

MULTIMETER

Multimeter detects these problems:

- Bad thermopile
- Bad thermocouple
- Bad switch to turn unit on/off
- If there is 110 electric to unit
- Bad remote

- ***Thermopile Check***
While flame is on, put alligator clips that are attached to the leads of the millivolt meter to the two leads from the thermopile. Turn pilot on. Turn burners off. Readings should be between 350 mv. And 525 mv. Turn the unit on. Readings now should be approximately 200 mv. These vary depending on how hot the pilot flame is.

- ***Thermocouple Check***
Put one alligator clip on copper wire of thermocouple and the other clip on silver tip at the end of thermocouple. Ignite pilot to get readings. Readings should be approximately 20 mv.

- ***Continuity Check (making sure switches and wiring are OK)***
Turn multimeter to the continuity sign. Place alligator clips on to the ends of the wires that go to the wall switch. When switch is off, meter should not sound. When switch is on, meter should make a tone sound. If meter does not sound when the switch is in the "on" position then the switch is bad or a break in the line. This works the same for other limit switches and wires leading to them.

- ***110 Electric to Blower Connection***
Turn meter to 110 Alternating Current setting. Push probes in the socket or on to ends of wire. If electric is present, meter display will read "110 volts."

- ***Remote check***
Disconnect remote from the valve. Put alligator clips on each end of the remote leads that go to valve. Place receiver switch in "remote" position. Turn the handheld transmitter to "on." Multimeter should make a tone sound. If it is off, there should be no tone sound. Be sure to be at least four feet away from the receiver when testing the system.

GAS SNIFFER

- *Use to detect gas leaks*

Turn sniffer unit on. Turn dial clockwise until you hear solid tone. Turn dial counter-clockwise until the tone goes to a ticking sound. Then turn it counter-clockwise further until the ticking sound gets very slow. Now you are ready to check all fittings and connections for gas leaks. Make sure to test lines going to the burners when unit is turned on high so there is gas flow in these areas.

Always check the WC test ports for leaks.

Note:

The sniffer is so sensitive that it can detect allowable amounts of leakage when it is placed on the breather of a gas valve or regulator. If you think the leak is significant, test with soapy water solution.

ORIFICE BITS

- *Crosscheck manufacturer's specs with the product*
- *See if unit is natural gas or LP*

Read specifications for burners and orifices in the instruction book or on the plates attached to the unit. Use BTU/Orifice size chart to crosscheck the Btu rating with orifice sizes.

- **Note:**

The Btu listed may differ slightly from the chart, depending on how the burner is configured. Take proper size orifice bit out of kit and push it through the orifice to see if orifice is, in fact, the proper size.

CO DETECTOR

CO detector is used to:

- Help with start-up of vent free and B-vent units
- Help find spillage on DV, B-vent, and wood burning units

Turn CO detector on. If possible, start detector outside the home to clear filters. This usually takes 2 to 3 minutes.

- ***Vent-free start-up:***

When starting the CO detector, hold down the button for approximately 4 seconds. Then hold down the "Zero" until you see "0" in the LED display. Let fireplace unit burn approximately 5 minutes. Place steel wand about 1" into the firebox at the top of the opening, in the center.

Parts per million (PPM) of CO should be no higher than 15. Readings of properly burning units usually are from 3 PPM to 12 PPM.

If readings are higher than 15 PPM, remove logs and take readings again. If readings are lower without the logs, replace logs and make sure they are positioned correctly. Take CO readings again with logs on the unit. If readings remain higher than 15 PPM, check for gas leaks. See if gas line size is correct and check Water Column (WC) readings to see if they are within manufacturer's specifications. Glowing embers may also cause higher readings.

We have found the in-stream readings listed above to be reliable numbers to work from during 10 years' testing experience in the field. We have not found a manufacturer who will provide specs for in-stream readings.

