Service Manual

Quality System Certified To ISO 9001-2000

NAPOLEON®
QUALITY FIREPLACES
Award Winning Products

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ISO-176 W415-0118/A/.07.05.05

Wolf Steel's Service Manual Index

PART 1: TROUBLESHOOTING: DIRECT VENTS

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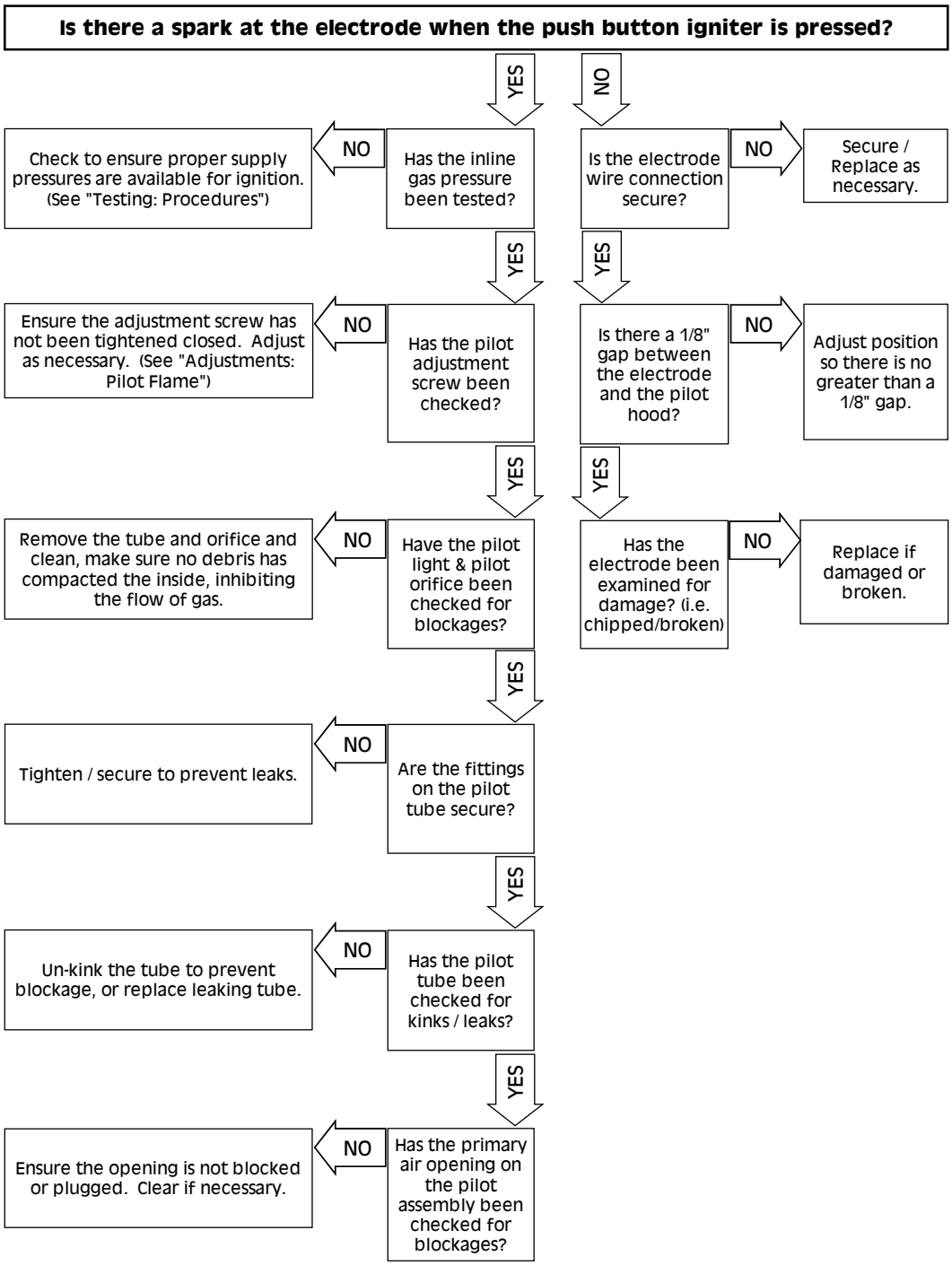
Troubleshooting: Direct Vents

Pilot Not Lighting Flowchart



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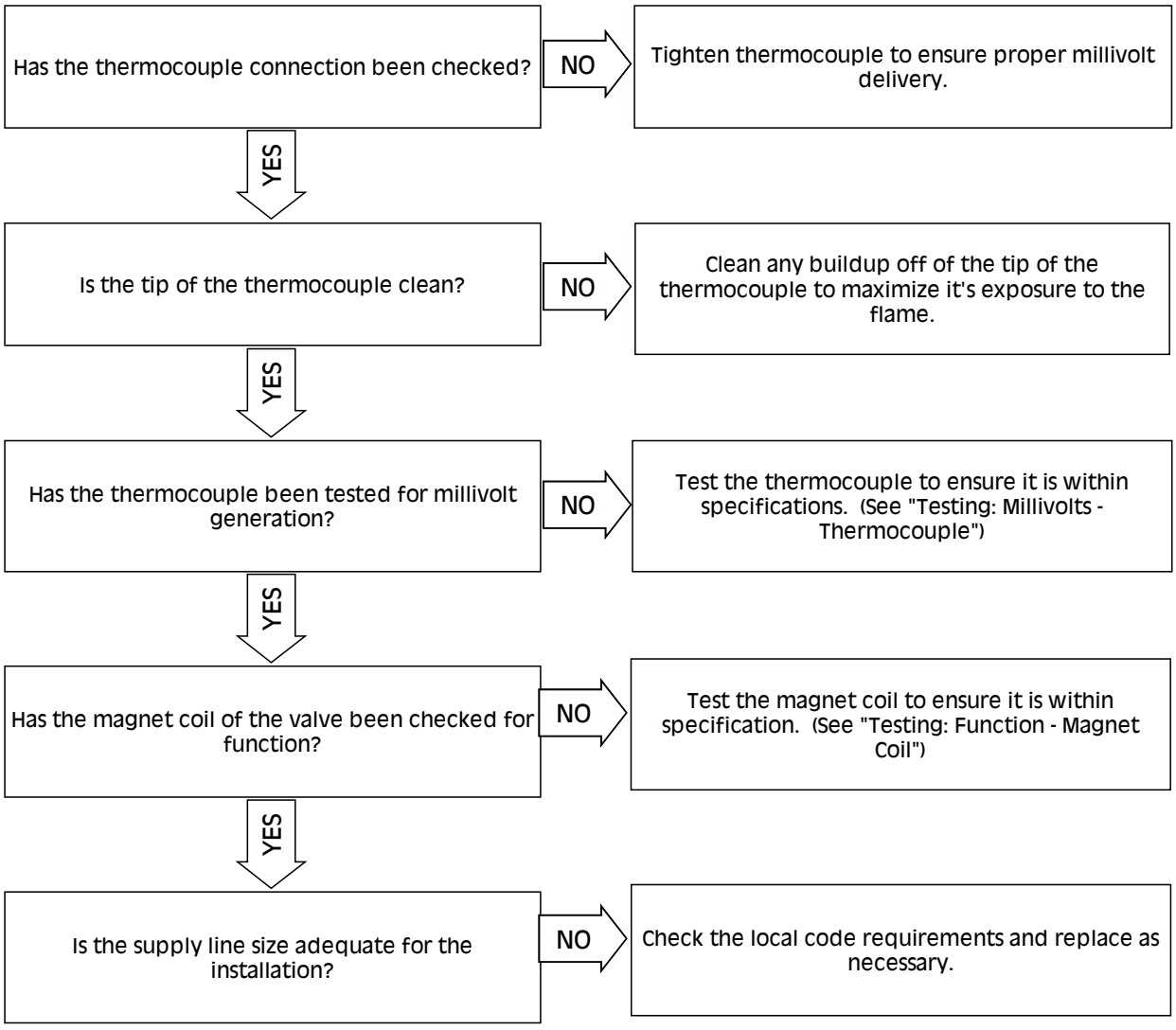
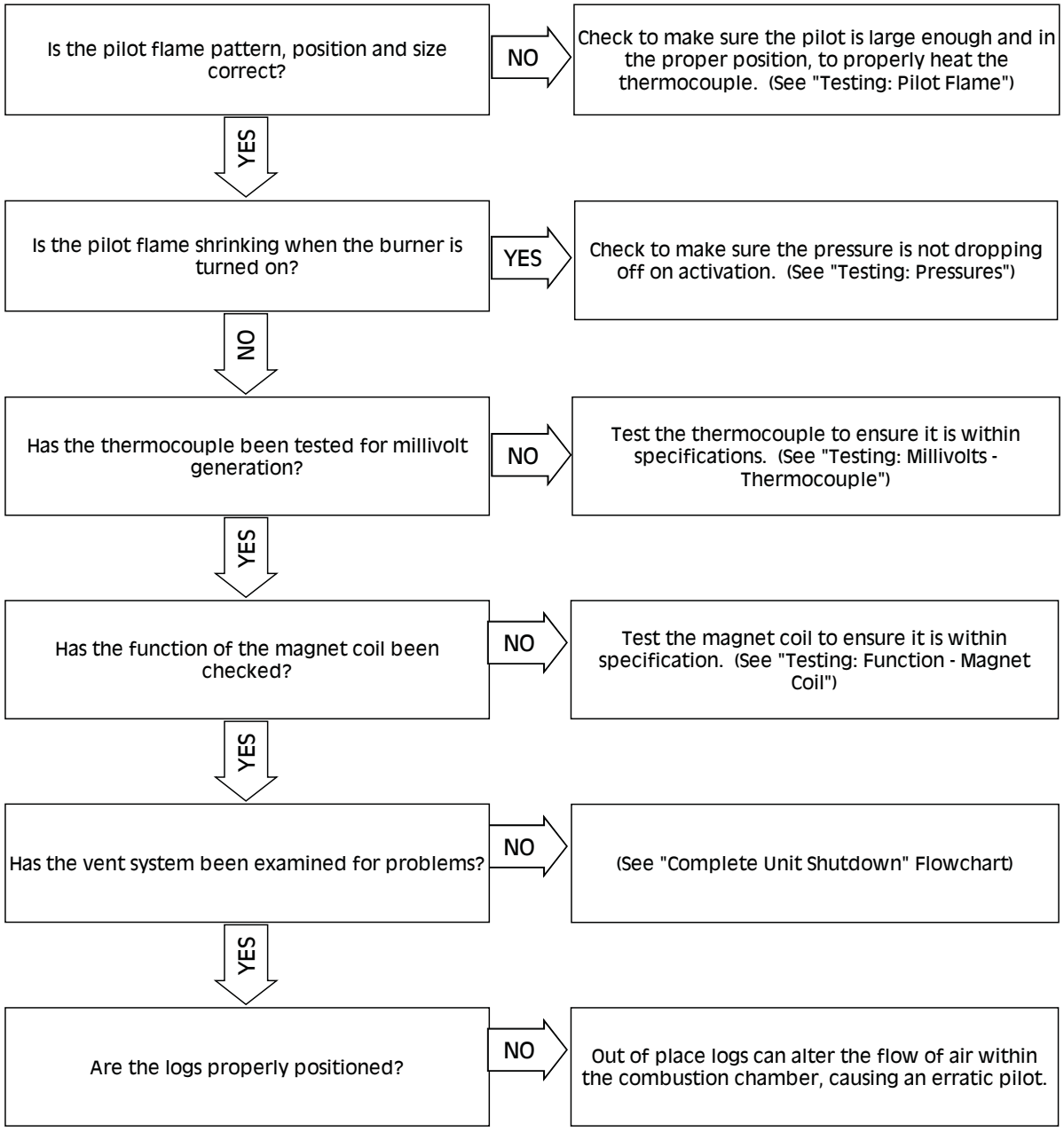
Troubleshooting: Direct Vents

Pilot Not Holding Flowchart



Troubleshooting: Direct Vents

Pilot Failure Flowchart



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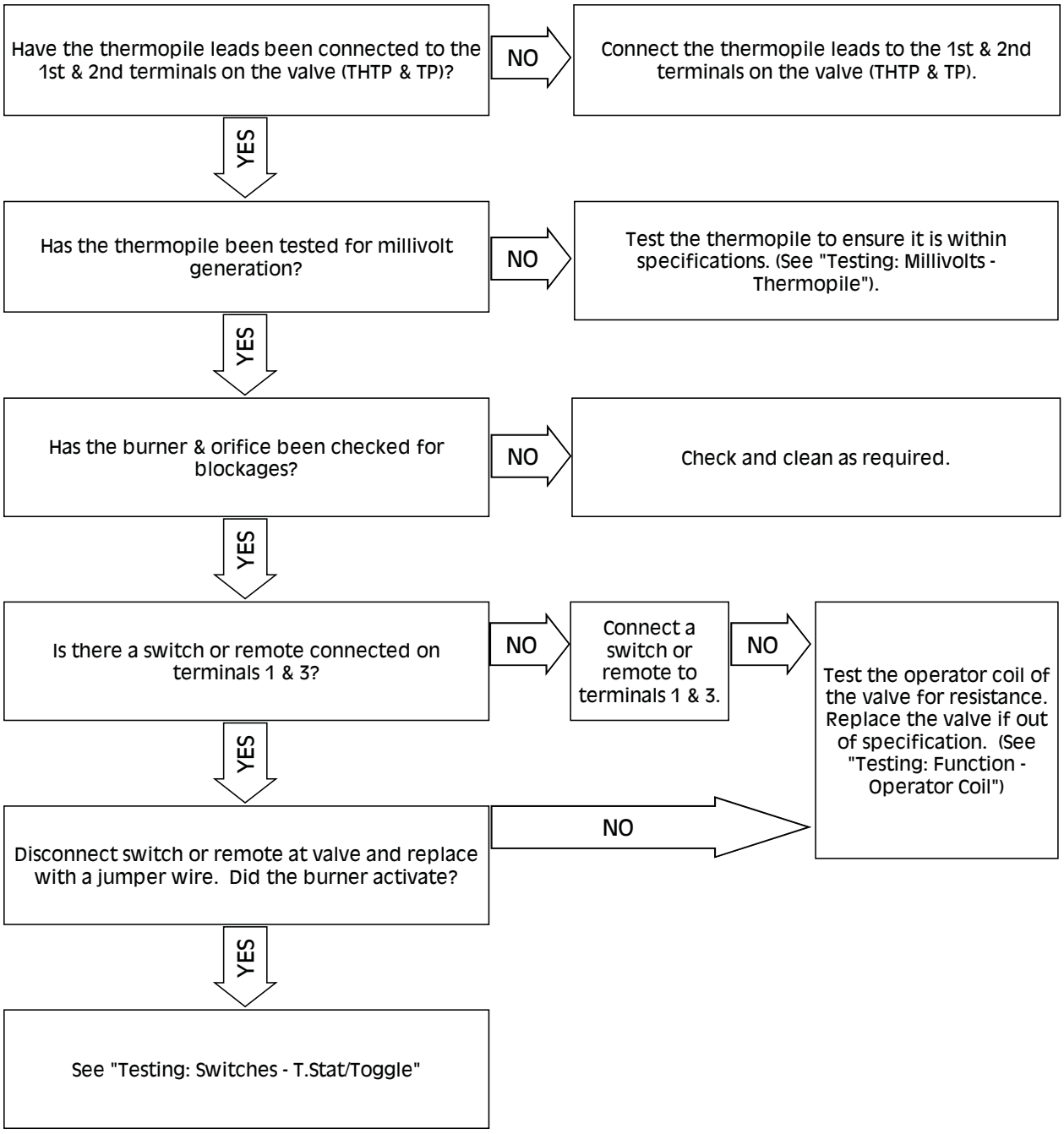
Troubleshooting: Direct Vents

Main Burner Not Lighting Flowchart



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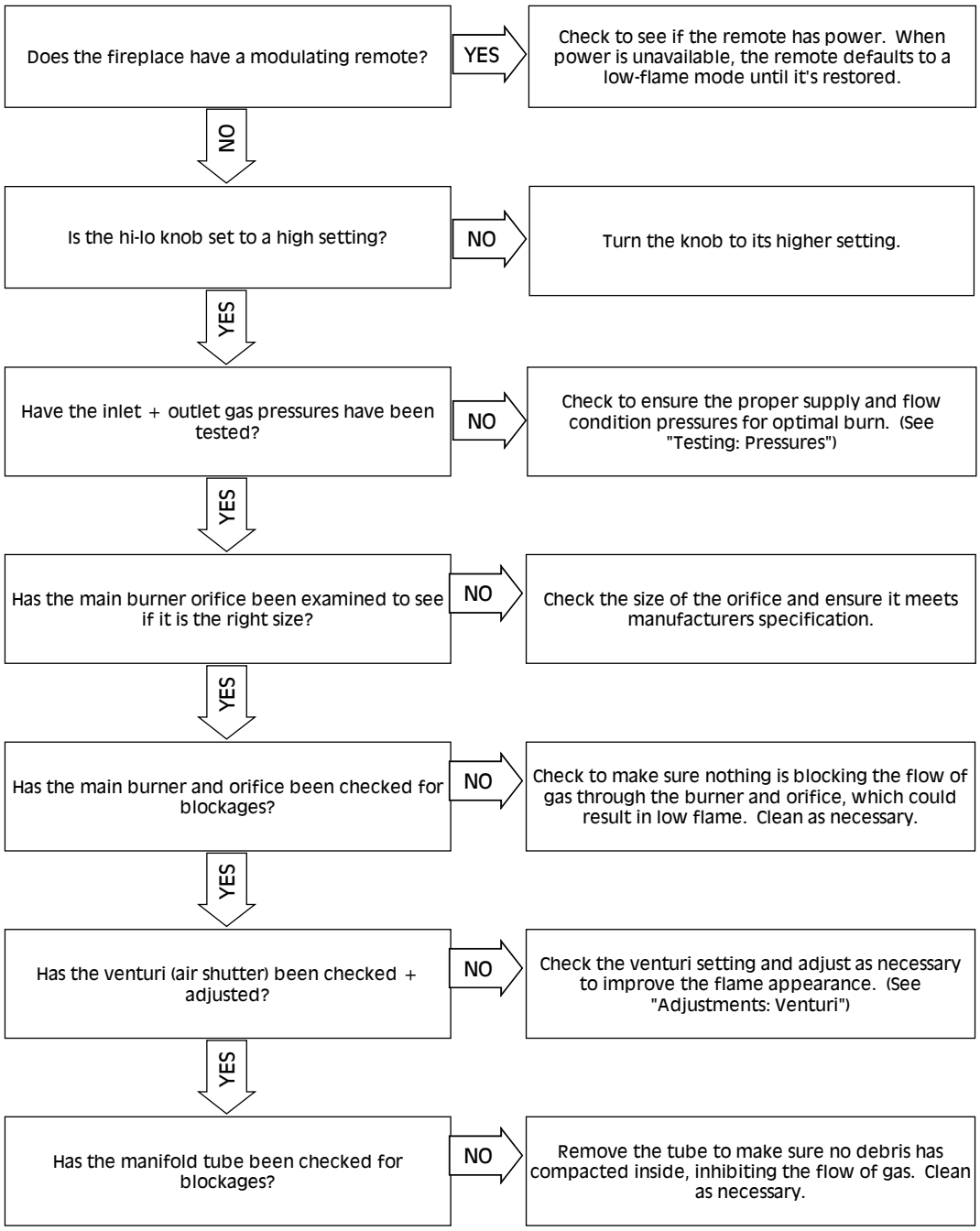
Troubleshooting: Direct Vents

Main Burner Delayed Ignition Flowchart

Has the pilot flame position and size been examined?	NO	Check to make sure the pilot is large enough and in the proper position, to reach the ignition ports. (See "Testing: Pilot Flame")
YES		
Has the inline gas pressure been tested?	NO	Check to ensure the proper supply pressures are available for ignition. (See "Testing: Pressures")
YES		
Has the main burner & orifice been checked for blockages?	NO	Check to make sure nothing is blocking the flow of gas through the burner and orifice, contributing to the delay. Clean as necessary.
YES		
Has the main burner orifice been examined to see if it is the right size?	NO	Check the size of the orifice and ensure it meets manufacturers specification.
YES		
Has the venturi (air shutter) been checked & adjusted?	NO	Check the venturi setting and adjust as necessary to improve the ignition time. (See "Adjusting: Venturi")
YES		
Has the venturi access door been checked?	NO	Check to ensure the door is tightly sealed and not allowing any air into the air-shutter chamber, and that the gasket is intact.
YES		
Has the burner been checked to ensure it is level?	NO	Examine and level as necessary.
YES		
Has the positioning of the logs been checked?	NO	Out of place logs can alter the flow of air within the combustion chamber, causing an erratic pilot.
YES		
Have the charcoal / glowing embers (where applicable) been checked?	NO	Check to make sure no ember material is clogging the ports, and contributing to the delay.
YES		
Has the venting been examined?	NO	Ensure the venting is sealed and there are no leaks.
YES		
Has the main door seal been checked?	NO	Check to make sure no air is leaking in around the seal, which can affect the flow of air in the combustion chamber.

