

Theory of Operation

Introduction

The Splendide Front-Loading Washer-Dryer models present many new features and characteristics that are different from previous models. In addition to the introduction of electronic controls, the washer-dryer contains a number of unique operating features designed to offer extremely high water and energy conservation while increasing fabric cleaning results.

Water System

The water system consists of the hot and cold water inlet valves and the dispenser distribution system along with a traditional pressure switch.

Water Inlet Valves

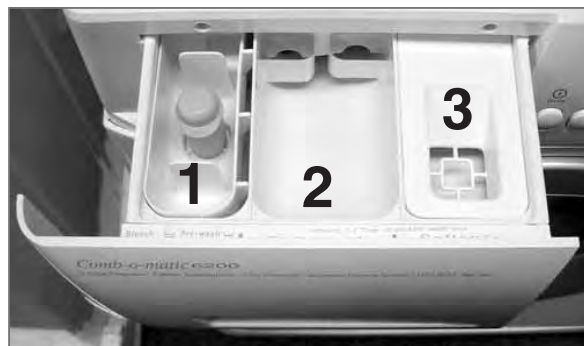
The hot and cold water inlet valves are located at the back, top-left of the washer. These valves receive a control signal from the Module Board to manage the temperature of incoming water. The temperatures are determined by the specific wash temperature selected. (See chart on next page)

Dispenser Distribution System

All wash and rinse water is introduced into the drum through a Dispenser Distribution System that diverts the incoming water to one or more of the follow water inlet modes: Detergent Dispensing, Bleach Dispensing, Fabric Softener Dispensing. The dispenser drawer has three separate compartments (plus one removable bin) for adding laundry products to the wash load. These compartments are:

1. Prewash Detergent (w/removable Bleach Bin)
2. Main Wash Detergent
3. Fabric Softener Compartment

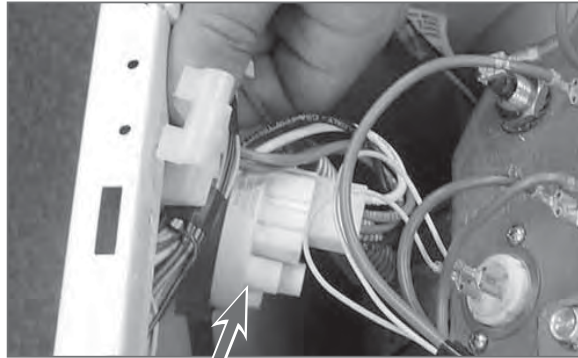
All of the water flows through the dispenser assembly. Laundry products are diluted and dispensed automatically at the proper time during the wash cycle. Refer to "Use and Care Guide" that came with the appliance for proper use of laundry aids.



Dispenser Drawer

Pressure Switch

The pressure switch is located in the top, right-front corner of the washer. This switch senses the water level in the drum. The control signal from the pressure switch is sent to the Module Board and is used to determine the amount of water introduced into the drum during the wash cycle.



Pressure Switch

WASH TEMP Knob	Position	Wash Temp.*
HOT (Red)	1:30	140°F / 60° C
	3 o'clock	131°F / 55° C
WARM (Grey)	4:30	122°F / 50° C
	6 o'clock	104°F / 40° C
	7:30	95°F / 35° C
COLD (Blue)	9 o'clock	86°F / 30° C
	10:30	FROM COLD VALVE ONLY
	12 o'clock	FROM COLD VALVE ONLY

**NOTE: Actual wash water temperatures may vary depending on the temperature set at the water heater. Rinse temperatures are ALWAYS COLD.*

The Wash/Dry System

The Wash/Dry System consists of the Module Board, the Main Motor, the Pump Motor and the Dryer Heating Element.

