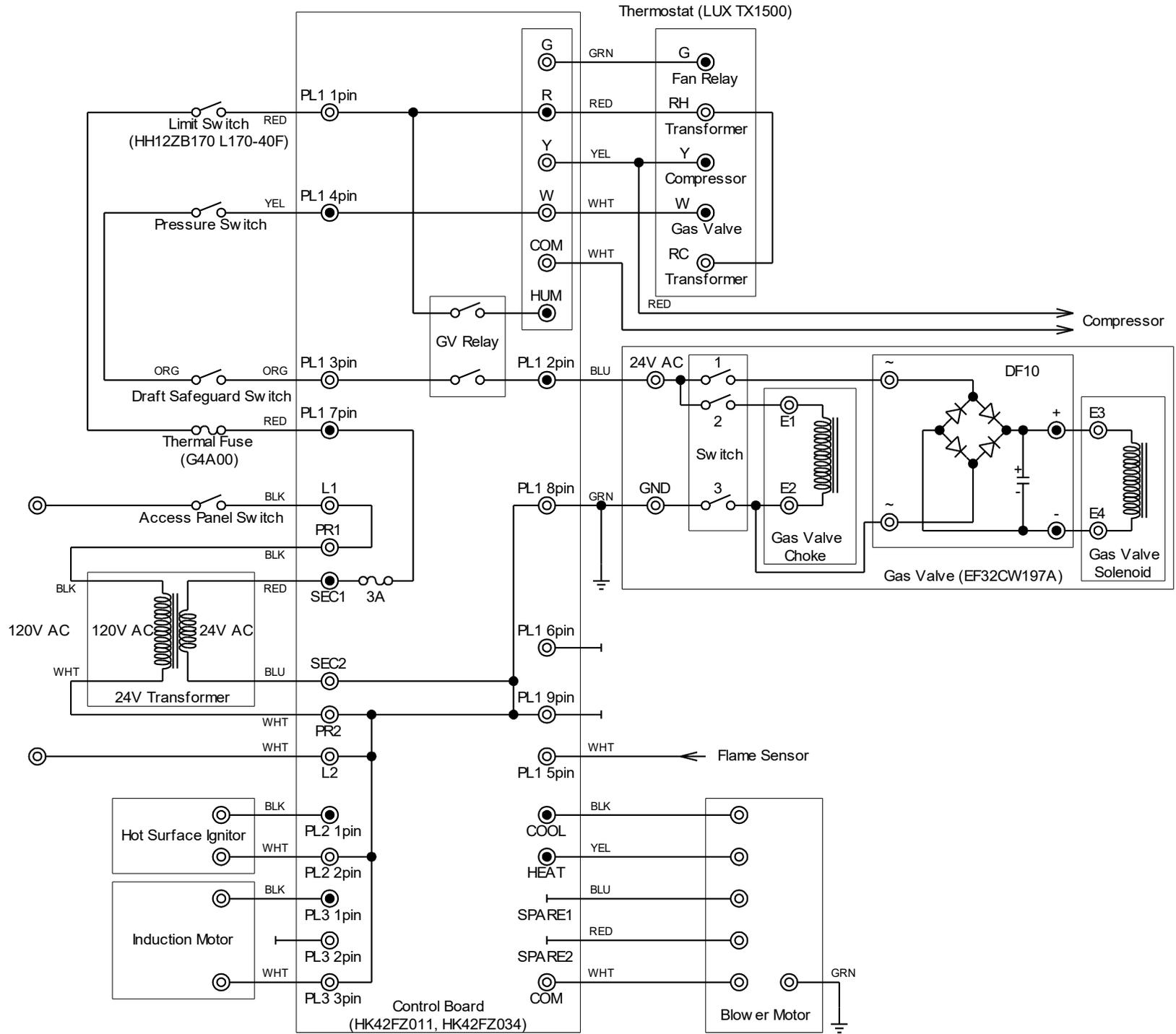


Repair Gas Furnace



Carrier Gas Furnace Weather Maker 8000 (58WAV) System Diagram

(Problem #1) No fire

Inducer motor rotates and hot surface igniter glows. But no fire occurs. Continuity & voltage diagnosis by voltmeter exhibited the gas valve switch has problem.

