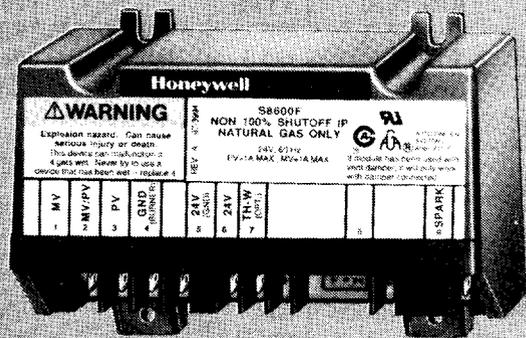


Honeywell

THESE IGNITION MODULES PROVIDE IGNITION SEQUENCE, FLAME MONITORING AND SAFETY SHUTOFF FOR INTERMITTENT PILOT CENTRAL FURNACES AND HEATING APPLIANCES.

- S8600, S8660 provide up to 1.0 A pilot and 1.0 A main valve current rating.
- S8610, S8670 provide up to 1.0 A pilot and 2.0 A main valve current rating.
- S8660, S8670 provide prepurge cycle.
- S8600A,B; S8610A,B use separate igniter and sensor (Q179C with igniter and sensor mounted on one bracket, or Q354 sensor with Q345, Q346, Q348, Q362 or Q381 igniter-sensor recommended).
- S8600F,H,M; S8610F,H; S8660D; S8670D use combination igniter-sensor (Q345, Q346, Q348, Q362 or Q381 igniter-sensor recommended).
- S8600A,F; S8610A,F are for use on natural gas only; they continue ignition until the pilot lights or the system is manually shut down.
- S8600B,H,M; S8610B,H; S8660D; S8670D can be used on natural or LP gas; they provide 100 percent shutoff on ignition failure.
- S8600B,H; S8610B,H; S8660D; S8670D lock out on shutoff. Manual reset is required.
- S8600M waits 6 minutes nom. following shutoff, then reinitiates the pilot ignition sequence. The ignition trial, shutoff, wait cycle repeats until the pilot lights or the call for heat ends.
- Models of S8600, S8610, S8660, S8670 replace S86, S90 and S860.
- Remote reset provided on 100 percent shutoff models.
- System uses rectification principle for flame sensing.
- Capacitive discharge spark output.
- Temperature ratings are
S8600, S8660: -40° F to +175° F [-40° C to +79° C].
S8610, S8670: -40° F to +175° F [-40° C to +79° C] when used with 1.0 A or less main valve; -40° F to +165° F [-40° C to +74° C] when used with over 1.0 to 2.0 A main valve.

INTERMITTENT PILOT MODULES



**S8600A,B,F,H,M;
S8610A,B,F,H;
S8660D; S8670D**

SPECIFICATIONS

IMPORTANT

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, AN INDIVIDUAL UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.

TRADELINE MODELS

Tradeline models are selected and packaged for ease of handling, ease of stocking, and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODELS AVAILABLE

S8610A,B,F,H Ignition Modules without prepurge.

S8670D Ignition Module with prepurge.

ADDITIONAL FEATURES:

- Main valve max. load rating of 2.0 A run, 20.0 A inrush.
- Temperature rating:
 - With main valve current of 1.0 A or less: -40° F to +175° F [-40° C to +79° C].
 - With main valve current between 1.0 A and 2.0 A: -40° F to +165° F [-40° C to +74° C].
- Ignition cable converter. Allows use of existing ignition cable with Rajah connector.
- TRADELINE pack with cross reference label and special instruction sheet.

MODELS: See Table 1.

TABLE 1—INTERMITTENT IGNITION MODULES.

MODEL	IGNITER/SENSOR TYPE	TYPE OF GAS	PREPURGE TIMING	100 PERCENT SHUTOFF	LOCKOUT TIMING	IGNITION SEQUENCE ^a
S8600A, S8610A	Separate	Nat.	None	No	No	Spark on until pilot lightoff or manual shutdown; pilot valve open until manual shutdown.
S8600F, S8610F	Combination					
S8600B, S8610B	Separate	Nat. or LP	None	Yes, at lockout	15 or 90 sec. max., as ordered	Spark on until lightoff or lockout; pilot valve closes on lockout.
S8600H, S8610H	Combination					
S8600M	Combination	Nat. or LP	None	Yes; . at 90 sec. max.	No, continuous retry	Spark and pilot gas on until shutoff. After 5 minutes min. (6 min. nom.) delay, ignition starts again. Ignition, wait, retry repeats until pilot lights or system is shut down manually.
S8660D, S8670D	Combination	Nat. or LP	45 sec.	Yes, at lockout	15 or 90 sec. max., as ordered	Ignition trial follows prepurge; spark on until lightoff or lockout; pilot valve closes on lockout.

^aIf established flame is lost, all models restart ignition trial.

(continued on page 3)

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALER OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number, TRADELINE if desired.
2. Lockout timing.
3. Other components as required.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL SALES OFFICE (CHECK WHITE PAGES OF YOUR PHONE DIRECTORY).
2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422-4386 (612) 542-7500

IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9. INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

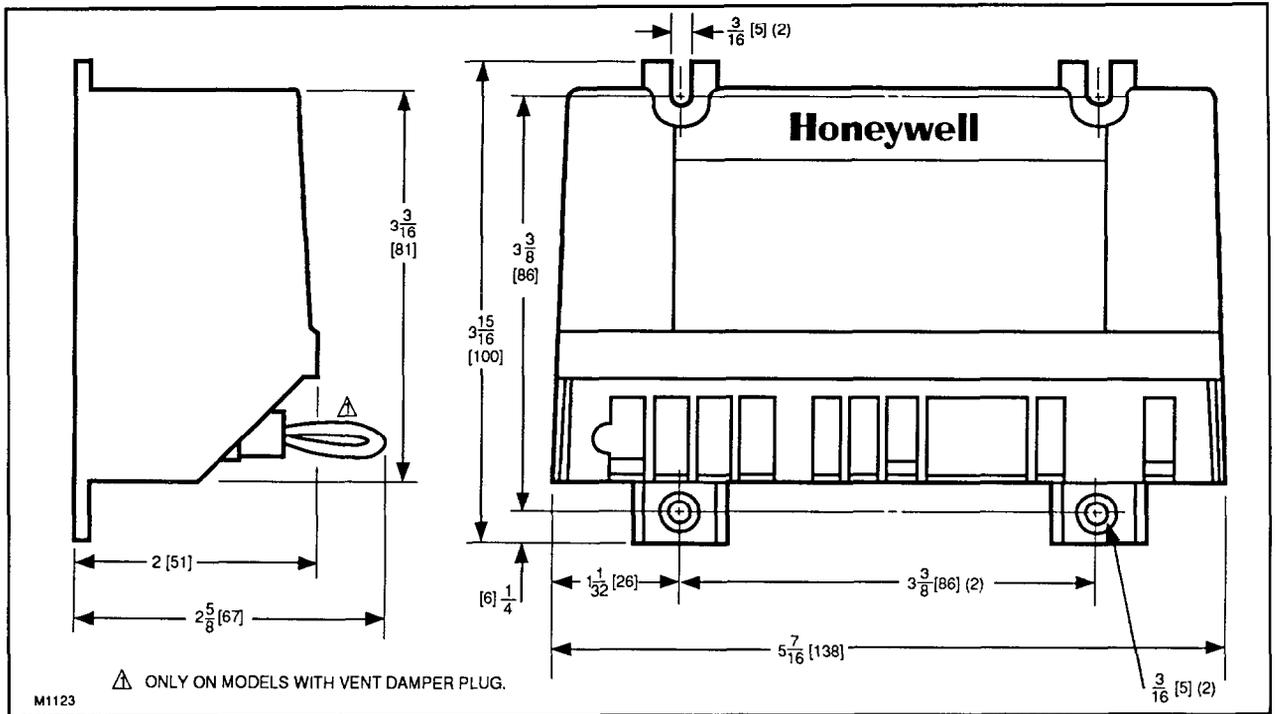


FIG. 1—APPROXIMATE IGNITION MODULE DIMENSIONS IN in. [mm].

ELECTRICAL RATINGS:

Voltage and frequency: 20.5 to 28.5 V (24 V nom.), 60 Hz.

Current rating: 0.2 A.

Valve contact ratings (at 24 Vac):

	S8600, S8660		S8610, S8670	
	Run	Inrush	Run	Inrush
Pilot	1.0 A	10.0 A	1.0 A	10.0 A
Main	1.0 A	10.0 A	2.0 A	20.0 A

SPARK GENERATOR OUTPUT: 13 kV peak at 25 pf load.

THERMOSTAT ANTICIPATOR SETTING: 0.2 A plus pilot valve rating plus main valve rating.

