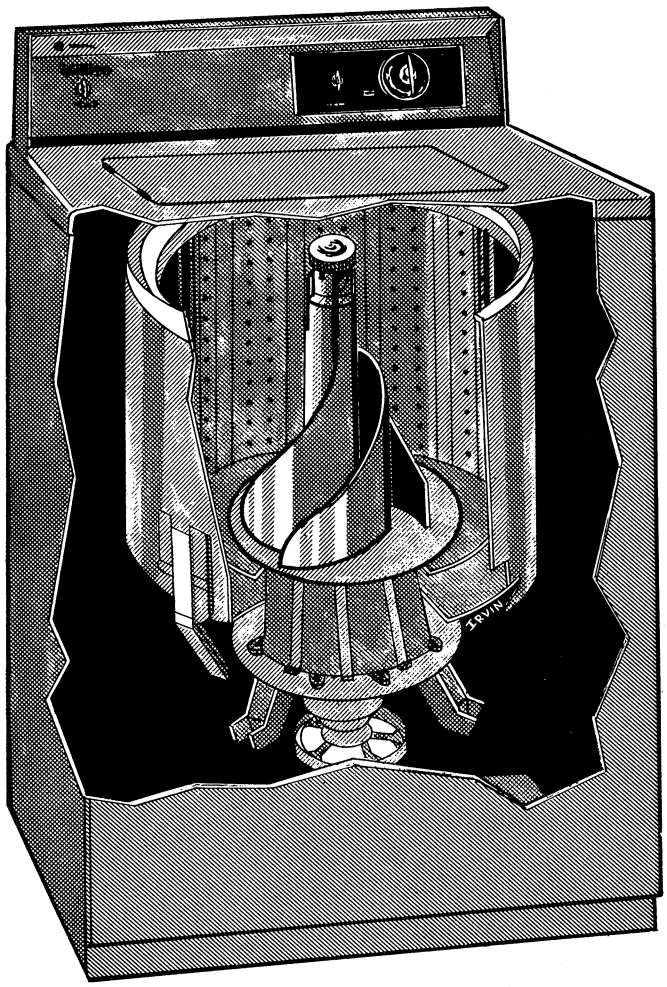
REPAIR-MASTER® for

WESTINGHOUSE

TOP LOADING AUTOMATIC WASHERS

- DIAGNOSIS CHARTS
- CHECKING PROCEDURE
- SERVICE PROCEDURE
- COMPONENT DATA
- PARTS LISTS



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REPAIR-MASTER for..

WESTINGHOUSE

WHITE CONSOLIDATED INDUSTRIES

TOP LOADING AUTOMATIC WASHERS

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FOREWORD

This Repair Master contains information and service procedures to assist the service technician in correcting conditions that are not always obvious.

A thorough knowledge of the functional operation of the many component parts used on washers is important to the serviceman, if he is to make a proper diagnosis when a malfunction of any part occurs.

We have used many representative illustrations, diagrams and photographs to portray more clearly these various components for a better over-all understanding of their use and operation.

IMPORTANT SAFETY NOTICE

You should be aware that all major appliances are complex electromechanical devices. Master Publication's REPAIR MASTER® Service Publications are intended for use by individuals possessing adequate backgrounds of electronic, electrical and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. Master Publications cannot be responsible for the interpretation of its service publications, nor can it assume any libility in connection with their use.

SAFE SERVICING PRACTICES

To preclude the possibility of resultant personal injury in the form of electrical shock, cuts, abrasions or burns, etc., that can occur spontaneously to the individual while attempting to repair or service the appliance; or may occur at a later time to any individual in the household who may come in contact with the appliance, Safe Servicing Practices must be observed. Also property damage, resulting from fire, flood, etc., can occur immediately or at a later time as a result of attempting to repair or service — unless safe service practices are observed.

The following are examples, but without limitation, of such safe practices:

1. Before servicing, always disconnect the source of electrical power to the appliance by removing the product's electrical plug from the wall receptacle, or by removing the fuse or tripping the circuit breaker to OFF in the branch circuit servicing the product.

NOTE: If a specific diagnostic check requires electrical power to be applied such as for a voltage or amperage measurements, reconnect electrical power only for time required for specific check, and disconnect power immediately thereafter. During any such check, ensure no other conductive parts, panels or yourself come into contact with any exposed current carrying metal parts.

2. Never bypass or interfere with the proper operation of any feature, part, or device engineered into the appliance.

3. If a replacement part is required, use the specified manufacturers part, or an equivalent which will provide comparable performance.

4. Before reconnecting the electrical power service to the appliance — be sure that:

   a. All electrical connections within the appliance are correctly and securely connected.
   b. All electrical harness leads are properly dressed and secured away from sharp edges, high-temperature components such as resistors, heaters, etc., and moving parts.
   c. Any uninsulated current-carrying metal parts are secured and spaced adequately from all non-current carrying metal parts.
   d. All electrical ground, both external and internal to the product are correctly and securely connected.
   e. All water connections are properly tightened.
   f. All panels and covers are properly and securely reassembled.

5. Do not attempt an appliance repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.

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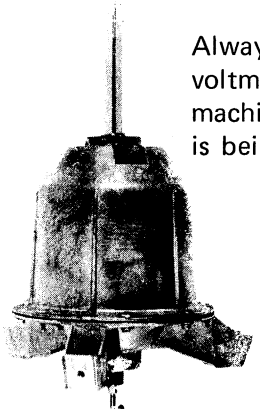
SERVICE CHECK LIST

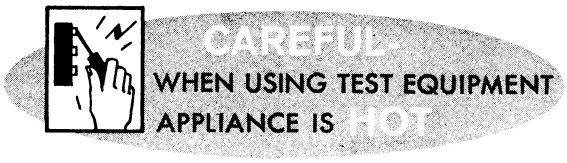
The following diagnosis chart is intended to be only a starting point in proceeding with the servicing of automatic washers. The diagnosis chart can only deal in generalities; to effectively service any appliance, the serviceman must thoroughly understand the mechanical functions and electrical circuitry of the appliance.

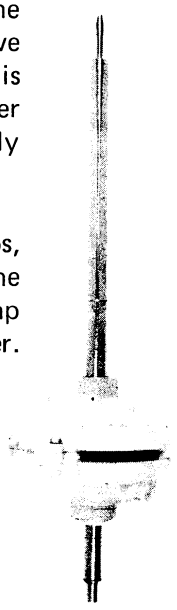
A considerable amount of time and money can be saved if a serviceman will take time to analyze the probable cause of a malfunction of a machine before proceeding to remove any parts. Always be sure first that the machine is properly installed and its power cord is plugged into a live receptacle that is properly fused. Be sure that the hot and cold water faucets are turned all the way open and that the operator of the machine has properly set the controls.

Always make a visual check first before using any testing equipment such as test lamps, voltmeters or ohmmeters. Before attempting to remove any electrical part from the machine, disconnect the power cord from the live receptacle. If a voltmeter or test lamp is being used for testing, the power cord must be plugged into a live receptacle, however.



DOMESTIC AND COMMERCIAL TRANSMISSION





24 INCH MODELS TRANSMISSION

Early Westinghouse top loaders were very much different in engineering design and because very few of these models are still in use, we will include the parts breakdown of the transmission and dwell lightly on these models.

The basic components and their operation, design, and methods of repair and service are for practical purposes the same as the present models of the top loader, such things as timers, water valves, switches, seals, and many other components can be replaced or tested with the methods prescribed herein, the Trouble Diagnosis and Checking Procedures in the most part, are just as effective in the early models and can be used as a positive guide line in the repair and service of both the early and late model top loader Westinghouse washing machine.

CONDITION	POSSIBLE CAUSE	REMEDY
DRIVE MOTOR WILL NOT RUN	Fuse	Test for continuity if check shows open
	Supply line receptacle	Replace. Try in another outlet.
	Timer (check timer contact)	Replace.
	Timer thermostat	Replace.
	Lid switch (spin)	Replace.
	Capacitor	Test for loading capacitor.
	Motor	See *"Motor Test Section".*
	Broken wires (see wiring diagram to trace circuit)	Look for broken wires at spade terminals.
	With lid open, machine will operate in agitate, but will not operate in spin	Close lid — look for broken wires.
DRIVE MOTOR WILL NOT GO INTO HIGH SPEED	Timer	Burnt contacts — replace timer.
	Belt drive	Tighten. Adjust belt.
	Pump will not remove water from the basket.	Foreign material in tub drain impeller loose on shaft.
	Inoperative clutch	Change motor pulley and clutch assembly (see *"Clutch Repair").*
	Foreign article in pump or between basket and tub	Check water level.
	Over sudsing	LAF and LAH models— change clutch Q137170 to Q149392.
EXCESSIVE VIBRATION, JAMMING OF THE AGITATOR, LOW WATER LEVEL, ETC.	Rubber cups have not been installed on adjustable feet	
	Stabilizer springs not properly adjusted	
	Hose not properly adjusted	
	Splash guard gasket — not enough clearance	Clogged fill valve screens on *"time fill"* washers will restrict the flow of water to the tub to such an extent the timer will advance to agitate before the tub is full of water. This then will produce all the problems attendent with a heavy load and low water level, including jamming of the agitator, severe unbalance and tripping of the timer thermostat.

CONDITION	POSSIBLE CAUSE	REMEDY
TIMER MOTOR WILL NOT RUN DURING WASH	Water level control	See *"Test Water Level Control".*
	Timer motor	*See "Test Timer Motor".*
	Broken wires (see wiring diagram to trace circuit)	Check wires for continuity.
TIMER MOTOR WILL NOT RUN DURING DRAIN OR SPIN	Timer contact *"T"* motor	Check across timer motor terminals for voltage. Replace timer motor if necessary.
	Lid switch	Check lid switch for continuity. See test-lid switch.
WATER WILL NOT ENTER TUB	Check faucets	Shut off faucets. Remove.
	Clogged screens	Check screens in hoses.
	Kinked hose	Check screen in water valve.
	Mixed and fill valve solenoids	Test solenoid coils with test cord or ohm meter.See *"Solenoid Test".*
	Timer	Check timer for burnt-broken contacts.
	Water level control	Test water selector — see Test Chart.
	Selector switch	
	Broken wires	
MOTOR RUNS BUT AGITATOR WILL NOT TURN	Broken belt or insufficient belt tension	Replace or tighten belt.
	Transmission	Remove or repair.
	Loose agitator	Replace agitator and block.
WILL NOT RETURN TO AGITATE	Timer	Check for burnt terminals or contacts.
	Push button switch	Check continuity.
	Switch in motor	See *"Motor Repair Section".*
	Transmission	
	Foreign article in pump	Remove hoses after draining machine. Check pump and components.

CONDITION	POSSIBLE CAUSE	REMEDY
DOES NOT COMPLETE CYCLE	Timer Water level control Overload tripped, timer thermostat	Check burnt terminals or contacts. Test water level control. Test timer thermostat.
SPRAY RINSE WILL NOT COME IN	Timer Water level control Valve solenoids	Check — Repair or replace. Test. Check for continuity
PUMP DOES NOT DRAIN TUB	Timer Impeller hub separater Foreign article in pump	Check. Repair or replace. Adjust hoses. Eliminate kinks. Clean. Check pump components.
WILL NOT SPIN OR PUMP BLOWS FUSE OR TRIPS MOTOR PROTECTOR	Clutch shoe stuck to drum	Release by prying shoe away from drum or replace clutch.
WATER WILL NOT SHUT OFF	Mix and fill valve Water level control	Valve mechanically stuck. open. Remove plug from wall receptacle. If water still enters machine without electric current valve must be cleaned or replaced. See *"Valve Repair Section"*.

Complaint

WATER CONTINUES TO FLOW – TIMER "ON" OR "OFF"

Cause

1. Water valve diaphragm breather hole plugged or diaphragm not seating.
2. Water valve amature sticking in guide.
3. Leak in air dome or pressure hose.
4. Pressure hose kinked, filled with water or plugged.
5. Pressure switch inoperative.
6. Electrical short.
7. Timer inoperative.

* * *

Complaint

WATER TEMPERATURE NOT AS "SELECTED"

Cause

1. Inlet hoses reversed at faucets or water valve.
2. Check water heater size and thermostat setting.

Complaint

WATER WILL NOT "PUMP OUT"

Cause

1. Loose or worn pump belt – belt slipping.
2. Drive pulley loose on motor shaft.
3. Clogged pump or drain hose.
4. Kinked drain hose.
5. Pump shaft seized in bearing.

* * *

Complaint

WATER DOES NOT RECIRCULATE

Cause

1. Recirculating system hose restricted – will cause pump-out during agitation.
2. Low water level and/or low speed motor operation.

* * *

Complaint

CLOTHES WET AFTER FINAL SPIN

Cause

1. Load out of balance in tub – clutch slips and tub does not reach full spin speed.
2. Clutch inoperative – slips.
3. Drain hose restricted.
4. Tight transmission – clutch slips.
5. Low spin selected – not suitable for some clothes.

* * *

Complaint

NOISE DURING AGITATION

Cause

1. Loose agitator cap or drive lug.
2. Loose set-screw in drive pulley on motor shaft.
3. Clutch parts worn or damaged.
4. Pump bearings or pulley worn.
5. Belts damaged or worn.
6. Drive pulley bent during delivery.
7. Gears in transmission worn or damaged.

* * *

Complaint

MOTOR OPERATES – TIMER AT "FILL" POSITION

Cause

1. Harness improperly connected to timer.
2. Pressure switch inoperative.

* * *

Complaint

MOTOR OPERATES – TIMER "OFF"

Cause

1. Inoperative timer – timer line switch contacts stuck closed.
2. Short in wiring harness.
3. Harness improperly connected to timer.

* * *

SECTION 2

SERVICE PROCEDURE AND COMPONENT DESCRIPTION

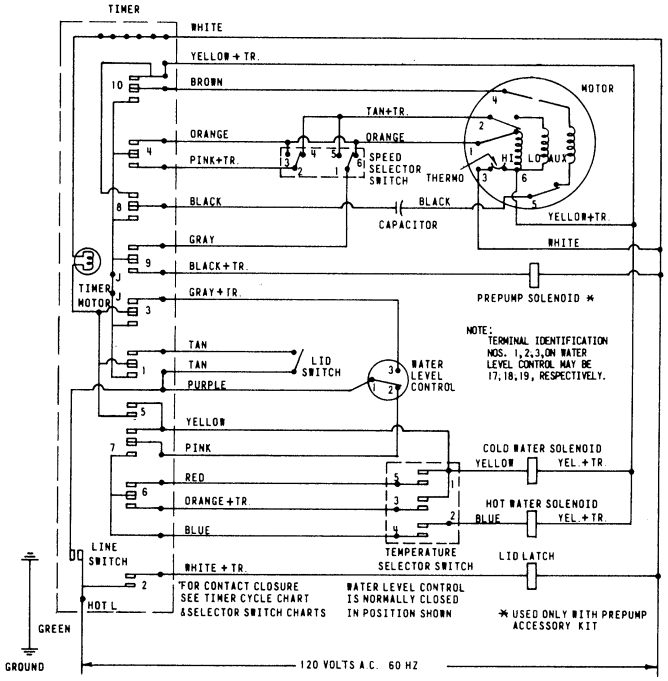
Before attempting to service an automatic washer of any make, the serviceman should be equipped with the proper tools. Many of these are special tools designed to do a particular job quickly and to protect various parts from damage. Special tools used to service all makes include a test lamp or voltmeter, a continuity tester or ohmmeter, and a wattmeter. Proper use of these special tools will help make fast, efficient diagnosis and service much easier.

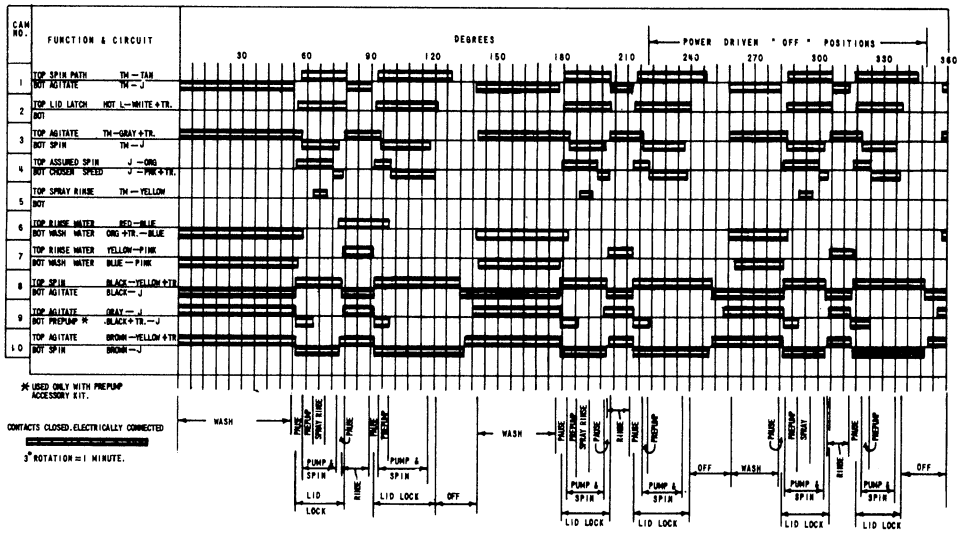
As a safety precaution, ALWAYS disconnect electrical power from the automatic washer before attempting to remove any parts from the machine. For testing purposes, the power cord can again be plugged into a live receptacle after the necessary parts are removed.

It is advisable to make certain that the water supply faucets or valves are closed and the washer is drained of all water, if any parts are to be removed or disconnected in the water system.

Due to the large number of models covered in this manual, no attempt will be made in this section to give a complete detailed step-by-step procedure on disassembly of each individual model. Instead we will give the service procedure and functional description of the various components as used on most models. In a few cases these components may not be identical to the machine being serviced but their function, as well as service procedure, will be the same.

Schematic & Timer Chart
TYPICAL





TIMER CYCLE CHART

TEMPERATURE SELECTOR SWITCH

FUNCTION		CIRCUIT		
WASH	RINSE	BLUE TO BLUE	ORG+TR TO YEL.	RED TO YELLOW
COLD	COLD		X	
WARM	COLD	X	X	
HOT	COLD	X		
WARM	WARM	X	X	X
HOT	WARM	X		X

"X" DENOTES CONTACTS CLOSED

SPEED SELECTOR SWITCH

FUNCTION		CIRCUIT			
AGITATE	SPIN	1-6	1-5	2-3	2-4
NORMAL	NORMAL	X		X	
NORMAL	GENTLE	X			X
GENTLE	GENTLE		X		X

Figure 1

CONSOLE ASSEMBLY

The console is used to house the the timer, various selector switches and the water pressure switch. Most important is the timer assembly.

TIMER ASSEMBLY

The timer drive is a self starting synchronous electric motor. Within the timer is a line switch which can be activated by the push-pull feature of the timer knob.

If the timer knob is pushed in, it will close the line switch allowing the washer to operate through every period, and programmed to go through the complete wash, rinse and spin periods. Housed in the timer are multiple contacts that open and close as they trolley on a series of rotating cams to activate many functions, such as water entry into the machine, water temperature, control of the motor and the lid-lock feature of the washer.

Each cam switch is a single pole, double-throw or a single pole and single-throw switch.

TIMER DIAGNOSIS

The timer controls all the electrical components. Electrical failures can be traced very often to other components. By isolating each unit from the machine wiring and testing with a continuity meter the defective component can be found.

Operation of the machine through all of its periods should pin-point which of the components is faulty. Always test further, one or more of the machines components could be found defective, or cause another to fail. If this is kept in mind it will avoid a back call and perhaps the wrath of the customer.
NOTE: Be sure the lid switch is functioning properly. Adjust when necessary.

Isolating the timer from the other electrical components is a sure way to determine whether or not the timer is defective.
This test requires that each electrical component, as necessary, be disconnected from the wiring harness and checked. The motor and the water valve should be tested with a direct A.C. line cord. The motor may show continuity but the coils could be shorted together due to motor burn out. The same applies to the solenoid coils on the water valve.

CAM CHART

Refer to the time chart on the wiring diagram.

To determine operation, the schematic is read together with the cam chart.
The schematic shows which cams connect individual operational parts. The cam chart indicates when cam switches are closed in a particular period. The black solid line shown in the cam chart represents continuity. The circuitry for any part of a cycle can be followed just by locating the terminals which are connected due to the cam action.

TIMER CHECK

1. Set timer to the place on the dial where the washer does not operate properly. The Cam Chart, *See Figure 1.* shows which switches remain closed.

2. Using a volt-ohm meter or test lamp, check the contacts there is doubt about by rotating the timer dial 360° to make sure the correct circuit is being tested.

TIMER REPLACEMENT

The installation of a timer replacement includes the following:

a. Timer c. Pointer
b. Knob d. Spacer

NOTE: There are two flats on the timer shaft. Do not install pointer 180° out of position, *Figure 2.*

WATER SAVER CONTROL

The water saver control system is made up of the following parts:

a. The Air Bell, see *Figure 3.*
b. Water Saver Control
c. Connecting Tube

The inter-connection of these parts are absolutely air-tight. The rising water level in the tub creates a pressure in the Air Bell. As the water level rises, pressure against the Diaphragm in the Water Control increases, at the desired water level the Diaphragm activates the switch as illustrated by the dotted line in Figure--. The switch cuts off the Fill Valve and starts the drive motor putting the agitator in operation.

WATER SAVER, RESETTING

As the Water Saver Switch snaps to the position indicated by the dotted line, additional water can not be added were it not for the reselect setting on the Water Saver control.

Turning the Water Saver Knob to the reset position forces the Diaphragm down, allowing the control switch to return to the position indicated by the solid line in Figure--. This stops the agitator and the Fill Valve opens to fill the tub to the water level desired.

The reselect position is spring loaded (some models) so it would be impossible to over-fill the tub.

CONSOLE DISASSEMBLE PROCEDURE

The console houses the timer, selector, switches and pressure switch.

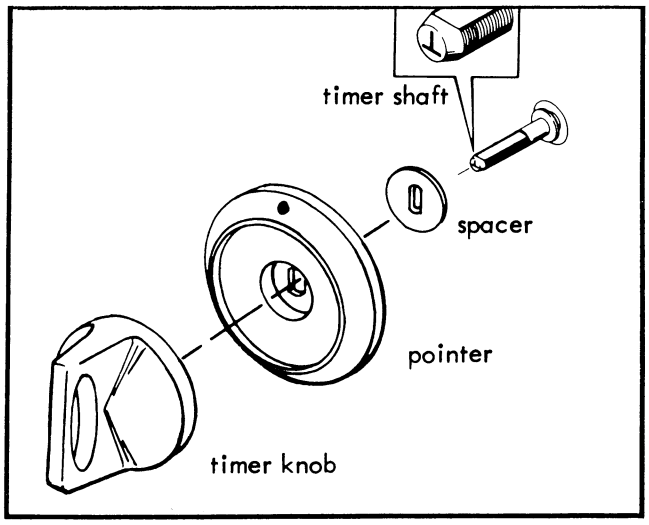


Figure 2

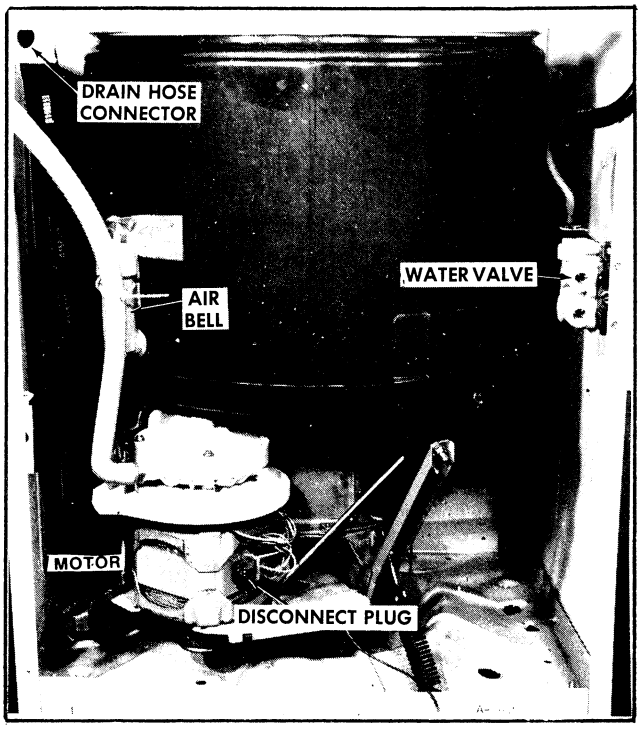


Figure 3

All components of the console are accessible for service by removing the backplate or complete console assembly.

On all models, the complete console assembly, including its components, may be removed from the top panel as an assembly.

The console is held in place on the top panel by two shoulder screws under each end. The heads of screws extend into spring clips that are attached to the underside of top panel.

CABINET TOP PANEL

The top panel supports the backguard and lid. For access to components at underside of top panel, proceed as follows:

1. Remove dispenser insert if applicable. Locate a small screwdriver between insert screen and inlet funnel at front outer corner. Then, pry insert up out of funnel and press it down out of opening. See *Figure 4* and *5*

2. Top panel is fastened in place with two spring clips. To release clips, raise lid and grasp top at front of lid opening. Place knees at each front corner of cabinet, pull forward on top until it clears clips, then lift upward.

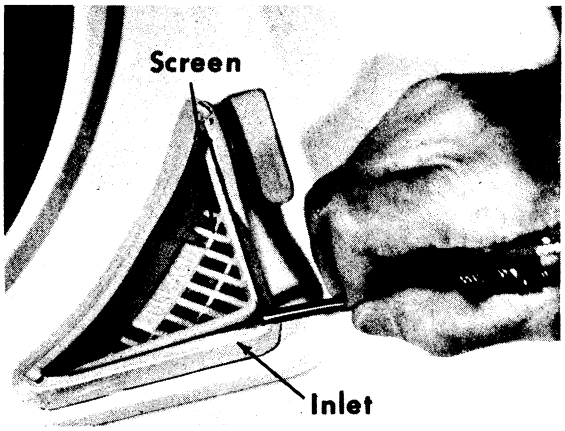


Figure 4 — Removing Dispenser Screen

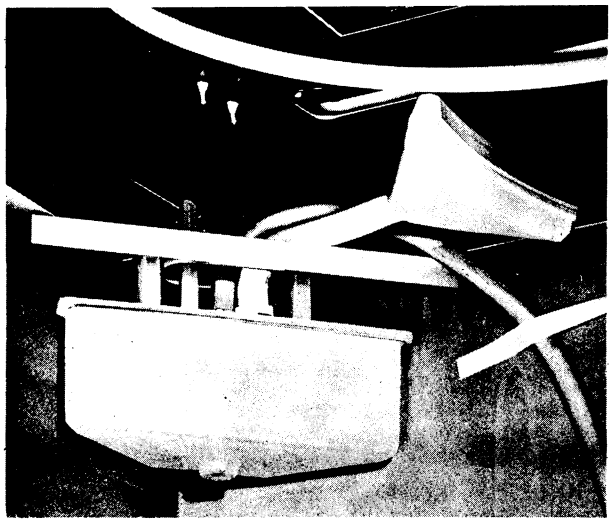


Figure 5 — Bleach Dispenser

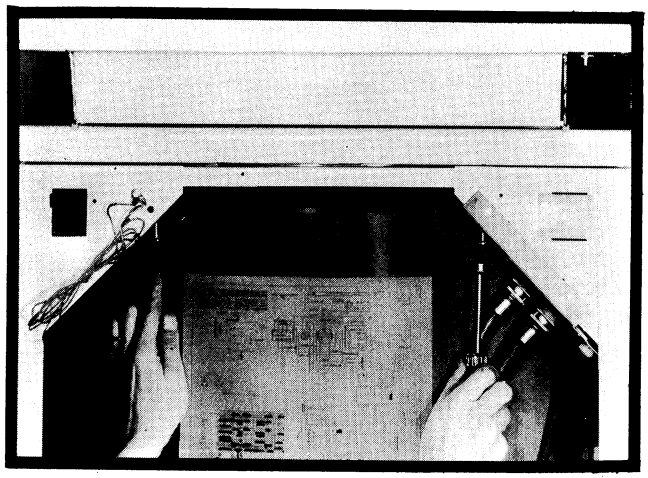


Figure 6

TOP PANEL, *Early Models*

The top panel is easily removable and gives access to many components. On early models the top panel was secured by two long tie rods at the front and two short tie rods at the rear, *Figure 6*.

CABINET TOP

On later and present models the top panel is held on by two spring clips in front and two retainers in the rear of the cabinet top edge.

The porcelain top supports the backguard and clothes door.

For access to components, when top only is to be raised and front panel is not to be removed, proceed as follows:

1. Remove dispenser screen or screens, as required, by carefully inserting a small screwdriver between screen and inlet at front outer corner. Then, pry screen up out of inlet and press inlet down out of opening.

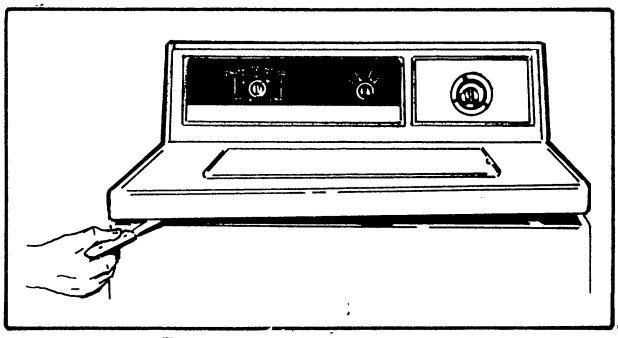


Figure 6A- Releasing Clip

2. Release clip at each side of front panel by passing a thin blade putty knife between top edge of front panel and lower edge of cabinet top. See *Figure 6A*. Push blade against clip to disengage it and raise top upward to clear the clip. The top can be raised to an upright position if space permits. The guide opening in the flange at the left underside of top and the hole in top flange of cabinet allow for use of a chain with hooks or a cord, to support top in a vertical position. See *Figure 7*.

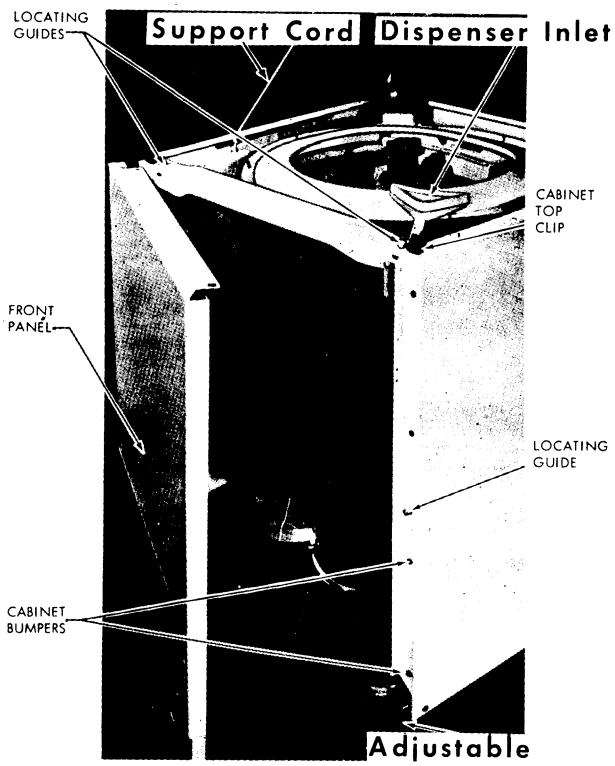


Figure 7 – Cabinet Front

1 **DISASSEMBLE PROCEDURE (Cabinet)**
With power cord disconnected, proceed as follows.

a. Remove nine screws around the cabinet base.
b. Disconnect wire harness at motor connector.
c. Tape lid shut, raise top panel, *Figure 6A* See *"Top Panel Removal", Procedures 3 and 4.*
d. Remove wire under ground screw.
e. Disconnect vinyl air bell hose, water mix valve wires and lift entire top panel free from rear hinge brackets.
f. Remove the screws mounting the drain hose connector to the cabinet.
g. LAF, LAH, LAJ models disconnect the low pressure hose at inlet air break.
h. LA-LX-LAMX disconnect the low pressure hose at inlet air break. On these models the air gap is mounted to the tub top cap. On other models the air gap is mounted to the edge of the cabinet.
i. Slide cabinet forward and release from base.

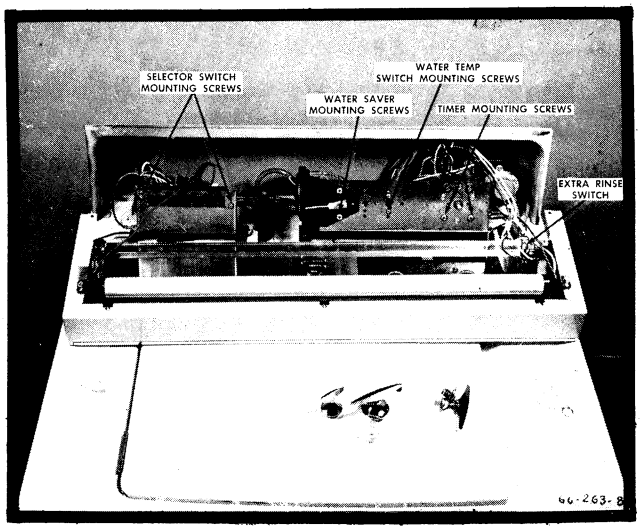


Figure 7A

2 **CONTROL HOUSING REMOVAL**, See *Figure 7A*

a. Disconnect service cord.
b. Push timer knob in, turn counterclockwise, remove knob and pull off plastic disk.
c. Remove water level knob from shaft.
d. Remove buttons or knob from selector control.
e. Remove screws from top and bottom edges of the control panel back cover, and remove cover.
f. Remove Phillips head screws from each front bottom of the control panel.

3 **TOP PANEL REMOVAL**, See *Figure 7B*

a. Depress spring clips, located approximately 2 1/4" in from each side at front of top panel, lifting up on the top panel at the same time.
b. Tip the top panel up and separate the disconnect plug.
c. Push the inner unit toward front of cabinet.
d. Remove the water level control tube from top of the air bell.
e. Lower top panel, pull forward of cabinet to release rear retainers and remove.

Figure 7B

4 TOP PANEL REMOVAL, *Early Models Figure 6.*

a. Remove rear panel.
b. Remove two short tie rods located just inside of rear top cabinet brace and approximately 6" in from the top rear of cabinet.
c. Tilt washing machine backwards, remove the two long tie rods from top of kick plate area.
d. Remove disconnected plug and water level control tube.
e. Remove top panel. See *Figure 8A*

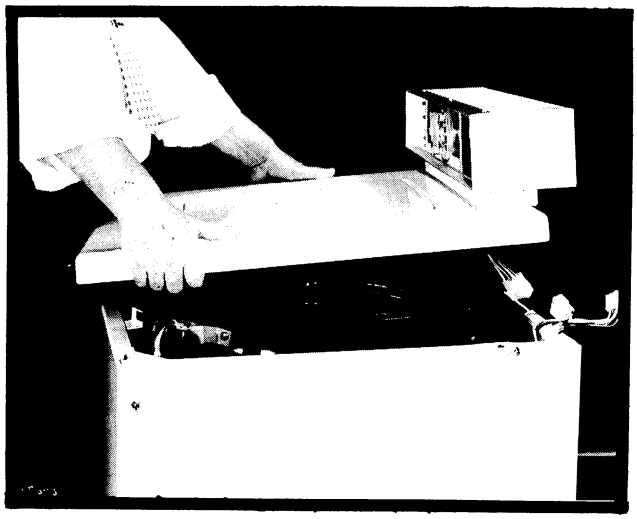


Figure 8A

REMOVING THE FRONT PANEL WITHOUT RAISING THE TOP

1. Remove the screws holding the front panel to the base.
2. Using a putty knife, release the two clips, *Figure 6A*. Raise top over the guides. Place handle of putty knife between the top and the cabinet, directly in back of clip at one side, to support top. Lift and remove front panel from cabinet.
3. Remove clamps from dispenser inlet hoses.
4. Replace, using reverse procedure.
5. Top must be securely fastened down in place with both clips.

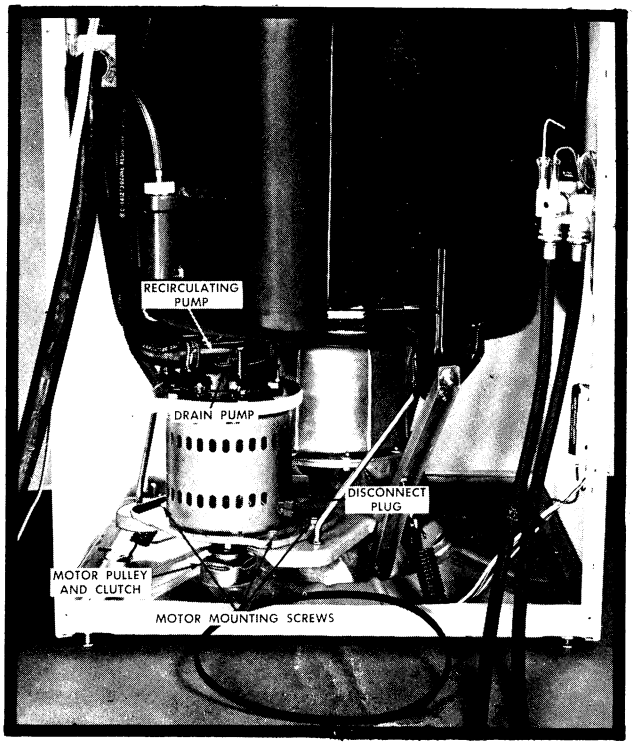


Figure 8C

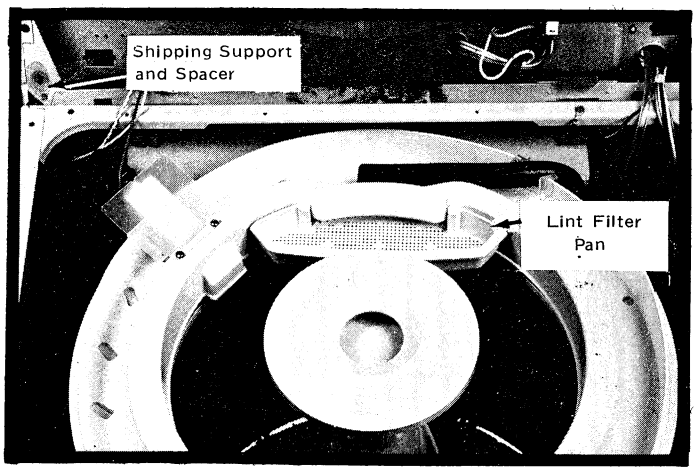


Figure 8D

Refer to Procedures 30,31,32

Rear Panel Removal

1. Remove the drain hose from pump hose at rear of cabinet. Use a shallow container under the coupling connection to drain pump and hoses. See *Figure 8B*.

2. Remove all the screws that fasten the rear panel. See *Figure 9*.

Cabinet Assembly Removal *with top panel and console attached*

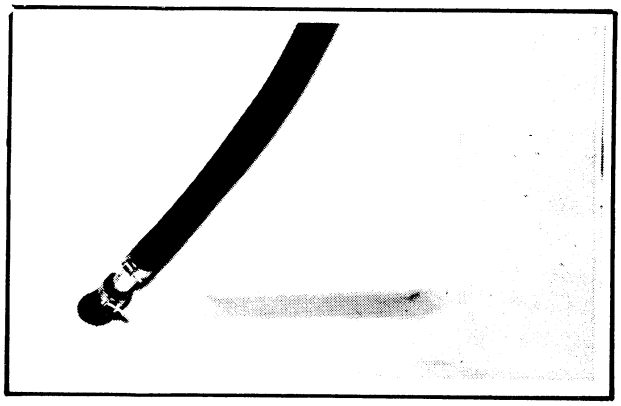


Figure 8B- Rear Panel-Drain Hose

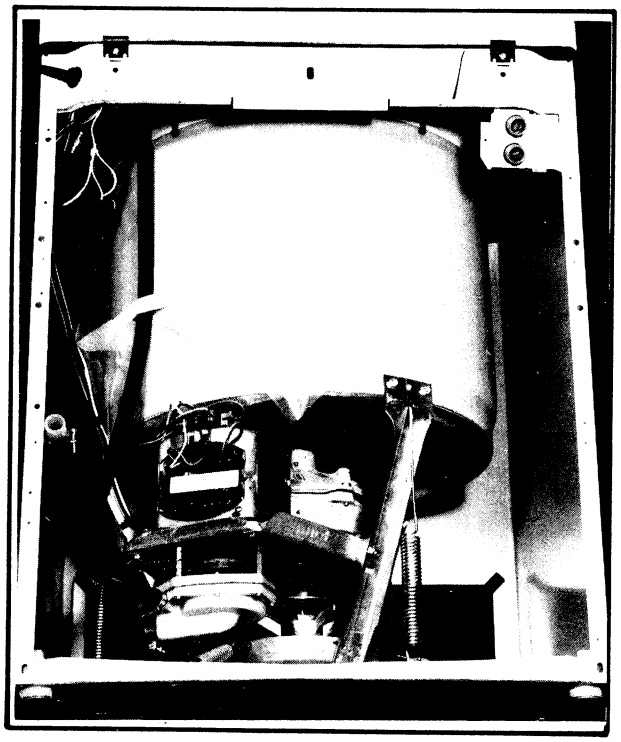


Figure 9 — Rear Panel Removed

The cabinet wrapper fastens to the base by screws around the bottom edge, supports hoses, water inlet funnel assembly, water valve and harness.