Device I/O or "Terminal"	When power off	When power on		
		Thermostat off	Thermostat on	Ignition/Fire Cycle
Limit Switch	Close	(Close)	(Close)	(Close, Open when heat changer overheated)
	--	24V AC	24V AC	24V AC
"R"	--	24V AC	24V AC	24V AC
"W"	--	0V AC	24V AC	24V AC
Pressure Switch	Open	(Open)	(Close)	(Close when blower rotates)
	--	0V AC	24V AC	24V AC
Draft Safeguard Switch	Close	(Close)	(Close)	(Close, Open when draft air overheated)
	--	0V AC	24V AC	24V AC
"PL1 3pin"	--	0V AC	24V AC	24V AC
"PL1 2 pin"	--	0V AC	0V AC	24V AC
Inducer Motor	--	Not rotating	Rotating	Rotating
Igniter	--	Not igniting	Not igniting	Igniting
Gas Valve Switch	Short but Open	(Short but Open)	(Short but Open)	(Short but Open)
	--	0V AC	0V AC	24V AC

Continuity & Voltage Diagnosis

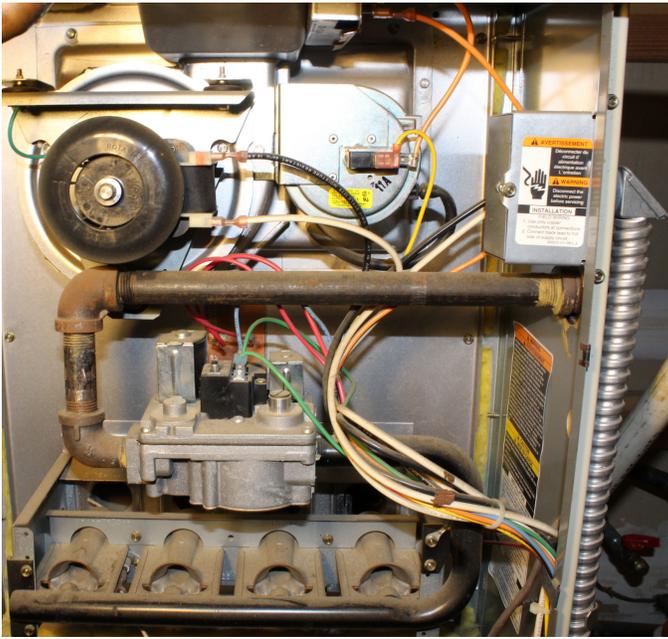
Control board, thermostat, preventive switches, inducer motor, and hot surface igniter, are all working properly.

Gas valve has a slide switch (it looks like a toggle switch, though) on it. Due to a contact failure existed on port #3 of the slide switch (refer to Furnace System Diagram), 24V AC current path for gas valve solenoid is shut off. As a result, gas valve stays closed.

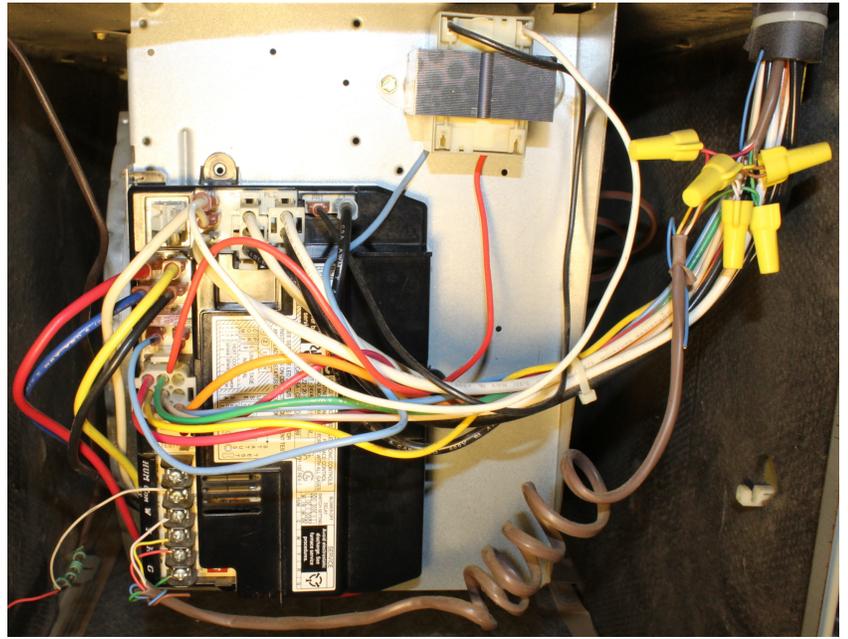
Resolution of the problem

Because the switch on the gas valve is always on under operating mode, port #1, #2, and #3 of the switch can be shorted to prevent the contact failure (ignore the needless switch function).

