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VOLUME 01 / FREE COURSE PREVIEW

DRYER REPAIR

Free Course Preview

Electric · Gas · Condenser · Heat pump

UNDERSTAND

Know the system

ISOLATE

Evidence before parts

VERIFY

Prove the repair

YOUR WORK. YOUR REPUTATION. YOUR FUTURE.

Essential technical knowledge for aspiring technicians and experienced professionals.

Invest in your skills. Build a stronger future in appliance repair.

WRITTEN EDITION 2.4 / OCTOBER 2026

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Free course preview

Selected practical lessons from edition 2.4: no useful heat, the complete supply, heating elements and a worked electric no-heat case. This is a sample of the teaching approach, not the full course.

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Chapter 42 - Runs without useful heat

For an electric model, compare required supply, heat request, heater and switches. For gas, compare the ignition stage and qualified fuel conditions. For a heat pump, compare compressor request, airflow, sensors and warm/cold coil behavior. The same customer wording covers different machines.

Check cooldown and air-only selections before opening the cabinet. If heat exists but does not reach or dry the load, inspect circulation, seals, overload and moisture removal.

Takeaway: prove which architecture and stage have lost useful heat.

Name the missing heat job before choosing a test

First compare the selected program with the actual stage. Air-only operation and intended cooldown can be valid heat-off conditions. An electric element, a gas sequence and a heat pump require different response evidence even if all three drums turn.

Use the following decision record before selecting a replacement. The observations are original hypothetical teaching examples, not field results or universal service limits. An operating reading is supplied on paper; it is not an instruction for a beginner to make an internal live measurement.

Observation or next comparison	What it establishes	What remains to separate
Air-only selected; no heat	Requested behavior can be normal	Customer expectation and actual program
Electric valid heat request; complete supply missing	Heating energy is unavailable	Supply branch
Gas glow without flame	One ignition event happened	Remaining transition/actuation/fuel evidence

Worked reasoning: Architecture controls the next test. A symptom title does not establish a universal heater failure. Resolve the missing functional job from the records rather than treating drum motion as proof of all heat permissions.

Correction and repair proof: Correct the demonstrated branch and retest a heat-producing stage with a permitted load, plus regulation and installed air/water conditions. Record the exact model, source and relevant condition beside each result. A component result, a control report and the customer's useful outcome are separate evidence. A missing acceptance criterion must be recorded as missing, rather than replaced with a value from another appliance.

Independent exercise: A ventless heat-pump model stops drying with retained sump water. Explain why an electric heater-resistance test alone does not address the stop. Write your next observation, the two causes it distinguishes, and the result required before declaring the complaint resolved.

Worked answer: The demonstrated missing water-removal function and level response need separation first; heat architecture and requested stage must still be identified.

Teaching sources and scope: WED99HEDC-W10678947-Tech-Sheet.pdf. Publication: W10678947B. PDF pages: 17, 18, 19, 20. WED99HEDC library association; use installed exact-model sheet. Application: Separate motor/heater paths, moisture reporting and installed drainage; conceptual exercises do not reproduce OEM wiring.; WhirlpoolWED99HEDC0heatpumpdryermanual.pdf. Publication: W10764068; L-88. PDF pages: 7, 8, 88. WED99HEDW0/WED99HEDC0 historical HybridCare platform. Application: Distinct air, refrigerant, condensate and auxiliary cooling functions. Current repair authority must be obtained separately.

Chapter 7 - Why a dryer can tumble without heating

Many North American electric dryers use a line-to-line 208/240 V heating branch and a different supply path for the motor or control. Losing one required line can leave some functions working while disabling heat. Other supply arrangements exist; the nameplate and diagram control the test.

Establish the required supply before blaming the heater and board. A qualified operating test compares the actual heating supply across its required lines, not just one line to the cabinet. With isolation, inspect the terminal block and damaged connections. Building electrical faults need the appropriate electrical professional.

Takeaway: a running drum does not prove a complete heater supply.

Tumble power and heating power must be proved separately

Trace the branches on the installed circuit

On a common North American electric dryer, the motor/control branch uses line to neutral while the main heater uses the two line conductors. The drum can turn when one required heater supply is unavailable. This explains a symptom; it does not prove which conductor or component failed. Gas and compact dryers can have different supply arrangements.

