TL751XXL DRYER TRAINING PROGRAM

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Distributor of Fine Appliances

ASKO

4th Edition 05/15/2008

Program agenda

- General information
- Dryer operation
- Tear-down procedure / component explanation
- Error codes
- Diagnostic mode
- Hands-on tear-down

General Information

- Warranty
- Model/serial location
- Electrical considerations
- Duct considerations
- Positioning of the unit
- Door swing

Product warranty

- Asko 2 Plus 1 Warranty
  - 2 years from date of installation
  - 3 years provided the registration gets submitted within 90 days of the installation
- Lifetime part warranty
  - Part only – stainless steel tank, drum or inner door
  - Only if it fails to hold water due to a manufacturing defect

Product warranty

- Applies to all Asko appliances manufactured after January 1, 2008
- Serial number identification
  - 0801xxxxxxxx and higher
  - Combo unit – 200801xxxxx and higher

Model/serial tag location

Electrical considerations

- 240 VAC
- 30 AMP
- 3 or 4 wire as designated by local code

Duct considerations

- Max length of 4” diameter rigid metal duct – 65’
- Max length of 4” diameter flex metal duct – 45’
  - Deduct 6’ for each elbow
  - No more than four 90 degree elbows if possible
  - Do not use plastic or thin foil duct material
- Use as few joints as possible
- Duct tape all joints

Positioning of unit

- ½” clearance at the sides and top of unit
- Minimum of 6” clearance behind dryer
- Unit should be placed on a solid floor
- Unit must be level
  - Can effect tumbling action and humidity sensor accuracy
  - Legs must be locked into place

Door swing can be reversed

Left hinge door swing

Right hinge door swing

Door reversal steps

- Remove bolts holding the door hinge to cabinet
- Remove the door
- Move the latch to the opposite side of opening
- Turn door upside-down and reinstall on opposite side
- Reinstall bolts holding door hinge to cabinet

General Information

- Warranty
- Model/serial location
- Electrical considerations
- Duct considerations
- Positioning of the unit
- Door swing

ANY QUESTIONS ???

Dryer operation

- Sensor Dry
- Manual Dry
- Dry Options
- Temperature Options
- Dry time Options
- Signal Tone
- Rack Dry
- More Time
- Less Time
- Damp Signal
- Anti Crease
- Delay Start
- Child Lock

Control console - Dryer operation

- Sensor dry programs
  - Bulky Items - temp high only; dryness adjustable
  - Towels – temp high only; dryness adjustable
  - Everyday Wear – temp mid-high; dryness adjustable
  - Synthetics – temp medium; dryness adjustable
  - Gentle – temp low; dryness adjustable
  - Ultra Gentle – temp low; dryness adjustable
  - Iron Dry – temp ultra low; dryness not adjustable

Control console - Dryer operation

- Manual dry programs
  - Quick dry – temperature high;
  - Freshen – temperature mid-high;
  - Air dry – temperature – no heat

Dry options

- Dry options determine the percentage of moisture that will be removed from the clothing

Selection	Target humidity removal
– Very dry	100%
– More dry	100%
– Normal dry	96% or higher
– Less dry	91 – 98%
– Damp dry	85 – 93%

Temperature options
(Only available on Manual Dry)

Level	Heater on	Heater off
– High	132F	145F
– Mid High	125F	138F
– Medium	113F	125F
– Low	105F	118F
– Ultra Low	91F	104F

Dry Time options (manual dry only)

- Defaults to 40 minutes
- All selected times include a 5 minute cool-down
- Can select up to 60 and then to 20 or 30 minutes by pressing DRY TIME button
- Pressing MORE TIME or LESS TIME button will allow a change in 1 minute increments
- Maximum drying time is 1 hr & 55 min
- Minimum drying time is 10 minutes

Signal tone options

- Selection from Low to High
- Selection cannot be changed during the program operation

Rack Dry

- Time defaults to 55 minutes
- Only Low or Ultra Low heat can be selected
- Time can be adjusted with More/Less button
- Anti-crease or Damp Signal cannot be selected

More Time option

- This button increases the selected time in one minute increments
- Time increases up to 155 minutes
- This option can be used with Manual dry and Anti Crease options

Less Time option

- This button decreases the selected time in one minute increments
- Time decreases up to 15 minutes
- This option can be used with Manual dry and Anti Crease options

Damp signal

- Only operational in Sensor Dry selection
- Dryer will beep every 3 seconds after target humidity has been achieved
- The beep stops if the door is opened or the Start/Stop button is pressed

Anti Crease

- This selection does not change the program time
- At end of cycle motor runs for 10 seconds out of each 6 minutes
  - The motor runs for 10 seconds, stops for 5 minutes and 50 seconds.
- To stop Anti Crease function, press Start/Stop OR the Power button
- This function can be selected or cancelled during the program

Delay start

- The pre-set time indicates the delay time
- Pressing the Delay Start button displays the delay time in the display
- To pre-set operation
  - Select cycle
  - Select Delay Start
  - Select delay time
  - Press Start/Stop button

Child Lock

- After program begins, press and hold the Child Lock button for 3 seconds
- All functions with exception of Power button are locked out
- To clear Child Lock, press and hold Child Lock button for three seconds OR press the Power button

Dryer operation

- Sensor Dry
- Manual Dry
- Dry Options
- Temperature Options
- Dry time Options
- Signal Tone
- Rack Dry
- More Time
- Less Time
- Damp Signal
- Anti Crease
- Delay Start
- Child Lock

ANY QUESTIONS ???

Tear-down procedure

- Product disassembly
- Component function
- Circuit flow for various components

Front console removal

Remove screw cover at left end of console
Remove screw to release the console

Front console removal

Lift up on the console assembly to release
Pull forward to expose harness connections

Disassembled control console

Refer to parts break-down

Control console is broken down into numerous pieces

Top Removal

Front

Rear

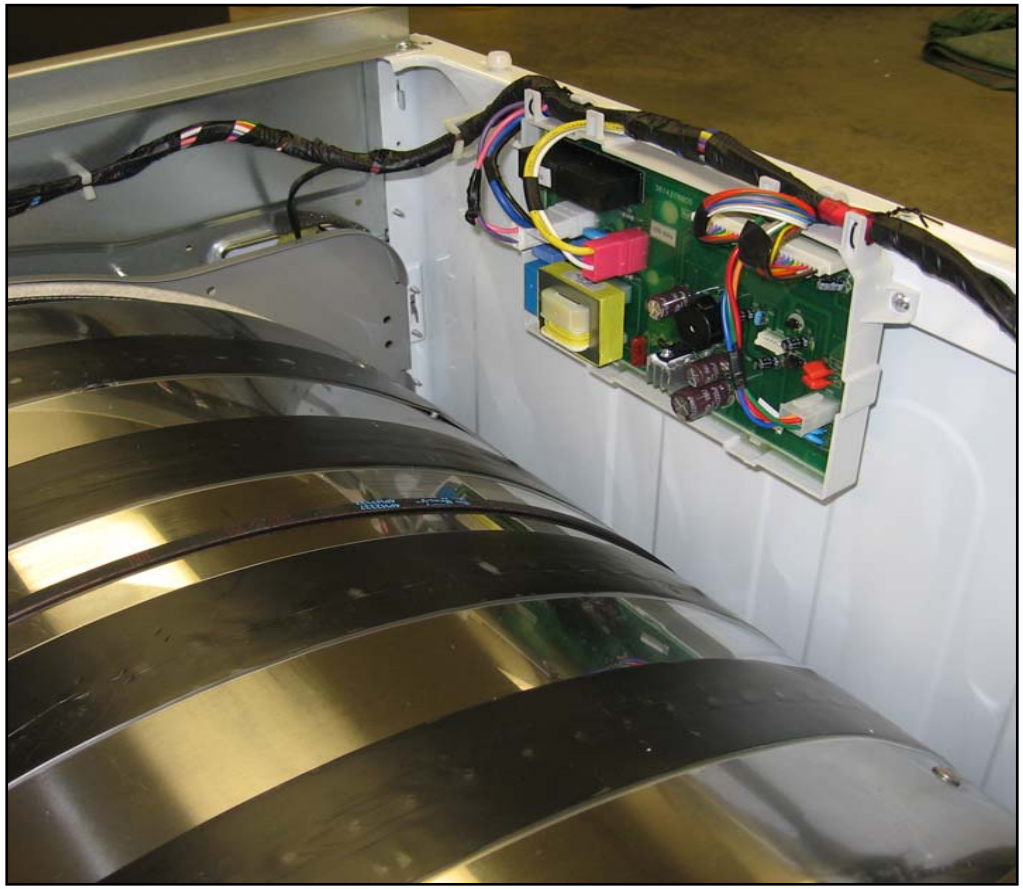
Remove three screws at the front of the top

Remove two screws at the rear of the top

Top Removal

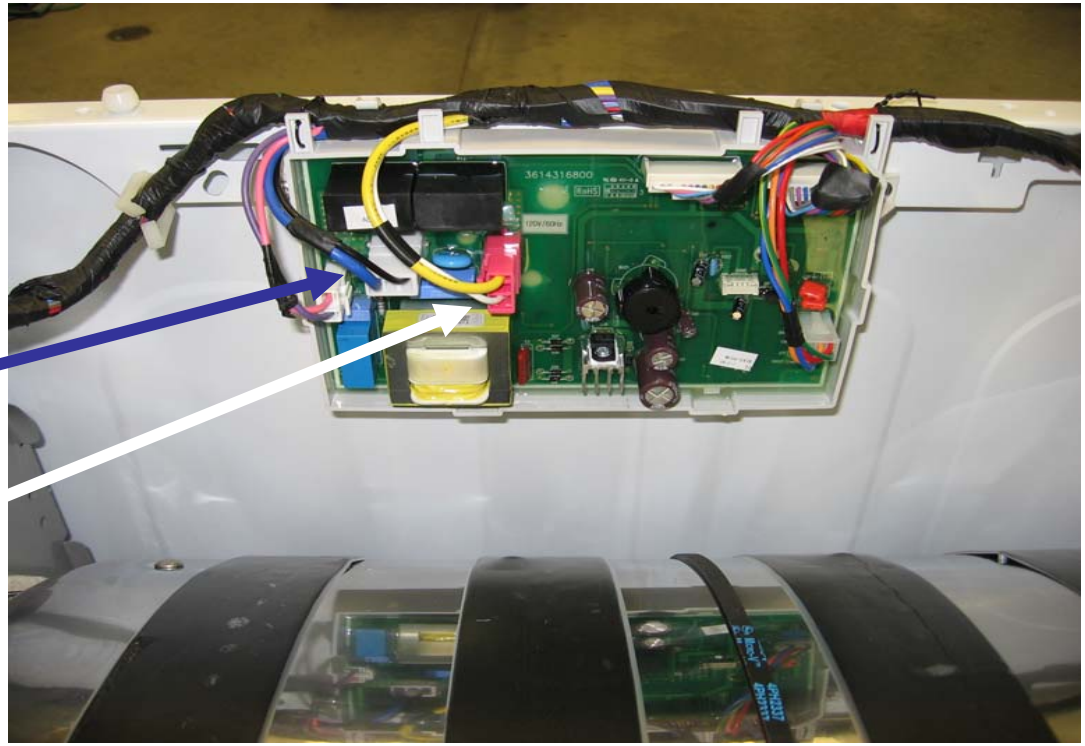
Slide the top forward to release from clips
Lift up and off of side panels

PCB – Power Control Board



Located on side wall under main top

Test points at Control Board



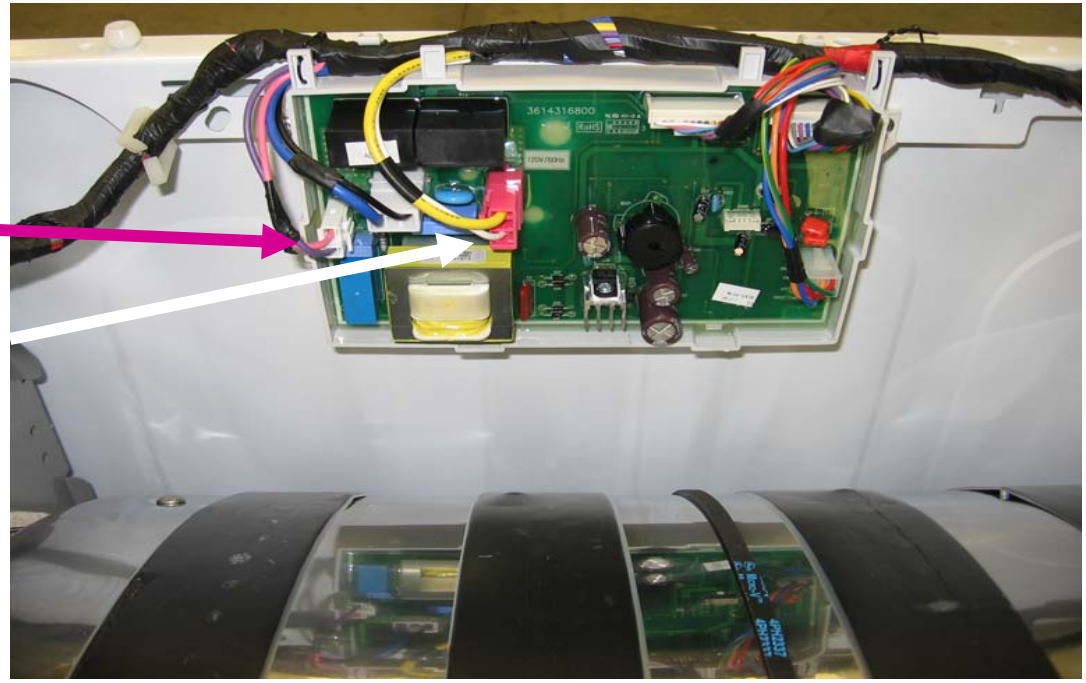
Input voltage at the power control board

