HEALTHY 15
HEARTH GUIDE

OPEN HEARTH
PRODUCTS & SOLUTIONS

FIELDCONTROLS

FIELD CONTROLS AIR

Field Controls Air

Since 1927, our focus has been the movement and control of air inside the home. Field Controls is the HVAC leader in residential appliance venting, combustion air supply, and comprehensive indoor air quality.

Our expertise in air movement and control allowed us to develop the Flue Sentinel® line of products specifically for the home's focal point - its hearth. Flue Sentinel is now available in damper only, fan only, and fan-damper combinations.

Flue Sentinel products operate automatically and interlock with any gas log system to ensure proper and safe venting. Combustion air intake can also be controlled, creating a truly "sealed" system.

Flue Sentinel® allows for open hearth construction and eliminates the need for glass doors.

This guide will introduce you to the full line of hearth options available to home builders and hearth contractors. We would very much like to talk to you about your applications and help you choose the right Flue Sentinel products for each hearth and each home.

Sincerely,

Patrick T. Holleran
President
Field Controls, LLC

Flue Sentinel® FSM and FSE dampers are ICC approved as an alternative for glass doors on fireplaces.

Field Controls' Flue Sentinel complies with the provisions of the International Fuel Gas Code, International Mechanical Code, International Residential Code, and International Energy Conservation Code.

ICC-ES is the United States' leader in evaluating building products for compliance with code. A nonprofit, public benefit corporation, ICC-ES performs technical evaluations of building products, components, methods, and materials. With over a decade of experience, ICC-ES is an internationally trusted evaluation service.

ICC INTERNATIONAL CODE COUNCIL®

Flue Sentinel,® the open hearth solution.

For decades, we have been working to make our homes more energy efficient to conserve fuel and reduce energy costs. Loss of heat through an open chimney has become a concern in this energy conscious environment. Glass doors attempt to solve this problem but eliminate the hearth's natural warmth and ambience.

Flue Sentinel® allows for open hearth construction and eliminates the need for glass doors.

Flue Sentinel delivers a **"Healthy Hearth"** - an open hearth that acts like a sealed hearth. The Flue Sentinel seals the fireplace from the outdoors while maintaining the aesthetic appeal of a natural, open gas or wood fireplace, minimizing heat loss and maximizing fuel efficiency.

Flue Sentinel dampers and fans are the best of both worlds. They automatically open and vent when the fireplace is in use and automatically close to the outside when not in use. This provides all the benefits of a sealed hearth with the ambience of an open hearth - a warm, inviting focal point in the home.

The desire:
A large, open gas fireplace.

The problem:
Heat loss. Cold, drafty rooms. Wasted energy.

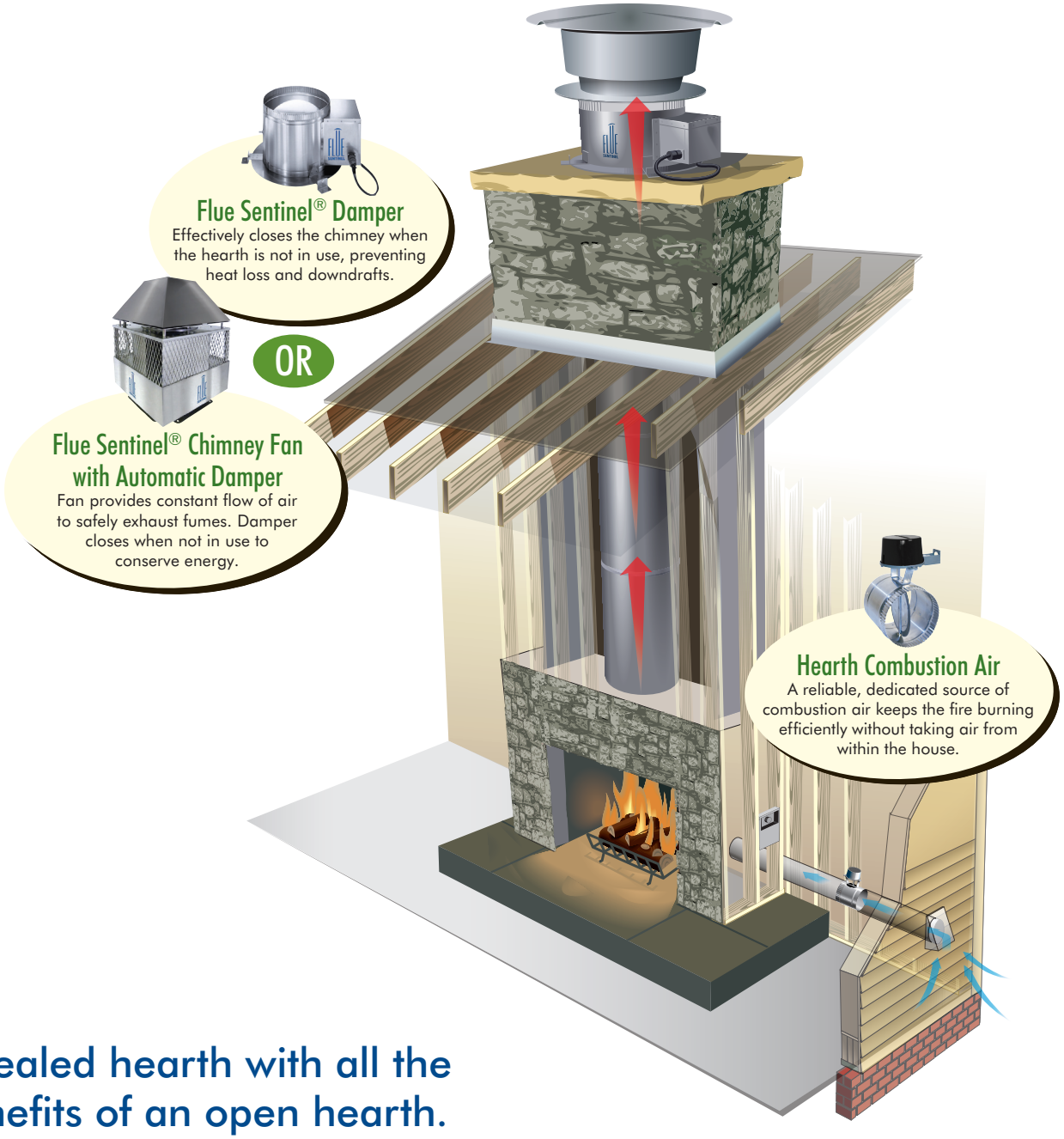
The old solution:
A manual damper, permanent glass panes or glass doors.

The new solution:
The Flue Sentinel is mounted on top of the chimney, opens and closes automatically, and saves energy.

Top off chimney. Stop heat loss. Save up to 30%.

Fireplace Options	
Option	**Result**
Direct Vent Gas	Interferes with hearth and building design
Ventless Gas	Limited to small fireplaces
Wood	Messy, expensive, and restricted in many areas
Glass Doors/Enclosures	Limits view, heat, and size of hearth
Open Hearth Gas Logs with Flue Sentinel®	Safe, quiet, natural venting that conserves energy. Natural look and feel.

The Flue Sentinel® Healthy Hearth



A sealed hearth with all the benefits of an open hearth.

Flue Sentinel® turns the hearth, firebox, and chimney into a Healthy Hearth System.™ A healthy hearth with Flue Sentinel operates safely and efficiently without negatively impacting the home's overall efficiency and design. Flue Sentinel systems have sufficient draft to ensure that exhaust goes up the chimney, a sealed damper to automatically open and close the vent or chimney, and safety interlocks to prove safe operation every time the fire is lit.

A direct source for combustion air can be included to provide a truly "sealed" system. The Fresh Air Damper and vent damper open in unison and the hearth operates as a sealed system. The illustration above demonstrates the primary requirements of a healthy hearth.

A Healthy Hearth and Home

A **Flue Sentinel**® and open hearth are part of a well–designed home.

A healthy hearth with Flue Sentinel is effectively sealed, maximizing energy efficiency by keeping the warm air in when not in use. The sealing of the dampers also eliminates any potential negative impact on the home's designed ventilation and air balance.

Damper

Flue Sentinel dampers automatically open and close the hearth's vent opening on demand. Flue Sentinel interlocks with any gas log system and uses proving switches to ensure proper and safe venting.

Chimney Fan and Damper

Fan and damper combination systems are now available to provide adequate and safe venting of any open gas hearth. This allows a large open face for the hearth, with a potentially smaller vent pipe. Chimney fans or draft inducers can also be used when the chimney alone does not provide enough natural draft.

Combustion Air Systems

A combustion air system works in conjunction with the damper and/or fan to provide a reliable source of fresh air for the fire.

Whole House Make-Up and Ventilation Air

The Flue Sentinel can also interface with our Healthy Home System Control to supply make-up or ventilation air for the home through the HVAC system.

FLUE SENTINEL®

Whole House Air

Whole house make-up or ventilation air can be provided by a powered Fresh Air Damper or mechanical Make-Up Air Damper.

See page 20

Flue Sentinel® Damper

Effectively closes the chimney when the hearth is not in use, preventing heat loss and downdrafts.

See page 12

OR

Flue Sentinel® Chimney Fan with Automatic Damper

Ensures a constant flow of air to safely exhaust combustion fumes and gases while preventing downdrafts.

See page 10

Hearth Combustion Air

A reliable, dedicated source of combustion air keeps the fire burning efficiently without taking air from within the house.

See page 18

The Healthy Home System™ for Ventilation and IAQ

Field Controls has developed the premier system that simply and inexpensively transforms the heating and cooling system in any home into a Healthy Home System. The Healthy Home System goes beyond traditional technology to ensure air that is FRESH, CLEAN, and PURE™.

