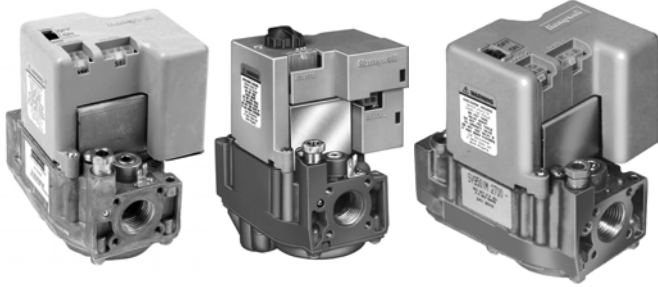


# SmartValve® System Controls

## SV9501; SV9502 SmartValve® System



**Body Pattern:** Straight-through  
**Maximum Capacity at 1 in. P.D.** 150 ft<sup>3</sup>/hr (4.2 m<sup>3</sup>/hr)  
**Maximum Capacity:** 200 ft<sup>3</sup>/hr (5.7 m<sup>3</sup>/hr)  
**Minimum Capacity:** 20 ft<sup>3</sup>/hr (0.6 m<sup>3</sup>/hr)  
**Pilot Gas Outlet:** Yes  
**Electrical Ratings:** 24 Vac  
**Frequency:** 60 Hz, 50 Hz  
**Flame Failure Response Time (sec):** 1.6 sec @ 3 µA  
**Flame Sense:** Electrode  
**Ignition Sequence:** Intermittent Pilot

The SmartValve System Controls provide easy field replacement of a wide range of SV9500, SV9501, SV9502 and SV9602 SmartValve System models. Gas appliance manufacturers use these models in many types of gas fired heating appliances including central furnaces, residential boilers, rooftop furnaces, commercial cooking appliances, and unit heaters. These controls provide intermittent pilot gas ignition sequencing, pilot flame sensing, and both pilot and main gas control functions in a single control. They are directly compatible with the Q3450 or Q3480 Intermittent Pilot burners used with the original controls on the appliance.

- Suitable for a wide range of gas-fired appliances including residential furnaces, roof-top furnaces, residential boilers, unit heaters, infrared heaters, space heaters and commercial cooking units.
- Replaces SV9500, SV9501 and SV9502 controls as noted below.
- Ignition sequence includes timed trial for ignition.

**Ignition Source:** Pilot  
**Ignition System Type:** Intermittent Hot Surface Pilot Ignition  
**Ignition Trial Time:** 90 sec  
**Ignition Trials To Lockout:** continuous retry  
**Pressure Ratings:** 1/2 psi (3.45 kPa)  
**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)  
**Typical Ignition Hardware:** Q3450

**Approvals:**  
**American Gas Association:** IAS Design Certified: C2030017

Residential  
Combustion Controls

Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge
				(psi)	(kPa)	
SV9501M2528	Natural	Standard Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.5 in. wc	None
SV9501M8129	Natural	Fast-Fast Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.4 in. wc	None
SV9502H2522	Natural	Slow Opening	1/2 in. NPT x 1/2 in. NPT	0.80 kPa	3.2 in. wc	15 seconds

# SmartValve® System Controls

## SV9510 SmartValve® System



The SV9510 SmartValve System Controls combine gas flow control and electronic direct main burner ignition sequencing functions into a single unit. The ignition source is 120V hot surface igniter lighting the main burner flame. Provides all gas ignition safety functions by controlling gas flow, ignition source, and a 120 Vac

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long  
(81 mm wide x 124 mm high x 104 mm long.)

