CLOTHES DRYER
Technical Information

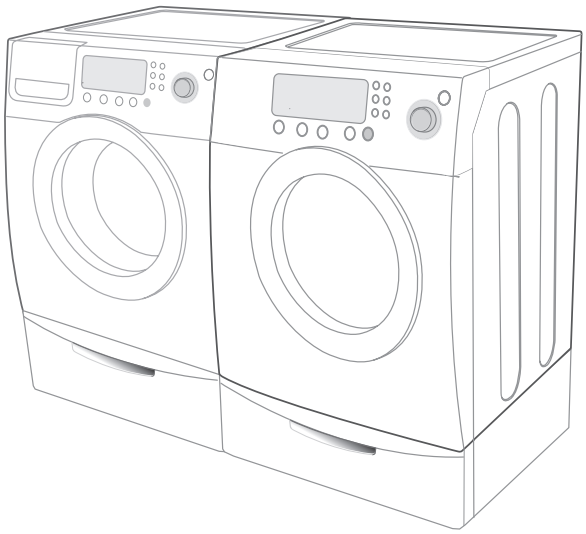
- Due to possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this unit.
- Refer to Service Manual (DV220, DV221, DV210, DV350, DV339, DV338, DV331, DV330, DV448, DV438, DV428, DV419, DV410, DV409, DV407) for detailed installation, operating, testing, troubleshooting, and disassembly instructions.

⚠ CAUTION

All safety information must be follwed as provided in Service Manual of DV220, DV221, DV210, DV350, DV339, DV338, DV331, DV330, DV448, DV438, DV428, DV419, DV410, DV409, DV407.

⚠ WARNING

To avoid risk of electrical shock, personal injury or death; disconnect power to dryer before servicing, unless testing requires power.



Code No. : DC68-02365B-07

ALIGNMENT AND ADJUSTMENTS

⚠ WARNING

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ERROR ITEMS AND DIAGNOSTIC CODES

An occurrence of an Error will make a sound of error melody for 5sec and con tinuously show one of the Error Displays from the following errors.

Error Display		Trigger	Action Taken
LED	LCD		
tS to tE		The Termistor resistance is very low or high.	Check for: - Clogged lint screen. - Restricted vent system. - Check Thermistor resistance.
hE HE		Invalid heating Temp in running the dryer	Check for: - Restricted vent system. - Check Thermistor resistance.
do dE		Running the dryer with door open	Check for: - Close the door, and run the dryer - Loose or open wire terminals in Door Sense circuit.
dF		Invalid door state for more than 256 milliseconds	Check for: - Loose or open wire terminals in Door Sense circuit.
bE bE2		Invalid state of key circuit short for 30 secs(all models) 75 secs(DV339,DV338,DV448,DV438,DV428)	Check for: - Display PCB key circuit short or not
FE		Invalid power source Frequency	Check for: - Not using regular power source frequency - Invalid power frequency sense circuit
9E		Electronic Control Problem (Communication Error)	Check for: - Check PCB and Wire harness. - Replace PCB
od		Invalid Dry time in excess Dry time	Check for: - Sensor bar Open - using Adjust time Up excessively
Et		Invalid state of Eeprom communication	Check for : - PCB with Eeprom circuit.

ALIGNMENT AND ADJUSTMENTS

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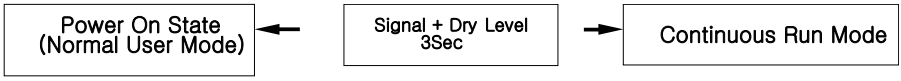
TEST MODE



Continuous Run Mode:

1. Press Signal + Dry Level for 3 sec during Power On State (Normal User Mode) .
2. Once in Continuous Run Mode, 7-Segment will toggle display “total cycle” and the remaining time.
3. The previous cycle will restart during Continuous Run Mode until continuous run mode is disabled.
4. During Continuous Run Mode, press Signal + Dryness Level for 3 seconds to return to normal user mode. 7-segment will no long display “total cycle ” and only display the remaining time.

Cycle Count Mode

Definition of Cycle Count Mode:

- While in Service Mode pressing the Signal key will put the dryer into the cycle count mode
- Cycle number executed will display.

How to Enter:

- To enter Special Test Mode press While in Service Mode pressing the Signal key for 3 seconds or until the control beep.