Con3 – blue wire

Con2 – white wire

Should measure 120VAC

Test points at Control Board



Output voltage – 120VAC to motor

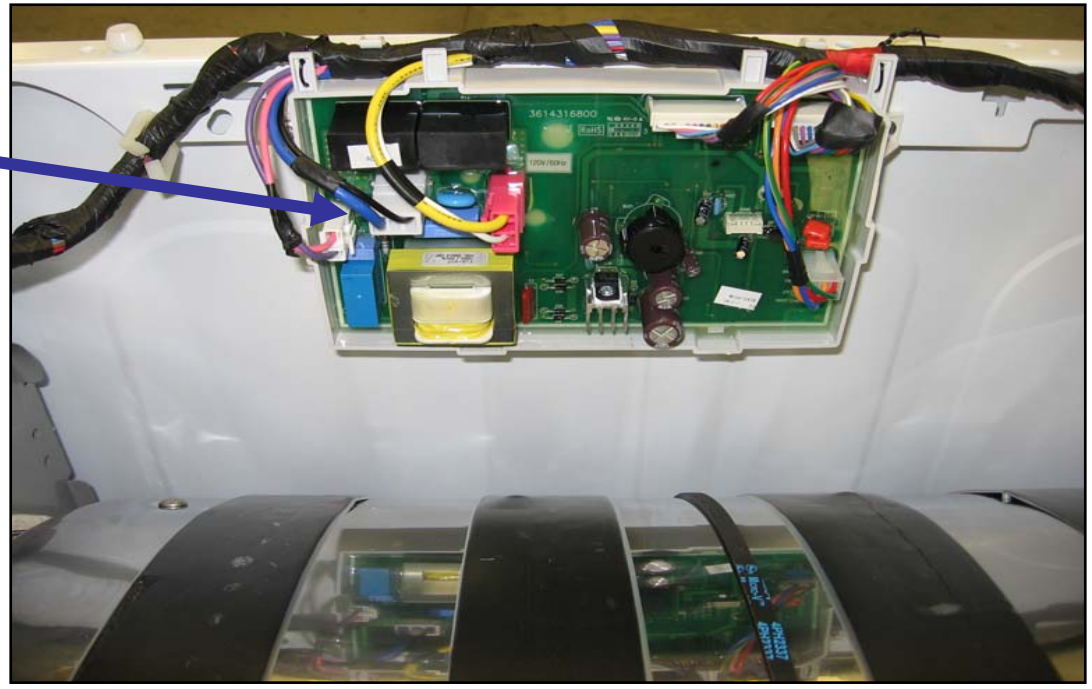
Con1- violet wire

Con2 – white wire

Should measure 120VAC

Test points at Control Board

Blue wire



Output voltage to one of the heat elements

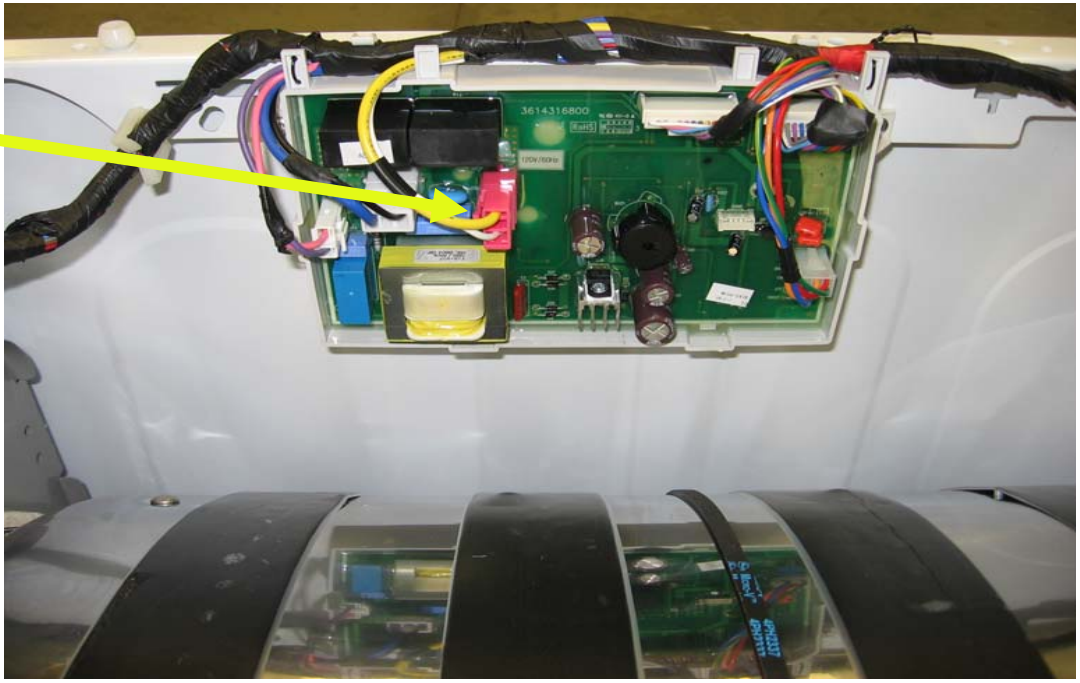
Con3 – blue wire

L2 (red wire) at dryer terminal block

Should measure 240VAC

Test points at Control Board

Yellow wire



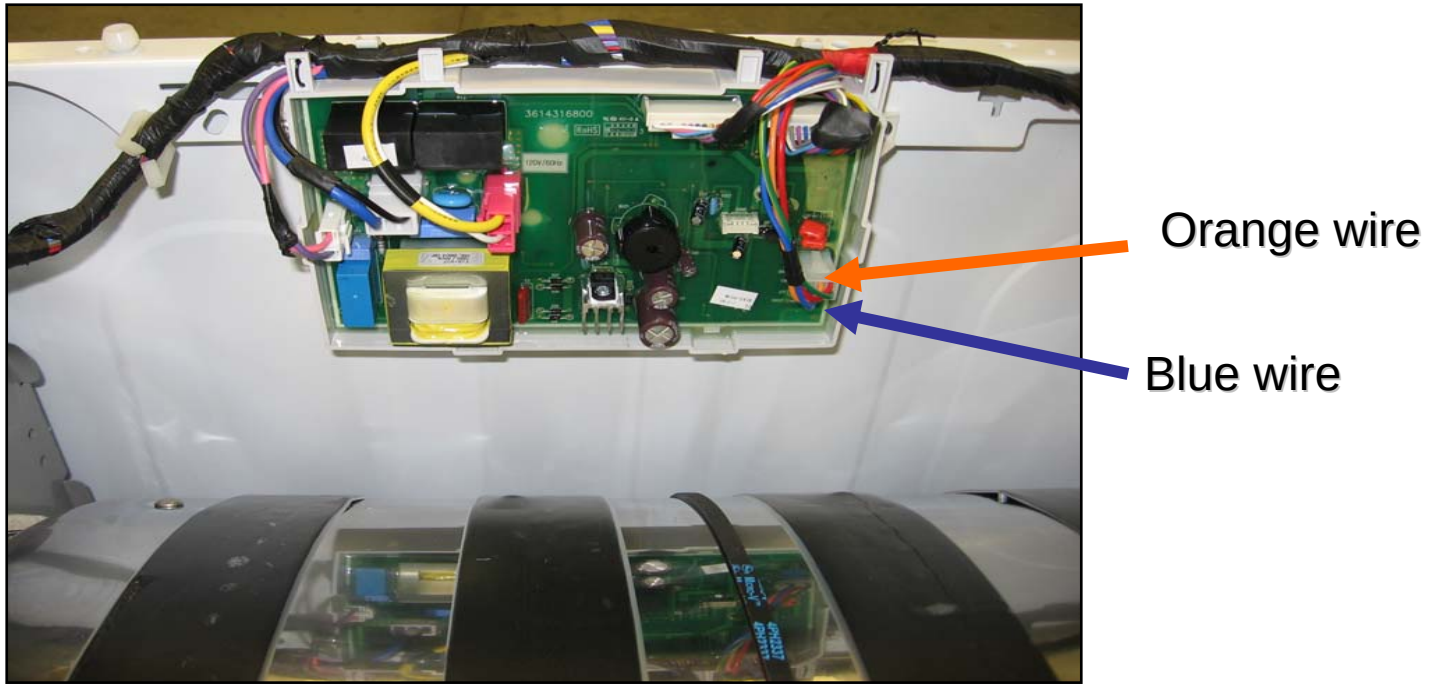
Output voltage to one of the heat elements

Con2 – yellow wire

L2 (red wire) at dryer terminal block

Should measure 240VAC

Test points at Control Board



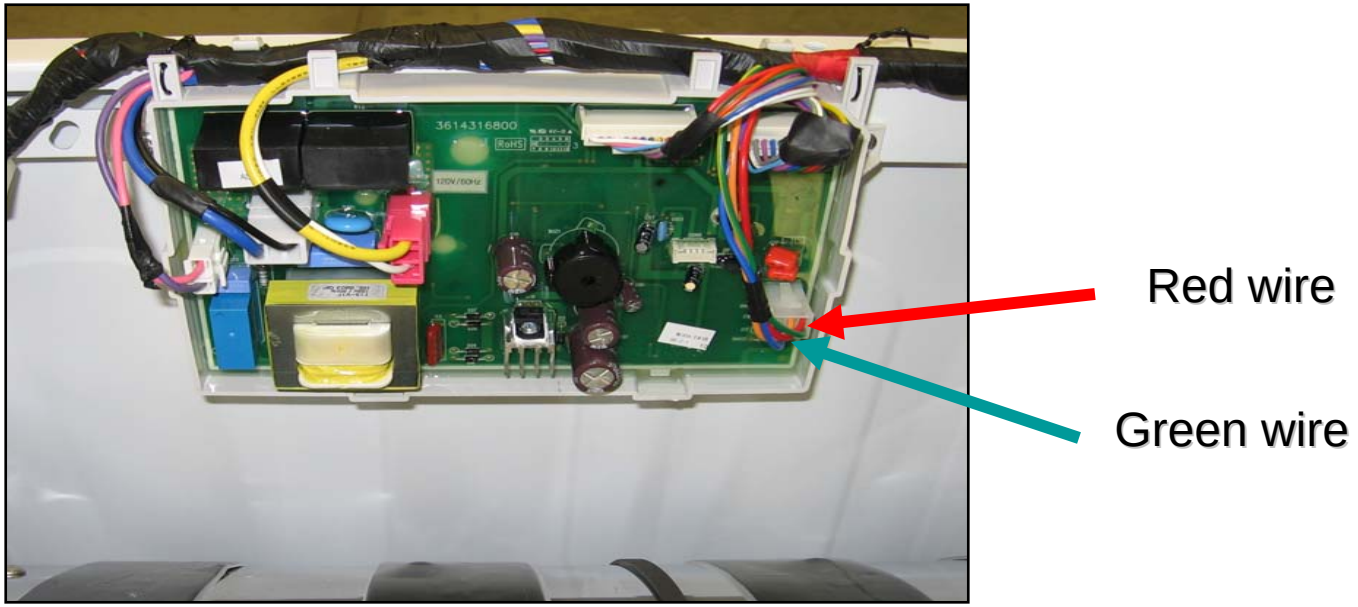
Resistance check of the fan thermister

Con4 – Orange wire

Con4 – Blue wire

Should measure 50K at room temperature

Test points at Control Board



Resistance check of the moisture sensor

Con4 – red wire

Con4 – green wire

Should read open with no moisture

The more moisture the lower the resistance

Front panel removal

Remove four screws at top of the panel
Remove the three screws that fasten to filter housing
Lift front panel up and off

Drum light receptacle

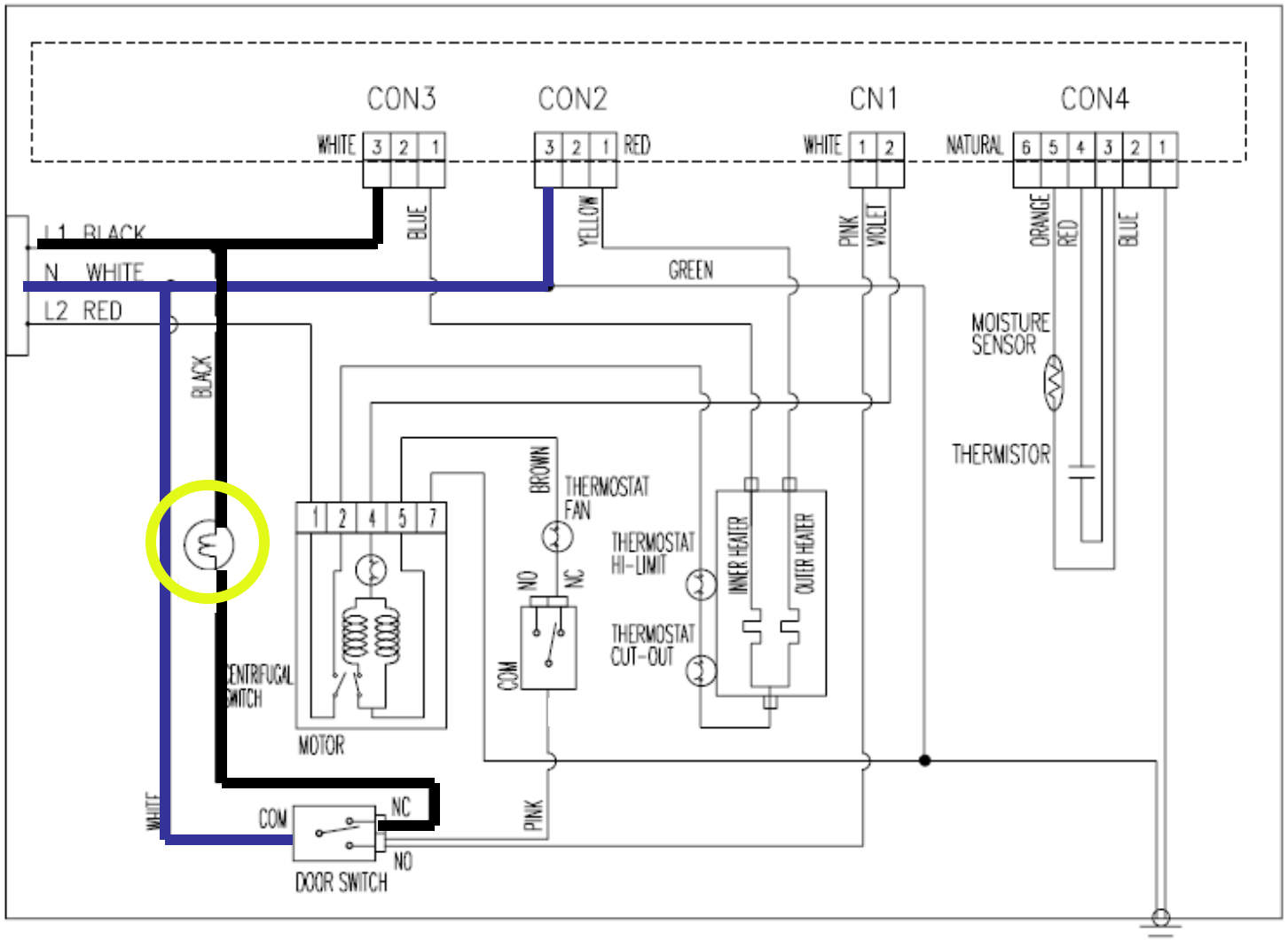
View with console removed

View with front bulkhead removed

15W bulb; 125VAC

Light circuit

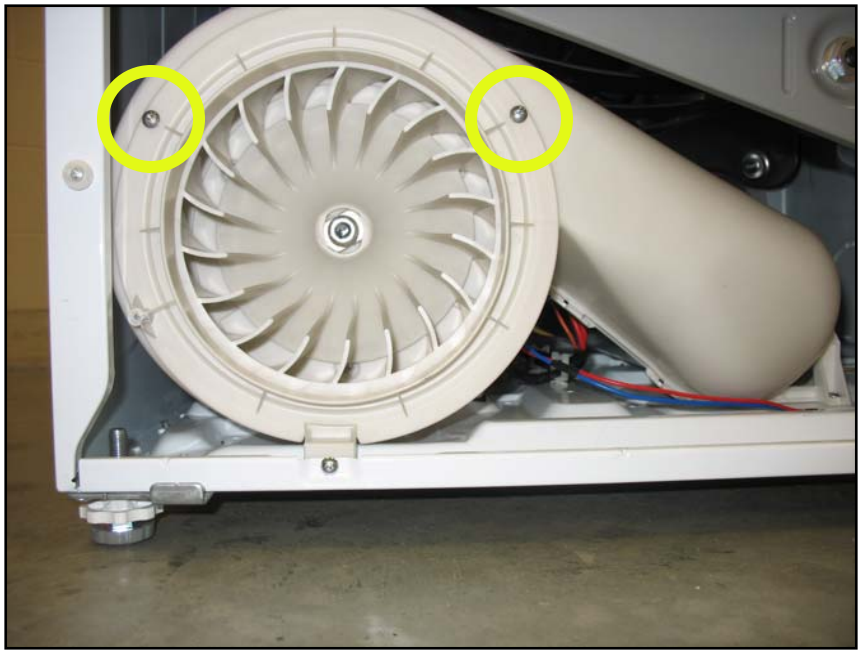
L1
N
L2



Exposing the blower wheel

Removal of three screws from the duct outlet
Remove the duct outlet and expose the blower

