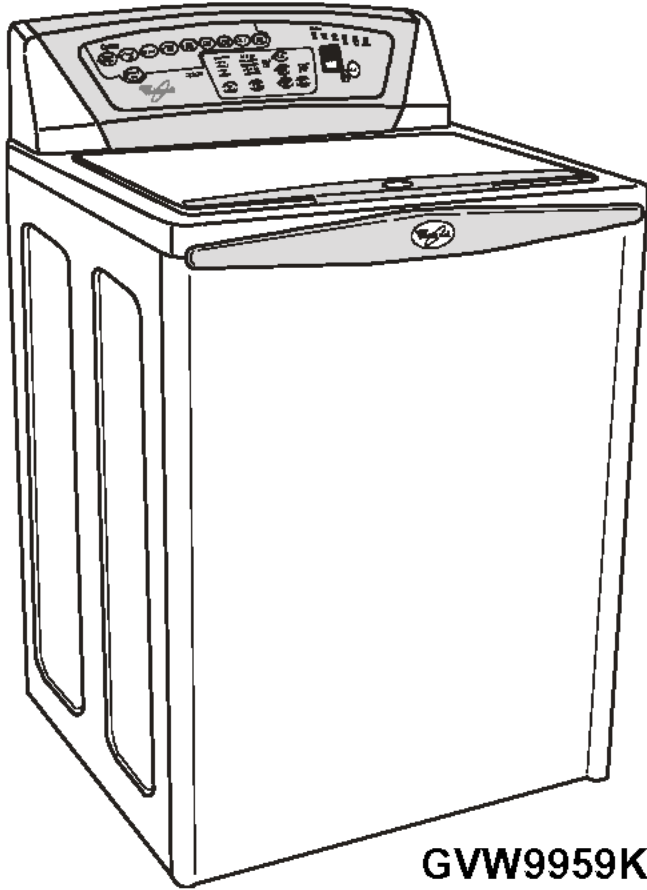




CONSUMER SERVICES TECHNICAL
EDUCATION GROUP PRESENTS

L-67



GVW9959K-0

CALYPSO
WASH MOTION™

**ELECTRONIC CONTROL WASHER
WITH
CALYPSO WASH MOTION**

JOB AID
Part No. 8178010



INTRODUCTION

This Job Aid, *“ELECTRONIC CONTROL WASHER WITH CALYPSO WASH MOTION,”* (Part No. 8078010), provides specific information on the new features and design elements of Whirlpool Electronic Control washers with Calypso Wash Motion.

“ELECTRONIC CONTROL WASHER WITH CALYPSO WASH MOTION” has been compiled to provide the most recent information on design, features, troubleshooting, service and repair procedures.

GOALS AND OBJECTIVES

The goal of this Job Aid is to provide detailed information that will enable the service technician to properly diagnose malfunctions and repair the unique features of Whirlpool Electronic Control washers with Calypso Wash Motion.

The objectives of the Job Aid are:

The service technician will -

- Understand proper safety precautions.
- Successfully troubleshoot and diagnose malfunction.
- Successfully perform necessary repairs.
- Successfully return the washer to proper operational status.



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FOR ANY REPAIRS MADE ON OUR PRODUCTS BY ANYONE
OTHER THAN AUTHORIZED SERVICE TECHNICIANS.

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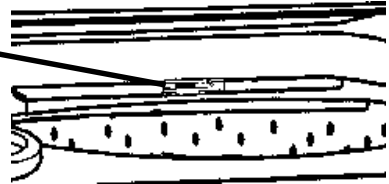
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MODEL/SERIAL NUMBER PLATE

SERIAL NUMBER DESIGNATOR

SERIAL NUMBER	C	L	36	50001
MANUFACTURING SITE	C = Clyde, OH			
YEAR OF MANUFACTURE	L = 2001			
WEEK OF MANUFACTURE				
PRODUCT SEQUENCE NUMBER				

Model/Serial
Number Plate
(Under Lid)



MODEL NUMBER DESIGNATOR

MODEL NUMBER	G	V	W	9	9	5	9	K	Q	0
G = Domestic Laundry Gold L = Domestic Laundry										
V = Vanguard Technology										
W = Resource Saver										
Cycles (1-9) 9 = 9 or more										
Wash/ Spin Combinations										
5 = Water Temperature Combinations										
1-5 = Water Levels 9 = Infinite Water Level										
YEAR OF INTRODUCTION										
J = 2000 K = 2001										
Color Code Q = White on White T = Biscuit on Biscuit L = Pewter										
ENGINEERING CHANGE 0 = Basic Release; 1 = First Revision; 2 = Second Revision										

SAFETY



WARNING



ELECTRICAL SHOCK HAZARD

Disconnect power before servicing the washing machine.
Replace all panels before operating the washing machine.
Failure to do so can result in death or electrical shock.

SECTION ONE

INSTALLATION CONSIDERATIONS

INSTALLATION INSTRUCTIONS

Proper installation is your responsibility.

You will need

- A water heater set to deliver a minimum of 120°F (49°C) water to the washer.
- A grounded electrical outlet located within 4 ft. (1.2 m) of where the power cord is attached to the back of the washer. See "Electrical Requirements."
- Hot and cold water faucets located within 4 ft. (1.2 m) of the hot and cold water fill valves, and water pressure of 5-100 psi (34.5-689.6 kPa.)
- A level floor with a maximum slope of 1 in. (2.5 cm) under entire washer. Installing the washer on carpeting is not recommended.

Do not operate your washer in temperatures below 32°F (0°C). Some water can remain in the washer and can cause damage in low temperatures.

Electrical Requirements

⚠ WARNING



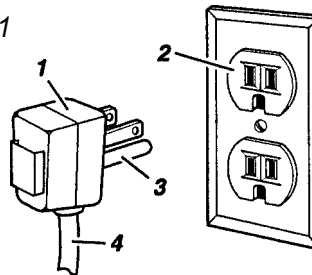
Electrical Shock Hazard

- Plug into a grounded 3-prong outlet.**
- Do not remove ground prong.**
- Do not use an adapter.**
- Do not use an extension cord.**
- Failure to follow these instructions can result in death, fire or electrical shock.**

- 120-volt, 60 Hz, AC-only, 15 ampere fused electrical supply is required. (Time-delay fuse or circuit breaker is recommended.) Connect to an individual branch circuit.
- This washer is equipped with a power supply cord having a 3-prong grounding plug. To minimize possible shock hazard, you must plug the power supply cord into a mating 3-prong grounding-type wall receptacle, grounded in accordance with

National Electrical Code, ANSI/NFPA 70-latest edition and all local codes and ordinances.

Fig. 1-1



1. 3-prong grounding plug
2. 3-prong grounding-type wall receptacle
3. Grounding prong
4. Power supply cord

GROUNDING INSTRUCTIONS

For a grounded, cord-connected washer:

This washer must be grounded. In the event of a malfunction or breakdown, grounding will reduce the risk of electrical shock by providing a path of least resistance for electric current. This washer is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING: Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the appliance is properly grounded.

Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

For a permanently connected washer:

This washer must be connected to a grounded metal permanent wiring system, or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

Tools needed and Parts Supplied

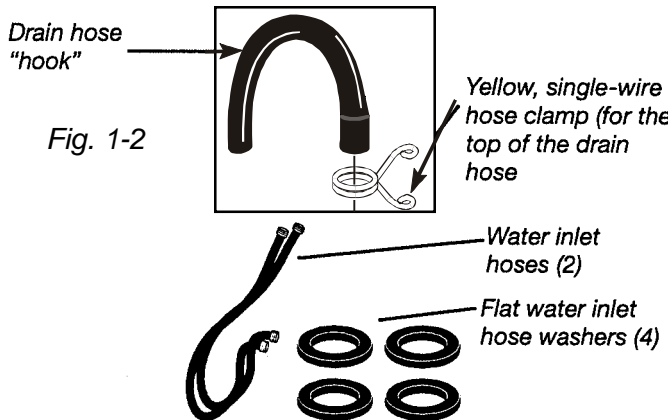
Assemble the necessary tools and supplies before beginning the washer installation. Do not re-install into the washer, the styrofoam that contains the supplied parts.

To connect the drain hose and water inlet hoses

You will need these following tools

1. Flashlight (optional)
2. Pliers (that open to 1 9/16 in (3.95 cm))

You will need the following supplied parts

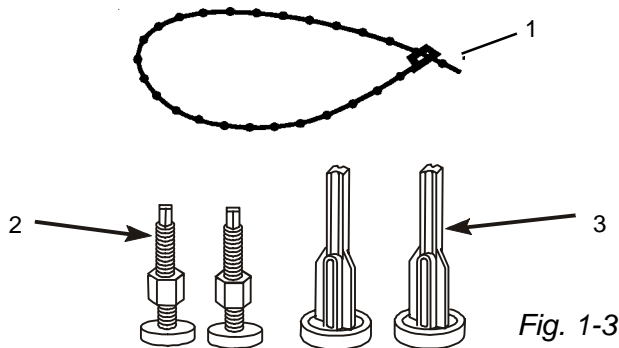


To secure the drain hose and level the washer

You will need the following tools

1. Open end wrench (9/16 in.)
2. Level
3. Wood block
4. Ruler or measuring tape

You will need the following supplied parts



1. Tie strap with fastener
2. Front leveling feet with nuts (2)
3. Rear self-adjusting feet (2)

Selecting a Location

Selecting the proper location for your washer improves performance and minimizes noise and possible washer "walk."

Your washer can be installed in a basement, laundry room, closet or recessed area. See "Drain System."

Proper installation is the consumer's responsibility.

You will need:

A water heater set to deliver a minimum **120° F. (49° C) water to the washer.**

A grounded electrical outlet located within 4 ft. of where the power cord is attached to the back of the washer.

Hot and cold water faucets located within 4 ft. of the hot and cold water fill valves and water pressure of 20-100 psi.

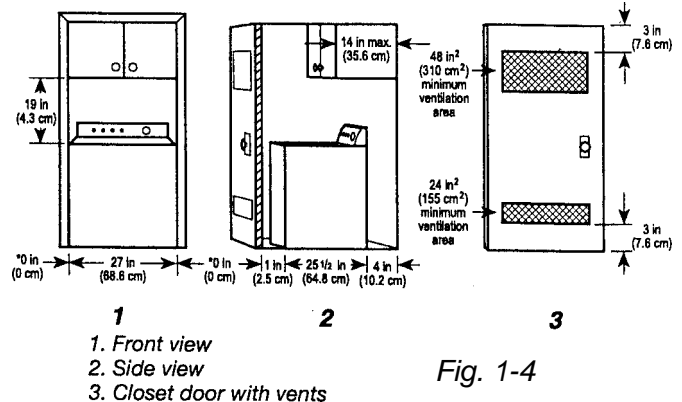
A level floor with a maximum slope of 1 inch under entire washer. Installing the washer on carpeting is not recommended.

A sturdy floor to support the washer with a total weight (water and load) of 315 lbs, (143kgs).

Do not operate the washer in temperatures below 32° F. (0° C). Some water can remain in the washer and can cause damage in low temperatures.

Recessed area or closet installation

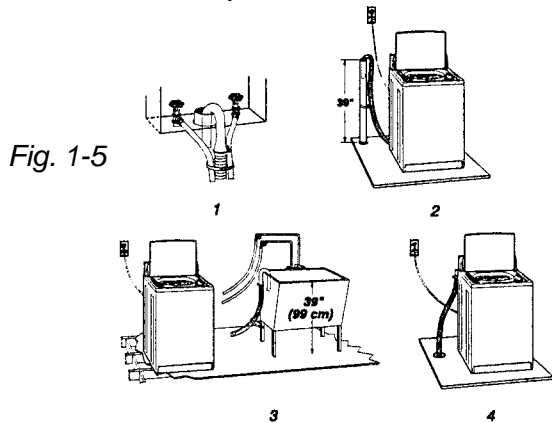
The dimensions shown are for the minimum spacing allowed.



- Additional spacing should be considered for ease of installation and servicing.
- Additional clearances might be required for wall, door and floor moldings.
- Additional spacing of 1 in. (2.5 cm) on all sides of the washer is recommended to reduce noise transfer.
- If a closet door is installed, the minimum air openings in the top and bottom of the door are required. Louvered doors with air openings in the top and bottom are acceptable.

Drain System

The washer can be installed using the standpipe drain system (floor or wall), the laundry tub drain system or the floor drain system. Select the drain hose installation method you need. See "Alternate Parts You May Need."



1. Standpipe drain system (wall)
2. Standpipe drain system (floor)
3. Laundry tub drain system
4. Floor drain system

Standpipe drain system (floor or wall)

The standpipe drain requires a minimum diameter standpipe of 2 in. (5 cm). The minimum carry-away capacity can be no less than 17 gal. (64 L) per minute.

The top of the standpipe must be at least 39 in. (99 cm) high and no higher than 96 in. (2.4 m) from the bottom of the washer.

Laundry tub drain system

The laundry tub needs a minimum of 20 gal (76 L) capacity. The top of the laundry tub must be at least 39 in. (99 cm) above the floor and no higher than 96 in. (2.4 m) from the bottom of the washer.

Floor drain system

The floor drain system requires a siphon break (purchased separately.)

The siphon break must be above the high-water level in the washer, at least 28 in. (71 cm) from the bottom of the washer.

Alternate Parts You May Need

If You Have	You Will Need to Buy
Laundry tub or standpipe taller than 96 in. (2.4 m)	Sump pump system (if not already available)
Overhead sewer	Standard 20 gal (76L) 39 in. (99 cm) tall drain tub or utility sink and sump pump (available from local plumbing suppliers)
Floor Drain	Siphon break, Part Number 285834; additional drain hose, Part Number 8318155 and connector kit, Part Number 285835
Drain hose too short	Drain hose, Part Number 8318156 and connector kit, Part Number 285835
Lint clogged drain	Drain protector, Part Number 367031 and connector kit, Part Number 285835
Water faucets beyond reach of fill hoses	2 longer water fill hoses: 6 ft. (1.8 m) Part Number 76314 10 ft. (3 m) Part Number 35008

Preparation

WARNING

Excessive Weight Hazard
Use two or more people to move and install washer.
Failure to do so can result in back or other injury.

To prevent floor damage, set the washer onto cardboard.

Installing feet

Install the rear self-adjusting feet

1. Move the washer to approximately 3 feet of the final location. Prop up the rear of the washer about 4 in. (10.2) with a wood block or similar object. The block needs to support the weight of the washer. Install the self-adjusting rear feet.

The self-adjusting feet will fit into a hole, as shown below, in each rear corner of the washer.

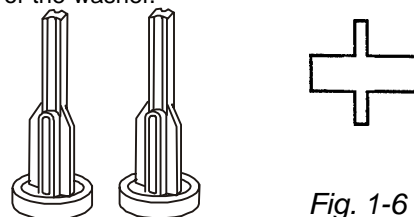
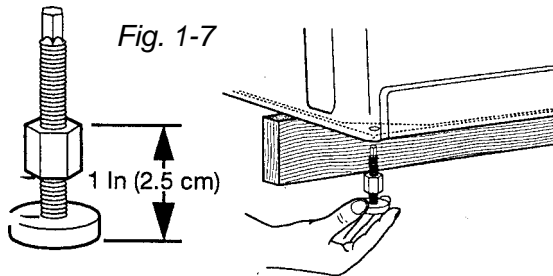


Fig. 1-6

2. Tilt the washer forward and remove the wood block. Gently lower the washer to the floor.
3. Prop up the front of the washer about 4 in. (10.2 cm) with a wood block or similar object. The block needs to support the weight of the washer.
4. Screw the lock nut onto each foot to within 1 in. (2.5 cm) of the base.



Screw the feet into the correct holes at the front corner of the washer until the nuts touch the washer.

NOTE: Do not tighten the nuts until the washer is level.

5. Tilt the washer back and remove the wood block. Gently lower the washer to the floor.

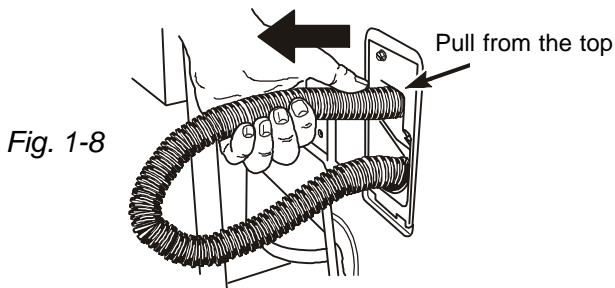
Connecting the Drain Hose

Proper connection of the drain hose protects your floor from damage due to water leakage. Carefully read and follow these instructions.

The drain hose is connected to your washer and is stored inside of the washer cabinet.

Removing drain hose from washer cabinet

1. Gently pull the corrugated drain hose out of the washer from the top of the hose. Continue to pull the hose until the end emerges.



For a floor drain

Do not install the drain hose "hook" on to the corrugated drain hose. Consult your plumber for proper installation.

For a laundry tub drain or standpipe Connecting the drain hose "hook" to the corrugated drain hose

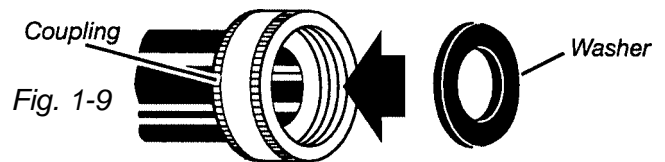
1. Open the yellow single-wire clamp and slide over the end of the drain hose about 4 inches. (Pliers optional)
2. Wet the outside end of the drain hose with tap water. Do not use another lubricant.
3. Twist and push the "hook" back and forth while pushing down onto the drain hose. Continue until the "hook" is down to the enlarged diameter of the drain hose.
4. Open the yellow single-wire clamp (placed on the drain hose earlier) and slide over the base of the drain hose "hook" to secure the sections together. (Pliers optional)
5. Put hooked end of drain hose into laundry tub or standpipe. Rotate "hook" to eliminate kinks.

To prevent drain water from going back into the washer;

- Do not straighten hooked end of the drain hose and force excess drain hose into standpipe. Hose should be secure but loose enough to provide a gap for air.
- Do not lay excess hose on the bottom of the laundry tub.

Connecting the Inlet Hose

Insert a new flat washer (supplied) into each end of the inlet hoses.

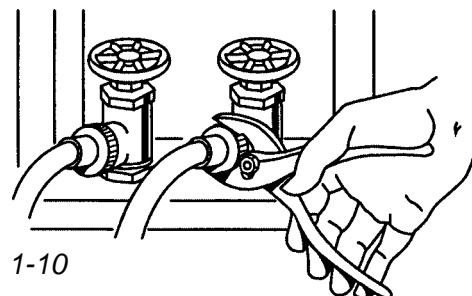


Firmly seat the washers in the couplings.

Connect the inlet hoses to the water faucets

Make sure the washer basket is empty.

1. Attach the hose with the red coupling to the hot water faucet. Screw on coupling by hand.
2. Attach the hose with the blue coupling to the cold water faucet. Screw on coupling by hand.
3. Using the pliers, tighten the couplings with an additional two-thirds turn.



NOTE: Do not overtighten. Damage to the valves can result.

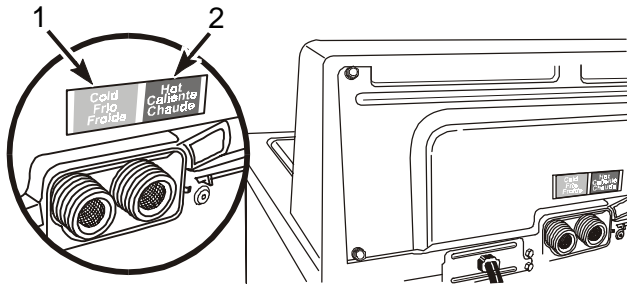
Clear the water lines

Run water through both faucets and inlet hoses into a bucket or laundry tub to get rid of particles in the water lines that might clog the inlet valve screens.

Connect the inlet hoses to the washer.

- Attach the hose with the blue coupling to the COLD (left) inlet valve. Screw on coupling by hand. Using the pliers, tighten the coupling an additional two-thirds turn.

NOTE: Do not overtighten. Damage to the valve may result.



1. Cold water inlet valve (blue) Fig. 1-11
2. Hot water inlet valve (red)

- Attach the hose with the red coupling to the HOT water (right) inlet valve. Screw on coupling by hand. Using the pliers, tighten the coupling an additional two-thirds turn.

NOTE: Do not overtighten. Damage to the valve may result.

Check for leaks

Turn on the water faucets and check for leaks. A small amount of water might enter the washer. You will drain this later.

Replace inlet hoses after 5 years of use to reduce the risk of hose failure. Record hose installation or replacement dates for future reference.

Periodically inspect and replace hoses if bulges, kinks, cuts, wear or leaks are found.

Securing the Drain Hose

- Remove the power cord from the rear panel of the washer and drape the cord over the console.
- Move the washer to its final location and remove any cardboard used to move washer.
- Locate the tie strap (supplied).

Fig. 1-12



- Wrap the drain hose to the laundry tub leg or standpipe with the tie strap. See illustration.

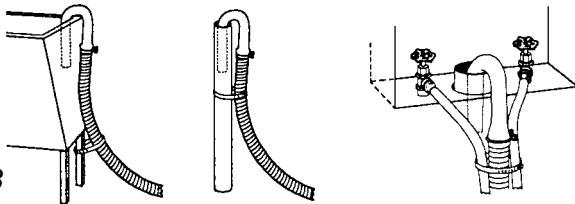


Fig. 1-13

If the washer faucets and the drain standpipe are recessed, put the hooked end of the drain hose in the standpipe. Tightly wrap the tie strap around the water inlet hoses and the drain hose.

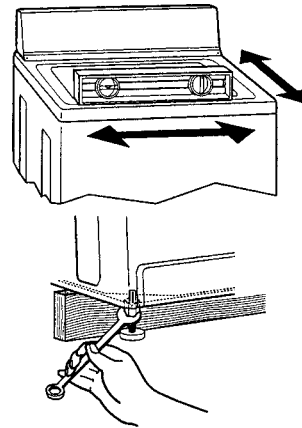
- Do not force excess drain hose back into the rear of the washer.

Leveling the Washer

Properly leveling your washer prevents excessive noise and vibration.

- Check the levelness of the washer by placing a level on the top of the washer, first side-to-side, then front-to-back.

