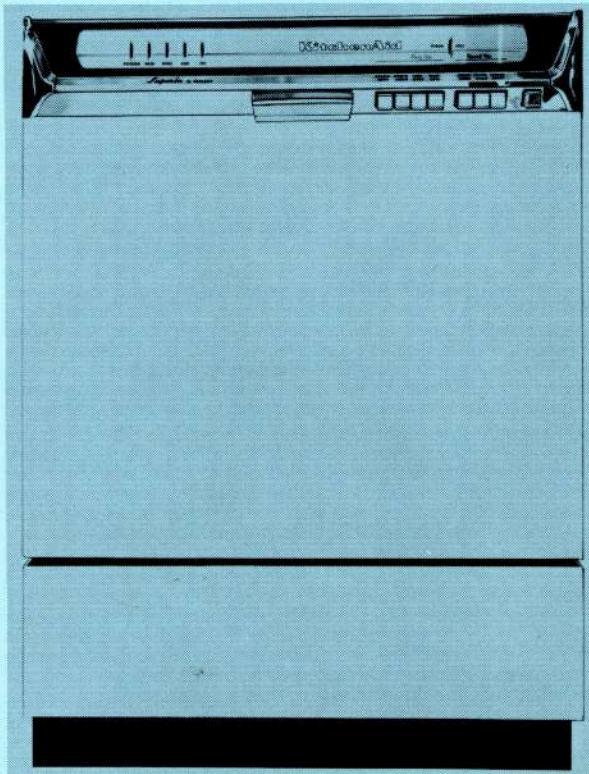


SERVICE MANUAL



KitchenAid. KD-18 SERIES-AUTOMATIC DISHWASHERS

MODEL ML DESCRIPTION

(“Built-In” Models)

KDC-18	34074	Custom
KDI-18	34073	Imperial
KDP-18	34162	Patrician
KDS-18	34072	Superba

(Dishwasher-Sink Combinations)

KDC-38	34076	Custom
KDS-38	34077	Superba

(Convertible-Portable Models)

KDC-58	34112	Custom
KDI-58	34111	Imperial
KDS-58	34110	Superba

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SELL *Service* ... SERVICE *Sells*

GENERAL INFORMATION

MODEL EXPLANATION

This service manual provides service information for the KD-18 series dishwashers. This includes the basic KD-18 dishwasher, designed to be "Built-in"; for which panels (with various finishes) and kits may be ordered and added to suit various installations (Fig. 1). Installation instructions are provided with each of these options.

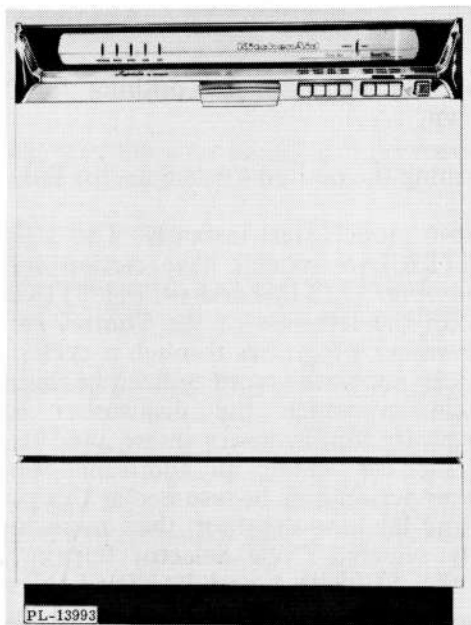


Fig. 1

In addition, there is a KD-38 model (Fig. 2), which is the same KD-18 dishwasher installed in a cabinet-sink combination.



Fig. 2

There are also KD-58 models (Fig. 3), which are "convertible-portable" dishwashers. These may be built-in at a later date, using KD-18 conversion instructions.

All KD-18 series dishwashers have automatic detergent dispensers, pump-out drain systems and "Sanitized Flo-Thru Drying" systems (Fig. 4). A separate fan and heating element outside the wash chamber circulate heated air during the "Dry" phase of each cycle.



Fig. 3

The KDS "Superba" model has a sixteen position upper rack, with "stay-put" flex-o-dividers and both a rinse agent dispenser and a Soak'n Scrub Cycle as standard equipment.

A rinse agent dispenser may be added to both the KDI "Imperial" and KDC "Custom" models, as an optional feature. The KDI "Imperial" models are also equipped with a Soak'n Wash Cycle and have a one position upper rack with "stay-put" flex-o-dividers. The KDC "Custom" has a one position upper rack with fixed dividers.

A small items basket is standard with the KDS "Superba" and KDP "Patrician". It is optional on the Imperial and Custom models.

All KD-18 models are equipped with energy saver feature.

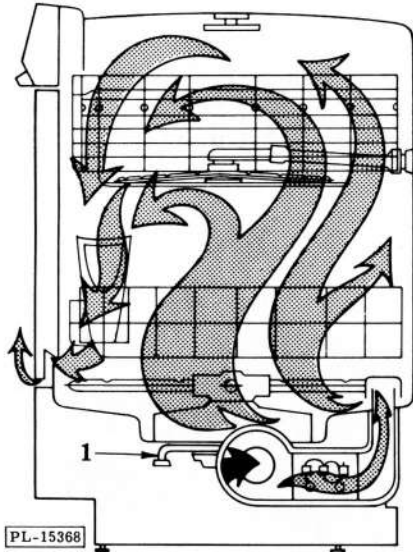


Fig. 4

AUTOMATIC PROTECTION FEATURES

All KD-18 series dishwashers are equipped with KitchenAid designed motors, featuring overload protection with automatic reset. Should the motor become overheated or overloaded, it will stop automatically . . . starting again when this condition has been relieved.

The "Sanitized Flo-Thru Drying" system (Fig. 4) is equipped with a thermal safety protector to prevent overheating. The sheath heater, (1, Fig. 4) KDS "Superba" models, has automatic overheat protection (a thermal protector which will temporarily open and cut off all voltage to the heater when temperature reaches a preset limit).

NOTE: The sheath heater is NOT a substitute for a hot water heater. Hot water, from 140° to 160° F., must be supplied to the dishwasher for best dishwashing results.

A built-in door interlock switch prevents operation of the dishwasher until the door is closed and latched and a cycle is activated. The dishwasher will not operate when the door is open.

Protection against over filling is provided by an overflow control switch that shuts off current to the water fill valve when the water in the wash chamber exceeds a predetermined level.

STARTING

INSTANT START - in all KD-18 series KitchenAid front-loading dishwashers the cycle is selected and the unit is started by:

1. Closing the door.
2. Latching the door by pushing the handle down.
3. Pushing the desired Cycle Selector Button.

All built-in models start instantly. The SUPERBA and PATRICIAN models have Action Indicator Lights (1, Fig. 5) (KDS) and (4, Fig. 5) (KDP) are located on the left side of the Control Panel. As the dishwasher progresses through a cycle, a light will appear above the word indicating the part of the cycle in which the dishwasher is then operating. If the cycle is interrupted for any reason, such as adding an additional item, the dishwasher action may be resumed at this point by closing and latching the door, then re-pushing the originally selected Cycle Selector Button. In addition, the SUPERBA and PATRICIAN models have a "Rinsed Only" light, located on the right side of the Control Panel (2, Fig. 5) (KDS) and (3, Fig. 5) (KDP). Once the "Rinse-Hold" cycle has been selected, this light will come on whenever the door is unlatched until another cycle is selected. This light shows the operator that the dishes have NOT been washed, but only rinsed and held. Latching the handle, following "Rinse-Hold" operation will turn "Off" the light, as long as the handle remains in the latched position.

The IMPERIAL model has an Indicator Light located on the right side of the Control Panel (not shown) that glows to indicate "Power On".

On both the IMPERIAL and CUSTOM models, the Action Indicator knob rotates as the cycle progresses and points to the part of the cycle in which the dishwasher is then operating.

STARTING CONVERTIBLE-PORTABLE MODELS

1. Load dishwasher, close and latch the door.
2. Connect hoses to sink faucet and power cord to grounded outlet. (See electrical instructions for detailed description). Allow a

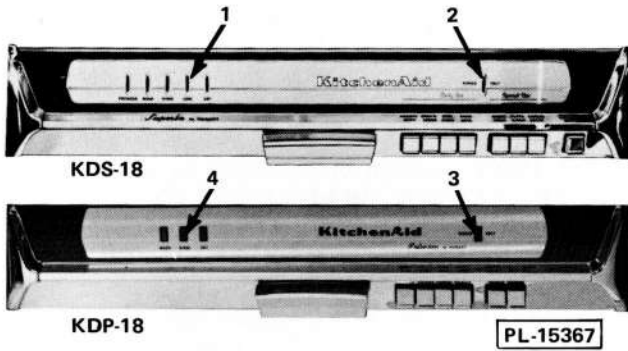


Fig. 5

few seconds after plugging in power cord (for timer to reset itself).

3. Turn on water.
4. Then push the desired Cycle Selector Button and the dishwasher will start instantly.

CONVERTIBLE-PORTABLES

KD-58 convertible-portable models are essentially built-in dishwashers with portability features added. They must be connected to the sink faucet and an electrical outlet before they can "do the dishes".

Connecting to Sink Faucet

An adapter kit, furnished with the dishwasher has an aerator faucet adapter with all parts necessary to connect the coupler to most faucets with external or internal threads.

If the adapter cannot be used on the faucet, use other adapters as required.

Faucets with External Threads (Fig. 6)

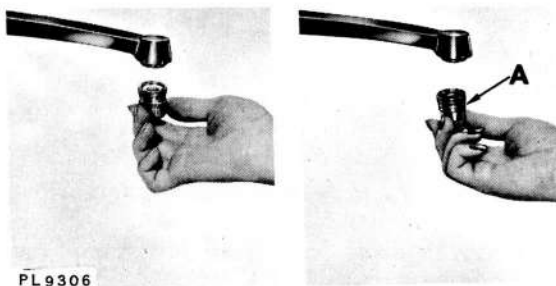


Fig. 6

1. Remove faucet aerator.
2. Screw adapter (A, Fig. 6) furnished in kit, to faucet.

3. Pull hoses and coupler from hide-away compartment at the back of the dishwasher and attach coupler (B, Fig. 7) to adapter (A, Fig. 7) by depressing outer ring (C, Fig. 7). When adapter and coupler are joined, release outer ring which snaps upward for snug fit.

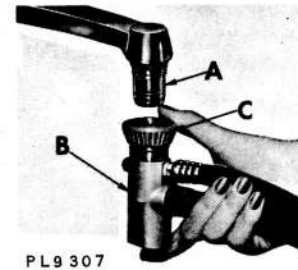


Fig. 7

Faucets with Internal Threads (Fig. 8)

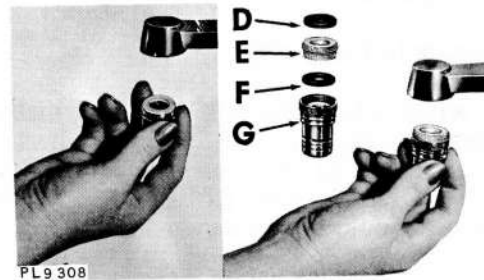


Fig. 8

1. Remove faucet aerator.
2. Screw faucet adapter (E, Fig. 8) with washers (D & F, Fig. 8) to adapter (G, Fig. 8) and then to faucet.
3. Connect hoses and coupler as described for faucet with external threads.

CAUTION: IF THE SINK HAS A SPRAY ATTACHMENT, IT MAY BURST AS A RESULT OF BACK PRESSURE, PARTICULARLY IF IT IS OLD.

There is no need to pre-rinse dishes before placing them in the dishwasher. It is suggested therefore, that this spray attachment hose be disconnected and the hole closed with a chrome plug or cap, obtained locally. Or replace with a new and stronger hose that will withstand the back pressure.

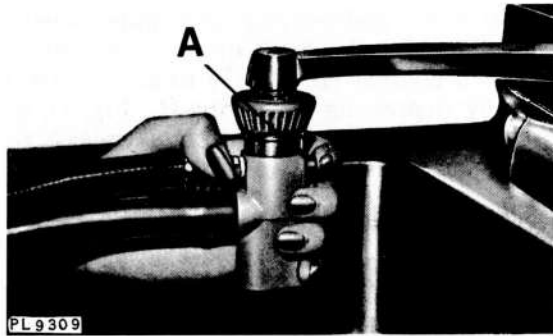


Fig. 9

Use Hot Water Only

Turn the hot water tap on full. **DO NOT USE ANY COLD WATER.** Water temperature should be 140° to 160° F. Flow pressure should be between 20 and 120 pounds per square inch.

NOTE: If hot water is needed while the dishwasher is connected press the red release button (A, Fig. 9) – but NOT when the dishwasher is filling or draining.

Connecting to Electricity

The KitchenAid convertible-portable dishwasher operates on regular 120 volt, 60 hertz A.C. electrical service to be supplied by an **APPROVED 3-PRONG GROUNDING RECEPTACLE.** The supply circuit should be protected by a 15 amp. fuse, or circuit breaker.

To make the electrical connection:

1. Be sure the action indicator is in the "OFF" position.
2. Insert the 3-pronged plug into a 3-prong receptacle. If the wall receptacle is not of the proper 3-prong grounding type an electrician should be consulted.

CAUTION: The use of an extension cord is not recommended.

The Receptacle Outlet Must be Grounded

The power cord on the portable dishwasher is equipped with a 3-pronged grounding plug. The third prong is designed to ground the cabinet electrically thus eliminating the possibility of shocking the operator if an internal electrical malfunction should occur.

It is essential that the electrical outlet into which the 3-pronged power cord is inserted be properly grounded. If this is in doubt a competent

electrician should be contacted to check the outlet.

Fill and Drain Hoses (Fig. 10)

CAUTION: INCORRECT REPLACEMENT OF EITHER FILL OR DRAIN HOSE ASSEMBLIES ON CONVERTIBLE-PORTABLE KITCHENAID DISHWASHERS CAN CAUSE SERIOUS DAMAGE. To prevent this, always replace hose assemblies in the exact same manner as the original. It is imperative that each new replacement hose be routed correctly and the retaining clamps installed properly at the correct locations on the hose. It is especially important that **NO PART OF THE HOSES BE PERMITTED TO MAKE CONTACT WITH ANY EXPOSED ELECTRICAL COMPONENTS OR TERMINALS,** as the hose material can act as an electrical conductor. Re-check each hose installation, upon completion, then extend and retract the hoses several times to make certain that they operate and locate properly.

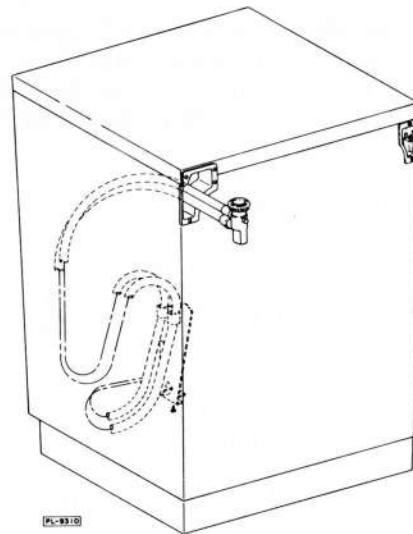


Fig. 10

Disconnecting

When disconnecting the convertible-portable:

1. Remove power cord from outlet and return to compartment.
2. Turn off the hot water.
3. Press red button on coupler (A, Fig. 9) to release water pressure and prevent splash back.
4. Depress coupler ring (C, Fig. 7) and remove coupler from faucet adapter. Return hoses to compartment.

GENERAL SERVICING INSTRUCTIONS

All models of the KD-18 series dishwashers are especially designed to be serviced from the front. By removing the lower front panel, the outer door panel, and the control panel, practically all parts are accessible without moving the dishwasher from its installed position.

These instructions cover all models of the KD-18 series dishwashers however, all the components

that are listed, may or may not be used for each model.

- NOTE:** (1) **CAUTION:** ALWAYS DISCONNECT ELECTRICAL POWER SUPPLY BEFORE REMOVING ELECTRICAL COMPONENTS.
- (2) NEVER reuse gaskets or sealing washers.
-

CYCLE DESCRIPTION

The following cycle descriptions (KDC-18 and KD-38 (CUSTOM), the KDI-18 and KDI-58 (IMPERIAL), KDP-18 (PATRICIAN) and the KDS-18, KDS-38 and KDS-58 (SUPERBA) model dishwasher) are for the KD-18 series dishwashers. All models have the energy saver feature.

Selection of the Energy Saver button, along with any of the "wash and dry" cycles, will shut off the heating element during the dry portion of the cycle. The fan in the drying system will continue to operate. This will reduce the amount of energy used during the cycle. Under certain conditions, you may find a few drops of water on dishes and silverware at the end of the cycle. Every time you raise the door handle, the Energy Saver button will pop out. Any time you start a new cycle, or restart an interrupted cycle, you must again push the Energy Saver button to save energy.

CUSTOM MODEL



NORMAL WASH CYCLE—Used to wash and dry daily loads including china and crystal with average soil. This cycle provides three pre-rinses, one main wash, two after rinses and dry. For more heavily soiled loads, the first pre-rinse can be turned into a pre-wash by adding detergent to both compartments of the detergent dispenser. Total: Time - 59 minutes plus automatic timer advance - 2 minutes; Water - 11.8 gallons.

RINSE/HOLD CYCLE—Used to rinse partial loads of dishes which are to be held until dishwasher is filled. Keeps dishes moist until they are washed and dried. This cycle provides one rinse. Do not use detergent with this cycle. Total: Time - 3 minutes; Automatic timer advance - 58 minutes; Water - 1.4 gallons.

IMPERIAL MODEL



NORMAL WASH CYCLE—Used to wash and dry daily loads including china and crystal with average soil. This cycle provides three pre-rinses, one main wash, two after rinses and dry. For more

heavily soiled loads, one of the pre-rinses can be turned into a pre-wash by adding detergent to both compartments of the detergent dispenser. Total: Time - 72 minutes plus automatic timer advance - 2 minutes; Water - 11.9 gallons.