Troubleshooting: Direct Vents

Main Burner Low Flame Flowchart



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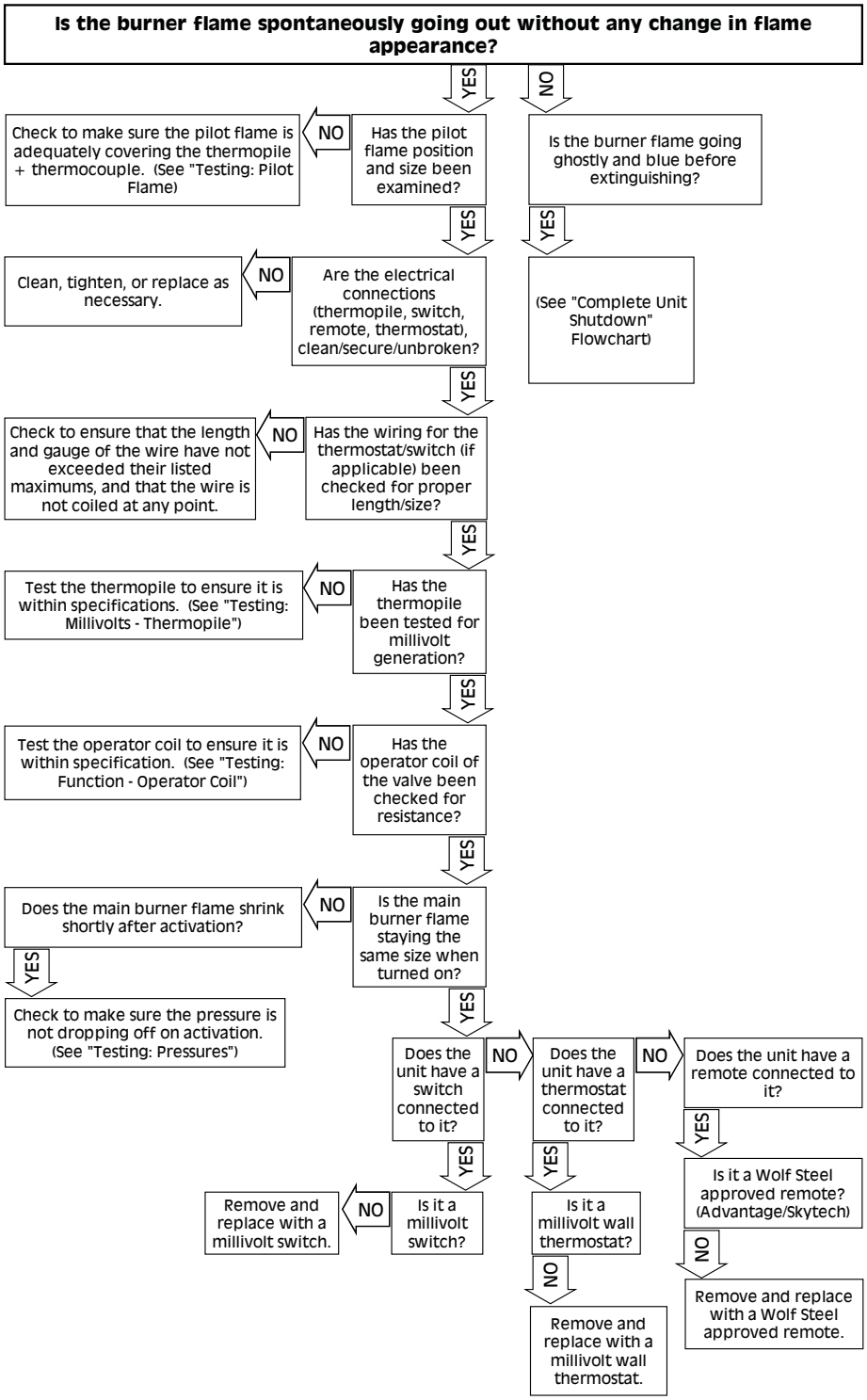
Troubleshooting: Direct Vents

Main Burner Failure Flowchart



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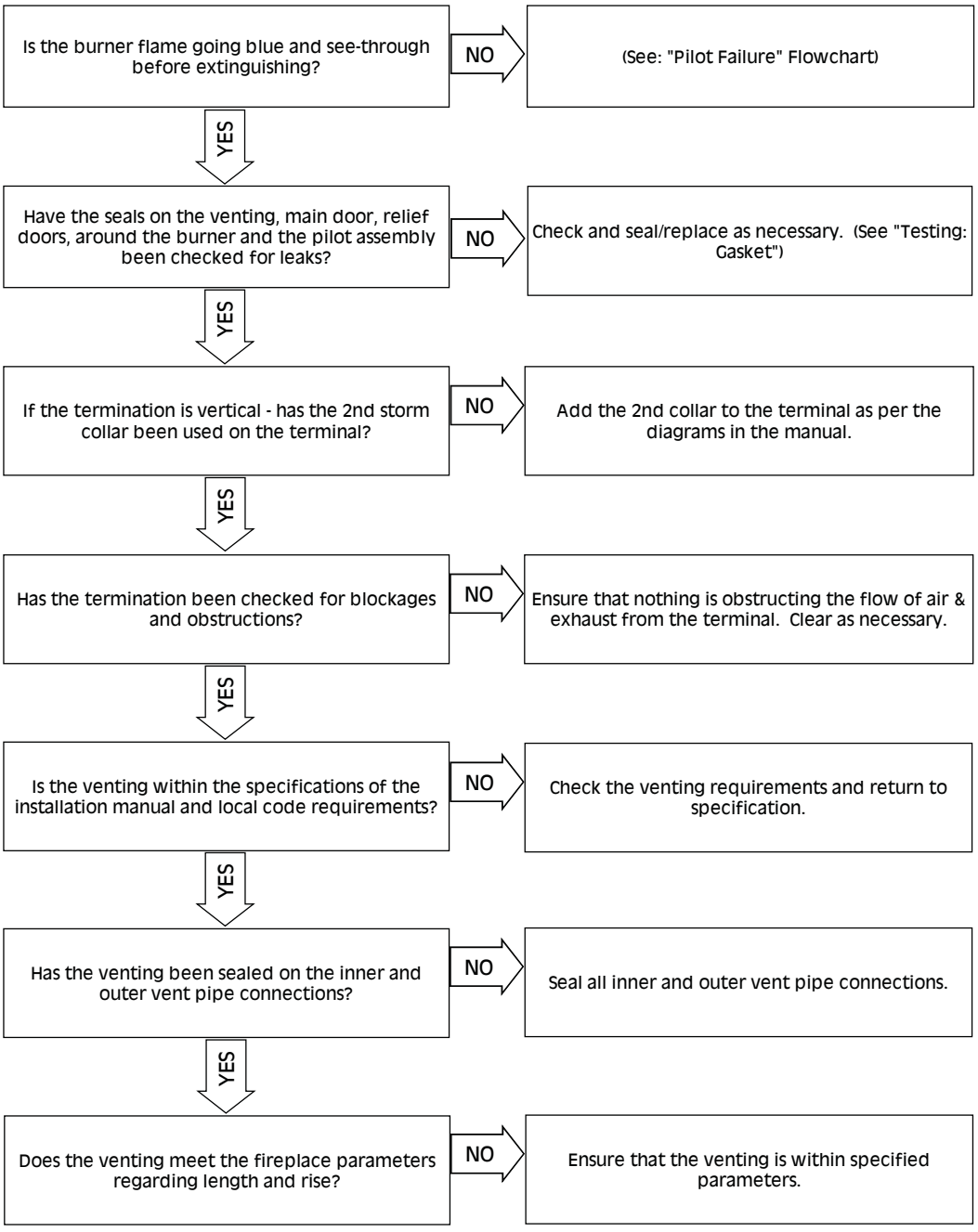
Troubleshooting: Direct Vents

Complete Unit Shutdown



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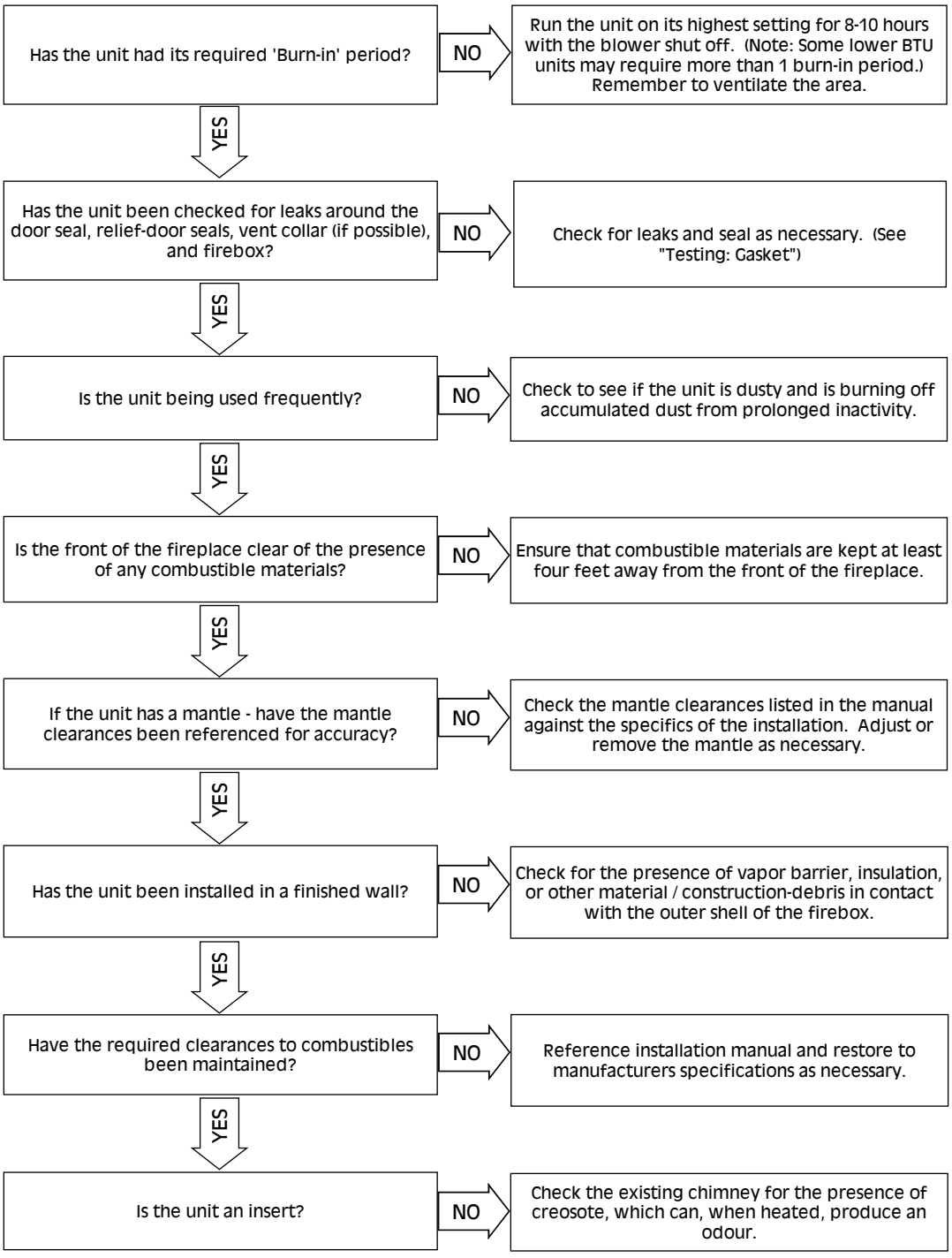
Troubleshooting: Direct Vents