Blower wheel removal



Remove two screws and the cover ring
Remove the nut from center of blower wheel
Nut fastened with a reverse thread

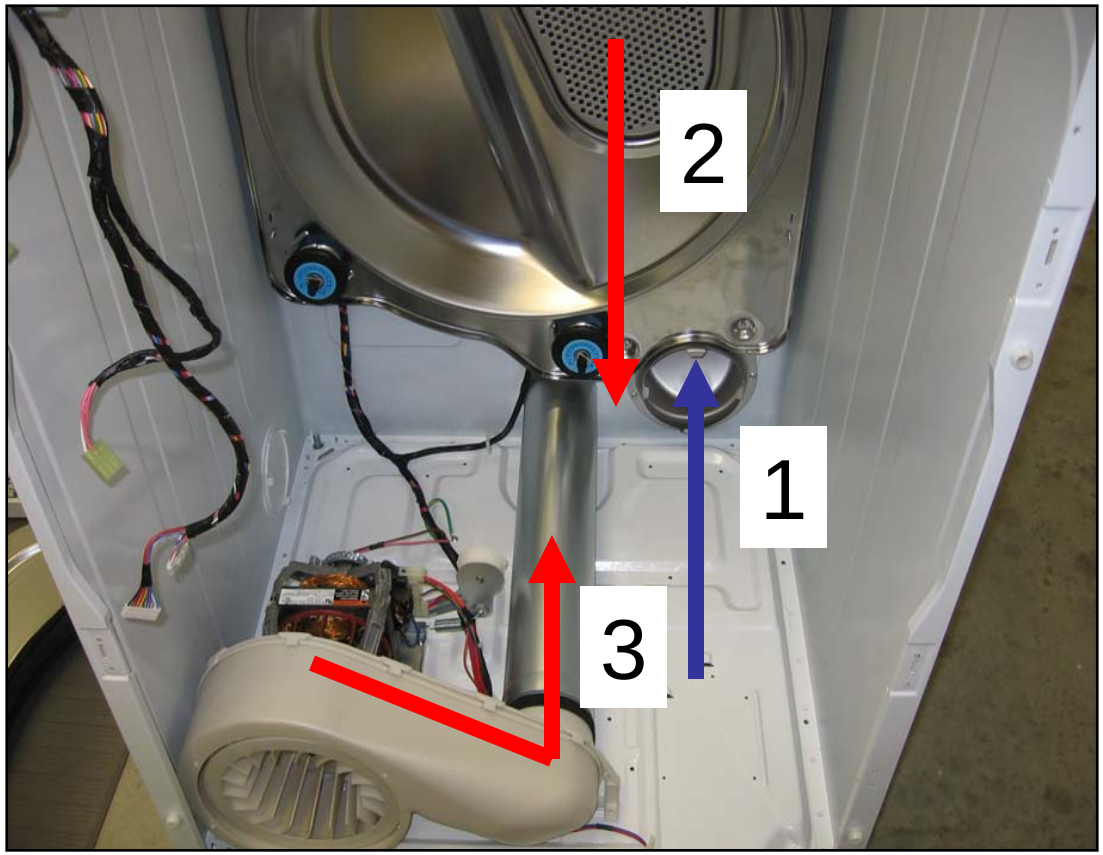
Bulkhead removal from dryer

Remove four screws from left side of bulkhead
Remove six screws from right side of bulkhead
Disconnect sensor wire connector & lift off

Drum removal

Disconnect belt from tension pulley
Remove six screws from console bracket
Remove console bracket & lift drum out