Special Test Mode

Definition of Special Test Mode:

- Dryer must be on before Service Mode can be entered.
- Press Signal and Temp Keys for 3 seconds, or until 3 beeps are heard.
- The machine will now be in Service Mode.
- Upon entry into Service Mode, the Sensor Bar Touch Data will be shown (Default Special Test Mode).

How to Enter:

- To enter Special Test Mode press Signal and Temp Keys for 3 seconds for 3 seconds or until the control beep.

Sensor Bar Touch Data Mode

Definition of Sensor Bar Touch Data Mode:

- With Power On pressing Signal and Temp Keys for 3 seconds
- This action will put the dryer into sensor bar touch data mode
- Dryer will display Sensor Bar data. This mode is default mode of entering service mode

How to Enter:

- With Power On pressing Signal and Temp Keys for 3 seconds

ALIGNMENT AND ADJUSTMENTS

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Temperature Display Mode(in Celsius)

Definition of Temperature Display Mode:

- With power on, Press Sinal and Wrinkle Prevent keys simultanously for 3 seconds.
- This action will put the dryer into Touch Sensor Mode
- Under "Touch Sensor Mode", Press Time and Wrinkle Prevent Keys at the same time.
- Then the dryer will display the temperature of drum inside in Celsius.

How to Enter:

- Under normal User Mode, Press "Signal and Wrinkle Prevent" Keys simultanously for 3 seconds
- Then press "Time and Wrinkle Prevent" keys at the same time.

• Converting °C → °F

Celsius(°C)	-30	-10	10	30	50	70
Fahrenheit(°F)	-22	14	50	86	122	158

$F = 9/5C + 32$

Software Version Mode

Definition of Software Version Mode:

- While in Service Mode pressing the Temp key will put the dryer into the software version mode

How to Enter:

- To enter Special Test Mode press Temp Key until the control beep.
  ex) In case of "U1 05", U1 means major version "U1", 05 means minor version "05".

System Check Mode

Special Test Mode:

- While in Power Off, pressing the Dryness Level + Power keys simultaneously will put the dryer into the System Check mode
- " t2 " will display.
- System Check Mode Progress t2 mode Function Performed Start/Pause
  Motor(CW) Relay On → Heater Relay On → Heater Relay Off → Motor(CW) Relay Off
  (Circulation)

ALIGNMENT AND ADJUSTMENTS

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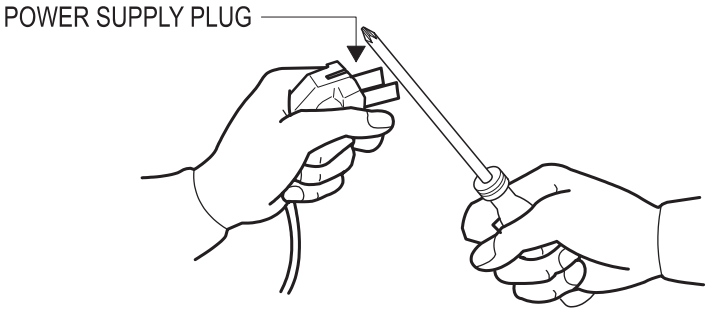
TROUBLE DIAGNOSIS

- As the micom dry machine is configured of the complicate structure, there might be the service call.
  Below information is prepared for exact trouble diagnosis and suitable repair guide.

Caution for the Repair and Replacement

Please follow below instruction for the trouble diagnosis and parts replacement.

1) As some electronic components are damaged by the charged static electricity from the resin part of dryer or the human body, prepare the human body earth or remove the potential differ ence of the human body and dryer by contacting the power supply plug when the work contacting to PCB is executed.



2) As the P.C.B assembly is designed for no trouble, do not replace the P.C.B assembly by the wrong diagnosis and follow the procedure of the trouble diagnosis when the micom is not operated normally.