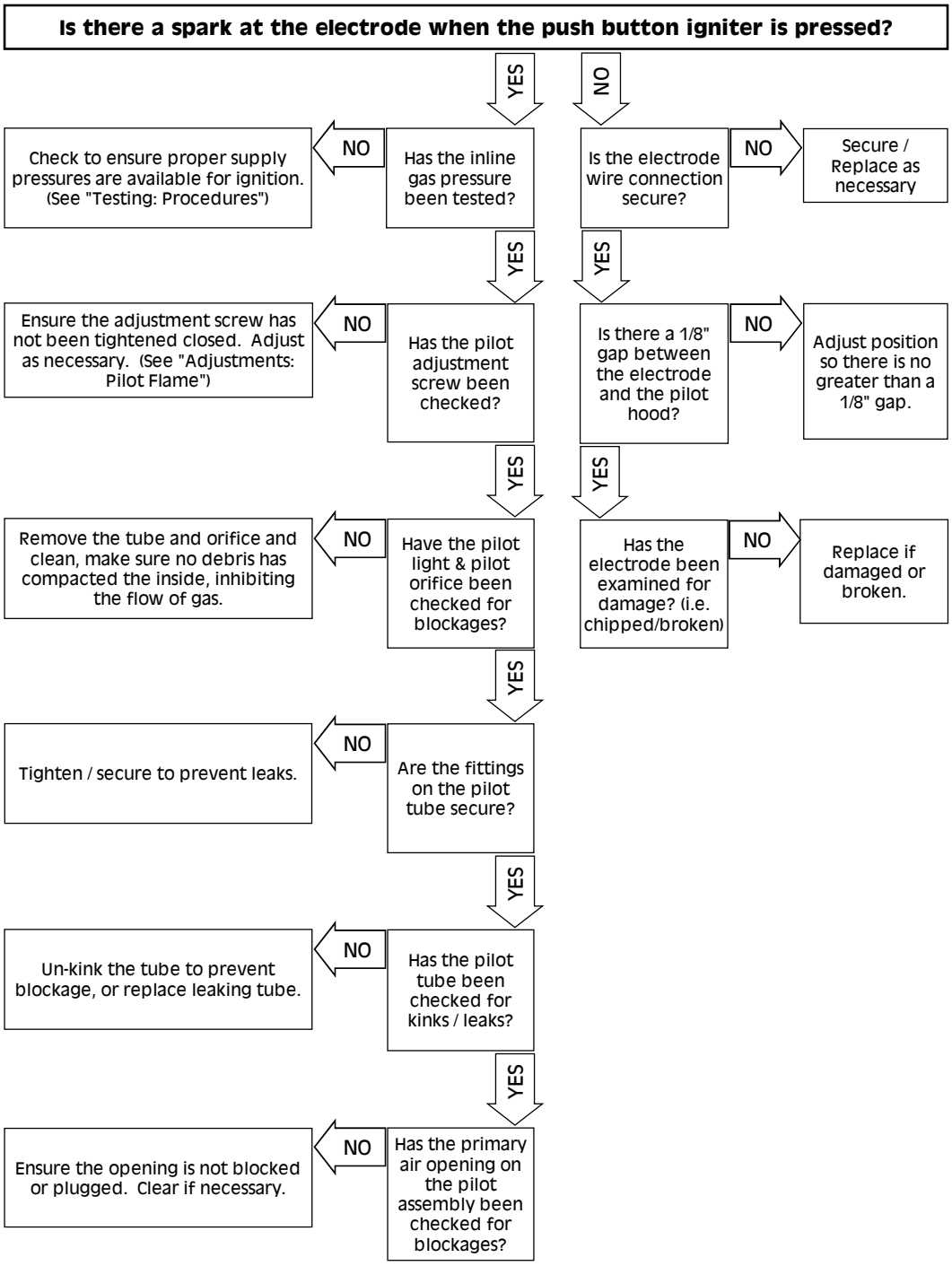
Odour Flowchart



PART 2: TROUBLESHOOTING: NATURAL VENTS

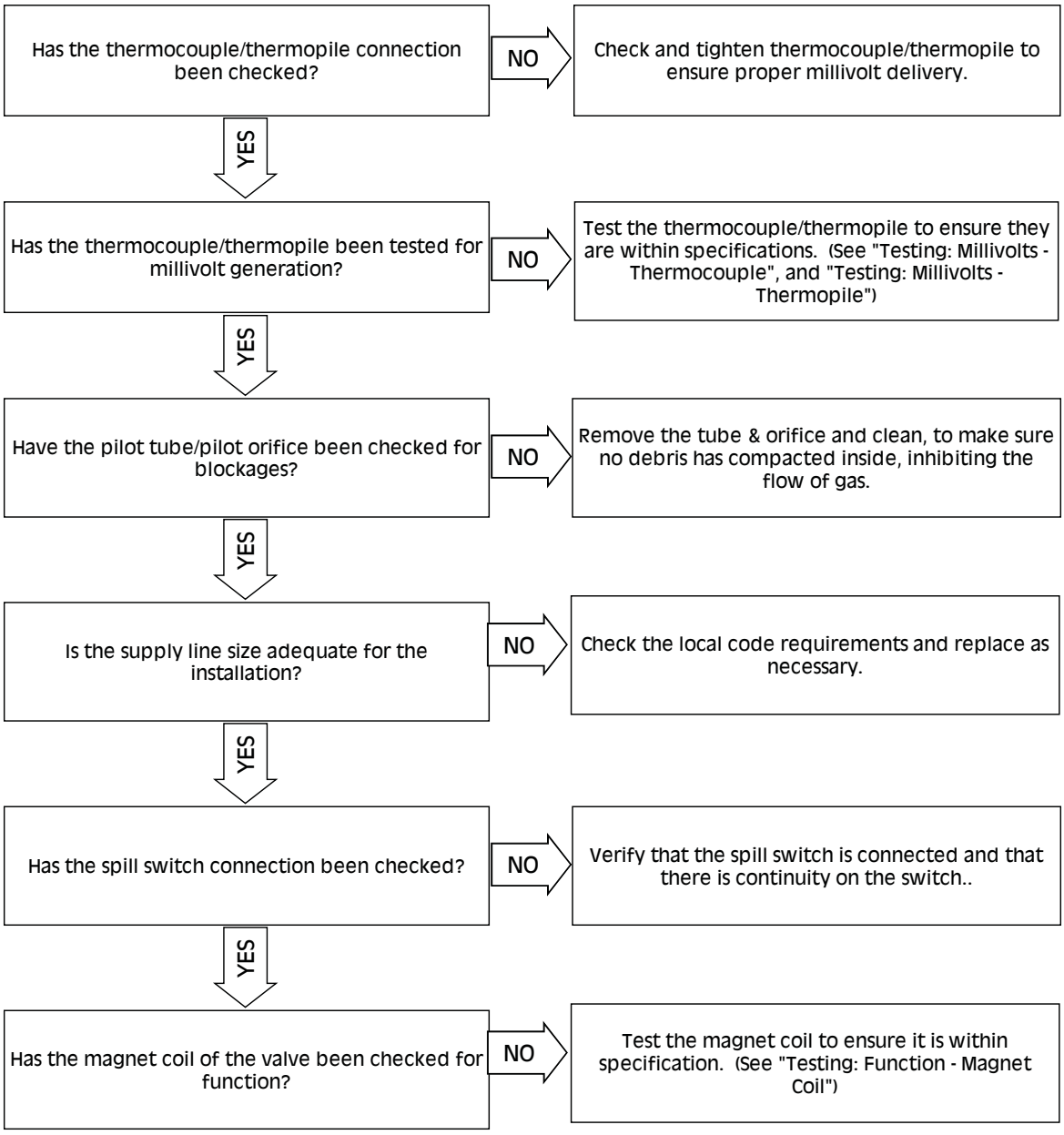
Troubleshooting: Natural Vents

Pilot Not Lighting Flowchart



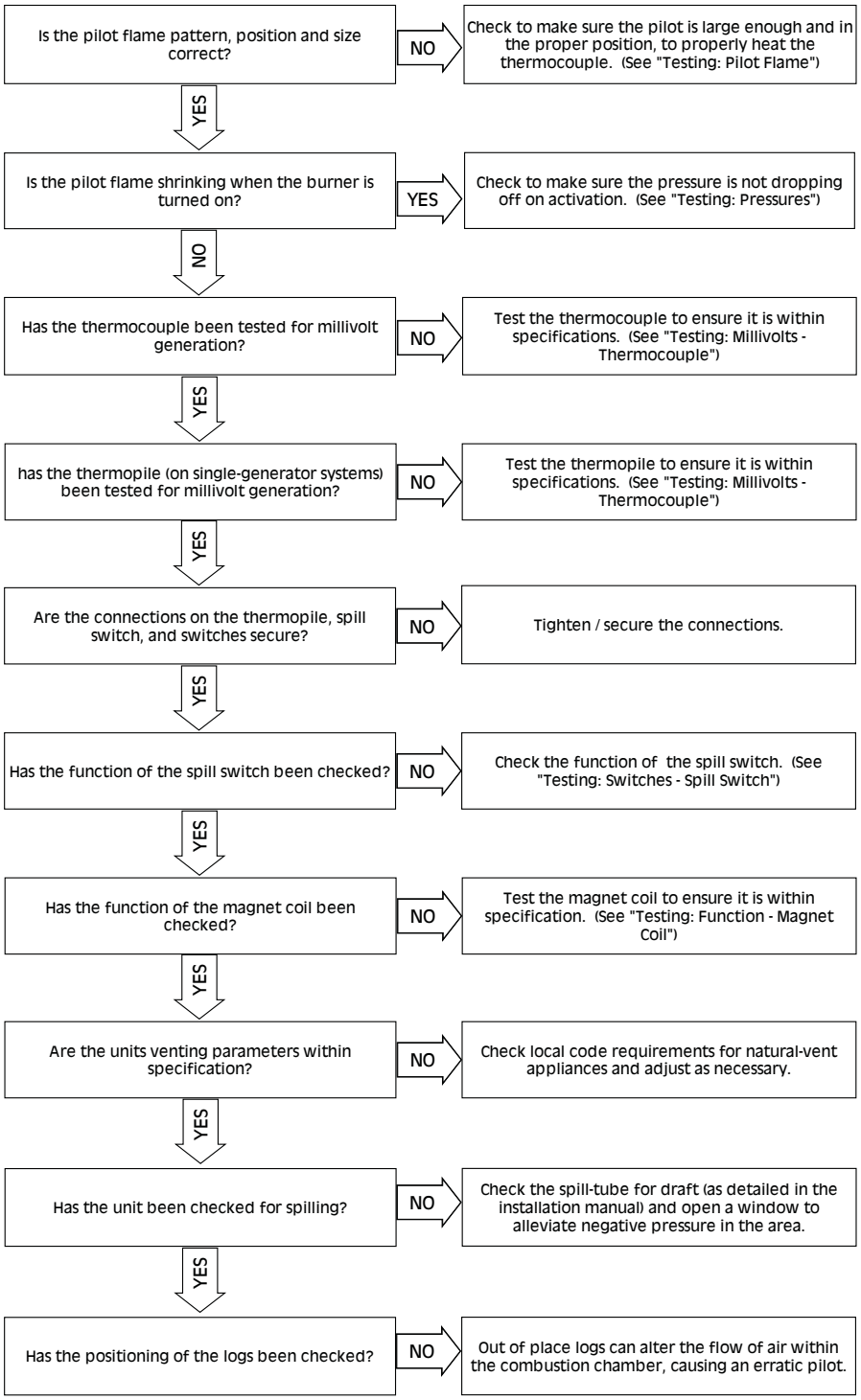
Troubleshooting: Natural Vents

Pilot Not Holding Flowchart



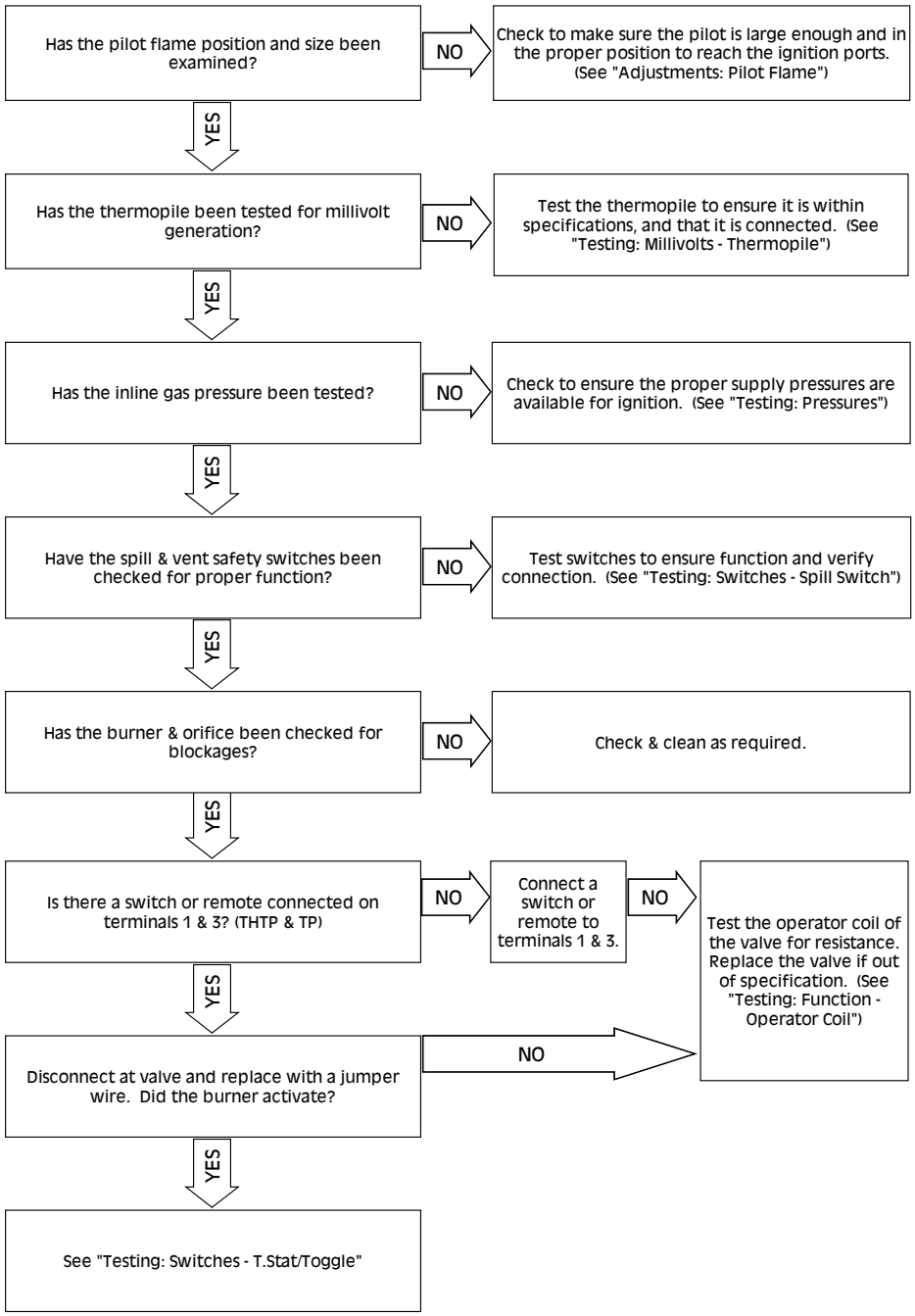
Troubleshooting: Natural Vents

Pilot Failure Flowchart



Troubleshooting: Natural Vents

Main Burner Not Lighting Flowchart



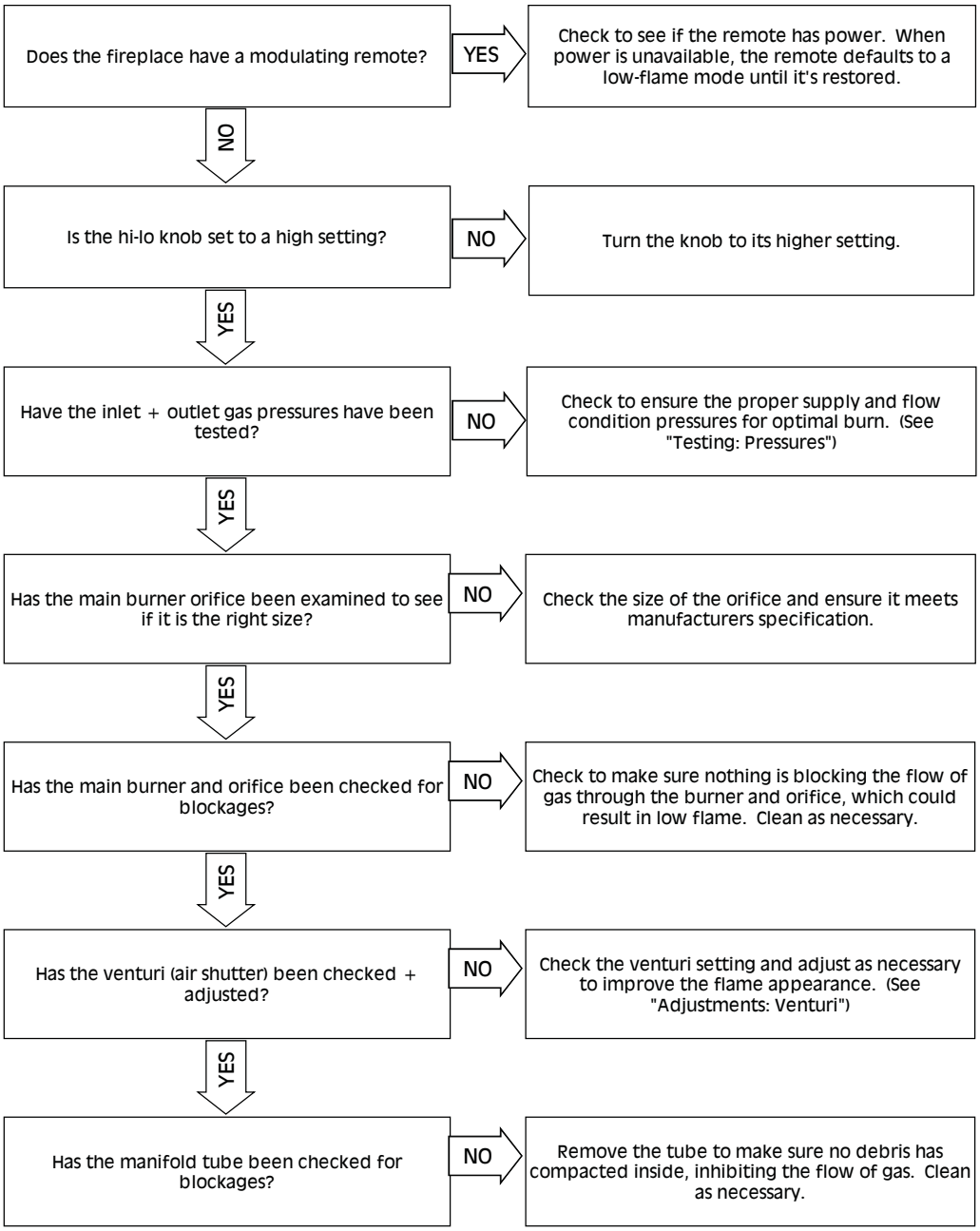
Troubleshooting: Natural Vents

Main Burner Delayed Ignition Flowchart

Has the pilot flame position and size been examined?	NO	Check to make sure the pilot is large enough and in the proper position, to reach the ignition ports. (See "Adjustments: Pilot Flame")
YES		
Has the inline gas pressure been tested?	NO	Check to ensure the proper supply pressures are available for ignition. (See "Testing: Pressures")
YES		
Has the main burner & orifice been examined to see if it is the right size?	NO	Check the size of the orifice to ensure it meets manufacturers specification.
YES		
Has the main burner and orifice been checked for blockages?	NO	Check to make sure nothing is blocking the flow of gas through the burner and orifice, contributing to the delay. Clean as necessary.
YES		
Has the venturi (air shutter) been checked & adjusted?	NO	Check the venturi setting and adjust as necessary to improve the ignition time. (See "Adjusting: Venturi")
YES		
Has the positioning of the logs been checked?	NO	Out of place logs can alter the flow of air within the combustion chamber, causing an erratic pilot.
YES		
Have the charcoal / glowing embers (where applicable) been checked?	NO	Check to make sure no ember material is clogging the ports, and contributing to the delay.

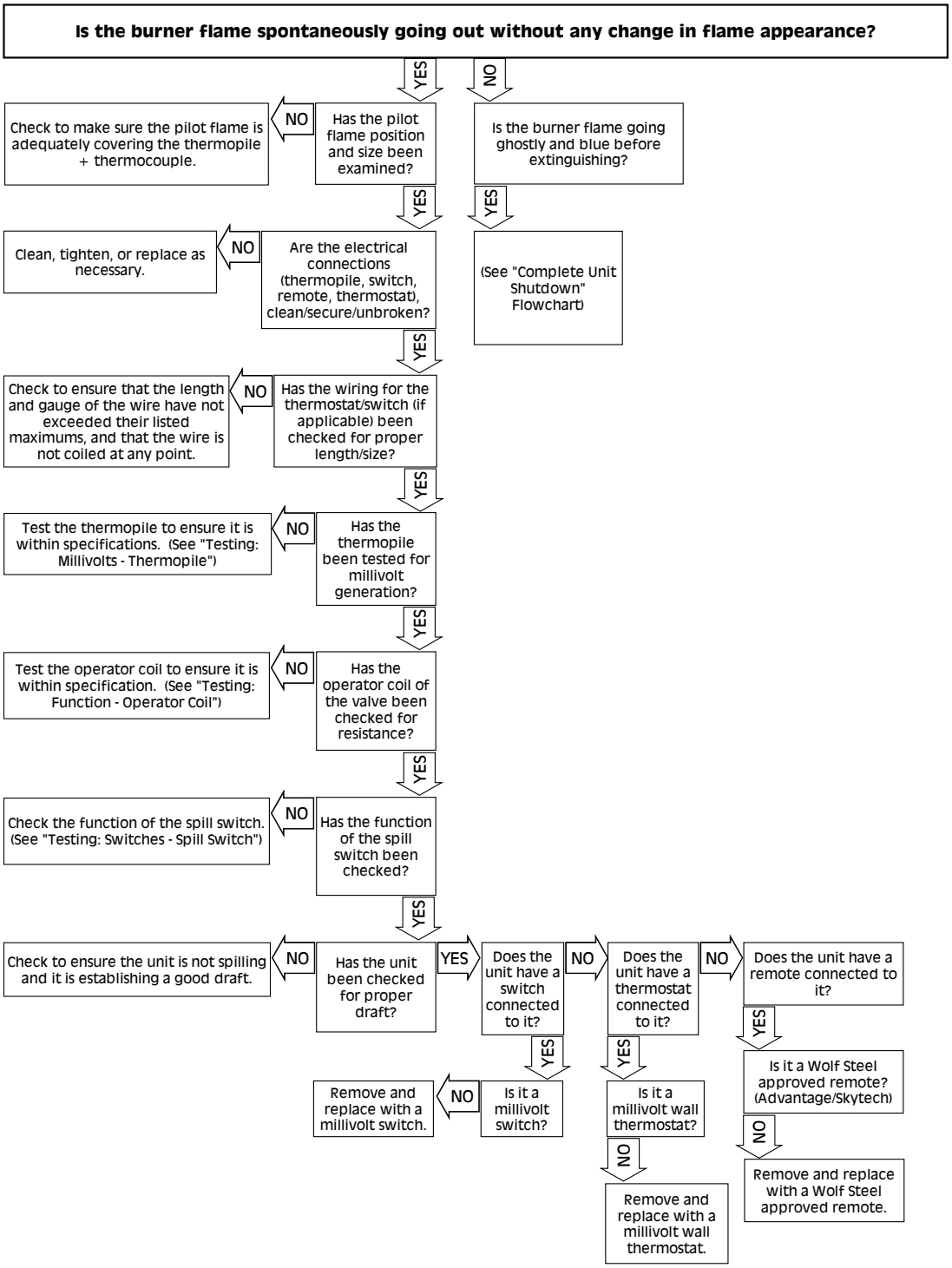
Troubleshooting: Natural Vents

Main Burner Low Flame Flowchart



Troubleshooting: Natural Vents

Main Burner Failure Flowchart



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Troubleshooting: Natural Vents

Complete Unit Shutdown

Is the burner flame going blue and see-through before extinguishing?