AMBIENT TEMPERATURE RATING:

S8600, S8660: -40° F to +175° F [-40° C to +79° C].

S8610, S8670: -40° F to +175° F [-40° C to +79° C] with main valve rated 1.0 A or less; -40° F to +165° F [-40° C to +74° C] with main valve rated over 1.0 A to 2.0 A.

RELATIVE HUMIDITY RATING: 5 to 90 percent RH at 95° F.

FLAME FAILURE RESPONSE TIME: 0.8 sec. at 1.0 μA flame current.

CONTINUOUS RETRY TIMING (S8600M only): 5 minute min., 6 minute nom. off time between trials for ignition.

TERMINALS:

SENSE (S8600A,B; S8610A,B only): 3/16 in. male quick connect.

All other terminals, including ignition: 1/4 in. male quick connects. Models available with Molex plug for connection to Honeywell D80D Vent Damper.

FLAME CURRENT: 1 μA, min.

MOUNTING: Mounts in any position except with terminals up. However, recommended mounting position is with terminals down to provide maximum protection from dripping water or dust accumulation. Fasten with No. 6-32 machine or No. 8 sheetmetal screws of appropriate length.

UNDERWRITERS LABORATORIES INC. COMPONENT RECOGNIZED: File No. MH15564, Guide No. MCC22.

CANADIAN GAS ASSOCIATION CERTIFIED: 1029-ABI-6269.

AMERICAN GAS ASSOCIATION DESIGN CERTIFIED: 20-14D3.

OTHER SYSTEM COMPONENTS

These modules provide operating control of an intermittent pilot system. Additional components required to complete the system must be ordered separately. They include:

- Dual valve combination gas control designed for intermittent pilot
- Combination pilot burner/igniter-sensor (S8600F,H,M; S8610F,H; and S8670D)
- Separate igniter and sensor on pilot burner bracket (S8600A,B)
- Ignition cable
- Transformer
- 24V thermostat
- High limit and other auxiliary controls as required

DUAL VALVE COMBINATION GAS CONTROL: Any that meets current ratings listed below. VR8204, VR8440 or VR8520 recommended.

S8600, S8660: 1.0 A pilot, 1.0 A main valve.

S8610, S8670: 1.0 A pilot, 2.0 A main valve.

PILOT BURNER/IGNITER-SENSOR: See Table 2.

TABLE 2—PILOT BURNER/IGNITER-SENSORS.

MODULE	PILOT BURNER/IGNITER-SENSOR	FLOW RATE*	
		cfh	m ³ /hr
S8600F,H,M; S8610F,H; S8660D; S8670D	Q345	0.8	0.02
	Q346	1.0	0.03
	Q348	1.5	0.04
	Q362 Q381	0.5	0.014
S8600A,B	Q179C	1.8	0.05
	Q354 with Q345, Q346, Q348, Q362 or Q381		

*With natural gas at 7.0 in. wc [1.7 kPa].

and the 24V terminal on the module. To change out a module with TH-R, TH-W terminals:

1. Remove the wires from the 25V(2) and TH-R terminals on the old module. Connect these two wires with a solderless connector.
2. Tag and remove the remaining wires from the old module.
3. Remove the old module and mount the new one in the same location.
4. Reconnect the remaining wires as shown in Table 5.
5. Increase the thermostat anticipator setting by 0.2 A.

TABLE 5—TERMINAL CROSS REFERENCE.

TERMINAL ON OLD MODULE:	TERMINAL ON NEW MODULE:
25V(1)	24V(GND)
TH-W	24V
MV	MV
MV/PV	MV/PV
PV	PV
GND(Burner)	GND(Burner)

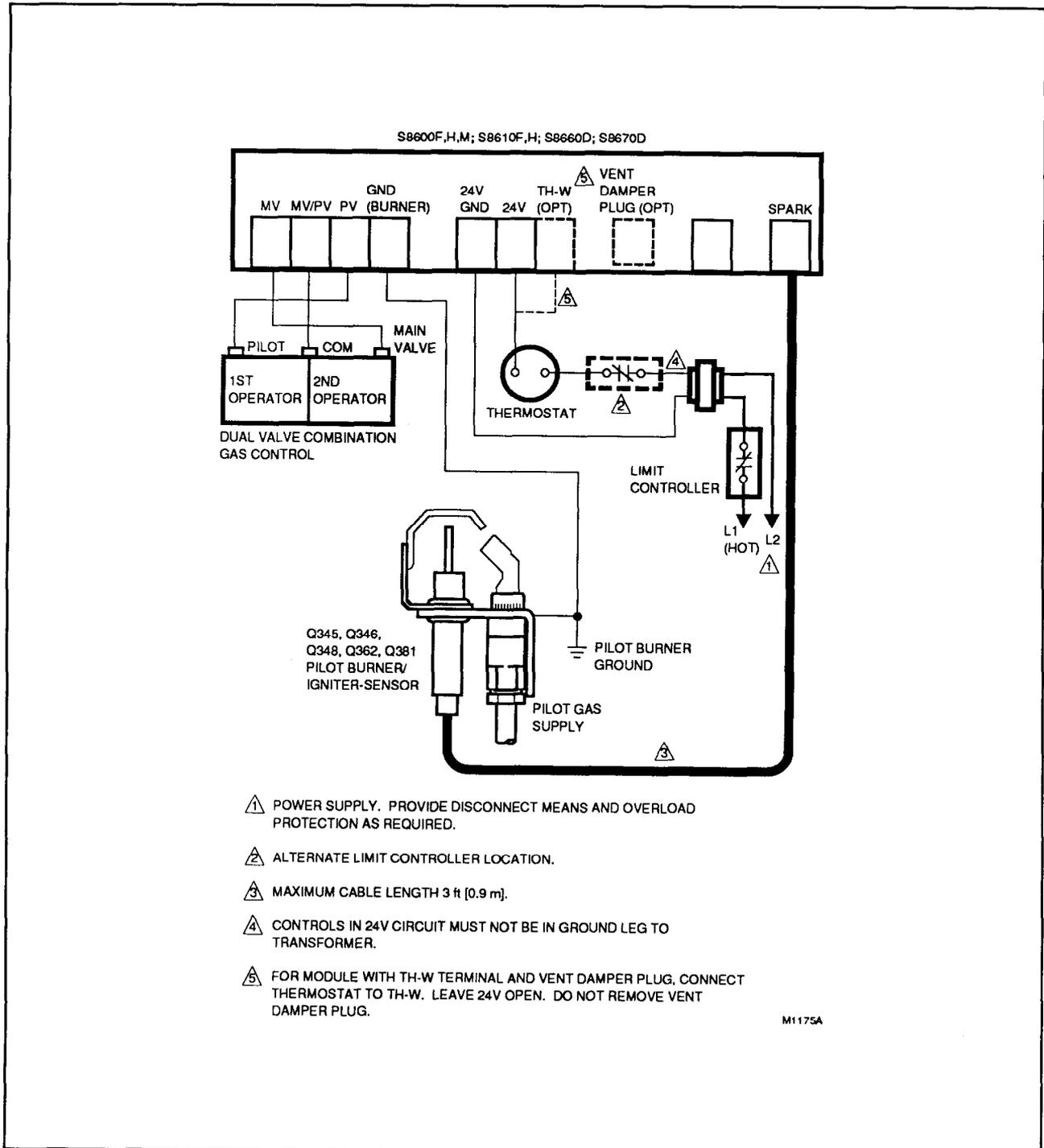


FIG. 2—S8600F,H,M; S8610F,H; S8660D; S8670D CONNECTIONS IN A HEATING SYSTEM WITH AN ATMOSPHERIC BURNER.