Draw the complete heater route from its supply through the actual relay, thermal protection, motor heat-enable contact and element to the return. Do not assume their order is identical on every dryer. Mark the motor branch separately. The Whirlpool W10678947B strip circuits, PDF page 20, illustrate why the running motor and its separate centrifugal heater contact need separate evidence.

Qualified supply measurements must identify the actual pair and state. Two independent line-to-neutral readings do not always prove the correct line-to-line supply. Conductors on the same phase, a damaged connection or misleading backfeed can confuse that shortcut. Use the required full supply checks and the model's method. Paper exercises can supply these readings without making live probing a beginner task.

Compare complete evidence sets

Stage 1: the drum turns and the dryer is in a heat-producing stage. A supplied line-to-line reading is far below the named heating requirement. The heater has not yet been proved faulty. The supply branch must be resolved first.

Stage 2: after a qualified supply correction, the full heating supply is correct. The isolated element is open across its specified pair. The first correction did not explain this second fault; the open element now supports component replacement.

Repair proof: confirm both supply and heating behavior, normal heat cycling, airflow and a representative load. Repeated supply interruptions or damaged building wiring need the appropriate electrical correction, not a new dryer board. A successful empty tumble is not the measurement point.

LG DLEX/DLGX service information, PDF page 28, also separates supply, heater, protection and motor contact checks. Its conflicting temperature conversions are not used here as acceptance limits.

Chapter 16 - Heating elements

A resistance element converts electrical energy into heat. The coil must be continuous and kept apart from its grounded support or enclosure. A broken coil prevents normal current. A coil touching its enclosure can create an unintended electrical path and, depending on the circuit, abnormal heating or a protective trip.

With correct isolation, inspect the coil and compare its disconnected resistance with the model specification. Use the permitted insulation check to the enclosure. A winding resistance within range does not clear a damaged connection or missing operating supply.

Takeaway: check the conductor, insulation, connections and supply as separate parts of the diagnosis.

Component test guide - Resistance heating element

How it behaves: An electrically resistive coil converts current to heat. Multi-section assemblies can share a common terminal; each section must be identified separately.

How to test it: With power verified isolated, disconnect the required lead(s), measure each specified heating section, and inspect the coil, insulators and connections. Check each heater terminal to the metal housing for an unintended conductive path. Qualified operating checks compare voltage across the heater feed/return, current in one heater conductor and actual temperature response during a valid heat request.

Reference readings and limits: Finite resistance is expected between the intended terminals; an open winding reads OL. Illustrative 240 V ratings of 4,000-6,000 W imply roughly 9.6-14.4 ohms and 16.7-25 A at the rated operating point. These are calculated examples, not a universal cold range. Terminal-to-housing resistance should be open on the ordinary meter; approved insulation testing may be more demanding.

How to interpret the result: Continuity alone does not prove insulation or rated output. Correct voltage with zero heater current supports an open path. No voltage directs diagnosis toward supply, required condition, relay, motor heat contact or wiring. A coil touching its housing can create unwanted heating and protective trips.

Verify the correction: Verify stable heat cycling with an assembled appliance, normal airflow and an appropriate load; confirm the original protective-trip cause was corrected.

Heating elements: use resistance, voltage and current together

What the part does and where it fails

An electric element uses a resistance conductor supported by insulating material in a heater housing. Air passing the assembly collects heat. A conductor can break open, a connection can burn, or a coil can move against metal. Each creates a different circuit condition. A continuity beep does not establish rated resistance or insulation from the housing.

With power isolated and the specified leads disconnected, identify each element section and measure its own terminal pair. Inspect supports, loose sections and heat-damaged connections. Check terminal-to-housing resistance using the model's permitted method; an ordinary meter can detect a conductive fault but cannot replace required insulation testing. Do not reconnect a displaced coil or bypass protection as a service trial.

A two-section source example

The LG DLEX/DLGX manual, PDF page 18, gives 10 ohms from common to each illustrated element end and 20 ohms between the two ends. The page 28 heater test repeats those relationships. This teaches how the selected pair changes the expected reading. It does not imply that every 240 V dryer has two 10-ohm sections or that both sections always operate in parallel.

For a fictional simple resistive load rated 240 V, 4,800 W, the operating estimates are $I = P/V = 20$ A and $R = V^2/P = 12$ ohms. Those estimates describe the supplied rating. They are not a universal cold-element specification. A meter can show voltage across an open element while no current flows because the conducting path is broken.

