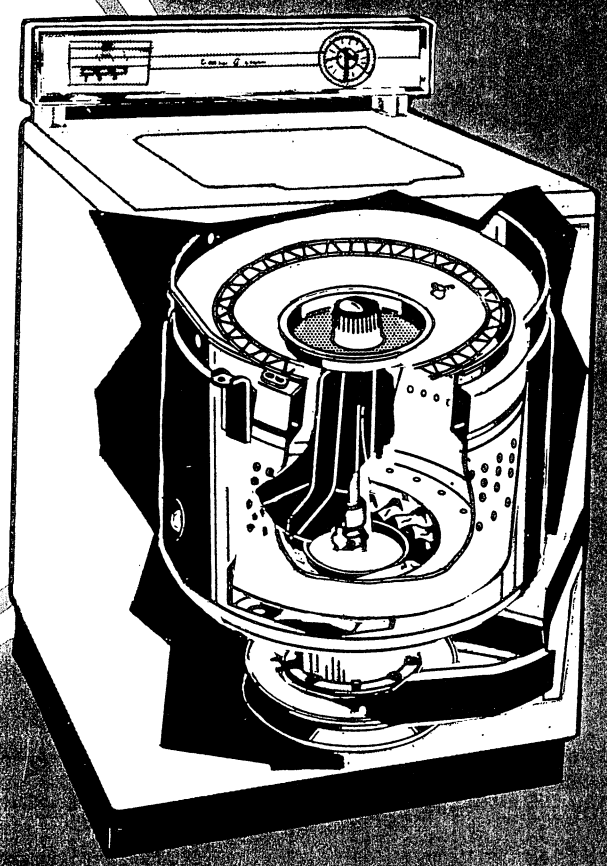
ASTER® *for...*

GENERAL ELECTRIC

AUTOMATIC WASHERS

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



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REPAIR-MASTER for..

GENERAL ELECTRIC

AUTOMATIC

WASHERS

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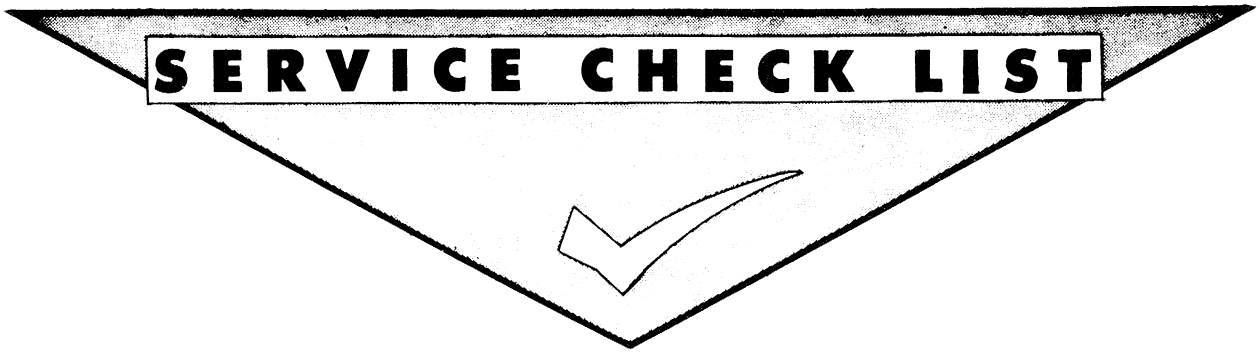


The following diagnosis chart is intended to be only a starting point in proceeding with the servicing of automatic washers. The diagnosis chart can only deal in generalities; to effectively service any appliance, the serviceman must thoroughly understand the mechanical functions and electrical circuitry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

WHEN USING TEST EQUIPMENT APPLIANCE IS

GENERAL

The complaint-remedy chart is intended to be only a starting point in proceeding with the servicing of automatic washers. It is *NOT* intended to substitute for acquiring basic knowledge of the operation of all electrical and mechanical components of the washer and of how the electrical circuits integrate these components.

The basic knowledge must be acquired through study of the mechanical, electrical and water systems sections of this manual. If the serviceman has this knowledge, he will have little need to refer to the complaint-remedy chart. The various causes of and corrections for different complaints will be self-evident to him, except where special parts are listed under *"Corrections"*. The complaint-remedy chart can deal only in generalities; to effectively service the appliance, the serviceman must thoroughly understand its operation and circuits — not just be a *"parts changer"*.

Before starting any work, the following points should be checked:

COMPLAINT — REMEDY CHART

1. There must be power to the washer. Check to see that the plug is in, that the wall switch is on, that a fuse is not blown, that a circuit breaker is not open.
2. There must be water supplied to the washer. Check that both faucets are turned on, and that there is water supplied to the faucets.
3. If water is too hot or too cold, be sure that the appropriate selection switches are set to the desired temperatures, and check the water heater thermostat to be sure it is set for 140°F. to 150°F. Also check that the water inlet hose connections are not reversed.
4. The control knob must be pulled out to its *ON* position before anything in the washer will operate — except for the fluorescent lamp and dial light.
5. Drain and suds saves return hoses must not be kinked for proper operation.
6. Water will not recirculate through the Filtro-Flo nozzle when the basket is not full — when the water saver button has been depressed.

COMPLAINT	CAUSE	REMEDY
FILLING		
1 Wash water does not enter	Inoperative control	Check circuit through receptacle with test prongs.
	Open circuit in harness to water valve solenoid(s)	Check with continuity tester.
	Clogged valve screen(s)	Clean or replace.
	Inoperative Selector Switch	Replace.
	Inoperative water valve solenoid(s)	Replace.
	Water valve allows water to enter tub during period machine is not in use, causing level switch or water pressure switch to move to *OFF* position, check by moving cycle control to spin dry position.	Clean or replace water valve assembly.
	Water not pumped out of tub from previous wash because pump valve is stuck or inoperative; because pump baffle is clogged	Replace valve or clean out pump; check pump baffle inside tub.
2 Rinse water too hot or too cold on *WARM* setting	Pressure differential between hot and cold water lines	Use flow restrictor (WH1x1083) in cold side of valve to increase rinse temperature.

COMPLAINT	CAUSE	REMEDY
FILLING (Cont.)	One solenoid inoperative	Replace.
	One faucet only open	Open both faucets.
	One clogged valve screen	Clean or replace.
	Open circuit in harness to one solenoid	Check with continuity tester.
	Inoperative control	Check circuit through receptacle with test prongs.
3 No temperature selection in *WASH-FILL*	Inoperative switch selection	Replace.
	One solenoid inoperative	Replace.
	Open circuit in harness to one solenoid	Check with continuity tester.
	Only one faucet open	Open both faucets.
	One clogged valve screen	Clean or replace.
	Inoperative control	Check circuit through receptacle with test prongs.
4 Water enters slowly	Dirty valve screen(s)	Clean or replace.
	Faucets partially open	Open faucets fully.
	Low water pressure	Customer education.
5 Flooding – tub overflows	Inoperative water control switchett	Replace.
	Inoperative water control actuating arm	Adjust or replace.
	Water control assembly out of adjustment	Adjust (for four to six gallons).
	Blocked bleed hole in water valve diaphragm	Clean or replace diaphragm.
	Dirt preventing water valve diaphragm from seating	Remove dirt.
	Torn or porous water valve diaphragm	Replace diaphragm.
	Inoperative control	See section on *"Control Service."*
6 Dry activation.	Water does not enter while water remains in outer tub because of:	
	a. Kinked drain hose	Eliminate kink.
	b. Inoperative pump impeller	Replace impeller (or repair pump).
	c. Clogged pump or baffle	Replace cover and clear obstruction in outer tub.
	d. Water level or water pressure switch in *OFF* position	Check for water acting against water level or water pressure switch caused by water leaking into the tub during period washing machine is idle. Replace or clean water valve assembly.

COMPLAINT	CAUSE	REMEDY
FILLING (Cont.)	Inoperative water control base actuating arm	Adjust or replace.
	Low water pressure — water drains out heavy soil orifice	Install WH1x1154 orifice plug.
	Inoperative switchette (water control)	Replace.
	Control switch umbrella binds switchette	Readjust umbrella.
	Inoperative water saver switch (shortening)	Replace.
	Broken flexible coupling or associated clamps	Replace.
	Pump valve stuck or clogged	Clean or replace pump valve.
7 Cold water enters on *HOT* setting or hot water enters on *COLD* setting	Inlet hoses reversed	Change around.
	Solenoid connections reversed	Change around.
	Inoperative control	Adjust or replace switch #2.
8 Only cold or hot water enters on *WARM* setting.	Inoperative selection switch	Replace.
	Inoperative control	Adjust or replace switch #2.
	Solenoid inoperative	Check harness or replace.
ACTIVATION		
1 Dry activation	See *"Filling Complaints" — Item 6*	
2 No activation	Inoperative water control base assembly	Adjust or replace inoperative parts.
	Inoperative motor	Replace.
	Loose or broken belt	Tighten or replace.
	Inoperative control	Check circuit through receptacle with test prongs.
	Inoperative transmission	Replace.
	Open circuit in harness	Use continuity tester.
	Male prong(s) on cycle control make no contact with female connector(s) in control receptacle	Adjust prong(s) or replace control receptacle.
3 Too slow activation	Clutch slips from water, oil, or grease on shoe linings	Clean and/or dry linings (also eliminate source of water, oil, etc.)

COMPLAINT	CAUSE	REMEDY
ACTIVATION (Cont.)	Clutch slips because linings are worn or damaged	Replace worn or damaged parts.
	Activator bearing tight on basket hub	Replace.
	Loose belt	Tighten.
	Grease or oil on belt	Clean or replace.
4 Intermittent activation	Inoperative centrifugal switch in motor (rare)	Replace motor.
5 Spins while activating	Snubber inoperative or missing	Replace.
	Snubber stuck in horizontal position	Replace, loosen, or deburr snubber.
	Spin tube collar not seated over snap ring	Reseat collar.
	Snubber band broken, unseated or slipping	Replace.
6 Torn clothes	Overloading or improper loading	Educate user – refer to *"USE AND CARE"* booklet.
	Dry activation	See *"Filling Complaints", item 6.*
	Warped activator skirt	Replace activator.
	Imperfection in basket or activator unit	Replace.
	Excessive activator unit clearance	Use WH1x748 shims under basket to obtain proper clearance (1/4" max. 1/8" min.)
	Clothing straps looped over activator unit	Educate user.
	Too strong bleaches	Educate user.
	Fragile clothing	Very fragile clothing should not be put in any washing machine.
RECIRCULATION SYSTEM		
1 No recirculated water (or too small a stream)	Insufficient water in basket because:	
	a. Water saver switch was depressed	Educate user.
	b. Low water pressure	Put plug (WH1x1154) in basket orifice.
	Clogged recirculation hose	Clean out.
	Object in pump	Remove obstruction from pump.

COMPLAINT	CAUSE	REMEDY
RECIRCULATION SYSTEM (Cont.)		
	Flexible coupling or clamps loose or broken	Replace clamp or coupling.
2 Water not hitting or splashing out of filter pan	Nozzle Alignment	Align nozzle.
	Filter pan not level	Replace filter mount.
	Pressure of recirculation stream too high — spraying out of filter pan	Replace recirculation hose or reduce stream by tightening wire around one identation in hose.
	Nozzle brace missing	Install brace inside nozzle opening.
3 Recirculating while spinning	Defective pump flipper valve	Replace.
	Obstruction in pump	Clean out.
SPINNING		
1 No spinning	Broken belt	Replace belt.
	Inoperative control	Check circuit through receptacle with test prongs.
	Jammed pump	Remove obstruction from pump.
	Inoperative transmission	Replace.
	Open Circuit in harness	Use continuity tester.
	Inoperative motor	Replace.
	Male prong(s) on cycle control not making contact with female connector(s) in control receptacle	Adjust prong(s) or replace control receptacle.
	Basket hub jammed	Remove clothing from around hub inside tub.
2 Too slow spin speed	Loose belt	Adjust tension (replace belt if badly worn).
	Clutch slips because of worn or damage linings	Replace shoes.
	Clutch drum bearings worn or rusted	Replace both top and bottom clutch bearings.
	Clutch slips from water, oil or grease on the linings	Clean and/or dry linings (also eliminate source of water, etc.)
	Loose basket hub clamp results in the hub plate dragging on the gear case cover	Reposition parts and tighten clamp securely (if clamp worn, replace).
	Excessive water in outer tub	See *"Filling Complaints"*, items 6a thru 6d.

COMPLAINT	CAUSE	REMEDY
SPINNING (Cont.)		
	Oil or grease on belt	Clean or replace.
3 Excessive vibration	Machine not level	Level machine.
	Machine sits too high on leveling screws	Adjust leveling screws so that machine is as close to the floor as possible as well as being level.
	Suspension assembly cracked or broken	Replace.
	Friction pad missing	Replace.
	Suspension spring unseated or broken	Reseat or replace.
	Loose or missing suspension assembly screws	Tighten or replace.
	Broken yoke	Replace.
	Broken yoke clamp	Replace.
	Suspension strap twisted or broken	Untwist or replace.
	Broken motor through-bolt	Replace.
	Yoke cushion unseated	Reseat.
	Weak floor	Install toeboard extension kit, WH49x56.
WATER LEAKS		
1 Transmission boot	Clamp loose	Tighten.
	Hole in boot	Replace.
2 Pump-to-tub	Pump gasket missing	Replace.
	Pump-to-tub screws loose or missing	Tighten or replace.
	Out-of-flat condition with portion of tub which mates with pump gasket	Install one additional gasket. If out-of-flat condition is too great for extra gasket to correct, replace tub.
3 Tub	Hole or open seam in tub	Replace tub.
4 Pump (drain)	Seal leak	Replace pump base assembly.
	Loose body-to-base screws	Tighten.
	Damaged pump body	Replace.
5 Drain hose assembly	Loose hose clamp	Tighten.
	Damaged hose	Replace.

COMPLAINT	CAUSE	REMEDY
WATER LEAKS (Cont.)		
	Hose jumps off set tub or standpipe because:	
	a. Shape of set tub	Install WH49x37 hose adapter.
	b. Drain hose not cut to length on short run.	Cut drain hose to proper length for installation and use connector supplied.
6 Recirculation hose assembly	Loose clamp	Tighten.
	Defective hose	Replace.
7 Tub gasket assembly	Gasket unseated	Reseat on tub flange.
	Gasket not sealing properly against cover	Elevate gasket by placing shim washers between tub mounting bracket and apron corner flange and corner(s) concerned.
8 Water valve assembly	Damaged outlet hose	Replace
	Outlet hose pinched by cover	Free hose.
	Damaged valve body (including stripped threads on nylon valve body)	Replace.
	Loose or missing outlet hose clamps	Tighten or replace.
	Loose screws in valve assembly	Tighten.
	Cracked-broken water inlet spout	Replace look for scale build-up at orifice.
9 Intake hose assembly	Cut hose washer	Replace.
	No hose washer	Install washer.
	Hose damaged	Replace.
	Hose not fastened securely	Tighten (hand tight plus 1/3 turn) with pliers
10 Water control assembly	Hole in diaphragm	Replace.
	Diaphragm unseated	Replace.
	Loose or missing diaphragm mounting screws.	Tighten or replace.
11 Return pump	Seal leak	Replace pump.
	Loose body-to-base screws	Tighten screws.
	Damaged pump body	Replace pump.
12 Distribution valve assembly and hose	Valve diaphragm damaged	Replace diaphragm.
	Valve body screws loose	Tighten screws.
	Hose Clamps loose or broken	Replace clamps.

COMPLAINT	CAUSE	REMEDY
WATER LEAKS (Cont.)		
	Valve body damaged	Replace valve.
SAVING SUDS		
1 Can not save suds.	Inoperative pushbutton switch	Replace.
	Inoperative distribution valve solenoid	Replace solenoid.
	Distribution valve rocker-arm damaged	Replace.
	Inoperative control	Adjust or replace switch #2 and/or switch #4.
2 Flooding.	Both wash water and rinse water saved. Control inoperative	Adjust or replace switch #2.
	Save hose jumped out of set tub	Shorten hose or install WH 49x37 hose adapter.
3 Dry activation.	Distribution valve solenoid stuck closed	Adjust or replace solenoid.
	Save port blocked open by foreign matter	Clean distribution valve.
RETURNS SUDS		
1 Saved water will not return	Bevel on save hose against side of set tub	Reverse bevel or install WH49x37 hose adapter.
	Inoperative return pump	Replace.
	Inoperative pushbutton switch	Adjust or replace.
	Inoperative Flow Switch	Replace.
	Flow sensor not connected to pressure chamber	Connect.
	Pressure chamber damaged	Replace return hose.
	Clogged flow sensor tube	Clean out.
	Air lock in hose to save tub	Eliminate droop in save hose, shorten.
FLUORESCENT LAMP – DIAL LIGHT		
1 Fluorescent lamp does not light	Florescent lamp burned out	Replace.
	Control inoperative	Check circuit through receptacle with test prongs.
	Ballast burned out	Replace.
	Starter inoperative	Replace.
	Fluorescent lamp circuit open	Check with continuity tester.

COMPLAINT	CAUSE	REMEDY
FLUORESCENT LAMP – DIAL LIGHT (Cont.)		
2 Dial light does not light	Lamp burned out	Replace.
	Control inoperative	Check circuit through receptacle with test prongs.
	Dial light circuit open	Check with continuity tester.
SLOW SPEED OPERATION		
1 No slow speed for either wash action or spin	Brake solenoid inoperative	Replace.
	Solenoid Circuit open	Check with continuity tester.
	Spring to solenoid plunger unfastened or broken	Fasten or replace.
	Brake not making contact	Bend spring bracket.
2 No slow speed for wash action	Selection switch inoperative	Replace.
3 No slow speed for spin	Selection switch inoperative	Replace.
RINSE DISPENSER SYSTEM		
1 Water does not enter dispenser tray during *RINSE-FILL*	No water into machine	Check water inlet system.
	Hoses disconnected between inlet nozzle and tray	Reconnect – using hose clamp if necessary.
	Kink somewhere in dispenser hoses	Adjust hose
	Solenoid remains energized – faulty control	Check switch # 2 on control.
	Plunger in valve stuck shut of plunger spring.	Repair or replace, check fastening.
2 Water enters tray during *WASH–FILL*	Solenoid not energized	Check wiring connections and # 2 switch on control.
	Solenoid inoperative	Replace.
	Valve inoperative (will not close)	Repair or replace.
3 Rinse agent drains out of tray when put in	Drain hole cap in tray unseated	Adjust or replace.
	Tray tilted downward	Reinstall tray or replace.
4 Water cannot be drained from tray at end of cycle	Pushbutton linkage to drain cap inoperative	Repair or replace.
EXCESSIVE NOISE		
1 Apron drumming – hitting against tub	Apron pad(s) missing	Replace.
2 General vibration noise	Washer not level	Level machine.

COMPLAINT	CAUSE	REMEDY
EXCESSIVE NOISE (Cont.)		
	Washer too high off floor	Adjust leveling screws to lower machine.
1 Two-speed clutch	60-cycle vibration – type noise	Replace clutch components individually: a. Shaft extension. b. Outer drum. c. Clutch shoes. d. Carrier plate. Replace drive motor as last resort.
2 Suspension clicking	Undried paint in joints where suspension triangle comes together	Spray joints with a paint solvent.
3 Suspension springs squeaking	Spring loops rubbing together	Apply a heavy grease.

SECTION 2

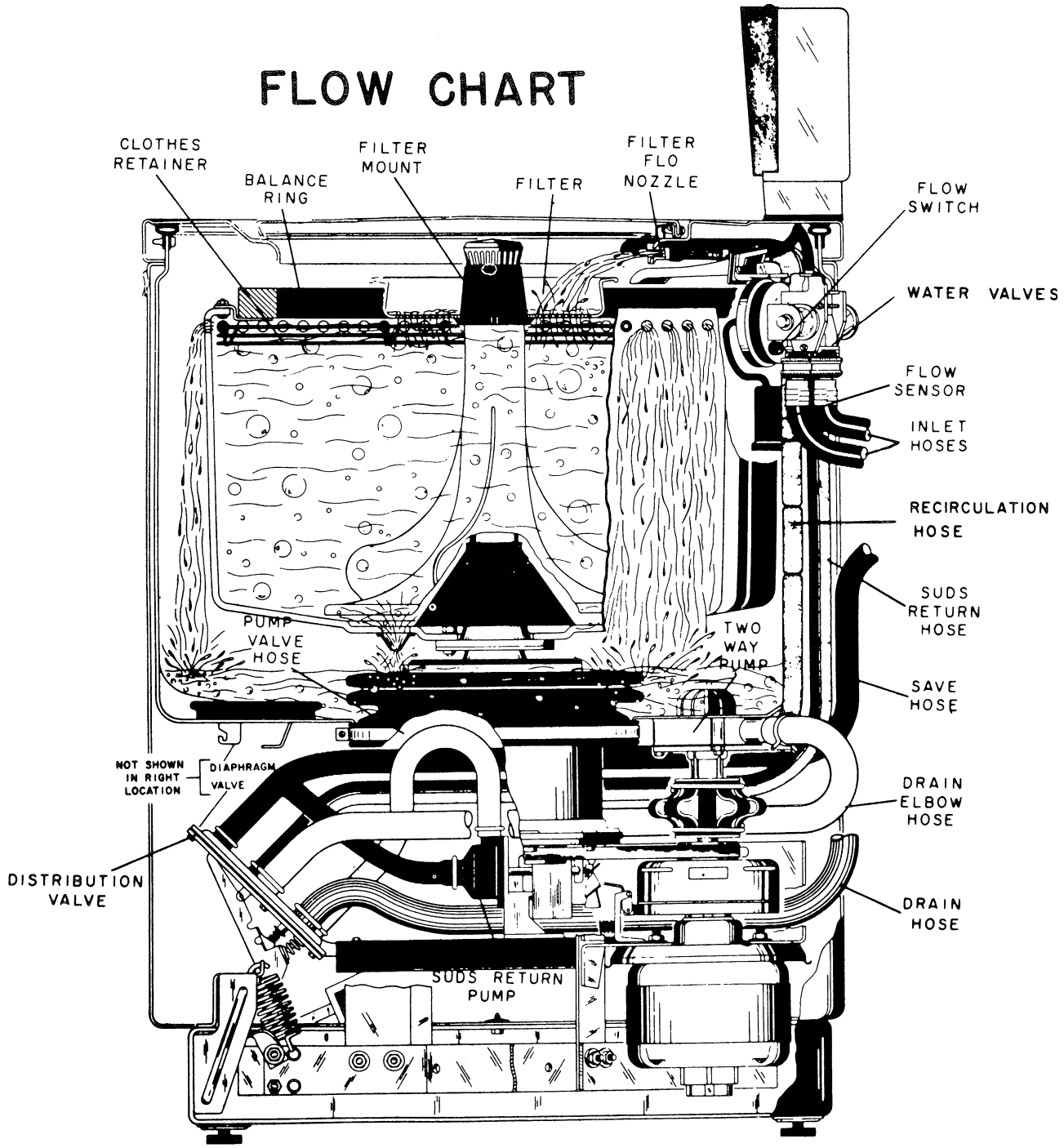
SERVICE PROCEDURE AND COMPONENT DESCRIPTION

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.

Also, 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.


FLOW CHART
CLOTHES RETAINER
BALANCE RING
FILTER MOUNT
FILTER
FILTER FLO NOZZLE
FLOW SWITCH
WATER VALVES
FLOW SENSOR
INLET HOSES
RECIRCULATION HOSE
SUDS RETURN HOSE
SAVE HOSE
DRAIN ELBOW HOSE
DRAIN HOSE
PUMP VALVE HOSE
TWO WAY PUMP
NOT SHOWN IN RIGHT LOCATION
DIAPHRAGM VALVE
DISTRIBUTION VALVE
SUDS RETURN PUMP

Cabinet

EARLY MODELS

The cycle control and the pushbutton switches are removed through the back of the machine. They are attached to the cover bolts hidden under the escutcheon.

First remove the cover back and the apron back. The cover back is attached to the rear channel by three screws, and the apron flanges by six screws. After removing the screws, push the cover back down to free the holding tabs at the top and lift out the cover back. Slip the apron back off over and *DRAIN* and *SAVE* hose.

To remove the control knob and the control drive, first pry out the chrome disc in the center of the control knob. The knob and dial are held to the control knob shaft by a small hair-pin clip. After removing this clip, the knob and dial can be slipped off the shaft.

To remove the escutcheon, first pull out the small metal frame from around the pushbutton switches. The escutcheon is fastened to the cover with six threaded studs and hex nuts which are removed from the rear of the machine, *Figure 1.*

To remove either set of pushbutton switches, first pull off the bayonet type connectors. Each set of switches is held to the cover with two screws which are removable from the front, *Figure 1.*

To remove the cycle control, first pull off the receptacle base. The three hex-nuts holding the control to the panel should then be removed. The control is then free for servicing, *Figure 1.*

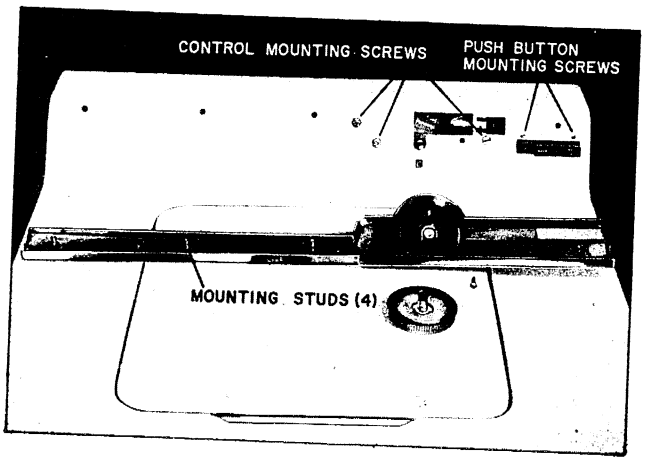


Figure 1

COVER ASSEMBLY, Late Models

The washing machine cover assembly is secured to the cabinet by spring clips at the front and back of the cabinet. On earlier models two brackets at the top in the rear of the cabinet would have to be removed in order to remove the complete cover assembly from the washer. The cover assembly can be removed as follows:

1. Push in on spring clips using a thin wooden wedge or a putty knife. Do not use anything thicker than a putty knife to prevent chipping the cover. Place the tool between the cabinet and the cover assembly as illustrated in *Figure 1A.*
2. On Dispensall models, the separator tabs must first be detached from the plastic cover shield or the molded pins on the diverter may be broken when the cover is raised off of the cabinet.

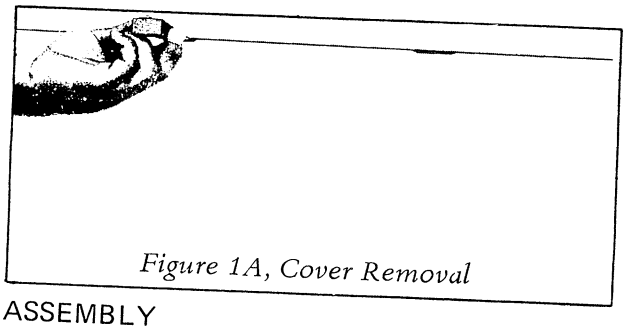


Figure 1A, Cover Removal

REASSEMBLY

1. Hook the rear cover flange over the two rear cover spring clips.
2. Make sure that the wires and water level switch hose will not be pinched between the cover and the top of the cabinet.
3. Pull the cover assembly forward over the front

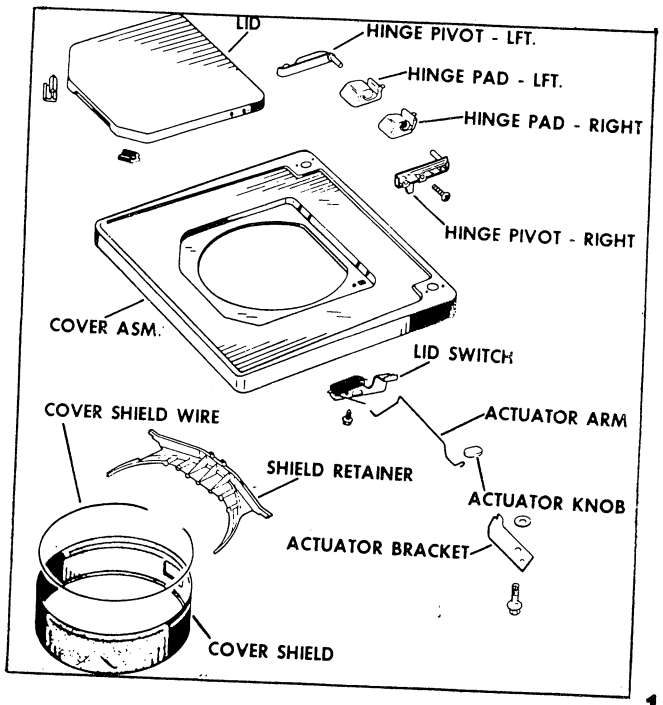


Figure 1B, Cover Components

spring clips and press down. Clips should snap in place.

4. Reinsert separator tabs or recirculation nozzle through cover shield.

COVER SHIELD AND HINGES

The plastic cover shield is attached to the flange on the underside of the cover. A plastic retainer supports the shield at the rear of the clothes loading hole. Both the shield and retainer are secured to the cover by a wire loop, refer to *Figure 1B.*

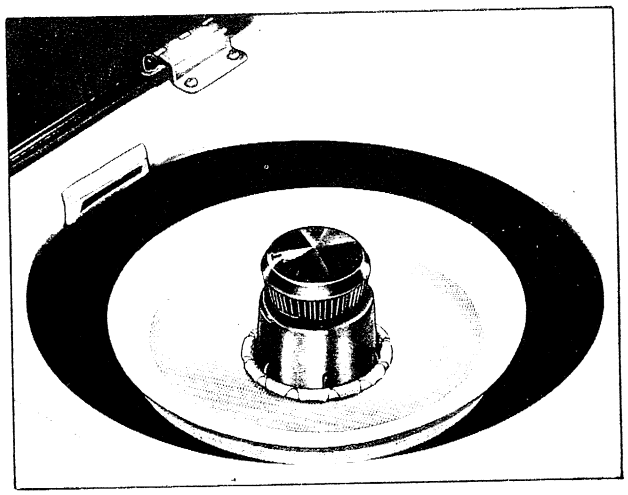


Figure 2

COVER REMOVAL

The cover can be removed as a complete unit. First remove the cover back and the apron back as described previously. Pull off the switch push-on type connectors and also free the receptacle base from the control. Remove the lamp and holder assembly.

Next remove the two hex-head screws fastening the cover to the back channel. The rear of the cover should be lifted slightly and the cover pulled forward to clear the front hold-down tabs. The cover can now be set to one side.

The recirculation nozzle of the Filtro-Flo system need not be removed from the cover during removal. When replacing the cover, be sure to insert the recirculation hose into the nozzle by reaching under the lid opening, *Figure 2.*

After the cover is removed, the positioning brackets at the front corners of the machine are visible. The front brackets are used to hold the front of the cover assembly down so that there is no gap between the apron assembly and the cover. They also hold the cover firmly against the cover gasket to form a positive water seal. The front brackets are slotted to permit adjustment of the front edge of the cover. The side positioning brackets are used to position the cover for side alignment.

TUB SHELF

To remove the tub shelf, first remove the cover assembly as described previously. Next pull out the four rubber buttons holding the tub gasket to the tub and shelf. Then remove the screw holding the gasket to the tub at the junction of the shelf and tub. Work the recirculation and return nozzle out of their openings in the shelf, and remove the screws holding the shelf to the tub. Care must be taken in breaking the shelf loose from the sponge rubber gasket not to tear the gasket. On reassembly, it is advisable to soap the rubber buttons so they will pull through the tub gasket easily, *Figure 3.*

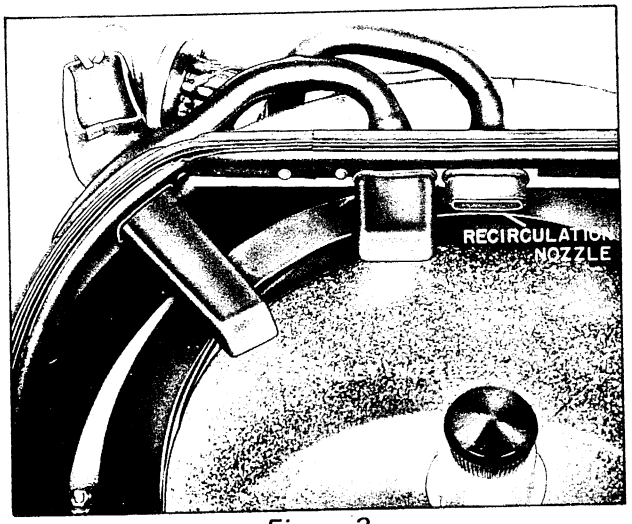


Figure 3

REMOVING CONTROL, LIGHTS AND PUSH-BUTTON SWITCHES ON LATER MODELS

The disassembly of the automatic washer backsplash parts for servicing the control, fluorescent lamp, indicator lamp or pushbutton switches is somewhat different for the various models, since various combinations of these same parts occur on other models, the instructions may be adapted for these other models.

Remove the control knob by grasping it with one hand and pulling the end of the detent pin from the slot in the knob shaft. This releases this pin from a groove in the control sleeve shaft.

Next, remove the pushbutton switch knobs by pulling them straight off the ends of the switch arms, *Figure 4.*

Push the pushbutton switch arms up. The three screws used to fasten the escutcheon bezel to the backsplash top should be removed next. Pivot the bezel forward from the top until it makes an angle of about 45° with the washer cover and hold it there with one hand. Lift the escutcheon up and out taking care not to scratch it as it clears the switch arms. Next, push the arms of the pushbutton switches down. Pivot the background plate forward from the top and lift it up and out so that it clears the pushbutton switch arms. Lift the bezel up at the bottom to disengage the tabs near each end of its bottom flange from the edge of the backsplash. Pull the dial forward and off the control shaft, *Figure 4.*

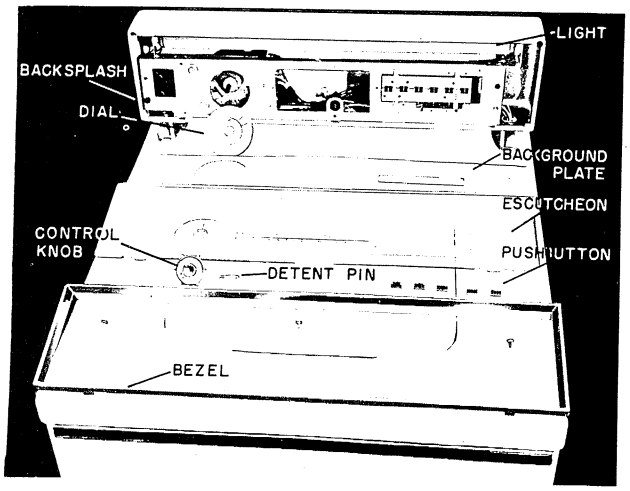


Figure 4

To remove the fluorescent lamp, grasp it at each end and rotate it out of its lampholders with a forward and downward motion, *Figure 5.*

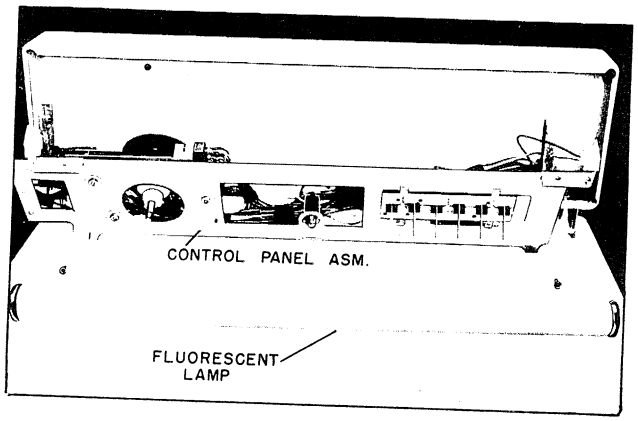


Figure 5

To service the control and pushbutton switches, remove the complete control panel assembly by removing the two hex-head screws at each end of the control panel. Lift the complete assembly up and rotate the lampholder parts backward. Then pull the assembly forward and set it on the washer cover with a cloth to prevent damage to the finish.

The control may be separated from the control panel by removing the three control mounting stud nuts from the front side of the control panel. Pull the receptacle off.

To service the pushbutton switches, remove the four hex-head screws which are used to fasten the switch mounting assembly to the control panel.

The lampholders and brackets may be removed from the control panel by removing the screw and lifting the tab out of its slot.

To remove the small indicating lamp, squeeze the ends of its bracket together so that they clear the slotted hole in the control panel, and pull the assembly out to the rear, *Figure 6.*

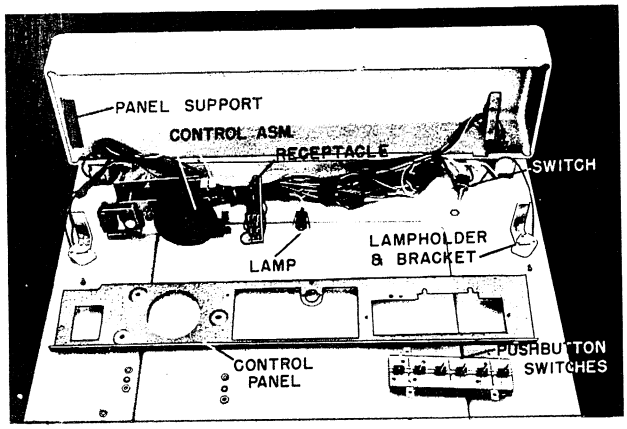


Figure 6

When the cable-hanger screw is removed, the control panel is empty.

The fluorescent lamp starting switch may be removed from the backsplash by unscrewing the locknut on its shaft underneath the backsplash and lifting the switch up from inside the backsplash.

Disassembly of the backsplash parts of some models differs in one respect.

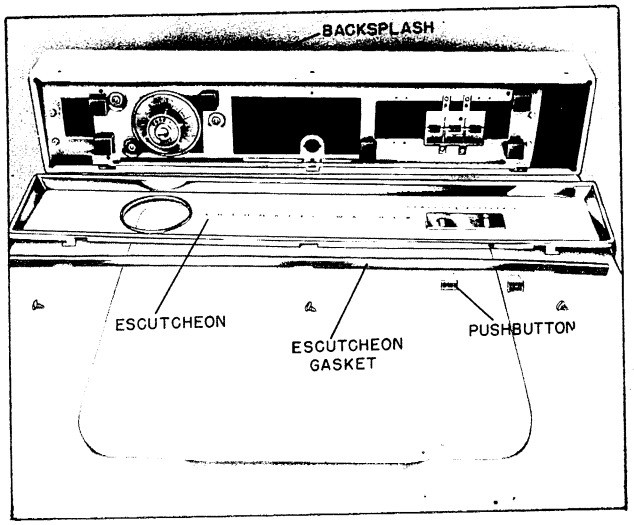


Figure 7

The escutcheon, *Figure 7,* on this model replaces the escutcheon bezel, *Figure 6.* It can be disassembled in one piece by removing the three screws holding it at the top, rotating the escutcheon forward from the top and then lifting it out, *Figure 7.*

The control knob, dial and pushbutton switch knobs are removed in the same manner.

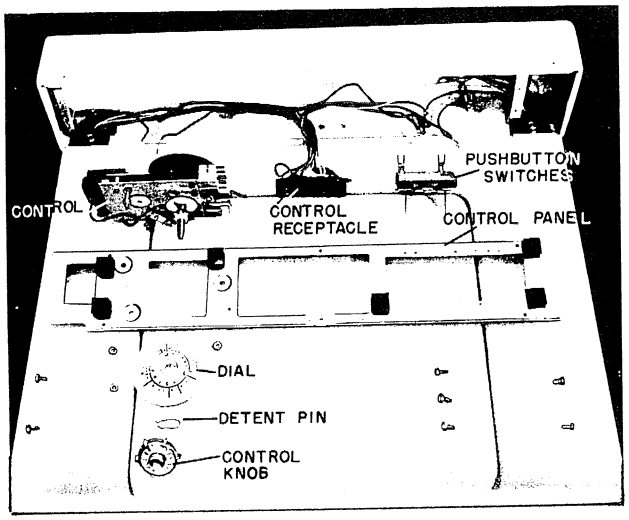


Figure 8

ASSEMBLY OF THE BACKSPLASH PARTS

Assembly of the bezel, escutcheon and background plate is easier if attempted in the following order: Assemble the control panel parts and the fluorescent lamp to the control panel. Insert the tabs on the lower flange of the bezel over the lip on the bottom of the backsplash. Holding the bezel at the top at about 45° angle with the washer cover with one hand, insert the background plate tab into its slot at the bottom of the control panel. Rotate it into the backsplash. Then fit the escutcheon over the pushbutton switch arms. Finally, rotate the bezel back, fit it over the backsplash, and fasten it with the three screws. In reassembling the control knob, first snap the detent pin in place. Pull out the control sleeve shaft. Then push the knob on over the sleeve shaft far enough to seat the detent pin.

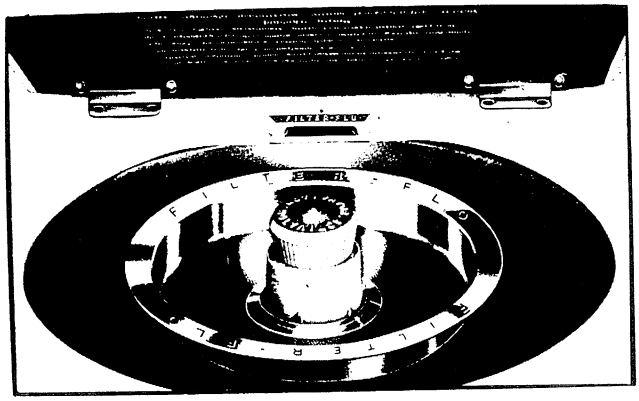


Figure 9

COVER REMOVAL

The cover and backsplash assembly can be completely or partially removed as a single unit, depending upon the amount of servicing necessary.

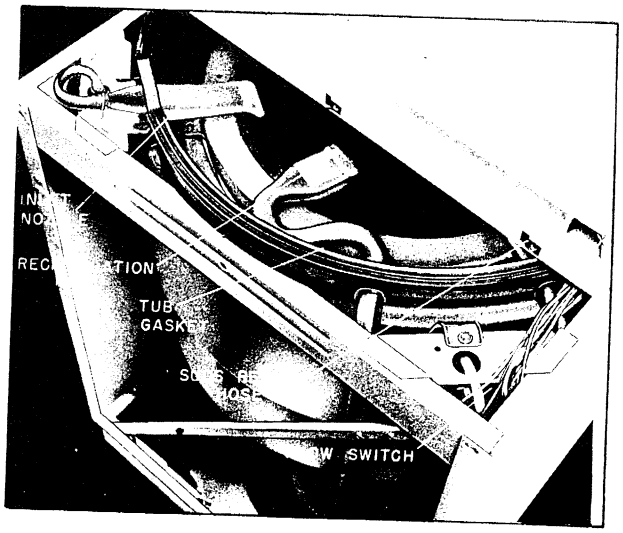


Figure 10

The recirculation nozzle need not be removed during cover disassembly. But when replacing the cover, be sure to insert the recirculation hose back into the nozzle by replacing underneath, through the lid opening.

To remove the cover, first remove the three hex-head screws which fasten it to the cover-apron brace channel. Lift the cover at the rear and slide it to the front of the machine, one corner at a time. Then lift up the entire cover and backsplash assembly and move it to the front as far as the harness wires will permit, *Figure 10.*

The cover may be removed completely by disconnecting the cover harness leads. A time-saving alternative is to tilt the cover and backsplash assembly back to the rear and rest it in a vertical position on a convenient platform or table.

With the cover only partially removed, *Figure 10,* the following water system parts are available for servicing:

Water inlet nozzle
Inlet tube
Tub gaskets
Recirculation hose
Return hose and nozzle
Flow switch

With the cover completely removed, the front cover stops (used to position and hold down the cover) are accessible. The cover stops prevent a gap between cover and apron, and help insure a tight seal between cover and tub gasket. The front cover stops are slotted to permit adjustment of the cover position. A stud projecting up from the front flange of the apron mates with a cutout in the lower return flange of the cover to provide for side-to-side positioning.

Cycle Controls

After making an electrical check of the control, it can be serviced part for part.

CONTROL MOTOR

The control motor is fastened to the two studs of the base plate by two hex nuts. After removing the motor, the rotor unit can be slipped out of the field and coil assembly. In reassembly, extra care should be taken to position the rotor so that the teeth of the rotor pinion mesh properly with the mating gear, *Figure 11.*

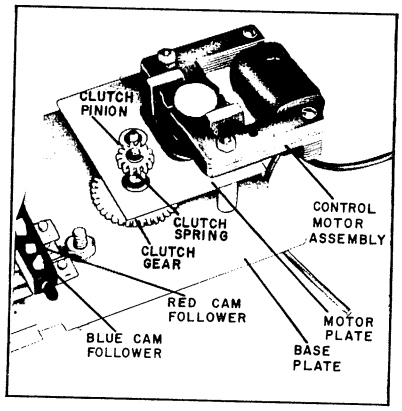


Figure 11

MINI-QUICK (LB & LATER), *Figure 12.*

The MECHANICAL MINI-QUICK function is obtained by using 2 gear and pinion assemblies in the control. A 26-minute MINI-QUICK gear assembly is used, along with a 67-or 77-minute NORMAL gear and pinion. Between these two gear assemblies is a rachet pawl mounted on the control gear shaft.