Efforts to make homes more energy efficient include weather stripping, caulk sealants and moisture barriers, which tighten the home's envelope. When a home suffocates with a lack of air, laundry dryers, range hood fans and bathroom fans do not exhaust as efficiently, taking more time to do their jobs and wasting precious energy.

In most states, fresh air ventilation is required to meet building codes for new construction or to obtain energy tax credits. We recommend ventilation delivered through the return air plenum of the HVAC system to temper and evenly distribute the air throughout the home on a regular schedule. For more information on our ventilation systems, look for our **Residential Ventilation Guide**.

FRESH
Fresh Air Ventilation

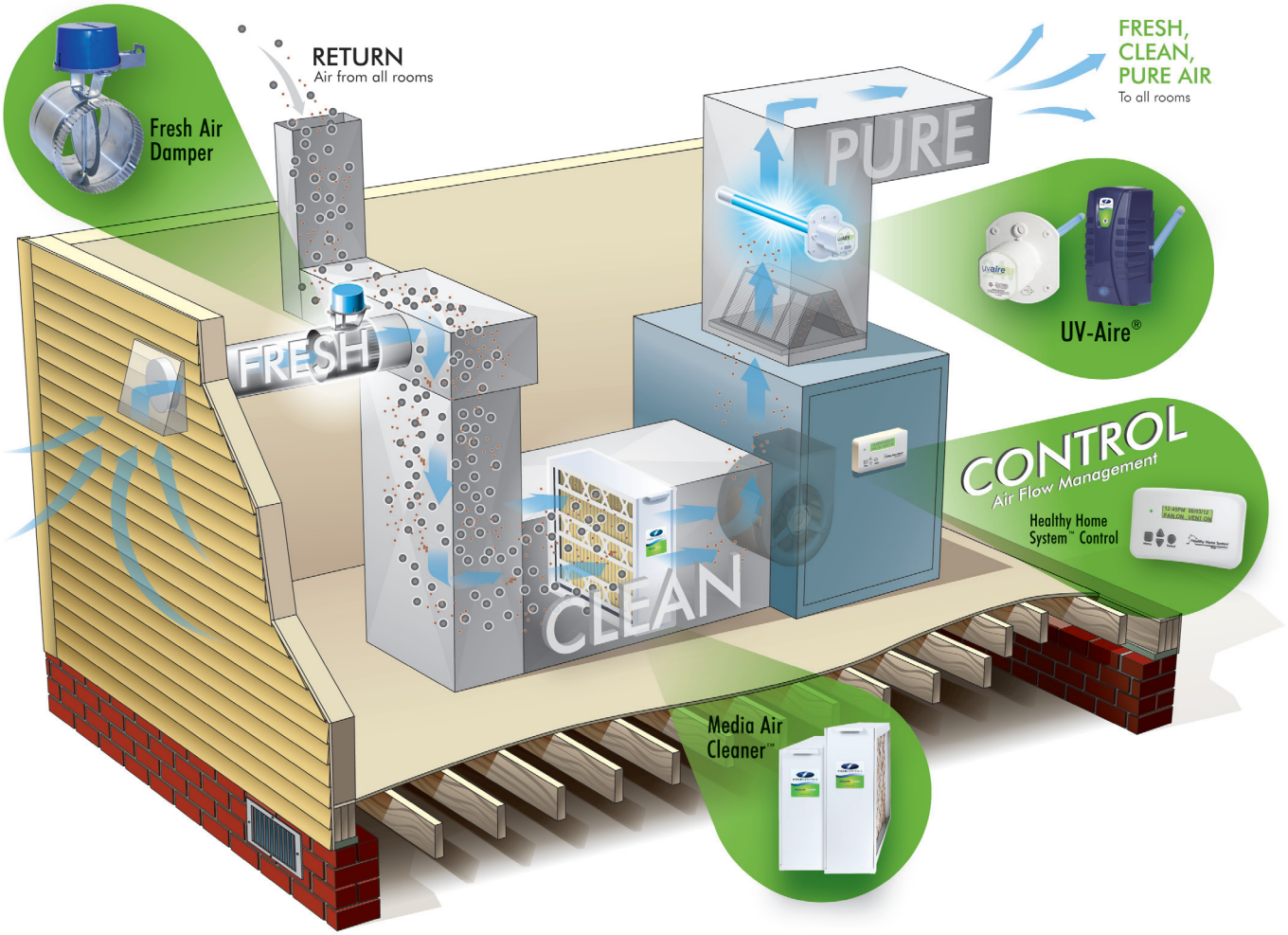
Healthy Home System™ Control

CLEAN
Clean Air Filtration

PURE
UV-Aire® Purification

It's the **Control** that makes it a **System!**

Our ventilation control is programed to meet code and periodically deliver fresh air through the central HVAC system. Combined with whole house filtration and UV purification, all air introduced and recirculated is automatically FRESH, CLEAN, and PURE™ all year round. For more information, see our **Healthy Home System™** in our **IAQ Guide**.



Healthy Home System™

FIELD CONTROLS

Chimney Fan with Damper

FOR GAS FIREPLACES

All New!

Introducing the Flue Sentinel Chimney Fan with Automatic Damper. This all-in-one includes a virtually air-tight flue damper with a heavy duty fan and chimney cap in one convenient, high performance package. The unit eliminates the need for glass doors on a hearth to conserve heat, and can save as much as 30% in energy costs that would normally be caused by heat loss through a chimney with a traditional damper.

The Flue Sentinel® Chimney Fan with Damper is constructed of high-grade stainless steel and can be installed in new or pre-existing chimneys. It is available in two sizes for chimneys with 8" and 12" openings.

The Flue Sentinel® comes complete with a control kit that interfaces with the gas logs and automatically opens the damper and engages the fan before allowing the fire to start. Back-up safety features ensure the fire won't start until the damper is fully open and draft has been proven.

FSGD-8 Chimney Fan with Damper

Flue Sentinel Gas Controller (FSGC) Included

Features

- Stainless steel housing
- Powder-coated, stainless steel chimney cap
- Two sizes: 8" and 12"
- Easy access for service

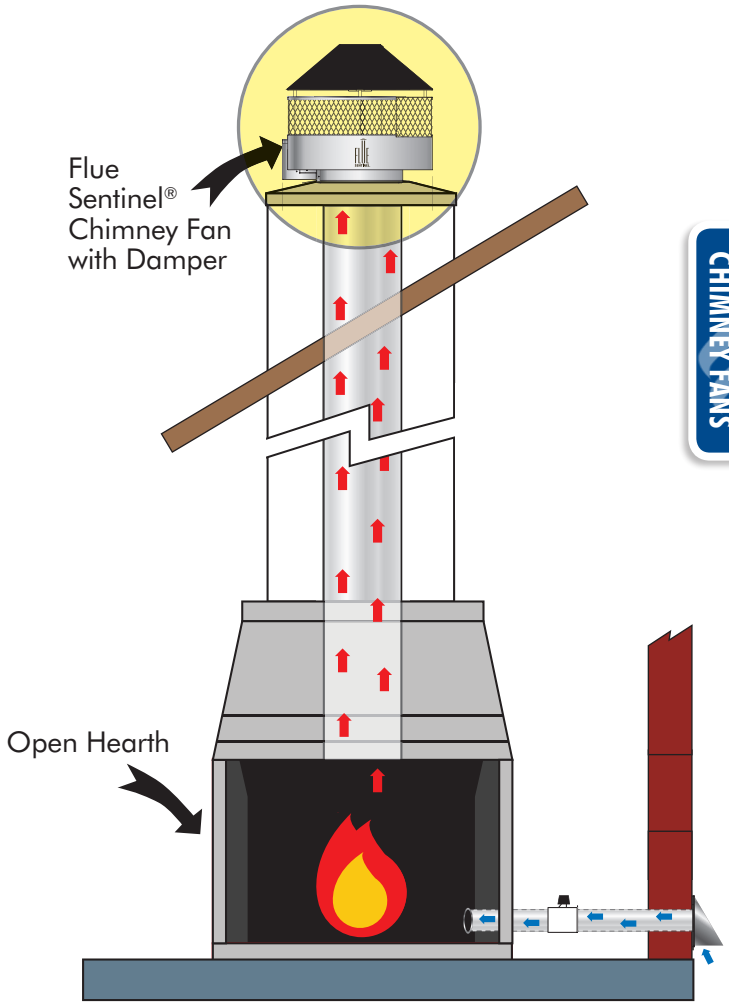
Benefits

- Integrated system for easy installation
- Reliable draft to exhaust fumes and gases
- Damper reduces heat loss and downdrafts

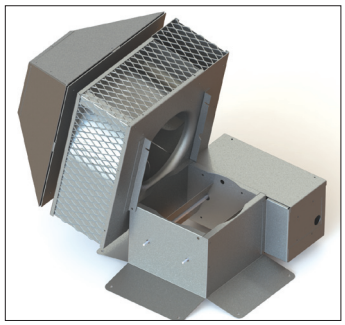
Chimney Fan with Damper

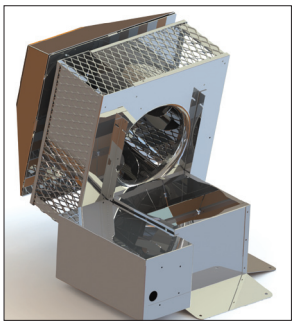
How It Works

When there is a call for fire, the Flue Sentinel® Gas Controller automatically opens the flue damper and engages the chimney fan. Once draft has been proven and the damper is fully open, the gas logs are allowed to light. When the fireplace is turned off, the fan is turned off and the damper automatically closes, trapping heat in the chimney.



The Flue Sentinel is designed with a hinged cap so the fan, motor, and damper are easily accessed for service or maintenance.

