



ST9101A Electronic Fan Timer

INSTALLATION INSTRUCTIONS

APPLICATION

The ST9101A Electronic Fan Timer integrates control of all combustion blower and circulating fan operations for a gas warm air appliance. The basic purposes of the ST9101A are to monitor the thermostat and run a combustion blower with a two-speed circulating fan. The ST9101A monitors the thermostat for heat, cool, and fan demands. The ST9101A also monitors a limit switch string, energizing the circulating fan when the limits open.

SPECIFICATIONS

Heat Fan		
Model	On Delay ^a	Off Delay ^b
ST9101A	Fixed	Field Adjustable

^aDelay timing starts when gas valve is energized.

^bDelay timing starts when gas valve is de-energized.

Power Requirements:

Voltage: 24 Vac, 50/60 Hz

Current: 4 VA at 24 Vac

Thermostat Load: Gas valve current + ignition module current + 0.06A

Maximum Motor Load Ratings:

Heat/Cool Fan: 12 AFL, 30 ALR at 120 Vac

Combustion Blower: 2 AFL, 12 ALR at 120 Vac

Delay On/Off Settings:

Heat Delay On: 20 seconds (fixed)

Heat Delay Off: 90, 120, 150, or 180 seconds (field-adjustable)

Timing Tolerance: larger of +/- 20% or 5 seconds

Environmental Ratings:

Ambient Temperature: -40 to +160° F [-40 to +70° C]

Humidity: 95% maximum, noncondensing

INSTALLATION

When Installing This Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings and specifications given in the instructions and on the product to ensure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out the product operation as provided in these instructions.



CAUTION

Disconnect power supply before wiring to prevent electrical shock or equipment damage.

Location and Mounting

The ST9101A is mounted in the appliance wiring compartment using five captive nylon snap-in standoffs. These standoffs snap into the mounting provided in the appliance.

Wiring

All wiring must comply with local codes and ordinances. Disconnect power before making wiring connections. See Fig. 1 for standard wiring connections. See Fig. 2 for an internal schematic.

Setting the Heat Fan Off Delay Screws

Set the heat fan off delay screws to either 90, 120, 150, or 180 seconds, as shown in Fig. 3. The off delay time starts when the main gas valve is de-energized at the end of a thermostat call for heat.



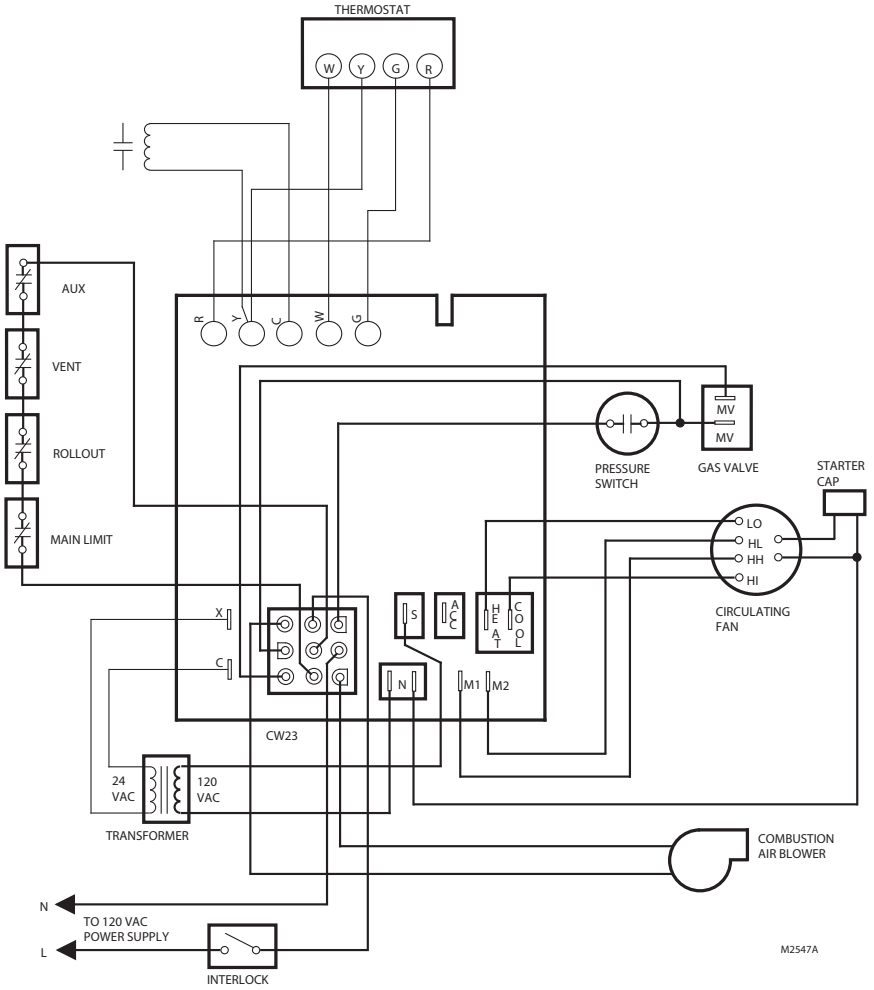


Fig. 1. Typical ST9101A wiring connections (Standing Pilot).