TROUBLE SHOOTING

⚠ WARNING

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No	Problem	What To Do
1	**Will Not Start or Run**	• All wires are hooked up to their corresponding terminals. • Dryer is plugged in. • Blown fuse or circuit breaker. • Door switch functional...door closed. Check for error code 3 (See Table for codedefinition). • Start/Pause rotary selector dial functional. • Control Board operational. • Belt off or broken and Belt Cut-off Switch operates. • Drive motor functional. • Check motor winding resistance: 2.88ohms between pin #3 and 4, 3.5ohms between pin #4 and 5.
2	**Motor runs/ tumbler will not turn**	• Belt off or broken/damaged. • Idler tension spring too weak or stretched. • Idler pulley jammed or stuck.
3	**Runs a few minutes and then stops**	• Lint buildup around drive motor. • Low voltage present. • Blower impeller blocked in blower housing. • Drive motor - start switch contacts stuck closed.
4	**Blows fuses or trips circuit breaker**	- Is the belt connected well? - Is the winding of the motor continuous? (Rotor winding, stator winding, generator) - Is the motor protector normal? • If above points are not found, the PCB assembly is out of order. Replace it.
5	**Blows fuses or trips circuit breaker (Gas Model)**	• During ignition the dryer will draw X amps. With the burner ON, the dryer will draw X amps. If the dryer is drawing amperages above this, then the house wiring, fuse box or circuit breaker is suspected to be at fault. • Igniter harness loose and shorted to base. • Incorrect wiring or wire shorted to ground. • Drive motor winding shorting to ground.
6	**Will not heat (motor runs)**	Open heating element. • Hi-Limit trips easily or is open. • Regulating thermostat trips easily or is open. • Membrane switch open. • Check Thermistor.
7	**Will Not Dry Gas Model Poor Gas Ignition**	When the dryer is operated on a heat setting, the igniter should be energized and burner shall fire within 45 seconds at 120 VAC. The failure of a component in this system will usually be indicated by one of three symptoms:

TROUBLE SHOOTING

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No	Problem	What To Do
8	**The igniter does not glow**	If the igniter does not heat up, remove power and using an ohmmeter, check the following: • Open flame sensor • Open igniter • Shorted booster coil • Open wiring • Bad motor switch (Neutral supply) • No power from control (L1 supply)
9	**Igniter glows - No gas ignition**	If the igniter heats up but the main burner flame is not ignited, remove power and using an ohmmeter, check the following: • Open secondary coil • Open holding coil • Open wire harness • Stuck flame sensor (Stuck closed)
10	**The gas is ignited but the flame goes out**	If a normal ignition takes place and after a short while the flame goes out, check for the following: • Radiant sensor contacts opening prematurely. • Weak gas valve coil may open when stressed by higher Temps. • Weak Hi-Limit • Poor venting • Bad drum seals
11	**Improper drying clothes wrinkled Rough texture long dry time**	• Lint filter is not clean. • Restriction in exhaust. • Outside exhaust hood damper door stuck closed. • Exhaust too long, too many elbows, flex ductwork installed. • Poor intake air available for the dryer. • Incorrect tumbler speed. Tumbler belt slipping. • Blower impeller bound; check for foreign material in blower area. • Customer overloading dryer. • Check clothing labels for fabric content and cycle selected. • Clothes too wet due to insufficient spin out by washer.
12	**Noisy and/Or Vibration**	• Thumping Check for loose tumbler baffle, rear tumbler roller(s) worn or misaligned, out-of-round tumbler or high weld seam on tumbler. • Ticking Check for loose wire harness or object caught in blower wheel area. • Scraping Check for front or rear bulkhead felt seal out of position or worn tumbler front bearings. • Roaring Check for blower wheel rubbing on blower housing or bad motor bearings. • Popping or squealing sound. Check for a sticky or frayed belt.

TROUBLE SHOOTING

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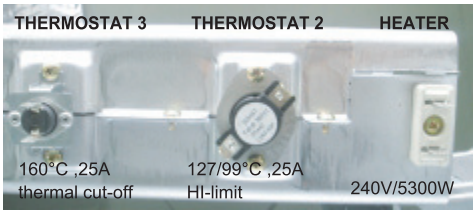
COMPONENT TESTING PROCEDURES

Component Electrical Testing (with ohmmeter)

- Thermistor resistance 10K Ω @ 25°C 77°F
- Thermostat 1 resistance < 1Ω

- Thermostat 3 resistance < 1Ω
  - If resistance is infinity, replace thermostat 3.
- Thermostat 2 resistance < 1Ω
  - If resistance is infinity, replace thermostat 2.
- Heater resistance 10 Ω
  - If resistance is infinity, replace Heater.

