikes and surges is absolutely essential for machines equipped with the AC inverter drive. Nonlinear inconsistencies (peaks and valleys) in the power supply can cause the AC inverter drive to generate nuisance errors.

  If voltage is above 240 Volt for 200 Volt installations or above 480 Volt for 400 Volt installations, a buckboost transformer is required.
- Sufficient space to perform service procedures and routine preventive maintenance is especially important for machines equipped with the AC inverter drive.

Misuse

Never use this machine for any purpose other than washing fabric with water.

- Never wash petroleum-soaked rags in the machine. This could result in an explosion.
- Never wash machine parts or automotive parts in the machine. This could result in serious damage to the basket.
- Never allow children to play on or around this machine. Death or serious injury can result if children become trapped in the machine. Do not leave children unattended while the machine door is open. These cautions apply to animals as well.

Operation

Model Identification

Information in this manual is applicable to these models:

UW100VV*
UW125VV*

*This manual applies to models with U1, U2, U3 or U4 in the 9th and 10th positions in the model number (e.g., UW100VVXU40001). Refer to Model Number Familiarization Guide.

This manual is designed as a guide to operating and programming the 100 pound and 125 pound capacity pocket hardmount washer-extractor equipped with the V-computer and AC inverter drive.

The manuals, installation instructions, and wiring diagrams which accompany the machine have been included with the machine at no charge. Additional copies are available at a nominal charge.

NOTE: Read this manual thoroughly before attempting to operate the machine or program the microcomputer.

NOTE: Do not use this manual in conjunction with earlier model computer-controlled machines. Do not use technical literature intended for earlier models when operating this machine.

NOTE: All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

Customer Service

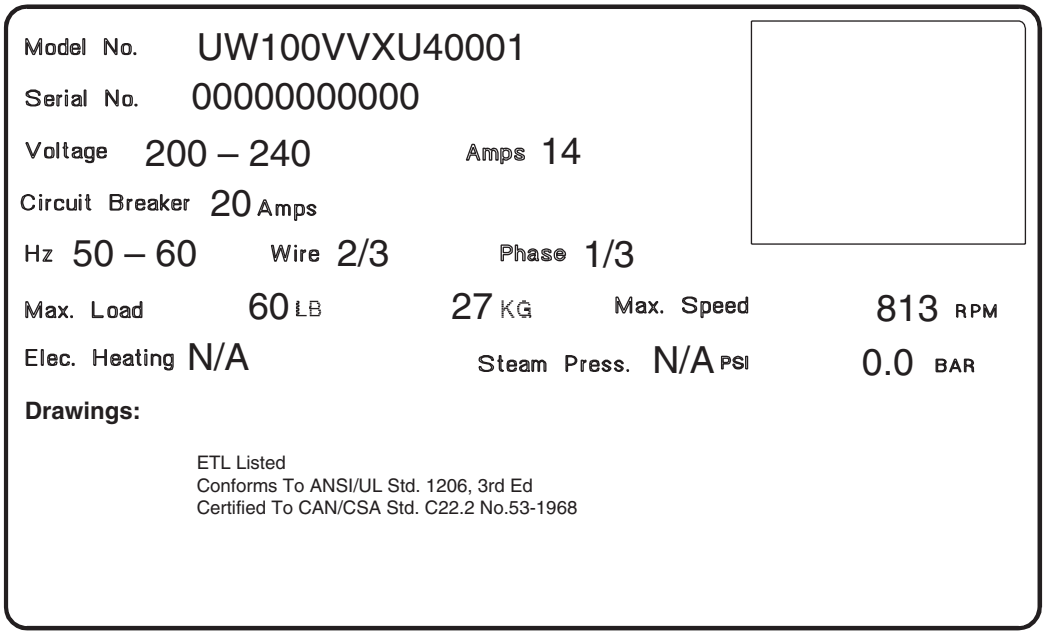
If literature or replacement parts are required, contact the source from whom the machine was purchased or contact Alliance Laundry Systems LLC at (920) 748-3950 for the name and address of the nearest authorized parts distributor.

For technical assistance call:

(920) 748-3121
Ripon, Wisconsin
www.comlaundry.com

A record of each machine is on file with the manufacturer. Always provide the machine's serial number and model number when ordering parts or when seeking technical assistance.

Model Number Familiarization Guide	
Sample Model Number: **UW100VVXU40001**	
UW	Model Number Prefix
100	Washer-Extractor Capacity (pounds dry weight of laundry)
V	Type of Electrical Control
V	Washer-Extractor Speed Capabilities
X	Electrical Characteristics
4	Design Series
0001	Option Identification (varies from machine to machine)



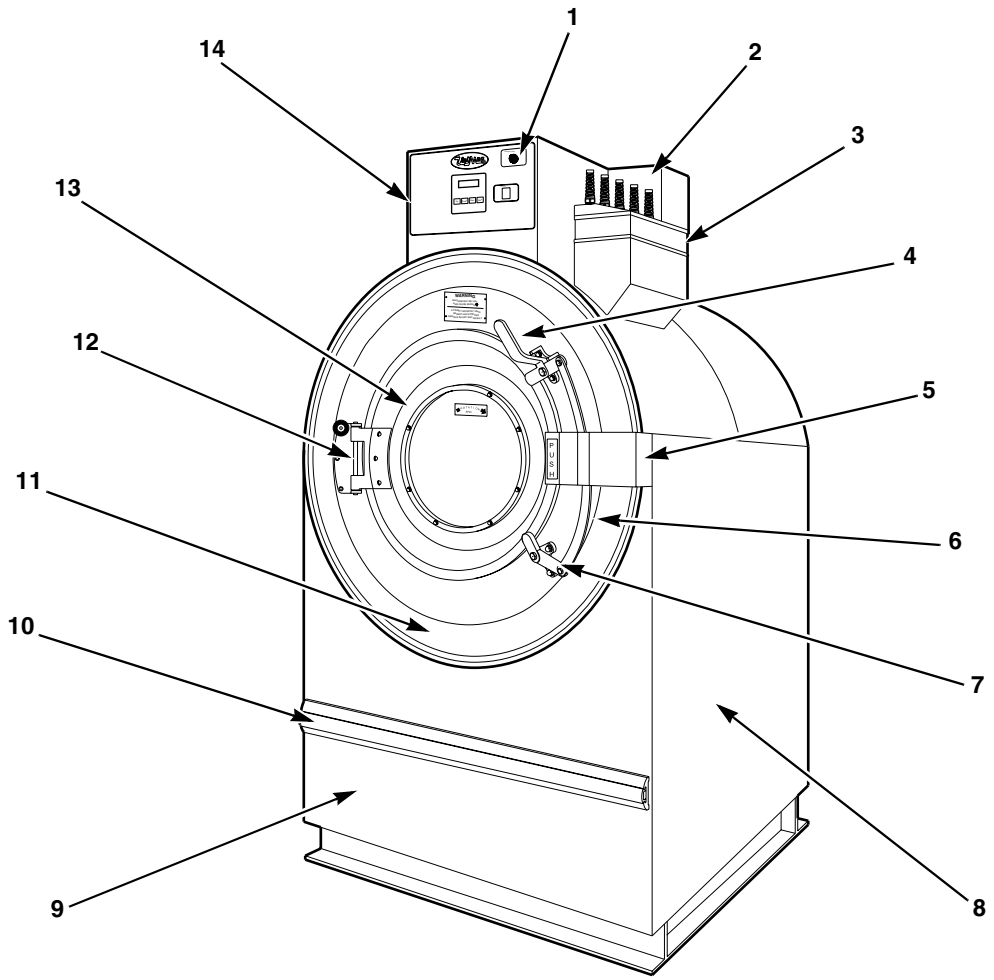
EXAMPLE OF NAMEPLATE

PHM627N

Figure 1

Machine Familiarization Guide

The machine familiarization guide in *Figure 2* provides front and rear views of the washer-extractor and identifies the major operational features of the machine.