Both gear and pinion assemblies have a slip clutch mechanism which allows the cam-driving pinion to slip in one direction. When the ratchet pawl is in Neutral (disengaged) position, the control motor drives both assemblies. The 26-minute pinion rotates 3 times faster than the NORMAL pinion, so the NORMAL pinion is overridden and slips, and the cam is driven at 3 times NORMAL speed, This gives MINI-QUICK.

For NORMAL operation, the pawl engages the sleeve gear which traps the 26-minute gear assembly clutch and prevents it from gripping the shaft. No torque is transferred to the 26-minute cam-driving

pinion, so the cam is driven only by the NORMAL cam gear. The pawl is engaged and disengaged through a mechanical linkage to the Water Level Switch. The linkage is spring-loaded at the WLS to insure positive engagement of the pawl and sleeve gear in all WLS positions except MINI-QUICK. In the MINI-QUICK setting, the pawl is rotated away from the sleeve gear which allows the 26-minute gear assembly to drive the cam at 3 times NORMAL speed.

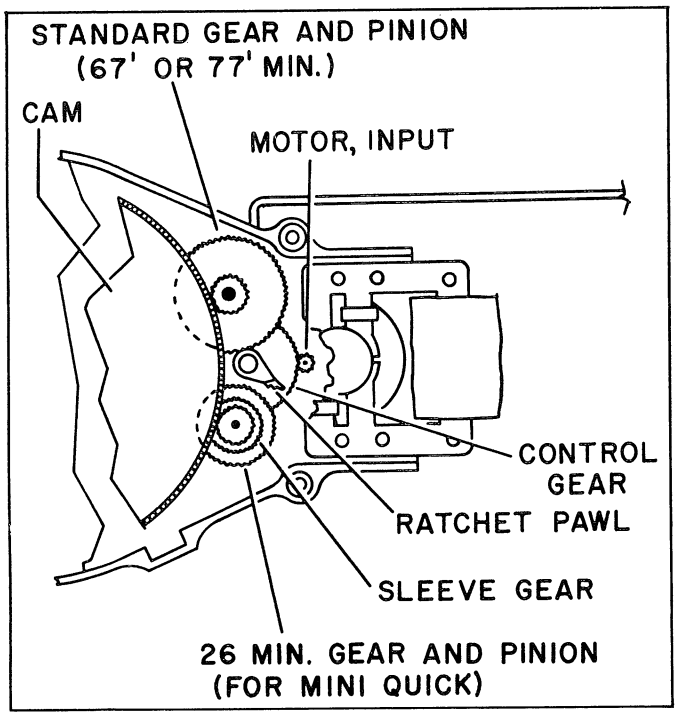
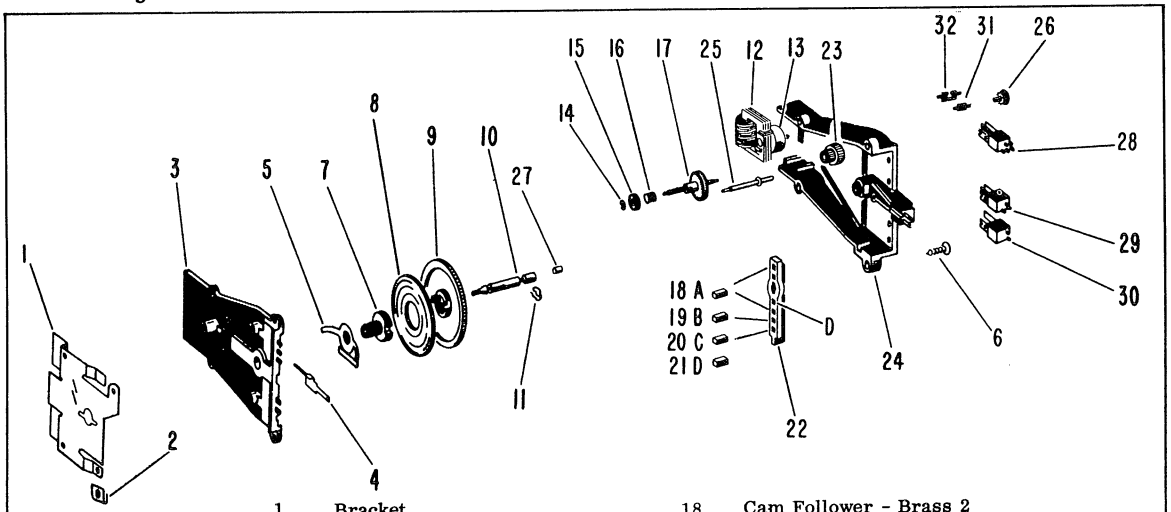


Figure 12

All parts and components of the timer can be changed separately. However, since there are so many models that have numerous cycles it is imperative that the part is ordered by model number. The timer of cycle control shown in Figure 13 is typical of all General-Electric cycle controls. The illustration shows a cycle control with 3 switches. There are others that use 4 switches. The individual switches are easily removed. They are secured by a keeper and each switch is held by one screw item 6 in Figure 13. The switches are mounted to the rear housing, item 24, Figure 13. It is important to note that some of the switches have insulated spacers that mount between the contact blades of the switches. These spacers will sometimes break and fall out of the switch, and even though the switch will appear servicable, the missing spacer can make the difference in erratic operation. The cam followers are of different lengths. These are items 18A-19B-20C-21D in Figure 13. The shape of the cam followers is such that they can not be inserted



1	Bracket	18	Cam Follower - Brass 2
2	Clip	19	Cam Follower - Silver 1
3	Front Housing	20	Cam Follower - Bronze 1
4	Ground Leaf	21	Cam Follower - Silver 1
5	Hub Spring	22	Guide
6	Screw	23	Gear & Pinion
7	Hub	24	Rear Housing
8	Cam-Printed Circuit	25	Motor Gear Shaft
9	Cam	26	Screw & Washer Asm.
10	Shaft	27	Insulator
11	Detent Pin	28	Switch #4
12	Field & Coil Asm. (110V)	29	Switch #3
13	Rotor Unit (60 Cycle)	30	Switch #1
14	Retaining Ring	31	Spacer
15	Clutch Pinion	32	Double Spacer
16	Clutch Spring		
17	Clutch Gear & Shaft Asm.		

Figure 13

into the cam guide incorrectly. In some cases the switch terminal designations will vary with models. Check the specific wiring label for proper wiring. In Figures 14, 15, 16, and 17, the variations in terminal markings can be seen. Figure 18 illustrates a typical 3 switch set up.

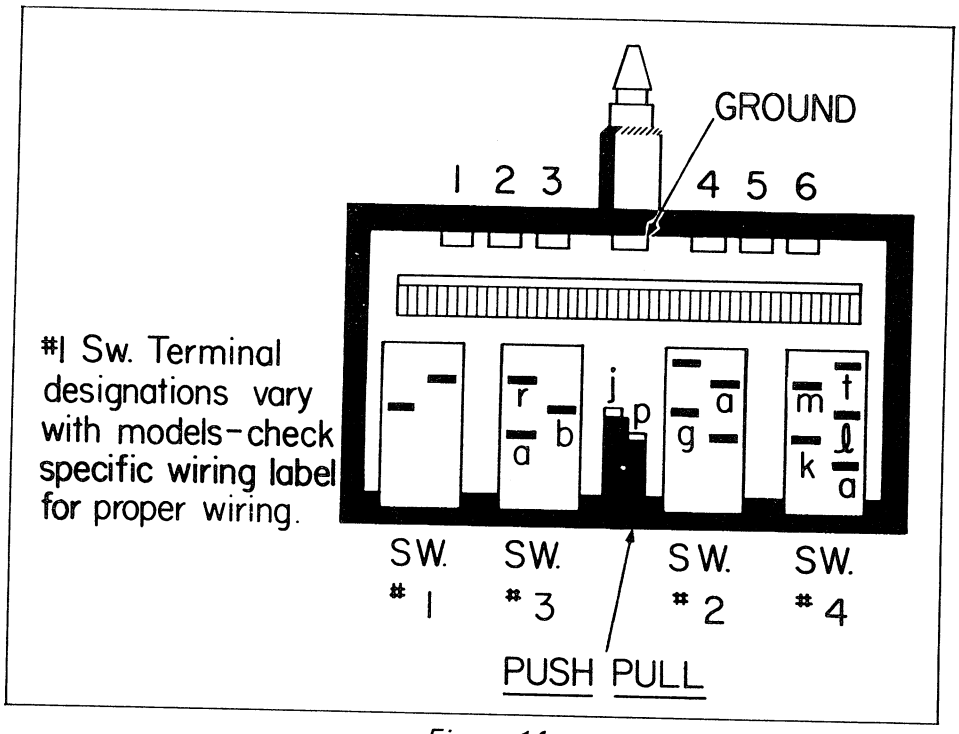


Figure 14

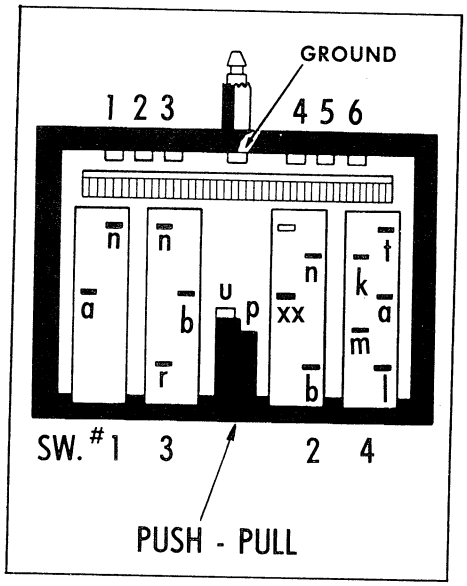


Figure 15

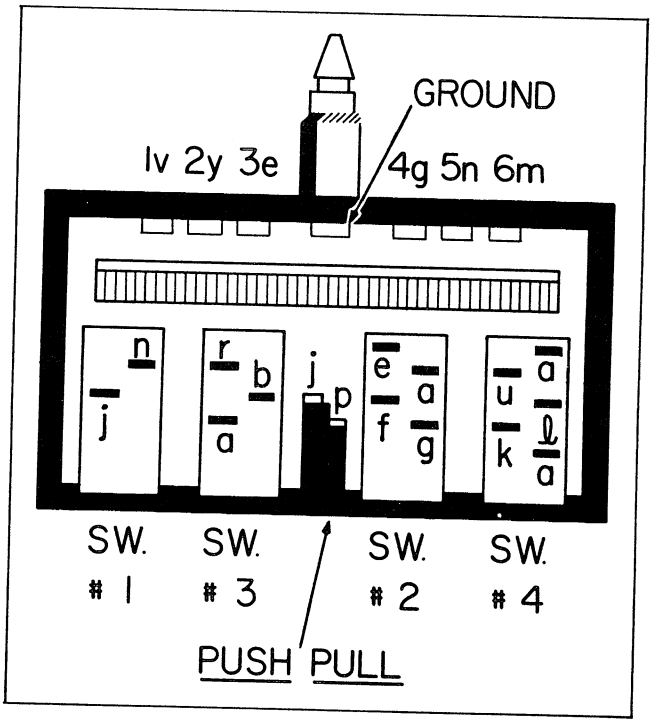


Figure 16

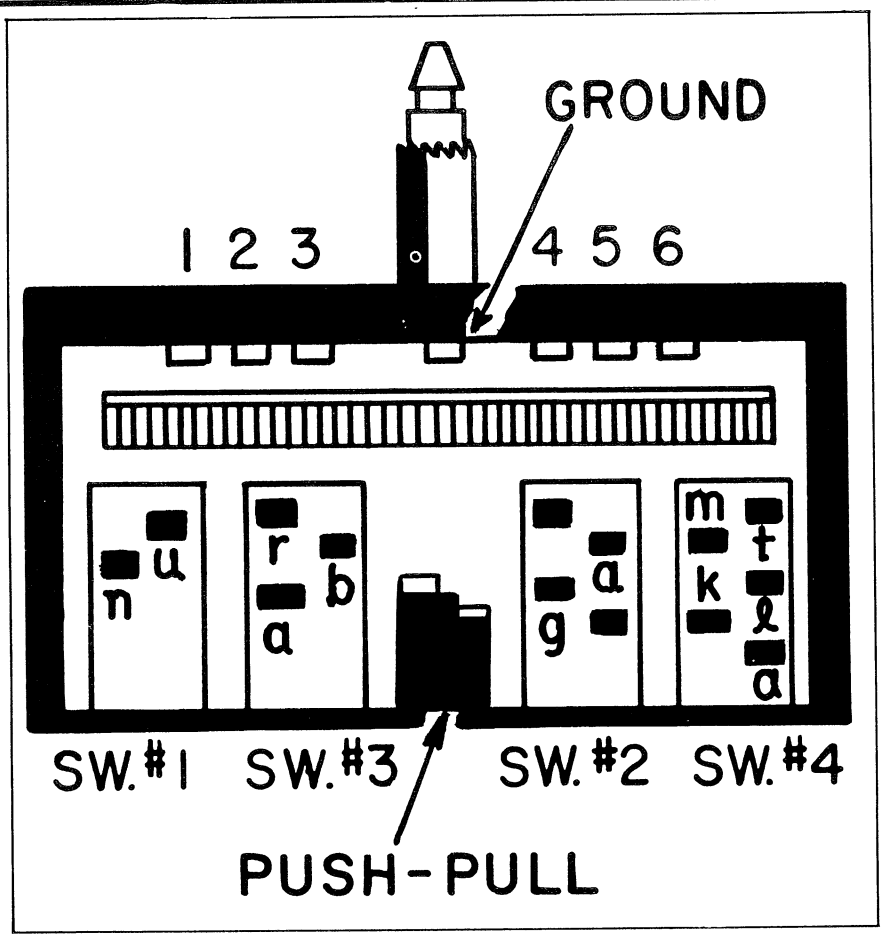


Figure 17

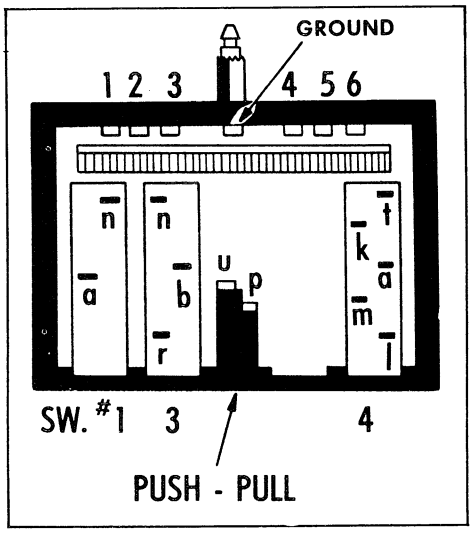


Figure 18

SERVICE HINTS, *Figure 19*

1. Take care when closing up the backsplash, after servicing, to prevent the harness from dislodging the linkage arm.

2. Set WLS to MINI-QUICK before closing.

3. There are two different length linkage arms. On the Pushbutton washer models, the linkage arm is color-coded RED at the WLS end.

4. Because of the larger diameter shaft required for MECHANICAL MINI-QUICK, a plastic insert is provided in the front housing on NON-MINI- QUICK models. The insert must be removed from replacement front housing when used on MECHANICAL MINI-QUICK controls.

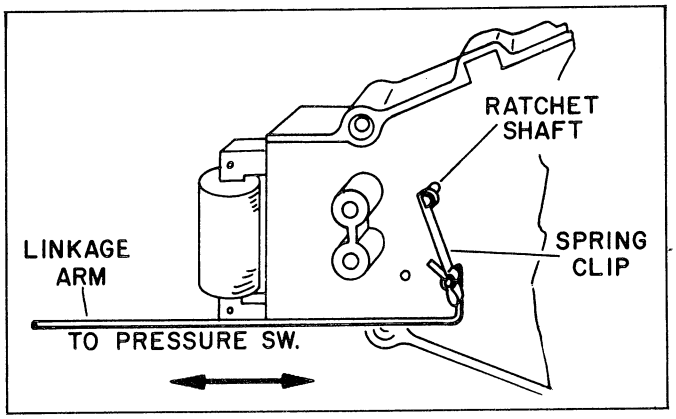


Figure 19

FACE CAM CONTROL

In later production the one-cycle control has a different appearance from the two-cycle control in that the sleeve shaft that fits up into the control knob is more pointed, and the hub is more from metal instead of nylon, is much larger, and has two threaded holes for mounting the dial, *Figure 20.*

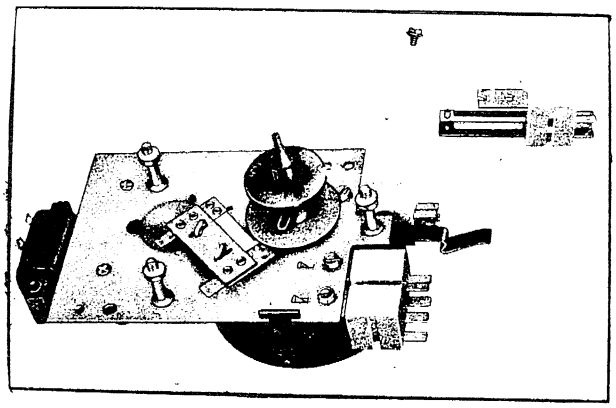


Figure 20

The face cam control is used on later model automatic washers. After making an electrical check of the control, it can be serviced parts for part.

One of the desirable features of the face cam control is the ease with which the various parts can be removed, in most cases, without disturbing the other parts in assembly.

The four leaf sequence switches are mounted individually to the base plate. Each of the switches is fastened to the base plate by a hex-head screw which threads into a tapped hole in the switch mounting bracket, *Figure 21.*

A two-digit number is molded into one side of each switch insulating block. The second of these two digits indentifies the particular switch (for example, if the second digit on a switch block is 2, the switch is the #2 switch).

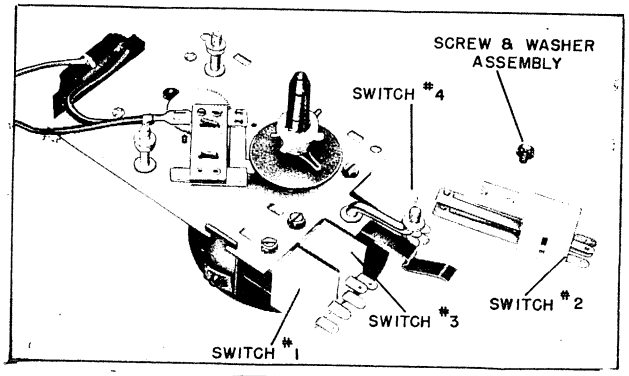


Figure 21 Switch removed

The control motor is fastened to the base plate studs by two hex head nuts. By removing these two nuts the motor and the motor plate are freed. After removing the C-shaped retaining ring which holds the motor gear shaft to the motor plate, the motor plate and gear train can be removed, *Figure 22.*

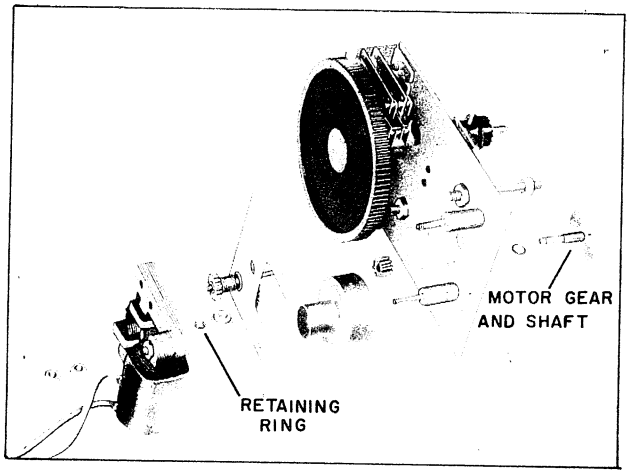


Figure 22 Remove motor and motor plate

The clutch pinion and motor gear assembly are disassembled by removing the C-ring which fastens the clutch pinion to the motor gear shaft, *Figure 23.*

In order to disassemble the control knob shaft assembly, first remove the detent pin and the spring dowel pin which hold the sleeve shaft and nylon hub to the cam and shaft assembly. With the sleeve shaft and hub disassembled, remove the large E-ring which clamps the cam shaft to the base plate. Then slip the cam and shaft assembly out through the cam follower guide, *Figure 24.*

The *OFF-ON* disconnect switch is fastened to a bracket which is riveted to the base plate, *Figure 24.* To remove this switch, straighten the bracket tabs which project through the fiber switch plate. Care should be exercised not to bend the copper contact arms when slipping off this switch over the straightened tabs.

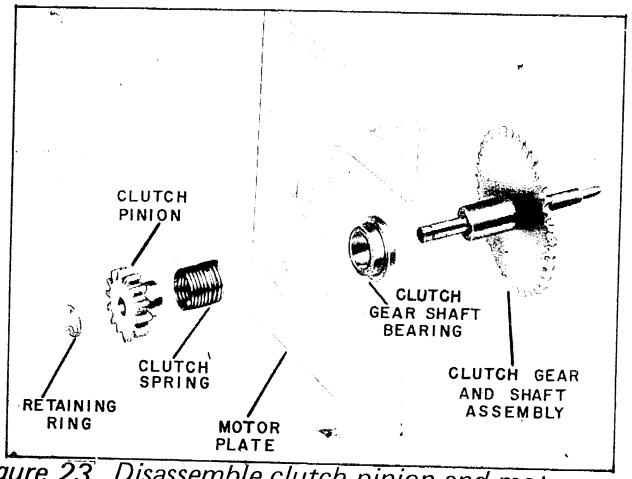


Figure 23 Disassemble clutch pinion and motor gear

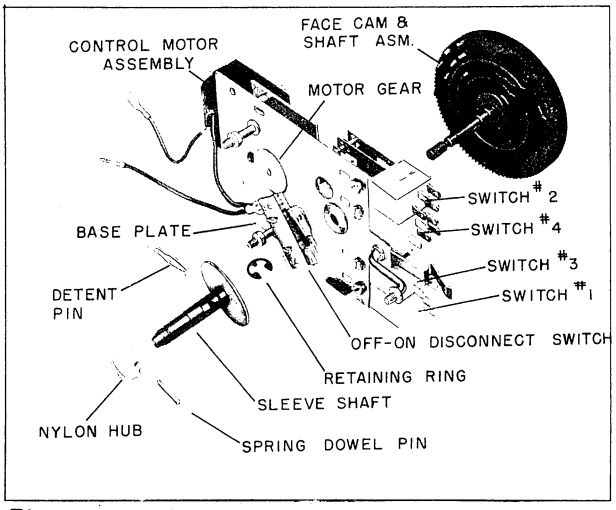


Figure 24 Disassemble the control knob shaft assembly

The five nylon cam followers are shown in *Figure 25.*

The followers which actuate switches No. 2 and 4 are green nylon. The followers which actuates switch No. 3 is white nylon. The followers for cams No. 1 and No. 1a are red and blue nylon respectively (cams No. 1 and No. 1a operate switch No. 1). The shape of the nylon cam followers is such that they cannot be inserted into the followers guide incorrectly. (If the control is held upside down when the cam is being removed, the followers will slip out of the follower.)

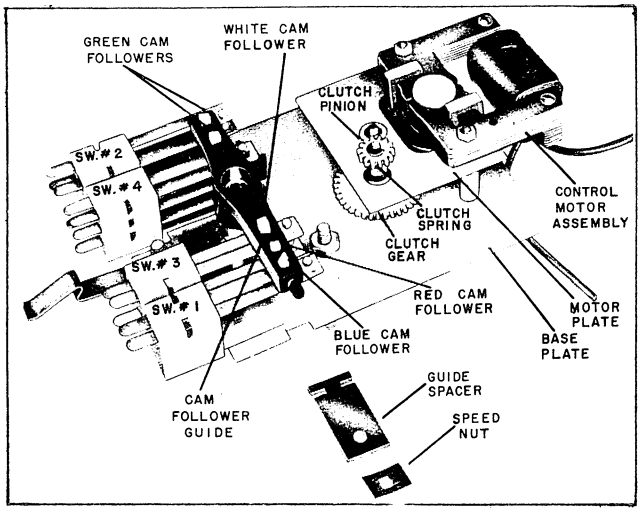


Figure 25 Cam removed

PRINTED CIRCUIT CONTROL DISASSEMBLY

Grasp the control as shown in *Figure 26,* while holding the front housing against the force of the hub spring, remove the four hex nuts. Do not release your hold on the control until you set it down on its back. Then release the hold and lift off the front.

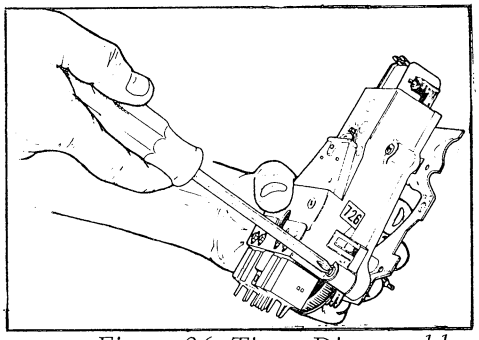


Figure 26, Timer Disassembly

With the front removed, *Figure 27,* the cont motor, hub spring and hub may be remov *Figure 28.* Then lift out the shaft and detent p Next lift off the face cam along with the print circuit cam sets in a recess in the back of the fa cam. It may be replaced without replacing the fa cam recess in only one position, *Figure 29.*

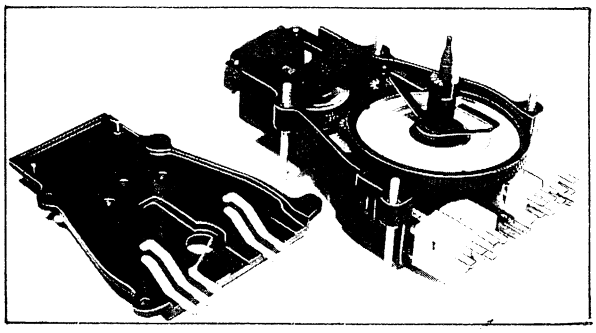


Figure 27

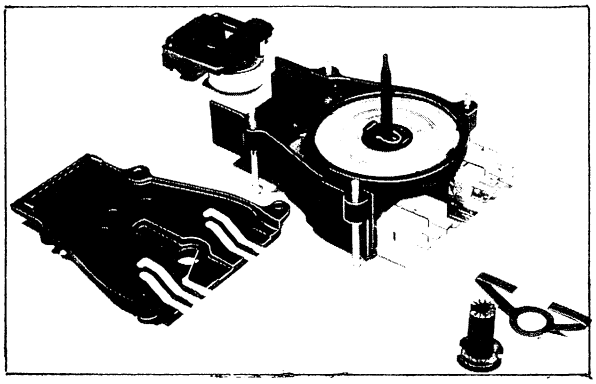


Figure 28

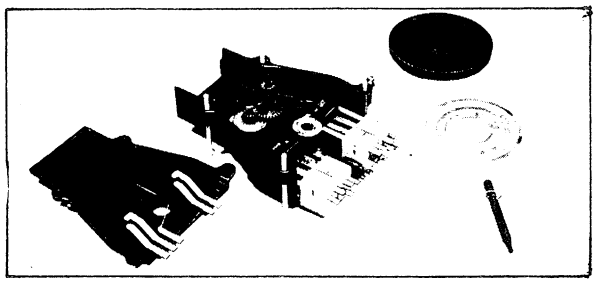


Figure 29

Lift out the clutch gear and shaft assembly. assembly is held together with a retaining c

NOTE: The clutch gear and shaft WH5X184 (one cycle position in the rear housing, Figure 29. The clutch gear and shaft WH5X186 (two-cycle gear)

is placed in the rear housing bearing hole located to the left of the pinion gear, as viewed from the switch end. The pinion gear is secured with a retaining ring.

Lift out the cam followers and remove the guide and washer, *Figure 30.*

The three short brass cam followers actuate switches No. 3, 2 and 4. Switch No. 1 is actuated by one silver and one long bronze cam follower.

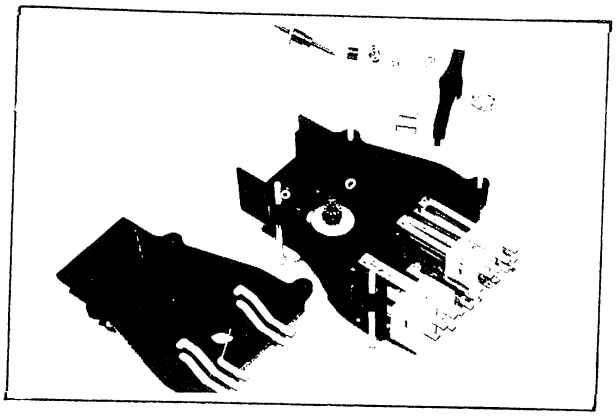


Figure 30

Figure 31 shows the location of the cam followers with respect to the guide.

For the brass and bronze cam follower, the end that bears against the face of the cam is the more flat end. For the silver cam follower, the more pointed end bears against the cam. The shape of the followers is such that they cannot be inserted into the *"Follower Guide"* incorrectly. *Figure 31 A*

NOTE: The bronze follower is the same shape as the brass except it is longer.

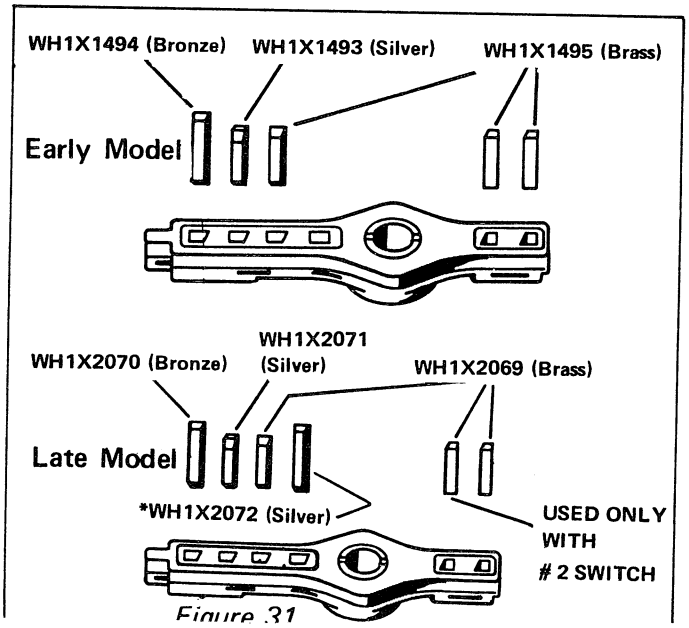


Figure 31

The four leaf sequence switches are mounted individually to the rear housing. Each of the switches are fastened to the housing with hex screws, *Figure 32.*

A two-digit number is molded into the side of each switch block. The first digit is the number of the switch.

An insulator located at the end of the shaft operates the *ON-OFF* contacts, riveted to the rear housing. The insulator is pushed in, closing the contacts, by pushing on the control knob, and is returned by the spring action of the switch leaves when the knob is pulled out.

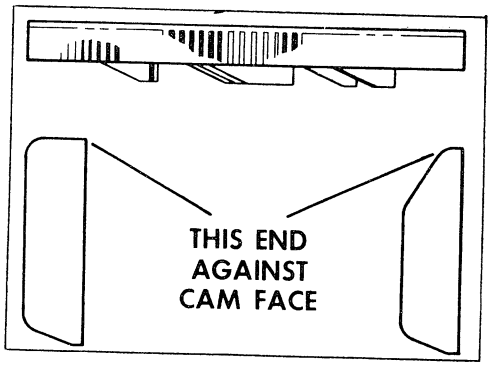


Figure 31A, Cam Followers

CHECKING CONTROL OPERATION

The operation of the four leaf switches on the face cam controls may be checked without disassembling the control assemblies by using a modified prong tester, *Figure 33.* The switch on the prong tester is a normally-open pushbutton switch that closes when depressed. By plugging the switch leads and jumper leads into different openings in the control receptacle, *Figure 34*, it is possible to simulate the closing of the different switch contacts. By this means, possible control malfunction can be isolated to the control itself or to a component outside the control.

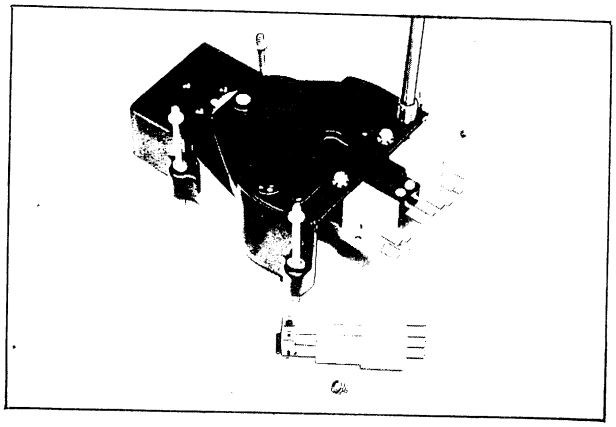


Figure 32

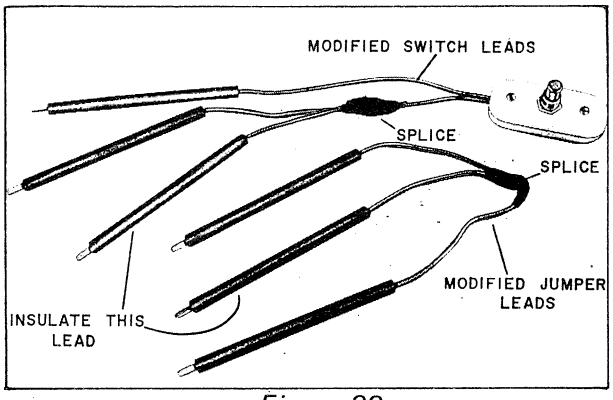


Figure 33

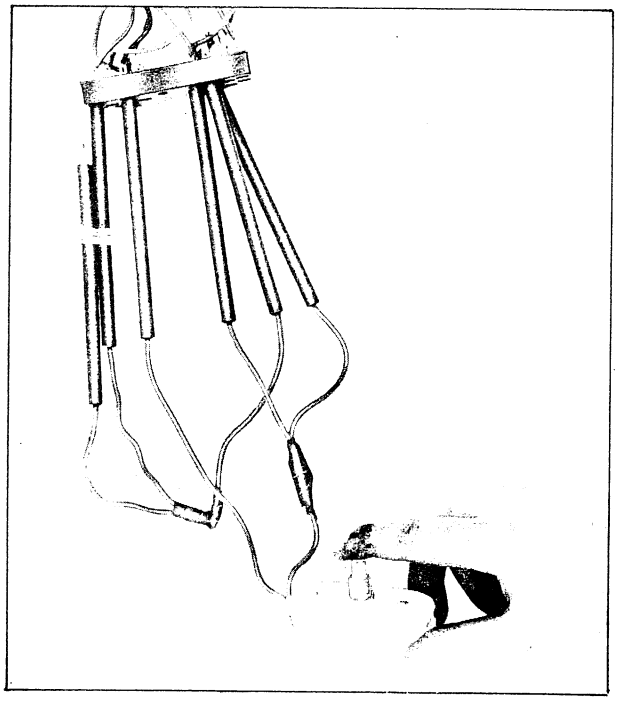


Figure 34 Tester

PROCEDURE: BOTH ONE-CYCLE AND TWO-CYCLE CONTROLS

1. Disconnect the control receptacle from the control. Leave the connections to the push-pull switch on the control as they are. Pull out the control knob to its *"ON"* position.
2. Be sure that the water control switchette is not closed (by water in the tub, etc.). Also be sure that the water saver switch is not closed or shorted.
3. A diagram of the control receptacle, looking from the slots side, is shown in *Figure 35..*

CAUTION: Slots "n" and "r" are HOT. Be sure that the prongs on the switch leads are so placed that the switch is always between slot "r" and the other slot or slots which the switches leads are connecting.

4. When using only two of the prongs on the switch or the jumper leads, be sure that the third prong touches nothing.
5. The *Figure 34A* shows how to obtain different operations of the washer by using the prong tester. If the operations check satisfactorily using the prong tester, but the washer does not operate with the control in the circuit, the control assembly should be replaced or repaired. If all operations of the water cannot be achieved using the prong tester, the trouble is outside the control.

Use the three-prong switch and jumper leads as shown in *Figure 34*

TROUBLE SHOOTING CONTROL

To check operation of the control motor, apply 115 volts, 60 cycle, to the motor terminals and observe that the motor gear tain is turning.

The push-pull switch operation can be checked by moving the dial hub in and out and observing that the switch terminals close.

Visually check the cam followers to see that they are all in place and move freely. Turn the face cam by hand to see that it is not binding.

The leaf switch contacts should be checked for signs or arcing or welding together. If any contacts are damaged, replace the individual switch.

TO OPERATE	SWITCH LEADS	JUMPER LEADS
Dial light and fluorescent lamp	Slots "r" and "b"	None
Hot, cold, or warm water input (depending on positions of selector switches)	Slots "r" and "b"	Slots "n" and "m"
Activation	Slots "r" to "a" and "k"	Slots "n" to "m" and "n"
Spin	Slots "r" to "a" and "u"	Slots "n" to "m" and "k"

Figure 34A

BACKSPLASH DISASSEMBLY

Low Style (6 inch)
1. Remove 2 screws "A".
2. Remove 2 screws "B".
3. Roll top of escutcheon towards front of washer.

Timer and Switches are now accessible.

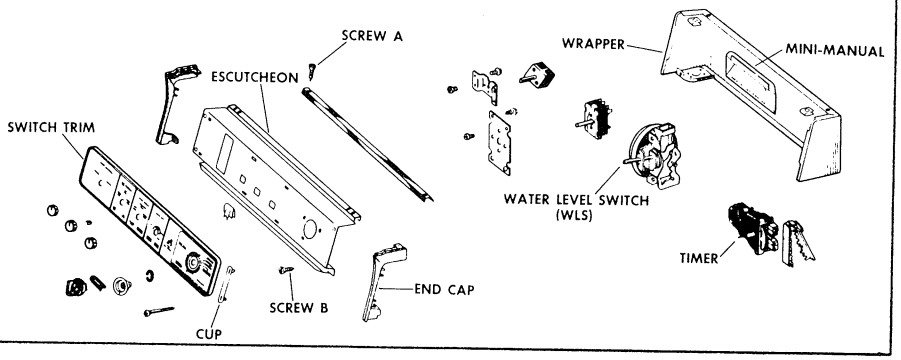


Figure 34B, Backsplash – Exploded View

TIMER-SINGER

To remove timer from washer proceed as follows:

Backsplash Removal, *(Refer to Figure 34B)*

1. Remove 2 screws "A".
2. Lift rear of top trim and roll towards front of washer.
3. Remove 2 screws "B".
4. Remove 2 screws "C".
5. Roll top of escutcheon towards front of washer.

Timer Removal

1. Remove 2 screws at top of timer, *refer to Figure 35A.*
2. Remove harness terminal block from switch bank.
3. Remove pin in back of knob.
4. Pull off knob and dial pointer disc.

Figure 35B illustrates the timer with the dust cover removed. Most of these timers have only one switch assembly. The timer motor and the switch/s can be replaced separately in the event of failure.

TIMER MOTOR REMOVAL

1. Remove 2 Phillips screws.
2. Separate the two single block connectors.
3. Remove motor from timer.

To reassemble, reverse the procedure.

SWITCH ASSEMBLY REMOVAL

1. Remove the dust cover, *Figure 35B.* Straighten one of the tabs "A" for #1 switch assembly, or "B" for #2 switch assembly, *Figure 35C.*
2. Spread the 2 plates so that the switch locating bosses, *Figure 35A,* are free.
3. Carefully remove the switch.
4. Install the replacement switch assembly and squeeze the plates together. Make sure the switch locating bosses are properly positioned and firmly seated. Bend tab to its original position.

If the cam, gears or push-pull switch is defective, it will be necessary to replace the complete timer. *Figure 35C* shows the timer identification and harness block colors as related to the switch bank. The wiring lable in the back splash shows the switch leaf identification relative to the schematic. *Figure 35D,* illustrates the correct position of the switch leaves relative

"Let me put it this way, Lady. . . if it were a horse, I'd shoot it"

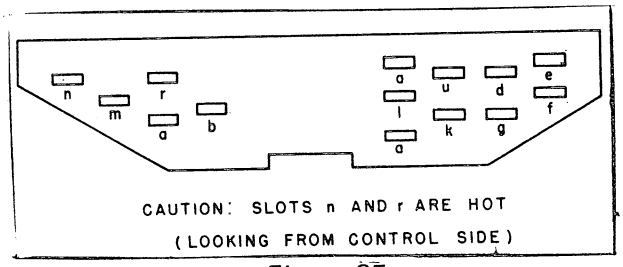


Figure 35

to the cam. If the leaves are not riding squarely in the cam tracks, lift the ends of the leaves and let them fall back into the correct position. Switch leave contacts should be as illustrated in *Figure 35E.* Replace dust cover, *Figure 35B.*

Switches

The internal connections for the piano-key switches used on top-of-the-line models are shown in *Figure 36.*

A diagram of the internal connections for the selector switch used on the later models washer is shown in *Figure 37.* The switch for the suds save models is the same except that the suds save return omitted.

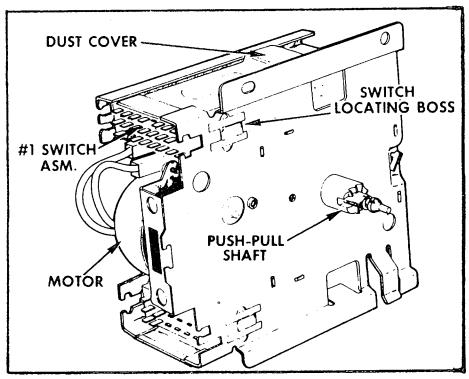


Figure 35A, Singer Timer, Front View

Also shown are the connections made when each pushbutton is in its up or down position. Note that terminals *5, 6,* and *7* are internally shorted together.

The internal wiring schematic and connections made for up and down positions of the pushbuttons on this model selector switch are shown in *Figure 38.* Note that terminals *5, 6,* and *7* are internally shorted together.

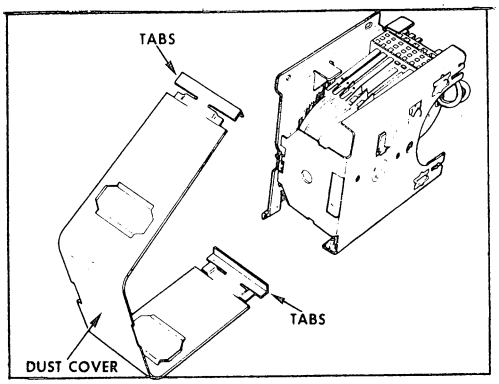


Figure 35B, Dust Cover Removed

The selection switch on less expensive models consists only of the wash temperature selection switch. In its up *(HOT)* position, the switch is open; in the down *(WARM)* position, the switch contacts are closed.

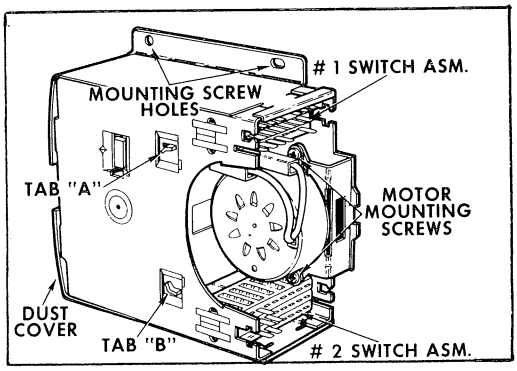


Figure 35C, Singer Timer, Rear View

WATER SAVER SWITCH

A momentary contact switch which shorts out th water valve solenoids and thus ends the *FILL* period This switch must be depressed until the motor' centrifugal switch operates.