Module Board

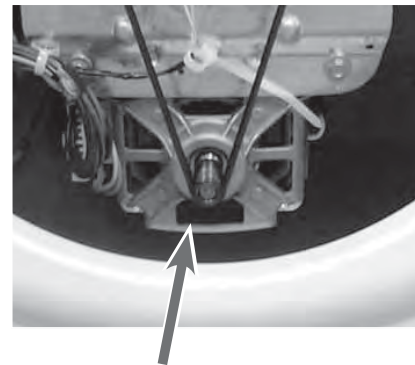
The Module Board is located at the bottom, right-rear corner of the washer-dryer. If diagnostic tests indicate that the module board is defective, the entire module board must be replaced.



The module board receives input from the Control Panel/LED assembly and directly controls the dispenser, drain pump, water inlet valves, door locking and unlocking, fan motor and heating element relay. The module board monitors the pressure switch, and door lock switches.

Main Motor

The main motor is located at the bottom, rear of the washer and is an infinite speed 0-90 VDC motor that operates at various speeds and directions based on input voltages from the module board.



Main Motor

(Continued on the next page)

Pump Motor

A separate pump/pump motor is used to drain the drum (Fig. 3-1). The pump motor is 120 VAC and is attached directly to the pump. The pump has a filter located at the bottom-front that allows for the removal of large objects like keys and coins that may have passed from the basket. (Fig. 3-2)



Fig. 3-1

Drain Pump



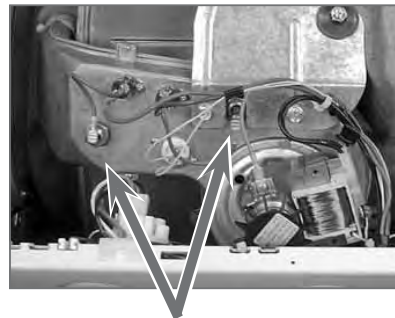
Fig. 3-2

Large Object Filter

Dryer Heating Element

The Dryer Heating Element is located in the heater duct assembly on the top-right of the drum. The Module Board provides power to the element in the dry cycle. During the dry cycle:

- **Vented models** (WD2100 and WD2000S) take air from the surrounding room, heat it, tumble it through the clothes, and then exhaust it to the outside through a vent.
- **Ventless models** (WDC6200CEE and WDC5200) require 5 gallons of cold water per hour during the dry cycle. (See below.)



Dryer Heating Element

How Does Ventless Drying Work?

1. As damp laundry tumbles, the inner drum is heated. Heat draws the moisture out of the laundry in the form of STEAM.
2. Cold water cools the OUTER TUB. The cold surface attracts the warm, saturated air. STEAM passes through the holes in the INNER DRUM to reach the OUTER TUB.
3. When the STEAM hits the cooled surface of the OUTER TUB, it's condensed back into water. The water is then pumped out the drain. Process repeats until clothes are dry.

NOTE: Do not attempt to dry less than 2.2 lbs of laundry during the Cotton Heavy Duty Dry cycle.

Door Lock/Switch Assembly

The Door Lock/Switch Assembly is located on the right side of the door opening. The assembly contains a bi-metal operated latching mechanism that will electrically lock the door during a wash or dry cycle.

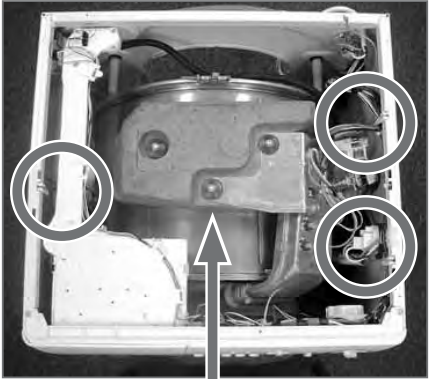


Door Lock/Switch Assembly

Suspension System

The drum assembly is held in position with two shock absorbers attached to the bottom sides of the tub assembly. In addition, the drum is suspended from the top frame of the washer with three springs attached to the sides of the case.

Stability for this suspension system is provided by two concrete counter weights. One is located at the top and one at the bottom-front of the outer drum.



Springs

Top Counter Weight



Bottom/Front Counter Weight

Shock Absorbers

Customer Interface / Cycle Selection System

The Customer Interface / Cycle Selection System consists of the Control Panel/LED Assembly along with the program timer, option buttons, and Wash Temperature and Dry Time Selectors.