1	Emergency Stop Button	**8**	Side Panel
2	Supply Valve Box	**9**	Front Panel
3	Supply Dispenser	**10**	Rub Rail
4	Door Handle	**11**	Shell Front
5	Door Box	**12**	Door Hinge
6	Door Latch Extension Arm	**13**	Door
7	Door Latch	**14**	Control Module

Figure 2

Theory of Operation

The design of the machine emphasizes performance reliability and long service life. The cylinder, shell, and main body panels are fabricated of stainless steel.

The cylinder is driven by a V-drive system supported via the shaft by two flange-mounted spherical roller bearings bolted to the A-frame.

The machine uses one motor to drive the cylinder via a V-belt drive in all speeds.

A door-lock system prevents opening of the stainless steel door when water is in the machine. It also prevents operation of the machine when the door is open.

Electrically operated drain valves are used to retain the water and wash solution in the machine during the wash and fill steps. The drain valve closes when power is applied and opens when power is removed, allowing the machine to drain in the event of a power failure.

The cylinder is designed with lifters or ribs that lift the garments from the wash solution when the cylinder rotates at slow speed and allow the garments to tumble back into the solution. The cylinder is perforated, allowing the water to pass through and drain from within during the wash process and extract.

Electrical controls for the machine are housed in a separate enclosure located underneath the top cover of the machine.

There are two possible load balance systems, the “AC Inverter Drive Balance Detection” and the “Overtravel Balance Detection.”

The balance detection system using the overtravel limit switch does not rely on the AC inverter drive and does not attempt to balance the load in a drain step. As the cylinder is spinning at the programmed speed, if the wash load becomes unbalanced, the overtravel limit switch is “tripped” causing the cylinder to slow to a stop until the end of the spin step.

The balance detection system using the AC inverter drive uses special balance detection software in conjunction with the V-computer to prevent out-of-balance conditions. When the AC drive detects an unbalanced load at the end of a drain step, the computer will make up to seven attempts to balance the load. After the seventh try the machine spins at a safe speed. As a fail-safe measure, an overtravel limit switch is installed.

The machine uses an AC inverter drive control which provides five motor speeds using a single motor. The solid state output board converts motor logic from the V-computer to the correct signals for the AC inverter drive.

The operator can select from among 30 cycles. A special permanent test cycle can be selected to verify proper operation of the machine.

Liquid supplies can be injected directly into the cups by a customer-supplied external chemical supply system. Five hose strain reliefs on top of the supply dispenser facilitate connection to an external supply system. A terminal strip inside a compartment attached to the left side of the control module, viewed from the rear of the washer-extractor, provides connection points for external supply signals.

V-Computer

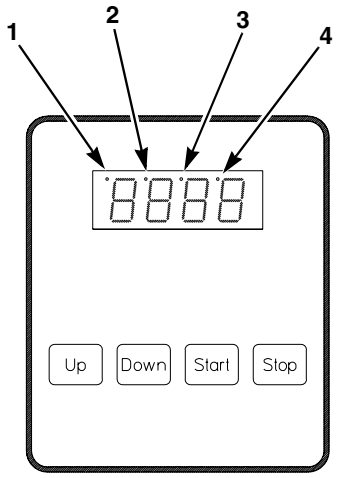
The V-computer control is a programmable solid-state control capable of storing and running up to 30 cycles. A detailed description of these cycles can be found in the ***Programming*** section of this manual.

If this machine’s computer has been equipped with special preprogrammed cycles, a separate insert listing these cycles has been included in the resealable plastic bag which contained this manual.

NOTE: Never turn the power off while the computer mode switch is in the Program position. Such action will disorder portions of the programmed data, necessitating reprogramming of some or all of the existing cycles. Always return the mode switch to Run position before turning the power off.

Keypad

Operation of the V-computer control is performed with a four-key touch keypad and LED display located on the front of the machine. Refer to *Figure 3*.



1	Out-of-Balance Condition
2	High Water Level
3	Medium Water Level
4	Low Water Level

Figure 3

Table 1 describes the function of the individual keys when the machine is in Run Mode.

Keypad	
Key	**Description**
Up	Used in cycle selection; pressing this key moves among cycles from smaller to greater.
Down	Used in cycle selection; pressing this key moves among cycles from greater to smaller.
Start	Used to start a cycle.
Stop	Used to stop a cycle.

Table 1

Conditions Monitored by the Computer

- **Door** – The computer continuously monitors the open/locked status of the door. If it detects that the door is open during a wash cycle, it immediately aborts the cycle and executes the stop routine.
- **Power** – If power is interrupted long enough for the computer to go off, after the power is restored, the display flashes “Hold” briefly to indicate the interruption. The door unlock will be disabled to keep the door from being opened while the basket is still turning.
- **Balance** – If the AC inverter balance detection system is utilized, the computer monitors the balance signal provided by the AC drive during drain steps. The computer will attempt to distribute the load seven times. The dot at the top of the leftmost display digit will light following the final unsuccessful attempt. If the inverter balance detection is not utilized, this dot will not light.
- **Water level** – The computer attempts to maintain the water level programmed for the fill preceding the agitation step. If the level falls below the programmed level, the computer will stop the time countdown and re-energize the fill valves until the level is restored.
- **Water level in a heat step** – In order for the computer to energize the heat output, there must be at least a low water level in the machine. If this minimum level is not detected, the heat output will be turned off until the required level is restored.
- **Temperature probe problem** – If the temperature sensor fails when prompted for degrees Fahrenheit, the computer flashes “tSFL” in Program Mode rather than showing the temperature. If the temperature sensor fails when prompted for degrees Celsius, the display will read “-17C” rather than showing the temperature.

Table 2 lists the various displays and what they mean. The operator should become familiar with these computer displays.

Display Indications			
Display	**Meaning**	**Display**	**Meaning**
FPC3, bP3	Program identification code (ROM) These are examples only.	Lo	Low water level
		nEd	Medium water level
Hold	Wait...power has just been turned on.	HI	High water level
CY	Cycle (followed by two-digit number)	SUP1	Supply 1
tESt/CYC*	Test cycle selected.	SUP2	Supply 2
FAr	Degrees Fahrenheit	SUP3	Supply 3
CEL	Degrees Celsius	SUP4	Supply 4
HEAt	Auxiliary heat enabled.	SUP5	Supply 5 (SETUP option)
noHt	Auxiliary heat disabled.	SUP6	Supply 6 (supply 1 and 5)
tFIL	Temperature-controlled fill enabled.	SUP7	Supply 7 (supply 3 and 4)
ntFL	Temperature-controlled fill disabled.	SLo/For**	Gentle wash speed, forward direction
CooL	Automatic cool-down enabled.	SLo/rEv**	Gentle wash speed, reverse direction
noCL	Automatic cool-down disabled.	norn/For	Normal wash speed, forward direction
Ag 1	Agitation 1 selected (90% agitation).	norn/rEv	Normal wash speed, reverse direction
Ag 2	Agitation 2 selected (33% agitation).	drAI	Drain enabled.
Ag 3	Agitation 3 selected (10% agitation).	nodr	Drain disabled.
Ag 4	Agitation 4 selected (6.7% agitation).	dISt	Distribution (load balancing before extract)
AgSn	Agitation speed normal	SPIn/tInE*	Reads “SPIn” for one second, then “tInE” followed by time for spin.
AgSL**	Agitation speed low		
PUnP	Pump output enabled (future use only).	SPn1	Lowest of three spins
nPnP	Pump output disabled (future use only).	SPn2	Middle of three spins
PrE	PreWash segment (1st of 11 segments)	SPn3	Highest of three spins
UASH	Wash segment (2nd of 11 segments)	STOP	Stop routine
FIL1	First fill (3rd of 11 segments)	SdLY	Spin coast delay
FIL2	Second fill (4th of 11 segments)	donE	Cycle and stop routine have ended.
FIL3	Third fill (5th of 11 segments)	dFLt	Drive fault detected.
FIL4	Fourth fill (6th of 11 segments)	door	Door not properly closed.
FIL5	Fifth fill (7th of 11 segments)	bAL/FAIL*†	Balancing routine failed during test cycle after 7 attempts to balance load.
FIL6	Sixth fill (8th of 11 segments)		
FIL7	Seventh fill (9th of 11 segments)	FILL/STOP*	Programmed water level not reached after 30 minutes.
FIL8	Eighth fill (10th of 11 segments)		
FIL9	Ninth fill (11th of 11 segments)	FULL	The computer detects low water level or higher when none should be present.
CFIL	Cold fill		
bFIL	Warm fill (both hot and cold)	rotA	Computer detects possible rotation of motor when there should be none.
HFIL	Hot fill		
AFIL	Auxiliary fill (SETUP option)	tSFL	Temperature sensor failure or temperature out of range.
SPC?	Special test cycle function (if present, ignore)	bAL?	Special test cycle function (if present, ignore)

* Display indications separated by a slash represent a flashing display.
** For UW100VV and UW125VV models, the washer-extractor will operate at normal wash speed regardless of the speed settings.
† This occurs only in the TEST cycle and only if the AC inverter drive balance detection is used. If the AC inverter drive balance detection is not used, this will NOT appear during the TEST cycle (note, there are two types of balance systems).