WATER CONTROL SWITCHETTE

Actuated by water pressure when the water reache a certain level in the tub, it shorts out the wate valve solenoids and thus ends the *FILL*

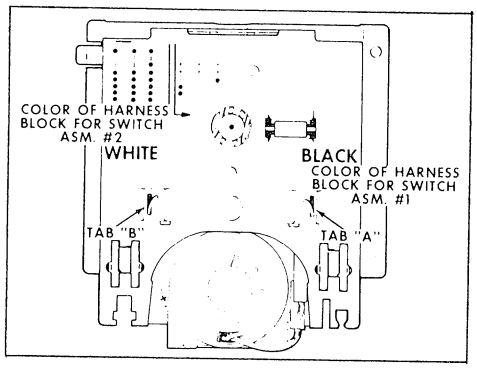


Figure 35D, Identification

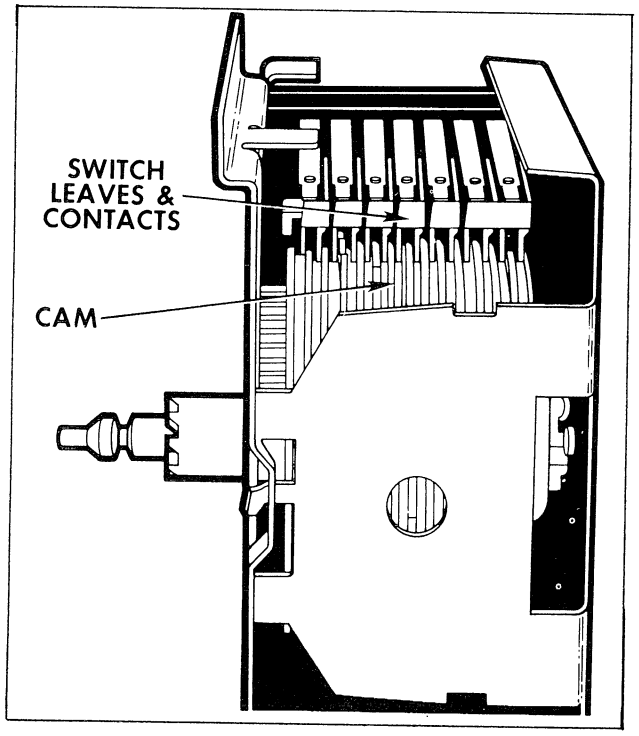


Figure 35E, Correct Position of Switch Leaves

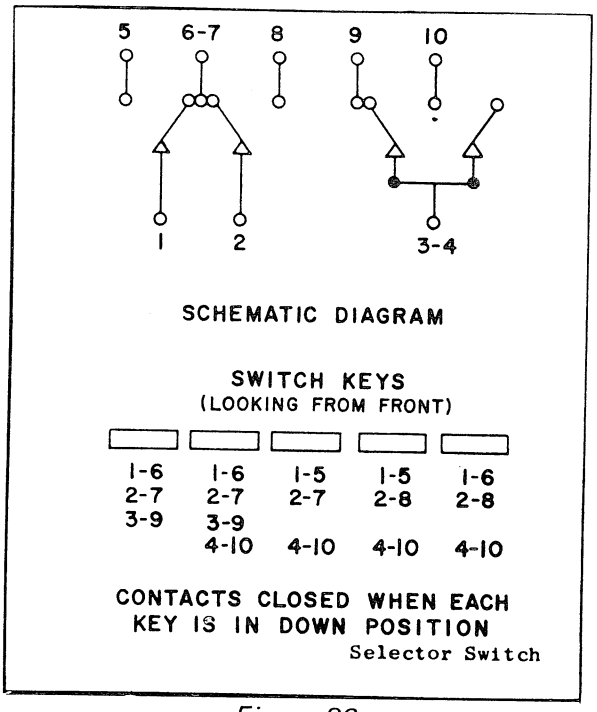


Figure 36

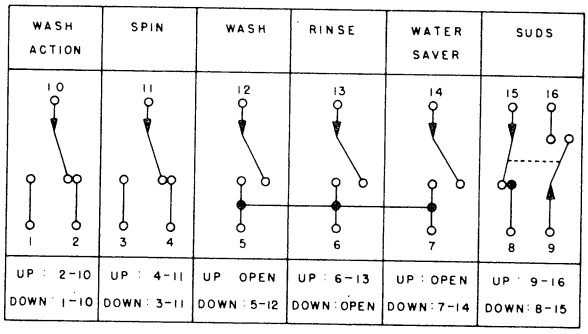


Figure 37

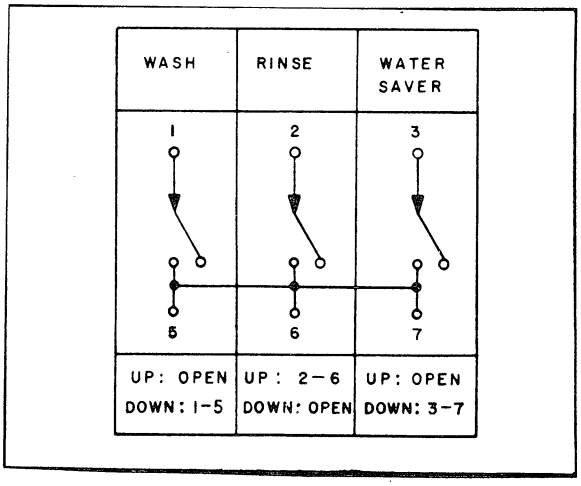


Figure 38

To replace the diaphragm or the diaphragm plate it is necessary to remove the wash basket. When the three hex-head mounting screws that hold the plate to the tub are removed — from underneath the tub — the diaphragm and plate are free and may be removed from inside the tub after the lead to the switchette are disconnected.

It is not necessary to remove the washbasket to service the water control switch itself.

First, disconnect the push-on leads to the switch. The complete switchette and actuator assembly can then be removed from the underside of the tub by removing the single screw which fastens the switch and bracket assembly to the control plate, *Figure 39.*

With the screw removed, the actuating arm shaft can be rotated out of the holding tabs and the

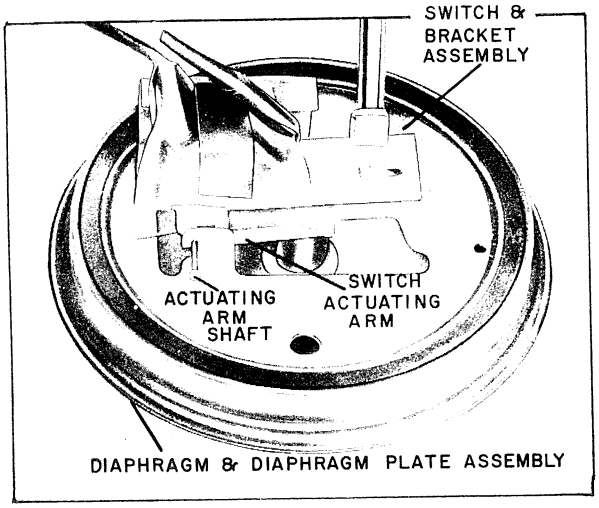


Figure 39

complete assembly will be free. To remove the actuating arm and actuating arm shaft, straighten the end of the shaft and slip it out of the holding tabs on the switch bracket, *Figure 39.*

During assembly of the actuating arm and shaft be sure to position the spring legs as shown in *Figure 40.*

The water control switchette should be adjusted to permit the machine to activate with from four to six gallons of water in the outer tub. This amount of water in the outer tub assures most efficient operation of the recirculation system. This amount of water prevents heavy particles from washing back through the Filtro-Flo assembly by permitting them to settle to the bottom of the tub. During *SPIN,* they are carried out through the drain.

The adjustment is made by loosening the screw which fastens the switch and bracket assembly to the control plate and sliding the bracket in the appropriate direction, *Figure 39.* Sliding the bracket in the direction toward the actuating arm shaft increases the amount of water required to close the water control switchette, and vice versa.

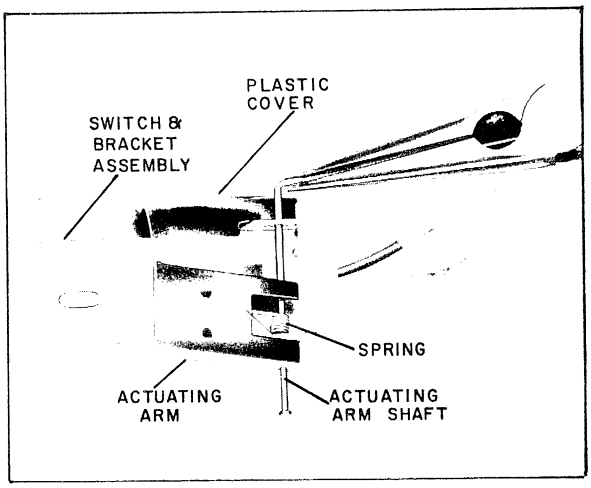


Figure 40

In later model washing machines the switchette is replaced by a water pressure switch. Water flowing into the outer tub during the fill and rinse period carries a column of water through a small diameter tube to the water pressure switch. This water exerts a pressure against the captured or trapped air ahead of it. The air in turn is forced against a diaphragm that is linked to electric contacts, if the contacts fail to open during the wash period flooding could result. If the water stops flowing into the washing machine after the plug has been removed from the electric outlet, the water pressure switch could be defective. Should the water continue to run into the machine after the plug has been removed from the wall outlet, there is an indication that the water valve is remaining open because of mechanical failure rather than an electric control problem, and the water valve should be replaced.

NOTE: Mechanical failure of the water valve can sometimes be an intermittent problem, be sure of your diagnosis.

On some model washing machines, the water level switch is adjustable from the control console by a water level control that connects to the water pressure switch using mechanical linkage. This mechanical linkage is fastened to the water pressure switch and a shaft protrudes through the control panel. The knob must first be removed before the water pressure switch can be separated from the panel.

CENTRIFUGAL SWITCH (In Motor)
One section of this switch closes when the motor gets up speed and acts as a holding contact to keep power supplied to the motor when the water control switch opens. The other section is in series with the start winding and opens when the motor gets up to speed.

WASH TEMPERATURE SWITCH OR FABRIC SELECTORS SWITCH – RINSE TEMPERATURE
In series with the hot water solenoid, the switch is open in the *COLD-RINSE* position and closed in the *WARM-RINSE* position.

RINSE TEMPERATURE SWITCH OR FABRIC SELECTOR SWITCH – RINSE TEMPERATURE
In series with the hot water solenoid, the switch is open in the *COLD-RINSE* position and closed in the *WARM-RINSE* position.

SAVE SUDS SWITCH (All Suds-Save Models)
This switch is in series with the distribution valve solenoid, and thus activates the distribution valve causing sudsy water to be channeled into an external set tub instead of down the drain.

SPIN SPEED SWITCH OR FABRIC SELECTOR SWITCH – SPIN SPEED
In series with the speed control solenoid, the switch is open in *NORMAL (FAST)* speed and closed in *SLOW (DELICATE)*

ACTIVATION SPEED SWITCH OR FABRIC SELECTOR SWITCH – ACTIVATION SPEED
In series with the speed control solenoid, the switch is open in *NORMAL (FAST)* speed and closed in *SLOW (DELICATE).*

RINSE TEMPERATURE SELECTION SWITCH
This switch over-rides the fabric selector switch rinse temperature on these models. In its *AUTO* position, it has closed contacts in series with the hot water solenoid and the fabric selector switch. In its *COLD* position, this circuit is opened. In its *WARM* position, it completes a bypass circuit around the fabric selector switch to the hot water solenoid.

SUDS RETURN SWITCH (All Suds-Saves Models)
A manual switch, when set to return suds energizes suds return pump and bypasses the water valves.

COLD WATER WASH SWITCH
This switch is in series with the hot water solenoid. When cold water is selected this switch opens and disconnects the hot water solenoid.

LID SWITCH, *Figure 40A*
The lid switch and linkage assembly provides a safety factor when the washer is operating. The washer should stop operation when the lid is raised a maximum of two inches and start at approximately one inch. Adjust the switch actuator as needed, *Figure 40B.* Use vice grip pliers, as illustrated in *Figure 40C* to prevent bending actuator brackets. Make adjustment with a common pliers as shown. A 1/10 inch bend will result in a 3/10 inch change therefore use caution and bend as required.

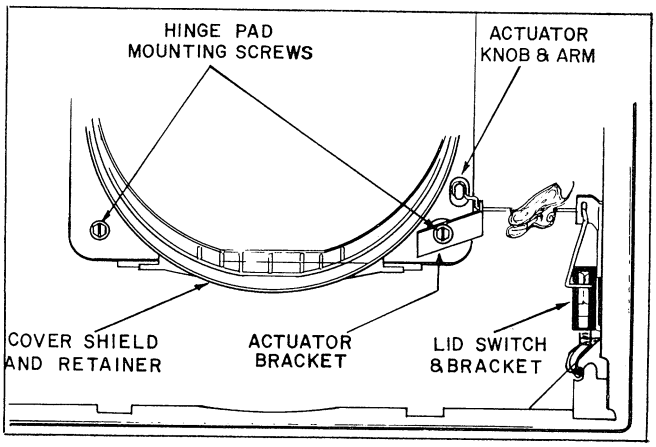


Figure 40A, Location of Lid Components

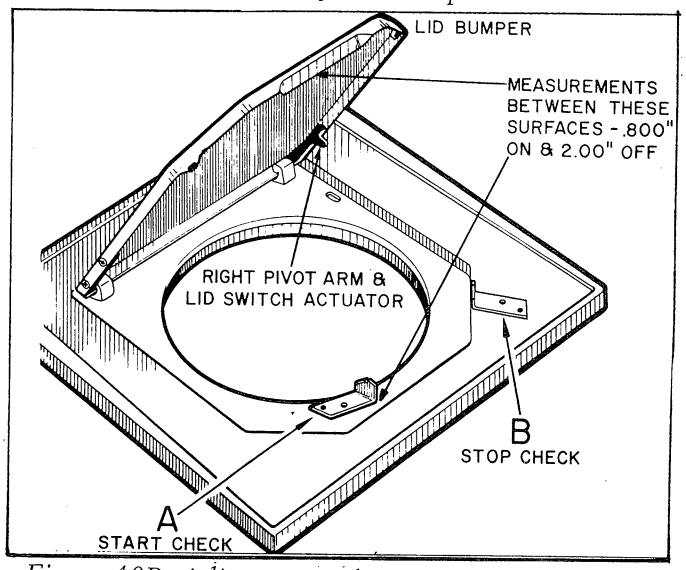


Figure 40B, Adjustment Check

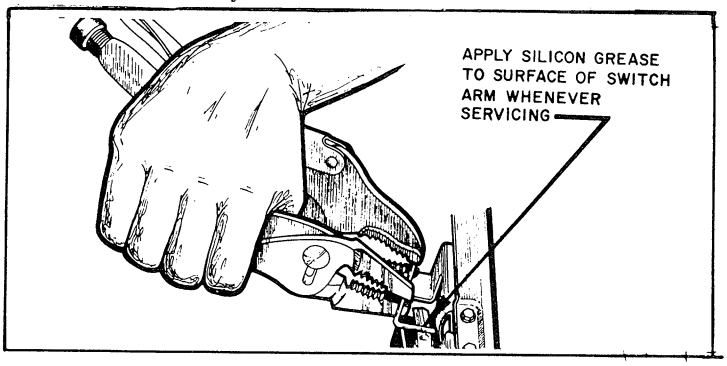


Figure 40C, Use Vice Grips to Prevent Bending Brackets.

Two different types of solenoids are used to control the water inlet valves used in the manufacture of G.E. automatic washers. These are the open type and the sealed type.

The open type solenoid, *Figure 41,* is used primarily with brass bodies valves and is anchored to the valve by means of a coil tension spring. The coil is cradled steel frame and a bushing is inserted in each end of the coil leaving a space between them to help center the plunger or armature and to prevent noisy operation. The spade terminal connections are on the side of the coil. The plunger is located in a cover or shield over which the solenoid is assembled. This plunger is spring-loaded to provide positive sealing action when the solenoid is not energized.

The Sealed Type Solenoid, *Figure 42,* functions in exactly the same manner as the open type but is secured to a nylon valve body by screws. Instead of being cradled in a steel frame, the solenoid coil is completely seated in a can-like container to further protect the wire from the corrosive effects of water and detergents. The spade terminals are mounted on the outer end of this solenoid.

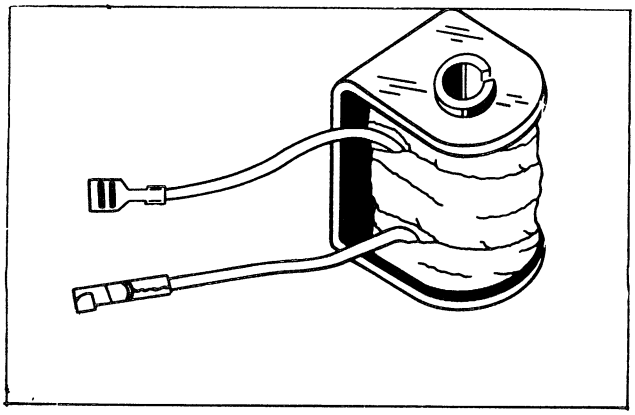


Figure 41

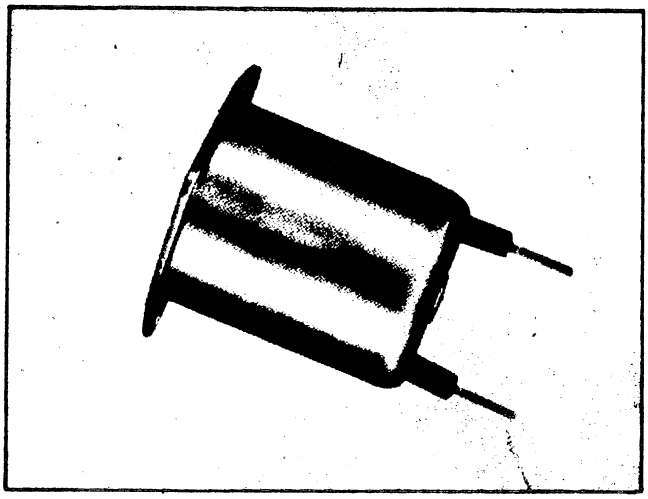


Figure 42 - Sealed Type Solenoid Coil

SPEED CONTROL SOLENOID

When power is applied to this solenoid, a brak against the carrier plate on the two-speed clutc is actuated which holds the carrier plate fixed an prevents the clutch from reaching full speec *Figure 43.*

RINSE DISPENSER SOLENOID

When this solenoid is energized, the plunger in th rinse dispenser valve is seated, blocking flow of wate to the dispenser tray. When unenergized, the valv is open, *Figure 44.*

BLEACH DISPENSER SOLENOID

When the solenoid is energized the valve in th measuring tank is lifted. This releases bleach int the outer tub, *Figure 45.*

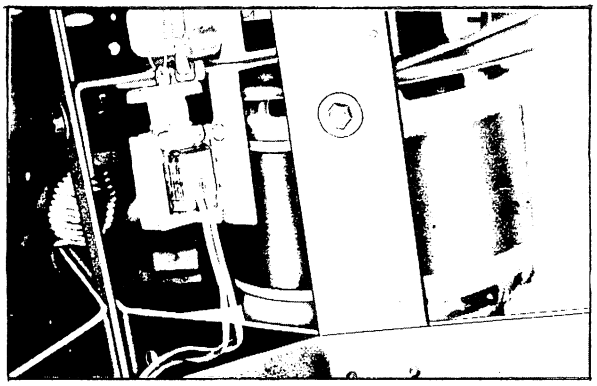


Figure 43

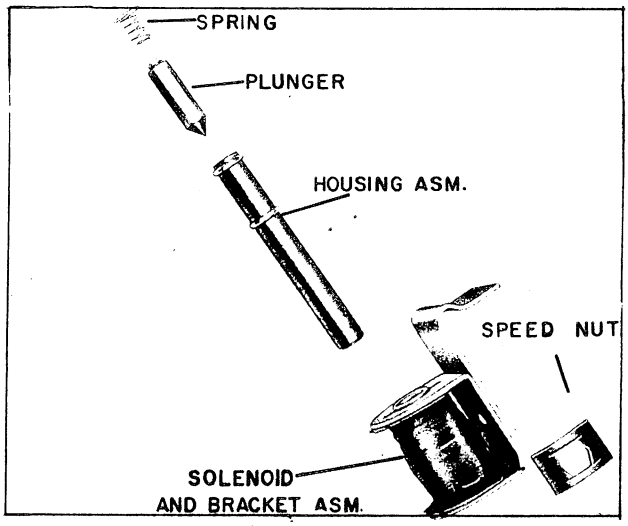


Figure 44

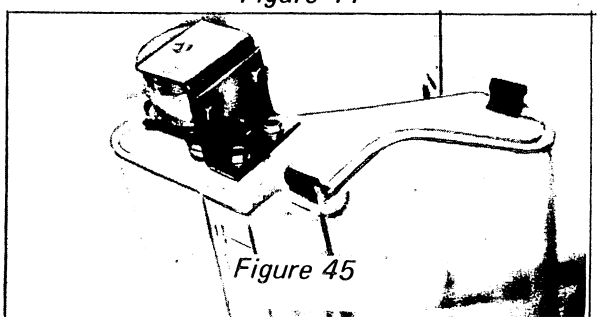


Figure 45

DISTRIBUTION VALVE SOLENOID

When actuated, this solenoid changes the position of the rocker arm in the distribution valve causing sudsy water to be channeled into the suds save hose instead of the drain hose. (Used on suds-saver models only), *Figure 46.*

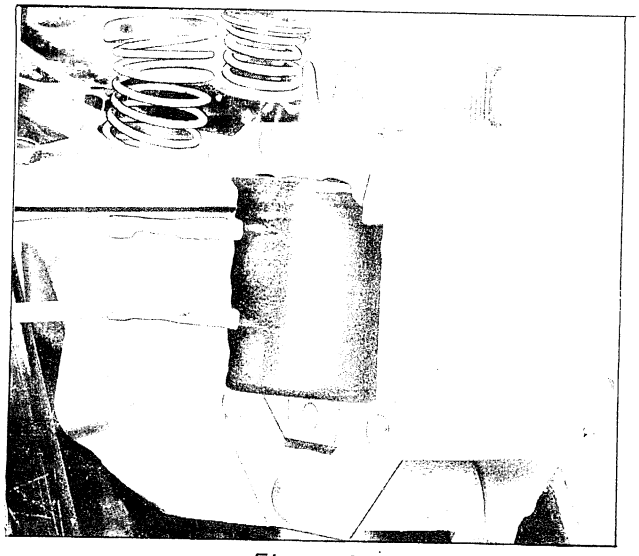


Figure 46

Machine Motors

All General Electric automatic washers are driven by a reversible General Electric motor. The motor is directly coupled to the drain pump through a flexible coupling, and is coupled to the transmission through a clutch and V-belt.

Direction of motor rotation and therefore of the clutch is controlled automatically through switches in the cycle control. Clockwise rotation of the motor powers the machine during *SPIN*: counterclockwise rotation supplies power during *WASH*. The direction of motor rotation is always stated as the direction of shaft rotation when viewing the motor from the end opposite the shaft extension.

The direction of rotation of the motor depends upon the polarity of the *START* winding when power is supplied to the motor. There is a normally closed set of centrifugal switch contacts in series with the *START* winding. When the speed of the motor reaches about 1450 RPM, these contacts open and the *START* winding is out of the circuit.

A thermal overload protector, in series with both the *MAIN* and *START* windings in the motor opens, when the windings overheat.

Late and current model washing machine do not use an internal centrifugal switch in the motor. Change from starting phase to running phase is accomplished by a motor starting relay generally mounted on the upper cross member of the cabinet at the left side. Because recent models of General Electric washers use 1/2 H.P. motors, caution should be taken, to ensure the proper relay is used when replacement is necessary, *Figure 47.*

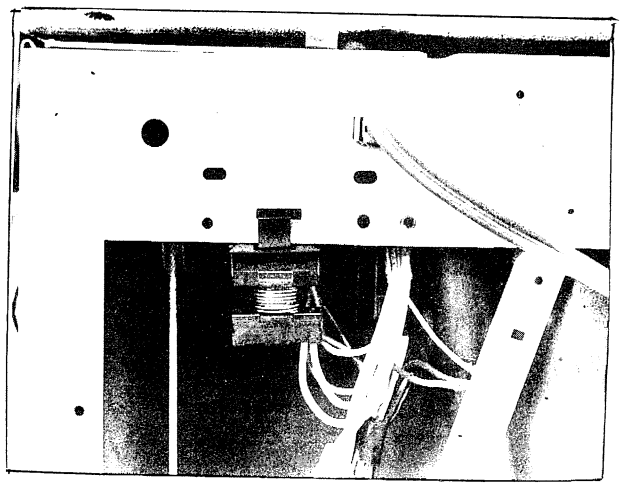


Figure 47

Three later model motors are shown, *Figures 48, 49* and *50. Figure 48,* the *"T"* frame motor (cube shaped) are *"throw-away"* motors repairs are not practical.

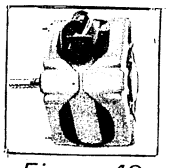


Figure 48

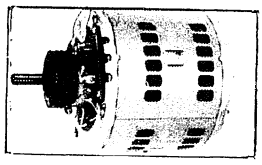


Figure 49

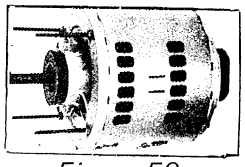


Figure 50

Up to 1967 the harness wires connecting to the motor was composed of five wires. In some hook-ups, four of these wires connected to the motor terminal board, the fifth wire extended from the motor and was a mid wire connection.

To check the motor with an ohmmeter, proceed as follows:

a. Remove wires from motor terminal board.

b. Test across starting coil from *Red* to *Black.* or *Orange* to *Black*, or *5* to *4*, or *White* to *Black.*

   Test should read 3.5 to 5 ohms.

c. Test across running coil and *Blue* to *Yellow,* or, *1* to *3,* or *Blue* to *Green.*

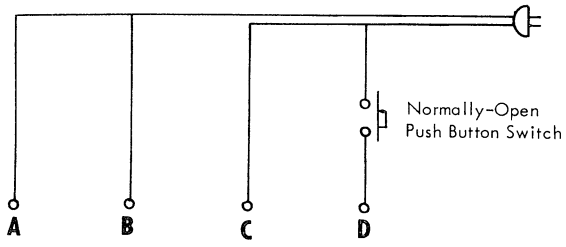
   Test should read approximately 2 ohms.

To construct and use a three-wire test cord, see text under *Figure 51*, a test cord such as shown in *Figure 51*, can be purchased from your appliance parts dealer.

GENERAL ELECTRIC RELAY MOTOR

DOUBLE SHAFTED MOTORS...
DIRECTION OF ROTATION GIVEN FACING PULLEY AND SWITCH END.
DIRECTION OF ROTATION GIVEN FACING PULLEY END.

RELAY START DRIVE MOTOR



MOTOR TEST HARNESS

MOTOR TEST PROCEDURE

1. DO NOT use Test Cord without Pushbutton Switch. Start windings will stay in circuit and burn up.
2. CW Rotation: Connect above test cord to motor wires as follows: (A) to Black, (B) to Yellow, (C) to Blue, (D) to Red.
3. Momentarily press Pushbutton. Motor should start and run when Pushbutton released.
4. CCW Rotation: Connect test cord as follows: (A) to Black, (B) to Blue, (C) to Yellow, (D) to Red.
5. Follow step three above.

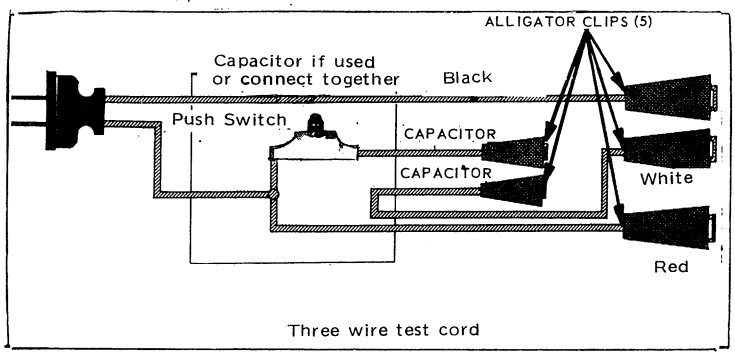


Figure 51

a. Connect one side of the starting winding to one side of the running winding together, Clip black wire of cord to this point.

b. Connect other side of starting coil to white wire of test cord.

c. Connect remaining red wire to other side of running coil.

d. With button on cord depressed, plug test cord into 115 Volt wall receptacle.

e. If and when motor starts, and continues to run, release button.

f. Do not hold button down for more than a few seconds.

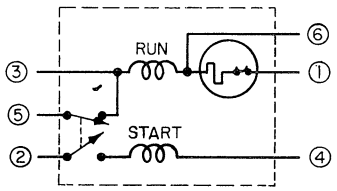
g. If motor runs, note if it sounds normal.

h. Start and stop the motor a number of times, employing the same procedure. (A bad relay, or centrifugal switch could be an intermittent problem.

i. If motor fails to start, or does not continue to run after button has been released, motor should be replaced.

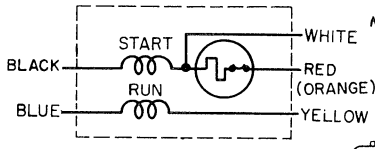
Illustrated are four schematics, all essentially the same, note coding of wires vary.

WH20X46 - 5KH45DR92X
("T" & EARLIER - STANDARD REPLACEMENT MOTOR)

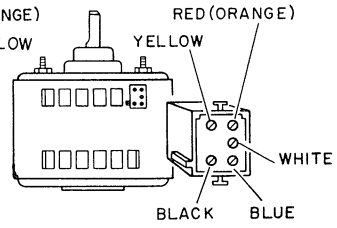


CENTRIFUGAL SWITCH SHOWN IN RUNNING POSITION

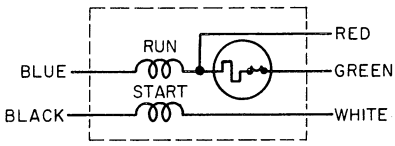
("V" and later standard replacement 1/3 H.P. motors)



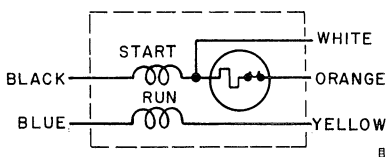
MOTOR - WH20X47 -'5KH42ER7005
RELAY - WH12X235 - 3ARR12KF41

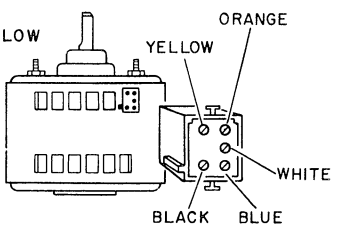


MOTOR - WH20X33 - 5KH42DR132X
RELAY - WH12X218 - 3ARR2KBA108C



MOTOR - WH20X48 - 5KH42ER681S
RELAY - WH12X400 - 3ARR12KF21ZM





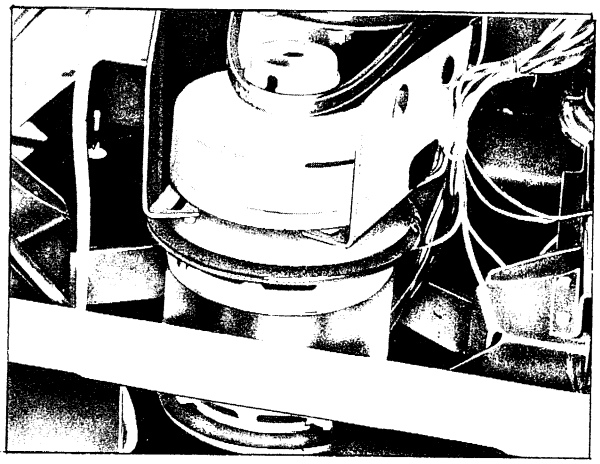


Figure 52

MOTOR REMOVAL

On washers which use a two-speed clutch, the clutch must be completely disassembled before the motor can be removed. On washers with one-speed clutches, the motor and clutch may be removed as a unit if desired. After the four motor mounting nuts which hold the motor to the suspension assembly are removed, the motor can be removed through the bottom of the washer. Over the top of the motor is positioned a motor guard which prevents water or oil from dripping down into the motor windings. Underneath the motor is a firewall which is mounted by two screws that thread into the motor end bell. Connections to the motor are made by quick-connect terminals at the bottom, *Figure 52*

Inlet Valves

WATER VALVES – EARLY MODELS

To remove the water inlet valve, pry open the throat of the inlet tube bracket and remove the screws holding the valve assembly to the apron. Rotate the valve, and extract it from the back of the machine. After removing the solenoid coils, the valve can be serviced part for part.

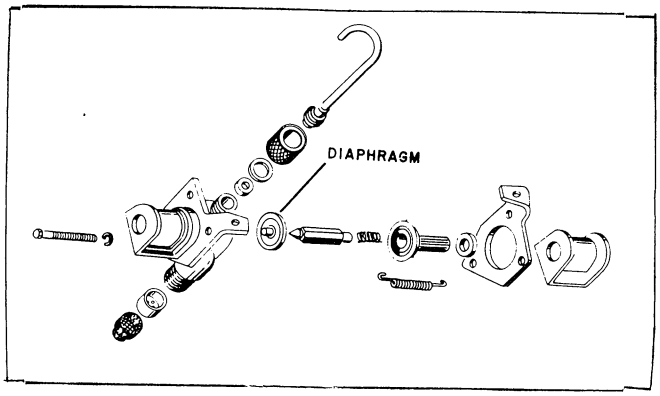
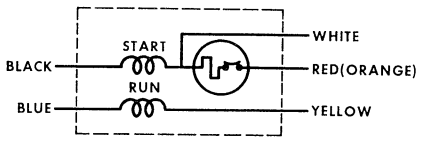
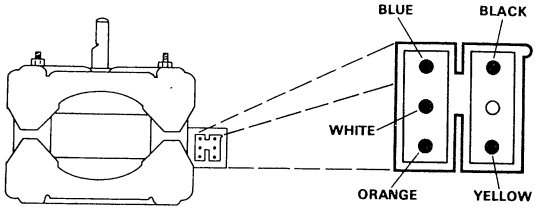


Figure 53

MOTOR-WH20X51-5KH42DTI9S
RELAY-WH12X235-3ARR12KF41
-3ARR18J41M

1/3 H.P.
FORM "T"





TERMINAL END OF MOTOR BLOCK SHOWING MOTOR WIRE COLORS

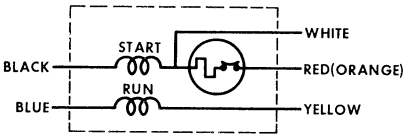
D.C. Resistance (Cold)
Run Wind.-1.73 Ohms
Start Wind.-4.23 Ohms

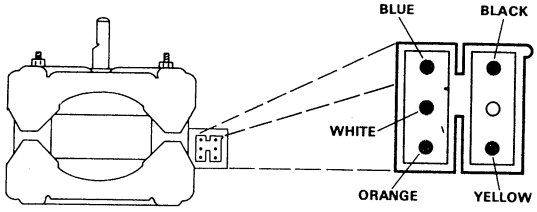
Originally Used On EA and L Series.

Colors Designate Wires Between Motor Receptacle and Motor Windings, Not Harness Windings.

MOTOR-WH20X52-5KH42GT2S
RELAY-WH12X468-3ARR12KF285M
-3ARR18J37M

1/2 H.P.
FORM "T"





TERMINAL END OF MOTOR BLOCK SHOWING MOTOR WIRE COLORS

D.C. Resistance (Cold)
Run Wind.-1.18 Ohms
Start Wind.-3.01 Ohms

Originally Used On EA and L Series.

Colors Designate Wires Between Motor Receptacle and Motor Windings, Not Harness Windings.

Complaints of leaking valves may arise if the inlet tube discharges into the inlet nozzle improperly so that over spray or splashing occurs. If this is not the case, all joints between the body and the solenoid guides should be checked as well as the connections between the inlet tube and valve body. The inlet hose connections to the valve should also be tightened if necessary.

If a valve continues to discharge water after the machine is shut off, the bleed hole in the diaphragm may be blocked, dirt may be preventing the diaphragm from seating or the diaphragm may be torn or porous. In any of these cases the diaphragm should be replaced, *Figure 53*

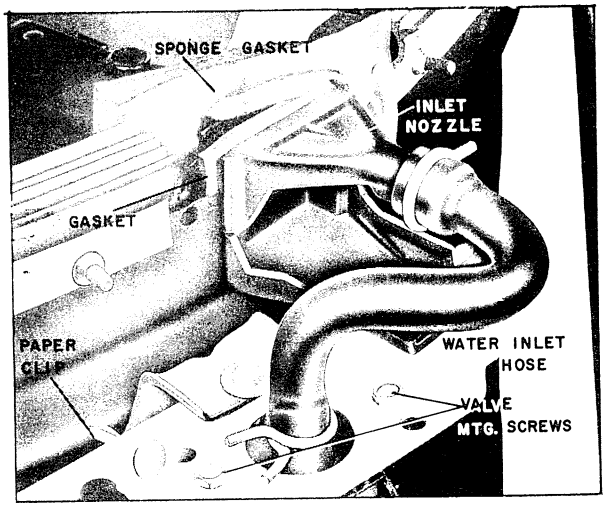


Figure 54

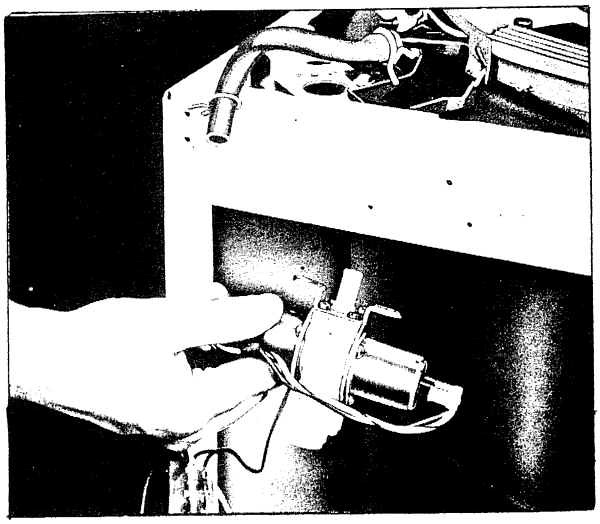


Figure 55

WATER VALVE AND WATER INLET NOZZLE-LATER MODELS

To remove the water inlet nozzle, first remove the sponge rubber gasket at the top of the nozzle. This gasket is held to the tub by two brass paper clips, *Figure 54.*

The nozzle is disassembled from the tub by lifting it straight up. A rubber washer placed in the groove around the nozzle is located on the inside of the tub, and makes a watertight seal between the inlet nozzle and the tub.

The water valve assembly is removed by unfastening the hose clamp that holds the water inlet hose to the nylon outlet tube at the top of the water valve; removing the valve mounting screws, *Figure 54;* and disconnecting the quick-connect terminals on the two solenoids, *Figure 55.*

WATER INLET SYSTEM, Late Models, *Figure 56*

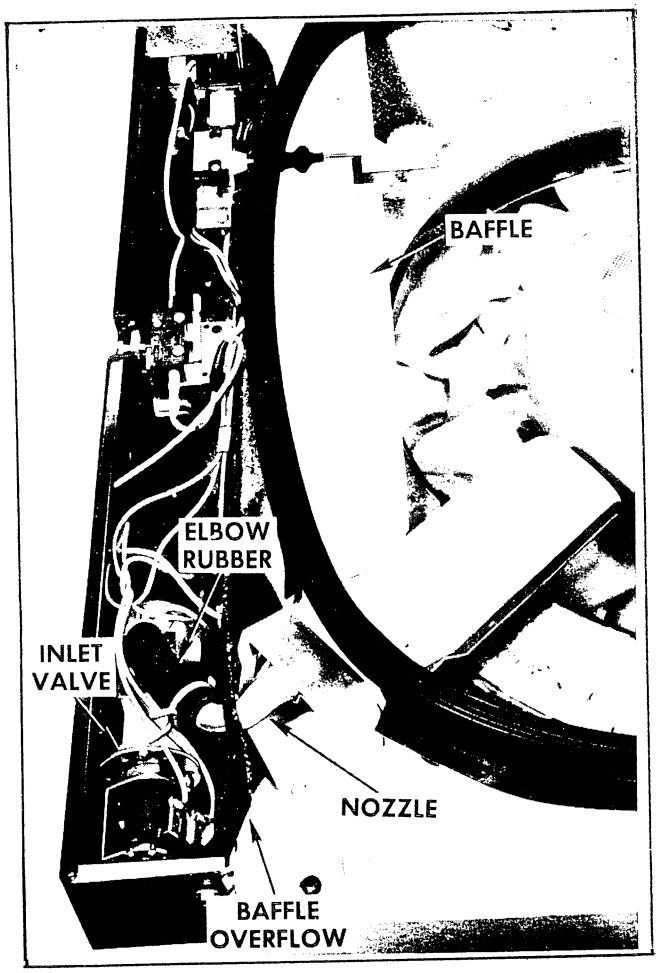


Figure 56

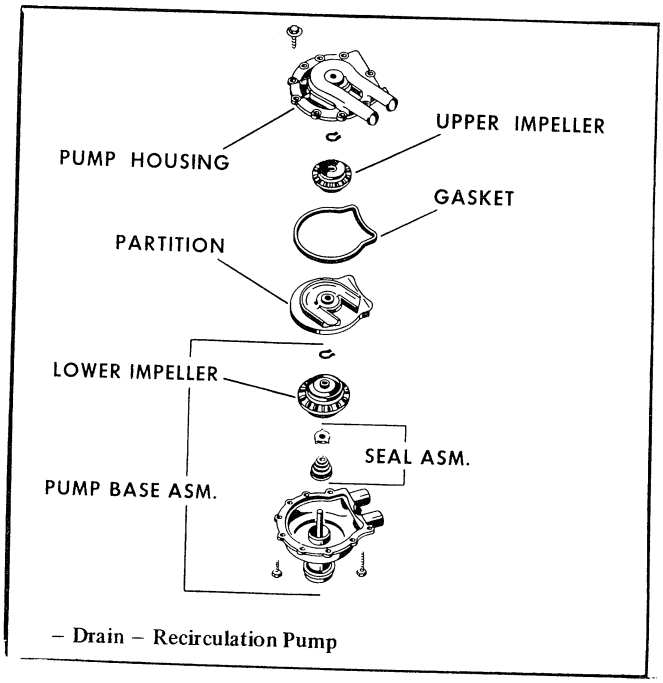
SERVICE HINTS

1. **Upper Impeller, Partition, and Top Housing:** On V7 and later model washers, three parts are different from on V1 through V6 models: Upper impeller, pump partition, and pump housing. The V7 and later, W model upper impeller has vanes with more area (vanes more square on edges), which give a higher recirculation flow rate. With the new upper impeller, the partition and top housing also has to be changed. All three V7 and later parts (used together) can be used to replace the corresponding parts on V1 through V6 machines, but not vice-versa.

   NOTE: On very clear V models (through serial number XT.....), the pump shaft is slightly larger – and the replacement upper impeller will not fit on the shaft. In these machines, the complete pump must be replaced if an upper impeller, partition, or top housing is required.

2. **Retaining Rings on Pump Shaft:** The two retaining rings on the pump shaft can easily be over-expanded when removing or replacing them. If the retainer ring over the lower impeller comes out of its groove, the lower impeller can move up and cause a seal leak. Use care to expand these retainer rings only enough to allow them to clear the shaft.

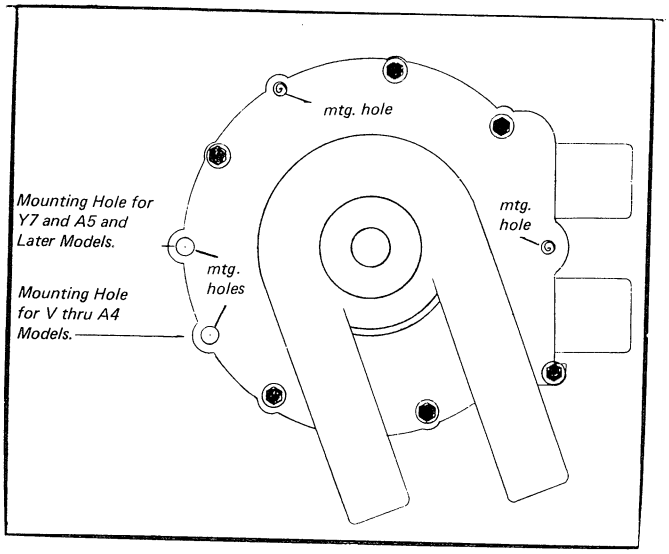
PUMP – LATE AND CURRENT MODELS



– Drain – Recirculation Pump

3. **Pump Assembly:** On W7 and later models, except X1, the lower impeller is pressed on to the pump shaft; therefore, the seal assembly and lower impeller are not serviceable. Replace the complete pump assembly.

REPLACEMENT PUMP FOR V AND LATER



Service Hints

The new WH23X42 (plastic) pump assembly supersedes all recirculating types. New pump has optional mounting holes to accommodate V thru B models. Partition, upper impeller, top housing or lower assembly are not physically interchangeable with zinc-cast parts.

Pumps

A flow chart for the Filter-Flo system is shown on page 18. While the chart shows a two-speed suds save model washer, the Filter-Flo operation is the same on all models.

During *WASH* or *RINSE* activation, water continually overflows from the wash basket through the small holes around its top circumference. At the same time, a small quantity of water drains out the bottom of the basket through the heavy soil orifice. This water is continually pumped back up through the recirculation hose and out the filter-flo nozzle into the filter pan where lint is deposited. Heavy soil (sand) falls to the bottom of the outer tub and remains there until it is flushed out during *SPIN.*

The heart of the filter-flo system is the two-way pump which is rigidly mounted on the bottom of the outer tub. A nylon baffle fits over the opening in the tub to prevent any articles of clothing which might possibly get into the outer tub from getting down into the pump and jamming it.

The pump shaft is connected to the motor shaft extension by means of a flexible coupling which also limits the transmission of clutch noise to the tub. Rotation of the motor turns the pump impeller at motor speed regardless of the clutch speed selected.

Depending upon the direction of motor rotation, water will be pumped from the tub out the drain hose, or from the tub through the recirculation hose back into the wash basket. A picture of the two-way pump base is shown in *Figure 57.*

The valve is a triangular molded rubber part, held in position in a key-hole slot in the pump casting by a heavy circular section on the end of a thin web. The thin web allows the triangular portion of the flipper to pivot about the heavy circular section. A rubber finger protrudes from the triangular section far enough to interfere with the impeller fins.

