UTILIZER III

DISHMACHINE ENERGY SAVER

INSTALLATION AND OPERATING MANUAL

Beta

PREFACE

This manual describes how to install, set up, operate and maintain the Utilizer III Dishmachine Energy Saver System.

Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via Technical Service Bulletins.

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FEATURES

Utilizer III is an energy saving shutdown device for rack and flight type dishmachines, with the following features:

- Shuts down pumps, motors, final rinse, and electric booster heaters (optionally) when ware is not being processed through the dishmachine.
- Allows the dishmachine to maintain water temperature and chemical concentrations so that proper solution is instantly delivered when ware enters the machine.
- Savings are realized in electrical energy for pumps and motors, the by-products of water and sewage costs, and the cost of energy needed to heat the water.
- Can reduce operating costs on most high temperature dish machines.

ARCHITECTURE

The Utilizer III is built around a rugged, all purpose printed circuit board (see Figure 1) that works in both rack and flight type dishmachines without modification. It may also be used in existing Rack Type 2 and Flight Type 2 dishmachines as a replacement board.

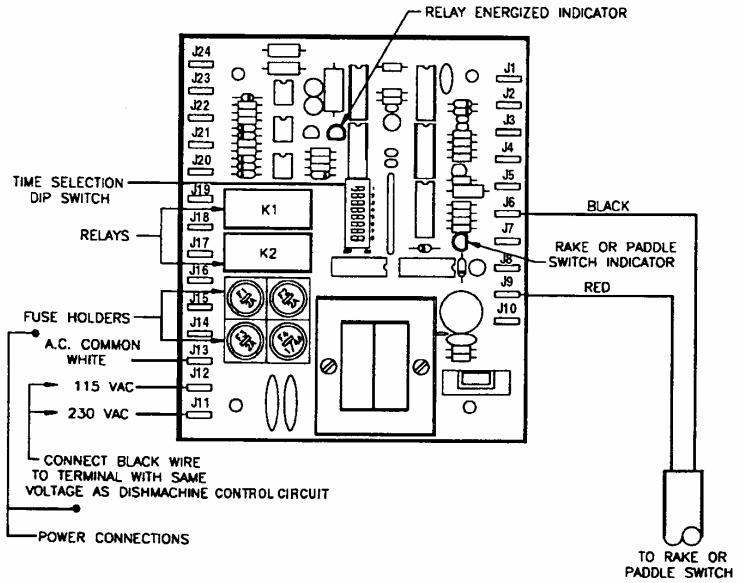

Figure 1. Utilizer III Printed Circuit Board

Solid state lights (LEDs) replace the incandescent lights used on previous systems. A large 3-position rocker switch with protective metal guards

replaces the toggle switch. A rake/paddle switch indicator on the Utilizer III board gives a visual indication when the rake or paddle switch is activated. All internal quick connectors are now fully insulated. The transformer primary and all relay contacts are fused. The new fuse holders are fully insulated and their design eliminates any shock hazard when replacing fuses. The relays are socketed to allow field replacement and the PCB is conformably coated to reduce the problems that occur when water gets on the board.

OPERATION

As racks or dishes enter the machine, they trip a start sensor which activates all appropriate pumps, motors and final rinse flow. Upon activation of this sensor, a preset timed cycle begins counting down. If another rack or dish enters the machine, the timer automatically resets and begins counting down to zero. When the timer reaches zero, the Utilizer III shuts down all appropriate functions.

In flight installations, the Utilizer III can sense when the conveyor brake switch has been engaged and will shut down the machine until ware is removed from the conveyor brake. The Utilizer III timer will hold the remaining time in memory until the obstruction is removed. This ensures that every piece of ware will get a complete wash without the operator having to go to the front of the dishmachine and re-trigger the unit.

The Utilizer III can shut down electric booster heaters at night or in-between meal periods while still allowing the booster to activate as needed when the machine is in an idle stage or washing dishes.

INSTALLATION REQUIREMENTS

Some machines may already have energy saving shutdown devices factory installed. In general, these are all low temperature machines and some Stero, ADS, Champion, Hobart and Insinger high temperature machines.

The Utilizer III should not be installed on any machine that already has an energy saving shutdown feature.

To install a Utilizer III, the dishmachine must have magnetic motor contactors. Dishmachines that have non-spring loaded start buttons (where one button stays in until the opposite button is pushed in) have manual starters. If the dishmachine does not have magnetic contactors, they must be installed by a service company prior to installing the Utilizer III. Do not attempt installation of magnetic contactors yourself.

WIRING

Wiring power to the Utilizer III PCB requires that the white wire always go to J13. For 230 VAC, the black wire goes to J11. For 115 VAC, move the black wire to J12. An insulated connector without any attached wire should be placed over the unused power terminal as a safety precaution. Attach the green wire for the chassis ground to the unused mounting stud near the bottom left of the Utilizer III box. The Utilizer III is shipped factory-wired for 230 VAC. See Figure 1.

Wiring to the dishmachine is the same as with previous Utilizers, even though some wire colors have changed. See Figure 2 and the wiring comparison charts that follow it.

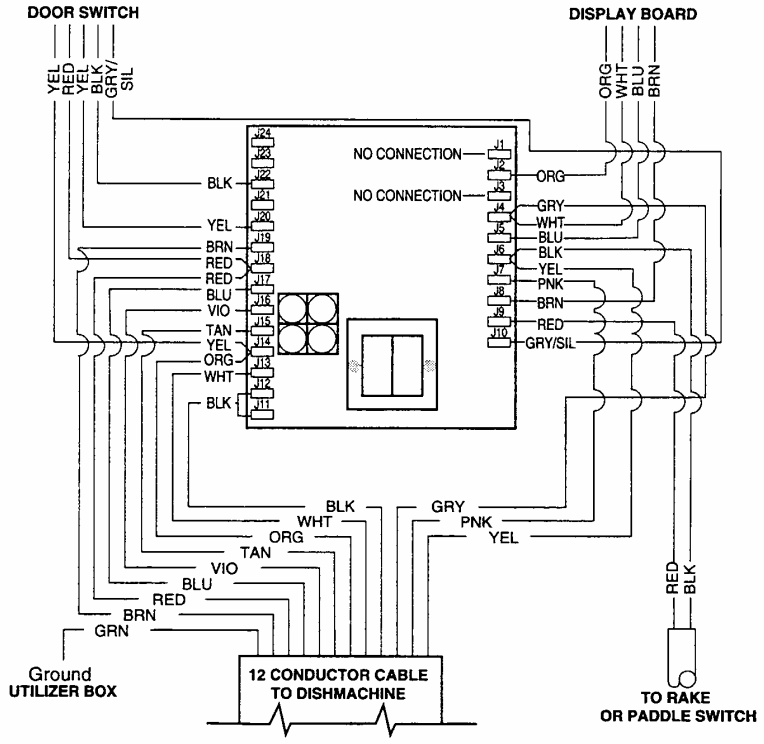

Figure 2. Wiring Identification

Rack Machine Installations		
Utilizer III Wiring Code		**Original Rack Utilizer Wiring Code**
12 Conductor Cable		12 Conductor Cable
Color	**Function**	**Color**
White	115/230 VAC	White
Black	115/230/VAC	Black
Green	Ground	Green
Brown	Final Rinse	Orange
Tan	Final Rinse	Orange
Red	Booster Heater	Red
Orange	Booster Heater	Red
Blue	Start	Blue
Violet	Start	Blue
Pink*		Grey/White*
Yellow*		
Grey*		
2 Conductor Cable : To Paddle		
Red	Start(+12VDC)	Grey
Black	Ground	Grey/Black
(*) These wires not used. Insulate individually and tie off		