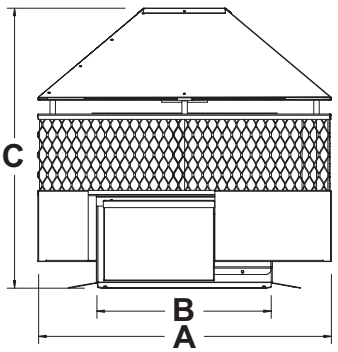




Specifications

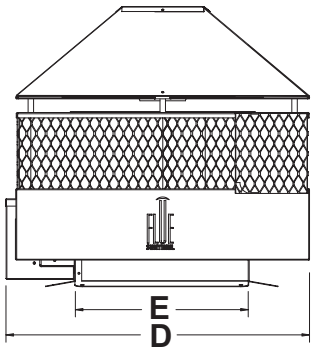
Electrical Data

Model	Volts	Hz	RPMs	HP	Amps	Thermal Protection
FSGD-8	120	60	1,050	1/10	2.5	Yes
FSGD-12	120	60	1,050	1/4	3.5	Yes



Dimensions

Dimensions (Inches)						Max. Hearth Opening (sq. ft.)
Model	A	B	C	D	E	
FSGD-8	14 1/4	8	19 1/2	17	8	12
FSGD-12	20 1/4	12	19 1/2	21	12	25



Automatic Flue Dampers
FOR GAS FIREPLACES

For a beautiful, open hearth gas fireplace, you need a Flue Sentinel®.

The Flue Sentinel is an electronic damper that automatically opens when you turn on your gas logs and closes when you turn them off. It's installed at the top of your chimney so you never see or hear it operate, but you will immediately notice the difference. No more cold drafts coming down the chimney and no more heated air escaping from the chimney.

The Flue Sentinel can be installed in new or pre-existing chimneys. Each unit is constructed of high-grade stainless steel and comes with a two-year manufacturer's warranty. The Flue Sentinel can save as much as 30% on your energy bill, paying for itself in no time.

Benefits

- Seals chimney and eliminates cold drafts
- Eliminates the need for glass doors to conserve heat and creates an instant "wow" factor with a large, open hearth
- Ultimate convenience, never have to remember to close your flue again
- Traps heat inside the chimney

Models

FSE 24 Volt Round

For 24 VAC, 60 Hz intermittent ignition and standing pilot ignition systems for gas log fireplaces.

FSM Millivolt Round

Designed to operate with millivolt/standing pilot ignition systems for gas log fireplaces.

FSE/FSM Low Profiles

Units are 6" in height and require a chimney cap.

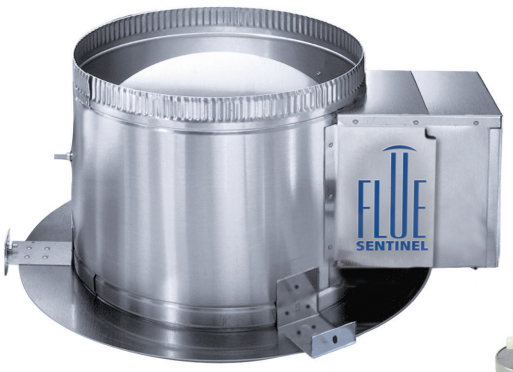
Rectangular/Square

Custom units and adapter kits can be special ordered for any chimney top.

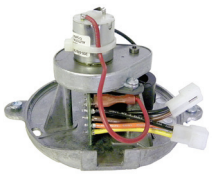
FSE 24v Round

Features

- The first electronic flue damper for gas log fireplaces
- For hearths up to 6' wide
- For flue diameters 6" to 24"
- Meets new fireplace codes
- Square/rectangular models available
- High-grade stainless steel construction



FSM Millivolt Round



Controller Included (shown without stainless steel cover)

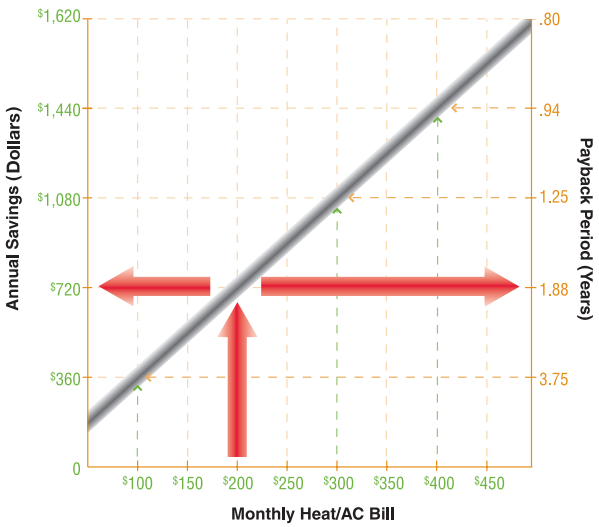
FSE/FSM Low Profile

Customer Service: 252.522.3031

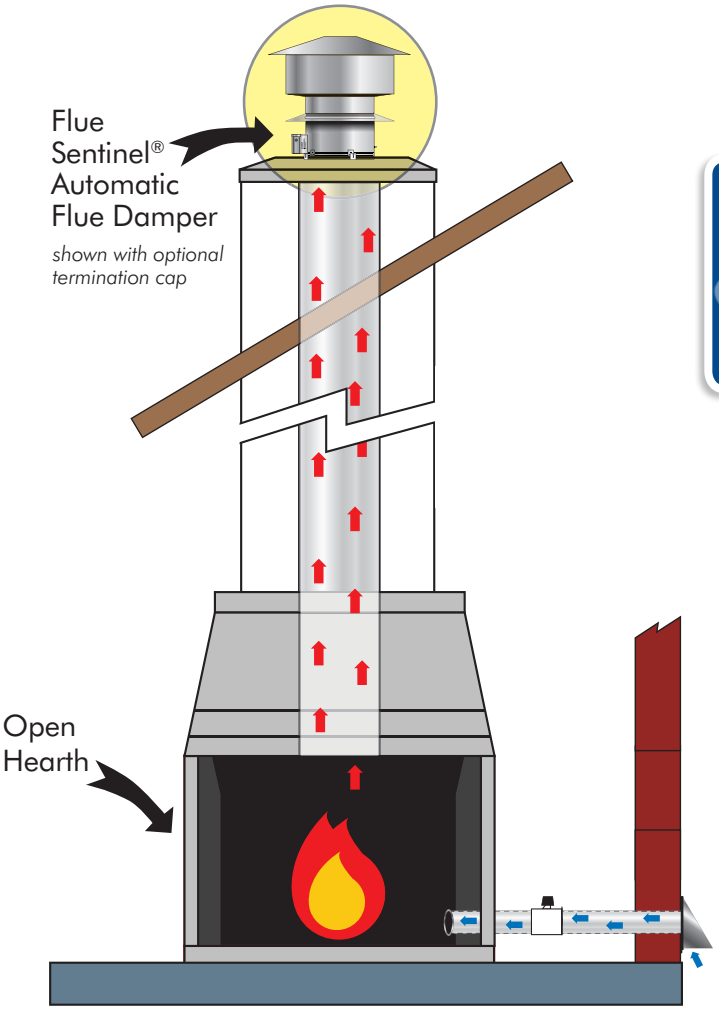
How It Works

When there is a call for fire, the Flue Sentinel damper opens to allow airflow in the chimney. Once the damper is fully opened, the controller allows the gas logs to fire. When the logs are turned off, the damper closes.

Flue Sentinel® FSM and FSE dampers are ICC approved as an alternative for glass doors on fireplaces.

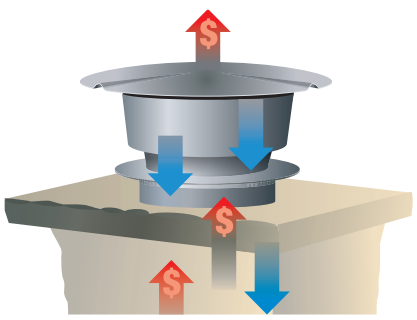


The Flue Sentinel quickly pays for itself in fuel and energy savings.

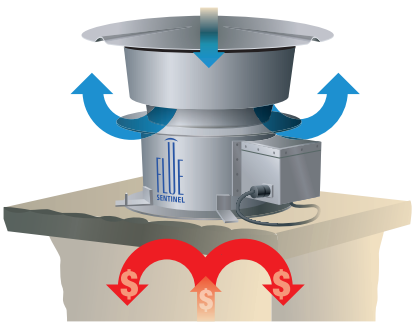


Air Leakage Comparison

When gas log fireplace is not in use:



Without Flue Sentinel®



With Flue Sentinel®

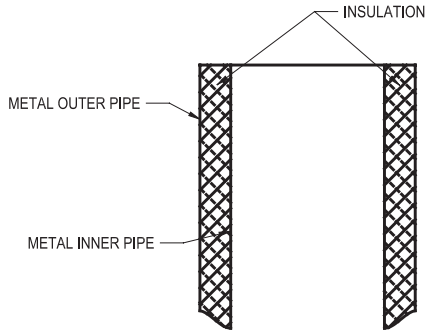
Automatic Flue Dampers

SIZING & SELECTION

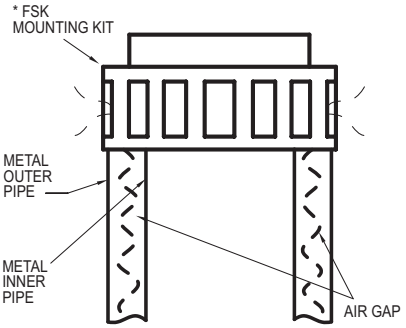
1. Determine if the gas log set is 24v or mV.

