

24" Condenser Dryer

DCCH485EK



IMPORTANT SAFETY NOTICE

The information in this presentation is intended for use by individuals possessing adequate backgrounds of electrical, electronic, & mechanical experience. Any attempt to repair a major appliance may result in personal injury & property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

WARNING

To avoid personal injury, disconnect power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.

RECONNECT ALL GROUNDING DEVICES

If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position & properly fastened.

GE Factory Service Employees are required to use safety glasses with side shields, safety gloves & steel toe shoes for all repairs.



Dyneema® Cut Resistant Glove



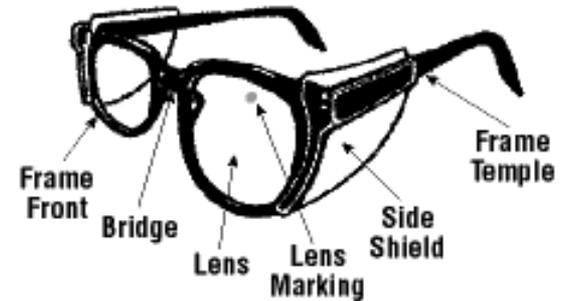
Steel Toe Shoes



Plano Safety Glasses



VR Gloves – provide shock protection



**Prescription Safety Glasses
Safety Glasses
must be
compliant with
ANSI Z87.1-2003**

Characteristics of a “condenser dryer”

A **condenser clothes dryer** is a machine that looks just like a conventional tumble clothes dryer, but which does not require an external vent. For the consumer, operation of both types of dryers is essentially the same - the difference is in the internal design.

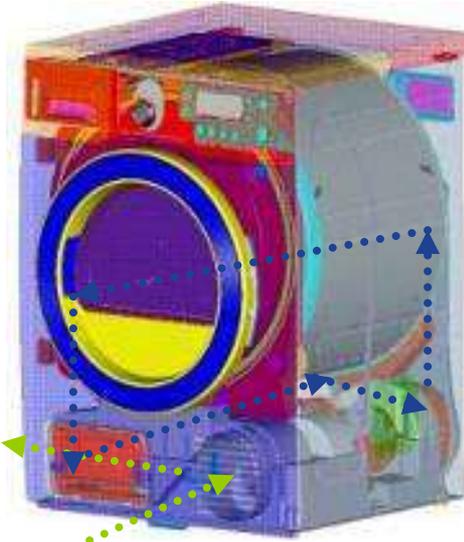
In a vented clothes dryer, air is drawn from the surrounding area (i.e. the laundry room), then heated and blown through the clothes as the drum tumbles them about. This hot air evaporates some of the water in the damp fabrics, and the resultant moisture-laden air is then exhausted through a vent duct to the outside.

In a condenser dryer, there are two separate "loops". The inside "loop" of air is sealed from the outside environment - air from within the drum is heated, then blown through the tumbling clothes, then the moisture-laden air is passed through a “condenser”, where the water re-condenses.

The same dry air is then reheated, where it is again blown through the drum and clothes, and the cycle begins again (this is a more-or-less continuous process).

Some condenser dryer models are air-cooled, and use the ambient room air as a heat sink, by blowing it across the outside of the condenser. These dryers will tend to heat the indoor air in one's laundry room significantly. Note however that ONLY heat is released – all MOISTURE is contained within the unit. The condensed water can be either pumped away to a drain line (e.g. into a standpipe shared with the clothes washer) or stored in a container within the dryer to be emptied later.

Air Flow



Ambient air loop

Process air loop

Cooling air
Intake from ambient

Process air is reheated

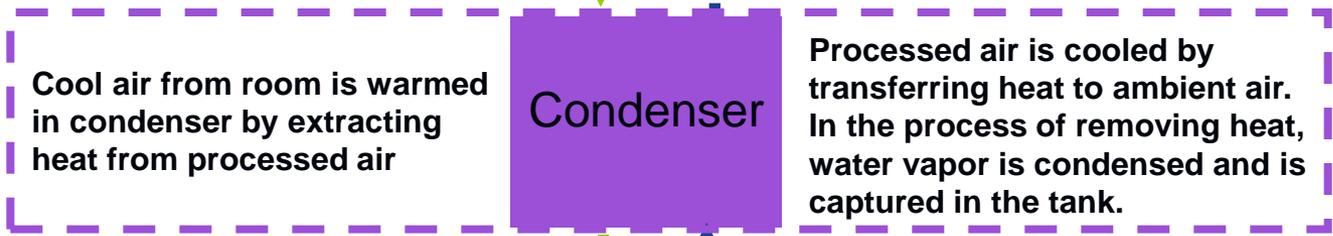
Moves ambient air

Cooling Air Fan

Process Air Fan

Moves process air

Heater & duct



Drum

Air absorbs the moisture from clothes

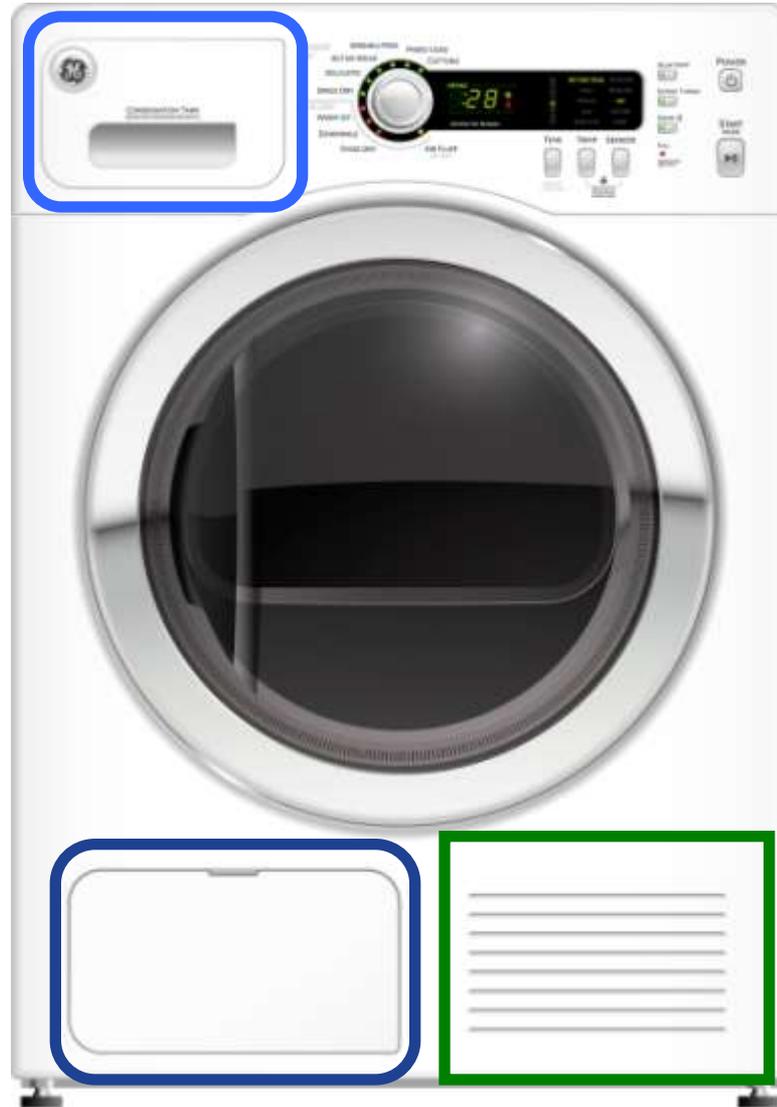
Warm air exhausted to ambient

Filter & duct

Filters lint from air

New Component Location

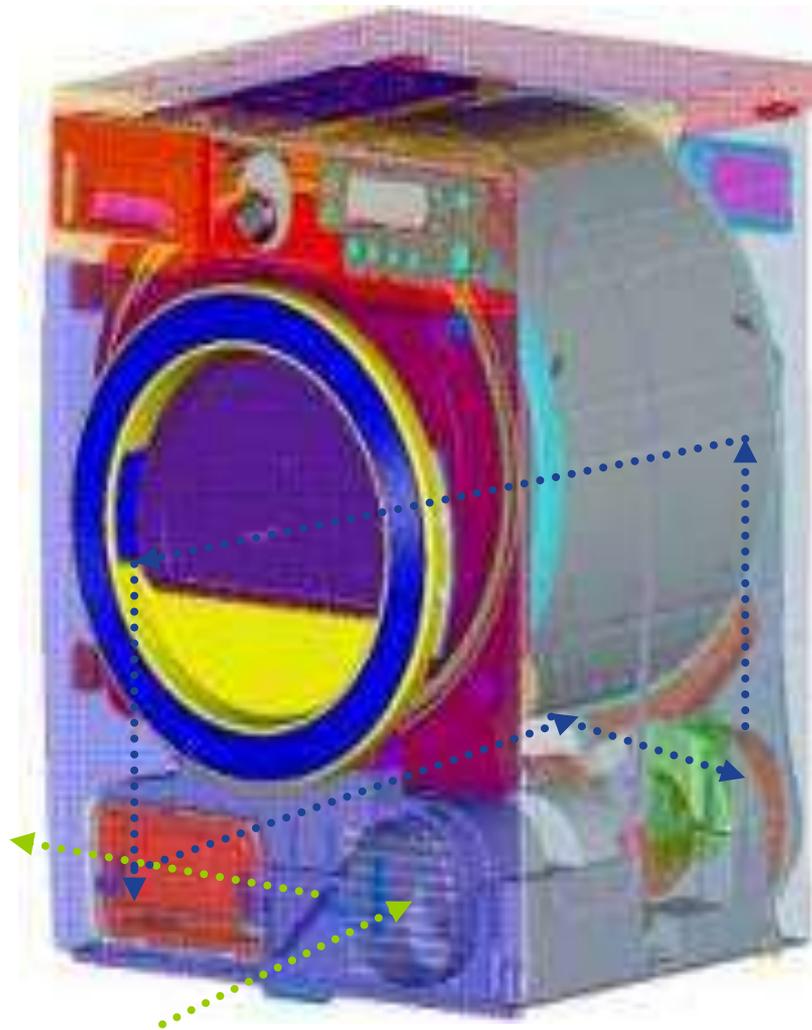
Condensation Tank



Condenser

Ambient Air Intake

Air Flow – Ambient

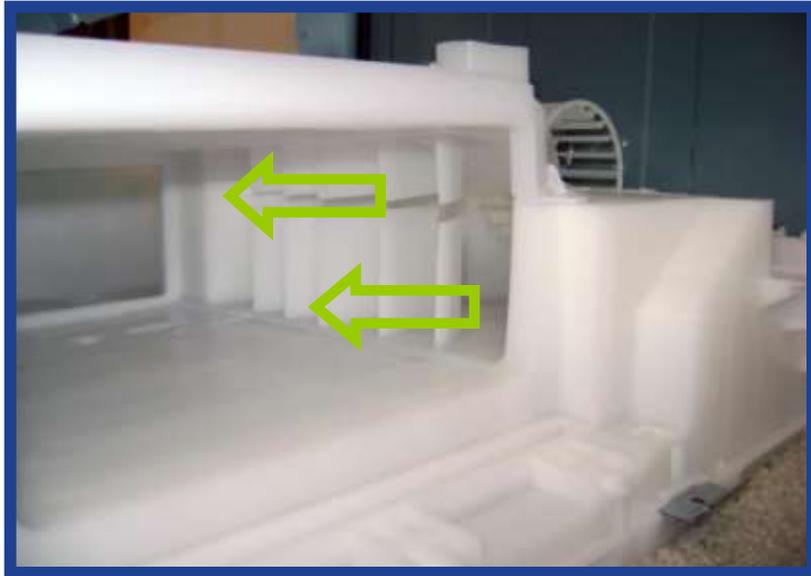


**Ambient air intake from room
(front panels & drum removed)**

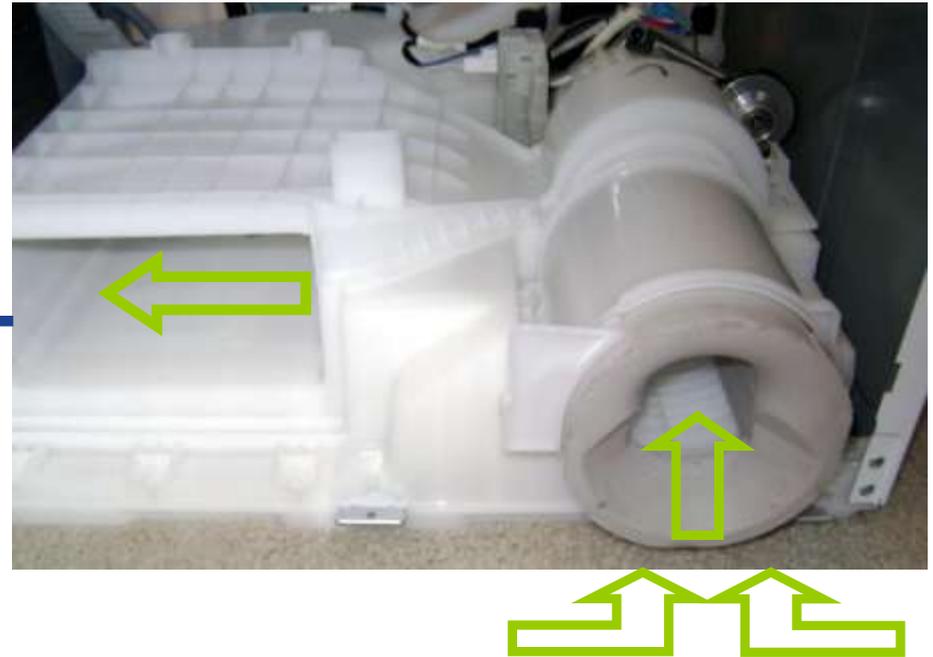


Air Flow – Ambient

Ambient air pushed over to “condenser”
(Condenser removed in picture)



Ambient air drawn in by blower wheel



Air Flow – Ambient

The cooler “ambient” air passes through the condenser, passes across and cools the “process” air, and then exits into room.