- ***Finding spillage on DV, B-vent, and wood burning units:***
(To investigate complaints about odors from these products -- even DV). Start the CO detector the same way as in the vent-free start-up. Then take the wand around all four sides of the DV glass while the unit is running. For B-vent and wood burning, put wand at the right and left center of the top of the fireplace opening.
- ***Clean filter after each use by letting detector run outside for 3 minutes.***

MANOMETER

A manometer is used to check gas pressure. This piece of equipment tells a technician if there is sufficient gas pressure to supply the fireplace. Problems that occur with low pressure include low flame, sooting, and outages of pilot and burner. High pressure can cause overheating and shorten the life of thermopiles and thermocouples.

Typical Reading

Natural gas incoming	6" to 12" Water Column (WC)
Best incoming	6" to 7" WC
LP gas incoming	11" to 13" WC
Best incoming	12" WC

Manifold Pressure Reading

This is the pressure taken while the unit is burning on high.

Note: if it is a variable valve, make sure it is turned to the high position.

Check the tags on the gas product for the manufacturer's recommended reading for those pressures.

Most manufacturers are looking for manifold pressures of:

Natural gas while on high	usually 3.5" WC
LP gas on high	usually 10" WC

To check incoming pressures:

Incoming pressure can be checked most of the time on the valve. There are two cone-shaped ports, one for incoming and one to check manifold pressure. The cones have screws in them; some have Phillips and some straight. Loosen the screw. (It won't fall out of the cone). Then slide the plastic tube over the cone that says "In." This tells you the incoming pressure. Next, close this screw and open the "Out" screw. Place the plastic hose over the "Out" cone. Then turn unit on to high. This is the manifold pressure. After tightening screws, check with sniffer to make sure they are closed.

Safety Pilot Kit Trouble Shooting

IT IS EXTREMELY RARE FOR A VALVE, PILOT BURNER OR THERMOCOUPLE TO MALFUNCTION DUE TO A DEFECT. BEFORE ASSUMING A DEFECT BE SURE UNIT IS INSTALLED CORRECTLY AND CHECK FOR THESE CONDITIONS.

<u>Symptoms</u>	<u>Possible Cause</u>	<u>Solution</u>
Pilot won't light.	1) Gas line not bled to let gas reach pilot. 2) Pilot adjustment screw not open far enough. 3) Pilot gas supply tube burned or crimped. 4) Stem on valve not being pushed in far enough. 5) Pipe dope or tape used on thermocouple connections. 6) Soot or rust covering outlet hole on pilot orifice. 7) Gas not reaching pilot because valve is installed backwards.	1) Bleed lines. 2) Open screw. 3) Install new line. Route away from Flame. 4) Push in about 1/4". 5) Remove pipe dope or tape. 6) Clean thoroughly and open hole with pin. 7) Re-install valve.
Pilot won't stay lit when knob released	1) Thermocouple is not hot enough	1) Make sure pilot flame is strong and is hitting thermo-couple and is strong enough 1a) Make sure thermocouple is paint, carbon & rust free. 1b) Be sure lead wire is properly tightened at both ends (finger tight + 1/4 turn).
Pilot lights but burner won't.	1) Pilot burner too far from main burner. 2) Too much or not enough material in pan. 3) Gas not getting to burner due to debris in line.	1) Relocate pilot burner. 2) Add or remove material. 3) Clear debris.
System lights, but goes out after a while.	1) Thermocouple over heating. Too close to main burner. 2) Back log blocking flames. 3) Thermocouple lead over heating. 4) Glass doors shut. 5) Grate too close to be resting on thermocouple.	1) Relocate pilot burner per instructions. 2) Relocate back log. 3) Move away from flame. 4) Open doors. 5) Move grate or thermocouple
Flames come out of holes on air/mixer orifice	1) Air mixer/orifice installed incorrectly.	1) Install air mixer/orifice so long end and air holes face toward valve (away from main burner).
Whistling Sound	1) Seldom caused by pilot. 2) Possibly a too small flex connector.	1) Check log set burner, orifice (if used) and amount of material covering burner. 2) Use minimum 1/2" OD connector.
Soot on Logs	1) Rarely caused by pilot.	1) Check for flame impingement on logs. 2) Adjust air mixer if using LP.