Table 2

Start-Up

Turn on the main power source (circuit breaker or cut-off switch on the wall).

An identification code will appear for approximately five seconds. Then the display will flash “Hold” briefly.

The display will then read “CY” followed by a two-digit cycle number (01 – 30) to indicate that a cycle can be selected. This display will be shown at all times when power is on between cycles, indicating that the door-unlock solenoid will function if the door-unlock button is pressed. The machine is then ready for loading and unloading.

Opening Door

Press and hold the door-unlock button next to the door handle and turn door handle upward.

Loading

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

SW025

Load the machine to full capacity whenever possible, but do not exceed the rated dry-weight capacity of the machine if the fabric to be washed is quite dense, closely woven, and heavily soiled. Overloading can result in an inferior wash. The operator may need to experiment to determine load size based on fabric content, soil content, and level of cleanliness required.

NOTE: Washing small loads can cause out-of-balance conditions which shorten life of bearing, seals, basket/shaft assembly, etc.

WARNING

Never operate the machine with a bypassed or disconnected balance system. Operating the machine with severe out-of-balance loads could result in personal injury and serious equipment damage.

SW039

When loading is complete, ensure that all fabric is inside the basket. Then close and lock the door by rotating the door handle clockwise until the door handle is horizontal. The machine should not start or run unless the door is both closed and locked.

CAUTION

Check the door safety interlock daily before the machine is placed in operation.

SW024

NOTE: When washing items which may disintegrate, such as mop heads or sponges, use laundry net bags to prevent drain blockage.

Cycle Selection

NOTE: Press keys at their centers just hard enough to activate them.

Press the Up or Down key until the desired cycle number is displayed. The computer will skip blank (unprogrammed) cycles automatically. Press the Start key to start the cycle. For a more detailed description of the preprogrammed cycles, refer to the cycle charts at the end of the ***Programming*** section.

If the computer detects that the door is not properly closed when the Start key is pressed, the display will read “door” until the door is closed and locked. Press Start again to begin the desired cycle.

Cycle Execution

A cycle can be stopped at any time by pressing the Stop key. The machine will go to the stop routine. When the routine is complete, the display shows "donE" until the door is unlocked.

To display the temperature of the water while a cycle is running, press the Up key. To display the number of the cycle in progress, press the Start key.

NOTE: The computer does not count down the remaining cycle time during fills, drains, cool-down, or prior to first achieving the programmed heat temperature when heating. The computer resumes counting down cycle time once the programmed fill level is reached, when the machine has drained, and after a programmed heat temperature is reached.

Each of the 30 cycles consists of 11 segments: PreWash, Wash, and Fills 1 – 9. A description of the various steps in a cycle segment follows:

Fill

After the Start key is pressed, the drain closes and the machine begins filling to the programmed level. Each programmed segment begins with a fill. The display counts down the remaining cycle time in minutes and seconds while the cycle is running.

If a supply is programmed in a step, the supply dispenser will flush during the fill of that segment.

If the machine is connected to an external chemical supply system, the programmed supply will begin 10 seconds into the fill. The supply will remain on until the programmed water level is reached, or until 60 seconds have elapsed, whichever happens first.

If agitation options 1 or 2 are selected for the cycle program, the cylinder will rotate slowly during the fill step. If agitation options 3 or 4 are selected for the cycle program, the cylinder will not rotate during the fill step. Refer to *Table 3* for more information.

If the computer does not receive a signal that water level has been attained within 30 minutes, it will alternately flash "STOP" and "FILL" and sound the on-board beeper for ten seconds. The computer will then initiate the stop routine.

Wash

As soon as water level is reached (and any programmed temperature is reached), the displayed time begins counting down at one-second intervals.

Agitation is active during this portion of the segment. There are four different agitation actions available. Refer to *Table 3* for more information.

Agitation Action Options		
Display	**Description**	**Percentage**
Ag 1	27 seconds forward, 3 seconds pause, 27 seconds reverse, 3 seconds pause	90%
Ag 2	10 seconds forward, 20 seconds pause, 10 seconds reverse, 20 seconds pause	33%
Ag 3	3 seconds forward, 27 seconds pause, 3 seconds reverse, 27 seconds pause	10%
Ag 4	4 seconds forward, 56 seconds pause, 4 seconds reverse, 56 seconds pause	6.7%

Table 3

If the segment contains a heat step, the machine begins heating after the water has reached the programmed level.

NOTE: If the water does not reach the programmed temperature in 40 minutes, the computer progresses to the wash step.

Drain

If the cycle program segment calls for a drain, the drain valves will open after the programmed segment time has elapsed. If a spin step follows a drain step, the cylinder will turn clockwise (forward) at wash speed for several seconds at the beginning of the drain step. This clockwise direction mirrors the spin rotation and is, therefore, also considered forward.

The cylinder then accelerates to distribution speed to help ensure that the load is evenly distributed. The drains open several seconds later.

NOTE: The machine should drain in 30 seconds. If the machine fails to drain, contact a qualified service technician.

If the cycle program segment does not call for a drain, the computer moves to the next segment of the cycle program. If the segment is at the end of a cycle program, the computer goes into the stop routine.

If the cycle program segment does not call for a spin, the cylinder will continue to turn at wash speed throughout the drain step. When the drain has completed, the computer moves to the next segment of the cycle program. If the segment is at the end of a cycle program, the computer goes into the stop routine.

NOTE: The drain step in the final segment (Fill 9) cannot be skipped.

Spin

After the drain sequence ends, the speed of the cylinder increases to the extract speed *if* the programmed spin time is *not zero*. The displayed time resumes counting down at one-second intervals.

After the programmed spin time has elapsed, the computer moves on to the fill step in the next segment of the cycle. If the spin is at the end of the cycle, the computer begins the stop routine.

Stop Routine

When the computer concludes the wash cycle or when the Stop key is pressed while a cycle is in progress, the computer goes into the stop routine.

The stop routine sequence:

- All inputs are turned off
- A brief pause, allowing the cylinder to coast down if in extract
- Brief rotation counterclockwise at wash speed
- A brief pause
- Brief rotation clockwise at wash speed
- A brief pause
- The display shows “donE”
- The door interlock is energized, allowing the door to be opened

If the stop routine seems excessively long, check for “FULL” or “rotA” messages. If this occurs, contact a qualified service technician.

WARNING

NEVER insert hands or objects into basket until it has completely stopped. Doing so could result in serious injury.

SW012

Once “donE” is displayed, open the door by pressing and holding the door-unlock button as described earlier. Once the door is opened, the computer display will show the most recent cycle number.

The machine is now ready to begin another wash cycle.

NOTE: A test cycle is provided as a means of verifying proper machine operation. Refer to the *Programming* section for instructions on running the test cycle.

Balance Detection

Each machine is equipped with either an AC inverter drive balance detection system or an overtravel limit switch balance detection system. To determine which system the machine is equipped with, consult the wiring diagram sent with the machine.

Overtravel Limit Switch Balance Detection

This system uses the overtravel limit switch only; the AC drive balance detection system is not utilized. As the cylinder is spinning at the programmed speed, if the wash load becomes unbalanced, the overtravel limit switch is "tripped" causing the cylinder to slow to a stop until the end of the spin step.