Do not hit the gas valve violently to recover from the commonly known malfunction. This is cave men's way.



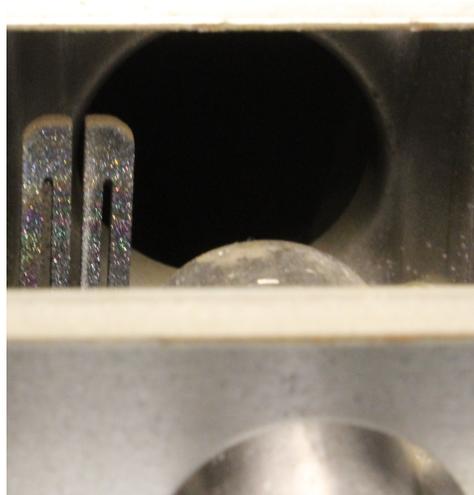
Gas Valve & Furnace



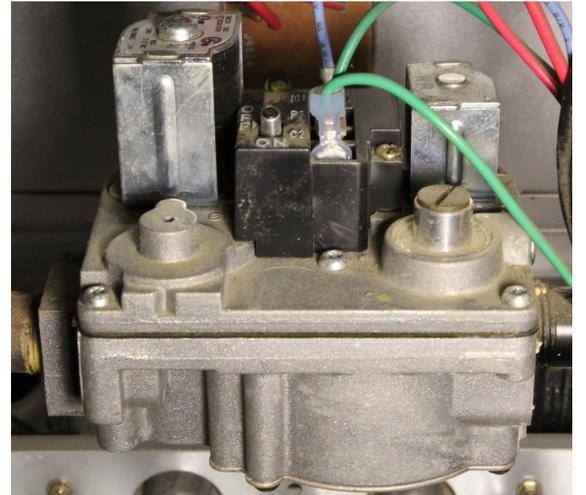
Control Board



Flame Sensor



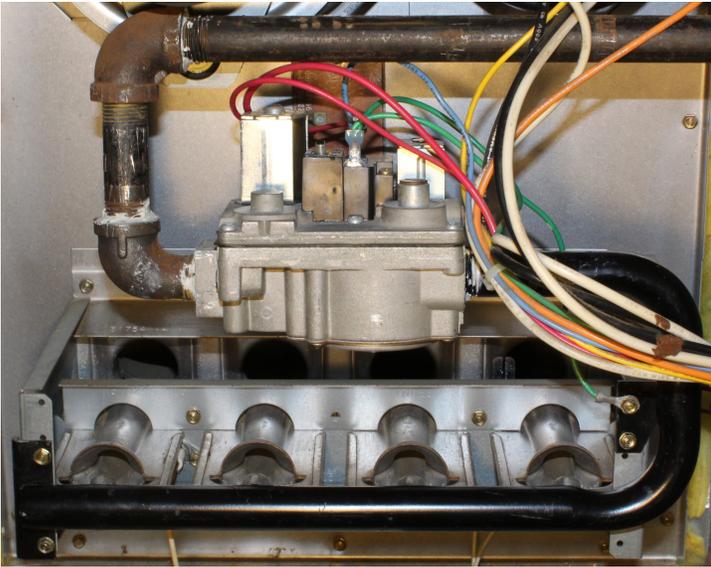