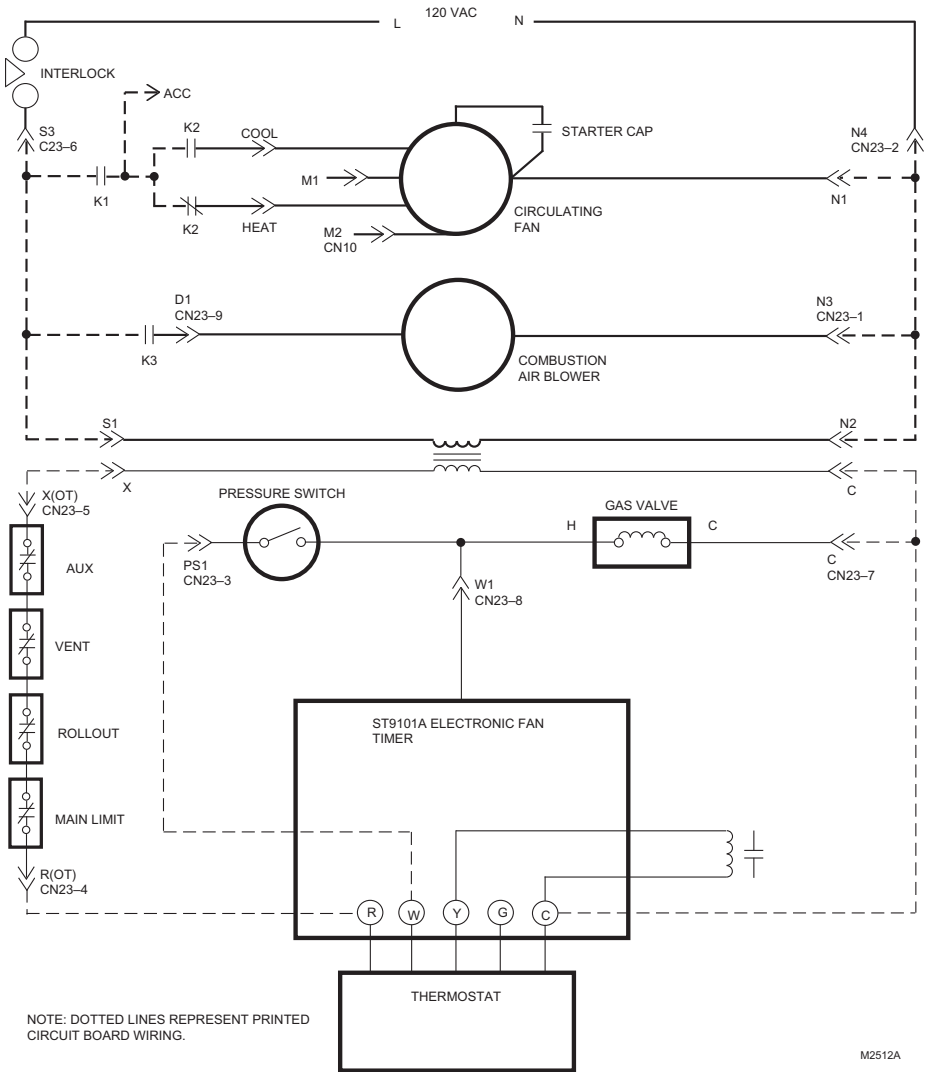


Fig. 2. ST9101A schematic (Standing Pilot).

CHECKOUT

Ensure the system operates properly by operating the system through at least one complete heating and cooling cycle. See Table 1. Troubleshoot by checking for appropriate voltages at the ST9101A terminals controlling the combustion blower and heat and cool speed circulating fan. The ST9101A schematic shows internal switching to clarify operation and assist in troubleshooting. See Fig. 1.

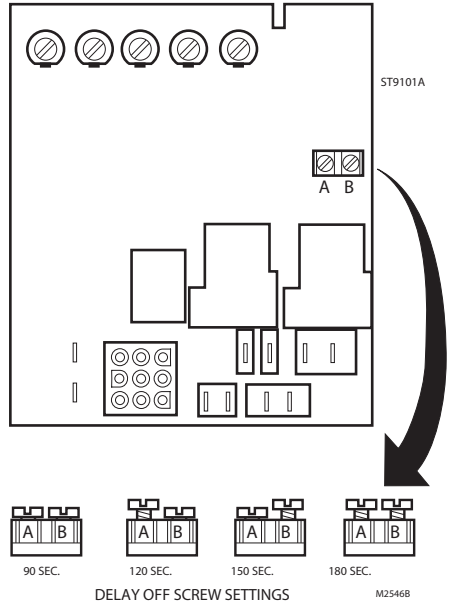


Fig. 3. Setting delay off screws.

Table 1. ST9101A Operating Sequence—Standing Pilot Application.

Action	System Response
Thermostat begins call for heat (W terminal energized).	<ul style="list-style-type: none"> Combustion air blower is energized. Air proving switch makes (air flow is established). Gas valve opens. Heat fan on delay timing begins. When timing is complete, circulating blower is energized at heat-speed.
Thermostat ends call for heat (W terminal de-energized).	<ul style="list-style-type: none"> Gas valve closes. Combustion air blower is de-energized immediately. Heat fan off delay timing begins when main gas valve closes. After heat fan off delay time, circulating fan is de-energized.
Thermostat begins call for cool (G and Y terminals energized).	<ul style="list-style-type: none"> Circulating fan is energized at cool-speed. Cooling compressor turns on immediately.
Thermostat ends call for cool (G and Y terminals de-energized).	<ul style="list-style-type: none"> Circulating fan turns off immediately. Cooling compressor turns off immediately.
Thermostat begins call for fan (G terminal energized).	<ul style="list-style-type: none"> Circulating fan is immediately energized at heat-speed. If a call for heat occurs, the circulating fan continues to run at the heat speed.
Limit switch string opens.	<ul style="list-style-type: none"> Circulating fan is energized at heat-speed immediately. If a call for cooling occurs, circulating fan switches from heat-speed to coolspeed.
Limit switch string remakes. Assembly line speed up enabled.	<ul style="list-style-type: none"> Circulating fan is de-energized after selected heat delay off time. Heat fan on and off delays are shortened for faster appliance assembly line operational checkout.



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