Millivolt Pilot Valve Kit Trouble Shooting

IT IS EXTREMELY RARE FOR A THERMOCOUPLE OR VALVE TO FAIL DUE TO DEFECT.
SEE BELOW BEFORE REMOVING EITHER FROM THE FIREPLACE.

<u>Symptoms</u>	<u>Possible Cause</u>	<u>Solution</u>
Pilot won't light.	1) Gas line not bled to let gas reach pilot. 2) Pilot adjustment screw not open far enough. 3) Gas not reaching pilot because valve is installed backwards. 4) Pilot gas supply tube burned or crimped. 5) Knob on valve not being in far enough. 6) Pipe dope or tape used on thermopile connections. 7) Soot or rust covering outlet hole on pilot orifice.	1) Bleed lines. 2) Open pilot adjustment screw. (Turn to Left). 3) Re-install Valve. 4) Replace pilot burner assembly. Route away from main burner flame. 5) Push in about 1/4". 6) Remove pipe dope or tape. 7) Clean thoroughly and open hole with pin.
Pilot won't stay lit	1) Thermopile is not hot enough. 2) Thermopile lead too tight or not tight enough at valve. 3) Insulation burned off thermopile lead.	1) Make sure pilot flame is strong and is hitting thermopile. 1a) Make sure thermopile is paint, carbon & rust free. 1b) Hold knob on valve in longer. 2) Adjust to finger tight + 1/4 turn. 3) Replace and route away from main burner flame.
Pilot lights but burner won't.	1) Gas not getting to burner. Valve control not set to ON position. 2) Valve/Receiver not wired correctly. 3) Pilot Burner Assembly to valve not wired correctly 4) Gas not getting to burner due to debris in line.	1) Turn control knob to "ON" position. 2) Rewire. 3) Rewire. 4) Disassemble and clean line.
Pilot lights, burner lights, but system goes out after a while.	1) Thermopile over heating.	1) Consult Instructions
Flames come out of holes on air/mixer orifice (LP systems)	1) Air mixer/orifice installed incorrectly.	1) Install air mixer/orifice of holes so long end and air holes face toward valve (away from main burner).
Whistling Sound	1) Seldom caused by pilot. 2) Possibly a too small flex connector.	1) Check log set burner, orifice (if used) and amount of material covering burner. 2) Use minimum 1/2" OD connector.
Soot on Logs	1) Rarely caused by pilot.	1) Check for flame impingement on logs. 2) Adjust air mixer if using LP.

INSTALLER CHECKLIST

Builder's Name _____ Installer's Name _____

Homeowner's Name _____ PO# _____

Job Address _____ City _____ Zip _____ Telephone _____

Type of Unit _____ N _____ LP _____ Serial # _____

Date Installation Requested _____ Directions to job _____

(Use back of sheet if necessary)

Work to be done? Set unit, stub gas, insulate chase, run electric, etc. _____

Check off each item as it is completed. You must do ALL items or the job is not finished. If any item is not required (such as plumbing not being done by our crew), write NA.

Face _____ Logs _____ Blower? _____

_____ Vent Type? _____ Vent size? _____

_____ Pipe in chase? _____ Pipe in house? _____ RGA or Warranty? _____

_____ Amount of vent used _____ ft. Number of elbow sets _____

_____ Vent pipe is connected and secure and clearance is maintained

_____ Unit is level and plumb

_____ Firestops are secured and tight

_____ Check that thermostat wire is in switch box, switch box is nailed securely to stud, and wire is tied in knot so it won't fall out of box