Control Panel/LED Assembly

The Control Panel/LED Assembly (Fig. 3-3) is removed as a single assembly and is connected to the Module Board by 14 connection points to the wiring harness.

The assembly contains all the buttons, LED's and switches for the user to operate the washer-dryer. This interfaces what the consumer commands to the Module Board.

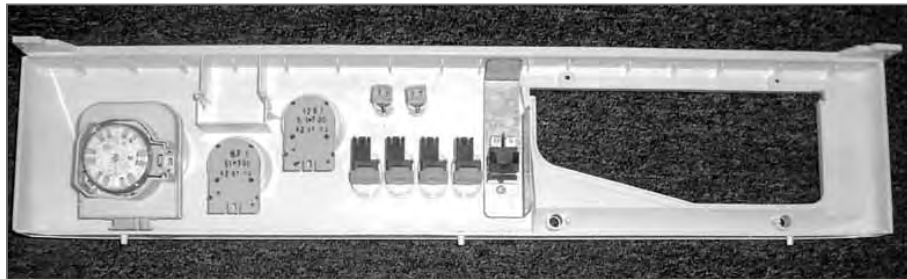


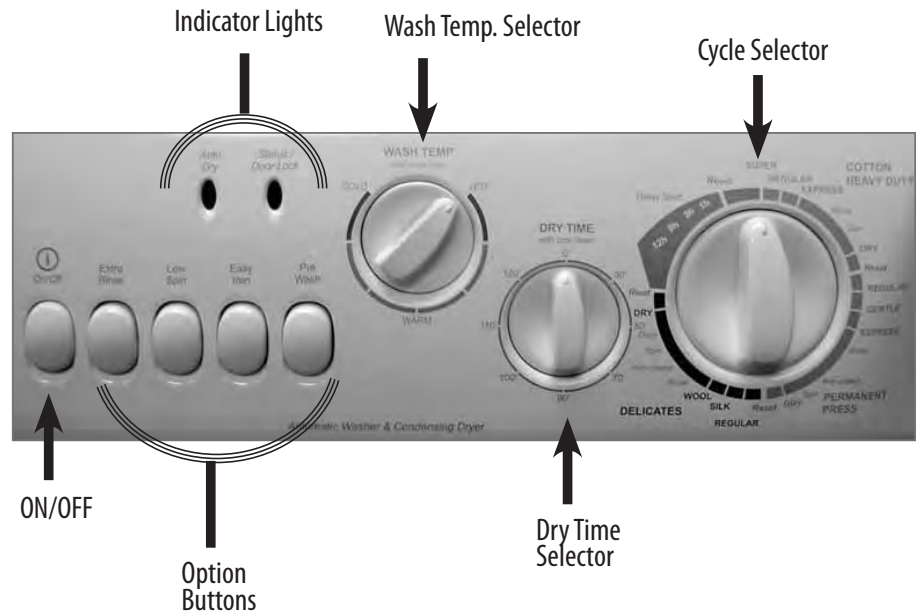
Fig. 3-3

NOTE: *Knobs and Selectors are not shipped with the replacement Control/Panel LED Assembly.*

Description of Control Panel Buttons, Knobs & LED's

ON/OFF Button- Leave the ON/OFF button in the OFF (out) position while setting the controls, then press ON (in) to start the program.

Option Buttons - Use these buttons to modify the wash cycle (see "Description of Option Buttons")



Status/Door Lock Light - This light indicates when the door is locked (solid or rapid flash) and when it can be safely opened (SLOW flash).

Auto Dry Light - This light indicates when a dry time has been set.

Water Temperature Selector - Choose a water temperature by turning the knob to the desired selection. Refer to the garment label and choose the warmest water safe for the fabric. Choose a slightly lower temperature to get the same wash results while saving energy. NOTE: Rinse is always COLD.