Fig. 1-14



If the washer is not level, prop up the front of the washer and adjust the feet up or down as necessary. If the washer is against a wall, move the washer out slightly before tipping back. Repeat this step until the washer is level.

- After the washer is in the final location and level, use a 9/16 in. open-end wrench to turn the nuts on the feet tightly against the washer cabinet.

If the nuts are not tight against the washer cabinet, the washer can vibrate.

- Tilt the washer back and remove the wooden block. Gently lower the washer to the floor.
- Move the washer to its final location.
- Tilt the washer forward until the rear of the washer is at least 4 in. (10.0 cm) off the floor. You may hear the self-adjusting rear feet click into place. Lower the washer to the floor.

Installation Checklist

- Check the electrical requirements. Be sure that you have the correct electrical supply and the recommended grounding. (See "Electrical Requirements.")
- Check to be sure all parts are now installed. If there is an extra part, go back through the steps to see which step was skipped.
- Check to be sure you have all of your tools.
- Dispose/recycle all packaging materials. Keep the styrofoam block for repackaging washer for transportation.
- Check to be sure the water faucets are on.
- Plug the power supply cord into a grounded outlet.
- Remove the protective film on the console and any tape remaining on the washer.
- Read "Using Your Washer."
- Measure ½ the normal recommended amount of powdered or liquid detergent and pour it into the detergent dispenser. Close the lid. Press HEAVY DUTY, and then press START. Allow it to complete one whole cycle.

Use & Care Information

Due to the unique washing action of the **CALYPSO™** washer, it is strongly recommended that the consumer use a High Efficiency detergent.

High Efficiency detergents are formulated to control sudsing which may occur with use of regular detergents. If the consumer does not wish to use HE detergent, it is recommended to use 1/2 the normal amount. In soft water locations, the quantity may need to be reduced even further.

Only LIQUID chlorine bleach should be used in the Bleach Dispenser. If color-safe bleach, (powder or liquid) is used, it should be added to the Detergent Dispenser.

This new washer works differently than most washers that you are accustomed to. The most striking difference is the washer does not have an agitator. It uses the innovative **CALYPSO™ Wash Motion. The Wash Plate, at the bottom of the basket, creates a motion that lifts, rolls and bounces the wash load through a mixture of water and detergent that is continuously reapplied to the load to force out stains and soils.**

The washer uses only enough water to saturate the clothes and recirculate over the load. The water is filled only to the bottom of the Wash Plate. If the lid is opened during a wash cycle, no water is visible and no additional water should be added. There is no deep wash/rinse as in traditional washers.

The CALYPSO™ washer spins at much higher speeds, (up to 800 RPM), than traditional washers. To assist the consumer in unloading the clothing at the end of the cycle, the CALYPSO™ washer will FLUFF the load after the spin is completed to loosen the clothing and ease in removal.

SECTION TWO

THEORY OF OPERATION

NUTATION

nu-ta-tion \ n(y)ü-'ta-shen\ n The spiral movement of the axis of a rotating body, such as the oscillation of a spinning top.

CONTROL PANEL

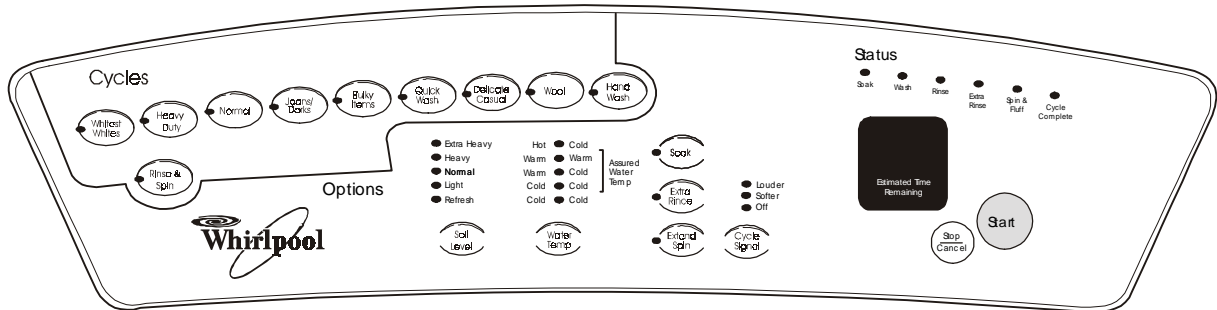


Fig. 2-1

CYCLE DESCRIPTIONS

	DESCRIPTIONS
CYCLES	
Whitest Whites	For extra whitening (with 1 cup of liquid chlorine bleach)
Heavy Duty	For sturdy fabrics and heavy soil
Normal	For mixed loads and average soil
Jeans/Darks	For denims and similar colors; prevents white crease lines in jeans
Bulky Items	For large bulky items
Quick Wash	For quickly cleaning lightly soiled items
Delicate/Casual	Combination of Delicate and Perm Press/Casual cycles.
Wool	For "hand wash" wool and silk
Handwash	For garments marked "hand wash" on the care label
Rinse & Spin	Short cycle to rinse out suds & other loose particles
Extend Spin	Stand alone high speed drain and spin cycle to extract water from clothes

OPERATIONAL CYCLE DEFAULT WASH AND SPIN

	MAIN WASH ACTION	FINAL SPIN
CYCLES		
Whitest Whites	275 NPM nutate	800 RPM
Heavy Duty	300 NPM nutate	800 RPM
Normal	275 NPM nutate	800 RPM
Jeans/Darks	250 NPM nutate	800 RPM
Bulky Items	250 NPM nutate	400 RPM
Quick Wash	250 NPM nutate	800 RPM
Delicate Casual	60 RPM spin and spray wash	400 RPM
Wool	60 RPM spin and spray wash	300 RPM
Hand Wash	60 RPM spin and spray wash	400 RPM
Rinse & Spin	N/A-not a wash	800 RPM
Extend Spin	N/A-not a wash	800 RPM

NOTE: NPM = Nutations per minute
RPM = Revolutions per minute

OPTION DESCRIPTIONS

Soil Level

Soil Level adjusts the amount of nutation or spray wash time in the selected cycle. It is valid for all cycles except Extend Spin and Rinse & Spin stand-alone cycles. Soil Level changes the 7-segment display in 1-minute increments, looping back to the minimum time once the maximum time has been reached. The following table shows the time display in the 7-segment display for a given cycle and soil level. These are total estimated times for the entire cycle.

SOIL LEVEL	EX HEAVY	HEAVY	NORMAL	LIGHT	REFRESH
CYCLE					
Whitest Whites	51	50	49	48	47
Heavy Duty	53	52	51	50	49
Normal	46	45	44	43	42
Jeans/Darks	46	45	44	43	42
Bulky Items	46	45	44	43	42
Quick Wash	27	26	25	24	23
Delicate Casual	40	39	38	37	36
Wool	32	31	30	29	28
Hand Wash	34	33	32	31	30

 = Default

Water Temp

The WATER TEMP keypad provides for selection of different wash and rinse combinations. Water fill temperatures can be either HOT (hot water valve only), WARM (both the hot and cold water valves) or COLD (cold water valve only). Fills during rinses may be COLD until the final rinse/spin interval.

The WATER TEMP can be changed at any time during the wash cycle. The action takes place during a water fill, or the next water fill. Changes late in the cycle are allowed, but may not be acted upon.

SELECTED CYCLE	DEFAULT WATER TEMP
Whitest Whites	Hot/Cold (no ATC)
Heavy Duty	Warm/Cold (with ATC)
Normal	Warm/Cold (with ATC)
Jeans/Darks	Warm/Cold (with ATC)
Bulky Items	Warm/Cold (with ATC)
Quick Wash	Warm/Cold (with ATC)
Delicate Casual	Warm/Cold (with ATC)
Wool	Cold/Cold (with ATC)
Hand Wash	Cold/Cold (with ATC)

Assured Water Temp

The Assured Water Temp LED (if available) lights up whenever the temperature selection is an auto-controlled temp. There are three auto-controlled temperature selections:

- WARM (100°F)/WARM (75°F)
- WARM (100°F)/COLD (“TAP” unregulated)
- COLD (75°F)/COLD (“TAP” unregulated)

There is another WATER TEMP selection that is not auto-controlled (TAP COLD/COLD). Auto temp control uses the thermistor input as feedback to regulate the hot and cold water valves to achieve the desired temperature.

ATC Thresholds

AUTO CONTROLLED	Low Trip	Median	High Trip
Cold Wash/Warm Rinse	~72° F	75° F	~80° F
	56.3K Ω		46.3K Ω
Warm Wash	~89.9° F	100° F	~109.9° F
	37.6K Ω		24.2K Ω

NOTE: ATC controls COLD WASH, WARM RINSE and WARM WASH functions. COLD RINSE is not ATC controlled.

THERMISTOR RESISTANCE CHART

THERMISTOR RESISTANCE	
TEMP ° F	RESISTANCE VALUE
40	126k - 135k ohms
50	97k - 102k ohms
60	75k - 78k ohms
70	58k - 61k ohms
80	46k - 47k ohms
90	36k - 37k ohms
100	28k - 30k ohms
110	23k - 24k ohms
120	18k - 19k ohms
130	15k - 16k ohms
140	12k - 13k ohms
150	10k - 11k ohms

Additional Options

	DESCRIPTIONS
OPTIONS	
Soak	Loosens soils when added to a cycle. Selection of SOAK will add approximately 16 minutes to the wash portion of the cycle.
Extra Rinse	Adds an additional rinse to any cycle.
Extend Spin	Adds three, (3), minutes to the final spin time of any cycle.

End of Cycle Signal

There are three (3) volume levels for the End of Cycle Signal, HIGH, LOW and OFF. Pressing the END OF CYCLE SIGNAL keypad toggles between these options by lighting one of the LEDs and beeping the corresponding end of cycle signal at the volume level selected. The LED remains lit during program mode and running mode until the cycle is complete.

If OFF is selected, no end of cycle signal will beep, but all key and warning beeps are active.

The end of cycle signal is set at a short high pitched, followed by a longer lower pitched tone, repeated four times.

MACHINE CONTROLLER

The Machine Controller interprets the consumer inputs from the keyswitch pads to operate the cycle selected. The Machine Controller interfaces with the Motor Controller to operate the Drive motor and Pump motor through their various functions during the cycle. The Machine Controller also directly operates the water fill and dispenser solenoids, interprets the thermistor readings, lid switch condition, as well as the position of the contacts in the Operating and Flood Pressure switches.

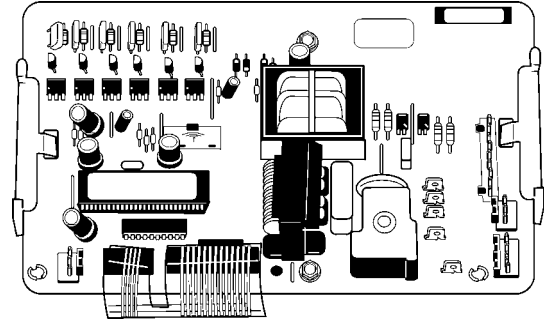


Fig. 2-2

MOTOR CONTROLLER

The Motor Controller receives commands from the Machine Controller to operate the Drive Motor at the desired speed and direction at various times in the cycle. It does so by applying varying voltages and frequencies to the Drive Motor to control speeds and by electrically leading with the Main or Aux winding to control direction.

The Motor Controller also operates the Pump Motor direction to either recirculate or drain water.

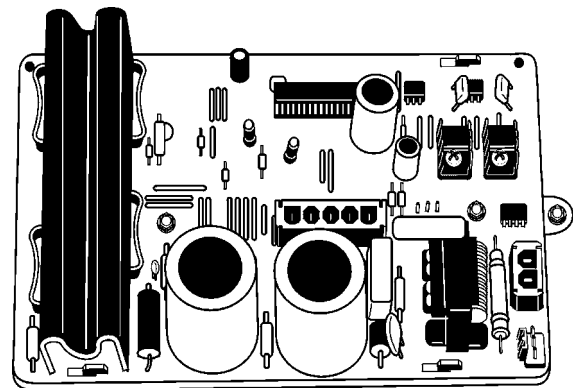


Fig. 2-3

DRIVE MOTOR

This washer uses a reversible, variable speed SPIM (Single Phase Induction Motor) as its main drive motor. Motor speed varies from 350 RPM to 4500 RPM. The ½ horsepower motor draws five to seven amps, in normal use. It uses a voltage output from the motor controller and operates at variable AC voltages and frequencies. The Motor Controller provides a variable frequency signal to the motor, which provides the various speeds to nutate and spin. **Checking voltages to the drive motor should not be attempted.**

The drive motor has five outputs.

- a) Ground
- b) FTC- This is 120VAC 60 Hz. and is basically L1.
- c) FHOT- This is a combination of 120 VAC 60 Hz, (the return of FTC), and common of the motor, which is variable frequency and variable voltage.
- d) Main- This is one of the windings of the motor. The main winding operates at voltages approximately 170V above and below L1 at a rate of 15K Hz. It uses a variable duty cycle square wave at a voltage that varies from 30 to 146 VAC referenced to FHOT. The operating frequency varies from 12 to 156 Hz. The frequency is directly proportional to the speed of the motor. **(Higher Frequency = Higher Speed)**. In spin, one winding will lead and the other follow. In nutate, the lead winding will be reversed.
- e) Auxiliary- See Main winding.

A thermal protector is used to direct voltage to the motor controller instead of acting as a shut-off for the motor. If the protector is tripped, voltage will be removed from the motor controller, which in turn, will remove voltage from the drive motor.

Peekaboo Mode

The Peekaboo mode allows the user the opportunity to look into the washer during a wash action. During the Peekaboo Mode, the electronic control will allow the machine to nutate at 150 NPM for a maximum of 5-seconds after the washer lid is opened. When the lid is closed, the Start pad must be pressed to continue the cycle.

NUTATION

The Calypso washer achieves a significant energy savings by utilizing less water than a traditional top loading machine with an agitator. This is made possible by the use of a Wash Plate which provides an undulating motion to toss the wash load. This action is called nutation.

The wash plate is tipped at approximately 35 degrees from level. The undulating action constantly rolls the load over and moving in a circular motion.

The water in the basket is constantly recirculated and sprayed onto the wash load during wash and rinse cycles.

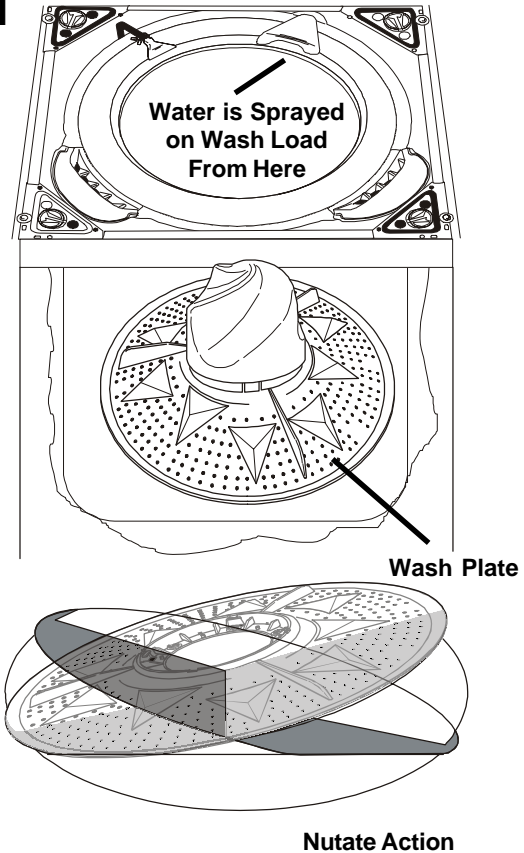
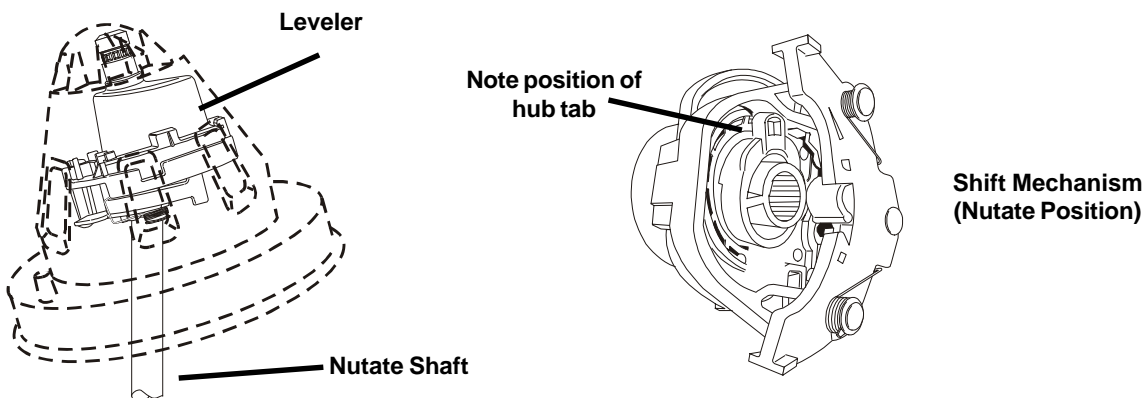


Fig. 2-4

LEVELER

The leveler acts as the mechanism that tilts the nutate or outer wash plate from a level to a 35 degree tilted position. The leveler is driven by the nutate shaft which replaces the traditional agitator shaft. A shifting mechanism on the underside of the leveler moves it from a perpendicular alignment in the spin mode to the 35 degree tilt required for nutation.



Leveler in nutate position.

Fig. 2-5

In the spin mode, the top of the leveler is positioned to be in line with the nutate shaft. This levels the outer wash plate so that the spin basket spins without an out of balance condition that would be caused by a tilted wash plate.

The leveler shift mechanism is moved from nutate to spin by the nutate shaft direction and an interference with the inner wash plate embossment.

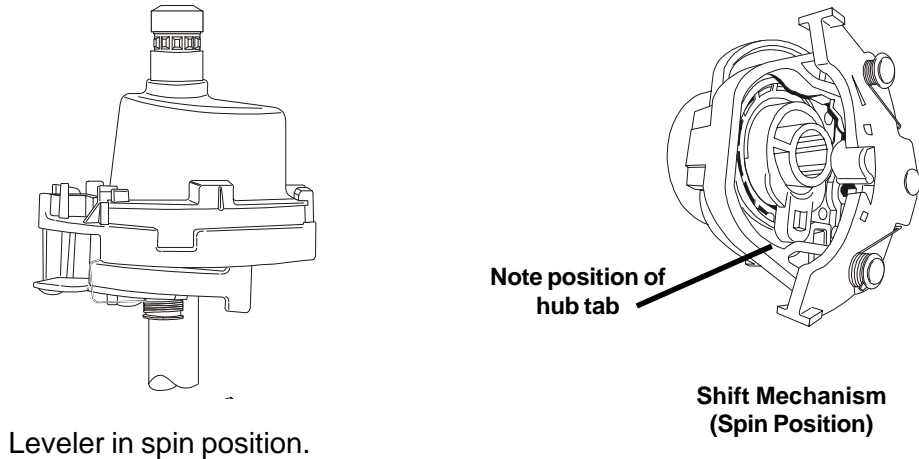


Fig. 2-6

UNIVERSAL JOINT

During Nutation, the Wash Plate is tipped at a 35 degree angle and must be free to undulate to move the clothing properly. The Wash Plate is attached to a Universal Joint that allows the Plate that freedom of movement.

The Universal Joint is attached to the basket drive block by a spanner nut and is sealed top and bottom by a boot and various seals to keep water from damaging its pivoting parts. The boot is attached to the bottom of the U-Joint and prevents water from getting to the U-Joint from underneath. Attached to the basket drive hub is an O-ring that forms a seal between the U-Joint boot and the basket drive hub.

The top of the U-Joint is sealed by six, (6), grommets and a gasket that is attached to the underside of the inner wash plate. The six grommets, wash plate gasket and/or O-ring **MUST** be replaced whenever their sealing surface(s) have been disturbed. **The Seal Kit is Part #285842.**

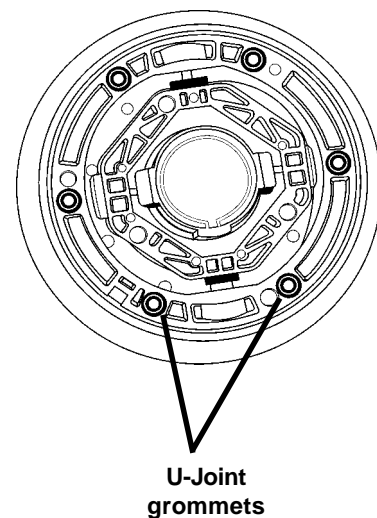


Fig. 2-7

DRIVE SYSTEM

The Drive Motor operates the nutate and spin functions by reversing direction. The Drive Motor is linked to the drive mechanisms by a stretch belt. The belt transfers the motion of the Drive Motor to a Drive Pulley. The Drive Pulley has a splined hub, into which the Nutate Shaft is inserted and is in motion in whichever direction the Drive Pulley is turning. The Drive Pulley, Drive Motor and Drive Belt all turn in a clock-wise direction, as viewed from underneath when the system is Nutating. The Drive Motor reverses direction for Spin and causes the Drive Pulley to turn in a counterclockwise direction, as viewed from underneath. When turning in this direction, an actuating bump in the hub of the Drive Pulley will contact the Brake Release pawl on the Spin Tube/Brake assembly. This releases the brakes and allows the basket to spin.