**Body Pattern:** Straight-through

**Maximum Capacity at 1 in. P.D.** 150 ft<sup>3</sup>/hr (4.2 m<sup>3</sup>/hr)

**Maximum Capacity:** 200 ft<sup>3</sup>/hr (5.7 m<sup>3</sup>/hr)

**Minimum Capacity:** 20 ft<sup>3</sup>/hr (0.6 m<sup>3</sup>/hr)

**Electrical Ratings:** 24 Vac

**Frequency:** 60 Hz, 50 Hz

**Control Voltage (Thermostat or other call for heat):** 24 Vac, 60 Hz.

**Flame Failure Response Time (sec):** 2 sec @ 5 µA

combustion air blower. The control also monitors the appliance airflow proving switch circuit and limit string to assure proper appliance operation. The SmartValve System Controls provide prepurge, postpurge and timed trial for ignition with multiple ignition trials and auto reset from lockout. Diagnostic LED indicates system status.

- The control communicates directly with the ST9160 Electronic Fan Timer (EFT) in typical forced warm air furnace applications.
- It will also interface with the 208907 Terminal Board, providing compatibility with power-stealing thermostats. Or, it directly interfaces with the appropriate power supplies and a system thermostat for additional appliance applications.
- When controlled directly by a thermostat, the control does not provide a postpurge function, as power to the control is removed when the thermostat call for heat ends.
- This system is suitable for a wide range of fan-assisted combustion, gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, water heaters and commercial cooking appliances.

**Flame Sense:** Two Rod

**Ignition Sequence:** 17/27 sec

**Ignition System Type:** Direct Hot Surface Ignition

**Ignition Trials To Lockout:** 4 trials

**Pressure Ratings:** 1/2 psi (3.5 kPa)

**Pressure Tapping:** 1/8 in. - NPT

**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)

**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

	Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge	Ignition Trial Time	Includes
					(psi)	(kPa)			
•	SV9510K2539	Natural	Slow Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.5 in. wc	15 seconds	9 sec	LP Conversion Kit
•	SV9510M2511	Natural	Standard Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.5 in. wc	15 seconds	7 sec	LP Conversion Kit
* TRADELINE models • SUPER TRADELINE models									

## SV9520 SmartValve® System



The SV9520 SmartValve System Controls combine gas flow control and electronic direct main burner ignition sequencing functions into a single unit. The ignition source is 120V hot surface igniter lighting the main burner flame. Provides all gas ignition safety functions by controlling gas flow, ignition source, and a 120 Vac

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long (81 mm wide x 124 mm high x 104 mm long.)

**Body Pattern:** Straight-through

**Maximum Capacity at 1 in. P.D.** 150 ft<sup>3</sup>/hr (4.2 m<sup>3</sup>/hr)

**Maximum Capacity:** 200 ft<sup>3</sup>/hr (5.7 m<sup>3</sup>/hr)

**Minimum Capacity:** 20 ft<sup>3</sup>/hr (0.6 m<sup>3</sup>/hr)

**Electrical Ratings:** 24 Vac

**Frequency:** 60 Hz, 50 Hz

**Control Voltage (Thermostat or other call for heat):** 24 Vac, 60 Hz.

**Flame Failure Response Time (sec):** 2 sec @ 5 µA

**Flame Sense:** Two Rod

**Ignition Sequence:** 7/12 sec

combustion air blower. The control also monitors the appliance airflow proving switch circuit and limit string to assure proper appliance operation. The SmartValve System Controls provide prepurge, postpurge and timed trial for ignition with multiple ignition trials and auto reset from lockout. Diagnostic LED indicates system status.

- The control communicates directly with the ST9160 Electronic Fan Timer (EFT) in typical forced warm air furnace applications.
- It will also interface with the 208907 Terminal Board, providing compatibility with power-stealing thermostats. Or, it directly interfaces with the appropriate power supplies and a system thermostat for additional appliance applications.
- When controlled directly by a thermostat, the control does not provide a postpurge function, as power to the control is removed when the thermostat call for heat ends.
- This system is suitable for a wide range of fan-assisted combustion, gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, water heaters and commercial cooking appliances.