Cabinet Panels

The mechanism in the lower cabinet area is accessible when the access and rear panels have been removed.

Each plated lid hinge is fastened to top panel and lid with four screws, washers and acorn type nuts.

Gaskets between hinges and top panel or lid are used as a cushion.

Raise and prop up front edge of top panel for access to nuts and washers at underside of panel.

The base assembly supports the entire washer mechanism, cabinet wrapper and top panel with console attached.

NOTE: Recommended for transmission removal.

1. Raise lid and remove bleach funnel (if applicable).

2. Raise front edge of top panel and remove water inlet tube from splash tub cover. Then fasten top panel down in place.

3. Remove front access panel; remove pressure tube and bleach hose (if applicable) from top of pin trap.

4. Remove cabinet rear panel; disconnect harness from motor, then remove harness from wire clip on leg-and-dome assembly and recirculating hose from pump (if applicable).

5. Remove one screw at front bottom, each side of cabinet, and three screws at each side bottom of cabinet that hold cabinet to base.

6. Carefully raise cabinet up so upper rear brace will clear splash tub cover. Then lift cabinet toward the front and away from mechanism.

Cabinet Replacement

1. Transfer all components to replacement cabinet.

2. Carefully remove fiberboard bumper pads from front and sides, inside the cabinet. Be sure pads are properly located on reassembly.

3. Carefully remove pressure tube holders fastened to side of cabinet with pressure sensitive tape. BE SURE TO LOCATE AND CEMENT HOLDERS IN PROPER LOCATION ON REPLACEMENT CABINET.

   NOTE: New replacement tube holders are available.

WATER INLET FUNNEL

The water inlet funnel assembly is located under the top panel, fastened to a bracket at top left side of cabinet See *Figure 10.*

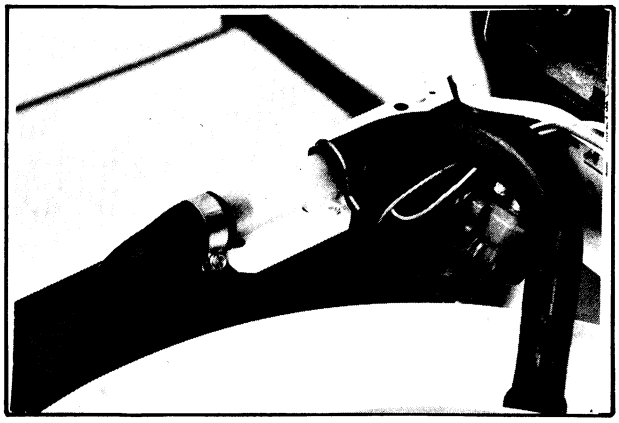


Figure 10 – Left Rear View of Cabinet

The funnel provides a vacuum break for the incoming water supply, as required by Underwriters and local plumbing codes.

Water is directed to the funnel from the water valve, through a hose held with a screw type clamp, at left rear of cabinet. The water passes through a nozzle in the funnel and flows through a tube held with a corbin type clamp, into the spin tub.

The rubber sleeve must be in place on the funnel assembly to prevent water deflection into the cabinet area, should a collection of minerals form in the outlet of funnel, *Figure 11.*

The new replacement water inlet funnel is supplied as a kit (consists of the funnel, sleeve, clamp and instructions).

When installing a new funnel, the clamp screw must be positioned with its head extending toward either side of cabinet. The screw head MUST not extend upward.

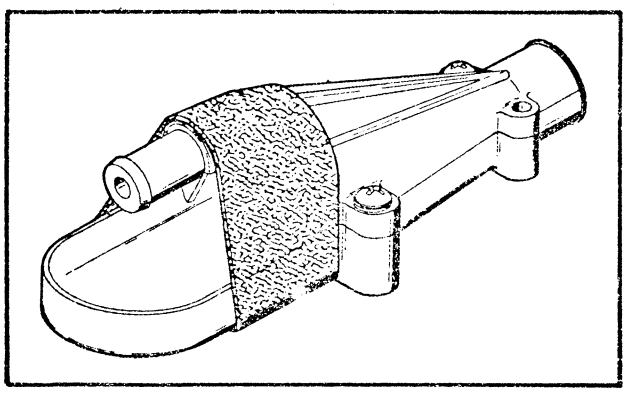


Figure 11 – Flume Assembly

Funnel Removal

1. Loosen the screw type hose clamp and disconnect the inlet hose from the front end of funnel. This clamp screw MUST not be reinstalled with screw extending upward.

   CAUTION: Hoses may seal to funnel connections. After removing clamps, carefully loosen hoses from funnel connections prior to their removal. DO NOT ATTEMPT TO TWIST HOSES FROM FUNNEL CONNECTIONS.

2. Use corbin clamp pliers to disconnect the tube from rear of funnel. A grommet, molded in outlet of tube, holds it in splash tub cover.

3. Remove two mounting screws (left front and right rear) and lift the funnel out.

RECIRCULATING SYSTEM

During agitation, water is circulated from the splash tub outlet into and through the pin trap to the pump assembly, out the pump recirculating hose to the lint filter, *Figure 12.*

During the spin period, all water passes through the pin trap into the pump inlet and is pumped out of the drain outlet.

Pin Trap

The pin trap, composed of a molded polypropylene plastic body, is fastened to the lower right front flange of splash tub by two screws and is connected to the splash tub outlet grommet by a clamp.

The pin trap is designed so its outlet is approximately two inches above the bottom of trap to form a sump and trap foreign objects.

Two vertical baffles, molded in the sump, are effective in trapping foreign objects that will not pass through the pump.

The trap outlet is connected to the pump inlet by a hose and two clamps.

An air dome and nipple, molded in the top of pin trap, provide connections for the plastic pressure tube and hose from the bleach funnel.

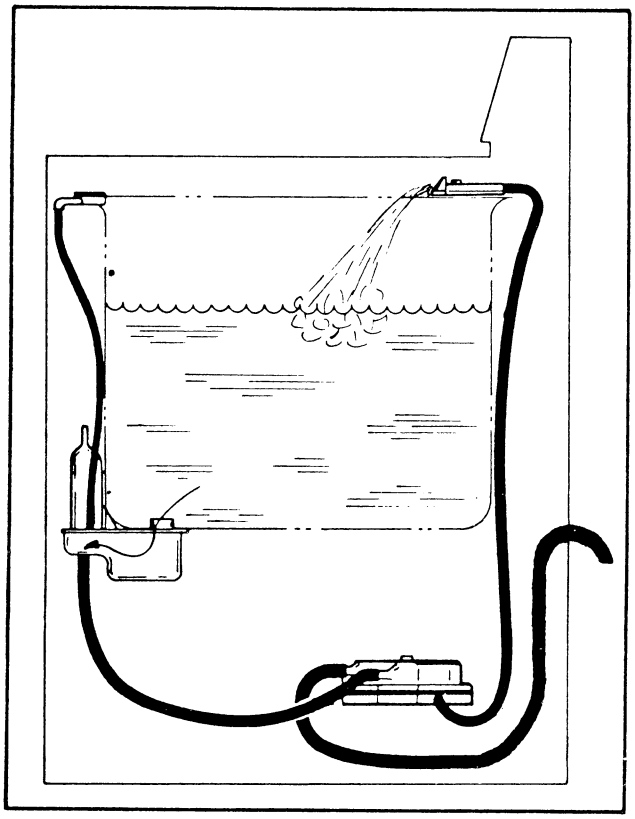


Figure 12 — Recirculating System

Lint Filter

The filter housing is mounted under the top panel, at rear of lid opening. See *Figure 13.*

Molded plastic tips on the surface of filter insert effect a screen to remove lint from the recirculating water. See *Figure 14.*

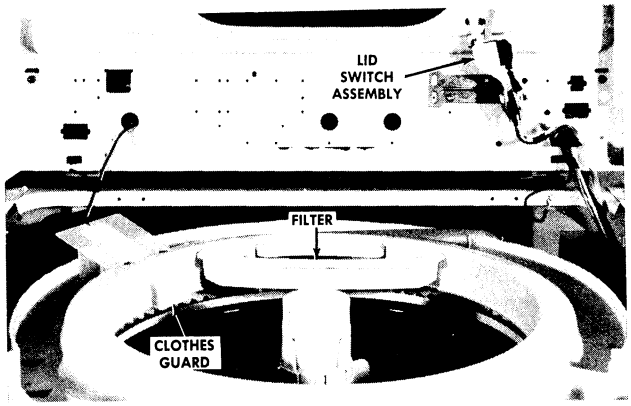


Figure 13

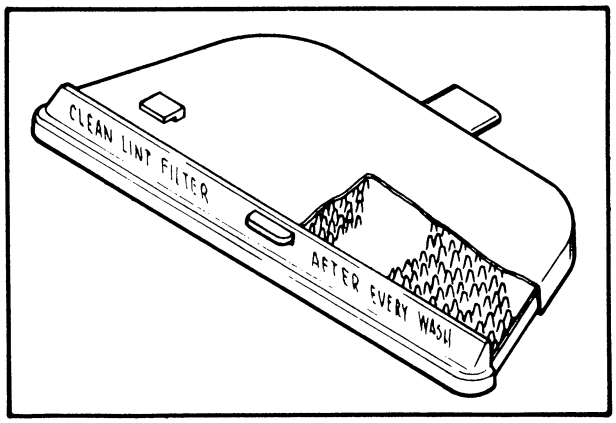


Figure 14 — Lint Filter

NOTE: REMOVE AND WASH OFF FILTER INSERT AT THE END OF EACH CYCLE.

To remove insert: Place fingers under insert to support it at center, then press down on lock tab with thumb and pull insert from housing.

Filter Housing Removal

1. Raise and prop up front edge of top panel.
2. Loosen hose clamp and disconnect recirculating hose from housing.
3. Remove two screws from filter support.
4. Push housing towards the back to disengage housing clips from lip of top panel at rear of lid opening.

Bleach Dispenser

The bleach dispenser system, located in right front corner of top panel and cabinet, consists of an insert, funnel, plastic coupling and hose which connects to top of pin trap. See *Figure 15.*

The pin trap acts as a reservoir for liquid bleach during the water fill period. The bleach mixes thoroughly with water and is recirculated through the lint filter during agitation.

Bleach System Removal

1. Open lid and remove the insert from the dispenser funnel.

2. Push the funnel down and out of opening in top panel.

3. Raise and prop up front edge of top panel. Loosen hose clamps to disconnect the funnel and hose from coupling at support bracket.

   CAUTION: Be sure support bracket is not bent upward, otherwise, bleach flow through funnel will be retarded.

4. The bleach hose connection at top of pin trap is accessible through top of cabinet or front access panel.

FABRIC SOFTENER DISPENSER

The polypropylene dispenser has no moving parts. Its operation depends entirely on centrifugal force and gravity.

The dispenser fits down over the top of agitator cap. Remove it by lifting straight up with both hands. Replace it by lining up the serations inside its hub with those on the agitator cap, then push down firmly on hub.

Prior to start of wash period, pour properly diluted softener into dispenser reservoir. DILUTE WITH ONE CUP OF WATER.

During agitation, the softener is thoroughly mixed with water.

During spin (normal or slow speed), centrifugal force moves liquid from the reservoir and holds it in the outer chamber. At the end of the first spin period, gravity causes the liquid to drain into tub for rinse period, *Figure 16.*

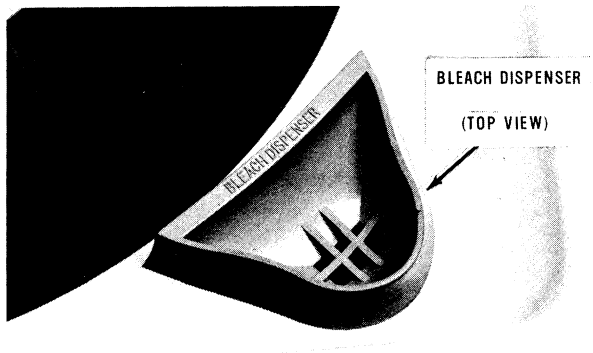


Figure 15

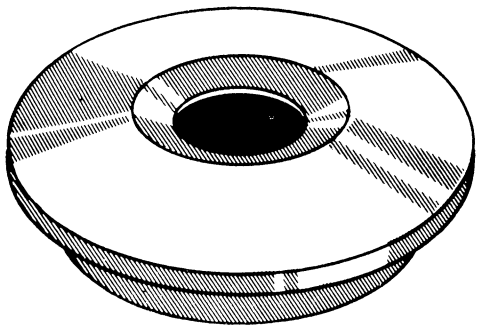


Figure 16

REMOVE THE DISPENSER AFTER EACH USE AND THOROUGHLY RINSE IT WITH HOT WATER.

THE DISPENSER, NOT INCLUDED ON SOME MODELS, IS A SERVICE REPLACEMENT PART AND CAN BE INSTALLED ON ANY CURRENT MODELS.

DISPENSER OPERATION, See *Figures 17* and *18.*

The recommended amount of softner is placed in the dispenser. Water is added to bring the level up to the lip of the dispenser. During the *DRAIN-RINSE* cycle, some of the conditioner is splashed out due to centrifugal force during spin, the conditioner leaves *Chamber A* and enters *Chamber B.*

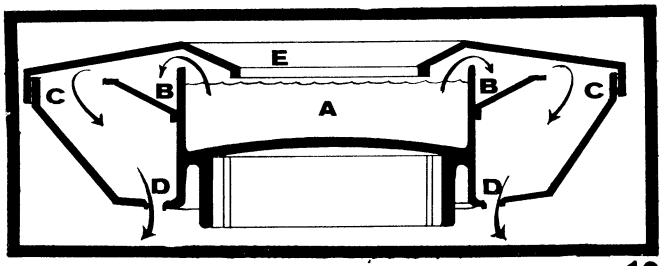


Figure 17

After the drain and spray rinse, the spin speed increases to a point where the force is great enough to throw the conditioner to the outside periphery of *Chamber C* where it is held during the spin cycle. During the *PAUSE* and *FILL* cycles for the deep rinse, the conditioner runs down and into the tub through the holes at *D,* because there is no centrifugal force to hold it in *Chamber C.*

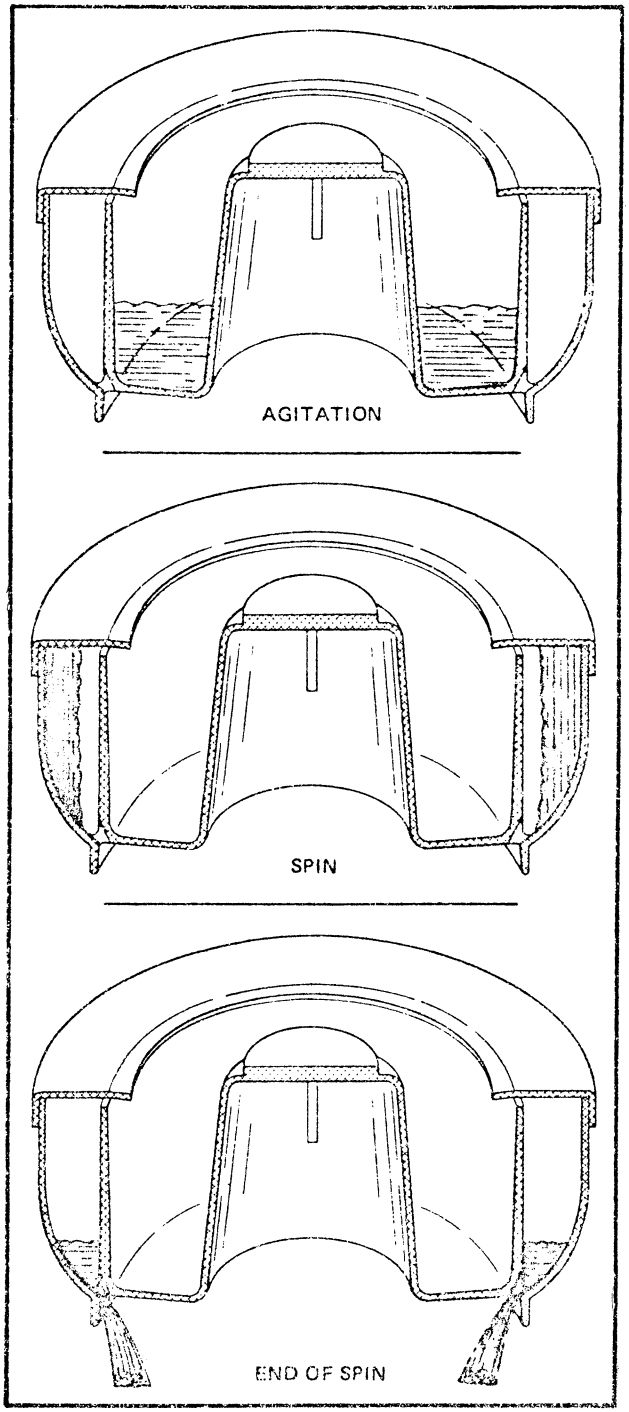


Figure 18 — Fabric Softener Dispenser

AGITATOR

There are several types of agitators used on these machines as shown below. Starting at the bottom of the line you have a blade type agitator, then a step up to a blade type with filter, then a single ramp agitator, and finally a double or nested ramp agitator. The ramp agitator models use a recirculating filter system, *Figure 19.*

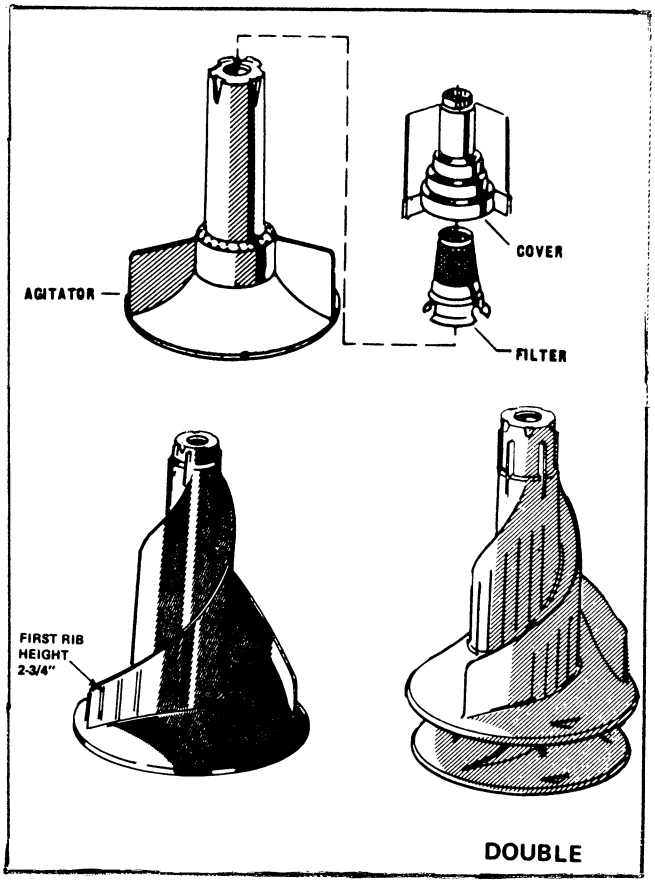


Figure 19

WATER LEVEL CONTROL SYSTEM, *Figure 20.* The air bell, water level control and a connecting tube are the three essential components that make

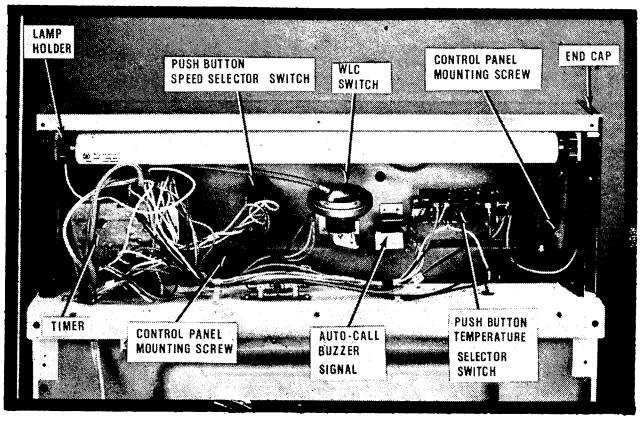


Figure 20

up the water level control system. Water rising in the tub creates a pressure in the air bell. The diaphragm in the water level control is forced against a switch mechanism as air pressure is increased. When desired water level is reached, pressure in the tube and against the diaphragm is increased enough to trip the switch, thus closing the water valve and starting the motor in agitate direction.

WATER PRESSURE SWITCH, *Figure 21.*

When pressure control is mounted behind the cabinet console. A shaft extends through the console and the water level is controlled by the operator. A plastic hose is connected between air bell (WLC model) and the pressure control. When water enters the tub it forces the air collected in the air bell which is fastened to the tub, up the tube and against a diaphragm. The diaphragm in turn activates a switch incorporated in the unit.

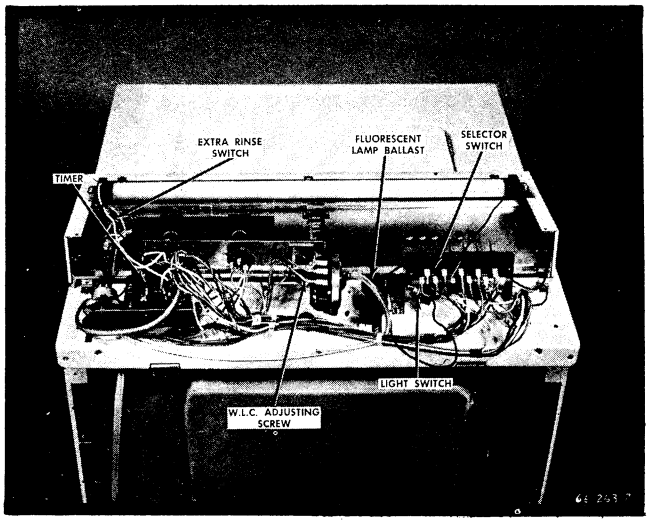


Figure 21

WATER LEVEL CONTROL *Figure 22*–Test With Power Cord Removed

a. Remove water level control from cabinet and disconnect wiring.

b. With a continuity checker as outlined below, proceed as follows.

c. *Terminals 1 and 2* are normally closed. Placing test probes across these terminals should make the lamp light (remove tube). If light does not go on, replace water level control.

d. Using a short length of tubing connect to tubing port of water level control.

e. Placing probes of continuity checker across *terminals 1 and 3* should not make lamp light.

f. Blow gently through the tube, if and when switch clicks, lamp should light, if switch fails to click on or lamp fails to light, water level control should be replaced.

NOTE: If an extra length of tubing is not available, disconnect tubing from washer and use it for testing.

RESETTING WATER LEVEL

By adjusting the water saver control to a higher position, additional water would enter the washer. By placing the *WATER SAVER* knob to the reset position, the diaphragm is forced down, returning the switch to the *ON* position, thus water again flows into the tub until desired amount of water is reached. Agitation stops as water flows into the washer.

WATER LEVEL CONTROL (Removal)

a. Disconnect service cord.

b. Remove control housing.

c. Remove wires from switch terminals

d. Remove plastic tube.

e. Remove pointer from shaft.

f. Remove switch mounting screws

g. Install new switch.

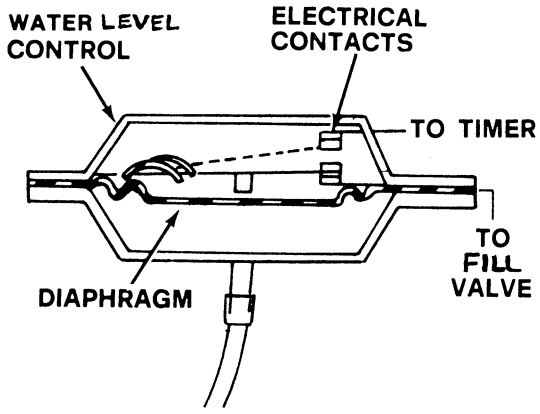


Figure 22

WATER SAVER

A water saver switch that overrides the water level control. The operator can actuate the switch at any time they feel sufficient water has entered the tub for the load use. If agitation should start with insufficient water in the machine, the motor will stop on the action of the motor overload switch. When the overload switch automatically resets, the cycle will return to the fill position again. Succeeding water fills will be normal unless the operator chooses again to use the water saver. Some models have a preselect registration.

SWITCHES

WATER TEMPERATURE SELECTOR SWITCH

When no water enters the washer on any fill period, or if the water is not of the correct temperature, the switch bank then may be suspected and must be tested. In checking the switch in *Figure 23,* for example, first disconnect the wire leads to the switch, leaving the switch in place. Use a live test lamp or ohmmeter to check the continuity through each circuit of the switch; on each listed test the lamp must light. Should the switch fail any test, it must be replaced as an assembly.

TEMPERATURE SELECTOR SWITCH

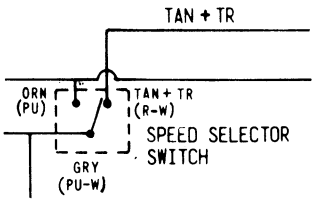
FUNCTION		CIRCUIT—ORANGE + TR (R-G)		
WASH	RINSE	TO BLUE (R)	TO PUR + TR (Y)	TO RED (GY)
Hot	Cold	X		
Hot	Warm	X		X
Cold	Cold		X	X
Warm	Cold	X	X	

, Figure 23.

In general, to successfully test switches (whether toggle, rotary or pushbutton, and whether one-gang or multiple-gang) first requires a careful referral to the wiring diagram of the washer. For example, with any switch having three terminals, one need only to determine which of the three is the common terminals; once that is established, testing becomes routine. Remember that access to the wiring diagram is essential to successful electrical trouble-shooting, since it is the only *"roadmap"* you have to perform point-to-point testing.

SPEED SELECTOR SWITCH

To test the switch at "Gentle" Wash place the ohmmeter leads across terminals marked "gray" and "tan" with wires removed from switch, if continuity is not indicated, replace the switch.



To test the switch at "Normal" Wash place the meter leads across terminals marked "gray" and "orange" with wires removed from switch. If continuity is not indicated, replace the switch.

NOTE: The above tests can also be made with a 10 watt, 115 volt lamp. Move washer for safe access to components. Refer to the proper wiring diagram and cycle chart.

LID SAFETY SWITCH AND LATCH, *Figure 24.*

The lid safety switch and latch is a built-in safety feature that prevents the user from reaching into the machine while the washer is in operation. The lid switch is in a closed position when the lid is down. While the timer is in operating position, and the washer is operating, timer, lid switch and line switch within the timer are closed and current flows to the solenoid latching mechanism, locking the lid. The lid cannot be opened until the user shuts the washer off at the control, thereby preventing possibility of injury to the user. The assembly is made up of a micro-switch that is normally open a solenoid coil, a latching mechanism and an adjusting screw. To adjust or replace this assembly refer to *"Lid Safety Switch and Latch Removal and Replacement Procedure".*

ADJUSTMENTS

LID SAFETY SWITCH AND LATCH, (Removal and Replacement)

a. Follow Procedure *"Top Panel Removal".*
b. Tip up top panel.
c. Disconnect switch and latch wiring.
d. Remove switch mounting screws.
e. Install and reconnect switch.
f. Adjust clearance and allow 1/32 to 1/16 inch between nylon lid catch and the latch bar in closed position, *Figure 24.*
g. Connect white and white Tr. wires to solenoid coil and two tan wires to the safety switch.

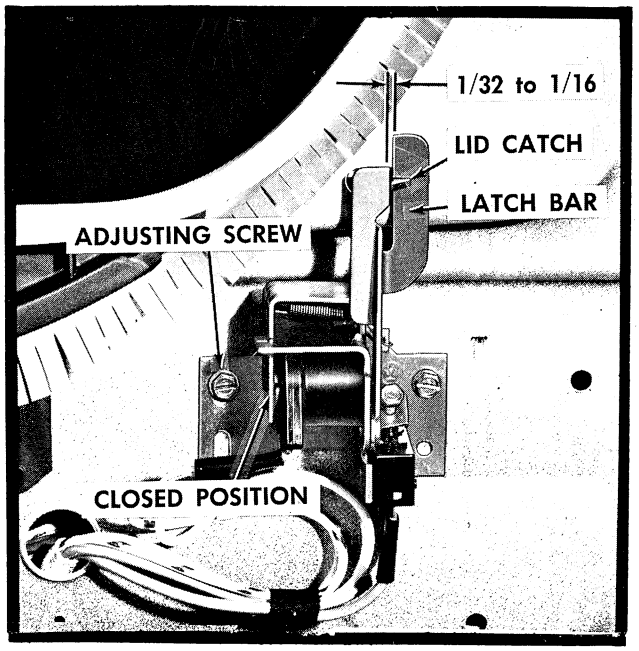


Figure 24

WATER LEVEL ADJUSTMENT, *Figure 25.*

The water level has been set at the factory. However, if the water level does not come within the limits of 14-3/8" at the extra large setting the control should be adjusted as follows:

1. Disconnect the service cord.
2. Remove the back cover from the control panel.
3. Turn the adjusting screw to the right to raise and left to lower. Three-fourths turn will raise or lower the level approximately one inch.

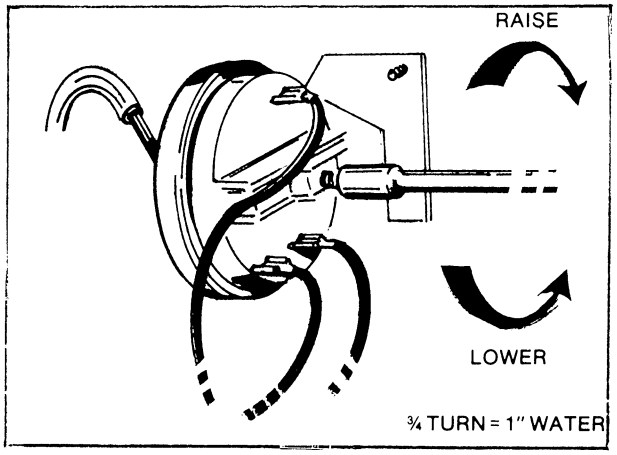


Figure 25 -

WATER LEVEL DEPTH SETTING

Tiny Wash	5-1/2" x 1-1/2" plus/minus
Small	8-1/4" x 1-1/8"
Medium	11-1/8" x 1"
Regular	12-3/4" x 7/8"
Large	13-1/2" x 3/4"
Extra Large	14-3/8" x 5/8"

Measure the water depth from the bottom of the basket. As you notice from the chart, this level can vary somewhat and still be within limits. Make the check at the Extra Large level and the other levels will fall within their variances.

END-OF-CYCLE SIGNAL

A signal buzzer sounds to let you know when the wash is completed. This signal is adjustable from a soft to a very loud sound level, or you may turn it off entirely. Not available on all models.

TIMER TEST AND ADJUSTMENT

CAUTION: Field repair of timers is not recommended as it is time consuming and voids the guarantee. However, if the timer motor is bad, it can be replaced in the field.

To check the timer in any cycle, start at the *OFF* position before the regular cycle. With an ohmmeter or test light, check for continuity by rotating the timer knob to the correct circuit to be checked. The timer shaft rotates 6^{o} every time the timer advances. You can determine which contacts are made at any given time by reading the timer cam chart which is with the schematic diagram on the front access panel.

TIMER REPLACEMENT

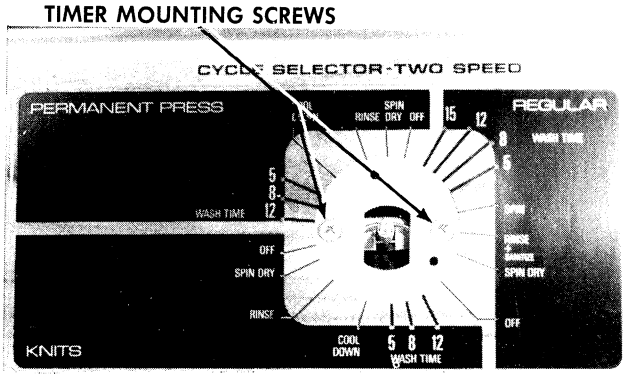


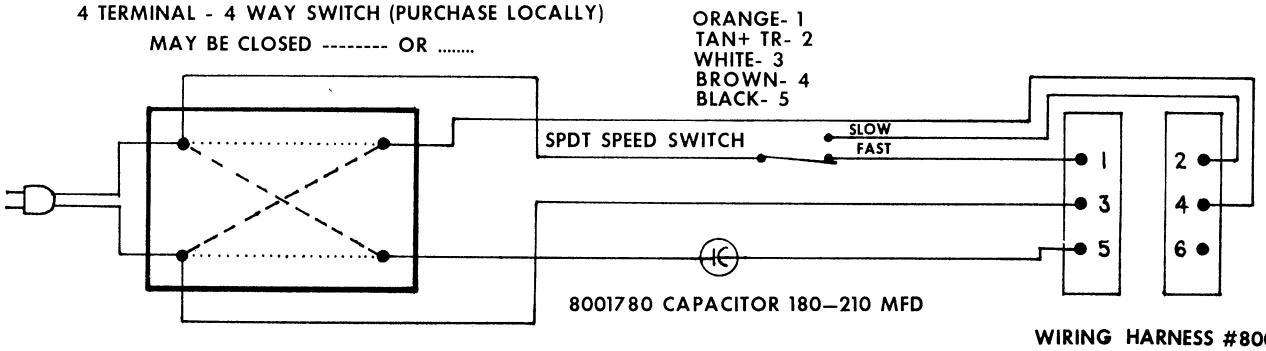
Figure 26

CYCLE SELECTOR (TIMER) – REPLACEMENT

Cycle Selector (TIMER) – Replacement

1. Remove the knob by turning counterclockwise.
2. Remove the indicator and hub from the shaft in in order to get to the mounting screws, *Figure 26.*
3. Transfer all wires to new timer.

MOTOR TEST CORD



Timer Analysis

All electrical components of the washer are controlled through the timer. Electrical failures can usually be traced to some component other than the timer.

First, endeavor to determine which component is at fault, by attempting to operate the washer through all different phases of the timer and selector switch.

ISOLATING THE TIMER

Isolating the timer from all other electrical components is a practical and accurate method of determining whether or not the timer is inoperative.

This method requires that all individual electrical components, except the timer, be disconnected from the wiring harness. Then using the selector switch schematic wiring diagram, make a continuity check of the selector switch. Also, a continuity check of the connecting harness wire leads may be in order, to make sure there is not a broken wire. Check all harness leads to each component to assure no loose connectors. The continuity checks should be made with at least a 100-watt incandescent lamp. Operate the water valve and electric motor (also Suds-Back components, when applicable) direct from a 115-volt power supply, simulating their normal operation.

By this method, the timer can be isolated from all other operating electrical components and the serviceman can accurately determine which component is inoperative.

CHECKING THE TIMER

Prior to checking the timer, determine, if possible, which operation of the washer is not functioning properly to eliminate the circuits which would not require checking. Then disconnect the harness leads from timer and connect continuity tester leads to the timer terminals for the circuit involved.

On Kingston timers the jumper lead (J-J) must be left in place, otherwise, a continuity check may indicate an open circuit when the contacts are closed.

With the timer line switch "ON" (shaft pulled out), advance timer manually through the portion of the cycle to be checked. The timer contacts must be closed and show a completed circuit as outlined on the timer chart. Due to timer design, some contacts will close prior to, and after the actual period indicated. Therefore, an acceptable timer circuit check is to proceed to make a continuity check across each set of contacts to make sure they "open" and "close" the circuit.

When checking any set of contacts which controls motor operation (agitate or spin), the motor control circuit contacts (one or more sets) must be checked.

When connecting the continuity tester leads to the timer terminals, as shown on the time chart, refer to the schematic diagram to be sure two different sets of contacts are not in series. When two sets of contacts are in series, it is possible that one set could be fused together and result in a checking error, in that the set of contacts which is operating properly would be the controlling factor, not indicating a failure in the other set of contacts.

When two sets of contacts are in series, check each set individually by connecting one continuity tester lead to only one of the timer terminals and the other tester lead to the correct exposed rivet on timer case, as shown on the schematic diagram. Then check the other set of contacts in the same manner.

On both brands of timers, the rivet will be located on the same side of timer case as the terminal, usually in line with the terminal. Make a continuity check to determine which rivet is required for the set of contacts involved. Each set of contacts is identified by a number and also by a letter "T" (top) or "B" (bottom). The Kingston timer has the "T" set of contacts on one side of the case (shaft side of timer) and the "B" set on the opposite side. The Mallory timer has two terminal boards, one on either side of the case. Each terminal board may have both a "T" and "B" set of contacts. Refer to timer time charts and schematic wiring diagrams.

CAUTION: Field repair of timers is not recommended as it is time consuming and voids the guarantee. However, if the timer motor is bad, it can be replaced in the field.

5 TIMER THERMOSTAT

Place test light probes across the two thermostat terminals. If lamp lights, it would indicate thermostat is open and should be replaced. The burning

out of a thermostat is generally the result of another trouble source, seek out the cause before replacing thermostat. Use a short jump wire across the thermostat terminals, (removing plug from wall receptacle first) after you are reasonable sure that other components are not at fault. *DO NOT USE JUMPER WIRE FOR A PROLONGED PERIOD OF TIME,* this would defeat the purpose and the safety intent of the thermostat. If machine operates normal with jumper wire installed, remove plug from wall receptacle, remove jumper wire and install new thermostat.

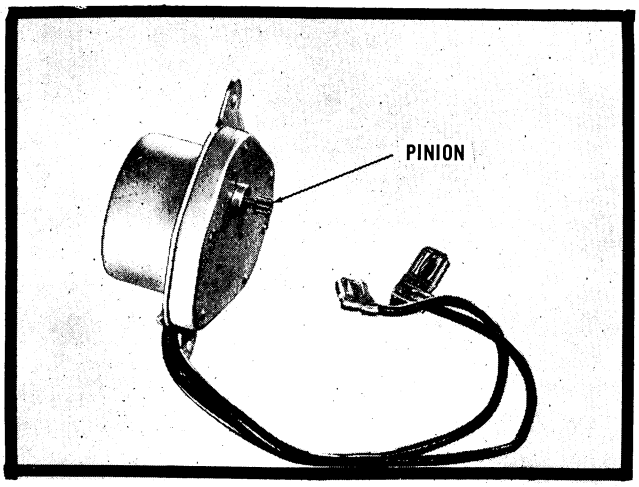


Figure 27 -

6 TIMER MOTOR , *Figure 27.*

a. Use same *Procedure* , on timer motor test. If lamp lights it will indicate current is reaching the timer motor, but will not indicate timer motor is inoperative.

b. Remove one timer motor lead from timer terminal board.

c. Place test probes between terminal on terminal board and lead that has been removed. If lamp lights it will indicate timer motor coil is good. Remove motor from timer, check escapement movement by connecting a test line directly to motor lead terminals after motor has been removed and both leads disconnected from timer. If escapement and motor is operative, reinstall in timer. Once again connect test cord to timer motor leads (leads must not be connected to the terminal board at this time). Allow timer to run through several increments. If timer motor or escapement is defective it should be replaced.

Basically the timer, timer motor and terminal board on the top loader are the same. In this text we will cover those repairs that are prudent to be made in the home, remembering that the timer is a very intricate and precise mechanism, and if not correctly repaired could cause malfunctions and sometimes damage to other components of the machine. Most timers can be rebuilt or replaced through the distributors of the product, or by companies that specialize in the repair of timers.

7 TIMER REMOVAL

a. Follow procedure.

b. Remove three timer mounting screws.

c. Remove wires from timer, being careful to mark wires if wiring diagram is not available.

d. If new or replacement timer is on hand, install wires as removed from original timer, being careful to inspect for broken wires at spade terminals.

e. Install timer in control housing

f. Replace control panel and component.

8 TIMER MOTOR REMOVAL

a. Disconnect the service cord.

b. Remove control housing, follow *Procedure 2, "Control Housing Removal".*

c. Remove the two motor mounting nuts from timer base.

d. Disconnect the motor leads from terminal board.

e. Remove motor from timer.

f. Check teeth on pinion gear for accessive wear. Check shaft for pinion bearing wear, try to move shaft sideways, if side play is accessive, motor must be replaced.

g. Connect test cord from 115 volt circuit directly to timer motor. Place tweezers over shaft as in *Figure 28*, allow to turn freely for a few revolutions.

