

*smartload*<sup>™</sup> **DRYER**

**MODELS**  
**DEGX1 and DGGX1**



**517772**

## SPECIFICATIONS

	Operating Voltage	Maximum Current
USA Electric	220/240V AC 60Hz	24 amps
USA Gas	110/120V AC 60Hz	6 amps

### **Igniter Gas**

Cold Resistance	40 - 200 Ohms
Typical Temperature	2399°F (1315°C) @ 120V
Minimum Temperature	1805°F (985°C) @ 80V
Maximum Temperature	3092°F (1700°C) @ 132V

### **Valve Regulator Gas**

Combination gas pressure regulator and dual automatic gas valve.

Voltage Rated 120 Volts AC 60 Hz

Resistance Across Terminals

1 & 2 1.4 kOhms

1 & 3 560 Ohms

3 & 4 1.3 kOhms

Orifice #43

Regulated pressure 3.5" H2O

### **Gas Flame Detector**

Voltage Rated 120 Volts AC 60 Hz

### **Thermostat Cutout – Automatic Reset (Gas)**

Type	SPST
Trip Temperature	230°F ± 37° (110°C ± 3°)
Reset Temperature	203°F ± 40° (95°C ± 4.5°)

### **Thermostat Cutout – Manual Reset (Gas)**

Type	SPST
Trip Temperature	293°F (145°C)

## **Element Assembly 240 V 3.6 Kw**

Two sets of Nichrome wire elements linked in parallel between Mica plates. A ceramic insulator is used to support the element assembly in the housing.

Resistance	13.5 Ohms
Current	15 Amps
Power	3.6 KW
Voltage	240 Volts (between two phases)

## **Element Assembly 240V 1.4KW**

Resistance	37 Ohms
Current	5.8 Amps
Power	1.4 KW
Voltage	240 Volts (between two phases)

## **Thermostat Cutout – Automatic Reset (Electrical)**

Type	SPST
Trip Temperature	158°F ± 37° (70°C ± 3°)
Reset Temperature	131°F ± 39° (55°C ± 4°)

## **Thermostat Cutout – Manual Reset (Electrical)**

Type	SPST 30 Amps/240 Volts AC
Trip Temperature	212°F (100°C)

## **Motor – 3 Phase 240W**

Voltage Rated	190 Volts AC 85 Hz
Power	240 Watts
Current	1.6 Amps
Speed	2340 RPM
Resistance Across Any Two Terminals of Plug	9.6 Ohms

## **Exhaust Temperature Sensor**

Resistance (+10%) at Various Ambients	
32°F (0°C)	33 kOhms
50°F (10°C)	20 kOhms
68°F (20°C)	12 kOhms
86°F (30°C)	8 kOhms
104°F (40°C)	5 kOhms

## Lid Lock

Resistance range 63 Ohms +/- 10 Ohms @ 68°F (20°C)  
 Safety extra low voltage.

## Temperatures

Each cycle, Denim through to Delicate, has a temperature limit, as defined in the table below, as measured in the exhaust air. After switching off at the limit, the temperature has a hysteresis of 5 degrees below these temperatures when the heat source switches back on.

Denim	Regular	Permanent Press	Delicate
149°F (65°C)	149°F (65°C)	140°F (60°C)	127°F (53°C)

When tumbling the heat source is turned on as shown in the table below:

Electric				
	Door Close Direction 4 minutes		Door Open Direction 40 seconds	
	Element 2/3 Heat	Element 1/3 Heat	Element 2/3 Heat	Element 1/3 Heat
Denim,	ON	ON	OFF	ON
Regular	ON	ON	OFF	ON
P.Press	ON	OFF	OFF	ON
Delicate	ON	OFF	OFF	ON
Air Dry	OFF	OFF	OFF	OFF
Gas				
	Door Close Direction 4 minutes		Door Open Direction 40 seconds	
	Gas Ignition delay	Gas Heating		
Denim	30 seconds	3 minutes 30 seconds	No Heat	
Regular	30 seconds	2 minutes 30 seconds		
P.Press	30 seconds	2 minutes 30 seconds		
Delicate	30 seconds	2 minute 10 seconds		
Air Dry	No heat	No Heat		