AC Inverter Drive Balance Detection

Load balance is monitored by the AC inverter drive during any drain step that immediately precedes a spin step.

If a spin step follows a drain step, the cylinder accelerates to distribution speed seven seconds into the drain step.

The computer begins monitoring the balance signal from the AC inverter drive eight seconds after the water level drops below low level. If the balance signal indicates that the wash load is evenly distributed, the computer will start the spin step.

If the balance signal indicates that the wash load is unbalanced, the computer will slow the cylinder down to wash speed for seven seconds in an attempt to redistribute the load. The computer will make as many as seven attempts if needed.

If on the seventh attempt the load is not balanced, the machine will light the out-of-balance LED indicator located in the upper left corner of the display (to the left of the first digit) until the drain step is complete. The machine will then continue the spin speed at a safe level.

If this occurs in the final segment, the machine will skip the spin step and initiate the stop routine. The out-of-balance LED indicator will remain lit until the door is opened.

As a fail-safe measure, an overtravel limit switch will "trip" during a spin if the wash load becomes severely unbalanced, slowing the cylinder to a stop until the end of the spin step.

Motor Thermal Overload Indicator

If the machine is equipped with a small indicator lamp on the side of the control module, it will light to indicate that a thermal overload switch in the motor has shut off the AC power to the computer board, thereby preventing damage to the motor caused by overheating and/or an overload condition. This feature protects and extends the life of the motor.

The thermal overload switch will automatically reset itself after the excessive heat condition has subsided.

Before attempting to restart the washer-extractor, determine the reason for the overload. The following is a partial list of possible problems:

- Washer-extractor not fully drained before spin
- Out-of-balance condition
- Low voltage
- Loss of one phase on a three-phase motor
- Bad bearings
- Air circulation blocked to motor

Contact a service technician to correct serious problems. Failure to take corrective action will ultimately result in damage to the motor and/or the inverter drive.

Programming

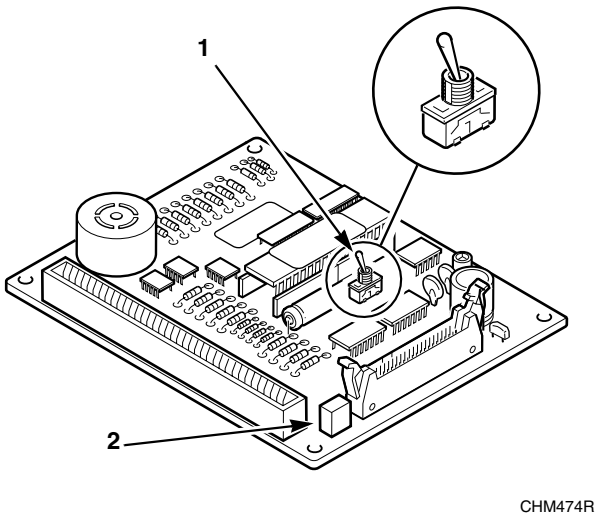
The V-computer board is inside the control module. Near the center of the board is a small toggle switch: this is the Run/Program Mode switch.

WARNING

Dangerous voltages are present in the electrical control box(es) and at the motor terminals. Only qualified personnel familiar with electrical test procedures, test equipment, and safety precautions should attempt adjustments and troubleshooting. Disconnect power from the machine before removing the control box cover, and before attempting any service procedures.

SW005

The Run/Program switch is normally in the *down* (Run Mode) position. To enter Program Mode, flip the switch to the *up* position. The display will now show the current temperature in the sump.



CHM474R

1 Run/Program Mode Switch
2 Temperature Calibration Screw

Figure 4

Since the keypad operates in a slightly different fashion when in Program Mode, pay careful attention to the programming instructions provided in this manual.

Key Functions in Program Mode

Up – The Up key is used to increase cycle numbers (1 through 30) and other numerical values such as times or temperatures (when creating wash formulas).

Down – The Down key is used to decrease cycle numbers (1 through 30) and other numerical values such as times or temperatures (when creating wash formulas).

Start – The Start key acts as an enter key in Program Mode. Use this key to enter data and move to the next function in the cycle.

Stop – The Stop key saves all data and terminates the programming procedure. If it is the first key pressed in Program Mode, the computer enters Setup Mode. The Stop key can be pressed again to exit Setup Mode and return to Program Mode.

Setup Mode

Setup options are programmable options that are in effect for all wash formulas. These options include:

- Degrees displayed in Fahrenheit or Celsius
- Auxiliary heat enabled or disabled
- Supply 5 or Auxiliary fill
- Temperature-controlled fill enabled or disabled
- Automatic cool-down enabled or disabled

NOTE: These options can be read or changed *only* in Setup Mode.

To enter Setup Mode, press the Stop key while the display is showing the temperature in the sump. Once in Setup Mode, use the Up or Down key to change the selected option. Use the Start key to accept the selected option and move on to the next one. Press the Stop key to exit Setup Mode.

Degrees Displayed in Fahrenheit or Celsius

This setup option affects the programming and display of all temperatures. If "FAr" is selected, all temperatures will display in Fahrenheit. If "CEL" is selected, all temperatures will display in Celsius. Acceptable ranges for programmable temperatures are 75° – 200°F or 25° – 93°C.

Procedure for Temperature Calibration

1. Ensure that the V-Computer has no input power applied.
2. Mount an accurate temperature sensor probe (part of temperature calibration equipment) in the bottom of the machine basket. Make sure the wires for the probe exit the top of the door to ensure the door gasket does not leak.
3. Close door and ensure that the door is locked.
4. Open machine top cover and remove control component cover(s), if necessary, to gain access to the V-Computer and output control board.

NOTE: For more accurate calibration proceed with steps 5-9. For a quick estimated calibration skip to step 10.

WARNING

Dangerous voltages are present in the electrical control box(es) and at the motor terminals. Only qualified personnel familiar with electrical test procedures, test equipment, and safety precautions should attempt adjustments and troubleshooting. Disconnect power from the machine before removing the control box cover, and before attempting any service procedures.

SW005

5. Note wire connections on the output control board for the AC Drive control. Some machines will have six wires connected to "STF," "STR," "RH," "RM," "RL," and "COM" individually or a single connector labeled "J11-1." Remove these wires or connector to ensure the basket will not rotate. Also remove the input power to the drive.

NOTE: If this step is not followed, damage can occur to the calibration temperature probe.

WARNING

NEVER insert hands or objects into basket until it has completely stopped. Doing so could result in serious injury.

SW012

6. Restore input power to the machine.
7. Wait until machine message displays "CY" followed by a two-digit cycle number (01 – 30).
8. Program one of the unused cycles to Fill to High Level using both of the water inlet valves. Select a time limit that would be sufficient to complete the calibration procedure.
9. When machine has completed the Fill to High Level, press and hold the Up key to display the machine temperature. Make sure that the V-Computer is in the correct temperature unit (deg F or C). Refer to ***Setup Mode*** section of manual to change.
10. Using a flat bladed screwdriver, turn the machine temperature calibration screw until the displayed temperature of the machine and the temperature of the temperature calibration equipment are accurate to the nearest degree (refer to *Figure 4)*.
11. When the temperatures match, calibration is completed.
12. Remove power from the machine input.
13. Reconnect any wires/connectors/fuses that were removed, making sure they are installed exactly as they were removed.
14. Reinstall all machine protective covers.
15. Remove the temperature calibration probe from the bottom of the machine basket.
16. Restore input power to machine.
17. Machine is now ready for use.

Auxiliary Heat

Heat is a dedicated output of the V-computer, which controls an optional heat source. If “noHt” is selected, the heat output will never energize during a cycle (except briefly in the test cycle to ensure that the output functions properly), regardless of programmed temperature settings. If “HEAt” is selected, the output will energize during a cycle if the three following conditions are true:

- A nonzero heat temperature is programmed.
- The computer senses that the present temperature is below the programmed target temperature.
- There is at least a low water level in the machine.

NOTE: Do not enable the auxiliary heat setup option and disable the temperature-controlled fill option on machines not equipped with auxiliary heat. The machine will pause for 40 minutes during any cycle segment where the fill water temperature does not equal or exceed the programmed value of the heat step.