Dry Time Selector - Choose a dry time by turning the knob to the desired selection. Choose No Dry ("0" min) up to 120 min. This knob does not move during the dry cycle.

Cycle Selector - Choose a wash cycle or dry cycle by turning the knob to the desired cycle. Each cycle is designed for different types of fabric and soil levels.

(Continued on the next page)

Description of Cycle Selector Options

Reset Positions - Choosing a Reset position on the Cycle Selector and waiting 10 seconds will allow changing any option or cycle after the cycle has begun. To cancel a cycle and select a new one, advance the timer to a Reset position, wait 10 seconds (Status/Door Lock light will blink RAPIDLY), then advance the timer to the desired cycle.

Delay Start - Use Delay Start to delay the start of any wash cycle by 1, 3, 9, or 12 hours. With the machine OFF:

1. Advance the cycle selector to 1, 3, 9, or 12 hrs.
2. Press the ON/OFF button ON (in)
3. After 5 seconds, advance the timer to your desired wash cycle. The Status/Door Lock light will blink 2 seconds ON/4 seconds OFF to let you know that Delay Start has been set.

Rinses and Drains - Use a Rinse cycle to get a rinse and spin only. A Rinse is useful for loads that need rinsing only or for adding fabric softener to a load. Use the Drain cycle (In the Delicates section) to drain the washer-dryer.

Description of Option Buttons

You can customize the wash by adding an OPTION or combination of options to your cycle selection. You can add or change the options after starting a cycle anytime before the option begins. (See "Preset Wash/Dry Cycles Chart")

Extra Rinse - Pressing this button will add an extra rinse cycle (Not available in Delicates)

Low Spin - Pressing this button will reduce the spin speed to 600 rpm (Not available in Delicates)

Easy Iron - If the Dry Time is "0" min, pressing this button will add more water, reduce the spin, and stops the cycle on "anti-crease". Pressing it again (out) will complete the cycle and allow you to remove clothes promptly so there's less wrinkling. (Available in all Permanent Press cycles and the Silk cycle)

Pre-Wash - Pressing this button will add an extra fill at the beginning of the cycle.

Description of Preset Wash Cycles

Cotton Heavy Duty Wash - Use the Cotton Heavy Duty cycles to wash loads of sturdy, colorfast fabrics and normally to heavily soiled garments. These cycles combine fast speed tumbling and an extra high spin speed (1200 RPM) to shorten dry times.

- SUPER - Use this cycle to wash heavily soiled garments.
- REGULAR - Use this cycle to wash normally soiled garments.
- EXPRESS - Use this cycle to wash smaller loads of lightly soiled garments in less time.

Permanent Press Wash - Use the Permanent Press cycles to wash loads of no-iron fabrics such as sport shirts, blouses, casual business clothes, permanent press blends, linens, and other synthetic fabrics. These cycles combine medium speed tumbling and a high-speed spin (850 RPM) for reduced wrinkling of synthetic fabrics.

- REGULAR - Use this cycle to wash normally to heavily soiled garments.
- GENTLE - Use this cycle to wash lightly soiled garments.
- EXPRESS - Use this cycle to wash smaller loads of lightly soiled garments in less time.

Delicates Wash - Use the Delicates Cycles to wash sheer fabrics, silk, wool, lingerie and other hand washable items. These cycles combine variable speed tumbling and a low spin speed (600 RPM) for gentle fabric care. (Check the label instructions to make sure that the garment is washable.)

- REGULAR - Use this cycle for delicate fabrics.
- SILK - Use this cycle to wash silk items, lingerie, and other particularly delicate fabrics.
- WOOL - Use this cycle to clean washable woolen garments and other hand washables.