Air Flow – Ambient



Heated ambient air exits rear of machine

Air Flow – Ambient



Condenser in place



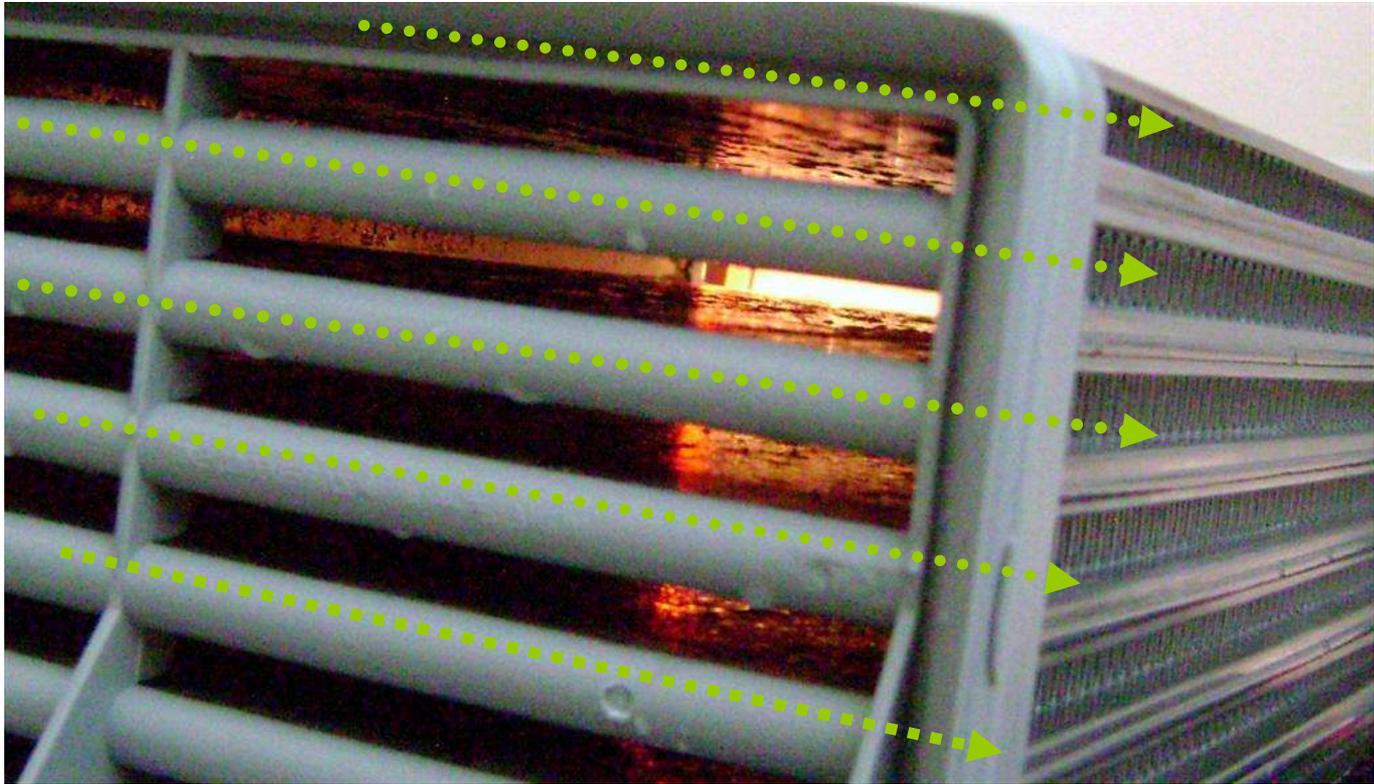
Condenser pulled slightly forward to view “ambient” air flow pattern

Air Flow – Ambient



- **Condenser (heat exchanger) out of unit.**
- **Ambient air passes through side slotted area with fins**
- **Lint that gets passed lint filter is trapped in the fins**
- **Requires cleaning by consumer monthly; based on usage**

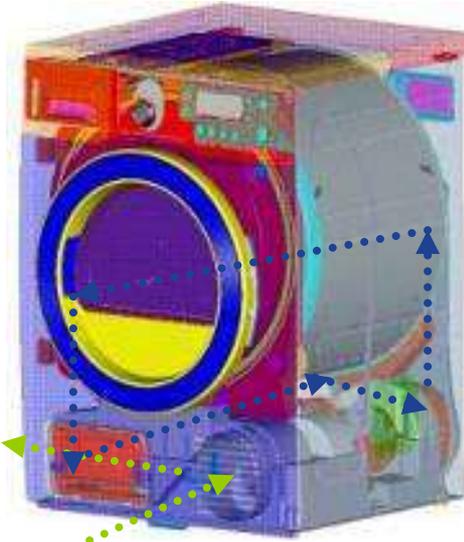
Air Flow – Ambient



View from end of condenser with a light inside to enhance view

(Process air will travel path where light is seen. Discussed next)

Air Flow



Ambient air loop

Process air loop

Cooling air
Intake from ambient

Process air is reheated

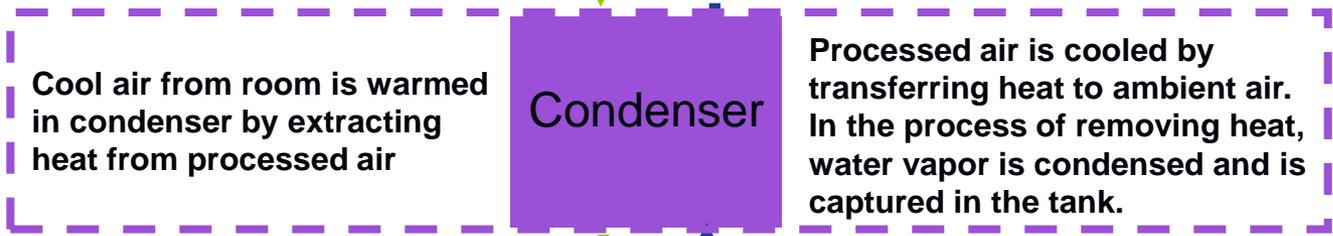
Moves ambient air

Cooling Air Fan

Process Air Fan

Moves process air

Heater & duct



Cool air from room is warmed in condenser by extracting heat from processed air

Condenser

Processed air is cooled by transferring heat to ambient air. In the process of removing heat, water vapor is condensed and is captured in the tank.

Drum

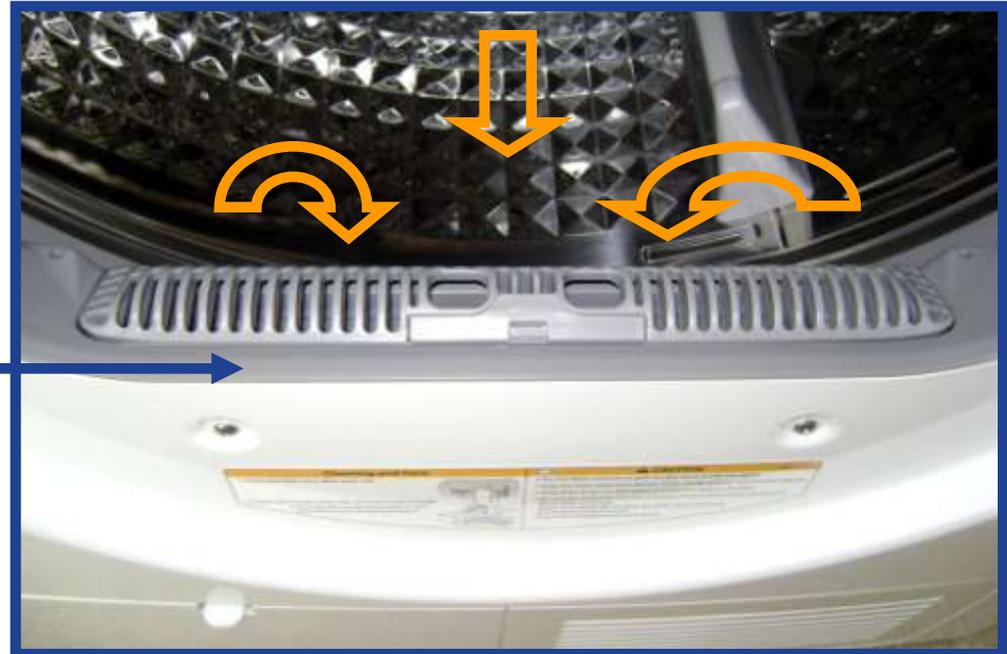
Air absorbs the moisture from clothes

Warm air exhausted to ambient

Filter & duct

Filters lint from air

Air Flow – Process air



- Process air in drum passes through clothes and into lint filter.

- From the lint filter the process air travels through the condenser from the front to the back

Air Flow – Process air



- **Close up of air travel in condenser compartment from front towards the back opening (condenser removed in picture)**

Air Flow – Process air



Condenser in place



Condenser pulled slightly forward to view “process” air flow pattern

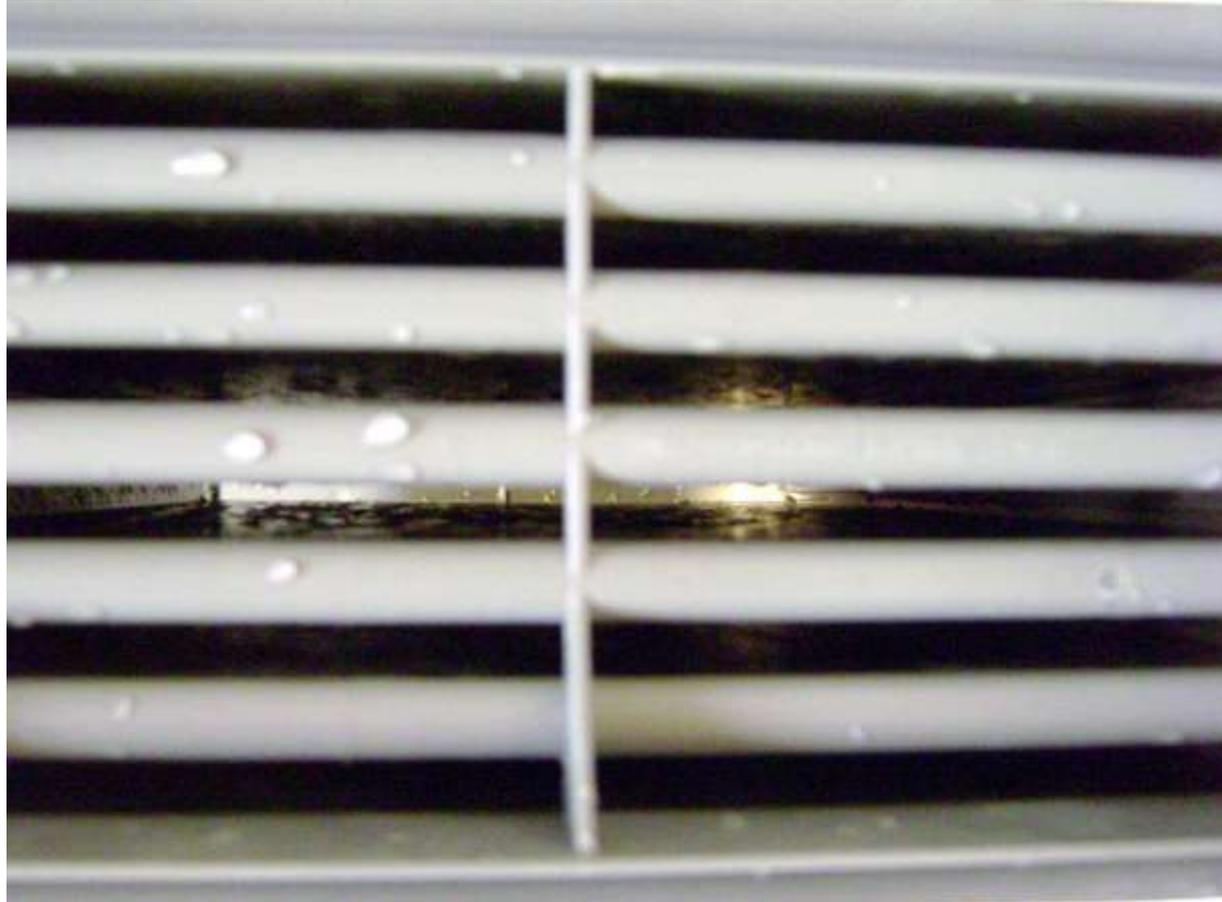
Air Flow – Process air



- **Process air travels from front of condenser to rear. It passes over, and is cooled by the ambient air that passes through condenser in the middle section as discussed earlier. (*enhanced on next slide*)**
- **Moisture that is formed collects in the bottom and runs into “pump” area.**
- **Fin area on side needs to be cleaned of lint monthly; depending on usage.**

* Think of the condenser as a “heat exchanger”.