The larger of the two exit ports is the drain outlet; the smaller port is the recirculation outlet.

During the activation the motor drives the impeller clockwise. The impeller strikes the flipper finger, and water force then carries it farther to the left until it completely closes the large drain outlet port, *Figure 58.* This permits water to be pumped out the smaller port and through the recirculation system into the basket

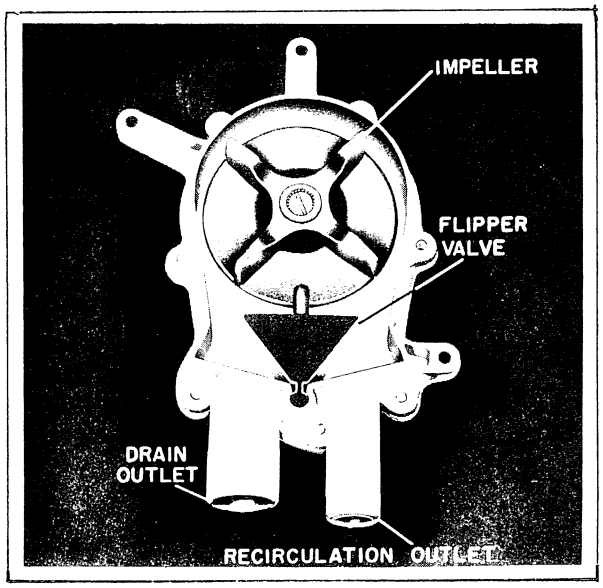


Figure 57

When the motor pauses between cycles, the motor and pump stop rotating, and the flipper returns to its normal center position.

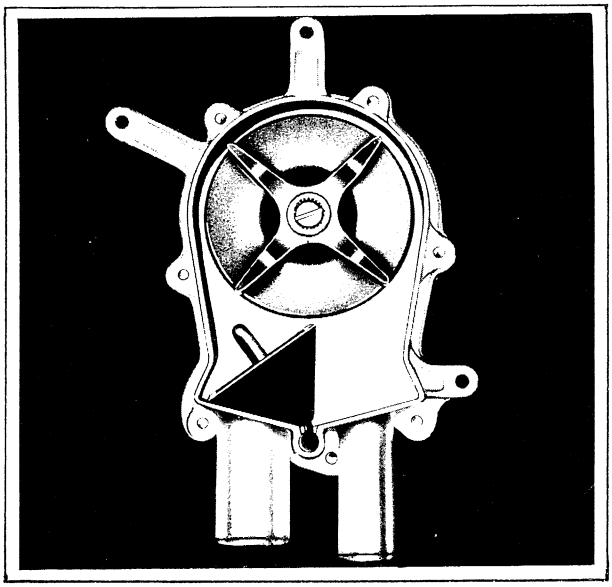


Figure 58

During *SPIN,* the motor drives the impeller counter clockwise. The impeller strikes the flipper finger and water force carries the flipper to the right unti it completely closes the smaller port. This direct

water from the tub out the drain hose, *Figure 59.* When the flipper valve blocks either exit port, the impeller fins do not strike the protruding rubber finger, and wear on impeller and valve is minimized.

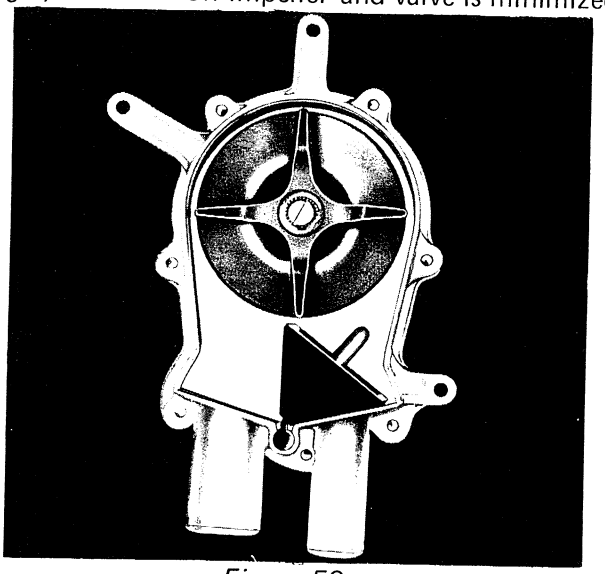


Figure 59

A sleeve-type bearing is used in the pump. It is lubricated by an oil wick and is protected from water by a slinger located above the bearing. The bearing is lubricated for life and requires no servicing.

To remove the pump assembly, first take off the drain and recirculation hose and remove the flexible drive coupling as previously described. Next, remove the three screws holding the pump to the tub bracket. *Figure 60.*

After the pump has been removed, it can be disassembled by extracting the six screws in the pump housing. This gives ready access to the impeller and flipper valve.

The impeller can be removed by removing the impeller screw and prying the impeller off the shaft. The pump valve may be lifted from its recess for replacement. The drive plate is attached to the shaft by a split roll pin.

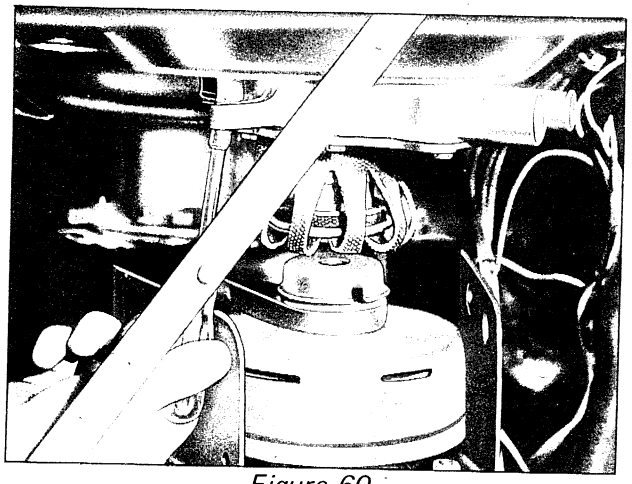


Figure 60

The rest of the pump — the base, shaft, sleeve bearing assembly and seal is replaced as a unit.

Distribution Valve

Figure 61.

These components are used on suds save return models only. To remove the distribution valve assembly, remove the four screws that hold its bracket to the suspension, *Figure 62.*

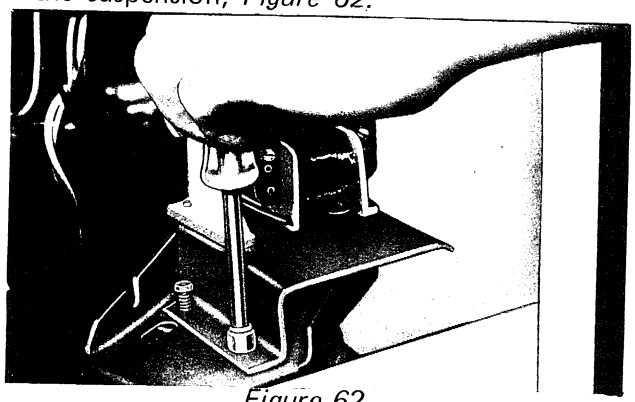
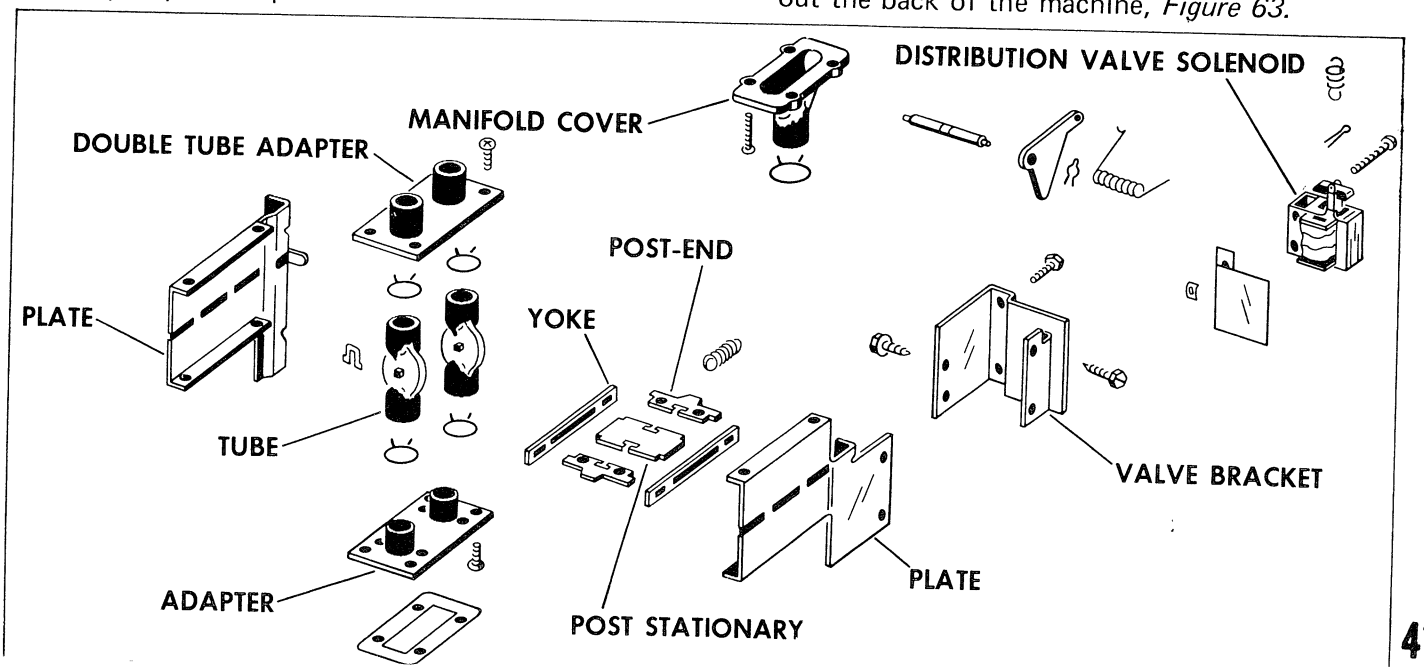


Figure 62

The bracket which holds the distribution valve assembly and the return pump can now be rotated out the back of the machine, *Figure 63.*



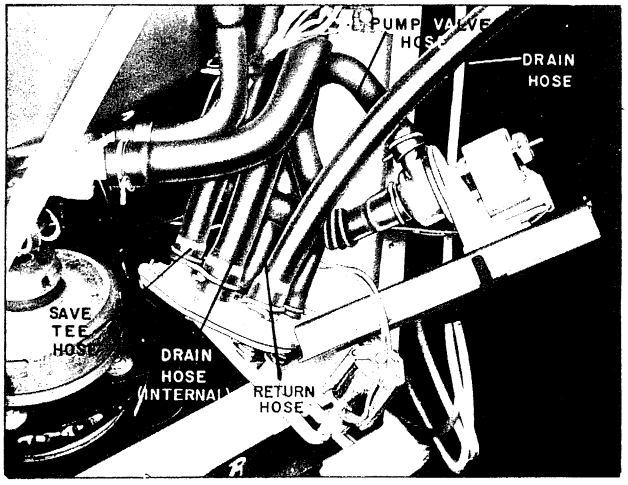


Figure 63

DISTRIBUTION VALVE DISASSEMBLY

Disconnect the hoses that connect to the five distribution valve ports. Remove the two screws which fasten the valve assembly to the bracket. Disconnect the solenoid coil leads, and remove the valve assembly.

To disassemble the solenoid, first remove the cotter pin which holds the rocker arm to the solenoid armature. The solenoid is then freed by removing the rivet and speed nut which hold the solenoid body to the distribution valve, *Figure 64.*

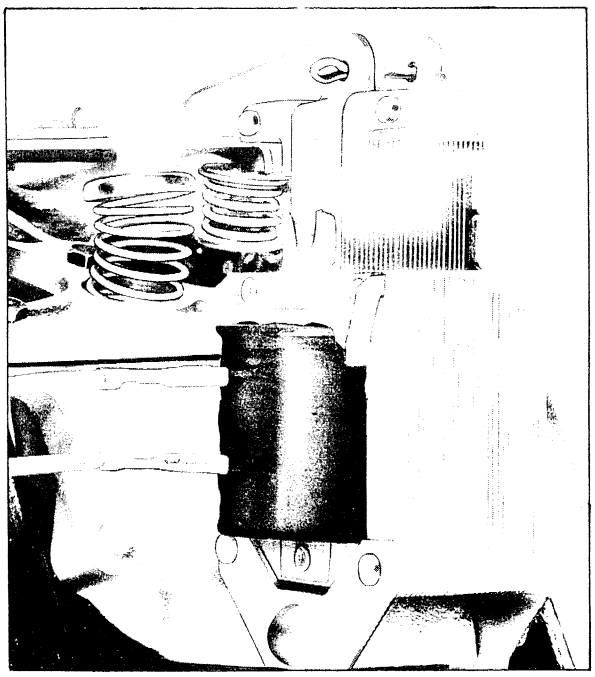


Figure 64

The rocker arm can be removed by pulling out the four cotter pins, three of which fasten the arm to the spring cups, and one of which holds the arm to the valve, *Figure 65.*

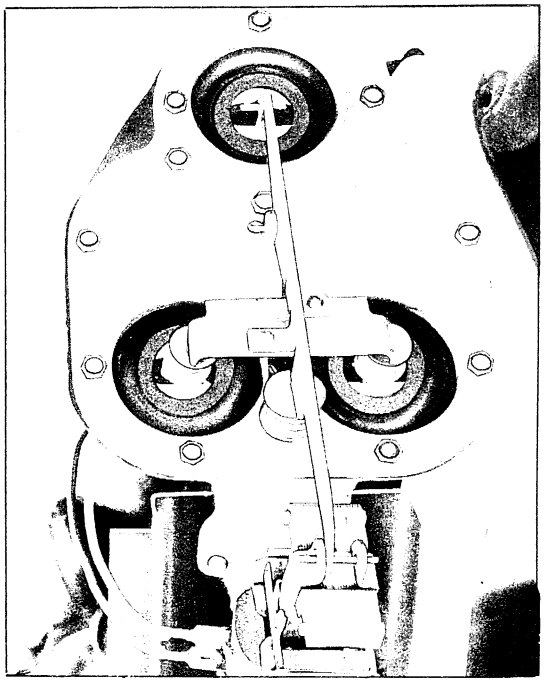


Figure 65

The valve body is fastened to the cover plate b twelve screws. With these screws removed, the valv can be disassembled and the diaphragm removec The valve body has two cavities and five ports. Th diaphragm is a one-piece rubber sheet, *Figure 6(*

RETURN PUMP DISASSEMBLY

The return pump is held to the bracket by fou screws driven from the underneath side. The bracke must be disassembled from the suspension as pr viously described before these screws can be r moved. Disconnect the hose connections and th pump leads, remove the four mounting screws, an the pump is free

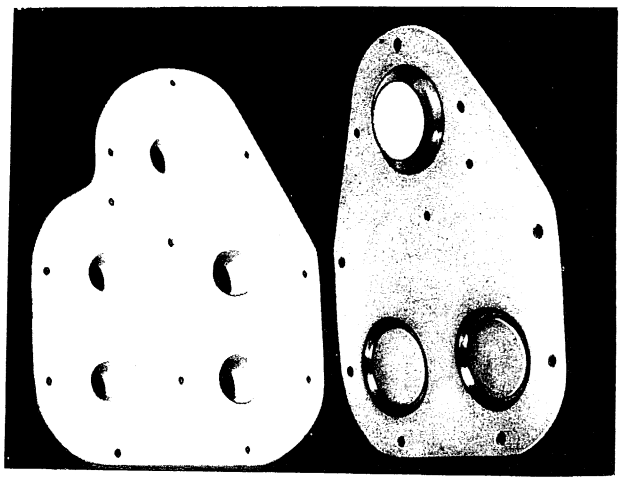


Figure 66

Dispensers

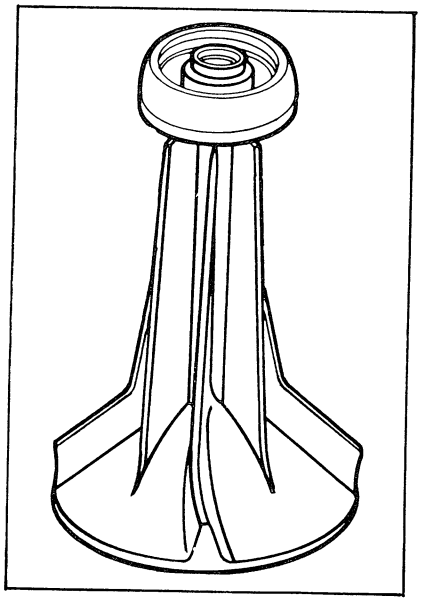


Figure 67, Rinse Agent Dispenser

SUDS SAVER AND SUDS RETURN

The suds save system is designed to save and return only the initial wash water, thereby saving the suds water for the next wash load. An auxiliary tub must be used to hold the suds water until the next wash load, at that time the suds water is drawn back through the pump and into the machine. The motor will run in the agitator mode during the return period. *Figure 66A,* illustrates the water flow during the SAVE cycle, *Figure 66B,* illustrates the water flow during the RETURN. If the SUDS SAVE fails to operate or operates in an erratic manner, lift the cover assembly from the washing machine and look for an item of clothes or foreign matter that may have dropped between the wash basket and the outer tub.

RINSE AGENT DISPENSER, *Figure 67.*

Operation – The rinse agent dispenser is mounted to the top of the agitator. A periodic cleaning of this device is necessary, for it is subject to becoming clogged due to the interaction between the detergents and the fabric softner. The dispenser can readily be removed from the agitator when not in use or for cleaning purposes. To clean, remove the dispenser from the agitator and immerse in a solution of 50% rubbing alcohol and 50% warm water for approximately 15 minutes. If clog is heavy it may take more than one soaking to complete the cleansing.

BLEACH DISPENSER, *Figure 67A*

Description

The spout for this one shot bleach dispenser is a snap fit into the washer cover. A bleach funnel is attached to the inside of the outer tub just below the spout. A correct measure of bleach is poured into the spout during or after the Wash fill period. It flows down the spout, into the funnel and is directed into the wash water between the tub and the basket.

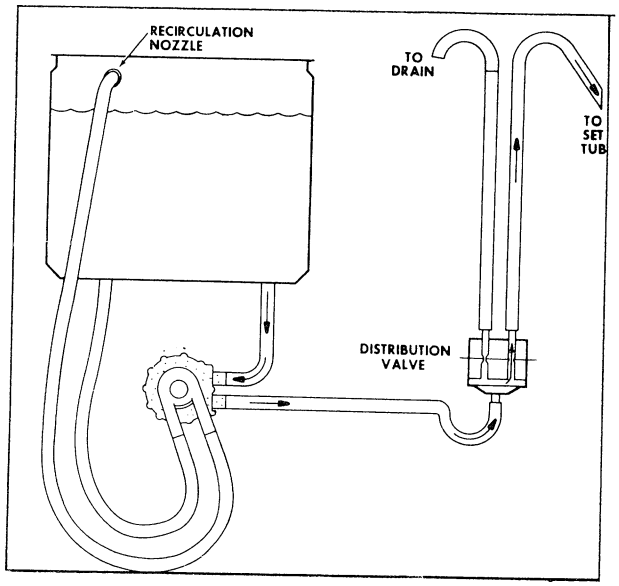


Figure 66A, Water Flow Chart During Suds Save

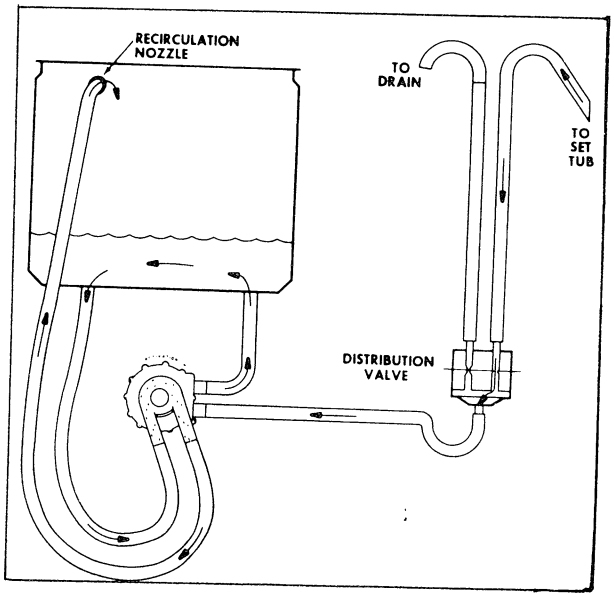


Figure 66B, Water Flow Chart During Return Suds Water.

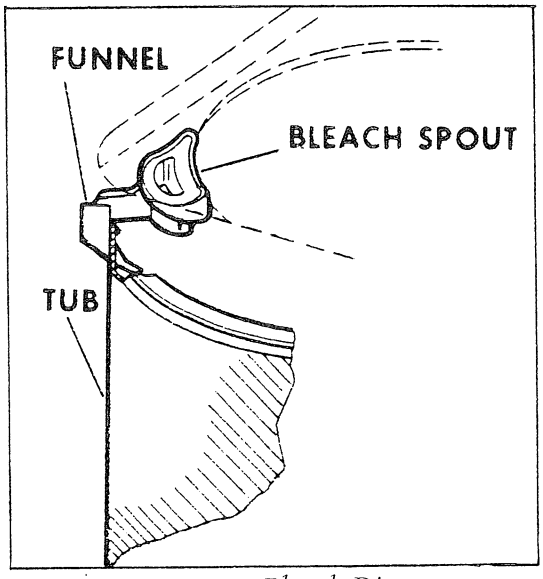


Figure 67A , Bleach Dispenser

BLEACH DISPENSER (EARLY MODELS)

The models containing a liquid bleach dispenser must be drained before the washer is tipped or tilted for service. The necessary steps to be followed when draining a bleach dispenser are contained on a label pasted to the back panel.

A syphon base is placed in a plastic bag which is attached to the inner side of the back panel.

DISPENSALL SYSTEM DIAGNOSIS

Refer to chart, Figure 68.

Malfunctions in the Dispensall system are grouped in two general categories.

a. Improper Air Control

b. Diverter or Tank contamination

Improper Air Control causes are as follows:

a. Diverter valve malfunction, which may include a bent actuator arm or poor valve seat, (check for foreign matter under seat).

b. Kinked air lines or cracked hoses causing leaks.

DIVERTER CONTAMINATION – A lint accumulation or build up of calcium carbonate in the diverter can result in improper or erratic operation. Cleaning should be done by flushing with clean water and a small brush. Do not use a knife or screw driver. Scratches on the inside surface of the diverter will cause a faster buildup of these contaminents.

NOTE: When the normal flow is CENTER, small amounts of water may be shifting right or left, this is called SPITTING. This can be tolerated if water does not enter the bleach cavity, or does not flush dry detergent out. Water must not enter the rinse agent cavity, When the normal flow is either left or right and the flow is intermittently shifting back to the center position, this is called DELATCHING.

DISPENSALL WATER FLOW CHART

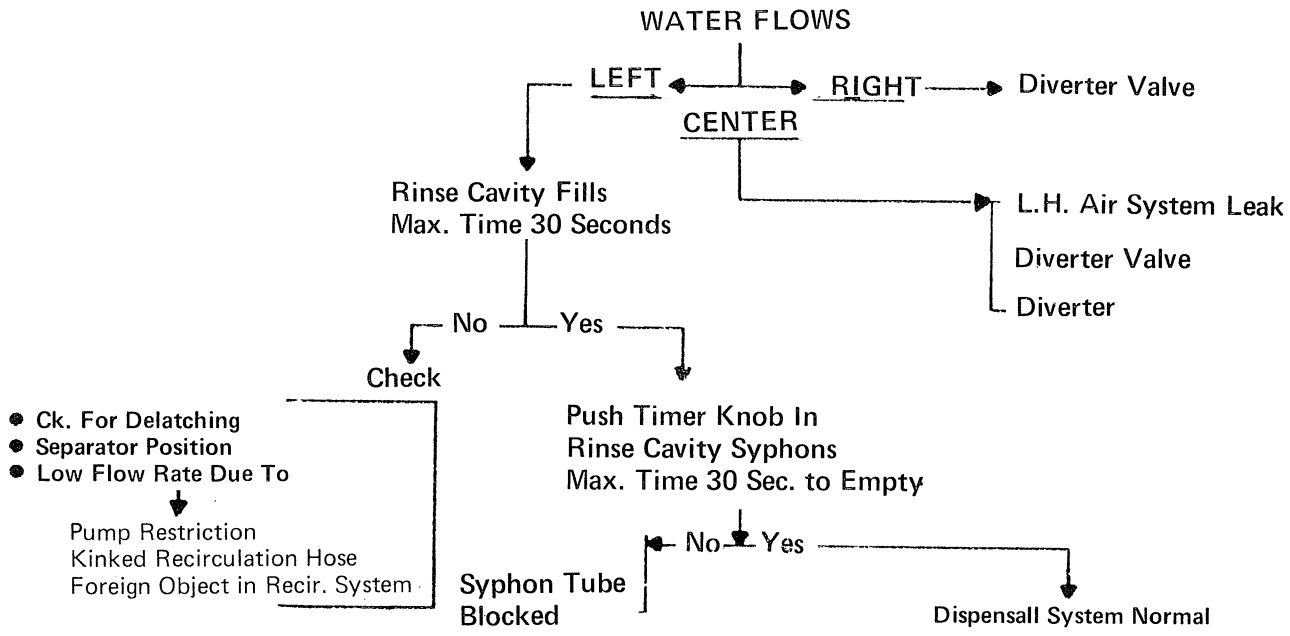


Figure 68, Water Flow Chart

Persistent spitting or delatching is caused by lint o foreign objects in the diverter or a defective diverter These faults are also intermittent and affected b water temperature and water level. Observe wate flow for 2 or 3 minutes to identify these possibl

DISPENSALL

The Dispensall is an automatic system for dispensing the following:

a. Prewash or Soak Detergent
b. Powdered Wash Detergent
c. Liquid Bleach
d. Liquid Fabric Softener.

The Dispensall is lid mounted, and each is dispensed in the proper segment of the cycle. It has three cavities to contain the additives and two troughs through which recirculating water is routed to the cavities. The fourth cavity, located at the right rear, opens directly into the filter pan below, *Figure 69* locates the major components.

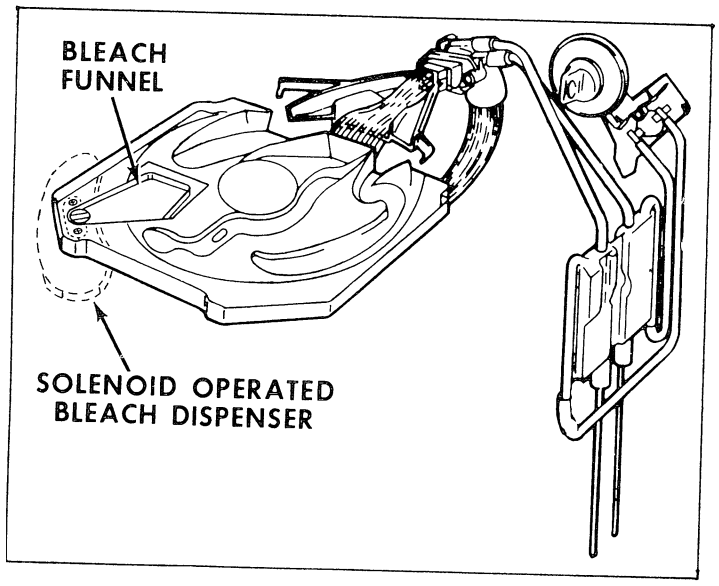


Figure 69

SERVICING THE DISPENSALL

Refer to Figures 70 and 71.

Tank Assembly –

1. Check the syphon tubes in the fabric softner cavity, *Figure 71.* The tubes may become clogged with lint or soap products.
2. Remove the tank and flush with clean water.
3. If the syphon tube is defective or improperly positioned, replace the tank assembly.

Separator – The rear of the separator is attached to the diverter by snapping it over two plastic studs. The diverter front has two plastic ears that snap into two holes in the cover shield. Whenever the washer cover is to be raised, the separator must first be disengaged from the cover shield to prevent damage.

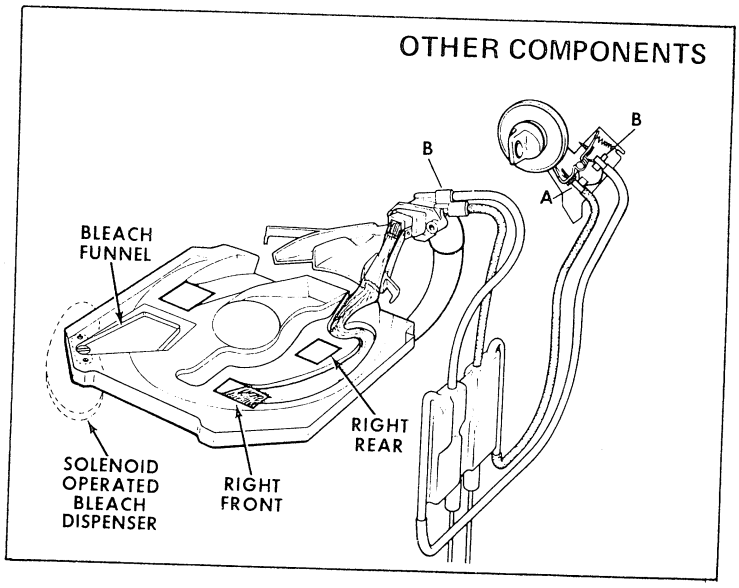


Figure 70

Diverter – The diverter is attached to the outer tub by two screws, nylon seal washers and a square rubber gasket.

Removal – The diverter can be removed as follows:

1. Remove all of the tub mounting screws with the exception of the left front tub mounting screw.
2. Raise the right rear portion of the tub about one inch to gain sufficient clearance.
3. Remove diverter from tub, remove air hoses from diverter.
4. Position nylon seals and rubber gasket properly before reassembly.

Surge Tanks – The surge tanks are mounted to the cabinet corner bracket and secured with a single screw. Check hoses for kinks or cracks. Position lower overflow hoses away from moving parts.

Diverter Valve – The diverter valve and bracket assembly mounts with two screws. One of these screws also secures the timer. It will be necessary to first remove the timer before attempting to remove the diverter valve.

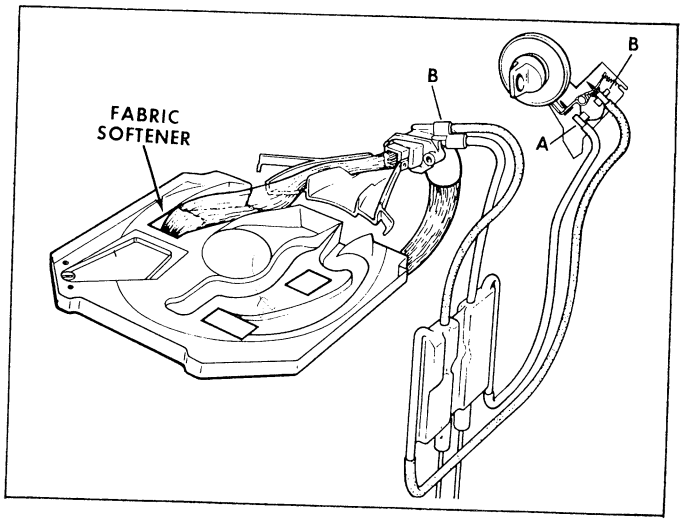


Figure 71

DISPENSALL CHECKOUT PROCEDURE

1. **Set Machine Controls:** Timer-**Soak,** Water Level-**High,** Wash/Rinse Temp.-**Warm,** Speed-**Norm.**
2. **Remove Dispensall Tank and Check the following:**
   Tank drained and free of lint.
   Separator secured to cover shield and diverter.
   Remove any lint from separator and diverter.
3. **Reinstall Tank** - be sure tabs are properly seated.
4. **Close Lid and Start Machine.**
5. **Open small Dispensall lid and observe recirculation water flow.**

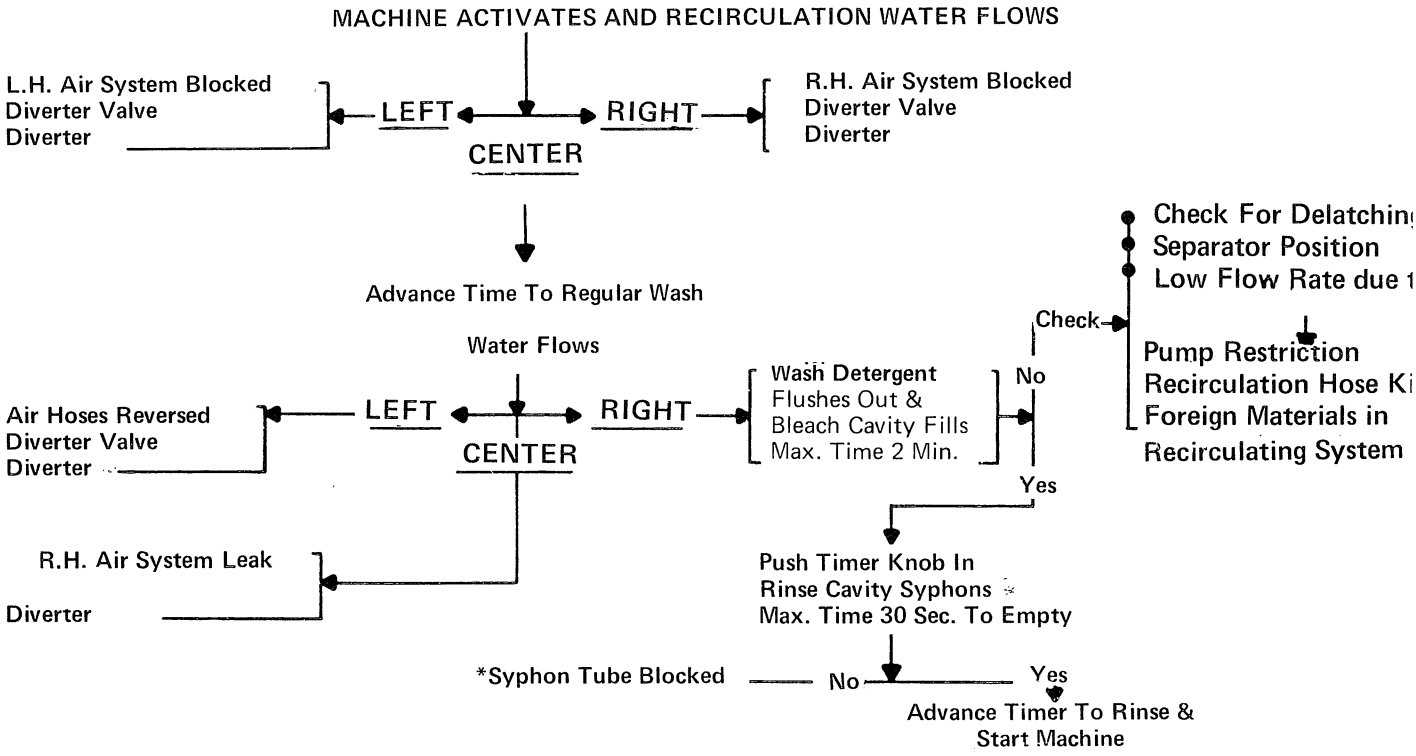


Figure 72

WATER LEVEL SWITCHES (PRESSURE SWITCHES)

On later models the pressure fill switch metering tube is located as indicated in *Figure 73*. In the high position with an adjustable pressure switch or with a permanently set pressure switch the water level should be 16½ inches measured from the bottom of the spin tub. When lowering the water leveli setting, the switch should be checked out at the lc level to be sure it resets after the water has spun ou

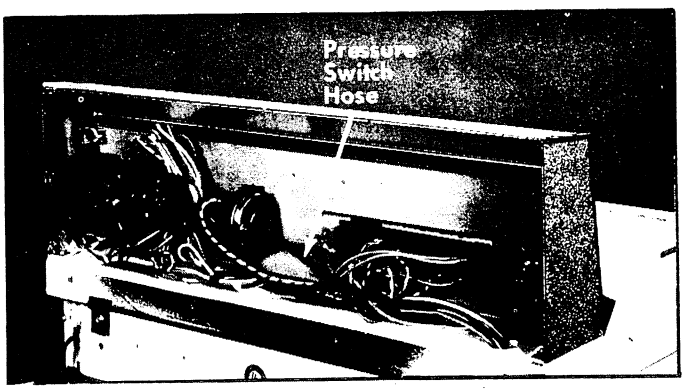
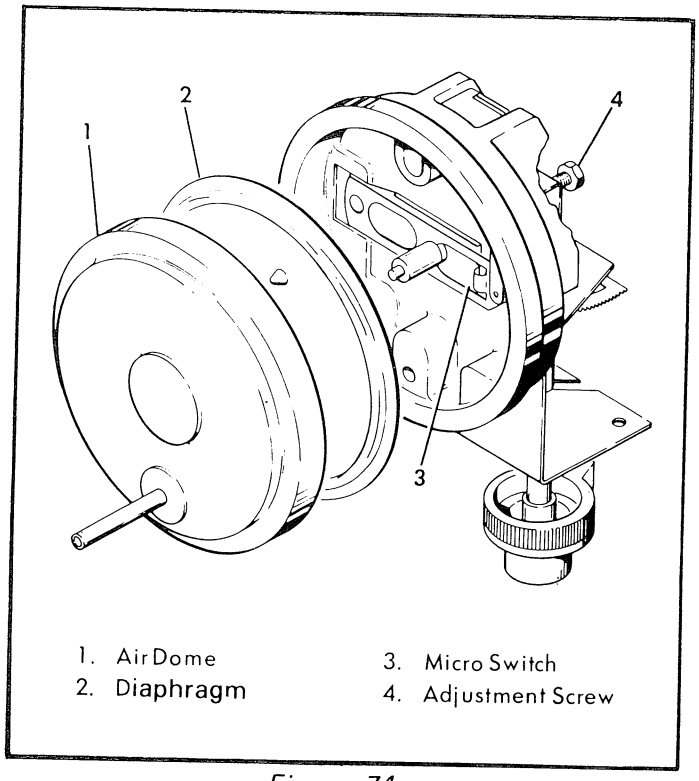


Figure 73 - Location of Metering Tube

CHECKING THE PRESSURE SWITCH

Contact numbers on all pressure switches are t same. When the switch is in the fill position, y will have contact between terminals No. *1 and* When the switch is satisfied, you will have con nuity between terminals *2 and 3.*

These symptoms appear when the pressure fill swit fails: Water does not enter tub during initial f cycle. The washer agitates immediately with water. Water will enter but no agitation.



Figures 74

PRESSURE FILL SWITCHES

Composed of a diaphragm, a plunger and electrical contacts, the pressure fill switch is used to control the water valve solenoids and the motor switch in such a way as to provide water when it is needed and to shut it off when a sufficient amount is present. By having the motor switch influence by the same circuit it is possible to start agitation at the correct water level When the weight of the incoming water is great enough it will trip the pressure fill switch and close the inlet solenoid of the water valve. The pressure switch may be adjusted by the screw on the dome. Turning the screw clockwise will let the machine fill with more water, *Figure 74*.

There are three basic types of water level switches

a. Fixed Level — *Figure 75*
b. Toggle — *Figure 76*
c. Rotary — *Figure 77*

The rotary switches come in two variations

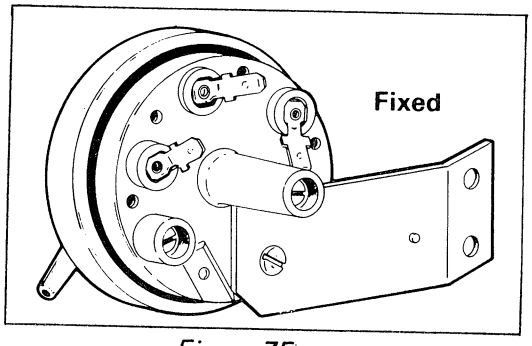


Figure 75

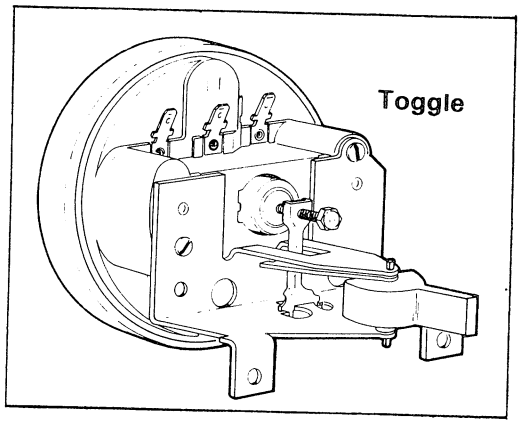


Figure 76

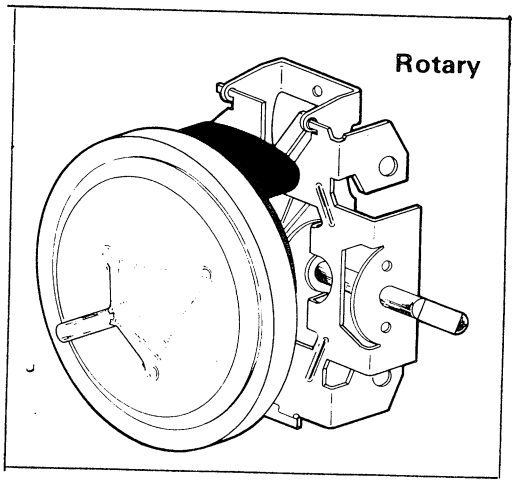


Figure 77

The water fill system operates on a pressure principle. The single-pole, double-throw pressure switch contacts, normally closed between terminals (1) and (2), complete the circuit to the water valve at the start of each "fill" period.

During "fill", water rises in the air dome of pin trap. As the water level raises, air in the pressure tube is forced against the diaphram to operate the switch. At the selected water level, the switch contacts actuate to open the water valve circuit and complete a circuit through terminals (1) and (3) to the motor for the "wash" period.

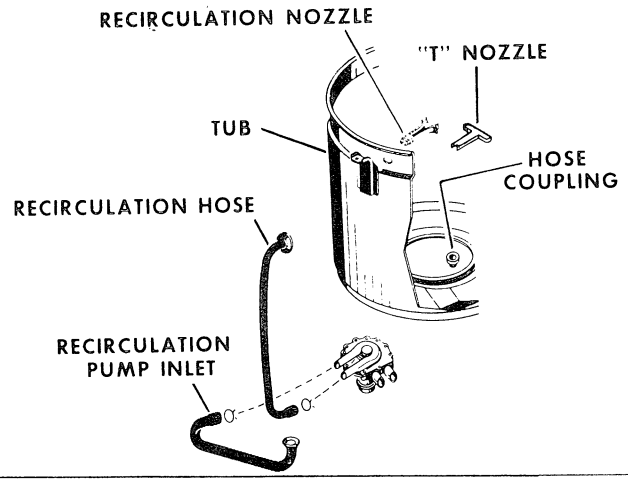
The pressure switch is adjustable, if required. See *Figure 74,* item 4, adjustment screw. Turn screw counter-clockwise to lower water level in tub.

After adjusting the pressure switch to change the water level, drain all water from the tub to make sure the switch will reset. Then, "fill" the tub to check the new level.