Air flow within dryer



1 – Cool, dry air drawn into heat chamber

2 – Hot air drawn into drum & through lint filter

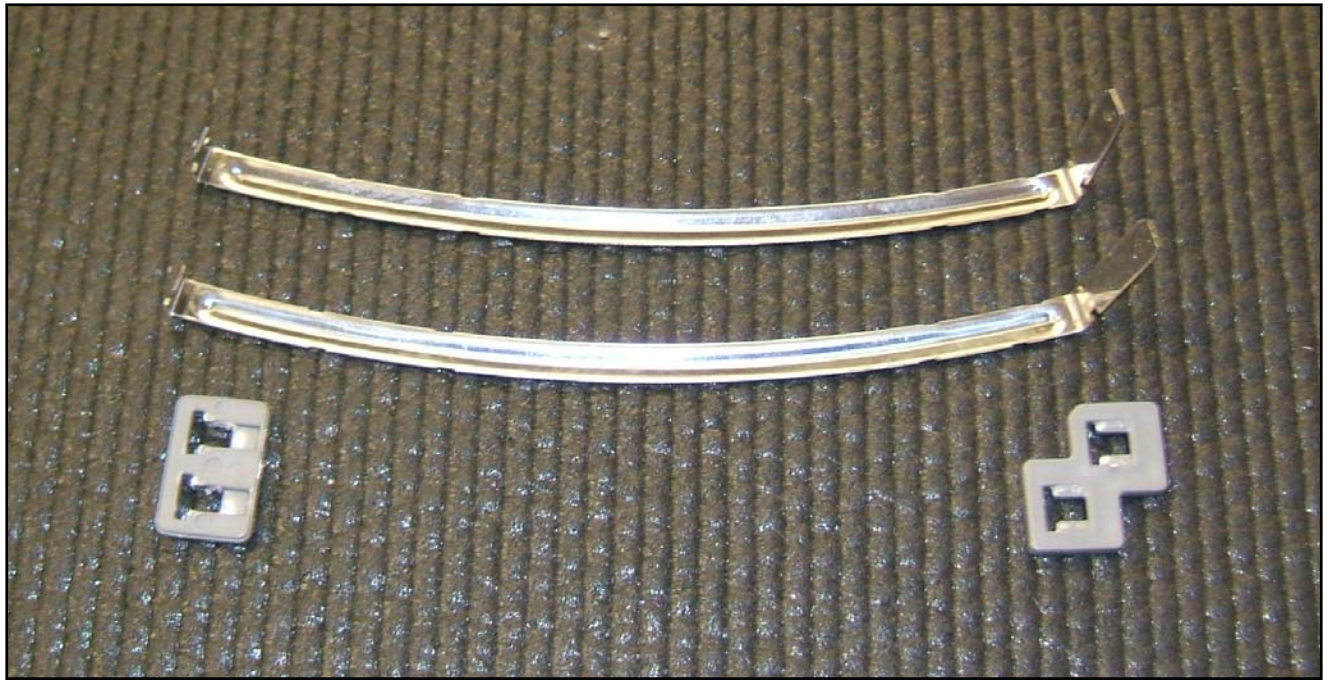
3 – Warm, humid air forced out duct

Sensor strips on inside of bulkhead

No resistance with no moisture

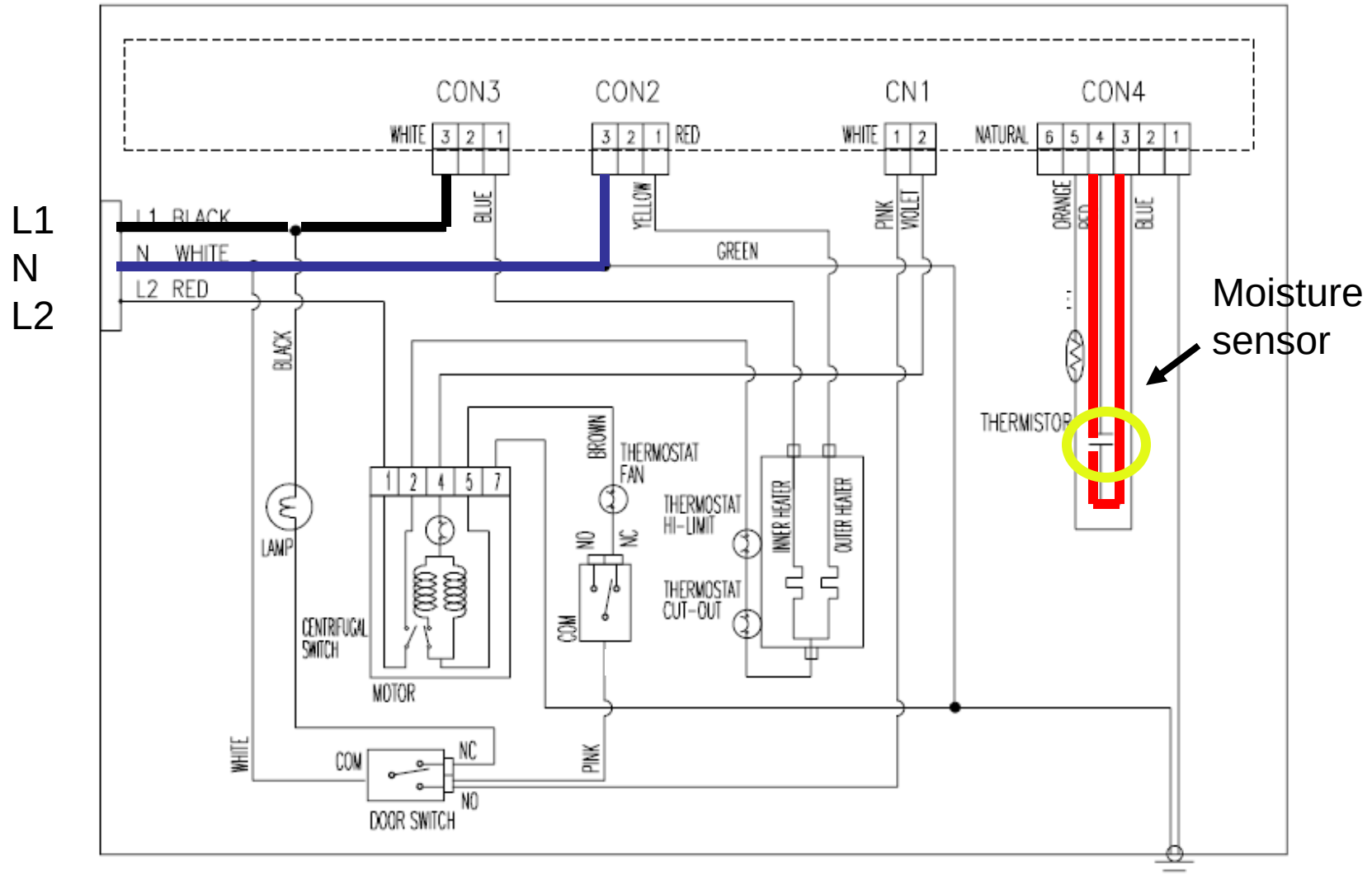
Resistance decreases with more moisture

Sensor strips removed from bulkhead

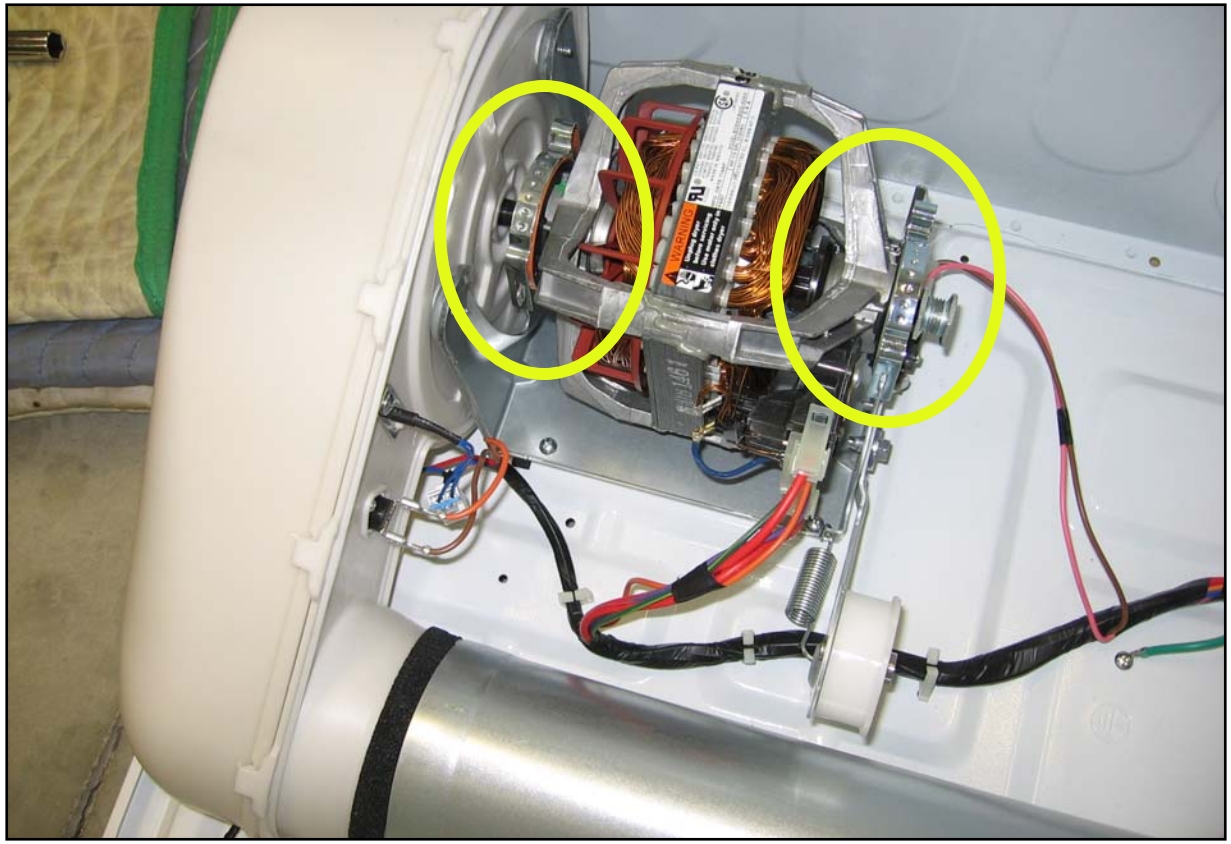


Sensor strips held in place with locking clips

Moisture sensor circuit

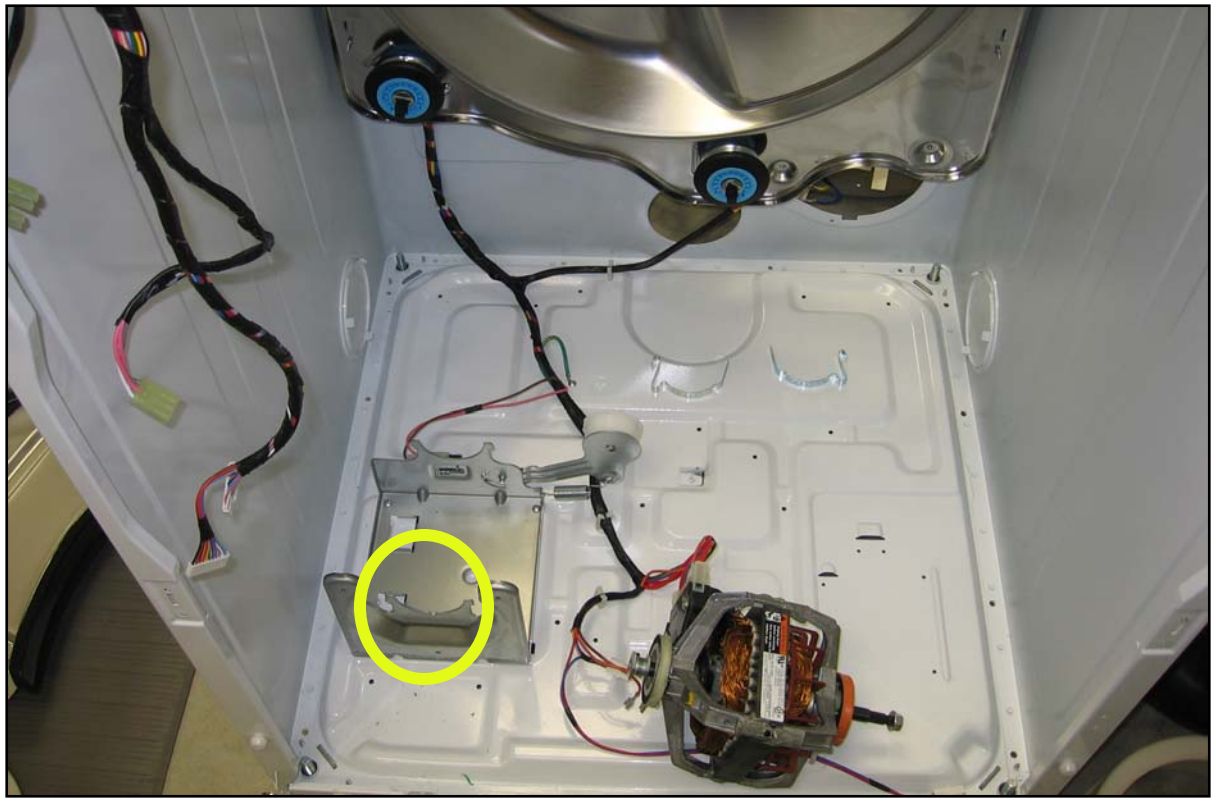


Motor setting in cradle



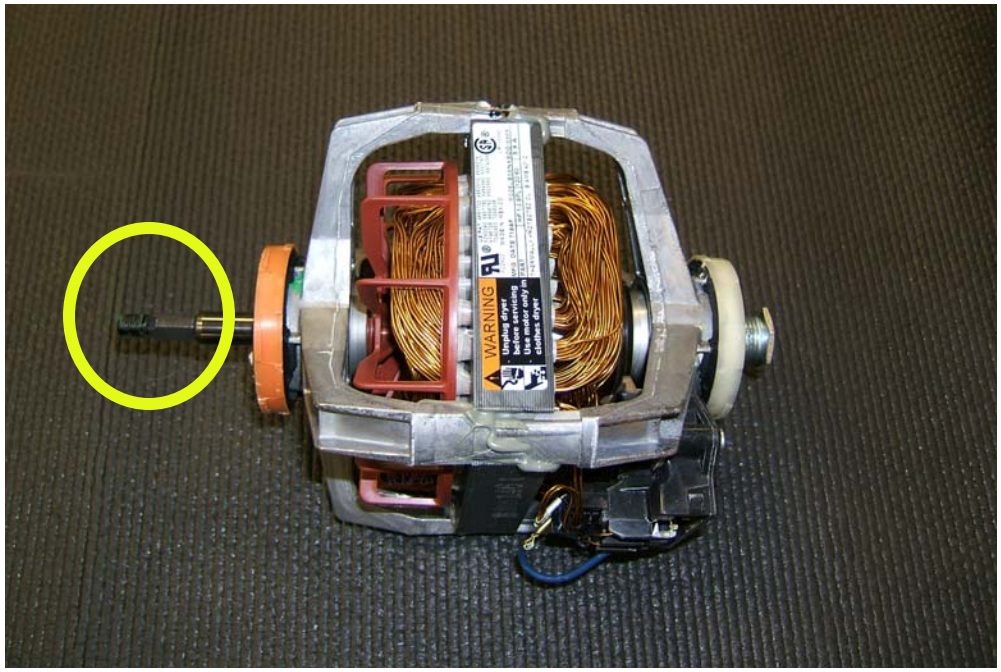
Clamp on each end hold motor in position on cradle