Supply 5 or Auxiliary Fill

If “SUP5” is selected, the output labeled AF on the solid state output board can be used to control a fifth supply signal. This setup option must be selected to program an “SUP5” or an “SUP6” (supply 1 and supply 5 combined) in a cycle step.

If “AFIL” is selected, the output labeled AF can be used to control an auxiliary fill valve. Auxiliary fills can be programmed to low, medium, or high water level. This setup option must be selected to program an “AFIL” in a cycle step.

Temperature-Controlled Fill

If “tFIL” is selected, a temperature-controlled fill can be programmed for any segment. This setup option must be selected to program a “tFIL” in a cycle step. If “ntFL” is selected, this feature is disabled.

Automatic Cool-Down

If “CooL” is selected, the automatic cool-down feature is enabled. If the wash solution is 140°F (60°C) or higher when a cycle step calls for a drain, the washing action will continue and the cold water valve will begin flushing cold water into the wash solution. Once the wash solution temperature drops below 140°F (60°C), the drains open and the cycle continues as programmed. If “noCL” is selected, this feature is disabled.

Cycle Count

To display the current cycle count, press the Start key while the display is showing the temperature in the sump. The display will show a two-digit number indicating how many cycles have been run to completion (cycles which were stopped in progress are not counted). Press the Start key to return to Program Mode without resetting the count. Press the Up or Down key to reset the count to zero and return to Program Mode.

Cycle Programming

To edit an existing cycle or create a new cycle, press the Up key while the display is showing the temperature in the sump. The display will show “CY01.” Press the Up or Down key until the desired cycle number is displayed. Press the Start key to begin editing the selected cycle.

Cycle Options

Cycle options are programmable options that are in effect for the duration of the selected wash cycle. These options include:

- Agitation action
- Agitation speed (defaults to normal wash speed regardless of setting)
- Recirculation pump enabled or disabled (for possible future application)

NOTE: Cycle option settings are unique to the cycle for which they are programmed.

Use the Up or Down key to change the selected option. Use the Start key to accept the selected option and move on to the next one.

Agitation Action

The programmer may choose among four agitation actions. Refer to *Table 4*.

Agitation Action Options		
Display	**Description**	**Percentage**
Ag 1	27 seconds forward, 3 seconds pause, 27 seconds reverse, 3 seconds pause	90%
Ag 2	10 seconds forward, 20 seconds pause, 10 seconds reverse, 20 seconds pause	33%
Ag 3	3 seconds forward, 27 seconds pause, 3 seconds reverse, 27 seconds pause	10%
Ag 4	4 seconds forward, 56 seconds pause, 4 seconds reverse, 56 seconds pause	6.7%

Table 4

The selected agitation applies to the *entire* cycle. It is possible to progam a different agitation action for each of the 30 cycles. When “Ag 3” or “Ag 4” is in effect, there is *no* agitation during the fill.

Agitation Speed

If “AgSn” or “AgSL” is selected, the machine will default to normal wash speed regardless of the setting.

Recirculation Pump

This cycle option setting is intended to be used with a possible future recirculation application. Selecting either “nPnP” or “PUnP” will have no bearing on the wash cycle. However, the “nPnP” setting is recommended to prevent the corresponding output on the output board from energizing.

Press the Start key after selecting this last cycle option setting to begin editing the cycle segments.

Segment Programming

All cycle programs (“CY01” – “CY30”) can be customized within a preset program structure. Each cycle program consists of eleven program segments. Refer to *Table 5*.

Cycle Program Segments	
Segment	**Display**
PreWash	PrE
Wash	UASH
Fill 1	FIL1
Fill 2	FIL2
Fill 3	FIL3
Fill 4	FIL4
Fill 5	FIL5
Fill 6	FIL6
Fill 7	FIL7
Fill 8	FIL8
Fill 9	FIL9

Table 5

When modifying a cycle, a time must be entered for each segment. To skip a segment or spin, set the time to "00" and press the Start key. *Table 6* gives the time parameters for each segment and spin, as well as the allowable temperature range.

Time and Temperature Parameters		
Function	**Minimum**	**Maximum**
PreWash	2 minutes	30 minutes
Wash	2 minutes	20 minutes
Fill 1	2 minutes	15 minutes
Fill 2	2 minutes	15 minutes
Fill 3	2 minutes	15 minutes
Fill 4	2 minutes	15 minutes
Fill 5	2 minutes	15 minutes
Fill 6	2 minutes	15 minutes
Fill 7	2 minutes	15 minutes
Fill 8	2 minutes	15 minutes
Fill 9	2 minutes	15 minutes
Intermediate Spin*	30 seconds	240 seconds
Final Spin**	1 minute	10 minutes
Temperature	75°F (25°C)	200°F (93°C)
* Programmed with wash segment through Fill 8. ** Programmed with Fill 9.		

Table 6

NOTE: Spin times in cycle segments 1 – 10 are entered in seconds (30 to 240), and time for final spin in segment 11 is entered in minutes (1 to 10).

1. Press the Up key until the computer display shows the segment to be edited. Press the Start key.
2. Use the Up or Down key to select the desired segment time. Set this value to zero to skip the segment. Press the Start key.

NOTE: The computer does not count down the remaining cycle time during fills, drains, cool-down, or prior to first achieving the programmed heat temperature when heating. The computer resumes counting down cycle time once the programmed fill level is reached, when the machine has drained, and after a programmed heat temperature is reached.

3. If the temperature-controlled fill setup option is enabled, the display will show "tFIL." Press the Start key.
4. Use the Up or Down key to select the desired fill temperature. Refer to *Table 7* for fill options.

Fill Temperature Options	
Display	**Fill Type**
CFIL	Cold Fill
HFIL	Hot Fill
bFIL	Warm Fill
AFIL	Auxiliary Fill*
*This is available only if the "SUP5"/"AFIL" setup option is set to "AFIL."	

Table 7

If the temperature-controlled fill setup option is enabled and a target temperature is set, the selected fill valve(s) will energize for the first three seconds of the segment fill. The computer will then begin operating the fill valves in an attempt to reach the target temperature. Press the Start key.

5. Use the Up or Down key to select the desired fill level. Refer to *Table 8*.

Water Level Options	
Display	**Fill Level**
Lo	Low Level
nEd	Medium Level
HI	High Level

Table 8

6. Press the Start key.
7. Use the Up or Down key to select the desired supply option. Refer to *Table 9*.

Supply Options	
Display	**Supply**
SUP0	No Supply
SUP1	Supply 1
SUP2	Supply 2
SUP3	Supply 3
SUP4	Supply 4
SUP5	Supply 5*
SUP6	Supply 1 and 5*
SUP7	Supply 3 and 4
*This is available only if the "SUP5"/"AFIL" setup option is set to "SUP5."	

Table 9

8. Press the Start key.
9. If the temperature-controlled fill or the auxiliary heat setup option is enabled, use the Up or Down key to select the desired segment temperature. To disable auxiliary heat and temperature-controlled fill for this segment, set this value to zero. Press the Start key.

NOTE: If the temperature-controlled fill setup option is enabled and an auxiliary fill has been selected for the segment, the segment temperature should be set to zero. Otherwise, the auxiliary fill valve will enable for only three seconds at the beginning of the fill before the computer begins using the hot and cold fill valves to reach the programmed temperature.

10. Use the Up or Down key to select the desired drain option. If "drAI" is selected, the machine will drain after the segment time has elapsed. If "nodr" is selected, the machine will not drain and the spin step will be skipped entirely. Press the Start key.

NOTE: The drain step in the final segment (Fill 9) cannot be skipped.

11. For final "FIL9" spin only, use the Up or Down key to select the desired spin speed. Refer *Table 10*.

Spin Options	
Display	**Spin Speed**
SPn1	Low Spin
SPn2	Medium Spin
SPn3	High Spin

Table 10

12. Press the Start key.
13. Use the Up or Down key to select the desired spin time. Set this value to zero to skip the spin step. Press the Start key. The display will now show the identifier for the next program segment (or return to the temperature display if the edited segment is the Fill 9 segment).

NOTE: Every intermediate spin is followed by a 25 second coast-down period, which occurs during the fill step for the following segment.