Flight Machine Installations		
Utilizer III Wiring Code		**Original Flight Utilizer Wiring Code**
12 Conductor Cable		12 Conductor Cable
Color	**Function**	**Color**
White	115/230 VAC	White
Black	115/230/VAC	Black
Green	Ground	Green
Brown	Final Rinse	Orange
Tan	Final Rinse	Orange
Red	Booster Heater	Red
Orange	Booster Heater	Red
Blue	Start	Blue
Violet	Start	Blue
Pink	MemoryHold Input	Grey/White
Yellow	24 VDC Neg Gnd	Grey/Black
Grey	24VDC –	Grey
2 Conductor Cable: To Rake		2 Conductor Cable: To Rake
Red	Start (+12VDC)	Yellow
Black	Ground	Yellow

LATCH RELAY

The latch relay is part of the magnetic contactor. The wires attached to the latch relay may be of a different color and/or of a smaller diameter than the wires going to L1, L2 and L3. Two wires from the start switch will always lead to the latch relay. See Figure 3.

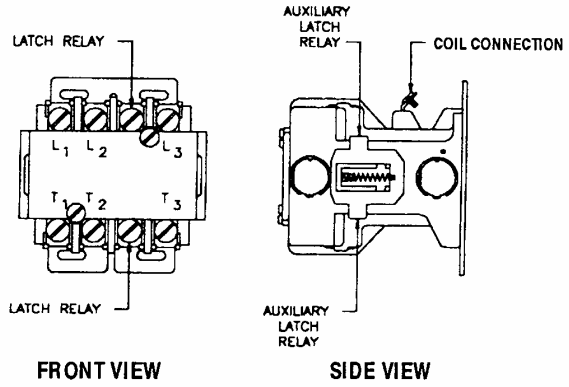

Figure 3. Typical Magnetic Contactor

INDICATORS

RACK INSTALLATIONS

For a rack style machine, a red LED near J7 lights up every time the paddle is activated and stays on as long as the paddle stays activated. This verifies the paddle's operation.

Another red LED near the relay lights up when the relay turns on to allow the dishmachine to operate. This is used to show if the relay is on or off.

The manual position of the door switch turns on the relay and its red LED. The off position turns off the relay and its red LED. The automatic position allows the normal Utilizer function.

FLIGHT INSTALLATIONS

For a flight style machine, the red LED near J7 lights up every time the rake is activated and stays on as long as the rake is activated. This verifies the rake's operation.

The red LED near the relay lights up when the relay turns on to allow the dishmachine to operate. This is used to show if the relay is on or off.

The manual position of the door switch turns on the relay and its red LED. The off position turns off the relay and its red LED. The automatic position allows the normal Utilizer function.

The memory hold function is controlled by the conveyor sensor. This is the same sensor that was used with previous Utilizers. When the memory hold function is activated, the relay and its red LED are turned off and the external timer hold light flashes.

RUN TIME

The 8-position DIP switch is used to set the run time. Run time starts when a rake or paddle has been activated and is then released. It is the release that starts the timer. The switch positions are each worth a fixed amount of time as follows:

Switch Position		Run Time (In Seconds)
1	=	1
2	=	2
3	=	4
4	=	8
5	=	16
6	=	32
7	=	64
8	=	128

Any number of switch positions can be used. Simply add the time values together for the total time.

RACK DISHMACHINE INSTALLATION

Installing the standard Utilizer III for rack dishmachines consists of three tasks:

- Mounting the paddle lever
- Mounting the Utilizer III control box
- Making electrical connections

MOUNTING THE PADDLE LEVER

On Stero side-loading machines that have very shallow drain pans at the entrance, it is impossible to properly mount the standard Utilizer III paddle lever.

1. The paddle lever is mounted inside the entrance to the dishmachine with the top of the bracket approximately 1/4 inch below the level of the dish table. It will be necessary to drill two 1/4 inch holes. The top of the bracket must be horizontally level to allow the lever arm to travel freely. When positioning the paddle lever bracket before drilling holes, make sure its mounted position will not interfere with the operation of the dishmachine's drive pawl bar assembly.
2. Insert the mounting screws from inside the dishmachine, through the holes and put on the washers and nuts, provided. Make any final adjustments by raising or lowering the actuator arm extension.
3. Measure the distance from the paddle switch to the dishmachine control panel and cut the two conductor cable to length. Using the rubber grommets and cable retainers provided, fasten one end at the paddle switch and run the cable to the dishmachine control panel through a 1/4 inch hole drilled in the control panel. See Figures 4 and 13.

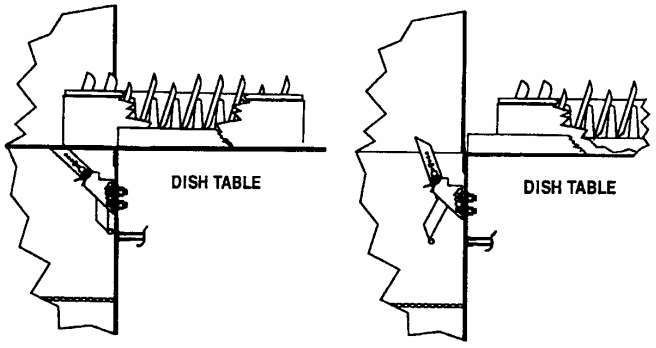

Figure 4. Paddle Lever Installation

MOUNTING THE UTILIZER III CONTROL BOX

1. Disconnect all power to the dishmachine and booster heater before attempting an installation.
2. Position the Utilizer III in a convenient dry place as far as possible from the flow of steam vapors. Be certain that the control wire cable is long enough to reach the dishmachine control panel. Mark the holes to be drilled for the four holes in the side flanges of the Utilizer III cabinet.
3. Using the screws and wall anchors provided (if wall mounted) or bolts and nuts (if machine mounted), drill the marked holes and mount the control box.
4. Measure the distance from the Utilizer III cabinet to the dishmachine control panel and add 12 inches of cable for extension into the control panel. Cut 3/8 inch Sealtite and the control cable to length.

   NOTE *Sealtite must be used to meet standard electrical codes.*
5. Feed the control cable through the Sealtite. Using the 3/8 inch Sealtite conduit connectors provided, secure the Sealtite to the Utilizer III control box and to the dishmachine control panel through the available electrical knockouts.

ELECTRICAL CONNECTIONS

POWER SOURCE

The Utilizer III needs a power source of 115 or 208/230 Volts. The Utilizer III has a built-in transformer to transform 115 or 208/230 Volt power to 24 Volts for the operation of the circuit board, relays, start switches and shutdown functions.