Supplied result at the requested heating state	Reasonable interpretation
Required voltage across element, zero current, isolated element open	Open element has direct supporting evidence
Element meets isolated range, required voltage absent	Investigate complete supply and switching path
One section open, other sound	Reduced heat can be a partial element failure
Terminal-to-housing conductive path	An insulation/ground fault must be addressed

Worked reasoning: a multi-section heater can leave the cabinet warm when one stage has failed. “It gets warm” therefore does not prove full output. Verify each requested stage using the actual circuit, rather than replacing a timer because drying is merely slow.

After a matched replacement, restore grounds, guards, fasteners and wiring clearances. Prove normal cycling, airflow and useful loaded drying. Correct a loose connector or airflow problem that damaged the old assembly; otherwise the new part can fail for the same reason.

Chapter 17 - Thermostats, thermal fuses and thermistors

A cycling thermostat opens and closes contacts as its sensed temperature changes. A high-limit device responds to an abnormal temperature; some reset and others do not. A thermal fuse is generally a one-time protective device. A thermistor changes resistance so a control can calculate temperature.

For contacts, compare continuity with the required temperature and state. For a thermistor, compare resistance with its own temperature curve. An open thermal fuse is important, but investigate the cause-such as restricted airflow, a failed fan or an uncontrolled heater-before completing the repair.

Takeaway: a contact device and a resistive sensor need different tests.

Component test guide - Thermal fuse and one-shot thermal cutoff

How it behaves: A one-shot protector opens its circuit after an excessive thermal event; it is not a temperature-measuring thermistor.

How to test it: Isolate power and a required lead, then measure resistance across the protector. Identify whether it interrupts motor power, heat power or a control feed in this design. Inspect exhaust restriction, blower operation, heater grounding and the associated control/protection chain.

Reference readings and limits: An intact closed protector is near lead-corrected zero ohms; a blown one-shot protector is open. Opening temperature and replacement pairing are part-specific.

How to interpret the result: An open fuse is a finding, not the root cause. A dryer may still tumble when a heat-path cutoff opens; a motor-path fuse can prevent running. Do not bypass or substitute a higher-temperature protector.

Verify the correction: Use the correct replacement and associated OEM-required parts, then demonstrate proper airflow and cycling without repeated thermal opening.

Component test guide - Cycling thermostat and high-limit thermostat

How it behaves: A bimetal contact changes state at its designed temperature. A cycling thermostat regulates heat; a high limit responds to abnormal conditions. Some thermostats also have separate bias-heater terminals.

How to test it: Isolate and identify the actual contact pair. Measure its state at the measured component temperature. If the OEM supplies a controlled temperature test, compare opening and closing temperatures under that procedure. Test separate bias-heater terminals as a different circuit.

Reference readings and limits: A contact designed closed at the current temperature should be near zero ohms; an appropriately open contact reads OL. A warm protector can be correctly open. Bias-heater resistance is finite and is not expected to equal contact resistance.

How to interpret the result: A cold continuity pass does not establish calibration or performance under heat. Repeated high-limit operation can arise from restricted airflow, incorrect heat control or a grounded coil. Do not treat all terminals on a four-terminal thermostat as one switch.

Verify the correction: Verify normal cycling and temperature behavior rather than relying on a single room-temperature continuity result.

Thermal protection and temperature sensing have different jobs

Sort the parts before testing them

A one-shot thermal fuse/cutoff interrupts a circuit after its specified thermal event. A cycling thermostat opens and closes at designed temperatures. A high-limit thermostat provides an additional protective response. An NTC thermistor changes resistance with temperature and supplies information to a control. Similar housings do not establish identical functions.

Locate each part on the heater, blower housing or air route shown by the parts drawing. Follow its circuit: a protector in the motor branch can stop tumbling; one in the heat branch can remove heat while tumbling continues. A four-terminal thermostat can have a separate bias-heater pair. Those terminals must not all be treated as one switch.

Isolated resistance testing must account for the expected state and temperature. A specified cold closed contact should be near the lead-corrected closed value; an open one-shot protector is a fault finding. A warm resetting thermostat may correctly be open. A cold continuity pass does not demonstrate accurate opening/closing temperatures or load performance.

Find why the protector opened

Inspect the complete air route, blower operation, heat-switching path and possible heater-to-housing fault. Fit the exact protector and associated parts required by the manufacturer. A higher-temperature substitute or a bypass removes the intended protection. Repeated resetting or replacement without cause separation is not a repair proof.