78

WATER SYSTEM

RECIRCULATION SYSTEM *Figure*



SUDS SAVE/RETURN SYSTEMS

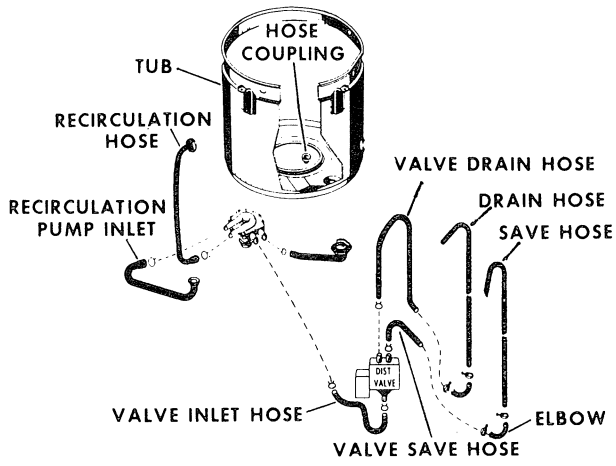
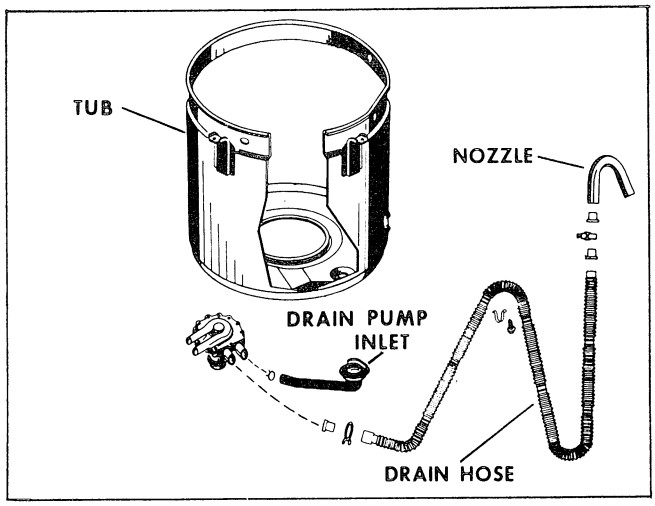


Figure 78

DRAIN SYSTEMS *Figure 79*

Side Pressure Take - Off



Bottom Pressure Take-Off

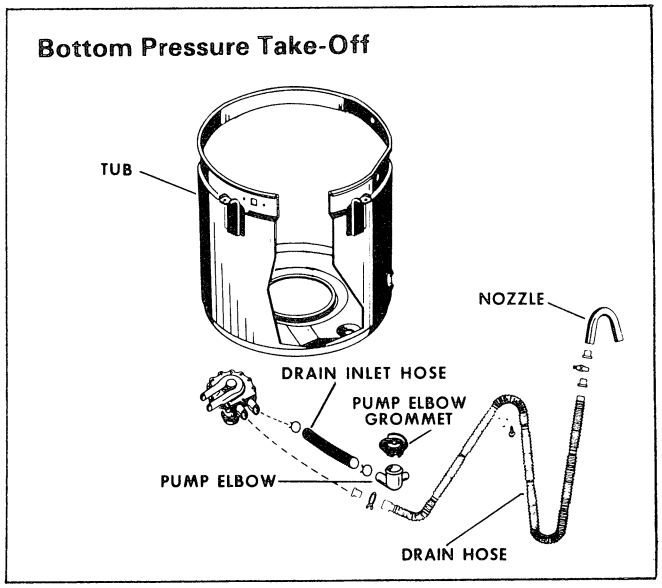


Figure 79

WATER RETAINING SYSTEM *Figure 80*

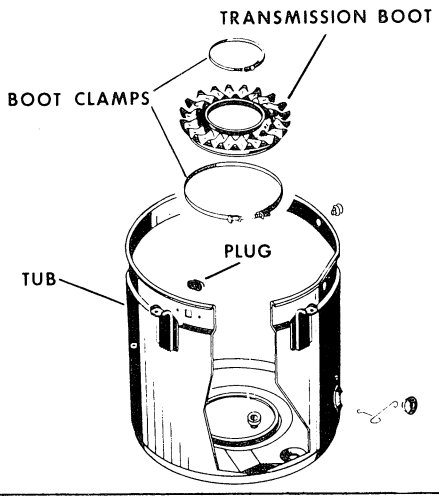


Figure 80

Motor & Clutch

MOTOR AND CLUTCH DISASSEMBLY – SINGLE SPEED MODELS

The motor and single-speed clutch can be removed from the automatic washer as a single unit. Carefully lay the machine on its front on padded 2 x 4's to prevent damage to the apron and cover.

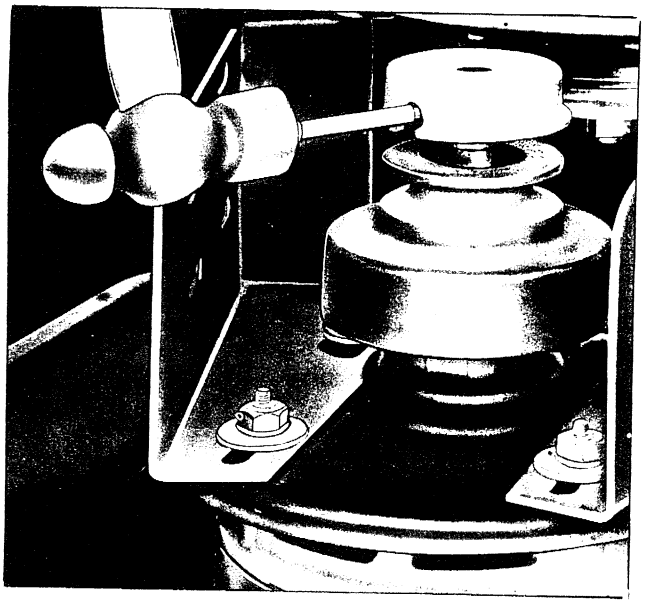


Figure 81

Remove the flexible coupling to the pump. Loosen the four motor mounting nuts and slide the assembly in towards the transmission to loosen the V-belt. Disconnect the motor terminal leads to the motor terminal box. Remove the hex-nuts and washers which hold the motor and clutch assembly to the suspension, *Figure 81.* The assembly may now be lifted free of the machine.

The clutch itself may be disassembled without removing the motor and clutch assembly from the machine. Loosen the motor holding nuts and V-belt. Using a WH50X55 drive pin tool, remove the drive plate from the shaft extension, *Figure 81.* Lift up and remove the clutch drum.

Lift off the spacer and leaf spring, *Figure 82.* Remove the two-hex-nuts clamping the shaft extension to the motor shaft. Lift off the shaft extension and primary shoes as a unit. These primary shoes may now be slipped off their pivot pins as a pair and the springs removed, *Figure 83.*

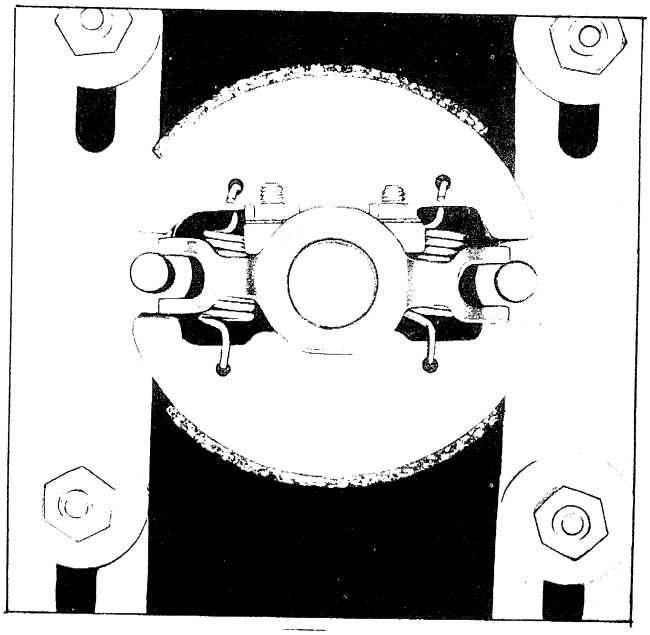


Figure 82

In reassembly, be sure to place the thrust washers over the pins before assembling the primary shoes to the pivot pins of the shaft extensions assembly, *Figure 83* and *85*. Make certain that all spacers are assembled in their proper places, *Figure 85*. The primary shoe springs should be reassembled to the shoes before slipping the pair of shoes over the pivot pins. Be sure that the primary shoes are assembled with the recessed ends up, *Figure 83.*

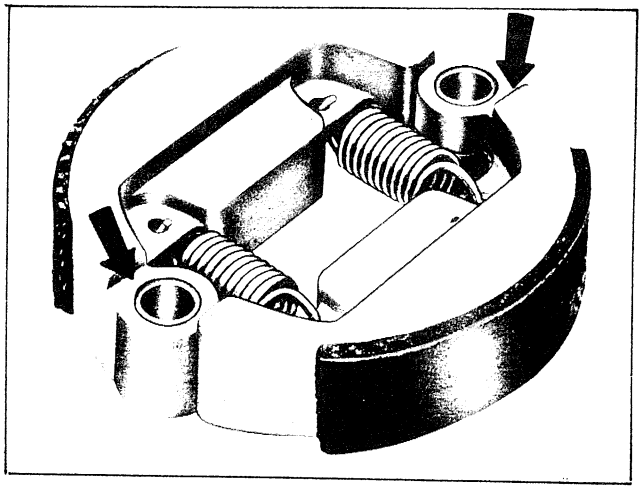


Figure 83

Assembled the U-bolt and clamp plate. Make sure that the shaft extension assembly is as far down on the motor shaft as possible before tightening the hex-nuts over the clamp plate. Assemble thrust washers over the extension pins and on top of the primary shoes. Seat the leaf spring over the shaft extension so that the forked ends straddle the pivot or extension pins, *Figure 84.*

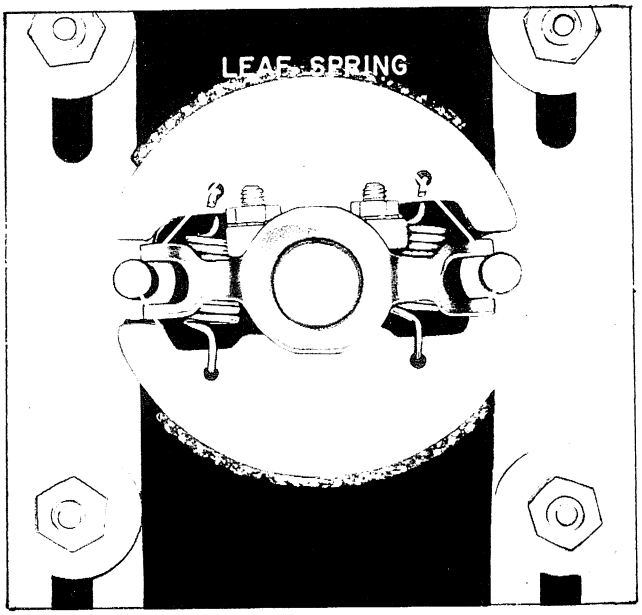


Figure 84

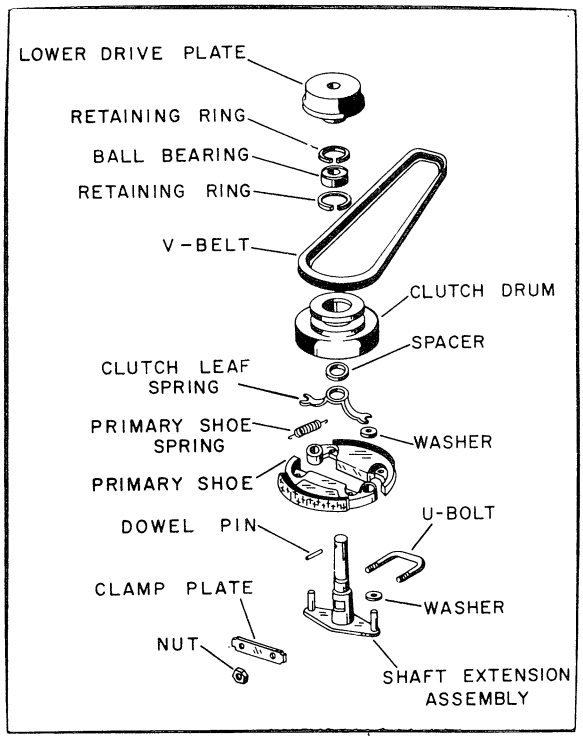


Figure 85

Place the thrust spacer on top of the leaf spring. Then assemble the clutch drum and pin the drive plate to the shaft extension. The drive plate holes may be lined up with the mating holes through the shaft extension by compressing the clutch assembly.

Finally, replace the belt, adjust the motor and clutch assembly for proper belt tension and connect the flexible coupling to the pump.

MOTOR AND CLUTCH REASSEMBLY – TWO-SPEED MODELS

The motor and two-speed clutch cannot be removed as a single unit. The clutch must be disassembled from the motor before either can be removed from the machine. However, the two-speed clutch may be serviced on the machine.

First loosen the motor holding nuts, slide the motor assembly forward and remove the belt, *Figure 86.*

Detach the flexible coupling, *Figure 86.* Remove the drive plate with a WH50X55 drive pin tool, *Figure 81.* Lift off the outer drum *Figure 87.* The outer drum slip shoes, spacer and inner drum will

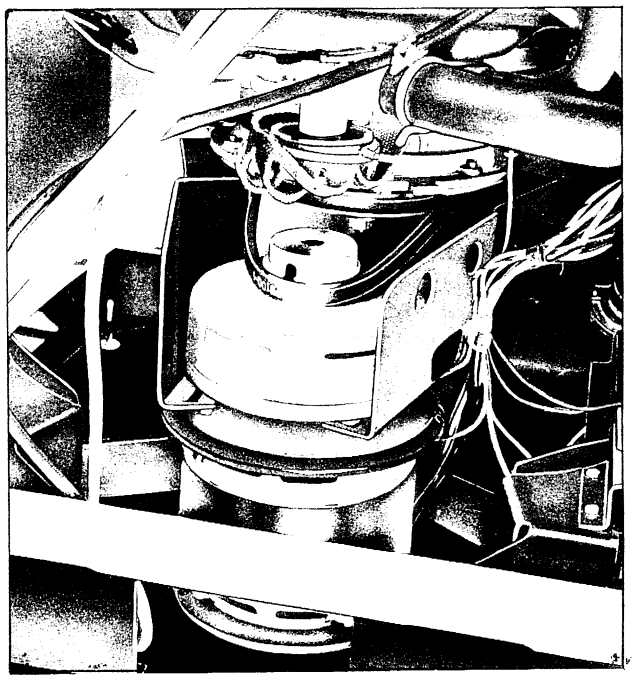


Figure 86

come off as a unit. Before attempting to remove the inner drum from the outer drum and slip shoe assembly, insert wire assembly pins into the holes in the portion of the slip shoes which is inserted into the slots in the outer drum, *Figure 88*. This can be done by forcing the inner drum first toward one slip shoe and then toward the other. This forces the back lug of each slip shoe farther into its outer drum slot, and lines up the holes and grooves cut in the outside flange of the outer drum. Slip these pins through the grooves and holes to hold the slip shoes retracted into the outer drum. The inner

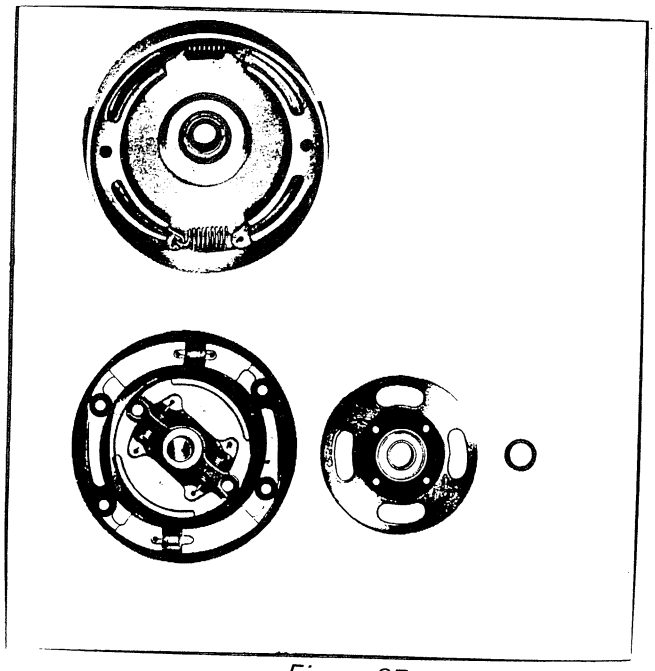


Figure 87

drum now slips out easily because the slip shoe spring pressure no longer holds it in the outer drum assembly. Also remove the spacer, *Figure 87.*

Lift off the washer and leaf spring over the shaft extension. The balance of this clutch assembly may then be lifted off the motor shaft by removing the two U-bolt nuts and clamp, *Figure 82* . The shaft extension assembly can be separated from the carrier plate assembly by prying off the retaining ring underneath. The remaining shaft extension and primary shoe assembly may be disassembled and reassembled as explained for the one-speed clutch, *Figure 82, 83 and 84.*

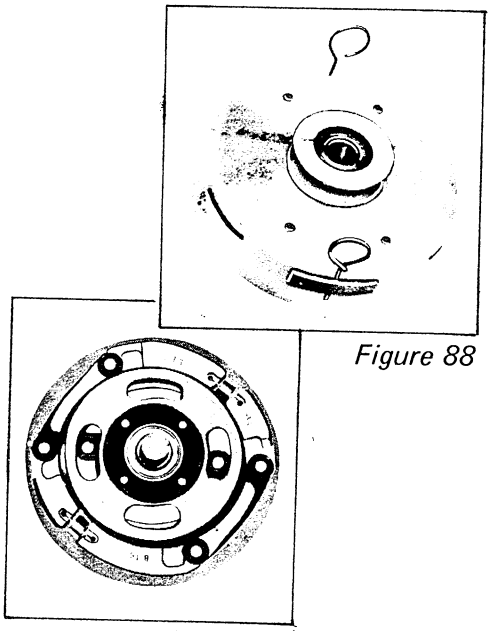


Figure 88

Figure 89

The inner and outer lock-in shoes may be removed by prying off their retaining rings and slipping them off their pivot pins. The leaf springs also slip off over these pins, *Figure 87.*

Remove the slip shoes from the outer drum by pulling out the hook-pins used to hold them in a retracted position. To prevent the loss of a spring, the clutch assembly should be placed on a table with the pins up, *Figures 88 and 89*

Before reassembling the two-speed clutch, assemble the slip shoes and springs into the outer drum. Fix them in the retracted position in the outer drum and insert the hook-pin assembly tool, *Figure 89.*

At this point, the motor can be removed. First remove the hex-nuts holding the motor to the suspension and remove the brake assembly. Bring the brake assembly out to the side of the suspension motor support for servicing, *Figure 90.* To remove completely, disconnect leads.

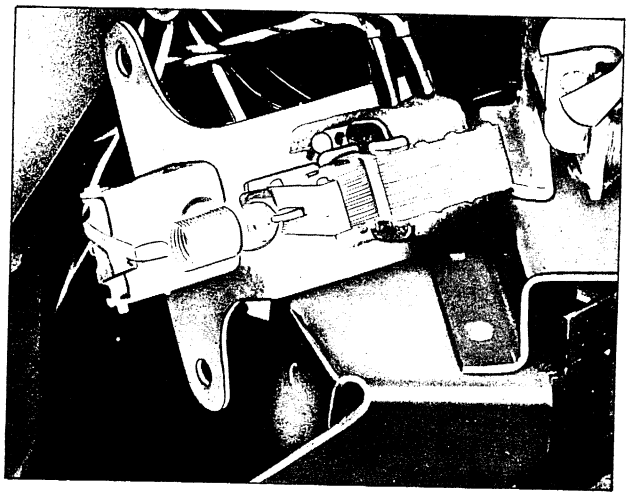


Figure 90

Disconnect the motor leads at the motor terminal block. Lift the motor free of the machine.

MULTI-SPEED CLUTCH

Current models of General Electric use a multi-speed clutch to vary the speeds of the washing machine.

When a particular cycle on the control dial is selected, the appropriate shifter assemble is activated (electro-solenoid mechanism) allowing the washing machine to operate at the required speed. Although this clutching arrangement is a complicated mechanism, and consists of an unusual number of parts, see *Figure 91*, it is efficient in operation and repairs, are minimal.

In the following paragraphs we will cover the removal

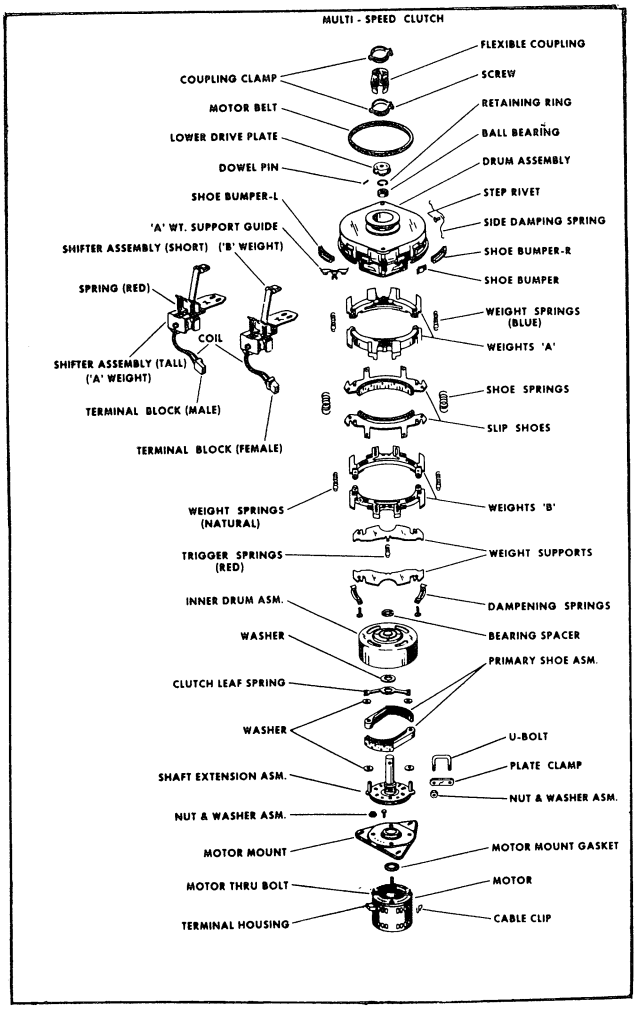


Figure 91

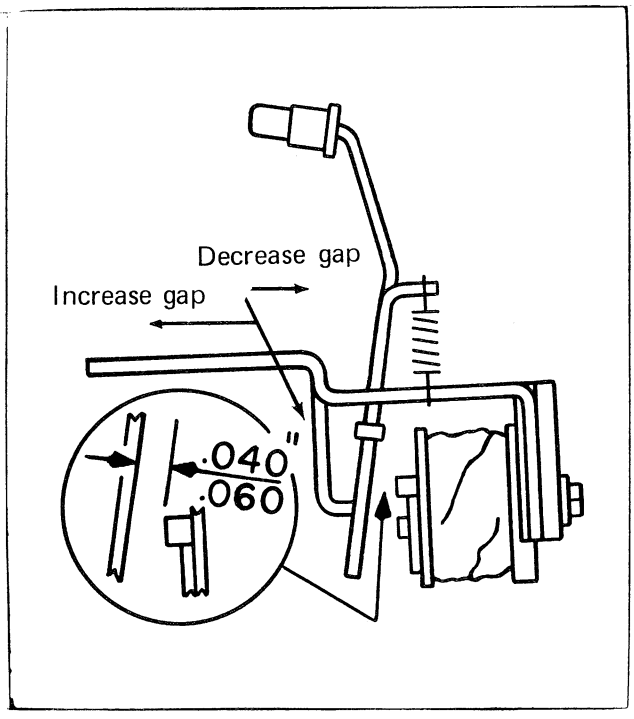


Figure 92

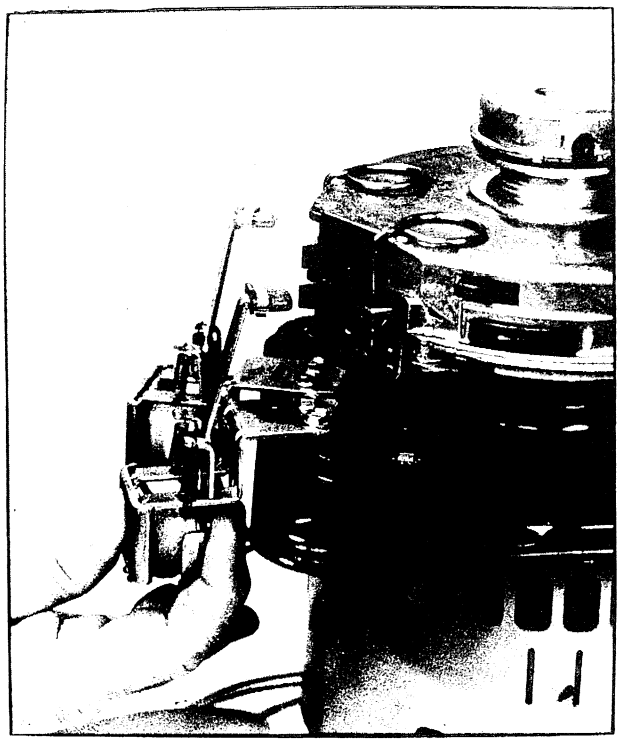


Figure 93

and repair of the multi-speed clutch. Because of the multitude of parts that compromise this assembly extreme care should be taken in reassembly and a continual reference made to the parts breakdown, *Figure 91.*

1. **Removal of Secondary Clutch** System

a. With proper size pin tool remove pin from, lower drive plate.

b. Insert four pins (proper size nails will do) into holes in slip shoe fingers that protrude through outer drum. The pins or nails should be long enough to prevent shoes from slipping back into drum.

c. Lift off drive plate, remove burrs or sharp edges from shaft found after careful examination, then remove outer drum assembly, with the exception of the shifters, the entire secondary system can now be removed.

2. **Secondary System Disassembly**

a. Remove screws and dampening springs.

b. Unhook *"B"* weight trigger springs and remove support plate.

c. Remove *"B"* weight and spring.

d. Remove pins (or nails) and springs and shoes attached.

e. Remove *"A"* weights.

POTENTIAL MALFUNCTIONS

COMPONENTS	CAUSE	EFFECT
SHIFTER		
Air Gaps	*Too small (Less than .040")*	*May trip every cycle.*
	Too large (Greater than .060")	*Shifter may not pick up with low voltage.*
Bumper Gaps	*Too small (Less than .060")*	*Could cause agitator and/or terminal ticking in slow spin.*
	Too large (Greater than .100")	*Could cause late shift impact or even continuous banging in slow act.*
Springs	*Force too high*	*May not pick up.*
	Force too low	*May cause shifter rattle and/or unbalance trip.*
RETURN SPRINGS		
	All "A" springs (high force)	*Would increase DELICATE and GENTLE agitator stroke rates.*
	All "A" springs (low force)	*DELICATE and GENTLE agitator stroke rates would decrease. Slow spin speed would decrease. "A" weights, may stick.*
	"A" and "B" springs reversed	*Some combination of above.*
SIDE DAMPENING SPRINGS	*Force too high*	*Could cause spin agitator ticking and/or "A" weight sticking.*
	Force too low	*Could cause spin agitator ticking.*
WINDOW GROMMETS	*Left out*	*Could cause "weight to shoe" rattle.*
	Reversed	*Could cause rattle if pushed out – or restrict shoe movement, resulting in slight speed variation.*
SHOE NOSE GROMMETS	*Left out*	*Could cause weight to shoe rattle.*
	Pinched or wedged	*Could cause spin speed variations. Agitator ticks and/or restricts shoe movement resulting in slight speed variation.*

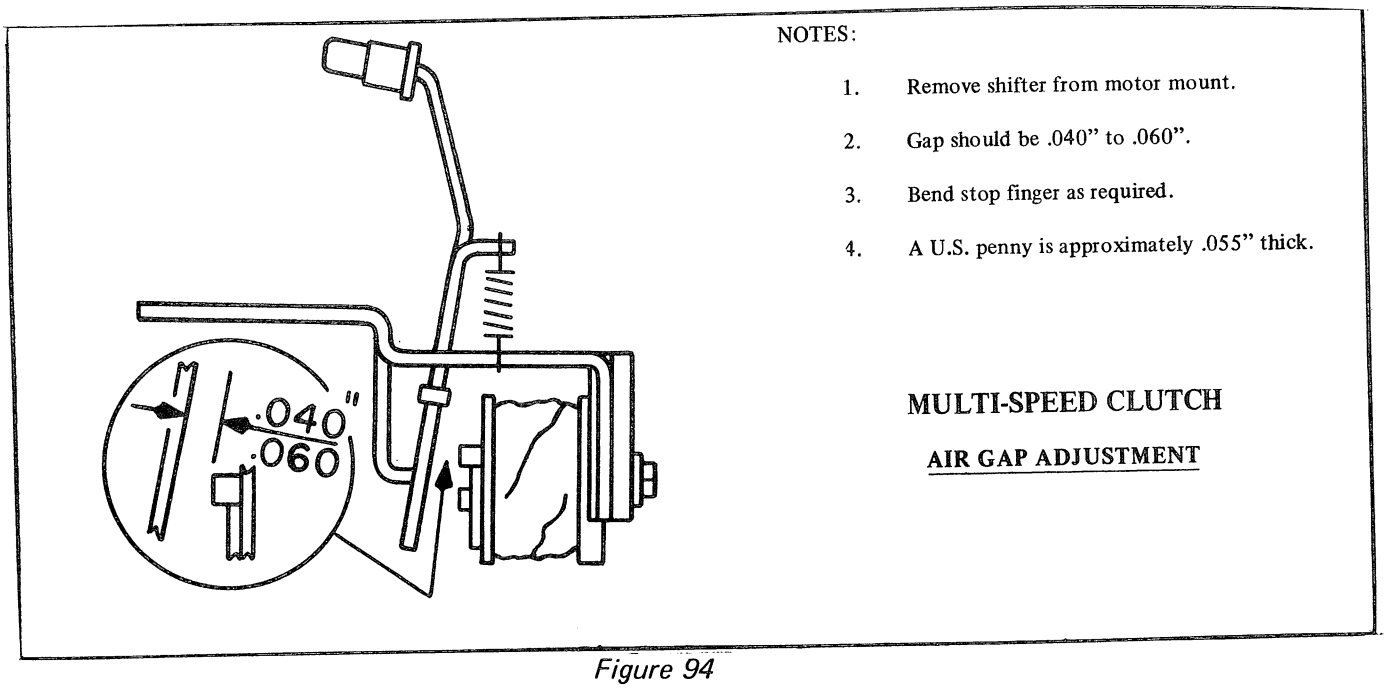


Figure 94

3. Reassembly of Secondary Systems

a. Replace *"A"* weights without springs.

b. Replace shoes with springs, replace holding spins or nails.

c. Replace *"B"* weights and springs.

d. Replace support plates.

e. Replace screws and dampening plates, seat spring tab properly.

f. Engage trigger springs.

g. Replace *"A"* weight springs, check parts breakdown. Visually check, grommets and springs, flip the triggers, for freedom of movement and proper return positioning, move the weights in and out for freedom of movement.

MULTI–SPEED CLUTCH ADJUSTMENTS (See Figure 94)

A. Air gap adjustments
   1. Remove shifter assembly from motor mount
   2. Bend stop finger as required to maintain a .040 to .060 (a U.S. penny is .055 thick), see *Figure 92.*

B. Nose to trigger adjustment
   1. Adjust with clutch mounted on motor.
   2. Clearance should be from .060" to .100".
   3. Adjust by bending main mounting bracket at slot.
   4. Measurement must be made with manually held shifter in energized position, and triggers in static position.
   5. Final check should be made with full load of water, check all speeds, listen for unusual noise, see *Figure 93.*

BEARING REPLACEMENT

The bearing in the outer drum assembly is replaced by removing the top retaining ring, and driving out the old bearing. The replacement bearing should be pressed in, and the top retaining ring replaced.

The WH4X76 bearing replacement package may be used for replacing the bearing in the inner drum assembly or the carrier plate assembly.

The WH4X76 kit includes one bearing with a slot around its outer diameter, four flat-top countersunk-head rivits, and four oval-head rivets. The flat-top countersunk-head rivets are used in replacing the bearing in the inner drum assembly, *Figure 95,* and the oval-head rivets are used in replacing the bearing in the carrier plate assembly.

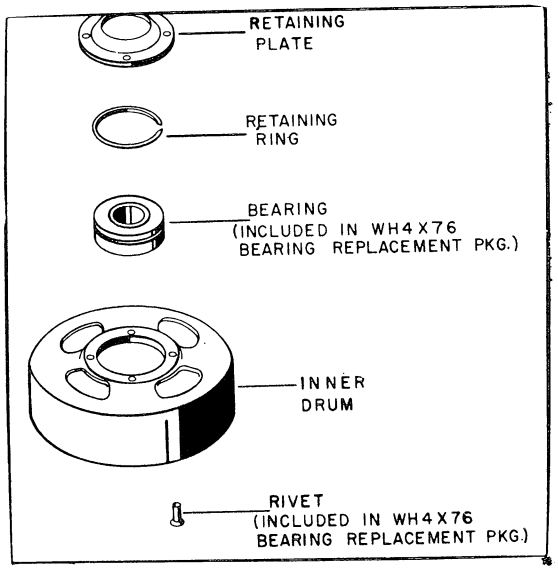


Figure 95

The retaining plate and retaining ring must be re-used on both the inner drum and the carrier plate.

To replace the bearing, remove the rivets holding the retaining plate either by drilling them out or by filing off their ends. Then knock out the bearing, and pry off the retaining ring.

Place the retaining ring in the slot on the new bearing and tap it evenly into the inner drum or carrier plate until the retaining ring is flat against the surface. Use the correct rivets to fasten the retaining plate to the inner drum or carrier plate.

CLUTCH BRAKE ASSEMBLY

The brake assembly used with the two-speed clutch is mounted behind the clutch assembly on the two rear motor mounting bolts. The brake shoe — when the speed control solenoid is energized - bears against the outer flange of the carrier plate. If the brake shoe does not bear against the carrier plate when the solenoid is energized, the top bracket on the brake assembly should be bent upward so that it will, *Figure 96.*

The brake assembly can be removed by taking off the two rear motor bolt nuts and disconnecting the solenoid leads. The brake assembly may be serviced part for part.

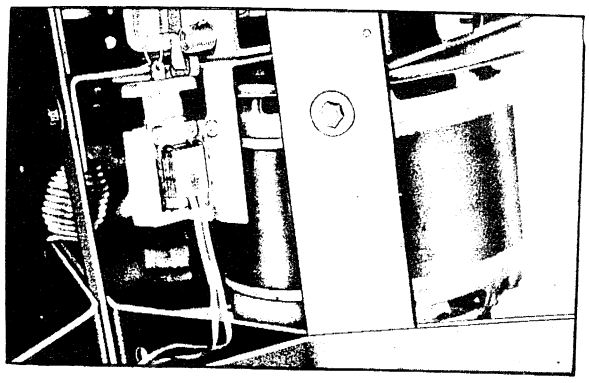


Figure 96

Transmission

The transmission pulley and pinion shaft are keyed together through two flats on the pinion shaft which match those in the pulley bore, *Figure 97.* During activation (counterclockwise motor rotation) power is transmitted from the clutch through the V-belt to the pulley, through the pinion shaft and into the gear train where crank and sector gears change rotating motion to oscillating motion in the activator shaft, drive block and finally in the activator unit. A clutch spring hub and clutch spring are also keyed to the pinion shaft through two flats on the pinion shaft which match the hub bore. Counterclockwise

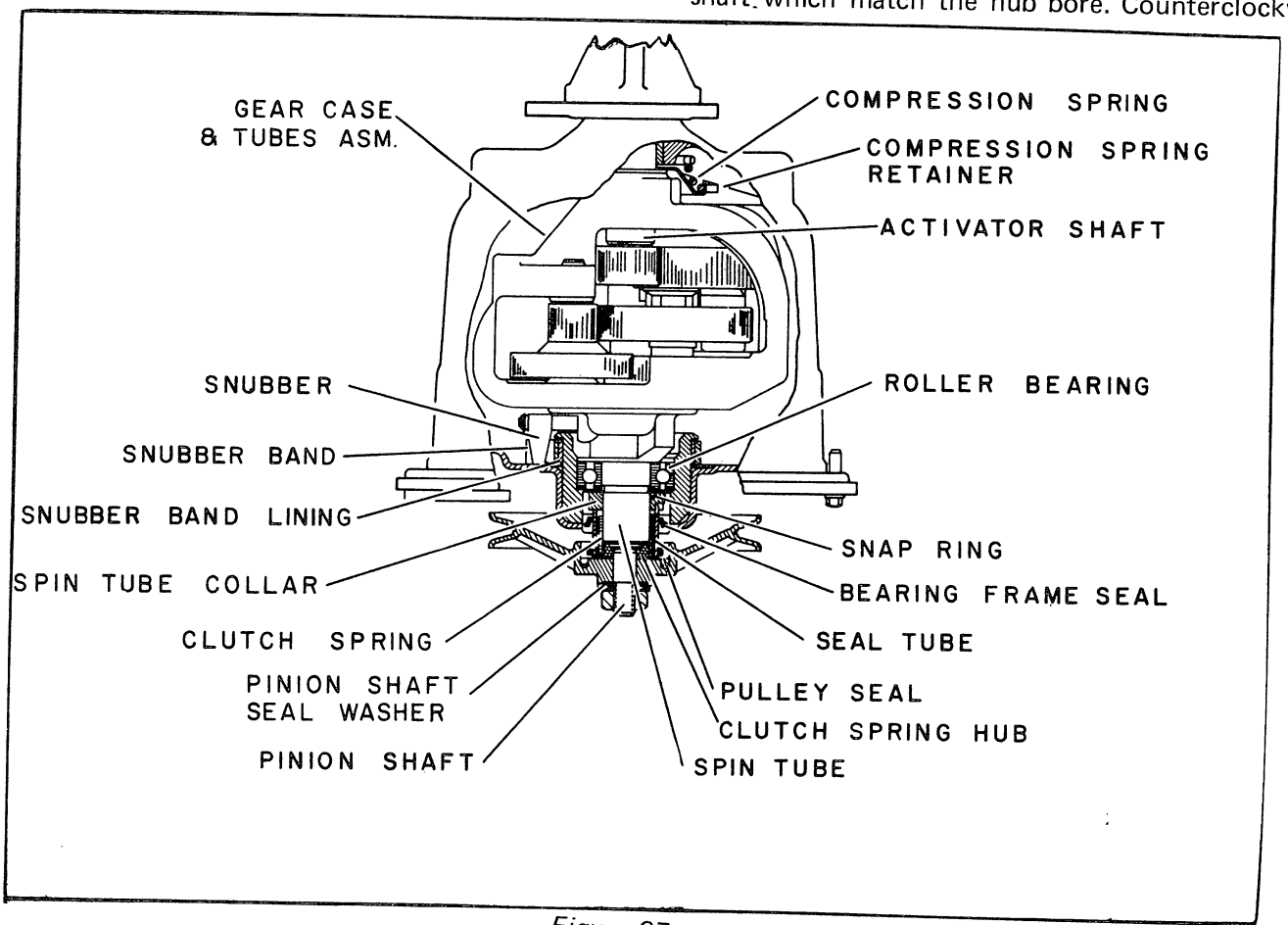


Figure 97

rotation unwinds this spring during activation, so that it idles on the spin tube. During *SPIN* (clockwise rotation) the clutch spring tightens around the spin tube, rotating the entire gear case and tube assembly. The basket hub, keyed to the drive tube, and the bolted-on wash basket are made to spin in this manner.

An internal snubber is used on this transmission, *Figure 97.* During activation the snubber butts against the tab of the snubber band. The snubber band acts as a spring and tightens under pressure from the snubber causing a braking action between the snubber band lining and the hub of the bearing frame. During spin, the snubber is held up against the gear case casting because its light weight and shape permit it to *"plane"* on the transmission oil and ride over the tab on the snubber band. A compression spring limits coast time at the end of the spin periods. The ends of the compression spring are keyed to the vanes in the gear case cover. *Figure 98* and the spring retainer.

The spring retainer bears against a bronze thrust washer located on top of the gear case casting. The vanes in the gear case cover assure proper lubrication of the gear case cover bearing. The seal tube, located at the bottom of the transmission, acts as a seal face for the lip-type seal.

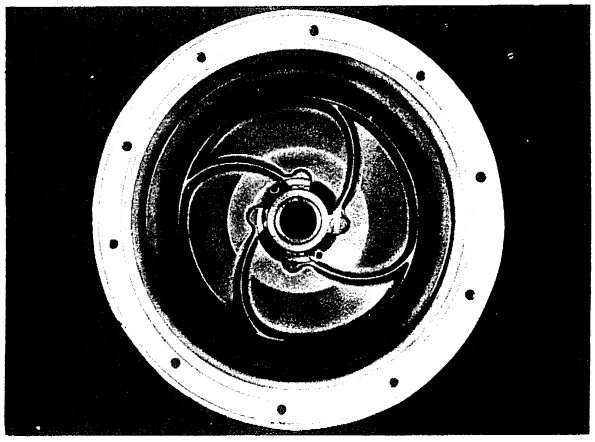


Figure 98

TRANSMISSION SERVICE

Service procedure for the transmission is divided into two categories: external service which can be performed in the customer's home, and internal service where the unit is repaired in the dealer's shop.

EXTERNAL TRANSMISSION SERVICE

External service covers oil leaks (oil spots in clothes or oil spots on the floor), slow spin speed or no spin, and slow activation.

Oil leaks which can be corrected in the customer's home may occur in any of the following locations:

1. Activator shaft seal (WH8X58) – location under the activator drive block.
2. Drive tube seal (WH8X172) – located under the basket hub in the gearcase cover.
3. Spin tube seal (WH8X185) – located inside the WH7X32 pulley.
4. Gasket washer (WH2X200) – located under the hex nut used to hold the pulley to the pinion shaft.

Number 1 and 2 result in oil getting inside the wash basket and spotting clothes. Numbers 3 and 4 result in oil spots on the floor underneath the washer.

ACTIVATOR SHAFT SEAL

The activator shaft seal is a lip-type seal that cannot be replaced once taken off the activator shaft. Supplied for replacement of this seal is the WH8X58 face-type seal and the WH1X471 Seal Guard.

Replacement of the activator shaft seal because of its leaking oil is seldom necessary. This seal, however, must be removed to replace the WH8X172 Drive Tube Seal. To replace the activator shaft seal:

1. Remove the Drive Block using WH50X73 horseshoe washer (or homemade washer shown in *Figure 107* and a WH50X61 wheel puller, *Figure 99.*

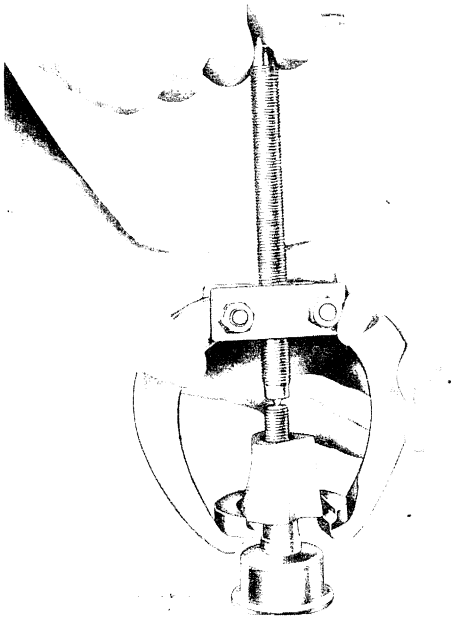


Figure 99

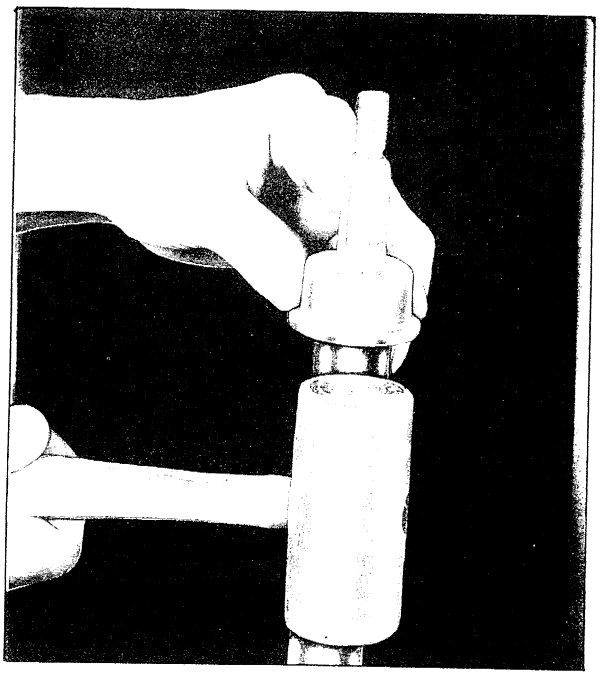


Figure 100

2. Remove the activator shaft seal by tapping it off with a wooden or rawhide mallet, *Figure 100.* If a WH8X58 seal has previously been installed, it can be removed using a wheel puller after the seal guard and seal mating ring with rubber insert have been lifted off, *Figure 101.*

3. Before installing WH8X58 activator shaft seal, be sure to clean off any oil or dried cement from the drive tube. Next, coat the drive tube with Pilobond #20 for a distance of 1/2" from the top.

4. Push the WH8X58 activator shaft seal onto the drive tube as far as possible by hand. Then, using an adapter cylinder, a flat adapter washer, and a 7/16" - 20 hex-head nut, drive the seal on until it seats on the top of the drive tube. Dimensions for the adapter cylinder and washer are given in *Figure 102.* To use them, place the cylinder over the WH8X58 seal so that its bottom edge rests on the seal flange. Place the washer over the cylinder and onto the threaded portion of the activator shaft, and drive the seal down by turning the nut.

5. Lightly moisten the running surface of the mating ring with clean light-weight oil (sewing machine oil).

6. Slip the mating ring, with its rubber washer, into position over the seal nosepiece; make sure that the rubber washer is properly seated in the mating ring.