**Ignition System Type:** Direct Hot Surface Ignition

**Ignition Trial Time:** 7 sec

**Ignition Trials To Lockout:** 4 trials

**Pressure Ratings:** 1/2 psi (3.5 kPa)

**Pressure Tapping:** 1/8 in. - NPT

**Ambient Temperature Range:** 0 F to 175 F (-18 C to +79 C)

**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

**Approvals:**

**Canadian Standards Association:** CSA International: 158158-10592145

Residential  
Combustion Controls

Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge	Includes
				(psi)	(kPa)		
• SV9520H8513	Natural	Fast-Slow Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.5 in. wc	15 seconds	LP Conversion Kit
• SV9520M2536	Natural	Standard Opening	1/2 in. NPT x 1/2 in. NPT	0.87 kPa	3.5 in. wc	15 seconds	LP Conversion Kit

\* TRADELINE models • SUPER TRADELINE models

# SmartValve® System Controls

## SV9541 SmartValve® System



The TRADELINE® SV9541 SmartValve System Controls combine gas flow control and electronic intermittent pilot sequencing functions into a single unit. The Q3450 or Q3480 Pilot hardware supplies the low voltage igniter, flame sensor and pilot burner. These ignition system controls provide all gas ignition safety

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long  
(81 mm wide x 124 mm high x 104 mm long.)

**Body Pattern:** Straight-through

**Maximum Capacity at 1 in. P.D.** 150 ft<sup>3</sup>/hr (4.2 m<sup>3</sup>/hr)

**Maximum Capacity:** 200 ft<sup>3</sup>/hr (5.7 m<sup>3</sup>/hr)

**Minimum Capacity:** 20 ft<sup>3</sup>/hr (0.6 m<sup>3</sup>/hr)

**Pilot Gas Outlet:** Yes

**Electrical Ratings:** 24 Vac

**Frequency:** 60 Hz, 50 Hz

**Control Voltage (Thermostat or other call for heat):** 24 Vac, 60 Hz.

**Flame Failure Response Time (sec):** 1.6 sec @ 3 µA

**Flame Sense:** Two Rod

**Ignition Sequence:** Intermittent Pilot

functions by controlling gas flow, ignition source, and a 120 Vac or 240 Vac combustion air blower. The controls also monitor the appliance airflow proving switch and limit string to assure proper appliance operation, and provide prepurge, postpurge, and timed trial for pilot ignition with 100 percent shutoff and continuous retry. A diagnostic LED indicates system status.

- These controls communicate directly with an electronic fan timer (ST9160 Electronic Fan Timer for single stage applications; ST9162 Electronic Fan Timer for two-stage applications) in typical forced warm air furnace applications.
- They also interface with the 208907 Terminal Board, providing compatibility with power stealing thermostats. Or, they directly interface with the appropriate power supplies and a system thermostat for additional appliance applications.
- When controlled directly by a thermostat, these controls do not provide a postpurge function, because power to the control is removed when the thermostat call for heat ends.
- The SV9541 Systems are suitable for a wide range of fan-assisted combustion gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, water heaters and commercial cooking appliances.

**Ignition Source:** Pilot

**Ignition System Type:** Intermittent Hot Surface Pilot Ignition

**Ignition Trial Time:** 90 sec

**Ignition Trials To Lockout:** continuous retry

**Pressure Ratings:** 1/2 psi (3.5 kPa)

**Pressure Tapping:** 1/8 in. - NPT

**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)

**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

**Approvals:**

**Canadian Standards Association:** CSA-International, Design Certified

	Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge	Includes
					(psi)	(kPa)		
•	SV9541Q2561	Natural	Standard Opening 2-stage	1/2 in. NPT x 1/2 in. NPT	0.42 kPa low; 0.80 kPa high	1.7 in. wc low; 3.2 in. wc high	15 seconds	LP Conversion Kit
* TRADELINE models • SUPER TRADELINE models								

SV9601 SmartValve® System



The SV9601 SmartValve System Controls combine gas flow control and electronic intermittent pilot sequencing functions into a single unit. This product family offers several different intermittent pilot sequences for a wide range of applications. This system is suitable for application in a wide range of gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, space heaters, water heaters, decorative appliances, and commercial cooking units. The specific application of the SmartValve System is the responsibility of the appliance manufacturer.