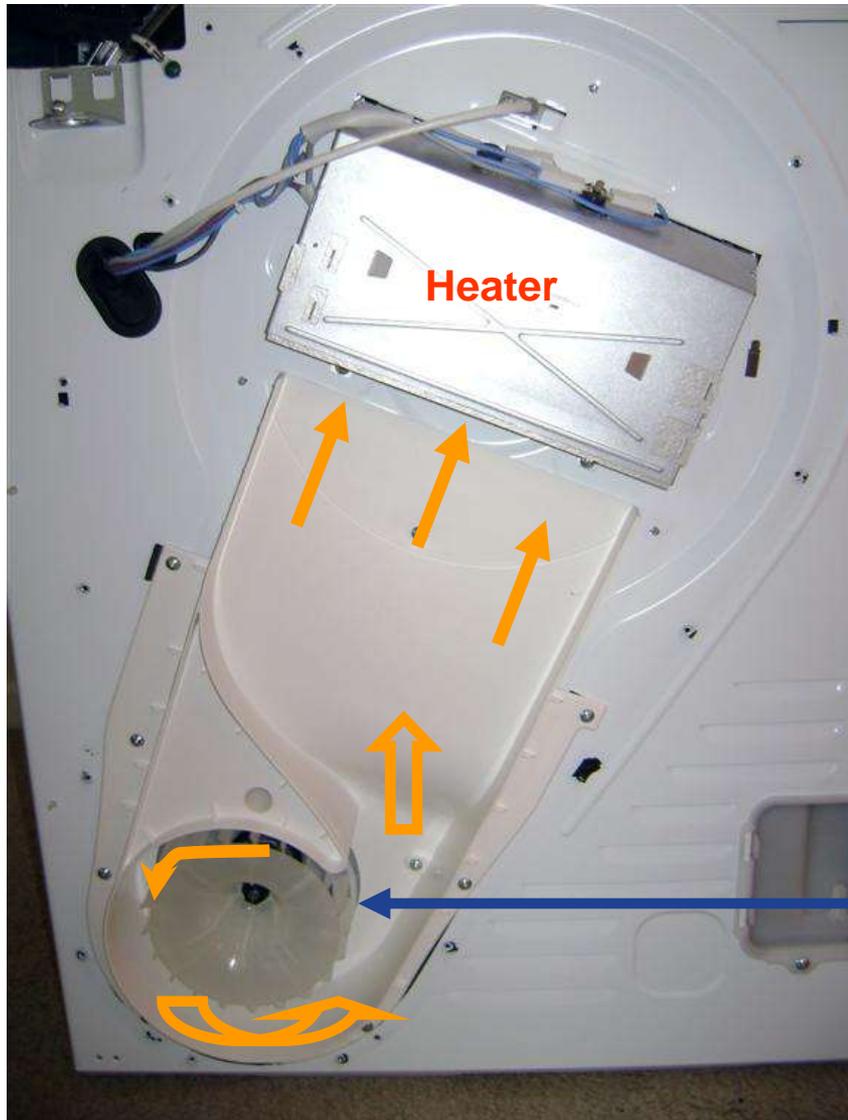
Air Flow – Process air



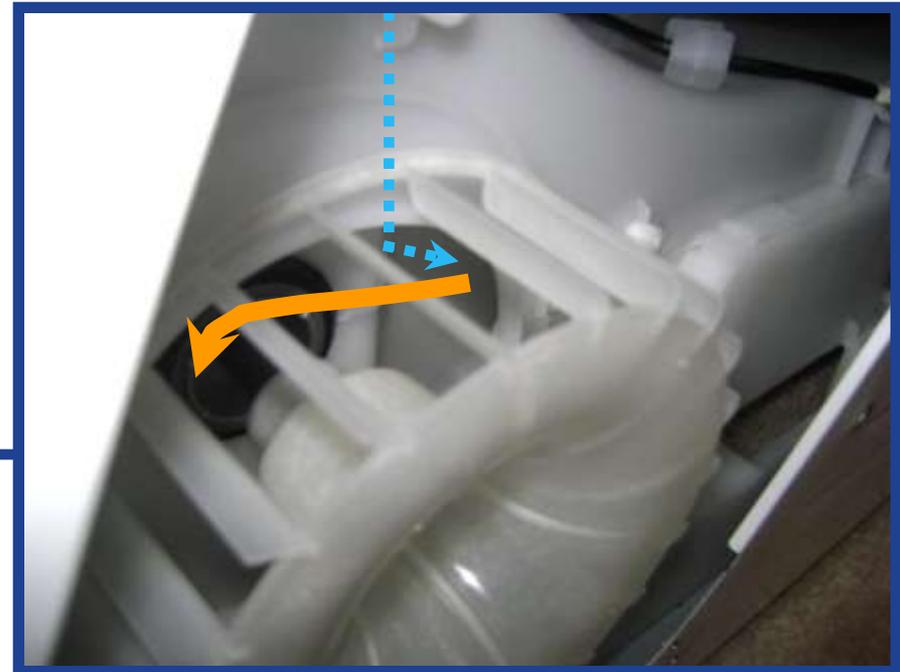
View from end of condenser looking in

Process air travels from front to back in between the flat surfaces where “ambient” air is passing through left to right. The two air loops form the moisture as seen.

Air Flow – Process air

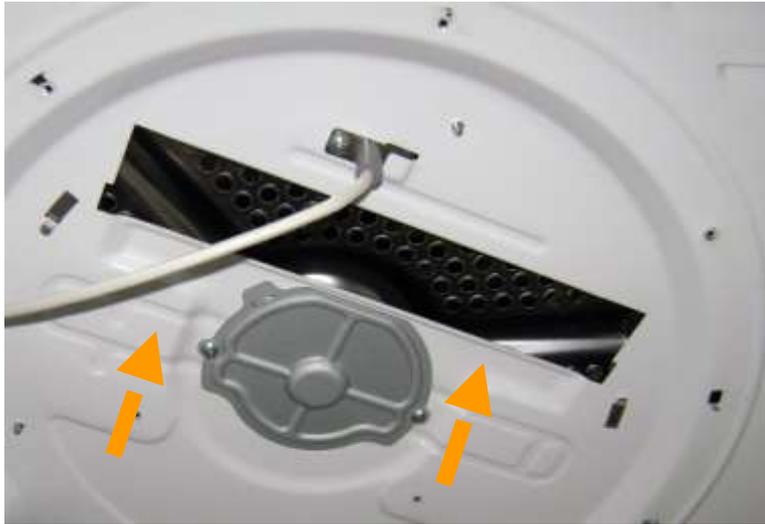


1. Air that exits rear of condenser is pulled by rear blower wheel from this opening in housing



2. Air travels up rear channel and through heater (back plate removed)

Air Flow – Process air



View of air flow with heater removed



View of heater removed



Process air loop repeats

Air Flow – Process air



View of dryer from rear with rear duct cover in place.



Duct cover removed and turned around to view sealed area for air.

Components - Condenser



Locked



Unlocked



NOTE: The access door will not close properly with the latches in the “unlocked” position.

Where does the moisture go?

Some condenser dryer models are air-cooled, and use the ambient room air as a heat sink, by blowing it across the outside of the condenser. These dryers will tend to heat the indoor air in one's laundry room significantly.

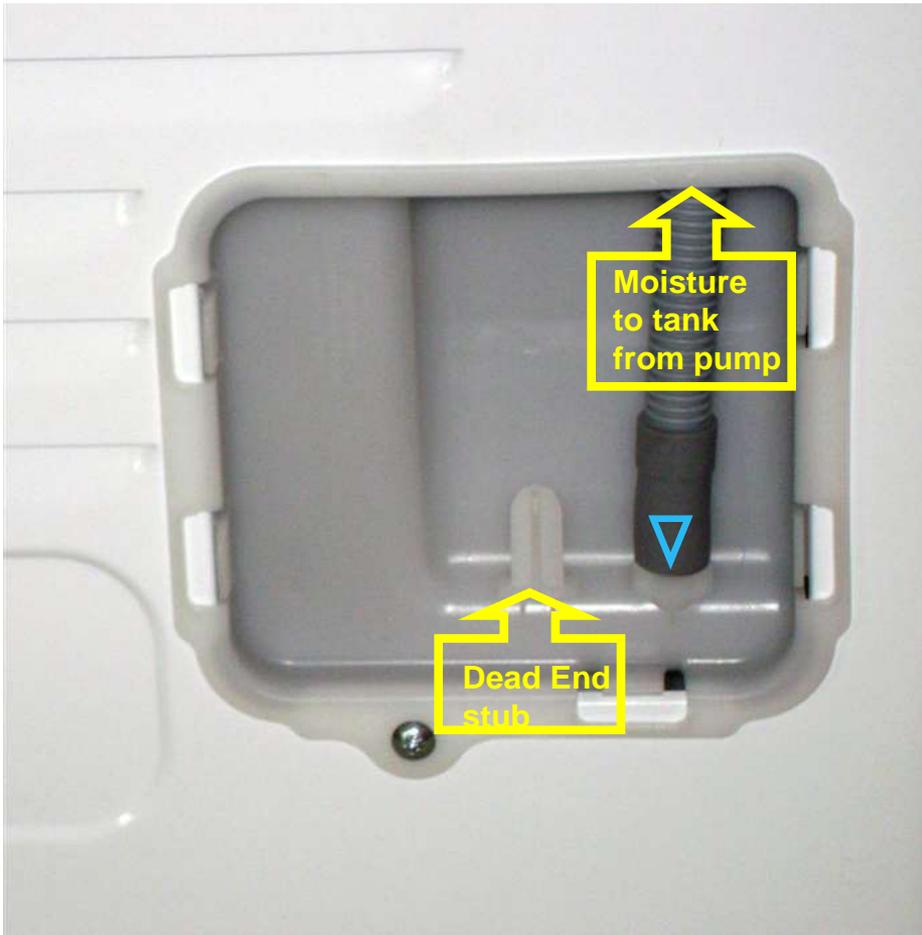
Note: ONLY heat is released – all MOISTURE is contained within the unit.

The condensed water can be either pumped away to a drain line (e.g. into a standpipe shared with the clothes washer) or stored in a container within the dryer to be emptied later.