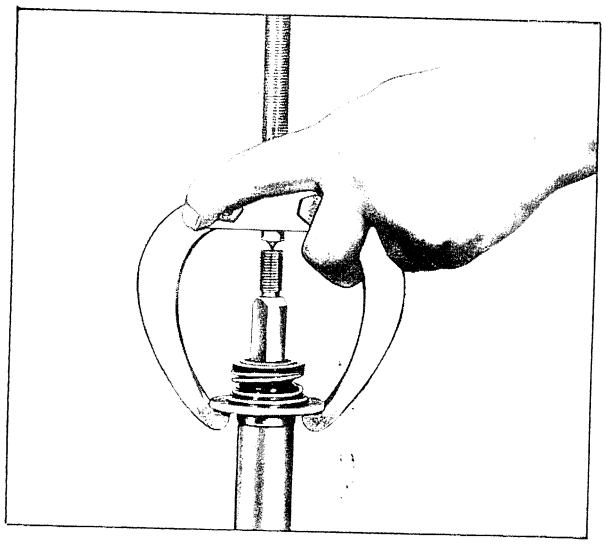


Figure 101

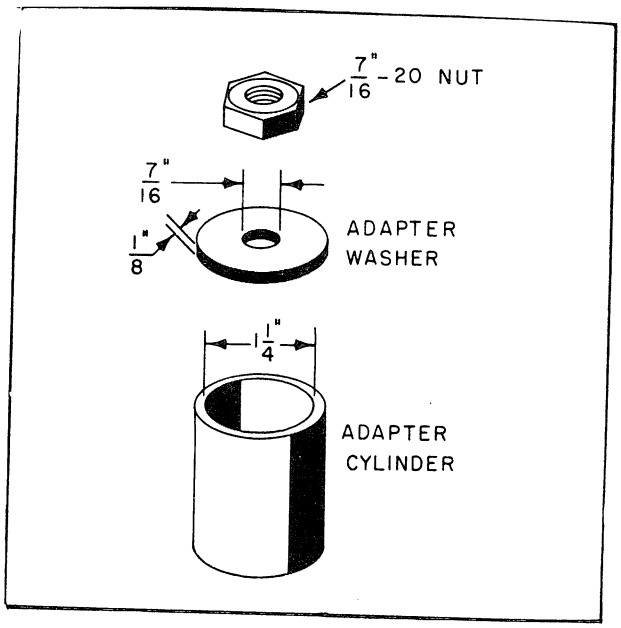


Figure 102

7. Assemble the WH1X471 shield over the seal, and force the drive block onto the activator shaft until it bottoms. To do this, use a flat washer and a WH2X541 (or a 7/16" – 20) hex-nut on the activator shaft to force the drive block into place. This nut is the same as that used to hold the pulley to the pinion shaft on the bottom of the transmission, *Figure 103.*

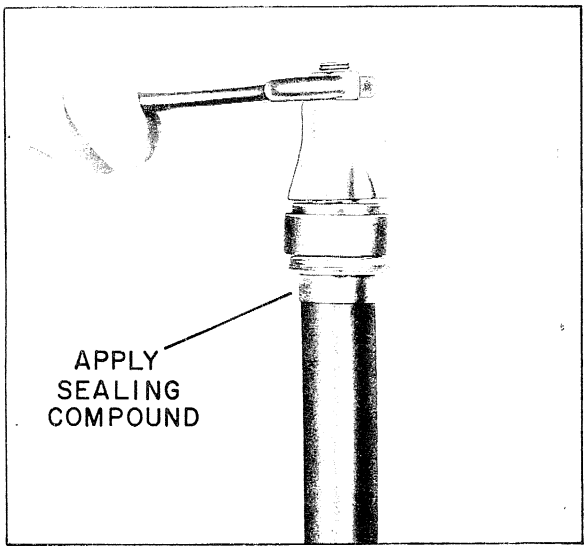


Figure 103

4. Remove the drive tube seal mating ring and its rubber insert; then pry the seal out of the gear case cover with a screwdriver, *Figure 105.*

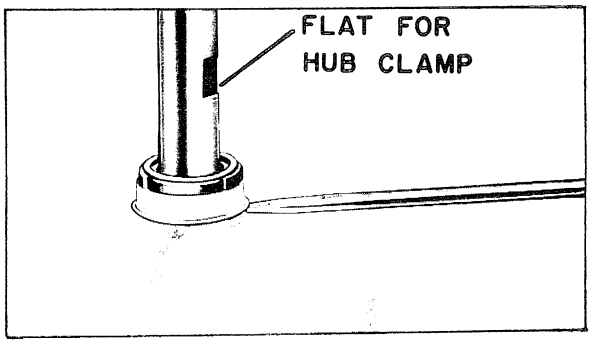


Figure 105

DRIVE TUBE SEAL

Replacement of the WH8X172 drive tube seal is made as follows:

1. To remove the WH17X41 basket hub and WH8X172 seal, first remove the wash basket.
2. Carefully remove the drive-block and activator shaft seal as described above.
3. Remove the hex bolts holding the basket hub to the drive tube. Slip out the basket hub clamp, and slide the basket hub off the drive shaft, *Figure 104.*

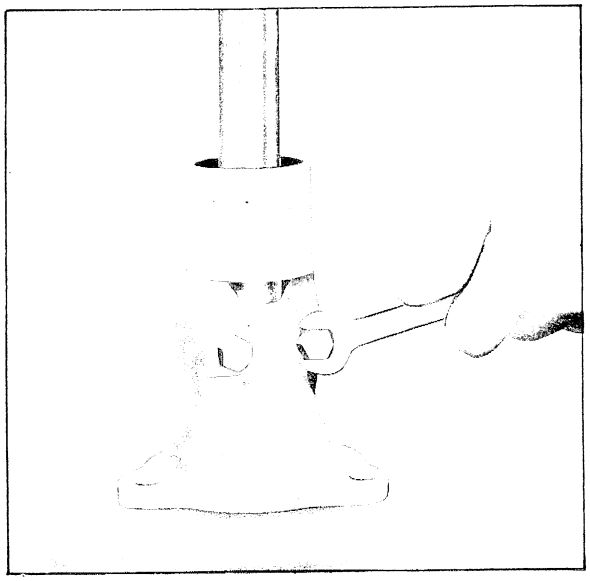


Figure 104

5. Before installing a new WH8X172 seal, thoroughly examine the drive tube in the area where the seal will be located. Check the drive tube for nicks and remove them with a whetstone. Also check the flat on the shaft where the hub clamp seats to be sure that the edges are not rounded. If the edges of the drive tube flat are distorted, it will be impossible to retighten the hub clamp so that it will hold properly. Where the drive tube flat is distorted, the transmission should be pulled and the WH37X18 gearcase assembly or replaced.
6. Install a new WH8X172 drive tube seal in the gearcase cover. Start the seal into the bore by hand. Be sure the cork gasket

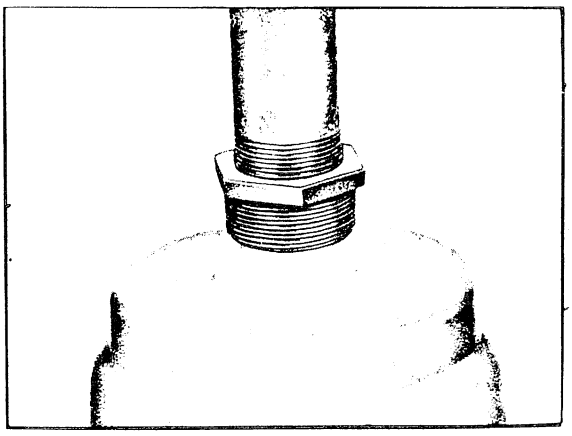


Figure 106

WH8X61 which comes with the seal is properly seated. Then, using an installation tool, bottom the seal by striking the tool lightly with a hammer, *Figure 106.* This seal tool and a suitable horseshoe washer for removing top seals can be made as shown in *Figure 107.*

The seal installation tool and a handy horseshoe washer can be made as follows: Cut out a 2" diameter flat washer as shown. File it to the proper dimensions. File the ends to a slight taper to permit easy insertion between the drive block and seal.

The drive tube seal installation tool can be made from an I.P.S. 2" to 1 1/2" bushing which can be purchased at a plumbing supply house. Attach to it a 15" piece of 1 1/2" steel pipe threaded on one end as shown in *Figure 107.*

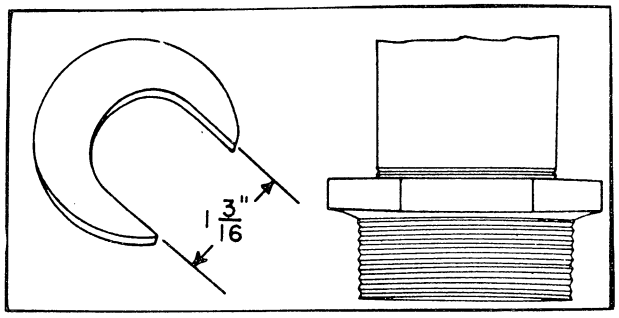


Figure 107

7. Lightly moisten the running surface of the mating ring with some clean light oil.
8. Slip the mating ring, with its rubber insert, into position over seal nosepiece. Be sure to keep the mating ring very clean and be sure that the rubber insert is correctly seated in the mating ring, *Figure 108.*

   The bottom outside diameter of the mating ring insert has a noticeable radius. The insert must be pushed into the mating ring with this radius toward the bottom.

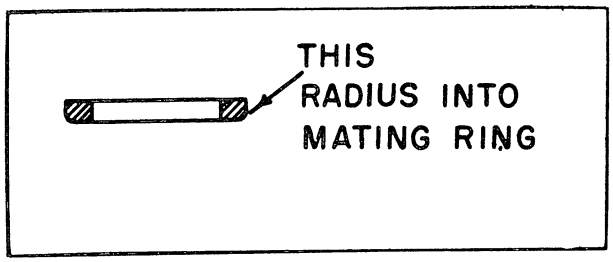


Figure 108

9. Slide the basket hub into position, and rotate it until the lugs engage the ears of the mating ring. Rotate it farther to line up the basket hub clamp recess with the flat on the drive tube. Slip the clamp into its slot in the hub. Assemble the hub clamp to the hub with the two hex bolts. Be sure to tighten the bolts evenly so that the clamp bears evenly against the entire flat on the shaft. Otherwise, the hub clamp will loosen with use. The hub clamp bolts should be as light as possible.

SPIN TUBE SEAL AND WASHER GASKET

Two sources of oil leaks of the underside of the transmission can be corrected in the customer's home.

If spots of oil are found on the floor directly under the pulley, or if sufficient oil has been thrown by the pulley to strike the apron sides and then flow down the sides, the leak should be corrected. Slight throwing of oil — a few drops noticed on the apron sides — is natural. The seal is so designed that oil is present at the seal lip edges to retard wear. Occasionally a drop of oil will form and be thrown by the pulley.

If the seal or washer gasket is leaking:

1. Lay the machine on its front using padded 2 x 4 blocks so that the base of the machine is higher than the top. This prevents oil from leaking from the transmission.
2. Remove the V-belt; loosen the motor holding nuts, *Figure 109* to remove the belt.

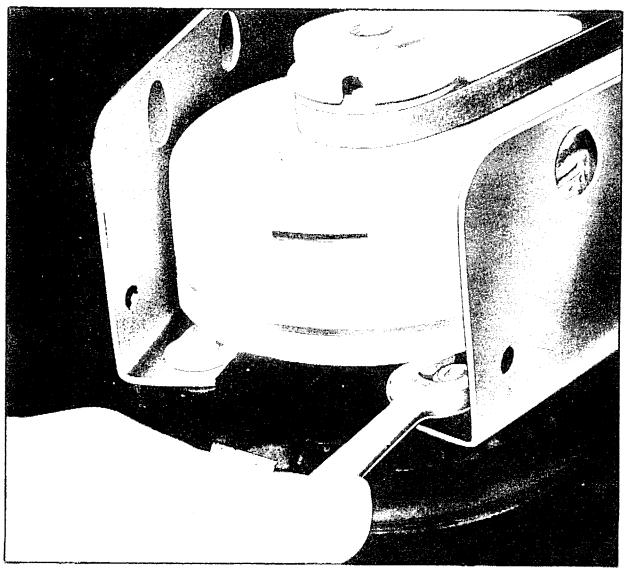


Figure 109

3. Remove the hex-nut, flat washer and rubber gasket holding the pulley in place. Check the condition of the rubber washer gasket to be sure it is not the cause of the leak.

The washer gasket leaking is usually attributable to:

a. The metal washer underneath the gasket being cupped; or

b. The pinion shaft nut being too loose. The nut should be tightened to the point where the metal washer butts against the bottom of the pulley, and then 1/2 more turn. If it is determined that the oil leak is occuring at the washer gasket, replace the gasket and the WH2X201 metal washer if necessary. If the oil leak is at the spin tube seal, go on with the following steps.

6. Pull the pulley straight off the pinion shaft.

5. Remove the seal tube by pulling it straight off, *Figure 110.*

6. Examine the tube for defects in the area where the pulley seal rides. Also examine the area where the tube contacts the bearing frame seal to be sure the tube is not nicked or scored causing the bearing frame seal to leak. If the tube is scored, it should be replaced. If the bearing frame seal leaks, the transmission should be removed to change this seal. Bearing frame seal leaks are very rare.

   Check the edges of the replacement tube for burrs left by machining or caused by haulding to prevent damage to the seal lips when inserting the tube. Insert the tube through the bearing frame seal and rotate it until the notches seat properly, *Figure 110.*

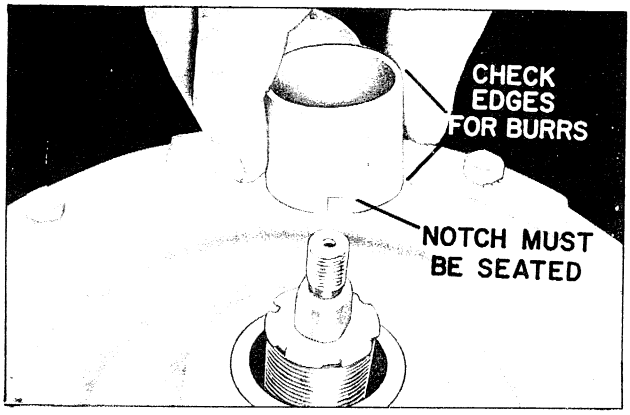


Figure 110

7. Remove the inoperative pulley seal carefully to avoid damaging the base or sides of the pulley bore. An easy method of prying this seal out is by using an offset screwdriver, *Figure 111.* Be sure to place a steel washer at least 1 1/4" in diameter in the base of the pulley so that the offset screwdriver does not deface the surface of the bore base. Work the screwdriver as a pry around the entire circumference of the seal prying it out evenly.

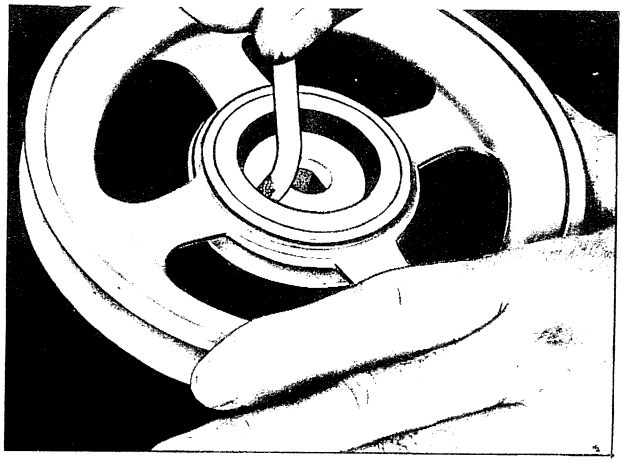


Figure 111

Before installing a new spin tube seal (WH8X185), coat the outer edge of the seal sparingly with Pliobond no. 20 or WL39X1 sealer.

Use of this sealer will prevent leaks at the outer edge of the seal. The seal must be pressed into the seal cavity evenly so that the bore is not distorted. Press the seal in so that the top of the seal is flush with the top of the pulley hub, Figure 112. The lip of the seal should point toward the base of the pulley.

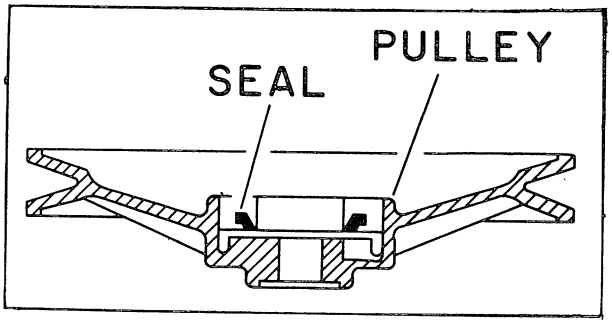


Figure 112

8. Push on the pulley and fasten it with the rubber washer, metal washer and hex nut, in that order.

9. Replace the belt and adjust belt tension.

SLOW SPIN OR ACTIVATION, NO SPIN

Slow spin or activation may result from:

1. A loose or badly worn belt. To replace a belt, loosen the motor holding bolts and remove the belt. After installing a new belt, pull back on the motor until proper belt tension is obtained. Tighten the holding nuts so that the motor is firmly bolted to the suspension.

2. Wet, oily or worn clutch weights. When oil is present, the clutch weights should be cleaned with a suitable cleaning solvent and reused. Wet clutches should be dried out and reused. Clutch weights should only be replaced when the clutch lining is worn to bare metal. In such cases the clutch drum should be examined for scoring and replaced if necessary.

3. Glazed clutch weight linings. Excessive clutch slippage caused by a bound mechanism or a bound pump can cause overheating of the clutch drum and weights and subsequent glazing of the clutch weight linings and clutch drum. Weights and drums in this condition bring the machine into spin slowly and cause a squeak. To correct this condition, simply remove the glaze by using a fine sandpaper on both the weights and the clutch drum.

4. A fractured clutch spring in the transmission (WH7X29). With only two or three turns inoperative, a clutch spring can cause a machine to come up to spin speed slowly. No spin at all – with normal activation – is an indication that the tab on the WH7X29 clutch spring is broken.

5. Worn or rusted drum bearing (see Section 2 *"Bearing Replacement"*.

To replace the clutch spring in the customer's home:

1. Place the machine on its side using padded 2 x 4 blocks. Raise the base of the machine slightly to prevent oil leakage, *Figure 113.*

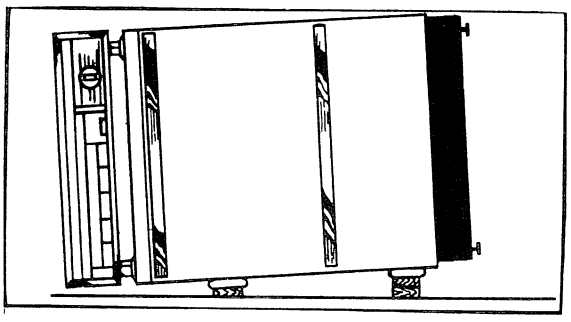


Figure 113

Figure 114

2. Remove the pulley belt.
3. Remove the pulley.
4. Slip out the seal tube.
5. Turn the clutch spring hub counterclockwise while pulling it off the pinion shaft. The clutch hub and spring will pull free as a unit, *Figure 114.* Be sure to remove all parts of the spring if it is fractured.
6. Replace the spring and hub as a unit by turning counterclockwise and pushing on the clutch hub.
7. Reassemble remaining parts.

SPIN IN ACTIVATION

Spinning in activation may be caused by either of two things:

1. Snubber not contacting snubber band tab because it is stuck in a horizontal position or the snubber band slipping. For this case the transmission must be removed and the snubber or snubber band repaired.

2. WH7X29 clutch spring binding between clutch spring hub (WH7X30) and bottom of spin tube.

One cause of clutch spring binding is that the pinion shaft nut has not been tightened sufficiently. Usually, when the clutch spring binds, it chews up the clutch spring hub and surface of the spin tube which makes it necessary to remove the transmission and replace the gearcase assembly, However, if an examination

of the spin tube shows it has not been damaged, the clutch spring and hub can be replaced to repair the transmission in the home.

Another case of clutch spring binding is improper assembly of the spring to the clutch spring hub. This can also be repaired in the home if the spin tube is not damaged.

A third cause of spring binding between the bottom of the spin tube and the clutch spring hub is a defective WH37X18 gearcase assembly on which the bottom of the spin tube is positioned too high. In this case, the transmission must be pulled and a new gearcase assembly installed. To check spacing between the bottom of the spin tube and the top of the clutch spring hub, remove the bearing frame and the WH1X1165 tube from the transmission and re-assemble the pulley, correctly tightening the pinion shaft nut. The clearance between the bottom of the spin tube and the hub should be .017 to .029 inches. The bevel on the bottom of the spin tube should also be checked to see if it is within .010 to .020 inches. If either the clearance dimension or the bevel dimension is too great, the WH37X18 gearcase assembly must be replaced.

TRANSMISSION REMOVAL

To remove the transmission, first remove the cover assembly as described earlier. Next, remove the basket boot, *Figure 115.*

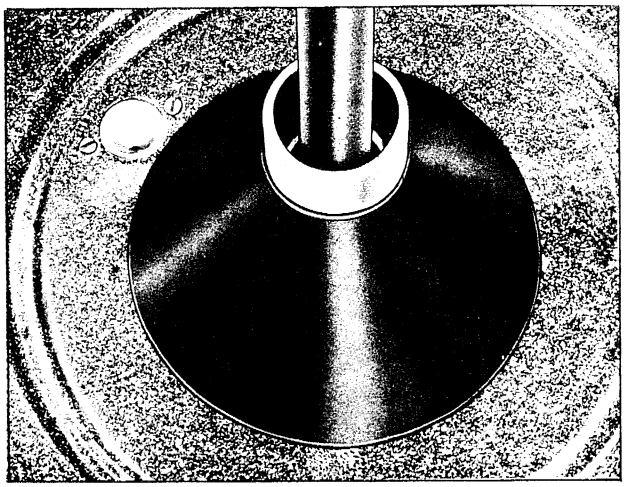


Figure 115

With the basket boot removed, the three basket mounting bolts are accessible, *Figure 116.* Remove these three bolts and lift the basket and balance ring assembly straight up and out of the tub. Be sure that the water inlet nozzle and the rinse dispenser tray are first moved out of the way.

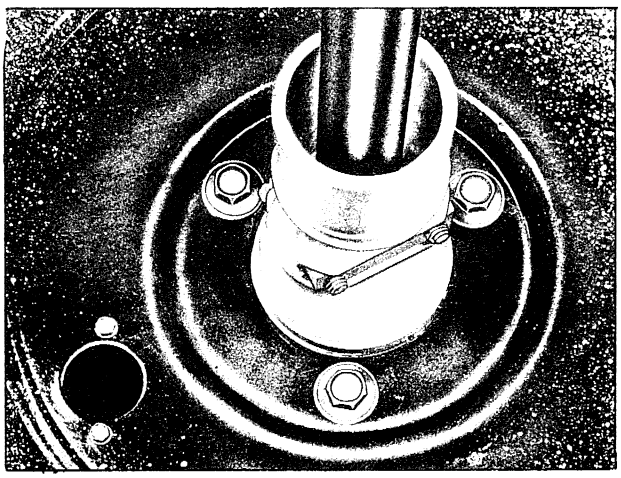


Figure 116

Next, loosen the clamp screw holding the transmission boot clamp to the underneath flange of the tube. Allow the clamp to drop, and pull down the turned-up portion of the mechanism boot *Figure 117.*

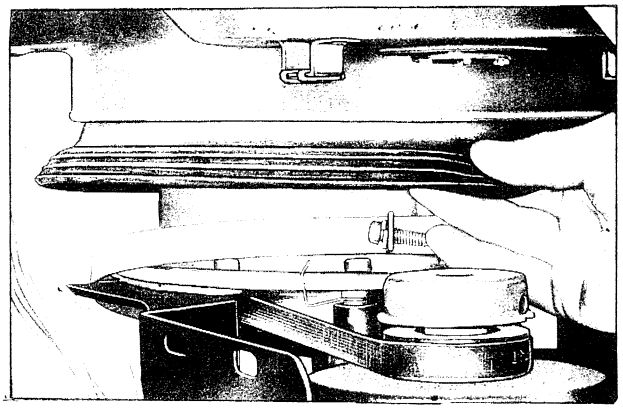


Figure 117

Then loosen the clamp screw on the clamp that holds the mechanism booth to the transmission inside the tub, *Figure 118.*

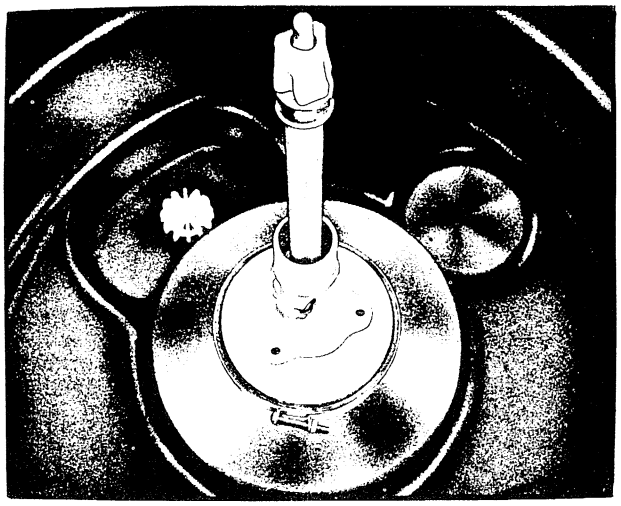


Figure 118

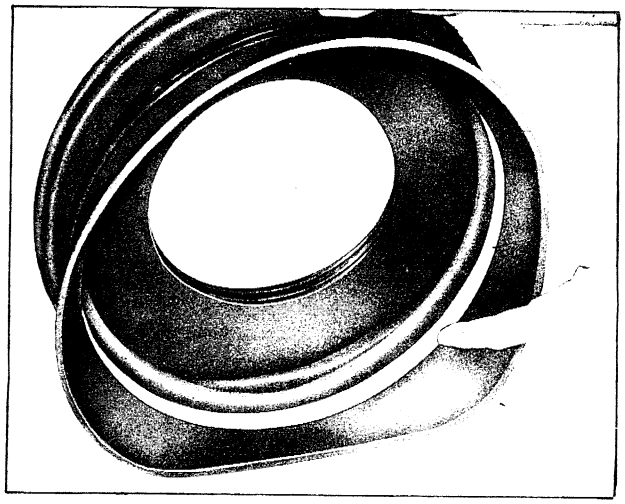


Figure 119

A sharp pull upward on the boot will free it. The boot is fitted with a continuous circular clamp which holds it against the tub opening, *Figure 119.*

Loosen the four bolts which hold the motor and clutch assemblies to the suspension and remove the V-belt. Remove the bolts holding the transmission to the suspension and lift the transmission from the machine.

INTERNAL TRANSMISSION SERVICE

Service involving the disassembly of the transmission or the seal in the bottom bearing frame of the transmission should not be performed in the customer's home.

To service the transmission for leaks at the bearing frame, support the mechanism on a workbench in an inverted position to prevent spilling oil.

Remove the hex nut, flat washer and rubber washer. Slide off the pulley. Pull the seal tube out of the bearing frame. Remove the clutch spring hub and clutch spring as a unit, *Figure 120.* To do this, turn the clutch hub counterclockwise while pulling forward. Now remove the hex bolts holding the bearing frame to the gearcase cover. Tap around the edge of the bearing frame to break the seal between it and the gasket. Using two screwdrivers, pry the bearing frame off the gearcase.

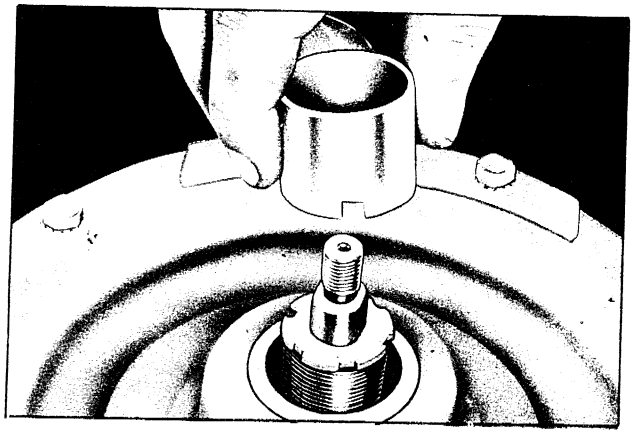


Figure 120

BEARING FRAME SEAL

To replace the bearing seal the following tools should be made available.

Robinaire No. 14095-1-2
Seal installer, 2 pieces, for agitator seal.

Robinaire No. 14027
Seal installer, for bearing frame seal *Figure 121.*

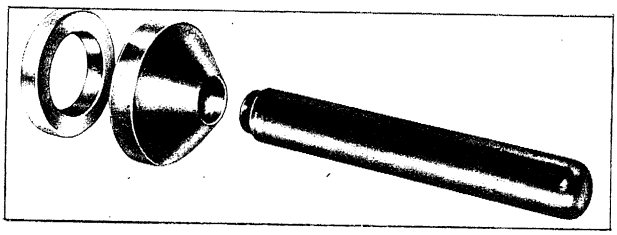


Figure 121

The machine should be placed in a position as shown in *Figure 122* and propped up correctly to prevent damage to the machine or personal injury. Examine around the transmission for evidence of oil leaks other then the bearing frame seal. The agitator should be removed and examined inside of the agitator for signs of oil that will float to the top when water enters the gear case. The following parts as shown in *Figure 123* can be replaced without removing the transmission from the cabinet.

1. A drip cloth should be placed under the working area to prevent damage to the floor from oil. The washer should be layed on its front and the bottom raised about 16". The agitator can be used if some other type of prop is not available, *Figure 122.*

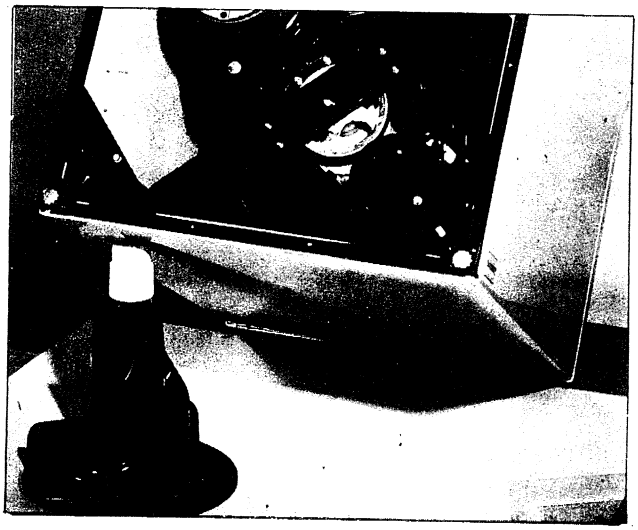


Figure 122

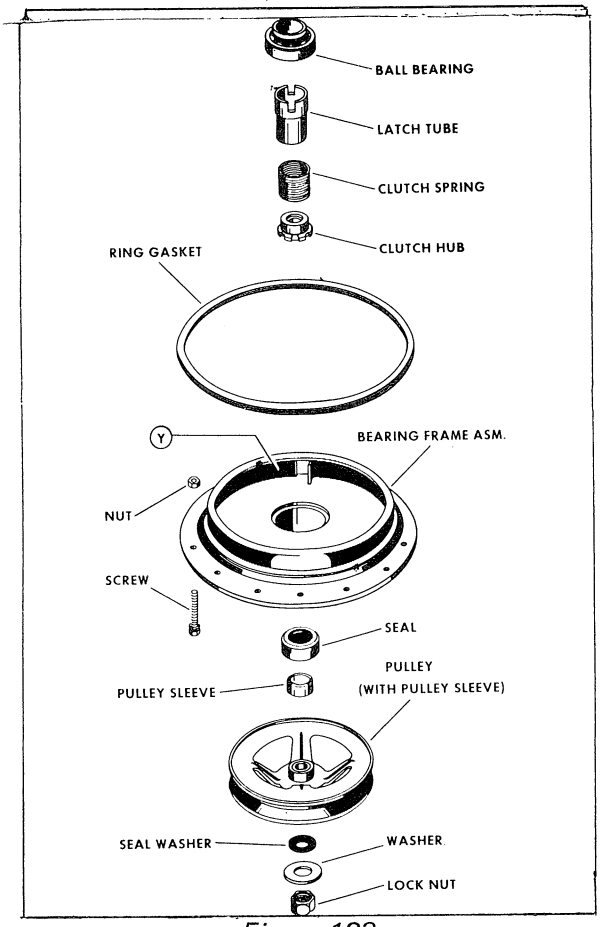


Figure 123

2. Remove pulley nut, the flat washer, seal washer and pulley. The belt will slip off as the pulley is lifted off the shaft. NOTE: With washer in position as shown in *Figure 122* observe the oil level. The oil should cover ¼ of the ball bearing. A higher level will indicate some water has entered the gear case. This would necessitate removing the complete transmission from the cabinet for major repairs.

3. Remove bottom seal by prying out with a small screwdriver or a ½" open end wrench as shown in *Figure 124.*

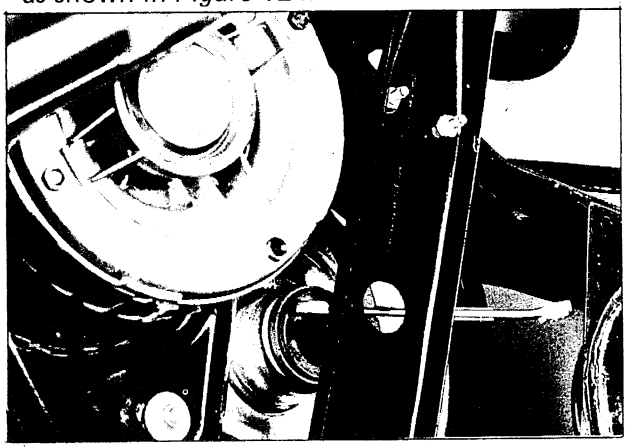


Figure 124

4. Remove clutch hub, clutch spring, and latch tube. A small screwdriver may help in the removal. NOTE: For WH38x32,33,34, should tab be broken off of clutch spring it will be found in the neck of the bearing frame between the ball bearing and the open end. The tab can be removed with a small magnet or a magnetic screwdriver. The WH38x35 has no tab on the spring.

5. Use new parts where needed. Reassemble clutch spring to latch tube and clutch spring hub. Place this assembly over pinion shaft. Make certain notches in latch tube are keyed over tab in latch plate or slide, *Figure 124A.* The clutch spring should be about ½" dowr from the open end of the bearing frame when properly seated. NOTE: If oil does not cover about ¼ of the ball bearing, add oil before installing new seal.

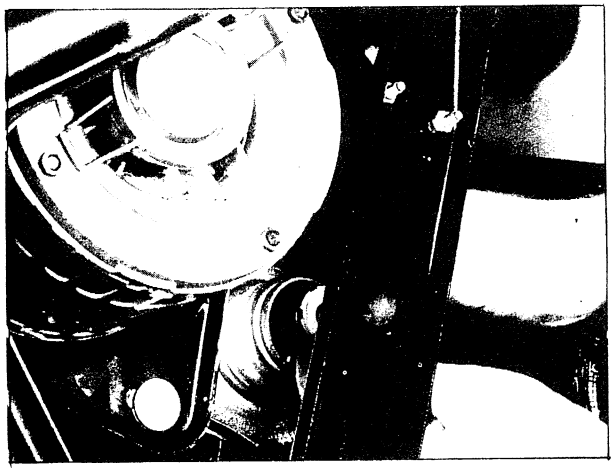


Figure 124A

6. When replacing the seal, seal tool 14027, *Figure 124B* should be used. A new seal should be installed whenever the clutch hub or related parts are replaced, whether or not an oil leak is apparent.

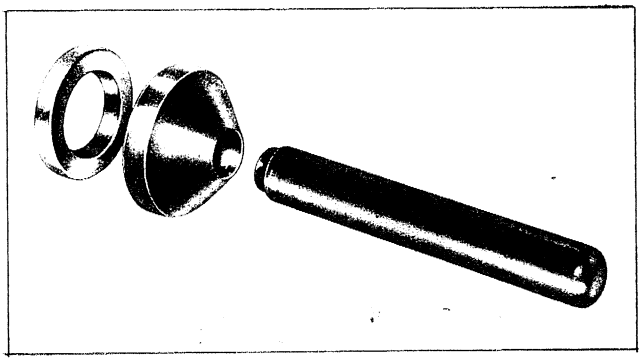


Figure 124B

7. Apply a thin coat of WL39x1 sealer, (pliobond can also be used) to outside diameter of the seal. Allow to set for approximately 5 minutes before installing into bearing frame.

8. Disassemble seal tool head from the handle.

9. Place seal on tool head, the seal spring should be visible.

10. Align seal and tool head with opening in the bearing frame.

11. Insert handle through hole in the suspension bar and into tool head. Drive seal into place. The tool is so designed that it will bottom on the bearing frame when the seal is in the proper position, *Figure 124C.*

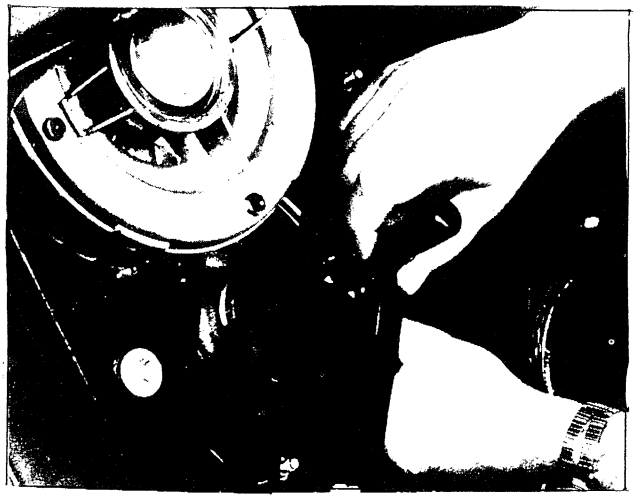


Figure 124C

12. Remove seal tool by removing handle from tool head. Before installing pulley, check sealing surface of pulley sleeve for nicks, grooves or scratches. Replace the pulley sleeve when necessary. Reassemble parts using a new seal washer. Make sure that the nut is as tight as possible. Use *Figure 123* as a guide for correct assembly.

GEAR CASE DISASSEMBLY

Disassembly the gearcase as follows:

After removing the oil from the gearcase cover, remove the drive block and activator shaft seal as mentioned under external service.

Next slip off the mating ring and rubber insert parts of the WH8X172 -seal. The WH8X172 seal body need not be removed from the gearcase cover. Slide the gearcase cover off the gearcase assembly. Lift off the compression spring and spring retainer, *Figure 124D*

1. Lift off the collar (WH1X1163) into which the seal tube fits. (Make sure collar bottoms on snap ring when reassembled).

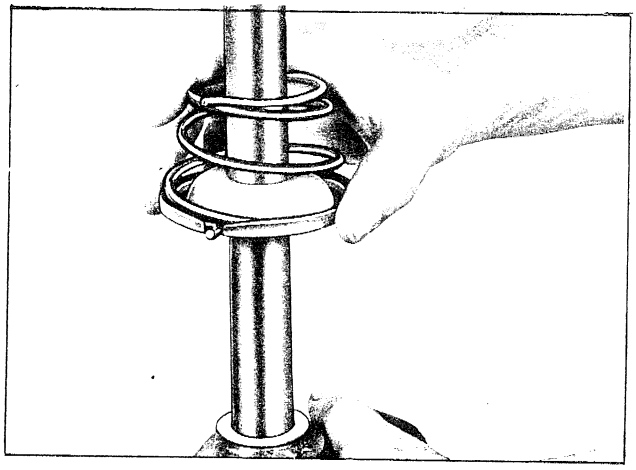


Figure 124D

2. Pry off the snap ring against which the collar bottoms *Figure 125.*

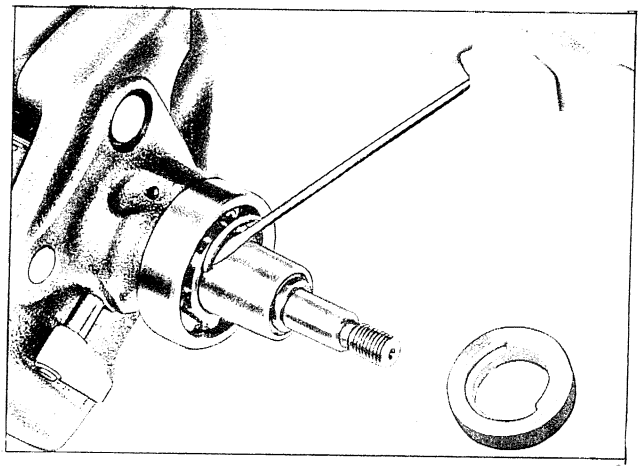


Figure 125

3. Using a wheel puller, remove the ball bearing, *Figure 126.*

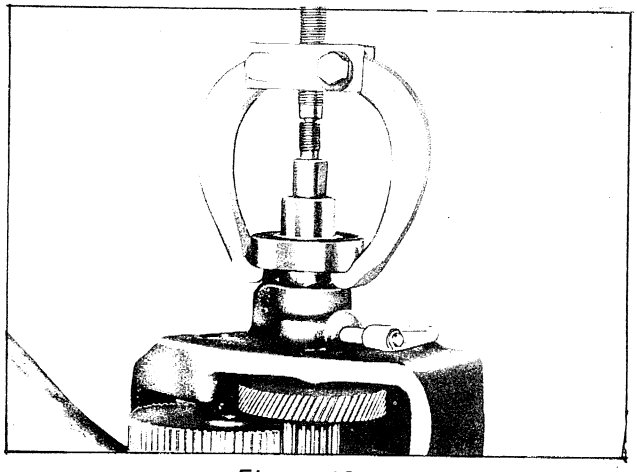


Figure 126

4. Remove the snubber (WH1X1160) by lifting off the retaining ring, *Figure 127.* In reassembly be sure that the washers on each side of the snubber are in place and that it wings freely. Refer to *Figure 126* for proper position of the snubber in relation to the gearcase.

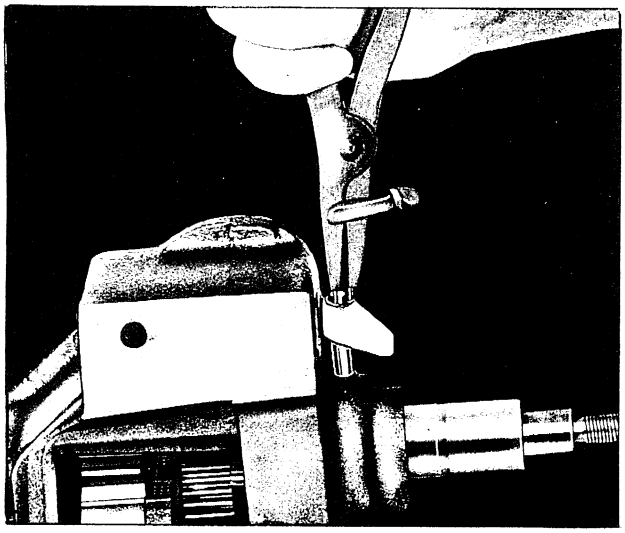


Figure 127

5. Drive out the dual gear (WH40X50) with a 3/8" drift punch, *Figure 128.* The dual gear shaft is a press fit into the dual gear. It rotates in the gearcase bores with the gear as a unit .