SOAK'N WASH CYCLE—Used to wash and dry hard-to-clean pots, pans and casseroles along with regular tableware. This cycle provides one pre-rinse, one wash with soak period, one rinse, one wash and three after rinses and dry. This cycle soaks and washes the ware approximately 22 minutes prior to complete wash and dry of the load. Detergent should be added to both compartments of the detergent dispenser. Some incrustated food soils may not be completely removed as a more abrasive action is necessary. Total: Time - 72 minutes plus automatic timer advance - 2 minutes; Water - 13.7 gallons.

RINSE/HOLD CYCLE—Used to rinse partial loads of dishes which are to be held until dishwasher is filled. Keeps dishes moist until they are washed and dried. Do not use detergent with this cycle. Total: Time - 1 rinse - 3 minutes; Automatic timer advance - 71 minutes; Water - 1.5 gallons.

PATRICIAN MODEL



NORMAL WASH CYCLE—Used to wash and dry daily loads including china and crystal with average soil. This cycle provides three pre-rinses, one main wash, two after rinses and dry. For more heavily soiled loads, one of the pre-rinses can be turned into a pre-wash by adding detergent to both compartments of the detergent dispenser. Total: Time - 67 minutes; Water - 12.9 gallons.

SOAK'N WASH CYCLE—Used to wash and dry hard to clean pots, pans and casseroles along with regular tableware. This cycle provides one pre-rinse, one wash with soak period, one rinse, one wash, three after rinses and dry. This cycle soaks and washes the ware approximately 20 minutes prior to complete wash and dry of the load. Detergent should be added to both compartments of the detergent dispenser. Some encrusted food soils may not be completely removed as a more abrasive action is necessary. Total: Time - 89 minutes; Water - 15.2 gallons.

RINSE/HOLD CYCLE—Used to rinse partial loads of dishes which are to be held until dishwasher is filled. Keeps dishes moist until they are washed and dried. This cycle provides one rinse. Do not use detergent with this cycle. Total: Time - 7 minutes; Water - 2.2 gallons.

SHORT WASH CYCLE—Used to wash and dry lightly soiled loads of glasses or plates, fine china and crystal. This cycle has one pre-rinse, one short wash, two after rinses and dry. Use detergent only in the right side of the MAIN WASH compartment of the detergent dispenser. Total: Time - 58 minutes; Water - 8.4 gallons.

CANCEL/DRAIN CYCLE—Used to cancel out any cycle in progress. When this button is pushed, the dishwasher will drain and automatically turn itself off. To start a new cycle, wait until all indicator lights have gone off, unlatch the door momentarily, relatch and select the desired new cycle. The water in the sump may not be completely drained because of the location of the timer when the cancel button is pushed. If there is too much water, lift latch, wait 3 to 5 seconds, close latch and again press cancel/drain button.

SUPERBA MODEL



NORMAL WASH CYCLE—Used to wash and dry daily loads including china and crystal with average soil. This cycle provides three pre-rinses, one main wash, three after rinses and dry. For more heavily soiled loads, one of the pre-rinses can be turned into a pre-wash by adding detergent to both compartments of the detergent dispenser. Total: Time - 67 minutes; Water - 13.5 gallons.

SOAK'N SCRUB CYCLE—Used to wash and dry hard-to-clean heavily soiled pots, pans and casseroles along with regular tableware. This cycle has two soaking and scrubbing periods, one rinse, one main wash, three after rinses and dry. It alternately soaks and scrubs in preheated water for

approximately 46 minutes prior to a complete wash and dry of the load. Detergent should be added to both compartments and front indentation of the detergent dispenser. A few incrustated or burned on food soils may not be completely removed as a more abrasive action is necessary. Total: Time - 108 minutes; Water - 15 gallons.

SANI CYCLE—Used when extra sanitizing is desired. This cycle has three pre-rinses, one main wash, three after rinses and dry. It washes and dries daily loads with same sequence as the normal wash cycle. In addition, the final rinse water is heated to approximately 180° F. before final rinsing. For more heavily soiled loads, one of the pre-rinses can be turned into a pre-wash by adding detergent to both compartments of the detergent dispenser. Total: Time - 67 minutes (plus time to heat water to 180° F.); Water - 13.5 gallons.

RINSE/HOLD CYCLE—Used to rinse partial loads of dishes which are to be held until dishwasher is filled. Keeps dishes moist until they are washed and dried. This cycle provides one rinse. Do not use detergent with cycle. Total: Time - 6 minutes; Water - 1.5 gallons.

SHORT WASH CYCLE—Used to wash and dry lightly soiled loads of glasses or plates, fine china and crystal. This cycle has one pre-rinse, one short wash, two after rinses and dry. Use detergent only in the right side of the MAIN WASH compartment of the detergent dispenser. Total: Time - 53 minutes; Water - 7.5 gallons.

PLATE WARM CYCLE—Used to warm dishes to be used for serving hot foods. Heated air flows throughout the wash chamber. Total: Time - 20 minutes.

CANCEL/DRAIN CYCLE—Used to cancel out any wash cycle in progress. When this button is pushed, the dishwasher will drain and automatically turn itself off. To start a new cycle, wait until all indicator lights have gone off, unlatch the door momentarily, re-latch and select the desired new cycle. The water in the sump may not be completely drained because of the location of the timer when the cancel button is pushed. If there is too much water, lift latch, wait 3 to 5 seconds, close latch and again press cancel/drain button.

SERVICING INSTRUCTIONS

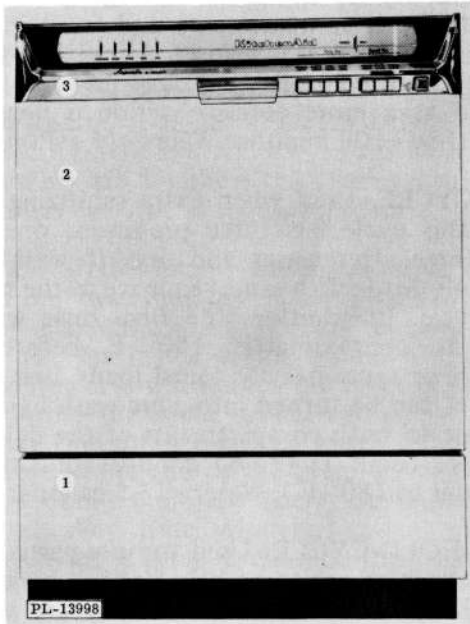


Fig. 11

Lower Front Panel (1, Fig. 11)

1. Remove two screws from lower flange of panel. For KD-58 models only, remove the slotted hex head mounting screws (1, Fig. 12) from the bottom of the lower front panel, R.H. & L.H. sides. For all other models, remove screws (2, Fig. 13) and lock washer.
2. Disengage tabs (1, Fig. 13) by pushing panel toward top of dishwasher, then pull panel forward and down to remove. When re-assembling panel, insert panel flange under evaporation channel support ends (3, Fig. 13) and reverse above procedure.

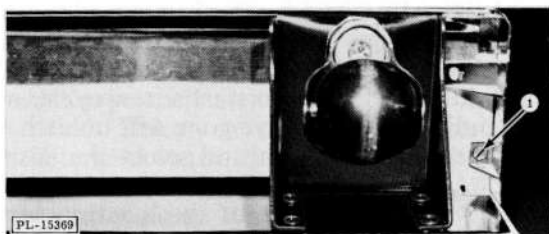


Fig. 12

Outer Door Panel Assy. (2, Fig. 11)

1. Open door and remove the four retaining screws while holding panel in place.
CAUTION: Do not permit the panel to drop and become marked.
2. Close door and remove panel by pulling out at lower edge of door, lowering and withdrawing panel.

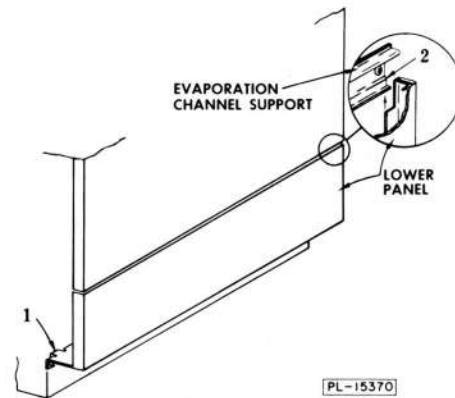


Fig. 13

Control Panel (3, Fig. 11)

1. Open door and remove the six control panel retaining screws (four along top edge and two on inside face of door). Close door.
2. Remove indicator knob on KDC & KDI.
3. Lift door handle, remove retaining screw and remove door handle.
4. Lift off control panel.

TIMERS

All KDC, KDI, KDP & KDS dishwashers have the timers located behind the control panel (3, Fig. 11).

Timers are sometimes needlessly replaced, when another component is at fault, due to incorrect diagnosis. Thoroughly check timer before making replacement. If, after making a timer replacement the problem was not corrected, remove this replacement and reuse the original timer.

If a timer operated component is inoperative, first check to make sure voltage is reaching component. For this check use a test lamp across component contacts at the time it should be energized.

If voltage is reaching the inoperative component at the correct time, the component should then be checked mechanically and electrically. If voltage is not reaching the component, the continuity between this component and the timer must be checked. If continuity exists, the timer should then be checked and replaced, as necessary.

TIMER (KDS-18, "SUPERBA") (Fig. 14)

KDS-18 timers operate on a unique principle: although each interval is of 90-second duration, the angular movement of each interval will vary in a predetermined pattern. In addition, they utilize multiple connector plugs to connect the dishwasher electrical harness with the timer.

The multiple connector plugs not only eliminate potential service problems, but also make the service technician's job easier by making the timer readily available for connecting or disconnecting from the wiring harness(es) and to test equipment or a test timer.

With the KDS-18 (SUPERBA) dishwasher, the timer has a dial face printed around the timer socket (4, Fig. 14). The notch on the socket points to the part of the cycle in which the timer is then operating. Check timer operation by comparing it with the operation of the components programmed for each part of that cycle.

If the KDS-18 timer is erratic, malfunctioning or inoperative, check as follows:

1. Disconnect power supply.
2. Remove four timer bracket retaining screws (3, Fig. 14).
3. Remove timer and disconnect electrical plugs (1, Fig. 14) (white) and (2, Fig. 14) (black).
4. Disconnect the black leads on timer motors that connect to "C" leads on Action Indicator lights.
5. Connect the two plugs into a test timer of assured proper operating condition.
6. Reconnect power supply to dishwasher and operate dishwasher through cycles.
7. If replacement does NOT correct problem, reconnect the plugs into the original timer and check other areas for malfunction.
8. Reverse the disassembly procedure to replace a new timer.

TIMER (KDP-18, "PATRICIAN") (Fig. 15)

The KDP-18 timer has a direct drive motor and also a rapid advance motor. The timer has a dial face printed around the timer socket (4, Fig. 15). The notch on the socket points to the part of the

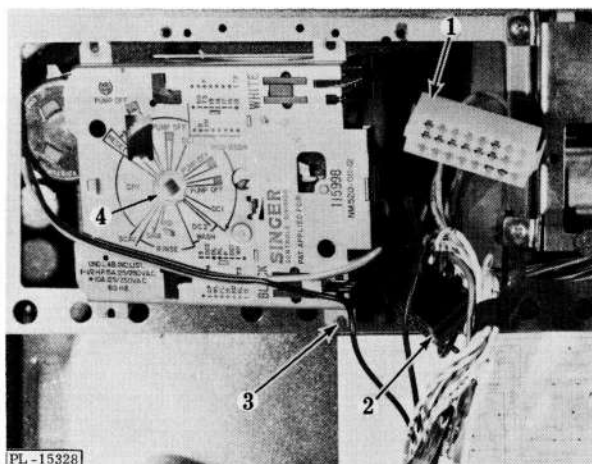


Fig. 14

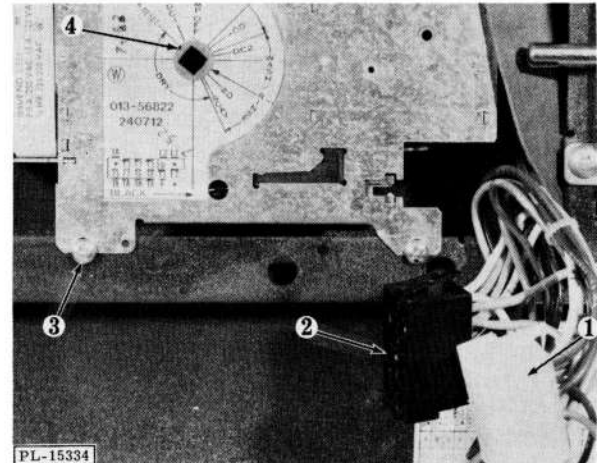


Fig. 15

cycle in which the timer is then operating. Check timer operation by comparing it with the operation of the components programmed for each part of that cycle.

The KDP-18 uses multiple connector plugs to connect the electrical harness with the timer. These connectors make the timer readily available for connecting and disconnecting from the wiring harness to the test equipment or a test timer.

If the KDP-18 timer is erratic, malfunctioning or inoperative, check as follows:

1. Disconnect power supply.
2. Remove the four timer bracket retaining screws (3, Fig. 15).
3. Remove timer and disconnect the electrical plugs (1, Fig. 15) (white) and (2, Fig. 15) (black).
4. Connect the two plugs into a test timer that is in proper operating condition.
5. Reconnect power supply to dishwasher and operate dishwasher through the cycles.
6. If replacement does NOT correct the condition, reconnect the electrical plugs into the original timer and check other areas.
7. Reverse the disassembly procedure to replace a new timer.

TIMERS (KDC AND KDI) KDI TIMER (SHOWN) (Fig. 16)

(Timers are direct drive and move approx. 6° in 60 seconds).

If the timer is erratic, malfunctioning or inoperative, check as follows:

1. Disconnect power supply.
2. Remove the control panel and outer door panel.
3. Remove the four timer bracket retaining screws.

4. Remove timer (1, Fig. 16).
5. KDI Only: Disconnect the two multiple connector plugs (3, Fig. 16) (white) and (2, Fig. 16) (black). Remove one black timer motor lead from white harness lead that connects the "Power On" light.
6. KDC Only (Not Shown): Disconnect the one multiple connector plug (black). Remove one black timer motor lead from harness lead.
7. Connect the plug(s) into a test timer of assured proper operating condition.
8. Reconnect power supply to dishwasher and operate dishwasher through cycles.
9. If replacement does NOT correct problem, reconnect the plug(s) into the original timer and check other areas for malfunction.
10. Reverse the disassembly procedure to replace a new timer.
11. When installing timer, check to make sure the timer reset mechanism is actuated in proper sequence with switch cancelling lever.

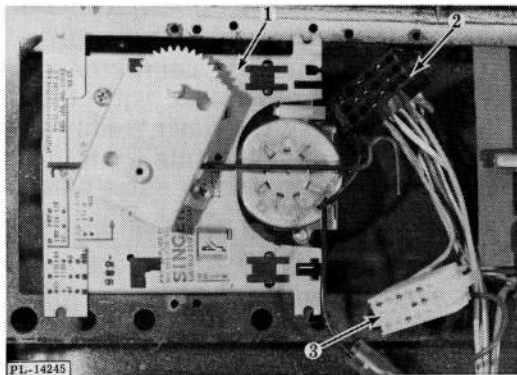


Fig. 16

Field Wiring Compartment (1, Fig. 17)

1. Remove lower front panel (1, Fig. 11).
2. Remove one screw retaining cover and lift off cover. Lead wires are now accessible.

Ground Screw (2, Fig. 17)

1. Remove lower front panel (1, Fig. 11).
2. Loosen ground screw.

Drain Valve

Two types of drain valves (1 & 2, Fig. 18) are currently being used. Your dishwasher may be equipped with either drain valve shown. The electrically operated drain valve (Fig. 18) is normally closed. It is energized and opens during each drain period, permitting the drain pump to remove water from the tank.

To determine if the solenoid is faulty, place a test

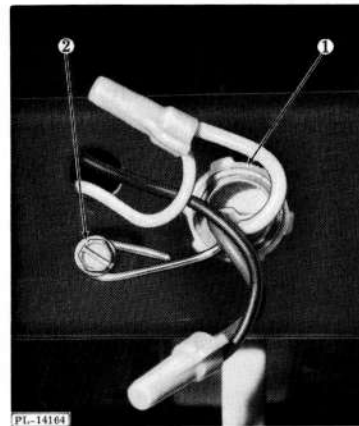


Fig. 17

lamp across the solenoid terminals to determine if voltage is reaching it. The timer may be advanced automatically or manually to direct voltage to the valve. If voltage is reaching the solenoid, but it remains inoperative, the continuity of the coil should be checked using an ohmmeter. (A common battery operated continuity tester will NOT function thru these coils due to resistance). Replace the drain valve, if continuity does not exist. NOTE: Coil windings can open when warm and close when they cool due to expansion of the wire.

To remove drain valve:

1. Remove lower front panel (1, Fig. 11).
2. Remove kickboard.
3. Depress hose clamps and disconnect hoses from inlet and outlet of drain valve.
4. Remove two bracket retaining screws.
5. Remove the two mounting screws.

Evaporation Channel (2, Fig. 19)

1. Remove lower front panel (1, Fig. 11).

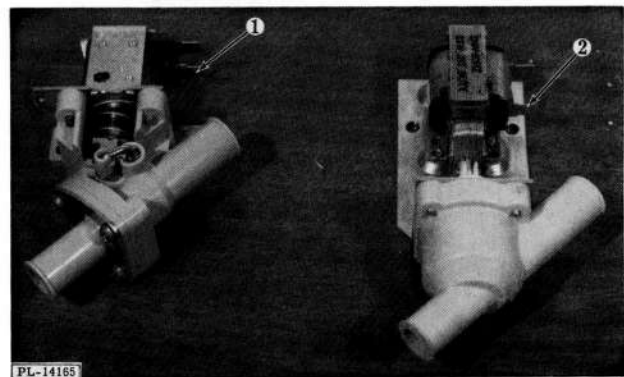


Fig. 18

2. Remove two retaining screws (one at each end) (3, Fig. 19).
3. Straighten conduit tabs (1, Fig. 19) in center of channel. Remove evaporation channel.