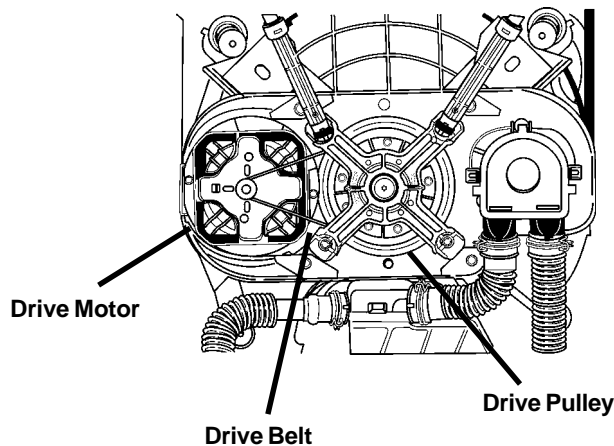


Fig. 2-8

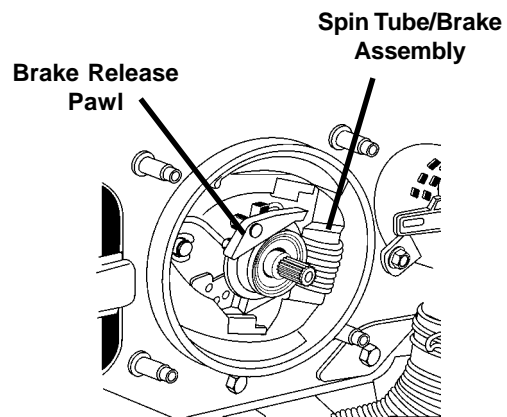


Fig. 2-9

INTERLOCK SWITCHES

There are two (2) Interlock Switches located behind the front panel and the bottom panel that ground the drive motor circuit when either panel is removed. When the machine is running with both panels in place, the drive motor is electrically isolated from ground.

The interlock switches are normally closed and held open when the panels are in place. Removing either panel grounds the drive motor for safety, but still allows it to operate. This condition may allow enough current leakage to ground to trip a Ground Fault Interrupter outlet. It is not recommended to operate the washer with either panel removed. The drive motor can only be tested for continuity in the field. The drive motor must be disconnected from the electrical source before testing.

Shield Capacitor

A capacitor is in series with the interlock switches and the lower harness shield to reduce electrical interference created by the drive motor's operation. The capacitor is a component of the lower wiring harness. If the capacitor has failed, the complete lower wiring harness must be replaced.

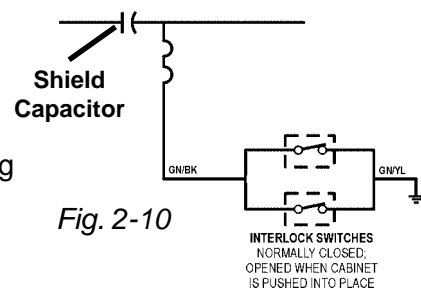


Fig. 2-10

INTERLOCK SWITCHES
NORMALLY CLOSED,
OPENED WHEN CABINET
IS PUSHED INTO PLACE

PRESSURE SWITCHES

The washer uses two pressure switches to control the amount of water entering the tub and to protect against an overflow condition. The operating pressure switch, marked OPR, controls the amount of water that enters the tub during normal wash and rinse functions. This switch operates in the same manner as similar pressure switches through a pressure switch tube, diaphragm and switch. The switch contact is normally closed and will open on pressure rise.

The overflow pressure switch, marked FLD, is used to guard against failure of the operating pressure switch or an overflow condition caused by the consumer adding water to the basket. The overflow pressure switch operates in the same manner as the operating pressure switch, except its trip setting is slightly higher than the operating pressure switch. The switch contact is normally closed and will open on pressure rise. **These pressure switches are NOT interchangeable.**

If an overflow condition is detected, the overflow switch will signal the electronic control which causes it to discontinue the current cycle. "FL" will flash on the control panel display and the beeper will repeat a warning every 10 seconds. The pump is cycled in drain mode for a half minute on, half minute off until the overflow switch is reset or power is disconnected from the washer. If the flood switch does reset, the washer will remain in standby mode with "FL" displayed. It will not automatically restart the cycle.

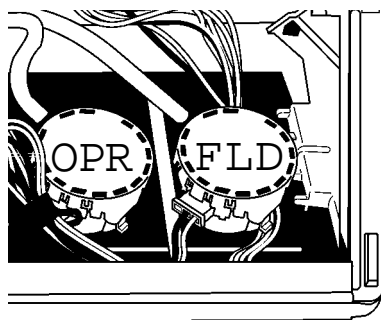


Fig. 2-11

LOG VALVE ASSEMBLY

The log valve assembly consists of an inlet valve with hot and cold water valves and solenoids for incoming water supply and four (4) outlet valves for the water to exit the valve body. The outlets drive the dispensers under the washer top and allow for fresh water fill. Also included in the log valve assembly, is the thermistor which is used to monitor incoming water temperature.

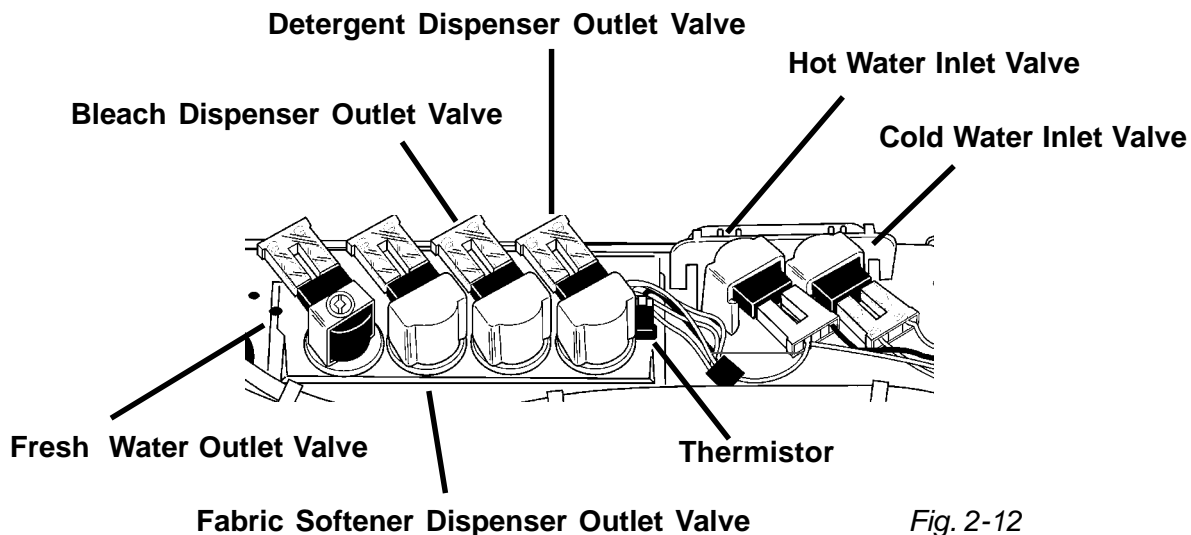


Fig. 2-12

RECIRCULATION AND DRAIN

Water Pump/Pump Motor

The pump is directly driven by a separate reversible 120 VAC 60 Hz motor. By being reversible, the motor provides for two separate operations of the washer.

Outer Tub

The Outer Tub sump plays a role in the drain and water recirculation function. The sump area includes two check balls that direct water flow when the water pump operates in the drain and recirc direction.

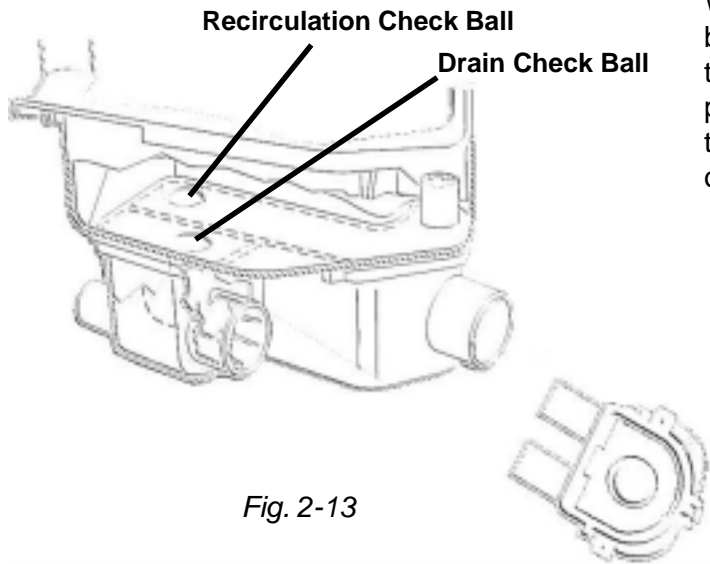


Fig. 2-13

When water is present in the tub, the check balls will float in the proximity of the recirculation and drain sump ports. Water weight or water pressure applied to the ball(s) will cause them to drop away from their respective port or seal off the port.

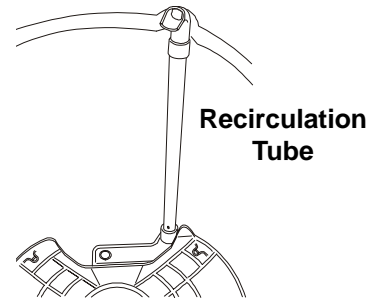


Fig. 2-14

Recirculation

During the Recirculation Mode, the pump motor turns counter-clockwise (as viewed from underneath the washer). This causes the water pump to draw water from the tub through the drain sump port, forcing the recirculation check ball to seal the recirculation sump port and force water through the recirculation tube outlet. Water is recirculated back into the tub onto the load.

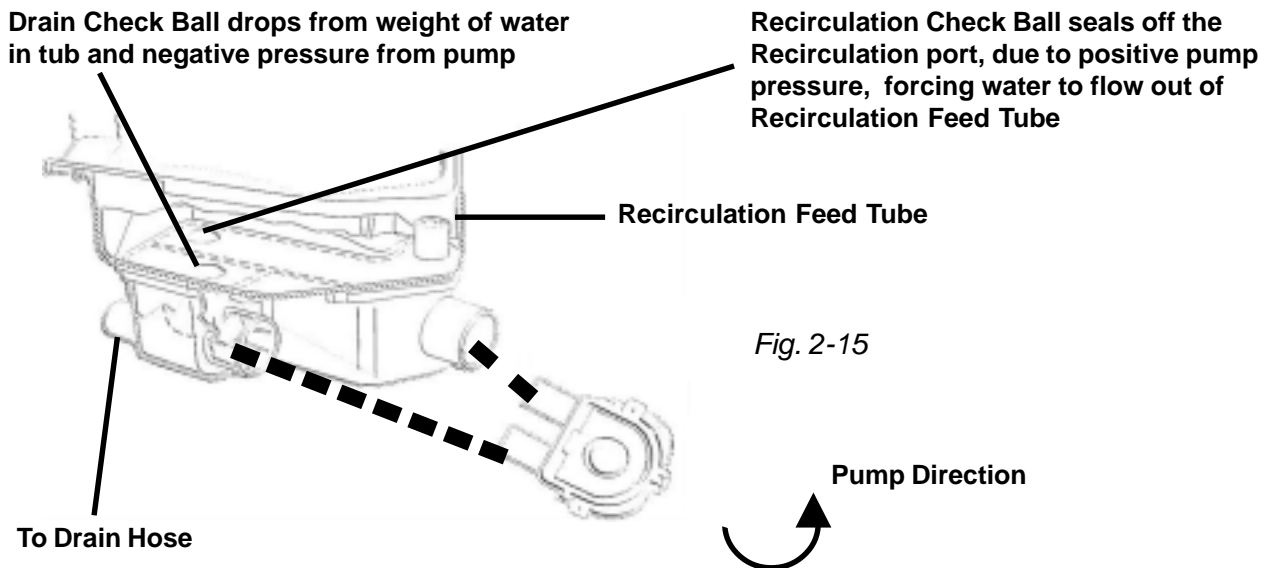


Fig. 2-15

Drain

During the Drain Mode, the pump motor turns clockwise (as viewed from underneath the washer). This causes the water pump to draw the water from the tub through the recirculation port, forcing the drain check ball to seal the drain sump port and force the water through the drain hose.

Drain Check Ball seals off Drain port, due to positive pump pressure, forcing water out the drain hose.

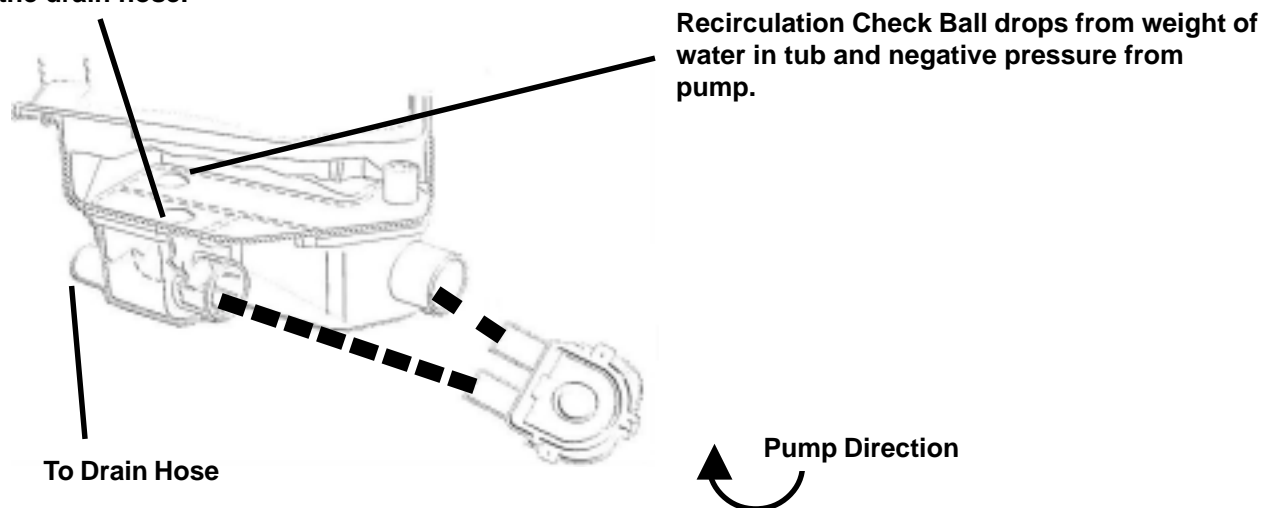


Fig. 2-16

Changing Cycles and Options

You can change Cycles and Options any time before Start is pressed.

- A short tone sounds when a change is selected.
- Two short tones sound if an unavailable combination is selected. The last selection will not be accepted.

Changing Cycles after pressing Start

1. Press STOP/CANCEL twice.
2. Select the desired wash cycle.
3. Press START.

The washer restarts at the beginning of the new cycle.

NOTE: If you do not press the Start within 5 minutes of pausing the washer, the washer automatically shuts off.

Changing Options after pressing Start

You can change an Option anytime before the selected Option begins.

1. Press STOP/CANCEL.
2. Select the new Option.
3. Press START to continue the cycle.

CYCLES

Use the cycle pads to choose the right washer cycle for the type of fabrics you are washing.

- For most loads, use the default soil level recommended in the preset cycle settings.
- For heavy soil and sturdy fabrics, use a higher soil level setting.
- For light soil and delicate fabrics, use a lower soil level setting.

OPERATIONAL CYCLE NOTES

The following notes apply to all cycle sheets where indicated in the NOTES column of the cycle sheet. When there is a contradiction, the cycle sheet itself has priority.

WATER FILL NOTES

A "WATER TEMP" of "WASH" means that the valves are controlled by the temperature selection from the WASH/RINSE TEMP key. HOT = hot water valve on, COLD = cold water valve on, and WARM = both hot and cold valves on.

In the notes below, "pressure switch" refers to the operating pressure switch. "PS CONTROLLED" refers to an operation that is controlled by the pressure switch. "TIMED FILL" refers to an operation that bypasses the operating pressure switch input to continue filling for a limited time specified.

1. FILL is HOT, WARM (both HOT and COLD valves on), or COLD water, selectable by the WASH/RINSE TEMP key. Fills are through the detergent dispenser unless otherwise noted. Fills are controlled by the operating pressure switch, unless otherwise noted. The cycle time is not stalled while filling unless otherwise noted.
2. FILL is HOT, WARM (both HOT and COLD valves on), or COLD water, selectable by the WASH/RINSE TEMP key. Fills are through the detergent dispenser unless otherwise noted.
3. Bleach dispenser time is 3 seconds, using cold water only.
4. Fill for 30 seconds, shut off for 15 seconds, and fill for the remaining 15 seconds.
5. All fills are cold from this step onwards unless otherwise noted.
6. Spray rinse -- available only when warm rinse is selected. This is defined as a 25 second warm fresh fill 5 seconds after the beginning of the step.
7. Bleach fill on for 10 seconds, followed by a water fill through the dispenser noted on the cycle sheet. Note that this is not needed in the RINSE phase if a 2ND RINSE phase has done this.
8. Fill is cold fresh water spray that bypasses the pressure switch.

CYCLE TIME NOTES

Times given under the DURATION column are in MM:SS format, where MM is minutes and SS is seconds, unless otherwise noted. Total time does not include time for VAR duration steps, pauses, spin-to-spin nutates, or pauses between nutate-to-spins or spin-to-nutates unless otherwise noted.

9. The cycle time is stalled during filling. To reflect possible cycle time stalls, a "+" is added to the duration column for this step.
10. Soil Level is selected at default settings with the flexibility to modify it by one-minute intervals.
11. Total Estimate Time Remaining does not count this step. Duration is denoted in parentheses.
12. This step is only added if STAIN TREAT is active.
13. If selected EXTEND SPIN will add 3 minutes to the duration of this step.

PUMP DRAIN/RECIRC NOTES

14. CND stands for Controlled Neutral Drain. During this step, if the pressure switch is satisfied the machine will drop out of spin and into neutral drain until the pressure switch is reset. The cycle time is STALLED in this step. To reflect possible cycle time stalls, a "+" is added to the duration column for this step. Note that if spinning, there may be a short spin-to-spin nutate if the cycle is stalled.
15. Pump drain is turned off during final fluff and plate leveling.

DRIVE MOTOR NOTES

Spin is defined as a clockwise (CW) Motor and Basket rotation when looking down from the top of the machine. Nutate is a counter-clockwise (CCW) rotation of the motor.

16. Step Spin. Drive motor ramps up to speed following specific motor profiles.
17. Suds Lock Detection and cleanup. Suds detection is done based on motor current ramp-up. This requires a 90-sec duration for this step. If suds are detected, the suds cleanup algorithm runs, then the detection algorithm runs again. This is repeated up to 3 times. If the suds are not cleared by the end of the iterations, the unit remains in pause mode with an "SL" (Suds Locked) error code on the display.
18. DN = Defaults to selected cycle's nutate speed.
19. Optional Spin-to-Spin protection nutate. May be turned off if there was already a nutate before this step in the cycle. The cycle may begin with this nutate if the last cycle ended in a spin.

Whitest Whites

This cycle introduces liquid chlorine bleach to the load at the proper time for improved whitening of your heavily soiled white fabrics. Use this cycle to get 13 to 17 minutes of medium speed wash action and high speed final spin. For maximum soil and stain removal, liquid chlorine bleach must be used. The preset cycle wash time is 15 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	275	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:25
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	275	00:05
	6	NUTATE+RECIRC+FILL	1,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	275	12:55
	7	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	8	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:15
END OF WASH										
RINSE	9	NEUTRAL DRAIN		OFF	OFF	RINSING LED ON	DRAIN	OFF	0	00:15
	10	NUTATE+RECIRC+FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30+
	11	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL-COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	13	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	14	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	275	03:00
	15	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	16	STATIC FILL-COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:30
	17	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	01:00
	18	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	02:00
	19	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:15
	20	SPIN+DRAIN W/ SUDS PROFILE	17	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	01:30
21	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)	
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	275	00:15
	C	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	D	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30+
	E	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	F	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
END EXTRA R.	G	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	22	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	23	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	275	00:15
	24	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	25	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30+
	26	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	27	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	28	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	29	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	30	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	31	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	32	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	33	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:08
	34	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	35	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30
	36	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:30
	37	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	38	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	39	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
40	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+	
41	NUTATE+RECIRC		COLD	OFF		RECIRC	NUTATE	275	00:05	
42	NUTATE + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	275	03:55+	
43	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30	
SPIN & FLUFF	44	SPIN + DRAIN W/CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30+
	45	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	500	00:30
	46	SPIN + DRAIN W/CND	14	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:15+
	47	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:15
	48	SPIN + DRAIN W/CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	49	FLUFF	15	OFF	OFF		OFF	NUTATE	275	00:30
50	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05	
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		42:53
END OF CYCLE		EOC W/ 2 ND RINSE		OFF	OFF		OFF	OFF		45:23

Heavy Duty

Use this cycle to get 15 to 19 minutes of wash time for loads of sturdy, colorfast fabrics such as work clothes. Cycle combines high speed wash action and high spin speed. The preset cycle wash time is 19 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	300	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN + RCRC + FILL	1	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:25
	4	SPIN + RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE + RECIRC		WASH	OFF		RECIRC	NUTATE	300	00:05
	6	NUTATE + RCRC + FILL	1,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	300	16:55
	7	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	8	STATIC FILL - COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:15
END OF WASH										
RINSE	9	NEUTRAL DRAIN		OFF	OFF	RINSING LED ON	DRAIN	OFF	0	01:00
	10	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	300	00:30+
	11	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL - COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	13	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	14	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	300	02:00
	15	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	16	STATIC FILL - COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:30
	17	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	01:00
	18	SPIN + DRAIN + FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	02:00
	19	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	300	00:15
20	SPIN+DRAIN W/SUDS PROFILE	17	OFF	OFF		DRAIN	SPIN	500	01:30	
21	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)	
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	300	00:15
	C	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	D	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	300	00:30+
	E	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	F	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
END EXTRA R.	G	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	22	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	23	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	300	00:15
	24	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	25	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	300	00:30+
	26	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	27	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	28	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	29	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	300	00:10
	30	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	300	VAR
	31	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	32	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	33	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	300	00:08
	34	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	35	SPIN + DRAIN W/CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30
	36	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	300	00:30
	37	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	300	00:10
	38	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	300	VAR
	39	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	40	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	41	NUTATE + RECIRC		COLD	OFF		RECIRC	NUTATE	300	00:05
	42	NUTATE + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	300	03:55+
43	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30	
SPIN & FLUFF	44	SPIN + DRAIN W/CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30+
	45	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	500	00:30
	46	SPIN + DRAIN W/CND	14	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:15+
	47	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	300	00:15
	48	SPIN + DRAIN W/CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	49	FLUFF	15	OFF	OFF		OFF	NUTATE	300	00:30
50	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05	
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		46:38
END OF CYCLE		EOC W 2 ND RINSE		OFF	OFF		OFF	OFF		49:08