Hot Surface Igniter



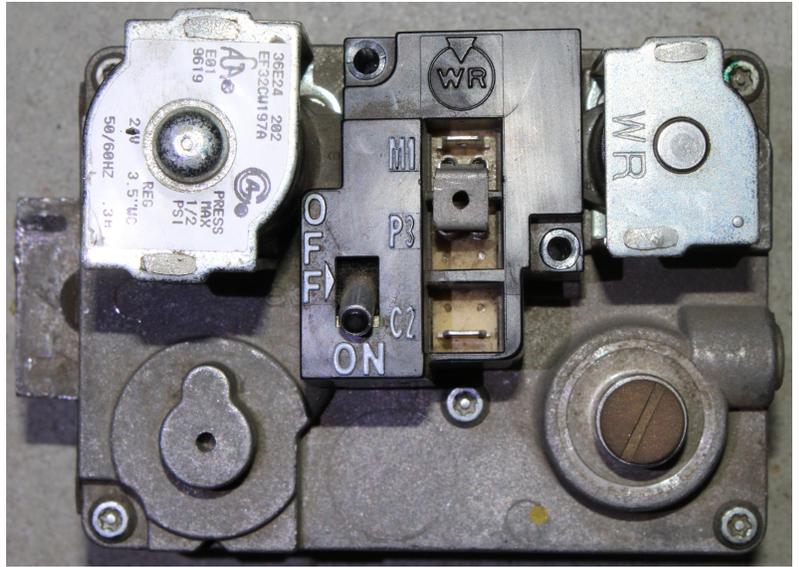
Gas Valve



After Removing Gas Valve Disconnecting Gas Pipes (Old Gas Valve (Up), New Gas Valve (Down))

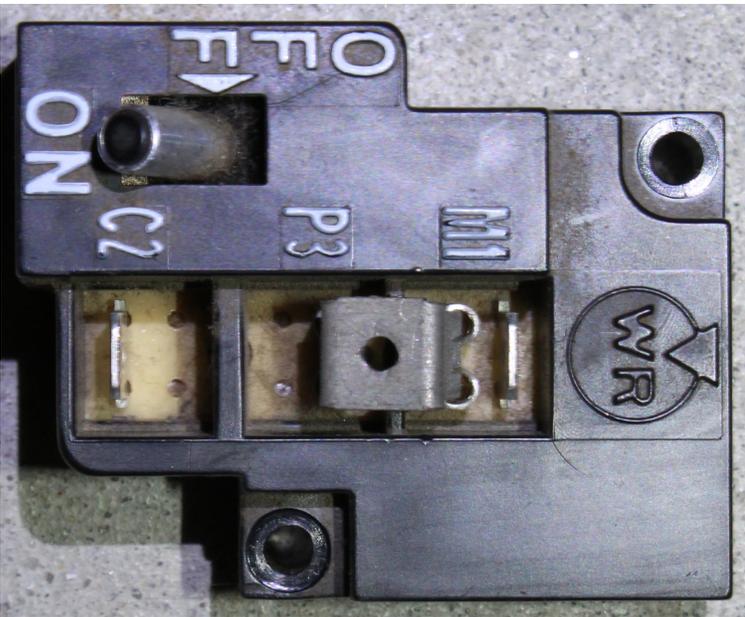


Replaced

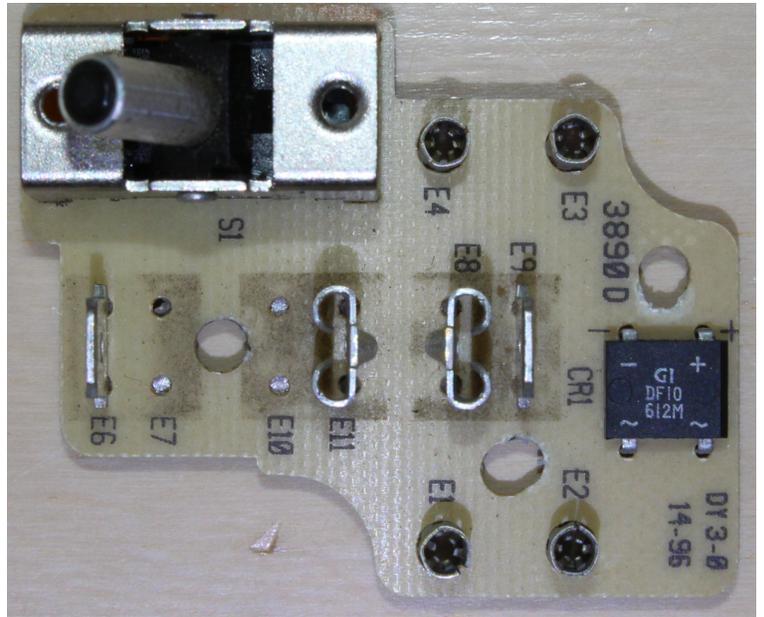


Gas Valve Switch (Center & Black)