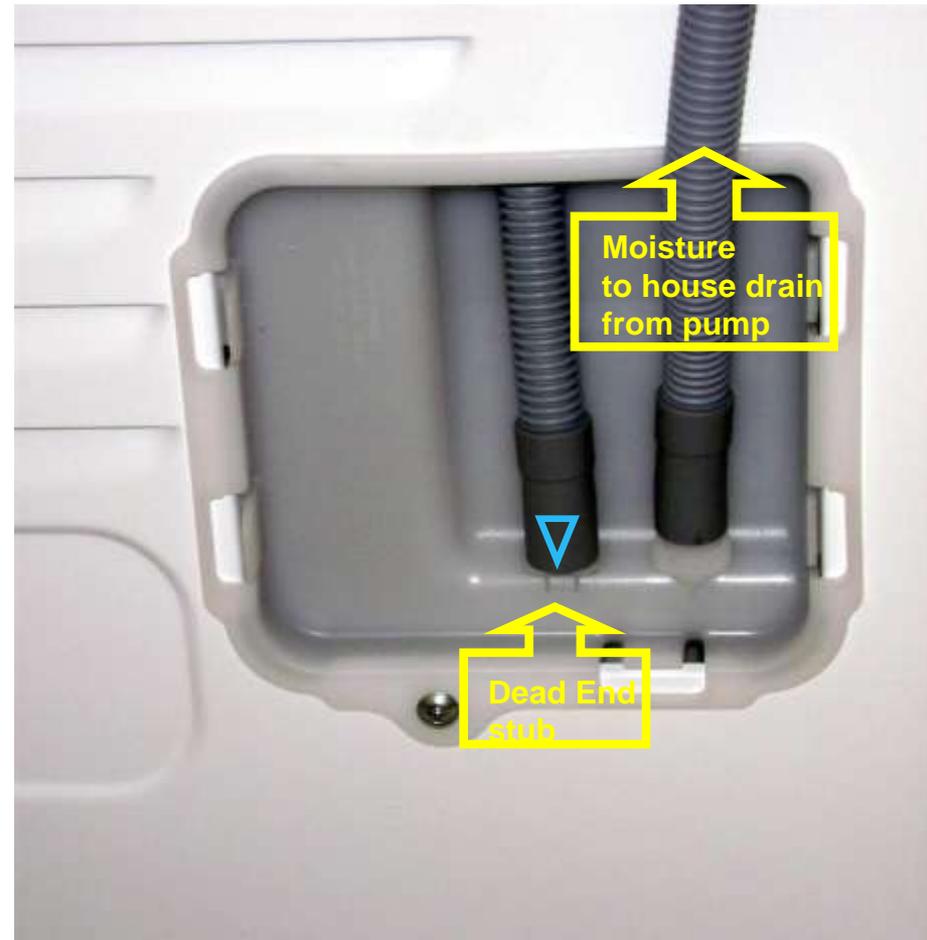
Optional drain hose pictured



Components – Moisture options



Option 1 As set from factory to utilize tank



Option 2 by-pass tank and go straight to standpipe drain utilizing optional drain hose as seen in prior slide.

Note: Move tank hose over to dead end stub

Components - Pump

Inside view with drum removed



- **Gray hose - (moisture) water pumped up to tank**
- **Black hose – drain back down in overflow event**



- **View from back of dryer**
- **Pump accessible but very difficult**

Components – Pump Operation



Pump operation:

Normal condition: on 20 seconds at the beginning of cycle. On 20 seconds at end of cycle.

Overfill condition: float switch triggers pump on 20 seconds. Re-attempts to clear water. If not, pauses cycle and turns LED “Tank full” light on.

Customer can press Start/Pause pad and machine will attempt to complete cycle. Repeats same process above unlimited times if overfill condition still exists.

Components - Pump



Cover removed
Float switch on left
Pump on right – 240V / 212 ohms



Removal view
Two screws secure pump cover
NOTE: Moisture path to pump

Components - Float



Float switch removed



View of pump and float upside down

Components - Hoses



- **Gray hose - (moisture) water pumped up to tank**
- **Black hose – drains back down with a tank overflow event**

Condensation Tank



CONDENSATION TANK
Remove and empty condensation tank when full



NOTE: Slides straight out – no “stop” position.

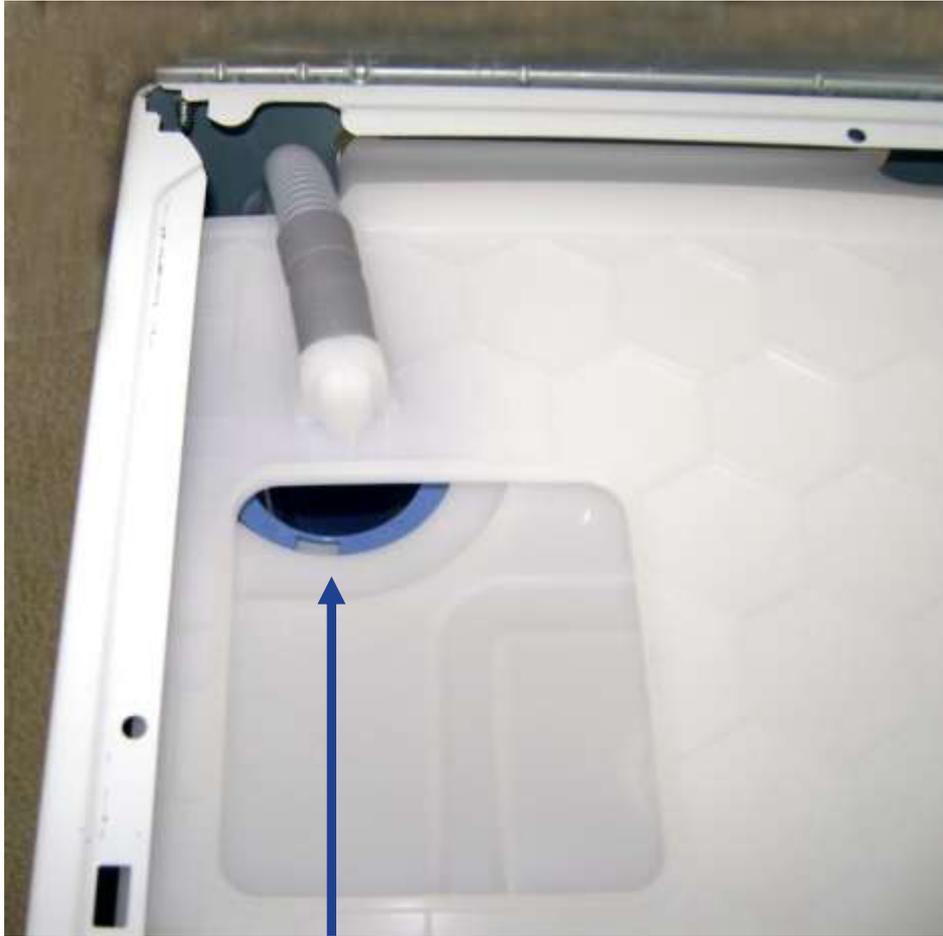
Holds approximately
3.5- 4 quarts.
(4-6 average loads)

Condensation Tank



Amount of moisture after three average size loads

Condensation Tank



Condensation water enters in this top opening



Tank removed

Condensation Tank



Condensation tank slides inside this area.

Condensation Tank - housing



Top panel - removal



Remove two 10mm/Phillips screws in the back.



Slide top panel rearwards appx 1" to clear front support bolts.

Component View



3 screws
secure tank
housing

Wire connections
& Terminal block

Motor
Capacitor

Control - Removal

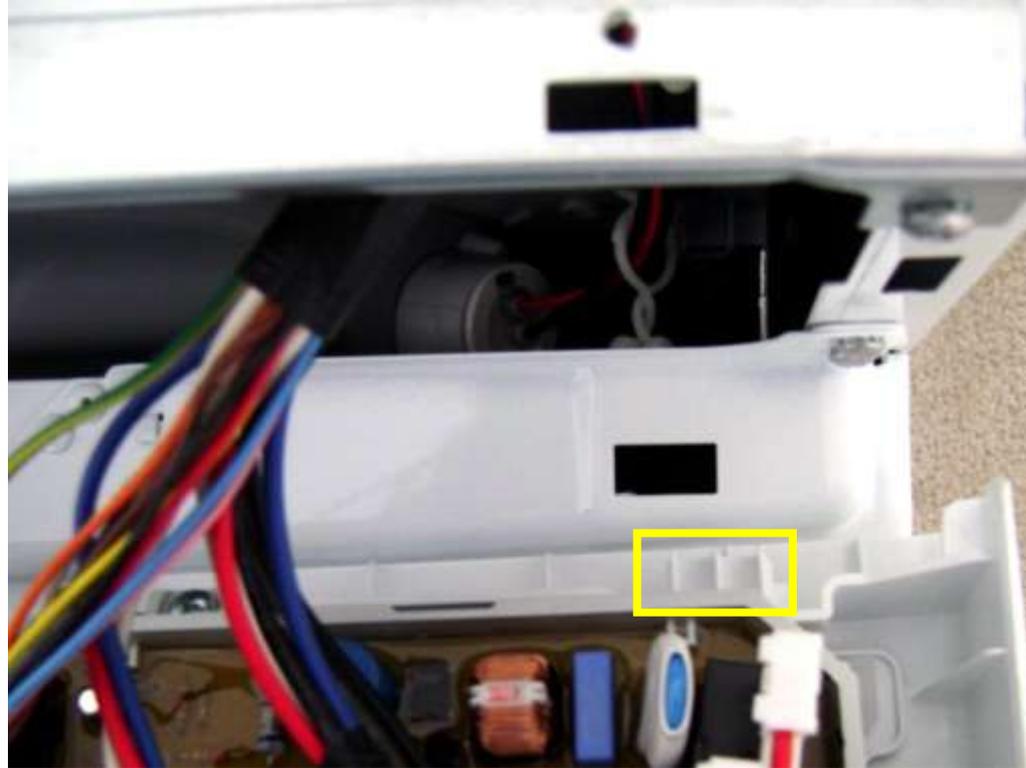


- Slide condensation drawer out
- Remove two Phillips-head screws



- Remove two top Phillips-head screws

Control - Removal



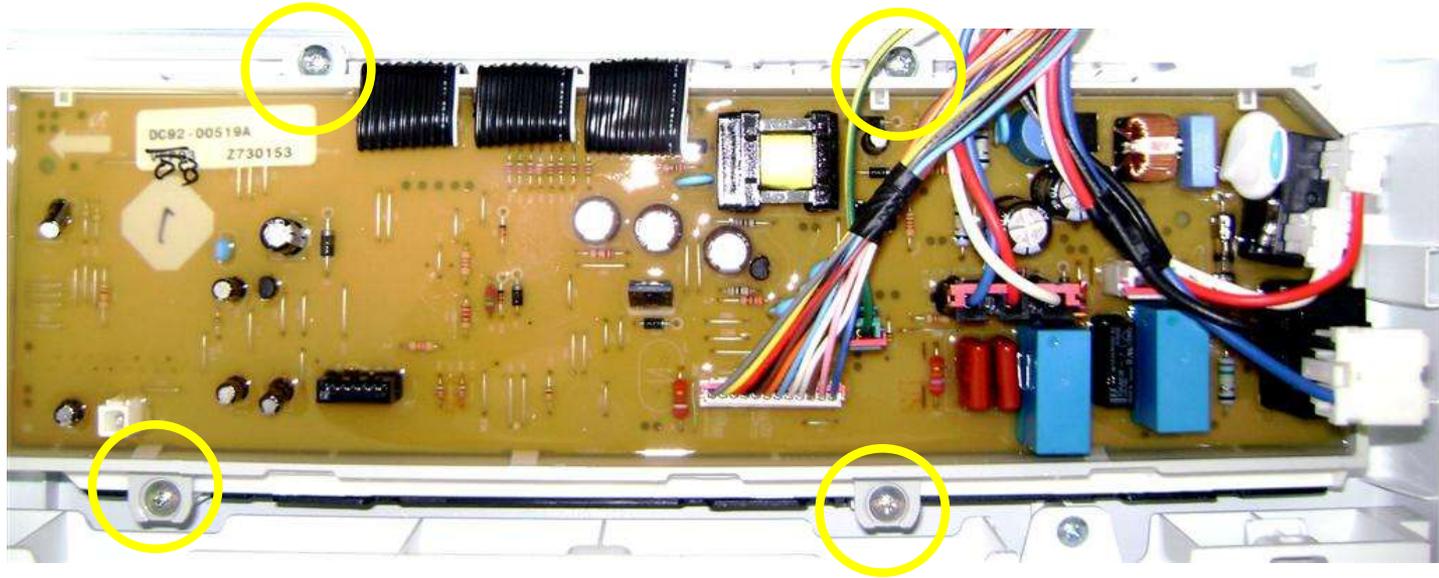
- Lift panel slightly up and forward to clear top and bottom tabs.
(right side bottom tab highlighted)