NOTE: Wiring harness is sealed to channel conduit and must be pulled free.

Door Springs (4, Fig. 19)

1. Make sure power is turned OFF.
2. Grasp top portion of spring (4, Fig. 19) and lift spring hook off door stop bracket.
3. Adjustment is provided by changing door spring mounting bracket (Fig. 20) location on the vertical frame member.

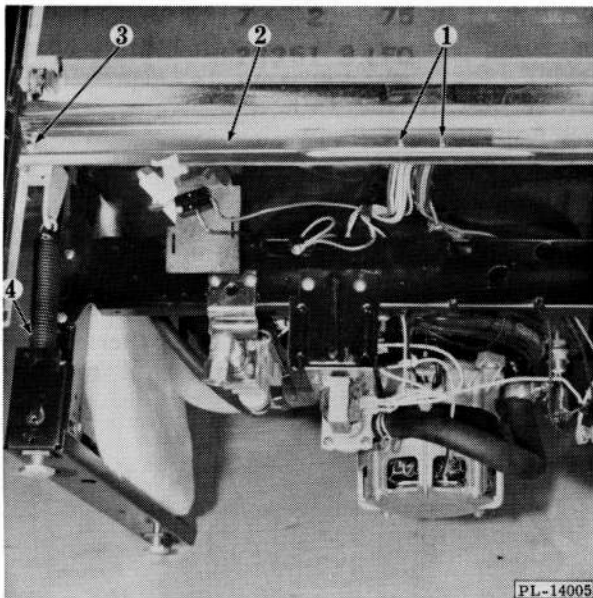


Fig. 19

Kickplate Adjustment

The kickplate can be adjusted by moving kickplate up or down.

Fill Valve (Fig. 21)

Two styles of fill valves, single coil outlet (1, Fig. 21) (for convertible-portable) and dual coil outlet (2, Fig. 21) (for KD-18) are used.

If water is not passing through the fill valve during the fill period, first make certain voltage is reaching each solenoid and that the solenoid is operative. The solenoid may be checked as previously outlined under "Drain Valve". Voltage

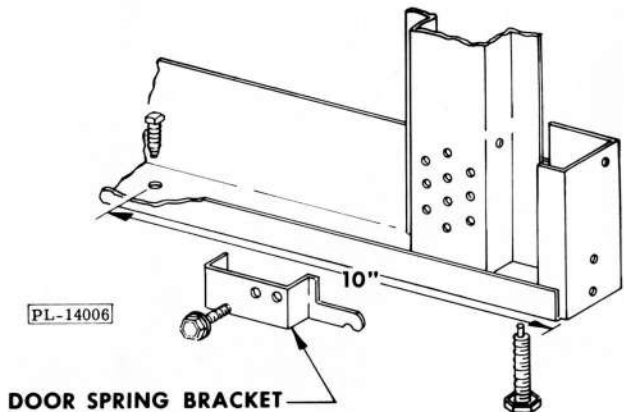


Fig. 20

between the timer and fill valve must pass through the overflow control switch, which is normally closed. If the solenoid is functioning as it should, the filter screen should be removed to make certain it is not clogged. If the valve still malfunctions, it should be replaced.

To replace fill valve:

1. Shut off water supply valve.
2. Remove lower front panel (1, Fig. 11).
3. Disconnect water inlet line at fill valve.
4. Remove two bracket mounting screws.
5. Disconnect electrical leads at valve coil (or coils).
6. Depress hose clamp and disconnect fill line hose.

CAUTION: THE VALVE, OR COMPONENT PARTS SHOULD NEVER BE ALTERED IN ANY WAY OR PARTS SUBSTITUTED.

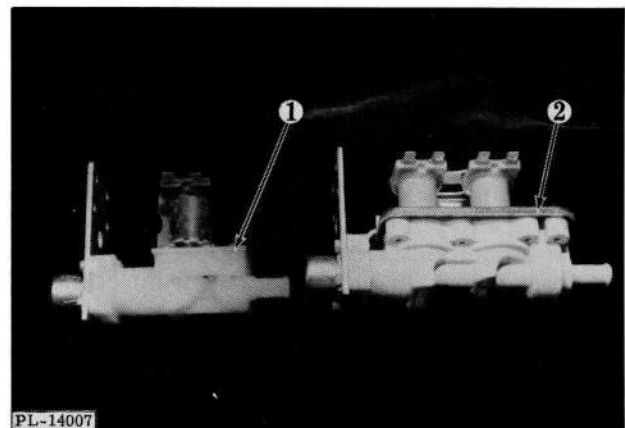


Fig. 21

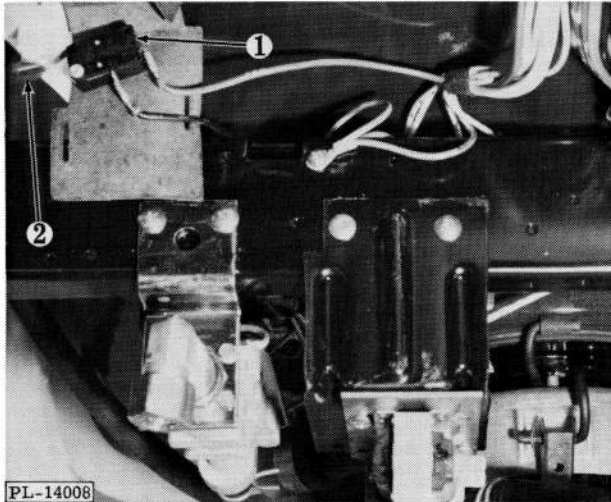


Fig. 22

Overfill Control Switch (1, Fig. 22)

The normally closed overfill control switch is an electrically operated safety device in series with the fill valve. This safety device will operate only if the timer stalls during fill cycle or if the dishwasher fails to drain. It will **not** protect the fill valve against a malfunction caused by foreign material or a mechanical failure.

Excessive water in tank (approx. 1/4" below hub of hydro sweep) actuates the overfill control switch, opening fill valve circuit.

This switch is permanently factory adjusted and has automatic reset. **DO NOT ATTEMPT TO ADJUST.**

To disassemble from dishwasher:

1. Remove lower front panel (1, Fig. 11).
2. Remove staple from cover.
3. Open cover and remove retaining screw.
4. Disconnect electrical lead wires to switch.

Overfill Protection Float Standpipe (Fig. 23)

Should the tank reach an excessive level (approx. 14 quarts), the overflow protection float will prevent flooding by shutting off the fill valve. The float is located inside the left front corner of the tank.

To disassemble from dishwasher:

1. Remove lower front panel (1, Fig. 11).
2. Remove overfill control float (1, Fig. 23).
3. Remove standpipe nut (2, Fig. 23) from inside tank.

4. Remove standpipe (4, Fig. 23) and gasket (3, Fig. 23) from beneath tank.
5. When reassembling standpipe, make sure gasket is on stem before inserting stem through the tank.
6. Using a tool, securely tighten standpipe nut (2, Fig. 23).

Thermostat and Thermal Protector (KDS Only) (1 & 2, Fig. 24)

A thermostat (1, Fig. 24) (KDS only) controls the water heater during the Sani Cycle. It holds the timer motor circuit open (preventing timer advancement) until the water reaches approximately 180° F. at which time the thermostat closes, allowing the timer to advance.

The automatic thermal protector (2, Fig. 24) is a normally closed safety device. If for any reason the sump temperature exceeds approximately 200° F. the protector contacts open, stopping current flow to the 1400 watt water heater. It does not interrupt dishwasher cycle. It will automatically reset at approx. 150° F.

To Service:

1. Remove lower front panel (1, Fig. 11).
2. Remove thermostat cover.
3. Disassemble thermostat and thermal protector by rotating them out of mounting spring (3, Fig. 24).

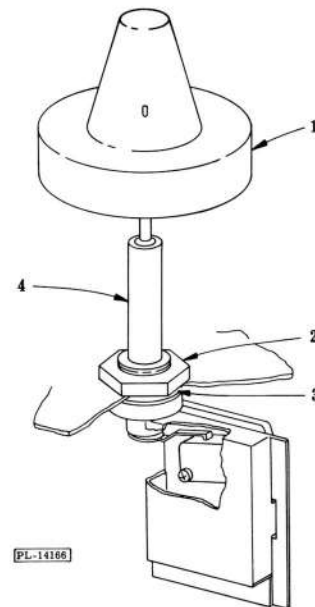


Fig. 23

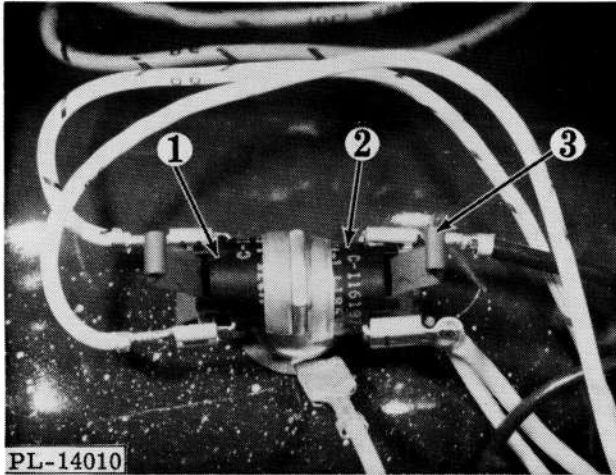


Fig. 24

“SANITIZED FLO-THRU DRYING” ASSEMBLY

Make certain power is reaching unit before removal. Disconnect power and withdraw assembly, with wiring intact, place on floor in front of dishwasher. Unit may be operated and checked in this position. See “Dryer Thermal Protector”, “Dryer Heating Element” and “Dryer Blower Unit” for component checking instructions.

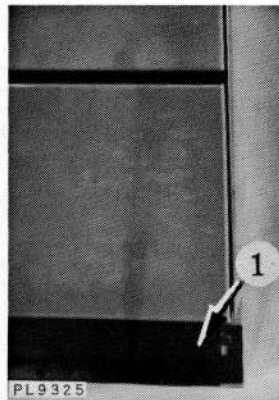


Fig. 25

To remove (See Fig. 26) (All except KD-58 models):

1. Remove kickboard (1, Fig. 25) and lower front panel (1, Fig. 11).
2. Loosen two mounting screws (3, Fig. 26) and swing assembly (1, Fig. 26) to the left to clear slots. Lower unit to withdraw beneath tank opening.
3. Move unit to front of machine and disconnect electrical leads.

To remove (KD-58 models only) (See Fig. 27):

1. Remove lower front panel (1, Fig. 11).
2. Tilt dishwasher to rear at 45° angle. (Dishwasher should be braced on box or similar object).
3. Loosen two screws holding assembly to frame (1, Fig. 27).
4. Disconnect electrical leads and remove dryer assembly from under dishwasher.

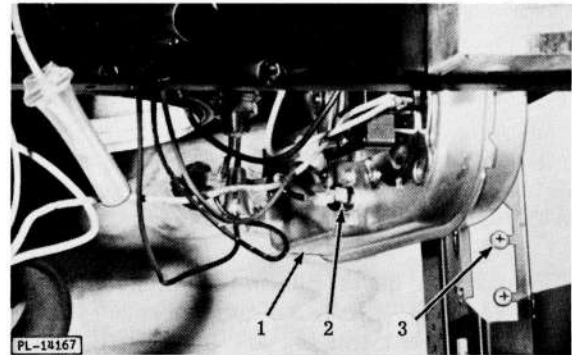


Fig. 26

A. Dryer Thermal Protector (2, Fig. 26)

The thermal protector is in series with the heating element. It opens if the temperature in the dryer overheats due to blower fan failure or air restriction. It is a safety device only.

To replace:

1. Remove dryer unit assembly (1, Fig. 26).
2. Remove two screws and lift off protector (2, Fig. 26).

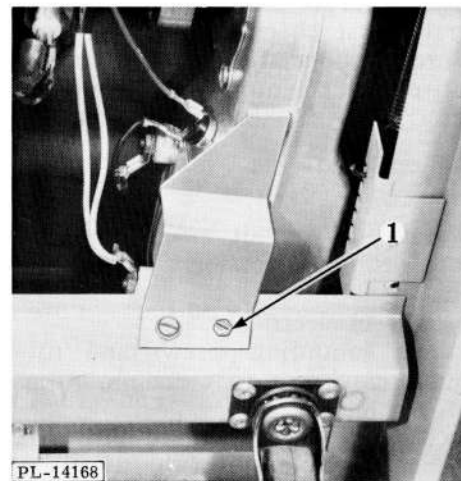


Fig. 27

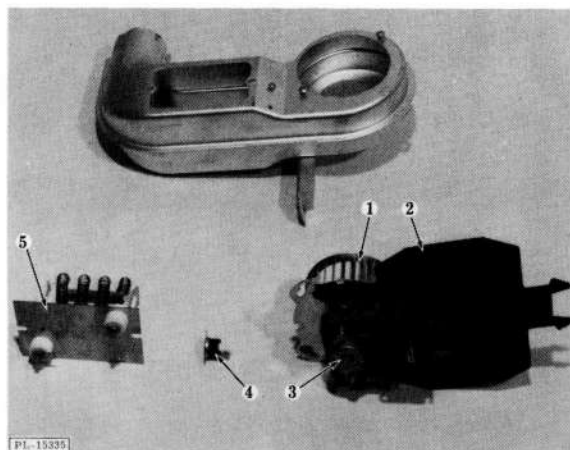


Fig. 28

B. Dryer Heating Element (5, Fig. 28)

Should the dryer heating element become inoperative first check to make sure voltage is reaching element (during dry period). If voltage is not reaching element, check for faulty energy saver switch. If voltage is reaching the element (thru thermal protector) (4, Fig. 28) next check continuity using an ohmmeter. If no continuity exists, replace element.

To replace:

1. Remove dryer unit assembly (1, Fig. 26).
2. Disconnect electrical leads.
3. Remove the two retaining screws and lift out dryer heating element (5, Fig. 28).
4. Replace element and reassemble dryer unit.

C. Dryer Blower Unit (1 & 3 Fig. 28)

Should the dryer blower motor (3, Fig. 28) fail to operate, first check the voltage supply. Next make sure motor shaft is free. If motor remains inoperative, check motor winding continuity with ohmmeter. Replace motor if tests prove negative.

To replace:

1. Remove dryer unit assembly (1, Fig. 26). Note terminal location and replace in same location.
2. Disconnect electrical leads.
3. Loosen mounting screws and rotate unit counterclockwise to clear mounting screws. Lift out blower unit.
4. Loosen set screw and pull blower fan wheel (1, Fig. 28) from motor shaft.
5. At reassembly, make sure dryer blower motor cover (2, Fig. 28) is in place.

WASH PUMP, DRAIN PUMP AND MOTOR SHAFT SEAL REPLACEMENT.

It is not necessary to remove the motor from the dishwasher to install the wash pump, drain pump or motor shaft seal.

Wash Pump (Figs. 29 & 30)

1. Remove lower rack.
2. Lift up and remove 4-Way Hydro Sweep (wash arm).
3. Lift up and remove strainer.
4. Remove four retaining screws and lift off wash arm support (1, Fig. 29).
5. Remove wash pump impeller retaining screw, spring washer, cap washer, key washer and wash pump impeller (2, Fig. 29).

Drain Pump (Figs. 29 & 30)

1. Remove wash pump components.
2. Remove lower pump housing (3, Fig. 29).
3. Remove fine strainer seat (1, Fig. 30).
4. Remove four retaining screws and lift off drain inlet cover (4, Fig. 29) and drain pump top (5, Fig. 29).
5. Remove drain pump impeller (6, Fig. 29) and shaft seal assembly (2, Fig. 30).

Pump and Shaft Seal Installation

1. Proper spacing (working height) of the drain pump impeller is important. Check shaft seal working height with the shaft seal height

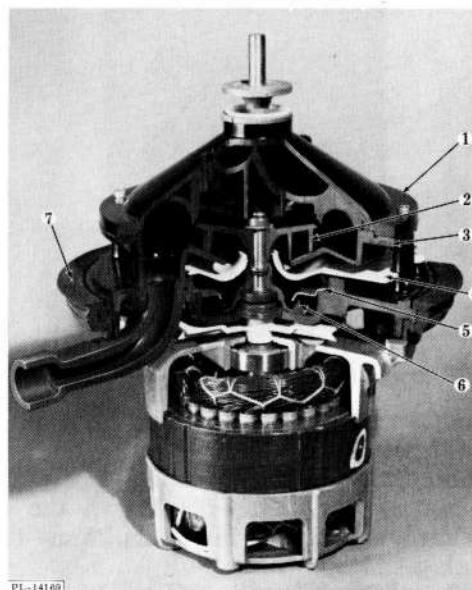


Fig. 29

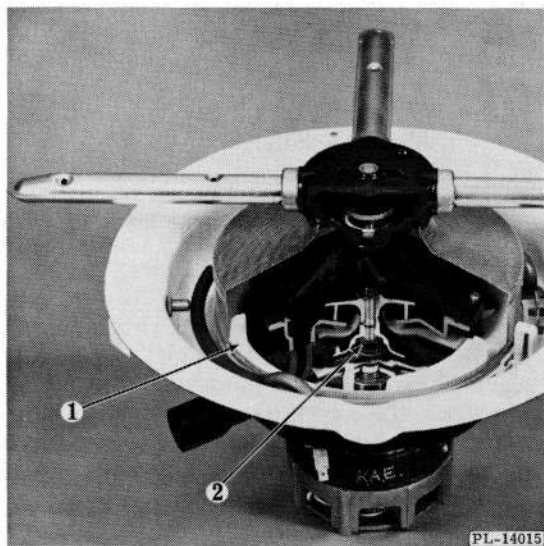


Fig. 30

“touch” or “clear” gauge (TL-91043) (1, Fig. 31). Limits of the seal height gauge are .606” to touch and .631” to clear. (See Fig. 31). Use the proper combination of shim washers on top of the motor shaft to attain proper dimension. NOTE: These shim washers have smaller I.D. and are NOT the same washers used for wash impeller spacing.