The Utilizer III is factory wired for accepting a power source of 208/230 Volts. If the dishmachine's power source is rated at 115 Volts, the wiring to the Utilizer III circuit board must be changed. You must:

- On the Utilizer III circuit board, a wire is attached to the male terminal marked J11. Remove this wire from that terminal and reconnect it to the terminal marked J12. Put the non-wired quick connector on the now unused terminal J11 to reduce the chance of electrical shock.
- If the dishmachine's power source is rated at 440-480 Volts, the dishmachine will have a transformer of its own which reduces this voltage to 115, 208 or 230 Volts for the operation of the dishmachine controls. Use a voltmeter to measure the voltage and follow the steps as indicated above. See Figure 5.

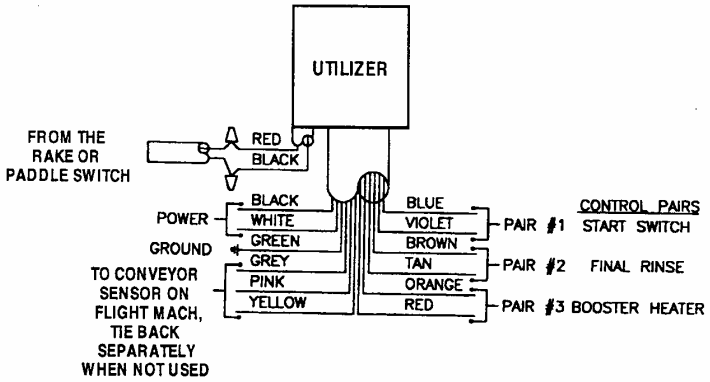

Figure 5. Utilizer III Wiring

HOBART RACK CONVEYORS

Note #1 - On all Hobart Rack Conveyors (Figures 6-9), do not attempt installation unless machine wiring matches typical original wiring exactly.

Note #2 - Newer Hobart machines have door safety interlocks. On those having a single rotary start switch and 6 & 4 bar terminals, route the violet wire as shown in Figure 6a. For installation to newer machines with configurations as shown in Figures 7-9, refer to the Preface page for technical support.

Single Rotary Start Switch With 6 + 4 Bar Terminals

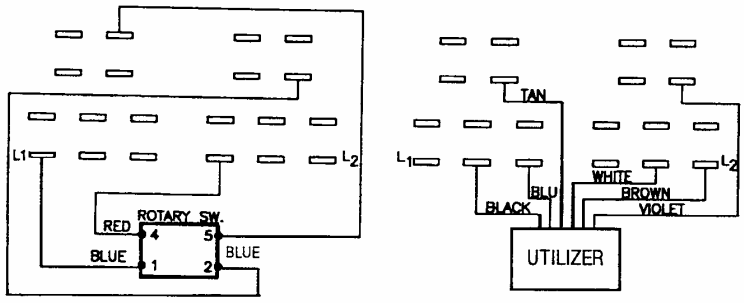

Figure 6. Single Rotary Start Switch with 6+4 Bar Terminals (older)

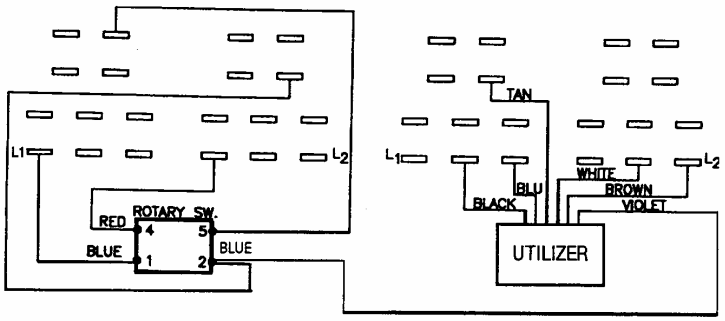

Figure 6a. Single Rotary Start Switch with 6+4 Bar Terminals (newer)

1. Check the machine voltage. Make sure the Utilizer III wiring matches (see Figures 1 and 5).
2. Turn off all electrical power to the dishmachine and booster heater.
3. Inside the dishmachine control box, make connections from the Utilizer III using the quick connects provided.
   - Attach the BLACK wire to one of the left 6 bar terminals.
   - Attach the BLUE wire to one of the left 6 bar terminals.
   - Attach the VIOLET wire to one of the right 4 bar terminals (see Note 2 under Hobart Rack Conveyor).
   - Attach the WHITE wire to one of the right 6 bar terminals.
   - Attach the BROWN wire to one of the right 6 bar terminals.
   - Attach the TAN wire to one of the left 4 bar terminals.
   - Attach the RED wire from the Utilizer III's 2-conductor cable to the RED wire from the paddle switch's 2-conductor cable.
   - Attached the BLACK wire from the Utilizer III's 2-conductor cable to the BLACK wire from the paddle switch's 2-conductor cable.
   - Ground the GREEN wire to any grounded screw inside the dishmachine control panel.
4. Remove the knob from the dishmachine rotary switch and give it to the Manager. If a manual bypass is required, turn the Utilizer III to OFF and operate the dishmachine with the rotary switch.

Single Start Switch With 6 Bar Terminals

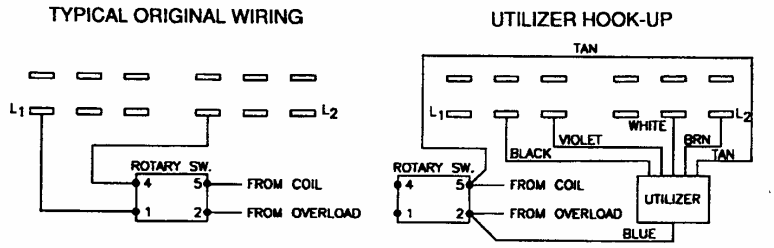

Figure 7. Single Start Switch With 6 Bar Terminals (without door interlocks)

1. Check the dishmachine voltage. Make sure the Utilizer III wiring matches (see Figure 7).
2. Turn off all electrical power to the dishmachine and booster heater.
3. There are four wires attached to the rotary start switch. One wire is attached to L1 (left-six bar terminal) and one attached to L2 (right-six bar terminal). There are two other wires leading back into the dishmachine. With a quick connect, attach the TAN wire from the Utilizer III to the upper right hand pin on the rotary switch along with the existing wire (#5). Also using a quick connect, attach the BLUE wire from the Utilizer III to the lower right hand pin on the rotary switch along with the existing wire (#2).
4. Inside the dishmachine control box, make connections from the Utilizer III using the quick connects provided.
   - Attach the BLACK wire to one of the left 6 bar terminals.
   - Attach the VIOLET wire to one of the left 6 bar terminals.
   - Attach the WHITE wire to one of the right 6 bar terminals.
   - Attach the BROWN wire to one of the right 6 bar terminals.
   - Attach the RED wire from the Utilizer III's 2-conductor cable to the RED wire from the paddle switch's 2-conductor cable.
   - Attach the BLACK wire from the Utilizer III's conductor cable to the BLACK wire from the paddle switch's 2-conductor cable.
   - Ground GREEN wire to any grounded screw inside the dishmachine control panel.
5. Remove the knob from the rotary switch and give it to the Manager. If a manual bypass is required, turn the Utilizer III to OFF and operate the dishmachine with the rotary switch.