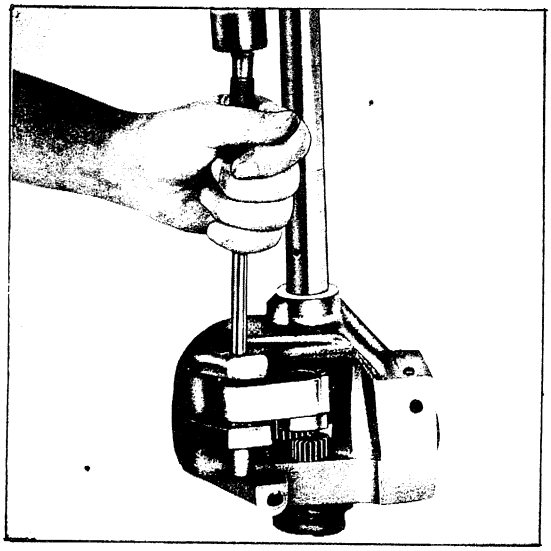


Figure 128

6 Remove the sector gear (WH5X22) by pushing out the retaining ring, *Figure 129.* A tool for doing this can easily be made up from 3/64" steel stock, *Figure 130.*

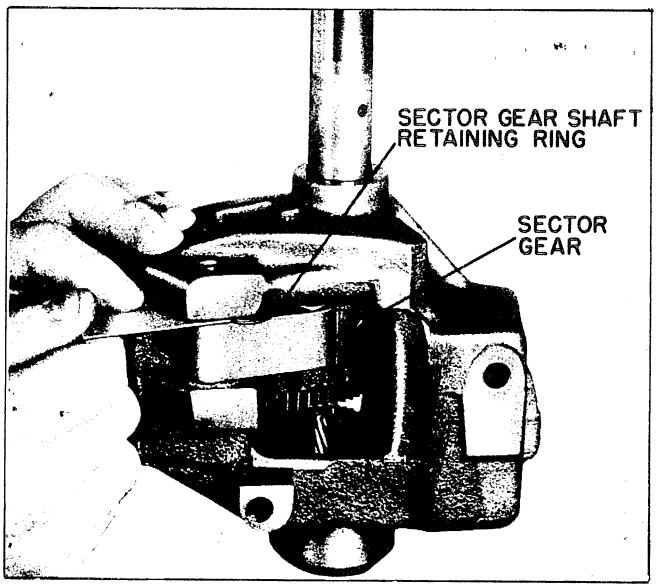


Figure 129

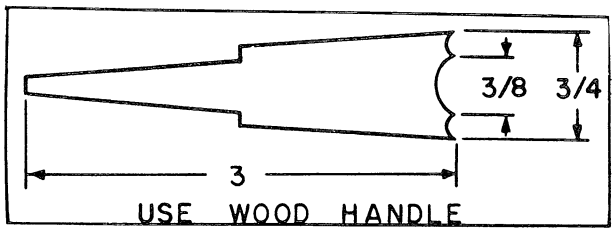


Figure 130

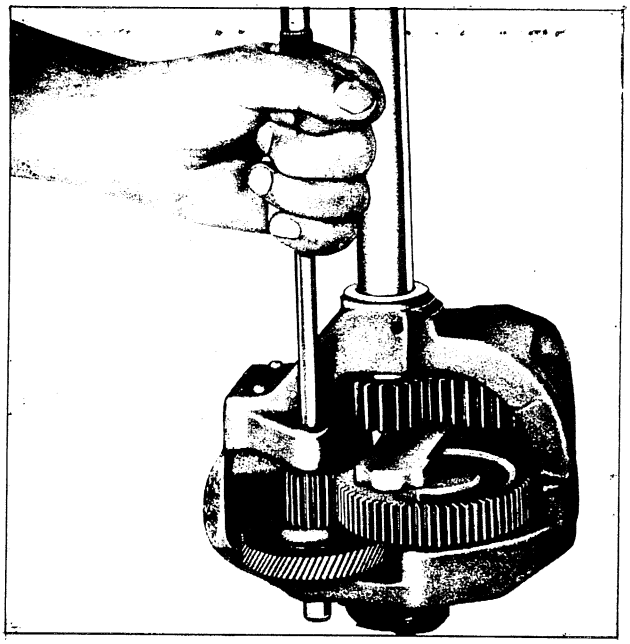


Figure 131

Then drive out the sector gear shaft from the top of the gearcase, *Figure 131.* Swing the sector gear out of the gearcase and lift off the link, *Figure 132.*

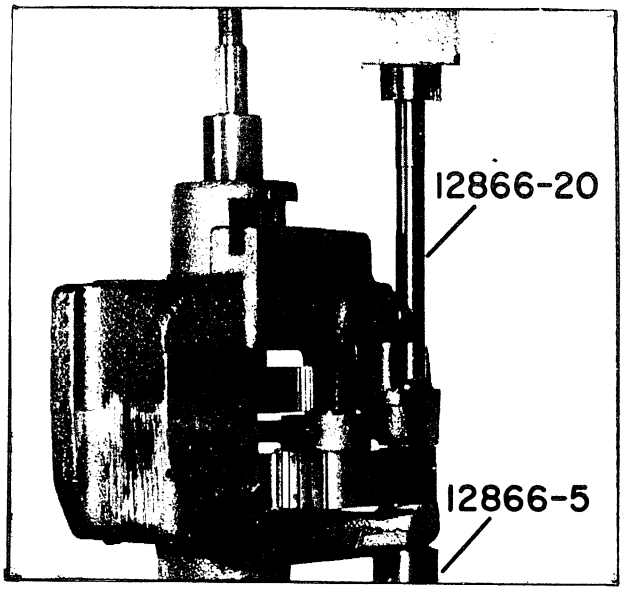


Figure 132

Drive out the crank gear shaft from the top *Figure 133.* The stop ring at the bottom of

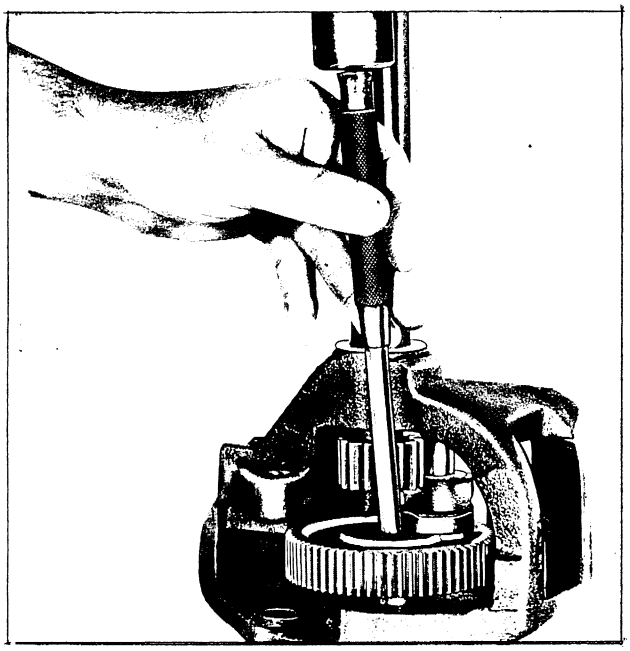


Figure 133

the shaft prevents the shaft from coming up too far and hitting the link while the gear is rotating. The crank gear shaft, crank gear and link are shown disassembled in *Figure 134.*

The gearcase assembly (WH37X18) with its activator shaft and pinion shaft is replaced as a unit, *Figure 135.*

Reassemble the gearcase components in the reverse order of disassembly.

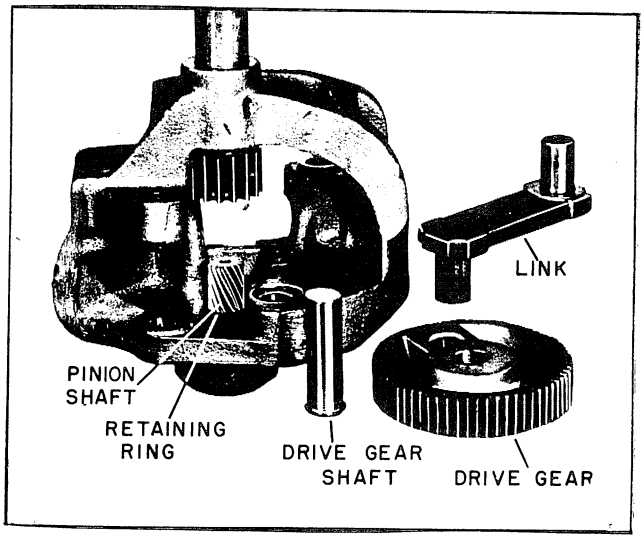


Figure 134

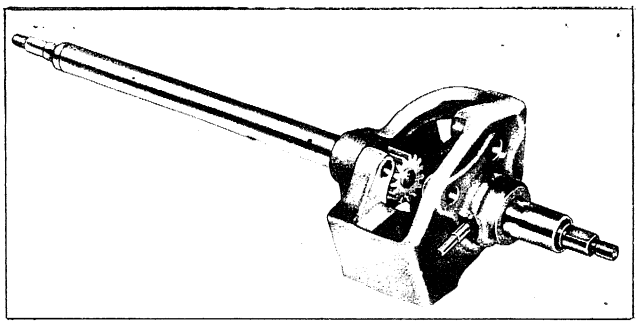


Figure 135

TRANSMISSION OIL

The transmission should be refilled with 54 fluid ounces of oil WH49X54 is a can containing this quantity of the correct lubricant. Any name brand premium type automobile oil, SAE 40 weight, may also be used. Do *NOT* use regular or heavy-duty detergent types of automobile oil.

Suspension

Since even a normal clothes load will not be balanced perfectly during *SPIN,* it is necessary to isolate the wash basket from the outer case or apron Accordingly, the motor and clutch assembly and the transmission assembly are rigidly mounted to a suspension assembly which hangs from springs mounted to brackets fastened to the toe board of machine base.

Thus, when the wash basket, which is clamped to the activator post or drive tube, contains an unbalanced clothes load, the wash basket, transmission, motor and clutch can move back-and-forth as a single unit. Since the suspension hung from the

toeboard, vibration created by a spinning off-balance load is, for the most part, transmitted into the toeboard where it is least objectionable. Springloaded damper pads, fastened to the toeboard brackets, ride against the suspension and further reduce vibration. These damper pads also act to restrain the suspension from excessive motion, thus permitting considerable larger unbalanced loads than would otherwise be possible.

Figure 136 shows the suspension and toeboard assembly with motor, two-speed clutch and transmission mounted.

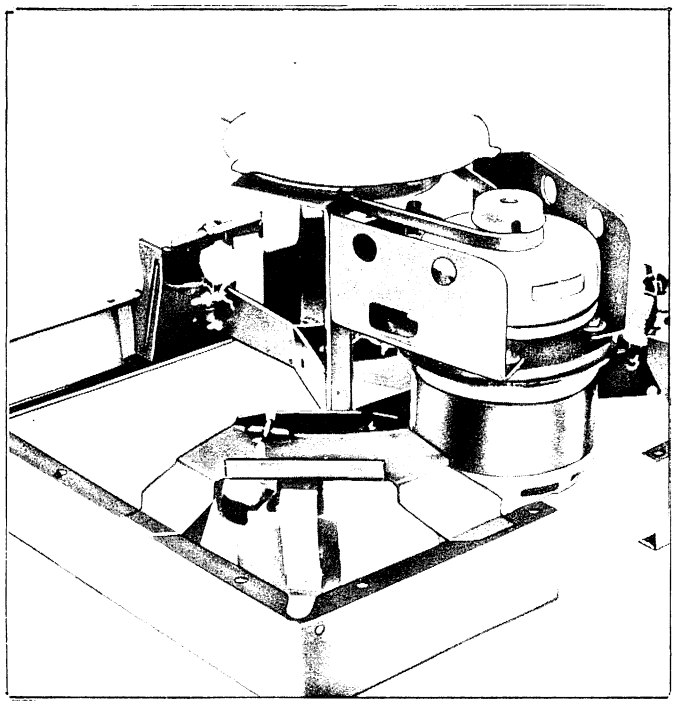


Figure 136

An adjustable leveling screw is provided in each corner of the toeboard to permit level installation of the machine on uneven or sloping floors. A jam nut is also provided for each leveling foot, not only to prevent the screw from turning after adjustment, but also to provide a firm bond between the leveling foot and the toeboard, thus eliminating vibration from this source.

Agitator

The smooth bottom surface of the activator cap bears against the rubber filter mount to form a seal which prevents water from entering and oxidizing the activator diver, *Figure 137.*

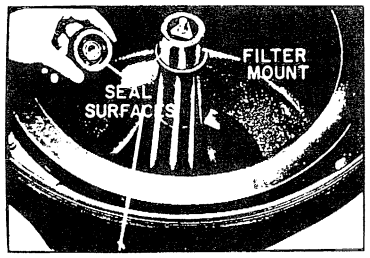


Figure 137

Basket

To remove the basket, the cover must first be completely removed. Then remove the activator cap, activator assembly and basket booth, *Figure 138.*

The three basket bolts are then removed, and the basket can be lifted out.

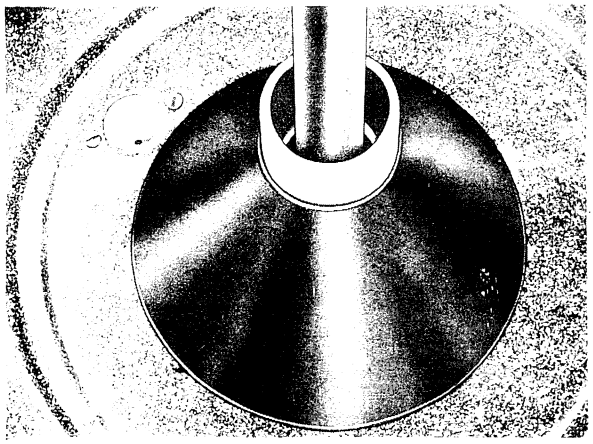


Figure 138

BOOT REMOVAL – REPLACEMENT

a. Remove the cover assembly.

b. Remove basket boot inside of tub.

c. Remove three bolts at bottom of basket.

d. Lift basket straight up and out of the tub; make certain that the water inlet nozzle and rinse dispenser trays are moved out of the way.

e. Loosen the clamp screw and remove clamp from around flange on underside of the tub, pull down boot flap.

f. Loosen clamp screw and remove upper clamp from around the transmission. A sharp pull upwards will free the boot.

g. Discard torn boot, retain continuous metal ribbon inside for future use.

h. New style boot does not use the metal ribbon Boot WH8X201 has been replaced by WH8X246 Later models use boot WH8X246.

2. To replace boot, reverse procedure.

VERSATRONIC SYSTEM, AND VARIABLE SPEED CLUTCH

The Versatronic washing machine employes an electro-magnetic friction clutch.

The friction clutch has a solid state control and is sensitive to varied speeds. A tachometer feed-back system allows a variable out-put speed without a predetermined range.

Basic Components

a. Speed selector assembly-located in control panel provides varied speed controls in agitation and spin cycles. Provides voltage reduction to the sensor for spin by resistor elimination.

   Provides surge supressor for sensor assembly. Provides relay operated olgic for desired speeds election.

b. Magnetic clutch assembly – located on shaft end of drive motor.

   The magnetic clutch can be defined as a clutch using the principle of electro-magnetic force to provide the variable speeds on the Versatronic models. The drum and pulley assemblies are employed to transmit torque from the primary system to the output.

c. Sensor assembly – this component is mounted on the bracket adjacent to the magnetic clutch, see *Figure 139.*

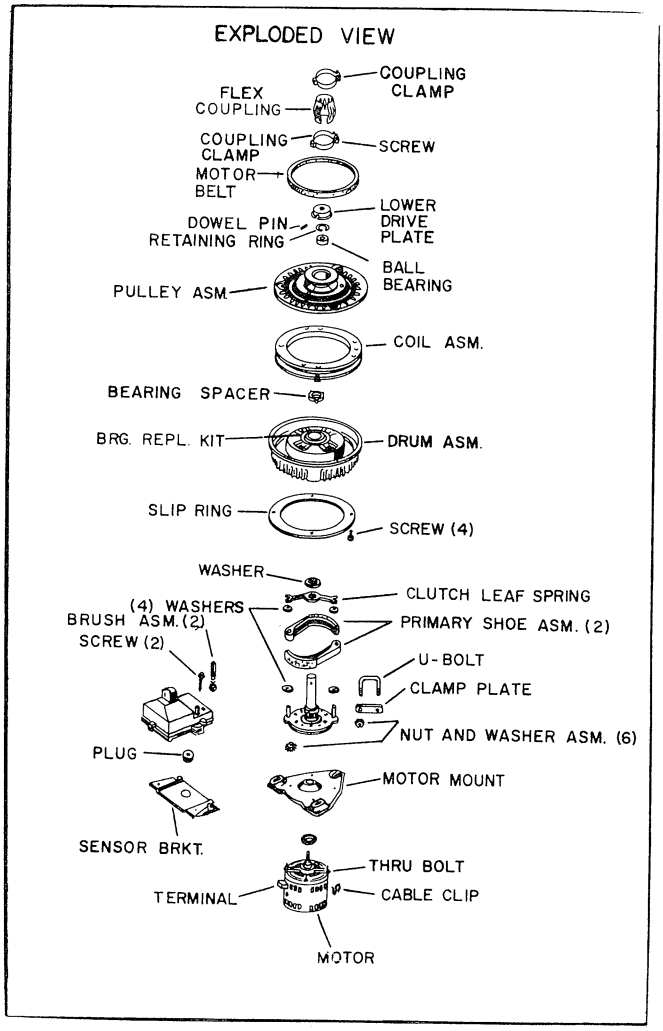


Figure 139

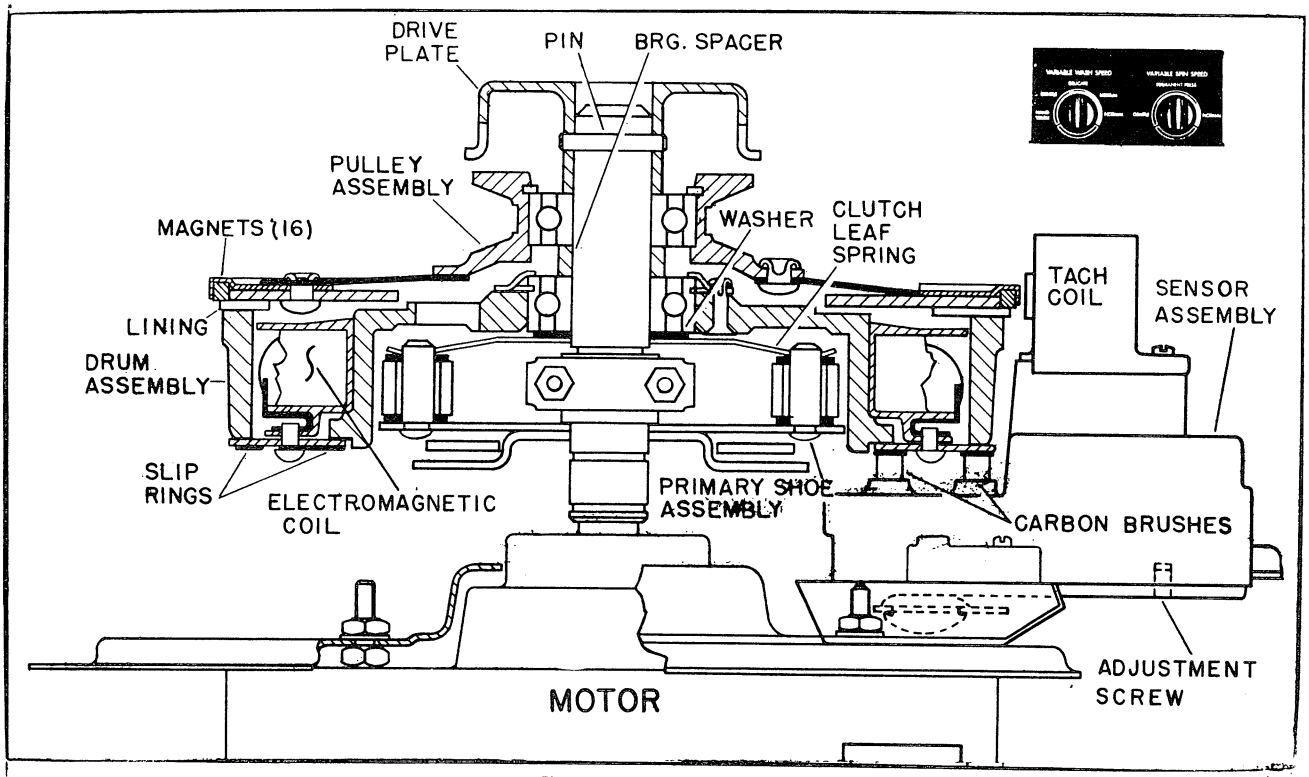


Figure 140

Figure 140 shows the cutaway assembly diagram depicting the relationship of the three basic components. Electrically the sensor assembly is connected to the speed select assembly and 120V A.C. by a six-way terminal housing utilizing four wires. Power is transmitted from the sensor assembly through two carbon brushes which contact the slip rings underneath the drum assembly; the slip rings connect to the coil within the drum assembly.

When the drive motor is energized the primary shoes are centrifugally thrown out to contact the drum cavity; the drum assembly rotates at motor speed. The pulley assembly will rotate only when the bushes supply power to the clutch coil within the drum assembly. The power to the coil is supplied through a SCR, phase controlled, half-wave circuit from within the sensor assembly. Phase control is accomplished by the solid state circuit, the customer control setting and the signal generated by the tachometer generator. The phase shift determines the portion of the half-wave applied to the clutch coil.

If *"high speed"* agitation (100 spm) is desired, the customer speed control is rotated clockwise, this rotation of the potentiometer puts high resistance in the circuit. (counterclockwise rotation decreases resistance). When the pulley assembly magnets pass the tachometer generator rapidly a high AC signal is generated; when pulley assembly speed is slow, a lower valve AC signal is generated.

The customer control establishes designed speed and the tachometer generator monitors pulley speed. If the pulley slows down for any reason the lower signal generated tells the SCR power circuit to conduct for a longer portion of the half-wave, resulting in a restoration to set speed.Conversely, if the pulley assembly tends to run faster than set speed, the resulting high AC tach, generated voltage signal tells the SCR to conduct for a shorter portion of the half-wave thereby reducing power to clutch coil, causing more *"slip"* and a restoration to set speed.

SERVICING THE VERSATRONIC:

Since the Versatronic system is a speed control system, consider the types of speed problems:

a. No speed – motor running, drum assembly rotating, but pulley assembly in full slip.

b. High speed only – 100 strokes per minute in agitation or 600 revolutions per minute in spin. Pulley assembly *"locked"* to drum assembly regardless of customer control setting.

c. Low speed only – 35 strokes per minute in agitation of 200 rpm in spin. Pulley assembly *"slipping"*, rotating about 1/3 drum assembly speed regardless of customer control setting.

If *"No Speed"* condition exists, this indicates no magnetic field between drum assembly and pulley assembly. Check for power to sensor assembly (120V A.C.) at gray and yellow terminals; check brush contact to slip rings; check continuity of clutch coil.

If *"High Speed Only"* condition exists, this indicates a *"high resistance"* (or open circuit) in purple/white to black/white circuit to sensor assembly. Check for open harness wiring, continuity through relay in customer control or customer control potentiometer.

If *"Low Speed Only"* condition exists, this indicates a *"low resistance"* (or short circuit) in purple/white to black/white circuit to sensor assembly. Check for shorted harness wiring or shorted customer controls.

A service harness adaptor (WH19X174) is available to assist in diagnosis of Versatronic washers. This adaptor may be used at the sensor assembly terminal block to isolate the harness and backsplash circuit from the motor-clutch and sensor circuit. Insert the harness adaptor in series with harness to sensor connectors; with the purple/white and black/white wires *"open"* – normal speed should exist. When purple/white and black/white wires are shorted together, low speed should exist. If motor–clutch assembly responds correctly with these two tests, then proceed to harness or speed control checks.

SPEED SELECT ASSEMBLY

The speed select assembly may be checked out with a volt-ohmmeter; the diagram, *Figure 141* shows the assembly in the de-energized (agitation) position. Note the separation between power terminals (upper half) and customer control circuit (dry circuit). Both the agitation and spin potentiometers *"open-circuit"* at about 180° of rotation, but paralled with 100K ohm resistors, maximum resistance is limited to 100K ohms. The 110 ohm (10 Watt resistor drops the voltage to the sensor assembly during spin to reduce the heat rise in the clutch assembly.

SPEED SELECT ASSEMBLY

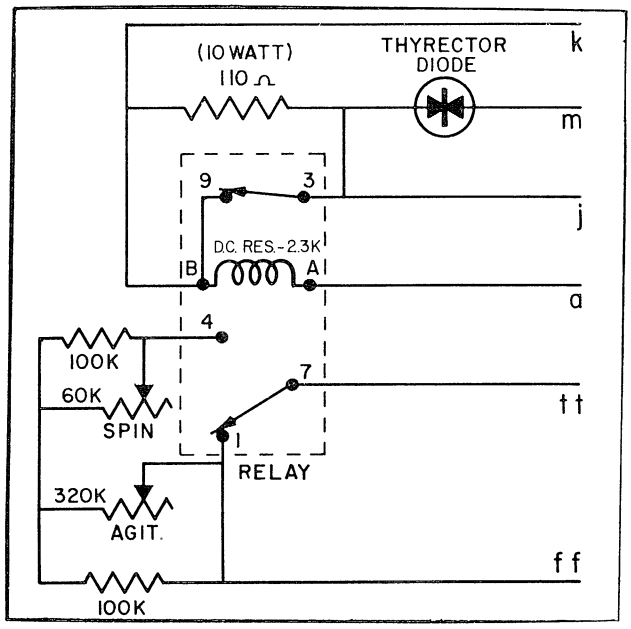


Figure 141

Sensor adjustments —

1. Air gap between the tachometer coil of the sensor assembly and the outer perimeter of the pulley assembly should be .035" to .085". Relating this dimension to coin thickness; a penny is about .055", a quarter is about .065", and a nickel is about .075" thick. The drive belt will tend to decrease this dimension, so use a nickel or a quarter to set, then check with a penny after belt is installed.

2. Trimming the sensor — since the air gap above has a direct relationship to tachometer feedback signal, the sensor must be trimmed whenever air gap is changed. The sensor must be trimmed whenever air gap is changed. The sensor must be trimmed on the appliance, either with load or empty. It is recommended to trim the sensor in agitation with a water load.

Fill machine with water, set customer agitation control to *"Normal"*, start machine and count agitation strokes. A *"stroke"* is one sweep through the arc and return. In *"normal"*, with water load, the agitation strokes should be 100 strokes per minute, this is a full *"locked-in"* condition with pulley assembly and drum assembly rotating at the same speed. If agitation stroke rate is less than 100 spm, adjust the trimming potentiometer (R6) to obtain full locked in condition. A small Phillips screwdriver fits the trim pot. Then rotate customer wash speed control to *"Hand-Wash"* (fully counterclockwise) and count agitation strokes, 30-35 strokes per minute is acceptable. Retrim, if necessary, then recheck *"Normal"* setting for 100 spm.

NOTE: There are two potentiometers in the sensor assembly, one is accessible, the other is plugged and not readily accessible. NEVER ADJUST THE PLUGED POTENTIOMETER (R5). This is a manufacturing adjust and should never be disturbed.

DETAILED CIRCUIT OPERATION

The AC tach voltage generated in the tach coil by the passing of the magnetic strip in the pulley assembly is rectified by diode D4 to 1/2 wave DC and filtered to reduce ripple and maintain a positive level by filter capacitor C4 (1mf). This level is then divided by trim pot R6 (10K) to standardize the voltage output at a specified speed to eliminate the variations of air gap, diode drop and capacitor value found in commercial manufacturing tolerance. The divided portion of this signal is fed through a resistor R7 (33K and 10K) where it is mixed with a signal from the negative feedback capacitor C3 (.047 MF). The negative feedback signal is used to stabilize the control function and limit the response of the control system. Resisitor R7 is used to limit the fixed speed range of clutch operation. The mixed signal is red through the speed select asm. which is set at 100K ohms for normal operation. The mixed signal voltage is dropped across the 100K ohms speed select resistance and is fed through the base-emitter junction of the input transistor (Q2). The base current is amplified 50 to 100 times and this collector current shunts the phase shift capacitor C2 (0.1 mf) and limits its rate of charge each cycle. The phase shift capacitor C2 is charged at a rate established by the effective RxC time constant of the current through the calibration pot R5 supplied by the 8-10 volt zener level established by the zener Q3 during the positive half cycle and the bleed off due to IC of transistor Q2. The time required to charge the phase shift capacitor C2 to approximate 2.5 volts establishes the phase angle of the half wave power which is supplied to the magnetic clutch coil by the SCR. The 2.5 volts is required to produce a sufficient base current flow in transistor Q1 to allow the emitter current to produce a voltage drop across resistor R3 (470 ohms) necessary to gate the SCR. leakage (anode to gate) from gating SCR and resistor R2 (1000 ohms) increases the voltage level on the phase shaft capacitor. The collector voltage on transistor Q1 is supplied by the zener Q3.

For improved phase shift timing stability and temperature stability, a ramp and pedestal type of phase shift capacitor charge rate is used. The pedestal is controlled by the transistor Q2 and calibrator pot. R5, and the ramp is established by resistor R4 and

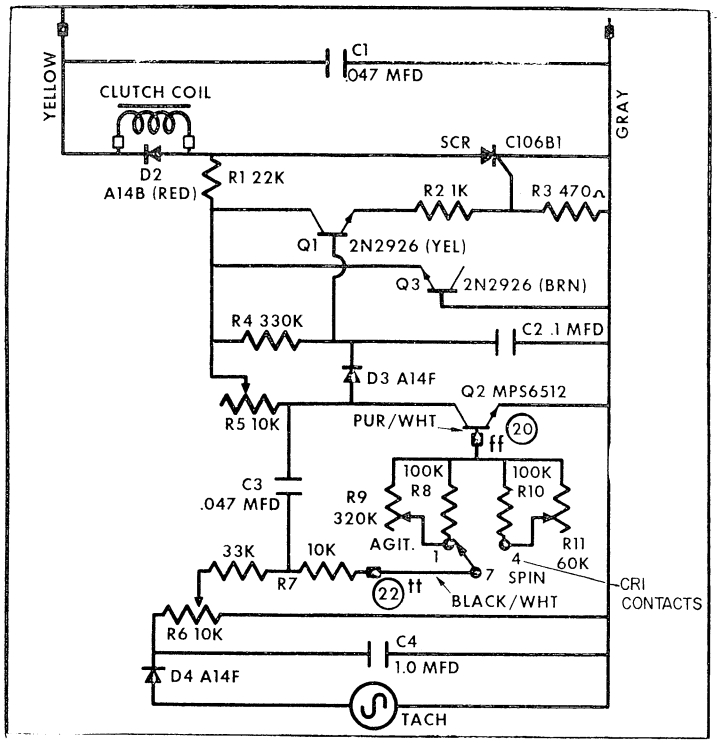


Figure 142

diode D3. Both modes operate off of the 8-10 volt level established by zener Q3. The RxC time constant of resistor R4 (330K ohms) and capacitor C2 is long and produces the ramp portion of the timing curve. Diode D3 prevents this charge rate from being controlled by transistor Q2. Since transistor Q2 does control the RxC time constant due to calibrator pot R5 (less than 10K), this time constant is short; the combined effect is a constant slope superimposed on a changing much steeper slope. This constant slope establishes the maximum degree of sensitivity to speed change that can occur at higher speeds. The negative feedback capacitor limits sensitivity at lower speeds.

The resistor R1 (22K ohms) limits current through zener during positive and negative half cycles.

Capacitor C1 (.047 mf 600V DC) is required to limit radio frequency interference generated by phase controlling positive half wave. It also limits possibility of outside 60 cycle interference controlling SCR gating.

Since the SCR blocks during the negative half cycle, the magnetic clutch coil is powered by phase controlled 170V peak half wave D.C. voltage. Diode D2 is used as a free wheeling diode to allow the current produced by the collapsing magnetic field during the negative half cycle and upgated positive half cycle to flow within the coil. This increases the effect current in the coil and eliminates 60 cycle noise.

For normal operations with 100K ohms in speed select spot, the base current in transistor Q2 is at a level that allows the phase shift capacitor to reach the voltage to get the SCR at an approximate 90° phase angle, this supplied more than demand torque to the clutch and high speed operation is obtained. During start up the tach coil is not producing any voltage, therefore, no base current is flowing in transistor Q2 and the phase shift capacitor quickly reaches the voltage required to gate the SCR and the clutch is operated at its full torque capability

with the SCR being gated at approximately a 30° phase angle. As the armature approaches motor speed the tach coil is generating sufficient voltage to allow transistor Q2 to bleed off the current charging the phase shift capacitor C2, and the SCR is gated later and reaches the 90° gate point at motor speed.

For any *"slower than normal"* speed the speed select asm. is set at a reduced resistance value. The slowest speed is when the resistance is at zero. When at a zero setting, the machine starts under the same conditions as with a normal high speed setting. The tach coil is not producing a signal, therefore, the SCR is gated early in the cycle and full clutch torque is available, however, as the pulley assembly approaches 600-640 RPM the tach coil is producing sufficient voltage to cause transistor Q2 to bleed current from the phase shift capacitor which causes the SCR to gate later in the cycle. This is possible because none of the tach signal is dropped across a speed selector resistance. If the speed select was set at 40K ohms the point where the SCR would begin to gate late in the cycle would be approximately 1200 RPM.

In any speed range other than normal, the clutch armature (pulley assembly) is controlled at a predetermined speed. If the torque demand increases the armature will slow down. The tach signal will then be reduced which will reduce the amount of the bleed off by transistor Q2, and then the phase shift capacitor C2 will reach the SCR gating voltage earlier in the cycle. Therefore, the SCR will furnish more power to the clutch coil in order to meet the high demand torque.

Conversely if the demand torque decreases, the armature will increase in speed and the tach signal will increase which will increase the amount of bleed off by transistor Q2 causing the phase shift capacitor C2 to reach the SCR gating voltage late in the cycle. Therefore, the SCR will furnish less power to the clutch which will allow clutch torque to meet the lower demand torque.

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 General Electric 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.

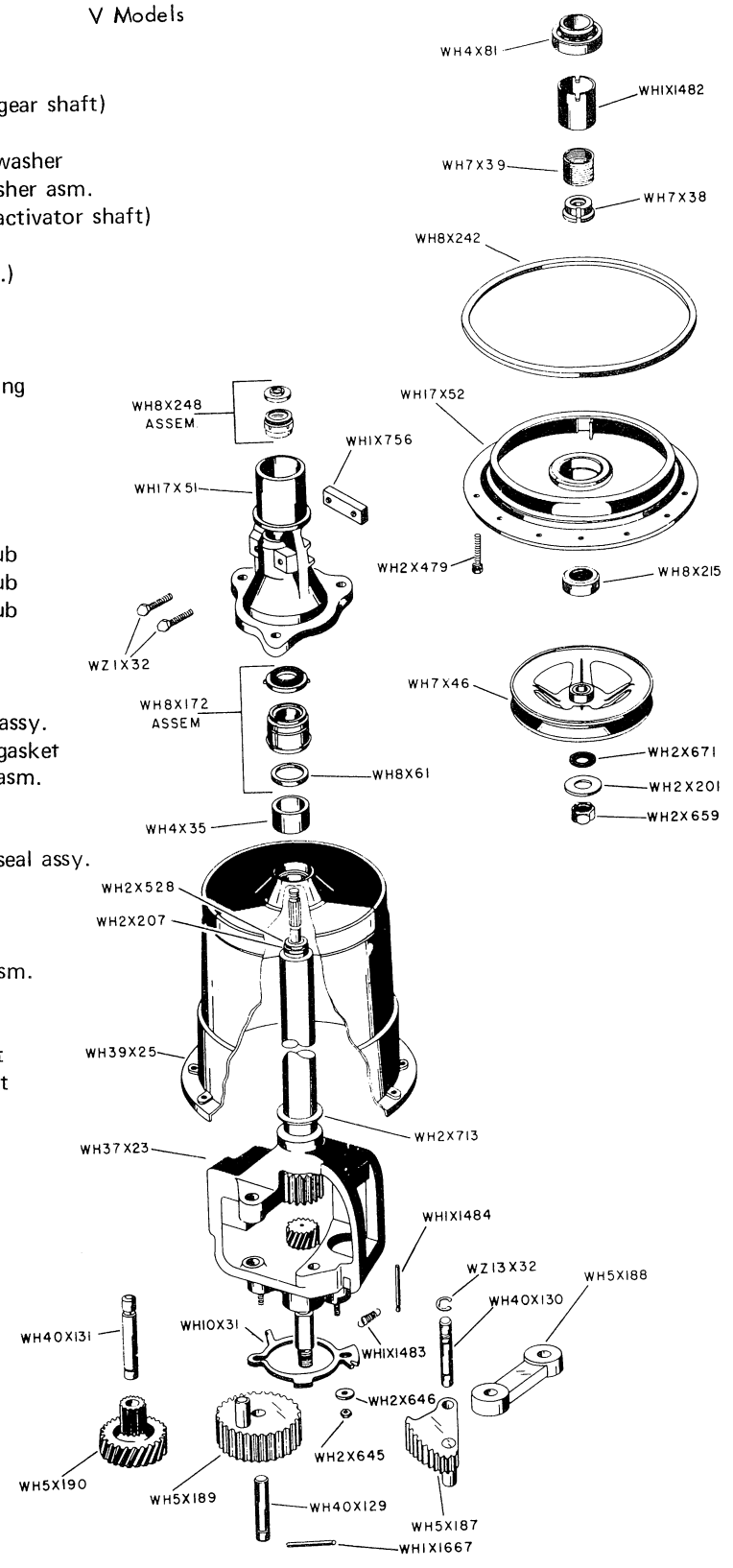
TRANSMISSION

WH 38 X 32

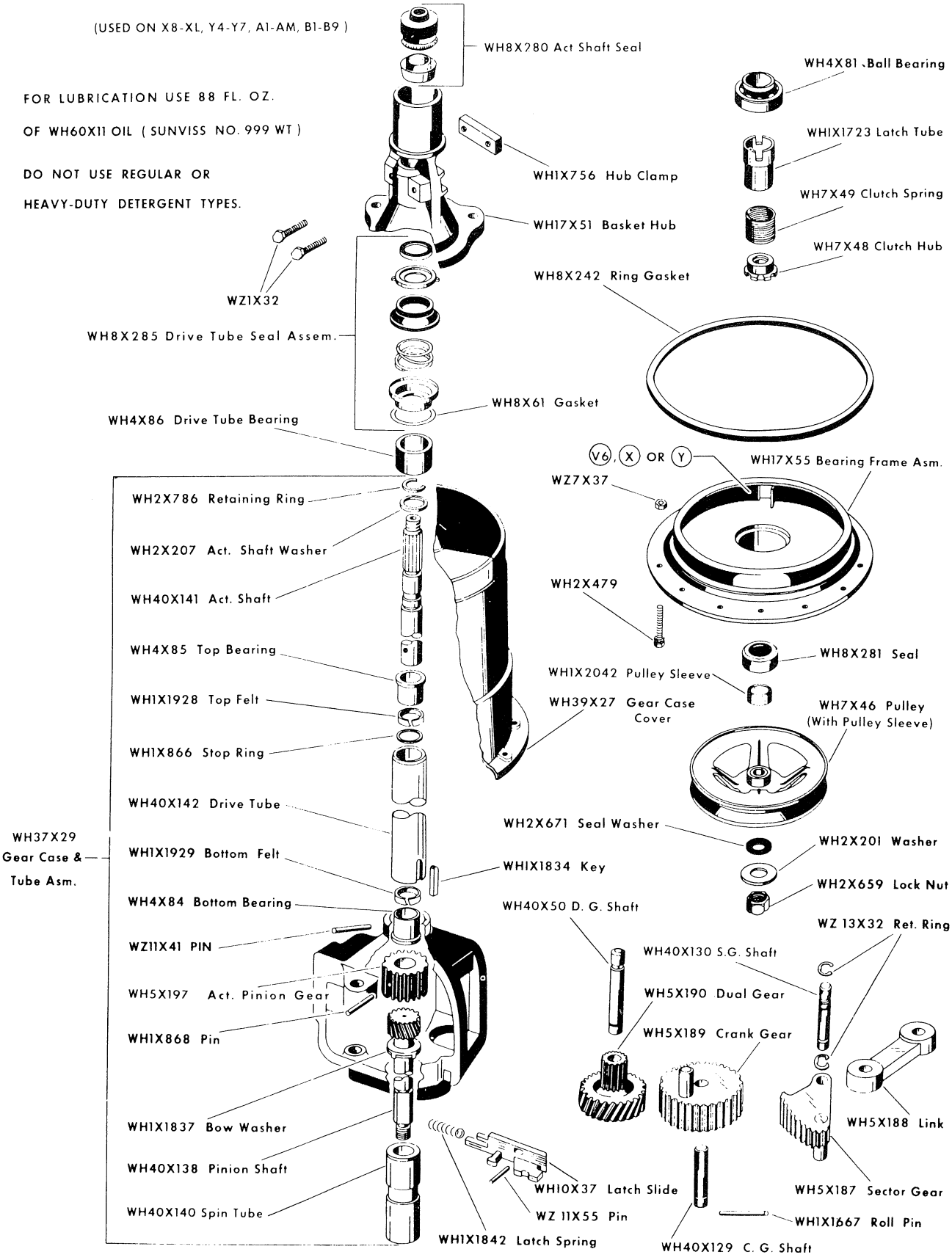
V Models

WH1X2083	(WH1X756)	Hub clamp
WH7X48 *	(WH1X1482)*	Latch tube
WH7X49 *	(WH1X1482)*	Latch tube
WH1X1723 *	(WH1X1482)*	Latch tube
WH1X1483		Latch spring
WH1X1484		Pin
WZ11X50 *	(WH1X1667)	Roll pin (crank gear shaft)
WH2X201		Washer
WH2X207		Activator shaft washer
WH2X479		Screw & lockwasher asm.
WH2X528	(WH2X786)	Retaining ring (activator shaft)
WH2X645		Stop nut
WH2X646		Washer (non std.)
WH2X659		Lock nut
WH2X671		Washer
WH2X713		Thrust washer
WH4X35	(WH4X86)	Drive tube bearing
WH4X81		Ball bearing
WH5X187		Sector gear
WH5X188		Link
WH5X189		Crank gear
WH5X209	(WH5X190)	Dual gear
WH7X48 *	(WH7X38)*	Clutch spring hub
WH7X49 *	(WH7X38) *	Clutch spring hub
WH1X1723 *	(WH7X38) *	Clutch spring hub
WH7X48 *	(WH7X39) *	Clutch spring
WH7X49 *	(WH7X39) *	Clutch spring
WH1X1723 *	(WH7X39) *	Clutch spring
WH7X46		Pulley & sleeve assy.
WH8X61		Drive tube seal gasket
WH8X172	(WH8X287)	Drive tube seal asm.
WH8X281	(WH8X215)	Seal (lower)
WH8X242		Ring gasket
WH8X291	(WH8X248)	Activator shaft seal assy.
WH10X31		Latch plate
WH17X69	(WH17X51)	Basket hub
WH8X292	(WH17X51)	Basket hub
WH17X52		Bearing frame asm.
WH37X23		Gear case asm.
WH39X25		Gear case cover
WH40X129		Crank gear shaft
WH40X146	(WH40X130)	Sector gear shaft
WH40X145	(WH40X131)	Dual gear shaft
WZ1X32		Screw
WZ13X32		Retaining ring

*(Kit)

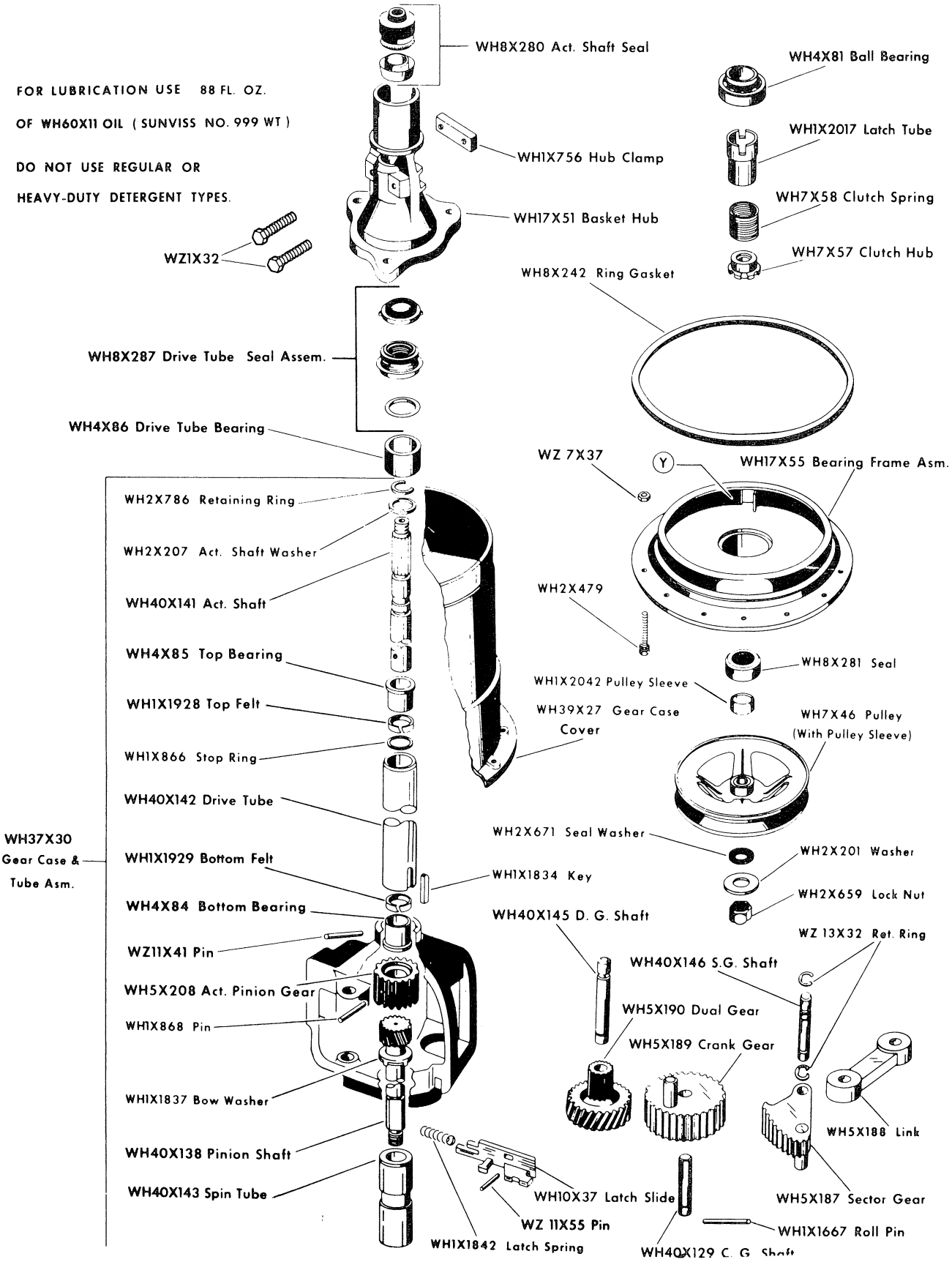


WH38X34 TRANSMISSION



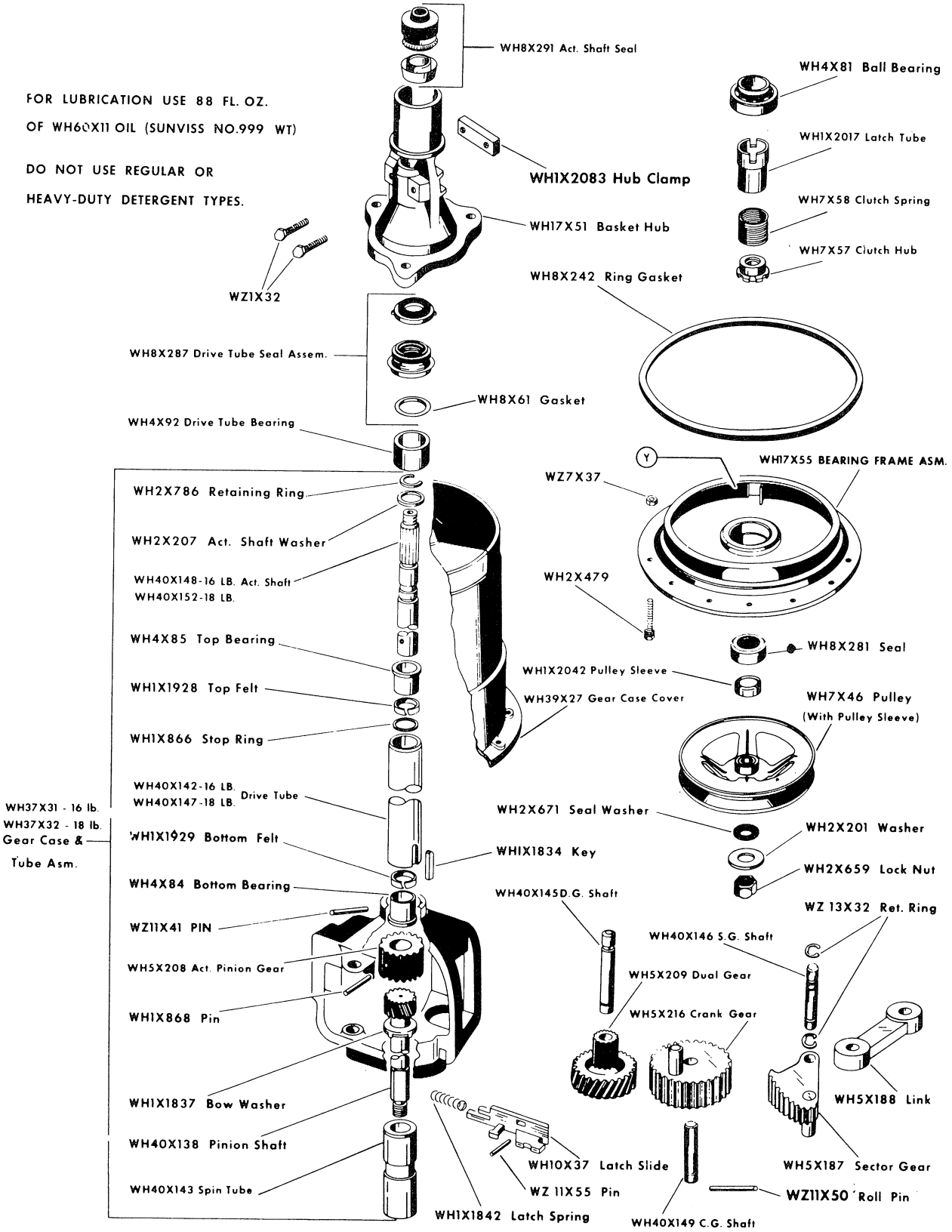
WH38X35 TRANSMISSION

(USED ON AN, BK-LATER; C, D, U MODELS)