2. The shaft seal assembly and drain pump impeller are furnished as a single unit and must be replaced as a single unit only. Do not attempt a partial replacement. Use water only as a lubricant for assembling seal. Moisten the bellows seal (stationary part) and press into place in the drain housing cavity. Install the drain pump impeller and rotating assembly all the way down over the motor shaft. Make sure no washers have stuck to the underneath side of the impeller and the stationary part is completely seated in the drain pump body for proper alignment. Firmly seat “O” ring

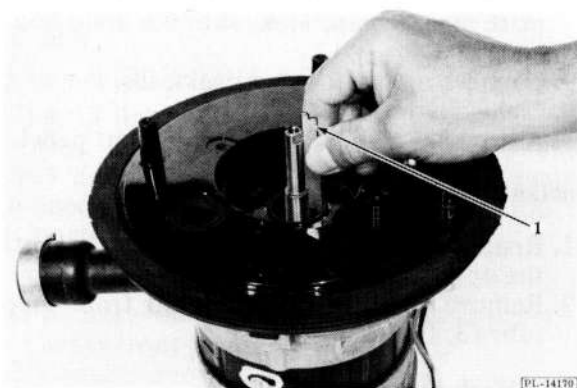


Fig. 31

around shaft into groove of drain pump impeller.

3. Place the drain pump top (stainless steel soft waste disposer) (5, Fig. 29) and inlet cover (4, Fig. 29) into position and securely fasten with the four retaining screws.
4. Position the lower pump housing so the upper spray supply hole is directly above the rubber overhead connector. The recesses in the lower pump housing must be in alignment with the motor mounting plate bosses over the drain housing. NOTE: Assemble the four bearing spacers (Part No. A-102652) (1, Fig. 32) furnished in the kit on top of the lower pump housing with four retaining screws removed in disassembling the wash arm support.
5. Assemble wash pump impeller making sure it engages the drain pump impeller. Assemble spring washer, cap washer, key washer, and retaining screw in proper sequence and tighten screw. NOTE: Check wash pump impeller spacing with shim gauge (TL-91042) (2, Fig. 32) beneath vane of wash pump

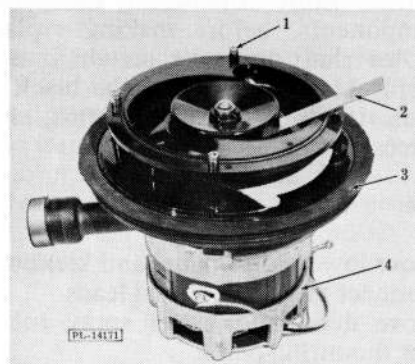


Fig. 32

impeller. The longest section of the shim gauge should clear. The combination of both sections (together) should just touch. Limits of the shim gauge are .015” to “clear” and .025” to “touch”. Add the proper combination of shim washers to the top of the drain impeller to attain the proper dimension. Always use at least one shim washer.

6. After spacing wash pump impeller correctly, remove the four bearing spacers.
7. Install ring gasket to the lower pump housing. Seat gasket properly. Make sure it is not twisted in the groove.
8. Install the wash arm support and position it with the word “FRONT” to the front of the dishwasher with the four retaining screws. Reassemble fine strainer seat, strainer, lower

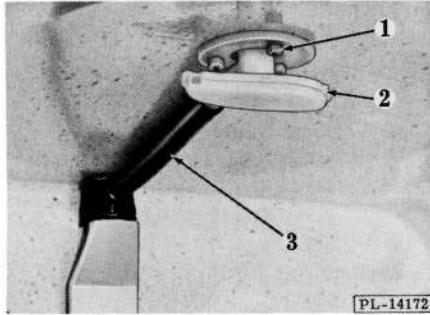


Fig. 33

wash arm, and lower rack in their correct location. Check dishwasher for operation.

Motor (4, Fig. 32)

The 1/2 H.P., 3450 R.P.M., single phase motor operates both wash and drain pumps. It rotates counterclockwise, incorporates a centrifugal start switch, ball bearing mounted rotor and integral automatic overload protector.

Always check motor operation, independent of other components, before making replacement. Check motor shaft to make certain it is free to rotate. Apply 115 V.A.C. across the black and the white leads. If motor starts and runs, check for other sources of trouble.

To remove:

1. Remove lower front panel and kickboard.
2. Disconnect motor electrical leads.
3. Remove drain and upper spray tubes from motor mounting plate.
4. Unsnap and remove the three motor retaining clips.
5. Remove fine strainer seat from inside tank. Insert a screwdriver blade between motor mounting plate and gasket. **CAUTION:** Do

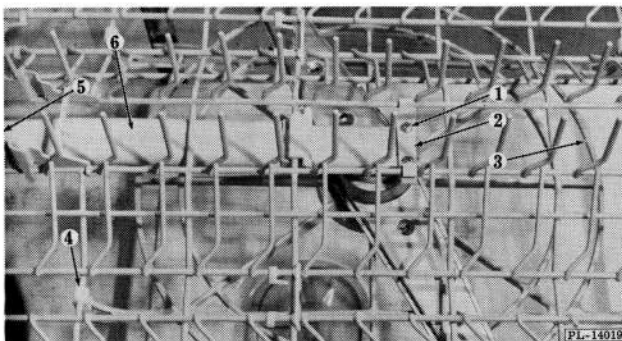


Fig. 34

not pry between gasket and tank or enamel may be damaged. Pry to loosen motor from gasket.

6. Withdraw complete motor and pump unit from inside wash tank.

To reinstall motor:

1. Motor and pump unit must be installed with "arrow" on motor mounting plate and word "FRONT" centered in the tank and positioned to the front of the dishwasher.
2. Install motor and pump unit as a complete assembly from inside the tank.
3. Moisten the complete surface of motor mounting plate gasket (7, Fig. 29) and area inside tank where gasket fits with water to aid installation.
4. Apply downward pressure on wash arm support to snap gasket in place in tank sump.
5. Make sure motor mounting plate gasket (3, Fig. 32) seals the tank.

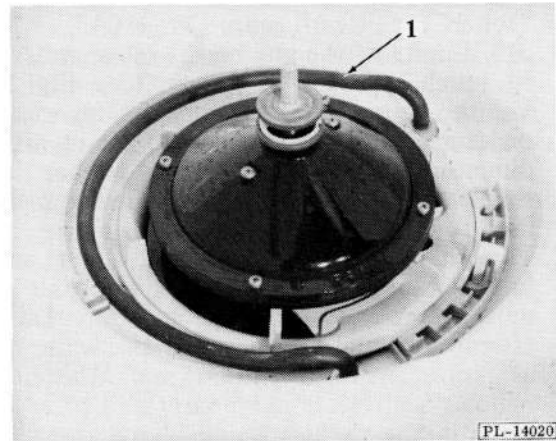


Fig. 35

6. Seat the fine strainer.
7. Install the three motor retaining clips and snap them in place.
8. Connect upper spray supply tube to flexible connector and drain tube to motor mounting plate and tighten. Make sure the drain hose is not kinked.
9. Connect the motor electrical leads.
10. Check for leaks.
11. Assemble kickboard and lower front panel.

Constant Wash/Rinse System (Fig. 33)

1. Remove the three nuts (1, Fig. 33) that retain the upper spray unit (2, Fig. 33).
2. Remove upper spray manifold from supply tube (3, Fig. 33).

Middle Wash System (Fig. 34)

1. Remove two screws (1, Fig. 34) and strap (2,

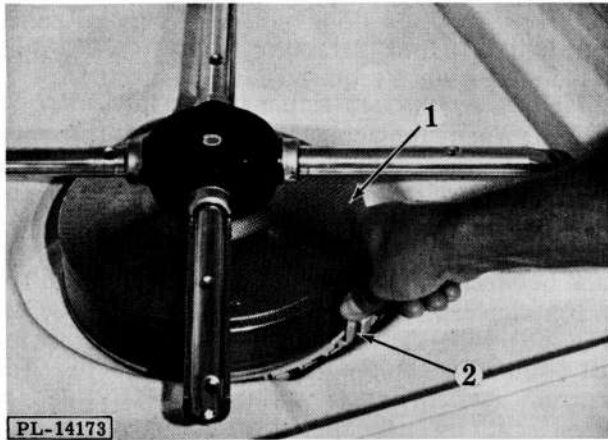


Fig. 36

Fig. 34) that holds the manifold to upper rack.

2. Unsnap the four clips (4, Fig. 34) and remove middle wash arm guard (3, Fig. 34).
3. Pull complete assembly including manifold tube (6, Fig. 34) from middle wash arm receiver (5, Fig. 34).

Sheath Heater (1, Fig. 35) (KDS Only)

To Replace:

1. Remove lower front panel and kickboard.
2. Disconnect electrical lead wires.
3. Remove the two hex nuts and ring gaskets from heating element on underside of tank.

NOTE: Use new ring gaskets at reassembly. Always reassemble washer and ground lug!

4. Lift and remove heating element from inside of tank.

Self-Cleaning Filter (Fig. 36)

1. Remove lower wash arm.
2. Lift out fine strainer assy. (1, Fig. 36).
3. Squeeze center section (2, Fig. 36) of coarse strainer together and lift out.
4. Grasp rear and front tab of fine strainer seat (1, Fig. 30), lift up on rear tab first, then lift out.

Air Gap & Fill Tube (1 & 2, Fig. 37)

The fill line air gap is not accessible from inside of tank. Do not loosen nut at inlet unless dishwasher is removed. (Nut must be securely tightened). Tube must not be kinked at top (air gap junction) or at fill valve.

Wiring Harness (KDP & KDS)

1. Remove outer door panel, control panel and lower front panel.
2. Remove door vapor shield.
3. Remove evaporation channel.
4. Remove program switch bracket.

5. Remove timer.
6. Disconnect leads in door to action indicator lights, all switches, dispensers, door frame ground, rinse agent dispenser ground, and multiple connector plugs (one white (3, Fig. 38) and one black (4, Fig. 38)). On KDS and KDP, also disconnect lead to rinse-only light.
7. Disconnect all nonwhite leads to blower motor, overfill control switch, drain valve, motor and white lead to fill valve. On KDS, also disconnect nonwhite leads to heater thermostat and sheath heater.

NOTE: Following removal of the complete wiring harness, some electrical connections still remain, such as: overfill control switch to fill valve, dryer heater and fan assembly connections, fill valve connection. On the KDS, there are also connections to the #87 thermal protector.

Wiring Harness (KDI & KDC)

1. Remove outer door panel, control panel, and lower front panel.
2. Remove door vapor shield.
3. Remove evaporation channel.
4. Remove program switch bracket.
5. Remove timer.
6. Disconnect leads in door to switches, light (KDI only), dispensers, and plug (KDC only), or multiple plugs (KDI only) to timer and door frame ground.
7. Disconnect all nonwhite leads to blower motor, heater thermostat, overfill control switch, drain valve, motor and white lead to fill valve.

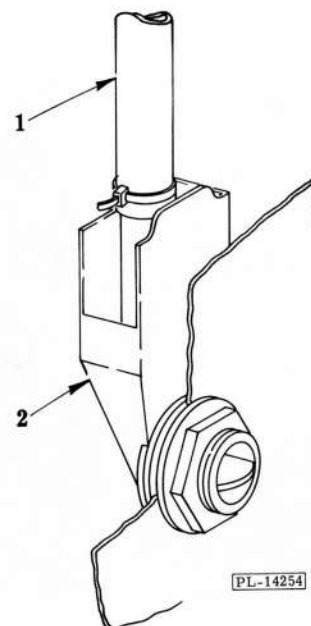


Fig. 37

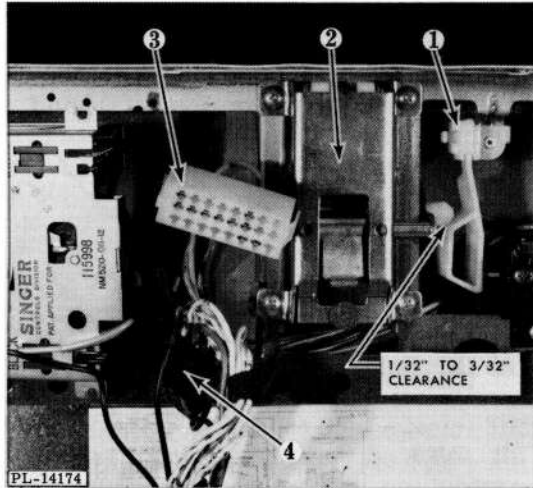


Fig. 38

Indicator Sequence Light Assy. (KDS & KDP) (3, Fig. 40)

1. Remove control panel.
2. Remove indicating sequence light assembly and disconnect leads.

Door Latch Mechanism (2, Fig. 38)

The latch is a safety device that automatically actuates the program push button cancelling lever each time the door handle is unlatched. It also operates the interval timer line switch on KDC and KDI models and resets the timer.

The latch can be adjusted to increase the door seal tension by adding shims between latch and inner door mounting bracket.

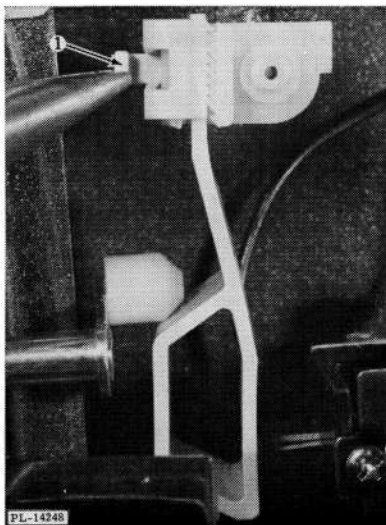


Fig. 39

1. Remove outer door panel and control panel.
2. Remove four retaining screws (with shim washers when required).

NOTE: When replacing a door latch, program switch or inner door panel, ALWAYS check the program switch cancel spring (1, Fig. 38). With the door handle latched and the normal cycle button depressed, check for correct clearance. The clearance between one side of the cancel spring and the switch cancel lever cap should be 1/32" to 3/32" (Fig. 38) with the other side of the cancel spring just contacting the program switch cancel bar. The program switch cancel spring is removable for adjustment by unsnapping it from the riveted anchor. Pull out on tab (1, Fig. 39) with needle nose pliers to disengage tab from detent, then pull straight forward (see Fig. 39).

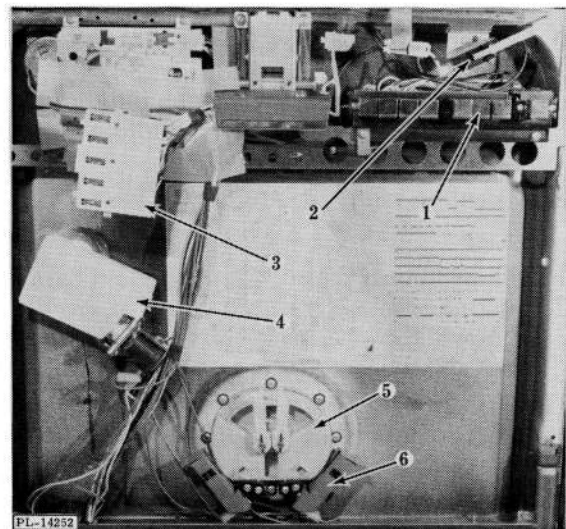


Fig. 40

Program Switch Assy. (1, Fig. 40) (KDS shown)

1. Remove control panel and outer door panel.
2. Remove switch bracket retaining screws, grounding clip, lock washer and disconnect electrical leads.
3. Lift switch assembly clear of door. At reassembly be sure to reinstall grounding clip and lock washer.

NOTE: Interlock switch (2, Fig. 40) is also accessible when control panel is removed.

Inner Door Assy. (Fig. 40)

1. Disconnect power supply.
2. Remove outer door panel and lower front panel.

3. Remove retaining screws and lift off door vapor shield.
4. Unhook door springs.
5. Pull off action indicator knob (KDI & KDC).
6. Remove control panel.
7. Remove retaining screws from program switch and bracket assembly.
8. Disconnect electrical wiring harness.
9. Remove timer.
10. Disconnect electrical leads at rinse agent dispenser and detergent dispenser.
11. Remove clips, push out pins and lift off door at a 90° angle and withdraw from hinges.

Rinse Agent Dispenser (4, Fig. 40) (Optional on KDI & KDC)

Check by applying voltage to the dishwasher and advancing timer thru two or three cycles; observe rinse agent liquid on inner door assembly.

1. Remove outer door panel.
2. Disconnect electrical lead wires.
3. Open door and remove two retaining nuts. Lift off dispenser.

NOTE: Avoid spilling concentrated rinse agent liquid on counter top, floors, etc.

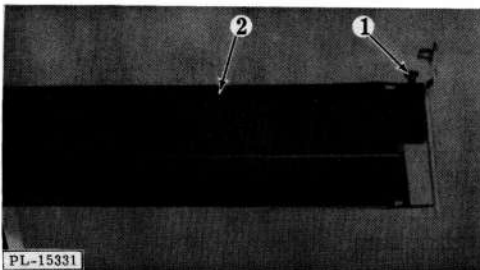


Fig. 41

Detergent Dispenser (5, Fig. 40)

CAUTION: Bimetal units have voltage potential at all times when motor is operating.

1. Remove outer door panel.
2. Disconnect electrical lead wires.
3. Remove bimetal and holder assembly (6, Fig. 40).
4. Remove retaining screws.
5. Open door and lift out dispenser assembly.
6. Reassemble bimetal unit to just touch or have 1/64" clearance from stop on swing arm.

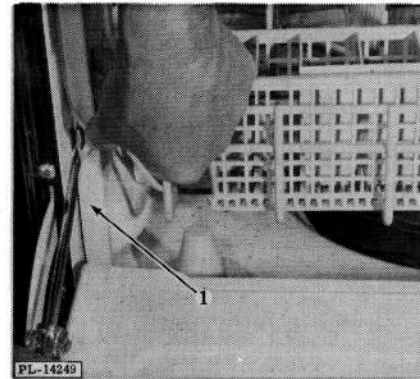


Fig. 42

NOTE: At reassembly use new detergent dispenser gasket.