Two Rotary Start Switches With 6 + 4 Bar Terminals

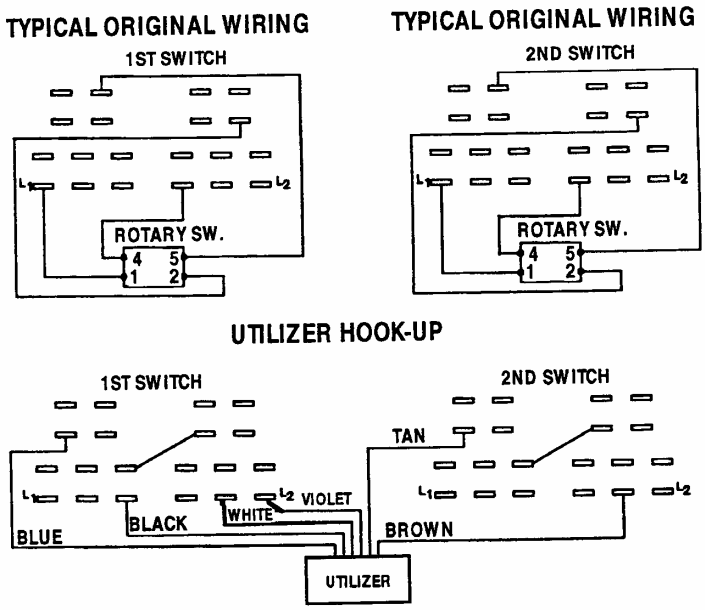

Figure 8. Hobart Rack Conveyors (without door interlocks)

1. Check the dishmachine voltage. Make sure the Utilizer III wiring matches (see Figure 5).
2. Turn off all electrical power to the dishmachine and booster heater.
3. First, inside the dishmachine control box, make connections from the Utilizer III using the quick connects provided:
   - Attach the BLACK wire to one of the left 6 bar terminals.
   - Attach the WHITE wire to one of the right 6 bar terminals.
   - Attach the BLUE wire to one of the left 4 bar terminals.
   - Attach the VIOLET wire to one of the right 6 bar terminals (see Note #2 under Hobart Rack Conveyor).
   - Attach a jumper wire between one of the left 6 bar terminals and one of the right 4 bar terminals.
4. Second, in the dishmachine control box, make connections from the Utilizer III using the quick connects provided:
   - Attach the BROWN wire to one of the right 6 bar terminals.
   - Attach the TAN wire to one of the left 4 bar terminals.
   - Attach a jumper wire between one of the left 6 bar terminals and one of the right 4 bar terminals.

- Attach the RED wire from the Utilizer III's 2-conductor cable to the RED wire from the paddle switch's 2-conductor cable.
- Attach the BLACK wire from the Utilizer III's 2-conductor cable to the BLACK wire from the paddle switch's 2-conductor cable.
- Ground the GREEN wire to any grounded screw inside the dishmachine control panel.

5. Remove the knob from the rotary switch and give it to the Manager. If a manual bypass is required, turn Utilizer III to OFF and operate the dish machine with the rotary switch.

Two Rotary Start Switches With 6 Bar Terminals

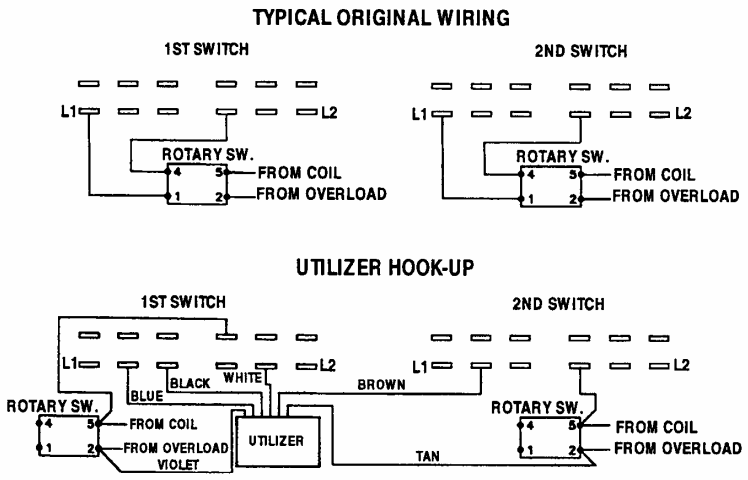

Figure 9. Hobart Rack Conveyors (without door interlocks)

1. Check the dishmachine voltage. Make sure the Utilizer III wiring matches (see Figure 9).
2. Turn off all electrical power to the dishmachine and booster heater.
3. First, inside the dishmachine control box, make the following connections from the Utilizer III using the quick connects provided.
   - Attach the BLACK wire to one of the left 6 bar terminals.
   - Attach the WHITE wire to one of the right 6 bar terminals.
   - Attach the BLUE wire to one of the left 6 bar terminals.
   - Attach the VIOLET wire to the lower right hand terminal (#2) on the rotary switch along with the existing wire (see Note #2 under Hobart Rack Conveyor).
   - Attach a jumper wire between one of the right 6 bar terminals and the upper right terminal (#5) on the rotary switch. Leave the existing wire on the rotary switch.

4. Second, inside the dishmachine control box, make the following connections from the Utilizer III using the quick connects provided.
   - Attach the BROWN wire to one of the left 6 bar terminals.
   - Attach the TAN wire to the lower right hand terminal (#2) on the rotary switch along with the existing wire.
   - Attach a jumper wire between one of the right 6 bar terminals and the upper right terminal (#5) on the rotary switch. Leave the existing wire on the rotary switch.
   - Attach the RED wire from the Utilizer III's 2-conductor cable to the RED wire from the paddle switch's 2-conductor cable.
   - Attach the BLACK wire from the Utilizer III's 2-conductor cable to the BLACK wire from the paddle switch's 2-conductor cable.
   - Ground GREEN wire to any grounded screw inside the dishmachine control panel.

PUSHBUTTON RACK CONVEYORS

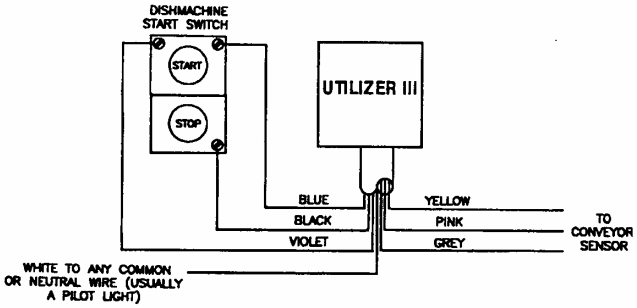

Figure 10. Pushbutton Rack Conveyors

Vulcan dishmachines made before 1973 may have manual starters.