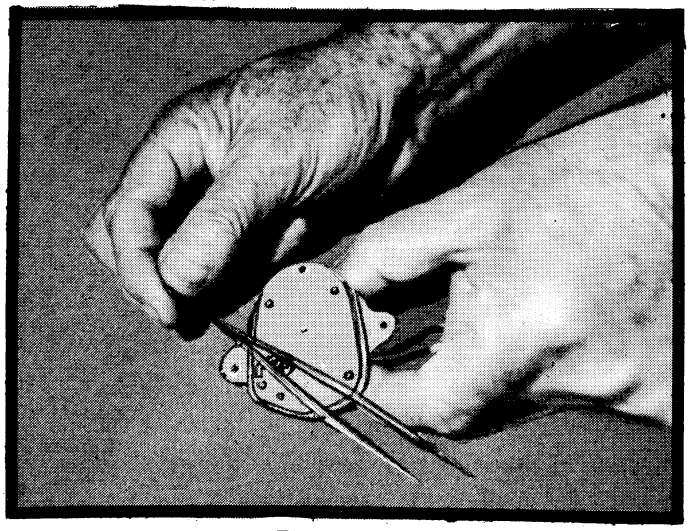


Figure 28

h. Exert slight pressure on top side of tweezers, if gear continues to turn motor is not faulty if gear slips or waves back and forth, motor should be replaced.

i. If motor passes all the above tests, look for trouble elsewhere, shaft binding against control panel, dial not properly spaced and dragging against control panel, gear spinning freely on cam and gear assembly, pawl or blade spring, broken or fatigued, mounting hole in spring rack worn or longated.

9 BLADE DRIVE SPRING (Replace)

a. Proceed as outlined under *"Timer Motor"* removal.

b. Remove steel cover plate which covers cam springs and contacts on the motor end of timer (can be removed by bending metal tabs up very carefully).

c. Remove gear and cam by lifting off of shaft.

d. Disengage and remove blade spring as illustrated, with screwdriver in *Figure 29.*

e. Replace spring, do not bother to look for cracks, breaks or worn spots.

NOTE: The cost of spring is so little it may cause more work if the old spring is reused. Always carry an extra spring in your tool box. Part No. Q-117931 is used on timers using the booster coil spring, Figure 31.

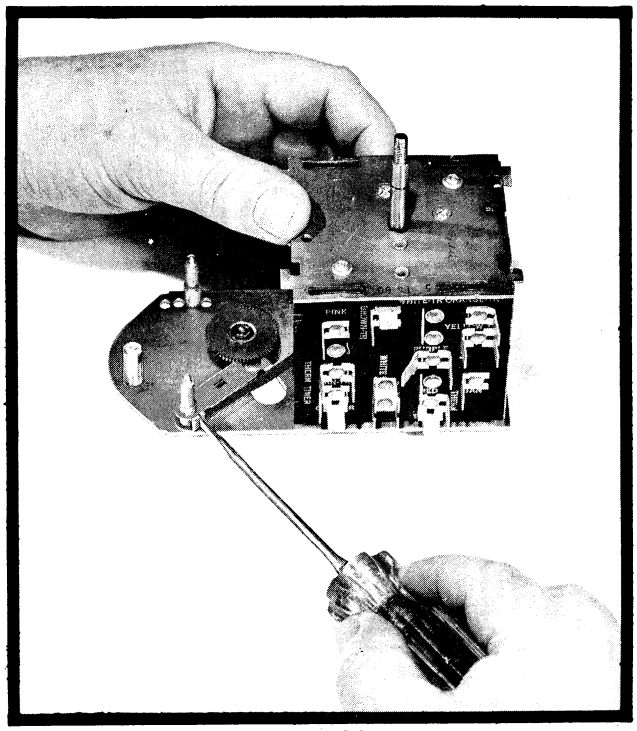


Figure 29

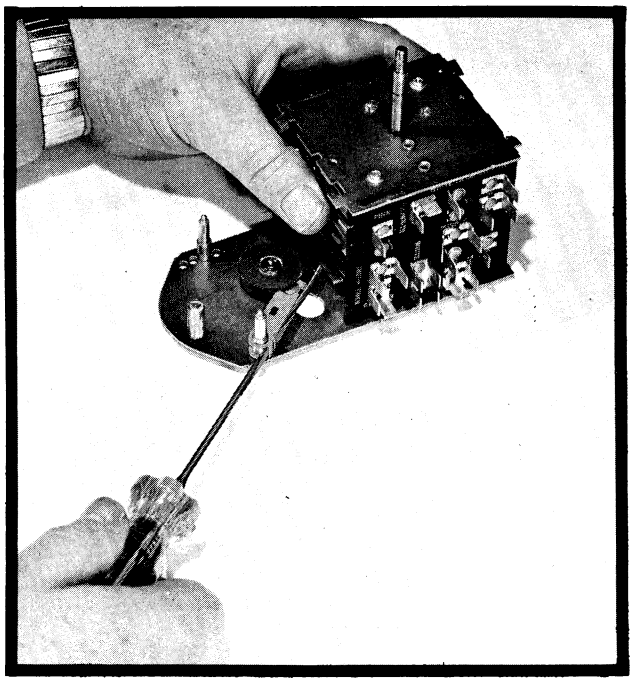


Figure 30

f. Position the spring with the formed end of the spring into the retaining slot, *Figure 30*

g. Reassemble cam and gear on base by pressing spring away from cam shaft and allowing cam to drop freely on shaft.

h. Manually turn cam and gear assembly and check for free movement and timer advance .

i. Reassemble timer.

10 CAM AND GEAR ASSEMBLY, *Figure 31.*

a. Follow procedures for *"Blade Drive Spring Removal".*

b. Examine gear and cam assembly as outlined in paragraph under *"Timer Motor Removal".*

c. Push cam follower and spring away from cam assembly shaft and allow new cam assembly to drop down on shaft.

d. Manually turn gear and cam assembly for freedom of movement and timer advance.

e. Reassemble timer.

CAM FOLLOWER (Replacement)

a. Follow above procedures

b. Lift cam follower from shaft, look for binding roller, pivot hole wear or longated.

c. If any of the above are encountered, replace cam follower.

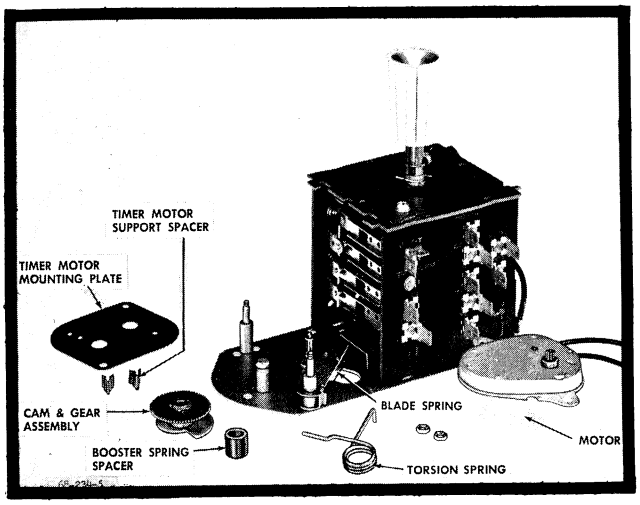


Figure 31

11 **TO CHECK THE CONTACT PRESSURE**
First remove the two end plates from the timer.

Checking and Adjusting the Top Contacts
Turn the timer shaft clockwise and observe the top stationary contacts. They should raise approximately .010 to .015. If they do not raise, the contact pressure is too light and should be adjusted as follows:

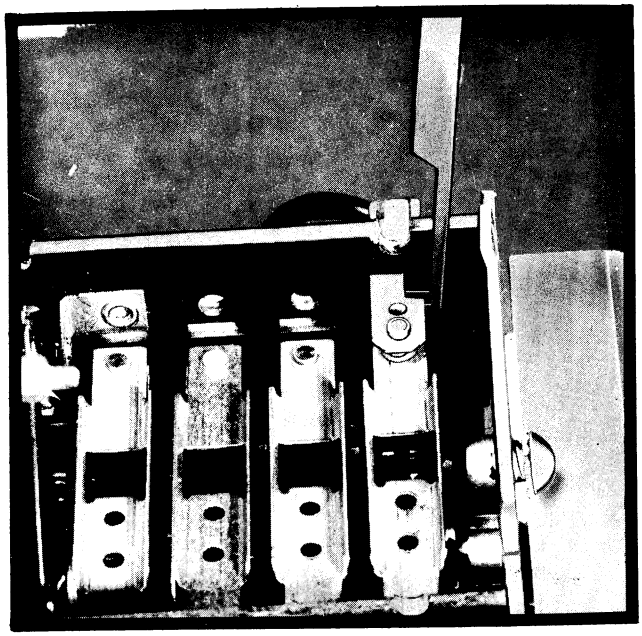


Figure 32

a. Turn timer so that movable contact arm is away from the stationary contacts.

b. Place the contact forming tool over the contact arm as close to Micarta-board as possible. Carefully bend the arm down a little at a time (do not distort arm) until the correct pressure is obtained, *Figure 32*.

12 **Checking and Adjusting the Bottom Contacts**

a. Turn the timer shaft clockwise until the cam activated contacts and the bottom stationary contacts are closed. It may be necessary to turn the shaft for each contact. Make sure the lift tab on the cam activated contact is not bottoming on the cam

b. Insert the blade of a small screwdriver in the opening of the arm near the contact and: with the edge of the Micarta terminal board as a fulcrum, open and close the contact to see that the activated contact is seating solidly against the stationary bottom contact, *Figure 33*. If the cam activated contacts do not make solid contact with the stationary contact, it should be adjusted as follows:

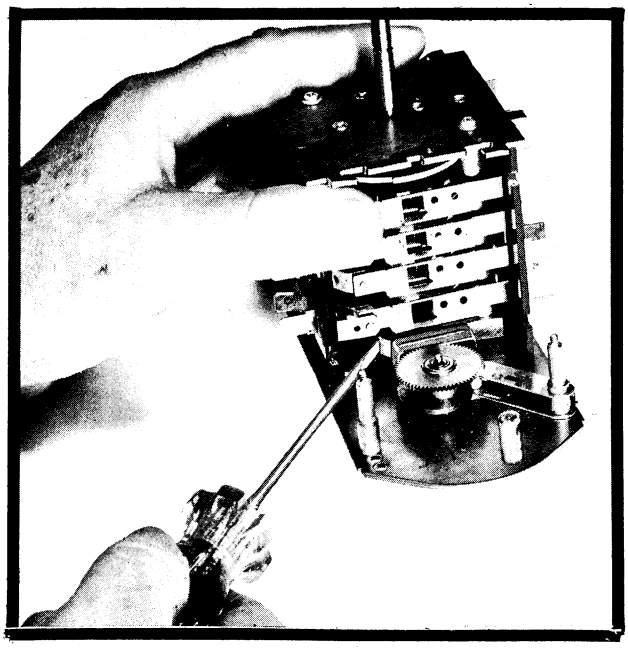


Figure 33

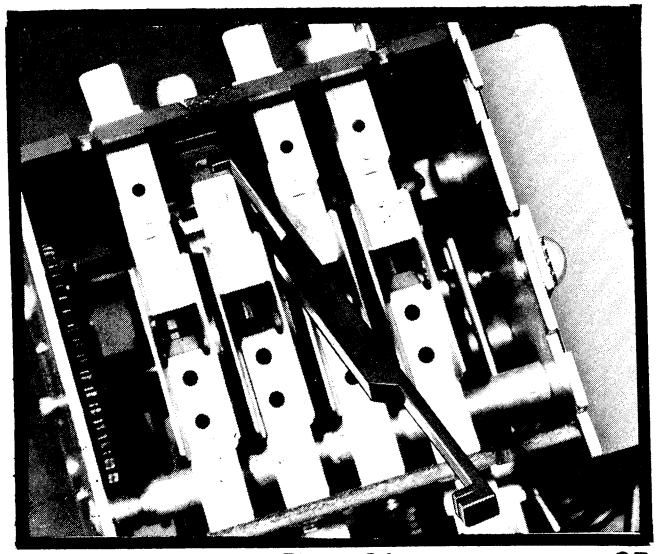
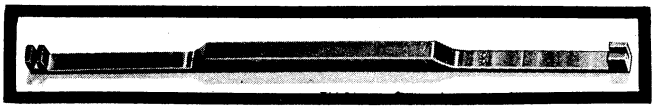


Figure 34

c. Turn the timer shaft until the cam activated contact is away from the stationary contact.
d. Place the contact bending tool over the bottom contact arm and bend it up until correct pressure is obtained, *Figure 34.*

TIMER CONTACT BENDING TOOL
The timer contact bending tool may be purchased from your distributor. The Robinair style number for this tool is No. 12919.



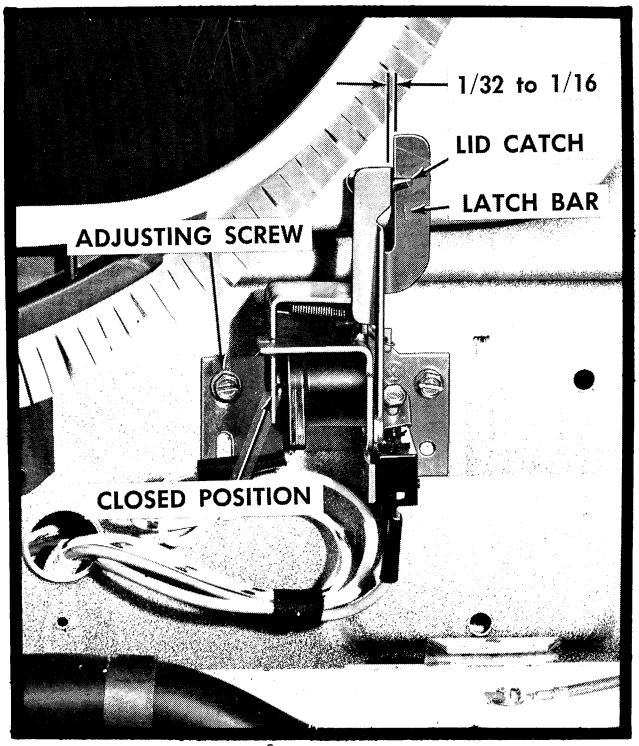


Figure 35

LID SAFETY SWITCH AND LATCH *Figure 35.*
The lid safety switch and latch is a built-in safety feature that prevents the user from reaching into the machine while the washer is in operation. The lid switch is in a closed position when the lid is down. While the timer is in operating position, and the washer is operating, timer, lid switch and line switch within the timer are closed and current flows to the solenoid latching mechanism, locking the lid. The lid cannot be opened until the user shuts the washer off at the control, thereby preventing possibility of injury to the user. The assembly is made up of a micro-switch that is normally open a solenoid coil, a latching mechanism and an adjusting screw. To adjust or replace this assembly refer to *"Lid Safety Switch and Latch Removal and Replacement Procedure".*

13 LID SAFETY SWITCH AND LATCH, (Removal and Replacement)

a. Follow Procedure 3, *"Top Panel Removal".*
b. Tip up top panel.
c. Disconnect switch and latch wiring.
d. Remove switch mounting screws.
e. Install and reconnect switch.
f. Adjust clearance and allow 1/32 to 1/16 inch between nylon lid catch and the latch bar in closed position, *Figure 35.*
g. Connect white and white Tr. wires to solenoid coil and two tan wires to the safety switch.

LID SWITCH-LOCK ASSEMBLY, Later Models.

On later and current models the solenoid latching mechanism is replaced with a bi-metal warp locking mechanism. The bi-metal warp unit is in series with the main drive motor, and not in parallel to the line. Connecting a direct A.C. cord for test purposes across the line will damage the unit.

When testing the machine for repeat spin starts place a jumper wire at timer terminals from LD to B on washers without a speed switch. On models with a speed switch, place a jumper wire from timer terminal B to terminal B on speed switch.

When installing the lid switch-lock assembly, place the assembly on the top panel so the locking arm intersects striker hole, refer to *Figure 36.*

TESTING

After replacing either lid switch-lock assembly or the main drive motor, always check the lid lock for correct operation as follows:

a. Close washing machine lid.
b. Set timer at spin.
c. Start washer.

The lid should be locked close 3 seconds after machine starts into spin. Run washer in spin period a minimum of one(1) minute.

d. Stop washer.

The lid should release from 18 to 50 seconds after the machine was stopped.

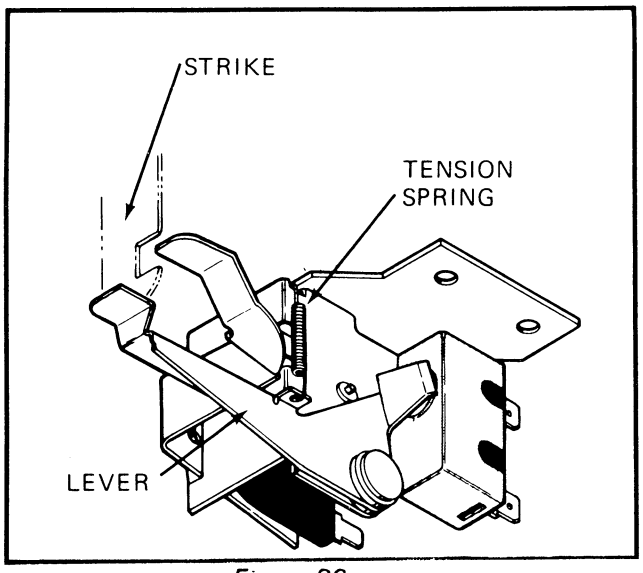


Figure 36

TIMER FILL MODELS

Some models of the Westinghouse top-loader are time fill models. Water level is reached by an elapsed period of time in relation to the volume or flow of water. The timer is so calibrated to allow a satisfactory amount of water over a predetermined period of time.

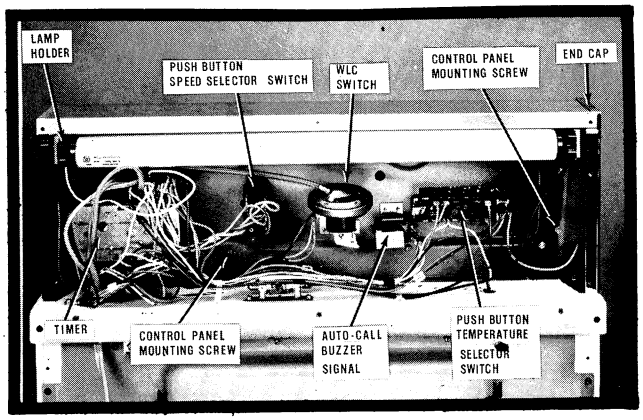


Figure 37

WATER LEVEL CONTROL SYSTEM *Figure 37*

The air bell, water level control and a connecting tube are the three essential components that make up the water level control system. Water rising in the tub creates a pressure in the air bell. The diaphragm in the water level control is forced against a switch mechanism as air pressure is increased. When desired water level is reached, pressure in the tube and against the diaphragm is increased enough to trip the switch, thus closing the water valve and starting the motor in agitate direction.

RESETTING WATER LEVEL

By adjusting the water saver control to a higher position, additional water would enter the washer. By placing the *WATER SAVER* knob to the reset position, the diaphragm is forced down, returning the switch to the *ON* position, thus water again flows into the tub until desired amount of water is reached. Agitation stops as water flows into the washer.

14 WATER LEVEL CONTROL (Removal)

a. Disconnect service core.
b. Remove control housing, follow *Procedure 2.*
c. Remove wires from switch terminals
d. Remove plastic tube.
e. Remove pointer from shaft.
f. Remove switch mounting screws
g. Install new switch.

15 WATER LEVEL ADJUSTMENT (For Test Procedures, Refer to "Testing Procedure No. 16, Water Level Control)

a. Disconnect the service cord.
b. Remove back panel cover.
c. Turn adjusting screw to right to raise water level and turn to left to lower water level. 3/4 turn will equal approximately one inch.

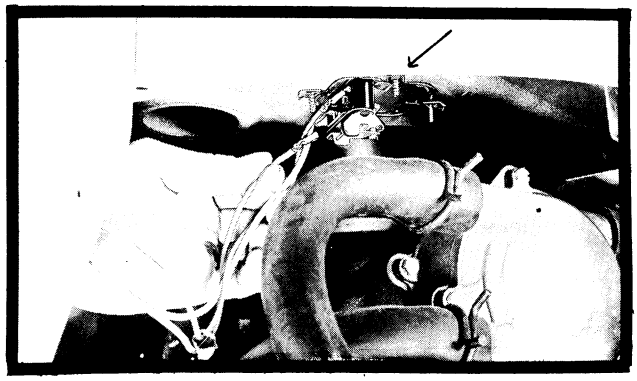


Figure 38

WATER LEVEL SWITCH, *Early Models*, *Figure 38.* Mounted to the bottom of the outer tub, and activated by the overflow of water from the inner tub, when the pressure switch is satisfied it opens the circuit from the water valve and closes the circuit to the motor in the direction of the agitation cycle.

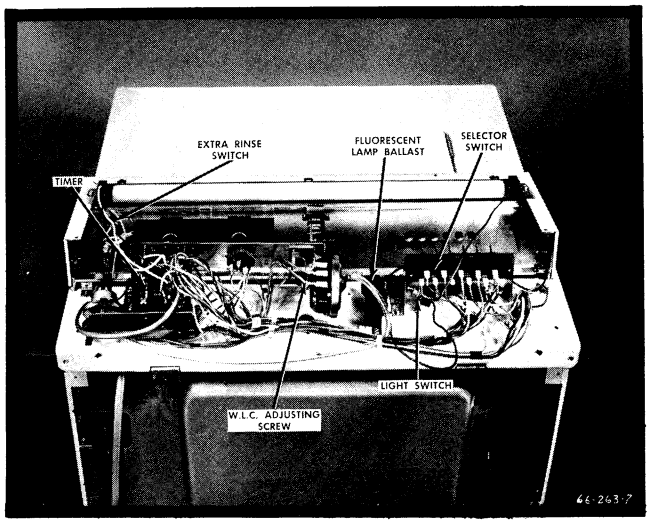


Figure 39

16 WATER LEVEL CONTROL (*Figure 39*–**Test With Power Cord Removed**

a. Remove water level control from cabinet and disconnect wiring *(refer to Figure 40)*.

b. With a continuity checker as outlined below, proceed as follows.

c. *Terminals 1 and 2* are normally closed. Placing test probes across these terminals should make the lamp light (remove tube). If light does not go on, replace water level control.

d. Using a short length of tubing connect to tubing port of water level control.

e. Placing probes of continuity checker across *terminals 1 and 3* should not make lamp light.

f. Blow gently through the tube, if and when switch clicks, lamp should light, if switch fails to click on or lamp fails to light, water level control should be replaced.

NOTE: If an extra length of tubing is not available, disconnect tubing from washer and use it for testing.

FILL VALVE (All Models) *Figure 41*
An electrically controlled valve using solenoid coils to operate the valve and allowing a flow of water into the washer, this is a non-thermostat valve, selection of hot cold or warm water is made using controls on the machine console by the operator.

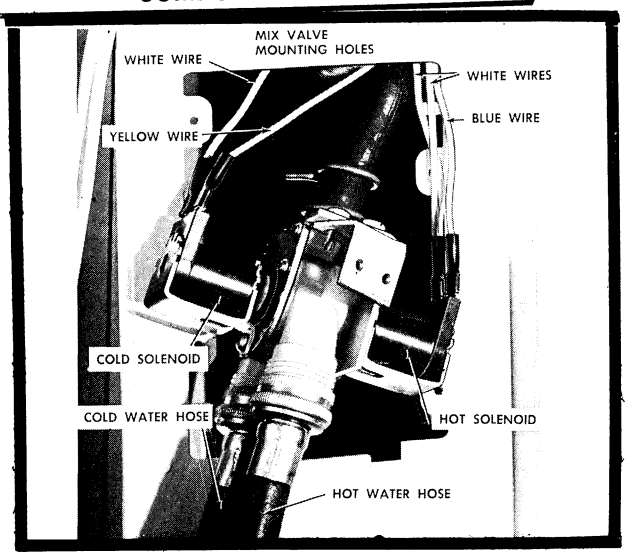


Figure 41

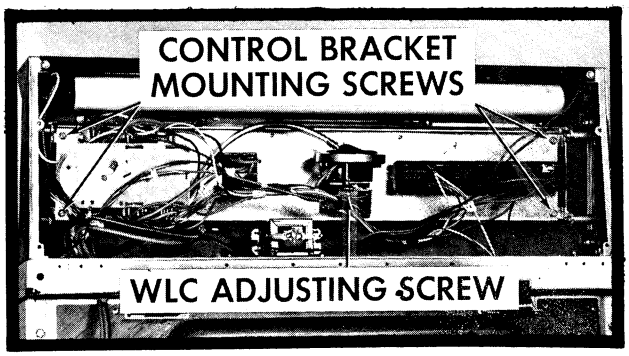


Figure 40

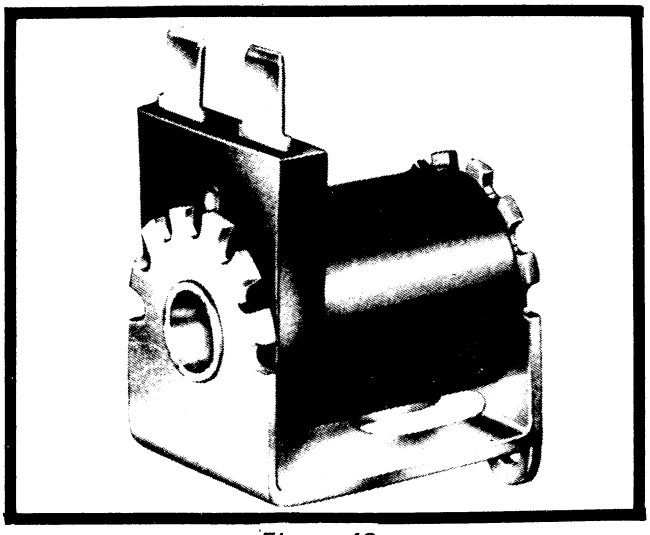


Figure 42

17 MIX VALVE SOLENOID *Figure 42*

a. Place test light across solenoid coil terminals, if light is *ON* it will indicate that current is reaching the solenoid terminals, but will not indicate if coil is open.

b. Remove one wire from solenoid. Put test damp probes between terminal on solenoid and wire that has been removed. If coil is open, light will not go *ON*, if coil is not at fault, lamp will light (sometimes dimly) indicating other problems must be searched out.

SPIN SWITCH – Tan wire TR is connected to the top terminal.

Pink wire TR is connected to the center terminal.

Orange wire is connected to the bottom terminal.

AGITATE SWITCH – Tan Tr. wire is connected to the top terminal.

Gray wire is connected to the center terminal.

Orange is connected to the bottom terminal.

PUSHBUTTON SWITCH (On Early LTC Model Only)
A multiple push button switch mounted on the console allows the operator to select *WASH TEMPERATURE, RINSE TEMPERATURE and SPEED.*

SELECTOR SWITCH (Removal and Installation)

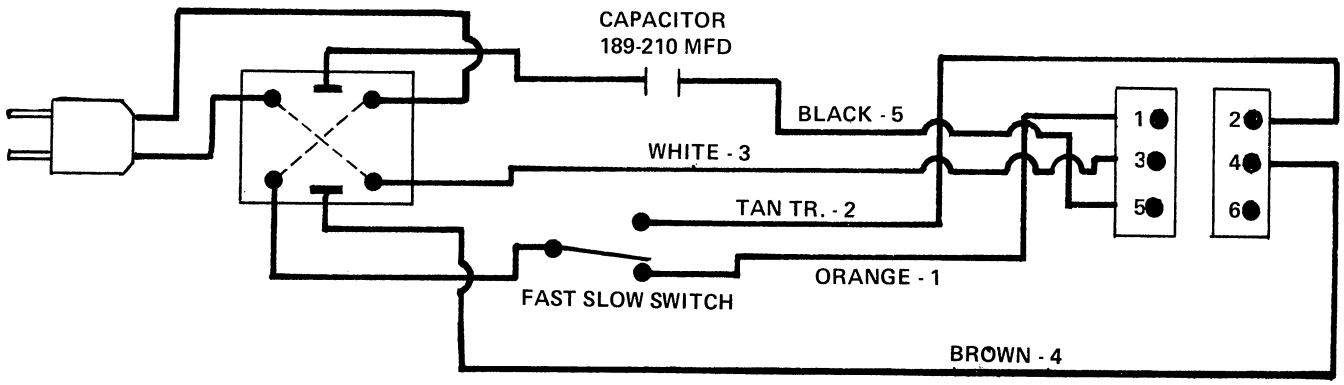
a. Follow *Procedure 2.*
b. Remove wires from switch terminals.
c. Remove switch mounting screws.
d. Install and replace wiring.
e. Reassemble control housing.

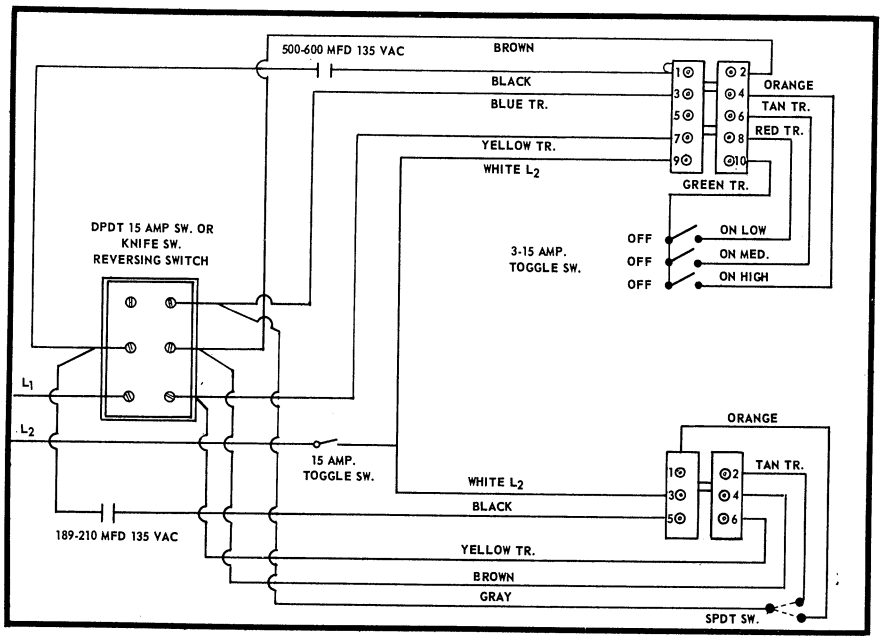
MOTOR TEST CODE FOR LA-LX TOP LOAD WASHERS

This motor test cord you can make will allow you to test motor operation of the LA-LX top load washers with no other components in the circuit.

Motor connector style Q-503535 is used on the test cord.

MOTOR TEST CORD FOR LA-LX TOP LOAD WASHERS





18 EXTRA RINSE SWITCH (Model LAH-850)

a. Follow *Procedure 2.*
b. Remove and replace switch.
c. Remove knurled nut from switch.
d. Reassemble control housing.

19 SPEED SELECTOR SWITCHES (Models LAH-605) LAH-615, LAH-625 and LAH-650)

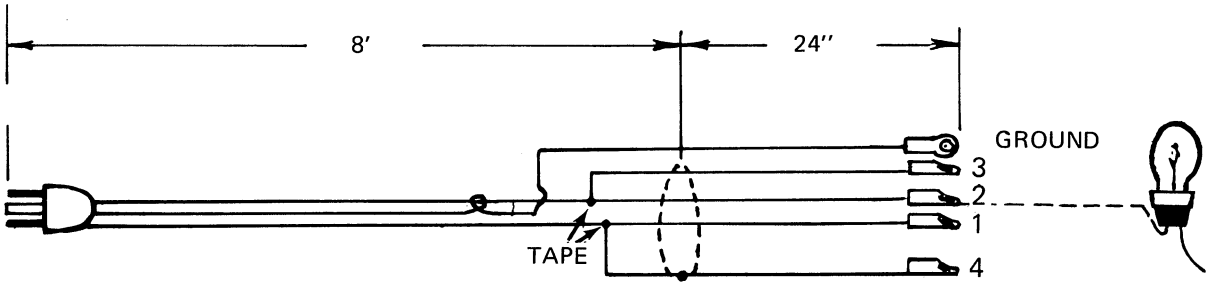
a. Follow *Procedure 2.*
b. Remove knurled nut from switches.
c. Remove switch from control panel.
d. Disconnect wiring from switch terminals.
e. Reinstall and rewire new switch.

NOTE: The flat on the threaded mounting sleeve should be considered the bottom of the switch, for purposes of rewiring.

WATER PRESSURE SWITCH (Later and Current Models) *Figure 39*
When pressure control is mounted behind the cabinet console. A shaft extends through the console and the water level is controlled by the operator. A plastic hose is connected between air bell (WLC model) and the pressure control. When water enters the tub it forces the air collected in the air bell which is fastened to the tub, up the tube and against a diaphragm. The diaphragm in turn activates a switch incorporated in the unit. To test this switch refer to *"Water Level Control"* under *"Testing Procedure* in *Section 1.*

MOTOR AND COMPONENT TEST CORD (See Illustration below)

MOTOR TEST CORDS YOU CAN MAKE



To make a test cord follow these simple instructions. Use a heavy duty 3-wire rubber covered cord. The third wire should be designated as a ground, the other two wires in the cord should be marked for identification purposes as *1* and *2.*

Stripe the cover insulation (the rubber) back about 24 inches from the end without the plug. At this point attach single wires about 24 inches long from each of the No. 1 and 2 wires and insulate at junction wire tape. Designate these wires for identification purposes as 3 and 4. Attach alligator clips to ends of wires.

For most test wires number 1 and 2 will be used, for motor test all four wires will be used. Always be careful that wires not used be insulated temporarily.

By connecting one side of your test light to number 2 wire on test cord, and designating the remaining wire on test light as number 2, you will then have a continuity tester between wires 1 and 2.

MOTORS (Late and Current Models)
The drive motors, depending on the models and the features, can be one, two or three-speed capacitor start motors, 1/2 H.P. 60 cycle speeds, varying from 1725 RPM to gentle or 850 RPM with intermediate speeds 1140 or 1150 RPM. *Figure 43*

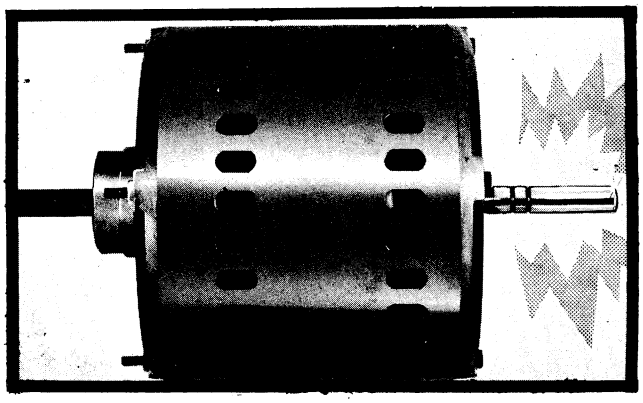


Figure 43

Other motors, both single-speed and two-speed, are split-phase and have the same general characteristics, all motors are permanently lubricated and have internal motor protection. These motors are linked to the transmission by a V-belt and have two shafts. The top shaft drives the pump impeller and the motor end bell serves as a pump mount. The bottom shaft has a clutch pulley attached by a steel split pin. The clutch arrangement in later models has been modified and a solid pulley is being used with a slipping belt drive assembly.

Electrical Check

Before removing a motor from the washer, make sure it is inoperative. Use the MOTOR OPERATION CHECK. See *Figure 43A*

DISCONNECT ALL HARNESS LEADS FROM SWITCH BEFORE CHECKING.

Make sure that the transmission is not stuck or any of the mechanical parts have trouble in operating. If everything else is in good working order, proceed to check the motor out. Check mini-switch as outlined elsewhere and check the amps and wattage with a proper testing kit.

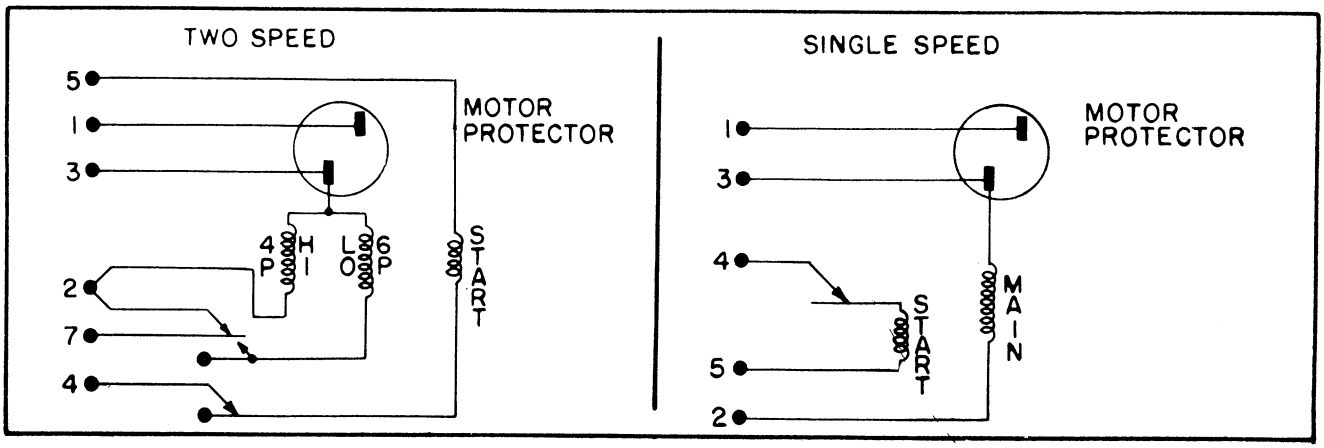


Figure 43A — Motor Schematic

When the motor shaft stops rotating after a wash cycle, a centrifugal switch inside the motor moves to the position that puts the motor starting winding in readiness for another cycle. When the motor is energized again, current flows through the start winding and running winding both at the same time. Centrifugal force throws the switch inside the motor out, removing the start winding from the circuit. The run winding is left in the circuit to bring the motor up to full speed.

The speed of the motor depends on a speed switch which controls its RPM. The purpose of a speed switch is to satisfy the demands of the timer when it calls for *Wash, Spin, Gentle Action* or any other cycle served by the machine motor.

The split phase motor will have a relay in the start winding circuit which switches over to the run winding by magnetic action. Some split phase motors do not have to use a relay. Induction is accomplished by a different set of start and run windings in the stator.

To check the motor, the front access panel is removed. Then, the clutch drive coupling can be pulled out after the clamps are removed. The functional test can be made before the motor is removed by using the appropriate method, *Figures 43B and C*

Test motor for shorts and continuity, if tests show motor to be bad, replace with a new motor. A functional test may be made by connecting terminals *4* and *2* to line *one*. Connect terminals *5 and 1* to line *two* on older models, *Figure 43D and E* show terminal connections for one and two speed motor. The expected speed will be a clockwise rotation of 1725 rpm, if the motor does not respond, exchange for a new motor.

One-speed motor; connect terminals four and two to line one, terminals five and one to line two.

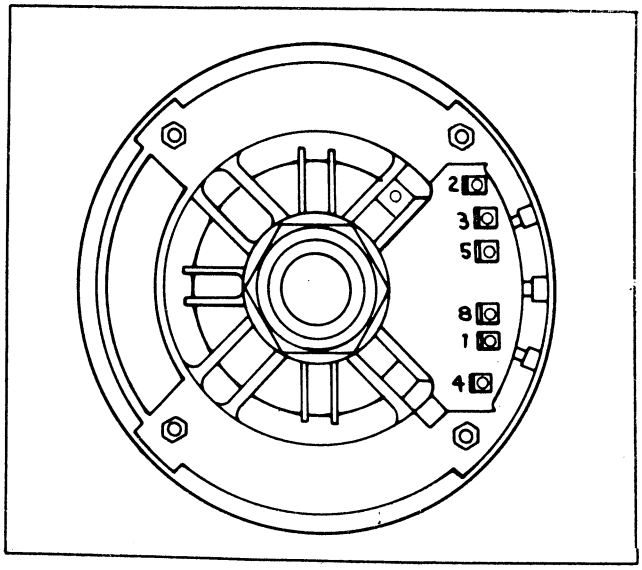


Figure 43B- Motor Terminals On A Single Speed Motor

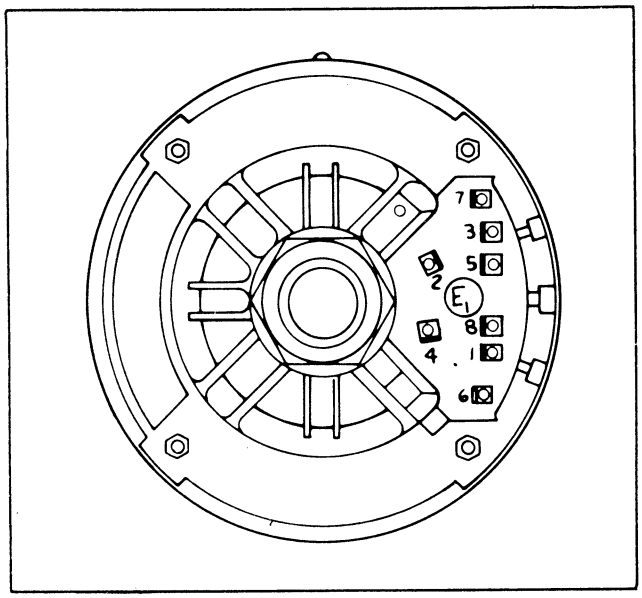


Figure 43C — Motor Terminals—Alternate Two Speed Motor

The normal rotation is clockwise, at 1725 rpm. To test the counterclockwise rotation, connect terminals five and two to line one, and terminals four and one to line two. To check the continuity of the motor centrifugal switch, test between terminals *"A" and "C"* with the motor stopped; between terminals *"A" and "B"* with the motor running.