2. Determine the style of chimney the Flue Sentinel will attach to and measure the opening per the instructions below:

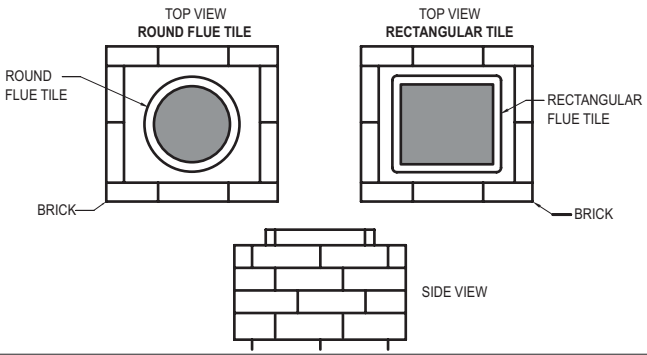
Class A Chimney Pipe - Measure the inside diameter.



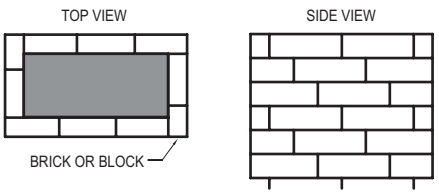
Vented or Air Pipe - If the pipe manufacturer is known, select the appropriate Chimney Pipe Adapter Kit (see accessories section). Otherwise, measure the inside pipe diameter and match to the outer adapter kit diameter.



Clay/Flue Tile - If round, measure the inside diameter. If rectangular, measure the length and width of the opening.*



Site Built Chimney - If rectangular, measure the length and width of the opening. Allow 4 weeks for custom manufacturing.*



***Note: A round unit can be used in a rectangular or square opening with the appropriate adapter or flashing.**

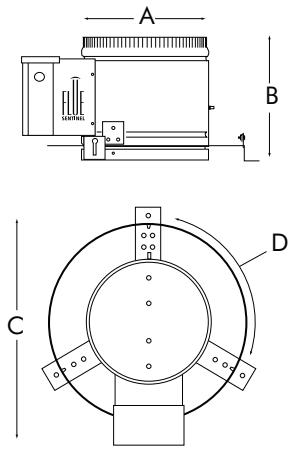
3. Select the round or rectangular Flue Sentinel model that fits your opening.

4. For round dampers, determine whether you want a low profile or standard profile Flue Sentinel. The low profile models require a chimney cap, a "dog house" or site built enclosure. Standard models do not require a chimney cap but a "dog house" or site built enclosure is recommended.

5. Choose accessories:
   - High Temperature Wire
   - Combustion Air Unit or Fresh Air Damper for combustion air
   - Electronic Ignition Kits are available to convert mV to 24v
   - Chimney Cap

FSE Series

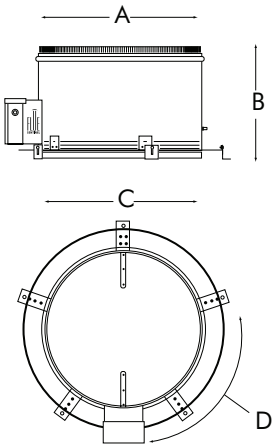
Voltage	Frequency	Current	Maximum Current	Operating Temperature	Timing
24 VAC	50/60 Hz	80 mA	5 A	Controller: -40°-140°F Pipe: -40°-650°F	7 seconds to open 30-40 seconds to close (including time delay)



Model	Dimensions (Inches)				Weight (lbs.)
	A	B	C	D	
FSE-6	5.9	6.0	14.5	11.8	6.0
FSE-8	7.8	10.5	17.0	13.8	7.8
FSE-10	9.8	10.5	19.0	15.8	8.9
FSE-11	10.8	10.5	20.0	16.8	9.4
FSE-12	11.8	10.5	21.0	17.8	10.0
FSE-13	12.8	12.5	22.0	18.8	11.3
FSE-14	13.8	12.5	23.0	19.8	12.0
FSE-16	15.8	12.5	25.0	21.8	13.3
FSE-18	17.8	13.5	27.0	23.8	15.6
FSE-20	19.8	14.5	29.0	25.8	17.8
FSE-22	21.8	15.5	31.0	27.8	20.1
FSE-24	23.8	16.5	33.0	29.8	22.9

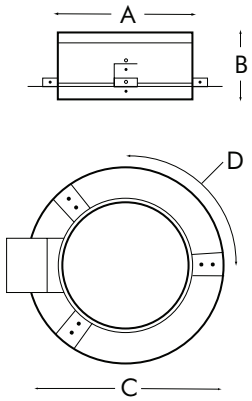
FSM Series

Controller Voltage	Switching Voltage	Battery Life	Operating Temperature	Timing
3.6 VDC	100-750 mVDC	10 years	Controller: -40°-140°F Pipe: -40°-650°F	7 seconds to open 30-40 seconds to close @ 450mV



Model	Dimensions (Inches)				Weight (lbs.)
	A	B	C	D	
FSM-6	5.9	6.0	14.5	11.8	6.0
FSM-8	7.9	10.5	17.8	13.8	7.8
FSM-10	9.9	10.5	19.8	15.8	8.9
FSM-11	10.9	10.5	20.8	16.8	9.4
FSM-12	11.9	10.5	21.8	17.8	10.0
FSM-13	12.9	12.5	22.8	18.8	11.3
FSM-14	13.9	12.5	23.8	19.8	12.0
FSM-16	15.9	12.5	25.8	21.8	13.3
FSM-18	17.9	13.5	27.8	23.8	15.6
FSM-20	19.9	14.5	29.8	25.8	17.8
FSM-22	21.9	15.5	31.8	27.8	20.1
FSM-24	23.9	16.5	33.8	29.8	22.9

FSE Low Profile & FSM Low Profile - Vent Cap Required



Model	Dimensions (Inches)				Weight (lbs.)	Clearance (in.)
	A	B	C	D		
FSE-L6/ FSM-L6	5.9	6.0	14.5	11.8	4.02	.25
FSE-L8/ FSM-L8	7.9	6.0	16.5	13.8	4.25	1.25
FSE-L10/ FSM-L10	9.9	6.0	18.5	15.8	5.25	2.25
FSE-L11/ FSM-L11	10.9	6.0	19.5	16.8	5.81	2.75
FSE-L12/ FSM-L12	11.9	6.0	21.5	17.8	6.36	3.25
FSE-L13/ FSM-L13	12.9	6.0	22.5	18.8	6.55	3.75
FSE-L14/ FSM-L14	13.9	6.0	23.5	19.8	7.07	4.25
FSE-L16/ FSM-L16	15.9	6.0	25.5	21.8	8.25	5.25
FSE-L18/ FSM-L18	17.9	6.0	27.5	23.8	9.80	6.25
FSE-L20/ FSM-L20	19.9	6.0	29.5	25.8	11.25	7.25
FSE-L22/ FSM-L22	21.9	6.0	31.5	27.8	12.35	8.25
FSE-L24/ FSM-L24	23.9	6.0	33.5	29.8	13.75	9.25

Chimney Fan

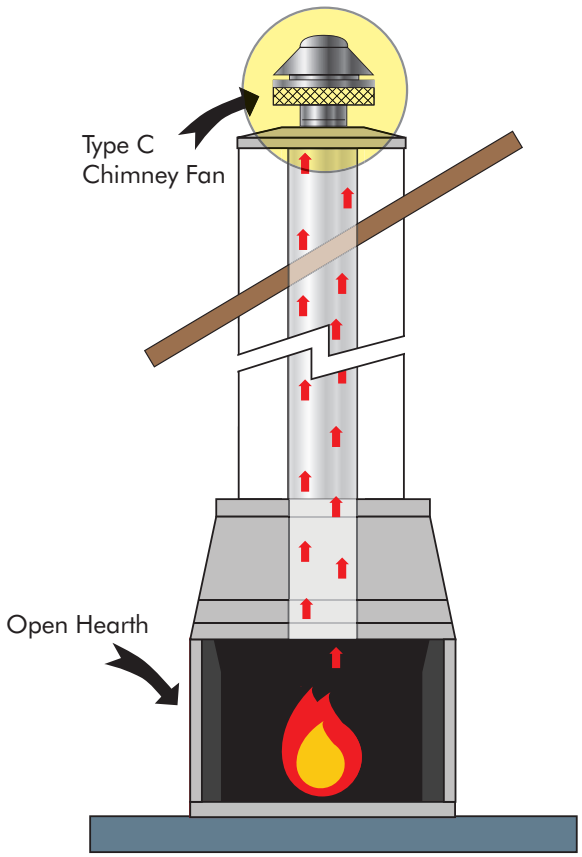
FOR WOOD & COAL FIREPLACES

The Type C Chimney Fan is the solution to preventing smoking fireplaces. It provides negative pressure to overcome the effects of wind, cold chimneys, insufficient chimney height, and downdraft. It is designed for wood or coal fireplaces and is available in four sizes: 6", 8", 10", and 13". It is insulated to withstand peak temperatures up to 1300° F and operates continually at 900° F without overheating the motor windings or bearings. It can operate with a standard manual on-off switch, or can be installed with a variable speed motor control.

Type C Chimney Fan

Benefits

- Eliminates smoking fireplaces
- Improves fuel efficiency
- Serves as exhaust fan any time



How It Works

The Type C Chimney Fan is connected to a manually-operated variable speed control. When engaged, the fan immediately creates draft by pulling air through the hearth and up the chimney, providing air for combustion and preventing downdrafts.

Features

- Stainless steel construction
- Four sizes - 6", 8", 10", 13"
- Heavy duty, variable speed fan
- Wood or coal

Speed Control sold separately

When to Use a Chimney Fan

To Prevent Occasional or Continuous Smoking

Occasional smoking may be the result of several factors including downdraft caused by adjacent buildings, terrain, or trees. Remodeling, new additions, or the addition of an exhaust fan can change air flows and result in poor draft. Or a fireplace design inadequacy, such as an undersized flue, may prevent adequate draft.