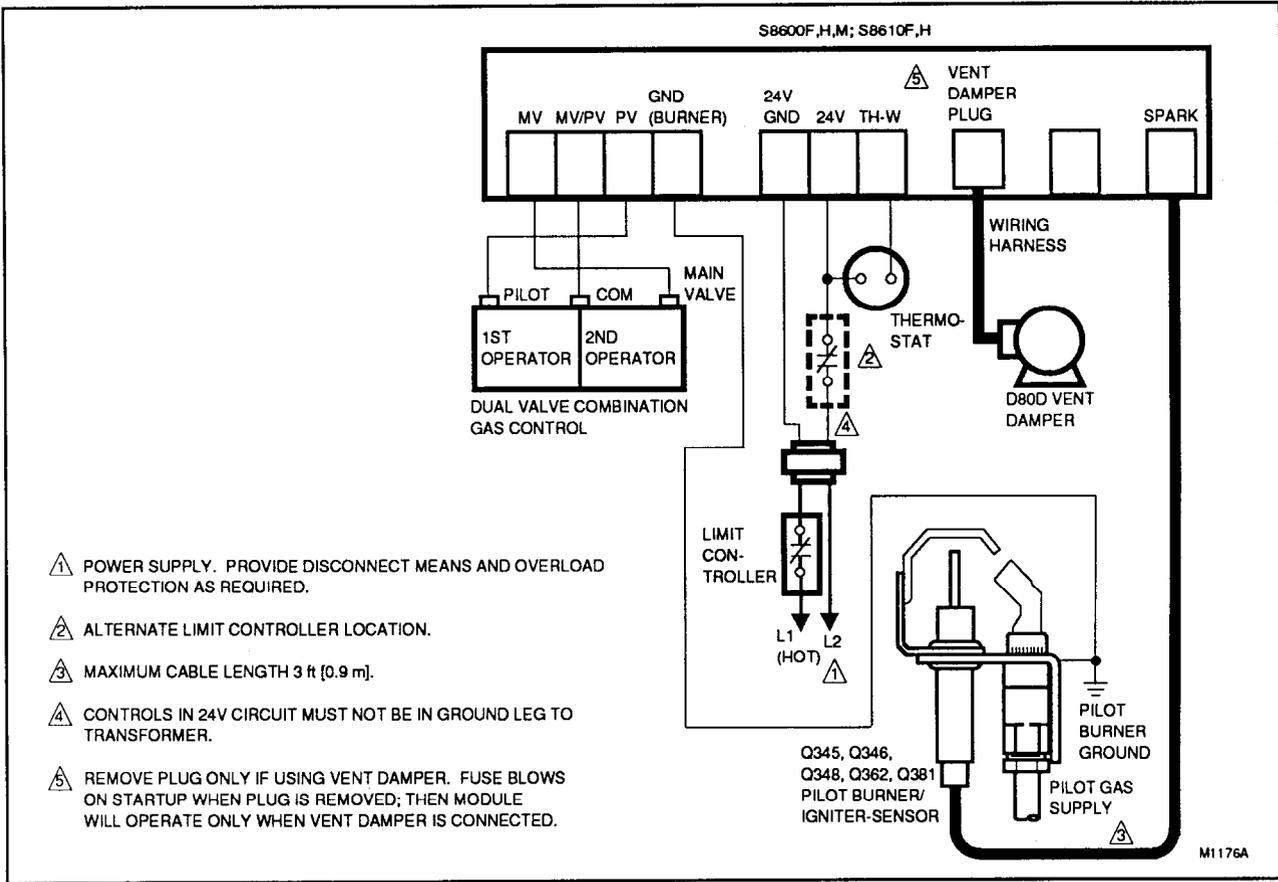


FIG. 3—S8600F,H,M; S8610F,H WITH VENT DAMPER PLUG IN A HEATING SYSTEM WITH AN ATMOSPHERIC BURNER AND A D800 VENT DAMPER.

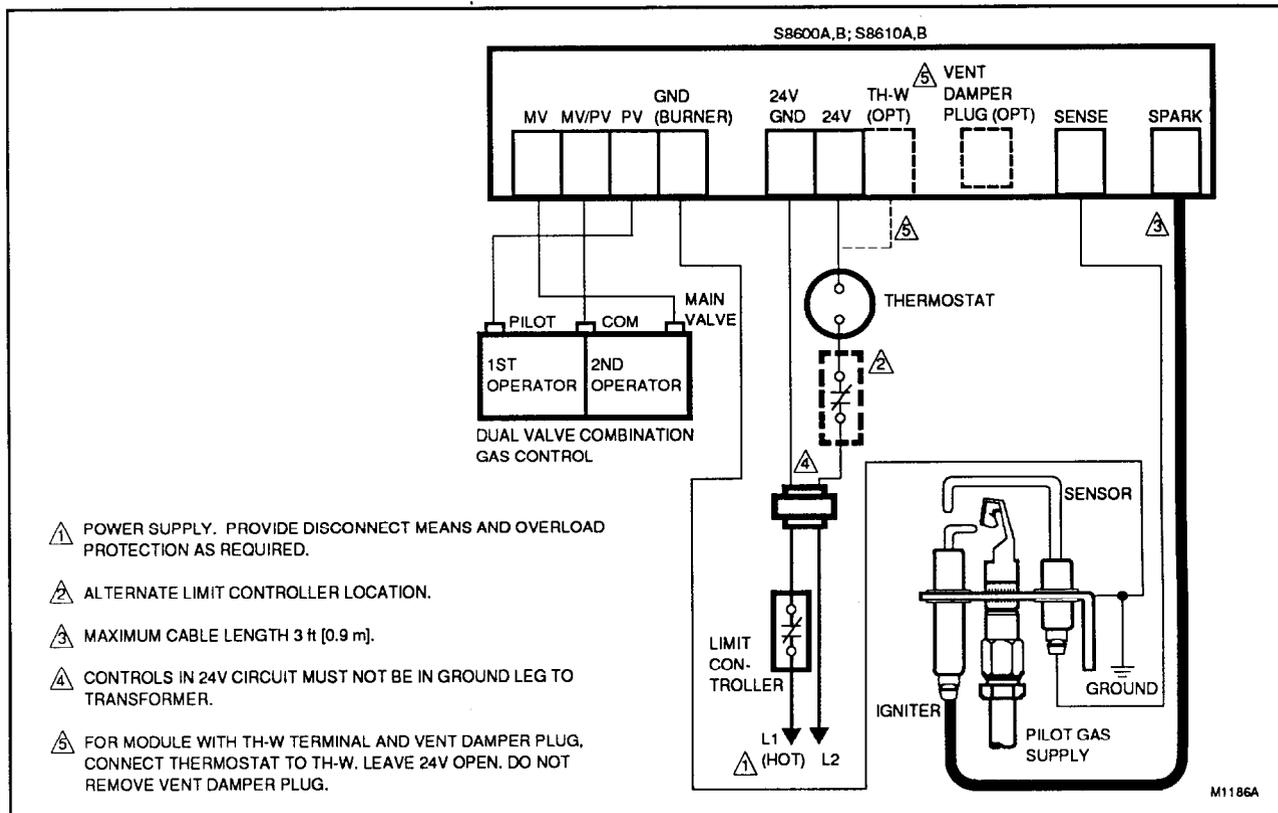


FIG. 4—S8600A,B; S8610A,B CONNECTIONS IN A HEATING SYSTEM.

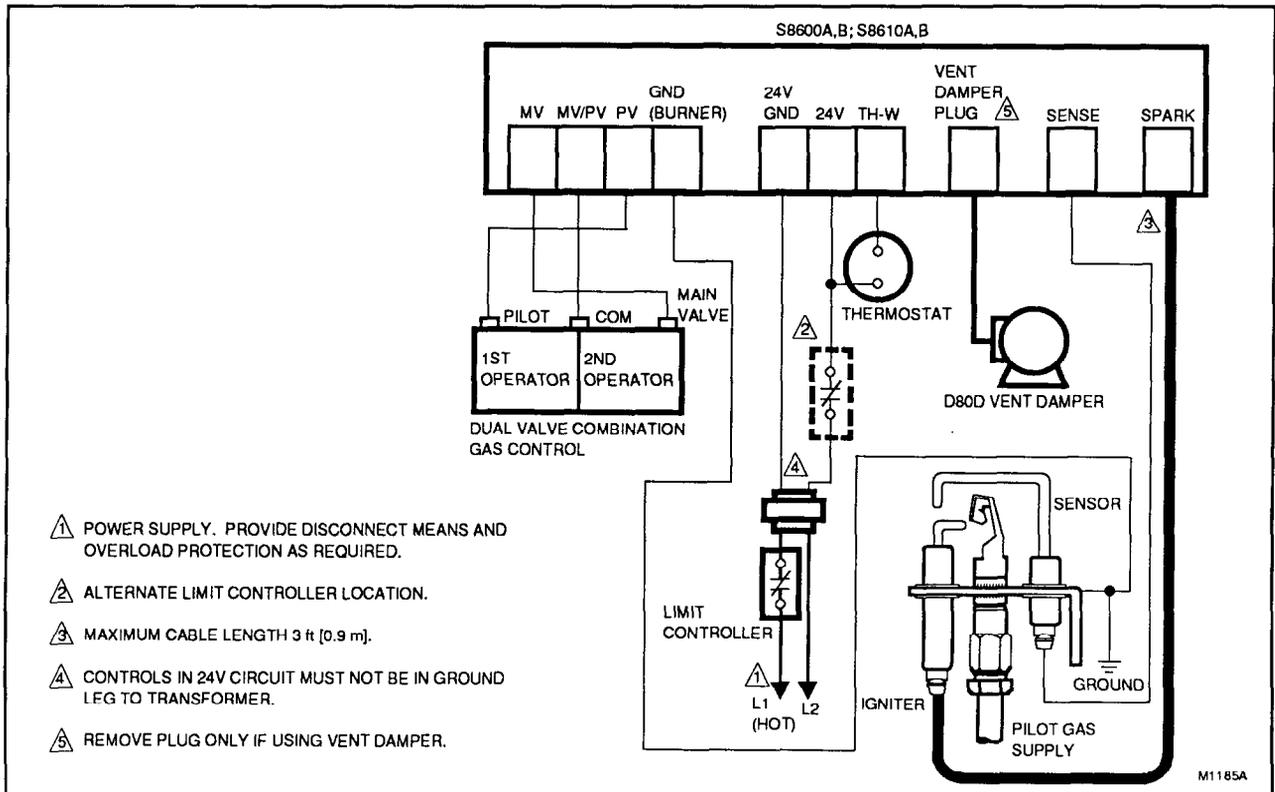


FIG. 5—S8600A,B; S8610A,B WITH VENT DAMPER PLUG IN AN ATMOSPHERIC BURNER HEATING SYSTEM WITH A D80D VENT DAMPER.