CHECKING A SINGLE SPEED MOTOR

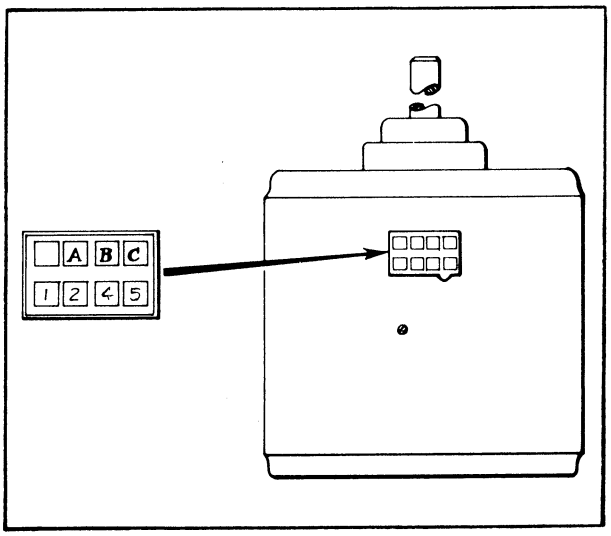


Figure 43D Terminals Location—Single Speed Motor

To check for continuity in the *SINGLE-SPEED MOTOR* across terminals *"M4" and "M5"* use a test lamp or a voltage-wattage meter. The pump will not pump out water if the machine motor does not run, neither will the agitator work. Check for continuity between terminals *"M-5" and "M-6"*. If there is no

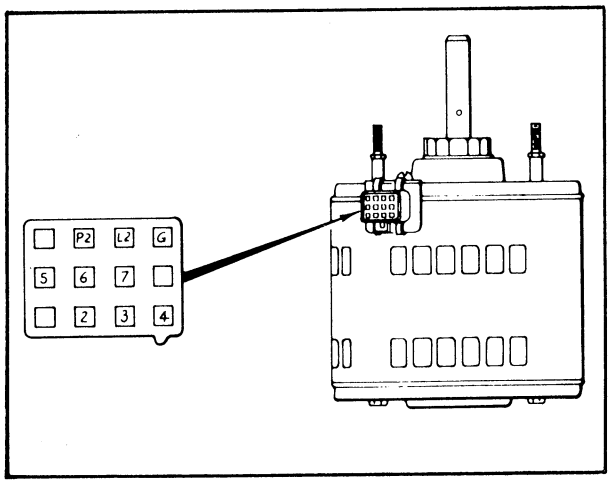


Figure 43E - Terminal Locations — Two Speed Motor

continuity between these terminals there is an open winding in the motor, or the overload protector may be defective. Check and see if there is current coming into the motor from the power cord. Refer to *Figures, 43 F,G,H, I*

CHECKING A TWO-SPEED MOTOR

To check the motor start switch, check for continuity between *"M2" and "M6", and "M2"and "M7"*.

To check the start winding, check for continuity between *"M4" and "M5". Figure 44B*

On a motor equipped with a capacitor, a test light will show low brilliance and an ohmmeter will show a circuit and the needle will drop back as the capacitor becomes charged by the ohmmeter battery. Be sure, when making the check, that the capacitor is in series with one leg of the test equipment, otherwise a full 115 volts of AC current across the capacitor terminals could cause a short circuit or blow up the capacitor.

To check the high-speed run-winding, check for continuity between terminals *"M2" and "M3"*.

To check the low speed winding, the motor must be removed and checked internally because the low speed winding terminates at the start switch in the motor.

To check the motor protector, you should have continuity between terminals *"M1" and "M8"*.

On models with a two-speed motor, test for continuity of the motor centrifugal switch between terminals *P2 and L2, Figure 43E*.

A running winding test may be made by connecting terminals M2 and M3 with a suitable tester, Refer to *Figures, 44A — 44D.*

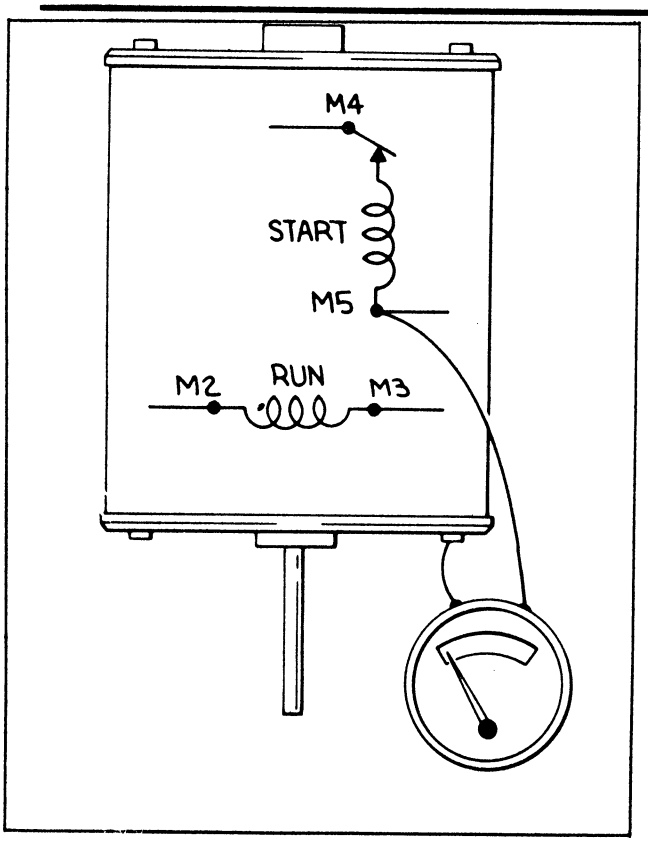


Figure 43F- Single Speed-Start to Ground Check

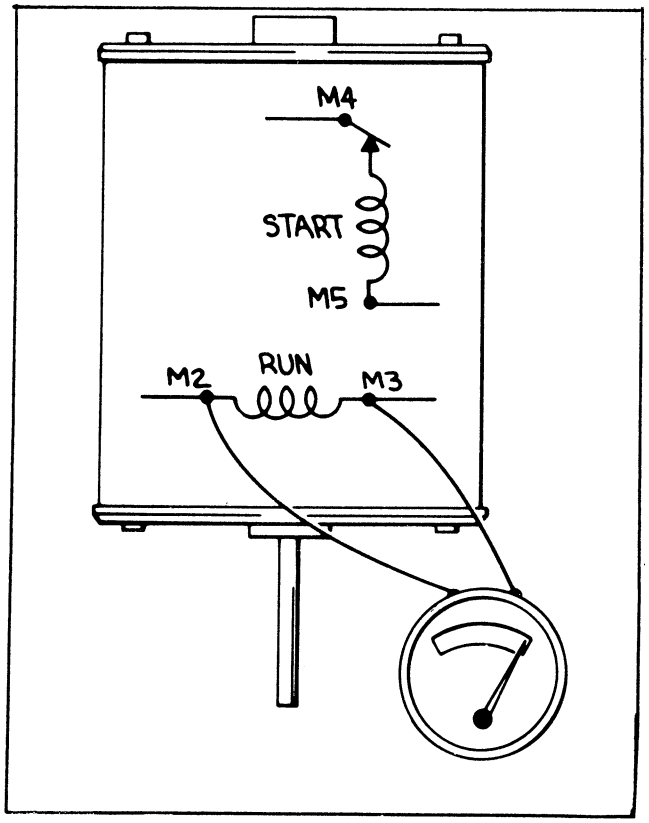


Figure 43H- Single Speed-Run Winding Continuity Check

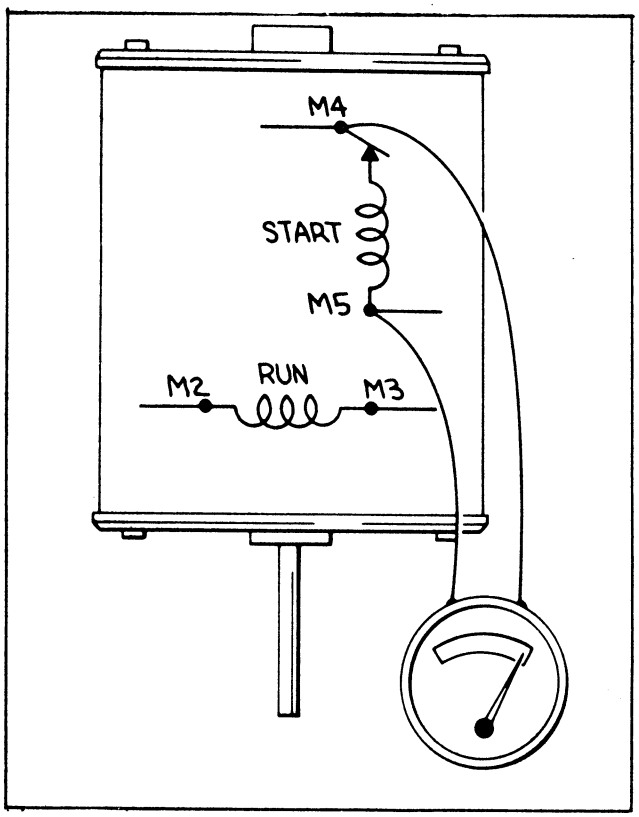


Figure 43G - Single Speed-Start Winding-Start Switch Continuity Check

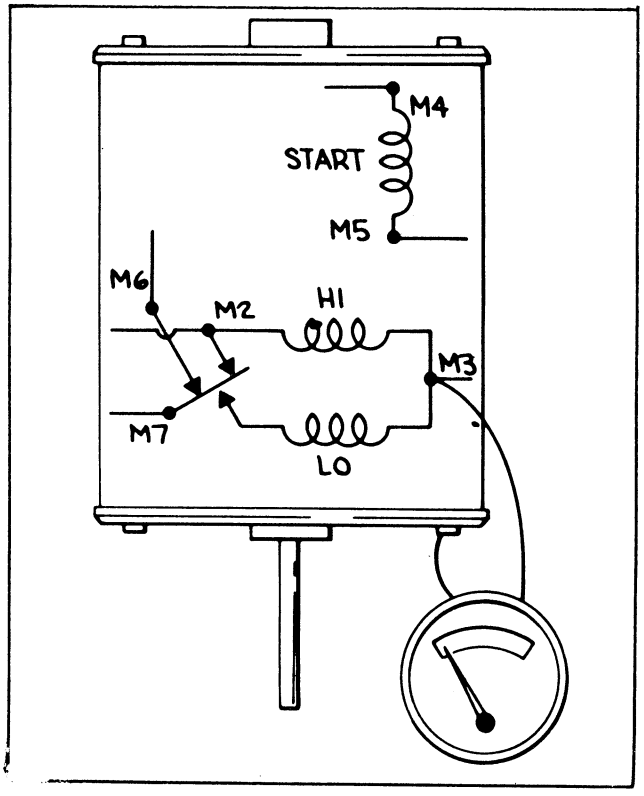


Figure 43I - Two Speed – Run to Ground Check

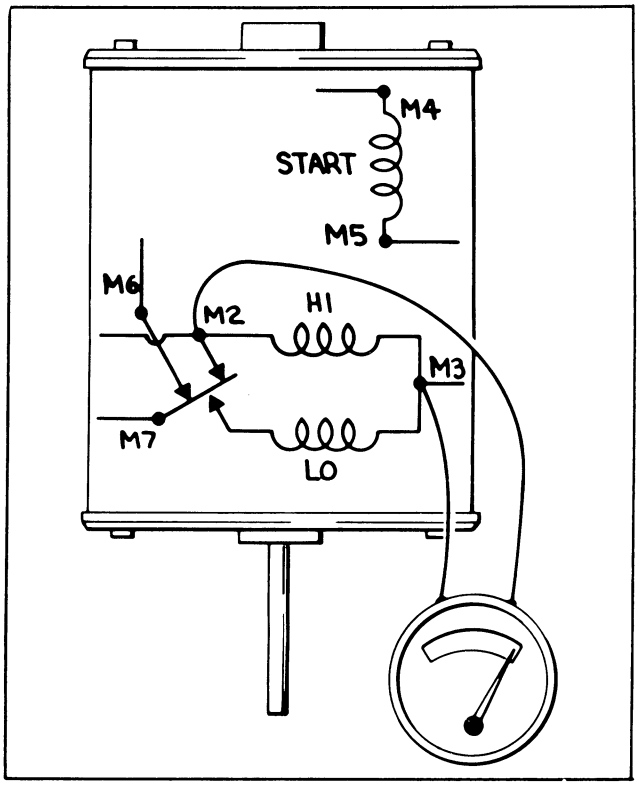


Figure 44A Two Speed – Continuity Check
Hi-Speed Winding

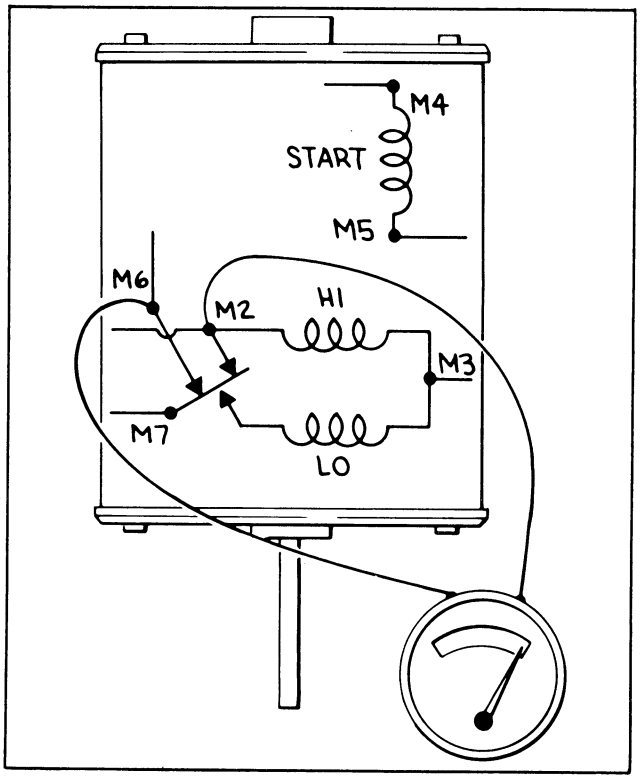


Figure 44C Two Speed – Continuity Check
Low Speed Winding

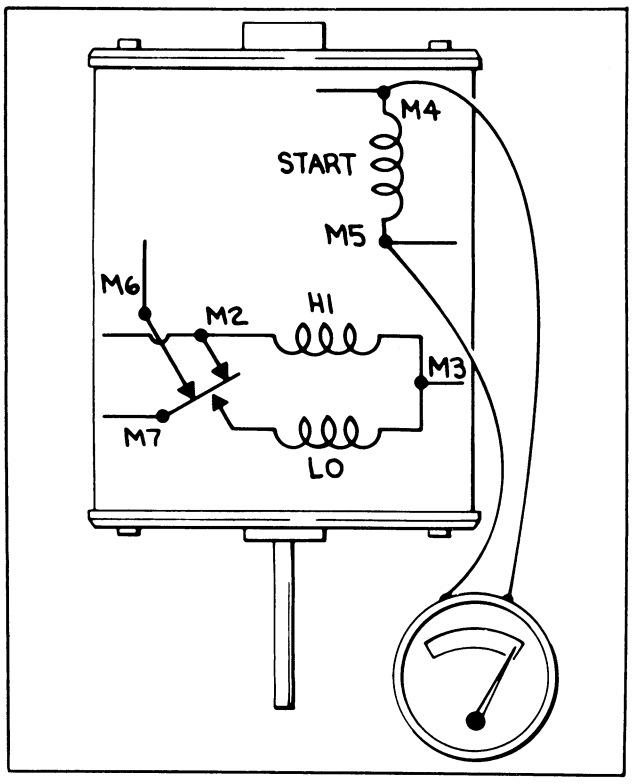


Figure 44B - Two Speed – Continuity Check
Start Winding

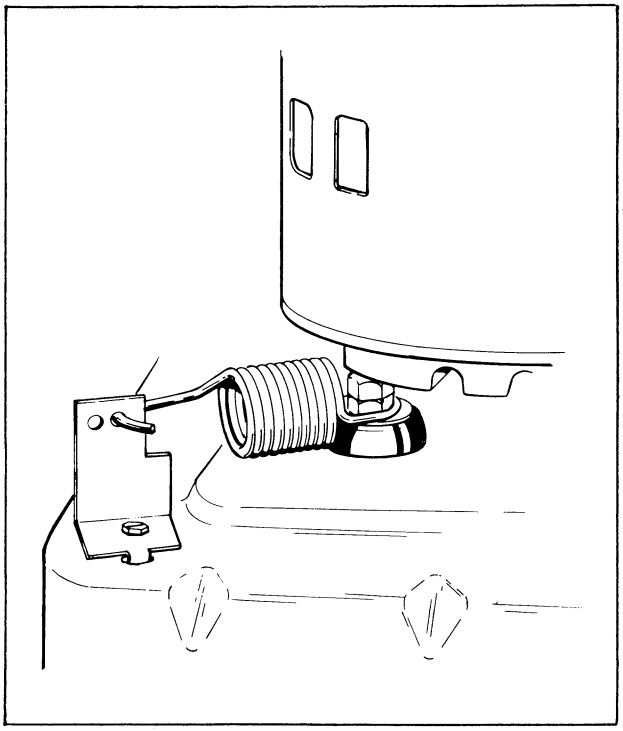


Figure 44D Releasing Belt Tension Spring

TRANSMISSION AND MOTOR (Early Models)
The transmission on the early models is equipped with a heavy duty, 1/3 H.P. 115 volts, 60 cycle reversible motor, single or two-speed with internal overload protection. A direct drive motor it eliminates all belts and pulleys. Nylon gears are used as part of the high speed components to produce quite operation. The change over from agitation to spin action is accomplished with the reversing of the motor and torque type clutch springs as couplers. The transmission incorporates a brake for fast stop at finish of spin action.

MOTORS (Early Models)
The motor on early models were fastened directly to the transmission, the armature of rotor having a long shaft, that was also the worm gear, see text *"Transmission and Motor"* in *General Description* section.

20 **MOTOR –REPAIR – REPLACEMENT**, *Figure 45.*

NOTE: Before removing motor for repairs, the following determinations should be made.

a. Remove belt, spin the motor manually from the pulley – clutch end, motor should spin free.

b. If motor is binding, remove pump hose. Look for foreign matter in the pump, remove pump and clean if necessary.

c. Test capacitor. If test equipment is available, use a replacement to test the motor. If motor starts with new capacitor, replace belts and test washer again.

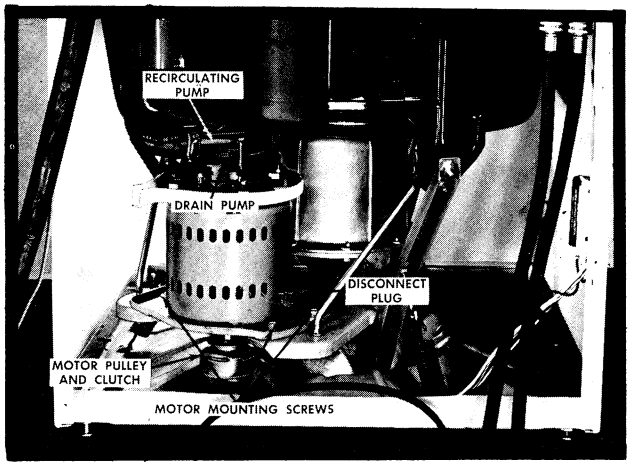


Figure 45

d. If motor does not operate correctly after the above tests have been made, remove for bench test and inspection of windings and centifugal switch.

21 **MOTOR REMOVAL**

a. Remove belts.

b. Remove connecting wiring harness at motor.

c. Remove all hoses from pump.

d. Remove motor mounting screws, *Figure 45.*

e. Remove motor with mounting bracket and clutch assembly (pulley) from washer.

22 **MOTOR (Disassembled)**

a. Remove clutch or pulley

b. Remove mounting bracket from motor:

c. Remove pump assembly, water slinger and tray from motor.

d. With a very fine grade emery paper, polish both shafts clean to prevent scoring bushings when bell housings are removed.

e. Remove four motor bolts. With a sharp punch or awl mark bell housings and stator for perfect alignment when reassemble.

f. Lay motor open, *Figure 46.* Remove top bell housing.

g. Remove rotor, being careful not to damage centrifugal mechanism.

h. Carefully examine centrifugal mechanism for freedom of movement, loose or missing weights or cracks in mechanism pressure plates.

23 **MOTOR VISUAL AND ELECTRICAL TEST**

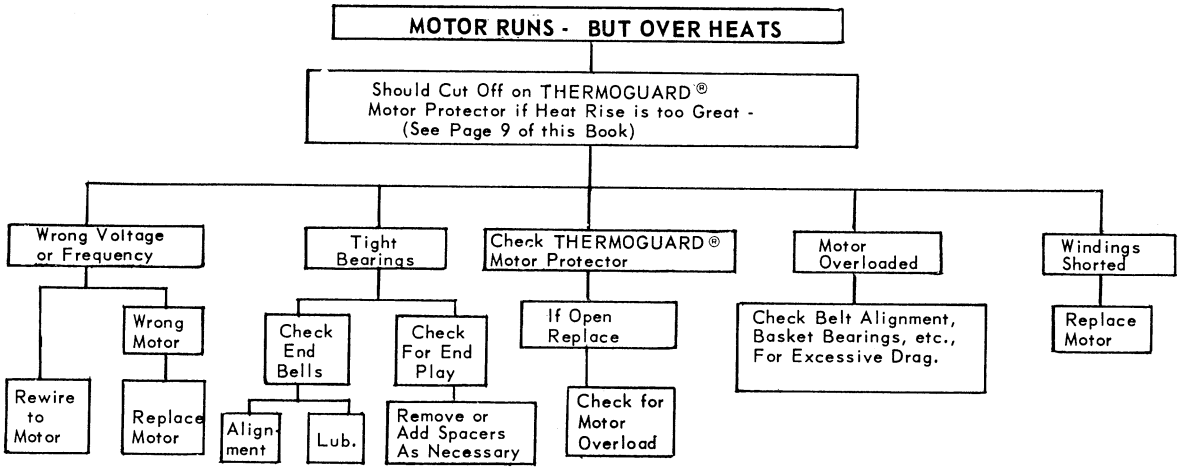
a. Inspect contact points on switch with switch removed from motor, starting points should be auxiliary points closed.

b. Clean grease or oil from around the switch.

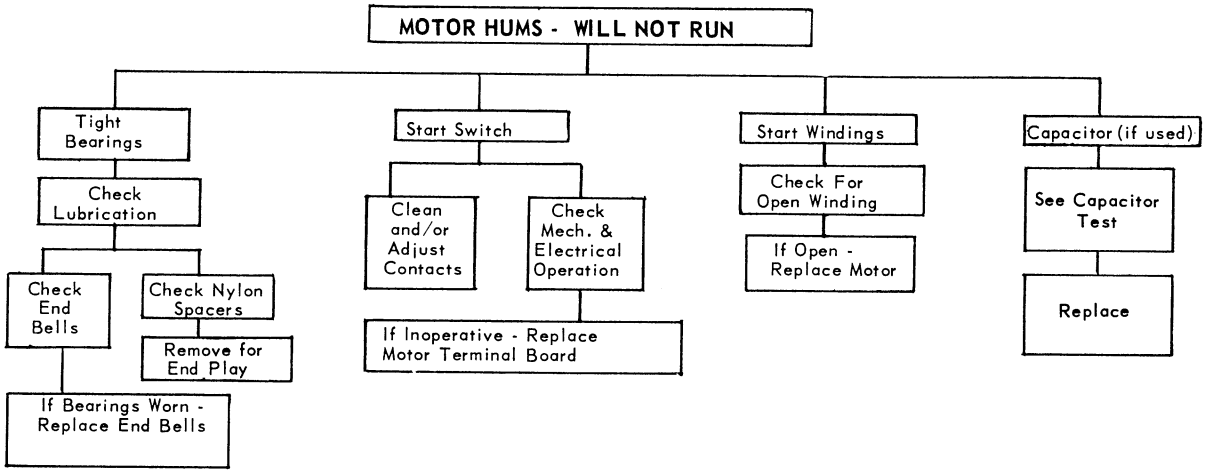
c. Test for continuity by pressing down on switch with ohm meter connected across the points.

e. Visually inspect motor shaft for damage or scoring.

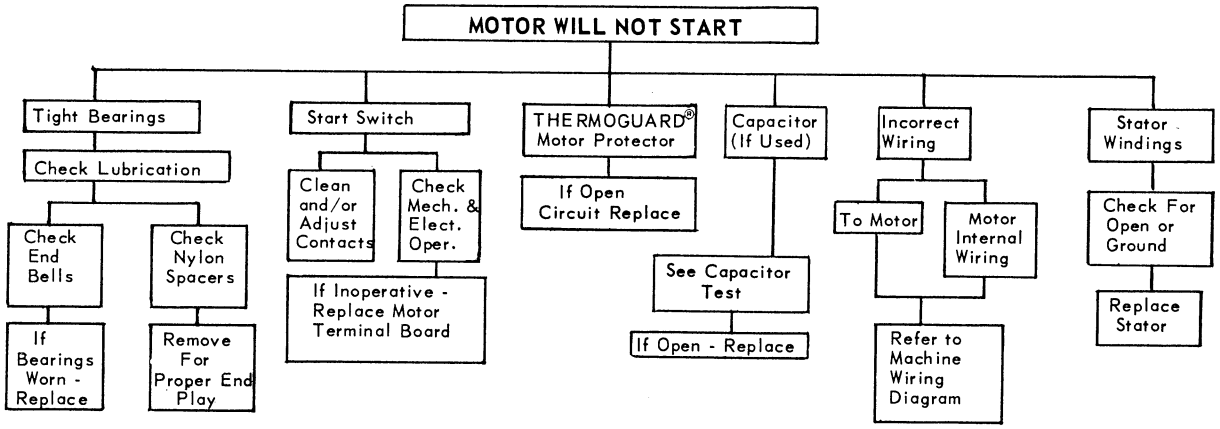
f. Visually inspect motor windings for burnt or baked-out varnish and wiring. Check coils with ohm meter for proper resistance, test for grounded wiring.


MOTOR RUNS - BUT OVER HEATS
Should Cut Off on THERMOGUARD® Motor Protector if Heat Rise is too Great - (See Page 9 of this Book)
Wrong Voltage or Frequency
Wrong Motor
Rewire to Motor
Replace Motor
Tight Bearings
Check End Bells
Align-ment
Lub.
Check For End Play
Remove or Add Spacers As Necessary
Check THERMOGUARD® Motor Protector
If Open Replace
Check for Motor Overload
Motor Overloaded
Check Belt Alignment, Basket Bearings, etc., For Excessive Drag.
Windings Shorted
Replace Motor

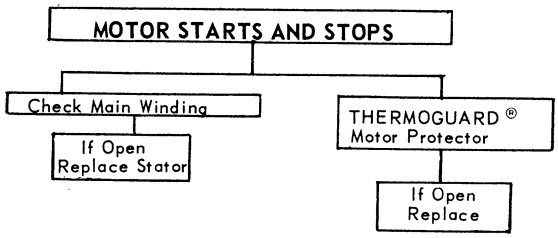
* * * * * * *


MOTOR HUMS - WILL NOT RUN
Tight Bearings
Check Lubrication
Check End Bells
Check Nylon Spacers
Remove for End Play
If Bearings Worn - Replace End Bells
Start Switch
Clean and/or Adjust Contacts
Check Mech. & Electrical Operation
If Inoperative - Replace Motor Terminal Board
Start Windings
Check For Open Winding
If Open - Replace Motor
Capacitor (if used)
See Capacitor Test
Replace

* * * * * * *


MOTOR WILL NOT START
Tight Bearings
Check Lubrication
Check End Bells
If Bearings Worn - Replace
Check Nylon Spacers
Remove For Proper End Play
Start Switch
Clean and/or Adjust Contacts
Check Mech. & Elect. Oper.
If Inoperative - Replace Motor Terminal Board
THERMOGUARD® Motor Protector
If Open Circuit Replace
Capacitor (If Used)
See Capacitor Test
If Open - Replace
Incorrect Wiring
To Motor
Motor Internal Wiring
Refer to Machine Wiring Diagram
Stator Windings
Check For Open or Ground
Replace Stator

* * * * * * * *


MOTOR STARTS AND STOPS
Check Main Winding
If Open Replace Stator
THERMOGUARD® Motor Protector
If Open Replace

MOTOR BLOCK				MOTOR DIRECTION				
5	6	7	8	Motor Direction (Shaft End)		Start	1725	1140
1	2	3	4					
				Spin C.W.	L1 to L2 to	4 5	2 3	7 3
				Agit. C.C.W.	L1 to L2 to	5 4	2 3	7 3

Two Speed

CONTROL SOLENOIDS

Solenoids, like switches, are checked by placing a continuity testing lamp in series with the subject solenoid. Defective solenoids must be replaced.

A solenoid is a device used as a means of converting electrical energy into mechanical motion. It consists of a coil of enamel-coated wire wrapped around a non-metallic bobbin and supported by a laminated iron field or a steel frame of some type. Some solenoids have a metal core in one end of the bobbin and some have metal bushings in each end with a space in between them. The particular application for which a solenoid is designed accounts for these variances.

When electric current flows through a coil of wire, a magnetic field is produced in the center of the coil. Therefore, when a solenoid is energized it acts like a magnet, positioned so as to attract a predesignated metal object.

Some solenoids are equipped with a free moving armature or plunger which is so assembled that it can be easily moved in and out of the center of the coil. When the solenoid is energized, this plunger is pulled into the center of the coil by the magnetic attraction. When electrical current stops flowing through the coil, the magnetic force ceases and the plunger moves back to its original position by gravity or by spring action. Other solenoids are equipped with a stationary core which pulls a metal leaf or plate against the end of the solenoid when electric current flows through the coil. There are several different types of solenoids used on automatic washers.

WATER CONTROL SOLENOIDS, *Figure 47.*

Various types of solenoids are used to control the water inlet valves in the manufacture of automatic washing machines.

The water inlet valve solenoids are used to control the flow of water into the washer. They differ in physical appearance due to the design of the valve manufacturer, but all operate exactly the same.

Mounted to the inlet valve, and set over the plunger guide, the magnetic attraction lifts the plunger up from the valve diaphragm seat, thus admitting water into the washer.

If water does not enter the washer during any fill period, the cause could be an open-circuited inlet valve solenoid. Check the solenoid coil with the live test lamp as in *Figure 48* and which shows a typical two-solenoid non-thermostatic valve and a continuity tester. As shown , the test will determine if power reaches the valve.

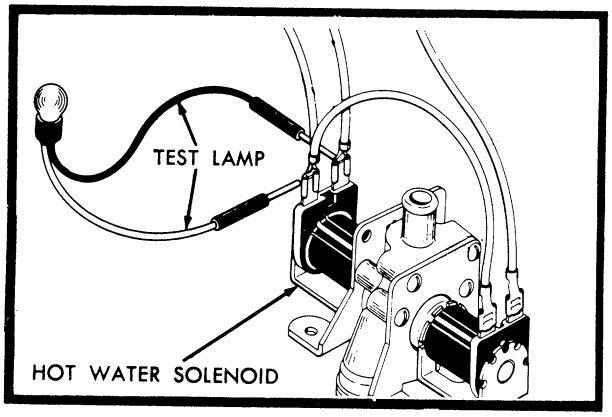


Figure 47

By removing one spade connection and placing one probe on the male connector on the coil, and another probe on the female spade the lamp will light slow and dim indicating continuity. Replace connection when finished with the test. If the test fails the continuity check, then it will be necessary to change the coil or the whole valve.

To test the solenoids for a ground, remove the valve assembly from the washer and check from the male connection of the coil to the body of the valve, if the valve is the old style brass valve. Late model plastic valves will not ground out.

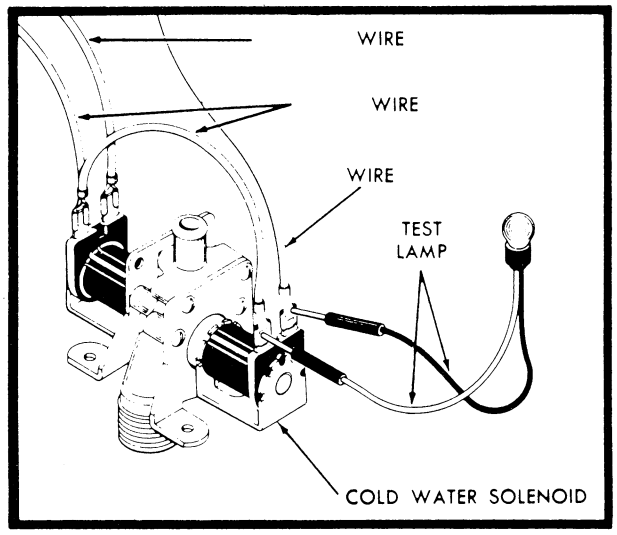


Figure 48

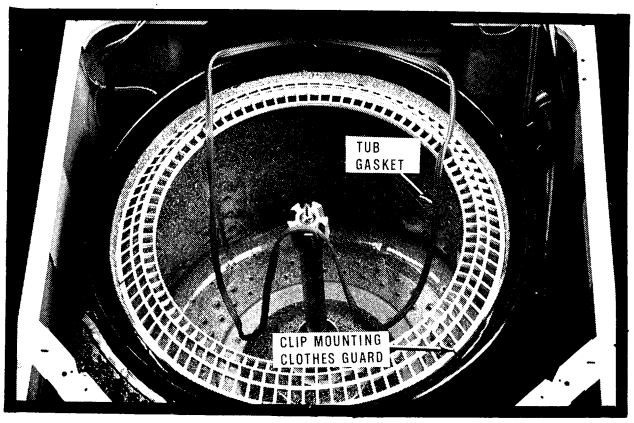


Figure 49

24 **CLOTHES GUARDS (Removal and Replacement)**

a. Disconnect service cord.
b. Raise top panel, *(Procedure 3).*
c. Disconnect low pressure fill hose from inlet air gap.
d. Remove re-circulating from top cap, also filter if so equipped.
e. Remove spring clips and remove cap.
f. Remove agitator.
g. Remove agitator stud, washers and drive hub.
h. Remove two spin tube key bolts and key.
i. Raise spinner basket to clear edge of tub. Remove wire clips, *Figure 49*
j. Replace clothes guard using new wire clips in clothes guard package. Be careful not to drop wire clips into tub.

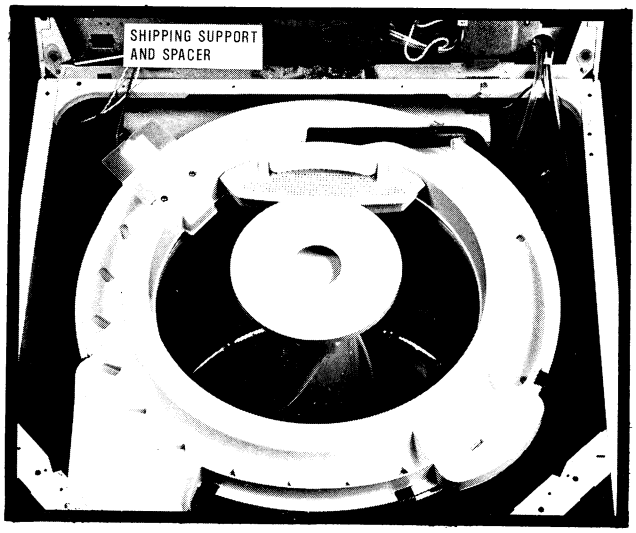


Figure 50

25 **SPINNER TUB (Removal and Replacement, *Figure 50.***

a. Disconnect the service cord.
b. Remove back panel.
c. Disconnect filter hose from pump.
d. Tip up top panel, *(Procedure 3)*
e. Remove fill hose from fill cone.
f. Remove tub clamp bolt.

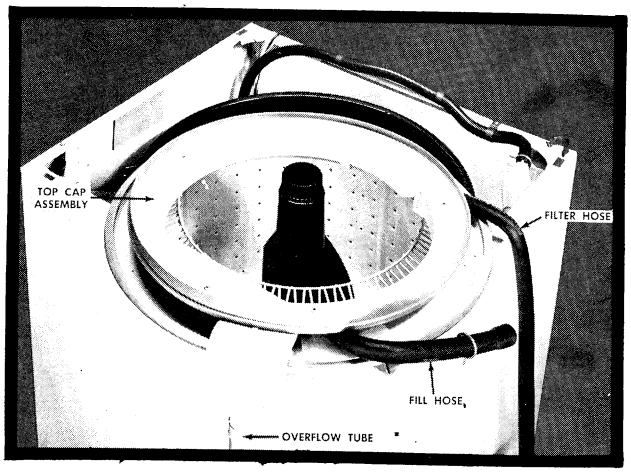


Figure 51

g. Remove wire clips holding top cap.
h. Slide tub clamp down onto outer tub.
i. Lift top cap straight up far enough to clear overflow hose, *Figure 51.*
j. Remove agitator cap and agitator out of tub.
k. Remove six screws holding tub to spinner hub.
l. Lift out tub.
m. Remove clothes guard and install on replacement tub.
n. Install new deflector ring.
o. Check clearance between bottom flange of the agitator and the bottom of the spinner basket. A minimum of 3/16" to a maximum of 3/8" is required.
p. To raise or lower the agitator, add or remove shims Q-93898 as necessary.

26 **WATER MIXING VALVE (Repair or replacement)**

a. Disconnect service cord.
b. Remove the back panel.
c. Remove the two valve mounting screws.
d. Disconnect wires from solenoid terminals.

e Remove hose from top of valve.

f. Install bracket on new valve.

g. Reassemble to cabinet, *Blue* and *White* wires to hot solenoid, *Yellow* and *White* wires to cold solenoid.

NOTE: To test mix valve refer to "Mix Valve Solenoid" under "Test Procedures".

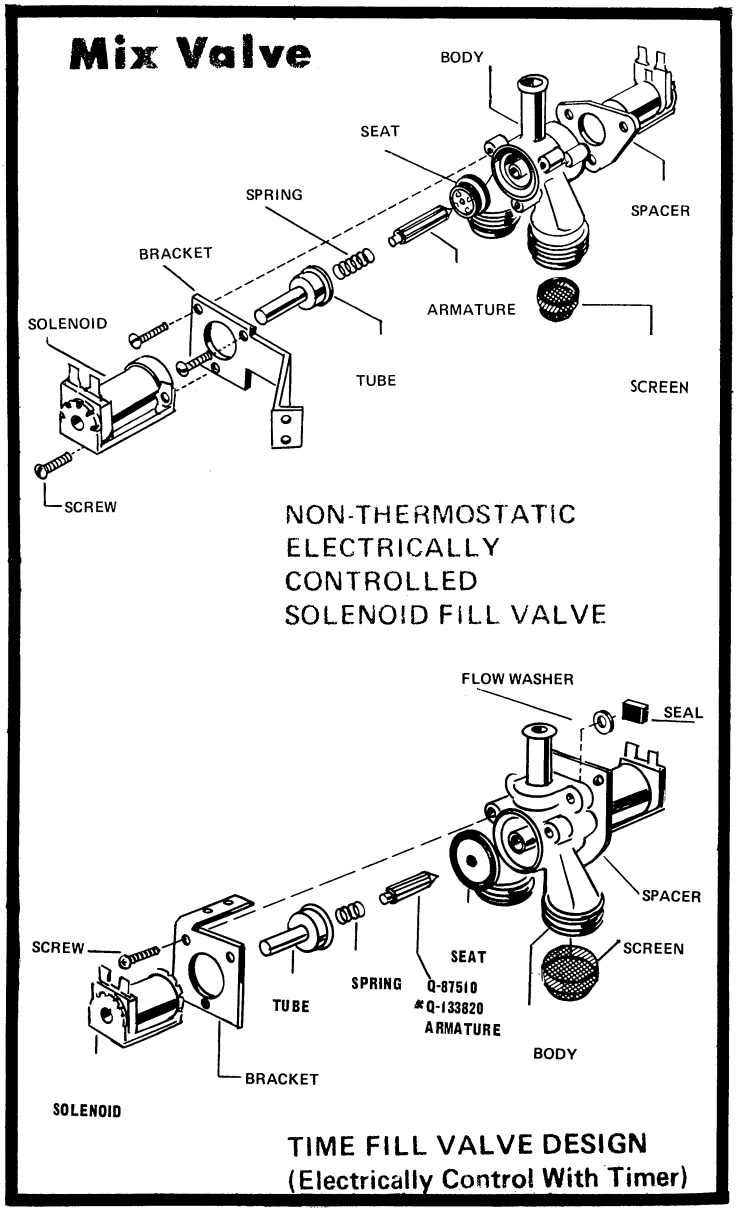


Figure 52

27 NEEDLE VALVE AND SEAT (Diaphragm, *Figure 52*)

a. Remove valve from washer. Follow above procedure.

b. Remove solenoids, mounting bracket, diaphragms, springs and armatures.

c. Valve kits are available to replace the above.

d. Examine valve body for damage spots on diaphragm seats.

e. If valve body is damaged, replace entire valve.

f. Valve parts can be cleaned by dipping in same solution as recommended for cleaning steam irons. Diaphragms normally have two holes one is the center valve seat. The bleeder hole is in the crease of the diaphragm in a constant water entering machine complaint, it is generally the armatures stuck in the cylinders that is faulty due to a concentrated lime deposit. Removing this by dipping in an acid solution or as explained above will in most cases restore the valve to a normal function.

g. Reassemble to machine.