NO → (See: "Pilot Failure" Flowchart)

YES ↓

Is the venting within the specifications of the installation manual and local code requirements?

NO → Check the venting requirements and return to specification.

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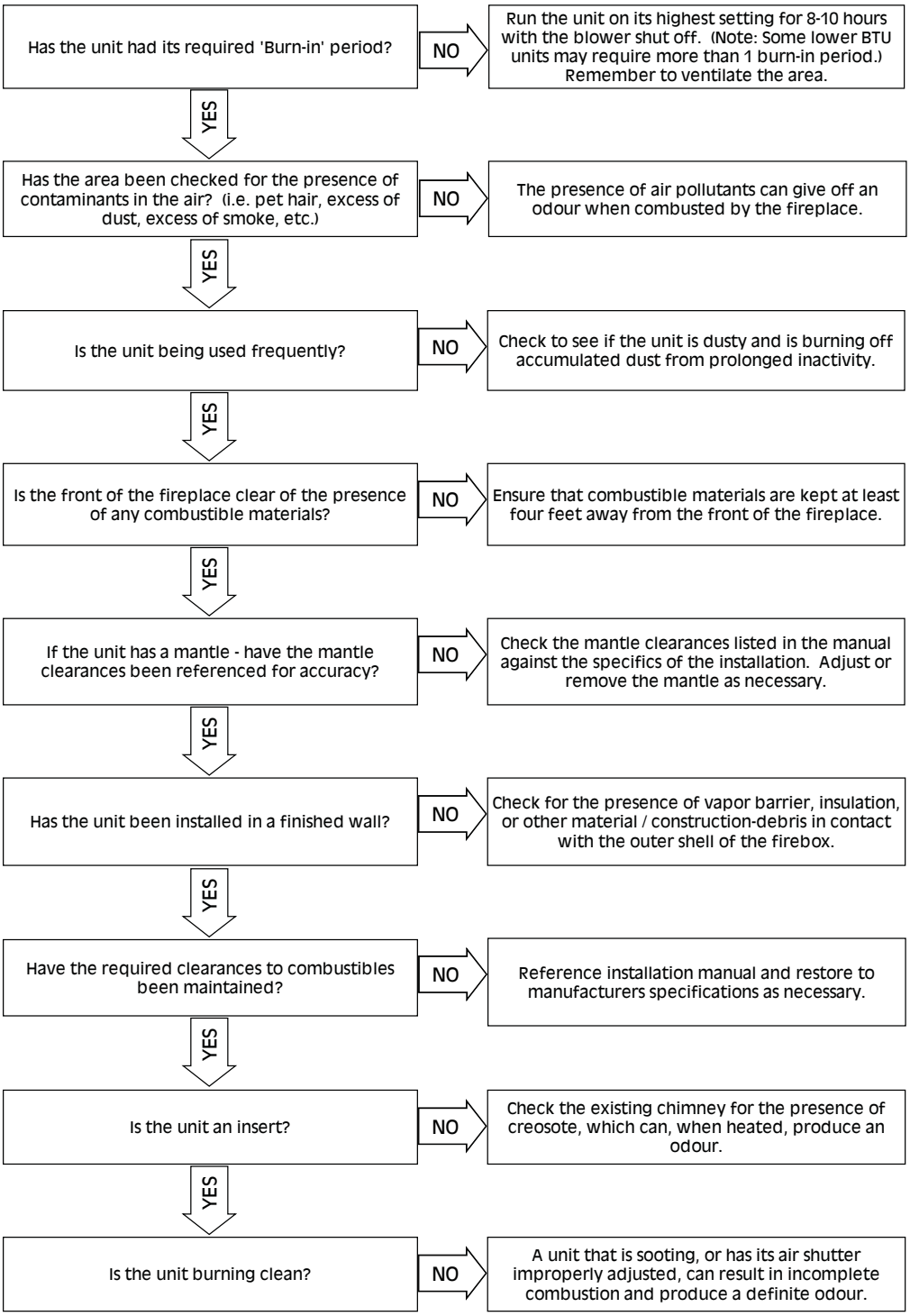
Troubleshooting: Natural Vents

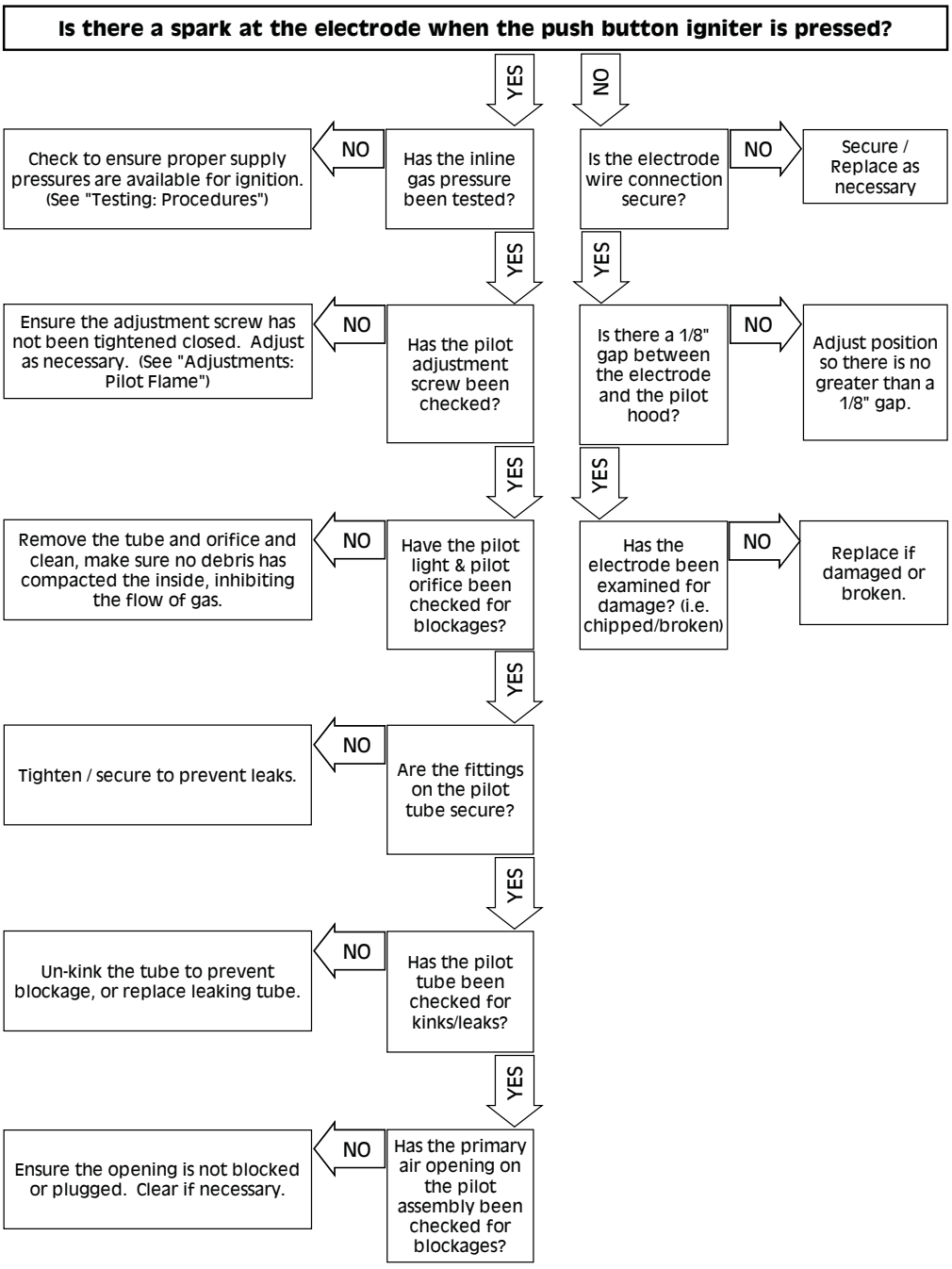
Odour Flowchart



PART 3: TROUBLE SHOOTING: VENT FREE

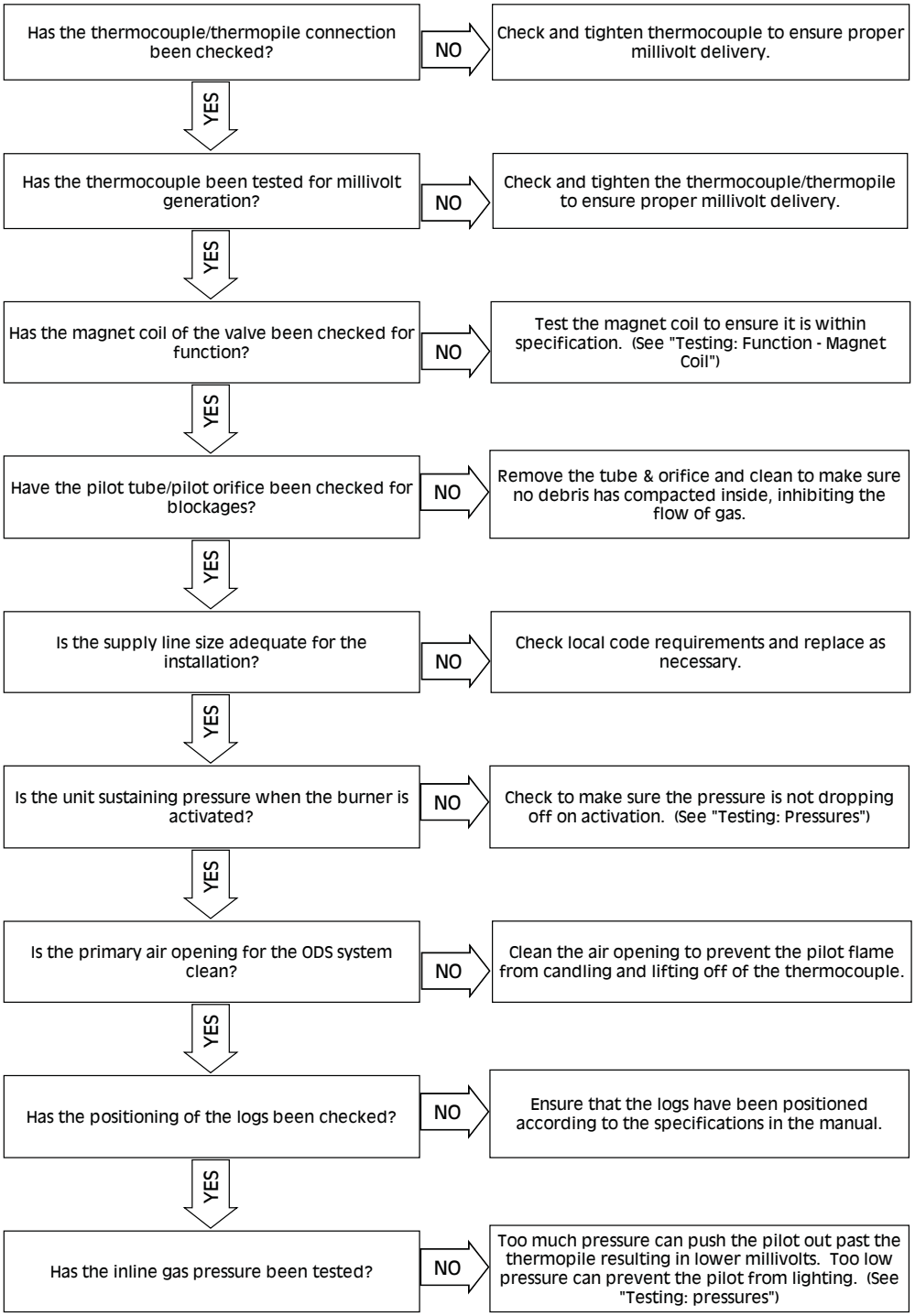
Troubleshooting: Vent Free

Pilot Not Lighting Flowchart



Troubleshooting: Vent Free

Pilot Not Holding Flowchart



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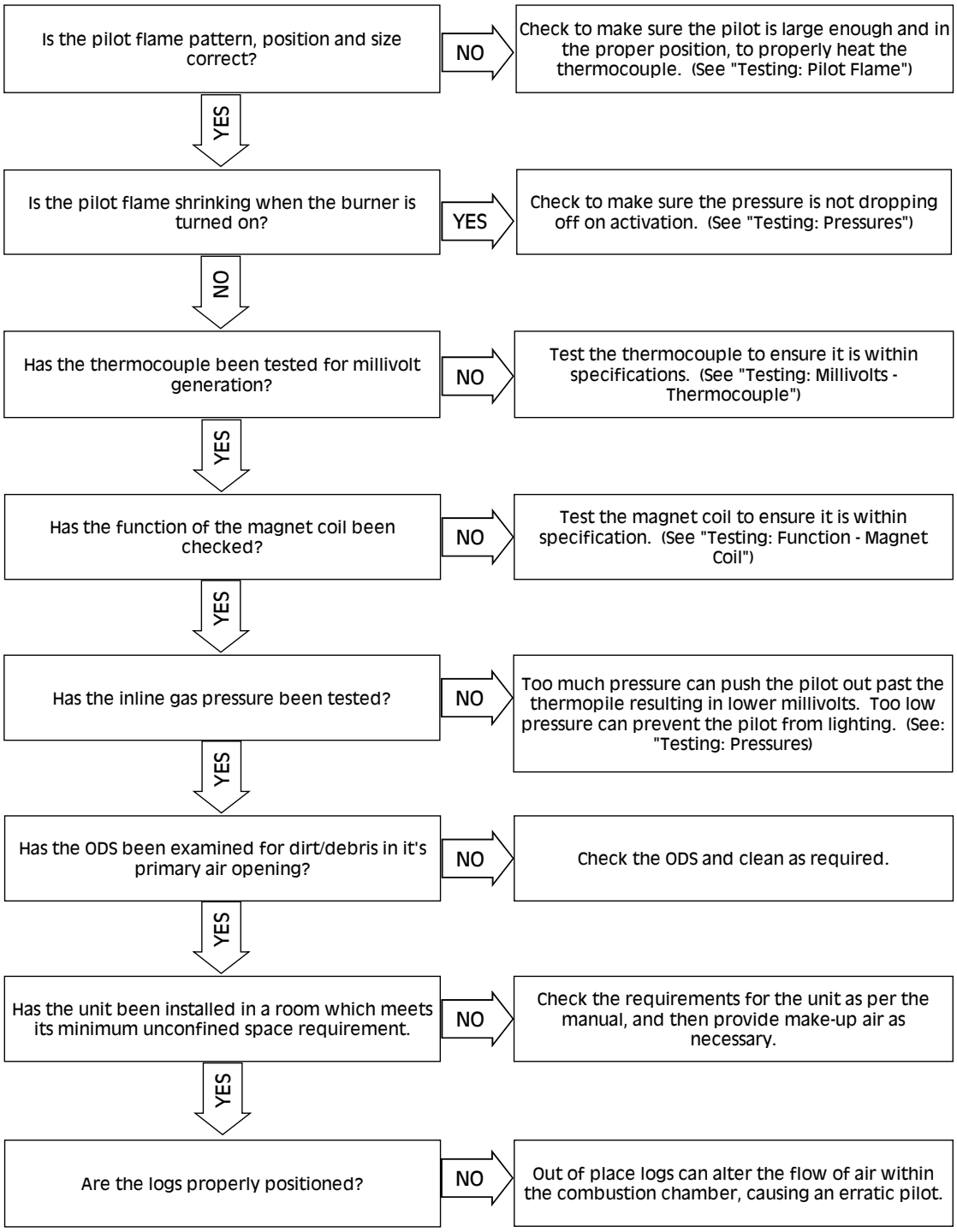
Troubleshooting: Vent Free