# DIAGNOSTICS

## Overview

If a fault occurs that prevents correct operation of the dryer, and is detected by the controllers, the dryer is stopped, the display shows a fault code and the beeper is continuously turned on and off. Pressing the **Power** button will stop the beeper but leave the fault code displayed to help the service technician diagnose the problem. Pressing the **Power** button again will remove the fault display and cause the dryer to try to start again.

If a fault occurs on a dryer, the user should be encouraged to turn the sound off (by pressing the **Power** button once) but leave the displayed fault code on for easy diagnostics.

**Note:** If the dryer has faulted and displayed a fault but the fault is currently not displayed, most faults will manifest when the user attempts to run the dryer again. However, at any time the “Last Fault” can be recalled from memory.

## Diagnostic Mode

### Entering the Diagnostic Mode

- (a) Turn the power supply to the dryer on.
- (b) Press and hold the **Auto Dry** down button, then press the **Power** button.

The dryer is now in level 0 of the diagnostic mode. After initial entry into the diagnostic mode, the **Start/Pause** button operates the dryer as normal. Press the **Auto Dry** up or down buttons to scroll through the fault levels.

There are several levels of diagnostics, most of which are used in development and production. These levels may bring on various LEDs, but the level of use for the service technician is that of the last fault.

### Last Fault

To enter the last fault diagnostics, enter the diagnostic mode as described above, then press the **Auto Dry** up button three times. The last fault will be displayed on the drying progress LEDs as described on page 7.

## **Conductivity Contact Impedance Check**

To enter the conductivity contact impedance check, enter the diagnostic mode as described above, then press the **Auto Dry** up button five times. In this mode, touching damp clothes or fingers across the conductivity contacts will cause the LED display to change. If the contacts, or the harness to them, have gone open circuit, no change will occur in the LED display. This is a useful method of checking the integrity of the sensor circuits.

To exit the diagnostic mode, press any cycle button.

## **Entering the Data Download Mode**

- (a) Turn the power supply to the dryer on.
- (b) Press and hold the **Auto Dry** down button, then press the **Power** button. This enters the diagnostic mode.
- (c) Press the **Regular** button.

Encoded data is transmitted serially out the red **Auto** LED, and is be captured by an optical download pen attached to a PC where “Smart Tool” software interprets the data to aid servicing.

To exit, press the **Regular** button.

## **Entering the Showroom Mode**

- (a) Turn the power supply to the dryer on.
- (b) Press and hold the **Air Dry** button, then press the **Power** button.

The LEDs will flash in a random sequence.

To exit, turn off the power supply to the dryer at the wall.

## Fault Codes

The fault code is displayed in the L.E.D.s of the Drying Progress display portion of the display panel as shown below.



Each L.E.D. illuminated represents a binary code. By adding up the binary code value of the L.E.D.s that are illuminated, the fault code number can be determined.



In the example above the fault code is  $8+2+1 = 11$

### User Warnings

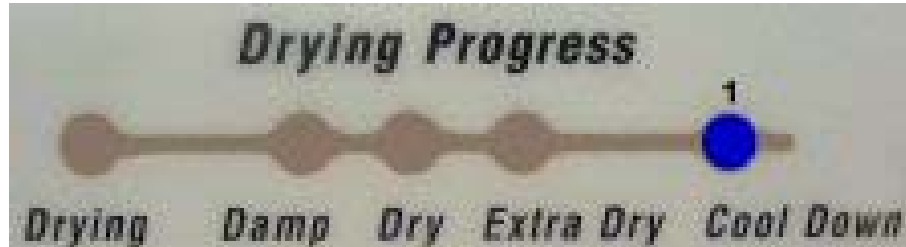
In the case of user warnings, the dryer may either pause, or “limp on”, and flash an LED (see Detailed Fault Codes, page 8) at the same time as sounding a user warning. Pressing any button will stop the sound, and pressing the **Start** or **Power** buttons, or the completion of the cycle, will stop the display of the warning. The warnings are stored as “faults” in memory with their warning or fault numbers, and can be recalled as “last fault” on the display, or by downloading the information using the Fisher & Paykel Smart Tool diagnostic software.