PUMP (Early Models, *Figure 53*)

A centrifugal pump driven directly from the transmission, metal cover and case, pumps water out of the machine during the spin cycle. It does not incorporate a recirculating section.

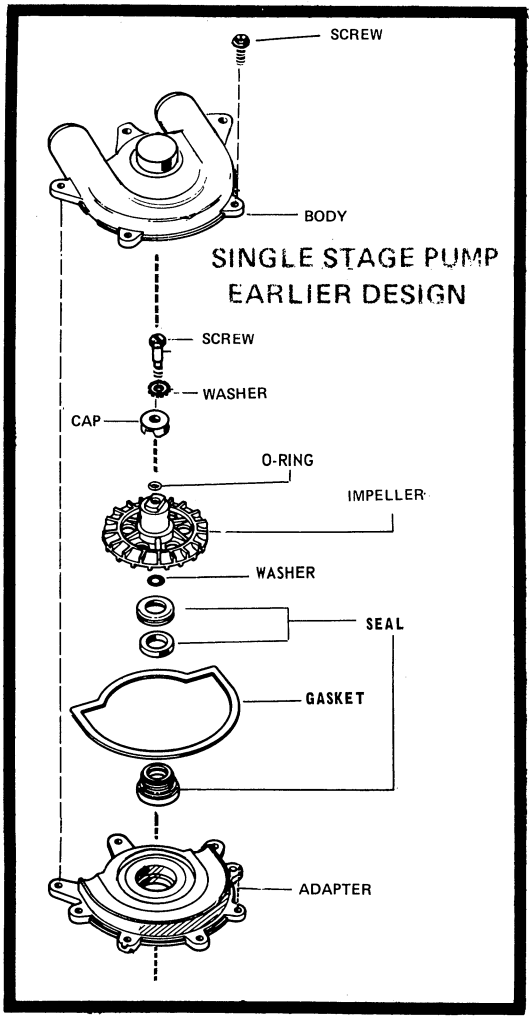


Figure 53

NOTE: When replacing clamp, which fastens hose to flume, be sure ears of clamp are turned towards underside of cabinet top, for adequate clearance of outer tub top. Figure 54.

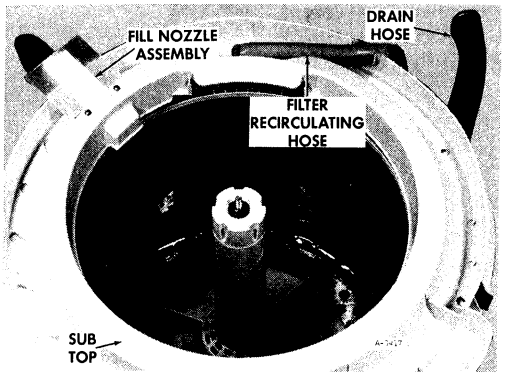


Figure 54

28 WATER PUMP ASSEMBLY

The single stage water pump provides recirculating water for lint filter action during agitation. During spin, the mechanism reverses to pump water for drainage.

The pump is direct drive from the motor shaft. The hub of pump impeller extends up through the pump cover and is connected to the motor shaft by a socket head screw with nylon plug. (Use 9/64 Allen type hex-key-wrench).

The pump cover, housing and impeller are composed of polypropylene. The spring loaded rubber seal body with carbon face, in recess of cover, mates to a rubber encased ceramic ring located in a recessed area around hub of impeller, *Figure 55.*

The pump cover is fastened to housing by four screws which thread into the cover. A cork gasket effects a water tight seal between cover and housing.

Driving the pump impeller direct from the motor shaft assures constant seal pressure and eliminates the need of bearings.

ALL PARTS OF THE PUMP ASSEMBLY ARE SERVICED SEPARATELY. TWO DIFFERENT PUMP HOUSING ARE REQUIRED. RECIRCULATING AND NON-RECIRCULATING MODELS, SEE *Figure 55A*

The complete pump and electric motor are assembled as a unit on the motor mounting plate.

Attach bolts from the motor end shield extend down through the mounting plate into four threaded hex spacers. The pump assembly is located under the motor and held in position by four mounting screws (through housing and cover) which thread into the hex spacers.

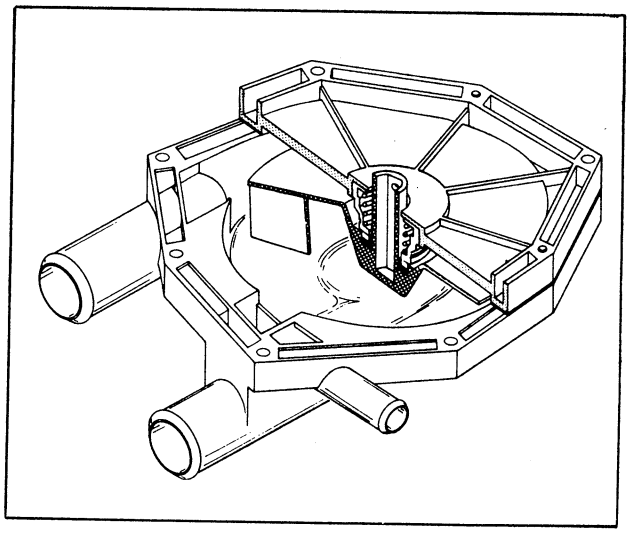


Figure 55 — Pump Cut-Away

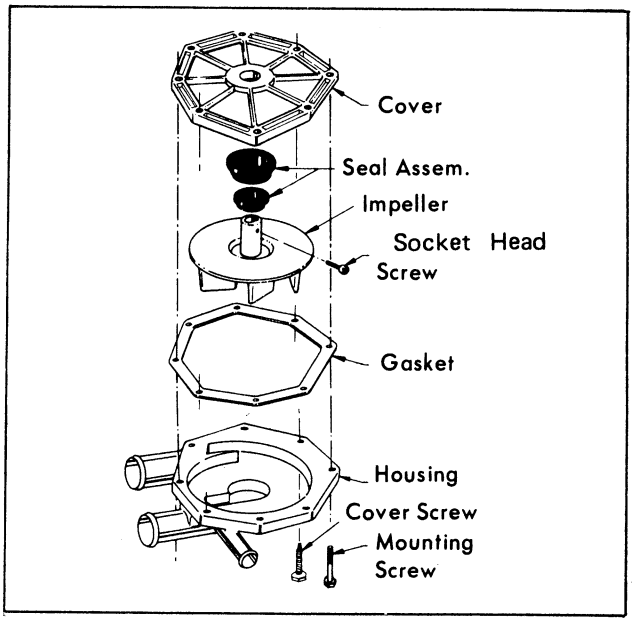


Figure 55 A— Pump Components

DURING DISASSEMBLY, NOTE THE LOCATION OF PUMP (INLET AND OUTLET) IN RELATION TO MOTOR POSITION, ALSO, THE LOCATION OF SCREWS, WASHERS AND SPACERS FOR PROPER REASSEMBLY.

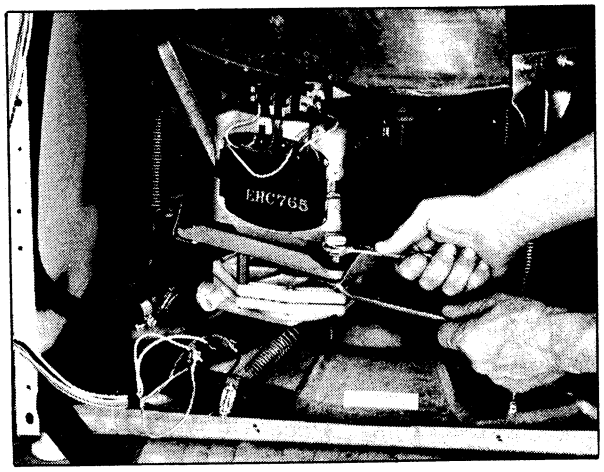


Figure 55B — Removing Shoulder Bolts

The mounting plate is held in position on the support plate by four shoulder bolts with lock-nuts. Flatted sides of the shoulders of bolts slide in elongated slots of the support plate.

Remove the complete pump and motor as a unit for repair of pump, motor or belt replacement. See *Figure 55B.*

Pump Removal — Installation

1. Remove cabinet rear panel.

2. Disconnect harness from motor.

3. Remove hoses from pump.

   NOTE: Use a flat container to drain water.

4. Carefully turn clutch and run belt off the clutch pulley.

5. Loosen (ONLY) the front shoulder bolts.

   NOTE: Front slots in support plate are sized so flats on shoulder of bolt are not required to be paralled with sides of slots. Also, the rear ends of the front slots are rounded so bolt heads will pass through without removal of bolts.

6. Remove rear shoulder bolts and lock-nuts.

   CAUTION: Hold bolt head to prevent it from turning. Otherwise, slots in support plate or flatted sides on shoulder bolt will be damaged. FLATTED SIDES OF REAR SHOULDER BOLTS MUST ALWAYS BE PARALLEL WITH SIDES OF SLOTS IN SUPPORT PLATE.

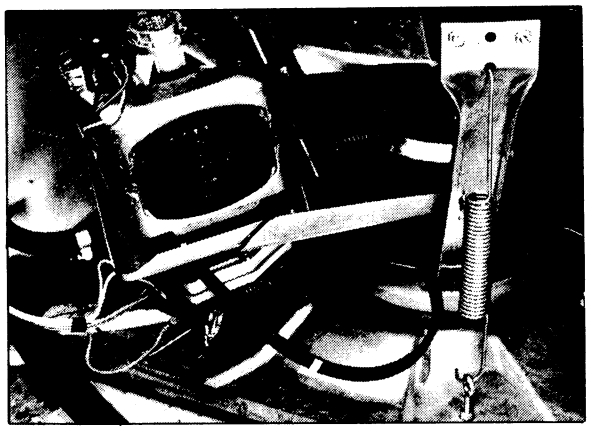


Figure 55C — Removing Motor and Pump Assembly

7. Slide pump and motor as a unit toward the rear, lifting front bolt heads through rounded openings of slots.

   NOTE: During disassembly the spring and retainer (belt tension equipment) may slip out of position. BE SURE TO NOTE LOCATION OF THIS EQUIPMENT PRIOR TO DISASSEMBLY AND LUBRICATE (GREASE) THE RETAINER ON REASSEMBLY, FIGURE 55C.

8. On installation of pump and motor unit, locate front shoulder bolts in place through openings in support plate.

9. Install spring and retainer in place. Press on motor, guiding end of retainer into slot of support plate, then install rear shoulder bolts (finger tight) to hold unit in position.

10. Tighten all four shoulder bolts and nuts.

    CAUTION: REAR SHOULDER BOLT FLATS MUST BE PARALLEL WITH SIDES OF SLOTS. TIGHTEN NUTS CAREFULLY. MOUNTING PLATE MUST SLIDE ON SUPPORT PLATE TO ASSURE CONSTANT BELT TENSION.

29 ASSEMBLING THE PUMP

Position the complete unit on the side of motor opposite starting switch, so pump extends out over the edge of a bench or table *Figure 55D.*

1. Note the position of the mounting plate in relation to the motor switch. The plate must be reassembled in the same position. STARTING SWITCH SIDE OF MOTOR IS POSITIONED AT WIDE (REAR) END OF PLATE.

2. Note the position of the hex spacer that is straddled by the belt. The belt must straddle the same spacer on reassembly. See *Figure 56*.

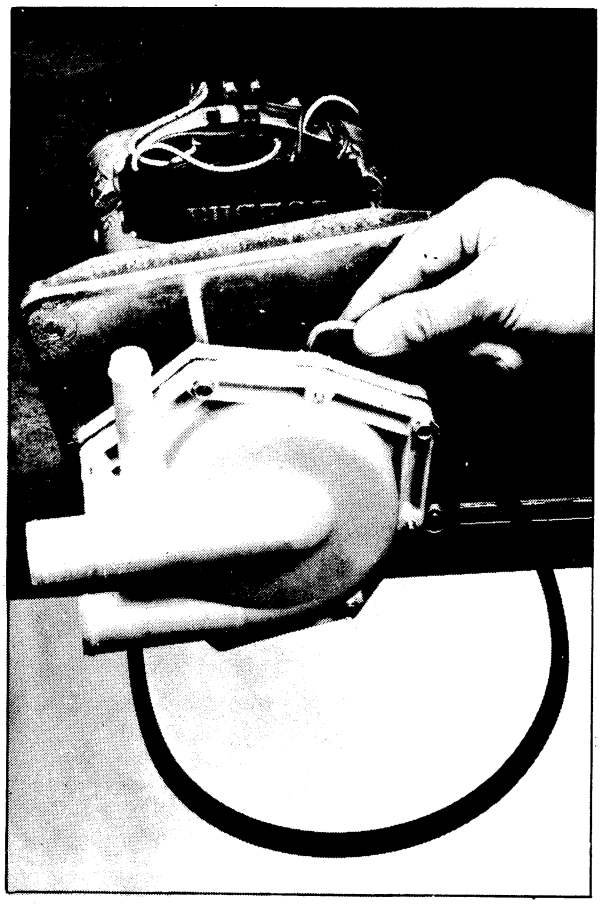


Figure 55D – Removing Socket Head Screws

3. Note the position of the pump in relation to the motor switch. The pump must be reassembled in the same position. From starting switch side of motor (rear) pump inlet and outlet extend towards the left side.

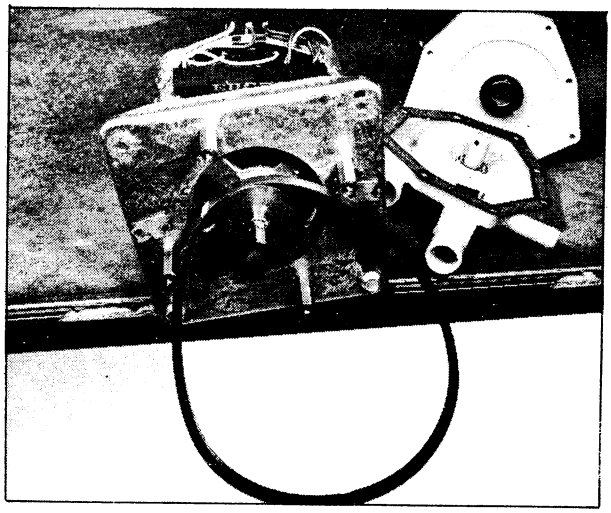


Figure 56 – Belt Location

4. Remove the socket head screw from hub of pump impeller and motor shaft (use 9/64" Allen type hex-key wrench).

5. Remove four screws from hex mounting spacers and pull pump from motor shaft.

6. Remove four screws that fasten cover to pump housing.

   CAUTION: Gasket MUST be in good condition on reassembly, otherwise, it MUST be replaced. DO NOT USE ADHESIVE TO SEAL GASKET BETWEEN COVER AND HOUSING.

7. Remove impeller from cover for access to seal assembly.

   WHEN THE SEAL IS TO BE REPLACED, ALWAYS REPLACE THE COMPLETE ASSEMBLY. THE SEAL IS AVAILABLE ONLY AS AN ASSEMBLY

8. Carefully remove the spring loaded seal body and ceramic ring. USE CARE NOT TO DAMAGE THE RECESSES IN COVER OR IMPELLER.

   NOTE: Use liquid soap in recesses as a lubricant when installing a new seal assembly. Lightly lubricate seal face with vasoline prior to reassembly. THE SEAL FACES MUST BE CLEAN AND FREE OF GRIT.

TO OPERATE RETURN SUDS

1. Place stopper in suds water tub. Place long hook hose into tub.
2. Wash first load in usual way. On the initial drain and spin period the *"Return Suds System"* will pump the suds water into the storage tub, rinse water will be pumped out the drain.
3. When the first load is finished, remove laundry from the washer.
   a. Turn control dial to the return suds position.
   b. Close lid and pull control dial out.
   c. Suds water will return to washer. (Signal light will glow).
4. When the suds water has returned to the washer, push in control dial to shut off machine.
5. Add second load and motor detergent if necessary Reset controls for second load.
6. Pull out *Control Dial* to start the machine.
7. Additional water will be added to the washer according to the water level setting, this will be an automatic process.

30 TROUBLE DIAGNOSIS OF SUDS RETURN

If the problem is all the water going out the drain, and none entering the auxiliary tub, the following should be checked.

1. Timer, look for poor connection at terminal board, or internal contacts not making properly, see *Section "Timer Repairs".*
2. Test suds return solenoid, same way as water valve solenoid coil, refer to test section.
3. Look for bent or broken valve arm, or seal binding in valve.
4. Kinked or plugged hose possibilities should be eliminated.

If the problem is water not returning to the washer.

1. Check timer for correct setting.
2. Hose kinked or plugged air lock.
3. Place hose in straight line from tub, eliminate #2.

If water overflows auxiliary tub.

1. Is capacity of the auxiliary tub ample?
2. Extra efficient pump will have to be restricted, place a screw type clamp on suds return hose and adjust to correct water flow.

FILTER SYSTEM

Filtering the water for lint removal is basically the same on all top loaders that include this feature. Water from the tub enters the pump. The small impeller in the recirculating chamber moves the wash water continueously through the recirculating hose and into the filter pan, *Figures 8C and 8D* in its return to the wash basket, or tub of the washer, Except for the spin and drain cycles, the suds water is constantly being filtered, See *Figure 8C* and note that this filtering system uses a two-stage pump. *Figure 8 C* illustrates a new polypropylene pump of a later design that has now become part of the new Top Loader design. Although this pump has only one impeller, filtering of the suds water takes place very efficiently. The pump can be used with or without a filter system, by closing the filter port with cap and clamp provided.

31 FILTER HOSE (Removal and Replacement)

a. Disconnect service cord.
b. Remove top and back panels, *Procedure 3.*
c. Remove hose from pump.
d. Remove hose clip.
e. Remove hose from top cap.
f. Coat the grommet end of the replacement. hose with Pliobond or 3M cement.
g. Push tub unit forward.
h. Work grommet end of the hose into opening in top cap.
i. Install hose clip.
j. Install restrictor washer in hose.
k. Connect hose to pump.
l. Tape this hose to inlet filter hose.
m. Install panels.

32 INLET HOSE (Removal and Replacement)

a. Disconnect the service cord.
b. Tip up top panel, *Procedure 3.*
c. Remove hose from fill cone.
d. Remove grommet end of hose from top cap.
e. Coat the grommet end of the replacement hose with Pliobond or 3M cement.
f. Work the grommet end of hose into the opening in top cap.
g. Connect hose to fill cone.

33 PLASTIC TOP CAP (Removal and Replacement, Figure 41)

a. Disconnect service cord.

b. Remove top and back panels, *Procedure 3.*
c. Disconnect inlet hose from fill cone.
d. Remove circulating hose.
e. Remove lint filter.
f. Remove spring clips.
g. Remove top cap.
h. Remove screws holding fill cone shield from top cap.
i. Install new tub gasket using cement.
j. Locate tub cap with overflow trough over the counterweight and seat against tub gasket.

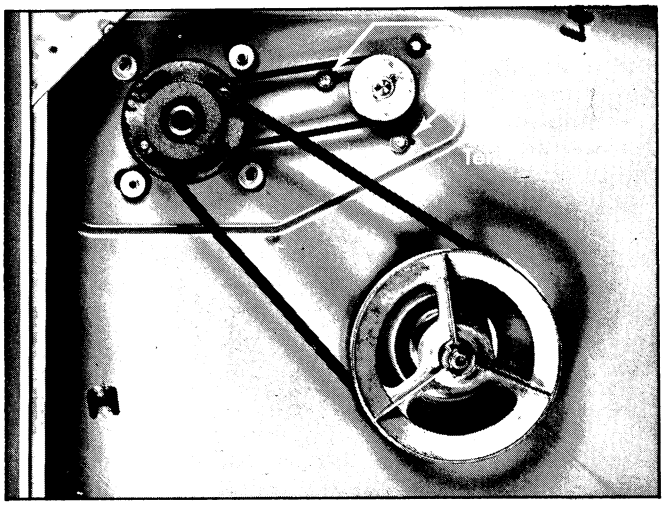


Figure 57 - Motor Bolts Location

34 IDLER DRIVE ASSEMBLY

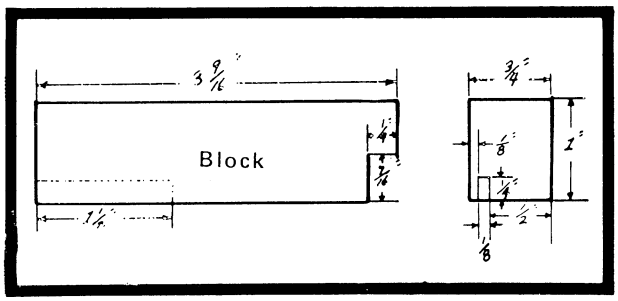
Proper adjustment of the idler arm and belt tension is necessary for trouble free operation of this drive system. An improper adjustment usually creates a banging clattering noise, belt wear is slippage which will result in slow spin speed.

There are two adjustments that must be made. These are:

a. The position of the motor in the motor bracket. (This compensates for variation in belt dimension.)
b. The idler arm position. (This adjustment is for belt tension, and is determined by wattage draw.) *Figure 57*

To make these adjustments proceed as follows:

a. Disconnect the service cord.
b. Remove the service panel.
c. Disconnect the adjusting link, by pulling out and down on link.
d. Loosen four motor mounting nuts (use 3/8 box end wrench or socket).
e. Slide motor forward in motor bracket slots.
f. Install new belt if old one is frayed or damaged.
g. Move the motor back until the idler pulley arm lines up with the slot in the motor bracket (idler pulley arm must be even with edge of slot in motor bracket 1/16").
h. Alternate adjustment using gauge block. Since it is sometimes difficult to visually check this alignment we suggest the use of a block guage.



This can be made of wood or other suitable material cut to the dimensions shown in above illustration.

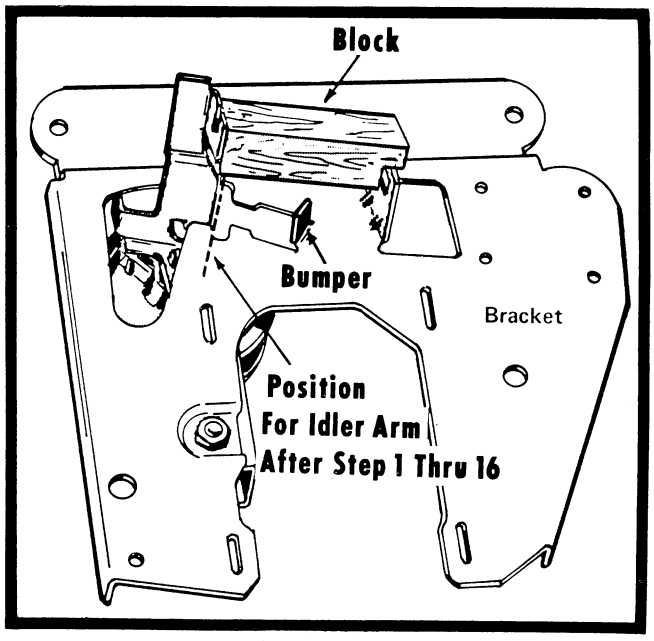


Figure A

To use the block for motor positioning follow steps a. through n. Set adjusting block on idler arm, pull idler arm into position tight against block, pull the motor back holding idler arm tight against the block, *Figure A.*

i. After positioning the motor using step e. or g., tighten motor mounting nuts in the sequence shown in *Figure B.* Nuts should be tightened to 40 pounds torque, a snug pull for the average person.

j. Replace adjusting link, set spring into 6th notch. Notches are counted from the end of link that hooks to link bracket, see *Figure C.*

k. Check idler arm position and alignment with notch in motor bracket. This must be 1/16 inch, see *Figure A.* For accuracy of position use of an inspection mirror such as Robinair style 12174 is recommended.

l. Check pump out wattage. Must be within specification recommended with water load. Tighten spring to increase wattage. Loosen spring to decrease wattage.

m. 600 RPM motor pulley (models with ramp agitator) should read between 750-900 watts power consumption.

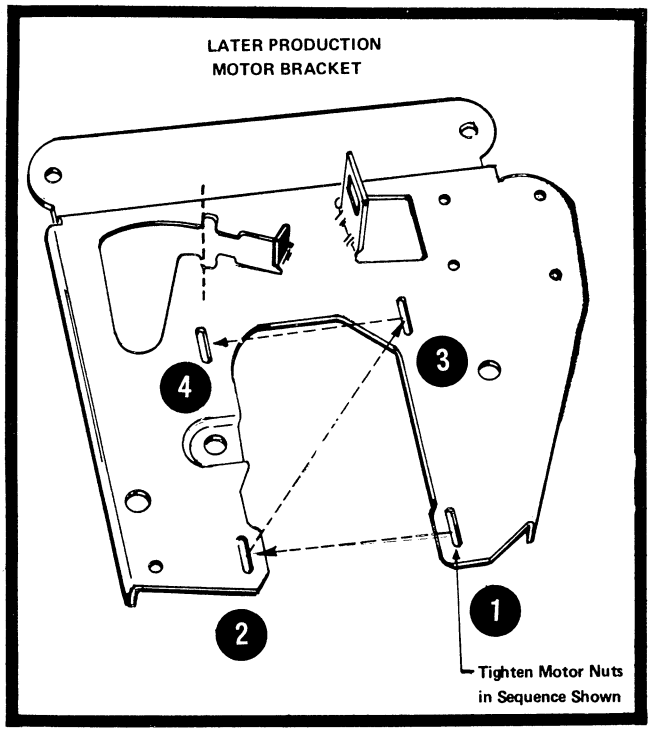


Figure B.

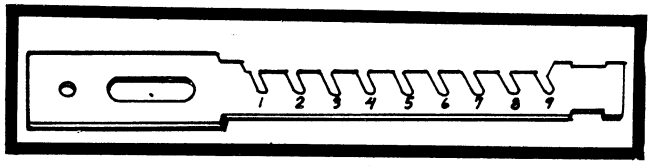


Figure C

m. 600 RPM motor pulley (models with ramp agitator) should read between 750-900 watts power consumption.

Check operation and replace service panel.

These procedures should eliminate any idler assembly noise. On present production a rubber bumper is used to quiet the noise of idler arm to motor bracket due to a grabbing belt.

A few early production washers were manufactured without this bumper. If you should encounter a machine without this bumper, one should be installed to prevent a future noise complaint.

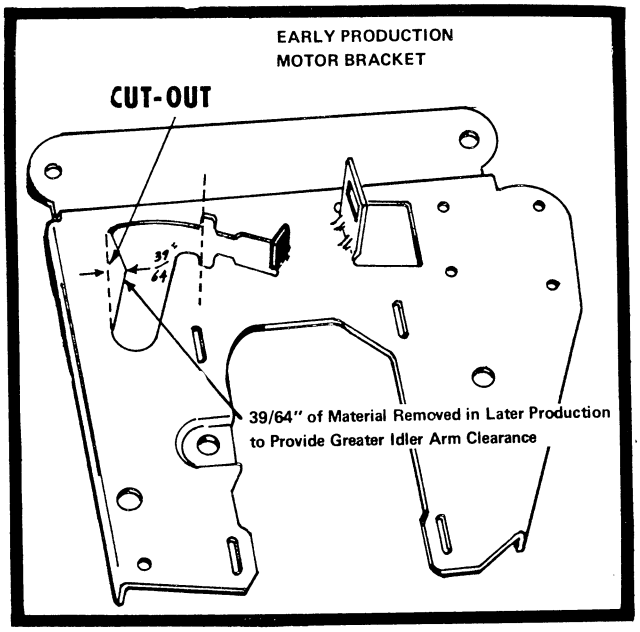


Figure D

Early production motor bracket has a smaller opening for the idler arm. In later production this opening was enlarged by 39/64 inch. See *Figure D.*

This change was made to provide more clearance for idler arm movement.

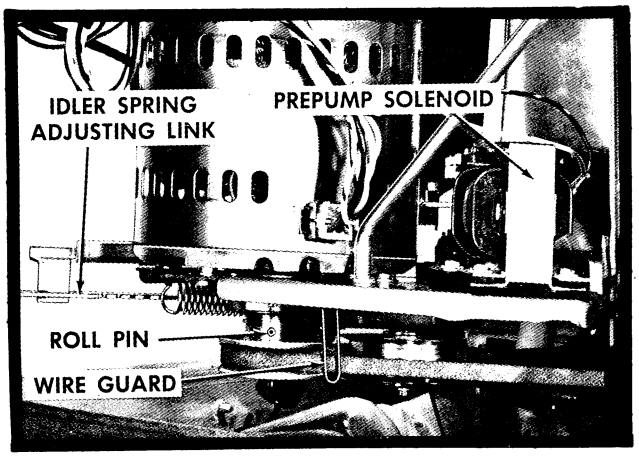


Figure 58

35 REPLACEMENT OF BELT

1. Disconnect the service cord.
2. Remove the back panel.
3. Release the idler tension spring adjusting link, *Figure 58.*
4. Remove the belt from the transmission pulley and motor pulley.
5. Work belt out between the idler pulley and transmission dome.

36 TO INSTALL THE BELT

1. Work the belt between the idler and transmission dome.
2. Place the belt over motor and idler pulley (be sure the belt is between the motor pulley and wire guard).
3. Start belt onto transmission pulley—turn transmission pulley to roll belt into pulley groove.
4. Hook up the tension spring adjusting link.

MOTOR PULLEY

1. Disconnect the service cord.
2. Remove belt.

NOTE: The roll pin is recessed on one side of the pulley to act as a guide for 1/8" drift.

3. Using a 1/8" drift, tap the roll pin out of the pulley. Remove pulley.
4. Start roll pin in pulley.
5. Line pin hole in shaft up with pin in pulley and slide pulley onto motor shaft.
6. Seat pin within 1/32" of being flush.
7. Install belt.

37 MOTOR AND PUMP ASSEMBLY (Removal)

1. Disconnect the service cord.
2. Remove back panel.
3. Disconnect the motor connector by pressing the sides of the plug (to release lock) and pull out, *Figure 59.*
4. Disconnect wires from prepump solenoid, if equipped.
5. Remove the belt.
6. Remove the four motor mounting nuts.

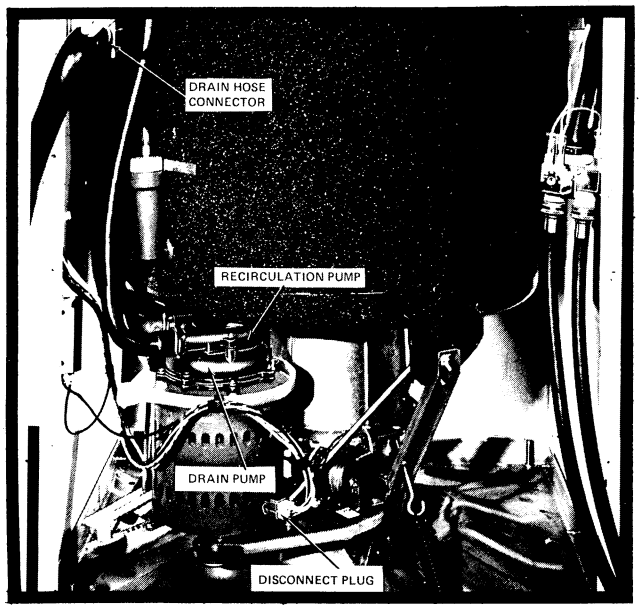


Figure 59

7. Loosen nuts (but do not remove) on motor bracket support rods, to allow motor assembly to drop down approximately 1/2 inch.
8. Remove the hose from the recirculating pump.
9. Remove the sump hose from pump.
10. Disconnect the drain hose at the connector.

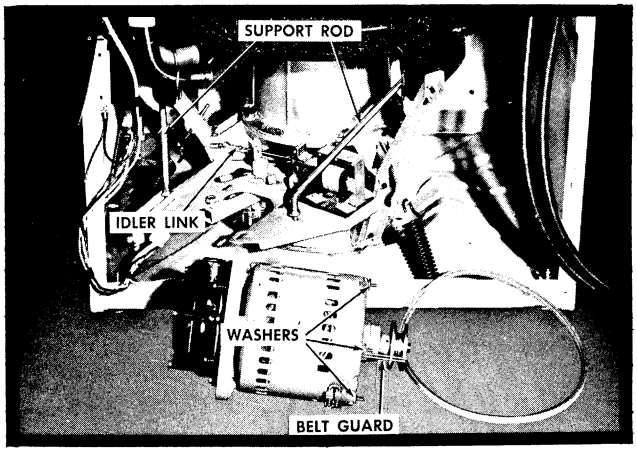


Figure 60

11. Lift motor and pump assembly off of bracket, *Figure 60.*
12. Remove the four recirculating pump screws.
13. Lift off cover.
14. Remove impeller mounting screws and remove impeller.
15. Remove the five drain pump cover screws and remove cover.

16. Remove the four drain pump adapter mounting screws.
17. Remove adapter and slinger.
18. Remove drip shield.

38 ASSEMBLING THE PUMP

1. Install the drip shield so the drain lip is to the left of the locating mark on the motor end bell, see *Figure 28*.
2. Install the water slinger on the motor shaft.
3. Coat the outside of the spring loaded seal with oil (bottom half) and push into position in the pump adapter with the carbon surface facing away from the adapter.
4. Line up mark on pump adapter with locating notch on motor.
5. Install the four pump adapter screws.
6. Place the cover gasket on the flange.
7. Coat upper part of seal with oil and push into impeller with the smooth part facing away from the impeller.

NOTE: Care must be taken to prevent scratches on the carbon and ceramic surfaces.

8. Apply a thin coat of grease on motor shaft (to prevent impeller sticking on shaft).
9. Install impeller on motor shaft.

NOTE: Before assembling cover to pump, turn impeller and motor shaft by hand, impeller must not rub adapter. If impeller rubs adapter, install spacer washers as required on end of motor shaft.

10. Coat lip seal with oil and install in drain pump cover with spring and lip facing away from cover. Coat sealing lip with water pump grease.

TRANSMISSION

The following should be determined before replacing transmission.

If the washer won't agitate:

a. Examine drive hub. Is it loose or broken?
b. Take note of transmission pulley, is it turning?
c. Did you check the belt tension? Disconnect the service cord.
d. Rotate the transmission pulley clockwise by hand, does the agitator turn?
e. Turn the pulley counterclockwise, does the basket turn?
f. If check *"c"* and *"d"* fail, remove pulley and check both large and small clutch springs, these are replaceable in the field.

If the thermostat trips in spin cycle.

a. Are the clutch shoes stuck to the clutch drum pulley?
b. Is some object jammed in the pump, or is pump binding?
c. Is the belt too tight.
d. Is the motor bearing binding, remove belt and check.

Is the spin speed too slow?

a. Is the pump air locked,
b. Is the drain hose kinked or obstructed? Has a foreign object entered the tub sump?
c. Is the belt loose, worn or frayed?
d. Is clutch shoes worn? Do you hear a metalic sound from the clutch assembly, an indication of wear.

NOTE: No transmission should be replaced because of visual indications of oil leaks in and about the seals. Where an excessive amount of oil has accumulated in the bottom pan assembly, clean and wipe as dry as possible to prevent oil spillage on the motor or other components when washer is inverted for transmission removal.

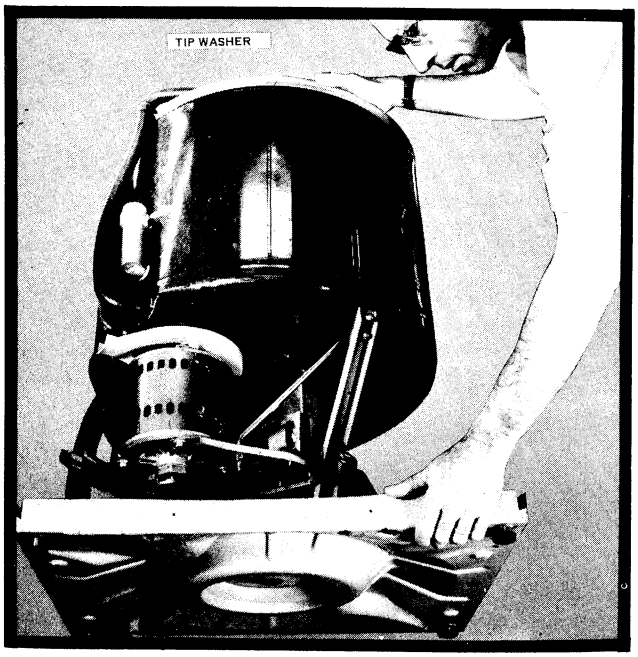


Figure 61

39 TRANSMISSION REMOVAL OR SEAL REPLACEMENT

Before proceeding lay protective work cloth on floor area, invert tub unit, *Figures 61* and *62*, and follow procedure.

a. Remove four tub mounting bolts, *Figure 62*.

b. Remove the three transmission mounting bolts, one from each brace, *Figure 62*.

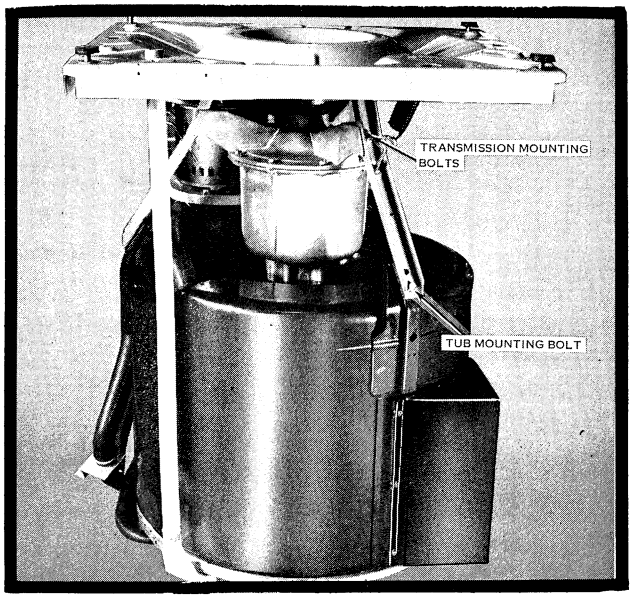


Figure 62

c. Loosen the two motor support rods from the motor bracket.

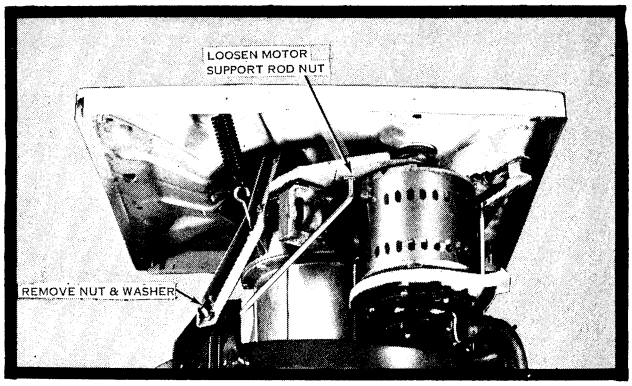


Figure 63

d. Remove the nuts and washers from the support rods at the support brackets and turn aside, *Figure 63 and Figure 64*.

e. Lift bottom pan, pivot dome and tub unit braces with the springs as a unit up and away, see *Figure 65*.

f. Release the belt tension link (idler models) clutch models loosen three motor bolts, *Figure 66*.

g. Remove belt,

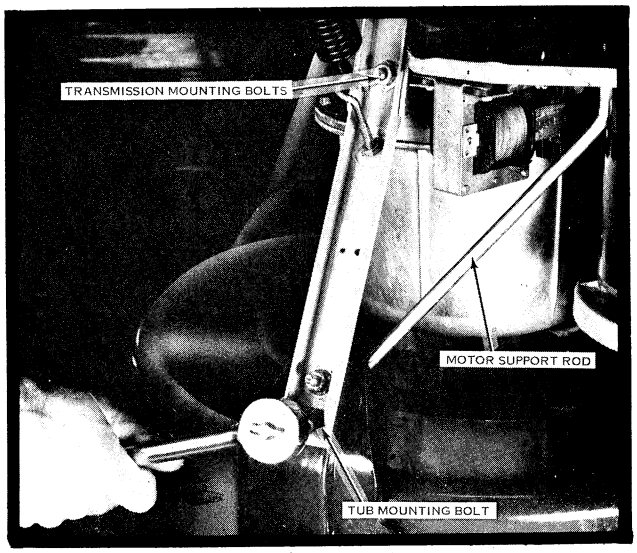


Figure 64

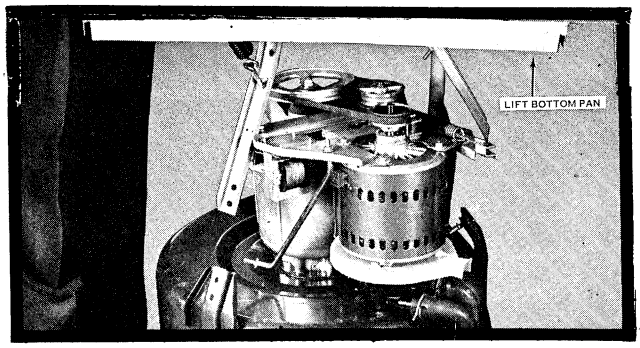


Figure 65

h. Remove pulley, nut, steel washer and rubber washer, *Figure 67*.

i. Pry out old seal with a screw driver or work out with the fingers.

j. Closely inspect seal cavity to be sure there are no nicks or rough spots that may injure a new seal.

k. With a clean cloth wipe out all oil and grease from seal cavity.