_____ Check that gas type on box and on unit match the type of gas to house

_____ Pre-wire for blower

_____ Pre-plumb and secure gas pipe

_____ Shut off and flex connector under unit

_____ Cap and caulking are neat and straight

_____ Flashing is secure and caulked

_____ Hearth safety strip installed, if needed

_____ Brass trim, hood, logs brought back to warehouse? Yes _____ No _____

_____ Wall switch under unit? Yes _____ No _____

_____ Did you insulate chase? Yes _____ No _____

_____ Did you drywall chase? Yes _____ No _____

_____ Outside air kit installed? Yes _____ No _____

I have performed all the above actions. Installer Signature _____

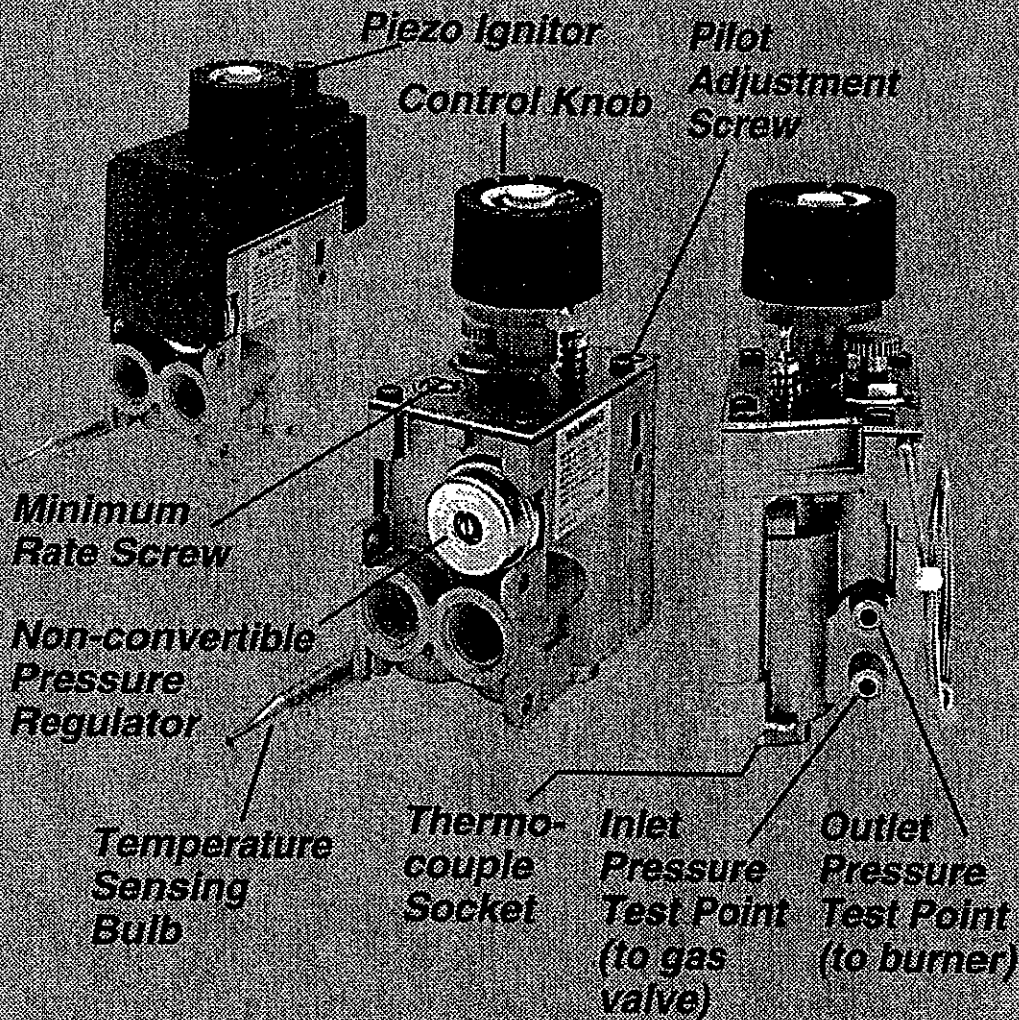
Date _____

ORFICE BIT SIZE = BTU'S

No.	Natural	Gas	L.P.	No.	Natural	Gas	L.P.
Bit	3.5" WC	4" WC	11" WC	Bit	3.5" WC	4" WC	11" WC
68	2440	2608	6713	41	23399	25015	64377
1/32	2487	2659	6843	40	24384	26068	67087
67	2600	2779	7153	39	25137	26872	69156
66	2765	2956	7607	38	26157	27963	71964
65	3110	3325	8557	37	27462	29358	75553
64	3291	3518	9053	36	28798	30786	79229
63	3476	3716	9563	7/64	30388	32486	83603
62	3666	3919	10087	35	30722	32843	84522
61	3862	4128	10625	34	31283	33443	
60	4062	4343	11176	33	32420	34659	
59	4268	4563	11742	32	34165	36524	
58	4479	4768	12322	31	36562	39086	
57	4695	5019	12916	1/8	39672	42411	
56	5490	5869	15104	30	41925	44819	
3/64	5585	5970	15365	29	46961	50204	
55	6865	7339	18888	28	50120	53581	
54	7680	8211	21131	9/64	50192	53657	
53	8989	9609	24730	27	52649	56264	
1/16	9918	10603	27286	26	54865	58653	
52	10238	10945	28167	25	56747	60665	
51	11398	12184	31357	24	58661	62711	
50	12441	13300	34228	23	60215	64372	
49	13530	14464	37225	5/32	62027	66309	
48	14665	15678	40347	22	62584	66905	
5/64	15487	16556	42608	21	64188	68620	
47	15646	16726	43045				
46	16658	17809	45831				
45	17072	18251	46969				
44	18778	20075	51663				
43	20111	21500	55331				
42	22197	23729	61067				
3/32	22339	23882	61460				