Pilot Failure Flowchart



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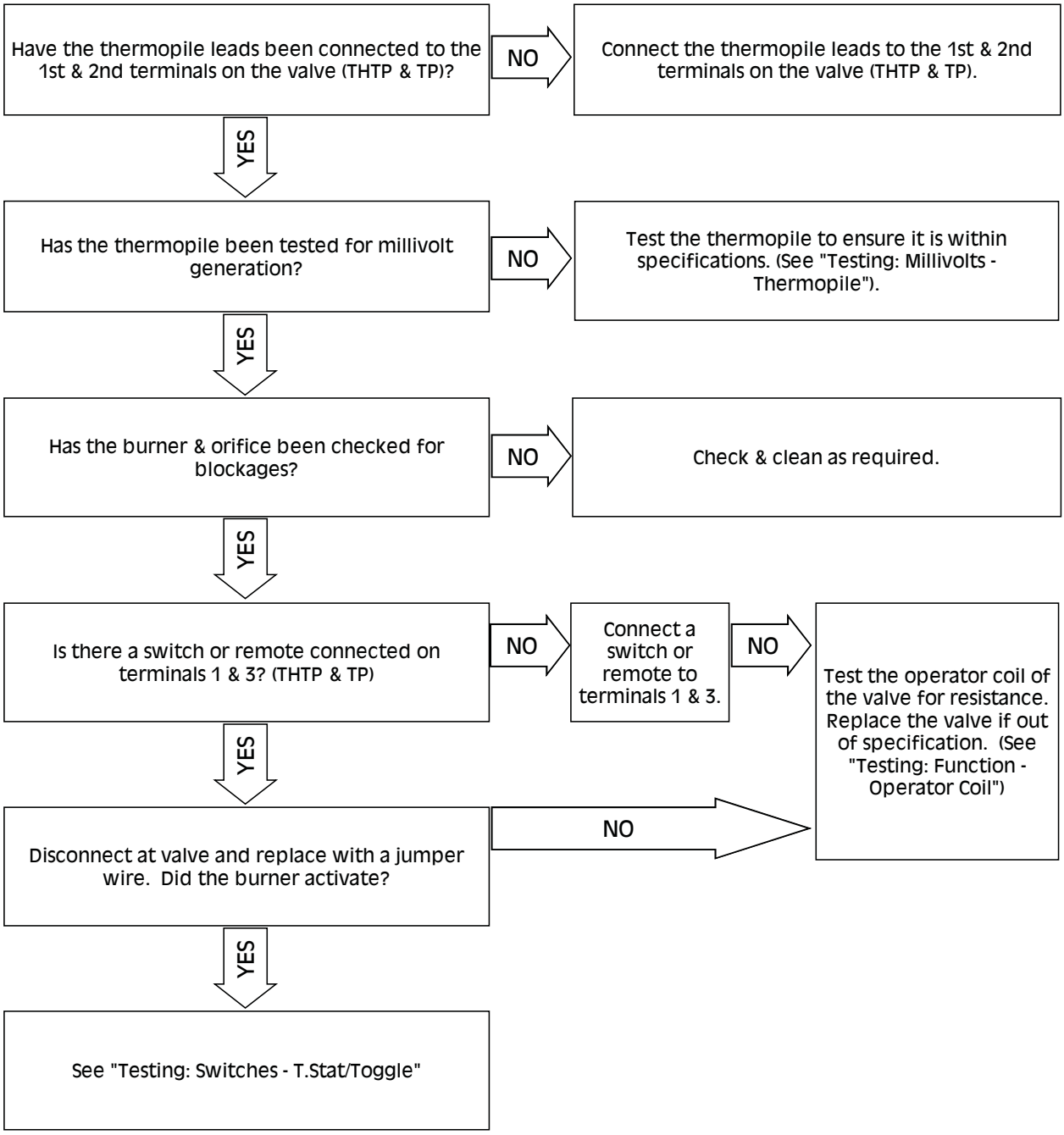
Troubleshooting: Vent Free

Main Burner Not Lighting Flowchart



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Troubleshooting: Vent Free

Main Burner Delayed Ignition Flowchart

Has the pilot flame position and size been examined?	NO	Check to make sure the pilot is large enough and in the proper position, to reach the ignition ports. (See "Testing: Pilot Flame")
YES		
Has the inline gas pressure been tested?	NO	Check to ensure the proper supply pressures are available for ignition. (See "Testing: Pressures")
YES		
Has the main burner & orifice been checked for blockages?	NO	Check to make sure nothing is blocking the flow of gas through the burner and orifice, contributing to the delay. Clean as necessary.
YES		
Has the main burner orifice been examined to see if it is the right size?	NO	Check the size of the orifice and ensure it meets manufacturers specification.
YES		
Has the venturi (air shutter) been checked & adjusted?	NO	Check the venturi setting and adjust as necessary to improve the ignition time. (See "Adjusting: Venturi")
YES		
Has the burner been checked to ensure it is level?	NO	Examine and level as necessary.
YES		
Has the positioning of the logs been checked?	NO	Out of place logs can alter the flow of air within the combustion chamber, causing an erratic pilot.
YES		
Have the charcoal/glowing embers (where applicable) been checked?	NO	Check to make sure no ember material is clogging the ports, and contributing to the delay.

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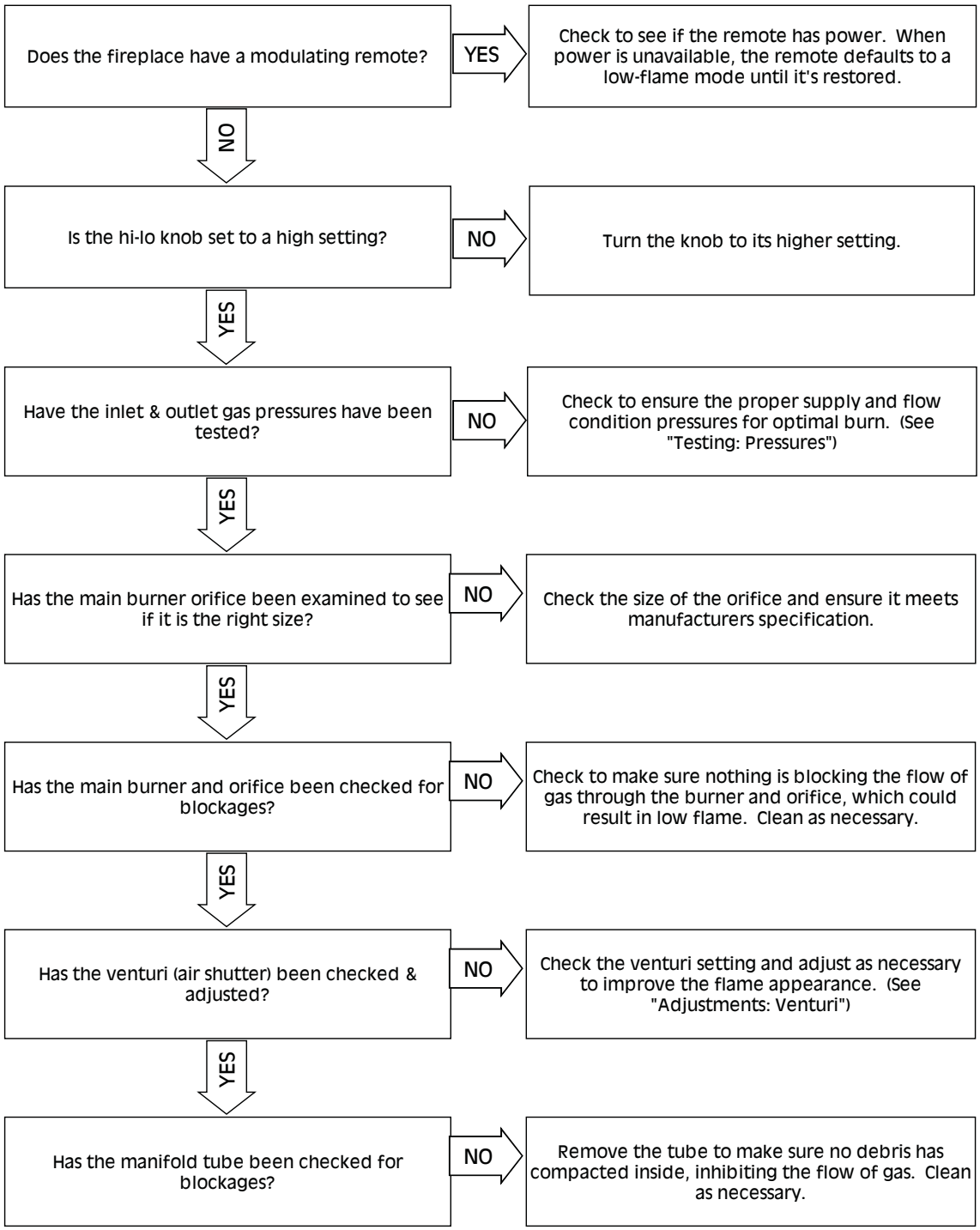
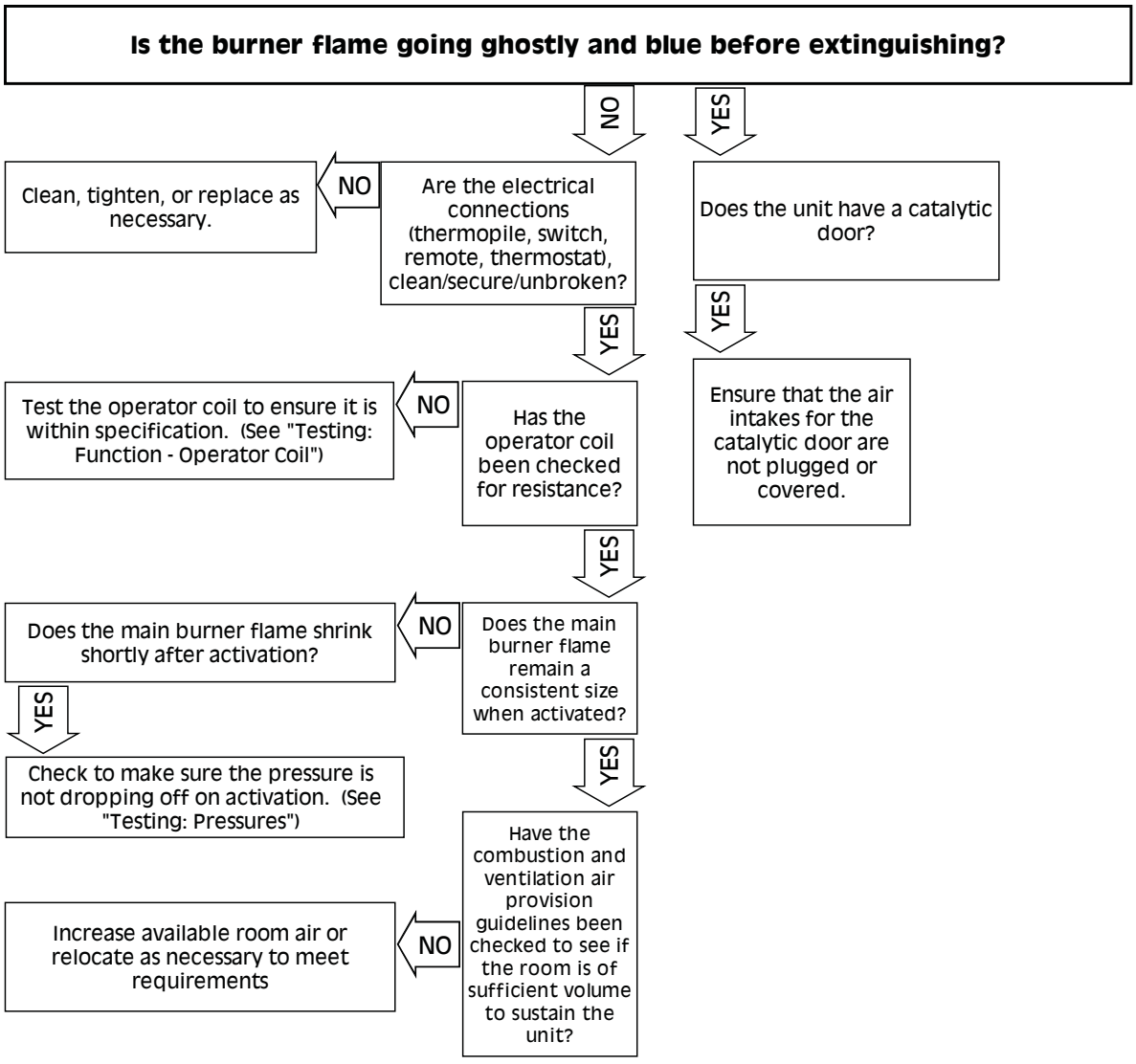
Troubleshooting: Vent Free

Main Burner Low Flame Flowchart



Troubleshooting: Vent Free

Complete Unit Shutdown Flowchart



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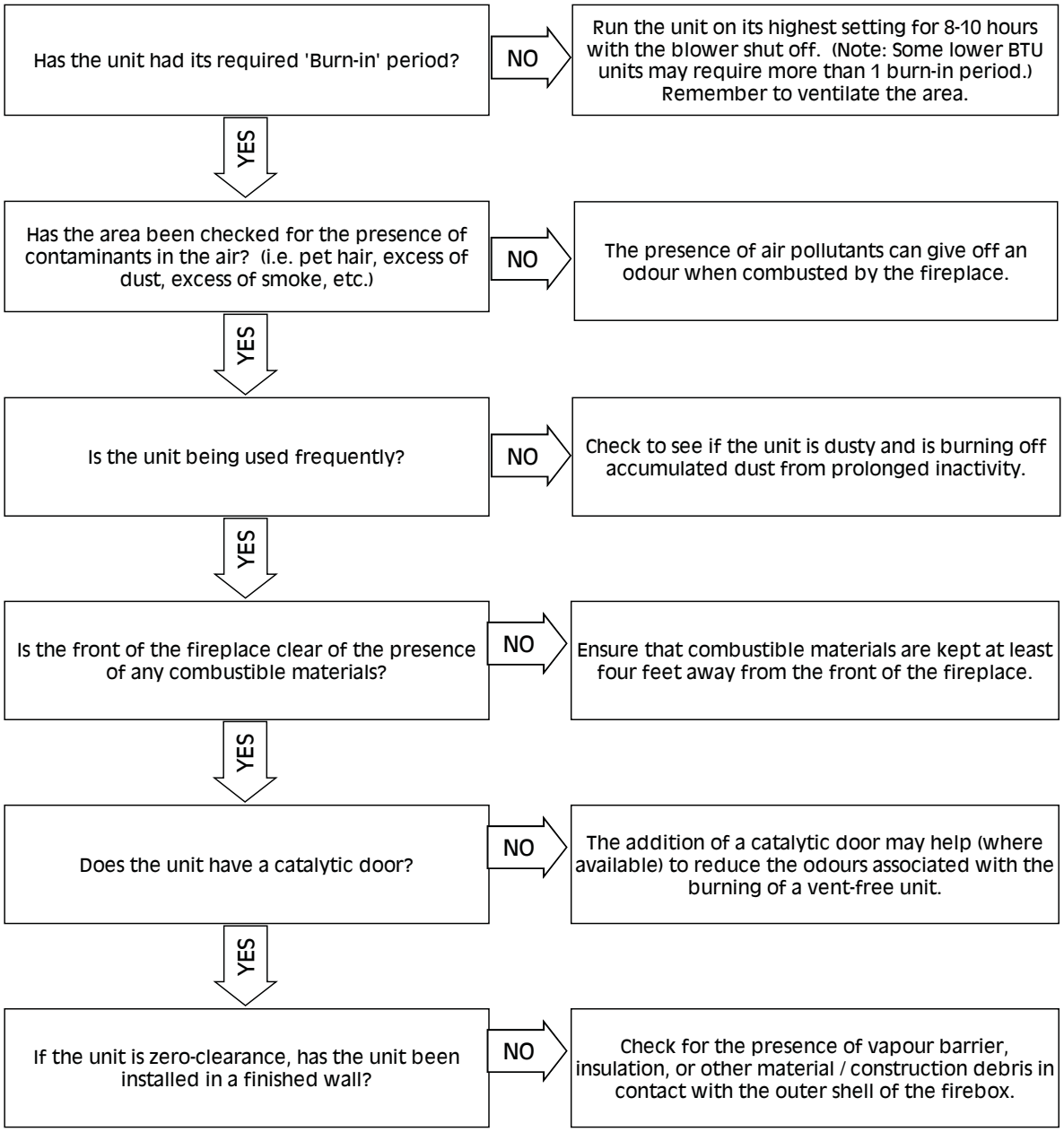
Troubleshooting: Vent Free