Normal

Use this cycle to get 12 to 16 minutes of wash time for normally soiled cottons and linens. Cycle combines medium speed wash action and high speed spin. The preset cycle wash time is 14 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	275	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:25
	4	SPIN + RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE + RECIRC		WASH	OFF		RECIRC	NUTATE	275	00:05
	6	NUTATE+RECIRC+FILL	1,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	275	09:55
	7	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	8	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	9	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	10	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	275	02:00
	11	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL-COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:30
END OF WASH										
RINSE	13	NEUTRAL DRAIN		OFF	OFF	RINSING LED ON	DRAIN	OFF	0	01:00
	14	SPIN+DRAIN-FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	02:00
	15	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:15
	16	SPIN+DRAIN W/ SUDS PROFILE	17	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	01:30
	17	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	275	00:15
	C	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	D	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30+
	E	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	F	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
END EXTRAR.	G	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	18	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	19	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	275	00:15
	20	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	21	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30+
	22	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	23	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	24	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	25	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	26	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	27	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	28	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	29	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:08
	30	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	31	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30
	32	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:30
	33	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	34	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	35	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	36	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	37	NUTATE + RECIRC		COLD	OFF		RECIRC	NUTATE	275	00:05
38	NUTATE + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	275	03:55+	
39	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30	
SPIN & FLUFF	40	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30+
	41	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	500	00:30
	42	SPIN + DRAIN W/ CND	14	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:15+
	43	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:15
	44	SPIN + DRAIN W/ CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	45	FLUFF	15	OFF	OFF		OFF	NUTATE	275	00:30
	46	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		37:53
END OF CYCLE		EOC W 2 ND RINSE		OFF	OFF		OFF	OFF		40:23

Jeans/Darks

Use this cycle to get 14 to 18 minutes of wash time for dark, colored items that may run or fade. Cycle combines low/medium speed wash action and high spin speed. The preset cycle wash time is 16 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	250	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	4	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	250	00:05
	5	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	250	00:55+
	6	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	7	NUTATE+RECIRC	10	WASH	OFF		RECIRC	NUTATE	250	04:00
	8	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	9	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	10	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	01:00
	11	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	12	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	13	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	14	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	15	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	02:00
END OF WASH										
RINSE	16	NUTATE+DRAIN		OFF	OFF	RINSING LED ON	DRAIN	NUTATE	250	00:08
	17	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	18	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	19	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	20	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	21	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	22	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	23	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	24	SPIN+DRAIN W/ SUDS PROFILE	17	OFF	OFF		DRAIN	SPIN	500	01:30
	25	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	C	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	03:00+
	D	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	E	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	F	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
END EXTRAR.	G	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	26	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	27	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	28	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	03:00+
	29	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	30	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	31	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	32	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	33	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	34	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	35	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	36	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	37	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	38	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	39	STATIC FILL - COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	01:00
	40	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	41	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	02:00
	42	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	43	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	00:30
	44	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	45	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
SPIN & FLUFF	46	SPIN + DRAIN W/CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30+
	47	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	500	00:30
	48	SPIN + DRAIN W/CND	14	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:15+
	49	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:15
	50	SPIN + DRAIN W/CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	51	FLUFF	15	OFF	OFF		OFF	NUTATE	250	00:30
	52	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		40:03
END OF CYCLE		EOC W/ 2 ND RINSE		OFF	OFF		OFF	OFF		45:33

Bulky Items

Use this cycle to get 13 to 17 minutes of wash time for large items like blankets and comforters. Cleaning starts with a spray of water and detergent mixture to thoroughly saturate your large load. This is followed by a low/medium wash action and low/medium spin speed to maintain load balance. The preset cycle wash time is 15 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	250	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	4	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	250	00:05
	5	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	250	00:25+
	6	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	7	NUTATE+RECIRC	10	WASH	OFF		RECIRC	NUTATE	250	05:00
	8	SPIN+RECIRC+FILL	1,9	WASH	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	9	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	01:00
	10	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	00:30
	11	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	12	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	13	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	14	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	15	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	02:00
END OF WASH										
RINSE	16	NUTATE+DRAIN		OFF	OFF	RINSING LED ON	DRAIN	NUTATE	250	00:08
	17	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	18	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	19	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	20	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	21	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	22	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	23	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	24	SPIN+DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	300	02:00+
	25	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	C	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	03:00+
	D	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	E	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	F	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	G	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
END EXTRA R.	26	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	27	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	28	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	03:00+
	29	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	30	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	31	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	32	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	33	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	34	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	35	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	36	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	37	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	38	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	39	STATIC FILL - COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	01:00
	40	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	41	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	02:00
	42	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	43	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	00:30
44	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08	
45	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22	
SPIN & FLUFF	46	SPIN + DRAIN W/CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	400	08:00+
	47	FLUFF	15	OFF	OFF		OFF	NUTATE	250	00:30
	48	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF	OFF	OFF		41:03	
END OF CYCLE		EOC W/ 2 ND RINSE		OFF	OFF	OFF	OFF		46:33	

Quick Wash

Use this cycle to get 7 to 11 minutes of wash time for small, lightly soiled loads that are needed in a hurry. Fast cleaning starts with a continuous spray of water and detergent mixture as the load is spun at extra-low speed, followed by a brief period of low/medium speed wash action. High spin speed reduces drying time. For fastest results, select warm wash. The preset cycle wash time is 7 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	250	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:55+
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	250	00:05
	6	NUTATE+RECIRC+FILL	1,9,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	250	03:55+
	7	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	8	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	9	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	10	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	01:00
	11	PAUSE	11	OFF	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL-COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:15
END OF WASH										
RINSE	13	NEUTRAL DRAIN		OFF	OFF	RINSING LED ON	DRAIN	OFF	0	01:00
	14	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	15	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
	16	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	17	SPIN+DRAIN W/ SUDS PROFILE	17	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	01:30
18	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)	
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:15
	C	SPIN + RCRC + FILL		COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	01:00
	D	NUTATE + RCRC + FILL		COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	250	01:00
END EXTRA R.	E	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:15
	19	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	20	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	250	00:15
	21	SPIN + RCRC + FILL		COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	01:00
	22	NUTATE + RCRC + FILL		COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	250	01:00
	23	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:15
	24	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	25	NUTATE		OFF	OFF		OFF	NUTATE	250	00:15
	26	PAUSE	11	COLD	OFF		OFF	OFF	0	00:05
	27	STATIC FILL - COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:30
	28	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	29	SPIN + RCRC		OFF	OFF		RECIRC	SPIN	60	00:30
	30	NUTATE+RECIRC		OFF	OFF		RECIRC	NUTATE	250	00:30
	31	SPIN + RCRC		OFF	OFF		RECIRC	SPIN	60	00:30
	32	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	250	00:08
33	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22	
SPIN & FLUFF	34	SPIN + DRAIN W/ CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	800	03:00+
	35	FLUFF	15	OFF	OFF		OFF	NUTATE	250	00:15
	36	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		20:03
END OF CYCLE		EOC W 2 ND RINSE		OFF	OFF		OFF	OFF		22:33

Delicate/Casual

Use this cycle to get 12 to 16 minutes of low speed wash action for no-iron fabrics and garments indicating “Gentle” cycle on the care label. Low/medium spin is used to reduce wrinkling. The preset cycle wash time is 14 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	225	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	03:55+
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	225	00:05
	6	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	225	00:55+
	7	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	02:05+
	8	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	9	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	225	00:05
	10	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	225	00:55+
	11	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	12	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	13	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	225	00:05
	14	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	225	00:55+
	15	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	16	STATIC FILL – COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	17	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	18	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	02:00
END OF WASH										
RINSE	19	NUTATE+DRAIN		OFF	OFF	RINSING LED ON	DRAIN	NUTATE	225	00:08
	20	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	21	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	22	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:08
	23	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	24	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	25	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:08
	26	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	27	SPIN+DRAIN W/ SUDS PROFILE	17	OFF	OFF		DRAIN	SPIN	500	01:30
28	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)	
EXTRA RINSE (IF SELECTED)	A	STATIC FILL – COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	225	00:30
	C	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	D	SPIN + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	E	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	225	00:30
	F	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
END EXTRA R.	G	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:30
	29	STATIC FILL – COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	30	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	225	00:30
	31	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	32	SPIN + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	33	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	225	00:30
	34	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	35	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:30
	36	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	37	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:08
	38	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	39	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	40	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:08
	41	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	42	STATIC FILL – COLD		COLD	DETERGENT	TIMED FILL	OFF	OFF	0	01:00
	43	FABRIC SOFTENER	4	OFF	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	44	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	00:30
	45	NUTATE + RCRC		OFF	OFF		RECIRC	NUTATE	225	00:30
	46	SPIN+RECIRC		OFF	OFF		RECIRC	SPIN	60	00:30
47	NUTATE+DRAIN		OFF	OFF		DRAIN	NUTATE	225	00:08	
48	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22	
49	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	400	00:30	
SPIN & FLUFF	50	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	400	01:00+
	51	NUTATE + DRAIN	8	OFF	OFF		DRAIN	NUTATE	225	00:30
	52	SPIN + DRAIN W/ CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC – SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	400	04:00+
	53	FLUFF	15	OFF	OFF		OFF	NUTATE	225	00:30
	54	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		34:33
END OF CYCLE		EOC W/ 2 ND RINSE		OFF	OFF		OFF	OFF		39:03

Wool

Use this cycle to get 6 to 10 minutes of wash time for washable items that are normally dry cleaned. Cycle combines extra-low speed spray cleaning and wash action to provide gentle care for delicate items such as wool sweaters and silk blouses. Low spin speed helps garments maintain their shape. The preset wash time is 6 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF	OFF	OFF	NUTATE	150	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	150	00:05
	6	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	OFF	NUTATE	150	00:10+
	7	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:25+
	8	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	9	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	150	00:05
	10	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	OFF	NUTATE	150	00:10+
	11	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	13	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	14	SPIN + RECIRC		OFF	OFF	OFF	RECIRC	SPIN	60	02:00
END OF WASH										
RINSE	15	NUTATE+DRAIN		OFF	OFF	RINSING LED ON	DRAIN	NUTATE	150	00:08
	16	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	17	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	18	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	19	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	20	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	21	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	22	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
23	SPIN + DRAIN W/ CND	14,16	OFF	OFF	OFF	DRAIN	SPIN	300	02:00+	
24	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)	
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:15
	C	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	D	SPIN + RCRC + FILL	1,9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	E	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:15
	F	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	G	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:15
END EXTRA R.										
	25	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	26	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:15
	27	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	28	SPIN + RCRC + FILL	1,9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	29	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:15
	30	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	31	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:15
	32	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	33	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	34	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	35	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	36	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	37	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	38	STATIC FILL - COLD		OFF	DETERGENT	TIMED FILL	OFF	OFF	0	01:00
	39	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	40	SPIN + RCRC		OFF	OFF	OFF	RECIRC	SPIN	60	00:30
	41	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:15
	42	SPIN + RCRC		OFF	OFF	OFF	RECIRC	SPIN	60	00:30
	43	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	44	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
45	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	300	00:30	
SPIN & FLUFF	46	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	300	01:00+
	47	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:15
	48	SPIN + DRAIN W/ CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	300	04:00+
	49	FLUFF	15	OFF	OFF	OFF	OFF	NUTATE	150	00:15
	50	PLATE LEVEL	15	OFF	OFF	OFF	OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF	OFF	OFF	OFF		25:03
END OF CYCLE		EOC W 2 ND RINSE		OFF	OFF	OFF	OFF	OFF		28:18

Handwash

Use this cycle to get 7 to 11 minutes of wash time for garments labeled “Hand Wash” and special care items. Gentle cleaning starts with a continuous spray of water and detergent mixture as the load is spun at an extra-low speed. This lasts for about one minute and is followed by a brief period of extra-low wash action. Low/medium spin speed helps reduce wrinkling. The preset cycle wash time is 7 minutes.

Garments are labelled “Hand Wash” because:

- The fiber construction may be sensitive to wash action.
- The fabric contains sensitive dyes that may bleed.

NOTE: Some “Hand Wash” Items, particularly wool, naturally shrink when washed. Keep this in mind when you purchase items labeled “Hand Wash.” Items that shrink should be dried flat. When still wet, block these items by gently stretching to original measurements.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
WASH	1	OPTIONAL FLUFF	19	OFF	OFF	OFF	OFF	NUTATE	150	00:08
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN+RECIRC+FILL	1,9,10	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	150	00:05
	6	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	150	00:25+
	7	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	00:25+
	8	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05
	9	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	150	00:05
	10	NUTATE+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	OFF	NUTATE	150	00:25+
	11	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
	12	STATIC FILL-COLD	5	COLD	DETERGENT	TIMED FILL	OFF	OFF	0	00:17
	13	BLEACH	3	COLD	BLEACH	TIMED FILL	OFF	OFF	0	00:03
	14	SPIN + RECIRC		OFF	OFF	OFF	RECIRC	SPIN	60	02:00
END OF WASH										
RINSE	15	NUTATE+DRAIN		OFF	OFF	RINSING LED ON	DRAIN	NUTATE	150	00:08
	16	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	17	SPIN+DRAIN+FILL	7,8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	18	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	19	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	20	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	21	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	22	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	23	SPIN + DRAIN W/ SUDS PROFILE	17	OFF	OFF	OFF	DRAIN	SPIN	500	01:30
	24	PAUSE	11	COLD	OFF		OFF	OFF	0	(00:05)
EXTRA RINSE (IF SELECTED)	A	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	B	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:30
	C	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	D	SPIN + RCRC + FILL	1,9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	E	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:30
	F	SPIN+DRAIN+FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
END EXTRA R.	G	NUTATE+DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:30
	25	STATIC FILL - COLD	7,9	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	26	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:30
	27	SPIN + RECIRC		COLD	OFF		RECIRC	SPIN	60	00:05
	28	SPIN + RCRC + FILL	1,9	COLD	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	01:55+
	29	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:30
	30	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	01:00
	31	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:30
	32	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	33	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	34	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	35	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	00:30
	36	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	37	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
	38	STATIC FILL - COLD		OFF	DETERGENT	TIMED FILL	OFF	OFF	0	01:00
	39	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	40	SPIN + RCRC		OFF	OFF	OFF	RECIRC	SPIN	60	00:30
	41	NUTATE + RCRC		OFF	OFF	OFF	RECIRC	NUTATE	150	00:30
	42	SPIN + RCRC		OFF	OFF	OFF	RECIRC	SPIN	60	00:30
	43	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:08
	44	NEUTRAL DRAIN		OFF	OFF	OFF	DRAIN	OFF	0	00:22
45	SPIN + DRAIN + FILL	8	COLD	FRESH	TIMED FILL	DRAIN	SPIN	400	00:30	
SPIN & FLUFF	46	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	400	01:00+
	47	NUTATE + DRAIN		OFF	OFF	OFF	DRAIN	NUTATE	150	00:30
	48	SPIN + DRAIN W/ CND	6,13,14,16	OFF (OR WARM 5 SEC)	OFF (OR FRESH 5 SEC - SEE NOTE 8)	PS CONTROLLED	DRAIN	SPIN	400	04:00+
	49	FLUFF	15	OFF	OFF	OFF	OFF	NUTATE	150	00:30
	50	PLATE LEVEL	15	OFF	OFF	OFF	OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		27:03
END OF CYCLE		EOC W/ 2 ND RINSE		OFF	OFF		OFF	OFF		31:33

Soak Cycle

Use this option for set-in stains and soil that need extra time for removal. Soaking in this washer is different than in a conventional washer. The washer sprays the load with water and detergent for 4 minutes at extra low spin speed followed by a brief period of wash action at the speed of the selected cycle. Then another 4 minutes of spraying and extra low spinning occurs. The wash action then pauses for the detergent to work on the soils. The Soak feature is followed by the selected cycle. Using Soak will extend your wash cycle by 16 minutes.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)	
SOAK	1	OPTIONAL FLUFF	18,19	OFF	OFF		OFF	NUTATE	DN	00:08	
	2	STATIC FILL	1,9,19	WASH	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR	
	3	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	03:55+	
	4	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05	
	5	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	DN	00:05	
	6	NUTATE+RECIRC+FILL	18	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	DN	00:55	
	7	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	03:55+	
	8	SPIN+RECIRC		WASH	OFF		RECIRC	SPIN	60	00:05	
	9	NUTATE+RECIRC		WASH	OFF		RECIRC	NUTATE	DN	00:05	
	10	NUTATE+RECIRC+FILL	18	WASH	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	DN	00:55	
	11	SPIN+RECIRC+FILL	1,9	WASH	DETERGENT	PS CONTROLLED	RECIRC	SPIN	60	04:00+	
	12	PAUSE			OFF	OFF		OFF	OFF	0	02:00
	13	NUTATE + RECIRC			OFF	OFF		RECIRC	NUTATE	DN	00:08
CONTINUE WITH SELECTED CYCLE, STEP 3										16:16	

Extra Rinse

Selecting this option provides a second rinse with the same water temperature as selected for the first rinse. An Extra Rinse can be added to any wash.

Extend Spin Cycle

This option adds an additional 3 minutes of spin to any cycle to reduce drying time and save energy. If you select EXTEND SPIN and do not select a wash cycle, you will get a 7 minute, high speed spin cycle.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
SPIN & FLUFF	1	OPT NUTATE + DRAIN	19	OFF	OFF	PS CONTROLLED	DRAIN	NUTATE	275	00:08
	2	SPIN + DRAIN W/ SUDS	17	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	01:30
	3	NUTATE + DRAIN		OFF	OFF	PS CONTROLLED	DRAIN	NUTATE	275	00:15
	4	SPIN+DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	5	FLUFF	15	OFF	OFF		OFF	NUTATE	275	00:30
	6	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		7:28

Rinse & Spin

Use this option to get a combination of rinses and spins followed by a high-speed spin. The time displayed will include an estimate of how long it will take to fill and drain the washer. Fabric softener can be added to the Fabric Softener dispenser.

When to use Rinse & Spin:

- For loads that need rinsing only.
- For completing a cycle after the power has been off.
- To add fabric softener to load

To use or change Rinse & Spin settings:

1. Add fabric softener to the dispenser (if desired).
2. Press the RINSE & SPIN OPTIONS control until the RINSE & SPIN indicator light glows.
3. Press START.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (MIN:SEC)
RINSE	1	OPTIONAL FLUFF	19	OFF	OFF		OFF	NUTATE	275	00:08
	2	STATIC FILL – COLD	9,19	COLD	DETERGENT	PS CONTROLLED	OFF	OFF	0	VAR
	3	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	00:30+
	4	NUTATE + RCRC + FILL		COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	00:30
	5	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	6	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	7	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	8	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	9	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	10	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
	11	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	300	00:15
	12	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:08
	13	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:22
	14	SPIN + DRAIN W/ CND	14,16	OFF	OFF	PS CONTROLLED	DRAIN	SPIN	500	00:30+
	15	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:30
	16	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	275	00:10
	17	NUTATE + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	NUTATE	275	VAR
	18	FABRIC SOFTENER	4	COLD	FAB SOFT	TIMED FILL	OFF	OFF	0	01:00
	19	SPIN + RCRC + FILL	9	COLD	FRESH	PS CONTROLLED	RECIRC	SPIN	60	02:00+
	20	NUTATE+RECIRC		COLD	OFF		RECIRC	NUTATE	275	00:05
	21	NUTATE + RCRC + FILL	9	COLD	DETERGENT	PS CONTROLLED	RECIRC	NUTATE	275	03:55+
	22	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	00:30
SPIN & FLUFF	23	SPIN + DRAIN W/ SUDS	17	OFF	OFF		DRAIN	SPIN	500	01:30
	24	NUTATE + DRAIN		OFF	OFF		DRAIN	NUTATE	275	00:15
	25	SPIN + DRAIN W/ CND	6,14,16	OFF OR WARM	OFF OR FRESH	PS CONTROLLED	DRAIN	SPIN	800	05:00+
	26	FLUFF	15	OFF	OFF		OFF	NUTATE	275	00:30
	27	PLATE LEVEL	15	OFF	OFF		OFF	SPIN	60	00:05
END OF CYCLE		END OF CYCLE (EOC)		OFF	OFF		OFF	OFF		19:56

Suds Lock Detection/Cleanout

Suds lock detection occurs during the last spin in the wash cycle phase of all cycles except BULKY ITEMS and WOOL. If suds are detected by the control, the cycle timer is stalled and a suds cleanout cycle is run. At the end of the suds cleanout cycle, the detection program is run again. The cleanout is run up to maximum of 3 times. If suds are still detected at the end of the last cleanout, the unit drops out of the cycle and displays “SL” on the 7-segment.