Motor removed from the cradle



Front cradle has notch at bottom for proper positioning of motor

Dryer motor

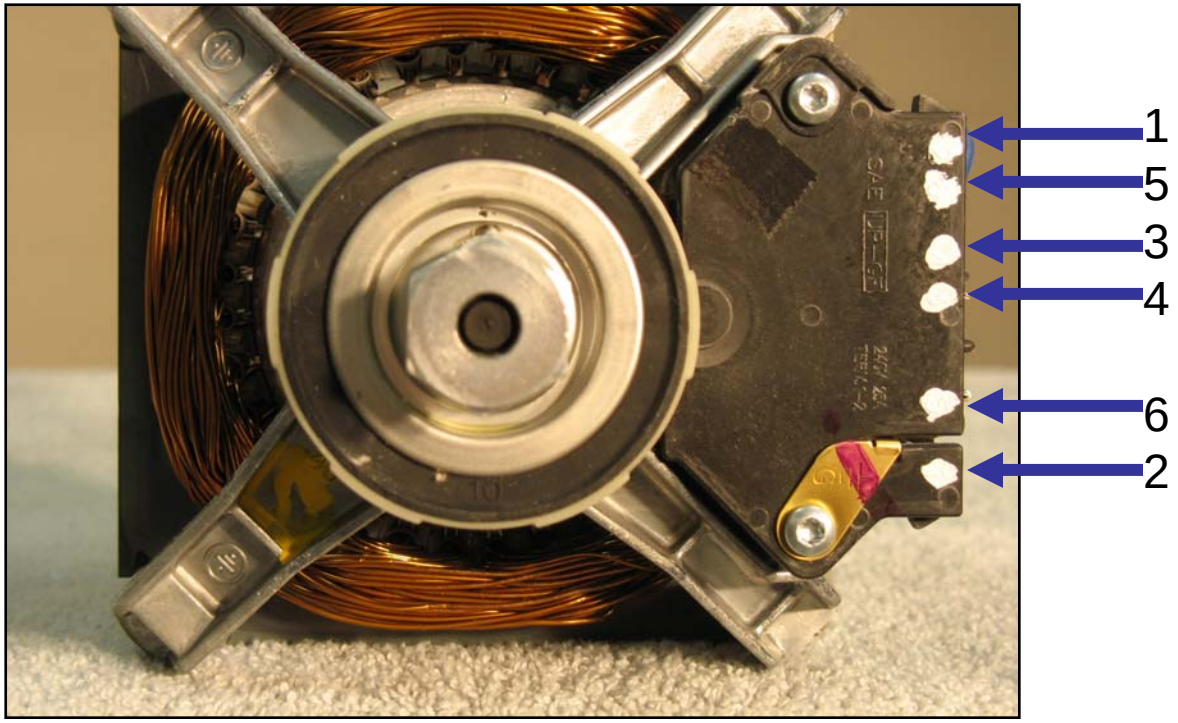


Motor shaft has left hand thread for blower wheel

120VAC; 5.9AMP

1.6 OHM Resistance between contacts 4 & 5

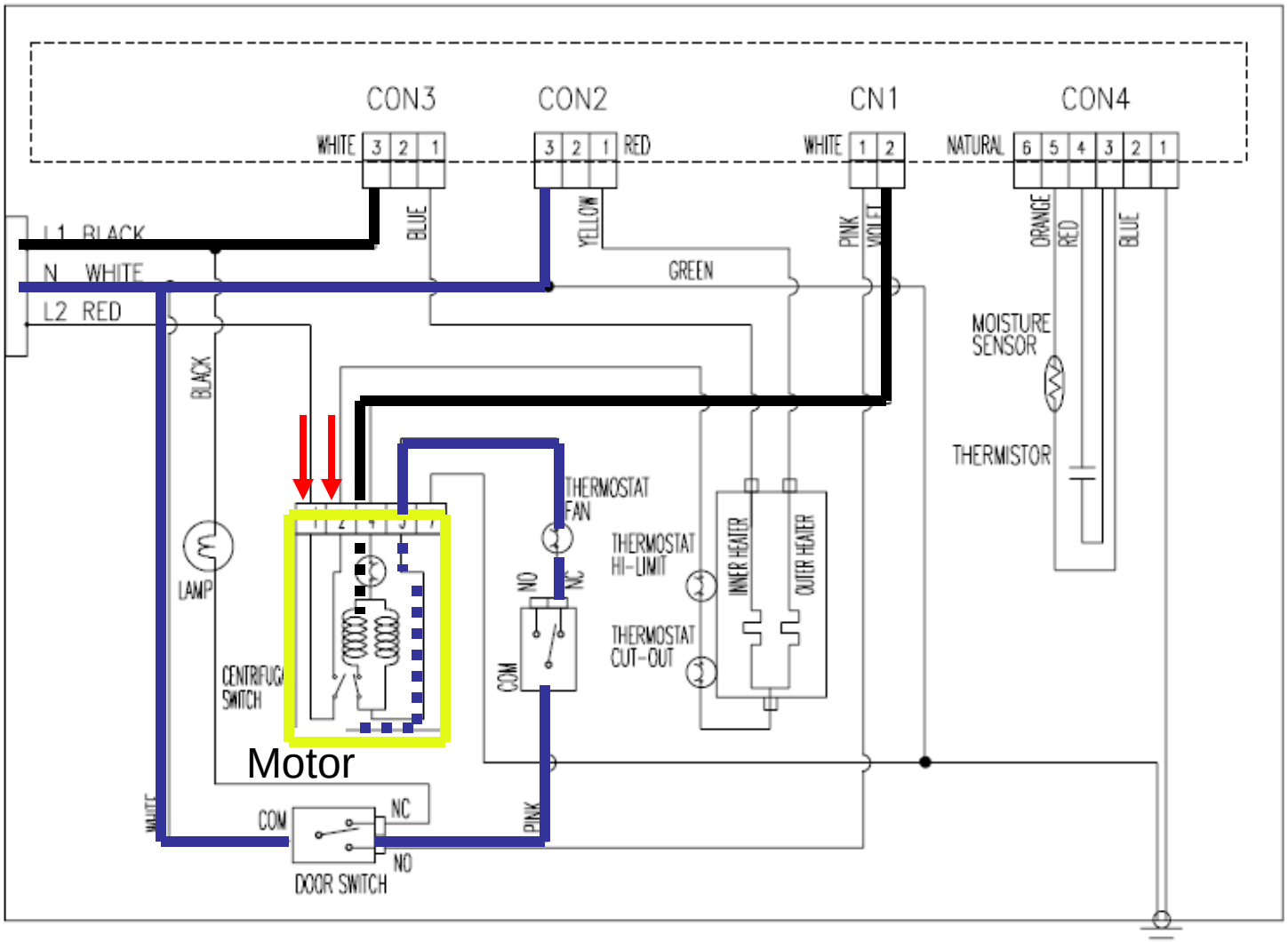
Dryer motor



Contacts 1 to 2 – Heater circuit

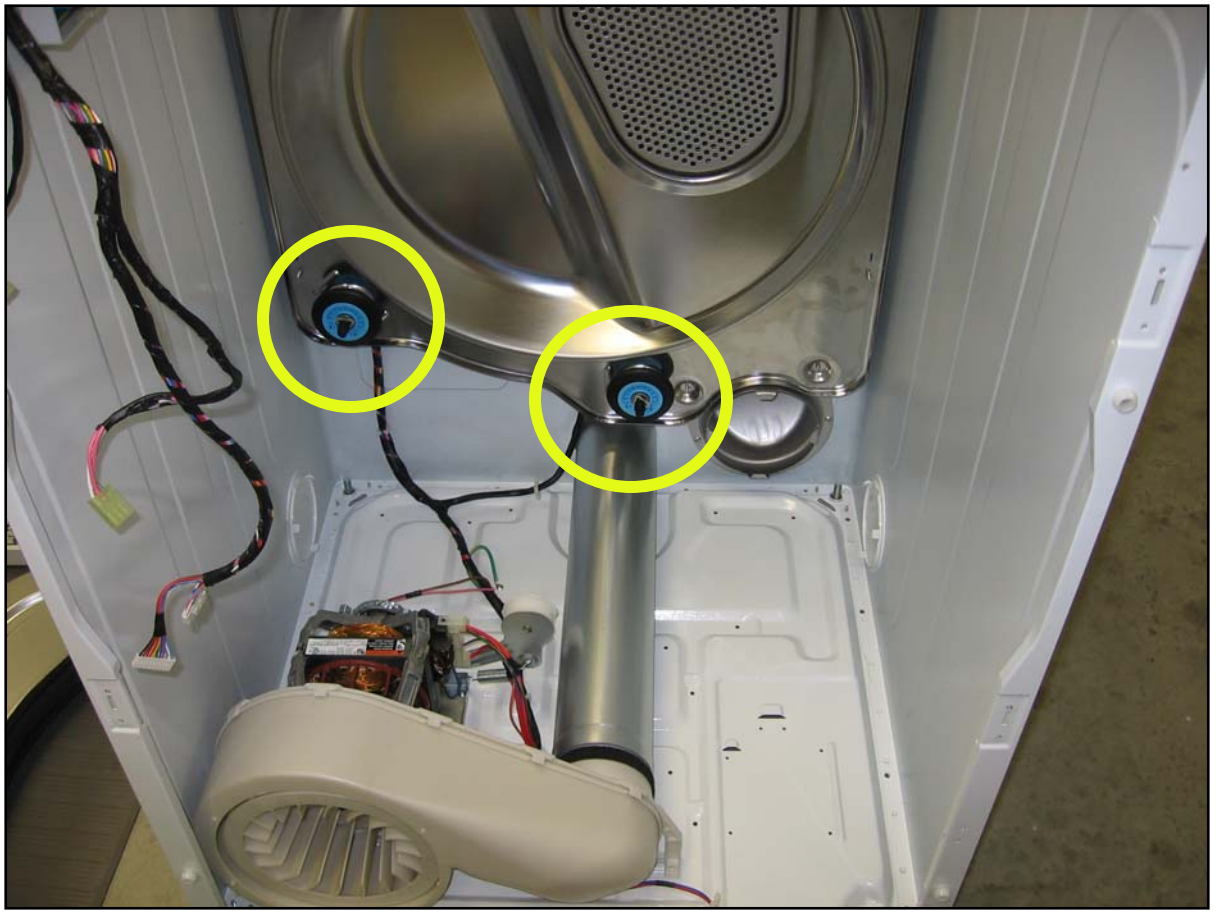
Contacts 4 to 5 – Motor circuit

Motor circuit



Contacts 1 to 2 – 240VAC; 25 AMP

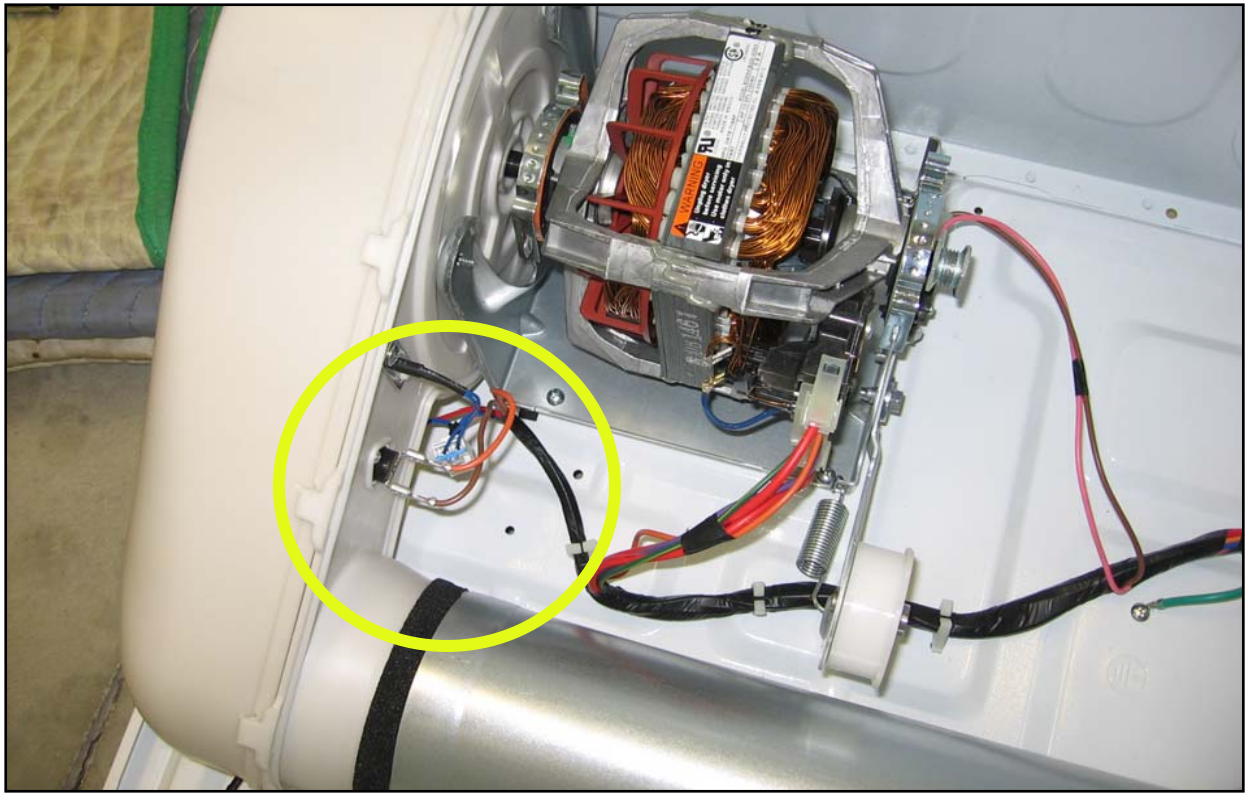
Rear drum rollers



Internal 4” rigid exhaust duct

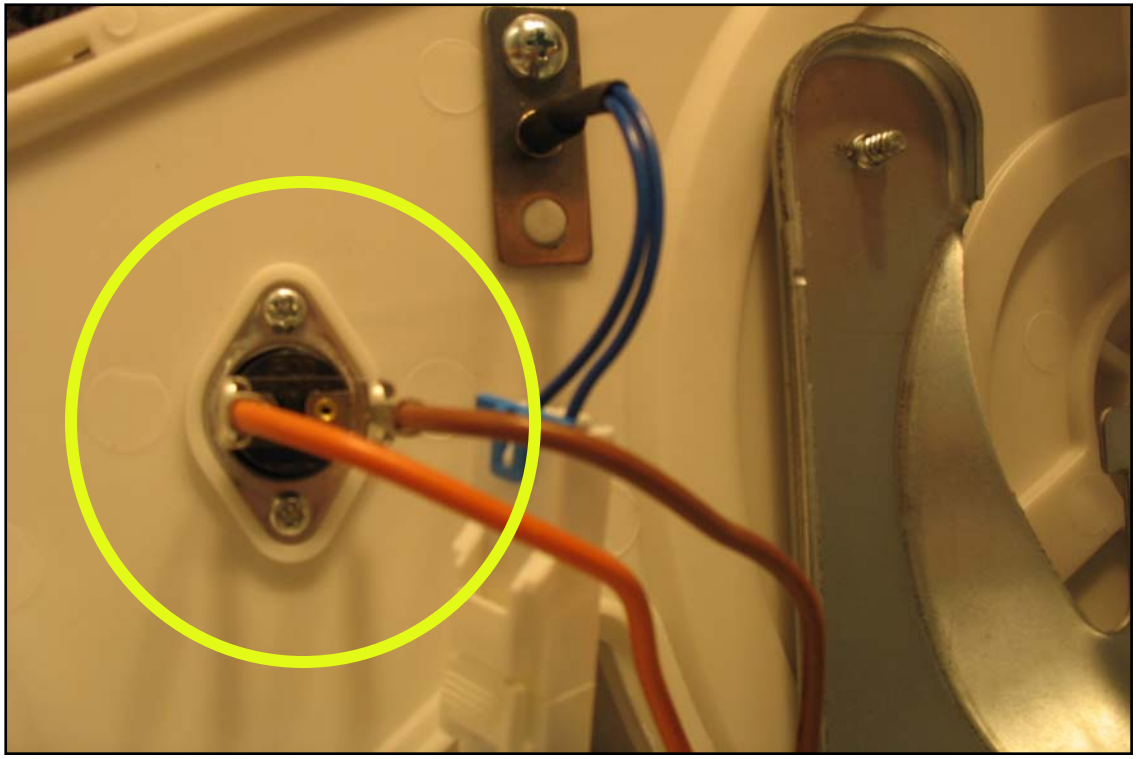
When installing belt on tension pulley, slide the 4” duct back for easier access to motor pulley

Fan thermostat and thermister



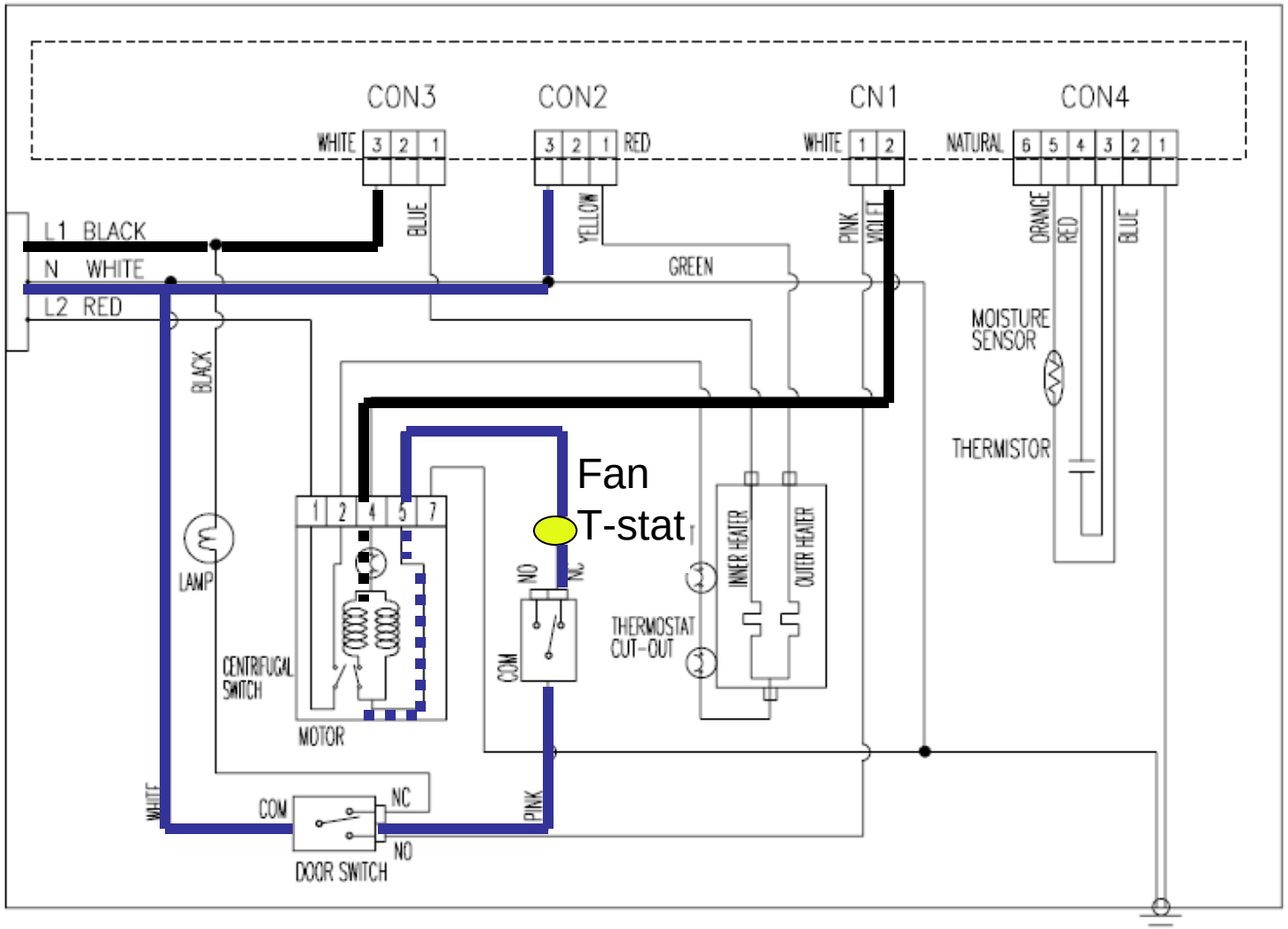
Located on back side of duct housing adjacent to motor

Fan thermostat

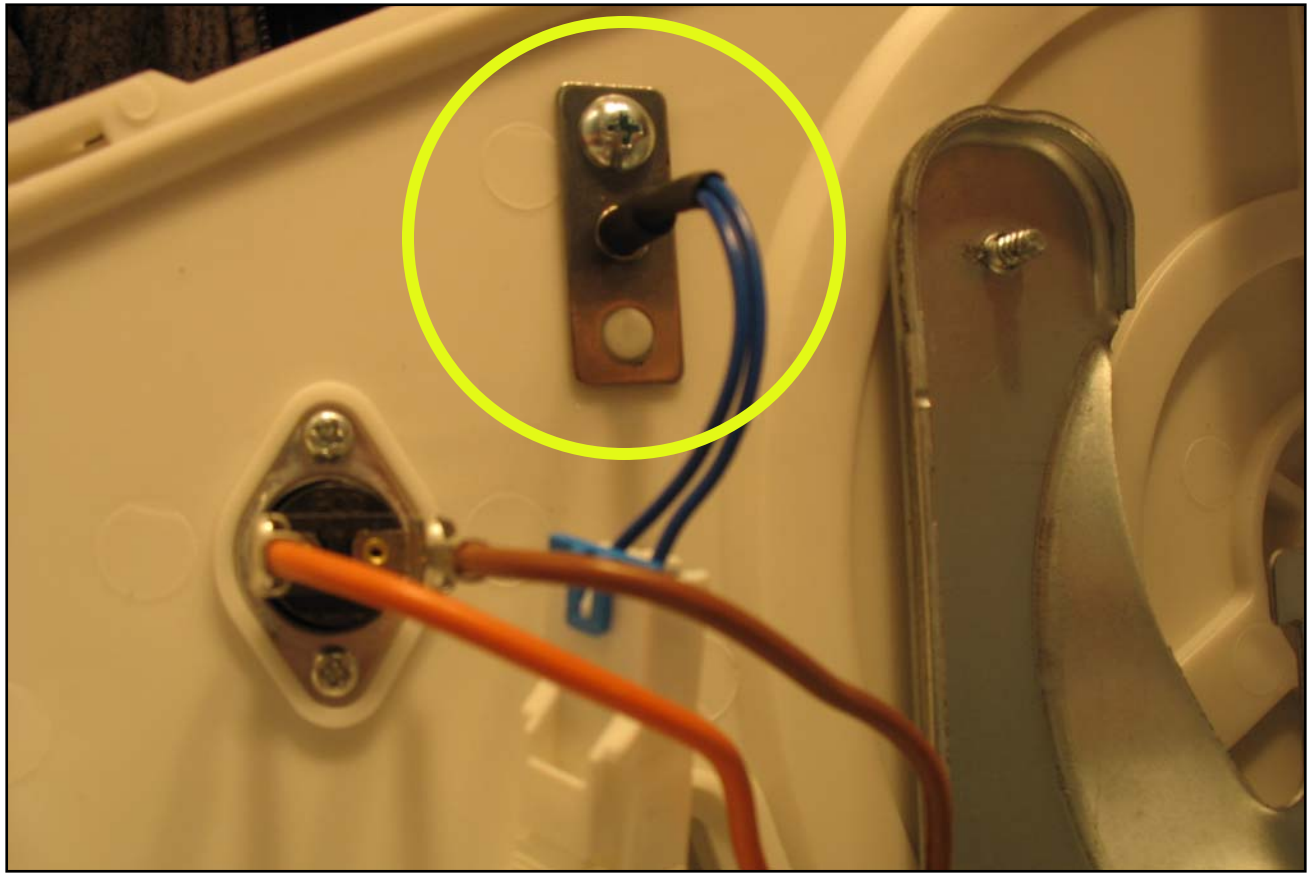


Opens motor circuit at 185 degrees F
Closes again when temperatures drop to 167 degrees F

Fan Thermostat circuit



Thermister



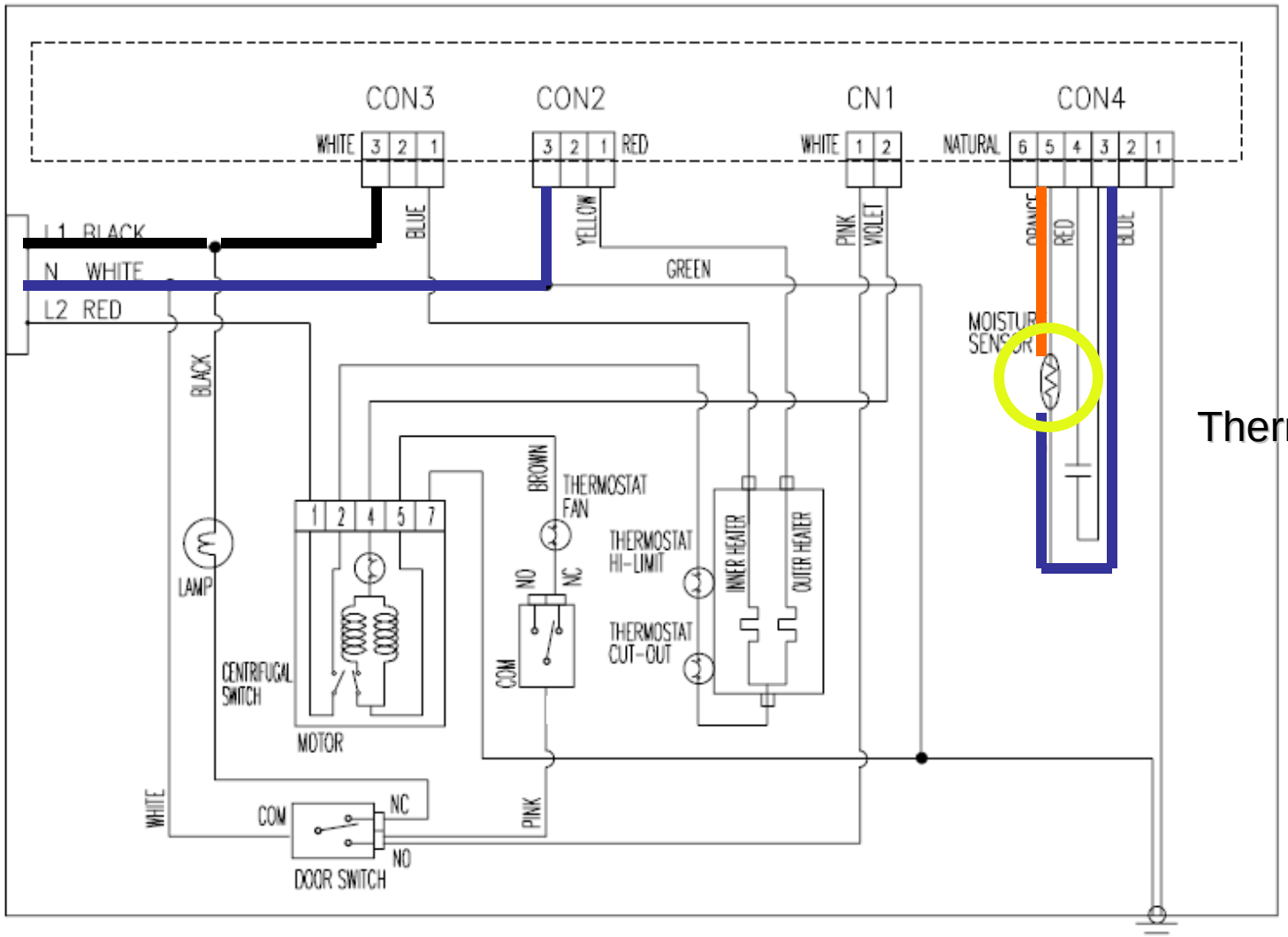
Cycles the heater to maintain temperature