1. Test voltage with one lead of Volt meter on either stop switch terminal and the other lead on any common or neutral (usually WHITE) wire of any dishmachine heat lamp. Voltage will be either 115 or 208-230.
2. Turn off all power to the dishmachine and booster heater.
3. Attach BLACK wire from the Utilizer III to the terminals on the stop switch just tested.
4. Attach WHITE wire from the Utilizer III to the common wire just tested.
5. If 115 Volts, also remove the wire attached to the terminal marked J11 on the Utilizer III circuit board and attach it to the terminal marked J12.
6. The dishmachine START switch will have two screw terminals. Attach the BLUE wire from the Utilizer III to either terminal on the START switch along with any existing wire(s).

7. Attach the VIOLET wire from the Utilizer III to the other START switch terminal along with any existing wire(s).
8. Inside the dishmachine control panel:
   - Attach the RED wire from the Utilizer III's 2-conductor cable to the RED wire from the paddle switch's 2-conductor cable.
   - Attach the BLACK wire from the Utilizer III's 2-conductor cable to the BLACK wire from the paddle switch's 2-conductor cable.
9. Locate the magnetic contactor running the pump(s). Locate the latch connection on the magnetic contactor (see Figure 3). Disconnect the wire(s) on one side of latch connection and wire nut. If more than one wire, wire nut all wires together. This must be done for each pump contactor.
10. Ground the GREEN wire to any grounded screw inside the dishmachine control panel.

ELECTRIC BOOSTER HEATER SHUTDOWN

This information is not applicable to steam booster heaters, gas-fired booster heaters or gas-fired water heaters.

The vast majority of food service operations using an electric booster heater for heating water to 180° F for final rinse water usually leave the booster turned on 24 hours a day, seven days a week. Rarely is it ever actually turned off. Leaving the booster heater on at night or at other times when the operation is closed is a waste of energy.

The Utilizer III can shut down an electric booster heater when the toggle switch on the front panel of the Utilizer III cabinet is in the Off position. If this feature is used, when the employees come to work in the morning or at the beginning of a meal period, they would close the drain valves on the machine, fill the tank(s) with water, turn on the tank heater and put the Utilizer III in the Automatic position, preparing the machine to wash dishes. It only takes several minutes (two to five, depending on size of booster heater) for the booster to heat water from room temperature to 180° F By waiting only a few minutes once the Utilizer III toggle switch is in Automatic position before starting to wash dishes, 180° F water for final rinse will be ready. If the Utilizer III ever has to be operated in the Manual position, the booster will continue to operate normally.

The following instructions are applicable for Hatco Electric Booster Heaters. See Figure 11.

If you want to shut down an electric booster heater and you were also planning to use the RED and ORANGE pair to control a final rinse solenoid valve, use the RED and ORANGE pair for the electric booster heater and Final Rinse Solenoid Shutdown.

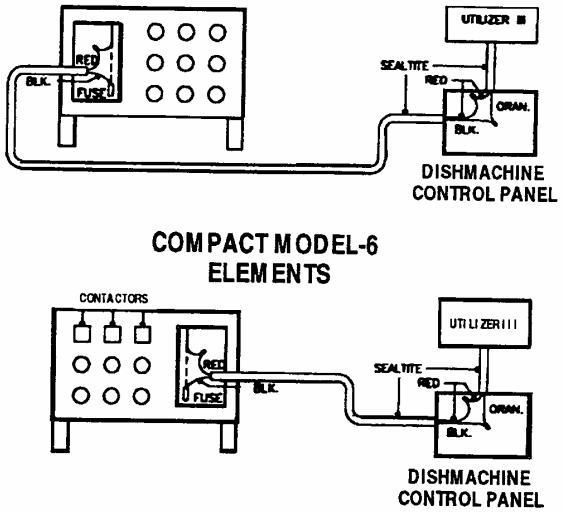

Figure 11. Hatco Electric Booster Heaters

1. It will be necessary to purchase enough Sealtite and 2-pair conductor wire with RED and BLACK wire(s) (18 gauge) to reach from the dishmachine control panel to the booster heater.
2. Extend the length of the RED and ORANGE wire pair in the Utilizer III cable by attaching the purchased 2-pair conductor RED and BLACK wire pair to these wires. Attach each wire separately.
3. Measure the distance from dishmachine control panel to the booster heater control panel and cut 3/8 inch Sealtite to length.
4. In the dishmachine control panel, take the RED and ORANGE pair and feed these wires through the Sealtite to the booster heater. Using 3/8 inch Sealtite conduit fittings, attach one end of Sealtite to an electrical knockout in the dishmachine control panel and the other end of Sealtite to an electrical knockout in the booster heater control panel.
5. Inside the booster heater control panel, you will find a 1 amp fuse used to protect the control current of the booster. Take the wire connected to the T1 side of the fuse clip (incoming power side) and disconnect this wire from the terminal. Take the RED wire from the Utilizer III cable, wrap it around the wire that you disconnected from the fuse clip and wire nut the connection. Take the black wire which is connected to the ORANGE wire from the Utilizer III cable and attach it to the terminal at the tip of the fuse clip where the booster heater wire was previously attached.
6. Reattach the cover for the booster heater control panel.

FINAL RINSE SOLENOID SHUTDOWN (OPTIONAL)

On dishmachines that are not equipped with a final rinse saver switch, the Utilizer III can be used to control the final rinse solenoid. The final rinse is only on when the pumps and motors are operating. The flow is shut-off when the Utilizer III shuts down other functions.

The Utilizer III will not interfere with the normal operation of the rinse saver device and there should be no need to discontinue this function. It will control the final rinse solenoid without any additional hookups where the final rinse solenoid is powered off the pump contactor. However, when the final rinse solenoid is powered directly off incoming line current, additional wiring is required if you wish to control the solenoid.

Before proceeding, make sure that you have one of the shutdown pairs RED-ORANGE, BLUE-VIOLET, or BROWN-TAN available. If you have used the BLUE-VIOLET and BROWN-TAN pairs already, but you do not want to use the RED-ORANGE pair for electric booster heater shutdown, take the red wire off the center pole of the Utilizer toggle switch and tape it back. Proceed with step 1. If all three pairs have previously been used and you want to control the solenoid, refer to the Preface page for technical support.

See Figure 12 and do the following:

1. Locate the wire pair running to the final rinse solenoid valve and trace this pair back to where it enters the dishmachine control panel.
2. Inside the control panel, cut one wire of the pair going to the final rinse solenoid valve. Strip 1/2 inch of insulation off each side of the wire you cut.
3. Take the unused Utilizer III shutdown pair (BLUE-VIOLET, BROWN-TAN, or RED-ORANGE) and wrap one wire of the pair around one side of the solenoid wire you cut, and wrap the other wire of the pair around the other side of the solenoid wire you cut. Wire nut both of these connections separately.

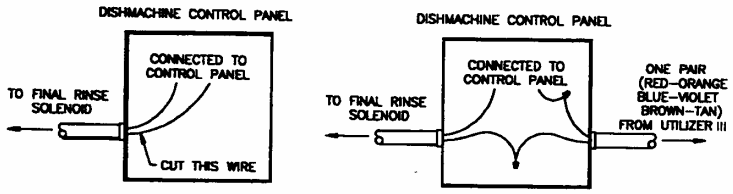

Figure 12. Final Rinse Solenoid Wiring

UTILIZER III MODIFICATION TO INSTALL A TABLE MOUNTED LIMIT SWITCH

A table mounted limit switch will be wired in series with one of the Utilizer's relay contacts. If either one opens, the dishmachine shuts down.