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long  
(81 mm wide x 124 mm high x 104 mm long.)  
**Body Pattern:** Straight-through  
**Maximum Capacity at 1 in. P.D.** 300 ft<sup>3</sup>/hr (8.5 m<sup>3</sup>/hr)  
**Maximum Capacity:** 415 ft<sup>3</sup>/hr (11.8 m<sup>3</sup>/hr)  
**Minimum Capacity:** 30 ft<sup>3</sup>/hr (0.8 m<sup>3</sup>/hr)  
**Electrical Ratings:** 24 Vac  
**Frequency:** 60 Hz, 50 Hz  
**Control Voltage (Thermostat or other call for heat):** 24 Vac, 60 Hz.  
**Flame Failure Response Time (sec):** 1.6 sec @ 3 µA  
**Flame Sense:** Two Rod

**Ignition Sequence:** Intermittent Pilot  
**Ignition Source:** Pilot  
**Ignition System Type:** Intermittent Hot Surface Pilot Ignition  
**Ignition Trial Time:** 90 sec  
**Ignition Trials To Lockout:** continuous retry  
**Pressure Ratings:** 1/2 psi (3.5 kPa)  
**Pressure Tapping:** 1/8 in. - NPT  
**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)  
**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

Residential  
Combustion Controls

	Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		Includes
					(psi)	(kPa)	
•	SV9601M4571	Natural	Standard Opening	3/4 in. NPT x 3/4 in. NPT.	0.87 kPa	3.5 in. wc	Two 3/4 in. x 1/2 in. reducer bushings and an LP conversion kit.
* TRADELINE models • SUPER TRADELINE models							

# SmartValve® System Controls

## SV9602 SmartValve® System



The SV9602 SmartValve System Controls combine gas flow control and electronic intermittent pilot sequencing functions into a single unit. This product family offers several different intermittent pilot sequences for a wide range of applications. This system is suitable for application in a wide range of gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, space heaters, water heaters, decorative appliances, and commercial cooking units. The specific application of the SmartValve System is the responsibility of the appliance manufacturer.

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long  
(81 mm wide x 124 mm high x 104 mm long.)

**Body Pattern:** Straight-through

**Maximum Capacity at 1 in. P.D.** 300 ft<sup>3</sup>/hr (8.5 m<sup>3</sup>/hr)

**Maximum Capacity:** 415 ft<sup>3</sup>/hr (11.8 m<sup>3</sup>/hr)

**Minimum Capacity:** 30 ft<sup>3</sup>/hr (0.8 m<sup>3</sup>/hr)

**Electrical Ratings:** 24 Vac

**Frequency:** 60 Hz, 50 Hz

**Control Voltage (Thermostat or other call for heat):** 24 Vac, 60 Hz.

**Flame Failure Response Time (sec):** 1.6 sec @ 3 µA

**Flame Sense:** Two Rod

**Ignition Sequence:** Intermittent Pilot

**Ignition Source:** Pilot

**Ignition System Type:** Intermittent Hot Surface Pilot Ignition

**Ignition Trial Time:** 90 sec

**Ignition Trials To Lockout:** continuous retry

**Pressure Tapping:** 1/8 in. - NPT

**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)

**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

**Approvals:**

**Canadian Standards Association:** CSA-International, Design Certified

	Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge
					(psi)	(kPa)	
*	SV9602P4816	Natural	Step Opening	3/4 in. NPT x 3/4 in. NPT.	Full Rate: 0.87 kPa; Step Setting: 0.17 kPa	Full Rate: 3.5 in. wc; Step Setting: 0.7 in. wc	30 seconds
*	SV9602P4824	Natural	Step Opening	3/4 in. NPT x 3/4 in. NPT.	Full Rate: 0.87 kPa; Step Setting: 0.62 kPa	Full Rate: 3.5 in. wc; Step Setting: 2.5 in. wc	30 seconds
*	SV9602P4832	LP	Step Opening	3/4 in. NPT x 3/4 in. NPT.	Full Rate: 2.49 kPa; Step Setting: 0.62 kPa	Full Rate: 10.0 in. wc; Step Setting: 2.5 in. wc	30 seconds
*	SV9602P4840	LP	Step Opening	3/4 in. NPT x 3/4 in. NPT.	Full Rate: 2.49 kPa; Step Setting: 0.35 kPa	Full Rate: 10.0 in. wc; Step Setting: 1.4 in. wc	30 seconds
* TRADELINE models • SUPER TRADELINE models							