To Wash ONLY:

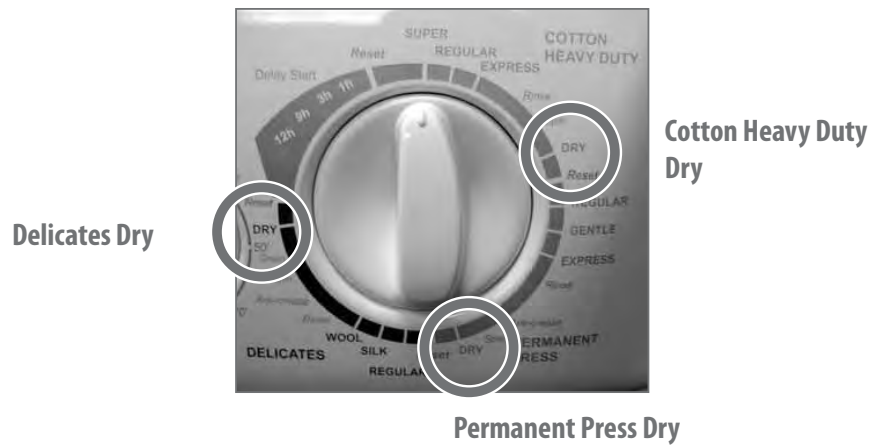
1. With the machine OFF, select a Wash Cycle
2. Set the Dry Time knob to "0" min.
3. Press "ON"

Description of Preset Dry Cycles

Cotton Heavy Duty Dry - Use this high heat cycle to dry sturdy, colorfast fabrics like towels socks and jeans. There's a high spin at the beginning of this cycle to remove more water from fabrics.

Permanent Press Dry - Use this medium heat cycle to dry certain blouses and casual business clothes.

Delicates Dry - Use this lower heat cycle to dry certain blouses, and casual business clothes.



To Go from Wash to Dry Automatically

1. With the machine OFF, select a wash cycle
2. Set the Dry Time knob to the desired time
3. Press "ON". When the wash cycle is finished, the machine will automatically start drying in the preset cycle.

To Dry ONLY

1. With the machine OFF, select a Dry Cycle (see above)
2. Set the Dry Time knob to the desired time
3. Press "ON"

Preset Wash/Dry Cycles Chart**

Type of Fabric and Degree of Soil	Program Knob	Detergent For Wash	Fabric Softener	Bleach	Options Available*	Total Length of cycle	Description of Wash Cycle
Cotton Heavy Duty							
Exceptionally soiled white/colorfast fabricry (Sheety, tablecloth, etc.)	Super	•	•	•	P, L, R	80 min.	35 min. wash cycle, 3 rinse cycle, intermediate and final spin cycle
Heavily soiled white/colorfast fabricry	Regular	•	•	•	P, L, R	70 min.	27 min. wash cycle, 3 rinse cycle, intermediate and final spin cycle
Slightly soiled white and light color (T-Shirt, sweaty shirt, etc.)	Express	•	•	•	P, L, R	40 min.	14 min. wash cycle, 2 rinse cycle, intermediate and final spin cycle
Rinse cycle		Softener is automatically dispensed during the last rinse					Rinse cycle, intermediate and final spin cycle
Spin cycle (1200 RPM high spin)							Draining and final spin cycle
Draining cycle for cotton fabricry							Cotton Heavy Duty Dr Program
Reyet							Interrupt/cancel program
Permanent Press							
Heavily soiled colorfast synthetic (Baby linen, etc.)	Regular	•	•		P, E, L, R	75 min.	26 min. wash cycle, 3 rinse cycle, anti-crease or spin cycle
Delicate color synthetic (All types of lightly soiled garmenty)	Gentle	•	•		P, E, L, R	65 min.	19 min. wash cycle, 3 rinse cycle, anti-crease or spin cycle
Delicate color synthetic (All types of lightly soiled garmenty)	Express	•	•		P, E, L, R	40 min.	13 min. wash cycle, 2 rinse cycle, anti-crease or spin cycle
Rinse cycle		Softener is automatically dispensed during the last rinse					Rinse cycle, anti-crease or spin cycle
Spin cycle (850 RPM spin)							Draining and spin cycle
Draining cycle for synthetic fabricry							Permanent Press Dr Program
Reyet							Interrupt/cancel program
Delicate							
Delicate	Regular	•	•		P	65 min.	16 min. wash cycle, 3 rinse cycle, spin cycle
Silk and particularly delicate garmenty (Curtainy, silk, viscose, etc.)	Silk	•	•		P, E	60 min.	17 min. wash cycle, 3 rinse cycle, anti-crease and draining (no spin)
Wool, hand wash	Wool	•	•			45 min.	27 min. wash cycle, 2 rinse cycle, spin cycle
Rinse cycle		Softener is automatically dispensed during the last rinse					Rinse cycle, anti-crease or draining or spin cycle
Spin cycle (600 RPM spin)							Draining and spin cycle
Draining							Draining On! (Silk program)
Draining cycle for synthetic fabricry							Delicate Dr Program
Reyet							Interrupt/cancel program
Delay Start							
12 - 9 - 3 - 1 hour delay							Program start is delayed
Stop/Reyet							Interrupt/Cancel program