**Note:** The blue Cool Down L.E.D. illuminated without the fault “beeps” indicates the dryer is in a low mains voltage (brown out) state, and is momentarily displayed whenever the supply power is turned off.

## Detailed Fault Codes

The following are the fault codes that may be displayed. The remedy section of each fault is the suggested sequence of repair or replacement. If the first suggestion does not remedy the fault, check the next on the list.

### Fault Code 1      Communications Error.



Communications failure between the sensor module and motor control module.

- Remedy:
- (1) Check the continuity of the module interconnecting harness.
  - (2) Replace the sensor module.
  - (3) Replace the motor control module.

### Fault Code 2      Drum Gap Cannot be Located.



- Remedy:
- (1) Ensure the sensor module is correctly located and clipped into place.
  - (2) Replace the lens on the sensor module.
  - (3) Replace the sensor module.
  - (4) Remove the top deck and clean the drum sensing "bumps" on the outside of the drum end.
  - (5) Replace the drum.



**Fault Code 3 Drum Stalled.**



- Remedy:
- (1) If there is mechanical movement of the drum, but this fault code is appearing, follow the procedures for fault code 2.
  - (2) If there is no mechanical movement of the drum, check drum movement mechanisms: belt, motor and motor harness.
  - (3) Replace the motor control module.
  - (4) Replace the motor.

**Fault Code 4 Invalid Option Link Read.**



The motor control module heat source option link read is invalid.

Remedy: Replace the motor control module.

**Fault Code 6 Door Jammed - User Warning.**



The door is unable to close due to either clothes catching or an excessive closing load.

- Remedy:
- (1) Remove the obstruction.
  - (2) Reposition or remove some of the load.
  - (3) Fix the cause of binding in the door closing mechanism.
  - (4) Replace the motor.

**Fault Code 7      Motor Current Excessive.**



- Remedy:
- (1) Free up the dryer. Remove overload or cause of jamming.
  - (2) Replace the motor control module.
  - (3) Replace the motor.

**Fault Code 8      Exhaust Sensor Over Temperature.**



The exhaust sensor measures over temperature (fire detection, element short circuit or low resistance).

- Remedy:
- (1) Check the integrity of the sensor circuit checking particularly for short circuits. Approximate resistances ( $\pm 10\%$ ) at various temperatures are; 32°F (0°C) = 33 KOhms, 72°F (22°C) = 11 KOhms, 104°F (40°C) = 5 KOhms. Replace thermistor and harness if out of range.
  - (2) Check the element integrity in that it switches off when the dryer is stopped.
  - (3) Replace the motor control module.
  - (4) Replace the sensor module.

**Fault Code 9      Exhaust Sensor Under Temperature.**



The exhaust sensor measures under temperature (open circuit or not plugged in).

- Remedy: Refer to steps for over temperature fault (fault code 8) above, but open circuit likely.

**Fault Code 10 24 Volt Supply Measurement Error.**



The sensor module measures low voltage on actuator power supply.  
Remedy: Replace the sensor module.

**Fault Code 11 Lid Lock Open Circuit.**



Remedy: Check the lid lock harness and coil. If there is continuity through these, replace the sensor module.

**Fault Code 12 Lid Lock Switching Device Failure.**



Remedy: Check that there are no short circuits in the lid lock circuit which may have caused the failure in the sensor module. The resistance of the lid lock should be between 50 and 100 ohms. If the circuit is correct, replace the sensor module.