Case: a supplied dryer repeatedly opens a heat-path cutoff. The element terminal-to-housing test shows a conductive path and the coil is visibly displaced against its casing. The cutoff is doing a protective job; replacing it alone leaves an unwanted heat path. Correct the element fault and any resulting damage, then verify normal cycling and airflow.

Deal with inconsistent documentation

The retrieved LG manual contains conflicting temperature conversions and a thermistor entry whose units conflict with its later table. Those entries are excluded from acceptance criteria in this course. Students should identify the conflict, check the current exact-model sheet/bulletin and obtain clarification through the manufacturer's technical channel. Selecting the convenient number or averaging contradictory entries does not create a valid specification.

Worked example

Initial complaint: The dryer first ran unusually hot and now tumbles without heat.

Before requesting evidence: Before the next supplied stage, choose the observation that distinguishes the two remaining explanations and state how its result changes your decision. Write two competing causes and predict their different results.

Supplied staged findings: Original hypothetical teaching data. Original hypothetical record: complete requested supply is present; disconnected heater range passes; the cutoff path is open. The blower outlet is obstructed. Approved route/protection correction restores supplied airflow and regulated timed heating. A comparable automatic load still stops early. At the specified sensing test, residue changes the local contact response. After approved cleaning the local response matches; the harness and named temperature path meet their supplied checks.

Stage	Evidence supplied or requested	Decision to record
Opening	The dryer first ran unusually hot and now tumbles without heat.	List at least two competing mechanisms; no diagnosis is established.
Next comparison	Before the next supplied stage, choose the observation that distinguishes the two remaining explanations and state how its result changes your decision.	State the expected result for each competing cause before seeing findings.
Findings	Original hypothetical teaching data. Every measurement and pass/fail statement is supplied on paper, not a field observation. Stage 1: valid supply and a sound isolated heater accompany an open cutoff. Stage 2: isolated inspection finds a blocked blower outlet. Stage 3: after approved route/protection correction, supplied airflow now meets its criterion but automatic drying still stops early; comparable timed drying reaches the paper target. Stage 4: the named moisture-sensing surface has contamination and fails its supplied response check; the harness passes.	Explain which observation supports or excludes each option.
Repair proof	Record route/protection correction as demonstrated, then correct the matched sensing condition and retest automatic as well as timed behavior with comparable loads. Verify regulated heat and final-position moisture exit separately.	Separate corrected function, useful outcome and unperformed checks.

Decision: Choose the best-supported conclusion, cite two decisive observations, and distinguish the immediate fault from any initiating or remaining condition. State the approved correction and the separate results required for repair proof.

Choose among: Starting load wetness differs between the compared modes.; The moisture-reporting harness intermittently opens.; An automatic sensing-surface problem remains after restored airflow.; A temperature thermistor gives the wrong automatic termination information.

Worked diagnosis: An automatic sensing-surface problem remains after restored airflow.

Next-test reasoning: Compare timed and automatic behavior under matched permitted loads before repeating the original cutoff repair. Distinct outcomes isolate the remaining termination branch.

Alternative interpretations: - Starting load wetness differs between the compared modes.: Loads are expressly comparable between modes; the localized sensing response still differs. - The moisture-reporting harness intermittently opens.: The sensing harness passes its supplied comparison. - An automatic sensing-surface problem remains after restored airflow.: Local contact response changes with residue and recovers after approved cleaning, while the other compared paths pass. - A temperature thermistor gives the wrong automatic termination information.: The named temperature path passes its supplied comparison.

Correction and separate verification: Record route/protection correction as demonstrated, then correct the matched sensing condition and retest automatic as well as timed behavior with comparable loads. Verify regulated heat and final-position moisture exit separately.

Remaining uncertainty: Passing a component or setup stage does not record actual learner performance or complete field repair. Preserve the separately listed missing verification and current exact-model criterion requirements.

Worked decisions at successive stages

Supply and branch - decision: Inspect the relevant airflow and heat-off behavior using permitted observations; a cutoff result alone does not identify its cause.

Physical route and correction - decision: Compare equivalent timed and automatic loads; retained useful timed heat and airflow shifts attention to automatic sensing.

Local versus connected sensing - decision: The surface response is localized, weighing against temperature-path, harness and unmatched-load explanations. Repeat comparable automatic drying and preserve airflow/regulation checks.