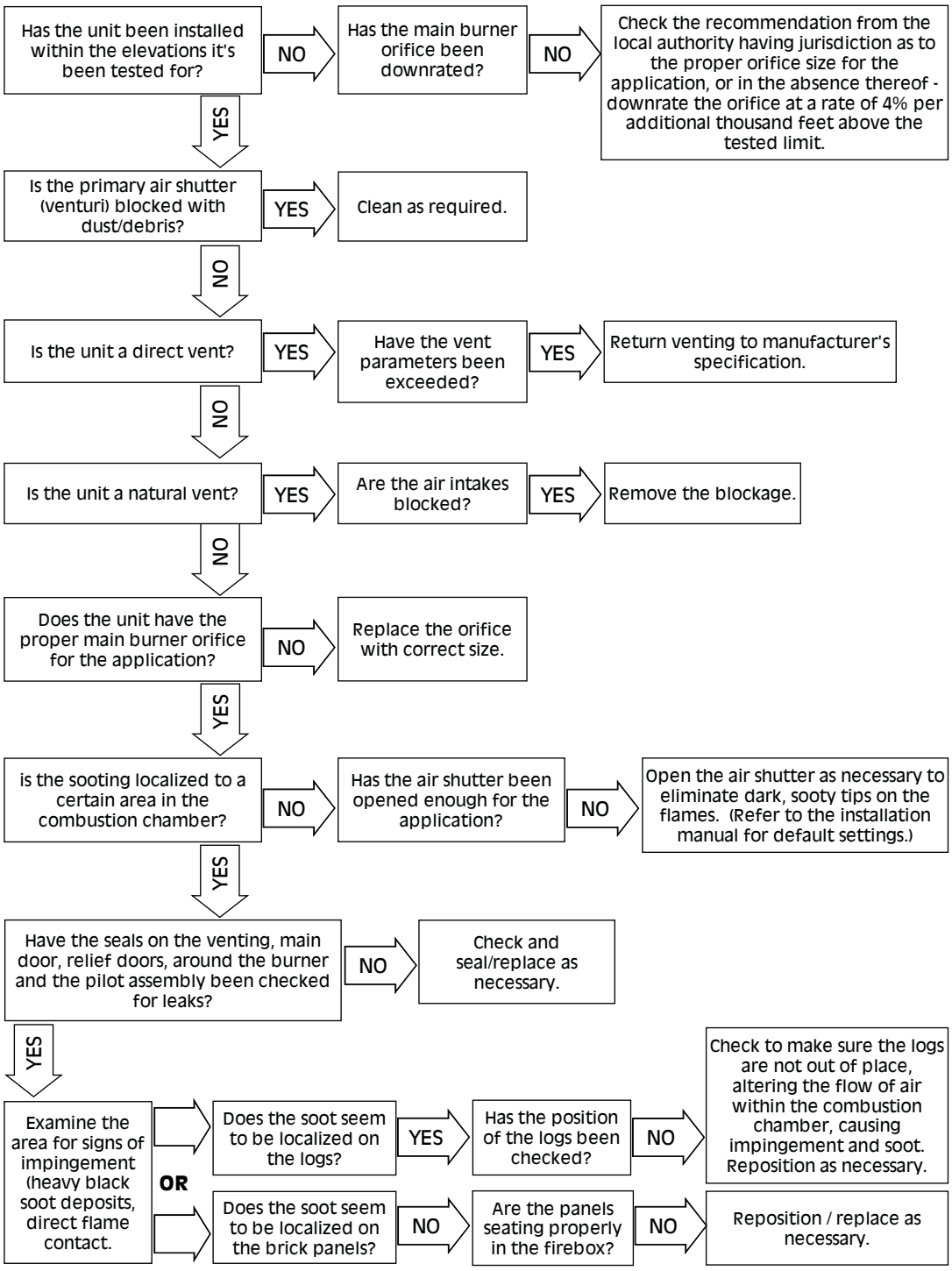
Odour Flowchart



PART 4: TROUBLESHOOTING: OTHER ISSUES

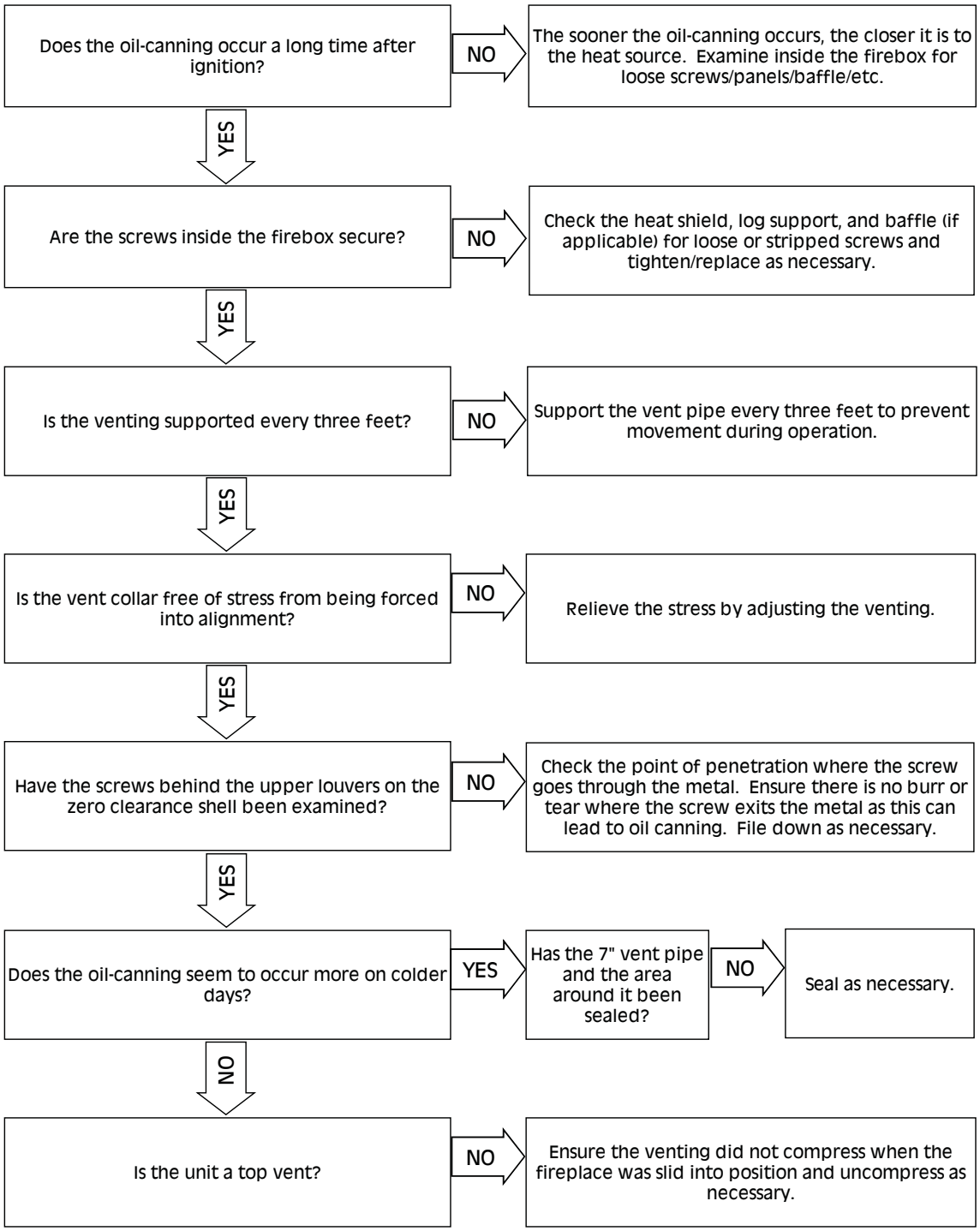
Troubleshooting: Other Issues

Carboning Flowchart



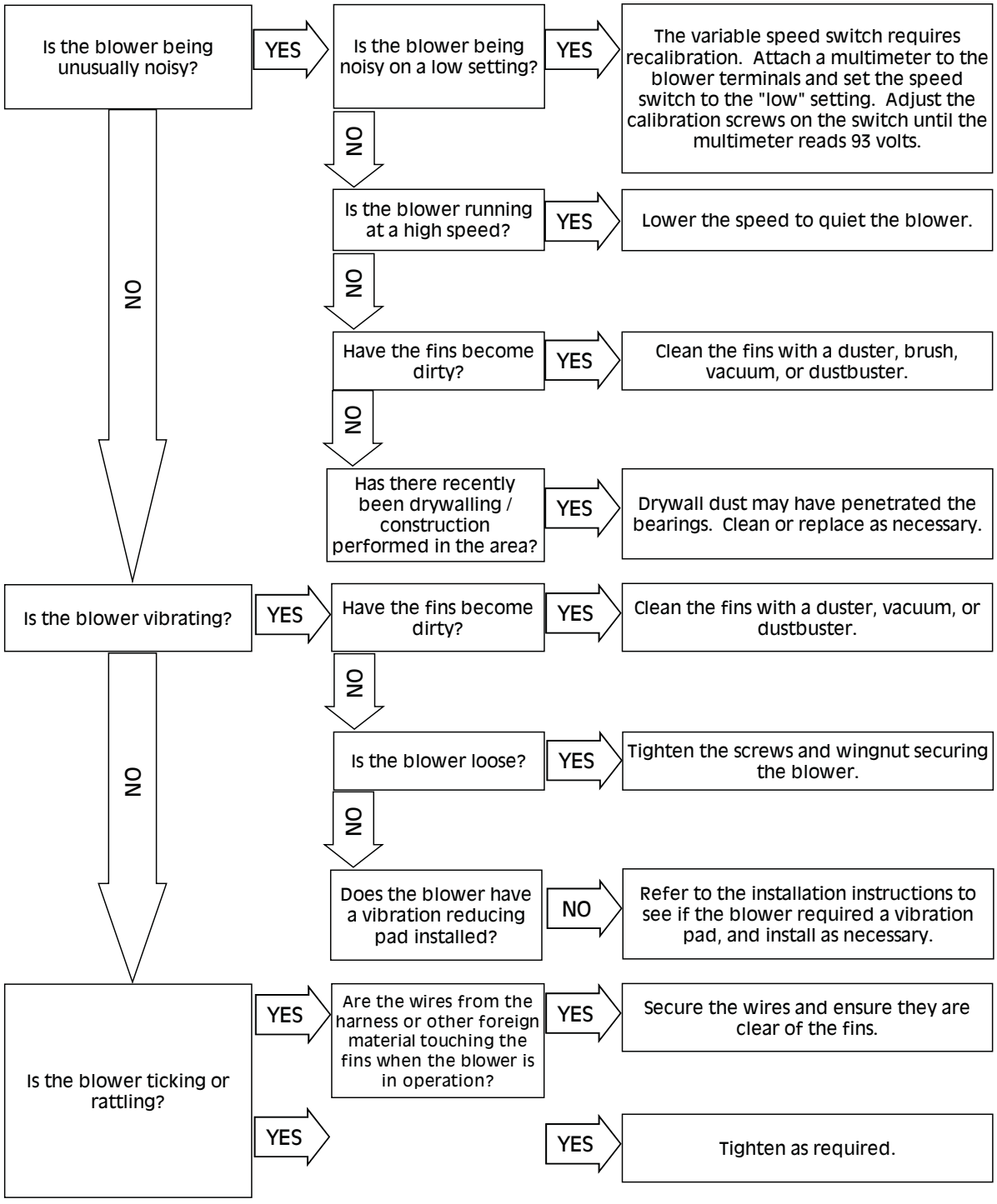
Troubleshooting: Other Issues

Oil-Canning Flowchart



Troubleshooting: Other Issues

Blower Flowchart



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Troubleshooting: Other Issues
Remote Control Guide

Code Switch Setting:
- Set the code switch on the transmitter (hand-held) before the batteries are installed. The remote transmitter reads and remembers the code switch setting right after the batteries are installed.
- Place the receiver in the "remote" position.
- The remote receiver will remember the code switch setting in it's internal memory and will not lose the code switch setting even during a power outage or battery change.
- After the batteries are installed, the LCD (display screen) on the transmitter will blink. Pressing any button during when the screen is blinking will activate the code and transmit it to the receiver.
- Pressing any button during when the screen is blinking will activate the code and transmit it to the receiver. You should be five feet away from the unit when doing this.
- When the receiver learns the code transmitted by the hand-held, it will produce a single beep noise. If the receiver is installed inside a fireplace, the beep may be very faint.
- Repeat the previous steps, if you did not receive a beep from the receiver.

Installing Multiple Remote Controls:
- If more than one remote control is expected to operate within a 50 foot range, a different coding is required for proper operation. Radio frequency signals will travel through floors and walls in all directions.
- Follow the code switch setting procedure for the first unit being programmed, and verify that it's working properly.
- Turn the first unit being installed to the off position, when you go to install and program the second unit. (Remembering to turn back to the "remote" position after setup of the other units are complete.)
- Change the transmitter code switch to a different combination for each unit installed.
- Move twenty feet away from all operating remote controls and follow the code switch setting procedure.
- Verify the correct operation of each remote.

Display Screen of the Transmitter is blank:
- Make sure fresh alkaline batteries are installed into the transmitter.
- Check that the batteries are properly installed into the battery compartment and the polarity is correct.
- After taking out the batteries from the transmitter, wait for at least 1 minute before replacing with fresh batteries.

Transmitter Cannot Switch off the Fireplace:
- Make sure the batteries at the transmitter are not empty. The low battery indicator will turn on automatically when the battery level is low. Change batteries if necessary.
- Check the temperature at the receiver. Make sure the temperature at the receiver is below 140F (when the fireplace is turned on).
- Reduce the distance between the transmitter and receiver if necessary.

Receiver Can Not Turn on the Fireplace:
- Make sure fresh alkaline batteries are installed into the receiver. (DC receiver only)
- Make sure the output cables are securely connected to the receiver, the gas valve and the millivolt generator.
- For DC receiver, switch the receiver to "on". For AC receiver, press the on/off button on the receiver. Use a multimeter to measure the resistance between the output cables. The multimeter should read zero, or very low resistance.

Receiver Turns off Automatically After Some Time:
- The receiver will turn itself off automatically if the temperature rises above 150F.
- Check the temperature at the receiver. Make sure the temperature is below 140F (when the fireplace is turned on).
- Relocate receiver as necessary.

Receiver Turns on Unexpectedly:
- Check to ensure that the transmitter is off.
- Change code switch setting on the transmitter. (Nearby radio transmissions may interfere with proper operation).
- Place receiver slide switch in the off position when not in use. (On DC battery operated receiver only).

PART 5: TESTING & ADJUSTMENTS

Testing & Adjustments

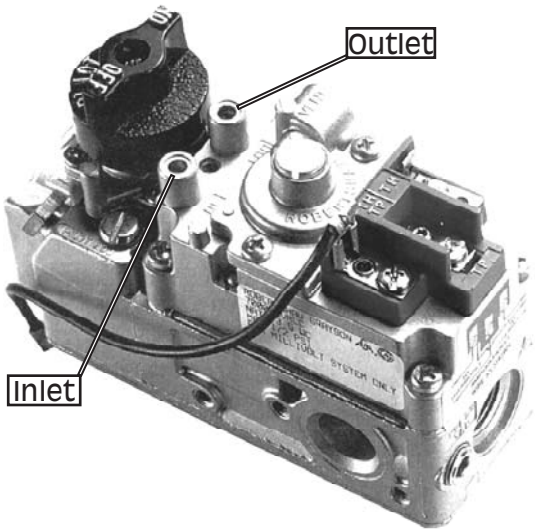
Testing: Pressures

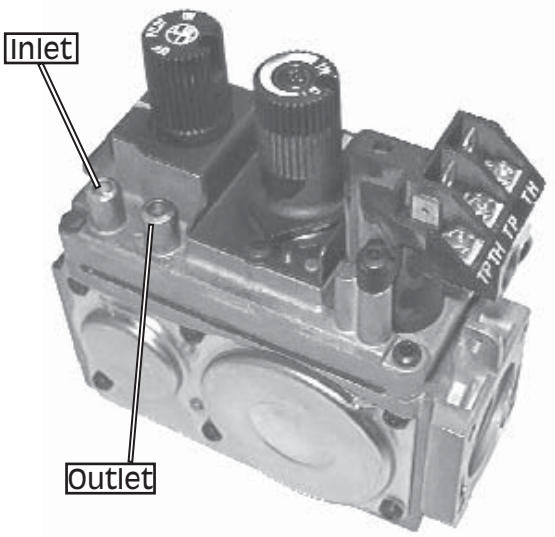
	NATURAL GAS	PROPANE
SUPPLY	7" WATER COLUMN	11" WATER COLUMN
MANIFOLD	3.5" WATER COLUMN	10" WATER COLUMN

To test inlet / outlet pressure by turning screw counter-clockwise 2 or 3 turns and then place gauge tubing over inlet / outlet hose fitting.
Test inlet pressure with the main burner on to determine if gas flow is sufficient.

Robertshaw

SIT 820 NOVA





After taking pressure readings, be sure to turn screws clockwise firmly to reseal.
DO NOT OVER TORQUE! Use an appropriate screwdriver with .150" x .030" blade.

Testing & Adjustments
Testing: Gasket

1. Take a 1" x 6" piece of paper, and place it in between the main body of the fireplace, and the door. Close the door and fasten it as per the method specified in the manual. Attempt to pull the paper out from between the door and body of the fireplace. If the paper will not be removed without tearing, the gasket is sealing well. If the paper pulls out easily, examine the door, gasket, and door latch assembly for any potential issues. Perform this test in varying positions around the doorframe.

2. Examine the opening of the firebox. Around its perimeter, you should see a distinct colour difference made by the pressure of the gasket around the opening. The colour difference should not penetrate past the perimeter of the gasket.

Testing & Adjustments
Testing: Switches - Spill Switch

Disconnect all wires. Set a digital multimeter to the Ohms setting (for measuring resistance). Touch the black lead of the multimeter to one of the spade connectors of the spill-switch, and the red lead to the other connector. The reading should be less than 1 Ohm, or 'Open Circuit'. If the reading is 1 Ohm or higher, replace the switch. If no multimeter is available, please refer to "Adjustments: Spill Switch - Robertshaw / SIT"

Testing & Adjustments
Testing: Switches - T.Stat/Toggle

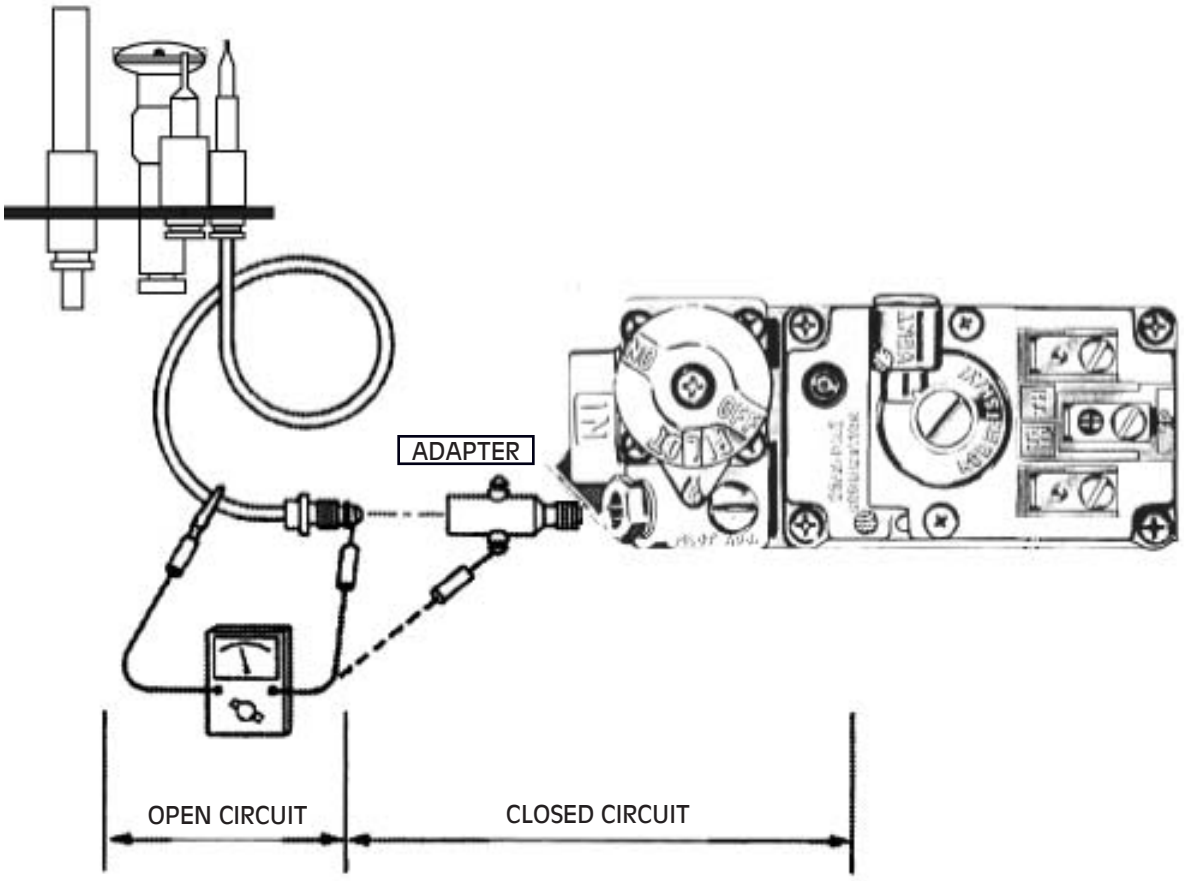
When encountering difficulty with a switch, in order to isolate whether it is the switch itself, or the wiring to the switch, you must perform the following test.

Ensure the wire leads from the switch are connected to terminals 1+3 (top and bottom) of the valve. Disconnect the wire-leads from the switch itself and connect them to each other. Turn the gas valve to the 'on' position. If the burner activates, this proves the wiring is not the issue.