Eurosit Gas Valve

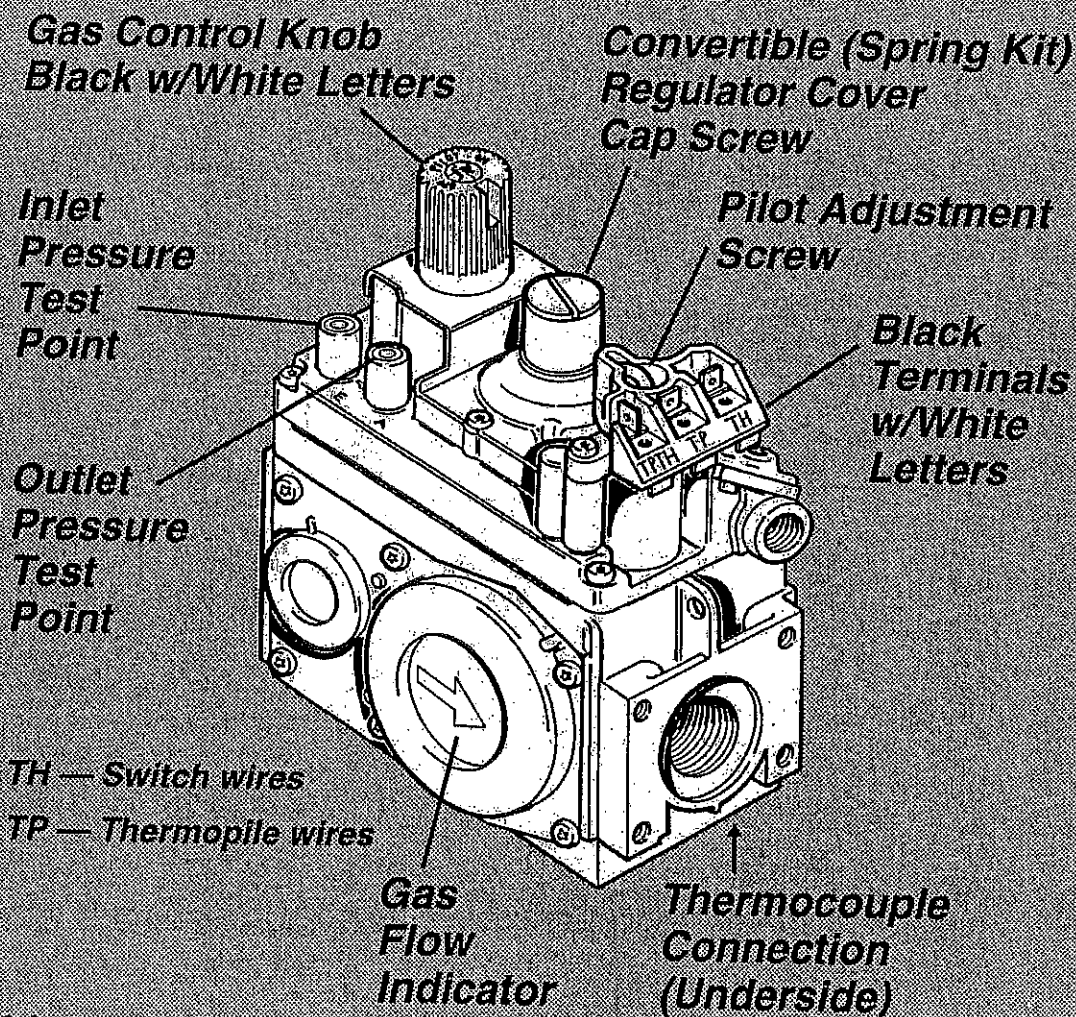


The control has an interlock device. After shutting off all gas flow, the pilot burner cannot be relit until the thermocouple has cooled, allowing the