**Fault Code 14 Sensor Module Fault.**



Remedy: Replace the sensor module.

**Fault Code 15      Sensor Module Fault.**



Remedy:    Replace the sensor module.

**Fault Code 16      Airflow Restriction - User Warning.**



Airflow restriction.

- Remedy:
- (1) Check that the lint bucket is empty and the filter is clear.
  - (2) Ensure that the exhaust duct is not restricted, blocked or kinked, preventing good airflow.
  - (3) Ensure that there is nothing inhibiting unrestricted airflow through the heater housing, through the drum, lint filter, lint collector and through the exhaust duct, and that the element has not shorted.
  - (4) Check that the voltage is not too high.
  - (5) Check for element shorts or low resistance, or that gas burner is operating correctly.
  - (6) Replace the automatic thermostat.
  - (7) Replace the motor control module.

**Fault Code 20      Door Actuator Stalled.**



Remedy:    As per fault code 21.

## Fault Code 21 Door Actuator Required Excess Voltage.



- Remedy:
- (1) Ensure there is no weight placed on the lid of the product (e.g. clothes basket). If so, remove the weight and retest.
  - (2) Inspect the installation, making sure that the cabinet sits evenly on the floor. If excess load is placed on the cabinet, it can cause the sub-deck assembly to twist.
  - (3) Inspect the front inside edge of the top deck for any signs of excessive inwards bowing as this can cause it to catch on the door grabber, resulting in excess current draw on activation. The bowing can be caused by a bowed top deck or by incorrect assembly of the top deck to the cabinet front.
  - (4) Ensure the user intervention tab is not inhibiting door grabber movement.
  - (5) Check that the actuator linkage is located correctly. There must be no gap between the linkage and the plastic moulding.
  - (6) Check that the actuator housing is in place, and that the four retaining lugs are correctly located. Early models may have aluminium tape holding the housing in place. If so, ensure that the tape is replaced when the housing is refitted.
  - (7) Remove the actuator housing and look for obvious signs of things that are out of position (can the worm drive be rotated freely both backwards and forwards by hand, is the actuator motor in place?)
  - (8) Replace the faulty door actuator mechanism.
  - (9) Replace the door grabber, linkage and housings.
  - (10) Replace the sensor module.

**Fault Code 22 Door Actuator Open Circuit.**



- Remedy:
- (1) Check that the actuator wiring is plugged into the sensor module and is not open circuit. If faulty, replace.
  - (2) Replace the sensor module.

**Fault Code 23 Door Actuator Movement Interrupted By Low Voltage.**



The door actuator movement was interrupted by low voltage (brown out).

- Remedy:
- (1) Ensure mains voltage is within +10% and -15% of nominal.
  - (2) Replace the sensor module, as voltage measurement circuit may be reading incorrectly.
  - (3) Replace the motor control module, as it may not be supplying sufficient power to the sensor module. When display is off, approximately 24V DC is supplied.

**Fault Code 24 Door Actuator Movement Took Too Long.**



Remedy: As per fault code 21.

**Fault Code 28 Data Retrieval Error Following Loss of Power**



- Remedy:
- (1) Switch off the mains power supply to the dryer for at least 10 seconds and confirm error.
  - (2) Replace the motor control module.

**Fault Code 29 Brown-Out Data Retrieval Error.**



- Remedy:
- (1) If the fault occurs every time the dryer is turned on, replace the sensor module.
  - (2) Replace the motor control module.

**Fault Code 30 Lid Lock unable to Lock - User Warning.**



The lid lock failed to lock. (Not user displayed.)

- Remedy:
- (1) Ensure the lid is closed and the tongue engaged.
  - (2) Replace the lid lock harness.
  - (3) Replace the lid lock.
  - (4) Replace the sensor module.

Note: The blue **Cool Down** LED illuminated without the fault “beeps” indicates the dryer is in a low mains voltage (brown out) state, and is momentarily displayed whenever the supply power is turned off.