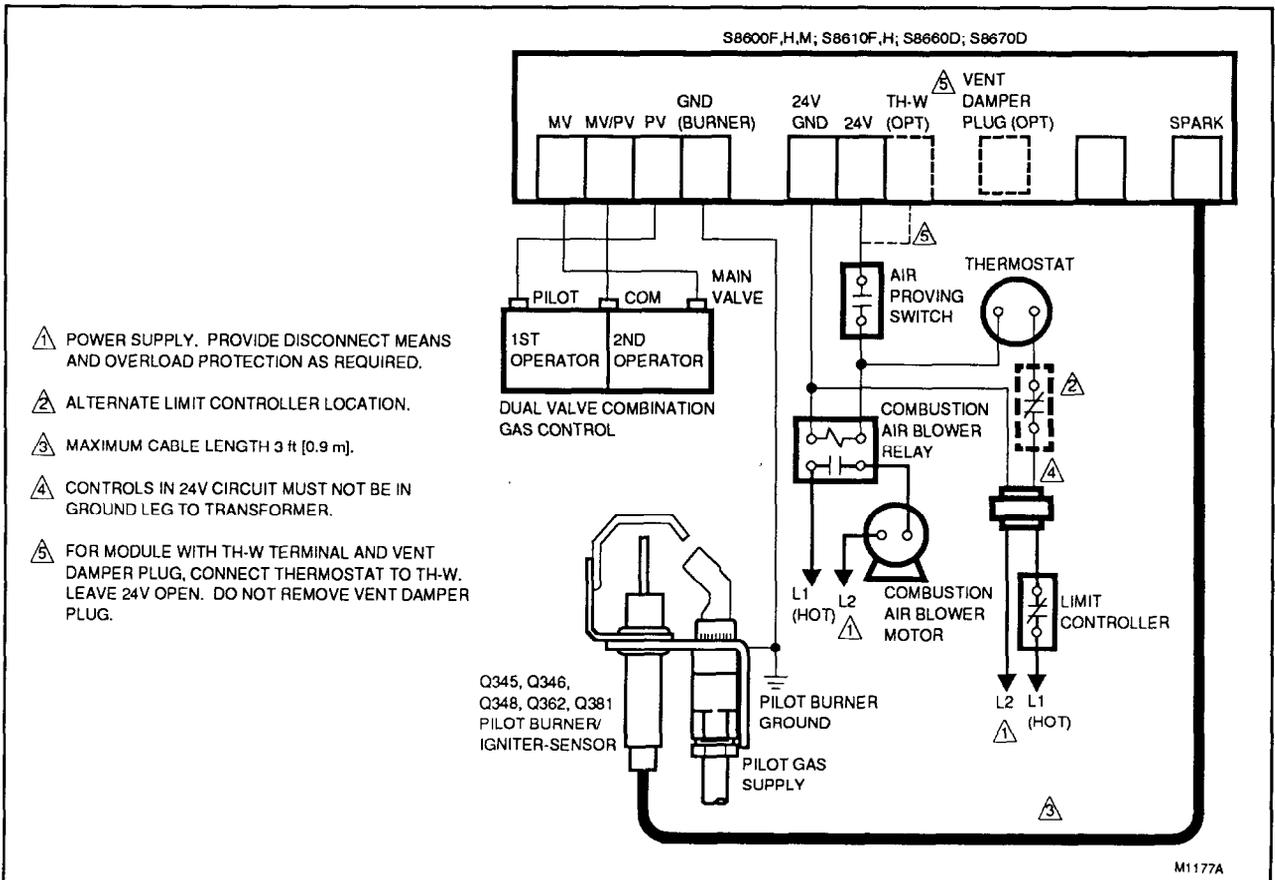
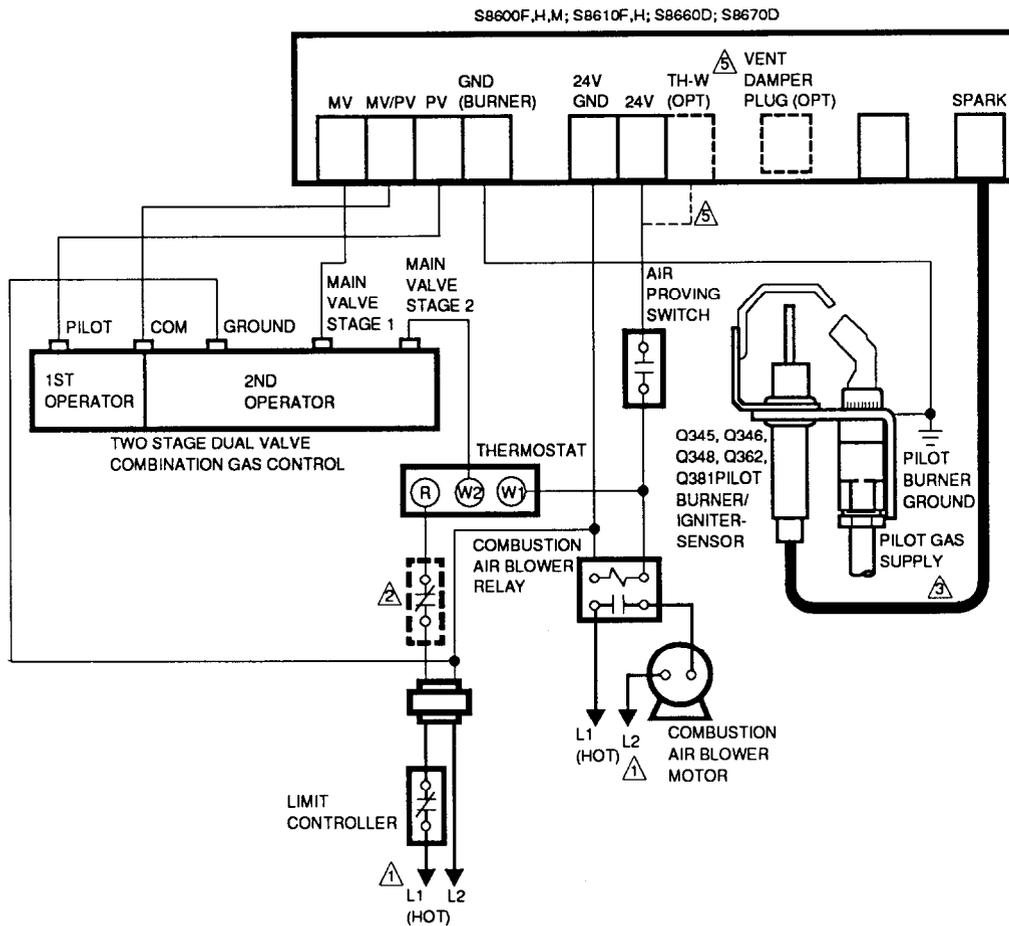