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (SEC)
CLEANOUT	1	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	30
	2	NUTATE + FILL		COLD	DETERGENT	TIMED FILL	OFF	NUTATE	300	15
	3	NEUTRAL DRAIN		OFF	OFF		DRAIN	OFF	0	15
	4	SPIN + DRAIN + FILL		COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	60
	5	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	60	30
	6	SPIN + DRAIN + FILL		COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	60
	7	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	60	30
	8	SPIN + DRAIN + FILL		COLD	FRESH	TIMED FILL	DRAIN	SPIN	60	60
	9	SPIN + DRAIN		OFF	OFF		DRAIN	SPIN	60	60
	10	DETECTION ROUTINE = SPIN+DRAIN W/SUDS PROFILE		OFF	OFF	IF SUDS ARE DETECTED, REPEAT FROM STEP 1 OF CLEANOUT	DRAIN	SPIN	500	90
IF SUDS ARE NOT DETECTED, CONTINUE WITH THE NEXT STEP IN CYCLE										7:30

SECTION THREE

COMPONENT ACCESS

COMPONENT LOCATION

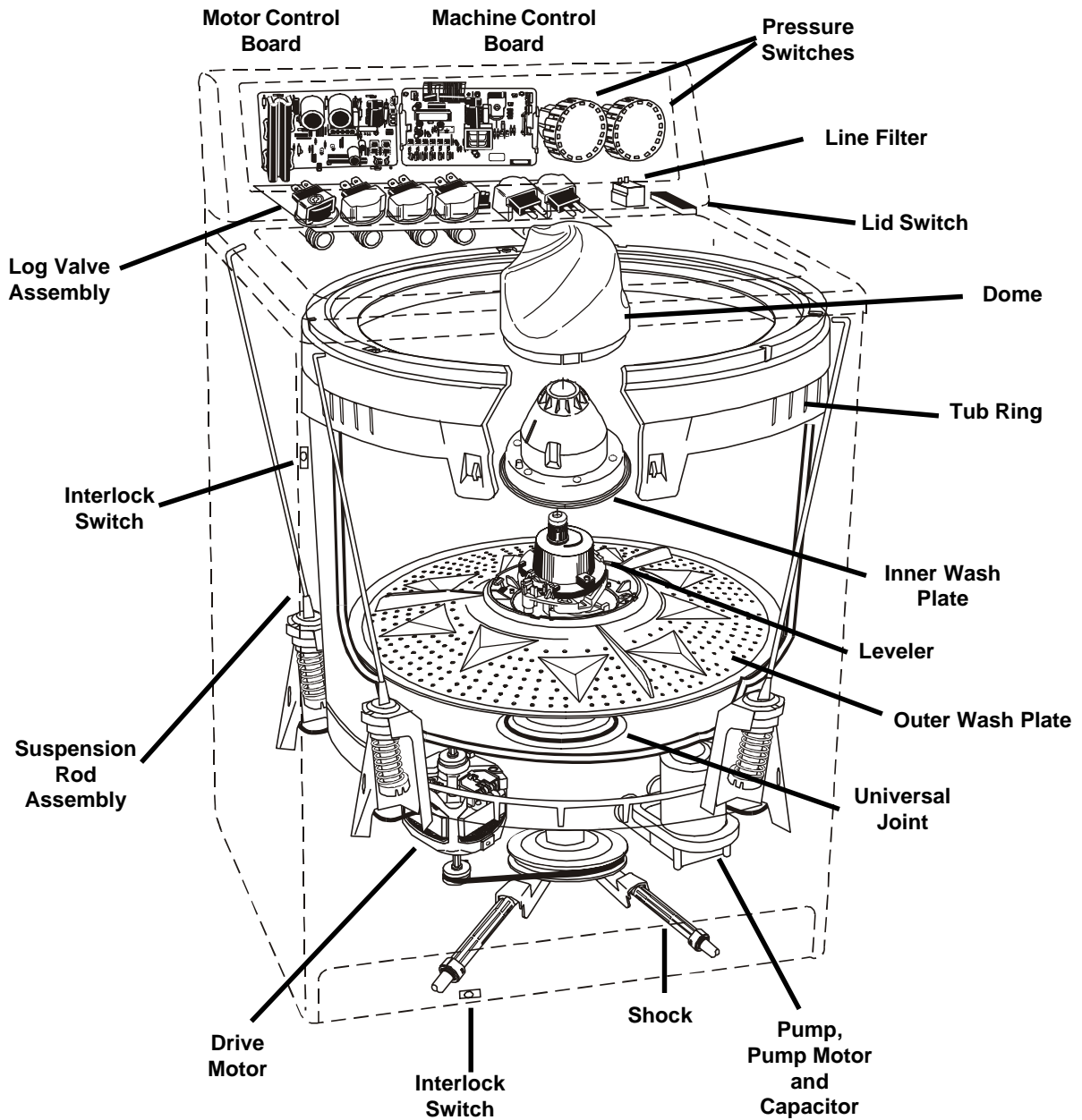


Fig. 3-1

SPECIAL TOOLS/PARTS REQUIRED FOR SERVICE

Putty Knife
 T-40 Torx
 Spanner Wrench
 Volt-Ohm Meter

Seal Kit, Part #285842

⚠ IMPORTANT

Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. ESD may damage or weaken the electronic control assembly. The new control assembly may appear to work well after repair is finished, but failure may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance. - OR - Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repacking failed electronic control assembly in anti-static bag, observe above instructions.

⚠ WARNING



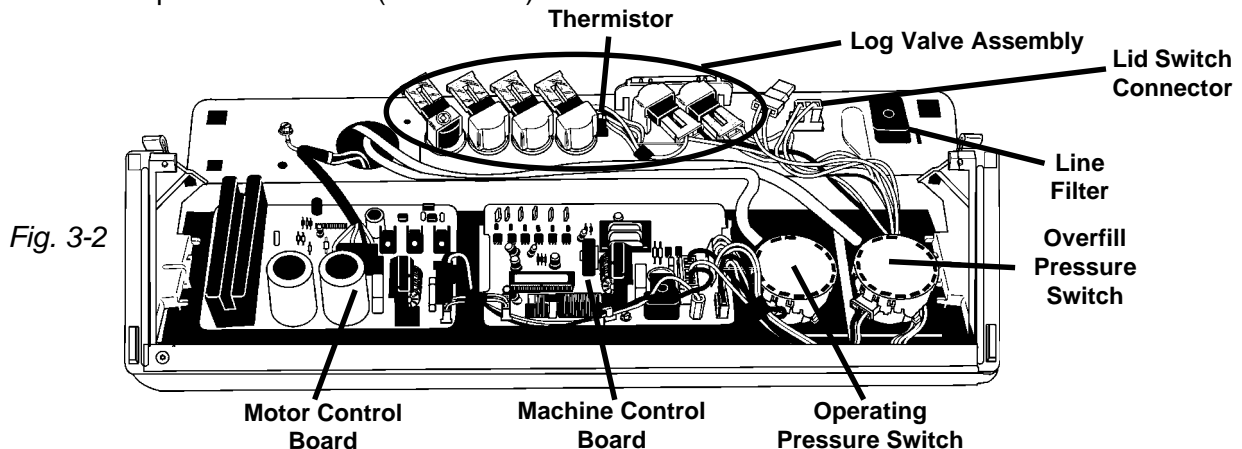
ELECTRICAL SHOCK HAZARD

Disconnect power before servicing the washing machine.
Replace all panels before operating the washing machine.
Failure to do so can result in death or electrical shock.

ACCESSING COMPONENTS IN THE CONSOLE

Components accessible inside the console are:

- Log Valve Assembly
- Hot Water Inlet Valve
- Cold Water Inlet Valve
- Fresh Water Outlet Valve
- Bleach Dispenser Valve
- Fabric Dispenser Valve
- Detergent Dispenser Valve
- Temperature Sensor (Thermistor)
- Machine Control Board
- Motor Control Board
- Line Filter
- Operating Pressure Switch
- Overfill Pressure Switch



Removing the Console

1. Disconnect power from the washing machine.
2. Slide the blade of a putty knife between the bottom of the console and the washer top at each front corner (*Arrow in Fig. 3-3*) and push the spring clip back far enough to release it from the slot in the washer top. (*Fig. 3-3, INSET*) Then lift the console up approximately one inch, tip the console back and lift it to release the mounting tab at the rear of the end cap from the slot in the washer top.
3. Lay the console face down on the washer top.
4. Remove the six (6) 1/4" screws securing the rear console panel and remove panel.

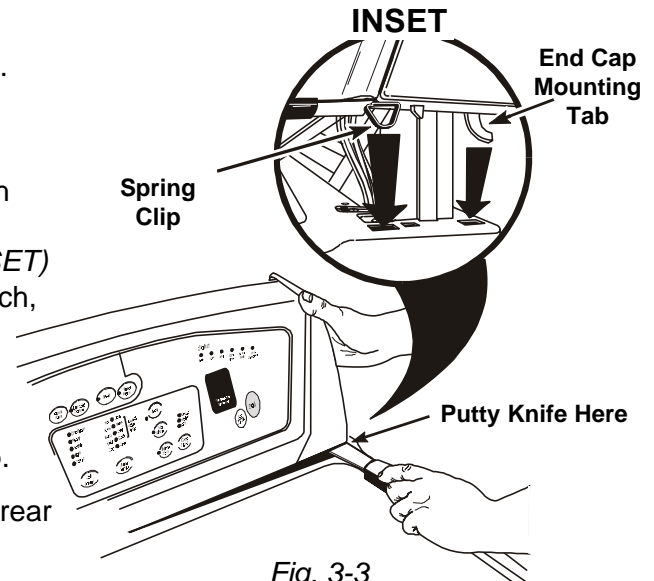


Fig. 3-3

Removing Console Components

Removing the Machine Control Board

1. Disconnect power from the washing machine.
2. Place the console in the service position.
3. Disconnect all wiring harness plugs from the machine control board terminals (P4, P11, P12, P13, P16, P17, P19).
4. Remove the two (2) hex-head screws securing the board to the console mounting plate.
5. Press in on the plastic mounting brackets on each end of the board and lift the board from the console mounting plate.

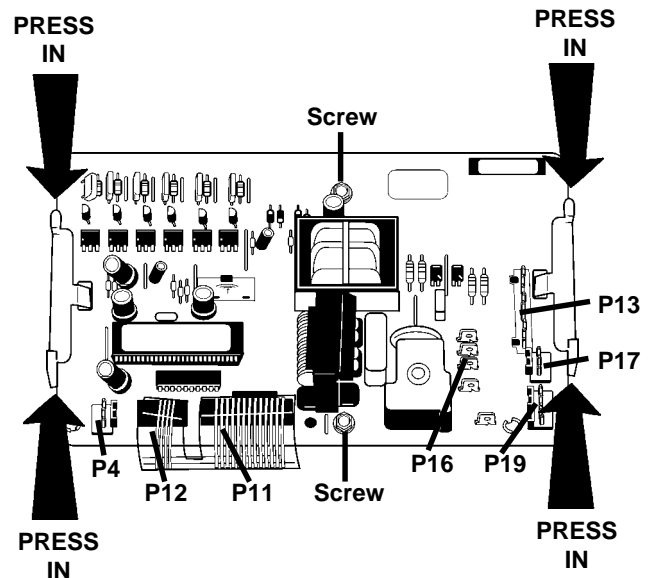


Fig. 3-4

Removing the Motor Control Board

	<p>⚠ WARNING</p> <p>High voltage may be present even after power has been disconnected from the unit.</p>
--	--

1. Disconnect power from the washing machine.
2. Place the console in the service position.
3. Disconnect all wiring harness plugs from the control board terminals (P1, P2, P5, P6).
4. Remove the two (2) hex-head screws shown, securing the board to the console mounting plate. Carefully slide the board from the console mounting plate.

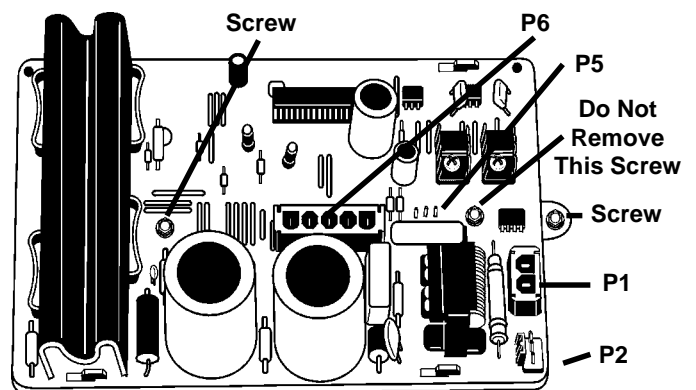
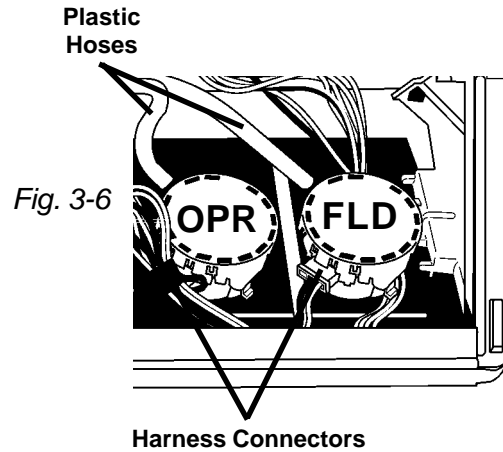


Fig. 3-5

Removing the Pressure Switches

The overfill and operating pressure switches are located next to each other on the console mounting plate. Both pressure switches are removed in the same manner.

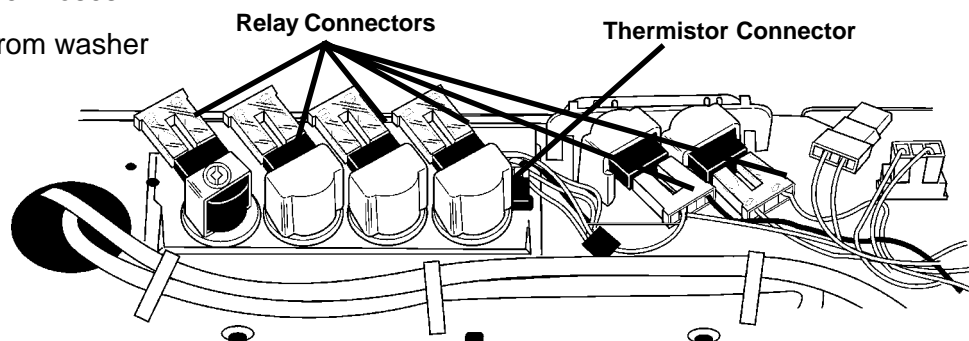
1. Disconnect power from the washing machine.
2. Place the console in the service position.
3. Disconnect the wiring harness connectors from the terminals of the pressure switch.
4. Disconnect the plastic hose from the pressure switch.
5. Depress locking tab on side of switch.
6. Turn the pressure switch $\frac{1}{4}$ turn in either direction and pull the pressure switch from the console mounting plate.



NOTE: Although the pressure switches look identical, they are not. When replacing the pressure switches, be sure to match part number and connect the correct set of wires to the replacement switch.

Removing the Log Valve Assembly

1. Disconnect power from the washing machine.
2. Disconnect the water supply hoses from the inlet valves.
3. Remove the $\frac{1}{4}$ " screw securing the log valve at the rear of the washer top.
4. Place the console in the service position.
5. Disconnect the wiring harness connectors from the terminals of the six (6) valve solenoids and the thermistor terminals.
6. Depress the tabs on the inner splash shield and push the tabs through the washer top.
7. Push the rivet tab through the washer top to release the rivet securing the splash shield.
8. Reattach the console to the washer top.
9. Raise the washer top to the service position. See procedure on next page.
10. Remove the inner splash shield.
11. Remove the rivet securing the log valve to the washer top.
12. Disconnect dispenser hoses.
13. Remove log valve from washer top.



ACCESSING COMPONENTS BENEATH THE WASHER TOP

Components accessible beneath the washer top are:

- Tub Ring
- Balance Ring
- Inner/Outer Wash Plates
- Leveler
- Universal Joint
- Dispensers
- Bleach Venturi
- Lid Switch

Raising the Washer Top to the Service Position

The washer top is hinged at the back edge. It does not have to be completely removed for access to components inside the tub.

1. Disconnect power from the washing machine.
2. If the unit is close to the wall at the back, pull the washing machine forward a foot or two.
3. Gently pry the emblem from the front trim. (*Fig. 3-8*)
4. Remove the T-20 Torx screw holding the washer top to the cabinet latch.
5. Slide the washer top forward, approximately 1/2 inch, to clear the cabinet latch.
6. Raise the front of the washer top up and prop it high enough to allow full access to the contents of the tub.

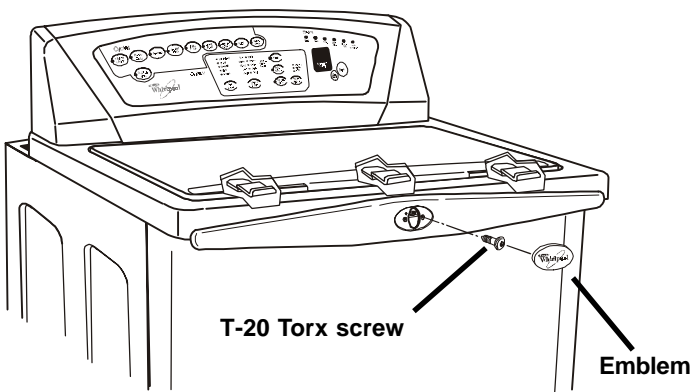


Fig. 3-8

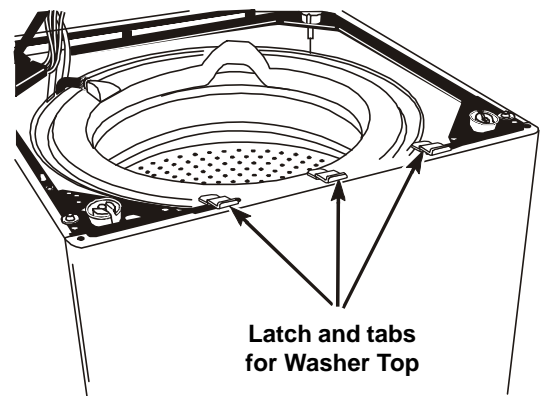


Fig. 3-9

! WARNING

PERSONAL INJURY HAZARD

Be sure the washer top is securely propped up.
Failure to do so could result in personal injury.

Removing Components in the Tub

1. Disconnect power from the washing machine.
2. Raise the washer top to the service position.
3. Disconnect the fresh water inlet hose from the tub ring. (Fig. 3-10)
4. Unsnap the tabs that secure the tub ring to the tub. (Fig. 3-10 - INSET) Lift the tub ring from the tub.
5. Using a flat bladed screwdriver, release the three (3) tabs to separate the balance ring from the basket.
6. Using two (2) flat bladed screwdrivers, 90° apart, in the notches provided, separate the dome from the outer wash plate. (Fig. 3-11)
7. Remove the six (6) 3/8" bolts securing the outer wash plate to the universal joint. (Fig. 3-12) Remove the outer wash plate from the basket.
8. Once the outer wash plate is removed, the inner wash plate can be lifted out of the basket. (Fig. 3-12)
9. Lift the leveler assembly from the splines on the spin tube. Reach under and hold the lower hub of leveler while lifting. (Fig. 3-13)

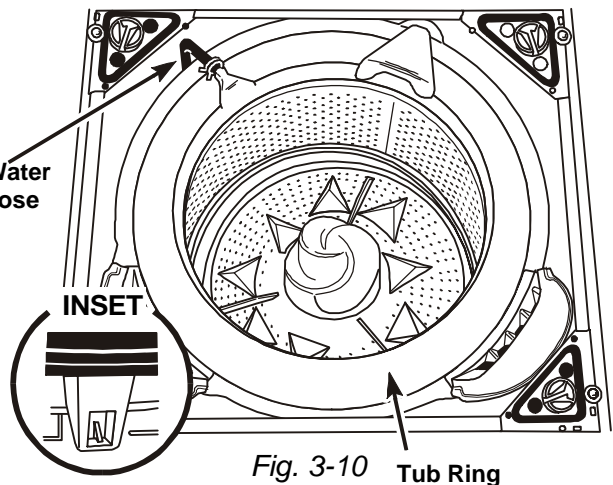


Fig. 3-10 Tub Ring

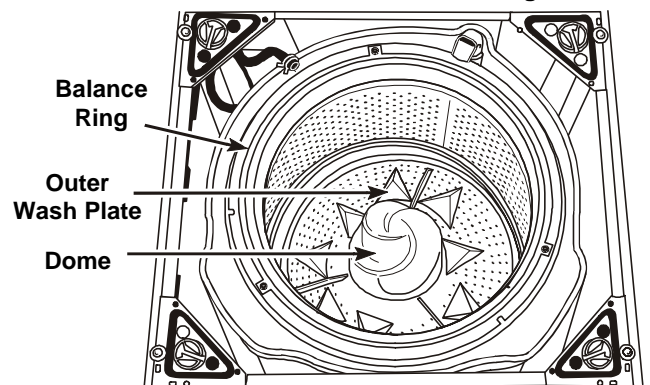


Fig. 3-11

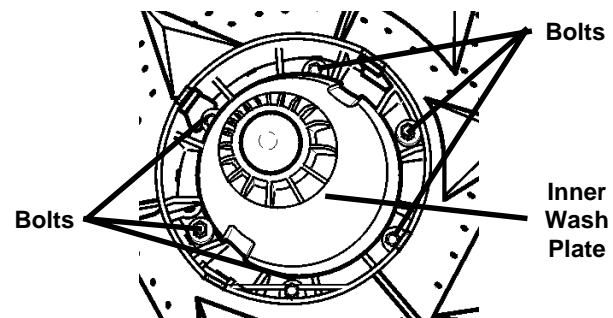
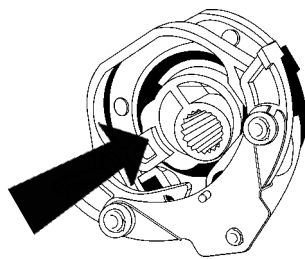


Fig. 3-12

Fig. 3-13



10. Use a spanner wrench and mallet to loosen the spanner nut securing the universal joint assembly to the drive block. (Fig. 3-14)

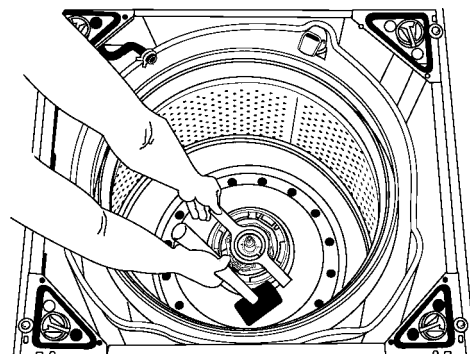
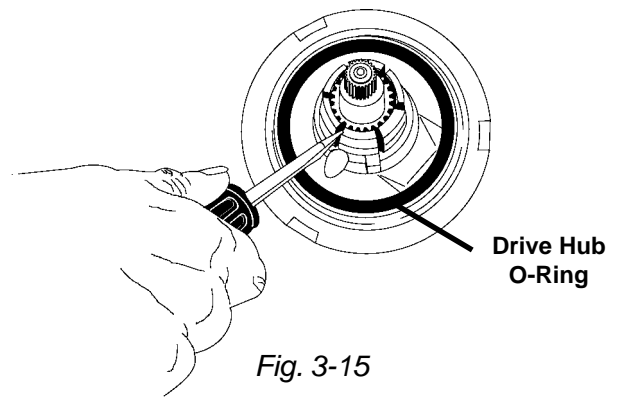


Fig. 3-14

11. Remove the spanner nut. Once this is done, the universal joint assembly can be lifted from the basket.
12. The basket can now be lifted from the tub.
NOTE: It may be necessary to spread apart one of the drive block sections to loosen the basket from the splines of the spin tube. (Fig. 3-15)

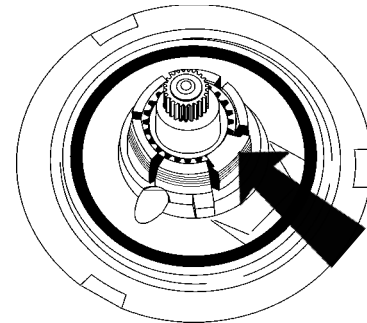


NOTE: The U-joint grommets must be replaced whenever the outer wash plate is removed. The seal on the inner wash plate must be replaced whenever the inner wash plate is removed. The O-ring on the basket drive hub must be replaced whenever the U-joint is removed. O-ring kit #285842.