Testing & Adjustments

Testing: Millivolts - Thermocouple

OPEN CIRCUIT = 20 - 30 mv
CLOSED CIRCUIT = 10 - 15 mv

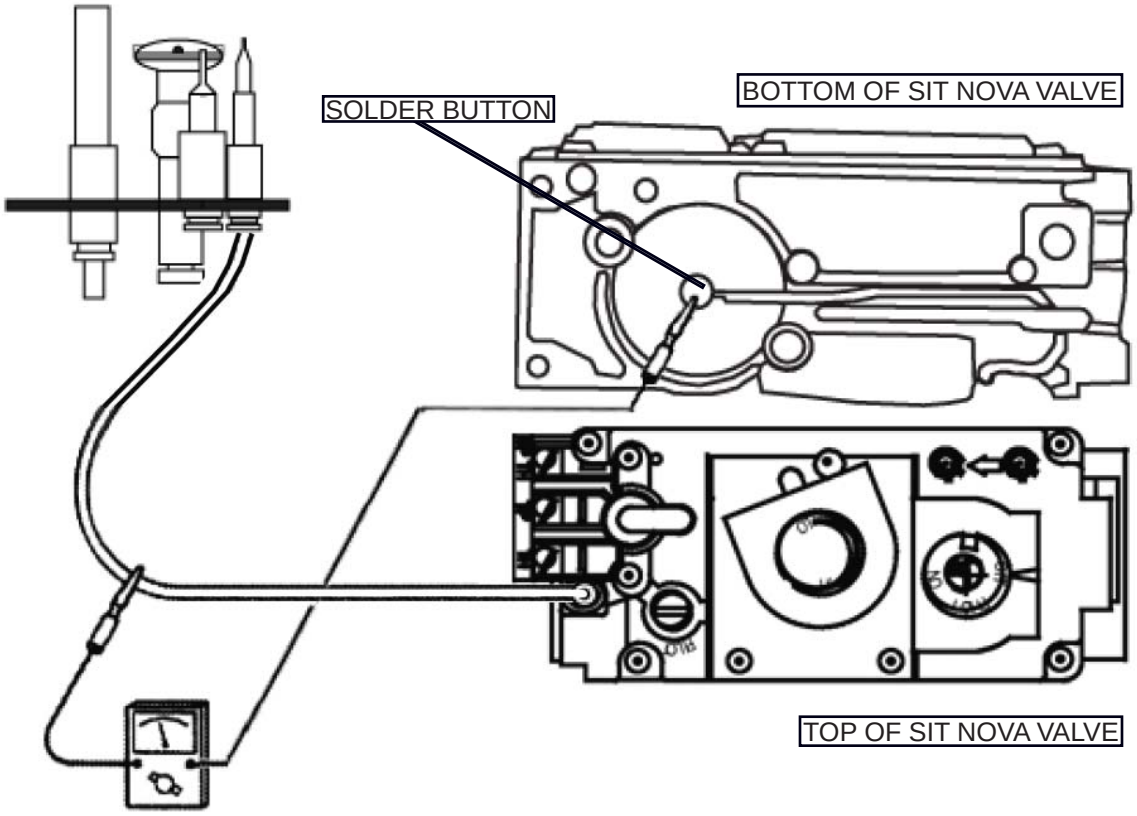


Testing & Adjustments

Testing: Millivolts - Thermocouple

OPEN CIRCUIT = 20 - 30 mv
CLOSED CIRCUIT = 10 - 15 mv

SIT 820 NOVA



Testing & Adjustments

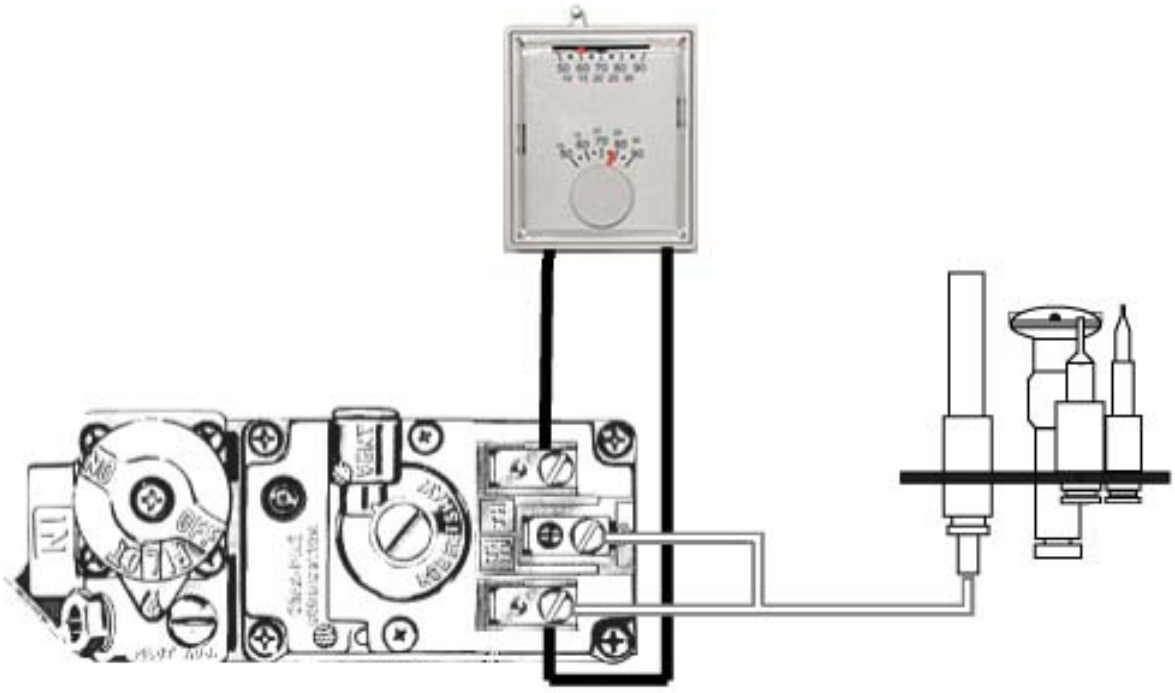
Testing: Millivolts - Thermopile

OPEN CIRCUIT TEST

1. Disconnect leads from terminals 1 & 2.
2. Set meter to millivolts.
3. Connect meter leads to thermopile leads.
4. Reading should be 500mv.

CLOSED CIRCUIT TEST

1. Connect leads from meter to terminals 1 & 2.
2. Set meter to millivolts.
3. Turn main burner on.
4. Reading should be a minimum of 150mv.



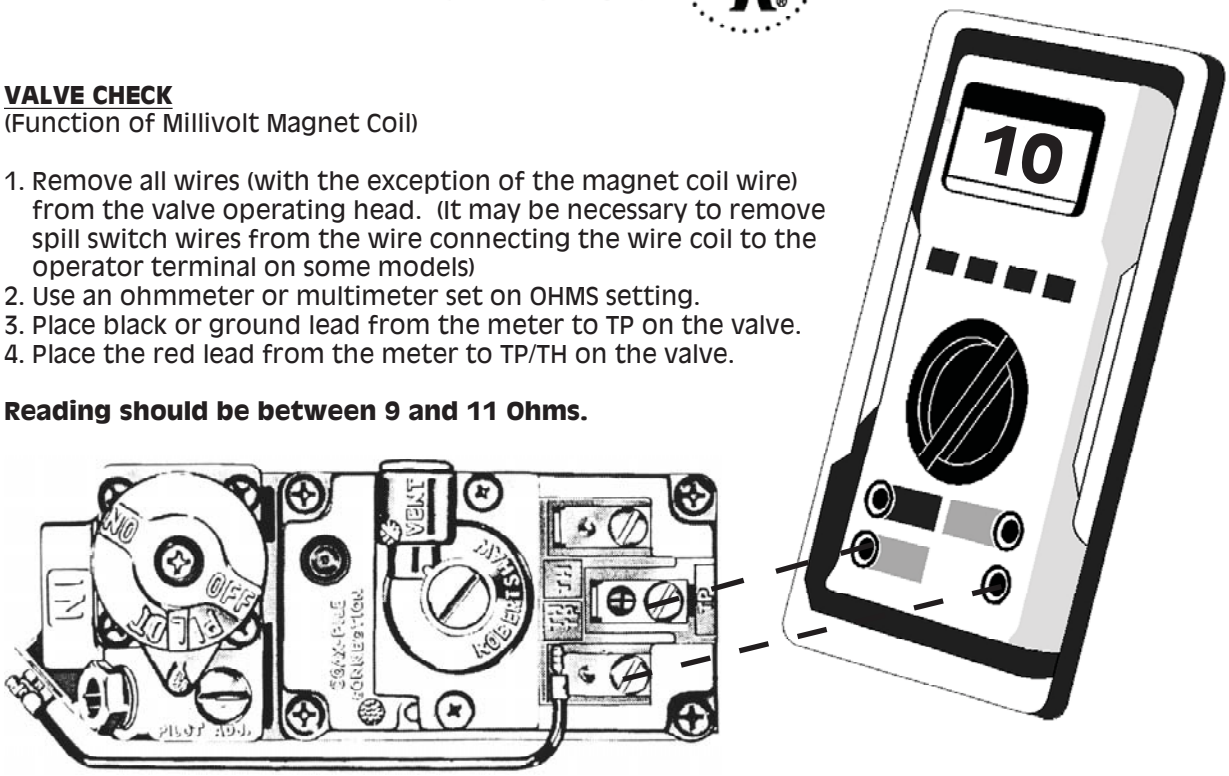
Testing & Adjustments

Testing: Function - Magnet Coil - Robert Shaw Valve

VALVE CHECK
(Function of Millivolt Magnet Coil)

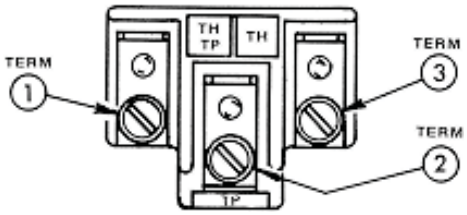
1. Remove all wires (with the exception of the magnet coil wire) from the valve operating head. (It may be necessary to remove spill switch wires from the wire connecting the wire coil to the operator terminal on some models)
2. Use an ohmmeter or multimeter set on OHMS setting.
3. Place black or ground lead from the meter to TP on the valve.
4. Place the red lead from the meter to TP/TH on the valve.

Reading should be between 9 and 11 Ohms.



NOTE: Assure that the magnetic coil wire is re-attached to terminal 1 prior to testing.

Operating Head:



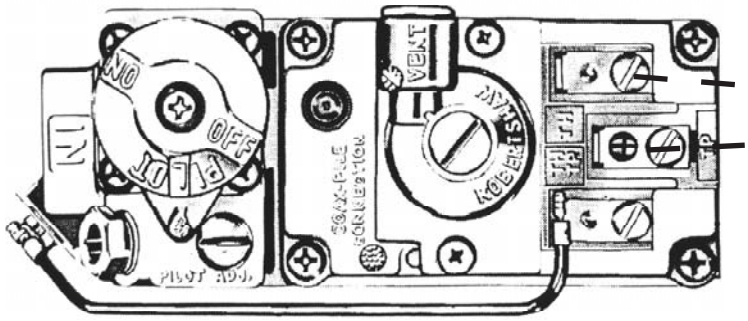
Testing & Adjustments

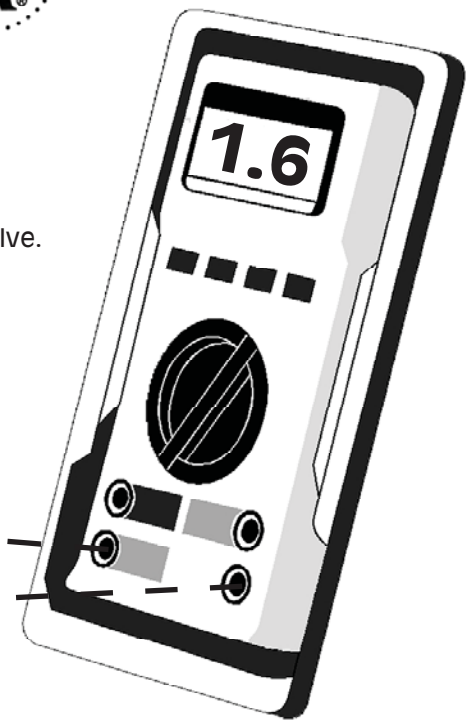
Testing: Function - Operator Coil - Robert Shaw Valve

VALVE CHECK
(Function of Millivolt Magnet Coil)

1. Remove all wires from the valve operating head.
2. Use an ohmmeter or multimeter set on OHMS setting.
3. Place black or ground lead from the meter to TP on the valve.
4. Place the red lead from the meter to TP/TH on the valve.

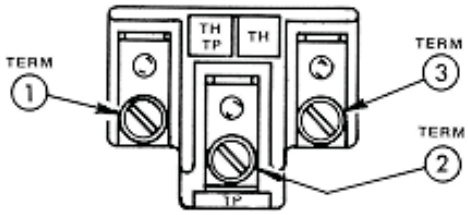
Reading should be between 1.5 and 1.7 Ohms.





NOTE: Assure that the magnetic coil wire is re-attached to terminal 1 prior to testing.

Operating Head:



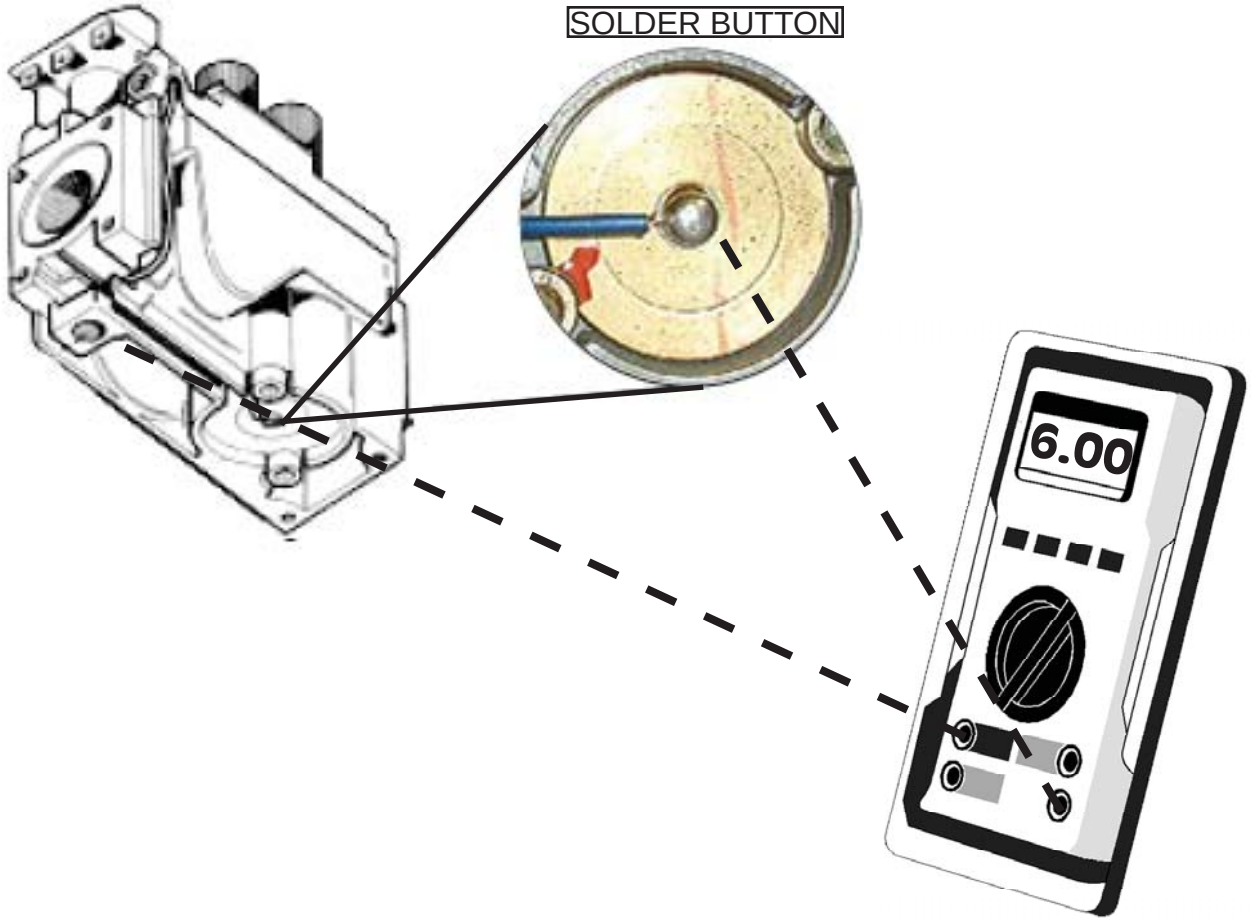
Testing & Adjustments

Testing: Function - Magnet Coil - SIT 820 Nova Valve

SIT 820 NOVA

Since the resistance of the magnet coil is too low to be read by most meters (0.015 milliohms), a "hold-in" test is more practical. Connect one millivolt meter lead to the thermocouple capillary tube. The other lead should be connected to the solder button on the bottom of the valve. Light the pilot and hold in the on/pilot/off knob until your multimeter registers the proper amount of millivolts to keep the pilot burning (6 millivolts for regular product, 4.2 millivolts for vent-free product).

At this point, the knob is released and the pilot should continue to burn. If it does not continue to burn, the valve fails the test and should be replaced.