To Create Draft in Cold Chimneys

A chimney, especially on an outside wall, may be so cold prior to starting a fire that no draft exists. A Type C Chimney Fan switched on before starting the fire will provide draft until the chimney has become hot enough to generate a natural draft.

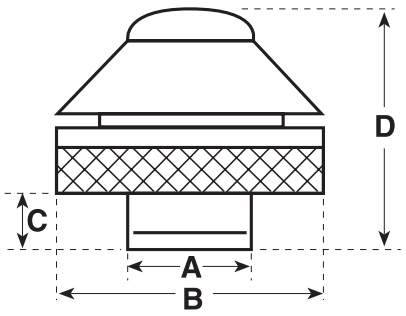
To Provide Additional Air

A considerable amount of air is necessary to allow for good chimney draft. In many tightly constructed homes, this air is not readily available. The addition of a Type C Chimney Fan will compensate for lack of air by supplementing the chimney's natural draft.

Chimney Fan

FOR WOOD & COAL FIREPLACES

Dimensions					
Model	Dimensions (Inches)				Max. Hearth Opening (sq. ft.)
	A	B	C	D	
6" Type C Chimney Fan	5 59/64	16	3 15/32	14 3/4	3.5
8" Type C Chimney Fan	7 15/16	16	3 3/8	14 3/4	7
10" Type C Chimney Fan	10	16	3 3/8	14 3/4	12
13" Type C Chimney Fan	13	16	3	14 3/4	30



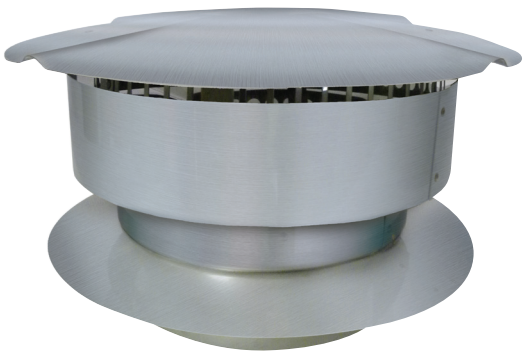
Specifications								
Motor Information						Speed Control		
Inducer Size	Volts	Amps	Watts	Hz	RPMs	Volts	Amps	Hz
6" Type C	115	.81	57	60	1,550	115	5	60
8" Type C	115	.81	57	60	1,550	115	5	60
10" Type C	115	3.75	252	60	1,050	115	5	60
13" Type C	115	3.75	252	60	1,050	115	5	60

Termination Cap

FOR GAS FIREPLACES

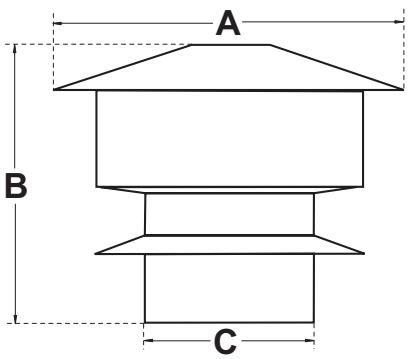
Flue Sentinel Termination Cap

The Flue Sentinel Termination Cap is designed to improve air flow performance by preventing downdrafts and wind interference. It also keeps rain, snow and animals from entering the flue. It is specially designed to work with our flue dampers, providing full clearance for damper blade travel.



Features

- 304 Stainless steel construction
- Four sizes - 8", 10", 12", 14"
- Heavy duty

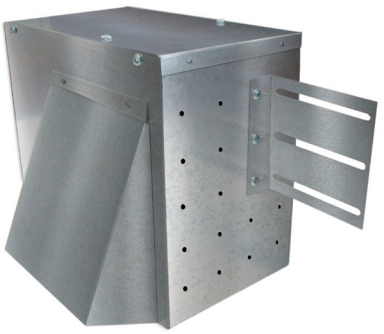


FS Termination Cap Dimensions			
Model	Dimensions (Inches)		
	A	B	C
8" Termination Cap	12.75	7.38	7.95
10" Termination Cap	14.75	7.76	9.95
12" Termination Cap	20.75	11.20	11.95
14" Termination Cap	23	11.83	13.95

Combustion Air Unit
FOR GAS FIREPLACES

The Combustion Air Unit

The CAU combustion air unit is an intake air hood and damper combined into one compact unit. The CAU opens automatically to provide air for combustion in the fireplace. Its compact design is ideal for hearths located on an exterior wall of the home.



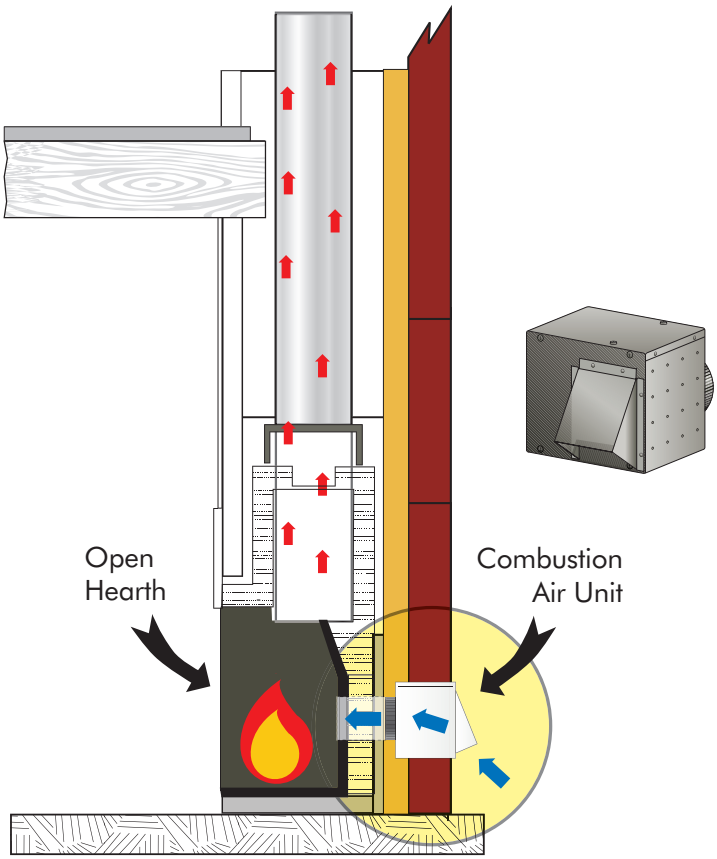
Combustion Air Unit

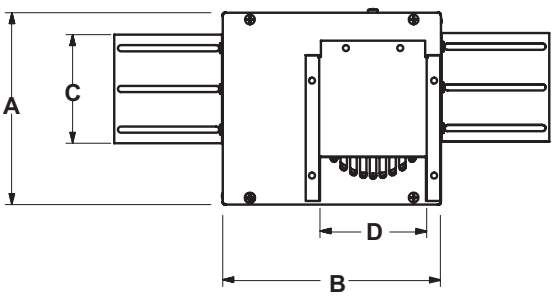
Features

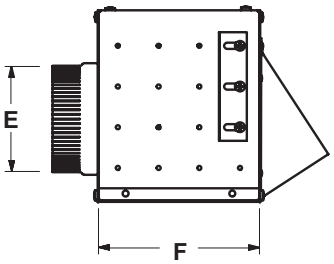
- Can be installed with or without the Flue Sentinel® electronic flue damper
- Galvanized steel construction
- Automatic operation
- Standard adjustable, variable position mounting bracket offers a variety of mounting options
- Easily mounts on exterior wall or crawlspace
- Paintable
- Two models - 4" & 6"

How It Works

When there is a call for fire, the CAU damper opens and allows the fire to start. Outside air is channeled directly into the firebox for combustion air. When the fire is turned off, the damper closes.







Specifications

Unit Dimensions (Inches)							Electrical Data			
Model	A	B	C	D	E	F	Volts	Hz	Watts	Timing
CAU-4	7 ⅛	8	4	4	4	6	24	60	3	15 seconds to open/close
CAU-6	9	10 ½	4	6	6	6	24	60	3	15 seconds to open/close

Combustion Air Damper
FOR GAS FIREPLACES

Combustion Air

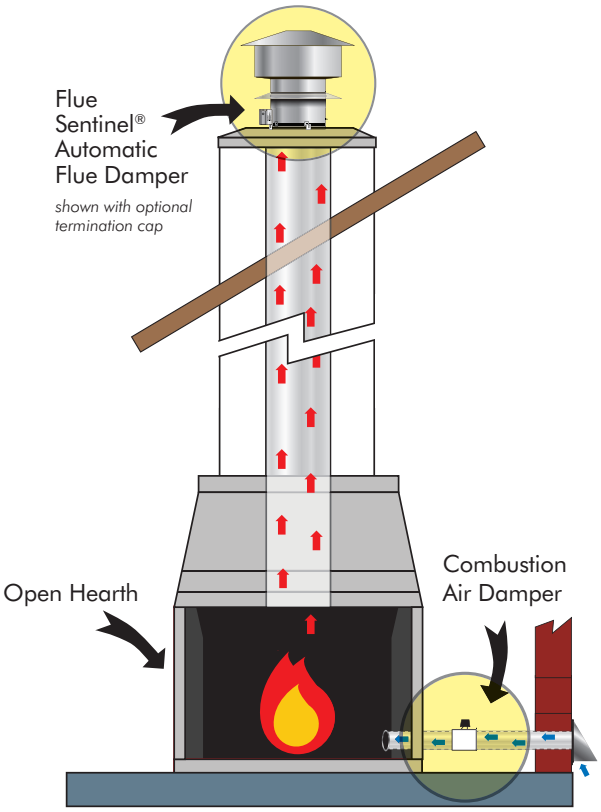
The Combustion Air Damper or FAD works with an Intake Air Hood to provide a reliable source of fresh air for combustion directly to the firebox. This is ideal for fireplaces not located on or near an exterior wall. This sealed damper opens when the gas logs are turned on, allowing fresh air to enter the firebox as needed for combustion. When the logs are turned off, the damper closes.