14. Press the Stop key at any time to complete the cycle programming procedure.

Test Cycle

1. Verify that the Run/Program Mode toggle switch is in the Run position.
2. Press the Up or Down key until the display alternately flashes “tESt” and “CYC,” indicating that the test cycle is selected.
3. Press the Start key to begin the test cycle.

NOTE: If “bAL?” or “SPC?” appear on display, ignore it; computer will proceed automatically.

NOTE: Pressing the Start key while the test cycle is in progress will immediately advance to the next step in the test cycle. Drain and load balancing steps may *not* be skipped.

The test cycle is as follows:

a. Once the Start key is pressed, the door interlock is de-energized (preventing the door from being opened), the drain valve closes, the cylinder begins agitating at wash speed, and both water inlet valves are energized. The display alternately flashes “bFIL” and “Lo” (both hot and cold fill valves on, filling to low level).

b. When the water level switch indicates that low water level has been reached, the water fill valves shut off and the dot above and to the immediate left of the fourth digit of the display lights.

c. The cold water fill valve is energized. The display alternately flashes “CFIL” and “nEd” (cold fill valve on, filling to medium water level).

d. When the water level switch indicates that medium water level has been reached, the cold water fill valve shuts off and the dot above and to the immediate left of the third digit of the display lights.

e. The hot water fill valve is energized. The display alternately flashes “HFIL” and “HI” (hot fill valve on, filling to high water level).

f. When the water level switch indicates that high water level has been reached, the hot water fill valve shuts off and the dot above and to the immediate left of the second digit of the display lights.

g. The auxiliary heat output is energized, provided that the water level switch indicates that at least low water level is present. The cold water fill valve is energized. The supply 1 output is energized for five seconds. The display alternately flashes “SUP1” and “HEAt” (supply 1 output on, auxiliary heat output on).

h. The supply 2 output is energized for five seconds. The display alternately flashes “SUP2” and “HEAt” (supply 2 output on, auxiliary heat output on).

i. The supply 3 output is energized for five seconds. The display alternately flashes “SUP3” and “HEAt” (supply 3 output on, auxiliary heat output on).

j. The auxiliary heat output is turned off. The supply 4 output is energized for five seconds. The display shows “SUP4” (supply 4 output on).

k. The supply 5/auxiliary fill output energizes for five seconds. If the “SUP5”/“AFIL” setup option is set to “SUP5,” the display shows “SUP5” (supply 5/auxiliary fill output on). If the “SUP5”/“AFIL” setup option is set to “AFIL,” the display shows “AFIL” (supply 5/auxiliary fill output on).

l. The cold water fill valve turns off. The recirculation pump output is energized for ten seconds, provided that the water level switch indicates that at least low water level is present. The display shows “PUnP” (recirculation pump output on).

m. The motor rotates counterclockwise (in reverse) at normal wash speed for 60 seconds. The display alternately flashes “SLo” and “rEv” (normal wash speed, counterclockwise).

n. The motor rotates clockwise (forward) at normal wash speed for 60 seconds. The display alternately flashes “SLo” and “For” (normal wash speed, clockwise).

o. The motor rotates counterclockwise (in reverse) at normal wash speed for 60 seconds. The display alternately flashes “norn” and “rEv” (normal wash speed, counterclockwise).

p. The motor rotates clockwise (forward) at normal wash speed for 60 seconds. The display alternately flashes “norn” and “For”.

q. The display begins alternately flashing “drAI” and “For” (drain step, cylinder rotating at wash speed). The motor continues to rotate clockwise (forward) at normal wash speed for seven seconds.

r. The motor accelerates to distribution speed. The display alternately flashes “drAI” and “dISt” (drain step, cylinder rotating at distribution speed).

s. The drain opens between 15 to 27 seconds into the drain step. The water level indicator lights on the display will begin to go out, one by one, as the machine drains past each water level.

t. The computer begins monitoring the balance signal from the AC inverter drive several seconds after the water level switch indicates that water level has dropped below low level.

u. If the balance signal indicates that the wash load is unbalanced, the cylinder will slow down to wash speed for seven seconds in an attempt to redistribute the load. The computer will make as many as seven attempts, as needed, in this cycle.

NOTE: If the machine utilizes the overtravel limit switch balance detection system, the computer will proceed through the drain step and will time steps t and u. The computer will then proceed to step v.

v. The cylinder accelerates to low spin speed. The display shows “SPn1” (cylinder rotating at low spin speed). The basket rotates at low spin speed for 60 seconds.

w. The cylinder accelerates to medium spin speed. The display shows “SPn2” (cylinder rotating at medium spin speed). The basket rotates at medium spin speed for 60 seconds.

x. The cylinder accelerates to high spin speed. The display shows “SPn3” (cylinder rotating at high spin speed). The basket rotates at high spin speed for 60 seconds.

y. All outputs are turned off for roughly 20 seconds. The display shows “SdLY” (spin coast delay).

z. The computer performs the normal stop routine.

The door interlock is energized (allowing the door to be opened), provided that the water level switch indicates that water has fallen below low level and that the AC drive indicates that the motor has stopped.

Cycle Segment Charts

Segment 1 (PreWash)	
Display	**Instructions**
	Use Up or Down key to change. Press Start key to enter or advance.
PrE	
00 or 02 to 30	Select segment time: 02 to 30 minutes (00 to skip segment).
tFIL	Indicates temperature fill is enabled.*
HFIL, CFIL, bFIL, or AFIL	Select “HFIL” (hot fill), “CFIL” (cold fill), “bFIL” (warm fill), or “AFIL” (auxiliary fill).**
Lo, nEd, or HI	Select fill level: “Lo” (low), “nEd” (medium), or “HI” (high) water level.
SUP0 – SUP7	Select supply 0 – 7 (0 for no supply).***
00°F, 75° – 200°F 00°C, 25° – 93°C	Select temperature: 75° to 200°F or 25° to 93°C (00 for no heat).†
drAI or nodr	Select drain option: “drAI” (drain), “nodr” (no drain).‡
SPIn (flashed for one second)	
tInE (flashed for one second)	
00 or 30 to 240	Select time for spin: 30 to 240 seconds (00 for no spin).
* This is displayed only if temperature-controlled fills are enabled in the setup options and if the heat temperature is set to a value other than “00.” ** “AFIL” can be selected only if the “SUP5”/“AFIL” setup option is set to “AFIL.” ***“SUP5” and “SUP6” can be selected only if the “SUP5”/“AFIL” setup option is set to “SUP5.” † This value is not available when temperature-controlled fill and auxiliary heat setup options are disabled. ‡ If “nodr” is selected, the computer skips the spin step and goes on to the next segment.	

Segment 2 (Wash)	
Display	**Instructions**
	Use Up or Down key to change. Press Start key to enter or advance.
UASH	
00 or 02 to 20	Select segment time: 02 to 20 minutes (00 to skip segment).
tFIL	Indicates temperature fill is enabled.*
HFIL, CFIL, bFIL, or AFIL	Select “HFIL” (hot fill), “CFIL” (cold fill), “bFIL” (warm fill), or “AFIL” (auxiliary fill).**
Lo, nEd, or HI	Select fill level: “Lo” (low), “nEd” (medium), or “HI” (high) water level.
SUP0 – SUP7	Select supply 0 – 7 (0 for no supply).***
00°F, 75° – 200°F 00°C, 25° – 93°C	Select temperature: 75° to 200°F or 25° to 93°C (00 for no heat).†
drAI or nodr	Select drain option: “drAI” (drain), “nodr” (no drain).‡
SPIn (flashed for one second)	
tInE (flashed for one second)	
00 or 30 to 240	Select time for spin: 30 to 240 seconds (00 for no spin).
* This is displayed only if temperature-controlled fills are enabled in the setup options and if the heat temperature is set to a value other than “00.” ** “AFIL” can be selected only if the “SUP5”/“AFIL” setup option is set to “AFIL.” ***“SUP5” and “SUP6” can be selected only if the “SUP5”/“AFIL” setup option is set to “SUP5.” † This value is not available when temperature-controlled fill and auxiliary heat setup options are disabled. ‡ If “nodr” is selected, the computer skips the spin step and goes on to the next segment.	