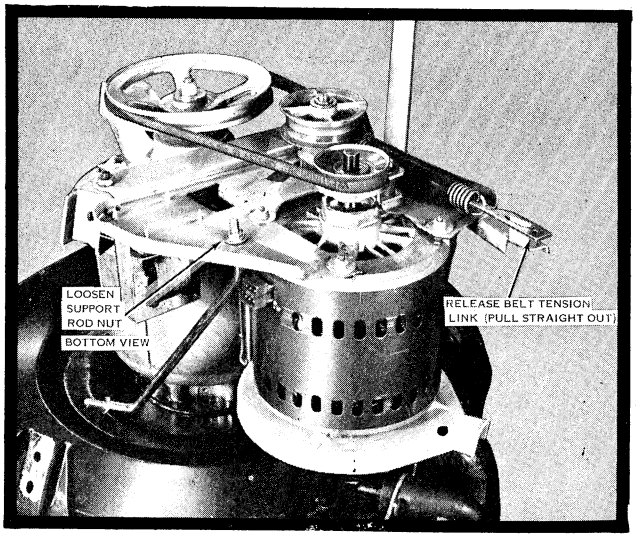


Figure 66

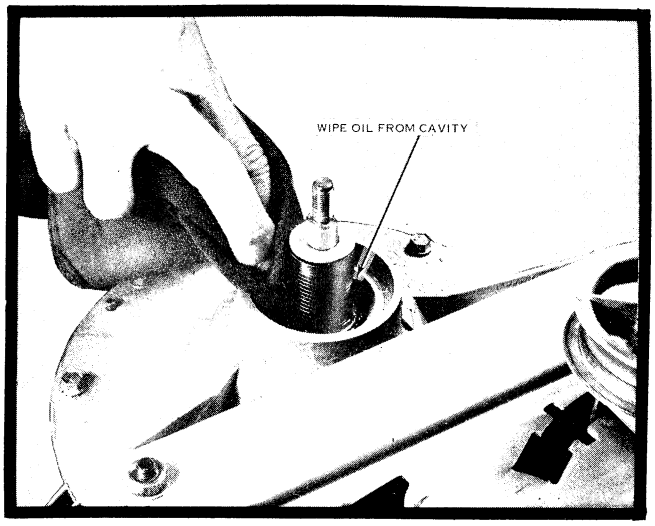


Figure 67

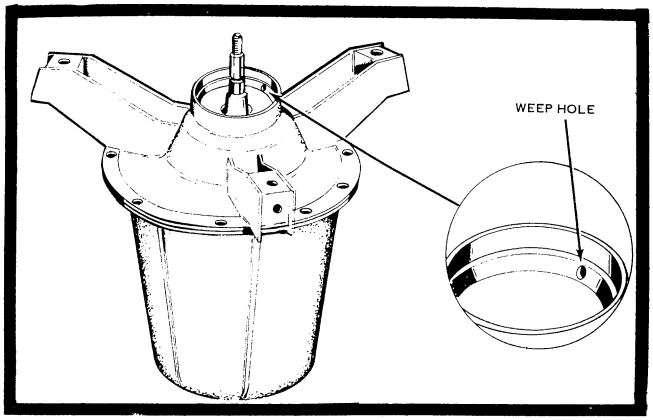


Figure 68 -

l. With a number ten wire, check oil level by inserting wire through weep hole. To do this remove clutch spring and collar, *Figure 68 .*

m. Insert 6 1/2" of the wire into weep hole . Oil must be added to reach the tip inserted .

IMPORTANT NOTES

1. Earlier transmissions will have a castle nut and cotter key for mounting the pulley to the shaft.

2. When removing the belt on idler system models, position the spring in link to reconnect properly.

3. If in wiping out seal cavity the input shaft is inadvertently turned and drops down and locks and cannot be raised, rotate the agitator and shaft. This will change the crank gear position so the input shaft and pinion gear will unlock and allowed to be raised to its proper position.

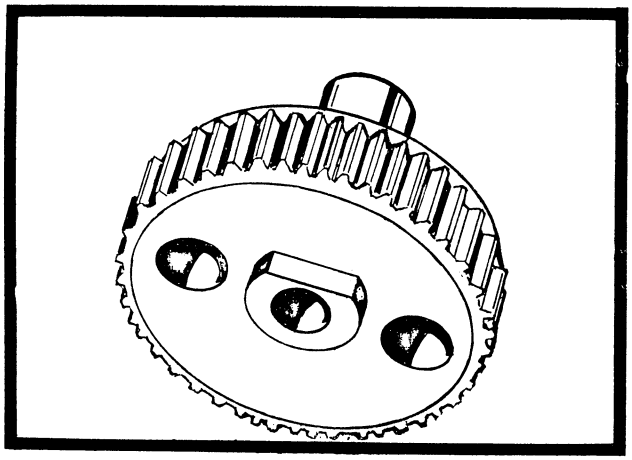


Figure 69.

This problem may develop in transmissions manufactured prior to late 1968. After that time the crank gear flat on the hub was eliminated with the subsequent problem, *Figure 69*

The above procedures should be followed only if there is internal damage or malfunction within the transmission, up to the present time the complete transmission should be removed and replaced. Internal functional parts are not available for repairs to the transmission in the field.

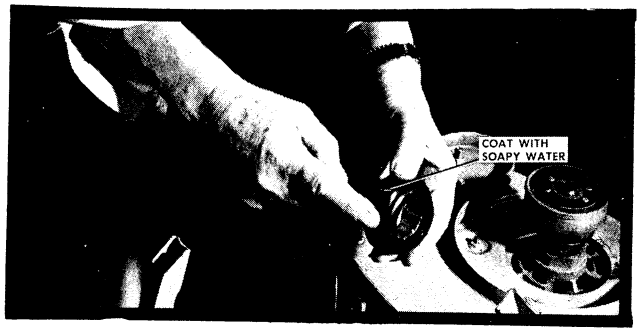


Figure 70

40 INSTALLING SEAL IN TRANSMISSION

a. The periphery of the seal should be coated with a thick soapy solution, at time of installation, *Figure 70.*

b. With the use of fingers, carefully start the seal into the cavity.

c. Remove the powdered iron part of the old seal from the pulley, wipe dry and clean with a cloth.

d. Using this part of the pulley seal or bronze part of the water seal, carefully seat the bottom half of the seal, *Figure 71.*

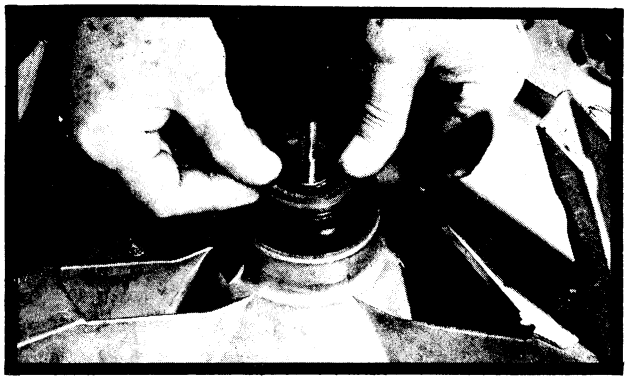


Figure 71

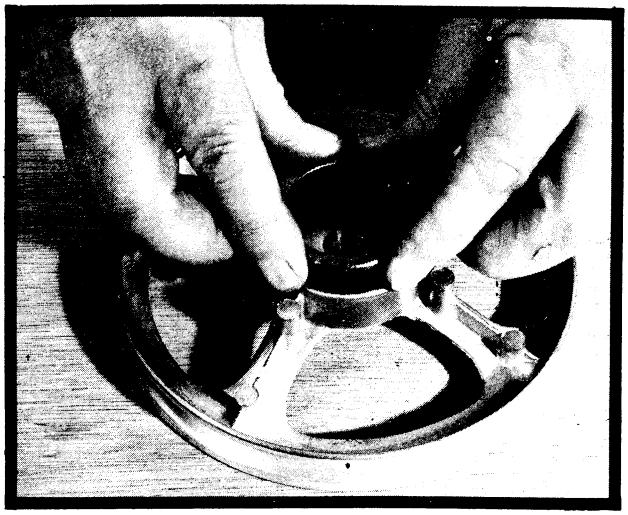


Figure 72.

41 INSTALLING SEAL IN PULLEY – DO NOT LUBRICATE

a. Remove old seal from pulley. Check seal cavity for nicks and damage.

b. Coat seal with soapy solution as previous.

c. Using fingers, carefully start seal into cavity, *Figure 72.*

d. As before, using old seal part, seat the seal in the pulley. Be sure the seal bottoms in the pulley.

42 INSTALLING THE PULLEY

a. Place the 1 1/8 x 5/8 x 1/16 inch washer over the pinion shaft, *Figure 73.*

b. Carefully clean the two seal surfaces with a soft clean cloth. Surface must be dry and dust free.

c. Place pulley on pinion shaft and push down.

d. Properly engage the pinion shaft.

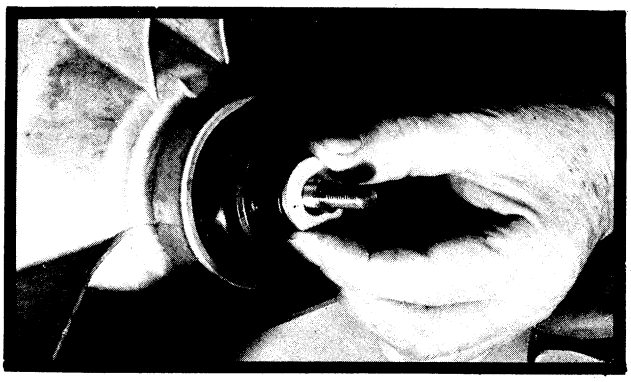


Figure 73

e. Exert pressure downward on pulley to compress the seal and spring. While holding the pulley down with one hand and pulling pinion shaft up with other, move pulley back and forth to be sure pinion is up as far as it will go.

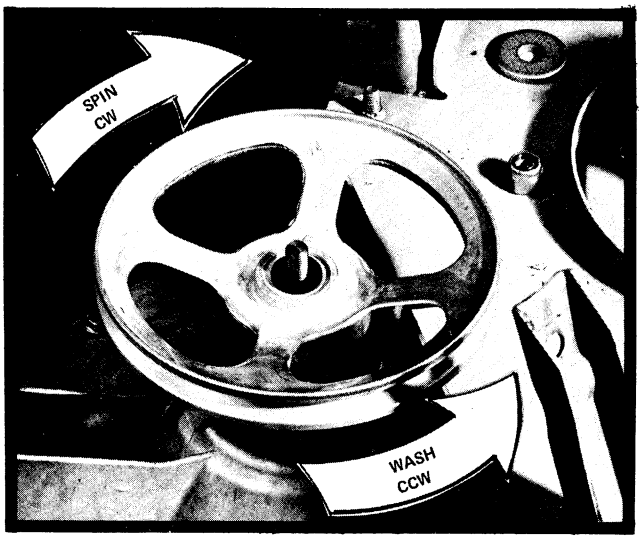


Figure 74

f. Install the rubber washer flush with the pulley, *Figure 74.*

g. Install thick washer and nut.

h. Tighten nut snugly to bottom, both seal face surfaces together, being careful not to compress the seal loading spring too much. There should not be any wobble between the shaft and pulley.

i. Test action. Pulley should turn free in CCW direction for wash and agitate. In a CW direction for spin a slight drag will be noted because of the additional movement of the gear frame. A slight amount of end thrust is normal.

j. Reverse procedures for reinstalling transmission.

43 **WATER SEAL (Removal and Replacement)**

NOTE: Both the seal and mating ring must be changed.

a. Remove spinner basket and hub from machine, see *Figure 75*

b. Remove bronze portion of seal, slide it off the spin tube.

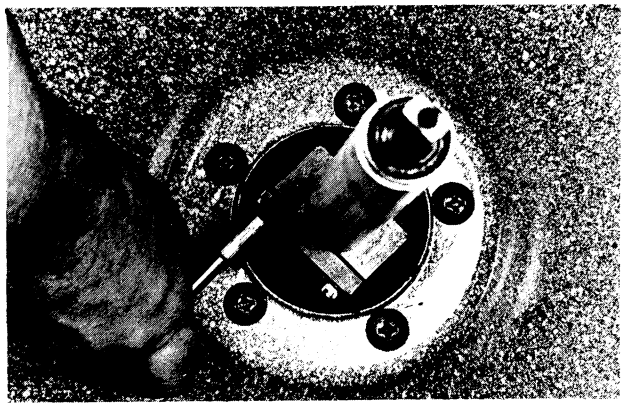


Figure 75

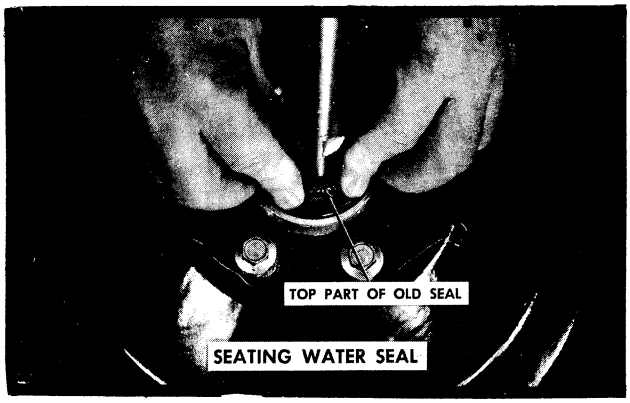


Figure 76

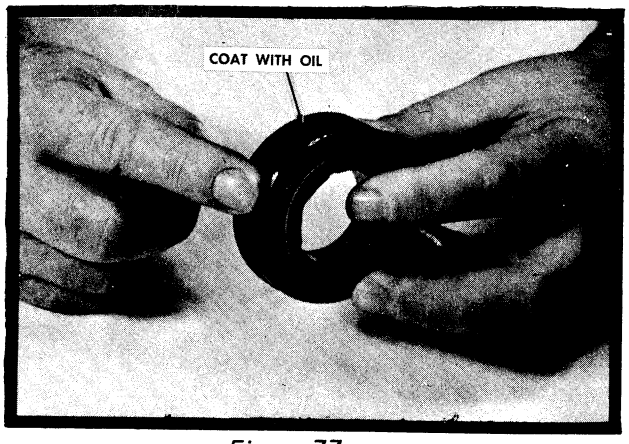


Figure 77

c. Remove bottom portion of seal.

d. Check the seal cavity for nicks or burns.

e. Coat the periphery of the seal with oil.

f. With use of fingers, carefully start seal in cavity.

g. Using the bronze part of the old seal carefully seat the bottom half of the water seal *Figure 76.*

h. Clean and coat both seal surfaces with oil. *Figure 77-78*

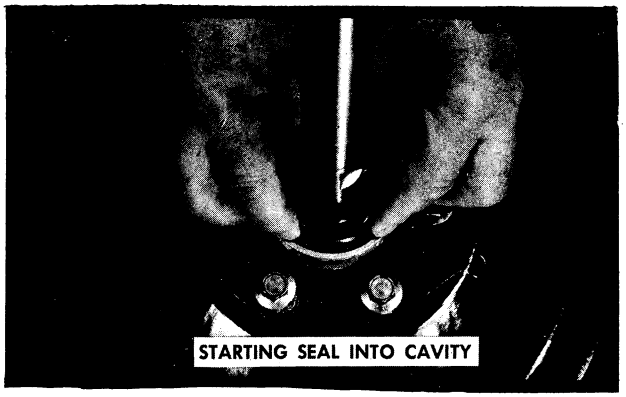


Figure 78

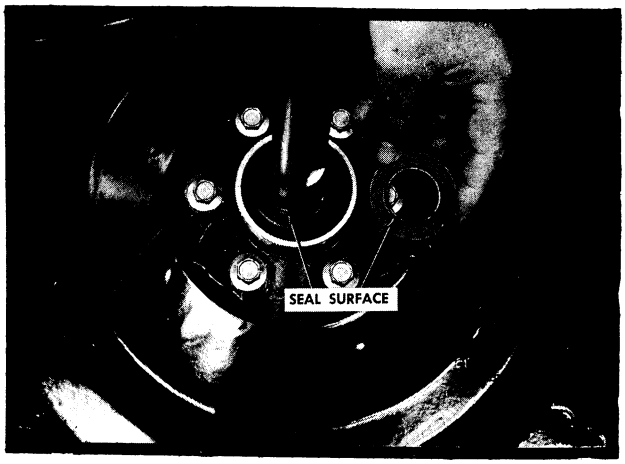


Figure 79

i. Start the new bronze and rubber insert down the spin tube. Use the old bronze seal to complete the job. Be sure rubber insert is correctly positioned, *Figure 79.*

44 **OUTER TUB REMOVAL**. See *Figure 45.*
Continue procedure from *"Spinner Tub Removal"*

a. Disconnect motor connector, remove solenoid wires.

b. Remove pump drain hose connector, *Figure 80.*

e. Remove fill hoses.

d. Remove the mix valve mounting screws.

e. Remove the cabinet screws at the base of cabinet.

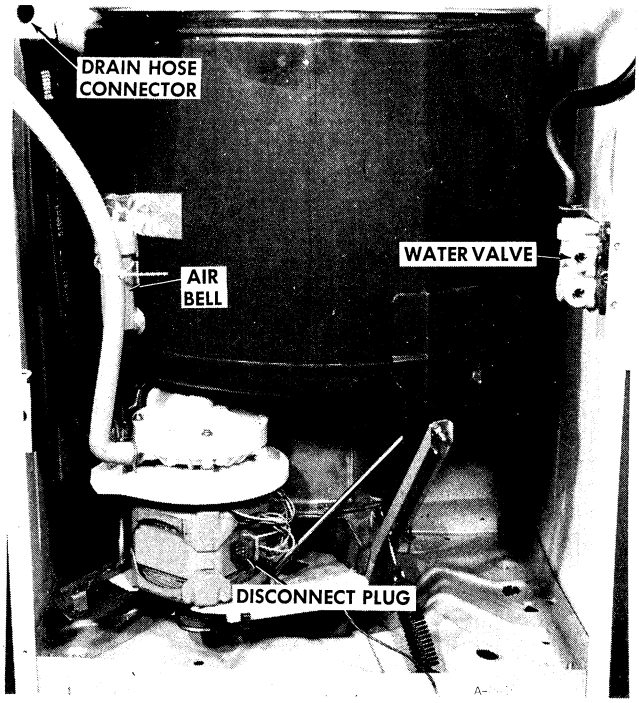


Figure 80

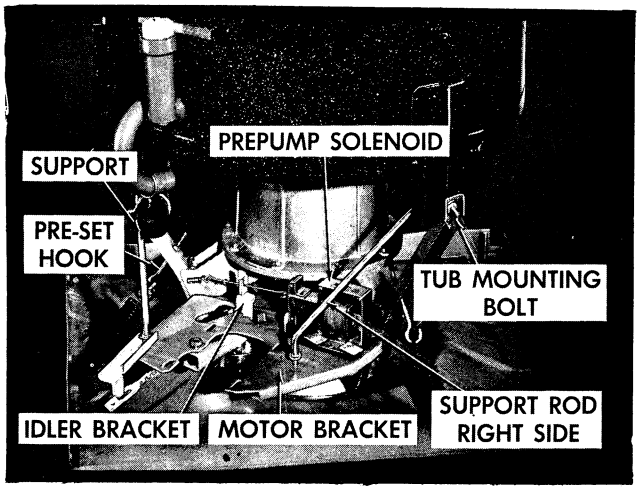


Figure 81

f. Remove cabinet from base.

g. Remove tub clamp ring.

h. Loosen the spin tube key bolts and disengage key.

i. Lift spin tub straight up and remove.

j. Remove motor and pump assembly.

k. Remove four bolts and two motor bracket support rods from outer tub mounting brackets, *Figure 81.*

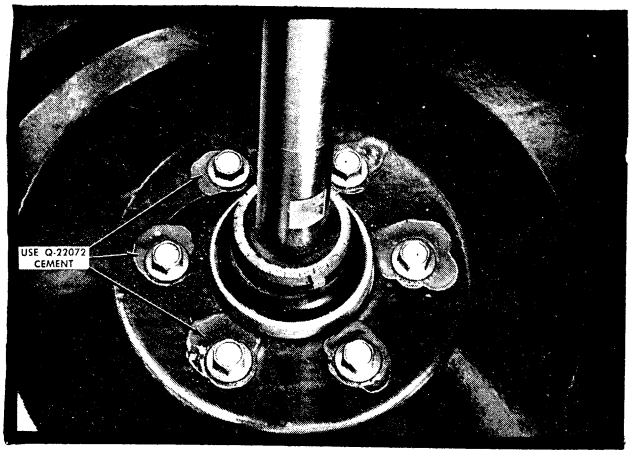


Figure 82

l. Remove the six cap screws inside bottom of tub, *Figure 82.*

m. Lift tub off base.

TRANSMISSION REMOVAL, *Figure 83.*

a. Continued from *"Outer Tub Removal"*

b. Remove three transmission mounting bolts one from each brace.

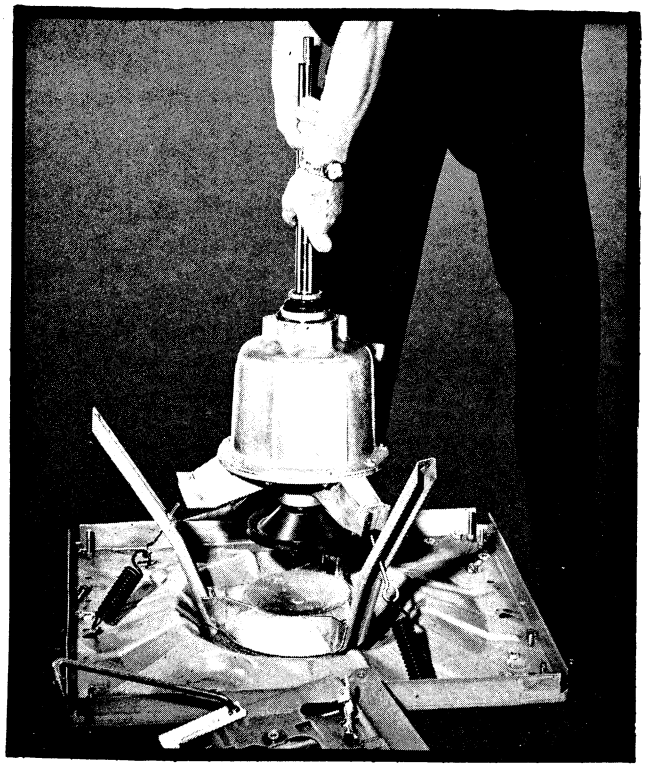


Figure 83

c. Remove the two motor mounting bracket screws.

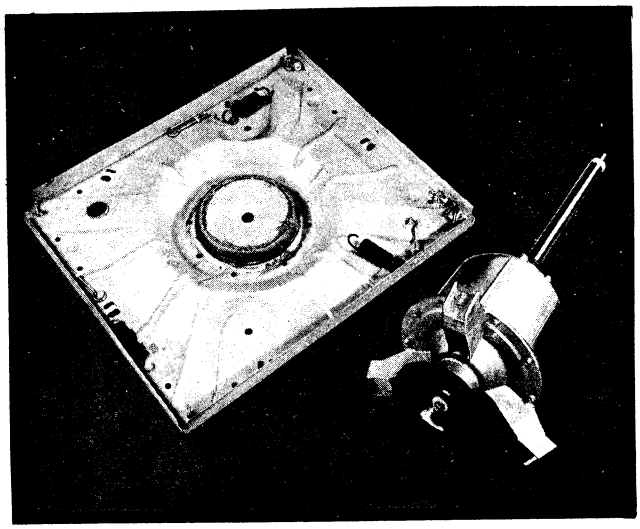


Figure 84

d. Lift transmission off of mounting brackets. *NOTE: Do not rest transmission on the pulley. Figure 84. To replace transmission, reverse procedures as outlined.*

INDICATIONS FOR SERVICE

Oil Leaks

If oil seals are not properly installed, or the oil seals are worn, look for the oil leak at the following places:

a - The upper transmission case seal.
b - The upper spin tube seal.
c - The lower transmission case seal.
d - The "O" ring seal on the transmission drive shaft.

TRANSMISSION REPAIR Refer to *Figure 85*

NOTE: The following text is included to acquaint the repairman with the disassemble and repair to the internal mechanism.

Figure 85, breakdown, shows the parts covered by the five year guarantee. Reference to this parts list will be made from time to time in the following text.

If evidence of an oil ring is found within the cabinet it would indicate that the tub seal is broken. Oil on the floor does not necessarily indicate a transmission seal leak. Check the brake assembly lubrication.

DIAGNOSING THE PROBLEM

Unless the gear train, segment gear, or allied parts in the transmission are broken, most problems can be remedied by just removing the transmission case cover, it will not be necessary to remove the transmission from the case.

Major Problems are:

A. Failure to agitate. Controlling factor — item 4 in *Figure 85*. torque or clutch spring.

B. Failure to spin — Controlling factor — item 26 in *Figure 85* spin torque or clutch spring. If the spring in either case proves not to be damaged or broken, item 5 clutch collar in reference to no agitate is a working part of item 4.

If a condition exists as outlined above, and the motor has been checked in regards to reversing in the related cycle and it also has been determined that the transmission is no longer in the guarantee period, proceed as follows.

The parts outlined below should be located before progressing. Find a source of supply for at the very least items 4, 5 and 26.

Remove transmission as outlined beginning at Service Procedure *Figure 83.*

As earlier stated, seals and seal kits are available. If you are successful in finding parts replacements, it would be best to also change the water and oil seals.

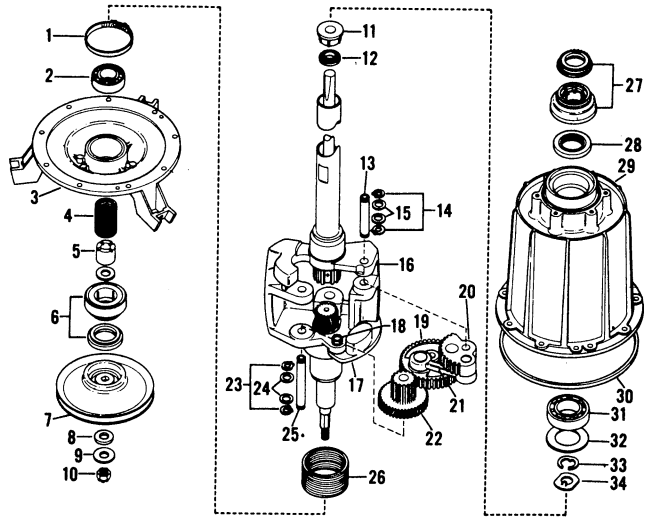
The oil should be completely drained and the transmission case flushed and wiped dry.

TRANSMISSION DISASSEMBLE

Mount transmission in work area with pulley side up, remembering that oil can leak out if seals are damaged. As a precaution, it would be prudent to place the shaft end of the transmission in a pail or bucket to catch any oil that may leak out.

1. Remove pulley nut, item 10, and steel and cork or rubber washers, items 8 and 9.
2. Remove pulley assembly. If item 4, the agitate spring, is not broken the pulley in turning at the same time lifting off of shaft will only turn one way. If the pulley turns in both directions without moving the gear train and the agitator shaft, a broken agitate spring would be more than likely. *See Figure 87.*
3. Remove nine bolts around the periphery of the transmission base housing. The pins and pin set holes will indicate position for reassemble.
4. Carefully lift bottom plate from transmission housing. Try to salvage the gasket, *Figure 88.*
5. Remove items 4 and 5, the agitate spring and hub. If the spring is broken or the hub scored badly,

PARTS COVERED BY FIVE-YEAR GUARANTEE



Key No.	Part Description	Key No.	Part Description
1	Clamp	18	Screw
2	Bearing	19	Crank Gear
3	Base	20	Sector Gear
4	Spring	21	Connector Rod
5	Clutch Collar	22	Dual Gear
6	Seal Assembly	23	Snap Ring
7	Pulley	24	Washer
8	Washer	25	Shaft
9	Washer	26	Clutch Spring
10	Lock Nut	27	Seal Assembly
11	Bearing, Upper Spin Tube	28	Seal
12	Seal, Upper Spin Tube	29	Housing
13	Shaft	30	Gasket
14	Snap Ring	31	Bearing
15	Washer	32	Washer
16	Gear Frame Assembly	33	"E" Ring, Upper Spin Tube
17	Counterweight Gear Frame	34	Washer, Upper Spin Tube

Figure 85

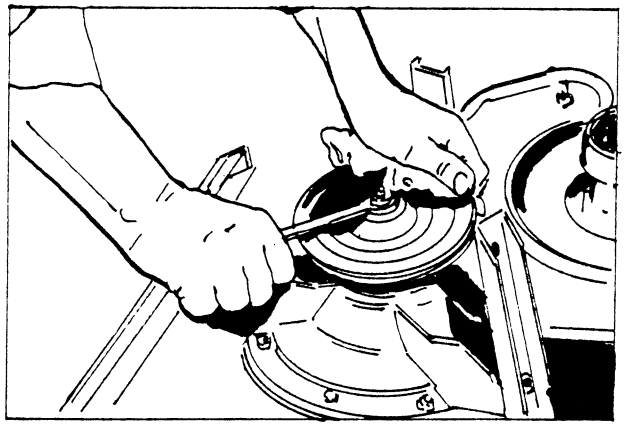


Figure 86

and the condition existed no agitate, replacing these items would in most cases solve the problem. To be sure, check the gear train by placing a crescent wrench on the pulley shaft and turn the shaft. In one direction the agitate shaft will move back and forth in the usual agitate arch, the other direction will turn the whole gear train assembly, if the spin spring is not broken, item 26.

6. Turn unit over, drain oil through a white cloth – preferably a nylon mesh. Any broken pieces will indicate other problems that may be remedied. Flush unit with a good grease solvent such as Krylon degreaser.
7. Remove agitator drive block if not removed previously. Clean burrs and polish shaft, tub hub should have been removed previously. See *Figure 89*.

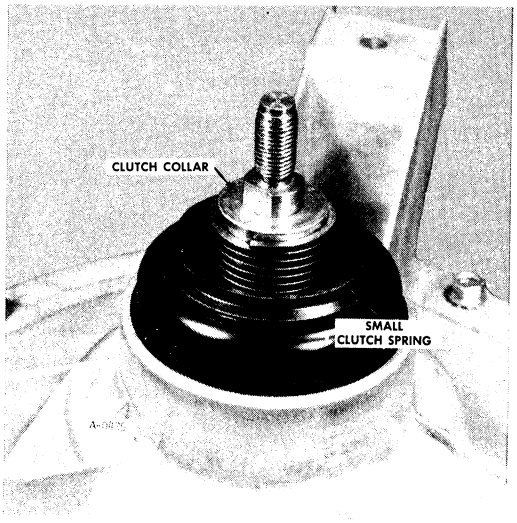


Figure 87.

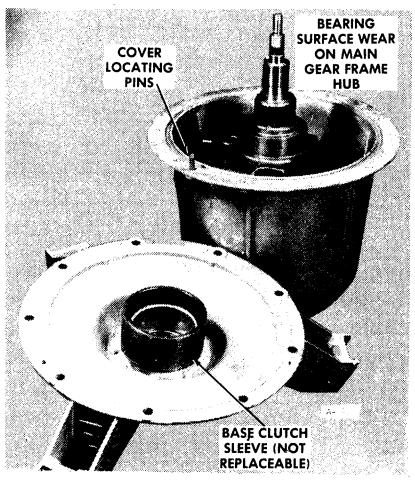


Figure 88

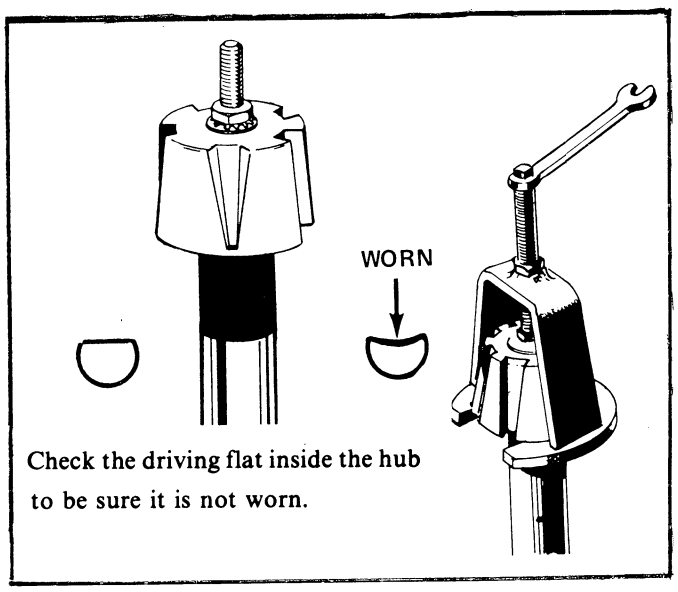


Figure 89

8. Lift transmission from housing.
9. Check spin torque spring and gear train.
10. By removing keepers and pins, items 23, 24, 25, and 12, 13, and 15, the gear segment, gear and crank arm can be removed, items 20, 21, 22 in *Figure 85*. See *Figure 90.*
11. Check the bearings, gears and springs.

In replacing with new parts, examine the parts very closely. This could be an excercise in futility if the parts break soon after they are installed.

REASSEMBLE

Reverse the procedure as outlined, see *Figure 93.*

a. Before replacing housing cover, replace oil, use slightly less than one quart of 3A or 30 viscocity oil, either will do and will reduce sound level if gears are noisy. Oil quantity is not critical up to one quart, do not exceed this amount.

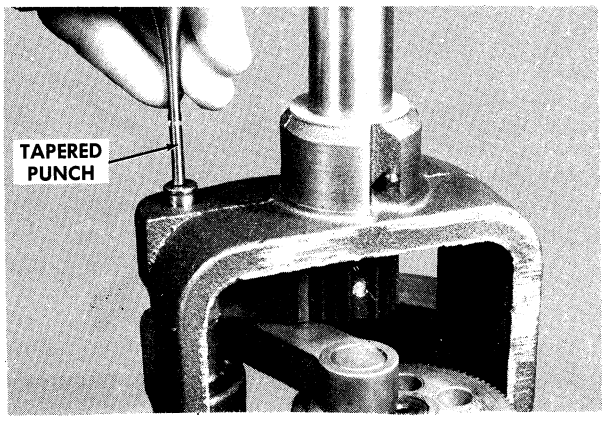


Figure 90

b. If gasket is torn replacement is required Then cover with 3M cement.
c. The oil seal in the pulley should be replaced. . See *Figure 91.*
d. The rubber or cork gasket is assembled ahead of the steel washer on the pulley shaft.
e. Tighten item 10, retaining nut securely. Do not overtighten-stripped threads could result.
f. Assemble to machine as outlined in "Transmission Removal and Installation" text.

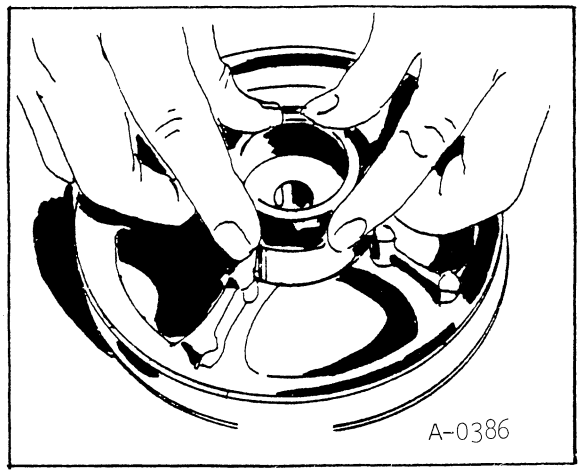


Figure 91

The upper housing has an open face ball bearing and oil seal. The oil seal is removable by placing the bottom section of the puller into the top opening of the seal. *Figure 92.* Then thread down the top half of the puller into the bottom section of tool until seal is free. Do not use a screwdriver to pry out this seal as it may damage the water seal cavity.

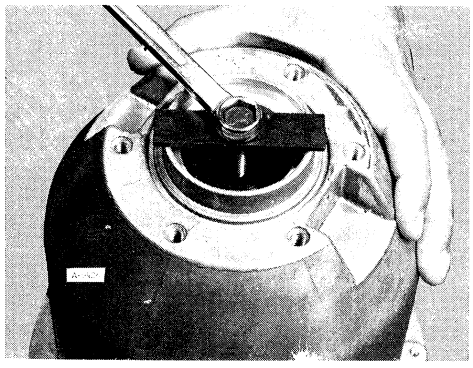


Figure 92

BEARING AND SEAL HOUSING

The bearing and seal housing assembly houses the tub seal and the ball bearing assembly.

The bellows type seal, with a carbon face, mates with the ceramic face in the hub of the spin tube, providing a water tight seal, so spinbasket can revolve inside outer tub.

The ball bearing assembly acts as a support and accepts the side-thrust of the spinbasket and mechanism during spin, to decrease noise and give smoother operation.

When replacing the seal, be sure both the seal face and the mating ring are free of all oil, grease, grit, or any substance which would cause it to bind.

Bearing Replacement , *Figure 94*, *Figure 95*.

When removing the damaged parts, use care to prevent damage to seal cavity base (breaking, scoring, etc.). The bearing surfaces must be thoroughly cleaned to assure proper seating of the new bearings. Remove old seal from housing. Check cavity for nicks and damage.

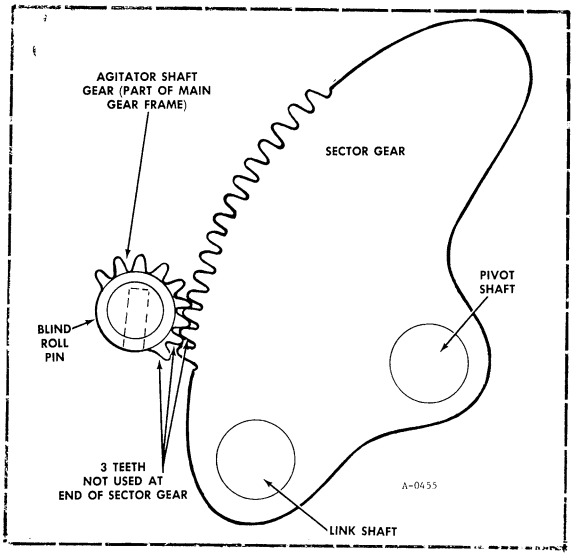


Figure 93 -

Drive the bearings out, using a large drift punch. The lower bearing must be driven down from the top and the upper bearing must be driven upwards using a bolt and nut, or pressed in with a vise or arbor press. The bottom bearing must be seated against the shoulder in the base. See *Figure 96* *Figure 97.*

SPECIAL TOOLS See *Figure 98.*

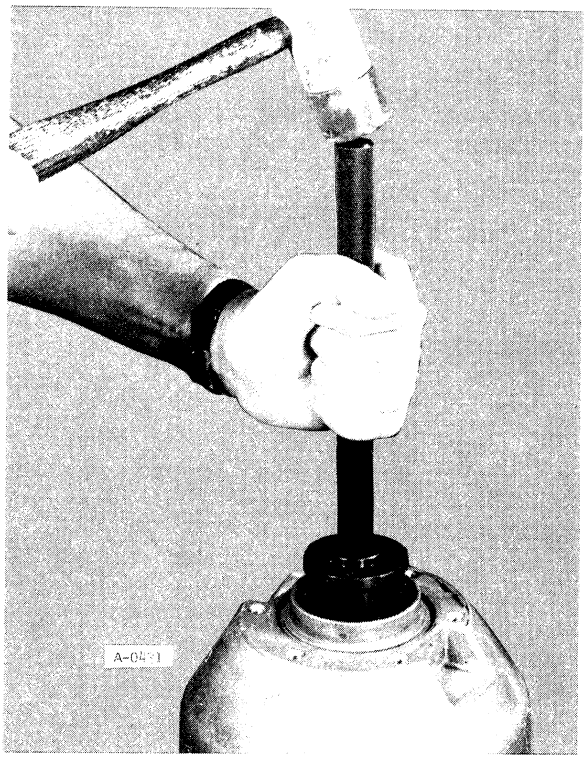


Figure 94

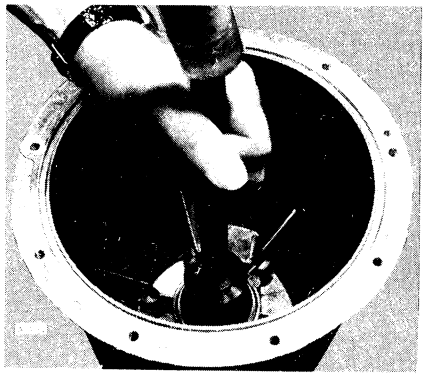


Figure 95

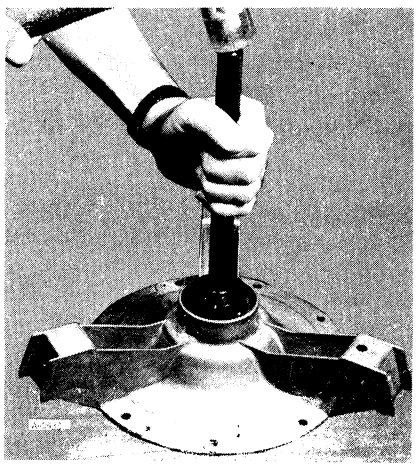


Figure 96

SPECIAL SERVICE TOOL KIT
AVAILABLE FROM
ROBINAIR MFG.
#14742

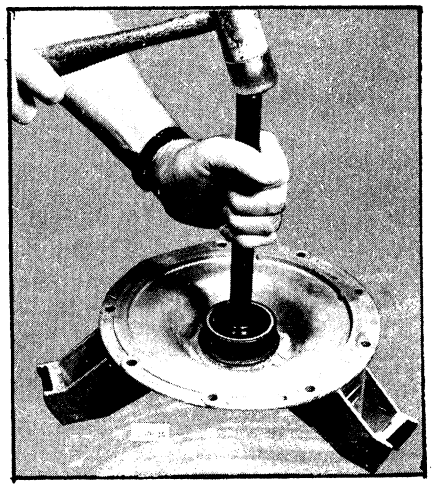


Figure 97

NOTE: LUBRICATE BEARINGS AND SEALS SLIGHTLY BEFORE INSTALLING.