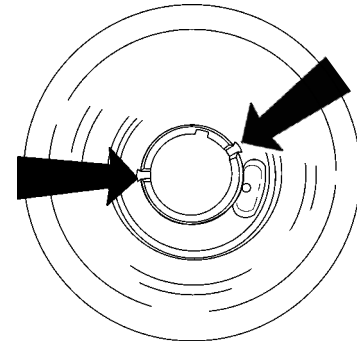
Reassembling Tub Components

When reassembling the components in the basket, take note of a number of alignment keys provided to assure proper reassembly.

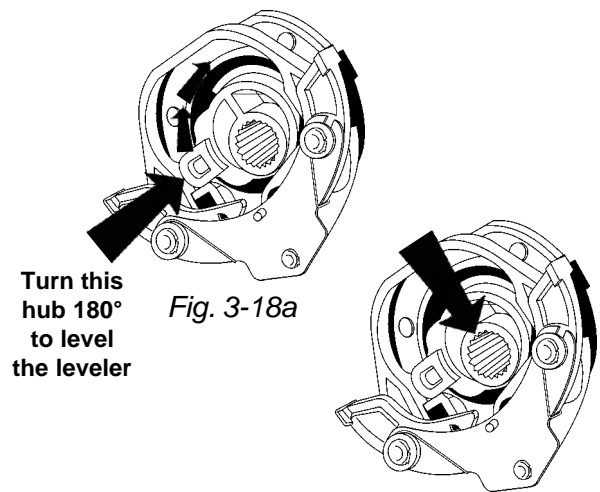
1. One portion of the spin tube does not have vertical splines. There is a corresponding portion of the drive block that does not have vertical splines. The top surface of the portion of the drive block without splines is slightly wider and should be aligned with the corresponding portion of the spin tube when setting the basket back into the tub. (Fig. 3-16)



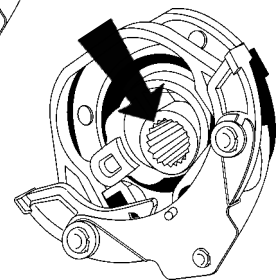
2. There are two (2) slots on the underside of the universal joint assembly (Fig. 3-17) that correspond to two tabs on the drive block of the basket. These should be properly aligned when placing the universal joint on the drive block. When the universal joint is properly installed, there will be enough threads showing on the drive block to install the spanner nut.



3. Install the spanner nut. The proper torque setting is 75 ft.-lbs. Do not overtighten.
4. Level the leveler before it is installed. (Fig. 3-18a)



5. There is a flat portion in the splines of the leveler assembly (Fig. 3-18b), that must be aligned with the flat portion of the splines on the drive shaft.



- There is a tab on the underside of the inner wash plate that corresponds to a slot on the universal joint. These should fit together when reassembling the inner wash plate over the universal joint.

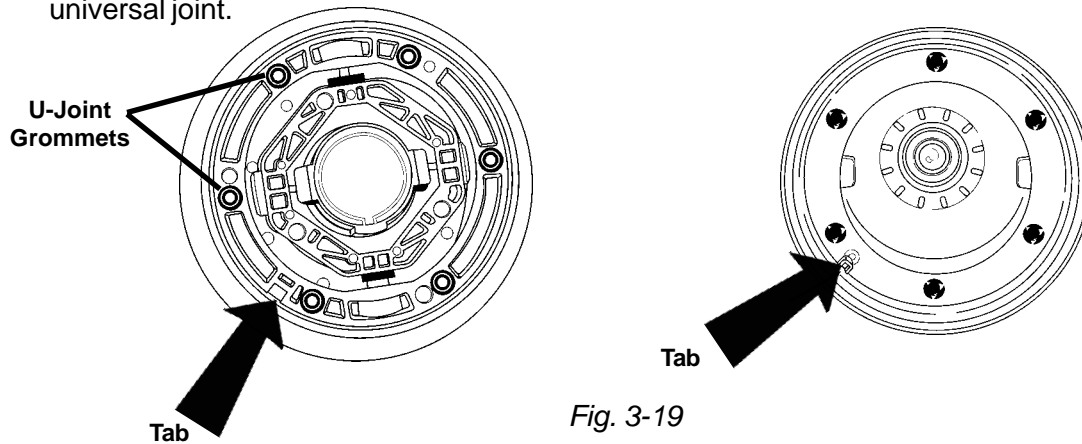


Fig. 3-19

NOTE: Do not rotate the inner wash plate when reassembling to the universal joint. Rotating the plate may move the leveler to it's tilted position which may cause the grommets to slip.

- There is a tab on the outer ring of the inner wash plate that fits into a corresponding hole in the inner ring of the outer wash plate. Install the bolts in the order indicated in Figure 3-20. The proper torque setting for these bolts is 100 in. - lbs.

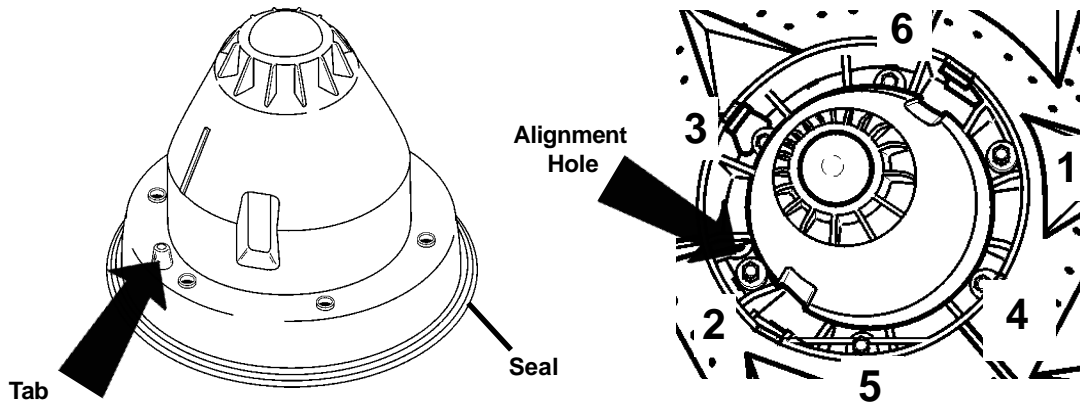


Fig. 3-20

- Install wash dome, aligning the four (4) tabs with the slots in the outer wash plate.
- There are three (3) tabs on the outer edge of the balance ring that must fit into corresponding slots in the basket.

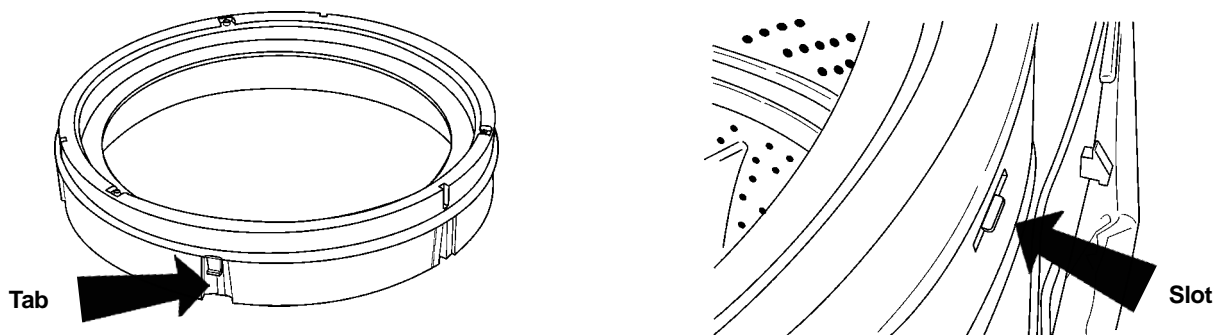


Fig. 3-21

- Align cut-out in tub ring with recirculating tube and snap ring onto outer tub.

ACCESSING COMPONENTS BENEATH THE TUB

Components accessible beneath the tub are:

- Suspension Assemblies
- Pump, Pump Motor and Capacitor
- Drive Motor and Drive Pulley Assembly
- Drain and Recirculation Hoses
- Brake and Drive Tube Assembly

Removing the Front Cabinet Panel

Access to many of the components beneath the tub can be gained by removing the front cabinet panel.

1. Disconnect power from the washing machine.
2. Prop the washer top in the service position.
3. Remove the four (4) screws located along the top edge of the front cabinet panel. (Fig. 3-23)
4. Lift the front cabinet panel out and up to disengage the slots at each side of the panel from the tabs in the side panels. (Fig. 3-24)

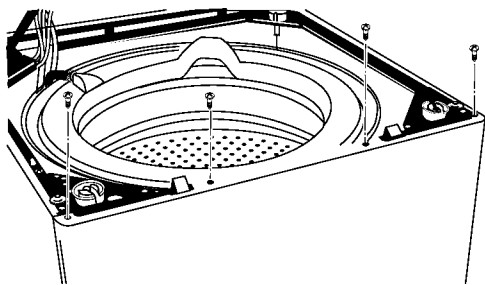


Fig. 3-23

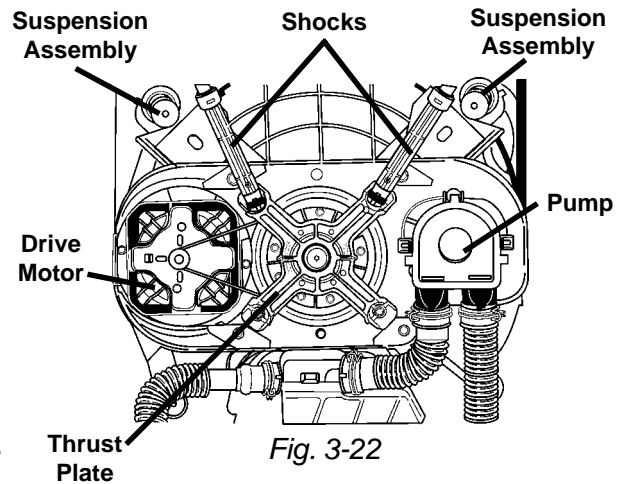


Fig. 3-22

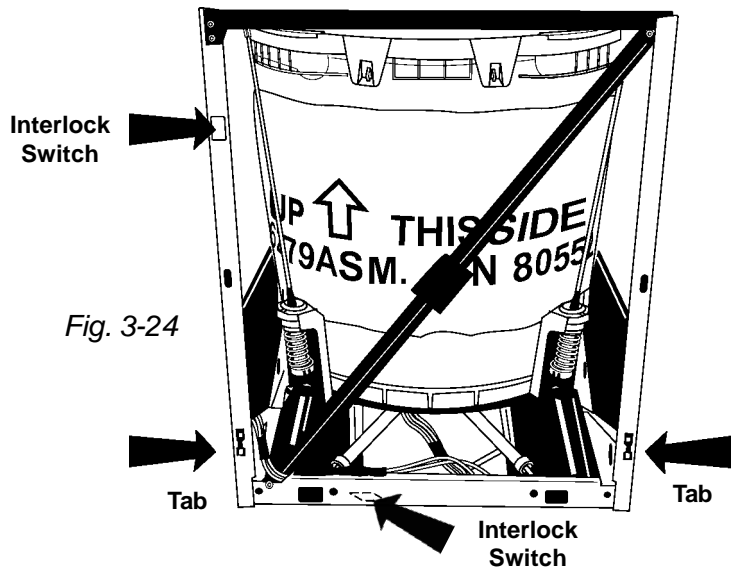


Fig. 3-24

Components Accessible with Front Cabinet Panel Removed

Front suspension assemblies can be serviced with the front cabinet panel removed. Figure 3-25 illustrates the lower portion of the front suspension rod assembly. Figure 3-26 illustrates one of two shocks.

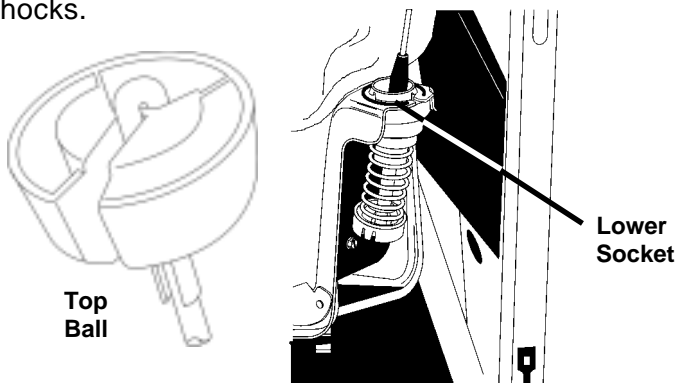


Fig. 3-25

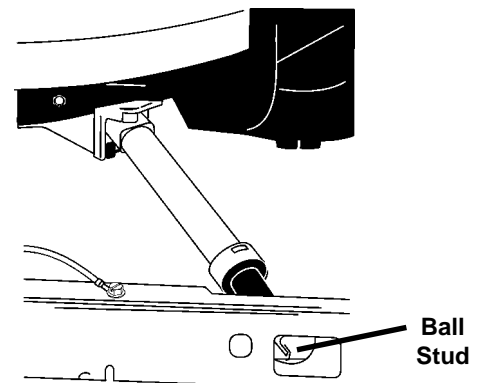


Fig. 3-26

Servicing Components from the Bottom of the Washer

Removing the Drive Motor

1. Disconnect the power from the washing machine.
2. Carefully lay the washer on its back.
3. Remove the two screws securing the bottom panel to the washer frame.
4. Disconnect the drive motor wiring harness from the connector block attached to the front bottom frame rail. (Fig. 3-27)
5. Remove the drive belt from the small pulley on the drive motor.
6. Remove the two (2) screws securing the drive motor mounting bracket to the motor plate.
7. Use a 3/8 inch socket extension and turn the drive motor mounting bracket 1/8 turn counterclockwise.
8. Both the drive motor mounting bracket and drive motor can now be pulled from their location.

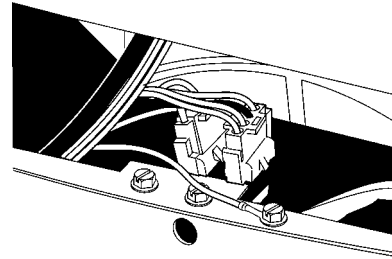


Fig. 3-27

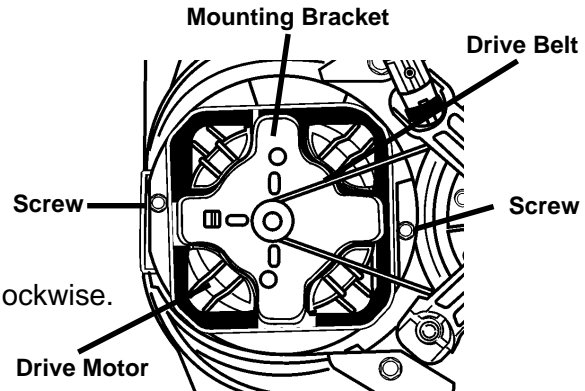


Fig. 3-28

NOTE: Reinstalling the drive motor:

Insert it into its position in the motor mounting plate with the wiring harness at the top. Once in place, turn the motor 1/8 turn clockwise and install the motor mounting bracket, making sure to align the slots on the bracket with the tabs on the motor. Install the belt. Using a 3/8 inch socket extension, turn the motor and bracket 1/8 turn clockwise. Reinstall the two screws securing the motor mounting bracket to the motor mounting plate. Reinstall the wiring harness connector and harness.

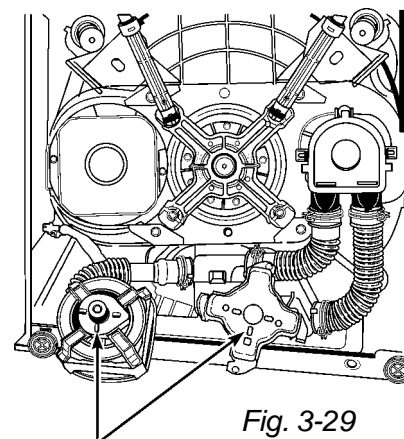


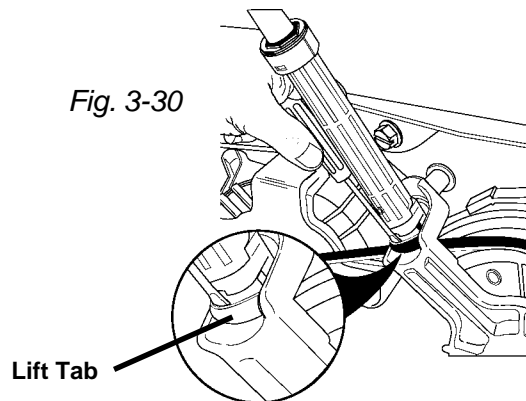
Fig. 3-29
Alignment Slots and Tabs

Removing the Thrust Plate

The thrust plate is attached to the motor mounting plate with four (4) screws. The shocks are attached to the two (2) front ball studs.

1. The shock must be removed first by lifting, but not removing the metal clip with a flat bladed screwdriver. The end of the shock will now lift off the ball stud. (Fig. 3-30)

Fig. 3-30



2. Remove the T-40 Torx head bolt securing the drive shaft bearing to the thrust plate.
3. Remove the four (4) T-40 Torx head bolts securing the thrust plate to the posts on the motor mounting plate. **NOTE:** The two (2) screws at the top of the bracket have ball ends. (Fig. 3-31)

Figure 3-32 shows all the components of the thrust plate assembly.

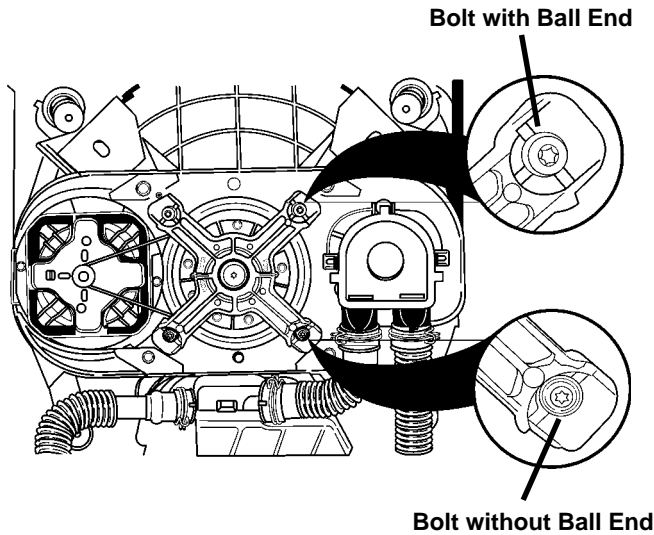


Fig. 3-31

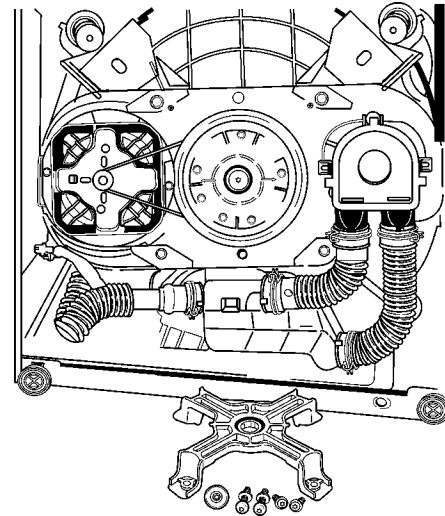


Fig. 3-32

With the thrust plate removed, the drive belt, pulley and brake assembly can be removed.

Removing the Brake Assembly/Nutate Shaft

1. Remove the spin basket.
2. Remove the drive belt from the large pulley.
3. Pull the large pulley from the nutate shaft.
4. Rotate the cam driver counter-clockwise while pulling the brake assembly out. (Fig. 3-33)
5. The brake assembly/spin tube and nutate shaft can now be removed.

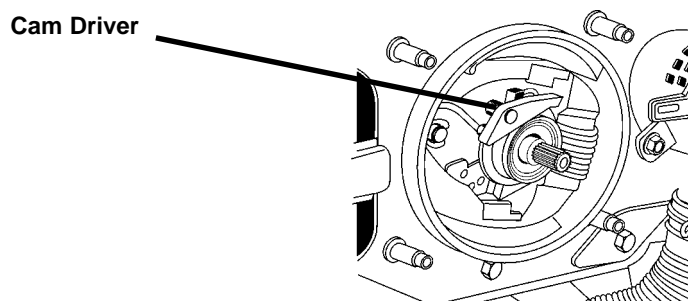


Fig. 3-33

6. Pull the nutate shaft out of the brake assembly/spin tube.

Removing the Pump and Pump Motor

Refer to Figure 3-34 for these procedures.

1. Disconnect power from the washing machine.
2. Carefully lay the washer on its back.
3. Remove the bottom panel secured to the washer frame.
4. Disconnect the pump motor wiring harness from the connector block attached to the front bottom frame rail.
4. Remove the two (2) clips securing the pump to the pump motor.
5. Remove the three (3) bolts securing the pump motor to the base plate. The start capacitor for the pump motor is attached to the pump motor housing.

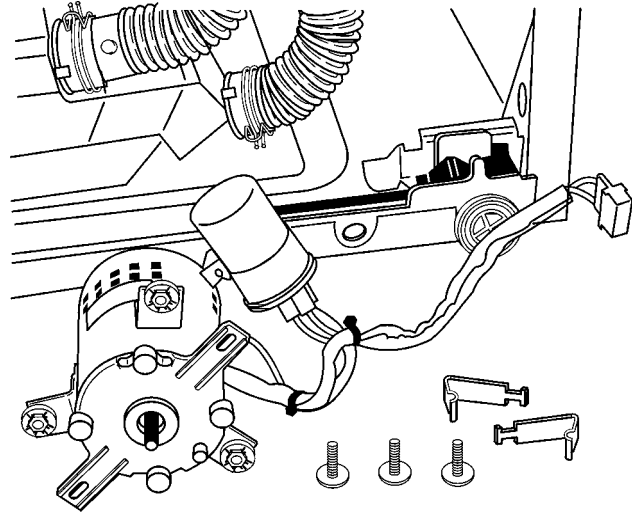


Fig. 3-34

NOTE: When replacing the pump motor, install new pump motor isolation grommets on the mounting bracket. The metal surface of the isolation grommet faces the motor mounting plate. Reinsert the motor wiring harness connector.