The new wiring is carrying 220 VAC @ medium current levels (±3 AMPS).

1. Turn off all power to the dishmachine.
2. Cut the blue wire from the Utilizer III. Be sure to leave enough wire on each side of the cut to allow easy wire nutting of each end to a separate wire as shown in Figure 14.
3. Attach the 2-wire cable in the dishmachine power box as shown in Figure 14.
4. Attach the other ends of the 2-wire cable to the common and N/C contacts.

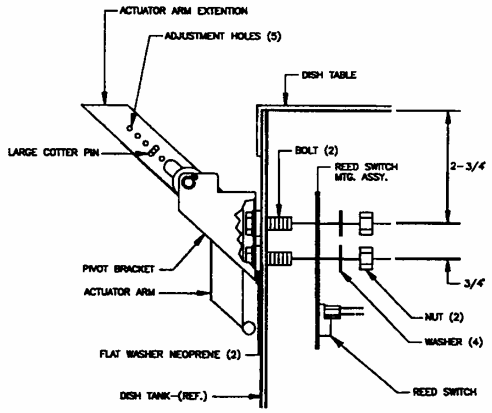

Figure 13. Paddle Switch Assembly

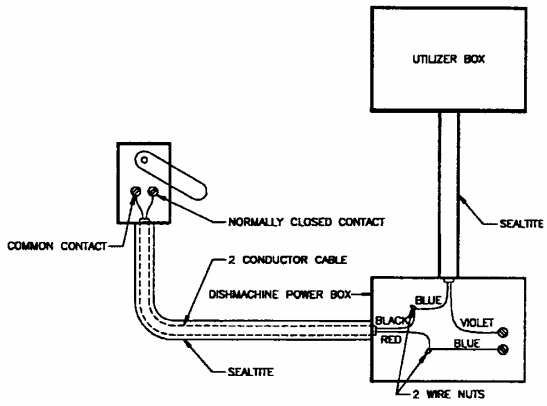

Figure 14. Wiring Instructions

FLIGHT DISHMACHINE INSTALLATION

Installing the standard Utilizer III for flight dishmachines consists of three tasks:

- Mounting the start gate
- Mounting the Utilizer III control box
- Making electrical connections

MOUNTING THE OPTIONAL SENSOR & START GATE

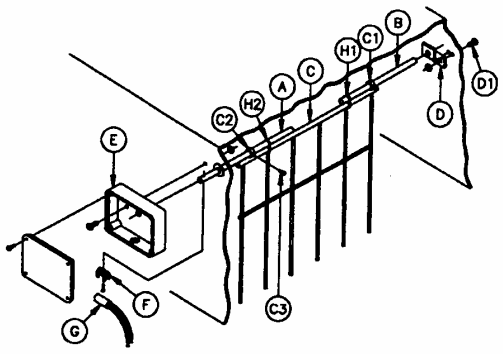

Figure 15. *Mounting Sensor and Start Gate on Dishmachine*

1. Select the side of the dishmachine at the front end where the junction box (E) containing the mercury starting switch (G) will be located.
2. Determine if the bracket (D) will fit on the opposite inside wall of the dishmachine without the gate hitting obstructions in its raised or lowered position. The bracket (D) may be mounted with fastening holes down, up, or to either side.
3. After selecting where the junction box will be mounted, determine where to drill a hole in dishmachine side wall for shaft (A). To determine where to drill this hole, first insert shaft (A) and shaft (B) into collars (C1 and C2) and welded washers (H1 and H2). Hold gate inside the machine just behind the front curtain so that the bottoms of the tines will just clear the top of the conveyor pegs. The start gate must be positioned high enough so that all ware, including sheet pans, if washed, will travel under the gate freely. If feeler tines are too long, cut to length, DO NOT BEND. Drill a 3/8 inch hole for shaft (A).
4. Insert the shaft (B) into the bracket (D) and place the gate assembly inside the dishmachine. After centering the gate (C), extend shafts (A and B) outward to their fullest length, so that stationary washer on shaft (A) and the end of shaft (B) are both firmly against inside wall of the dishmachine. The flattened edge of shaft (A) should extend approximately 1-1/2 inches outside of dishmachine. Tighten the bolts (C3) so that the shafts

are secured firmly in their collars. Using bracket (D) as a template and with the gate in a vertical position and horizontally across the top, mark and drill two 1/4 inch holes in side wall of the dishmachine. Bolt this bracket in to place with the bolts (D1) and nuts provided, making sure that the bolt heads are on outside of dishmachine. The gate should now swing freely. 5. Place the junction box (E) over the protruding end of shaft (A) drill two 1/4 inch holes and secure the box to dishmachine side wall, over shaft (A) withe the nuts and bolts provided.

5. Mount the mercury switch clip (F) onto the flat portion of shaft (A) with the screw and nut provided. The screw head should be flush against the flat portion of clip with leads facing soiled end of dishmachine. The lead ends should be slightly higher than horizontal. If necessary, loosen the reposition switch. After adjustment, retighten the set screw.
6. Take the two-conductor cable coming out of the bottom of the Utilizer III cabinet, measure the distance to the junction box (E) and cut the cable to length. Using the rubber grommet and cable retainer provided, fasten the loose end of the cable to the junction box in the 1/4 inch hole provided.

MOUNTING THE UTILIZER III CONTROL BOX

Disconnect all power to the dishmachine and booster heater before attempting an installation.

1. Position the Utilizer III in a convenient dry place as far as possible from the flow of steam vapors. Be certain that the control wire cable is long enough to reach the dishmachine control panel. Mark the holes to be drilled for the four holes in the side flanges of the Utilizer III cabinet.
2. Using the screws and wall anchors provided (if wall mounted) or bolts and nuts (if machine mounted), drill the marked holes and mount the control box.
3. Measure the distance from the Utilizer III cabinet to the dishmachine control panel and add 12 inches of cable for extension into the control panel. Cut 3/8 inch Sealtite and the control cable to length. Sealtite must be used to meet standard electrical codes.
4. Feed the control cable through the Sealtite. Using the 3/8 inch Sealtite conduit connectors provided, secure the Sealtite to the Utilizer III control box and to the dishmachine control panel through the available electrical knockouts.