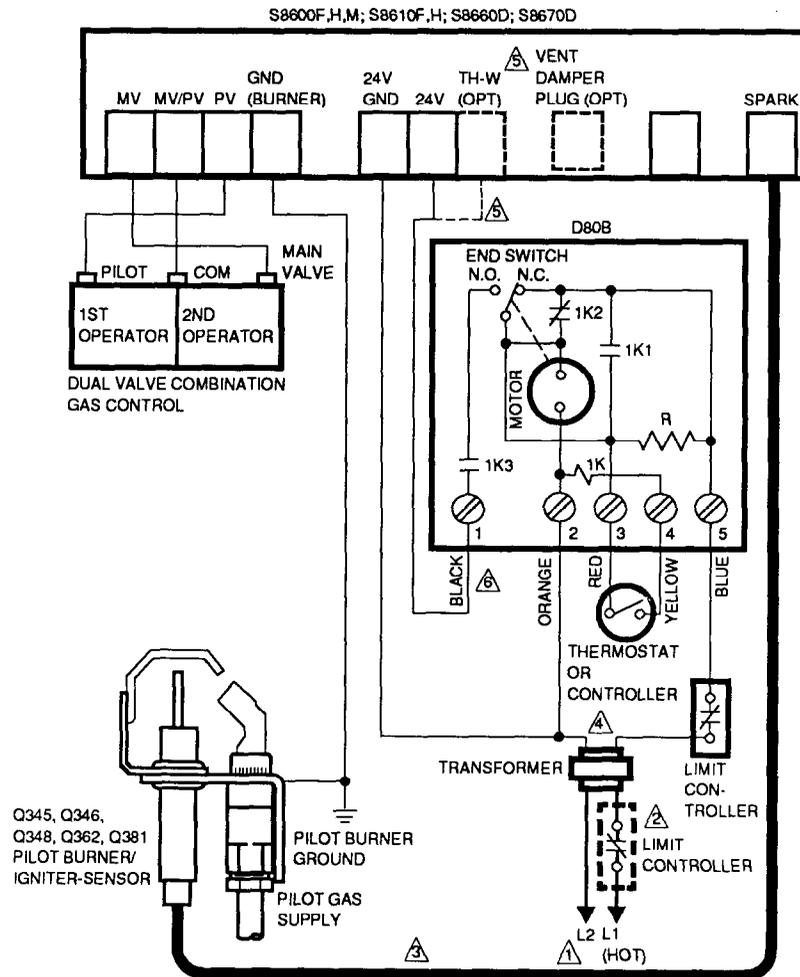
FIG. 6—S8600F,H,M; S8610F,H; S8660D OR S8670D CONNECTIONS IN A HEATING SYSTEM WITH A FAN-ASSISTED COMBUSTION BURNER.



- ⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠ ALTERNATE LIMIT CONTROLLER LOCATION.
- ⚠ MAXIMUM CABLE LENGTH 3 ft [0.9 m].
- ⚠ CONTROLS IN 24V CIRCUIT MUST NOT BE IN GROUND LEG TO TRANSFORMER.
- ⚠ FOR MODULE WITH TH-W TERMINAL AND VENT DAMPER PLUG, CONNECT THERMOSTAT TO TH-W. LEAVE 24V OPEN. DO NOT REMOVE VENT DAMPER PLUG.

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FIG. 7—S8600F,H,M; S8610F,H; S8660D OR S8670D CONNECTIONS IN A HEATING SYSTEM WITH A TWO STAGE GAS CONTROL AND A FAN-ASSISTED COMBUSTION BURNER.



- ⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠ ALTERNATE LIMIT CONTROLLER LOCATION.
- ⚠ MAXIMUM CABLE LENGTH 3 ft [0.9 m].
- ⚠ CONTROLS IN 24V CIRCUIT MUST NOT BE IN GROUND LEG TO TRANSFORMER.
- ⚠ FOR MODULE WITH TH-W TERMINAL AND VENT DAMPER PLUG, CONNECT THERMOSTAT TO TH-W. LEAVE 24V OPEN. DO NOT REMOVE VENT DAMPER PLUG.
- ⚠ COLORS REFER TO WIRE HARNESS, IF USED.

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FIG. 8—S8600F,H,M; S8610F,H; S8660D OR S8670D IN A HEATING SYSTEM WITH A D80B VENT DAMPER.

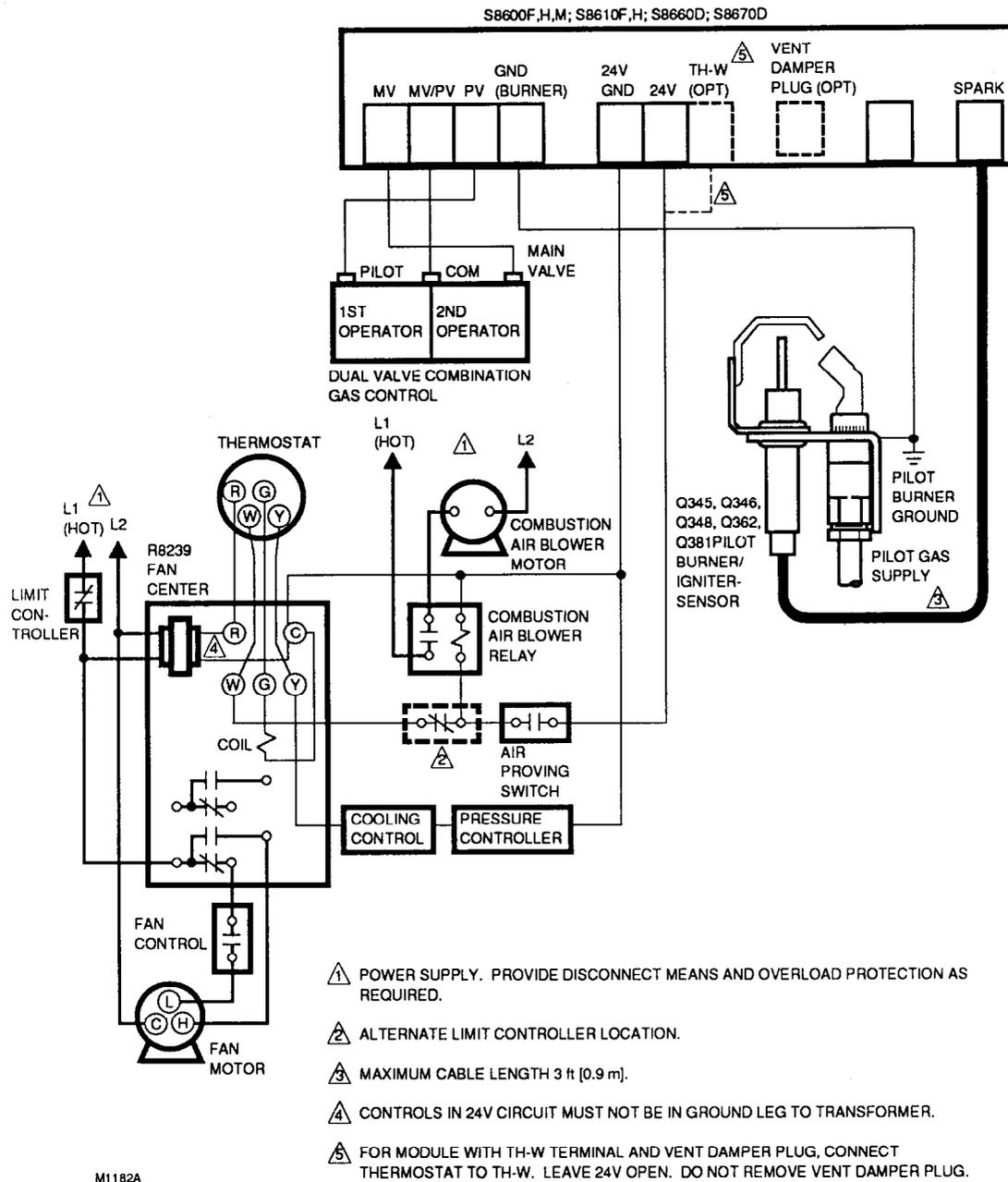


FIG. 9—S8600F,H,M; S8610F,H; S8660D; OR S8670D CONNECTIONS IN A HEATING-COOLING SYSTEM WITH A FAN-ASSISTED COMBUSTION BURNER.