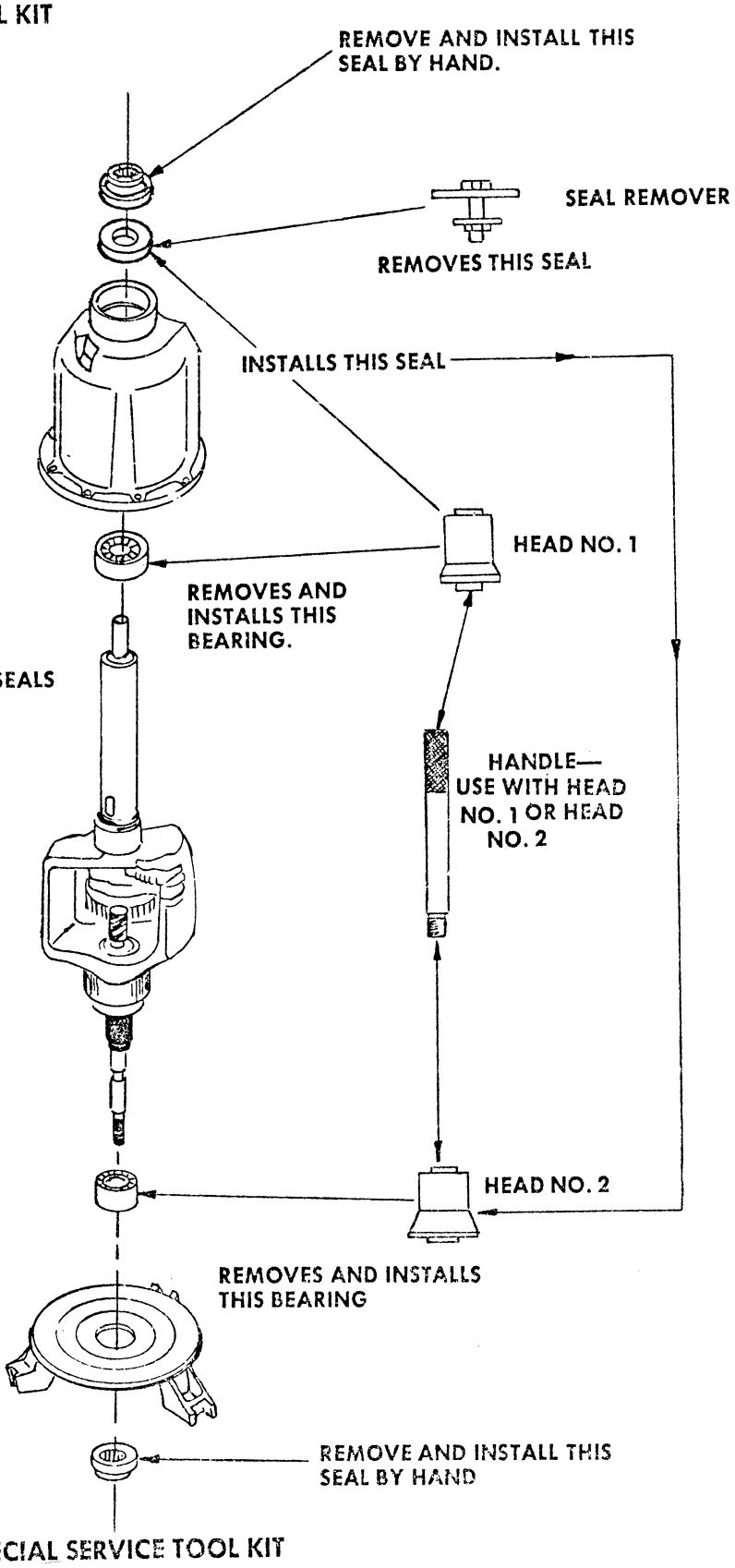


Figure 98

Support spin tub during assembly of lockplate, to prevent it from dropping down. Lift tub (with trunnion attached) from splash tub. Use care to eliminate the possibility of porcelain damage. See *Figure 99.*

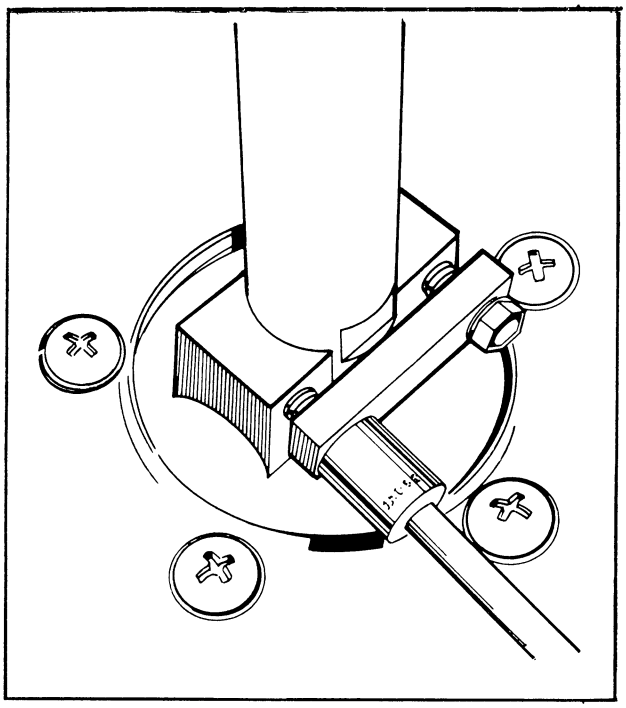


Figure 99 - Proper Position of Locking Plate

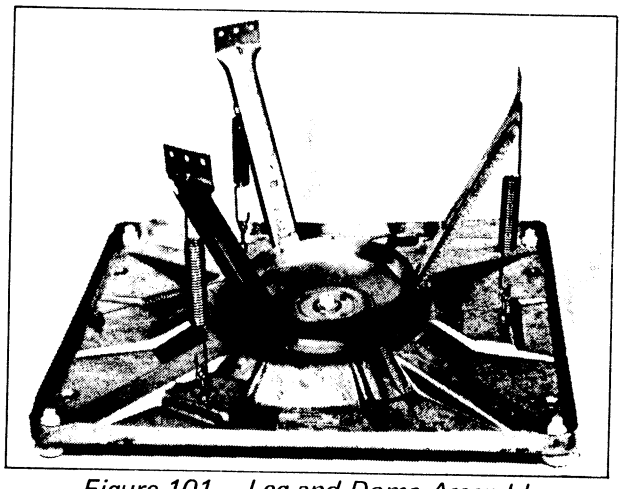
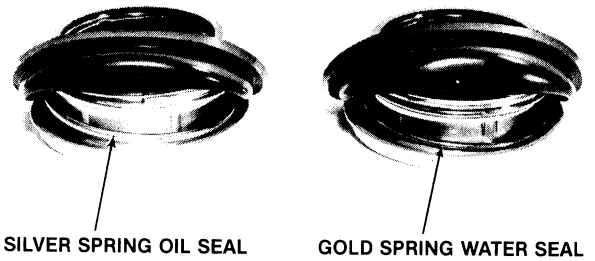


Figure 101 – Leg and Dome Assembly



Seal Identification

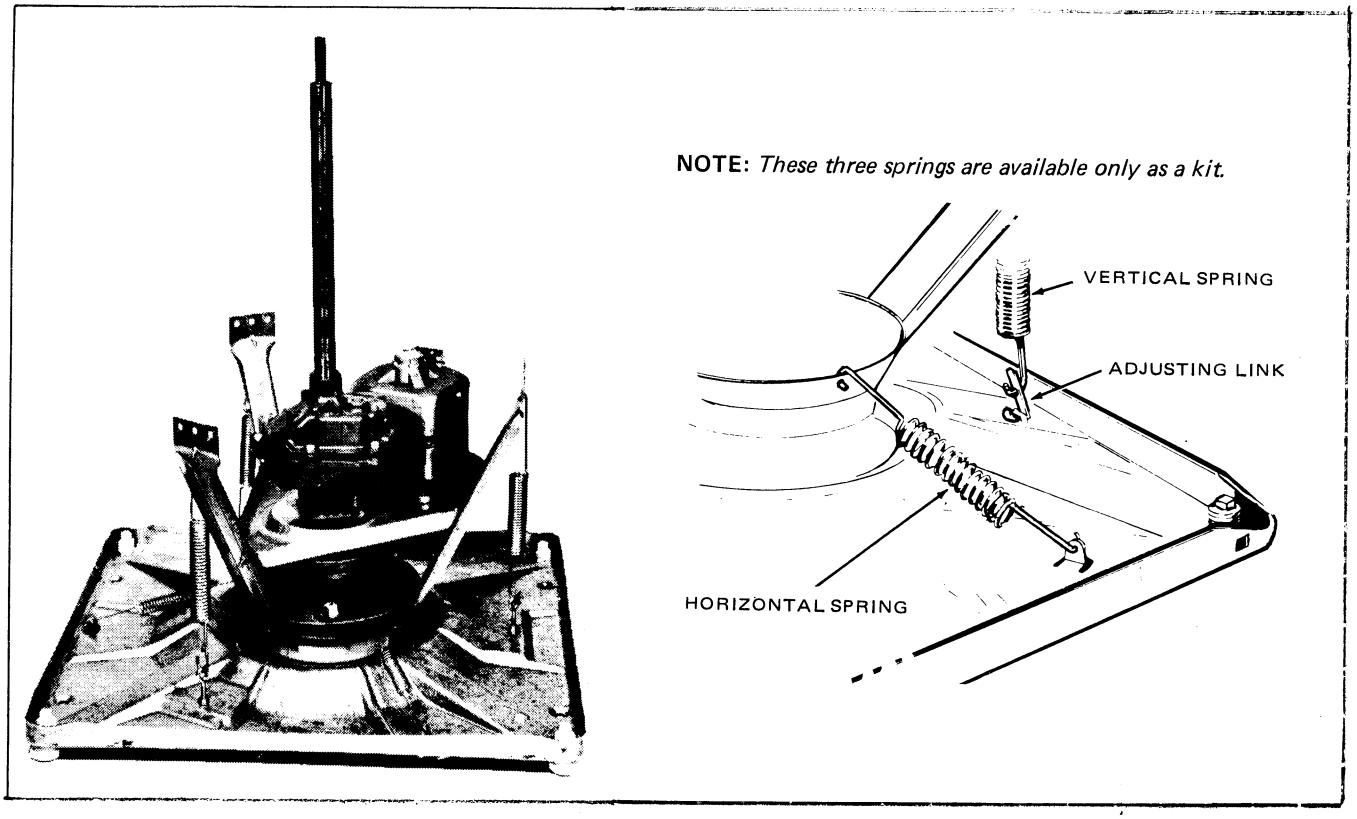


Figure 100 – Front View—Lower Mechanism

W H MODELS

SNUBBER – STABILIZER SPRINGS

Three vertical-adjustable snubber springs hook into eye-bolts, which thread into adjustable shoulder nuts in the base and to upper end of leg (leg-and-dome assembly), *Figure 100.*

The springs, a means of holding the mechanism against the snubber ring on washer base, are tensioned to resist out-of-center mechanism movement during washer operation. Also, they are adjustable to center the mechanism in the cabinet.

Three horizontal stabilizer springs which hook into dome and tabs on base aid in keeping the mechanism stable and centered on crown of base.

NOTE: The horizontal springs are available only in a set of three, Figure 101.

SPLASH TUB

The tub bearing tool, part no. FX8278, is required to remove or install the bearing-and-housing assembly.

Bearing Housing Removal Installation

1. When removing the assembly, install the tub bearing tool through the bearing-and-housing and tub bottom EXACTLY as illustrated in *Figure 102.*

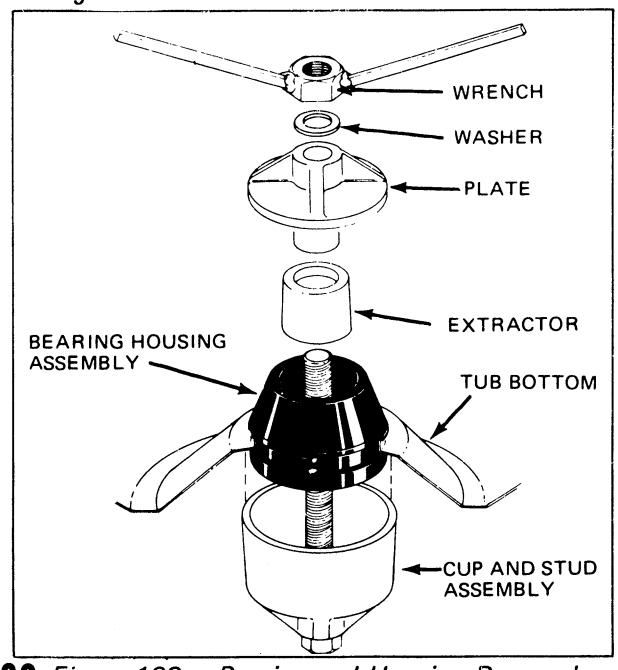


Figure 102 – Bearing and Housing Removal

2. From INSIDE the tub, turn the wrench down until the bearing housing is free of the tub.

3. Disengage the tool from the housing assembly.

4. When installing the assembly, install the tub bearing tool through the bearing-and-housing and tub bottom EXACTLY as illustrated in *Figure 103.* LIQUID SOAP MUST BE APPLIED ON THE TAPERED PART OF THE RUBBER HOUSING AS A LUBRICANT.

5. From OUTSIDE the tub, turn the wrench down until the groove in rubber housing is completely in the tub bottom opening. DO NOT OVER TIGHTEN AND CHIP PORCELAIN TUB BOTTOM.

6. Disengage the tool.

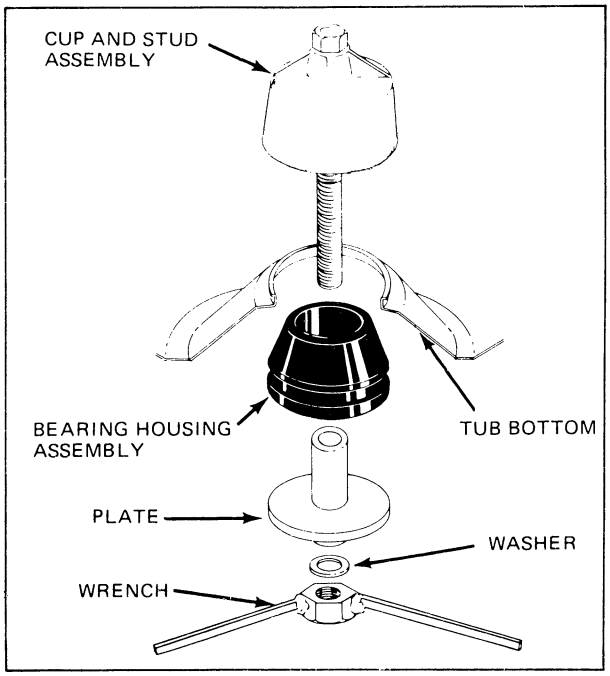


Figure 103 – Bearing and Housing Installation

Leg-and-Dome Assembly

The dome of leg-and-dome assembly, resting on the snubber ring, is the pivot point and support for the washer mechanism, *Figure 100.*

After the splash tub, transmission and support plate have been removed, the leg-and-dome, snubber ring, snubber and stabilizing springs, and base are accessible, *Figure 101.*

Leg-and-Dome Removal

1. Remove the three vertical snubber springs. Carefully pull the leg toward the spring being removed and unhook the lower end from the eye bolt.

   SPRING WITH SHORT UPPER EXTENSION IS LOCATED AT LEFT FRONT, OPPOSITE MOTOR AND PUMP.

2. Remove the three horizontal springs and lift the leg-and-dome and snubber ring off.

   NOTE: Removal of leveling legs at each corner of the base and the eye bolts from the shouldered nuts is necessary when a replacement base is to be installed.

TRANSMISSION

THE TRANSMISSION IS REPAIRED IN THE FIELD AFTER IT HAS BEEN REMOVED FROM THE WASHER.

The two piece of gear case houses the gears and connecting rod that create the 210 degree arc of agitation, *Figure 104.*

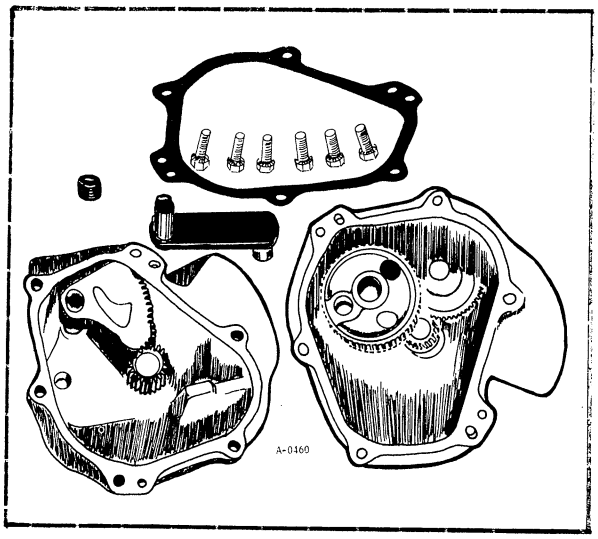


Figure 104

The gears operate in the 32 ounces of special oil. The entire counter-balanced transmission is supported and spins on the lower ball bearing in a rubber cushioned bearing housing.

CAUTION: THE SPINNING TRANSMISSION IS THE REASON FOR THE WARNING AGAINST HANDS OR TOOLS IN THE LOWER CABINET AREA WHEN THE WASHER IS OPERATING.

Operation

The small L.G.S. spring (on hub of pinion gear inside bottom of gear case), the large L.G.S. spring (on the hub at bottom outside of gear case) and another small L.G.S. spring (on hub at top of clutch pulley), work in conjunction with the clutch assembly to operate the mechanism during agitation and spin, *Figure 105.*

During agitation, the small spring inside the gear case is free running, the large spring acts as a brake (tightens to prevent gear case from revolving clockwise) and the spring on hub of clutch pulley drives by engaging a steel collar (fastened on lower shaft by a set-screw), to drive the gear train in gear case.

During spin, the small spring inside of gear case tightens on hub of gear (locks the pinion gear of lower shaft assembly to lower housing and causes the gear case to spin), the large spring on hub of gear case is free running and the small spring on hub of clutch pulley is free running on collar, so pulley can transfer torque through the plate-and-liner to the splined nut of pressure spring and drive the splined lower drive shaft assembly, to spin the complete transmission assembly counter-clockwise.

CAUTION: NEVER CONDEMN THE TRANSMISSION GEAR TRAIN OR OTHER COMPONENTS PRIOR TO A CAREFUL CHECK OF ALL DRIVE COMPONENTS.

REMOVAL OF THE TRANSMISSION IS REQUIRED FOR SERVICE ON THE TRANSMISSION SUPPORT BEARING OR LARGE L.G.S. SPRING AT BOTTOM OF TRANSMISSION AND ALL COMPONENTS INSIDE THE GEAR CASE.

Drive Component Check

DETERMINE THE SERVICE REQUIRED PRIOR TO TRANSMISSION REMOVAL FROM WASHER.

1. Remove access panel, then remove belt from drive pulley.

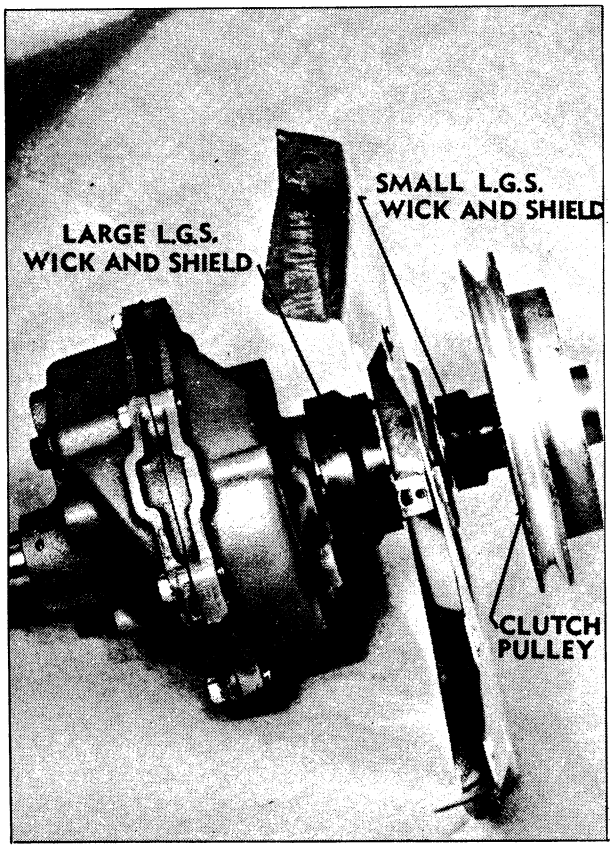


Figure 105 — Transmission Support Plate—Clutch Pulley

2. Attempt to turn gear case in both directions. Large L.G.S. spring MUST act as a brake in clockwise direction. The gear case MUST revolve freely counter-clockwise and drive the spin tub.

   NOTE: Bearing failures, lower bearing in support plate or bearing housing will create resistance in the spin direction.

3. Turn clutch pulley in both directions.

   Pulley should run free counter-clockwise and operate the gear train for agitation, in a clockwise direction.

   NOTE: Locked or damaged gears in transmission will be evident when turning pulley clockwise. Should the pulley run free in clockwise direction without gear train interference or movement, the small L.G.S. spring on pulley hub is not driving.

4. Remove locknut, pressure spring and plate-and-liner from lower drive shaft assembly. Then, slip only the pressure spring assembly on splined portion of lower drive shaft and attempt to turn shaft in both directions. When pressure spring is turned counter-clockwise, transmission should revolve without gear train movement, otherwise, the small L.G.S. spring inside transmission is slipping and is not locking the pinion gear. When pressure spring is turned clockwise, the gear train should operate without transmission movement.

ONLY AFTER A CAREFUL CHECK OF THE COMPONENTS AS OUTLINED, PROCEED WITH THE REQUIRED REPAIRS.

Transmission Removal

1. Remove all required components as outlined under the required items in this section.

2. Remove screws and nuts that fasten the support plate to the legs of leg-and-dome assembly. Lift the complete transmission, support plate, motor and pump out, and lay it on one side, *Figure 106.*

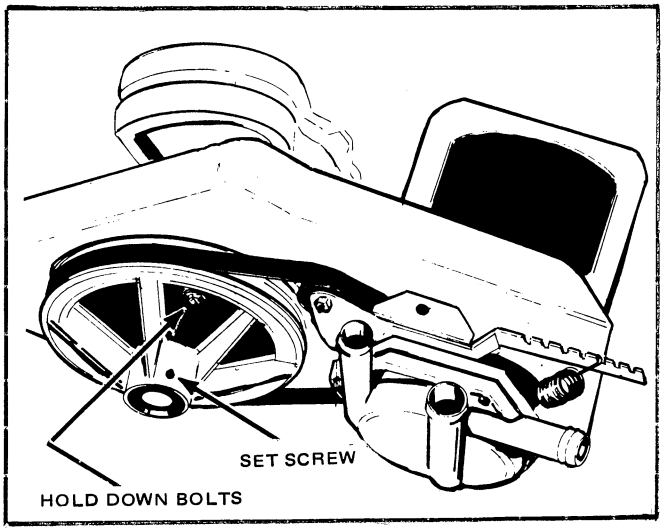


Figure 106

3. Run the belt off the clutch pulley.

4. Remove the locknut, flat washer, pressure spring and plate from lower end drive shaft, if not previously removed.

5. Remove snap (retainer) ring (No. 22 Truarc type external pliers) from the shaft, also the spacer and thrust washer. Carefully remove the clutch pulley by turning it clockwise, then pull it off.

   Note the location of spacer and thrust washers above retainer ring, inside lower hub of pulley, for proper reassembly.

6. Remove L.G.S. spring rubber shield and wick from hub at top of pulley. Turn spring counter-clockwise and pull it off.

7. Remove thrust washer, then the collar fastened on shaft with a set-screw. Also, thrust the spacer washers above collar.

   NOTE: THE LOCATION OF SPACER AND THRUST WASHERS FOR REASSEMBLY. PLACE A FILM OF F77836-1 GREASE ON SURFACE OF ALL THRUST AND SPACER WASHERS PRIOR TO REASSEMBLY.

8. Remove transmission from support plate for access to the housing, ball bearing, large L.G.S. spring rubber shield and wick from lower end of transmission, *Figure 107.*

   REMOVE SNAP (RETAINER) RING FROM TUBE OF LOWER HOUSING BELOW BALL BEARING.

9. Remove rubber cushion from housing. Then, turn the housing counter-clockwise and pull it off. All parts on hub of gear case will usually come off with the housing as an assembly. The center race of bearing may stick on the steel tube. Tap LIGHTLY on each corner of housing and pull. See *Figure 108.*

   THE BALL BEARING IS A FINGER PRESS FIT IN THE HOUSING, HELD IN PLACE WITH A WIRE OR SNAP (RETAINER) RING

Where grease is recommended use No. 907 Lubriplate grease. Where oil is recommended use SAE-30 non-detergent automobile motor oil.

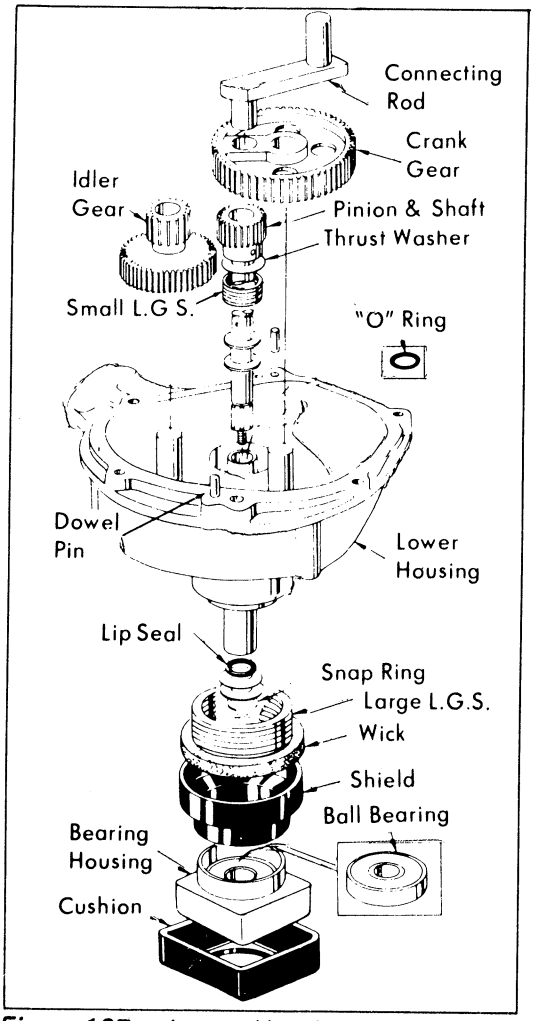


Figure 107 – Lower Housing and Related Parts

(NO. 23 TRUARC TYPE INTERNAL PLIERS).

When either the bearing or housing is to be replaced, use only fingers to remove the bearing or return it to housing.

Transmission Hold-Down

The hold-down is accomplished by the use of two bolts, two spacers, two rubber washers and two steel washers. The self threading bolts extend up through the washers, spacers, support plate and cushion, into the housing.

Transmission Disassembly

DURING A TRANSMISSION REPAIR, CAREFULLY EXAMINE EACH COMPONENT FOR WEAR, SCORED SHAFTS AND OTHER DAMAGE. REPLACE ALL DAMAGED PARTS, ALSO GASKET, LOWER LIP SEAL AND "O" RING.

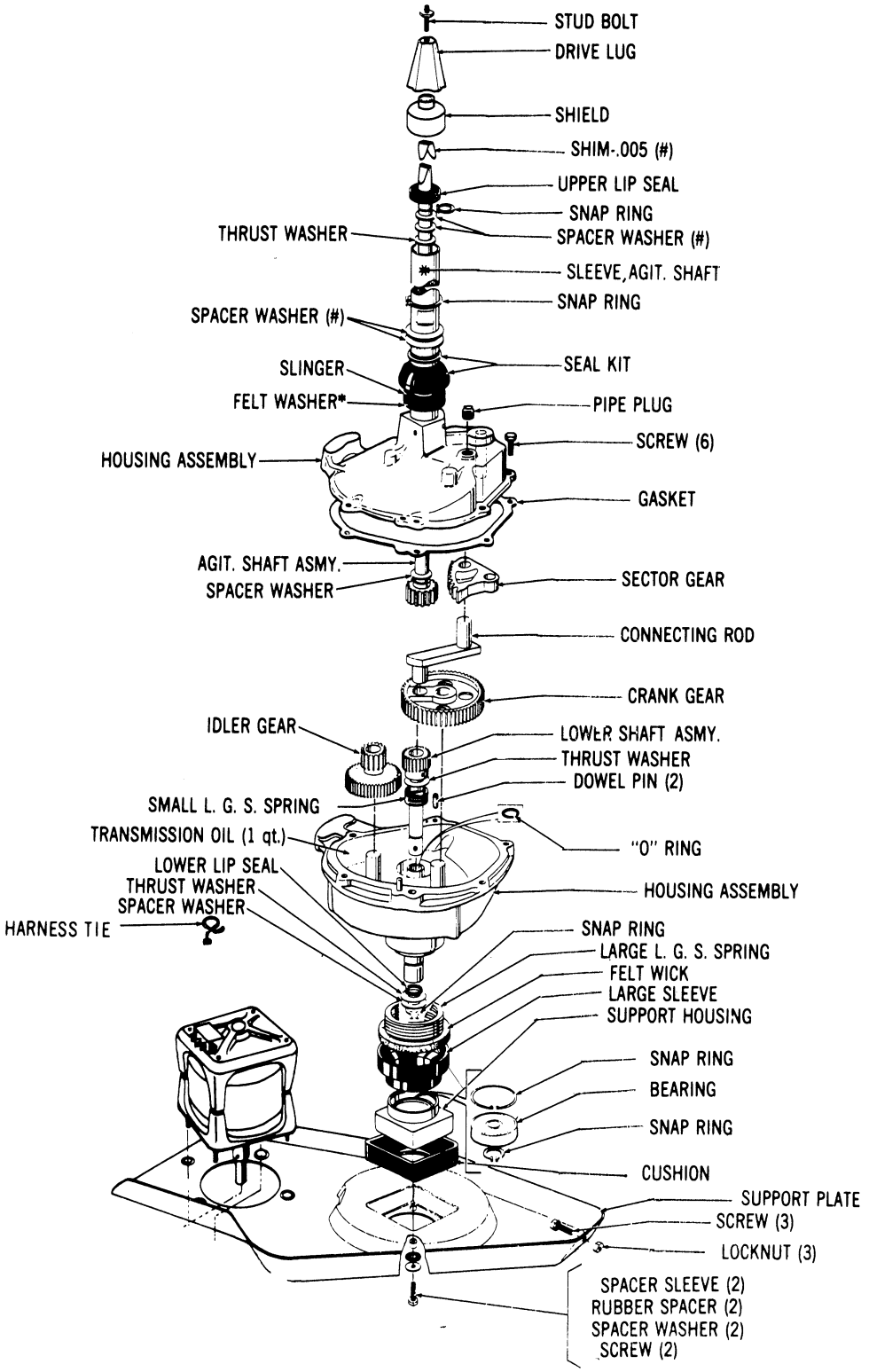


Figure 108 — Transmission

1. Remove hex socket plug (use 5/16 Allen type hex-key-wrench) from the top of the transmission housing and drain oil (32 ounces) from the unit.

2. Remove six screws and separate the housings, *Figure 109.*

   NOTE: Some oil will remain in housings, use caution when they are separated.

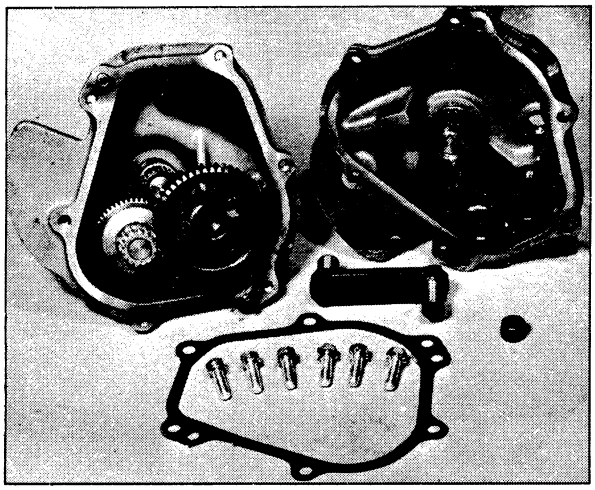


Figure 109 — Transmission Housing Separated

3. Remove the sector gear, connecting rod, crank gear and idler gear from their respective housings.

   THE SECTOR AND CRANK GEARS ARE SUBJECT TO IMPROPER POSITIONING DURING REASSEMBLY. BE SURE AND OBSERVE THE POSITION OF THE SECTOR GEAR. THE OIL RESERVOIR WITH DRILLED OIL PASSAGE TO CONNECTING ROD MUST BE UP FOR PROPER LUBRICATION. HOUSING CANNOT BE BOLTED TOGETHER IF CRANK GEAR IS INVERTED.

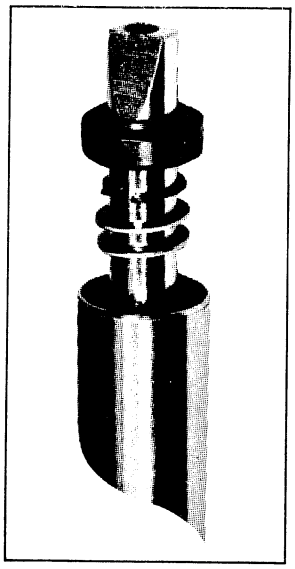


Figure 110 — Spin Shaft Seal

4. Remove lip seal from upper end of spin shaft and snap (retainer) ring no. 22 Truarc type external pliers) from the upper end of the agitator shaft. Pull the shaft assembly out of spin shaft. See *Figure 110.*

   NOTE: Steel spacer washers (as required to control end play to a maximum of .012 inches) and one stainless steel thrust washer are located in the upper cavity of the spin shaft, Figure 110.

5. Remove the snap (retainer) ring, spacer washer and thrust washer from lower housing drive shaft. Carefully pull drive shaft up out of tube in lower housing. Turn clockwise to disengage L.G.S. spring.

   NOTE: A bronze thrust washer is located between pinion gear and tube inside of lower housing. It MUST be properly positioned on reassembly. Two .030 spacers are located around tube in housing under L.G.S. spring.

DRIVE LUG, *Figure 111.*

The drive lug, fastened at top of agitator drive shaft with a stud bolt, effects drive for the agitator and is a means of adjusting clearance between bottom edge agitator and tub bottom.

Adjust agitator height with shims under drive lug, as reqired for a minimum clearance of 3/16" and a maximum clearance of 5/16". The minimum clearance is critical.

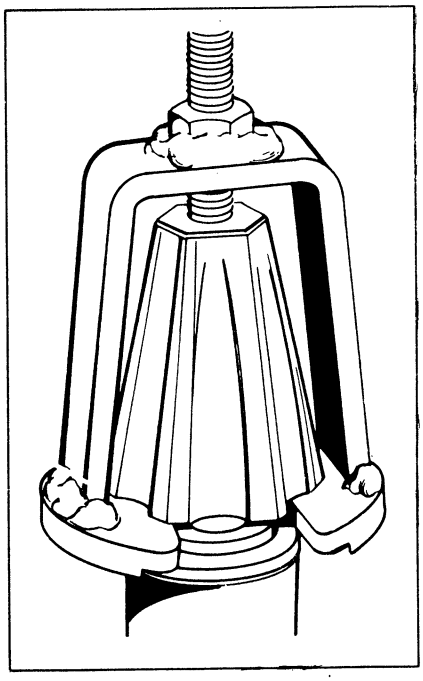


Figure 111 – Drive Block

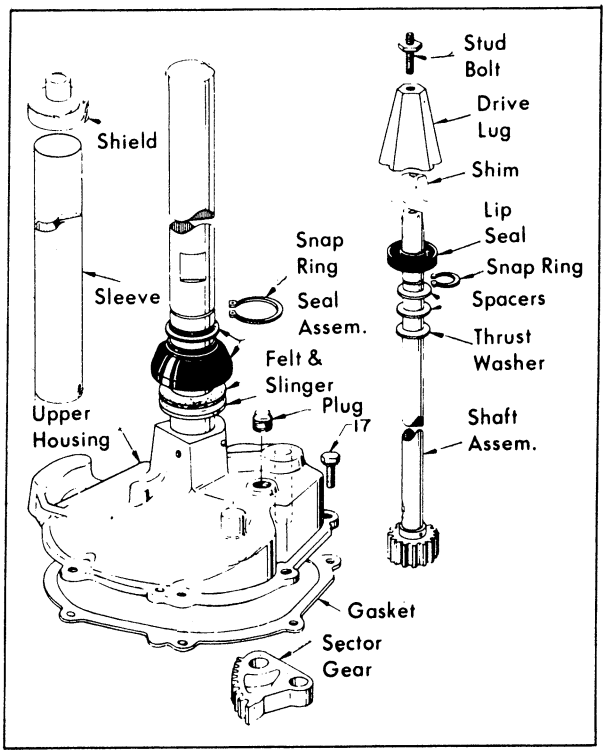


Figure 112 – Upper Housing – Related Parts

HOUSING AND SEALS

The upper spin shaft, which has two bronze bearings, is pressed into and is a part of the upper housing assembly, See *Figure 112.*

NOTE: The replacement housing and spin shaft assembly does not have the lip seal installed. It is considered a separate part.

The upper lip seal can be replaced by removing the drive lug. Pry seal out with a sharp pointed awl.

NOTE: The F78364 seal installation tool is required to install a new seal. It must be driven firmly into position.

A steel tube is pressed into and is part of the lower housing assembly. It contains three bronze bearings, an "O" ring and a lip seal.

A new replacement lower housing has all bearings, the "O" ring and lip seal in place. A new gasket, new oil and new seals SHOULD be used when the transmission is disassembled for repair.

IDLER ARM CLUTCH OPERATION

The idler arm clutch consists of a special motor pulley designed to disperse heat, a mechanism pulley, and an idler arm with a pulley on one end, and a spring on the other, which pivots on a pump spacer. Two spacer washers must be installed on each side of the idler arm, *Figure 113.*

The idler arm clutch serves two purposes; first, it is a positive drive during agitation and, secondly, a variable speed drive during spin. The clutch allows slow speed-up while the water is being extracted and, during an extreme-out-of-balance load, it allows the tub to spin at reduced speed through the entire spin cycle. This dual function results from the direction of drive. The direction of pull is across the idler pulley during the spin cycle and from pulley to pulley in the agitate cycle.

IDLER ARM CLUTCH

The mechanism consists of the following major components. *Figure 113.*

1. A trepanned motor pulley, which reduces heat transfer to the motor shaft and pump impeller.
2. A ventilated transmission drive pulley, which is attached to the transmission shaft with a set screw.
3. A spring loaded belt tension idler arm, with a ball bearing roller.

