



TROUBLESHOOTING GUIDE

Residential Gas-Fired Water Heaters Equipped With 24-Volt Flue Damper

CONDITION	CAUSE	REMEDY
The burner will not ignite.	No gas.	Check with gas utility company.
	Dirt in gas line.	Notify utility. Install drip leg in gas line.
	Pilot line clogged.	Clean. Check for source of trouble and correct.
	Combustion air intake holes blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Flame arrestor openings blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Main burner line clogged.	Clean. Check for source of trouble and correct.
	Defective pilot assembly.	Replace with new assembly.
	Defective gas control valve.	Replace with new gas control valve.
	Gas control valve set too low.	Turn temperature dial to desired temperature.
	Heater installed in a confined area.	Provide fresh air ventilation.
No electricity	Correct problem or call utility company.	
The burner flame floats and lifts off ports.	High gas pressure.	Check with gas utility company.
	Orifice too large.	Replace with correct orifice.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Combustion air intake holes blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Flame arrestor openings blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Heater installed in a confined area.	Provide fresh air ventilation.
	Cold drafts (downdraft).	Locate source and correct.
The burner flame is yellow and lazy.	Insufficient secondary air.	Provide fresh air ventilation.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Combustion air intake holes blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Flame arrestor openings blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Main burner line clogged.	Clean. Check for source of trouble and correct.
Heater installed in a confined area.	Provide fresh air ventilation.	
The burner flame is too high.	Insufficient secondary air.	Provide fresh air ventilation.
	Orifice too large.	Replace with correct orifice.
	Defective gas control valve.	Replace with new gas control valve.
The flame burns at the orifice.	Low gas pressure.	Check with gas utility company.
	Defective gas control valve.	Replace with new gas control valve.
The pilot will not light or remain lit.	No gas.	Check with gas utility company.
	Dirt in gas line.	Notify utility. Install drip leg in gas line.
	Pilot line clogged.	Clean. Check for source of trouble and correct.
	Loose pilot connection.	Tighten with pliers.
	Defective pilot assembly.	Reset or replace with new pilot assembly.
	Cold drafts (downdraft).	Check source and correct.
	Combustion air intake holes blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Flame arrestor openings blocked.	With a vacuum cleaner, remove dirt, dust, and lint.
	Gas control valve high limit switch has tripped.	Replace with new gas control valve.
	Resettable thermal switch on inner access door has tripped.	Reset thermal switch on inner access door and relight burner.
	Flammable vapours incident.	Contact a qualified service technician or the manufacturer for further instructions.
No electricity.	Correct problem or call utility company.	
The access door temperature high limit switch is tripping.	Not enough draft from the chimney.	Check for any obstruction in the chimney. Ensure that the chimney is sized and installed according to proper installation codes.
	Not enough fresh air for the combustion.	Supply make-up air. Refer to the proper installation codes.
	Ambiant air temperature is too high.	Reduce ambient air temperature.
	Excessive dirt, dust, or other debris accumulation on the flame arrestor.	Clean the flame arrestor in the combustion chamber using a stiff brush, compressed air and/or a vacuum cleaner.
High operating costs.	Gas control valve set too high.	Turn temperature dial to desired temperature.
	Sediment or lime in tank.	Drain. Check to see if water treatment is necessary.
	Water heater is undersized.	Install size of water heater that meets demand.
	Wrong piping connections.	Correct piping, dip tube must be in cold inlet.
	Leaking faucets.	Repair faucets.
	Gas leaks.	Check with gas utility company. Repair at once.
	Wasted hot water.	Advise consumer.