Segments 3 – 10 (Fills 1 – 8)	
Display	**Instructions**
	Use Up or Down key to change. Press Start key to enter or advance.
FIL1, FIL2, FIL3, FIL4, FIL5, FIL6, FIL7, or FIL8	
00 or 02 to 15	Select segment time: 02 to 15 minutes (00 to skip segment).
tFIL	Indicates temperature fill is enabled.*
HFIL, CFIL, bFIL, or AFIL	Select “HFIL” (hot fill), “CFIL” (cold fill), “bFIL” (warm fill), or “AFIL” (auxiliary fill).**
Lo, nEd, or HI	Select fill level: “Lo” (low), “nEd” (medium), or “HI” (high) water level.
SUP0 – SUP7	Select supply 0 – 7 (0 for no supply).***
00°F, 75° – 200°F 00°C, 25° – 93°C	Select temperature: 75° to 200°F or 25° to 93°C (00 for no heat).†
drAI or nodr	Select drain option: “drAI” (drain), “nodr” (no drain).‡
SPIn (flashed for one second)	
tInE (flashed for one second)	
00 or 30 to 240	Select time for spin: 30 to 240 seconds (00 for no spin).
* This is displayed only if temperature-controlled fills are enabled in the setup options and if the heat temperature is set to a value other than “00.” ** “AFIL” can be selected only if the “SUP5”/“AFIL” setup option is set to “AFIL.” *** “SUP5” and “SUP6” can be selected only if the “SUP5”/“AFIL” setup option is set to “SUP5.” † This value is not available when temperature-controlled fill and auxiliary heat setup options are disabled. ‡ If “nodr” is selected, the computer skips the spin step and goes on to the next segment.	

Segment 11 (Fill 9)	
Display	**Instructions**
	Use Up or Down key to change. Press Start key to enter or advance.
FIL9	
00 or 02 to 15	Select segment time: 02 to 15 minutes (00 to skip segment).
tFIL	Indicates temperature fill is enabled.*
HFIL, CFIL, bFIL, or AFIL	Select “HFIL” (hot fill), “CFIL” (cold fill), “bFIL” (warm fill), or “AFIL” (auxiliary fill).**
Lo, nEd, or HI	Select fill level: “Lo” (low), “nEd” (medium), or “HI” (high) water level.
SUP0 – SUP7	Select supply 0 – 7 (0 for no supply).***
00°F, 75° – 200°F 00°C, 25° – 93°C	Select temperature: 75° to 200°F or 25° to 93°C (00 for no heat).†
drAI or nodr	Select drain option: “drAI” (drain), “nodr” (no drain).
SPn1, SPn2, or SPn3	Select spin speed: “SPn1” (low), “SPn2” (medium), or “SPn3” (high).
SPIn (flashed for one second)	
tInE (flashed for one second)	
00 or 01 to 10	Select time for spin: 1 to 10 minutes (00 for no spin).
* This is displayed only if temperature-controlled fills are enabled in the setup options and if the heat temperature is set to a value other than “00.” ** “AFIL” can be selected only if the “SUP5”/“AFIL” setup option is set to “AFIL.” ***“SUP5” and “SUP6” can be selected only if the “SUP5”/“AFIL” setup option is set to “SUP5.” † This value is not available when temperature-controlled fill and auxiliary heat setup options are disabled.	

V-Computer Cycle Charts

V-Computer Standard OPL Cycles								
Program	1 Permanent Press Light Soil	2 Cotton Terrycloth Light Soil	3 Permanent Press Medium Soil	4 Cotton Terrycloth Medium Soil	5 Permanent Press Heavy Soil	6 Cotton Terrycloth Heavy Soil	7 Table Napery Blends Colors	8 Table Napery Blends Whites
Agitation	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1
Wash Speed	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn
Pump	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP
PreWash								
Time (Min)	0	0	2	2	2	2	2	2
Water	---	---	Warm	Warm	Warm	Warm	Warm	Warm
Level	---	---	High	High	High	High	High	High
Supply	---	---	0	0	0	0	0	0
Temp (F)	---	---	0	0	0	0	0	0
Drain	---	---	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	---	---	0	0	0	0	0	0
Wash								
Time (Min)	7	7	7	7	6	6	9	9
Water	Hot	Hot	Hot	Hot	Hot	Hot	Hot	Hot
Level	Low	Low	Low	Low	Low	Low	Low	Low
Supply	1	1	1	1	1	1	1	1
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	0	0	0	0
Fill 1								
Time (Min)	4	4	7	7	7	7	4	7
Water	Hot	Hot	Hot	Hot	Hot	Hot	Hot	Hot
Level	High	High	Low	Low	Low	Low	High	Low
Supply	0	0	2	2	1	1	0	2
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	0	0	0	0
Fill 2								
Time (Min)	2	2	4	4	7	7	2	4
Water	Warm	Warm	Hot	Hot	Hot	Hot	Warm	Hot
Level	High	High	High	High	Low	Low	High	High
Supply	0	0	0	0	2	2	0	0
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	30	60	0	0	0	0	30	0
Fill 3								
Time (Min)	4	0	2	2	4	4	4	2
Water	Warm	---	Warm	Warm	Hot	Hot	Warm	Warm
Level	Low	---	High	High	High	High	Low	High
Supply	3	---	0	0	0	0	3	0
Temp (F)	0	---	0	0	0	0	0	0
Drain	DrAI	---	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	240	---	30	0	60	0	240	30

V-Computer Standard OPL Cycles (Continued)								
Program	1 Permanent Press Light Soil	2 Cotton Terrycloth Light Soil	3 Permanent Press Medium Soil	4 Cotton Terrycloth Medium Soil	5 Permanent Press Heavy Soil	6 Cotton Terrycloth Heavy Soil	7 Table Napery Blends Colors	8 Table Napery Blends Whites
Fill 4								
Time (Min)	0	0	4	0	2	2	0	4
Water	---	---	Warm	---	Warm	Warm	---	Warm
Level	---	---	Low	---	High	High	---	Low
Supply	---	---	3	---	0	0	---	3
Temp (F)	---	---	0	---	0	0	---	0
Drain	---	---	DrAI	---	DrAI	DrAI	---	DrAI
Spin (Sec)	---	---	240	---	30	30	---	240
Fill 5								
Time (Min)	0	0	0	0	4	0	0	0
Water	---	---	---	---	Warm	---	---	---
Level	---	---	---	---	Low	---	---	---
Supply	---	---	---	---	3	---	---	---
Temp (F)	---	---	---	---	0	---	---	---
Drain	---	---	---	---	DrAI	---	---	---
Spin (Sec)	---	---	---	---	240	---	---	---
Fill 6								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 7								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 8								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 9								
Time (Min)	0	4	0	4	0	4	0	0
Water	---	Warm	---	Warm	---	Warm	---	---
Level	---	Low	---	Low	---	Low	---	---
Supply	---	3	---	3	---	3	---	---
Temp (F)	---	0	---	0	---	0	---	---
Drain	---	---	---	DrAI	---	DrAI	---	---
Spin	---	SPn3	---	SPn3	---	SPn3	---	---
Spin (Min)	---	5	---	5	---	5	---	---