electromagnet to be released (approximately 60 seconds).



Sit 880 Nova

Thermopile / Thermocouple Millivolt Gas Valve





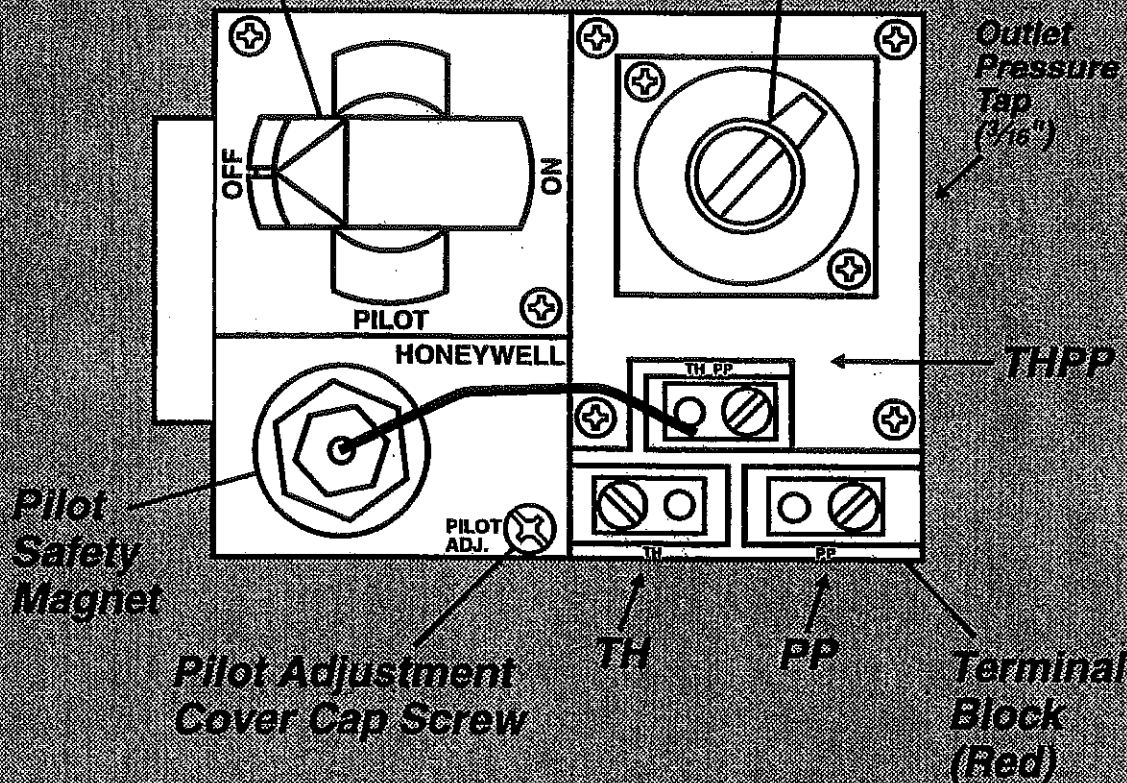
HONEYWELL

Millivolt Gas Valve

Control Knob
(Gray)