Upper Rack Track (2, Fig. 41)

1. Pull track forward to bumper stop. Lift tab from detent hole and remove stop retaining stud (1, Fig. 41).
2. Pull track forward, releasing bumper. Withdraw track.
3. Use shim washers behind rollers for alignment, when required.

Door Seal Gasket (1, Fig. 42)

The door seal is furnished as an assembly with a one piece wire rod in place. Retaining clips are included.

1. Starting at the bottom, pry the seal retaining clips from the tank by inserting a screwdriver blade between wire rod and seal.
2. Install the seal, starting at the top and snapping new clips into holes in the tank. Never reuse old clips.
3. Run dishwasher through a cycle and check for leaks.

Lower Door Baffle

1. Remove outer door panel.
2. Remove door vapor shield.
3. Pull wiring harness from slots in the door.
4. Unhook door springs.
5. Remove hinge pin retaining clips and hinge pins.
6. Lift off door.
7. Remove three retaining screws holding lower baffle (1, Fig. 43) to lower edge of the door.

NOTE: When replacing door baffle, seal edges with putty to prevent leaks.

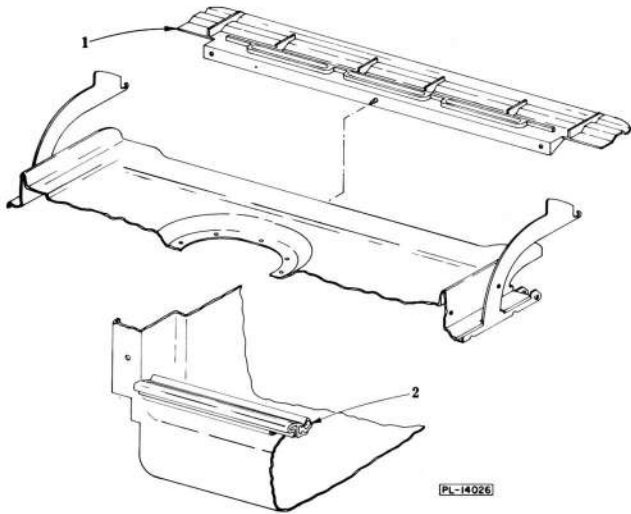


Fig. 43

Tank Seal Assembly

1. Remove outer door panel.
2. Remove hinge pin retaining clips and hinge pins.
3. Unhook door springs.
4. Lift off door.

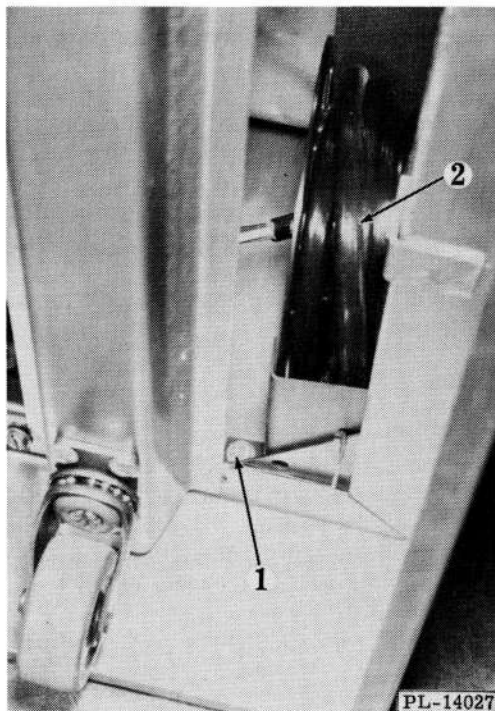


Fig. 44

5. Remove tank seal (2, Fig. 43) by pulling on end.
6. To reassemble tank seal, insert seal at one end and pull it through.

DRAINING CONVERTIBLE-PORTABLE DISHWASHERS

Drain dishwasher hoses before servicing any component which requires placing dishwasher on its back or when making conversion to under-the-counter installation. Remove lower rack, wash arm and strainer.

1. Tilt dishwasher to rear at 45° angle. (Dishwasher should be braced on box or similar object).
2. Remove lower front panel.

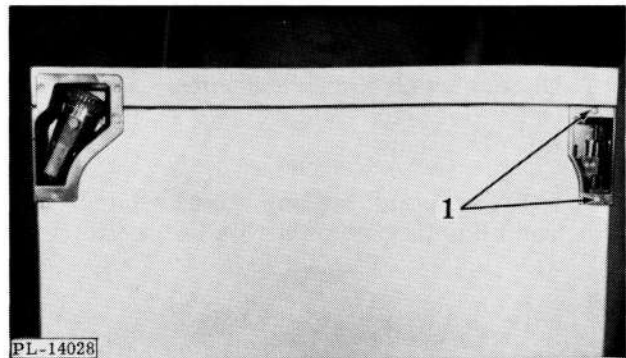


Fig. 45

3. Place suitable container under hose connections (both fill and drain hoses) at the fill and drain valves.
4. Disconnect hoses from fill and drain valves.
5. Drain hoses into container.

Electrical Cord with Reel (KDI-58 & KDS-58 Only) (2, Fig. 44)

To remove power cord with reel:

1. Remove two mounting screws (1, Fig. 45) from power cord housing.
2. Remove power cord housing (1, Fig. 46) and push through slot opening, provided in the housing.
3. With unit drained, lower rack, wash arm and strainer removed, place dishwasher on back. Protect finish by laying it on a rug or similar object.
4. Remove lower front panel.
5. Disconnect electrical leads from reel.
6. Remove one mounting screw (1, Fig. 44) and slide cord reel to the right and lift out.

To reassemble cord reel on dishwasher (KDI-58 & KDS-58 Only)

1. Replace reel on frame with one mounting screw (1, Fig. 44).
2. Extend power cord up through left rear corner of dishwasher cabinet.
3. Pull power cord through opening in top left corner of cabinet. Replace cord in power cord housing. Install cord housing with two mounting screws (1, Fig. 45).
4. Using wire nuts connect electrical leads and reconnect ground lead.
5. Make sure there is proper tension on the reel.
6. Replace lower panel.

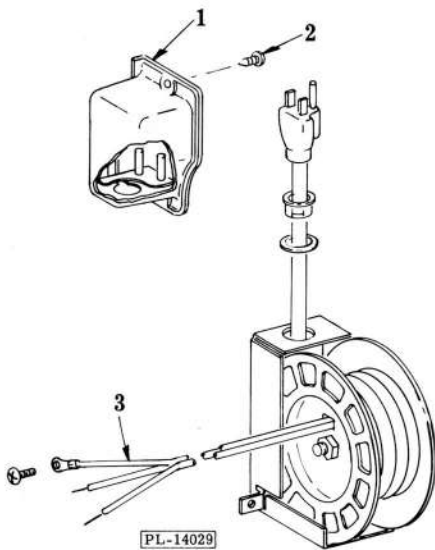


Fig. 46

Electrical Power Cord (KDC-58)

1. Remove two mounting screws (2, Fig. 47) from cord housing.
2. Remove power cord housing (1, Fig. 47) from cabinet and push end of cord through cord housing slot.
3. Locate cord clamp at top corner of dishwasher and disassemble clamp by removing one screw.
4. Disconnect power cord electrical leads and frame ground.

To reassemble, reverse removal procedure

NOTE: Make sure power cord is properly positioned in cabinet for ease of operation and harness wire does not interfere with cord operation.

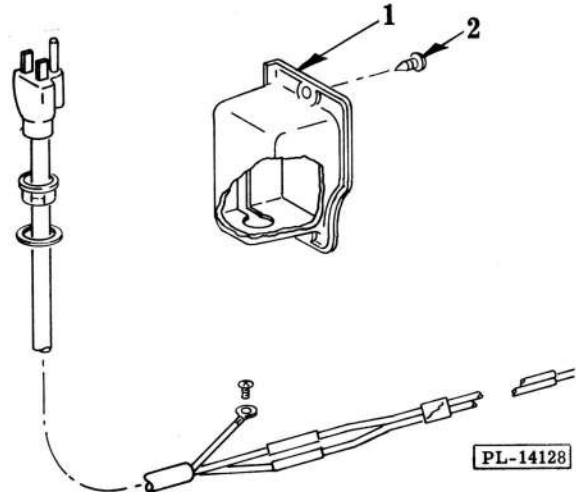


Fig. 47

WATER (FILL AND DRAIN) CONNECTIONS (Fig. 48)

To remove:

1. See "DRAINING CONVERTIBLE-PORTABLE DISHWASHER".
2. Remove anchor bracket (3, Fig. 48) and hose guard (4, Fig. 48).
3. Remove hose clamp bracket (2, Fig. 48) holding hoses to frame.

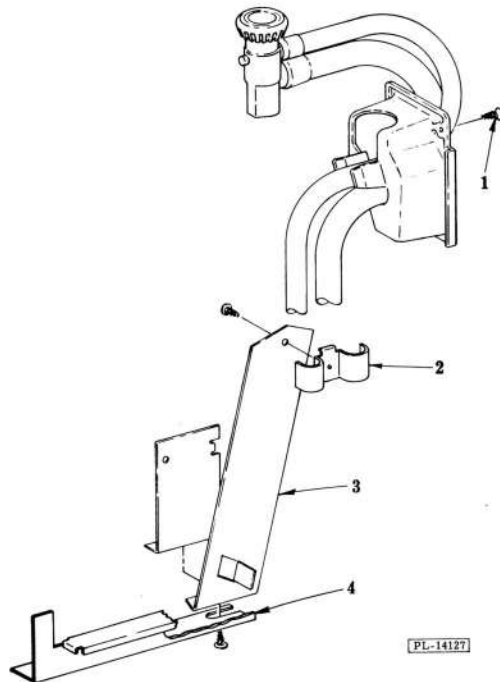


Fig. 48

4. Stand dishwasher upright and pull hoses through hose coupler housing in top, right rear of dishwasher.

To reassemble, reverse above procedures

NOTE: Be especially careful that hoses are dressed properly in loop in cabinet and that hoses do not touch electrical components or terminals, as hoses may act as conductors under some conditions.

CONVERSION OF KD-58 MODELS

Conversion of the KD-58 Convertible-Portable models to undercounter installation requires special instructions. Complete instructions for both the conversion and the undercounter installation are provided.

REMOVAL OF TOP (Fig. 49)

1. Remove retaining screws (1, Fig. 49) from

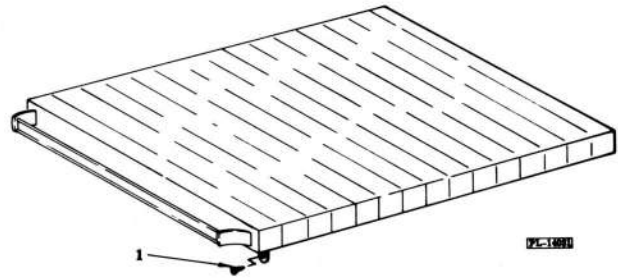


Fig. 49

- top anchor mounting brackets and front of wraparound housing.
2. Remove upper retaining screws (1, Fig. 48) from hose coupler housing.
3. Slide top forward and lift off.

SERVICE TIPS

CONDITION	POSSIBLE CAUSE	REMEDY
Upper Rack binds.	1. Binding due to user's pushing from side, not center.	1.1 Push from center. (Rack flexible for user's convenience in use/loading).
	2. Binding due to distortion. (Has been forced out of shape).	2.1 Align rack wheels into same plane on each side (by eye). Use hands (rack is flexible).
	3. Binding due to distortion. (Distance between upper rack rollers changed).	3.1 Stretch or squeeze rack to make dimension 20-5/8" (over outside edge of rollers).
	4. Binding due to improper distance between upper rack track roller screws.	4.1 Add or remove spacers to align tracks and remove distortions: a. There should always be one LESS spacer on the rear track roller screws than on the front. Actual numbers differ depending on production location.
Visible water vapor exhausting from under door ("steam").	1. High relative humidity and/or cool room temperature (air conditioning, etc.).	1.1 Some visible water vapor is normal for brief time – no correction required or possible.
		1.2 Change room conditions as necessary (decrease humidity and/or increase room temperature).
		1.3 Make certain room air conditioner outlet does not blow directly onto face of dishwasher.
	2. Excessive water supply temperature.	2.1 Lower water temperature as necessary but not below 140° F. at dishwasher.
	3. Dishwasher installed against outside cold wall.	3.1 Insulate dishwasher from cold, as required.
4-Way Hydro Sweep does not turn at proper speed. (30-43 RPM speed for wash arm operating in clean/clear water).	1. Not enough water.	1.1 See "Insufficient fill" and "Water does not remain in tank".
	2. Worn wash arm.	2.1 Replace Hydro Sweep wash arm and/or support.
	3. Strainer clogged.	3.1 Clean strainer and strainer cleaning nozzle.
	4. 4-Way Hydro Sweep nozzles clogged.	4.1 Clean nozzles.
	5. Too much suds.	5.1 Correct the amount and type of detergent or try different brand using varying amounts.

SERVICE TIPS (Cont.)

CONDITION	POSSIBLE CAUSE	REMEDY
Water does not remain in tank.	1. Foreign matter on seat of drain valve.	1.1 Remove foreign matter.
	2. Faulty drain valve spring.	2.1 Replace drain valve.
	3. Drain valve inoperative.	3.1 Replace drain valve.
	4. Timer malfunctioning.	4.1 Replace timer.
Water on floor after fill cycle.	1. Water inlet tube damaged during installation.	1.1 Replace water inlet tube and/or air gap as necessary.
	2. Fill tube of air gap clogged with foreign matter.	2.1 Clean fill tube.
	3. Water "splashing-out" of air gap (rare).	3.1 Replace air gap.
Leaks water at the motor.	1. Shaft seal leaking.	1.1 Replace motor shaft seal.
Excessive noise or vibration during drying cycle.	1. Fan loose on shaft.	1.1 Remove and re-tighten fan.
	2. Heater fan out of balance.	2.1 Replace fan.
	3. Shaft bent on fan motor.	3.1 Replace fan motor.
Dishes do not dry.	1. Water not hot enough.	1.1 Set water heater so that water temperature is 140-160° F. at the dishwasher.
	2. Dryer heater element burned out.	2.1 Replace heater element.
	3. Fan motor inoperative.	3.1 Replace fan motor.
	4. Dryer thermal protector inoperative.	4.1 Replace protector.
	5. Erratic timer operation.	5.1 Replace timer.
	6. Energy saver mechanism malfunctioning.	6.1 Check switch and cancel mechanism. Replace any broken parts or switch.
	7. Air inlet check valve assy. stuck. (If dishwasher equipped with check valve).	7.1 Check to see if valve operates freely.
	8. Blower Fan improperly positioned on shaft.	8.1 Locate fan as close to motor as possible without touching motor.
Dishwasher fails to pause in Sani Cycle (KDS Only).	1. Water too hot.	1.1 Set water heater so that water temperature is 140-160° F. at the dishwasher.
	2. Thermostat inoperative.	2.1 Replace thermostat.
	3. Program switch malfunctioning.	3.1 Replace switch.
	4. Erratic timer operation.	4.1 Replace timer.
Dishware not clean after completed cycle.	1. Not enough water.	1.1 See "Insufficient fill" and "Water does not remain in tank".

SERVICE TIPS (Cont.)

CONDITION	POSSIBLE CAUSE	REMEDY
Dishware not clean after completed cycle. (Cont.)	2. 4-Way Hydro Sweep turning too slowly.	2.1 See "4-Way Hydro Sweep does not turn at proper speed".
	3. Incorrect quantity of detergent.	3.1 See "filling detergent dispenser" in Use and Care Guide.
	4. Low water temperature.	4.1 Set water heater so that water temperature is 140-160° F. at the dishwasher.
	5. Improper detergent.	5.1 Try various brands of detergents. (See Use and Care Guide).
	6. Incorrect loading.	6.1 See operating instructions. (Use and Care Guide).
	7. Clogged strainer.	7.1 Remove and clean strainer assembly.
	8. Middle wash arm not rotating, therefore not enough water.	8.1 Check fill system.
	Soak Cycle does not clean pots and pans.	1. Insufficient detergent.
2. Charred food soils.		2.1 Pre-condition charred areas.
Tableware spotting.	1. Overloading or improper loading.	1.1 See "Use and Care Guide".
	2. Low water temperature.	2.1 See "Does not wash clean".
	3. Incomplete fill.	3.1 See "Insufficient fill" and "Water does not remain in tank".
	4. Excessive water hardness.	4.1 Install water softener or check existing softener for proper regeneration.
	5. Incorrect quantity or improper detergent.	5.1 See "Does not wash clean" and "Use and Care Guide".
	6. Mineral solids (dissolved minerals may exist in both hard and soft water).	6.1 Water may require installation of external special filter.
	7. Rinse agent depleted in dispenser.	7.1 Refill dispenser.
Action Indicator signal light (s) KDS & KDP, Power-On light KDI, etc. inoperative.	1. Lamps burned out.	1.1 Replace lamp and/or socket assembly. (Does not affect machine operation).
Dishwasher does not operate.	1. No electrical power at dishwasher.	1.1 Make sure Portable "plugged in". 1.2 Check fuse or circuit breaker and correct.
	2. Door not latched or cycle selector button not pushed.	2.1 Latch door and push button.
	3. Timer has not reset.	3.1 Unlatch door, wait approx. 1 minute, re-latch door and push button.

SERVICE TIPS (Cont.)