50 – 52K OHM resistance @ room temperature

Thermister check

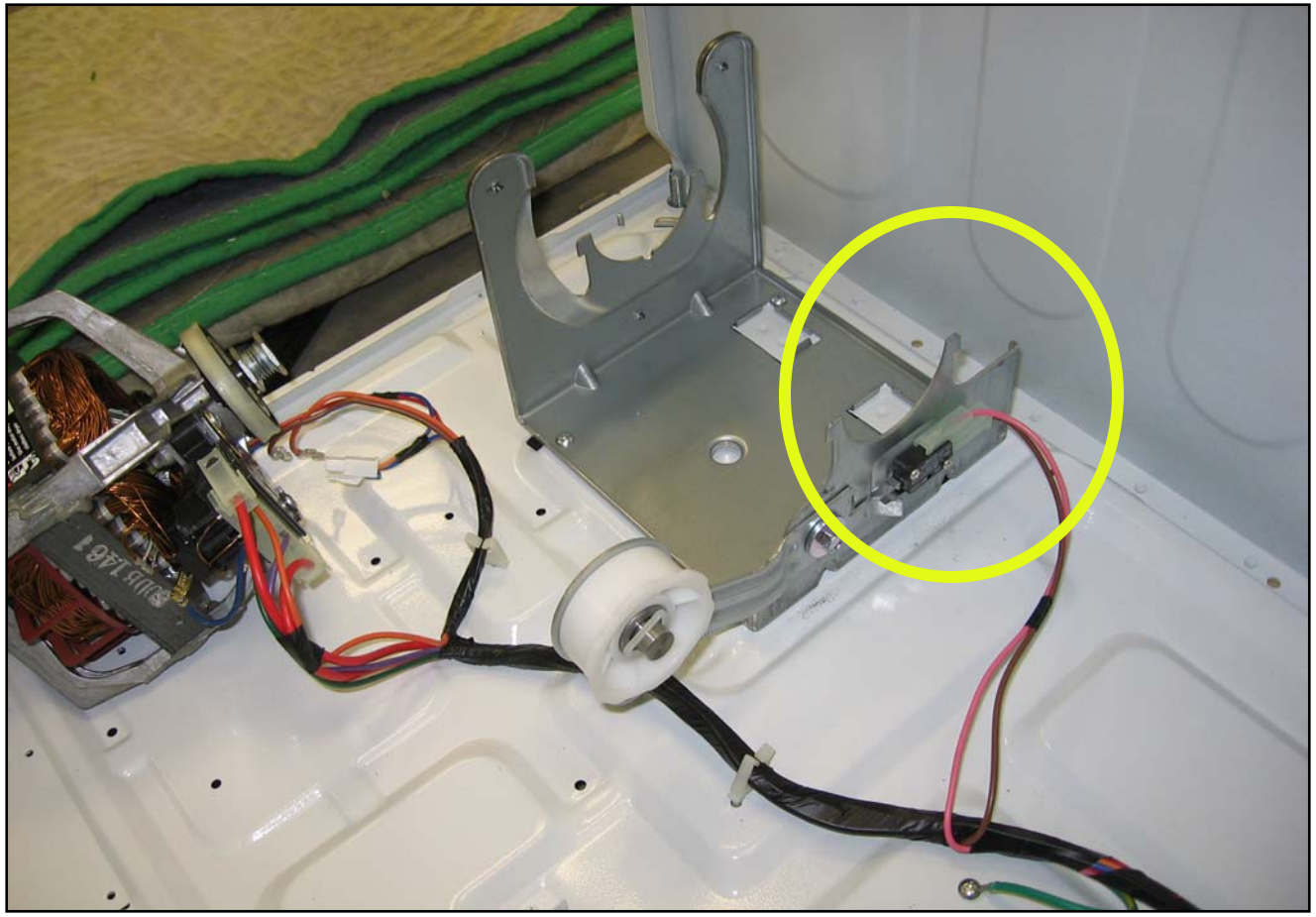
- Place into cold water (50 – 68 degrees F)
  - 40,000 OHMS in 30 seconds
- Place into hot water (203 – 212 degrees F)
  - 4,000 OHMS in 30 seconds

Thermister circuit



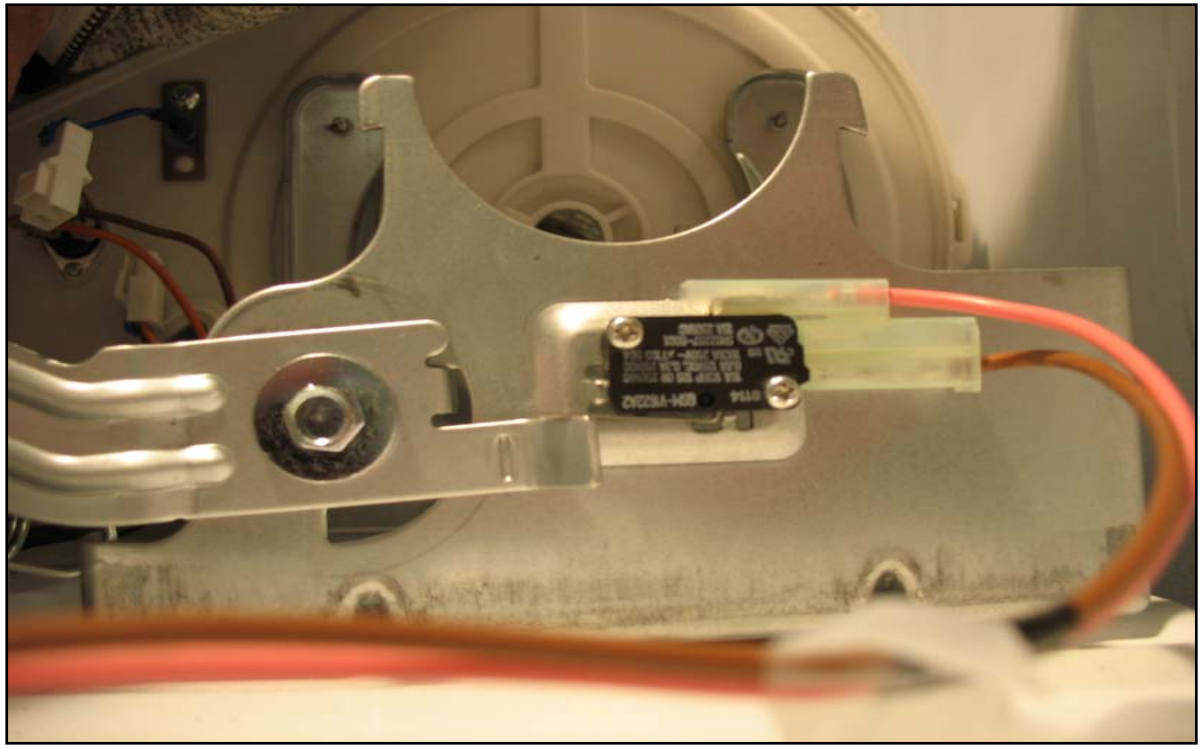
Thermister

Belt switch



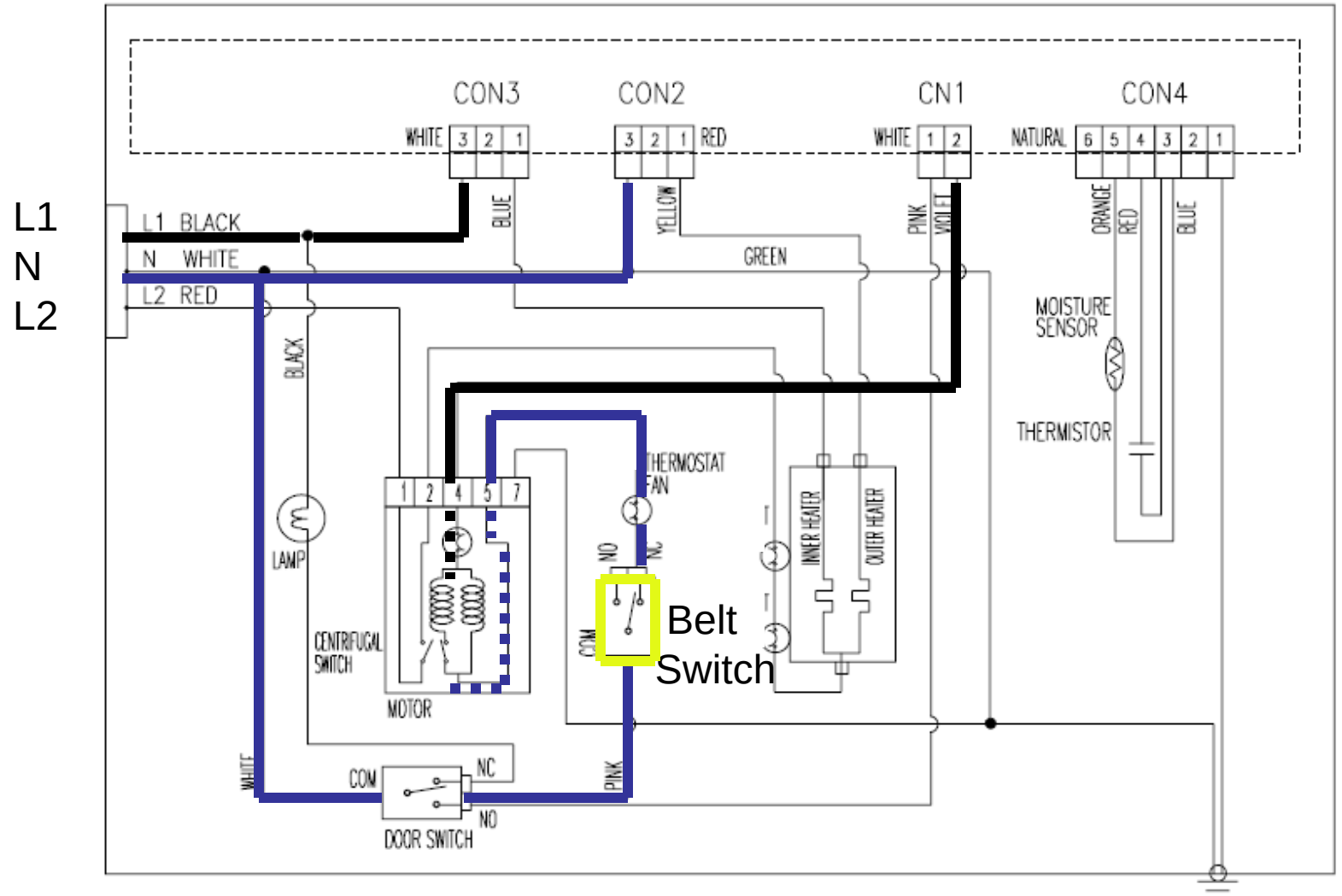
Mounted to motor support bracket

Belt switch

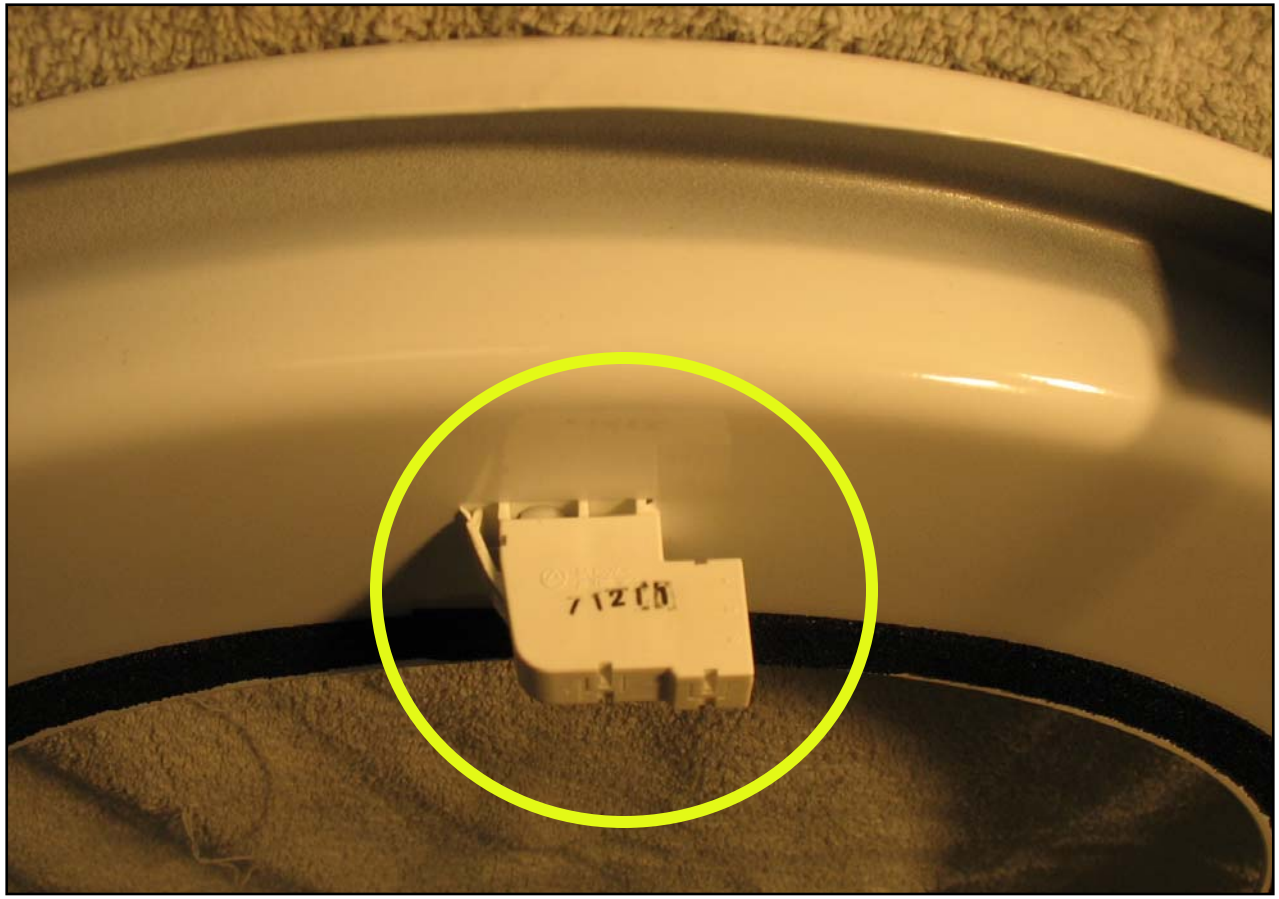


Contacts C to N/C provide for motor circuit
If belt breaks the belt switch contacts open and the motor circuit opens and the motor stops