ELECTRICAL CONNECTIONS

Before beginning, use a meter to measure voltage at L1 and L2. See Figure 16. Do the wiring connections listed below for the measured voltage

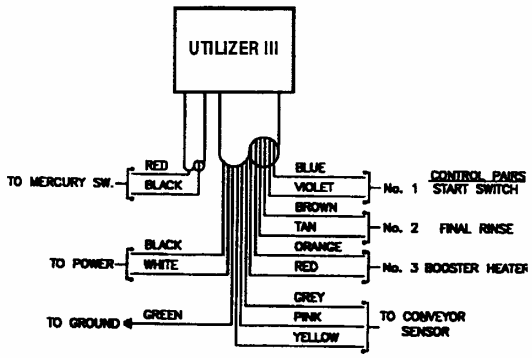

Figure 16. *Wiring Control Pairs*

115 OR 208-230 VOLTS

1. Turn off all power to the dishmachine and booster heater.
2. Attach the BLACK wire from the Utilizer III to L1.
3. Attach the WHITE wire from the Utilizer III L2.
4. If 115 Volts, remove the wire attached to the terminal marked J11 on the Utilizer III circuit board and attach it to the terminal marked J12. Put the unwired quick connect on the now unused terminal J11 to reduce the chance of electrical short.

440-480 VOLTS

1. Test voltage with one lead of the meter on either stop switch terminal and the other lead on any common or neutral (usually WHITE) wire of any dishmachine heat lamp. Voltage will be either 115 or 208-230.
2. Turn off all power to the dishmachine and booster heater.
3. Attach BLACK wire from the Utilizer III to the terminal on the stop switch just tested. See Figure 17.

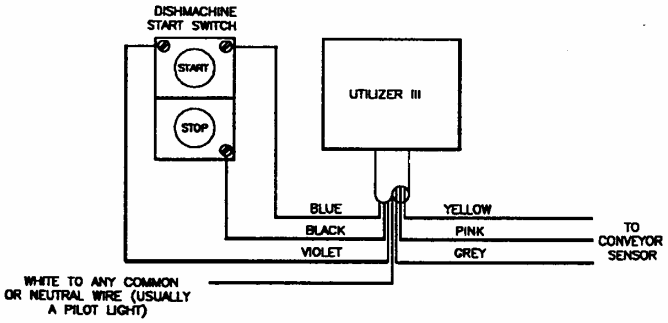

Figure 17. *Wiring for 440-480 Volts*

4. Attach WHITE wire from the Utilizer III to the common, neutral wire just tested.

5. If and only if the control voltage is 115 Volts, remove the wire attached to the terminal marked J11 on the Utilizer III circuit board and attach it to the terminal marked J12.
6. The dishmachine START switch will have two screw terminals. Attach the BLUE wire from the Utilizer III to one terminal on the START switch along with any existing wire(s).
7. Attach the VIOLET wire from the Utilizer III to the other start switch terminal along with any existing wire(s).
8. Attach the RED wire of the 2-conductor cable from the Utilizer III to one terminal of the MERCURY START switch.
9. Attach the BLACK wire of the 2-conductor cable from the Utilizer III to the other terminal of the MERCURY START switch.
10. Locate the magnetic contactor running the pump(s). Locate the latch connection on the magnetic contactor. Disconnect wire(s) on one side of latch connection and wire nut. If more than one wire, wire nut all wires together. This must be done for each pump contactor.
11. Locate the conveyor contactor. Locate the coil on conveyor contactor (See Figure 18). Place the conveyor sensor next to conveyor contactor inside dishmachine control panel.

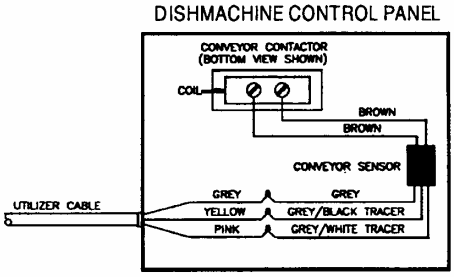

Figure 18. *Conveyor Contactor Connections*

12. Make the following connections from the conveyor sensor:
    - Attach one BROWN wire to one coil connection
    - Attach other BROWN wire to other coil connection
    - Attach the GREY wire to the GREY wire in the Utilizer III cable
    - Connect GREY with BLACK tracer to the YELLOW wire from the Utilizer III cable.
    - Connect GREY with WHITE tracer to the PINK from the Utilizer III cable.
    - Ground the GREEN wire to the grounded screw inside dishmachine control panel.

CHAMPION MACHINES

Installation of the Utilizer III on Champion Flight Machines is identical to the procedures for Hobart flight machines except for the following additional steps.

1. Locate the conduit leading from the conveyor brake limit switch (clean end) to the dishmachine control panel.
2. Where this conduit enters the control panel you will find a BLUE, a BLACK and a RED wire. The RED wire (marked #5) must be disconnected from wherever it is attached in the dishmachine control panel and reconnected to the RED wire from the Utilizer III cable with a wire nut.
3. Connect the ORANGE wire from the Utilizer III to the BLACK wire #1 on the STOP switch of the dishmachine. DO NOT remove this connection from the screw terminal on the switch.
4. Remove the two BLACK wire(s) #4 from the latch relay on the conveyor contactor in the dishmachine control panel and wire nut this set of wires together. Let this connection hang free.

In Champion flight dishmachines, the RED/ORANGE pair can only be used to tie in the conveyor drive as described above.

ELECTRIC BOOSTER HEATER SHUTDOWN

This information is NOT applicable to steam booster heaters, gas-fired booster heaters or gas-fired water heaters.

The vast majority of food service operations using an electric booster heater for heating water to 180°F for final rinse water usually leave the booster turned on 24 hours a day, seven days a week. Rarely is it ever actually turned off. Leaving the booster heater on at night or at other times when the operation is closed is a waste of energy.

The Utilizer III can shut down an electric booster heater when the toggle switch on the front panel of the Utilizer III cabinet is in the Off position. If this feature is used, when the employees come to work in the morning or at the beginning of a meal period, they would close the drain valves on the machine, fill the tank(s) with water, turn on the tank heater and put the Utilizer III in the Automatic position, preparing the machine to wash dishes. It only takes several minutes (two to five, depending on size of booster heater) for the booster to heat water from room temperature to 180°F. By waiting only a few minutes once the Utilizer III toggle switch is in Automatic position before starting to wash dishes, 180°F water for final rinse will be ready. If the Utilizer III ever has to be operated in the Manual position, the booster will continue to operate normally.

CONNECTIONS FOR HATCO ELECTRIC BOOSTER HEATERS

These instructions are applicable for Hatco Electric Booster Heaters. See Figure 19.

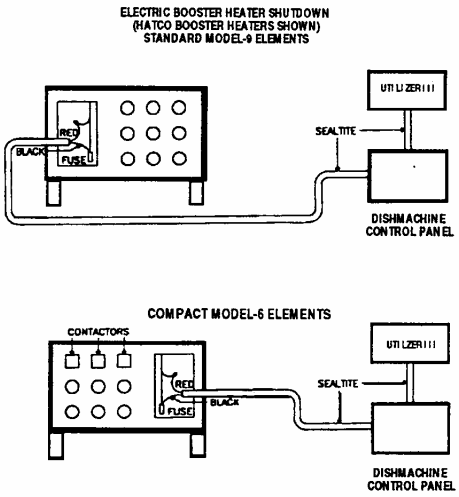

Figure 19. *Connections for Hatco Electric Booster Heaters*

The Electric Booster Heater Shutdown feature of the Utilizer III cannot be used on Champion Flight machine installations because the RED-ORANGE pair must be used to tie in the conveyor motor. This feature cannot be used on the very few Pushbutton START STATION installations where the RED-ORANGE pair must be used to control a third pump START STATION. If you want to shut down an electric booster heater and you were also planning to use the RED-ORANGE pair to control a final rinse solenoid valve, use the RED-ORANGE pair for the electric booster heater and see Optional Final Rinse Solenoid Shutdown.