Control



Knob simply pulls straight off

Control

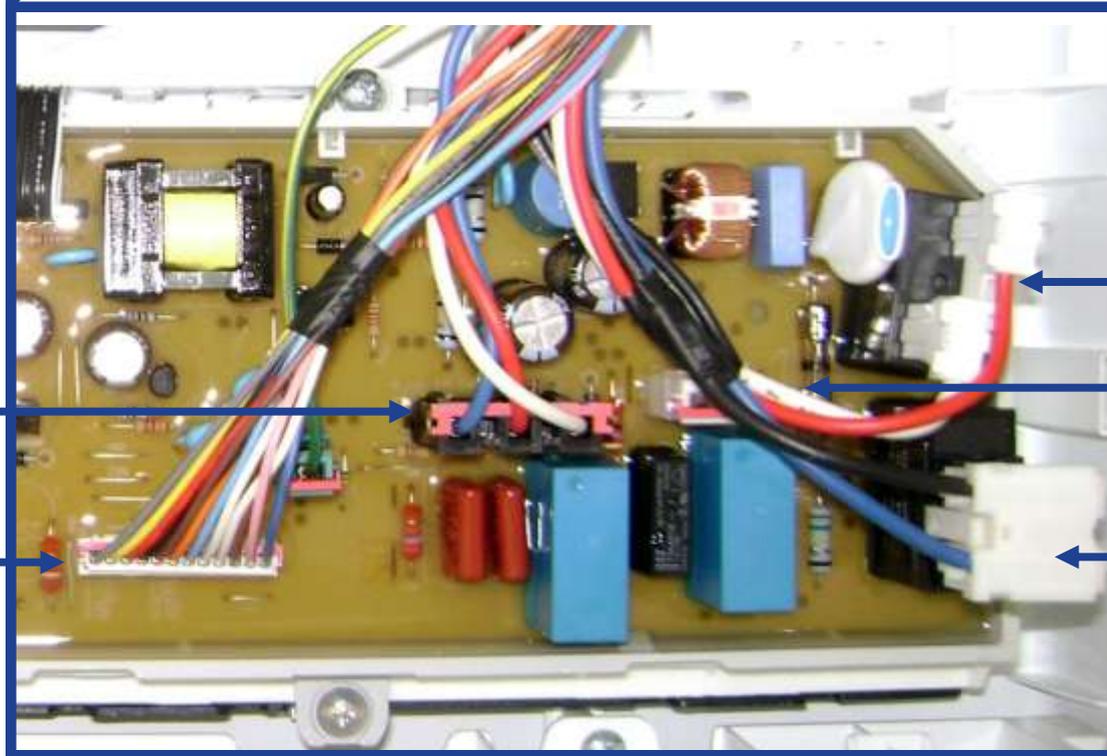
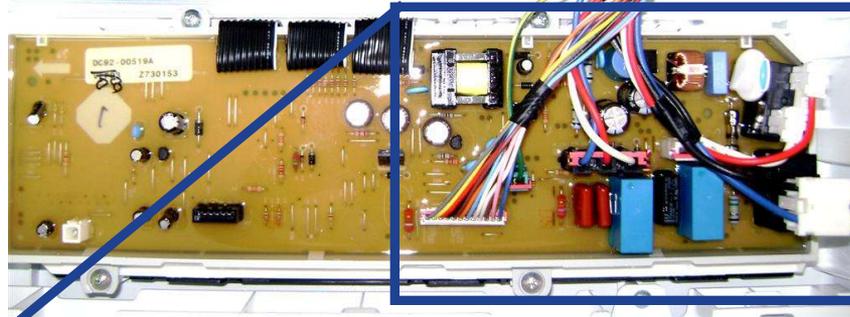


Remove 4 Phillips-head screws



Control Assembly

Control - Connections



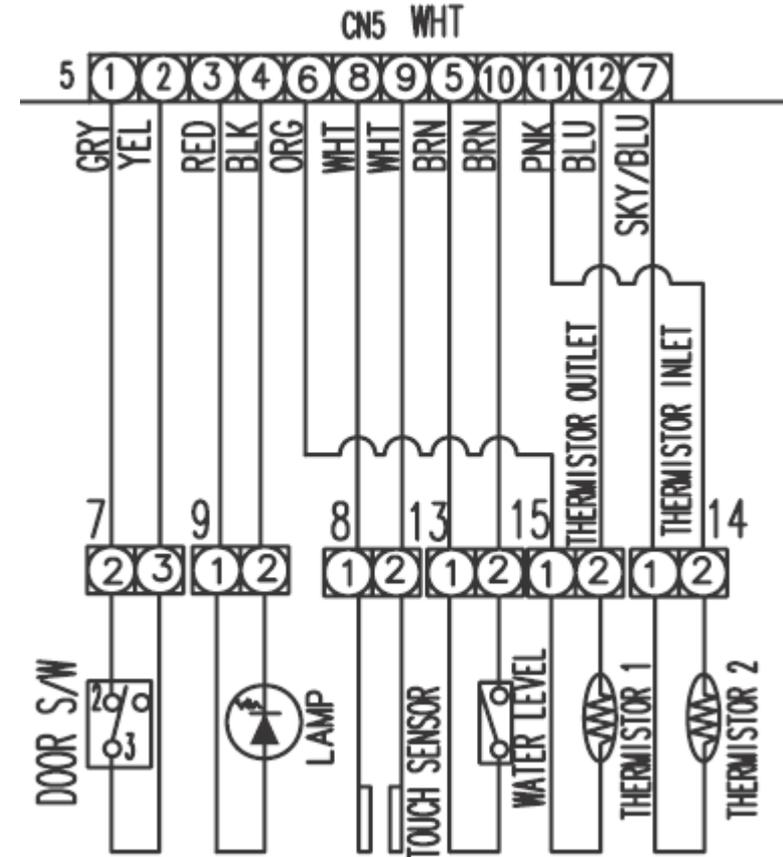
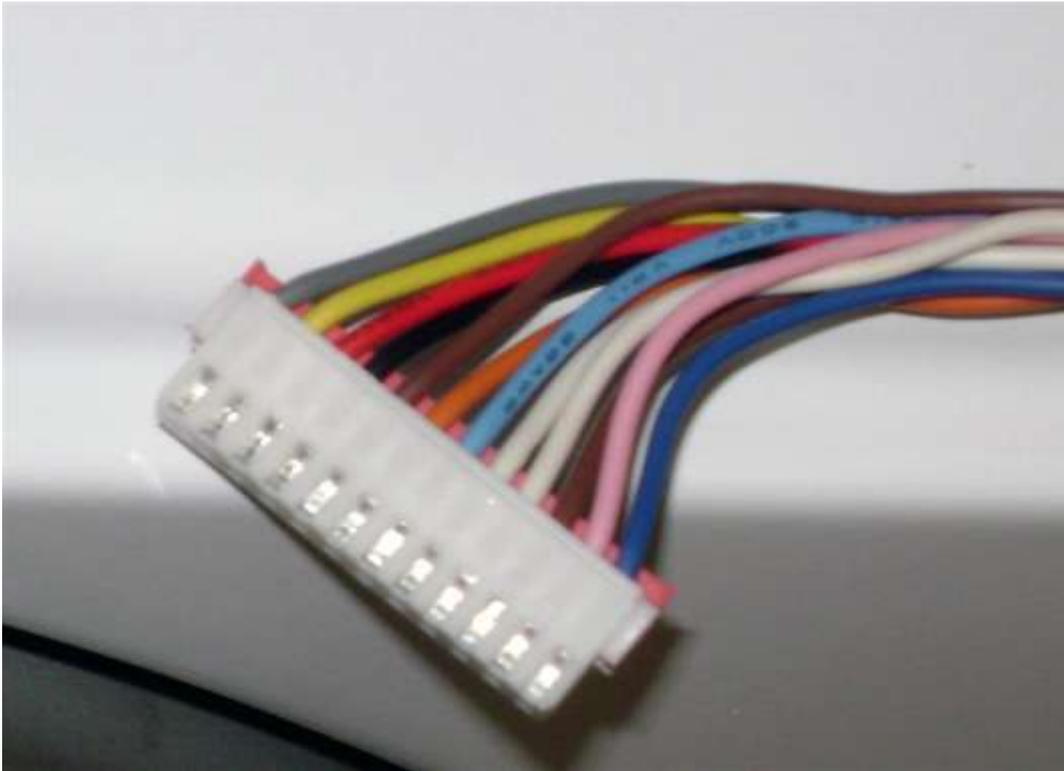
Motor Connector

Heater & Pump Connections

DC Components

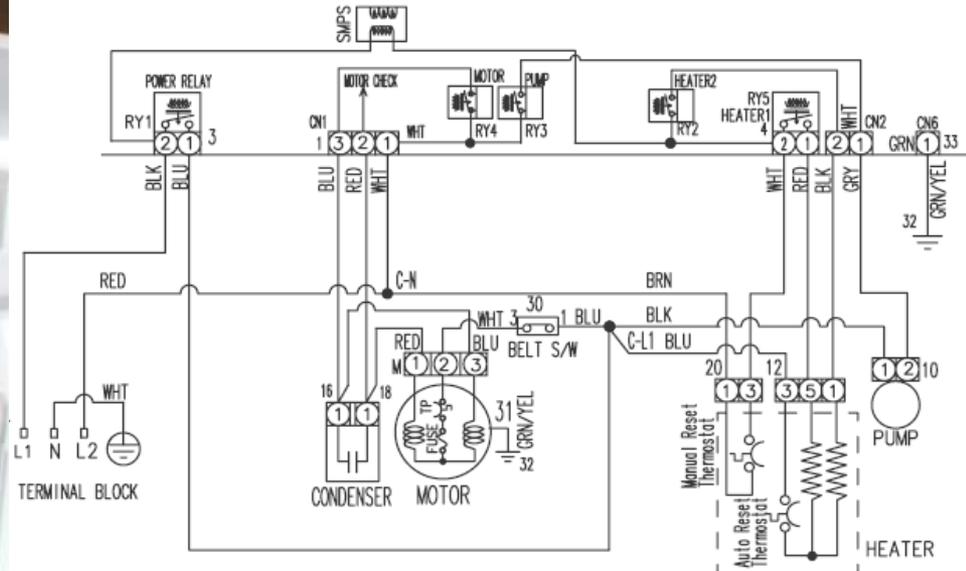
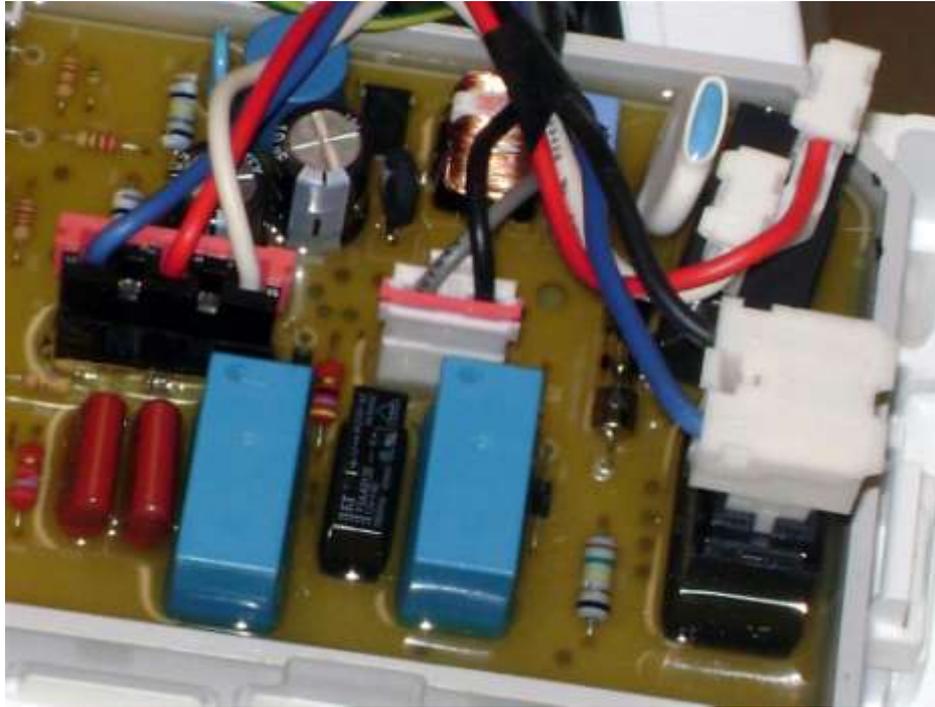
Power Relay

Control – DC Connections



Note physical pin locations and numbers

Control – 240VAC Connections



Components in back of dryer – Power Cord



Components in back of dryer – Duct Cover

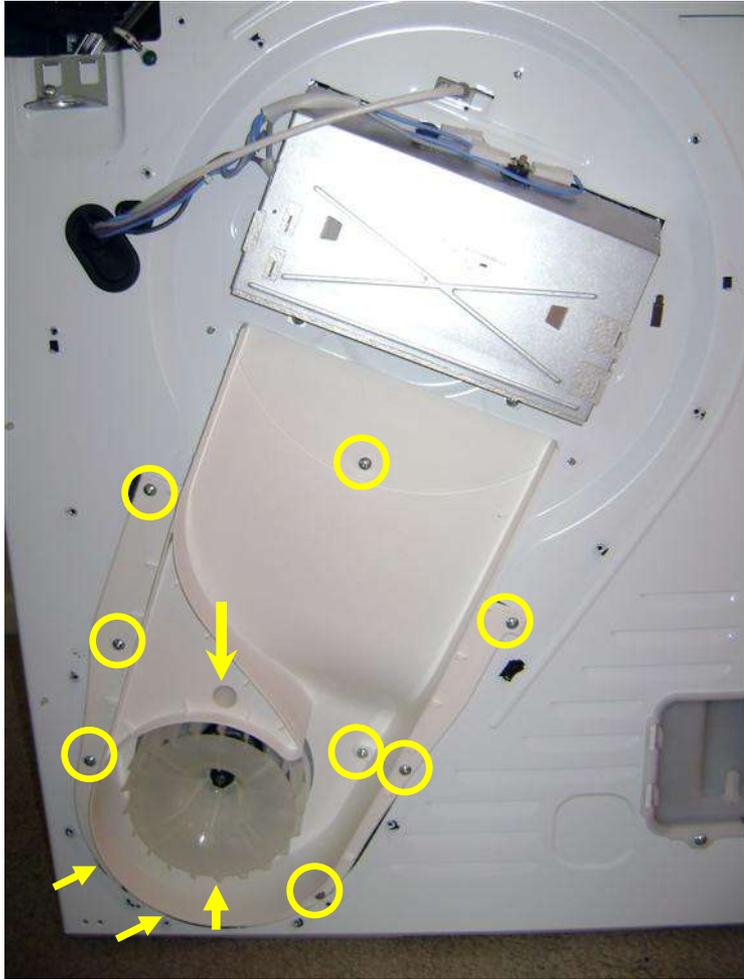


Remove 16 Phillips-head screws around cover.