NOTE: You cannot select more than one option for a cycle. Some options cannot be added to some cycles.

**Above cycle times will vary according to water pressure, load size and fabric type.

***Options:**

P = Prewash
E = Easy Iron**
L = Low Spin
R = Extra Rinse

Automatic Routines

The following are routines that the washer-dryer will follow out automatically during all of the wash, spin, rinse and dry cycles.

Door Locking / Unlocking Routines

Door Locking Summary - The Door Locking Routine will only start if the door is securely closed and the Door Switch contact is CLOSED.

1. The Door Switch is energized whenever a cycle is started.
2. During the next few seconds, the contacts on the door switch are checked by the Module Board. The Status/Door Lock light will go SOLID and the cycle will begin.

Door Unlocking Summary - Unlocking will occur ONLY under these conditions:

1. The Main Motor speed equals "0"
2. There is no water in the drum
3. The cycle is finished
4. The Cycle Selector is on a 'Reset' position and the Status/Door Lock light is blinking SLOWLY

IMPORTANT!

- The door WILL NOT open while ANY cycle is in progress (Wash or Dry).
- The door WILL NOT open when the Status/Door Lock light is blinking QUICKLY, or is SOLID.
- The door WILL STAY LOCKED for approximately 1-2 min. after the cycle is complete.

DO NOT attempt to open the door UNLESS the Status/Door Lock light is blinking SLOWLY! If you do, the handle could break and replacement costs would not be covered under the Warranty.

Wash Quality Routines

Drain and Spin Routines - During the Drain and Spin cycles, the water level is checked continuously. Normal Drain and Spin will occur until the Pressure Switch senses no water or foam (suds) in the drum.

Foam Detection and Elimination Routine - Excessive foam can make clothes appear dingy and is usually caused by the use of too much detergent, or the wrong kind of detergent. If the Pressure Switch senses the presence of foam during the Drain or Spin Routine, the Module Board will stop the main motor and the basket will stop spinning. The Drain Pump will turn OFF and the drum will fill with water. Once the tub is filled, the basket will rest for several minutes in an attempt to eliminate the foam before resuming the original cycle. This process will repeat until no foam is detected.

Impulse Spin Technology (IST) - During the Spin cycle the drum will rotate at varying speeds before reaching high spin (instead of a constant pace). This routine optimizes rinse efficiency and drying uniformity - clothing comes out with less creasing and wrinkling.

Automatic Balance Routine

Automatic Balance Routine Summary - An unbalanced load can cause excessive noise and vibration. The Automatic Balance Routine occurs during the distribution ramp (while the basket spin is accelerating from 40 to 600 rpm). At 600 rpm the motor is decelerated and the rate of deceleration is monitored by the Module Board. The motor is then ramped up to 600 rpm and shut off. The rate of deceleration is monitored again and compared to the first deceleration rate. Based on this comparison, the Module Board can determine whether an unbalanced condition exists or not.

- If the Module Board does not sense an unbalanced condition, the ramp will continue.
- If the Module Board senses an unbalance condition, the Main Motor will rotate slowly back and forth for the remainder of the cycle.