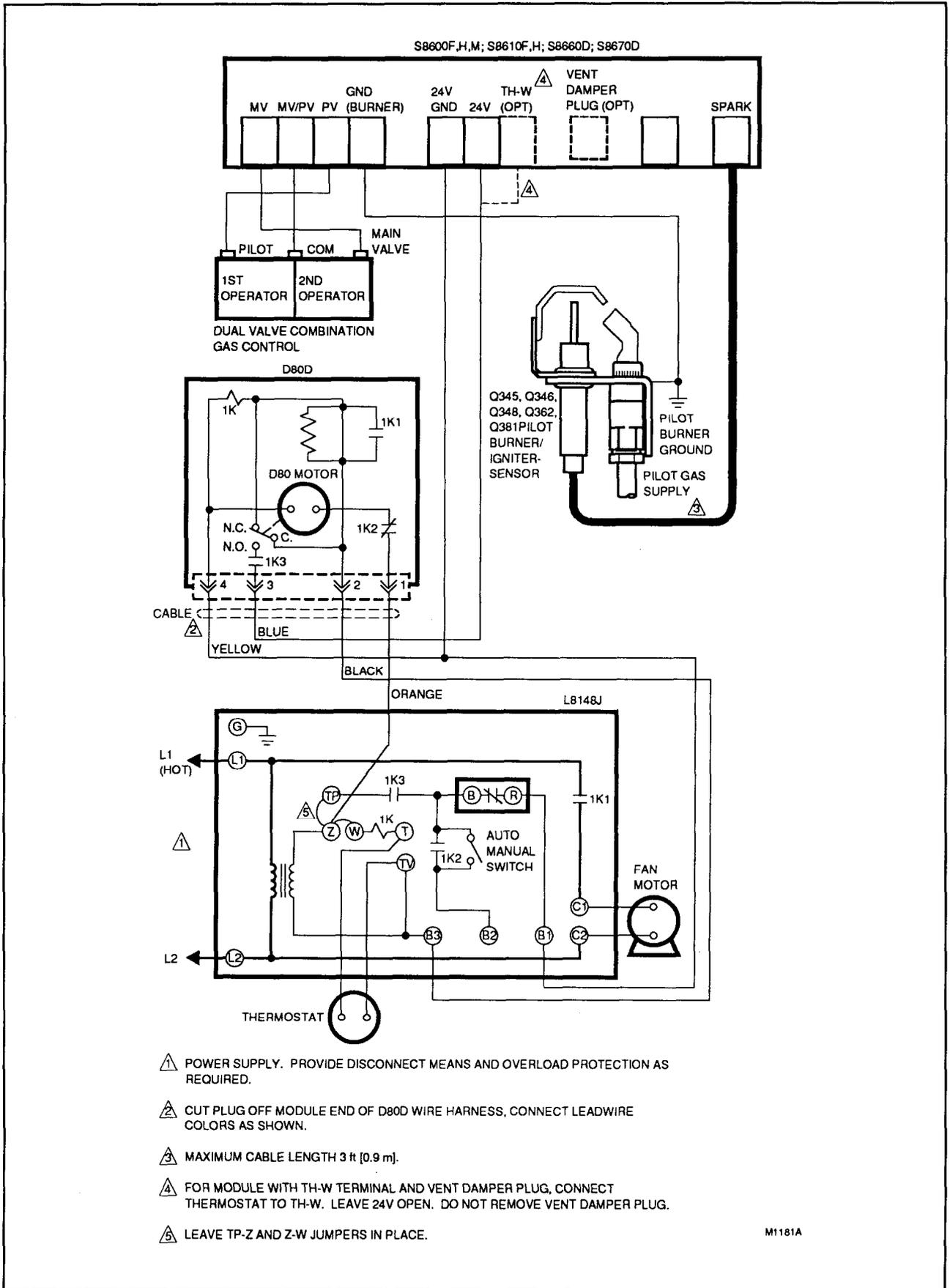


FIG. 10—S8600F,H,M; S8610F,H; S8660D; OR S8670D CONNECTIONS IN A HYDRONIC HEATING SYSTEM WITH A D80D VENT DAMPER.

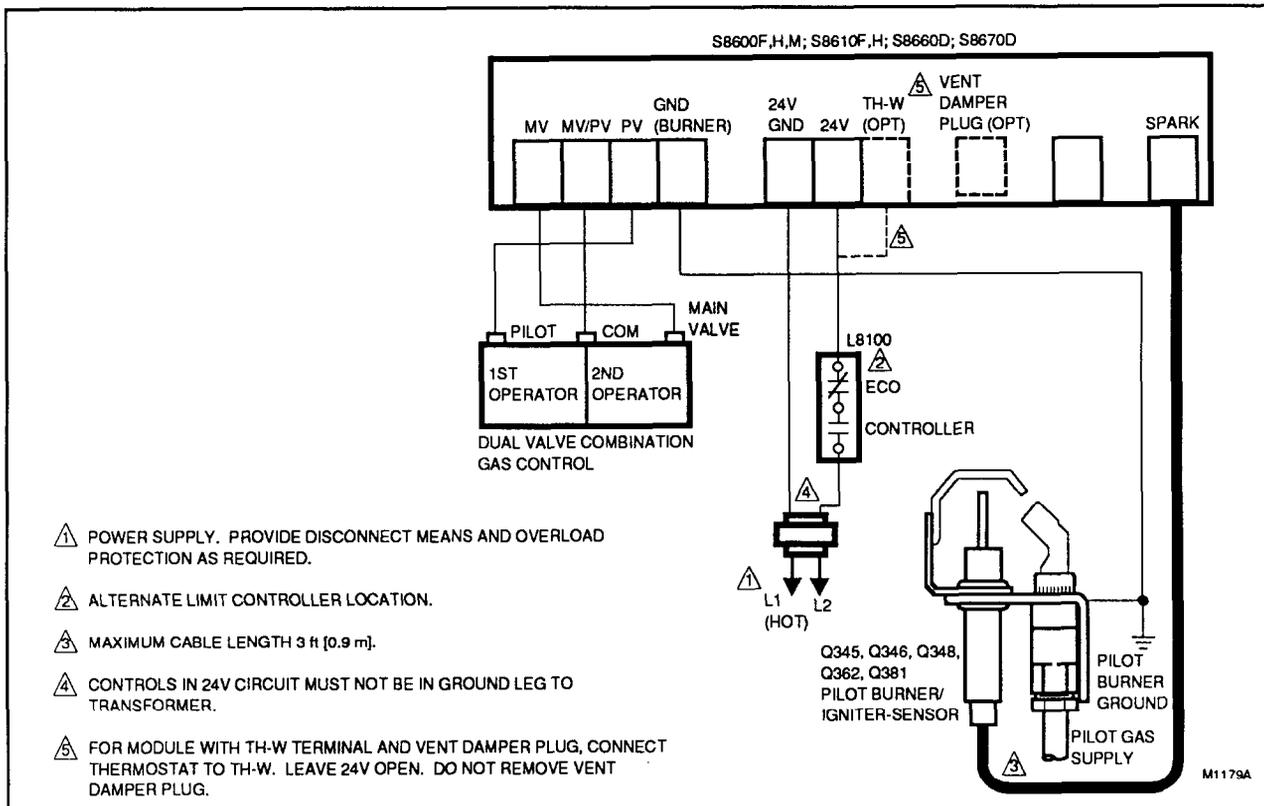


FIG. 11—S8600F,H,M; S8610F,H; S8660D OR S8670D CONNECTIONS IN A COMMERCIAL WATER HEATER CONTROL SYSTEM.

CHECKOUT

Check out the gas control system:

- At initial installation of the appliance.
- As part of regular maintenance procedures. Maintenance intervals are determined by the application. See **PLANNING THE INSTALLATION**, page 4, for more information.
- As the first step in troubleshooting.
- Any time work is done on the system.

GAS LEAK TEST: Paint pipe joints with rich soap and water solution. Bubbles indicate gas leak. Tighten joints to stop leak. Recheck with soap and water.

STEP 2: Review Normal Operating Sequence and Module Specifications.

- See **OPERATION**, page 15, and **SPECIFICATIONS**, page 2.

STEP 3: Reset the Module.

- Turn the thermostat to its lowest setting.
- Wait one minute.

As you do Steps 4 and 5, watch for points where operation deviates from normal. Refer to Troubleshooting Chart to correct problem.

STEP 4: Check Safety Shutoff Operation.

This step applies to lockout and continuous retry modules only.

- Turn gas supply off.
- Set thermostat or controller above room temperature to call for heat.
- Watch for spark at pilot burner either immediately or following prepurge. See **SPECIFICATIONS**, page 2.
- Time spark from start to shutoff. See **SPECIFICATIONS**, page 2.

On continuous retry models, wait 6 min. nom. Ignition sequence should start again followed by shutdown after 90 sec. max.

- Open manual gas cock and make sure no gas is flowing to pilot or main burner.
- Set thermostat below room temperature and wait one minute before continuing.

WARNING

FAILURE TO HEED THESE WARNINGS MAY CAUSE FIRE OR EXPLOSION WITH PROPERTY DAMAGE, INJURY, OR LOSS OF LIFE.

1. If you smell gas or suspect a gas leak, turn off gas at manual service valve and evacuate the building. Do not try to light any appliance, do not touch any electrical switch or telephone in the building until you are sure no spilled gas remains.
2. Gas leak test must be done as described in Steps 1 and 5 below on initial installation and any time work is done involving the gas piping.

STEP 1: Perform Visual Inspection.

- With power off, make sure all wiring connections are clean and tight.
- Turn on power to appliance and ignition module.
- Open manual shutoff valves in the gas line to the appliance.
- Do gas leak test ahead of gas control if piping has been disturbed.

STEP 5: Check Normal Operation.

- Set thermostat or controller above room temperature to call for heat.
- Make sure pilot lights smoothly when gas reaches the pilot burner.
- Make sure main burner lights smoothly without flashback.
- Make sure burner operates smoothly without floating, lifting, or flame rollout to the furnace vestibule or heat buildup in the vestibule.