SV9641 SmartValve® System



The TRADELINE® SV9641 SmartValve System Controls combine gas flow control and electronic intermittent pilot sequencing functions into a single unit. The Q3450 or Q3480 Pilot hardware supplies the low voltage igniter, flame sensor and pilot burner. These ignition system controls provide all gas ignition safety functions by controlling gas flow, ignition source, and a 120 Vac or

**Dimensions, Approximate:** 3.2 in. wide x 4.9 in. high x 4.1 in. long  
(81 mm wide x 124 mm high x 104 mm long)  
**Body Pattern:** Straight-through  
**Maximum Capacity at 1 in. P.D.** 300 ft<sup>3</sup>/hr (8.5 m<sup>3</sup>/hr)  
**Maximum Capacity:** 415 ft<sup>3</sup>/hr (11.8 m<sup>3</sup>/hr)  
**Minimum Capacity:** 30 ft<sup>3</sup>/hr (0.8 m<sup>3</sup>/hr)  
**Pilot Gas Outlet:** Yes  
**Electrical Ratings:** 24 Vac  
**Frequency:** 60 Hz, 50 Hz  
**Control Voltage (Thermostat or other call for heat):** 24 Vac  
**Flame Failure Response Time (sec):** 1.6 sec @ 3 µA

240 Vac combustion air blower. The controls also monitor the appliance airflow proving switch and limit string to assure proper appliance operation, and provide prepurge, postpurge, and timed trial for pilot ignition with 100 percent shutoff and continuous retry. A diagnostic LED indicates system status.

- These controls communicate directly with an electronic fan timer (ST9160 Electronic Fan Timer for single stage applications; ST9162 Electronic Fan Timer for two-stage applications) in typical forced warm air furnace applications.
- They also interface with the 208907 Terminal Board, providing compatibility with power stealing thermostats. Or, they directly interface with the appropriate power supplies and a system thermostat for additional appliance applications.
- When controlled directly by a thermostat, these controls do not provide a postpurge function, because power to the control is removed when the thermostat call for heat ends.
- The SV9641 Systems are suitable for a wide range of fan-assisted combustion gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, water heaters and commercial cooking appliances.

**Flame Sense:** Two Rod  
**Ignition Sequence:** Intermittent Pilot  
**Ignition Source:** Pilot  
**Ignition System Type:** Intermittent Hot Surface Pilot Ignition  
**Ignition Trial Time:** 90 sec  
**Ignition Trials To Lockout:** continuous retry  
**Pressure Ratings:** 1/2 psi (3.5 kPa)  
**Pressure Tapping:** 1/8 in. - NPT  
**Ambient Temperature Range:** -40 F to +175 F (-40 C to +79 C)  
**Mounting:** 0 to 90 degrees in any direction from the upright position of the gas control knob, including vertically.

Residential  
Combustion Controls

	Product Number	Type of Gas	Opening Characteristics (standard, step)	Inlet/Outlet Size (in.)	Pressure Regulator Setting		PrePurge	PostPurge	Includes
					(psi)	(kPa)			
•	SV9641M4510	Natural	Standard Opening	3/4 in. NPT x 3/4 in. NPT.	0.87 kPa	3.5 in. wc	15 seconds	30 seconds	Two 3/4 in. x 1/2 in. reducer bushings and an LP conversion kit.

\* TRADELINE models • SUPER TRADELINE models