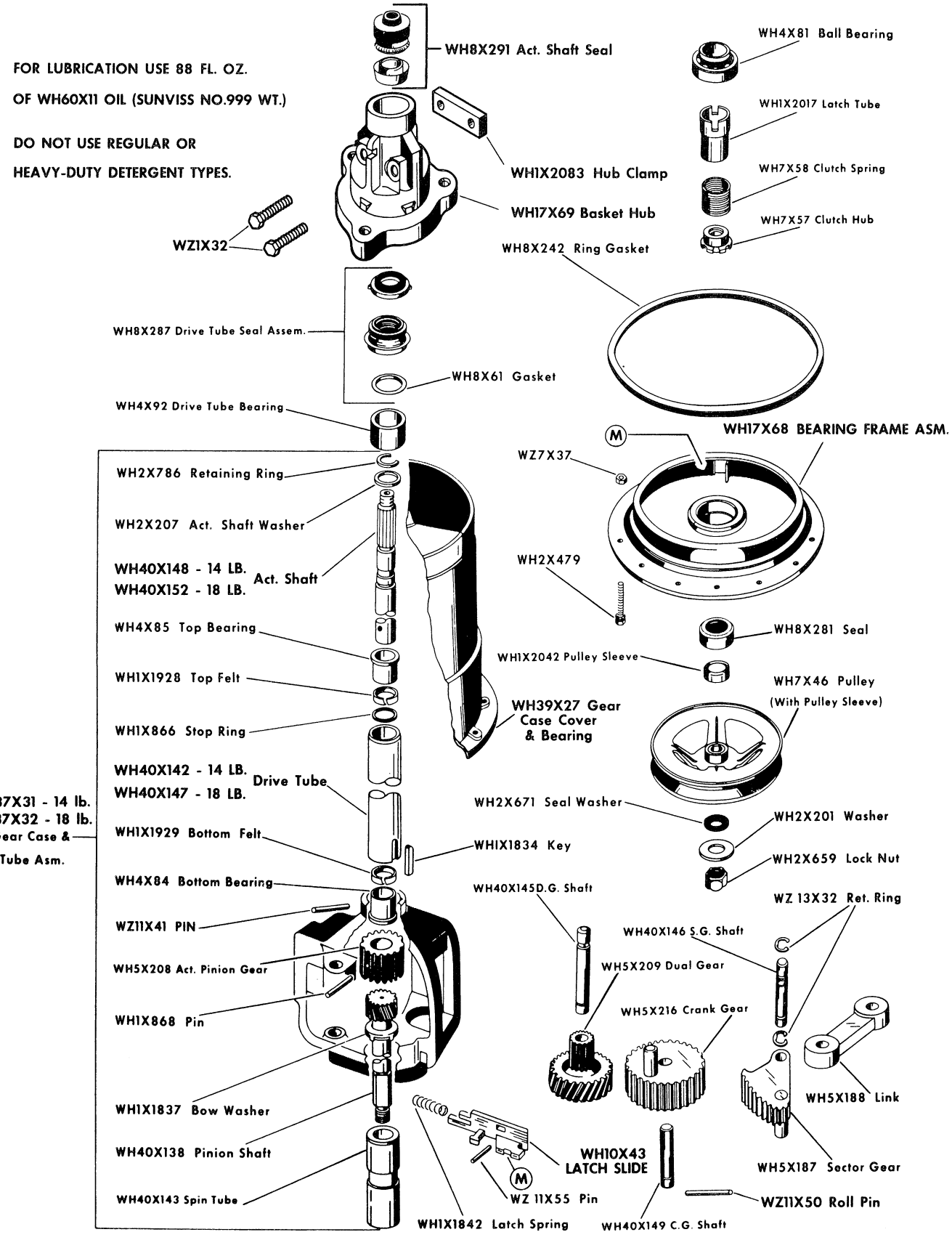


WH38X36 - 16LB.
WH38X37 - 18LB. — TRANSMISSION

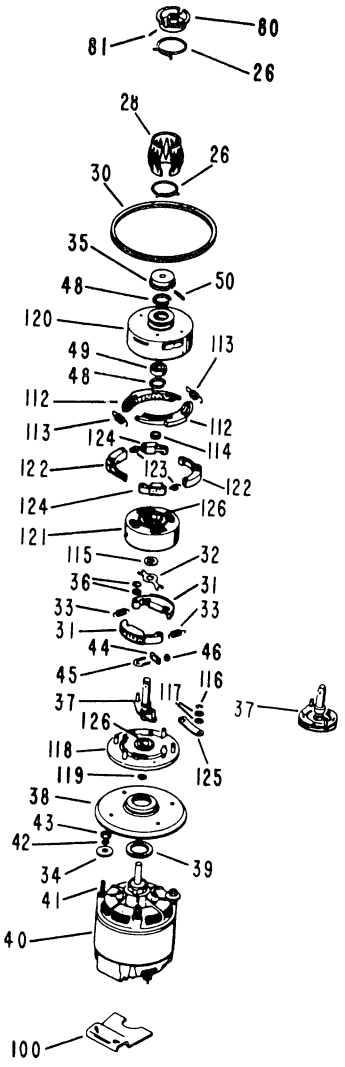
USED ON DA, EA, LA - LE MODELS



WH38X38 - 14 LB.
WH38X39 - 18 LB. — TRANSMISSION



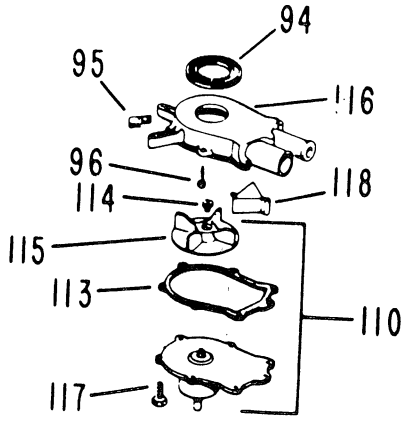
MOTOR DRIVE BRAKE & CLUTCH



750S Series
850S Series
950S Series
750T Series
850T Series
950T Series
1050T Series

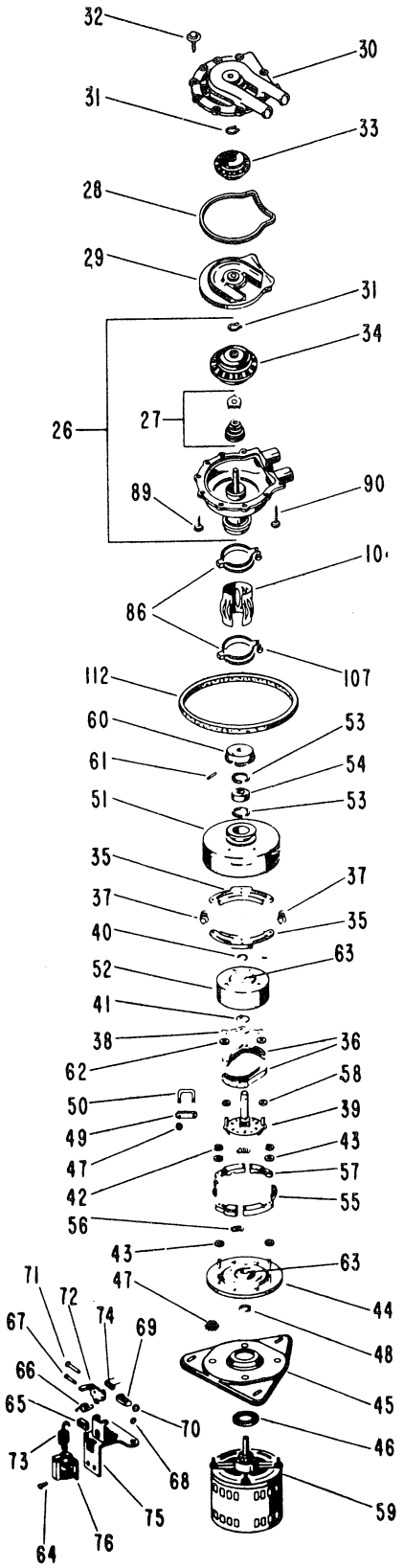
26.	WH1X373		Clamp
28.	WH1X1722	(WH1X1055)	Coupling
30.	WH1X2026	(WH1X1249)	V-belt
31.	WH7X64	(WH7X34)	Shoe assy. primary
32.	WH1X1309		Clutch leaf spring
33.	WH1X1257		Spring primary shoe
34.	WZ10X39		Washer
35.	WH7X45	(WH7X36)	Drive plate, lower
36.	WH2X539		Washer
37.	WH40X150	(WH40X127)	Shaft ext. arm "T" models
	WH40X151	(WH40X124)	Shaft ext. arm
38.	WH16X179		Motor guard
39.	WH8X164		Gasket, motor
44.	WH1X1169		Clamp plate
45.	WH2X543		U-bolt
48.	WH2X190		Retaining ring
49.	WH4X12		Ball bearing
80.	WH7X727		Drive plate upper
100.	WH1X1424		Terminal box cover
112.	WH7X33		Slip shoe assembly
113.	WH1X1337	(WH1X1284)	Slip shoe spring
114.	WH2X579		Bearing spacer
118.	WH17X44		Carrier plate assembly
120.	WH5X175		Outer drum assembly
121.	WH4X91	(WH5X176)	Inner drum assembly
	WH5X207	(WH5X176)	Inner drum assembly
122.	WH5X172		Shoe assy, long
123.	WH1X1258		Lock spring
124.	WH5X173		Shoe assembly, short
125.	WH1X1259		Leaf spring
126.	WH4X87	(WH4X76)	Bearing repl. pkge.

PUMP



94.	WH8X166		Gasket
95.	WH2X507		Speed nut
110.	WH23X25	(WH23X38)	Pump base assembly
113.	WH8X176		Pump gasket
115.	WH1X1051		Impeller
116.	WH16X218	(WH16X187)	Pump body
118.	WH8X177		Pump valve

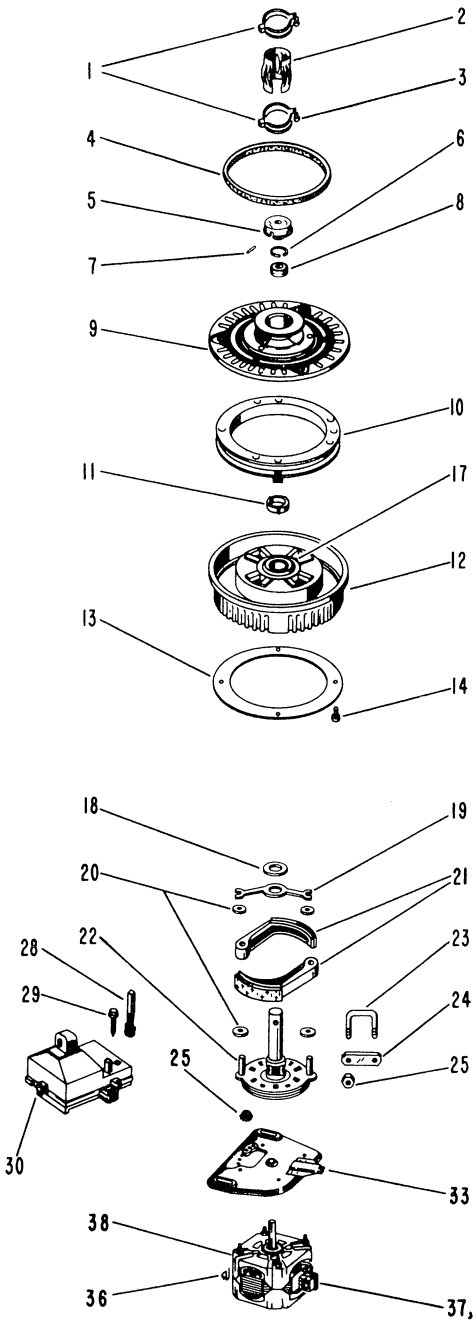
MOTOR DRIVE PARTS



V Models

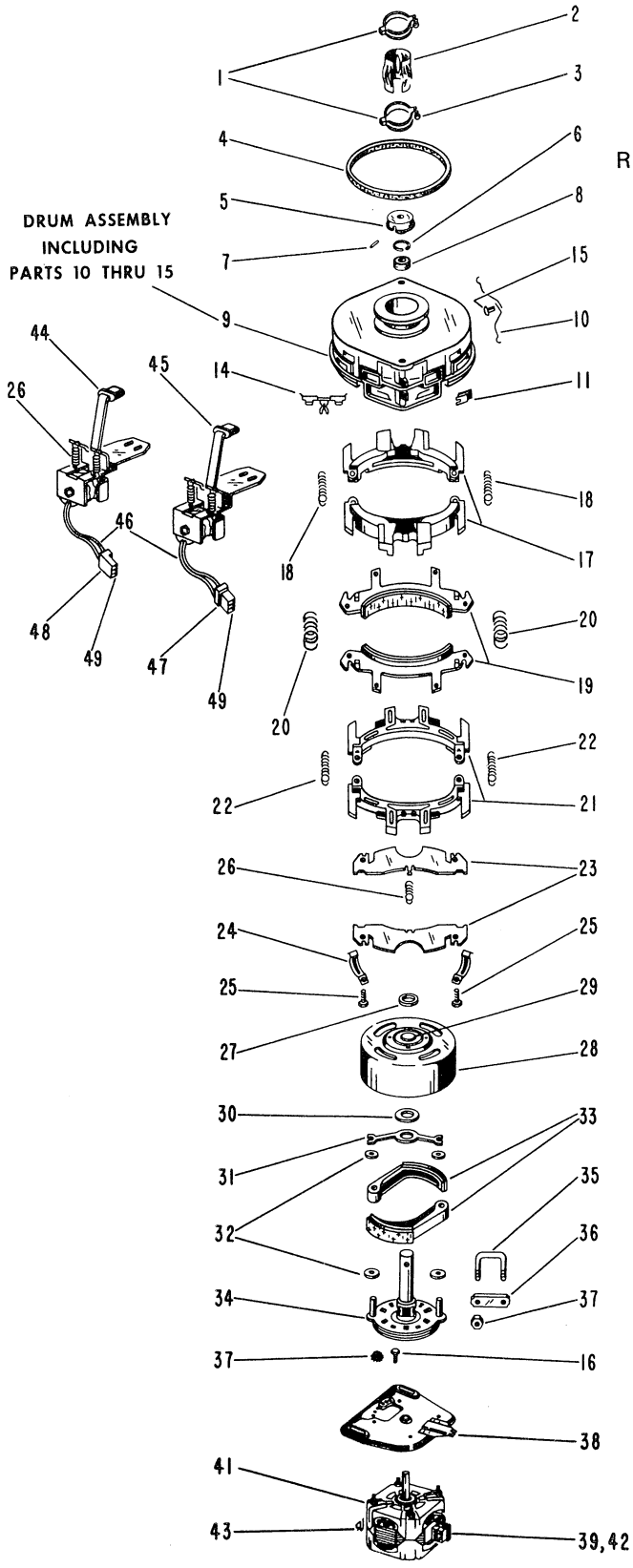
26.	WH23X42	(WH23X33)	Pump housing & impeller
27.	WH8X237		Seal assembly
28.	WH8X286	(WH8X239)	Gasket
29.	WH23X42	(WH10X30)	Pump portion
	WH1X1810	(WH10X30)	Pump portion
30.	WH23X42	(WH16X250)	Pump housing
	WH1X1810	(WH16X250)	Pump housing
31.	WH1X1626		E Ring
33.	WH1X1694		Upper impeller arm
34.	WL23X36	(WH1X1662)	Lower impeller
35.	WH7X33		Outer drum
36.	WH7X64	(WH7X44)	Primary shoe
37.	WH1X1337		Slip shoe spring
38.	WH1X1309		Clutch leaf spring
39.	WH40X150	(WH40X128)	Shaft extension
40.	WH2X579		Bearing spacer
41.	WH2X634		Washer
42.	WZ13X31		E-Ring
43.	WH2X580		Washer
44.	WH17X44		Carrier plate
45.	WH1X841	(WH1X1666)	Motor mount
46.	WH8X241		Motor guard gasket
48.	WZ13X6		Retaining ring
49.	WH1X1169		Clamp plate
50.	WH2X543		U-Bolt
51.	WH5X175		Outer drum
52.	WH4X91	(WH5X176)	Inner drum
	WH5X207	(WH5X176)	Inner drum
53.	WH2X190		Retaining ring
54.	WH4X12		Ball bearing
55.	WH5X172		Shoe assembly
56.	WH1X1258		Lock in shoe spring
57.	WH5X173		Shoe assembly
58.	WH2X662		Bow washer
59.			Motor
60.	WH7X45		Lower drive plate
63.	WH4X87	(WH4X76)	Brg. repl. pkge.
65.	WH1X1250		Bumper
66.	WH1X1251		Solenoid return spring
67.	WH2X576		Pin
68.	WH2X604		Retaining ring
69.	WH1X1305		Brake shoe
70.	WH1X1465		Retaining ring
71.	WH2X578		Pin
72.	WH1X1252		Brake linkage
73.	WH1X1253		Solenoid pull spring
74.	WH1X1255		Brake shoe spring
75.	WH16X251		Pivot bracket
76.	WH1X1254	(WH12X244)	Solenoid
86.	WH1X1621		Clamp
104.	WH1X1722	(WH1X1664)	Flex coupling
112.	WH1X2026	(WH1X1249)	Motor belt

VARIABLE SPEED CLUTCH

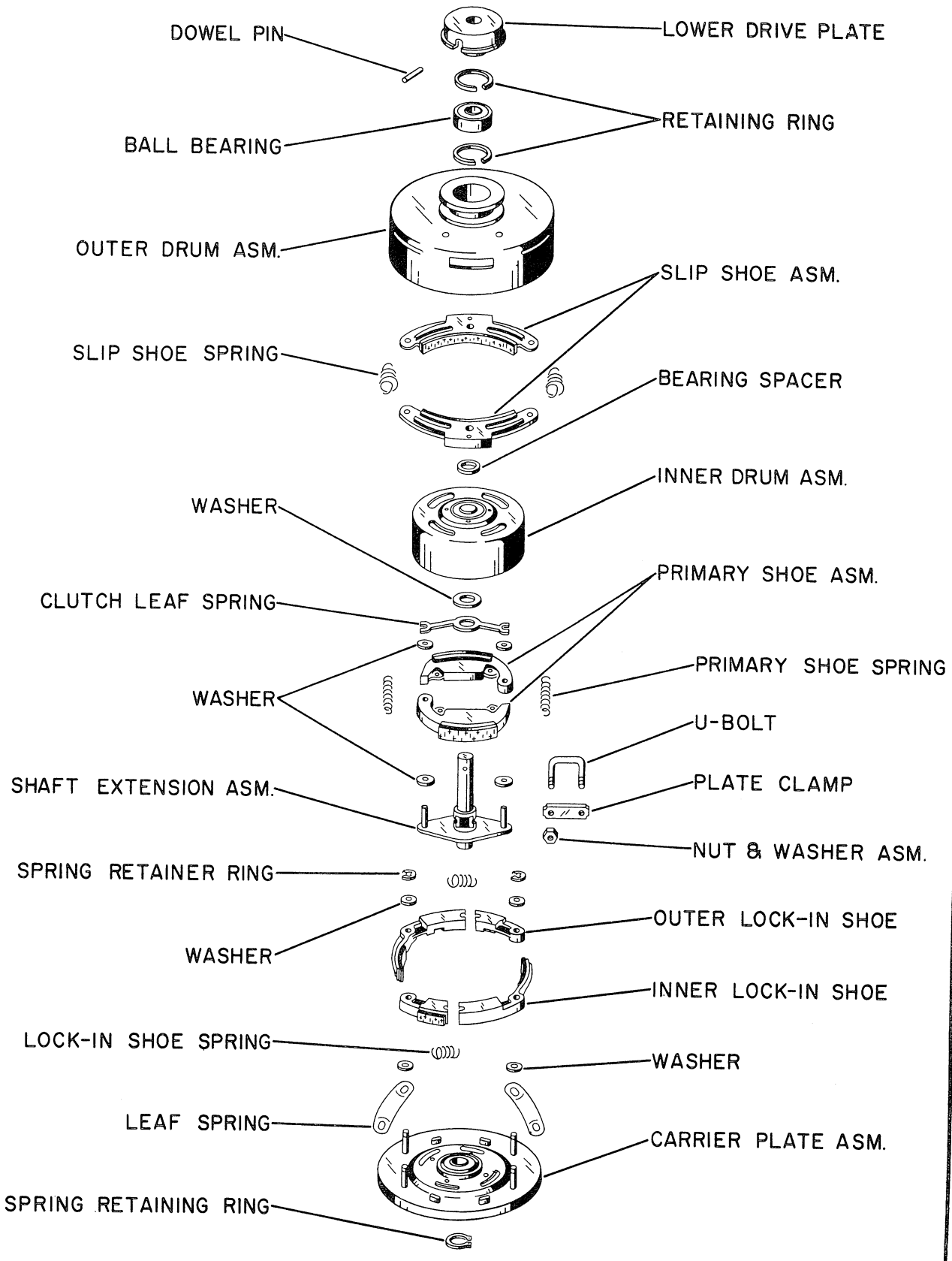


REF. NO.	CATALOG NO.	DESCRIPTION
1.	WH1X1621	Coupling Clamp
2.	WH1X1722	Flexible Coupling
3.	WZ4X337	Screw
4.	WH1X2026	Motor Belt
5.	WH7X45	Lower Drive Plate
6.	WH2X190	Retaining Ring
7.	WZ11X50	Dowel Pin
8.	WH4X12	Ball Bearing
9.	WH7X61	Pulley Assembly
10.	WH12X458	Coil Assembly
11.	WH2X793	Bearing Spacer
12.	WH5X212	Drum Assembly
13.	WH12X459	Slip Ring
14.	WZ5X185	Screw
17.	WH4X87	Bearing Replacement Kit
18.	WH2X634	Washer
19.	WH1X1309	Clutch Leaf Spring
20.	WH2X539	Washer
21.	WH7X64	Primary Shoe Assembly
22.	WH40X144	Shaft Extension Assembly
23.	WH2X543	U-Bolt
24.	WH1X1169	Clamp Plate
25.	WZ8X5 (WZ8X6)	Nut & Washer Assembly
28.	WH12X460	Brush Assembly
29.	8–18 x 5/8	Screw
30.	WH12X461	Sensor Assembly
33.	WH17X66	Motor Mount
36.	WH1X1997	Cable Clip
37.	WH12X416	Terminal Housing
38.	WH20X52	Motor (60 Cycle) 1/2 HP
39.	WH1X2048	Pin Terminal – Male.

MULTI - SPEED CLUTCH

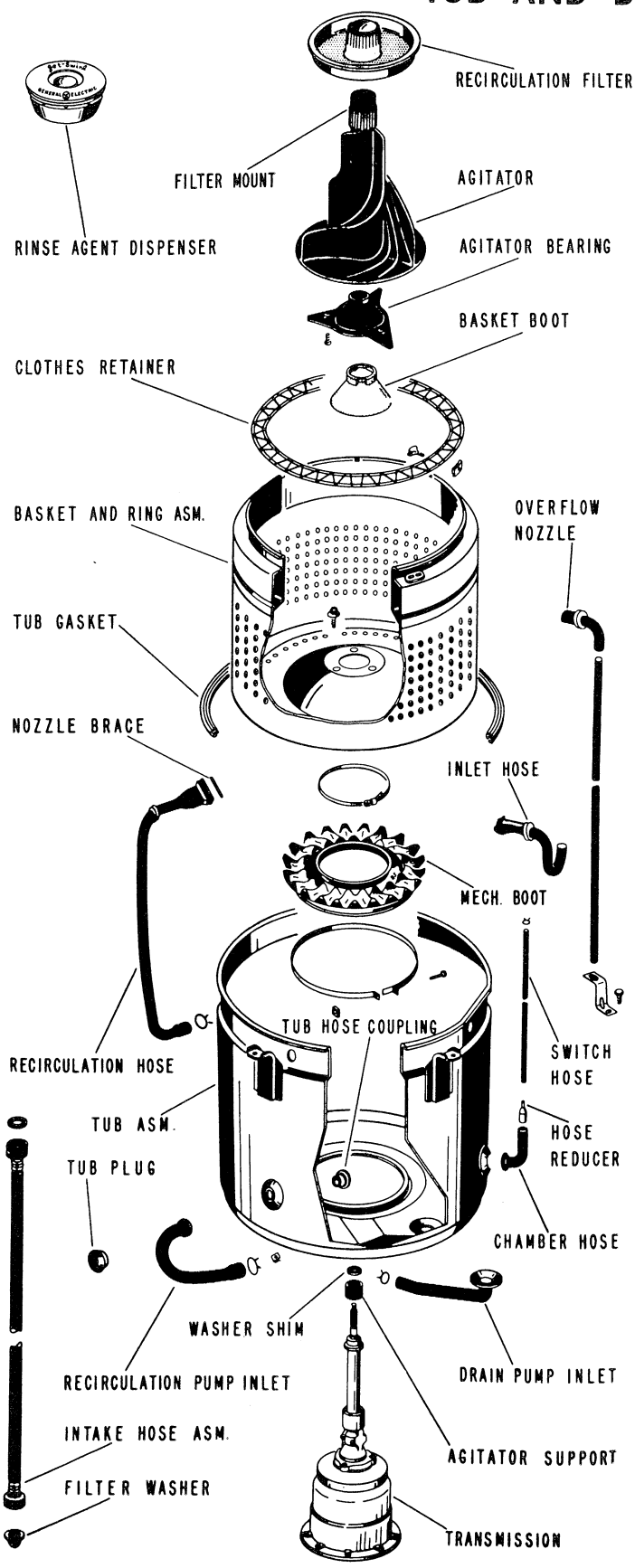


REF. NO.	CATALOG NO.	DESCRIPTION
1.	WH1X1621	Coupling Clamp
2.	WH1X1722	Flexible Coupling
3.	WZ4X337	Screw
4.	WH1X2026	Motor Belt
5.	WH7X45	Lower Drive Plate
6.	WH2X190	Retaining Ring
7.	WZ11X50	Dowel Pin
8.	WH4X12	Ball Bearing
9.	WH5X203	Outer Drum Assembly
10.	WH1X1987	Side Damping Spring
11.	WH1X1988	Shoe Bumper
14.	WH1X1991	"A" Wt. Support Guide
15.	WH2X794	Step Rivet
16.	10–16x1/4	Screw
17.	WH7X54	"A" Weight
18.	WH1X1992	"A" Weight Spring
19.	WH7X55	Slip Shoe
20.	WH1X1993	Shoe Spring
21.	WH7X56	"B" Weight
22.	WH1X1994	"B" Weight Spring
23.	WH16X339	Weight Support
24.	WH1X1995	"B" Weight Damping Spring
25.	WH2X792	Screw
26.	WH1X1996	Spring
27.	WH2X793	Bearing Spacer
28.	WH5X204	Inner Drum Assembly
29.	WH4X87	Bearing Replacement Kit
30.	WH2X634	Washer
31.	WH1X1309	Clutch Leaf Spring
32.	WH2X539	Washer
33.	WH7X64	Primary Shoe Assembly
34.	WH40X144	Shaft Extension Assembly
35.	WH2X543	U-Bolt
36.	WH1X1169	Clamp Plate
37.	WZ8X5 (WZ8X6)	Nut & Washer Assembly
38.	WH17X66	Motor Mount
39.	WH1X2048	Pin Terminal-Male
41.	WH20X52	Motor (60 Cycle) 1/2 HP
42.	WH12X416	Terminal Housing
43.	WH1X1997	Cable Clip
44.	WH12X473	"B" Weight Shifter Assembly
45.	WH12X391	"A" Weight Shifter Assembly
46.	WH12X392	Coil
47.	WH12X257	Terminal Block
48.	WH12X243	Terminal Block
49.	WH1X1719	Terminal



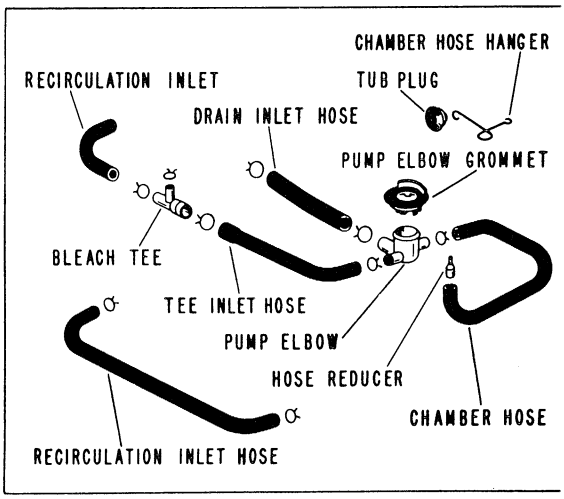
Two-Speed Clutch Parts

TUB AND BASKET



SPECIAL PARTS FOR MINI WASH* AND WT SERIES MODELS

THE PARTS SHOWN BELOW ARE USED INSTEAD OF THE RECIRCULATION PUMP INLET, DRAIN PUMP INLET AND CHAMBER HOSE.



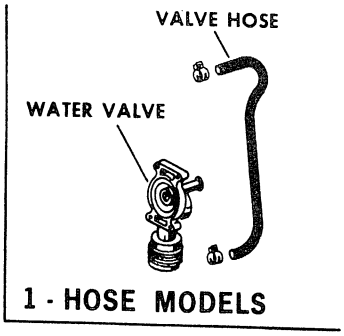
1. MODELS WITH AUTOMATIC BLEACH DISPENSER USE RECIRCULATION INLET, BLEACH TEE AND TEE INLET HOSE. MODELS WITHOUT AUTOMATIC BLEACH DISPENSER USE RECIRCULATION INLET HOSE INSTEAD.

2. MODELS WITHOUT FILTER-FLO® SYSTEM HAVE A SPECIAL PUMP ELBOW WITH ONLY 2 OUTLETS. THE RECIRCULATION INLET, BLEACH TEE, TEE INLET HOSE OR RECIRCULATION INLET HOSE IS NOT REQUIRED.

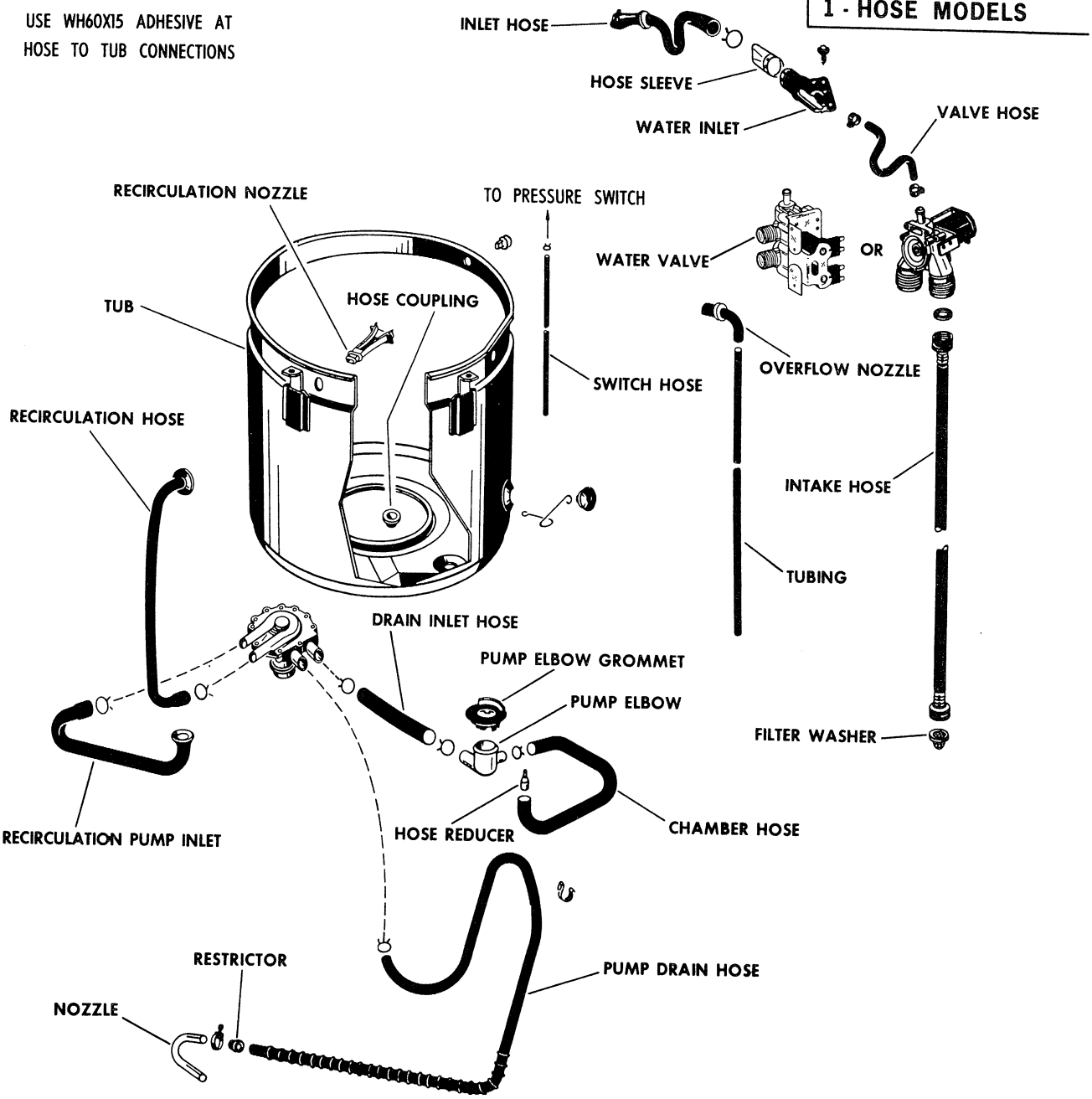
* TRADEMARK OF THE GENERAL ELECTRIC COMPANY

HYDRAULIC SYSTEM ASSEMBLY

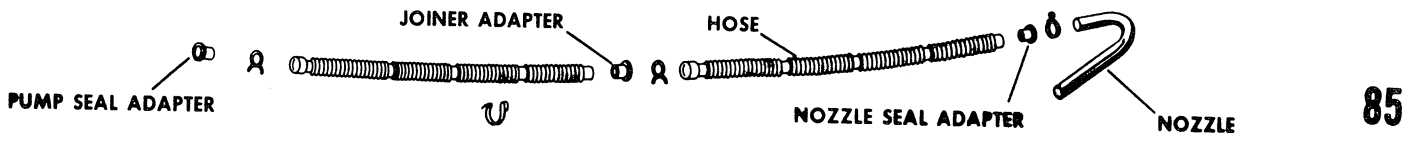
TYPICAL PARTS 24" MODELS



USE WH60X15 ADHESIVE AT
HOSE TO TUB CONNECTIONS

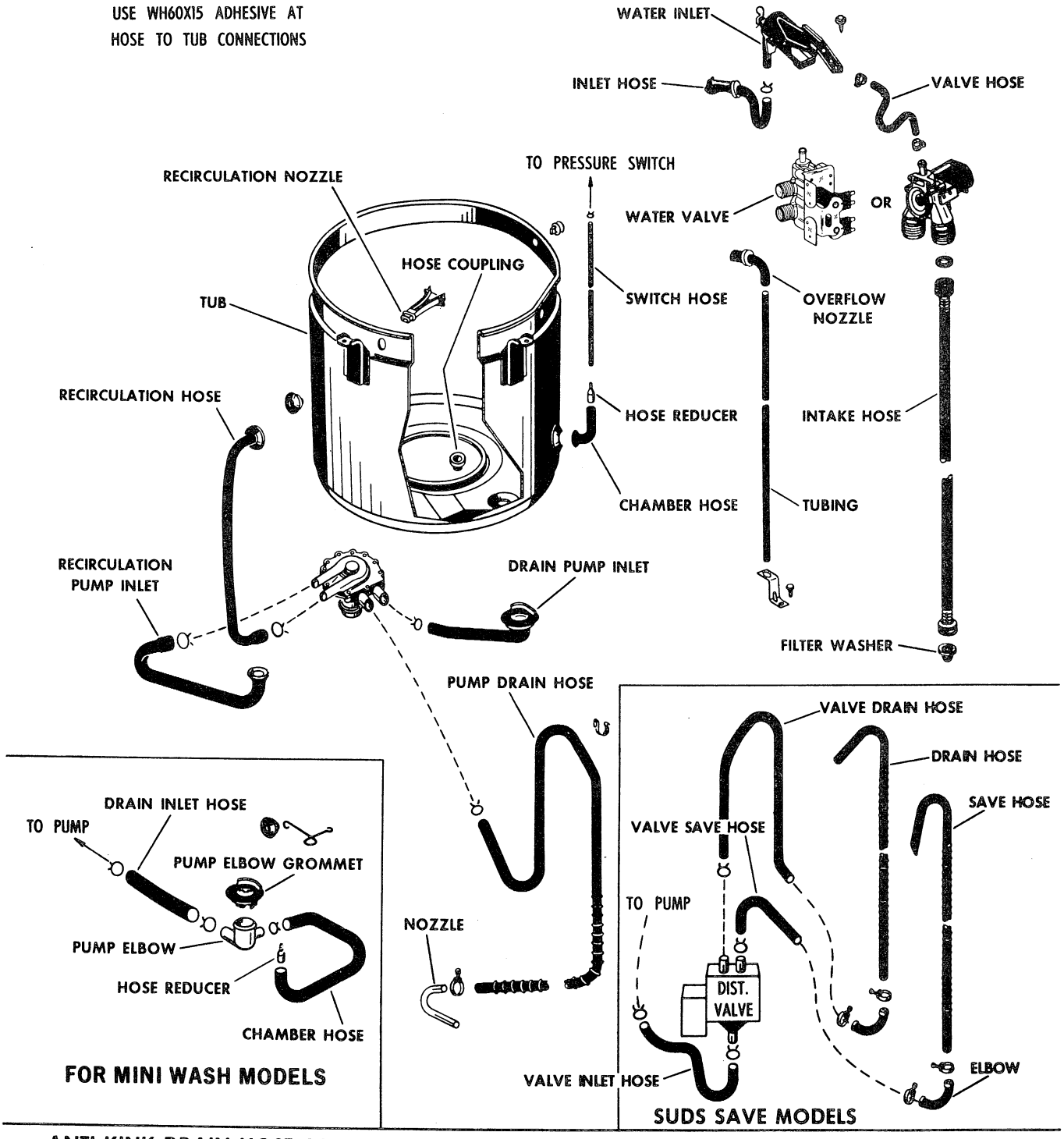


ANTI-KINK DRAIN HOSE ASM.

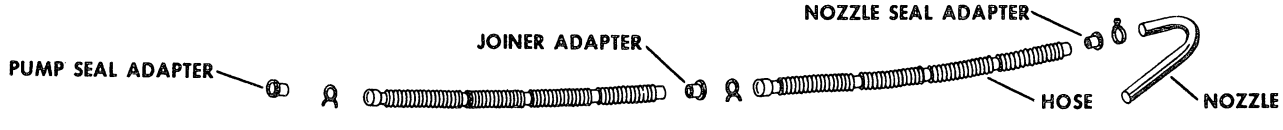


HYDRAULIC SYSTEM ASSEMBLY

TYPICAL PARTS 27"



ANTI-KINK DRAIN HOSE ASM.



INDEX

SERVICE POINTERS

PRODUCT: ALL LAUNDRY PRODUCTS

SUBJECT: WIRING DIAGRAM SYMBOLS

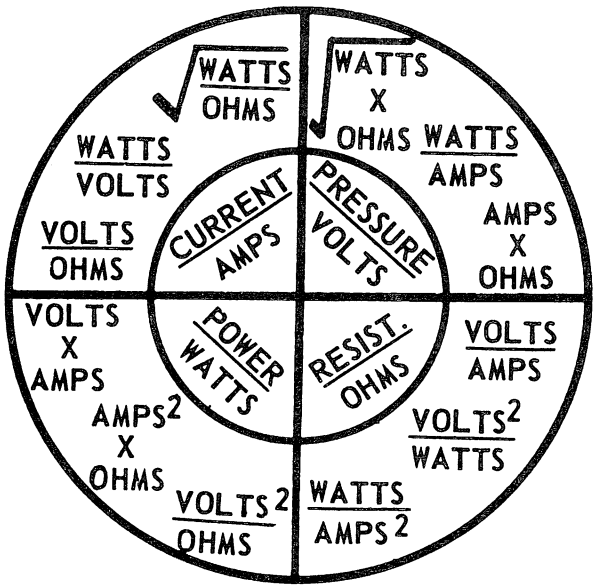
In order to standardize on wiring diagram symbols, all manufacturing divisions will use symbols as established by the American Standards Association. This standardization will result in a reduction of the total number of symbols which a service technician must learn to recognize. This change becomes effective in the laundry division with the 1966 models.

The first column below indicates the wiring diagram item; the second column contains symbols currently in use; the third column contains the wiring diagram symbols to be used in future production.

ITEM	CURRENT LDRY. STD.	REVISED LDRY. STD.
Internal Conductor		
Harness Wire		
Permanent Connection		
Cross Over		
Ground		
Timer Switch		
Automatic Switch		
Manual Switch		
Double Throw		
3 Prong Plug		
Heater (Wattage Shown)	2800	2800W
Fuse		
Circuit Breaker		
Terminal		
Timer Motor		
Thermister	NONE	T
Transistor	NONE	
Diode (Rectifier)	NONE	
Motor Single Speed		
Motor Multi Speed	1725 1140	1725 1140
NOTE: Internal motor wiring may be shown		
Light (Incandescent)		
Germ Lamp		
Pressure Switch		
Fluorescent		
Starter (Automatic)	S	S
Coil		
Capacitor		
Resistor (Show Value)	500	500Ω
Plug Connector		
Centrifugal Switch		
Thermostat Show N.O. or N.C.		
Double Throw Stat		
Ballast		B
Adj. Stat		
Thermocouple		
Warp Switch		
Neon Light	NONE	
Transformer	NONE	
Rectifier (Controlled)	NONE	
Relay	Coil & Switches separate in circuit.	

HERE'S A HANDY CHART FOR FIGURING ELECTRICAL VALUES

This chart can be used as a quick reminder of electrical formulas. It shows 3 ways to figure each value, AMPS, VOLTS, OHMS or WATTS and can be easily copied and carried in the shirt pocket or cemented to the inside of the tool box.



Memorandum

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