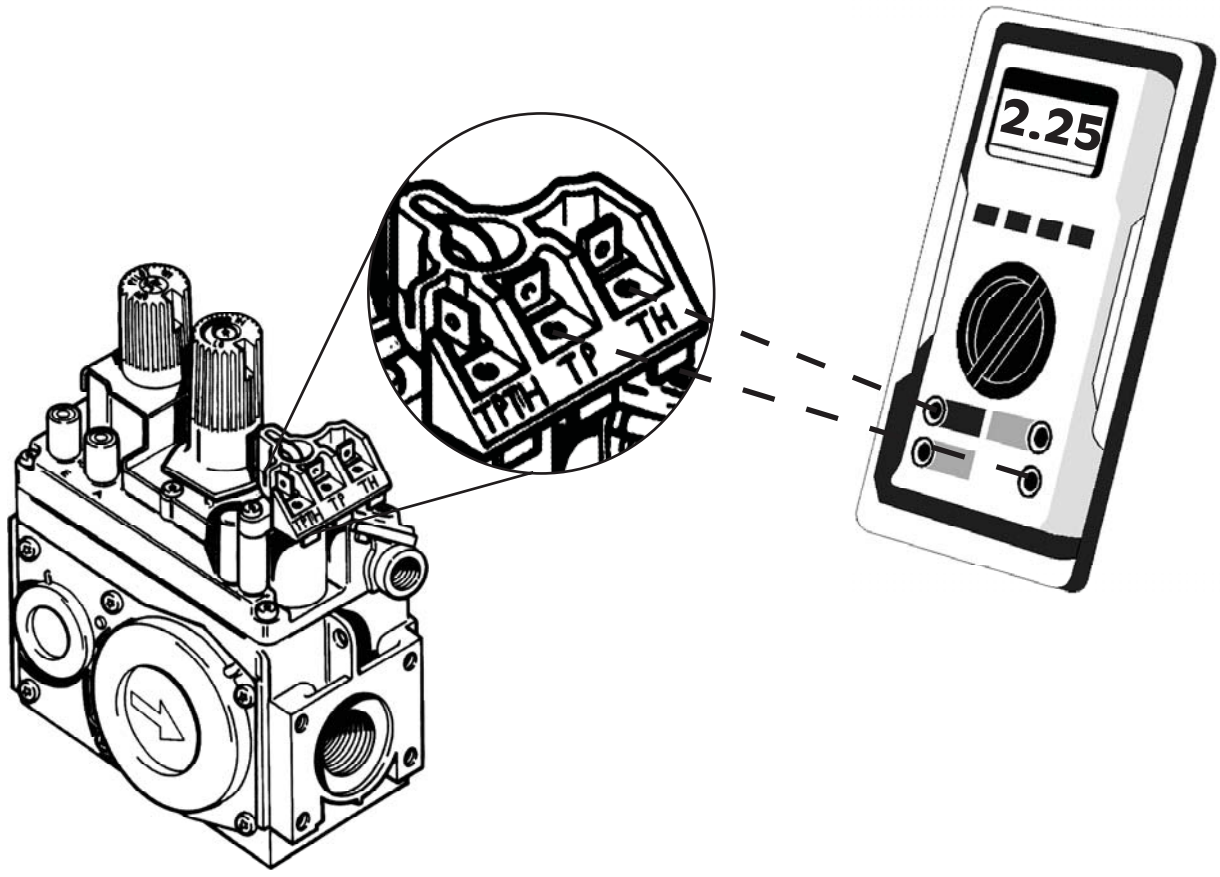
Testing & Adjustments

Testing: Function - Operator Coil - SIT 820 Nova Valve

SIT 820 NOVA

1. Remove all wires from the valve operating head.
2. Use an ohmmeter or multimeter set on OHMS setting.
3. Place black or ground lead from the meter to TP on the valve.
4. Place the red lead from the meter to the TH on the valve.

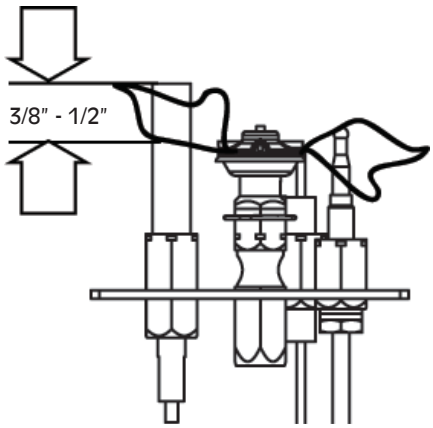
Reading should be 2.25 Ohms.



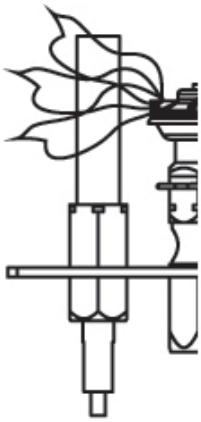
Testing & Adjustments

Testing: Pilot Flame

CORRECT FLAME

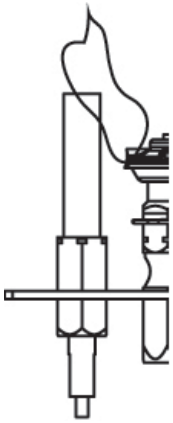


WAVING BLUE FLAME



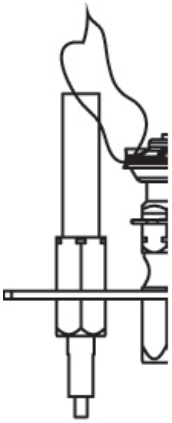
CHECK FOR:
- Drafts at pilot location

NOISY, LIFTING, BLOWING FLAME



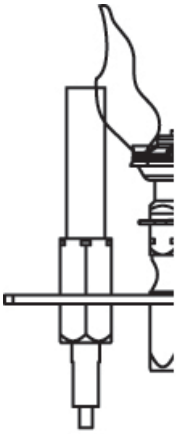
CHECK FOR:
- High gas pressure
- Wrong orifice

HARD, SHARP FLAME



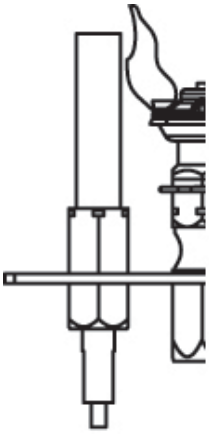
CHECK FOR:
- High gas pressure
- Orifice too small

LAZY YELLOW FLAME



CHECK FOR:
- Clogged primary air opening
- Clogged orifice

SMALL BLUE FLAME

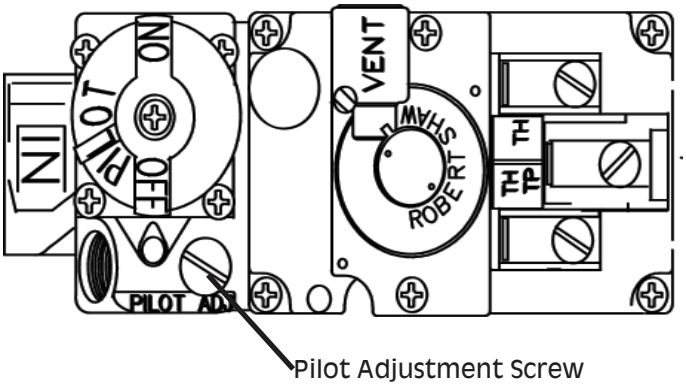


CHECK FOR:
- Wrong orifice
- Low gas pressure
- Clogged pilot tube
- Pilot tube gas leak

Testing & Adjustments

Adjustments: Pilot Flame

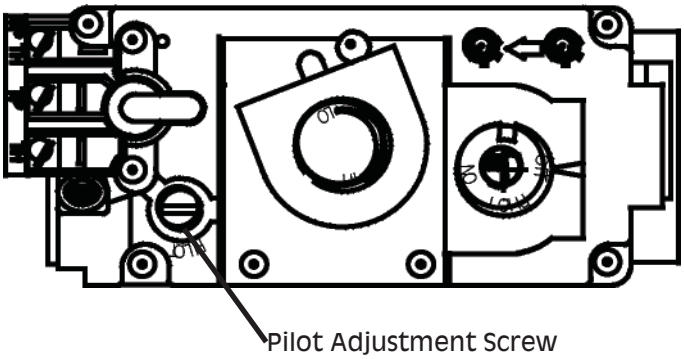
Robertshaw



Pilot Adjustment Screw

1. Remove the protective cap screw.
2. Turn the pilot adjustment screw:
   a) Clockwise to reduce the pilot flame.
   b) Counter clockwise to increase the pilot flame.

SIT 820 NOVA



Pilot Adjustment Screw

1. Turn the pilot adjustment screw:
   a) Clockwise to reduce the pilot flame.
   b) Counter clockwise to increase the pilot flame.

Testing & Adjustments

Adjustments: Spill Switch

Wall switch or thermostat

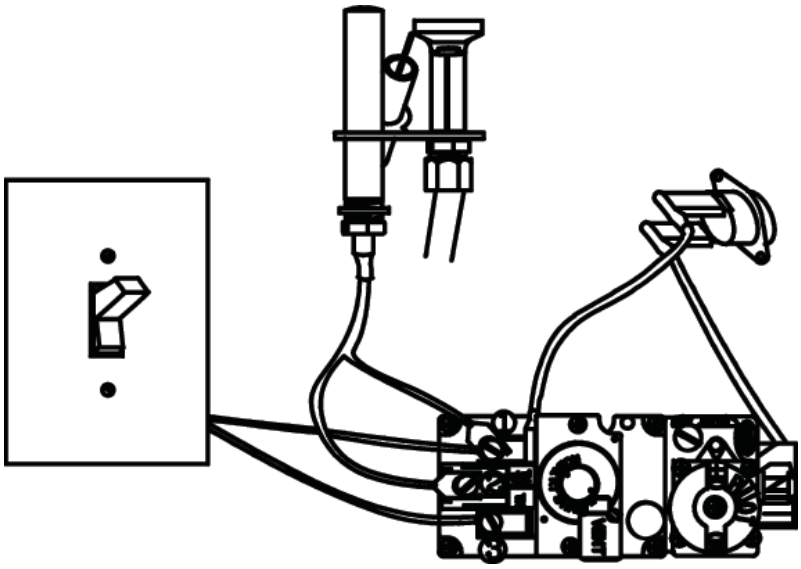
Robertshaw

When troubleshooting natural draft appliances which make use of a spill switch, it is sometimes necessary to bypass it in order to test its function and that of the other ignition components.

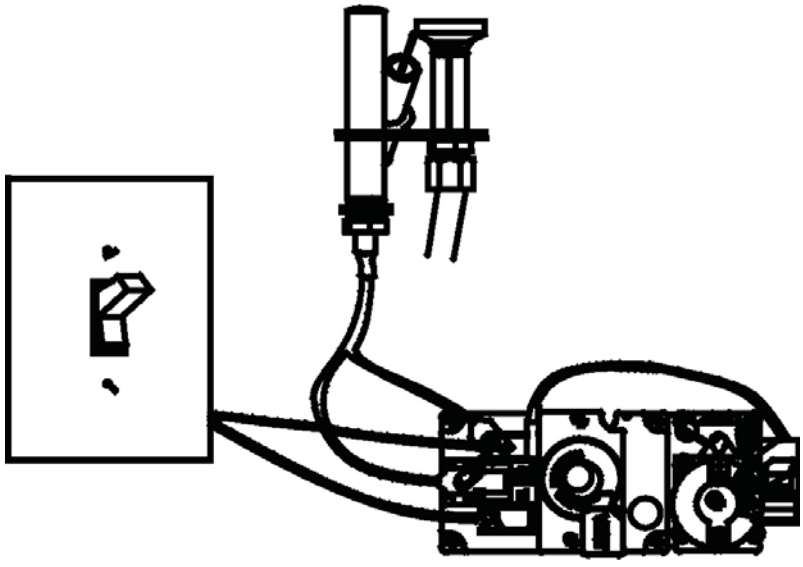
It is illegal to keep the spill switch bypassed. The spill switch is a safety feature of the fireplace which is required for proper operation.

The following two diagrams illustrate how to bypass the spill switch on a commonly used Robertshaw system.

Switch Connected



Switch Disconnected



Testing & Adjustments

Adjustments: Spill Switch

Wall switch or thermostat

SIT 820 NOVA

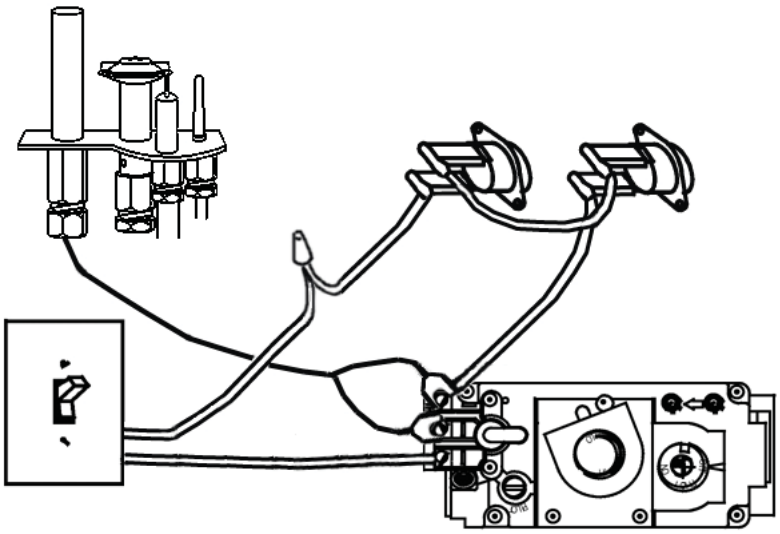
When troubleshooting natural draft appliances which make use of a spill switch and vent safety switch, it is sometimes necessary to bypass them it in order to test their function and that of the other ignition components.

It is illegal to keep these switches bypassed. These switches are a safety feature of the fireplace which are required for proper operation.

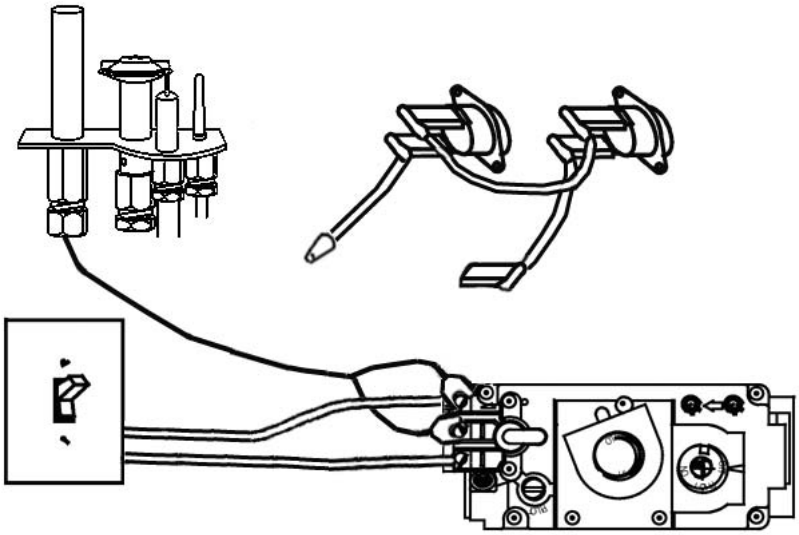
The following two diagrams illustrate how to bypass the spill switch and vent safety switch on a commonly used SIT system.

Note: When B venting a stove use the high limit spill switch included in the GS-150KT. An addional connection to a terminal block must be made before connecting to the valve. Please review the respective installation manual of the stove for more information.

Switches Connected



Switches Disconnected



Testing & Adjustments

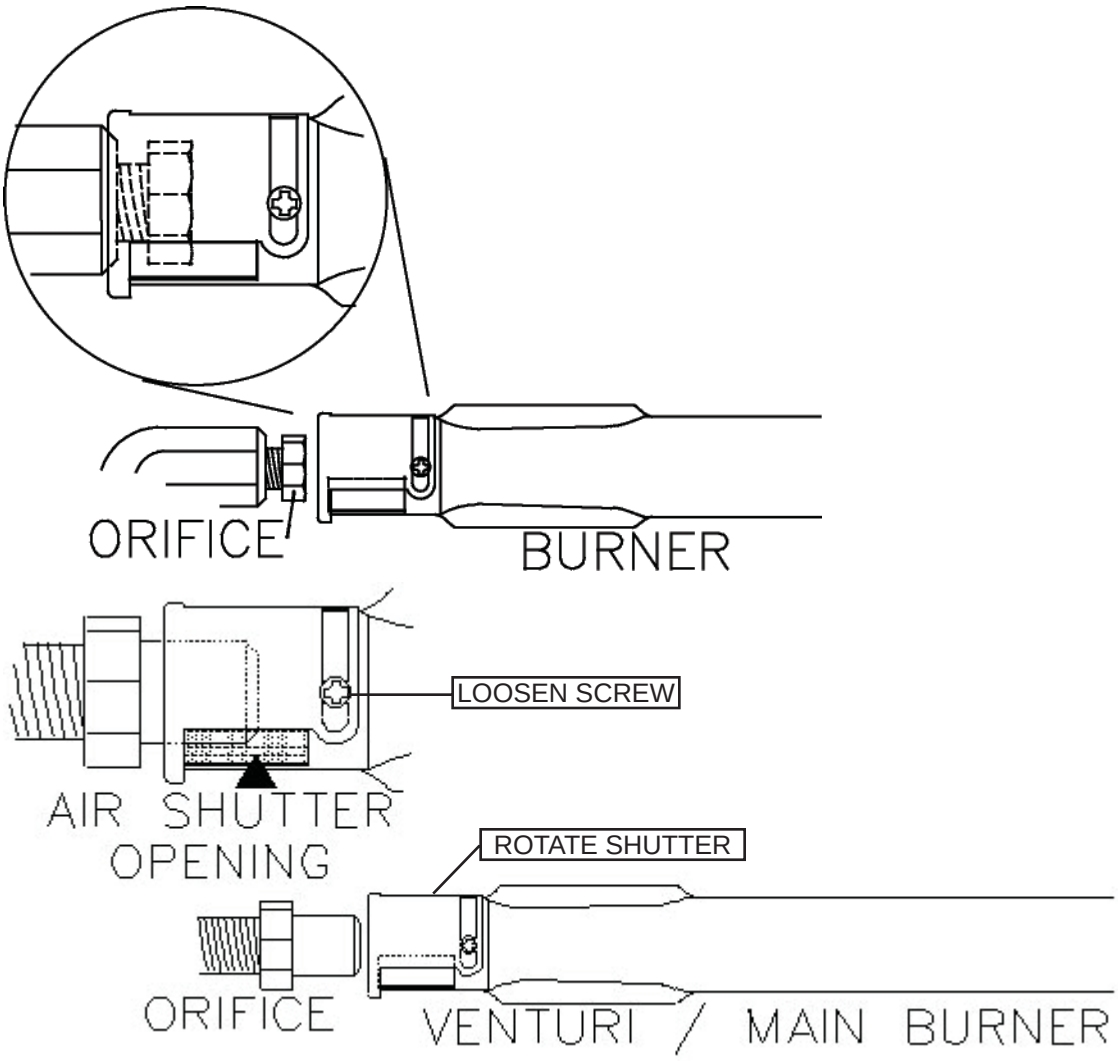
Adjustments: Venturi/Air Shutter

Adjustment may be required depending on fuel type, vent configuration and altitude.

Closing the air shutter will cause a more yellow flame, that can lead to carboning. Opening air shutter will cause a more blue flame, but can cause the flame to lift from the burner ports.

The flame may not appear yellow immediately; allow 15-30 minutes for the final flame colour to be established.

Loosen securing screw and rotate venturi (indicated) to open/close as desired.



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