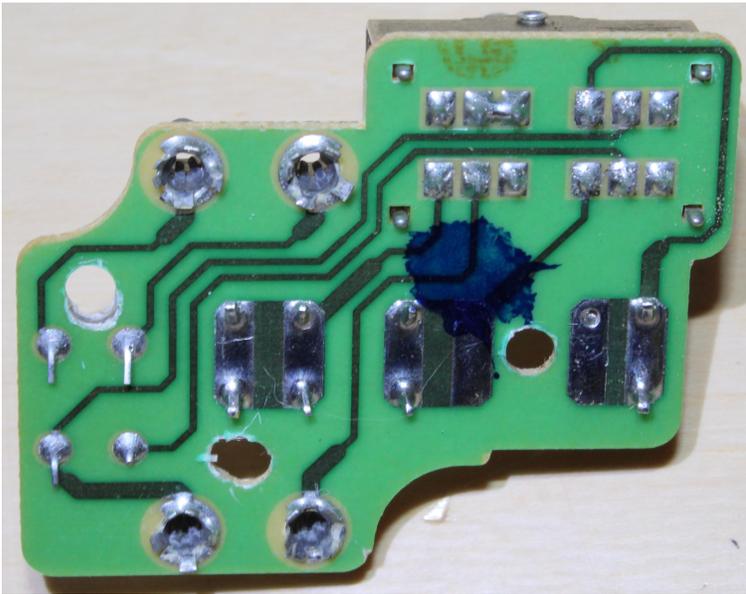
After replacing the faulty gas valve to new gas valve, the furnace started working fine. Then, I started to resolve actual problem on gas valve switch disassembling it.



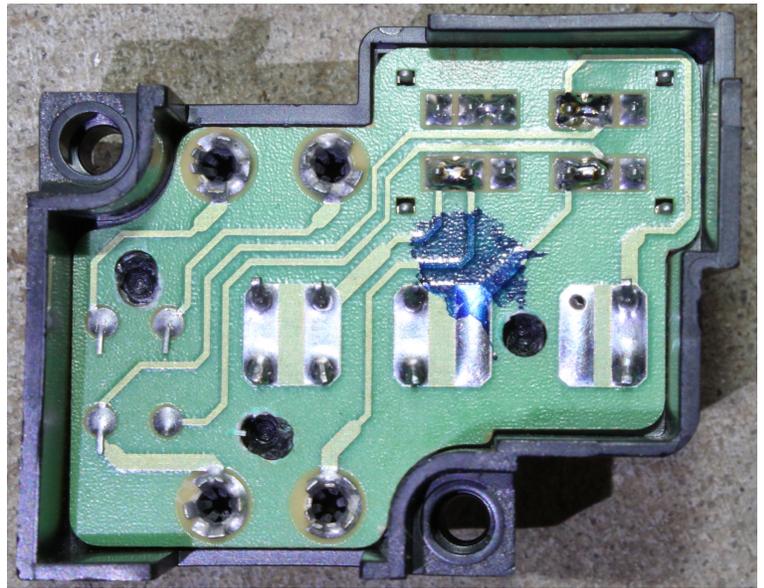
Gas Valve Switch Detached



Cover Removed (4 Pin Full Wave Rectifier (Right))



Three Port Switch Soldering Normally



Three Port Switch Disabled by Soldering Each Ports

This way resolves commonly known "no fire" problem on gas furnace without replacing gas valve. Simply detach gas valve switch from gas valve and solder three places.

(Problem #2) Blower always running

Device I/O or "Terminal"	When Power on
"HEAT"	0V
"COLD"	0V but 120V AC
"G"	0V but 24V AC
"R"	24V AC
"Y"	0V but 24V AC
"W"	0V
"HUM"	0V

Voltage Diagnosis Result

Wire	When power off & terminal wire disconnected & Thermostat disconnected
Red & Yellow	Open but Short

Wire Continuity Diagnosis

Total six colored wires (green, red, yellow, white, blue, and brown) are routed between thermostat module and gas furnace. Only four wires (green, red, yellow, and white) out of the six are connected to "G", "R", "Y", and "W" terminals respectively on control board as well as on thermostat module.