If gas line has been disturbed, complete gas leak test. **GAS LEAK TEST:** Paint gas control gasket edges and all pipe connections downstream of gas control, including pilot tubing connections, with rich soap and water solution. Bubbles indicate gas leaks. Tighten joints and screws or replace component to stop gas leak. Recheck with soap and water.

Turn thermostat or controller below room temperature. Make sure main burner and pilot flames go out.

OPERATION

Module operation can be conveniently divided into two phases for S8600, S8610 and three for S8660, S8670. The phases are

- Prepurge (S8660, S8670 only)
- Trial for ignition (all models)
- Main burner operation (all models)

Figs. 12 and 13 summarize the normal operating sequences of the modules.

PREPURGE (S8660, S8670 ONLY)

When the S8660 is used in a fan-assisted combustion system, the combustion air blower starts on a call for heat. On proof of airflow, the air proving switch closes and energizes the S8660, S8670. When the module is used in an atmospheric system, the call for heat energizes the module.

In either case, the module first initiates a 45 sec. delay to allow system prepurge. After prepurge, the module starts the pilot ignition sequence.

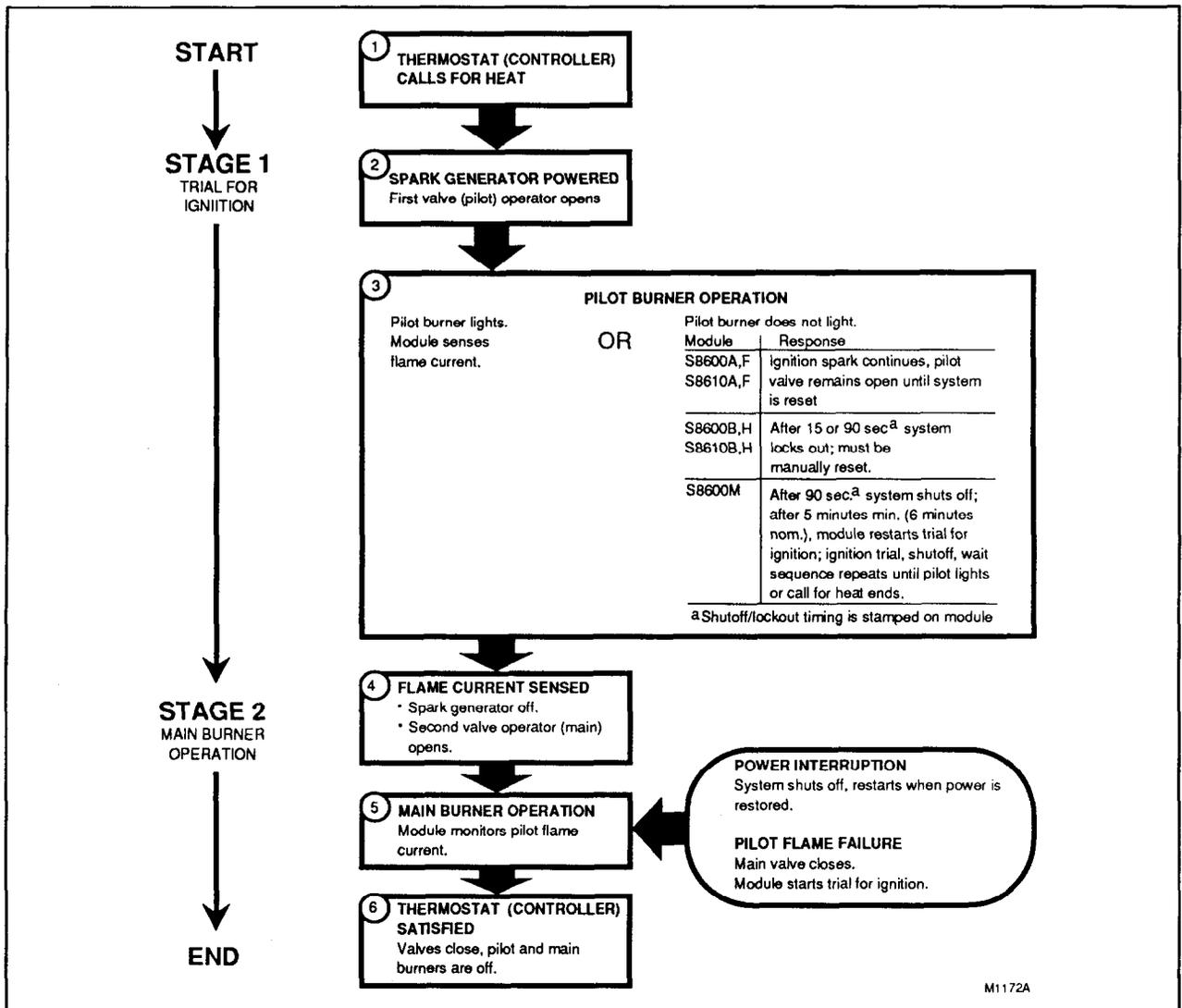


FIG. 12—S8600, S8610 NORMAL OPERATING SEQUENCE.

TRIAL FOR IGNITION

Pilot Ignition

Following prepurge timing (S8660, S8670), or on the call for heat (S8600, S8610), the module energizes the first main valve operator. The first main valve opens, which allows gas to flow to the pilot burner. At the same time, the electronic spark generator in the module produces a high voltage spark pulse output. The voltage generates a spark at the igniter (S8600A,B; S8610A,B) or igniter-sensor (S8600F,H,M; S8610F,H; S8660; S8670) that lights the pilot.

If the pilot does not light, or the pilot flame current is not at least 1.0 μ A and steady, the module will not energize the second (main) valve and the main burner will not light. S8600A,F; S8610A,F will continue to spark as long as the thermostat calls for heat, or until the pilot lights.

Safety Lockout (S8600B,H; S8610B,H; S8660D; S8670D)

These modules provide 100 percent shutoff and safety lockout. A timer in these models starts timing the moment the trial for ignition starts. Ignition spark continues only until the timed trial for ignition period ends. Then the module goes into safety lockout. Lockout de-energizes the first main valve operator and closes the first main (pilot) valve in the gas control, stopping pilot gas flow. The control system must be reset by setting the thermostat below room

temperature for one minute or by turning off power to the module for one minute.

Safety Shutoff with Continuous Retry (S8600M)

The S8600M provides 100 percent gas shutoff, followed by retry for ignition. Operation on ignition failure is the same as lockout modules, except that a timer starts timing immediately following shutoff. Six minutes nom. (five minutes min.) after shutoff, the module restarts the ignition sequence. The ignition trial, shutoff, wait sequence continues until either the pilot lights or the thermostat is set below room temperature to end the call for heat. The module can also be reset by setting down the thermostat for one minute.

MAIN BURNER OPERATION

When the pilot flame is established, a flame rectification circuit is completed between the sensor and burner ground. The flame sensing circuit in the module detects the current, shuts off the spark generator and energizes the second main valve operator. The second main valve opens and gas flows to the main burner, where it is ignited by the pilot burner. On lockout models, the flame current also holds the safety lockout timer in the reset (normal) operating condition.

When the call for heat ends, both valve operators are de-energized, and both valves in the gas control close.