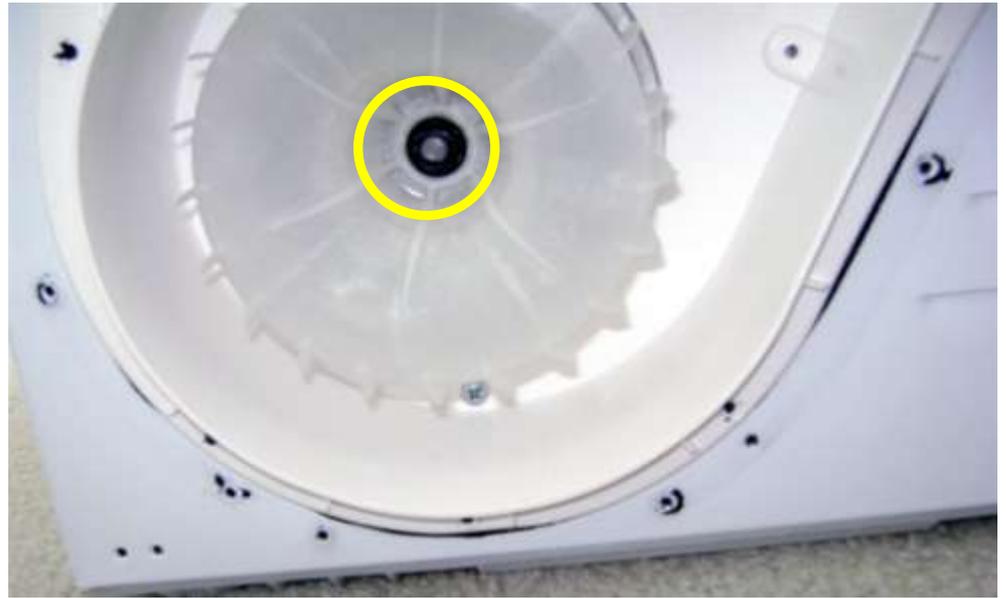


Duct cover turned around to view air seal

Components in back of dryer –Duct fan guide



Remove 12 Phillips-head screws



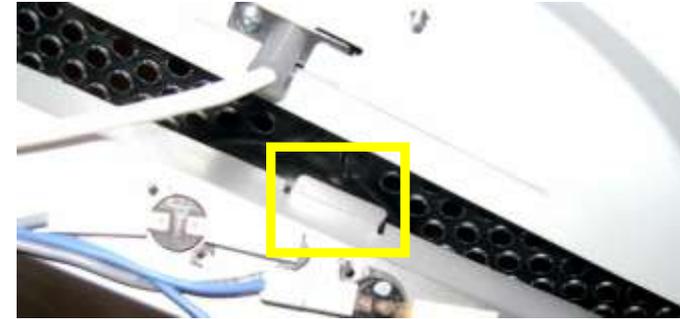
**Blower wheel is removed with 14mm nut.
(clockwise threads)**

Components in back of dryer



Rear view of motor connections and drum belt

Components in back of dryer – Heater Assembly



**Heater assembly consists of two coils
1600 watt & 600 watt
34 Ω & 92 Ω**

Assembly also consists of two thermostats

- Remove two screws at bottom.
- Lean out at bottom to release top tab

Components in back of dryer – Heater Assembly



Inlet thermistor located above heater and replaced with single screw 49K @ 77F



**Auto reset thermostat – (left side)
Opens 212F & Closes 176F**

**Manual reset thermostat (right side)
High limit 293F**

Thermistor Chart

TEMPERATURE	RESISTANCE
32F	162.21K
50F	98.32K
68F	61.46K
86F	39.51K
104F	26.05K
122F	17.59K
140F	12.14K
158F	8.54K
176F	6.12K
194F	4.46K
212F	3.30K

Components in back of dryer – Drum shaft bearing



Remove 2 Phillips-head screws



Remove C-clip securing drum shaft

Door Latch & Catch



- Door switch at top
- Mechanical catch only on side



Door - Hinge - Reversible



Door Switch



View of top door switch looking down



- Remove front panel
- Remove gray housing first by depressing tabs
- Remove white door switch by depressing tab