CONDITION	POSSIBLE CAUSE	REMEDY
Dishwasher does not operate. (Cont.)	4. Spring that activates door interlock switch bent or broken.	4.1 Replace door interlock switch.
	5. Door interlock switch inoperative.	5.1 Replace door interlock switch.
	6. Program switch has not reset because switch cancelling lever is mis-aligned, preventing program switch from cancelling (button remains depressed).	6.1 Check program switch cancelling lever and correct or replace lever.
	7. Program switch malfunctioning.	7.1 Check program switch cancelling lever and correct or replace lever.
	8. Timer inoperative.	8.1 Replace timer.
	9. Timer has not reset.	9.1 Check program switch cancelling lever and correct or replace lever. 9.2 On KDC & KDI, make sure torsion bar reset has reset the timer.
Motor does not operate.	1. Improper electrical connection(s).	1.1 Check and correct.
	2. Timer malfunctioning.	2.1 Replace timer.
	3. Motor inoperative.	3.1 Replace motor and shaft seal.
	4. Obstruction in drain pump.	4.1 Remove obstruction.
Cycle does not stop when door is open.	1. Door interlock switch and/or program switch inoperative.	1.1 Replace door interlock switch and/or program switch.
Loud humming during drain cycle.	1. Drain valve solenoid vibrating.	1.1 Replace drain valve assembly.
	2. Obstruction between armature and frame.	2.1 Remove obstruction.
Cycle starts but timer will not advance (resulting in continuous fill).	1. Timer malfunctioning.	1.1 Replace timer.
Insufficient fill (low fill line should be at top of vertical wall on strainer; normal fill line should be 2" up on inclined plane of strainer).	1. Low water flow pressure.	1.1 Have water pressure tested by plumber. If below 20 lbs. per sq. in. flow pressure, take corrective measures.
	2. Fill valve strainer dirty.	2.1 Remove strainer and clean.
	3. Fill tube of air gap clogged.	3.1 Clean fill tube.
	4. Fill valve or overflow control switch inoperative.	4.1 Replace inoperative parts. Also check timer.
	5. Timer inoperative on fill cycle.	5.1 Replace timer unit.
	6. Kinked hose (portable).	6.1 Remove kinks.
	7. Faucet adapter clogged (portable).	7.1 Clean adapter screens.

SERVICE TIPS (Cont.)

CONDITION	POSSIBLE CAUSE	REMEDY
Detergent dispenser does not operate.	1. Dispenser shaft "frozen" in housing.	1.1 Disassemble and clean shaft.
	2. Torsion spring disassembled or broken.	2.1 Replace dispenser assembly.
	3. Timer malfunctioning.	3.1 Replace timer.
	4. Inoperative bimetal unit.	4.1 Replace bimetal unit.
	5. Bimetal unit not properly adjusted.	5.1 Adjust bimetal unit.
Water in tank during drying cycle and at end of complete operation.	1. Clogged drain.	1.1 Remove obstruction.
	2. Drain pump malfunctioning.	2.1 Replace damaged impeller.
	3. Drain valve inoperative or clogged.	3.1 Remove obstruction or replace drain valve.
	4. Program switch malfunctioning.	4.1 Replace program switch.
	5. Timer inoperative or malfunctioning.	5.1 Replace timer.
Inadequate drain.	1. Installation deficiency (drain tubing too small or too long).	1.1 Check drain size 9/16" I.D. min.
	2. Drain tubing kinked.	2.1 Remove kinks.
	3. Disposer "knockout plug" not removed.	3.1 Check for removal of plug (if disposer installed).
	4. Drain air gap, external to dishwasher, clogged or improper size (5/8" I.D. min. required).	4.1 Have air gap cleaned or corrected by plumber (required on some installations; not responsibility of dishwasher service technician).
	5. Program switch has been bumped after program selected or switch malfunctioning.	5.1 Check program switch cancelling lever and correct or replace lever. Replace program switch and/or educate customer to avoid bumping switch.
	6. Timer malfunctioning.	6.1 Check timer for continuity; replace if necessary.
	7. Damaged drain impeller.	7.1 Replace drain impeller.

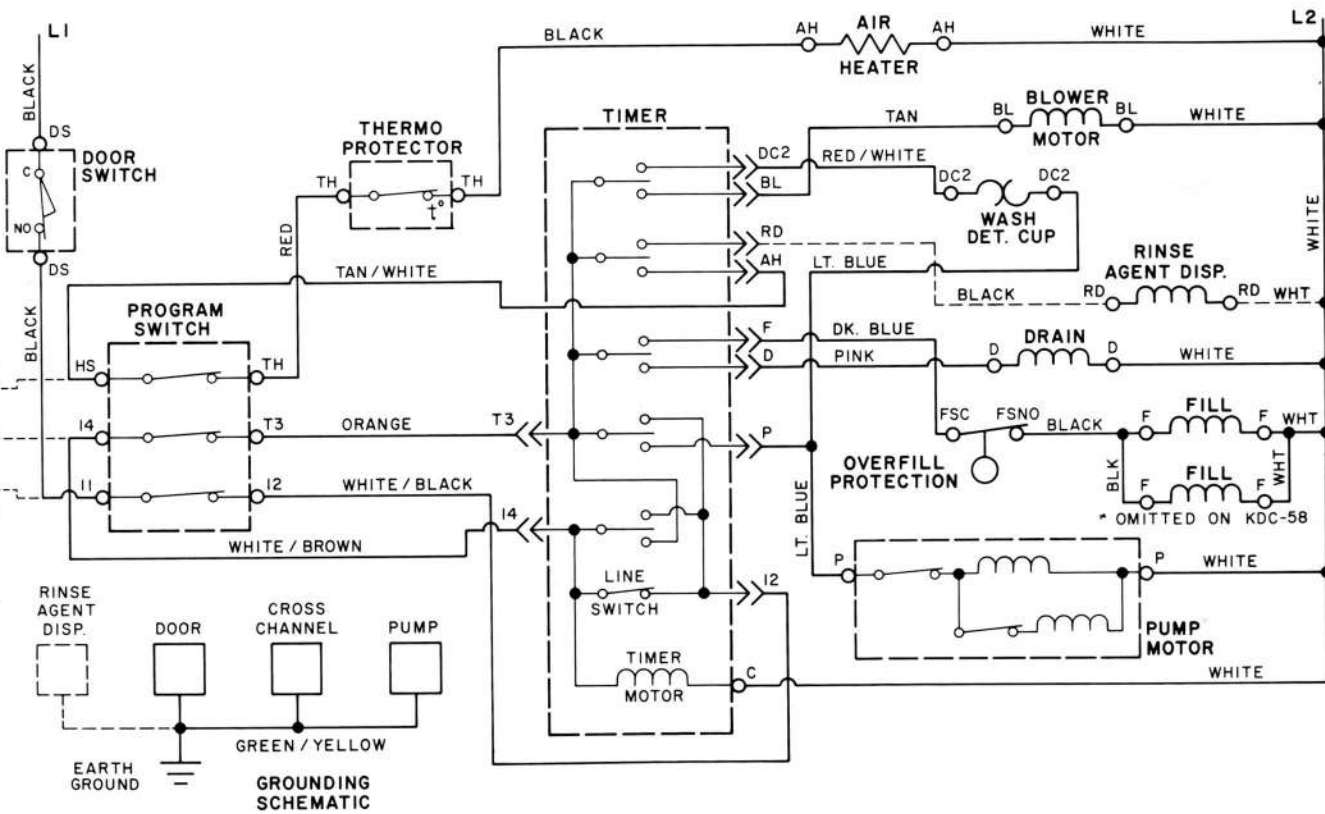
KDC-18 SERIES SCHEMATIC WIRING DIAGRAM

WARNING
ELECTRICAL CONNECTIONS SHOULD BE MADE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR SUCH CODES IN FORCE

PROGRAM SWITCH				
NORMAL	WASH	RINSE	HOLD	RESET
Δ	Δ	0	X	HS-TH
X	0	Δ	0	I4-T3
X	X	Δ	0	I1-I2

X CLOSED
0 OPEN
Δ OPEN OR CLOSED - CONTACT INDEPENDENT OF BUTTON

PL-14032



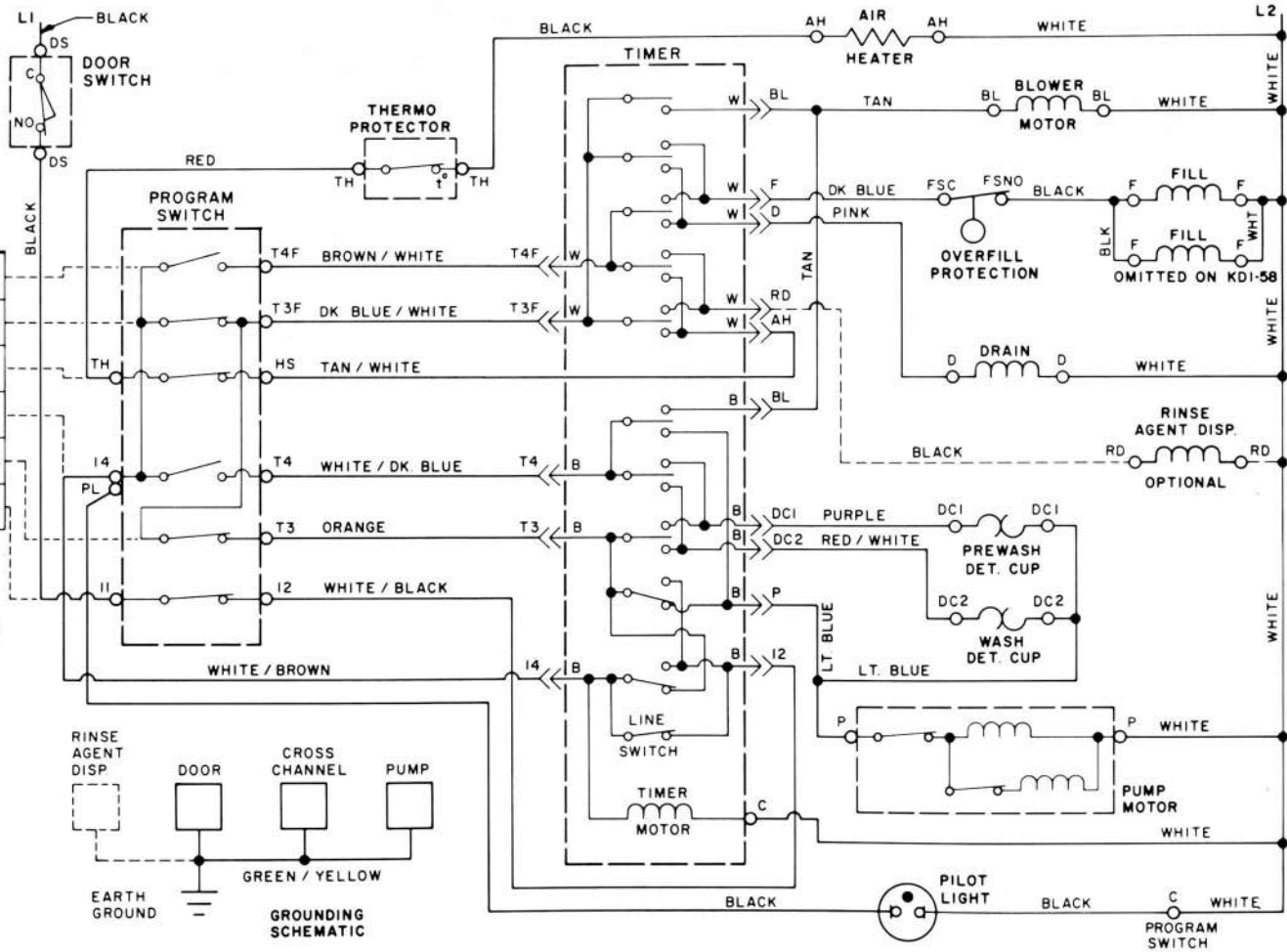
KDI-18 SERIES SCHEMATIC WIRING DIAGRAM

WARNING
ELECTRICAL CONNECTIONS SHOULD BE MADE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR SUCH CODES IN FORCE

PROGRAM SWITCH					
NORMAL WASH	SOAK N WASH	RINSE HOLD	HEAT OFF	RESET	
O	X	O	Δ	O	I4-T4F
X	O	O	Δ	O	I4-T3F
Δ	Δ	Δ	O	X	TH-HS
O	X	O	Δ	O	I4-T4
X	O	X	Δ	O	T3F-T3
X	X	X	Δ	O	II-12

X CLOSED
O OPEN
Δ OPEN OR CLOSED-CONTACT INDEPENDENT OF BUTTON.

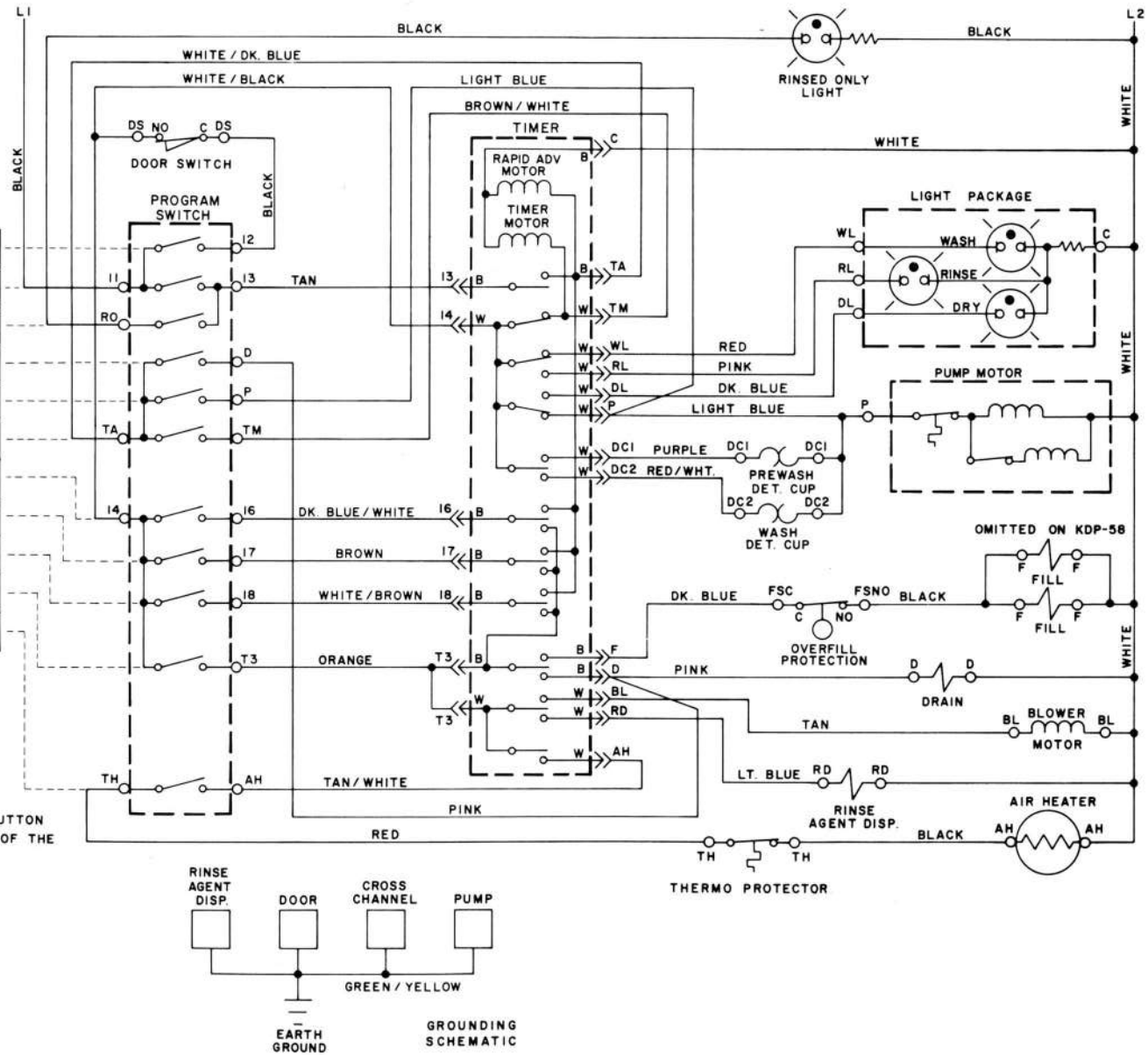
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KDP-18 SCHEMATIC WIRING DIAGRAM

PROGRAM SWITCH		
NORMAL	WASH	
X	X	11-12
X	X	11-13
X	X	RO-13
X	X	TA-D
X	X	TA-P
X	X	TA-TM
X	X	14-16
X	X	14-17
X	X	14-18
X	X	14-T3
X	X	TH-AH

X CLOSED
 O OPEN
 M MOMENTARY
 ⊕ OPENS ONLY IF ANOTHER BUTTON IS CLOSED
 △ OPEN OR CLOSED
 HEAT OFF (ENERGY SAVER) BUTTON HAS NO EFFECT ON REST OF THE CONTACTS BUT ITS OWN.