V-Computer Standard OPL Cycles (Continued)								
Program	9 VISA Table Napery Colors	10 VISA Table Napery Whites	11 Rags Heavy Soil	12 Reclaim	13 Personals with Bleach	14 Personals no Bleach	15 Delicates Spreads Cold Water	16 Delicates Spreads Warm Water
Agitation	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1
Wash Speed	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn
Pump	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP
PreWash								
Time (Min)	2	2	2	2	2	2	0	0
Water	Warm	Warm	Warm	Hot	Warm	Warm	---	---
Level	High	High	High	High	High	High	---	---
Supply	0	0	1	1	1	0	---	---
Temp (F)	0	0	0	0	0	0	---	---
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	---	---
Spin (Sec)	0	0	0	0	0	0	---	---
Wash								
Time (Min)	10	10	10	6	7	7	5	7
Water	Hot	Hot	Hot	Hot	Hot	Hot	Cold	Warm
Level	Low	Low	Low	Low	Low	Low	High	High
Supply	1	1	1	1	2	1	1	1
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	0	0	0	0
Fill 1								
Time (Min)	6	6	6	12	2	2	4	4
Water	Hot	Hot	Hot	Hot	Warm	Warm	Cold	Warm
Level	Low	Low	Low	Low	High	High	High	High
Supply	1	1	2	2	0	0	0	0
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	0	0	0	0
Fill 2								
Time (Min)	4	4	4	4	2	2	2	2
Water	Hot	Hot	Hot	Hot	Warm	Warm	Cold	Warm
Level	High	High	High	High	High	High	High	High
Supply	0	0	2	0	0	0	0	0
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	30	30	30	30
Fill 3								
Time (Min)	2	2	2	2	4	4	4	4
Water	Warm	Warm	Warm	Warm	Warm	Warm	Cold	Warm
Level	High	High	High	High	Low	Low	High	High
Supply	0	0	0	0	3	3	3	3
Temp (F)	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	240	240	240	240

V-Computer Standard OPL Cycles (Continued)								
Program	9 VISA Table Napery Colors	10 VISA Table Napery Whites	11 Rags Heavy Soil	12 Reclaim	13 Personals with Bleach	14 Personals no Bleach	15 Delicates Spreads Cold Water	16 Delicates Spreads Warm Water
Fill 4								
Time (Min)	2	2	2	2	0	0	0	0
Water	Cold	Cold	Warm	Warm	---	---	---	---
Level	High	High	High	High	---	---	---	---
Supply	0	0	0	0	---	---	---	---
Temp (F)	0	0	0	0	---	---	---	---
Drain	DrAI	DrAI	DrAI	DrAI	---	---	---	---
Spin (Sec)	30	30	60	30	---	---	---	---
Fill 5								
Time (Min)	4	4	4	4	0	0	0	0
Water	Cold	Cold	Warm	Warm	---	---	---	---
Level	Low	Low	High	Low	---	---	---	---
Supply	3	3	0	3	---	---	---	---
Temp (F)	0	0	0	0	---	---	---	---
Drain	DrAI	DrAI	DrAI	DrAI	---	---	---	---
Spin (Sec)	240	240	60	240	---	---	---	---
Fill 6								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 7								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 8								
Time (Min)	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---
Temp (F)	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---
Fill 9								
Time (Min)	0	0	4	0	0	0	0	0
Water	---	---	Warm	---	---	---	---	---
Level	---	---	Low	---	---	---	---	---
Supply	---	---	3	---	---	---	---	---
Temp (F)	---	---	0	---	---	---	---	---
Drain	---	---	DrAI	---	---	---	---	---
Spin	---	---	SPn3	---	---	---	---	---
Spin (Min)	---	---	6	---	---	---	---	---

NOTE: Preprogrammed cycles 17 – 20 are blank.

V-Computer Export OPL Cycles										
Program	21 Normal 90°C (PreWash)	22 Normal 90°C	23 Normal 60°C (PreWash)	24 Normal 60°C	25 Normal 40°C (PreWash)	26 Permanent Press 90°C (PreWash)	27 Permanent Press 90°C	28 Permanent Press 60°C (PreWash)	29 Permanent Press 60°C	30 Fine 40°C
Agitation	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 1	Ag 2
Wash Speed	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn	AgSn
Pump	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP	nPnP
PreWash										
Time (Min)	8	0	8	0	6	8	0	8	0	6
Water	Cold	---	Cold	---	Cold	Cold	---	Cold	---	Cold
Level	High	---	High	---	High	High	---	High	---	High
Supply	1	---	1	---	1	1	---	1	---	1
Temp (C)	40°	---	40°	---	40°	40°	---	40°	---	40°
Drain	DrAI	---	DrAI	---	DrAI	DrAI	---	DrAI	---	DrAI
Spin (Sec)	0	---	0	---	0	0	---	0	---	0
Wash										
Time (Min)	10	10	10	10	8	10	10	10	10	8
Water	Hot	Hot	Hot	Hot	Both	Hot	Hot	Hot	Hot	Both
Level	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Supply	2	2	2	2	2	2	2	2	2	2
Temp (C)	90°	90°	60°	60°	40°	90°	90°	60°	60°	40°
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	0	0	0	0	0	0	0	0	0	0
Fill 1										
Time (Min)	0	0	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---	---	---
Temp (C)	---	---	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---	---	---
Fill 2										
Time (Min)	0	0	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---	---	---
Temp (C)	---	---	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---	---	---
Fill 3										
Time (Min)	2	2	2	2	2	2	2	2	2	2
Water	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold
Level	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Supply	0	0	0	0	0	0	0	0	0	0
Temp (C)	0	0	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	30	30	30	30	30	30	30	30	30	30

V-Computer Export OPL Cycles (Continued)										
Program	21 Normal 90°C (PreWash)	22 Normal 90°C	23 Normal 60°C (PreWash)	24 Normal 60°C	25 Normal 40°C (PreWash)	26 Permanent Press 90°C (PreWash)	27 Permanent Press 90°C	28 Permanent Press 60°C (PreWash)	29 Permanent Press 60°C	30 Fine 40°C
Fill 4										
Time (Min)	2	2	2	2	2	2	2	2	2	2
Water	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold
Level	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Supply	0	0	0	0	0	0	0	0	0	0
Temp (C)	0	0	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	30	30	30	30	30	30	30	30	30	30
Fill 5										
Time (Min)	2	2	2	2	2	2	2	2	2	2
Water	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold
Level	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Supply	0	0	0	0	0	0	0	0	0	0
Temp (C)	0	0	0	0	0	0	0	0	0	0
Drain	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI	DrAI
Spin (Sec)	30	30	30	30	30	30	30	30	30	30
Fill 6										
Time (Min)	0	0	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---	---	---
Temp (C)	---	---	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---	---	---
Fill 7										
Time (Min)	0	0	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---	---	---
Temp (C)	---	---	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---	---	---
Fill 8										
Time (Min)	0	0	0	0	0	0	0	0	0	0
Water	---	---	---	---	---	---	---	---	---	---
Level	---	---	---	---	---	---	---	---	---	---
Supply	---	---	---	---	---	---	---	---	---	---
Temp (C)	---	---	---	---	---	---	---	---	---	---
Drain	---	---	---	---	---	---	---	---	---	---
Spin (Sec)	---	---	---	---	---	---	---	---	---	---
Fill 9										
Time (Min)	2	2	2	2	2	2	2	2	2	2
Water	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold	Cold
Level	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Supply	3	3	3	3	3	3	3	3	3	3
Temp (C)	0	0	0	0	0	0	0	0	0	0
Spin	SPn3	SPn3	SPn3	SPn3	SPn3	SPn3	SPn3	SPn3	SPn3	SPn2
Spin (Min)	6	6	6	6	6	2	2	2	2	2

Cycle Programming Worksheet

Program		PreWash		Wash	
Title		Time (Min)		Time (Min)	
		Water		Water	
		Level		Level	
Cycle		Supply		Supply	
Agitation		Temp		Temp	
Wash Speed		Drain		Drain	
Pump		Spin (Sec)		Spin (Sec)	
Fill 1		**Fill 2**		**Fill 3**	
Time (Min)		Time (Min)		Time (Min)	
Water		Water		Water	
Level		Level		Level	
Supply		Supply		Supply	
Temp		Temp		Temp	
Drain		Drain		Drain	
Spin (Sec)		Spin (Sec)		Spin (Sec)	
Fill 4		**Fill 5**		**Fill 6**	
Time (Min)		Time (Min)		Time (Min)	
Water		Water		Water	
Level		Level		Level	
Supply		Supply		Supply	
Temp		Temp		Temp	
Drain		Drain		Drain	
Spin (Sec)		Spin (Sec)		Spin (Sec)	
Fill 7		**Fill 8**		**Fill 9**	
Time (Min)		Time (Min)		Time (Min)	
Water		Water		Water	
Level		Level		Level	
Supply		Supply		Supply	
Temp		Temp		Temp	
Drain		Drain		Spin	
Spin (Sec)		Spin (Sec)		Spin (Min)	