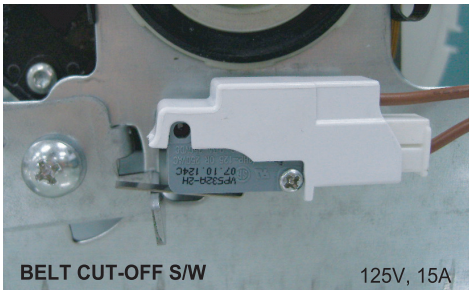


- Measure resistance of the following terminal

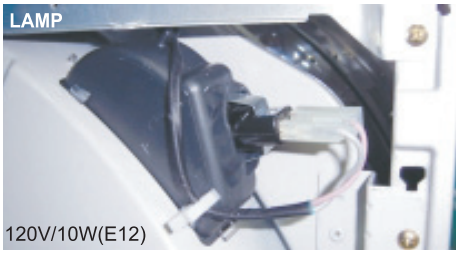
1) Door switch : open
Terminal : "COM" - "NC" (1-3) < 1Ω
Terminal : "COM" - "NO" (1-2) : ∞ Ω

2) Door switch push: On
Terminal : "COM" - "NC" (1-3) : ∞ Ω
Terminal : "COM" - "NO" (1-2) < 1Ω

- Belt Cut-off S/W
  - Lever open: Resistance value < 1Ω
  - Lever push: Resistance value : ∞ Ω



- Lamp resistance 80~100 Ω (Violet & gray)



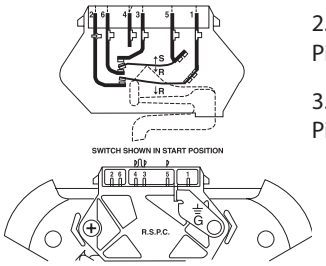
- Motor (Electronic & GAS)

Contacts

Function	1M	2M	3M	5M	6M
Start			●	●	
Run	●	●		●	●

● = Contact closed

Centrifugal Switch (Motor)



2.88Ω between Pin# 3 and 4

3.5Ω between Pin# 4 and 5

TROUBLE SHOOTING

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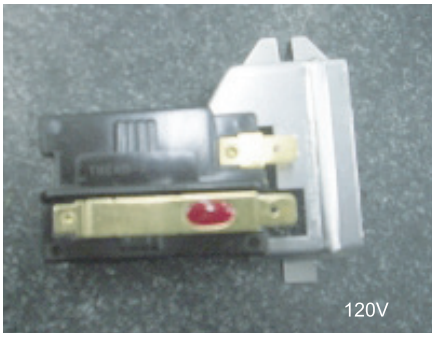
GAS MODEL

Radiant Sensor(10RS)

Resistance value < 1 Ω

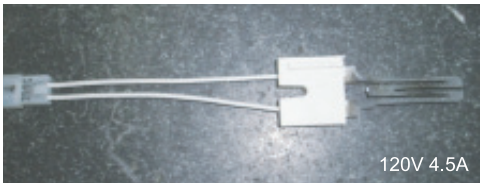
If resistance is infinite, replace Radiant sensor



Igniter(101D)

Resistance value 40~400 Ω

If resistance is infinite, replace Igniter



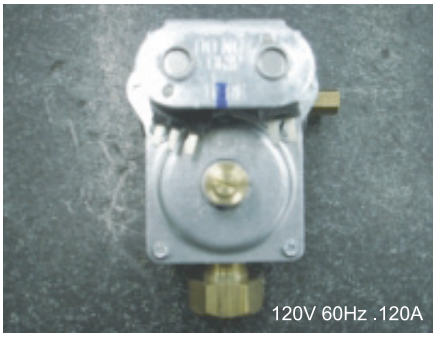
Gas Valve(25M01A)