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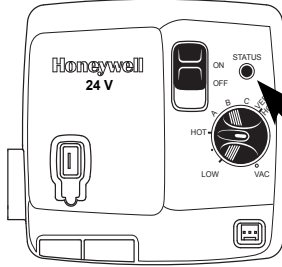
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40 Lesage Avenue, Montreal-East (Quebec) Canada H1B 5H3 • Telephone: (514) 645-8893 • Fax: (514) 640-0969

CONDITION	CAUSE	REMEDY
High operating costs (Continued)	Long runs or exposed piping.	Insulate piping.
	Hot water piping on outside wall.	Insulate piping.
Insufficient hot water.	Low gas pressure.	Check with gas utility company.
	Wrong piping connections.	Correct piping, dip tube must be in cold inlet.
	Sediment or lime in tank.	Drain. Check to see if water treatment is necessary.
	Water heater is undersized.	Install the size of water heater that meets the demand.
	Gas control valve set too low.	Turn temperature knob to desired temperature.
	Leaking faucets.	Repair faucets.
	Wasted hot water.	Advise consumer.
	Long runs or exposed piping.	Insulate piping.
	Hot water piping on outside wall.	Insulate piping.
Slow hot water recovery.	Insufficient secondary air.	Provide fresh air ventilation.
	Low gas pressure.	Check with gas utility company.
	Gas control valve set too low.	Turn temperature dial to desired temperature.
	Improper calibration.	Replace gas control valve.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Water heater is undersized.	Install size of water heater that meets demand.
	Wrong piping connection.	Correct piping, dip tube must be in cold inlet.
	Wasted hot water.	Advise consumer.
Leaking water.	Poorly sealed, hot or cold water connections, gas control valve threads, relief valve, or drain valve.	Tighten threaded connections.
	Leakage from plumbing system or other appliances.	Inspect plumbing system and other appliances.
	Condensation.	Refer to Condensation in the installation manual.
Water drips from the relief valve.	Heater stacking.	Lower gas control valve setting.
	Excessive water pressure.	Install a pressure-reducing valve.
	Thermal expansion in a closed water system.	Install an expansion tank.
	Improperly seated valve.	Check relief valve works properly and replace, if necessary.
The gas control valve fails to shut off.	Defective gas control valve.	Replace with new gas control valve.
	Improper calibration.	Replace gas control valve.
Condensation.	Water heater filled for the first time.	Let water heater warm up. Problem should go away. If it persists, check all plumbing connections for leaks.
	Heavy draws of hot water with very cold refill water.	Let water heater warm up. Problem should go away. If it persists, check all plumbing connections for leaks.
	Water heater is undersized.	Install size of water heater that meets demand.
Combustion odours.	Insufficient secondary air.	Provide fresh air ventilation.
	Heater installed in a confined area.	Provide fresh air ventilation.
	Flue clogged.	Clean. Check for source of trouble and correct.
Smoking and carbon formation (sooting).	Insufficient secondary air.	Provide fresh air ventilation.
	Low gas pressure.	Check with gas utility company.
	Burner flame yellow, lazy.	Refer to The burner flame is yellow and lazy in the installation manual.
	Flue clogged.	Clean. Check for source of trouble and correct.
	Defective gas control valve.	Replace with new gas control valve.
	Heater installed in a confined area.	Provide fresh air ventilation.
The pilot flame is too small.	Low gas pressure.	Check with utility.
	Pilot line or orifice clogged.	Clean. Check for source of trouble and correct.
Smelly water.	High sulfate or mineral content in water.	Change magnesium anode to an aluminum anode and bleach tank.

LED Status Codes



Light-emitting diode (LED)

FAULT	PROBABLE CAUSE
Resettable thermal switch tripped (open)	<ul style="list-style-type: none"> Insufficient combustion air Presence of flammable vapors