Combustion Air Damper

Intake Air Hood

Features

- Stainless steel housing and damper
- Ultra-reliable motor
- Power open/power close
- Super-tight seal



Benefits

- Delivers combustion air automatically, on demand
- Helps reduce heating and cooling costs

How It Works

When there is a call for fire, the damper opens and allows the fire to start. Outside air is channeled through the ductwork directly into the firebox for combustion air. When the fire is turned off, the damper closes.

Model	Product	Description	Voltage	Amps	Watts
FAD-4	Fresh Air Damper	Power open/close, fits 4" duct or pipe	24	–	3
FAD-5	Fresh Air Damper	Power open/close, fits 5" duct or pipe	24	–	3
FAD-6	Fresh Air Damper	Power open/close, fits 6" duct or pipe	24	–	3
FAD-7	Fresh Air Damper	Power open/close, fits 7" duct or pipe	24	–	3
FAD-8	Fresh Air Damper	Power open/close, fits 8" duct or pipe	24	–	3
FAD-10	Fresh Air Damper	Power open/close, fits 10" duct or pipe	24	–	3

INTEGRATES with optional sensors and fans for additional benefits

Central Fan Integrated Ventilation (CFIV) Whole House System

A healthy hearth can draw a significant amount of air when the fire is glowing, causing negative pressure within the home. A Flue Sentinel can interface with our Fresh Air System to supply make-up air or ventilation air for the home through the HVAC system whenever the fireplace is running. This fresh air interlock will provide a reliable source of replacement air to keep the home in balance.

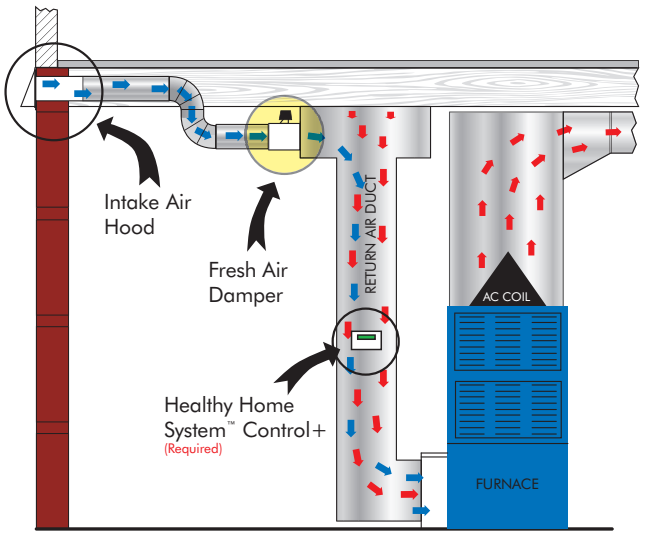
FAS – Fresh Air System

Features

- Integrates into the central HVAC system and Flue Sentinel® Controls
- Utilizes the central fan to distribute air
- Sealed damper prevents infiltration of air during off cycles
- Primary control by HHSC+
- Part of the Healthy Home System™

Benefits

- Delivers fresh air automatically, year round
- Creates uniform temperature and humidity throughout the home
- Enhances effectiveness of Media Air Cleaner™ and UV air purifiers
- Helps reduce humidity
- Helps reduce heating and cooling costs
- Meets ASHRAE 62.2 Ventilation Standards



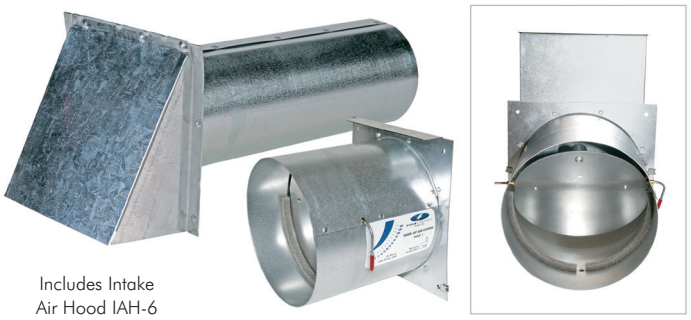
How It Works

The Fresh Air Damper is connected to the outside via duct and an intake air hood. It is then connected to the central HVAC system return. A Healthy Home System Control (HHSC+) is programmed to open the control on a schedule in conjunction with the central fan. The HHSC+ can also be connected to the 24v (FSE) Flue Sentinel Damper control and will open when the flue damper is open. As outside air enters the system through the damper, it is mixed with conditioned air and distributed throughout the house via the central ductwork. The Fresh Air Damper is closed when the HHSC+ signals that ventilation demands are satisfied or the call for fire has ended. It can also be closed manually from the HHSC+.

Model	Product	Description	Voltage	Amps	Watts
FAS-6	HHSC+	Fan/Vent ON and OFF delay settings, 1-199 minutes in 1 minute increments, unlimited setting for ON and OFF	24	0.07	–
	FAD Fresh Air Damper	Motorized, stainless steel, power open/close in 15 sec. increments, fits 6" duct or pipe	24	–	3

Whole House Make-Up Air System

A simple, economical method to provide make-up air, this pressure-activated damper opens automatically when there is a need for additional air in the home. Since there is no motor, it works without electricity or the need for a separate control. It has an adjustable gate to control the amount of air flow.



Includes Intake Air Hood IAH-6

Make-Up Air System

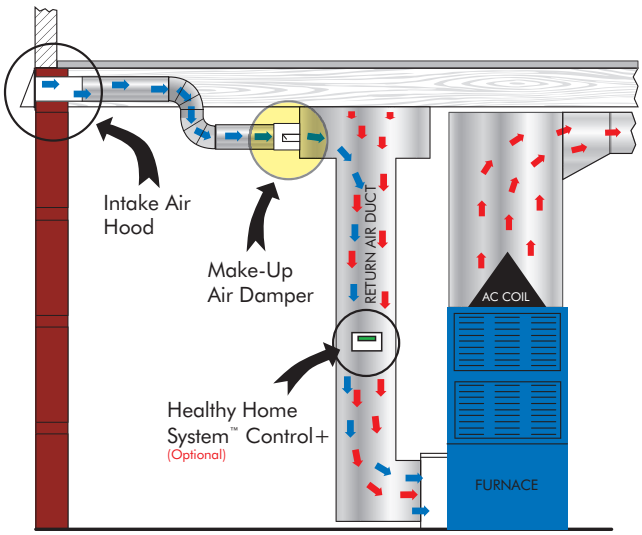
Note: The IAH-4 and the IAH-6 can be purchased separately.

Features

- Adjustable gate provides precise air flow control
- Pressure activated
- Easy to read air flow gauge
- No electricity required
- 24 gauge aluminum coated steel
- Corrosion resistant and paintable
- Intake air hood included
- Quiet operation

Additional uses of the MAS

- To improve appliance efficiency
- To improve indoor air quality
- To conserve energy
- To increase fresh air changes
- To replace air exhausted by bathroom fans, laundry dryers, range hood fans, and other exhaust devices



How It Works

The MAS is connected to the outside via an intake air hood and to the central HVAC system via return duct. When the home goes negative because air is being pulled from the house through the chimney, a range hood fan, or any mechanical means, the damper automatically opens to allow make-up air to enter the HVAC return. The air is then tempered and distributed to the house. The damper closes automatically when the fan is turned off and/or the home returns to a balanced state. The gate is adjustable to provide precise control of air flow.

FRESH					
Model	Product	Description	Voltage	Amps	Watts
MAS-1	Fresh Air/Make-Up Damper	Pressure activated, fits 6" duct or pipe	–	–	–

Parts & Accessories

Accessories		
REF.	DESCRIPTION	PART NO.
A	SVC Part - Electronic Ignition System *(Does not include gang box & wiring)*	FSP-EI
A	SVC Part - Electronic Ignition Kit	FSP-EIK
B	SVC Part - Fan Controller, FSM	FSP-RC-MV
B	SVC Part - Controller, FSE	FSP-RC-24
B	SVC Part - Controller, FSE (Low Profile)	FSP-RCL-24
B	SVC Part - Controller, FSM (Low Profile)	FSP-RCL-MV
C	FSGC - Draft Inducer/fan dual voltage controller	FSP-RC-DG
D	Type C- Speed Control 6" & 8"	04325108
D	Type C- Speed Control 10" & 13"	04325113
E	Combustion Air Kit- 4"	CAU-4
E	Combustion Air Kit - 6"	CAU-6
F	Battery, D-Cell	0241-00
G	Termination Cap - 8"	FSP-TC8
G	Termination Cap - 10"	FSP-TC10
G	Termination Cap - 12"	FSP-TC12
G	Termination Cap - 14"	FSP-TC14
H	Wiring Harness High Temperature Universal 25ft (continuous temps to 1000° F)	FSP-HHT25
H	Wiring Harness High Temperature Universal 30ft (continuous temps to 1000° F)	FSP-HHT30
H	Wiring Harness High Temperature Universal 35ft (continuous temps to 1000° F)	FSP-HHT35
H	Wiring Harness High Temperature Universal 40ft (continuous temps to 1000° F)	FSP-HHT40
H	Wiring Harness High Temperature Universal 45ft (continuous temps to 1000° F)	FSP-HHT45
H	Wiring Harness High Temperature Universal 50ft (continuous temps to 1000° F)	FSP-HHT50
H	Wiring Harness High Temperature Universal 60ft (continuous temps to 1000° F)	FSP-HHT60
I	SVC Part - Harness, FSM - 55ft	FSP-MH
I	SVC Part - Harness, FSE - 6ft	FSP-24H
I	Wiring Harness, FSE - 50ft	FSP-24H50