Belt Switch circuit

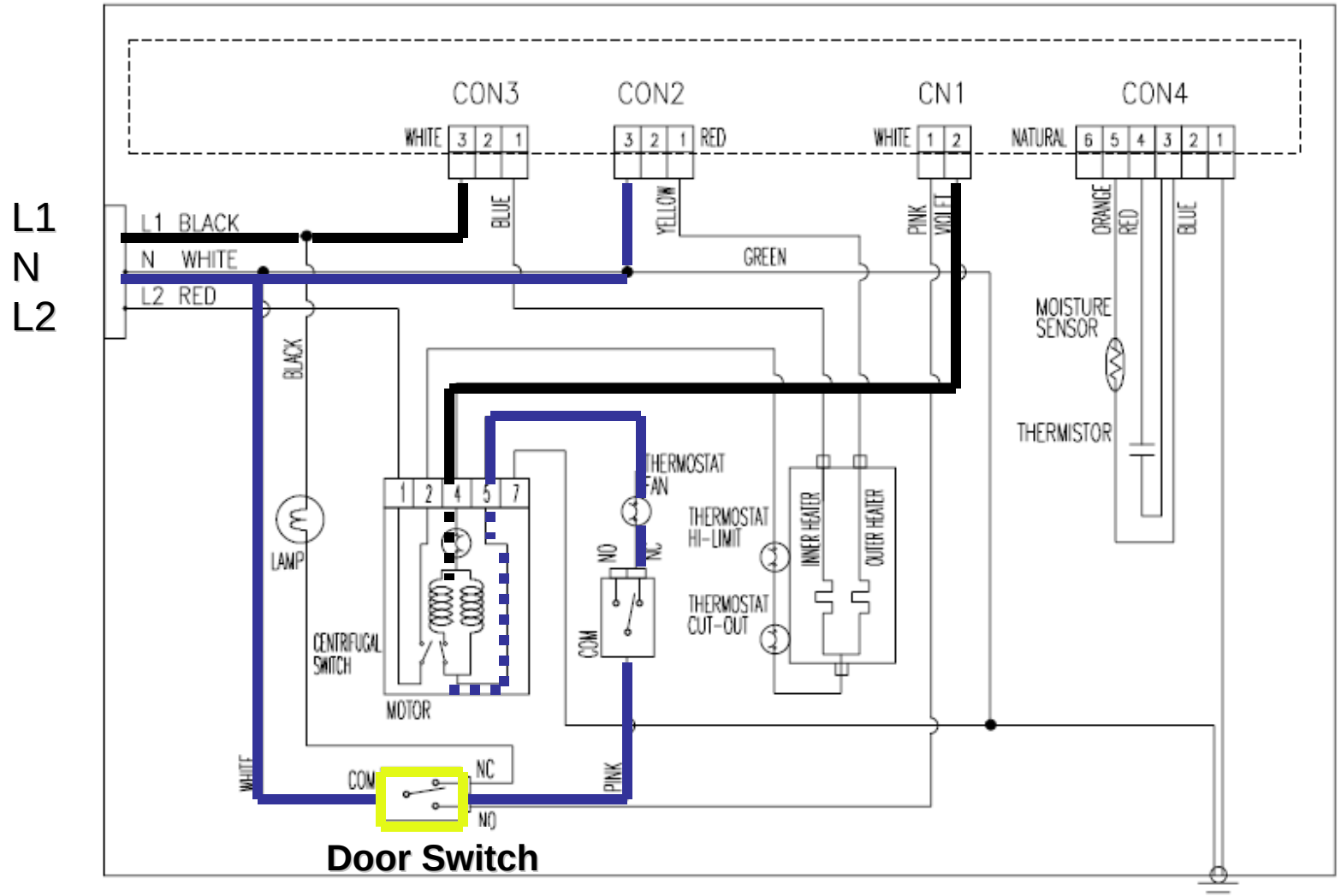


Door switch



Mounted on inside of font panel

Door Switch circuit



Heat chamber – rear of dryer

Cover on chamber

Cover removed

Fastened by twelve perimeter screws

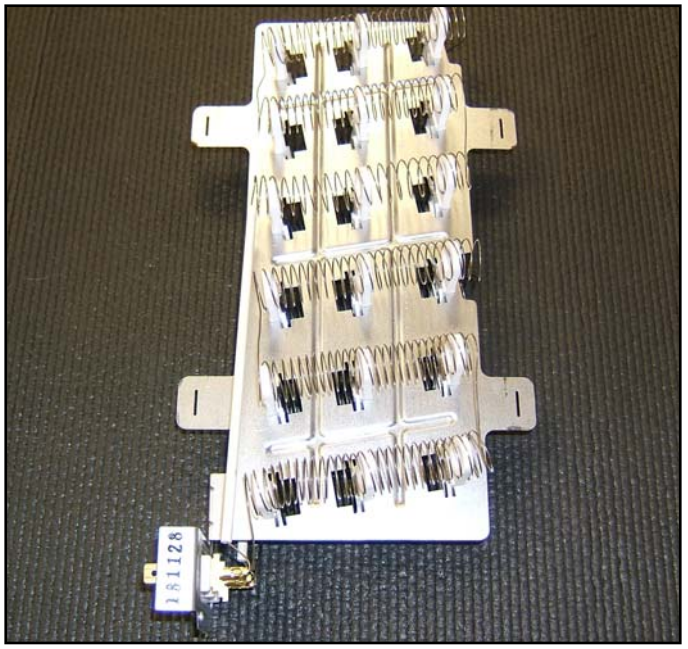
Two tabs at top prevent it from falling off

Pull housing out at bottom and lift off

Heat element

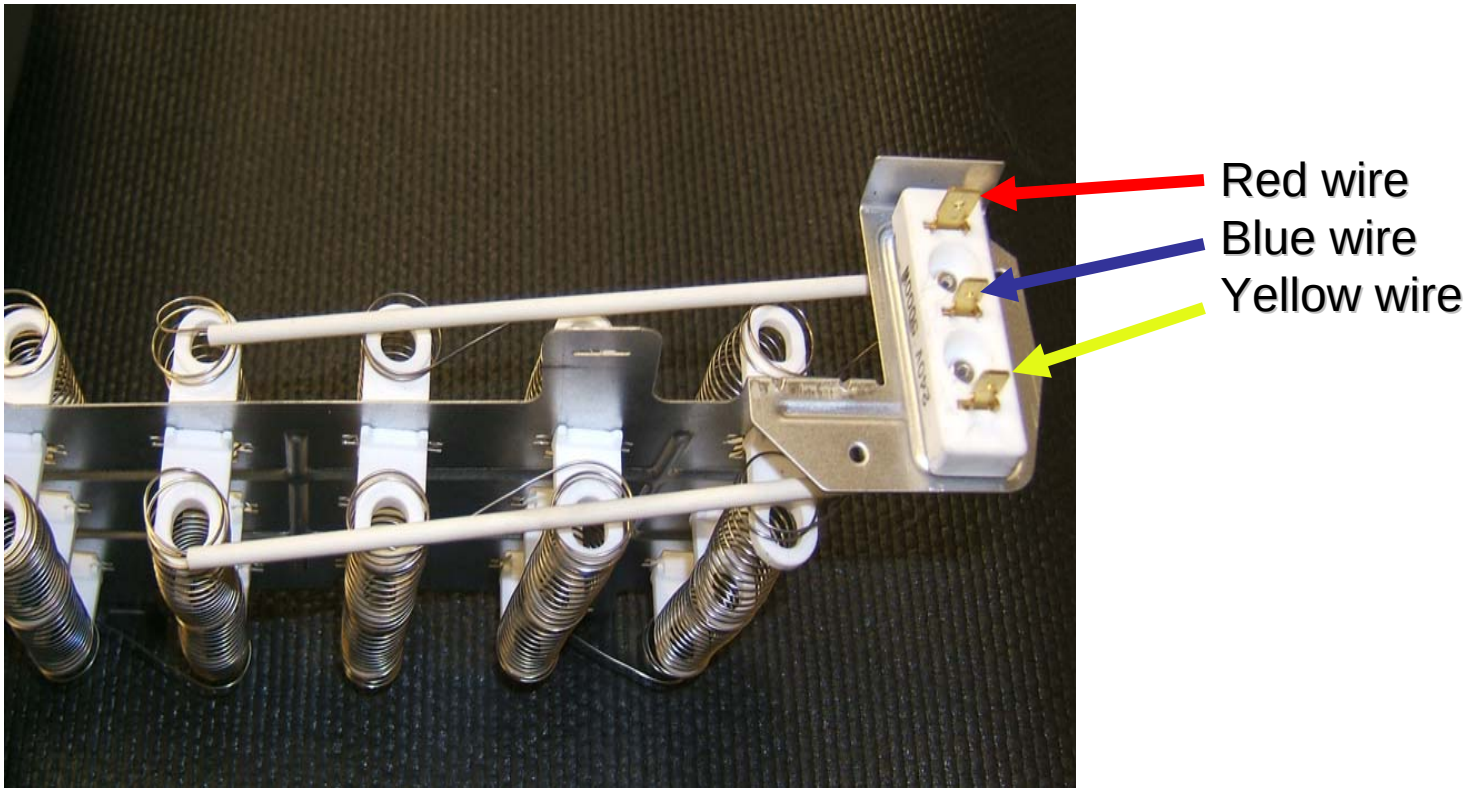
Heat chamber removed from dryer

Heating element



Two 2500W elements in parallel circuit
One or both elements will be energized depending on program selected