Convertible (Regulator
Body Replacement)
Regulator Adjustment
Cover Cap Screw

Black — Propane; Silver — Natural



TH Terminals — Switch wires

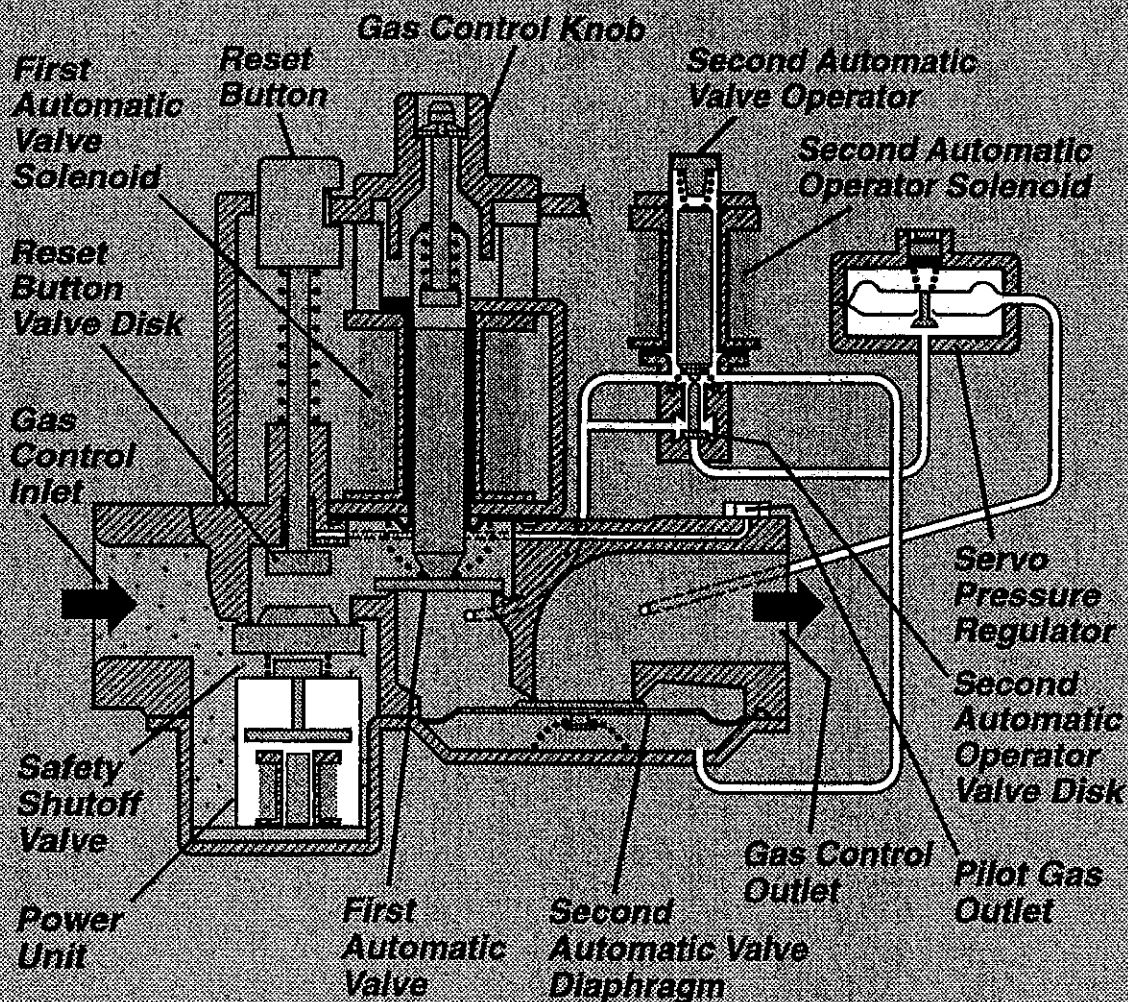
PP Terminals — Power Pile (Thermopile) wires





What Happens Inside A Typical Gas Valve

Pilot "OFF"—Burner "OFF"



Honeywell gas valve shown