The drive mechanism provides positive drive in agitation, and variable speed drive in spin. This dual drive function is a result of the direction of drive. In

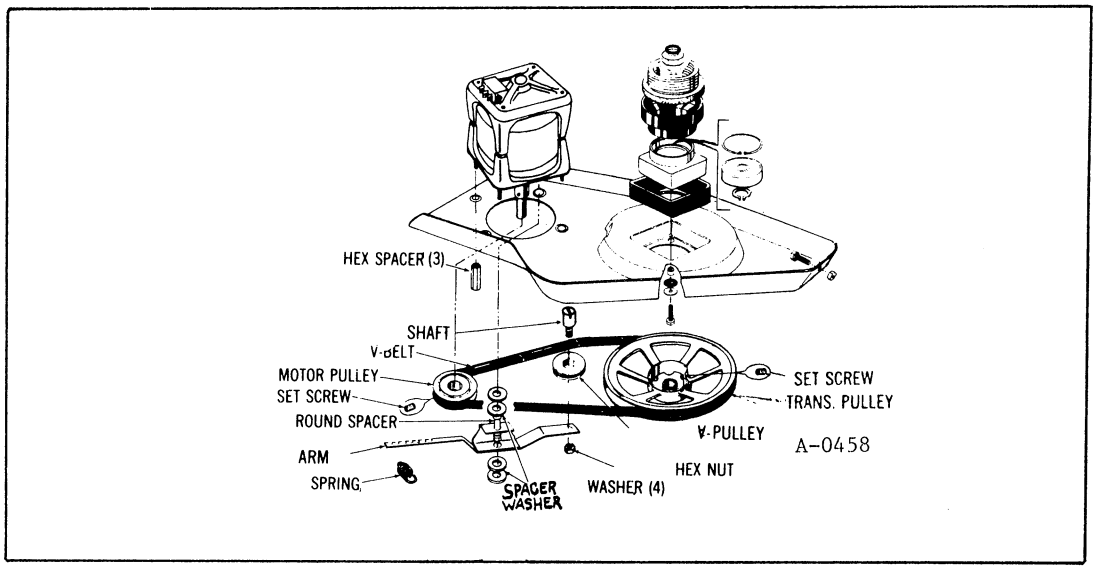


Figure 113

agitation, the direction of pull is from pulley to pulley. This causes the belt to ride tight in the pulleys and provide positive drive. In spin, the direction of pull is across the spring loaded idler arm roller. The idler arm "senses" the load and controls belt tension to provide a gradual increase in spin speed as water is extracted. With an extreme out-of-balance load, the tub will spin at reduced speed throughout the spin cycle. This permits the washer to complete the full cycle.

Proper operation of the drive mechanism is dependent on correct calibration of the idler arm tension spring.

NOTE: Make all measurements with power off, after running machine in agitation.

IDLER ARM CLUTCH ADJUSTMENT

1. To adjust the clutch, install the spring in number (4) four slot in idler bar (notch nearest pivot point is number (1) one). See *Figure 114.*
2. Using Spring Gauge, insert slotted end onto the pump spacer where the idler spring is located.

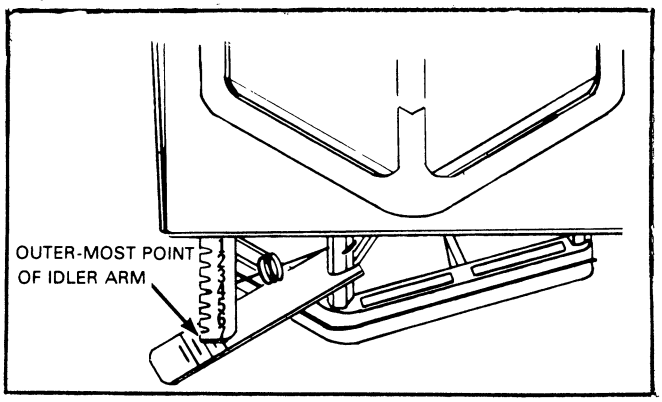


Figure 114

The number 1 hole is the nearest the front of the gauge.

3. Move the tool to the OUTER-most point of idler arm until the outer end of idler arm is centered in one of the holes or lines in the tool. THIS HOLE OR LINE INDICATES WHICH SLOT THE IDLER SPRING SHOULD BE HOOKED INTO ON THE IDLER ARM.

IMPORTANT: Keep in mind that the number sequence on the idler arm is exactly reversed from that of the spring gauge. The outer-most slot on the idler arm is No. 7, whereas the outer-most hole or line on the gauge is No. 1.

During operation, the belt must ride fully on idler roller in both directions of rotation. If it does not, replace the idler arm.

When assembled to the round pump spacer, the idler arm *MUST* have two spacer washers both above and below the arm. Lightly grease the spacer washers to prevent noise.

SECTION 2

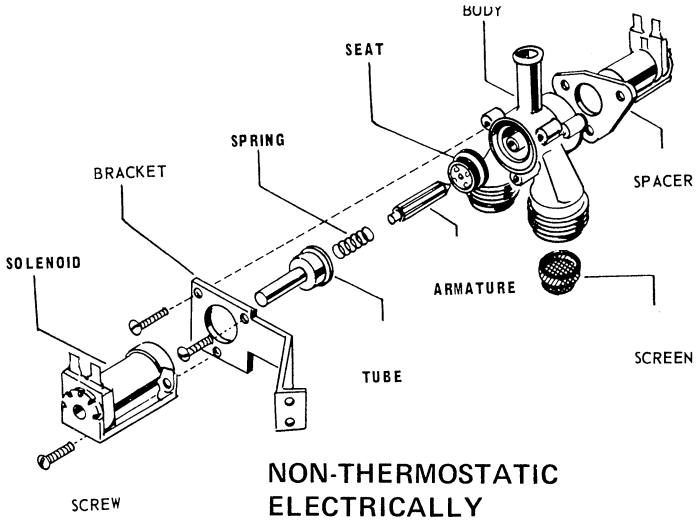
PART D: PARTS LIST

PARTS LISTS

The following part lists are representative of the majority of the most popular parts used in servicing WESTINGHOUSE automatic washers. Mainly, they are shown as an aid in assembly sequence and to show the nomenclature of the various parts.

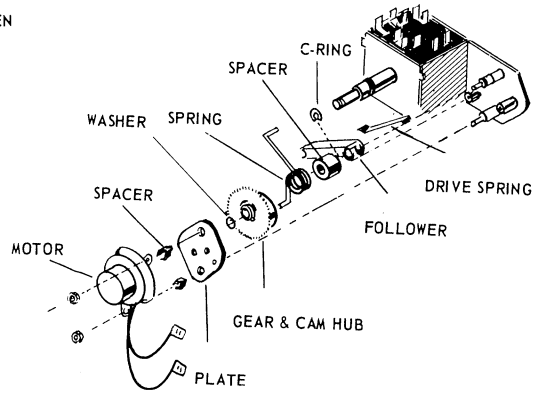
When ordering parts always give the full model and serial number of the washer. These numbers are found on a metal identification plate on the back of the machine.

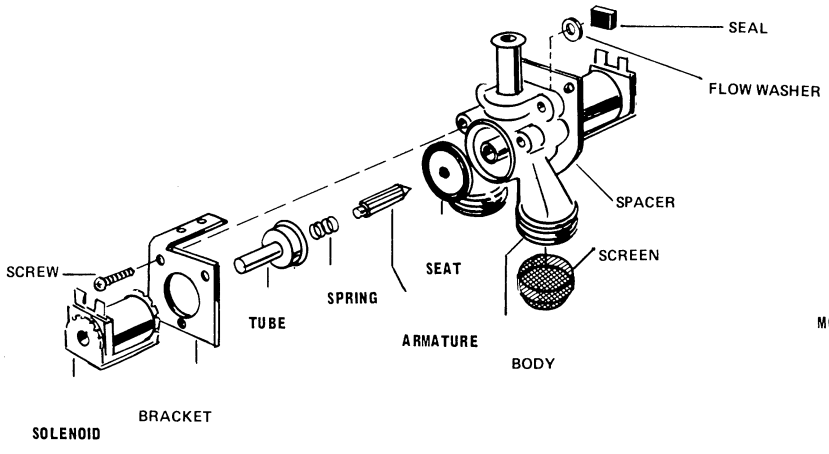
Mix Valve & Timer Assys.



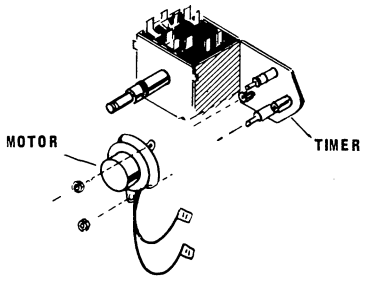
NON-THERMOSTATIC
ELECTRICALLY
CONTROLLED
SOLENOID FILL VALVE

BLADE SPRING DRIVE,
TIMER DESIGN



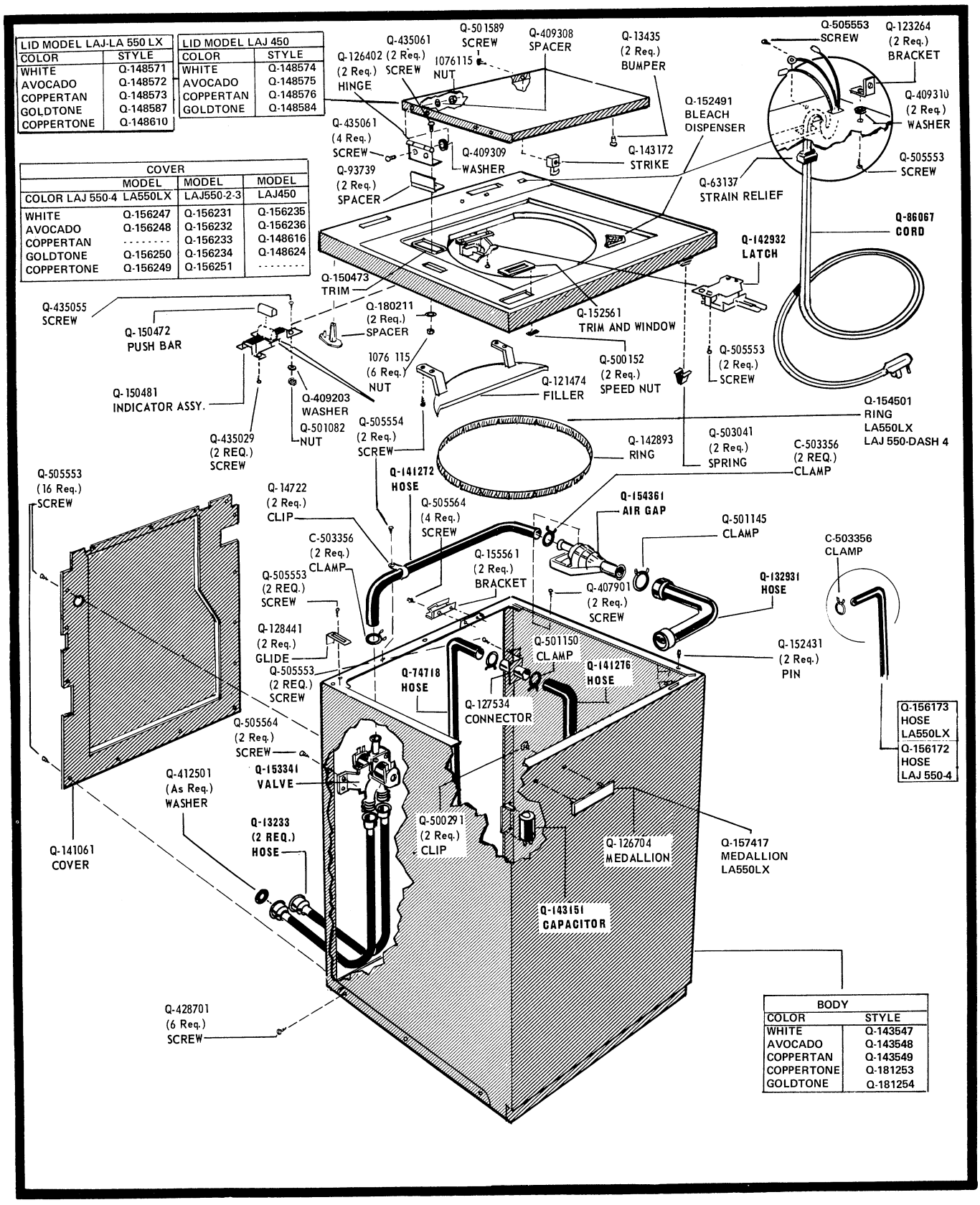


CONSTANT SPEED
TIMER DESIGN

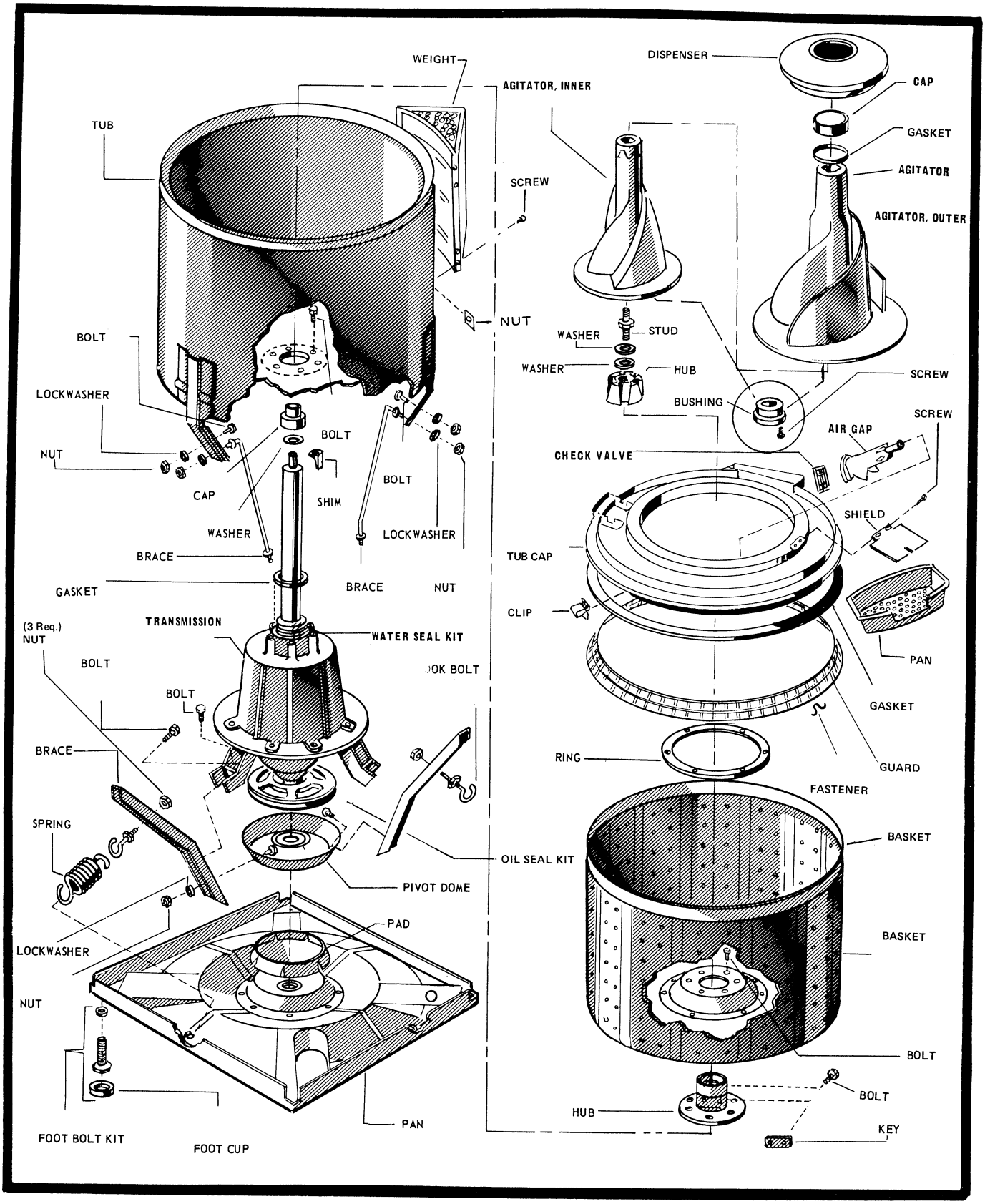


TIME FILL VALVE DESIGN
(Electrically Control With Timer)

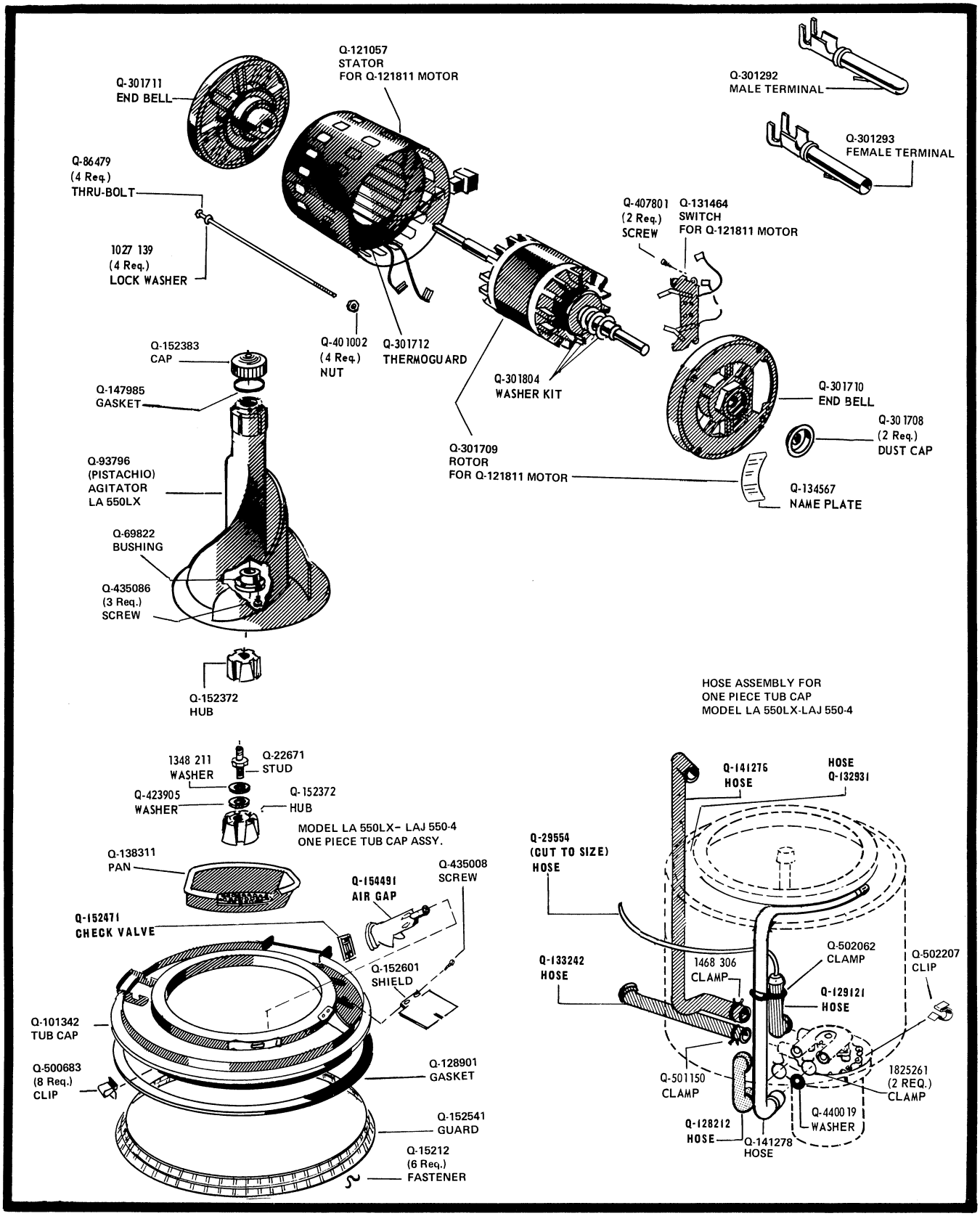
Lid, Top Cover, & Body Assy.

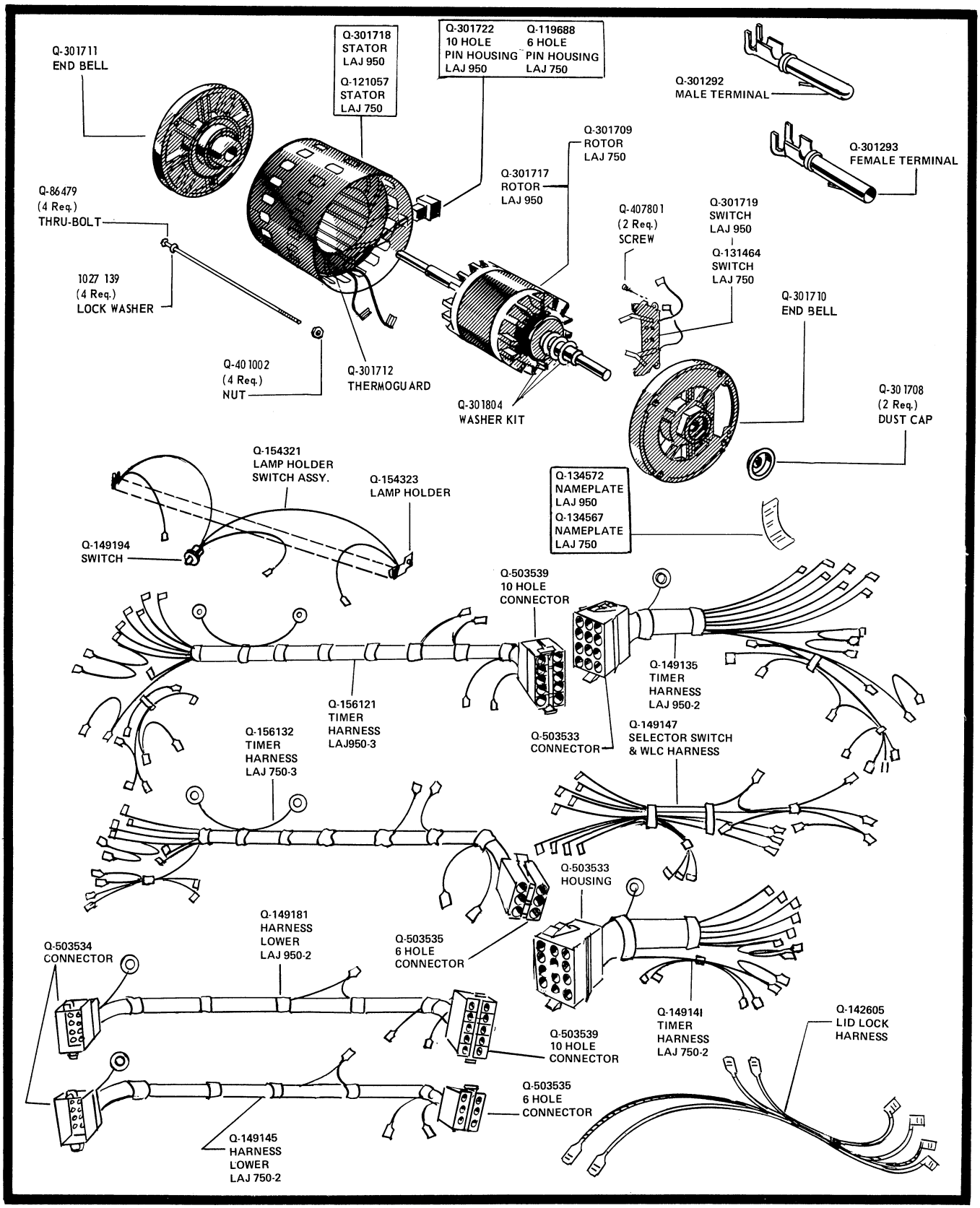


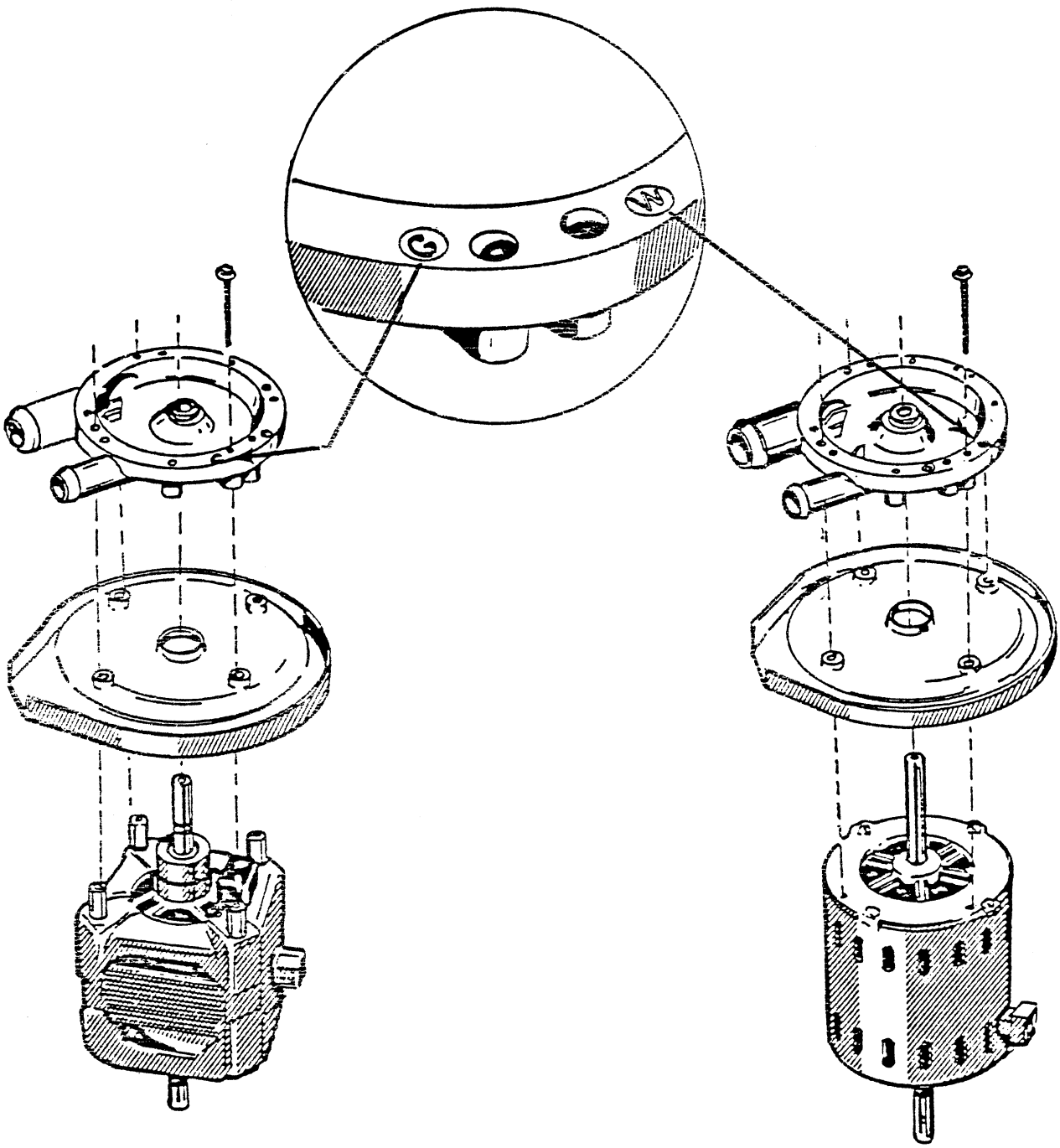
Tub, Transmission & Spinner Basket Assy.



Motor Parts, One Piece Tub Cap, Agitator & Hose Assemblys




Q-301711
END BELL
Q-301718
STATOR
LAJ 950
Q-121057
STATOR
LAJ 750
Q-301722
10 HOLE
PIN HOUSING
LAJ 950
Q-119688
6 HOLE
PIN HOUSING
LAJ 750
Q-301292
MALE TERMINAL
Q-301293
FEMALE TERMINAL
Q-301709
ROTOR
LAJ 750
Q-301717
ROTOR
LAJ 950
Q-86479
(4 Req.)
THRU-BOLT
1027 139
(4 Req.)
LOCK WASHER
Q-401002
(4 Req.)
NUT
Q-301712
THERMOGUARD
Q-301804
WASHER KIT
Q-407801
(2 Req.)
SCREW
Q-301719
SWITCH
LAJ 950
Q-131464
SWITCH
LAJ 750
Q-301710
END BELL
Q-301708
(2 Req.)
DUST CAP
Q-154321
LAMP HOLDER
SWITCH ASSY.
Q-154323
LAMP HOLDER
Q-149194
SWITCH
Q-134572
NAMEPLATE
LAJ 950
Q-134567
NAMEPLATE
LAJ 750
Q-503539
10 HOLE
CONNECTOR
Q-149135
TIMER
HARNESS
LAJ 950-2
Q-156121
TIMER
HARNESS
LAJ950-3
Q-156132
TIMER
HARNESS
LAJ 750-3
Q-503533
CONNECTOR
Q-149147
SELECTOR SWITCH
& WLC HARNESS
Q-503533
HOUSING
Q-149181
HARNESS
LOWER
LAJ 950-2
Q-503534
CONNECTOR
Q-503535
6 HOLE
CONNECTOR
Q-149141
TIMER
HARNESS
LAJ 750-2
Q-503539
10 HOLE
CONNECTOR
Q-142605
LID LOCK
HARNESS
Q-503535
6 HOLE
CONNECTOR
Q-149145
HARNESS
LOWER
LAJ 750-2

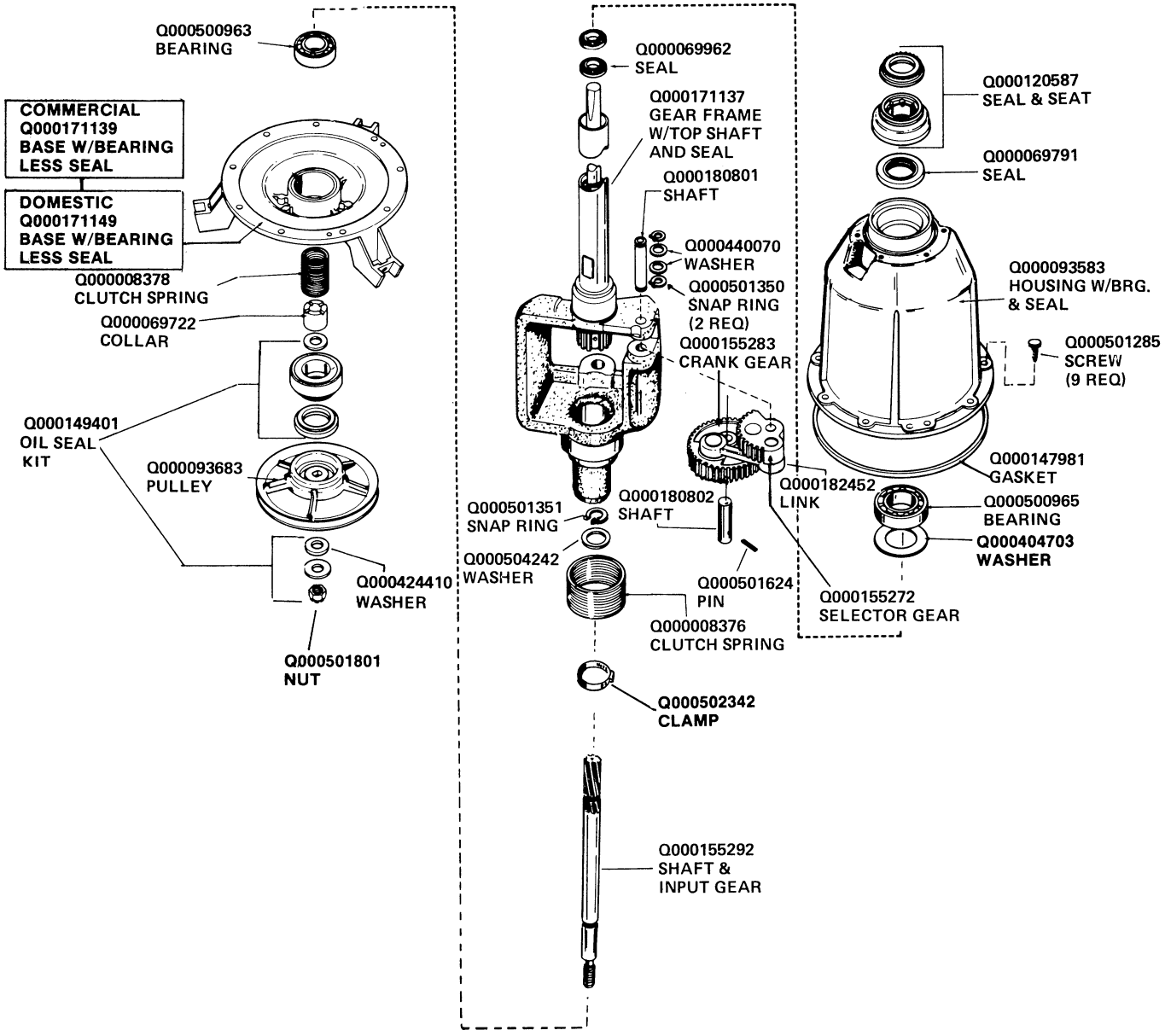


G.E. Motor

Westinghouse
Motor

As shown in the above illustration, when using a Westinghouse motor, align the holes with the "W" mark on pump body. When a General Electric motor is used, align the holes for the motor screws with the "G" mark on the pump body. The hose connections will be properly aligned if the pump body is installed correctly.

**DOMESTIC AND COMMERCIAL
TRANSMISSION PARTS**

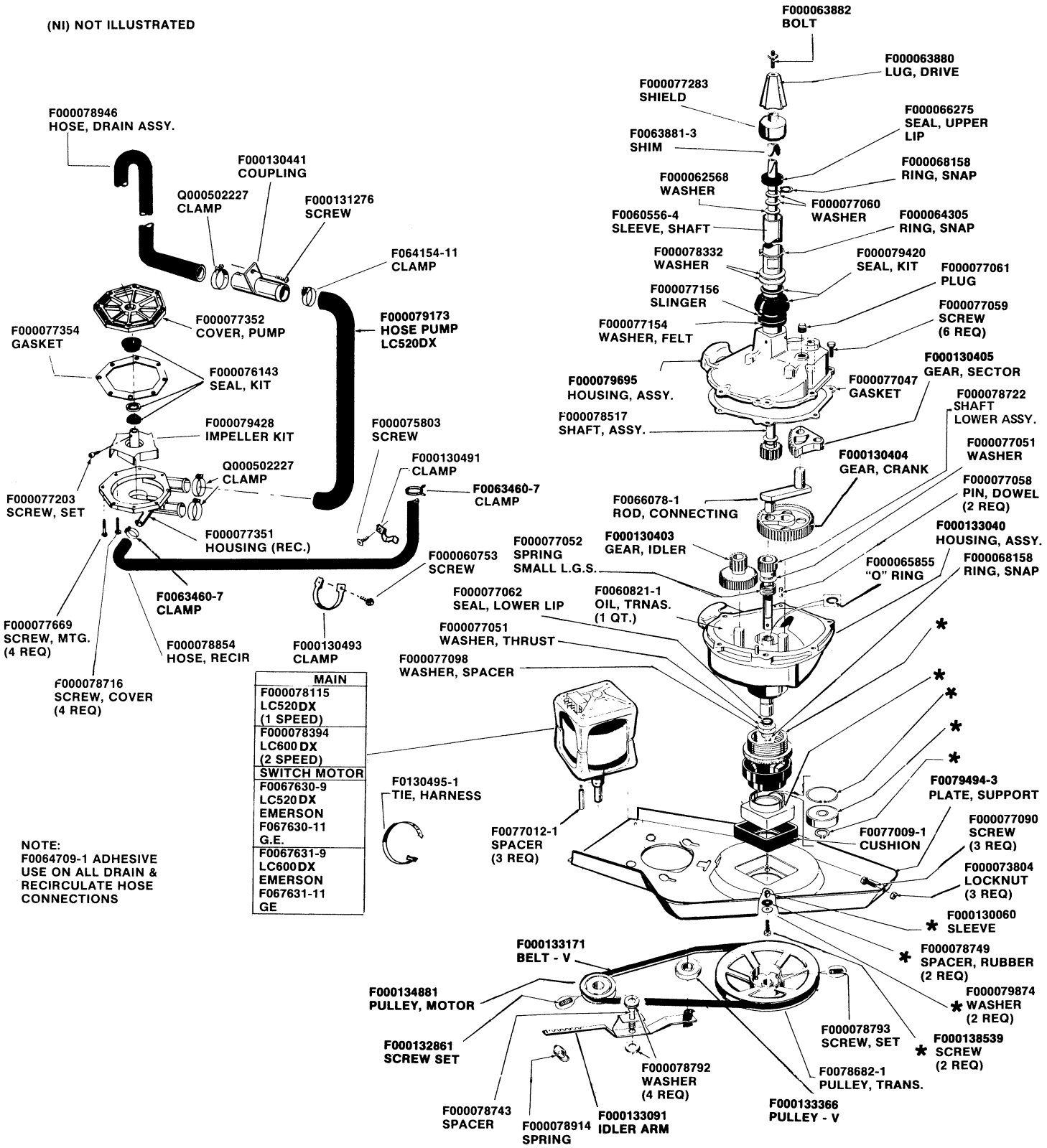


(NI)F0130495-1
CABLE TIE, DRAIN HOSE
TO RECIRC. HOSE
(NI)F0130491-3
CLAMP DRAIN
HOSE TO TUB

(NI) NOT ILLUSTRATED

*F000137014 BEARING HSG ASSY.
CONSIST OF ALL PARTS WITH *

NOTE
F0130416-1
TRANSM. COMPL.



MAIN
F000078115 LC520DX (1 SPEED)
F000078394 LC600DX (2 SPEED)
SWITCH MOTOR
F0067630-9 LC520DX EMERSON F067630-11 G.E.
F0067631-9 LC600DX EMERSON F067631-11 GE

NOTE:
F0064709-1 ADHESIVE
USE ON ALL DRAIN &
RECIRCULATE HOSE
CONNECTIONS

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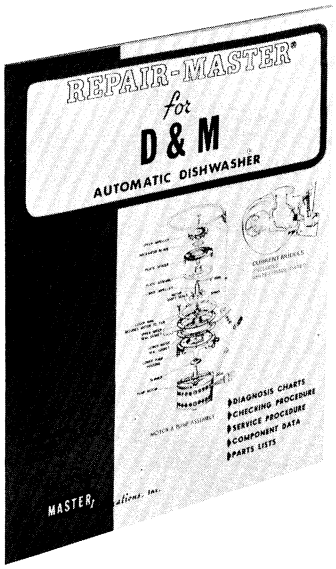

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9005 Westinghouse Front Loading
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9012 Speed Queen
9015 Norge – Plus Capacity
9016 Frigidaire Roller-Matic
9017 Westinghouse Top Loading

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5553 Kitchenaid
5554 Westinghouse
5555 D & M
5556 Whirlpool
5557 Frigidare

CLOTHES DRYERS

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8053 Hamilton
8055 Maytag
8056 Westinghouse
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8059 Frigidaire

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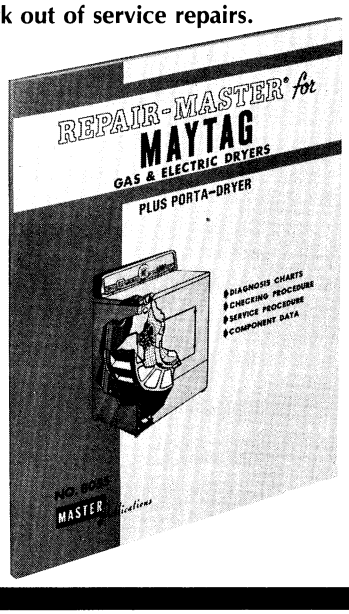

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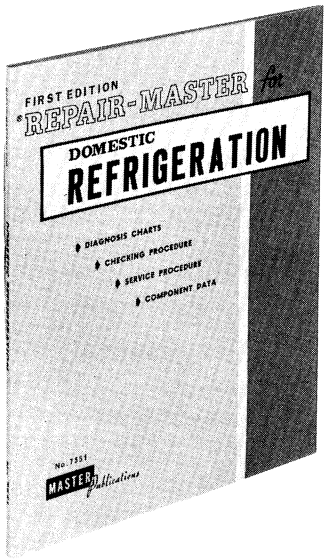

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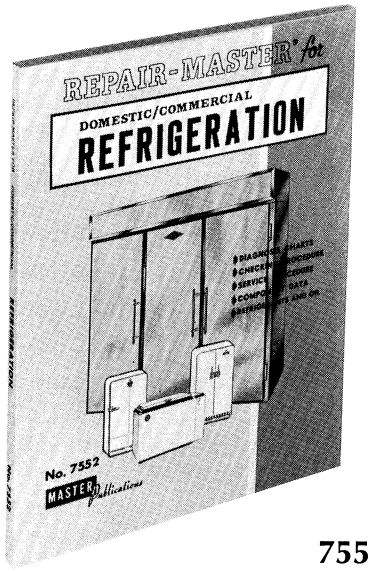

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