1. It will be necessary to purchase enough sealtite and two conductor pair with RED-BLACK wires to reach from the dishmachine control panel to the booster heater.
2. Extend the length of the RED wires in the Utilizer III cable by attaching the purchased two conductor RED-Black pair of wires to these wires. Attach each wire separately, RED to RED and BLACK to ORANGE.
3. Measure distance from dishmachine control panel to booster heater control panel and cut 3/8 inch Sealtite to length.
4. In the dishmachine control panel, take the RED-Black pair and feed these wires through Sealtite to the booster heater. Using 3/8 inch Sealtite conduit fittings, attach one end of the Sealtite to an electrical knockout in the dishmachine control panel and the other end an electrical knockout in the booster heater control panel.

5. Inside the booster heater control panel, you will find a 1 amp fuse used to protect the control current of the booster. Take the wire connected to the T1 side of the fuse clip (incoming power side) and disconnect this wire from the terminal. Take the RED wire from the Utilizer III conductor extension cable, wrap it around the wire that you disconnected from the fuse clip and wire nut the connection. Take the BLACK wire from the Utilizer III conductor extension cable and attach it to the terminal at the tip of the fuse clip where the booster heater wire was previously attached.
6. Reattach the cover for the booster heater control panel.

FINAL RINSE SOLENOID SHUTDOWN (OPTIONAL)

On dishmachines that are not equipped with a final rinse saver switch, the Utilizer III can be used to control the final rinse solenoid so that the final rinse is only on when pumps and motors are operating. The flow is shut out when the Utilizer III shuts down other functions.

The Utilizer III will not interfere with the normal operation of the rinse saver device and there should be no need to discontinue this function. It will control the final rinse solenoid without any additional hookups where the final rinse solenoid is powered off the pump contactor. However, when the final rinse solenoid is powered directly off incoming line current, additional wiring is required if you wish to control the solenoid.

Before proceeding, make sure that you have one of the shutdown pairs RED-ORANGE, BLUE-VIOLET, or BROWN-TAN available. If you have used the BLUE-VIOLET and BROWN-TAN pairs already, but you do not want to use the RED-ORANGE pair for electric booster heater shutdown, TAKE THE RED WIRE OFF THE CENTER POLE OF THE UTILIZER III ROCKER SWITCH and tape and proceed with step 1. If all three pairs have previously been used and you want to control the solenoid, refer to the Preface for technical support.

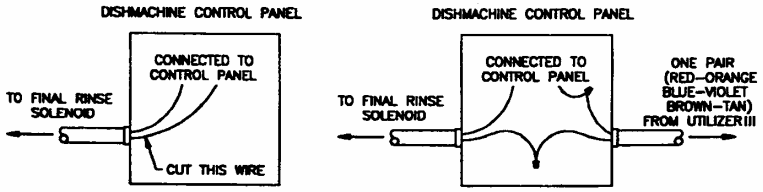

Figure 20. *Final Rinse Solenoid Shutdown Wiring*

See Figure 20 and make the following connections:

1. Locate the wire pair running to the final rinse solenoid valve and trace this pair back to where it enters the dishmachine control panel.
2. Inside the control panel, cut one wire of the pair going to the final rinse solenoid valve and strip 1/2 inch of insulation off each side of the wire you cut.
3. Take the unused Utilizer III shutdown pair (BLUE-VIOLET, BROWN-TAN, or RED-ORANGE) and wrap one of the Utilizer III wire pairs around one side of the solenoid wire you cut. Wrap the remaining wire of the Utilizer III wire pair around the other side of the solenoid wire you cut. Wire nut both of these connections separately..

ADJUSTING THE TIMER

Switch Position		Run Time (in seconds)
1	=	1
2	=	2
3	=	4
4	=	8
5	=	16
6	=	36
7	=	64
8	=	128

Any number of switch positions can be used. Simply add the time values together for the total time.

FINISH AND CLEANUP

KEY LOCK

The key lock mechanism is common to all Utilizer III's.

CLEAN-UP

When all adjustments have been made, make sure that all connections are solid and that no unused wires are exposed. Replace all covers to the Utilizer III parts and the dishmachine control panels.

TRAINING

Make sure that all the dishwashing personnel are completely familiar with the operation of the dishmachine and the Utilizer III. Be sure to inform all dishwashers how to turn the dishmachine and the Utilizer III On and Off to avoid damage to dishmachine, heating elements and other components.

CAUTION STICKER

Red pressure-sensitive, adhesive-backed caution stickers are provided with each Utilizer III. Place these on the dishmachine at the control panel or near the door openings, or in other highly visible locations.

MAINTENANCE

MODELS/ACCESSORIES

Description	Item #
Rack and Flight Model	058166
Conveyor Sensor Switch	016902

SPARES

Description	Item #
Main Printed Circuit Board	013613
Fuse (2 amp)	016677
Fuse (1/4 amp)	032528
Rack Sensor Assembly	028387
Reed Switch	032133
Relay	032524

PACKING LIST

(1) Utilizer III proper with 2 keys, Utilizer III printed circuit board and approximately 21 feet of 12-conductor cable

(1) Magnetic paddle switch with cover, approximately 21 feet of 2-conductor cable and mounting bolt, nut and washer

(1) Flexible conduit (1/2") approximately 18 feet in length

(1) Conduit connector with plastic insert, 2 nuts and 1/2" MNPT

(6) Wire nuts

(7) Female wire terminals

(4) Plastic wall anchors

(4) Hex screws 3/4" x 1/4-20

(4) Hex nuts 1/4-20 with nylon insert

(4) Slotted sheet metal screws 1" long

(4) Spade terminals

(1) Ring tongue terminal

(1) Grommet 7/16" OD x 3/16" ID

(1) Retaining Clamp

(1) Set of Operating Instructions

(1) Item & List Number

(2) Caution labels

TECHNICAL ASSISTANCE

If you require technical assistance or additional product technical information, contact the appropriate Technical Support Department. See **Preface** for company information and telephone numbers.

PRODUCT REPAIR

It is very helpful to the Repair Departments if you include in the shipping container a description of the problem, symptoms, failure or abnormality that precipitated the equipment's return and any order for replacement parts.

If you need to return an item for repair, you must call or write to obtain a Return Authorization (RA) number **before** you may return the product. The Repair Department will issue a unique RA number for any product that satisfies the warranty requirements. Multiple items in a single shipment will not normally require multiple RA numbers, but always make sure that the Repair Department knows the entire extent of your shipment in case this general rule doesn't apply. Refer to this number in all your documentation, prominently display it on the outside of the shipping container, and refer to it if you need to call for information about the status of the repair.

Failure to obtain an authorization number before sending an item in for repair or replacement may seriously delay the repair and/or return of your equipment.