A 

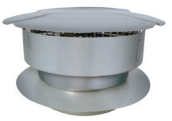
B 

C 

D 

E 

F 

G 

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PARTS & ACCESSORIES

Chimney Pipe Adapter Kits		
PIPE MANUFACTURER	NOMINAL FLUE SIZE	PART NO.
Contempo	8"	FSK-C-8
Desa	8"	FSK-D-8
Hearth Technologies SL800	8"	FSK-H-8
Hearth Technologies SL300	8"	FSK-H-8SL300
Lennox FTF-8	8"	FSK-L-8
Majestic	8"	FSK-M-8
Contempo, Home Tech 400 "KHT10"	10"	FSK-C-10
Lennox (use with FS-9)	10"	FSK-L-10
Hearth Technologies SL1100, KHT11	11"	FSK-H-11
Majestic	11"	FSK-M-11
Contempo, VanGuard 12" class A pipe KVG12	12"	FSK-C-12
Desa	12"	FSK-D-12
Majestic	12"	FSK-M-12
Lennox (Security Chimneys) FTF-13 (use with FS-12)	13"	FSK-L-13
Dura Chimney (O.D. = 15")	12"	FSK-DC-12
Simpson Dura-Vent	14"	FSK-DC-14
Simpson Dura-Vent	16"	FSK-DC-16

Troubleshooting

24v & MILLIVOLT UNITS

Basic Sequence of Operation for 24v Units

When the fireplace is turned on, a 24v signal is sent by the fireplace control to the damper controller. The damper controller motor then rotates the damper blade, which is indexed to a cam, to the open position to allow products of combustion to pass through the flue outlet. The cam proves the damper is in the open position and switches 24v from the motor to the main gas valve or ignition system, which fires the main burner.

When the fireplace is turned off, the fireplace control removes the 24v signal to the damper controller, shutting off the main burner. After a 30-40 second delay, the damper controller motor then rotates the damper blade to the closed position and resets itself for the next time the fireplace is turned on.

Turn on the gas and electrical supplies to the appliance. Check the operation of the Flue Sentinel by cycling the appliance at least three times as follows:

1. Switch the fireplace control to turn on the fireplace.
2. The damper will open and fire the main burner. T**he damper must be in the open position when appliance main burner is operating.**
3. Switch the fireplace control to turn off the fireplace. The main burner will immediately shut off and, after approximately 30-40 seconds, the damper will rotate to the closed position.

Basic Sequence of Operation for Millivolt Units

When the fireplace is turned on, a millivolt signal is sent by the fireplace control to the damper controller. The damper controller motor then rotates the damper blade, which is indexed to a cam, to the open position to allow products of combustion to pass through the flue outlet. The cam proves the damper is in the open position and sends the millivolt signal to the main gas valve, which fires the main burner.

When the fireplace is turned off, the fireplace control removes the millivolt signal to the damper controller, shutting off the main burner. The damper controller then waits 30 seconds* then rotates the damper blade to the closed position and resets itself for the next time the fireplace is turned on.

Turn on the gas to the appliance and light the pilot. Check the operation of the Flue Sentinel by cycling the appliance at least three times as follows:

1. Switch the fireplace control to turn on the fireplace.
2. The damper will open and fire the main burner. **The damper must be in the open position when appliance main burner is operating.**
3. Switch the fireplace control to turn off the fireplace. The main burner will immediately shut off and, depending on the system voltage, the damper will rotate to the closed position after approximately 10-50 seconds.

**Average time delay at 450mV. Time delay ranges from 10 to 50 seconds and will be longer at a higher voltage, shorter at a lower voltage.*

Troubleshooting Chart: 24 Volt

Problem	Possible Causes	Action
Damper won't open.	No power or insufficient power at damper.	Check the voltage between the Black and Brown wire. This should be the same voltage as the output of the transformer. If this voltage is zero or below 20 volts AC check the connections and the power to the transformer.
	No signal to damper and the switch or remote is in the on position.	Check the voltage between the Orange and Black wire after the switch. This voltage should be the same as the output of the transformer. If this voltage is zero check the voltage before the switch and make sure you are switching at least 20 volts AC.
	Obstruction preventing damper blade from rotating.	Check for protruding screws or binding in pipe/blade assembly and correct.
	Wiring harness.	If all the voltages at the bottom were checked and were correct, check the voltages again at the controller at the top. If there is a difference between any of them there is a short in the wiring harness.
		If Ignition Control Module starts to send a signal to the Spark Electrode before the damper is open there is a short in the wiring harness.
	Defective damper controller.	If all above conditions have been checked and you have power between the Black and Brown wire, and the Orange and Black wires at the circuit board and the damper does not operate replace the controller.
Damper opens and stops in the open position but appliance main burner(s) does not fire.	Wiring not connected correctly.	Make sure that the Yellow wire is connected to the correct position on the Ignition Control Module.
	No Voltage on Yellow wire.	Check the voltage between the Yellow and Black wire. This should be the same voltage as the output of the transformer. If the voltage is zero check the voltage at the circuit board between the Yellow and Black wire. If the damper has stopped in the open position and there is no voltage replace the controller.
	Defective gas valve or ignition control on appliance.	Check for power at gas valve and/or ignition control. If present, replace defective part. Make sure gas supply is turned on.
Damper rotates continuously.	Defective damper controller.	Replace controller.
Damper won't close, main burner off.	No power or insufficient power at damper.	Check for power at controller, only the Black and Brown wires should be energized. If not, check wiring diagram. The voltage between the Orange and Black wire must be zero for the damper to close.
	Obstruction preventing damper blade from rotating.	Check for protruding screws or binding in pipe/blade assembly and correct. Because the damper blade rotates in a complete circle, the damper could open without any obstructions and still get caught on something when closing.
	Transformer power.	Make sure that the power to the transformer is still energized.
	Defective damper controller.	If all of the above conditions have been checked and the damper still will not close replace controller.

Troubleshooting Chart: Millivolt

Problem	Possible Causes	Action
Damper won't open.	Polarity reversed from thermopile.	Check to make sure that the positive wire from the thermopile is connected to the THTP position on the gas valve, and the negative side of the thermopile is connected to the TP position on the gas valve. If this is reversed the Flue Sentinel will not operate.
	No voltage on Orange wire.	Make sure switch or remote control is in the on position. Check voltage between the Orange and Black wire after the switch. If voltage is zero check the switch or remote control for correct installation. If correctly connected the voltage between the Orange and Black wires should be the same as the output of the thermopile between THTP and TP on the gas valve when pilot is lit.
	Signal voltage between Orange and Black wire less than 100 mV.	Check connections, adjust pilot, and/or replace thermopile.
	Obstruction in damper.	Check for protruding screws or binding in pipe/blade assembly and correct.
	No power or insufficient power at damper.	Check damper battery & replace if less than 2.8V. Make sure battery is connected to the circuit board.
	Wiring harness.	Check the voltage at the circuit board to make sure the signal on the Orange wire is present. This is accomplished by testing the voltage between the Orange and Black where they are connected to the circuit board. If this voltage is not the same as the voltage checked after the switch between the Orange and Black wire there is a problem with the wiring harness.
	Defective damper controller.	After all the voltages have been checked and controller will still not operate remove controller and test again. If controller still will not operate replace controller.
Damper opens and stops in the open position but appliance main burner(s) does not fire.	Wiring harness.	At the circuit board check the voltage between the Yellow and Black wire. This voltage should be the same as the voltage between the Orange and Black wire. If the voltage is the same check the voltage at the gas valve between the TH and TP. This voltage should be the same as what was tested at the circuit board. If the voltage is not the same the problem is in the wiring harness.
	Circuit board problem.	If the damper is in the open position and the correct voltage between the Orange and Black wire were tested, the voltage between the Yellow and Black wire is still reading zero, cycle the damper again and retest the voltages. If still no signal replace the controller.
	Battery not connected.	Make sure that the battery inside the enclosure is connected to the circuit board. If this is not connected the damper will not operate.
	Signal voltage at Yellow wire less than 100 mV.	Check connections, adjust pilot, and/or replace thermopile.
	Signal voltage at Yellow wire greater than 100 mV and less than 1.5 volts.	Check to make sure that the Yellow wire is connected to the TH connection on the gas valve, and make sure gas supply is turned on.

Continued on next page

Troubleshooting Chart: Millivolt		
Problem	**Possible Causes**	**Action**
(Continued) Damper opens and stops in the open position but appliance main burner(s) does not fire.	Signal voltage between the Black and Orange wire is more than 1.5 volts DC.	If voltage between the Black and Orange wire is greater than 1.5 volts this could cause the motor to overrun the switches. The damper will open and stop but no signal will be sent to the gas valve to open. If this is found out to be normal for this gas valve, you need to call Field Controls Engineering for further assistance.
Damper rotates continuously.	Defective damper controller.	Replace controller.
Damper won't close.	Signal voltage at Orange wire.	Check for power at controller, only the Black and Brown wires should be energized. If not, check wiring diagram. The voltage between the Orange and Black wire must be zero for the damper to close.
	Obstruction in damper.	Check for protruding screws or binding in pipe/blade assembly and correct. Because the damper blade rotates in a complete circle, the damper could open without any obstructions and still get caught on something when closing.
	No power or insufficient power at damper.	Make sure that the power to the transformer is still energized.
	Defective damper controller.	If all of the above conditions have been checked and the damper still will not close replace controller.
Damper won't close main burner off.	Obstruction in damper.	Remove obstruction, because the damper blade rotates in a complete circle. The damper could open without any obstructions and still get caught on something when closing.