Valve 1-2 : Resistance value 1.2K Ω

Valve 1-3 : Resistance value 0.5K Ω

Valve 4-5 : Resistance value 1.2K Ω

If resistance is infinity, replace Valve



Thermostat (60T21 Hi-Limit)230F-50F

Resistance value < 1 Ω

If resistance is infinity, replace Thermostat

TROUBLE SHOOTING

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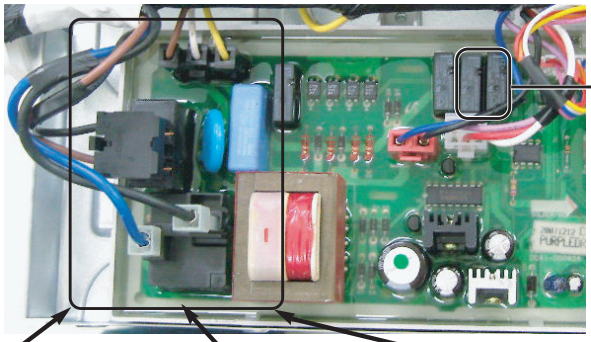
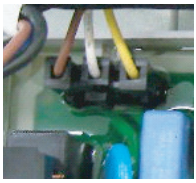
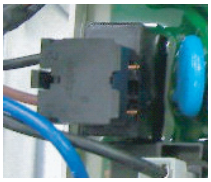


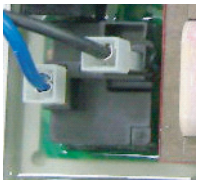


CN1

1. AC Power Port
2. AC Power Off Detection Sensor
3. Door Detection Sensor

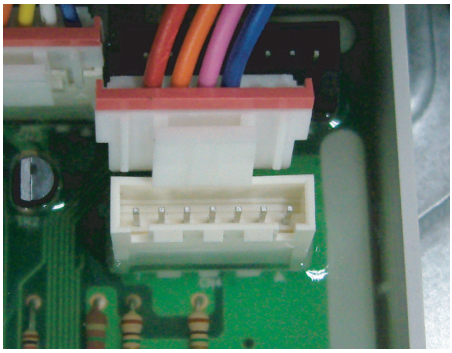


RY5 - Motor Relay Switch



RY6 - Heater Relay Switch

Sensor Bars & temperature sensor check



Sensor Bars - Disconnect harness and test Pink wire Pin 4 to Orange wire Pin 5.
Approx ∞ Ω without laundry
Approx 190Ω ± 10% with wet clothes

Cycling Thermostat - Disconnect harness and test Blue wire Pin 2 to Red wire Pin 6.
Approx 10 KΩ at 25 °C/77 °F

TROUBLE SHOOTING

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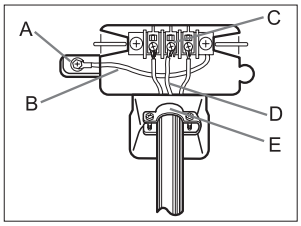
3-WIRE system connections

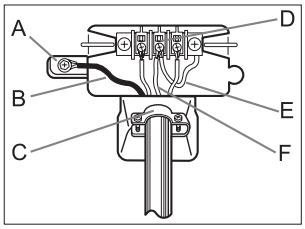


A. External ground connector
B. Neutral grounding wire (green/yellow)
C. Center silver-colored terminal block screw
D. Neutral wire (white or center wire)
E. ¾" (1.9 cm) UL-listed strain relief

1. Loosen or remove the center terminal block screw.
2. Connect the neutral wire (white or center wire) of the power cord to the center, silver-colored terminal screw of the terminal block. Tighten screw.
3. Connect the other wires to outer terminal block screws. Tighten screws.
4. Tighten the strain relief screws.
5. Insert the tab of the terminal block cover into your Dryer's rear panel slot. Secure the cover with a hold-down screw.

   If converting from a 4-wire electrical system to a 3-wire, the ground strap must be reconnected to the terminal block support to ground the Dryer frame to the neutral conductor.

4-WIRE system connections



A. External ground connector
B. Green or bare copper wire of power cord
C. ¾" (1.9 cm) UL-listed strain relief
D. Center silver-colored terminal block screw
E. Neutral Grounding wire (green/yellow)
F. Neutral wire (white or center wire)

1. Remove the External ground connector screw.
2. Connect the ground wire (green or unwrapped) of the power cord to the external ground connector screw. If you want to connect B(Green or bare copper wire of power cord) to the Neutral Post without assembling with A(cabinet ground), call the service technician.
3. Loosen or remove the center terminal block screw.
4. Connect the neutral wire (white or center wire) of the power cord and the appliance ground wire (green with yellow stripes) under the central screw of the terminal block.
5. Connect the other wires to the outer terminal block screws. Tighten screws.
6. Tighten the strain relief screws.
7. Insert the tab of the terminal block cover into your Dryer's rear panel slot. Secure the cover with a hold-down screw.

WIRING DIAGRAM

WARNING

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WIRING DIAGRAM