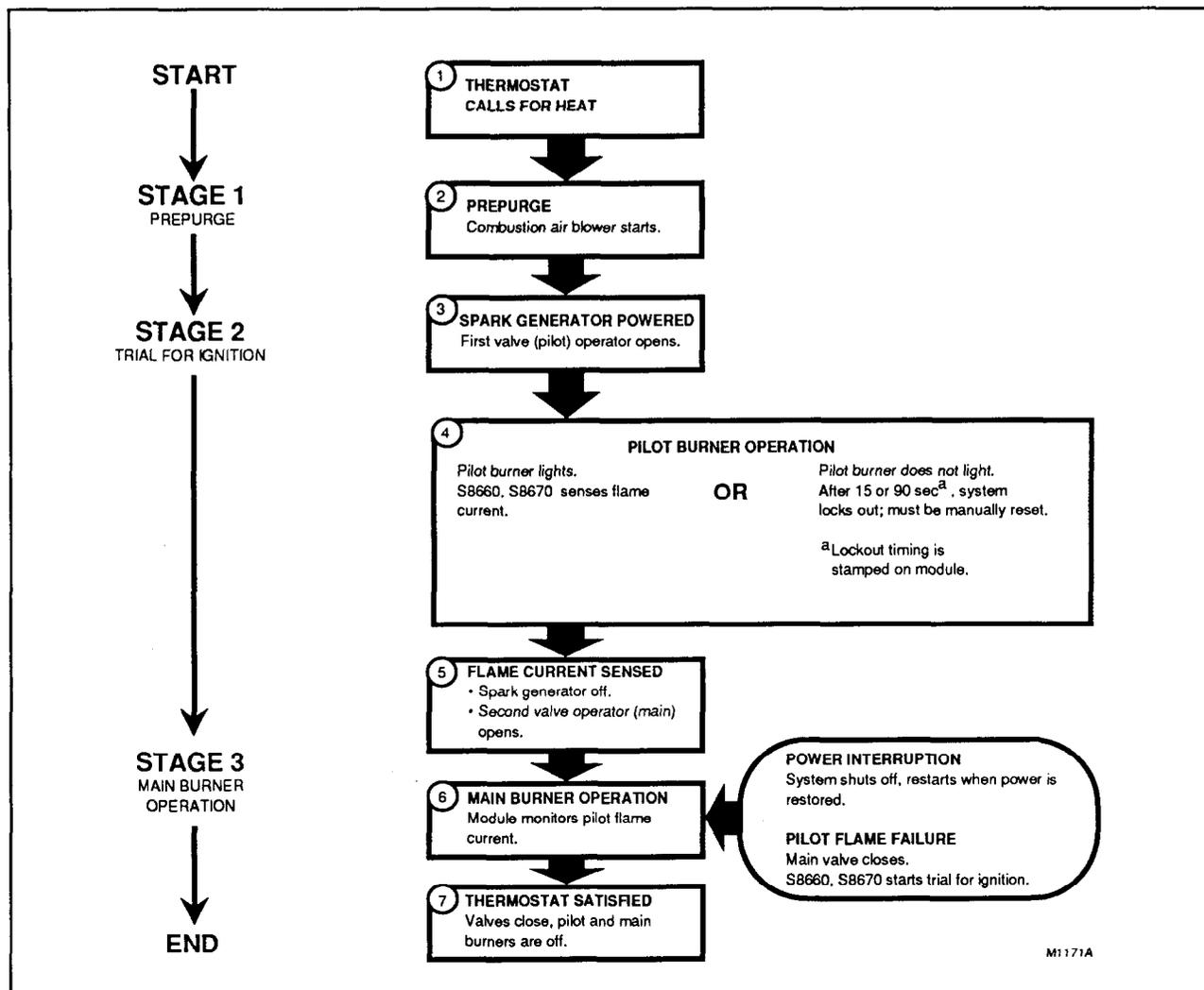


FIG. 13—S8660, S8670 NORMAL OPERATING SEQUENCE.

TROUBLESHOOTING

IMPORTANT

1. The following service procedures are provided as a general guide. Follow appliance manufacturer's service instructions if available.
2. On lockout and retry models, meter readings between gas control and ignition module must be taken within the trial for ignition period. Once the ignition module shuts off, lockout models must be reset by setting the thermostat down for at least one minute before continuing. On retry models, wait for retry or reset at the thermostat.
3. If any component does not function properly, make sure it is correctly installed and wired before replacing it.
4. The ignition module cannot be repaired. If it malfunctions, it must be replaced.
5. Only trained, experienced service technicians should service intermittent pilot systems.

Perform the checkout on page 14 as the first step in troubleshooting. Then check the appropriate troubleshooting guide (Fig. 15 or 16) and the schematic diagram (Figs. 17-22) to pinpoint the cause of the problem. If troubleshooting indicates an ignition problem, see Ignition System Checks below to isolate and correct the problem.

Following troubleshooting, perform the checkout procedure (page 14) again to be sure system is operating normally.

IGNITION SYSTEM CHECKS

STEP 1: Check ignition cable.

Make sure:

- Ignition cable does not run in contact with any metal surfaces.
- Ignition cable is no more than 36 in. [0.9 m] long.
- Connections to the ignition module and to the igniter or igniter-sensor are clean and tight.
- Ignition cable provides good electrical continuity.

STEP 2: Check ignition system grounding. *Nuisance shutdowns are often caused by a poor or erratic ground.*

- A common ground, usually supplied by the pilot burner bracket, is required for the module and the pilot burner/igniter sensor.
 - Check for good metal-to-metal contact between the pilot burner bracket and the main burner.
 - Check the ground lead from the GND(BURNER) terminal on the module to the pilot burner. Make sure connections are clean and tight. If the wire is damaged or deteriorated, replace it with No. 14-18 gauge, moisture-resistant, thermoplastic insulated wire with 105° C [221° F] minimum rating.
 - Check the ceramic flame rod insulator for cracks or evidence of exposure to extreme heat, which can permit leakage to ground. Replace

pilot burner/igniter-sensor and provide shield if necessary.

—If flame rod or bracket are bent out of position, restore to correct position.

STEP 3: Check spark ignition circuit. *You will need a short jumper wire made from ignition cable or other heavily insulated wire.*

- Close the manual gas valve.
- Disconnect the ignition cable at the SPARK terminal on the module.

WARNING

When performing the following steps, do not touch stripped end of jumper or SPARK terminal. The ignition circuit generates over 10,000 volts and electrical shock can result.

- Energize the module and immediately touch one end of the jumper firmly to the GND terminal on the module. Move the free end of the jumper slowly toward the SPARK terminal until a spark is established.
- Pull the jumper slowly away from the terminal and note the length of the gap when sparking stops. Check table below.

ARC LENGTH	ACTION
No arc or arc less than 1/8 in. [3 mm]	Check external fuse, if provided. Verify power at module input terminal. Replace module if fuse and power okay.
Arc 1/8 in. [3 mm] or longer.	Voltage output is okay

STEP 4: Check pilot and main burner lightoff.

- Set the thermostat to call for heat.
- Watch the pilot burner during the ignition sequence. See if:
 - Ignition spark continues after the pilot is lit.
 - The pilot lights and the spark stops, but main burner does not light.
 - *S8600B,H,M; S8610B,H; S8660D; S8670D only:* The pilot lights, the spark stops and main burner lights, but the system locks out.
- If so, ensure adequate flame current as follows.
 - Turn off furnace at circuit breaker or fuse box.
 - Clean the flame rod with emery cloth.
 - Make sure electrical connections are clean and tight. Replace damaged wire with moisture-resistant No. 18 wire rated for continuous duty up to 105° C [221° F].
 - Check for cracked ceramic insulator, which can cause short to ground, and replace igniter-sensor if necessary.
 - At the gas control, disconnect main valve wire from the TH or MV terminal.

- Turn on power and set thermostat to call for heat. The pilot should light but the main burner will remain off because the main valve actuator is disconnected.
- Check the pilot flame. Make sure it is blue, steady and envelops 3/8 to 1/2 in. [10 to 13 mm] of the flame rod. See Fig. 14 for possible flame problems and their causes.
- If necessary, adjust pilot flame by turning the pilot adjustment screw on the gas control clockwise  to decrease or counterclockwise  to increase pilot flame. Following adjustment, always replace pilot adjustment cover screw and tighten firmly to assure proper gas control operation.
- Set thermostat below room temperature to end call for heat.

- Recheck ignition sequence as follows.
- Reconnect main valve wire.
 - Set thermostat to call for heat.
 - Watch ignition sequence at burner.
 - If spark still doesn't stop after pilot lights, replace ignition module.
 - If main burner doesn't light or if main burner lights but system locks out, check module, ground wire and gas control as described in appropriate troubleshooting chart, Fig. 15 or 16.

APPEARANCE	CAUSE
SMALL BLUE FLAME 	CHECK FOR LACK OF GAS FROM: <ul style="list-style-type: none"> • CLOGGED ORIFICE FILTER • CLOGGED PILOT FILTER • LOW GAS SUPPLY PRESSURE • PILOT ADJUSTMENT AT MINIMUM
LAZY YELLOW FLAME 	CHECK FOR LACK OF AIR FROM: <ul style="list-style-type: none"> • LARGE ORIFICE • DIRTY LINT SCREEN, IF USED • DIRTY PRIMARY AIR OPENING, IF THERE IS ONE • PILOT ADJUSTMENT AT MINIMUM
WAVING BLUE FLAME 	CHECK FOR: <ul style="list-style-type: none"> • EXCESSIVE DRAFT AT PILOT LOCATION • RECIRCULATING PRODUCTS OF COMBUSTION
NOISY LIFTING BLOWING FLAME 	CHECK FOR: <ul style="list-style-type: none"> • HIGH GAS PRESSURE
HARD SHARP FLAME 	THIS FLAME IS CHARACTERISTIC OF MANUFACTURED GAS CHECK FOR: <ul style="list-style-type: none"> • HIGH GAS PRESSURE • ORIFICE TOO SMALL

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FIG. 14—EXAMPLES OF UNSATISFACTORY PILOT FLAMES.