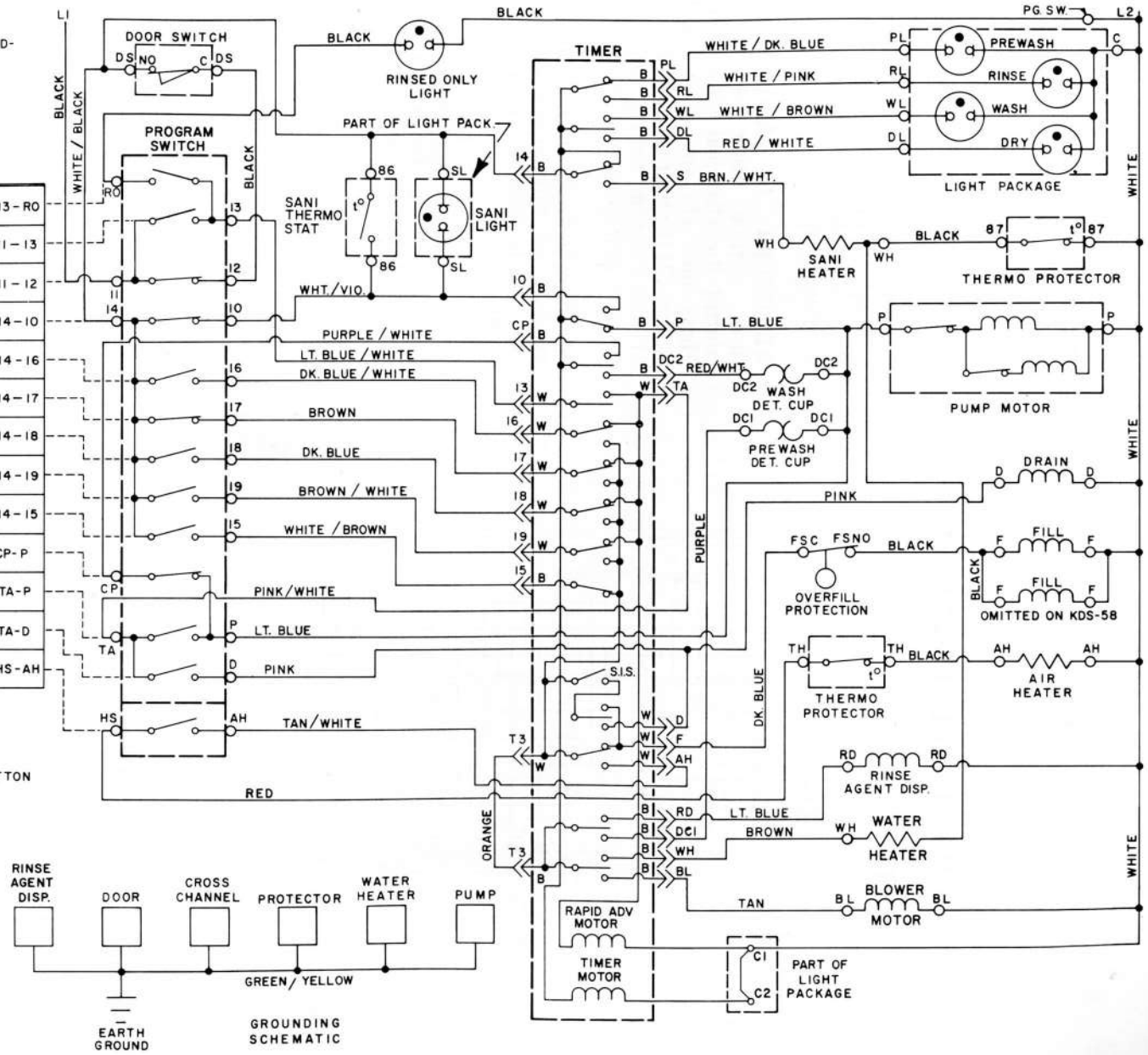
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WARNING
ELECTRICAL CONNECTIONS
SHOULD BE MADE IN ACCORD-
ANCE WITH THE NATIONAL
ELECTRICAL CODE OR
SUCH CODES IN FORCE.

KDS-18 SERIES SCHEMATIC WIRING DIAGRAM

PROGRAM SWITCH										
NORMAL WASH	SOAK 'N SCRUB	SANI CYCLE	RINSE	HOOD WASH	PLATE WASH	WARM DRAIN	CANCEL HEAT OFF	RESET		
○	○	○	✳	○	○	○	△	○	13-RO	
○	○	○	○	○	○	○	△	○	11-13	M
X	X	X	X	X	X	X	△	○	11-12	
X	X	○	X	X	X	X	△	○	14-10	
○	○	○	X	○	○	X	△	○	14-16	
X	○	X	○	○	○	○	△	○	14-17	
○	○	○	○	X	○	○	△	○	14-18	
○	○	○	○	○	X	X	△	○	14-19	
○	X	○	○	○	○	○	△	○	14-15	
X	○	X	X	X	X	○	△	○	CP-P	
○	○	○	○	○	○	X	△	○	TA-P	
○	○	○	○	○	○	○	△	○	TA-D	
△	△	△	△	△	△	△	△	X	HS-AH	

- X CLOSED
- OPEN
- M MOMENTARY
- ✳ CLOSED UNTIL ANOTHER BUTTON IS PUSHED.
- △ OPEN OR CLOSED-CONTACT INDEPENDENT OF BUTTON.



PL-14034

KDC TIMER SEQUENCE CHARTS

KDC NORMAL WASH CYCLE PROGRAM

Event	Timer Motor Pump	Fill	Drain	Det. Disp. Rinse Agent	Disp. Air Heat	Blower	Time				P R O G R E S S
							Per Event		Total Elapsed at End of Event		
							Min.	Sec.	Min.	Sec.	
PUMP	X	X					0	40	0	40	↓
FILL, 1ST PRE-WASH	X	X	X				0	56	1	36	
PUMP	X	X					0	30	2	6	
DRAIN	X	X	X				0	45	2	51	
PUMP	X	X					0	42	3	33	
FILL, 2ND PRE-WASH	X	X	X				0	56	4	29	
DRAIN	X	X	X				0	45	5	14	
PUMP	X	X					0	22	5	36	
FILL, 3RD PRE-WASH	X	X	X				1	30	7	6	
PUMP	X	X					1	0	8	6	
DRAIN	X	X	X				1	0	9	6	
PUMP	X	X					0	22	9	28	
FILL - WASH	X	X	X				1	30	10	58	
DET. DISP.	X	X		X			1	30	11	30	
PUMP	X	X					4	30	16	0	
DRAIN	X	X	X				1	0	17	0	
PUMP	X	X					0	22	17	22	
FILL, 1ST AFTER RINSE	X	X	X				1	30	18	52	
DRAIN	X	X	X				1	0	19	52	
PUMP	X	X					0	22	20	14	
FILL, 2ND AFTER RINSE	X	X	X				1	30	21	44	
RINSE AGENT DISP. (OPT.)	X	X		X			1	0	21	44	
PUMP	X	X					2	11	23	55	
DRAIN	X	X	X				1	0	24	55	
PUMP	X	X					0	20	25	15	
PUMP OFF	X						0	45	26	0	
PUMP	X	X					0	15	26	15	
DRAIN (SCAVENGER)	X	X	X				0	30	26	45	
PUMP	X	X					0	20	27	5	
PUMP OFF	X						2	55	30	0	
BLOWER	X				X		0	10	30	10	
AIR HEATER	X				X	X	21	50	52	0	
BLOWER (ONLY)	X				X		7	20	59	20	
RESET	X						2	5	61	25	

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch, and (4) the thermal protectors.

NOTE: The timer may be advanced manually by turning the timer indicator knob clockwise to the desired position.

These timers may vary approximately 7 to 10 seconds. The total time may vary for different timer manufacturers.

KDC RINSE/HOLD CYCLE PROGRAM

Event	Timer Motor Pump	Fill	Drain	Time				P R O G R E S S
				Per Event		Total Elapsed at End of Event		
				Min.	Sec.	Min.	Sec.	
PUMP	X	X		0	40	0	40	↓
FILL	X	X	X	0	56	1	36	
PUMP	X	X		0	30	2	6	
DRAIN	X	X	X	0	45	2	51	
PUMP	X	X		0	24	3	15	
RESET	X			58	10	61	25	

KDI TIMER SEQUENCE CHARTS

KDI NORMAL WASH CYCLE PROGRAM

Event	Timer Motor Pump	Fill	Drain	Det. Disp. Rinse Agent Disp.	Air Heat Blower	Indicator Light	Time				P R O G R E S S
							Per Event		Total Elapsed at End of Event		
							Min.	Sec.	Min.	Sec.	
PUMP	X	X				X	0	50	0	50	↓
FILL, 1ST PRE-WASH	X	X	X			X	0	58	1	48	
PUMP	X	X				X	0	20	2	8	
DRAIN	X	X	X			X	0	45	2	53	
PUMP	X	X				X	0	49	3	42	
FILL, 2ND PRE-WASH	X	X	X			X	0	58	4	40	
DRAIN	X	X	X			X	0	45	5	25	
PUMP	X	X				X	0	27	5	52	
FILL, 3RD PRE-WASH	X	X	X			X	1	30	7	22	
DET. DISP. #1	X	X		#1		X	1	30	7	46	
PUMP	X	X				X	0	32	8	18	
DRAIN	X	X	X			X	1	0	9	18	
PUMP	X	X				X	0	27	9	45	
FILL, WASH	X	X	X			X	1	30	11	15	
DET. DISP. #2	X	X		#2		X	1	30	11	30	
PUMP	X	X				X	4	43	16	13	
DRAIN	X	X	X			X	1	0	17	13	
PUMP	X	X				X	0	27	17	40	
FILL, 1ST AFTER RINSE	X	X	X			X	1	30	19	10	
DRAIN	X	X	X			X	1	0	20	10	
PUMP	X	X				X	0	27	20	37	
FILL, 2ND AFTER RINSE	X	X	X			X	0	15	20	52	
FILL & RINSE AGENT DISP. (OPT.)	X	X	X	X		X	1	0	21	52	
FILL, 2ND AFTER RINSE	X	X	X			X	0	15	22	7	
PUMP	X	X				X	2	0	24	7	
DRAIN	X	X	X			X	1	0	25	7	
PUMP	X	X				X	0	25	25	32	
PUMP OFF	X					X	0	45	26	17	
PUMP	X	X				X	0	15	26	32	
DRAIN (SCAVENGER)	X	X	X			X	0	30	27	2	
PUMP	X	X				X	0	23	27	25	
PUMP OFF	X					X	5	26	32	51	
BLOWER	X				X	X	0	9	33	0	
AIR HEATER	X				X	X	22	0	55	0	
BLOWER (ONLY)	X				X	X	16	26	71	26	
RESET	X					X	2	41	74	7	

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch, and (4) the thermal protectors.

NOTE: The timer may be advanced manually by turning the timer indicator knob clockwise to the desired position.

These timers may vary approximately 7 to 10 seconds. The total time may vary for different timer manufacturers.

KDI RINSE/HOLD CYCLE PROGRAM

Event	Indicator Light	Timer Motor Pump	Fill	Drain	Time				P R O G R E S S
					Per Event		Total Elapsed at End of Event		
					Min.	Sec.	Min.	Sec.	
PUMP	X	X	X		0	50	0	50	↓
FILL	X	X	X	X	0	58	1	48	
PUMP	X	X	X		0	20	2	8	
DRAIN	X	X	X	X	0	45	2	53	
PUMP	X	X	X		0	27	3	20	
RESET	X	X	X		70	47	74	7	

KDI TIMER SEQUENCE CHART

KDI SOAK'N WASH CYCLE PROGRAM

Event	Timer Motor	Pump	Fill	Drain	Det. Disp. Rinse Agent Disp.	Air Heat Blower	Indicator Light	Time				P R O G R E S S
								Per Event		Total Elapsed at End of Event		
								Min.	Sec.	Min.	Sec.	
PUMP	X	X					X	0	50	0	50	
FILL, 1ST PRE-WASH	X	X	X				X	0	58	1	48	
PUMP	X	X					X	0	20	2	8	
DRAIN	X	X		X			X	0	45	2	53	
PUMP	X	X					X	0	49	3	42	
FILL, 2ND PRE-WASH	X	X	X				X	1	30	5	12	
DET. DISP. #1	X	X			#1		X	1	30	5	16	
PUMP	X	X					X	5	18	10	34	
PUMP OFF	X	X					X	4	0	14	34	
PUMP	X	X					X	9	33	24	7	
DRAIN	X	X		X			X	1	0	25	7	
PUMP	X	X					X	0	27	25	34	
FILL, 3RD PRE-WASH	X	X	X				X	1	12	26	46	
DRAIN	X	X		X			X	0	45	27	31	
PUMP	X	X					X	0	27	27	58	
FILL - WASH	X	X	X				X	1	30	29	28	
DET. DISP. #2	X	X			#2		X	1	30	29	51	
PUMP	X	X					X	4	35	34	26	
DRAIN	X	X		X			X	1	0	35	26	
PUMP	X	X					X	0	27	35	53	
FILL, 1ST AFTER RINSE	X	X	X				X	1	30	37	23	
DRAIN	X	X		X			X	1	0	38	23	
PUMP	X	X					X	0	27	38	50	
FILL, 2ND AFTER RINSE	X	X	X				X	1	30	40	20	
DRAIN	X	X		X			X	1	0	41	20	
PUMP	X	X					X	0	27	41	47	
FILL, 3RD AFTER RINSE	X	X	X				X	0	58	42	45	
RINSE AGENT DISP. (OPT.)	X	X				X	X	1	0	43	8	
PUMP	X	X					X	0	37	43	45	
DRAIN	X	X		X			X	0	45	44	30	
PUMP	X	X					X	0	43	45	13	
PUMP OFF	X						X	0	50	46	3	
PUMP	X	X					X	0	15	46	18	
DRAIN (SCAVENGER)	X	X		X			X	0	30	46	48	
PUMP	X	X					X	0	23	47	11	
PUMP OFF	X						X	1	15	48	26	
BLOWER	X						X	0	9	48	26	
AIR HEATER	X					X	X	19	51	68	26	
BLOWER (ONLY)	X						X	3	0	71	26	
RESET	X						X	2	41	74	7	

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch, and (4) the thermal protectors.

NOTE: The timer may be advanced manually by turning the timer indicator knob clockwise to the desired position.

These timers may vary approximately 7 to 10 seconds. The total time may vary for different timer manufacturers.

KDP TIMER SEQUENCE CHART

KDP NORMAL WASH CYCLE PROGRAM

Event	Timer Motor	R. A. Motor	Pump	Fill	Drain	Det. Disp. #1	Det. Disp. #2	Rinse Agent Disp.	Air Heat Blower	Indicator Light				Time				P R O G R A M					
										W. L.	R. L.	D. L.	D. L.	Per Event		Total Elapsed at End of Event							
														Min.	Sec.	Min.	Sec.						
PUMP	X		X																				
FILL, 1ST PREWASH	X	X	X																				
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
FILL, 2ND PREWASH	X	X	X																				
PUMP	X	X	X																				
RAPID ADVANCE	X	X	X																				
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
FILL, 3RD PREWASH	X	X	X																				
DET. DISP. #1	X	X	X			X																	
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
FILL, MAIN WASH	X	X	X																				
DET. DISP. #2	X	X	X				X																
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
FILL, 1ST AFTER RINSE	X	X	X																				
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
FILL, 2ND AFTER RINSE	X	X	X																				
PUMP	X	X	X																				
RAPID ADVANCE	X	X	X																				
RINSE AGENT DISP.	X	X						X															
PUMP	X	X	X																				
DRAIN	X	X		X																			
PUMP	X	X	X																				
PUMP OFF	X																						
PUMP	X	X	X																				
DRAIN (SCAVENGER)	X	X		X																			
PUMP	X	X	X																				
PUMP OFF	X																						
BLOWER ON	X								X			X											
AIR HEAT & BLOWER	X								X		X		X										
BLOWER ON	X								X			X											
DWELL	X											X											
RESET	X																						

*When Door Unlatched

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDP model, the timer should be manually advanced **ONLY** by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDP TIMER SEQUENCE CHART

KDP SOAK'N WASH CYCLE PROGRAM

Event	Timer Motor	Rapid Advance Pump	Fill	Drain	Det. Disp. #1	Det. Disp. #2	Rinse Agent Disp.	Air Heat	Blower	W. L. R. L.	Indicator Light	Time				P ↓ O ↓ C ↓ C ↓ P ↓ P
												Per Event		Total Elapsed at End of Event		
												Min.	Sec.	Min.	Sec.	
PUMP ON	X	X									X	0	13	0	13	
FILL, 1ST PREWASH	X	X	X								X	1	18	1	31	
PUMP	X	X									X	0	19	1	50	
DRAIN	X	X		X							X	0	55	2	45	
PUMP	X	X									X	0	39	3	24	
FILL, 2ND PREWASH	X	X	X								X	1	30	4	54	
PUMP	X	X									X	0	18	5	12	
DET. DISP. #1	X	X			X						X	1	37	6	49	
PUMP	X	X									X	2	50	9	39	
SOAK (PUMP OFF)	X										X	4	0	13	39	
PUMP	X	X									X	9	36	23	15	
DRAIN	X	X		X							X	1	0	24	15	
PUMP	X	X									X	0	39	24	54	
FILL, 3RD PREWASH	X	X	X								X	1	30	26	24	
PUMP	X	X									X	1	0	27	24	
DRAIN	X	X		X							X	1	0	28	24	
PUMP	X	X									X	0	38	29	2	
FILL, MAIN WASH	X	X	X								X	1	30	30	32	
DET. DISP. #2	X	X			X						X	1	30	31	18	
PUMP	X	X									X	4	14	35	32	
DRAIN	X	X		X							X	1	0	36	32	
PUMP	X	X									X	0	40	37	12	
FILL, 1ST AFTER RINSE	X	X	X								X	1	30	38	42	
PUMP	X	X									X	0	30	39	12	
DRAIN	X	X		X							X	1	0	40	12	
PUMP	X	X									X	0	39	40	51	
FILL	X	X	X								X	1	30	42	21	
PUMP	X	X									X	1	38	43	59	
DRAIN	X	X		X							X	1	0	44	59	
PUMP	X	X									X	0	39	45	38	
FILL, 3RD AFTER RINSE	X	X	X								X	1	18	46	56	
RINSE AGENT DISP.	X	X			X						X	1	30	48	0	
PUMP	X	X									X	0	46	48	46	
DRAIN	X	X		X							X	0	55	49	41	
PUMP	X	X									X	0	20	50	1	
PUMP OFF	X										X	0	52	50	53	
PUMP	X	X									X	0	30	51	23	
DRAIN (SCAVENGER)	X	X		X							X	0	30	51	53	
PUMP	X	X									X	0	18	52	11	
PUMP OFF	X										X	0	51	53	2	
BLOWER ON	X								X	X	X	0	11	53	13	
AIR HEAT & BLOWER	X					X	X		X	X	X	22	1	75	14	
BLOWER	X							X	X	X	X	13	21	88	35	
DWELL	X											0	43	89	18	
RESET	X											0	3*			

*When Door Unlatched

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDP model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDP TIMER SEQUENCE CHART