Front Frame



Remove 8 Phillips-head screws

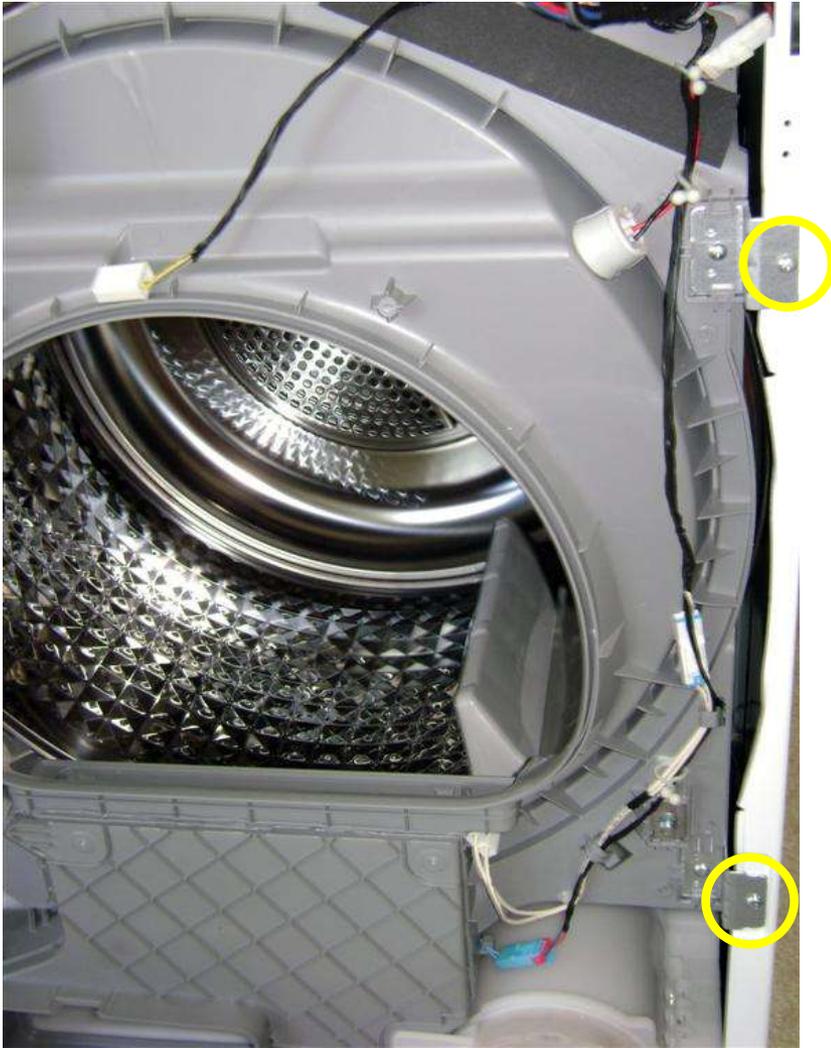


Remove condenser door

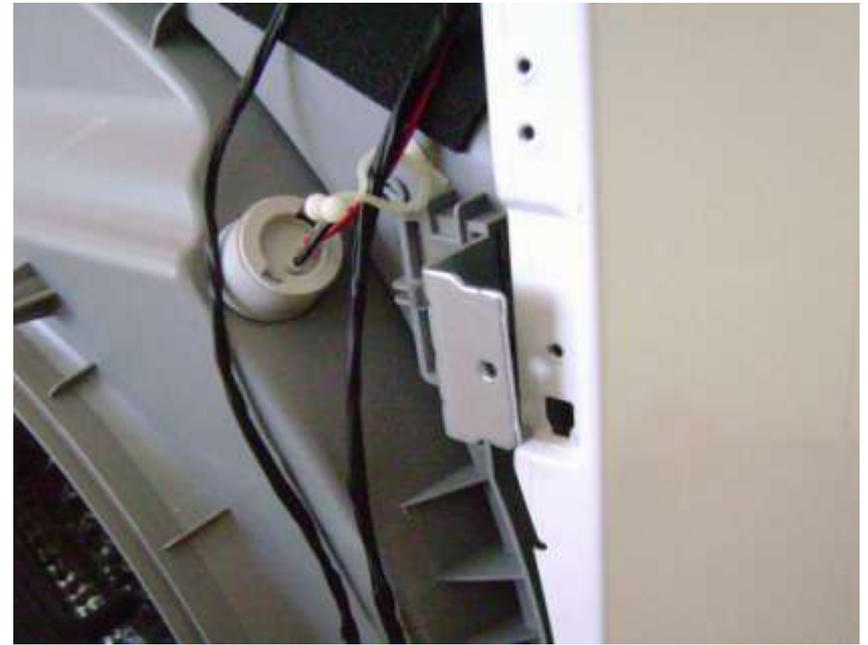


Lift off 3 lower clips

Front Panel



**Remove 4 screws from support brackets
2 – each side**



Remove 3 screws located below condenser

Rollers – Moisture sensor – Outlet thermistor



- Two Rollers secured with 10mm

- Moisture Sensor

Outlet Thermistor



- Pulls straight out for removal

Light



LED Lamp pulls straight down



Replaced as an assembly

Drum Belt - Removal

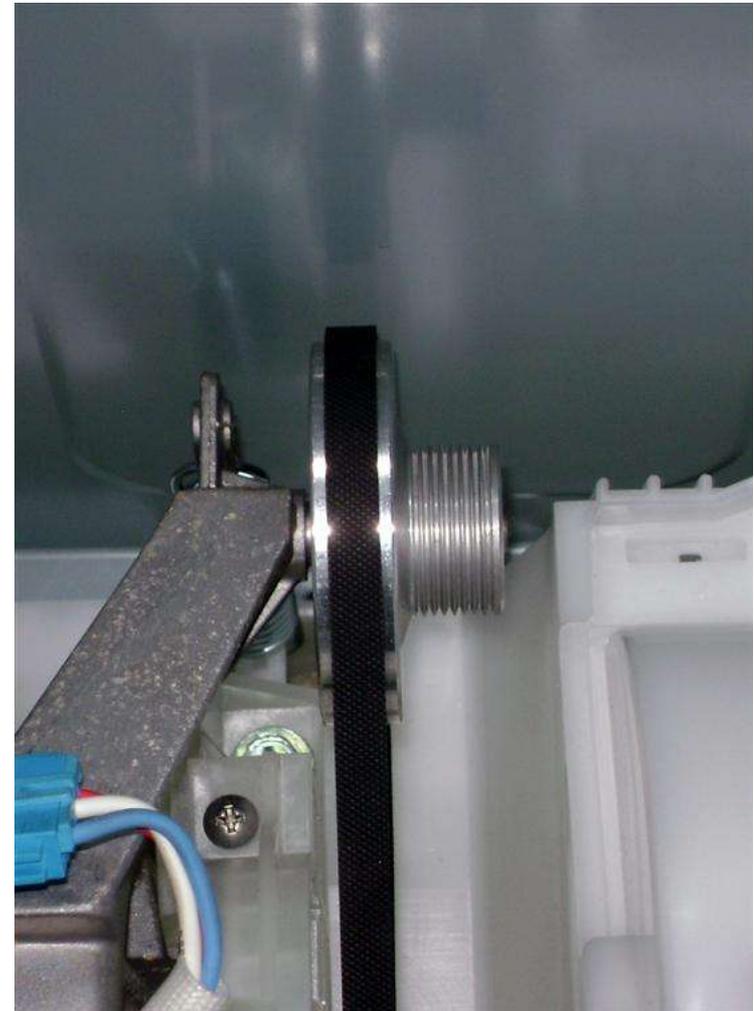


**Remove front panel to gain access to the drum belt.
Drum belt can be rolled off motor pulley**

Drum Belt



Drum belt turned over to view ribs



View of pulley with belt removed

Belt - installation

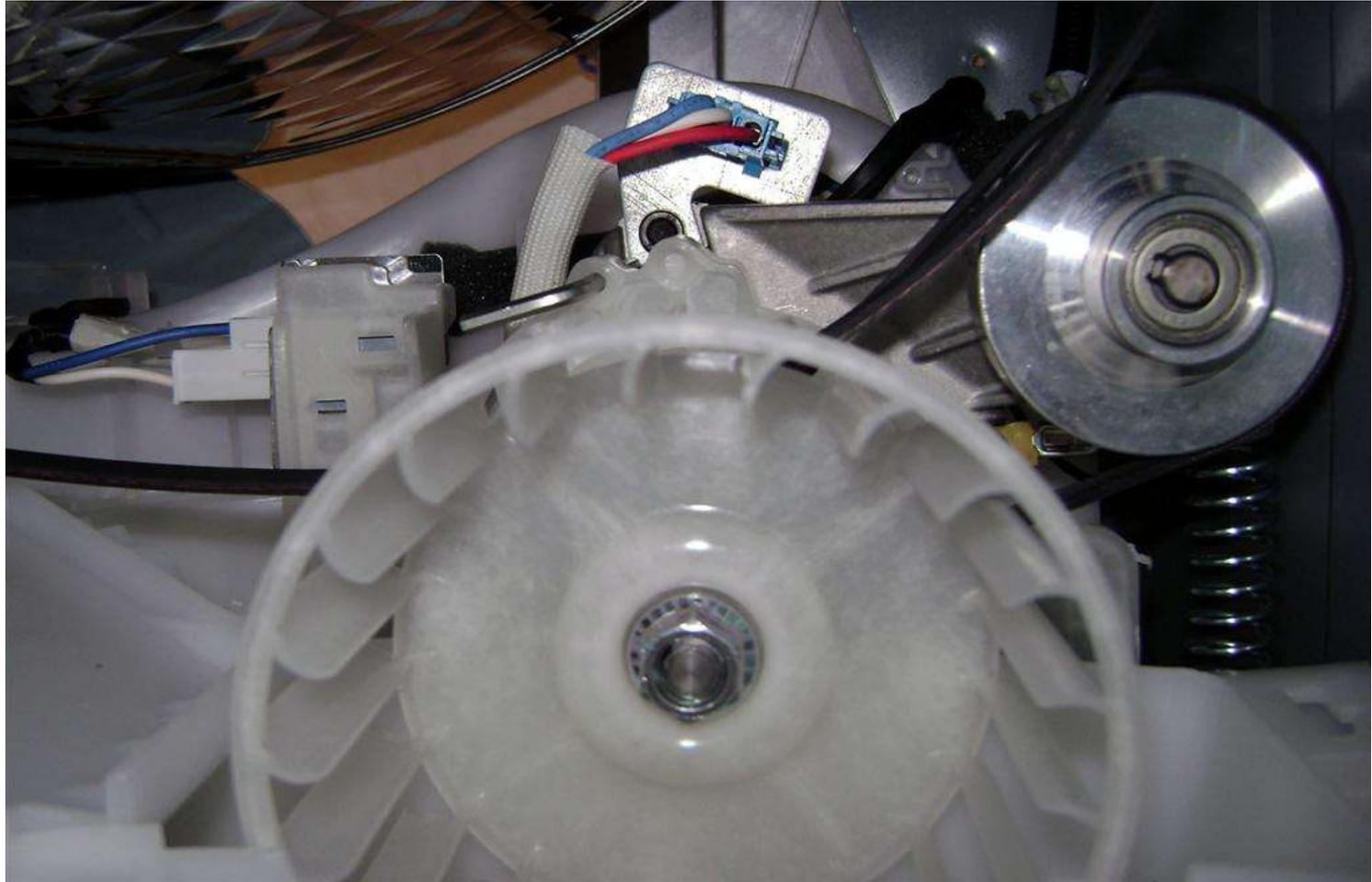


Note hole in top motor support bracket as well as “notched” area of motor housing



1/8 allen wrench or other similar size tool will fit in the hole and used notched area of motor to take up spring tension.
NOTE: Spring tension is extremely strong.

Belt - installation



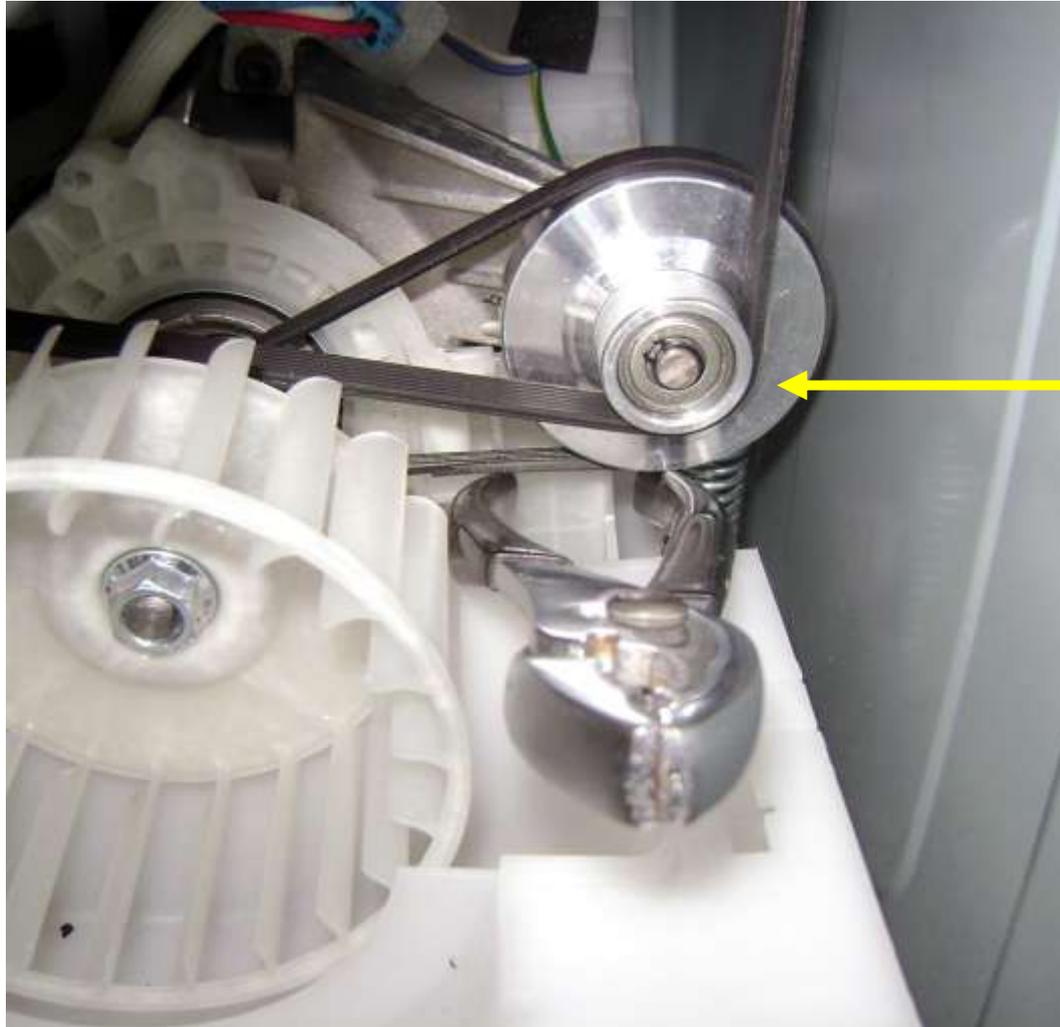
- View from in front of dryer with drum in place.
- Belt will now easily slip over motor pulley.
- Tool removed at this time.

Belt - installation



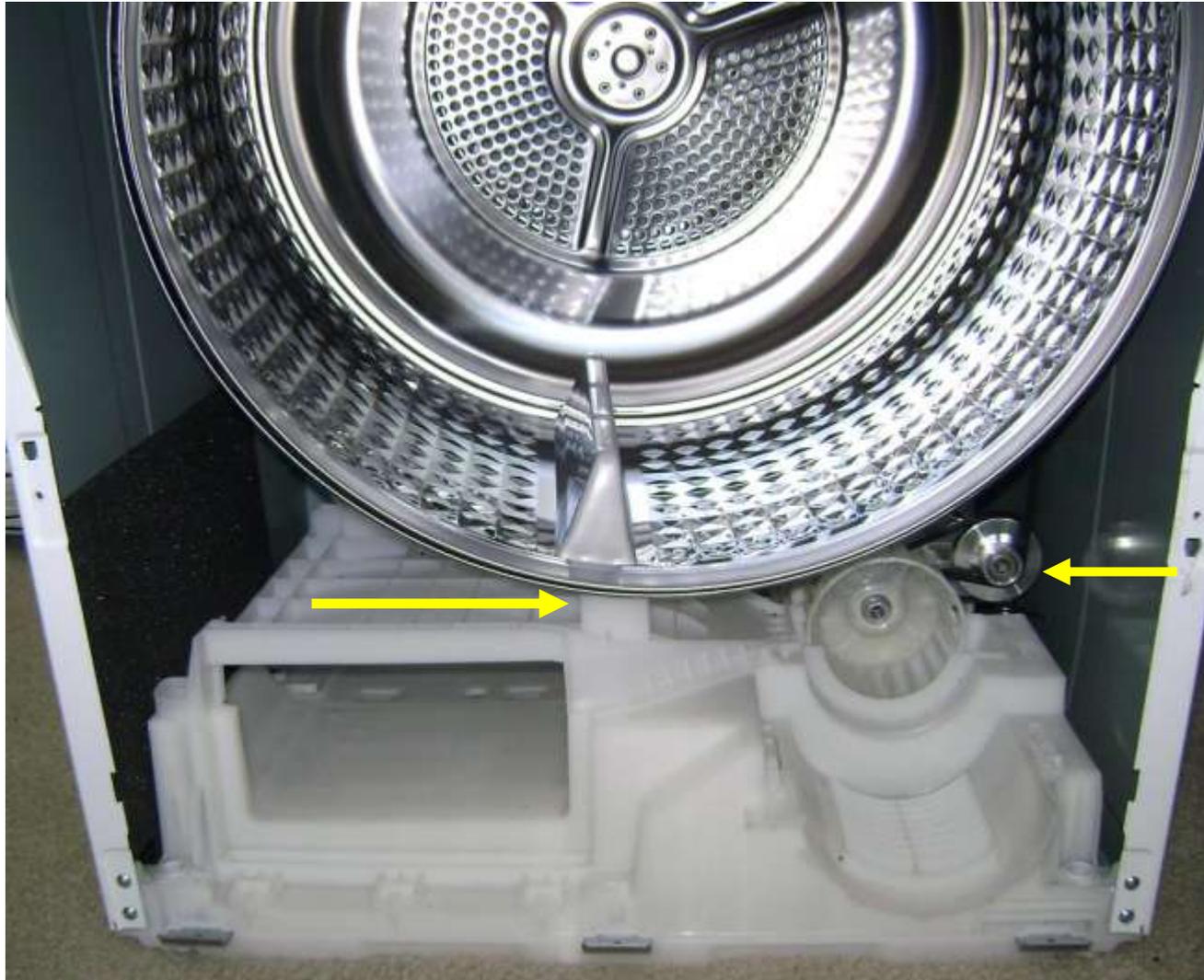
If unable to lift motor by hand to insert support tool, technician would need to pry up on motor pulley in some manner. Care should be taken to not damage drive belt

Belt – installation – alternate method



With the drum in place, lightly lift up on the pulley, and loop the drum belt around pulley