Replacing the Capacitor

1. Discharge the capacitor.
2. Remove the four wires from the capacitor terminals.
3. Loosen the screw on the capacitor mounting bracket.
4. Slide the capacitor from the mounting bracket.

NOTE: When reinstalling the capacitor, make sure the red wires are attached to one terminal and the two yellow wires are attached to the other. Do not mix colors on one terminal.

Replacing the Outer Tub

1. Disconnect power from the washing machine.
2. Prop the washer top in the service position and remove front panel.
3. Remove the spin basket, outer and inner wash plates and universal joint.
4. Disconnect the drive motor and pump motor wiring harnesses and remove the ground wire from the motor plate.
5. Disconnect the pressure switch hoses and drain hose from the rear of the tub.
6. Disconnect the front shocks and cabinet cross brace.
7. Lift the suspension rods at each top corner gusset and rotate the metal hook to allow it to pass through the slot in the top ball.
8. Slide the outer tub and motor plate through the front of the washer.
9. Remove the four (4) screws securing the tub to the motor plate/tub support and lift off.

SECTION FOUR

TROUBLESHOOTING AND DIAGNOSIS

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	SOLUTION
Won't Power Up	120VAC electrical supply.	Check voltage supply to washer.
	Open AC cord.	Check for voltage at the power cord connection to the line filter.
	Line filter open.	Check voltage into and out of line filter.
	Machine control board open.	With the washer off but connected to the AC outlet, measure the AC voltage between Pins 4 and 2 at connector P16.
Won't Start Cycle	Lid Switch failure.	If "LS" is flashing, open and close lid to clear fault code and restart cycle. Check lid switch for contacts opening/closing.
	Loose harness connections at control board(s).	Check harness connections.
	"Start" touchpad failure.	Check touchpad for continuity.
Control Won't Accept Commands	Touch Pad failure.	Check touchpad(s) for continuity.
	Loose harness connections.	Check touchpad ribbon connections to machine control board.
Won't Shut OFF	STOP/CANCEL touchpad open.	Check touchpad for continuity.
	Lid Switch failure.	Check Lid Switch contacts for open/closing.
Won't Dispense	Dispenser valve solenoid open.	Check dispenser valve solenoid for continuity.
	Wiring connections loose/broken.	Check wiring connections at machine control and log valve.
	Water supply off or hose connections within unit plugged or disconnected.	Check water supply and hose connections within washer.
AM Radio or TV Interference	Shield capacitor open.	Replace lower wiring harness.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Overfills	Operating Pressure Switch failure.	Check Operating Pressure Switch contact and wiring harness connections.
	Pressure Switch tube off at Pressure Switch or tub pressure dome or kink in tubing.	Check Pressure Switch tubing for proper connection and check for kinks along length of tubing.
	Not draining.	Check pump/drain system. Overfilling could indicate a failure to drain.
Won't Nutate	Machine or motor controller connections loose.	Check all harness connectors and wiring terminals.
	Drive motor inoperative.	Check Drive motor windings for continuity. Check Drive motor for binding.
	Drive belt broken.	Check drive belt. Replace as needed.
	Drive mechanism failure.	Check drive pulley, nutate shaft, leveller, inner wash plate and universal joint.
Won't Spin	Machine or motor controller connections loose.	Check all harness connectors and wiring terminals.
	Drive motor inoperative.	Check Drive motor windings for continuity. Check Drive motor for binding.
	Drive belt broken.	Check drive belt. Replace as needed.
	Drive mechanism failure.	Check drive pulley, basket drive brake release pawl, spin tube and basket drive block.
Motor Overheats	Drive Motor failure.	Check Drive motor windings for proper resistances. Check wiring connectors.
	Mechanical binding.	Check for free movement of drive mechanism.
	Inadequate voltage supply.	Do not use an extension cord. Check for 120 VAC at outlet. If voltage drops when washer is started, contact electrician.
Tripping GFI	Shield Capacitor Shorted.	Check Shield Capacitor. If shorted, replace lower wiring harness.
	Interlock Switch(es) shorted.	Check continuity of front and lower cabinet interlock switches. Switches are normally closed and should show an open circuit with cabinet panels in place.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Won't Drain	Foreign material in pump, tub sump or drain hoses.	Clear foreign material.
	Pump impellar cracked/broken. Pump bound.	Check pump for proper movement and check for impellar problems. Replace pump as needed.
	Pump motor failure.	Check pump motor windings resistances. Check wiring harness connections at pump motor and motor controller.
Washer Vibrating	Improperly installed.	Check for shipping material left in washer. Check for proper levelling and adequate floor support.
	Levelling legs not properly installed.	Check the rear levelling legs for proper installation and free movement. Check front legs for level and wrench tighten lock nuts against washer cabinet.
	Balance ring cracked or loose on basket.	Check for water in balance ring. If ring is cracked and not holding water, replace balance ring. Check for proper fit on spin basket.
	Basket drive block loose or improperly installed.	Check basket drive block for tight fit on spin basket. Check that drive block is keyed to the spin tube and the spanner nut is tightened.
Incorrect Water Temperature	Hot/Cold water inlet valve(s) inoperative.	Check Hot/Cold inlet valve solenoids for continuity. Replace log valve if defective.
	Automatic Temperature Control sensor out of range.	Check ATC sensor by measuring resistance between P13-7 and P13-8 at the machine control harness connector. Resistance should be between 74 and 24 k-ohms.
	Incorrect input from machine control board.	See ATC test. If supply water, inlet valves and sensor pass test, replace machine control board.
Won't Recirculate Rinse Water	Pump motor not running in recirc mode.	Check pump motor windings and wiring harness connectors.
	Pump inoperative.	Check pump for cracked/broken impeller. Check impeller drive connector at pump motor.
	Recirculation tube blocked or improperly connected to tub recirc spout.	Check recirc tube for blockage and proper connection to tub recirc spout.
Display Flashing		See "Display Fault/Error Codes" (next section)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Load is Wrinkled	Not removing load promptly.	Unload the washer as soon as it stops.
	Wrong cycle for fabrics being washed.	Use cold rinses and cycles with slow spin speeds to reduce wrinkling.
	Overloading.	Loads should move freely during wash. Wash smaller loads.
	Wash water not warm enough to relax wrinkles. Using warm rinses.	Use Automatic Temperature Control (ATC) if safe for fabric, use warm or hot wash water. Use cold rinse water.
	Hoses reversed.	Reverse hoses (see Installation Instructions, Section One.)
Load is Tangled/ Twisted	Overloading.	Loads should move freely during wash. Wash smaller loads.
Clogged Dispensers/ Bleach Leaking/ Bleach on Wrong Loads	Use of color-safe bleach in chlorine bleach dispenser	Add color-safe bleach to the detergent dispenser. Do not use chlorine bleach dispenser.
	Improper use of chlorine bleach	Always measure bleach before adding to the dispenser. Carefully pour into the dispenser. Wipe up bleach stains.

ERROR CODES

Power Failure	P F	<p>“PF” flashes if the washer loses power during a running cycle. The washer does not flash “PF” when it is first plugged in.</p> <p>Press START to continue the cycle from the moment that power was lost -OR-</p> <p>Press STOP/CANCEL to clear the display and completely cancel the cycle.</p>
Flood Condition	F L	<p>“FL” flashes if any overfill condition occurs. This condition occurs when excessive water in the tub causes the overfill switch to trip. The control must realize that the trip was due to an overfill condition instead of a suds lock condition in order for “FL” to be displayed.</p> <p>With an overfill condition, the beeper repeats a warning every 10 seconds with no time out. The pump is cycled in drain mode for 30 seconds on, 30 seconds off until the overfill switch resets or power is discontinued to the unit.</p> <p>Press STOP/CANCEL to clear the display.</p>
Processor Reset Error	E r	<p>This error code is displayed if the control failed to save cycle information during a power failure. This does not generate an error code beep.</p> <p>Press STOP/CANCEL to clear the display.</p>
Long Fill	L F	<p>If the water fill time exceeds ten (10) minutes, the water valves are turned off and “LF” is flashed.</p> <p>Press STOP/CANCEL to clear the display.</p>

ERROR CODES

<p>Communications Error</p>	<p>C E</p>	<p>If there is any breakdown in communication between the machine controller and the motor controller, "CE" flashes and the unit beeps once.</p> <p>Some common causes of "CE" errors include:</p> <ul style="list-style-type: none"> • Conformal coating on serial communications pins between the machine controller and motor controller. After disconnecting power to the unit, try scraping this coating off the pins. • Check the resistance values between the serial communications pins with the connectors in place. Make sure the harness does not have a bad connection. • Check the quick disconnect at the motor terminal. The drive motor must be hooked up properly or a "CE" error will occur. • Drive motor thermal protector has opened. • Motor controller is not powered or fuse has opened. Replace motor controller. <p>Press STOP/CANCEL to clear the display.</p>
<p>Long Drain</p>	<p>L d</p>	<p>"Ld" flashes if it takes longer than 5 minutes to pump out water to a point where the operating pressure switch resets.</p> <p>Press STOP/CANCEL to clear the display.</p>
<p>Average Current Limit or Instantaneous Current Limit</p>	<p>C A C I</p>	<p>If a status signal comes back from the motor controller that a current limit has been breached, the unit will return to standby mode and display either "CA" for average current limit trip or "CI" for instantaneous current limit trip.</p> <p>Average current trip occurs if there is a 2 second average of current draw greater than 5.55 Amps at the motor windings.</p> <p>Instantaneous current trip occurs if there is a spike of 26 Amps instantly at the motor windings.</p> <p>This may signify problems with the drive motor, thermal protector or motor controller. Overloading the unit may cause this problem.</p> <p>Press STOP/CANCEL to clear the display.</p>
<p>Off Balance</p>	<p>o b</p>	<p>If the motor controller detects an unrecoverable off-balance condition, the machine controller will shut down and display an "ob" for off balance.</p> <p>The lid switch must be opened at least once before restarting the cycle, if this condition occurs. Opening the lid will allow the customer to view and redistribute the load.</p> <p>Press STOP/CANCEL to clear the display.</p>
<p>Stuck Relay</p>	<p>S r</p>	<p>"Sr" signifies a failure of the relay in the closed position. With this failure, power to the motor controller cannot be turned off by the machine controller.</p> <p>The machine control board may have a bad relay and may need to be replaced. Check pins 1 and 5 of P16 of the machine controller and pins 1 and 2 of P1 of the motor controller. This should have AC line voltage when the motor controller is powered.</p> <p>Press STOP/CANCEL to clear the display.</p>
<p>Lid Switch Error</p>	<p>L S</p>	<p>The control should flash this error code if it cannot detect the lid switch opening and closing properly. This error code may also be used if there is a disagreement between the motor and machine controllers on the state of the lid switch. The control should not allow the unit to run in this condition.</p> <p>This code will also appear if the user presses the START key while the lid is open.</p> <p>Open the lid or press STOP/CANCEL to clear the display.</p>

ERROR CODES

Open Lid	Flashing Display Time	If the lid opens while the unit is in running mode, time remaining will flash in the display. Close the lid and press START to continue with the cycle.
Suds Lock	SL	The motor controller senses a suds lock condition by analyzing the current draw on the drive motor. If a potential suds lock is detected, the control tries up to 3 times to clean out the unit with a mini-cycle. See Use and Care Guide for more information. “SL” is displayed if suds are detected but the unit is unable to clean out suds. This may indicate a bad pump, an extra heavy load, excessive detergent or excessive suds. Press STOP/CANCEL to clear the display.

SELF DIAGNOSTIC ROUTINES

Automatic Service Diagnostics Mode

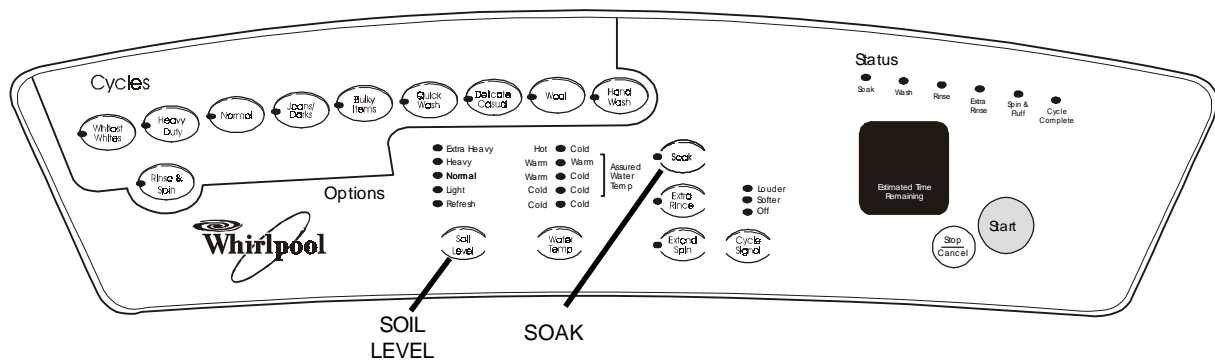


Fig. 4-1

The automatic service diagnostics mode is a short demonstration to provide an automatic check for major wash functions.

The automatic service diagnostics mode is activated by pressing:

SOAK - SOIL LEVEL - SOAK - SOIL LEVEL

within five (5) seconds while the machine is in Standby Mode. The 7-segment LED will display the countdown of the time remaining for this test in seconds. A Soil Level LED for each dispenser will be lit while the valve is actuated.

STEP	DESCRIPTION	WATER TEMP	DISPENSER ACTIVATED	LED LIT	DRIVE MOTOR	DRIVE SPEED	PUMP MOTOR	DISPLAY
1	Nutate + Fill	Cold	Fresh	Heavy	Nutate	300	Off	99-81
2	Nutate + Recirc	Cold	Fab Soft	Normal	Nutate	275	Recirc	80-61
3	Nutate + Fill + Drain	Warm	Bleach	Light	Nutate	250	Drain	60-41
4	Nutate + Fill + Drain	Hot	Detergent	Refresh	Nutate	225	Drain	40-21
5	Spin + Drain	Off	Off	None	Spin	500	Drain	20-01
	Return to Standby	Off	Off		Off		Off	0

Manual Diagnostic Mode

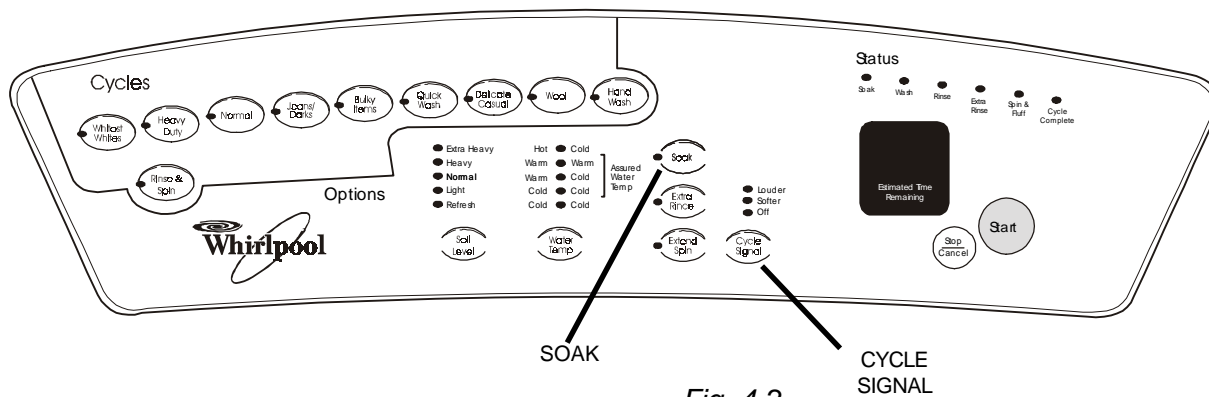


Fig. 4-2

The manual diagnostic mode will enable activation of specific machine functions without having to run a cycle. Each function test will time out in three (3) minutes. To enter the manual diagnostic mode:

1. Press: **SOAK - CYCLE SIGNAL - SOAK - CYCLE SIGNAL**

within five (5) seconds while the machine is in Standby Mode. The 7-segment LED will display “dt”.

2. Press the **WATER TEMP** keypad. The 7-segment display show “00”. See Nutate and Recirculate Test on next page.

In this mode the Peekaboo function is disabled. Opening the lid will stop the drive motor and all functions.

Running Nutate or Spin

3. Continue with steps in Nutate and Recirculate Test to step 12. At that point, the motor can be started in Nutate by pressing the START keypad. Nutate speeds are selectable by pressing the Cycle keypads as shown in the table below. Pressing the START keypad a second time will pause the motor. Speeds can be changed without pausing the motor. If the lid is opened during this test, it must be closed and the START keypad must be pressed again to restart the motor.

The motor can be run in Spin by pressing the RINSE & SPIN keypad. The RINSE & SPIN LED will light up. Then press START. The motor does not need to be paused to change from nutate to spin. When performing the spin speed test, the Wash LED will flash while the unit is ramping up to speed.

CYCLE	NUTATE SPEED	SPIN SPEED
Whitest Whites	150	60
Heavy Duty	225	250
Normal	250	300
Jeans/Darks	275	400
Bulky Items	300	500
Quick Wash	300	600
Delicate Casual	300	800
Wool	300	800

Pump Drain/Recirculation

4. Press the EXTRA RINSE keypad to operate the pump motor in Drain. Press the EXTEND SPIN keypad to run the pump motor in Recirculation. Pressing these keypads a second time turns the pump motor off.











NUTATE AND RECIRCULATE TEST

This test sequence assumes the control is off. The test will timeout after 3 minutes of use.

	PRESS TOUCHPAD	DISPLAY	CONTROL ACTION
1	SOAK		Key Dance key press #1
2	CYCLE SIGNAL		Key Dance key press #2
3	SOAK		Key Dance key press #3
4	CYCLE SIGNAL		Key Dance key press #4 Presses #1 - #4 must be completed in 5 seconds or the key dance is not valid.
5	WATER TEMP		Key press #5, "00" on the display
6	WATER TEMP		Cold Water Inlet Valve and Fabric Softener dispenser valve on. Cold/Cold and Normal (above SOIL LEVEL) LEDs will turn on.
7	SOIL LEVEL		Normal LED will turn off and Heavy LED will turn on. Fabric softener valve will shut off and Fresh water valve will turn on.
8	WATER TEMP		Cold/Cold LED turns off and Hot/Cold LED turns on. Cold inlet valve turns off and Hot inlet valve turns on.
9	WATER TEMP		Both hot and cold inlet valves turn on.
10	None		Wait about 10 seconds until enough water is in tub.
11	WATER TEMP		All valves turn off.
12	WHITEST WHITES	Whitest Whites LED on	Unit is now set to 150 RPM nutate speed. Motor doesn't start until START is pressed.
13	START	Wash LED flashes, then Rinse LED turns on	Wash plate begins nutating at 150 RPM.
14	HEAVY DUTY, NORMAL, JEANS/DARKS, BULKY ITEMS	Wash LED flashes, then Rinse LED turns on	These keys can increase the nutate speed if necessary (optional).
15	EXTEND SPIN	Extend Spin LED on	Pump should turn on in recirculate mode. Press EXTEND SPIN again to turn off pump.
16	STOP/CANCEL	All LEDs Off	Cancel all diagnostics, go back to Off mode. You may want to spin and drain out the water in the unit after this test.

WATER INLET AND DISPENSER VALVE, OPERATING PS TEST

If Operating Pressure Switch trips at any time, all water valves should turn off. Press EXTRA RINSE to start draining after key press #5 to start draining. Press EXTRA RINSE again to turn off the pump.

	PRESS TOUCHPAD	DISPLAY	CONTROL ACTION
1	SOAK		Key Dance key press #1
2	CYCLE SIGNAL		Key Dance key press #2
3	SOAK		Key Dance key press #3
4	CYCLE SIGNAL		Key Dance key press #4 Presses #1 - #4 must be completed in 5 seconds or the key dance is not valid.
5	WATER TEMP		Key press #5, "00" on the display
6	WATER TEMP		Cold Water Inlet Valve and Fabric Softener dispenser valve on. Cold/Cold and Normal (above SOIL LEVEL) LEDs will turn on.
7	SOIL LEVEL		Normal LED will turn off and Heavy LED will turn on. Fabric softener valve will shut off and Fresh water valve will turn on.
8	SOIL LEVEL		Heavy LED will turn off and Refresh will turn on. Fresh water valve will turn off and Detergent dispenser valve will turn on.
9	SOIL LEVEL		Refresh LED will turn off and Light LED will turn on. Detergent valve will turn off and Bleach valve will turn on.
10	SOIL LEVEL		This key press turns off the Bleach and turns on the Fabric Softener.
11	WATER TEMP		Cold/Cold LED turns off and Hot/Cold LED turns on. Cold inlet valve turns off and Hot inlet valve turns on.
12	WATER TEMP		Both hot and cold inlet valves turn on.
13	WATER TEMP		All valves turn off.
14	STOP/CANCEL	All LEDs off	Cancel all diagnostics, go back to Off mode.

Console Switches and Indicators Test

The console switches and indicators can be tested by pressing the following touchpads:

SOAK - CYCLE SIGNAL - SOAK - CYCLE SIGNAL

within five (5) seconds while the machine is in Standby Mode. The 7-segment LED will display “dt”.

1. Press the START pad.

Pressing each touchpad will cause a beep to sound and control one or more LEDs as shown.