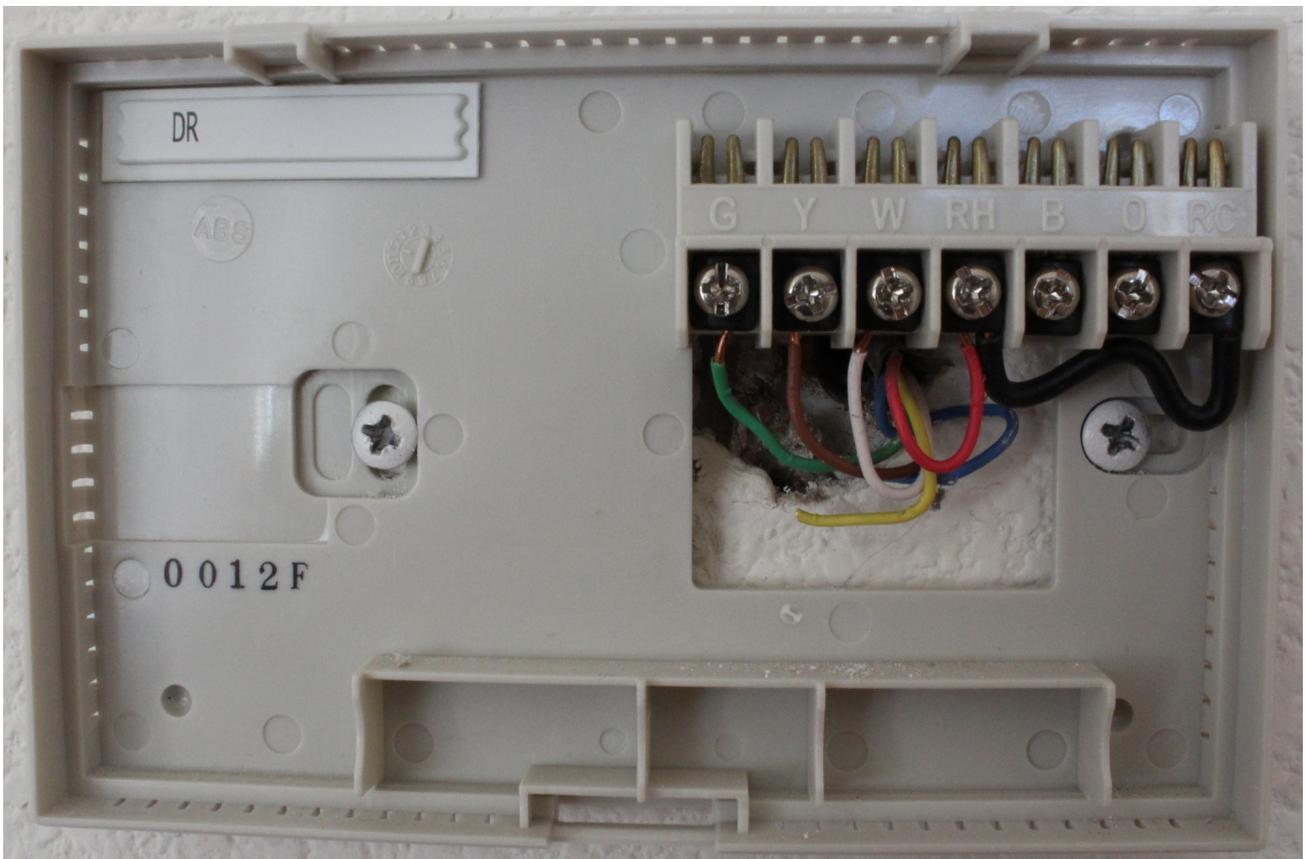
The wire continuity diagnosis showed that red, yellow, and blue wires were shorted together. The cause is unknown. Probably, mouse bit the wires routing on ceiling.

Resolution of the problem

Yellow terminal ("Y") connection was connected to intact brown wire, not the problematic yellow wire.



Before (Blower always On)



Brown Wire Connected Instead of Yellow Wire