LED FLASH SEQUENCE	CONTROL STATUS	PROBABLE CAUSE	REMEDY
Short flash once every four seconds	Stand-by mode (no call for heat, no fault conditions)	<ul style="list-style-type: none"> Water temperature set point has been achieved 	None
"Heartbeat", alternates bright/dim	Call For Heat (no fault conditions)	<ul style="list-style-type: none"> Water temperature is below set point 	None
One Flash, three-second pause	Low Flame Signal (control continues to operate)	<ul style="list-style-type: none"> Carbon build-up on pilot electrode Pilot tube restricted or damaged Pilot igniter wire damaged Incorrect wiring and/or connections Gas supply problems 	<ul style="list-style-type: none"> Clean or replace pilot assembly Inspect wiring and connections Correct gas supply
Two Flash, three-second pause	Flue Damper Switch Failed Closed	<ul style="list-style-type: none"> Flue damper gate stuck open Flue damper switch stuck closed Faulty flue damper motor Obstruction or debris in flue damper opening Incorrect wiring and/or connections 	<ul style="list-style-type: none"> Inspect flue damper opening Inspect wiring and connection Replace flue damper assembly
Three Flash, three-second pause	TCO or Flue Damper End Switch Failed Open	<ul style="list-style-type: none"> Flue damper gate not reaching full open position Flue damper switch stuck open Faulty flue damper motor Obstruction or debris in flue damper opening Resettable thermal switch fault 	<ul style="list-style-type: none"> Inspect flue damper opening Inspect wiring and connection Replace flue damper assembly Resettable thermal switch open
Four Flash, three-second pause	Thermal Cut-off Device Tripped – System in Lock-out mode	<ul style="list-style-type: none"> Thermal well fault in gas control – Excessive water temperature Faulty gas control 	<ul style="list-style-type: none"> Reset gas control Replace gas control
Five Flash, three-second pause	Flame Out Of Sequence	<ul style="list-style-type: none"> Pilot and/or main burner valve malfunctioning 	<ul style="list-style-type: none"> Replace gas control
Six-One Flash, three-second pause	Unit failed to light – System in Soft Lock-out mode	<ul style="list-style-type: none"> Pilot flame unstable Carbon build-up on pilot electrode Pilot tube restricted or damaged Pilot igniter wire damaged Gas supply problems 	<ul style="list-style-type: none"> Clean or replace pilot assembly Correct gas supply
Six-Two Flash, three-second pause	Flue Damper Switch Opened – System in Soft Lock-out mode	<ul style="list-style-type: none"> Faulty flue damper switch Incorrect wiring and/or connections Damper gate jostled during operation 	<ul style="list-style-type: none"> Inspect wiring and connections Replace flue damper assembly
Six-Three Flash, three-second pause	Flame Lost - System in Soft Lock-out mode	<ul style="list-style-type: none"> Pilot flame unstable Carbon build-up on pilot electrode Pilot tube restricted or damaged Pilot igniter wire damaged Insufficient combustion air Gas supply problems 	<ul style="list-style-type: none"> Ensure combustion air supply is not blocked or restricted Clean or replace pilot assembly Correct gas supply
Six-Four Flash, three-second pause	Flame sense out of Sequence - System in Soft Lock-out mode	<ul style="list-style-type: none"> Gas control valve stuck open 	<ul style="list-style-type: none"> Replace gas control
Seven Flash, three-second pause	Flammable Vapor Detected - System in Lock-out mode	<ul style="list-style-type: none"> Presence of gasoline or other flammable vapors Excessive moisture on flammable vapor sensor Faulty flammable vapor sensor Faulty gas control 	<ul style="list-style-type: none"> Ensure that no flammable vapors are present Reset the gas control Replace flammable vapor sensor Replace gas control
Eight-One Flash, three-second pause	Flammable Vapor Sensor Fault Detected	<ul style="list-style-type: none"> Flammable vapor sensor out of specification Incorrect wiring and/or connections Faulty flammable vapor sensor Faulty gas control 	<ul style="list-style-type: none"> Inspect flammable vapor sensor wiring and connections Replace flammable vapor sensor Replace gas control
Eight-Two Flash, three-second pause	Temperature Sensor Fault Detected	<ul style="list-style-type: none"> Thermal well fault in gas control 	<ul style="list-style-type: none"> Inspect thermal well wiring and connections Replace thermal well
Eight-Three Flash, three-second pause	Electronics Fault Detected	<ul style="list-style-type: none"> Thermal well fault in gas control Faulty gas control 	<ul style="list-style-type: none"> Replace thermal well Replace gas control
Eight-Four Flash, three-second pause	Gas control Fault Detected	<ul style="list-style-type: none"> Gas control needs to be reset Gas control has been damaged 	<ul style="list-style-type: none"> Reset gas control ON/OFF switch Replace gas control

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