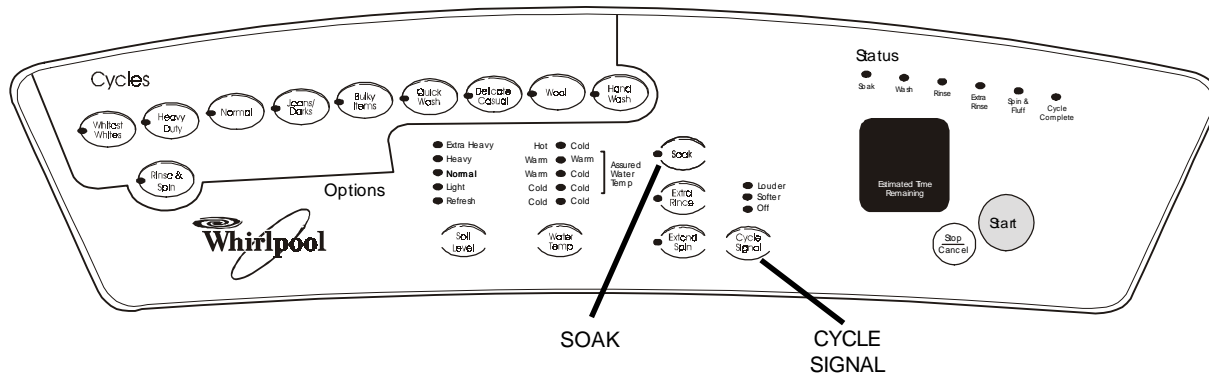


Fig. 4-3

If none of the LEDs light up:

- Visually check that connectors P11 and P12 are inserted all the way into the machine controller. If these connectors are properly installed, remove P11 and P12 from the control board while the power is still on.

If a particular group of LEDs does not light up:

- A group or combination of LEDs share a common electronic connection. If this connection is open, all of the LEDs in the group will be disabled. Replace the console panel/touchpad assembly.

If a single LED does not light up:

- Press the touchpad associated with the LED several times. If the LED does not light up, the LED has failed. Replace the console panel/touchpad assembly.

If no beep sound is heard:

- If the associated LEDs do light up, it is possible that the beeper circuit has failed. Check touchpad functioning before replacing the control board.

If no washer function is activated when a particular touchpad is pressed:

- If the associated LEDs do light up, it is possible that the control board has failed. Check touchpad functioning before replacing the control board.

Checking Touchpad Functioning:

Before replacing the control board, check for proper touchpad functioning as follows:

- Disconnect the power cord from the outlet.
- Remove the connectors P11 and P12 from the control board.
- Using the Key Switch Matrix below, measure the resistance across the switch when the touchpad is pressed.

NOTE: *The meter must be connected with the proper polarity.*

- **If using an analog readout meter:** The resistance reading should go from infinity (open circuit) down to approximately 10 or 20 ohms.
- **If using a digital readout meter:** The resistance reading should go from infinity down to a readable ohm level.

KEY SWITCH MATRIX

TOUCHPAD	+ LEAD	- LEAD
WHITEST WHITES	P11-2	P11-4
HEAVY DUTY	P11-3	P11-4
NORMAL	P11-1	P11-5
JEANS/DARKS	P11-2	P11-5
BULKY ITEMS	P11-3	P11-5
QUICK WASH	P11-1	P11-4
DELICATE/CASUAL	P11-1	P11-6
WOOL	P11-2	P11-6
HAND WASH	P11-3	P11-6
RINSE & SPIN	P11-1	P11-7
SOIL LEVEL	P11-2	P11-7
WATER TEMP	P11-3	P11-7
SOAK	P11-1	P11-8
EXTRA RINSE	P11-2	P11-8
EXTEND SPIN	P11-3	P12-5
CYCLE SIGNAL	P11-3	P11-8
STOP/CANCEL	P11-2	P12-5
START	P11-1	P12-5

- If any switches fail this test, replace the console panel/touchpad assembly.
- If all switches are OK, replace the control board.

Sales Demo Mode

The Sales Demo mode is activated by pressing:

SOAK - WATER TEMP - SOAK - WATER TEMP

within five (5) seconds. "Sd" should be displayed in the seven-segment display when activated and the following cycle should progress. The STOP/CANCEL key can be used to return to standby mode at any time during the cycle. No options are active during this cycle.

If the lid is opened during this cycle, the Peekaboo function will be active. This cycle should not require the lid switch to be opened afterwards to run another cycle, (i.e. no "LS" check).

PHASE	STEP	DESCRIPTION OF SEQUENCE	NOTES	WATER TEMP	DISPENSER	COMMENT	PUMP MOTOR ACTION	DRIVE MOTOR ACTION	DRIVE MOTOR SPEED	DURATION (SEC)
DIAGNOSTIC	1	NUTATE 150		OFF	OFF		OFF	NUTATE	150	8
	2	SPIN 60		OFF	OFF		OFF	SPIN	60	15
	3	NUTATE 150		OFF	OFF		OFF	NUTATE	150	5
	4	NUTATE 225		OFF	OFF		OFF	NUTATE	225	5
	5	NUTATE 250		OFF	OFF		OFF	NUTATE	250	5
	6	NUTATE 275		OFF	OFF		OFF	NUTATE	275	5
	7	NUTATE 300		OFF	OFF		OFF	NUTATE	300	5
	8	SPIN 800		OFF	OFF		OFF	SPIN	800	60
		RETURN TO STANDBY		OFF	OFF		OFF	OFF		1:48

CHECKING DRIVE AND PUMP MOTOR CONTINUITY

The pump and drive motors can be checked for continuity. Disconnect power from the washer and remove the front cabinet panel.

1. Disconnect the wiring harness plugs from the drive and pump motor terminal connectors.
2. Using the color codes shown in Fig. 4-4, and the resistance chart below. Check for proper winding resistances.

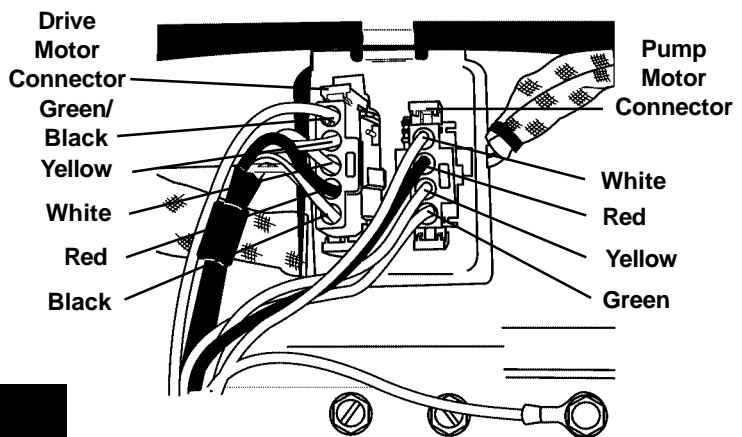


Fig. 4-4

NOTE: Color codes shown in Fig. 4-4 are for wires from the motors to the connectors. Color codes for wires to the wiring harness plugs are different. See Section Five: TECH TIPS for complete Wiring Diagram.

RESISTANCE CHART		
COMPONENT	WINDING	RESISTANCE VALUE
Drive Motor	RD to BK	2 - 4 ohms
	YL to WH	2 - 4 ohms
	RD to YL	5 - 7 ohms
Pump Motor	RD to WH	10 - 12 ohms
	YL to WH	10 - 12 ohms
	RD to YL	20 - 25 ohms

TROUBLESHOOTING TESTS

120VAC Electrical Supply

1. Check for 120VAC on the power cord connection to the line filter. If no AC power is present, replace the power cord.
2. Check for 120VAC on the line filter connection to the machine controller. If no AC power is present, replace line filter.
3. Check for 120VAC to the control board. With the washer off but connected to the AC outlet, measure the AC voltage between Pins 4 and 2 at connector P16.
 - If 120VAC is present, continue with remaining Trouble Shooting Tests as needed.
 - If voltage is not present, check circuit breaker or fuse box, power cord connection at outlet and washer.

Water Inlet and Dispenser Solenoid Test

This test checks for 120VAC to the water inlet and dispenser valves, the electrical connections to the valves and the valves themselves.

1. Check the electrical connections to the valves.
2. If any valve solenoid does not activate, measure the voltage across the pins as shown in the following table. The voltage should be equal to the incoming line voltage.

P13 - Pin #	P13 - Pin #	Function
1	9	cold water valve
2	9	hot water valve
3	9	detergent dispenser valve
4	9	fabric softener dispenser valve
5	9	bleach dispenser valve
6	9	fresh water valve

3. If no voltage is present at any of these test points and voltage at the wall outlet is normal, the control board has a faulty relay. Replace the control board.
4. If voltage measurements are correct, check the individual solenoid valve. Unplug the washer and disconnect connector P13 from the control board.
5. Check the resistance at the contacts shown in the following table. If resistance is outside of range, replace the complete water inlet and dispenser assembly.

SOLENOID TESTED	RESISTANCE (Ω) FOR 120VAC	CONTACTS	
Cold water valve	800 - 1200	P13 - 1 (YL/RD)	P13 - 9 (WH/GN)
Hot water valve	800 - 1200	P13 - 2 (TN/RD)	P13 - 9 (WH/GN)
Detergent dispenser valve	800 - 1200	P13 - 3 (TN/OR)	P13 - 9 (WH/GN)
Fabric dispenser valve	800 - 1200	P13 - 4 (OR/BK)	P13 - 9 (WH/GN)
Bleach dispenser valve	800 - 1200	P13 - 5 (BU/OR)	P13 - 9 (WH/GN)
Fresh water valve	800 - 1200	P13 - 6 (WH/OR)	P13 - 9 (WH/GN)

Motor and Motor Control System Test

These tests check the machine controller power to the motor controller, the motor controller board, the wiring connections between the control board and the drive motor, and the drive motor itself.

Machine Control Relay

1. Check for 120VAC on the power cord connection to the line filter. If no AC power is present, replace the power cord.
2. Check for 120VAC on the line filter connection to the machine controller. If no AC power is present, replace line filter.
3. Check for 120VAC to the control board. With the washer off but connected to the AC outlet, measure the AC voltage between Pins 4 and 2 at connector P16.
 - If 120VAC is present, continue with remaining Trouble Shooting Tests as needed.
 - If voltage is not present, check circuit breaker or fuse box, power cord connection at outlet and washer.
4. Set the probes of a volt-ohmmeter between P16-5 (BK/WH) and P16-1 (WH/BU) on the machine controller. Start the washer by pressing HEAVY DUTY and then START. Confirm that 120VAC is present when the relay clicks closed. Press STOP/CANCEL twice to stop the cycle.
5. Set the probes of a volt-ohmmeter between P1-1 (BK/WH) and P1-2 (WH/BU) on the motor controller. Start the washer by pressing HEAVY DUTY and then START. Confirm that 120VAC is present when the relay clicks closed. Press STOP/CANCEL twice to stop the cycle.

Motor Controller

Check power to motor controller board:

- P1 of the motor control board should have 120VAC across its two terminals **when the motor controller is powered**. Replace the control board if connector is broken.

Check link between machine controller and motor controller:

- With the **power disconnected**, check continuity between P4 of the machine controller and P2 of the motor controller. Replace upper harness if open wire is found.

Check Fuse:

- With the power disconnected, check for an open fuse. The conformal coating may need to be scratched away from the bare metal of the fuse.
- If fuse is open, replace the motor controller.

Drive Motor and Wiring Harness

- Check the drive motor windings and wiring harness by removing connector P6 from the motor controller. Check for resistance values as shown:

WINDING	RESISTANCE (Ω)	CONTACTS	
Main to FHOT	2 - 4	P6 - 2 (RD)	P6 - 4 (WH/BK)
AUX to FHOT	2 - 4	P6 - 1 (YL)	P6 - 4 (WH/BK)
MAIN to AUX	5 - 7	P6 - 2 (RD)	P6 - 1 (YL)
FTC to FHOT	less than .5 (short)	P6 - 5 (WH/RD)	P6 - 4 (WH/BK)
MAIN to Ground	infinite	P6 - 2 (RD)	Ground screw in top
AUX to Ground	infinite	P6 - 1 (YL)	Ground screw in top

- If the winding measurements are much higher than shown in the preceding table, a problem exists in the motor winding or in the wiring harness between the motor controller and the motor. Check the resistance of the windings at the motor. Remove the connector at the motor and take measurements as shown:

WINDING	RESISTANCE (Ω)	CONTACTS	
Main to FHOT	2 - 4	RD	BK
AUX to FHOT	2 - 4	YL	BK
MAIN to AUX	5 - 7	RD	YL
FTC to FHOT	less than .5 (short)	WH	BK
MAIN to Ground	infinite	RD	GN/BK
AUX to Ground	infinite	YL	GN/BK

- If the resistance is much higher than shown, replace the drive motor.
- If the resistance at the drive motor is correct, there is a harness problem between the motor and the motor controller. Replace the wiring harness as necessary.

Automatic Temperature Control Test

This test checks the water inlet solenoids, the temperature sensor and the control board.

- Check that the hot and cold water fill valves are working.

NOTE: This test **MUST** be done with the Automatic Temperature Control (ATC) selected.

If the fill valves are working properly:

- Press NORMAL or HEAVY DUTY cycle.
- Press the WATER TEMP selector to set the wash water temperature to WARM.
- Press START
- After water has been introduced into the tub, press STOP/CANCEL once.
- Measure the water temperature. At the WARM setting, the ranges should be 90-110°F.

If the temperature is not within this range, check the Automatic Temperature Control Sensor:

- Remove connector P13 from the control board.
- Measure the resistance between P13-7 and P13-8 at the wiring harness connector. The resistance should be between 74 K Ω and 24 K Ω .

If the resistance is not within this range, check for continuity between the connector and the sensor.

→ If continuity is good, replace the log valve assembly

If the valves and temperature sensor are functioning properly:

→ Replace the control board.

Operating and Over Fill Pressure Switch Test

Check the hose connections between each pressure switch in the console and the pressure dome attached to the tub.

If hose connections are good, check the Operating Pressure Switch as follows:

- Press HEAVY DUTY then START to start a cycle. Let the unit fill and see if the operating pressure switch turns off the water.
- Check the voltage across Pins P and V of the operating pressure switch. If 12VDC is present, the water level switch has opened the switch.
- If no voltage is present and the water has filled the tub to a visible level (above the nutate plate), stop the cycle and replace the operating pressure switch.

If hose connections are good and the Operating Pressure Switch is good, check the Overfill Pressure Switch as follows- NOTE - PERFORM THE FOLLOWING STEPS IN THIS ORDER:

- Pull the hose off the Operating Pressure Switch so that the washer can fill beyond the operating switch trip point.
- Press HEAVY DUTY then START to start a cycle. Let the unit fill and see if the overfill pressure switch will trip.
- Check the voltage across pins P and V of the overfill pressure switch. If 120VAC is present, the water level has opened the switch. This should also shut off the water inlet valves and give an FL indication on the 7-segment display.
- If no voltage is present and the water has filled the tub to an overfill level, stop the cycle and replace the overfill pressure switch. Drain out the water by starting an EXTEND SPIN cycle. Do not allow the wash plate to nutate under water.

Drain/Recirculation Test

Perform the following checks if the unit fails to drain or recirculate.

- Check that there is power to the washer.
- Check that the pump connection (P5) to the motor controller is properly installed.
- Check pump motor windings and wiring harness by removing the connector (P5) from the motor controller board.

Recirc to Neutral	10 - 12 Ω	P5-3 (RD/BU) to P5-1 (WH)
Drain to Neutral	10 - 12 Ω	P5-2 (TN/YL) to P5-1 (WH)
Recirc to Drain	20 - 25 Ω	P5-3 (RD/BU) to P5-2 (TN/YL)

- If the winding measurements are much higher than shown above, a problem exists in the motor winding or in the connection between the motor controller and the motor. Check the resistance at the pump motor.

- Remove the connector at the motor and take measurements as shown in the following table.

Recirc to Neutral	10 - 12 Ω	RD to WH
Drain to Neutral	10 - 12 Ω	YL to WH
Recirc to Drain	20 - 25 Ω	RD to YL

- If the resistance is much higher than shown, replace the pump motor.
- If the resistance at the pump motor is correct, there is an open circuit in the wiring between the motor and the motor controller. Repair or replace the lower wiring harness.
- If the pump motor windings and motor controller are OK, repair or replace the pump.

- NOTES -

SECTION FIVE

TECH TIPS

WIRING DIAGRAM

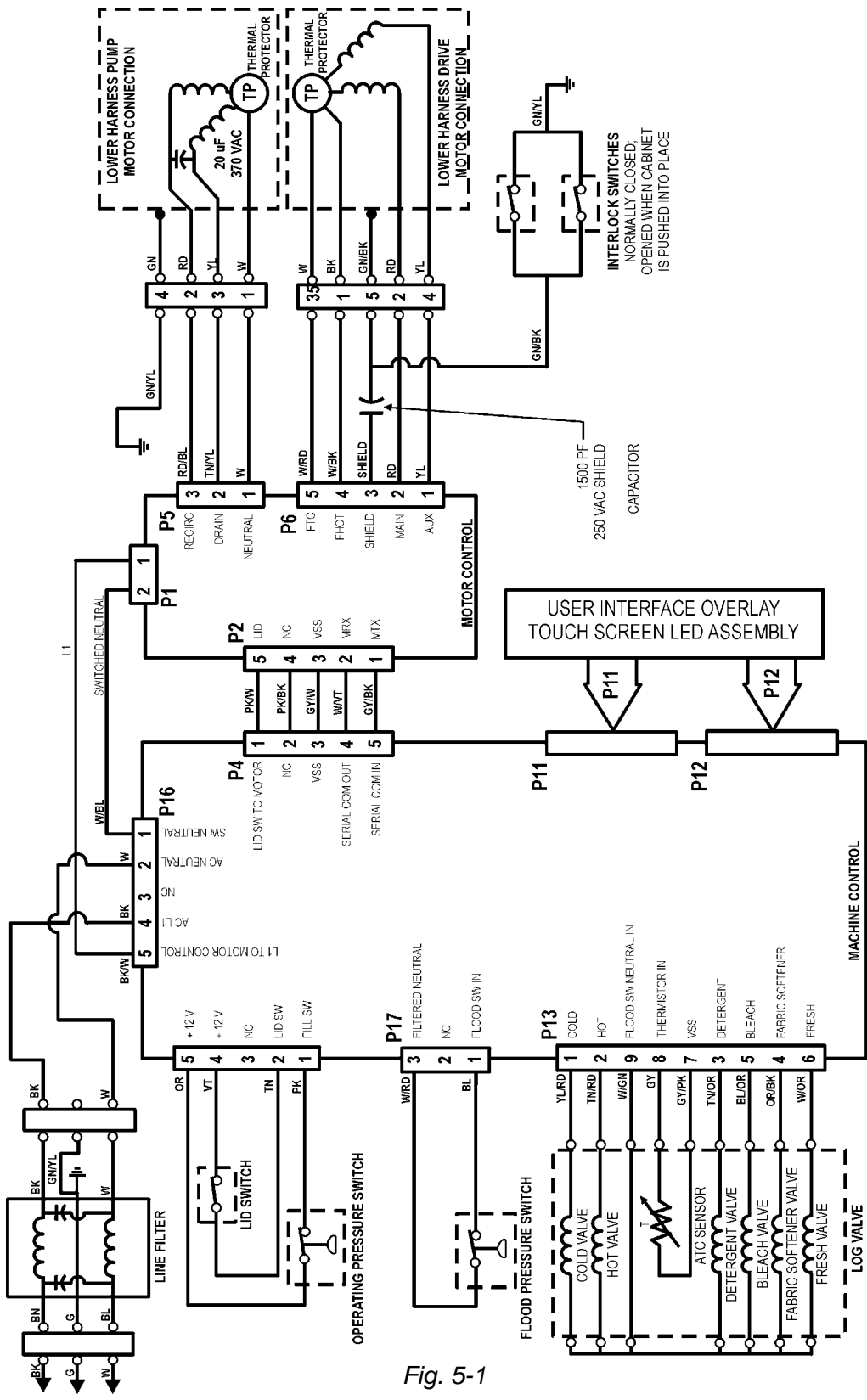


Fig. 5-1

COMPONENT RESISTANCE CHART

RESISTANCE CHART			
COMPONENT	WINDING	TEMPERATURE ° F	RESISTANCE VALUE
Drive Motor			
	RD to BK		2 - 4 ohms
	YL to WH		2 - 4 ohms
	RD to YL		5 - 7 ohms
Pump Motor			
	RD to WH		10 - 12 ohms
	YL to WH		10 - 12 ohms
	RD to YL		20 - 25 ohms
Thermistor			
		40	126k - 135k ohms
		50	97k - 102k ohms
		60	75k - 78k ohms
		70	58k - 61k ohms
		80	46k - 47k ohms
		90	36k - 37k ohms
		100	28k - 30k ohms
		110	23k - 24k ohms
		120	18k - 19k ohms
		130	15k - 16k ohms
	140	12k - 13k ohms	
	150	10k - 11k ohms	

WARRANTY INFORMATION

ONE-YEAR FULL WARRANTY

For one year from the date of purchase, when this washer is operated and maintained according to instructions attached to or furnished with the product, Whirlpool Corporation will pay for FSP® replacement parts and repair labor to correct defects in materials or workmanship. Service must be provided by a Whirlpool designated service company.

FIVE-YEAR LIMITED WARRANTY

For five years from the date of purchase, when this washer is operated and maintained according to instructions attached to or furnished with the product, Whirlpool Corporation will pay for FSP® replacement parts for the following, if defective in materials or workmanship: porcelain top and lid, (against chipping and rust); drive belt and drive pulley; electronic machine control board, electronic motor control board.

TEN-YEAR LIMITED WARRANTY

For ten years from the date of purchase, when this washer is operated and maintained according to instructions attached to or furnished with the product, Whirlpool Corporation will pay for FSP® replacement parts for the outer tub, should it crack or fail to contain water, if defective in materials or workmanship.

LIFETIME LIMITED WARRANTY

For the lifetime of the washer, when this washer is operated and maintained according to instructions attached to or furnished with the product, Whirlpool Corporation will pay for FSP® replacement parts for the Stainless Steel wash basket, if defective in materials or workmanship. This warranty does not include any polishing marks found in the bottom of the basket which occurs during the break in period of the washer.

PRODUCT SPECIFICATIONS
AND
WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301
FOR KITCHENAID PRODUCTS: 1-800-422-1230
FOR ROPER PRODUCTS: 1-800-447-6737

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-253-2870

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED SERVICER

FOR LITERATURE ORDERS:

PHONE #: 1-800-851-4605

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

1-800-461-5681

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-488-4791

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED SERVICER