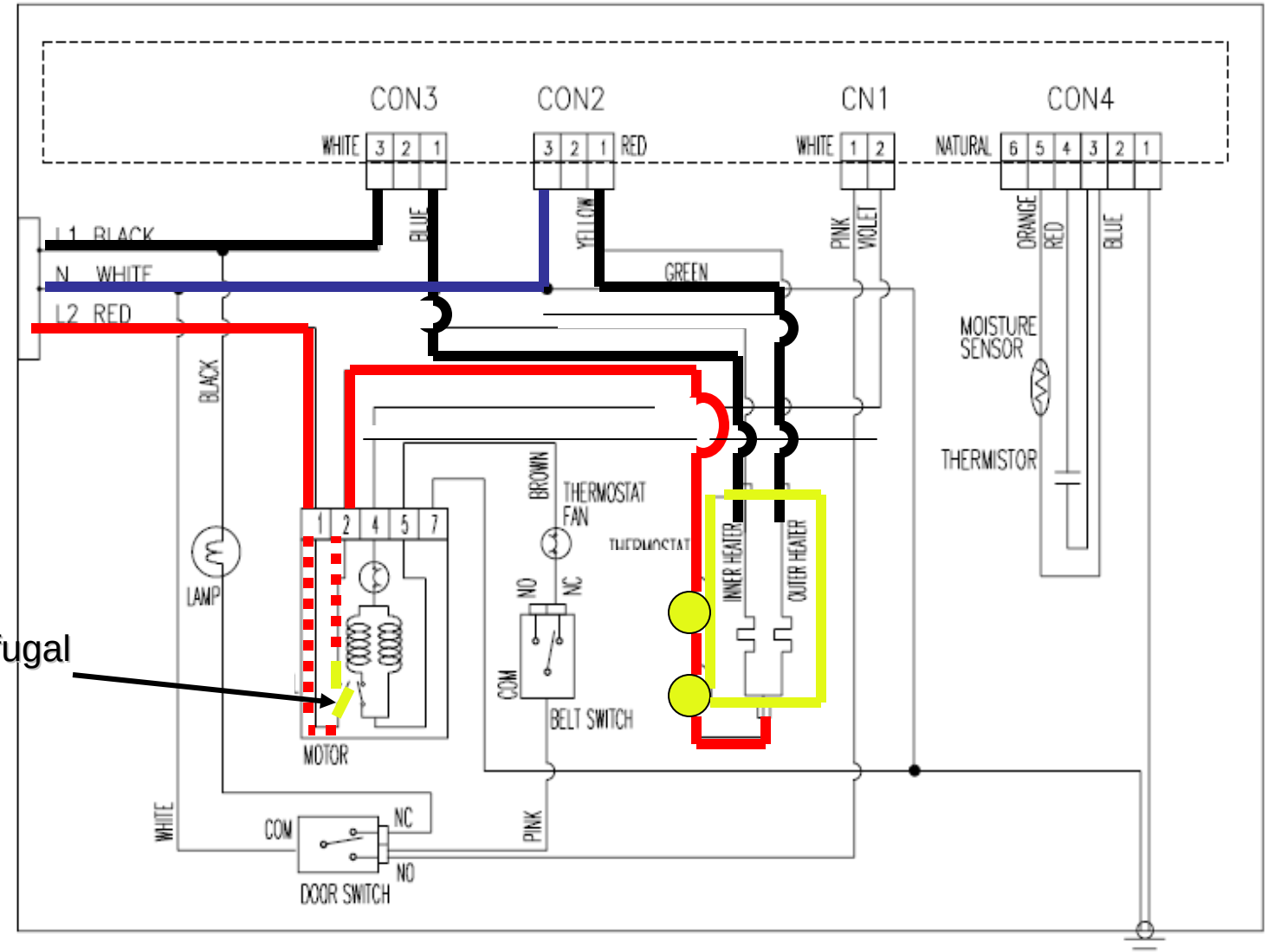
Checking the element for resistance



17 - 25 OHM between red & blue wire

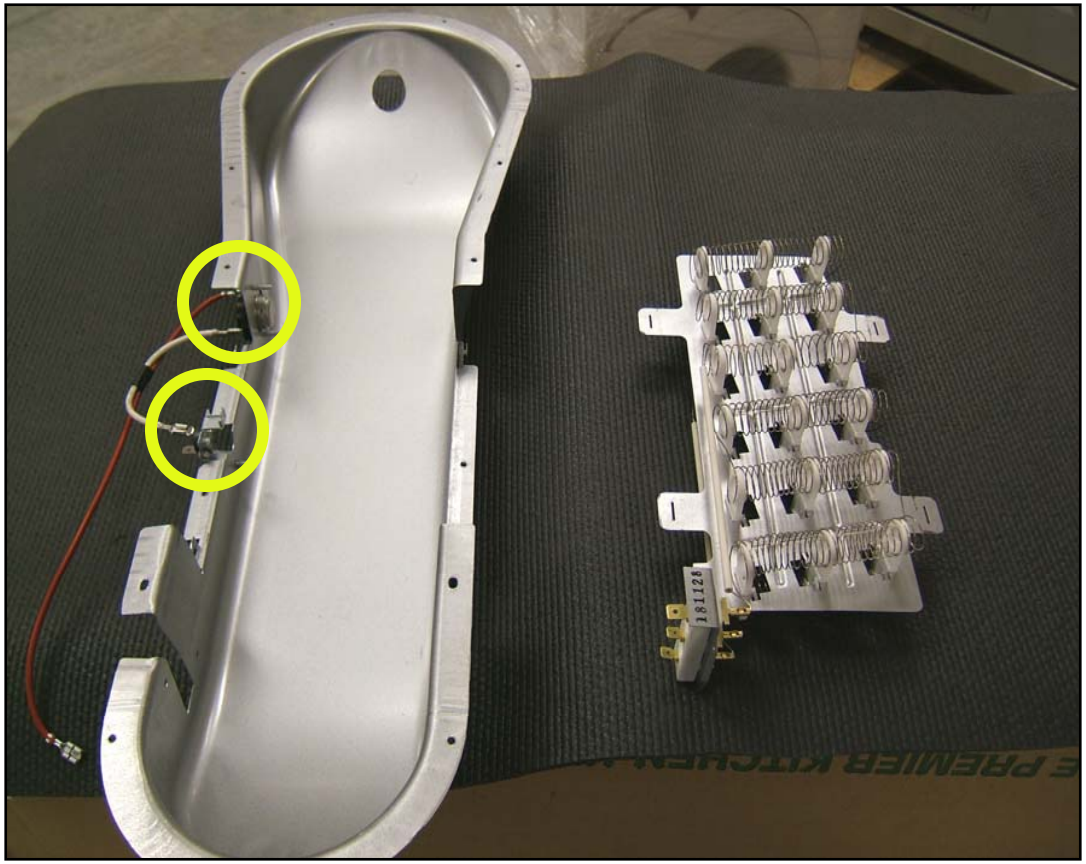
17 - 25 OHM between red & yellow wire

Heater circuit – 240VAC



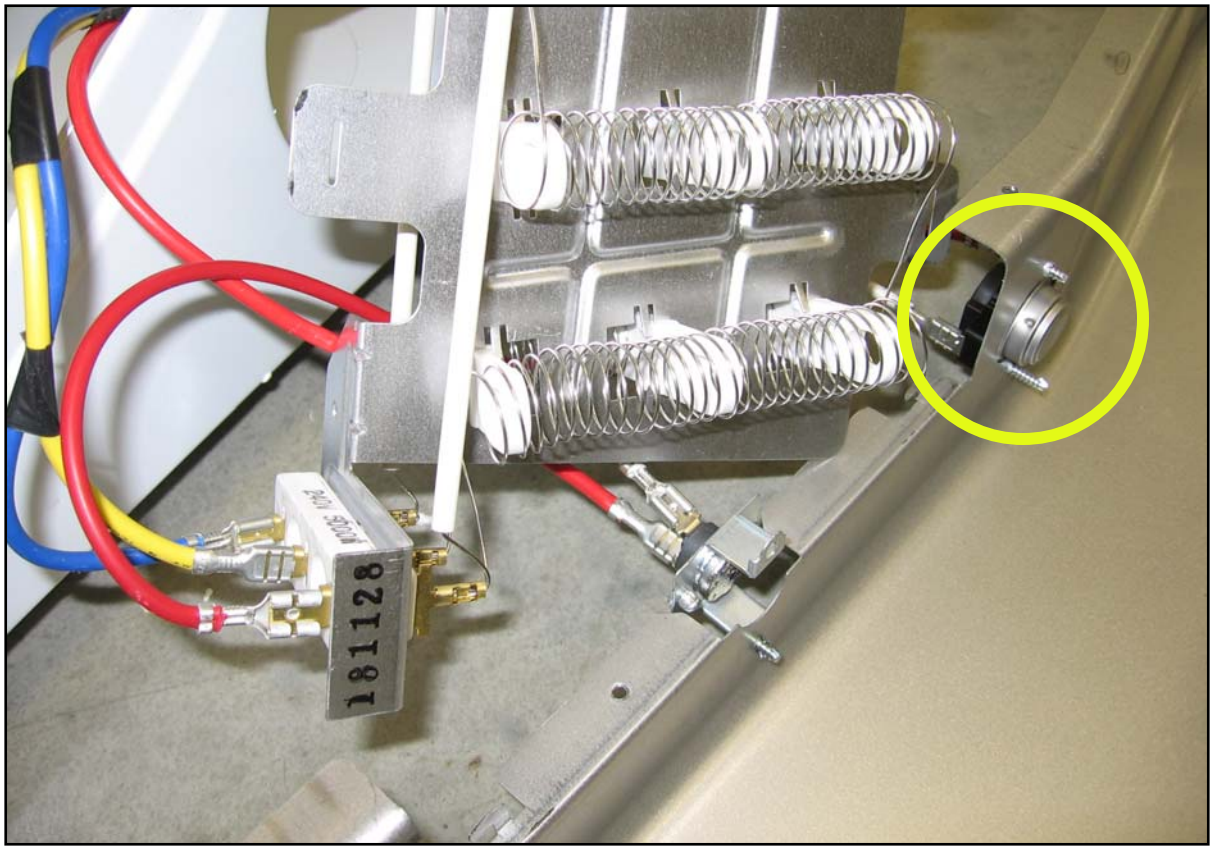
Motor must be running for heater to work

High limit & cut-out (safety) thermostats



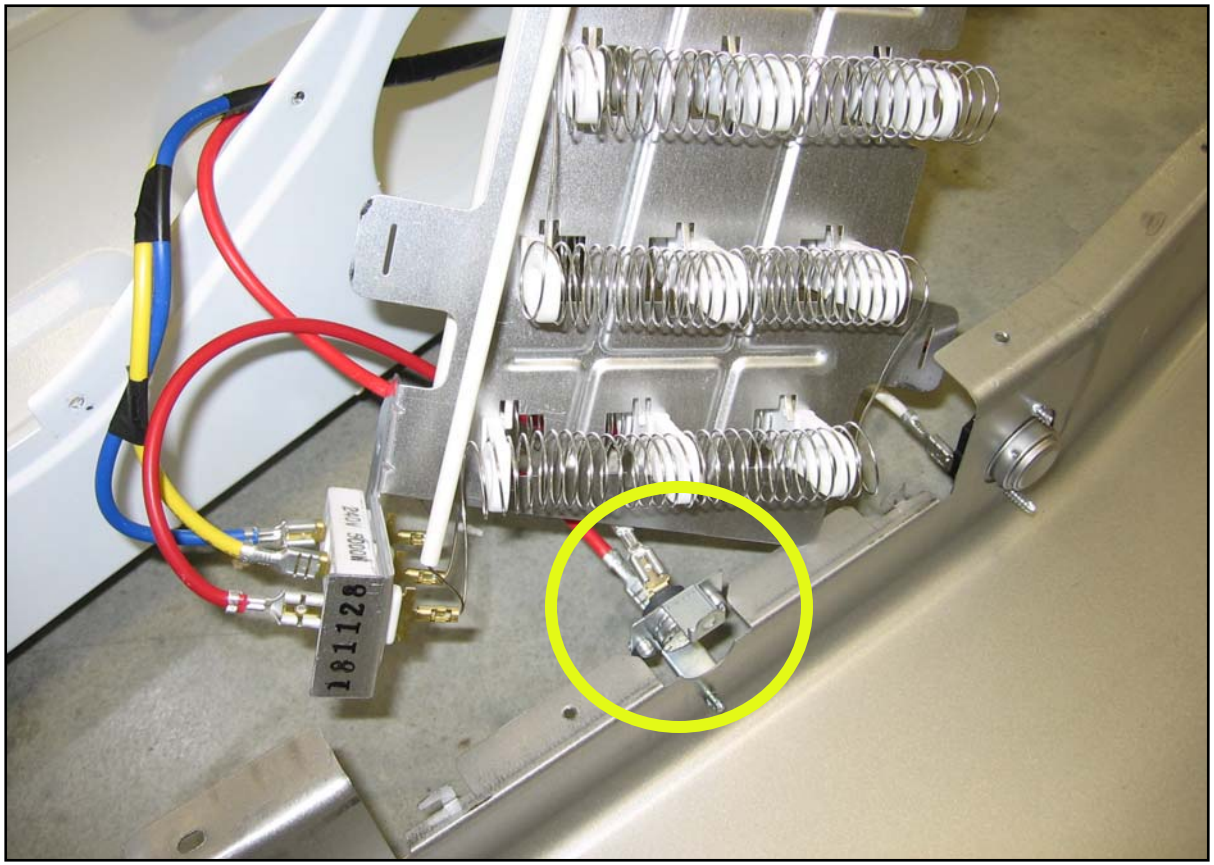
Located on the heater housing
Hi limit is positioned above the cut -out

High limit thermostat



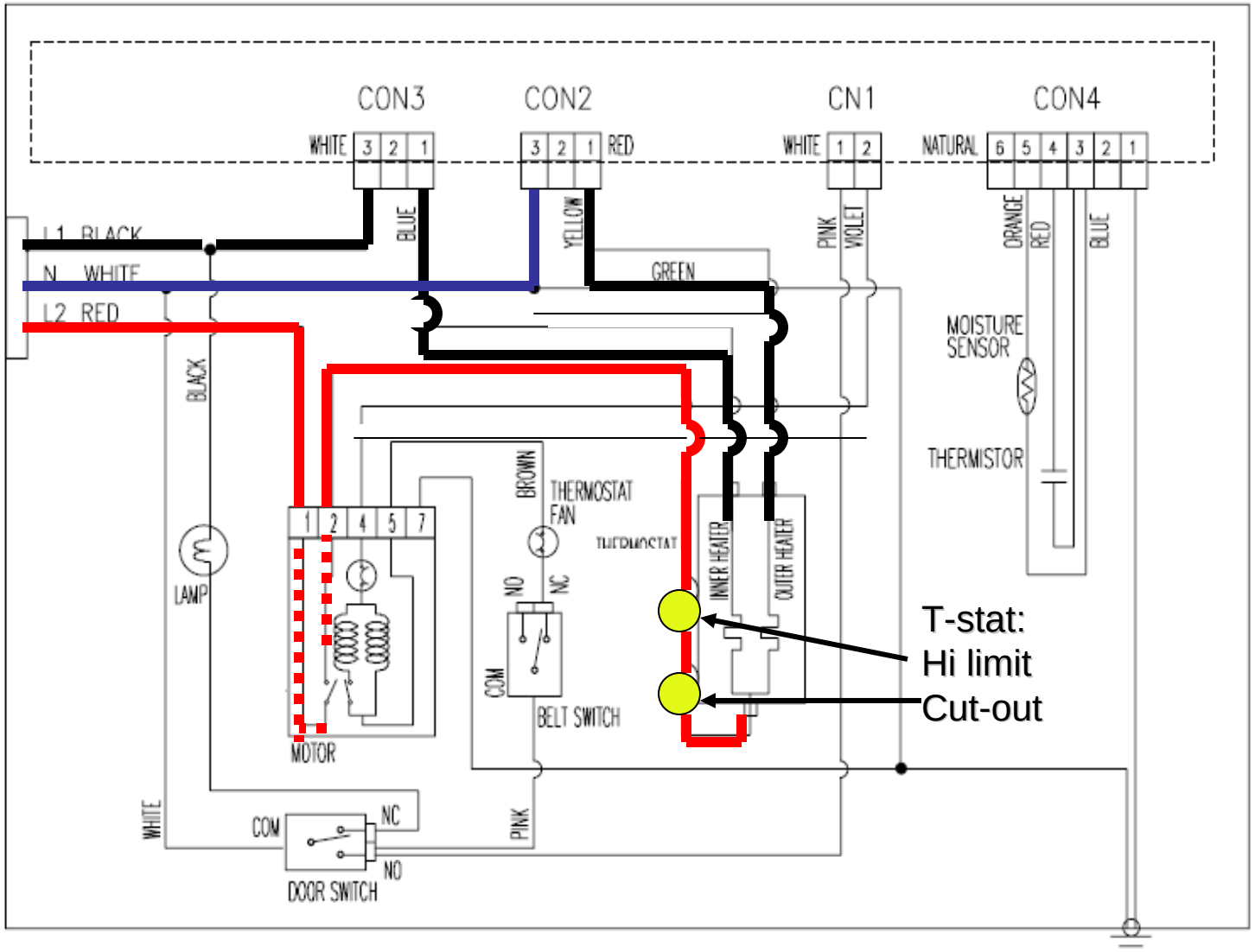
Hi limit opens at 185 F and closes at 167 F

Cut-out (safety) thermostat



Cut-out opens at 284 F and closes at -22 F
If it opens it should be replaced

Heater thermostat circuit



Front drum roller

Each roller is held on roller shaft with triangular plastic keeper

Tear-down procedure

- Product disassembly
- Component function
- Circuit flow for various components

ANY QUESTIONS ???

Error Codes

Error Codes

- H1 – Humidity sensor issue
- H2 – Thermister error issue
- H5 – Heater issue (over heat)
- H4/H6 – Heater disconnect

H1 Error – Humidity sensor

- Indicates a short in the humidity sensor circuit
- Measured values lower than 22 OHMS
- The unit buzzes every 10 minutes for a period of 10 seconds
- The error display goes off when the power is switched off

H2 Error – Thermister

- Shorted or open Thermister circuit
- The unit buzzes every 10 minutes for a period of 10 seconds
- The error display goes off when the power is switched off

H5 Error – Heater overheat

- Temperature sensor indicates 185 degrees F or higher

H4/H6 Error – Heater error

- Consumer receives no indication of error
- Check error through following steps, with no load in the dryer

- Heater self-test
  - Push POWER button while holding in DAMP SIGNAL & MORE TIME buttons
  - Both heaters will be energized & motor will run

H4/H6 Error – Heater error – Cont'd

- The unit will run a check of the initial temperature and then again after two minutes of run time
  - If the difference is 68F or greater, OK is displayed in the display window
  - If the temp difference is between 41F & 66F, then H6 is displayed indicating a loss of one of the heaters
  - If the temp difference is 41F or below, then an H4 is displayed indicating a loss of both heater circuits

Error Codes

Any questions ???

Diagnostic mode

TL751XXL Asko dryer

Component test procedures

- PCB Auto test Mode
- Manual Test Mode

PCB Auto test mode

- Turn power on while pressing DRY SENSOR and TEMPERATURE buttons
- Press DRY TIME button
- Test mode will advance automatically
  - Must open /close door manually to test door switch

Component test procedures

- PCB Auto test Mode
  - LED read-out All LED
  - Humidity sensor - 1:xx
  - Temp sensor - 2:xx
  - Door switch - dc -> do
  - Motor check will run
  - Heater – outer - H1
  - Heater – inner - H2
  - Power off shuts off

Manual test mode

- Turn power on while pressing DRY SENSOR and DRY TIME buttons
- Press DRY TIME button to advance to next component selection
  - Advancement to each component must be done manually
  - Allows for diagnostic time at each component

Component test procedures

- Manual test mode
  - Motor - 1:nr
  - Heater 1 - 2:H1
  - Heater 2 - 3:H2
  - Heaters off - 4:nr
  - Humidity sensor - 5:xx
  - Temp sensor - 6:xx
  - Door switch - motor off
  - Start/stop - motor on
  - Power off - unit off

Diagnostic mode

Any questions ???

Hands-on tear-down

That’s All Folks