KDP RINSE/HOLD CYCLE PROGRAM

Event	Timer Motor	R. A. Motor	Pump	Fill	Drain	Det. Disp. #1	Det. Disp. #2	Rinse Agent Disp.	Air Heat	Blower	Time				P R O G R E S S		
											Per Event		Total Elapsed at End of Event				
											W.L.	R.L.	D.L.	Indicator Light		Min.	Sec.
RAPID ADVANCE	X	X	X							X			0	30	0	30	
PUMP	X	X	X							X			0	15	0	45	
FILL	X	X	X	X						X			1	30	2	15	
PUMP	X	X	X							X			0	32	2	47	
RAPID ADVANCE	X	X	X							X			0	3	2	50	
PUMP	X	X	X							X			0	15	3	5	
DRAIN	X	X	X		X					X			0	55	4	0	
PUMP	X	X	X							X			0	20	4	20	
PUMP OFF	X	X	X							X			0	52	5	12	
PUMP	X	X	X							X			0	30	5	42	
DRAIN (SCAVENGER)	X	X	X		X					X			0	30	6	12	
PUMP	X	X	X							X			0	18	6	30	
PUMP OFF	X	X	X							X			0	15	6	45	
RAPID ADVANCE	X	X	X							X			0	25	7	10	
DWELL	X												0	23	7	33	
RESET		X											0	3*			

*When Door Unlatched

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch, (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDP model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDP SHORT WASH CYCLE PROGRAM

Event	Timer Motor	R. A. Motor	Pump	Fill	Drain	Det. Disp. #1	Det. Disp. #2	Rinse Agent Disp.	Air Heat	Blower	Time				P R O G R E S S		
											Per Event		Total Elapsed at End of Event				
											W.L.	R.L.	D.L.	Indicator Light		Min.	Sec.
PUMP	X	X	X							X			0	13	0	13	
FILL, 1ST PREWASH	X	X	X	X						X			1	18	1	31	
PUMP	X	X	X							X			0	23	1	54	
RAPID ADVANCE	X	X	X							X			0	3	1	57	
DET. DISP. #1	X	X	X		X					X			1	34	3	31	
PUMP	X	X	X							X			1	1	4	32	
RAPID ADVANCE	X	X	X							X			0	15	4	47	
PUMP	X	X	X							X			0	15	5	2	
DRAIN	X	X	X		X					X			1	0	6	2	
PUMP	X	X	X							X			0	38	6	40	
FILL, MAIN WASH	X	X	X	X						X			1	30	8	10	
DET. DISP. #2	X	X	X			X				X			1	30	8	56	
PUMP	X	X	X							X			0	21	9	17	
RAPID ADVANCE	X	X	X							X			0	3	9	20	
PUMP	X	X	X							X			0	24	9	44	
DRAIN	X	X	X		X					X			1	0	10	44	
PUMP	X	X	X							X			0	40	11	24	
FILL, 1ST AFTER RINSE	X	X	X	X						X			1	30	12	54	
PUMP	X	X	X							X			0	34	13	28	
RAPID ADVANCE	X	X	X							X			0	3	13	31	
PUMP	X	X	X							X			0	15	13	46	
DRAIN	X	X	X		X					X			1	0	14	46	
PUMP	X	X	X							X			0	39	15	25	
FILL, 2ND AFTER RINSE	X	X	X	X						X			1	18	16	43	
RINSE AGENT DISP.	X	X	X				X			X			1	30	17	47	
PUMP	X	X	X							X			0	46	18	33	
DRAIN	X	X	X		X					X			0	55	19	28	
PUMP	X	X	X							X			0	20	19	48	
PUMP OFF	X	X	X							X			0	52	20	40	
PUMP	X	X	X							X			0	30	21	10	
DRAIN (SCAVENGER)	X	X	X		X					X			0	30	21	40	
PUMP	X	X	X							X			0	18	21	58	
PUMP OFF	X	X	X							X			0	51	22	49	
BLOWER ON	X									X	X		0	11	23	0	
AIR HEAT & BLOWER	X							X	X	X			22	1	45	1	
BLOWER	X									X			13	21	58	22	
DWELL	X												0	43	59	5	
RESET		X											0	3*			

*When Door Unlatched

KDS TIMER SEQUENCE CHART

KDS NORMAL WASH CYCLE PROGRAM

Event	No. of Impulses Timer Motor	Pumps	High Fill	Low Fill	Drain	Water Heater	Sani-Heat	Air Heater	Blower	Det. Disp.	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Disp.	Time				P R O G R E S S
																	Per Event		Total Elapsed at End of Event		
																	Min.	Sec.	Min.	Sec.	
RAPID ADVANCE	1	X	X								X						0	1	0	1	
FILL (LOW)	1	X	X		S						X						**	1	30		
RAPID ADVANCE	11	X	X								X				X		0	11	1	41	
DRAIN	1	X	X		S						X						**	3	0		
RAPID ADVANCE	2	X	X								X				X		0	2	3	2	
FILL (LOW)	1	X	X		S						X						**	4	30		
RAPID ADVANCE	13	X	X								X				X		0	13	4	43	
DRAIN	1	X	X		S						X						**	6	0		
FILL (HIGH)	1	X	X	X							X						1	30	7	30	
DET. DISP.	1	X	X							#1	X						1	30	9	0	
PRE-WASH.	1	X	X								X						1	30	10	30	
DRAIN	1	X	X		S						X						**	12	0		
FILL (HIGH)	1	X	X	X							X						1	30	13	30	
DET. DISP.	1	X	X				X			#2	X						1	30	15	0	
WASH (WITH HEAT)	2	X	X				X				X						3	0	18	0	
WASH	1	X	X								X						1	30	19	30	
DRAIN	1	X	X		S						X						**	21	0		
FILL (HIGH)	1	X	X	X							X						1	30	22	30	
RAPID ADVANCE	1	X	X								X				X		0	1	22	31	
DRAIN	1	X	X		S						X						**	24	0		
FILL (HIGH)	1	X	X	X							X						1	30	25	30	
RINSE	1	X	X								X						1	30	27	0	
DRAIN	1	X	X		S						X						**	28	30		
FILL (LOW) R. A. DISP.	1	X	X		S						X				X		**	30	0		
RINSE	1	X					X	X			X						1	30	31	30	
RINSE (WITH HEAT)	1	X	X				X				X						1	30	33	0	
DRAIN	1	X	X		S						X						**	34	30		
DWELL	1	X									X						1	30	36	0	
DRAIN (SCAVENGER)	1	X	X		S						X						**	37	30		
AIR HEATER & BLOWER	15	X						X	X		X						22	30	60	0	
BLOWER	3	X									X						4	30	64	30	
DWELL	1	X									X						1	30	66	0	
RAPID ADVANCE (RESET)	2														X		*0	2			

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDS model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

* = after door latch is lifted.

** = indicates feature is "Off" for 5 seconds, "On" for 60 seconds and "Off" for the remaining 25 seconds of the 90 second interval. When a rapid advance occurs immediately before the S. I. S., subtract 5 seconds from the rapid advance time and subtract remainder from the 60 seconds to determine features time.

S = Sub Interval Switch

KDS TIMER SEQUENCE CHART

KDS SOAK'N SCRUB CYCLE PROGRAM

Event	No. of Impulses Timer Motor	Pump	High Fill	Low Fill	Drain	Water Heater	Sani-Heat	Air Heater	Blower	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Disp.	Time				P R O G R E S S
																Per Event		Total Elapsed at End of Event		
																Min.	Sec.	Min.	Sec.	
FILL (HIGH)	1	X	X							X						1	30	1	30	
PRE-WASH	1	X	X							X						1	30	3	0	
SOAK	4	X	X							X						4	30	7	30	
PRE-WASH	4	X	X							X						4	30	12	0	
SOAK	4	X	X							X						4	30	16	30	
PRE-WASH	1	X	X							X						1	30	18	0	
PRE-WASH (WITHOUT HEAT)	1	X	X							X						1	30	19	30	
DRAIN	1	X	X		S					X						**	21	0	0	
FILL (HIGH)	1	X	X	X						X						1	30	22	30	
DET. DISP.	1	X	X							#1	X					1	30	24	0	
PRE-WASH	2	X	X							X						3	0	27	0	
PRE-WASH (WITH HEAT)	1	X	X			X				X						1	30	28	30	
SOAK	2	X	X			X				X						3	0	31	30	
PRE-WASH	4	X	X			X				X						6	0	37	30	
SOAK	2	X	X			X				X						3	0	40	30	
PRE-WASH	3	X	X			X				X						4	30	45	0	
DRAIN	1	X	X		S					X						**	46	30	0	
FILL (HIGH)	1	X	X	X						X						1	30	48	0	
PRE-WASH	2	X	X							X						3	0	51	0	
DRAIN	1	X	X		S					X						**	52	30	0	
FILL (HIGH)	1	X	X	X						X						1	30	54	0	
DET. DISP.	1	X	X			X				#2	X					1	30	55	30	
WASH	2	X	X			X				X						3	0	58	30	
WASH (WITHOUT HEAT)	1	X	X			X				X						1	30	60	0	
DRAIN	1	X	X		S					X						**	61	30	0	
FILL (HIGH)	1	X	X	X						X						1	30	63	0	
RINSE	1	X	X							X						1	30	64	30	
DRAIN	1	X	X		S					X						**	66	0	0	
FILL (HIGH)	1	X	X	X						X						1	30	67	30	
RINSE	1	X	X							X						1	30	69	0	
DRAIN	1	X	X		S					X						**	70	30	0	
FILL (LOW) R. A. DISP.	1	X	X		S					X				X		**	72	0	0	
SANI (DWELL)	1	X				X	X			X						1	30	73	30	
SANI (RINSE)	1	X	X			X				X						1	30	75	0	
DRAIN	1	X	X		S					X						**	76	30	0	
DWELL	1	X								X						1	30	78	0	
DRAIN (SCAVENGER)	1	X	X		S					X						**	79	30	0	
AIR HEATER & BLOWER	15	X					X	X		X						22	30	102	0	
BLOWER	3	X					X			X						4	30	106	30	
DWELL	1	X								X						1	30	108	0	
RAPID ADVANCE (RESET)	2									X				X		*0	2			

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDS model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

* = after door latch is lifted.

** = indicates feature is "Off" for 5 seconds, "On" for 60 seconds and "Off" for the remaining 25 seconds of the 90 second interval. When a rapid advance occurs immediately before the S. I. S., subtract 5 seconds from the rapid advance time and subtract remainder from the 60 seconds to determine features time.

S = Sub Interval Switch

KDS TIMER SEQUENCE CHART

KDS SANI CYCLE PROGRAM

Event	No. of Impulses	Timer Motor	High Fill	Low Fill	Drain	Water Heater	San-Heat	Air Heater	Blower	Det. Disp.	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Disp.	San. Light	Time				PROGRAM SECS
																		Per Event		Total Elapsed at End of Event		
																		Min.	Sec.	Min.	Sec.	
RAPID ADVANCE	1	X	X								X							0	1	0	1	
FILL (LOW)	1	X	X	S							X							**	1	30		
RAPID ADVANCE	11	X	X								X							0	11	1	41	
DRAIN	1	X	X		S						X							**	3	0		
RAPID ADVANCE	2	X	X								X							0	2	3	2	
FILL (LOW)	1	X	X	S							X							**	4	30		
RAPID ADVANCE	13	X	X								X							0	13	4	43	
DRAIN	1	X	X		S						X							**	6	0		
FILL (HIGH)	1	X	X	X							X							1	30	7	30	
DET. DISP.	1	X	X							#1	X							1	30	9	0	
PRE-WASH	1	X	X								X							1	30	10	30	
DRAIN	1	X	X		S						X							**	12	0		
FILL (HIGH)	1	X	X	X							X							1	30	13	30	
DET. DISP.	1	X	X				X			#2	X							1	30	15	0	
WASH (WITH HEAT)	2	X	X				X				X							3	0	18	0	
WASH	1	X	X								X							1	30	19	30	
DRAIN	1	X	X		S						X							**	21	0		
FILL (HIGH)	1	X	X	X							X							1	30	22	30	
RAPID ADVANCE	1	X	X								X							0	1	22	31	
DRAIN	1	X	X		S						X							**	24	0		
FILL (HIGH)	1	X	X	X							X							1	30	25	30	
RINSE	1	X	X								X							1	30	27	0	
DRAIN	1	X	X		S						X							**	28	30		
FILL (LOW) R, A, DISP.	1	X	X	S							X					X		**	30	0		
SANI (DWELL)	1						X	X									X	****	***	31	30	
SANI (RINSE)	1	X	X				X											1	30	***	33	0
DRAIN	1	X	X		S						X							**	***	34	30	
DWELL	1	X									X							1	30	***	36	0
DRAIN (SCAVENGER)	1	X	X		S						X							**	***	37	30	
AIR HEATER & BLOWER	15	X					X	X										22	30	***	60	0
BLOWER	3	X						X										4	30	***	64	30
DWELL	1	X									X							1	30	***	66	0
RAPID ADVANCE (RESET)	2															X		*0	2			

* = after door latch is lifted.

** = indicates feature is "Off" for 5 seconds, "On" for 60 seconds and "Off" for the remaining 25 seconds of the 90 second interval. When a rapid advance occurs immediately before the S. I. S., subtract 5 seconds from the rapid advance time and subtract remainder from the 60 seconds to determine features time.

*** = plus water heating time.

**** = hold for heating water.

S = Sub Interval Switch

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDS model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDS TIMER SEQUENCE CHART

KDS RINSE/HOLD CYCLE PROGRAM

Event	No. of Impulses Timer Motor	Pump	High Fill	Low Fill	Drain	Water Heater	Sant-Heat	Air Heater	Blower	Det. Diap.	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Diap.	Time				P R O G R E S S	
																	Per Event		Total Elapsed at End of Event			
																	Min.	Sec.	Min.	Sec.		
RAPID ADVANCE	1	X																0	1	0	1	↓
FILL (LOW)	1	X	X															0	**	1	30	
RAPID ADVANCE	10	X	X															0	10	1	40	
DRAIN	1	X	X																**	3	0	
RAPID ADVANCE***	40	X	X								X	X	X					0	40	3	40	
RAPID ADVANCE	18	X	X								X	X	X					0	18	3	58	
REZERO	1	X												X				0	32	4	30	
RAPID ADVANCE	2	X												X				*0	2			

* = after door latch is lifted.

** = indicates feature is "Off" for 5 seconds, "On" for 60 seconds and "Off" for the remaining 25 seconds of the 90 second interval. When a rapid advance occurs immediately before the S. I. S., subtract 5 seconds from the rapid advance time and subtract remainder from the 60 seconds to determine features time.

*** = Pump pauses for three 1 second periods in this section of rapid advance.

S = Sub Interval Switch

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDS model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDS TIMER SEQUENCE CHART

KDS SHORT WASH CYCLE PROGRAM

Event	No. of Impulses Timer Motor	Pump	High Fill	Low Fill	Drain	Water Heater	Sani-Heat	Air Heater	Blower	Det. Disp.	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Disp.	Time				P R O G R A M C Y C L E	
																	Per Event		Total Elapsed at End of Event			
																	Min.	Sec.	Min.	Sec.		
RAPID ADVANCE	31	X	X															0	31	0	31	
FILL (HIGH)	1	X	X	X							X							***0	59	1	30	
DET. DISP.	1	X	X								#1	X						1	30	3	0	
PRE-WASH	1	X	X								X							1	30	4	30	
DRAIN	1	X	X			S						X							**	6	0	
FILL (HIGH)	1	X	X	X							X							1	30	7	30	
DET. DISP.	1	X	X				X				#2	X						1	30	9	0	
RAPID ADVANCE (WASH)	9	X	X									X				X		0	3	9	3	
DRAIN	1	X	X			S						X							**	10	30	
FILL (HIGH)	1	X	X	X							X							1	30	12	0	
RINSE	1	X	X								X	X						1	30	13	30	
DRAIN	1	X	X			S						X							**	15	0	
RAPID ADVANCE	3	X	X									X				X		0	3	15	3	
FILL (LOW) R. A. DISP.	1	X	X			S						X				X			**	16	30	
DWELL	1	X					X	X				X						1	30	18	0	
RINSE (WITH HEAT)	1	X	X				X					X						1	30	19	30	
DRAIN	1	X	X			S						X							**	21	0	
DWELL	1	X										X						1	30	22	30	
DRAIN (SCAVENGER)	1	X	X			S						X							**	24	0	
AIR HEATER & BLOWER	15	X						X	X			X						22	30	46	30	
BLOWER	3	X						X				X						4	30	51	0	
DWELL	1	X										X						1	30	52	30	
RAPID ADVANCE (RESET)	2														X			*0	2			

* = after door latch is lifted.

** = indicates feature is "Off" for 5 seconds, "On" for 60 seconds and "Off" for the remaining 25 seconds of the 90 second interval. When a rapid advance occurs immediately before the S. I. S., subtract 5 seconds from the rapid advance time and subtract remainder from the 60 seconds to determine features time.

*** = Timer motor is advancing at the same time the rapid advance motor is advancing, thereby decreasing the 90 second increment by 31 seconds.

S = Sub Interval Switch

These charts show which components are energized and should be functioning during each period of the program cycle.

REMEMBER: In addition to the timer, certain other switches also control the electrical power supply. These are: (1) the door interlock switch (2) the over fill control switch, (3) the program switch and, (4) the various thermostats and thermal protectors.

NOTE: On the KDS model, the timer should be manually advanced ONLY by removing the dial from the tool (TL-72139) and placing the pointer-like hub on the timer shaft, then rotating the hub slowly clockwise to the desired position. The pointer on the hub will indicate the cycle phase in which the timer is operating by pointing to that portion of the dial which is already printed on the surface of the timer.

KDS PLATE WARM CYCLE PROGRAM

Event	No. of Impulses Timer Motor	Pump	High Fill	Low Fill	Drain	Water Heater	Sani-Heat	Air Heater	Blower	Det. Disp.	Pre-Wash Light	Wash Light	Rinse Light	Dry Light	R. A. Timer Motor	Rinse Agent Disp.	Time				P R O G R A M C Y C L E	
																	Per Event		Total Elapsed at End of Event			
																	Min.	Sec.	Min.	Sec.		
RAPID ADVANCE**	53	X	X															0	53	0	53	
RAPID ADVANCE	3	X																0	3	0	56	
AIR HEATER & BLOWER	12	X						X	X									17	4	18	0	
RAPID ADVANCE	3	X																0	3	18	3	
REZERO	1	X																1	27	19	30	
RAPID ADVANCE	2														X			*0	2			

* = after door latch is lifted.

** = Pump pauses for three 1 second periods in this section of rapid advance.