Belt – installation – alternate method



**Belt in
place on
pulley**

**Full view – Drum leans “down” on plastic frame with belt
on first....but no tool needed to install belt.**

Belt – installation – alternate method



- **With towel under drum..inserted on right side only- (left side leaves no room to remove towel with front panel on)**
- **The towel lifts the drum up to better support and line drum lip with rollers on front frame**

Belt – installation – alternate method



Install front frame.. lower section first to line up drum and rollers

Belt – installation – alternate method



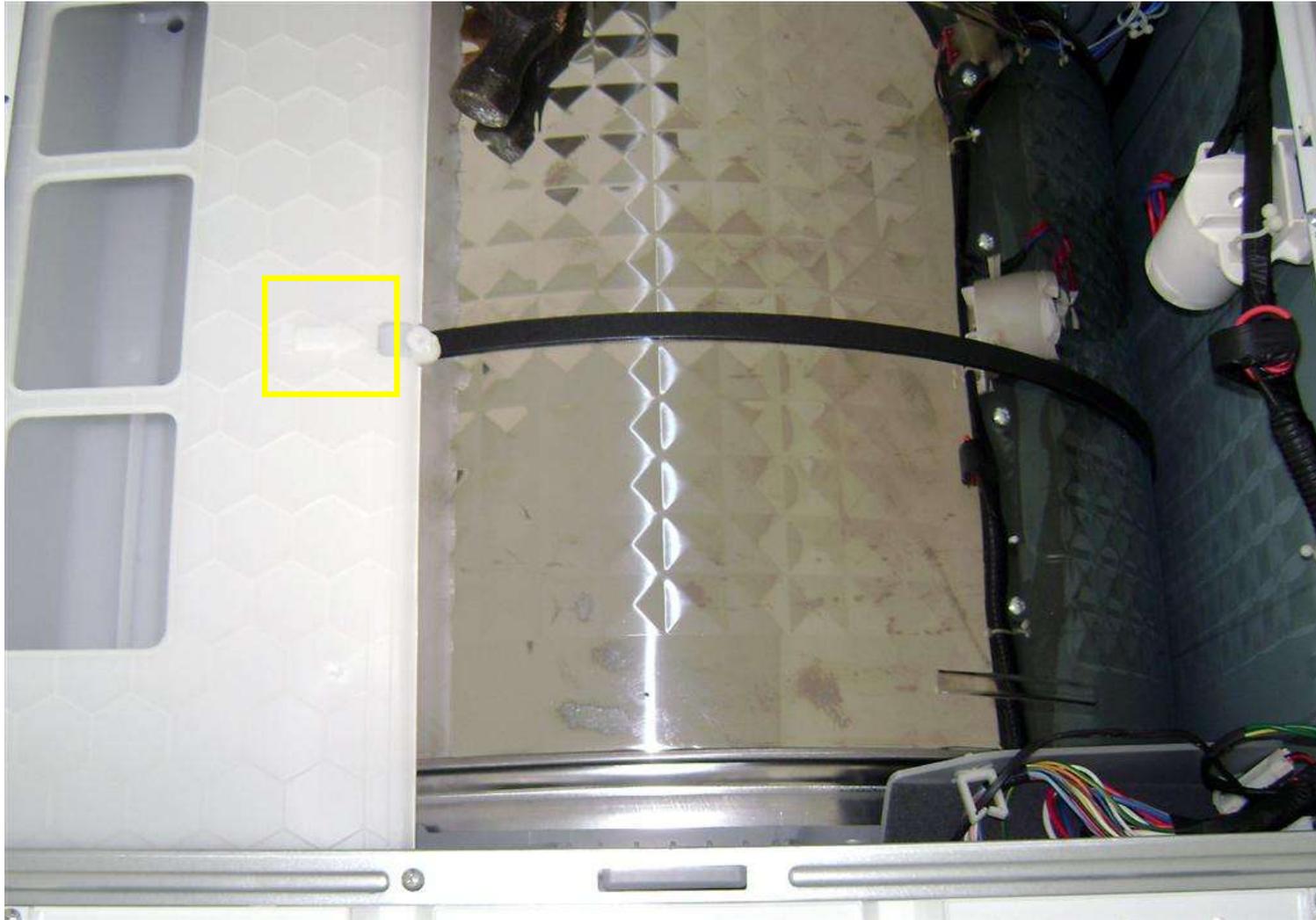
Install lower right side screw first for support of front frame, and then other screws, while noting position of drum lip and belt.

Belt – installation – alternate method



Remove towel and finish installation of front frame. Test belt for fit

Belt - installation



Belt location mark

Belt - installation

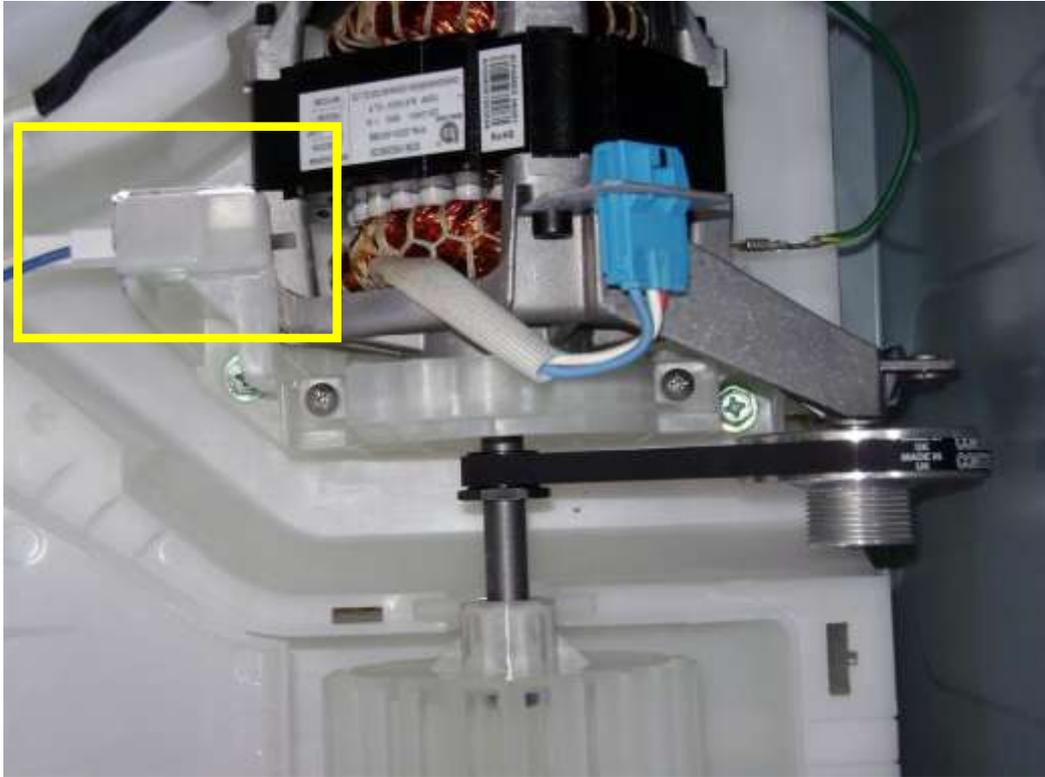


Blower cover lifts up on right side



Front air cover slides forward

Belt - switch



When belt breaks – switch opens



Removed with tabs on housing

Motor - Overview



- Remove blower cover – tabs on right side – lift up
- Note location of screws; 2 on top; 2 on bottom bracket
- Remove back blower - 14mm nut

Motor - Removal



- Remove two screws and lift top support off housing
- Remove left side screw from lower support
- Loosen right side screw (not seen) and swing lower support forward

Motor Assembly



- Front blower wheel nut has “left-handed” threads for removal
- Resistance test: $20\ \Omega$ (white-red) & $14\ \Omega$ (white-blue)

Temperature – Time Chart (Example)

Selection

Cottons

Option

Dry

	Temperature (F°)	Time
Anti-Bacterial	154 ~161 °	85 min
High	154 ~ 161 °	80 min
Medium	122 ~ 151 °	83 min
Low	118 ~ 134 °	87 min
Extra Low	114 ~ 131 °	92 min



Programs – Tank full



Pump runs to try and pump excess water out of sump. Eventually it could pause cycle and light the **red** “Full” LED as shown in picture.

Programs



Time: 10 – 80 minutes

Extended tumble: 90 minutes

Cool down period: 5 minutes (except “Warm Up” is 2 minutes)

Delay Start: 1-18 hours

Service mode

To Enter Service Mode:

- From idle state (no display)
- Press: Signal - Extended Tumble - Signal - Extended Tumble
- Rotate knob: CW to advance to next test.
CCW to go back to prior tests.
- Press “Start/Pause” pad to initiate test.
- Press “Power” to go back to test selection mode.
- Press “Power” during test mode selection to “Exit” test mode.

SERVICE MODE TEST		SEQUENCE		NOTE
t01	Software version	Start/Pause	Display software version number	
		Power	returns to service mode screen	
t02	Error codes	Start/Pause	Display software version number	
		Start/Pause	clear highlighted error code from machine (During t02 test)	
		Power	returns to service mode screen	
t03	User interface test	Start/Pause	LEDs light up	
		any button	hear beep as button is pressed	
		but Power	(During t03 test)	
		Power	returns to service mode screen	
t04	Door switch test	Start/Pause	Display shall show “d0” or “00”.	“d0”: Door is open. “00”: Door is closed.
		Power	returns to service mode screen	
t05	Dryer motor test	Start/Pause	Dryer motor will rotate.	“on”: motor rotate “d0”: Door is open.
		Power	returns to service mode screen	
t06	Thermistor 1 and 1600W heater test	Start/Pause	Display Temperature and dryer motor will rotate.	The heater shall then be turned on for a maximum of 5 minutes
		Power	returns to service mode screen	
t07	Thermistor 2 and 600W heater test	Start/Pause	Display Temperature and dryer motor will rotate.	The heater shall then be turned on for a maximum of 5 minutes
		Power	returns to service mode screen	
t08	Moisture Sensor Test	Start/Pause	displayed the status of touch sensors	Touch the sensor with hand “1”: be detected
		Power	returns to service mode screen	“0”: Is not detected
t09	Water sensor and Pump test	Start/Pause	Display Water Level and turn on the pump.	Turn off drain pump after water level detect empty. Maximum pump work time is 1 minutes. “1”: be detected. “0”: Is not detected
		Power	returns to service mode screen	

Error Codes

Error codes			
Error Code	Description	Trigger Condition	Action
E00	No Error	Displayed in service mode only when there are no errors to display.	
tE2	Inlet Thermistor Error	1. Thermistor Voltage is over 4.8V for more than 5 seconds 2. Thermistor Voltage is under 0.2V for more than 5 seconds.	- Check Inlet Thermistor connector and wiring. - Replace the Thermistor1 as necessary. - Replace the PCB as necessary.
tE4	Outlet Thermistor Error	1. Thermistor Voltage is over 4.8V for more than 5 seconds 2. Thermistor Voltage is under 0.2V for more than 5 seconds.	- Check Outlet Thermistor connector and wiring. - Replace the Thermistor2 as necessary. - Replace the PCB as necessary.
dE	Door Fail	Door Interupt Voltage is continously Low level for more than 256 milliseconds.	- Check Door switch and Door switch wiring. - Replace the Door switch as necessary. - Replace the PCB as necessary.
od	Over Dry	The Dry and cooling process is over 240 minutes. (Failure mode is stuck heater relay, should replace MC board.)	- Check Thermistor1,2 connector and wiring. - Replace the thermistor as necessary. - Replace the PCB as necessary.
HE	Heating Error	Heating Temperature is over 185 Fahrenheit for more than 10 seconds. (Failure mode is stuck heater relay, should replace MC board.)	- Check the Heater and Heater's connector. - Replace the PCB as necessary.
HE4	Heating Error(Filter Check)	Clean lint filter detected 3 consecutive times.	- Check the case filter & Condensor - Check the Duct Fan. - Replace the PCB as necessary.
bE2	Button Error	When any key is continously pressed for more than 30 seconds.	- Check for stuck keys on panel. - Replace the control panel as necessary. - Replace the PCB as necessary.
3E1	Motor Relay Open	When the motor state is running, the control detects the high motor Signal within 120 seconds. (The Motor Relay cycles on/off once every 30 seconds)	- Check wiring to PCB - Replace the PCB as necessary
3E2	Motor Relay Stuck	When the motor state is stop, the control detects the zero cross motor signal within 60 seconds.	- Check motor's connector and wiring. - Replace the PCB as necessary
5E	Drain Fail	Water overflow detected 3 consecutive times.	- Check the water tank & water sensor. - Check the pump & drain pipe. - Replace the PCB as necessary.

Schematic