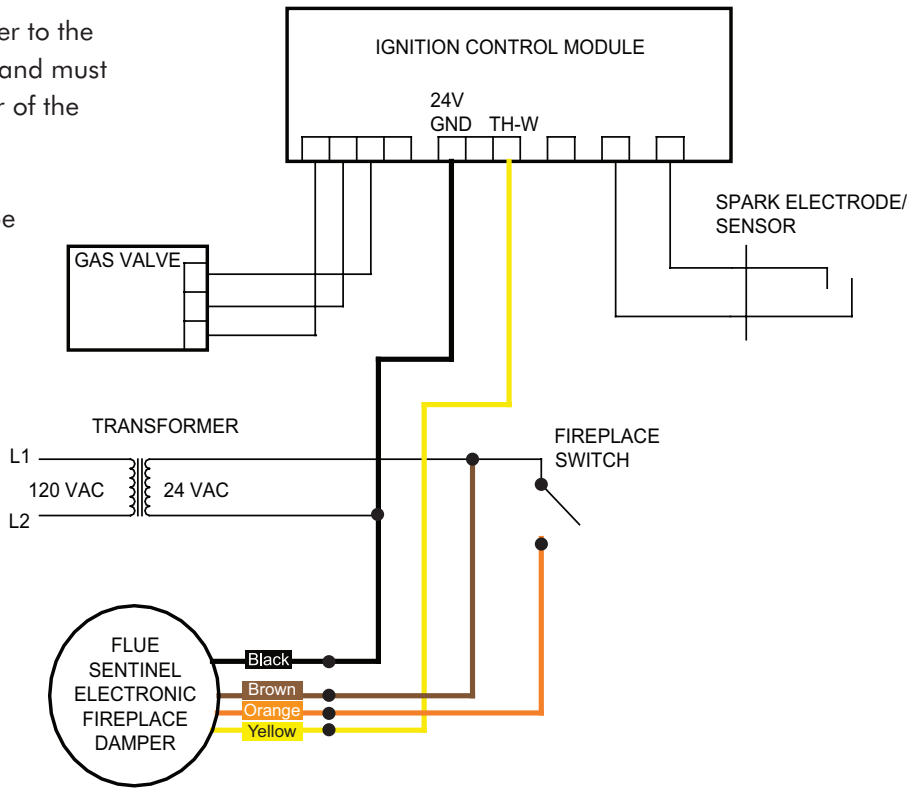
Wiring Diagrams
FLUE SENTINEL® DAMPERS

Basic Wiring for 24v Damper

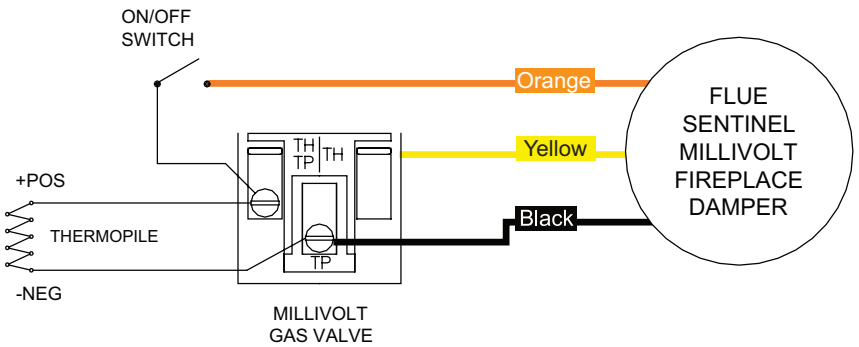
The wiring connecting the damper controller to the gas valve must be a minimum of 18 AWG and must be run in conduit if installed on the exterior of the chimney or required by code.

The damper control wiring **must always** be connected as follows:

Brown - 24 VAC Hot
Orange - Signal In
Yellow - Signal Out
Black - 24 VAC Common



Basic Wiring for Millivolt Damper



The damper must be installed using the 50-foot wiring harness and wire terminals supplied with it. The harness should be cut to remove any excess length.

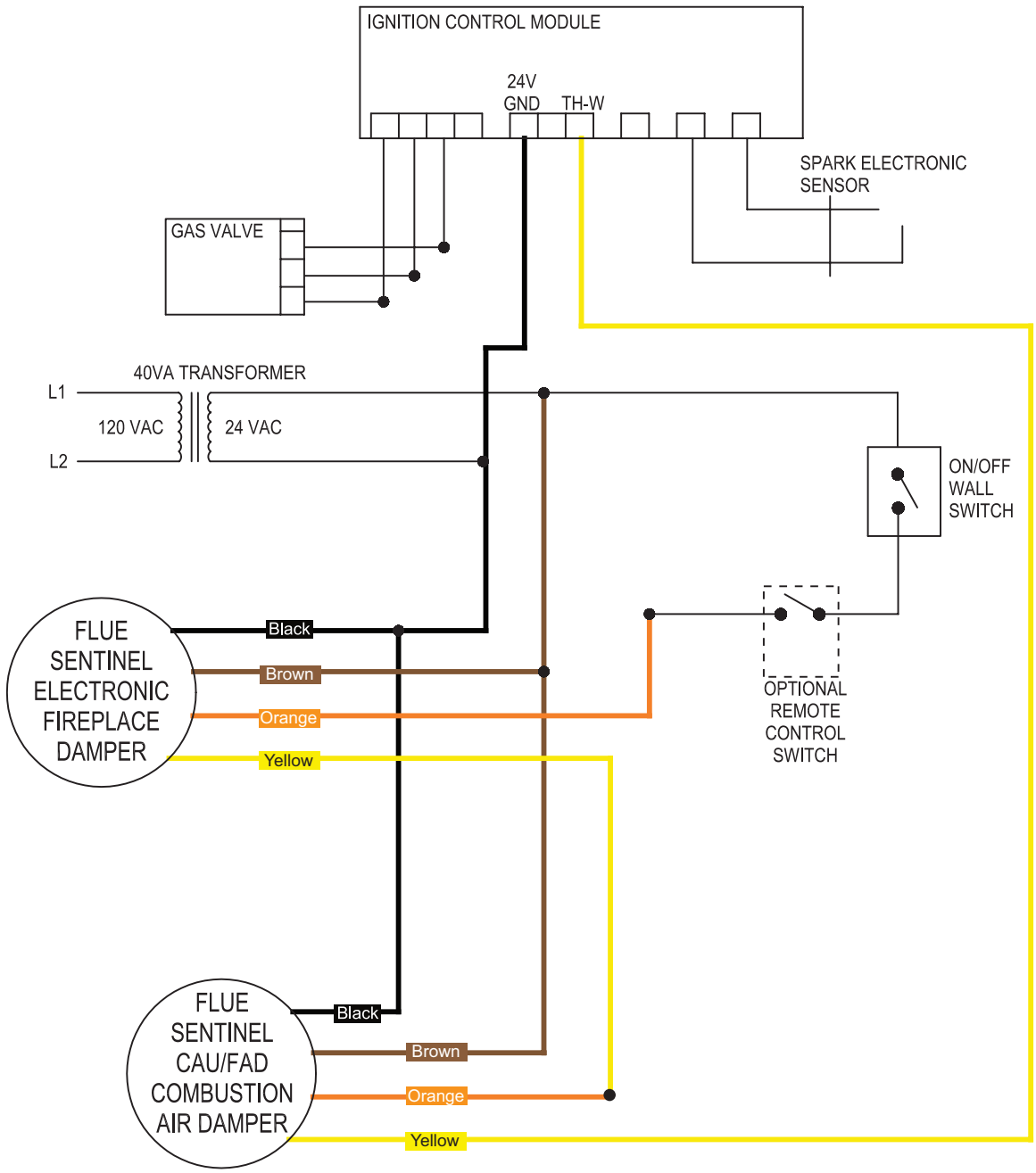
Millivolt gas valve must be wired as follows:

FSM Harness
Orange - On/Off Switch
Yellow - TH
Black - TP

Thermopile Leads
Red (Positive) – TH/TP
White (Negative) - TP

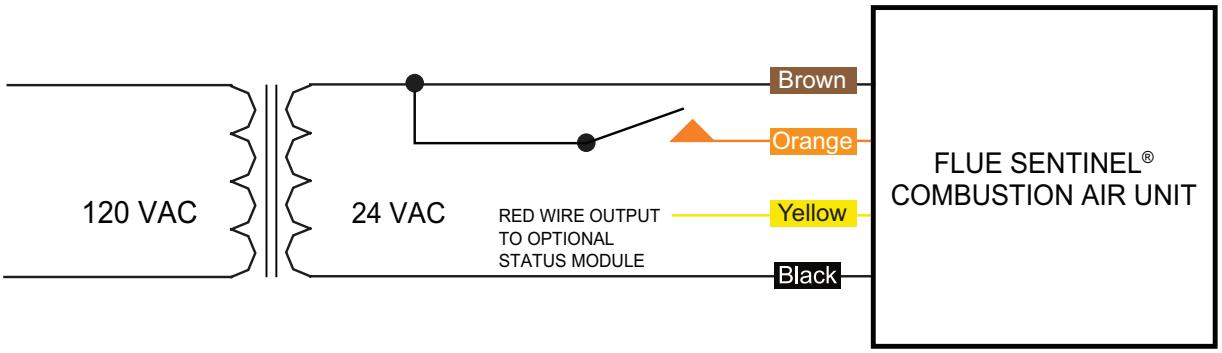
WIRING

FSE Series Damper and CAU/FAD Combustion Air Damper



Wiring Diagrams
FLUE SENTINEL® DAMPERS

Combustion Air Unit



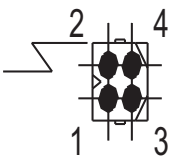
Wiring with High Temperature Wiring

High Temperature Cable Color Code colors of the high temperature wires are different; refer to information below for proper wiring connections.

HARNESS COLOR CODE

Standard
Wire Connector

WIRE CONNECT	
CODE	COLOR
1	BROWN
2	ORANGE
3	YELLOW
4	BLACK



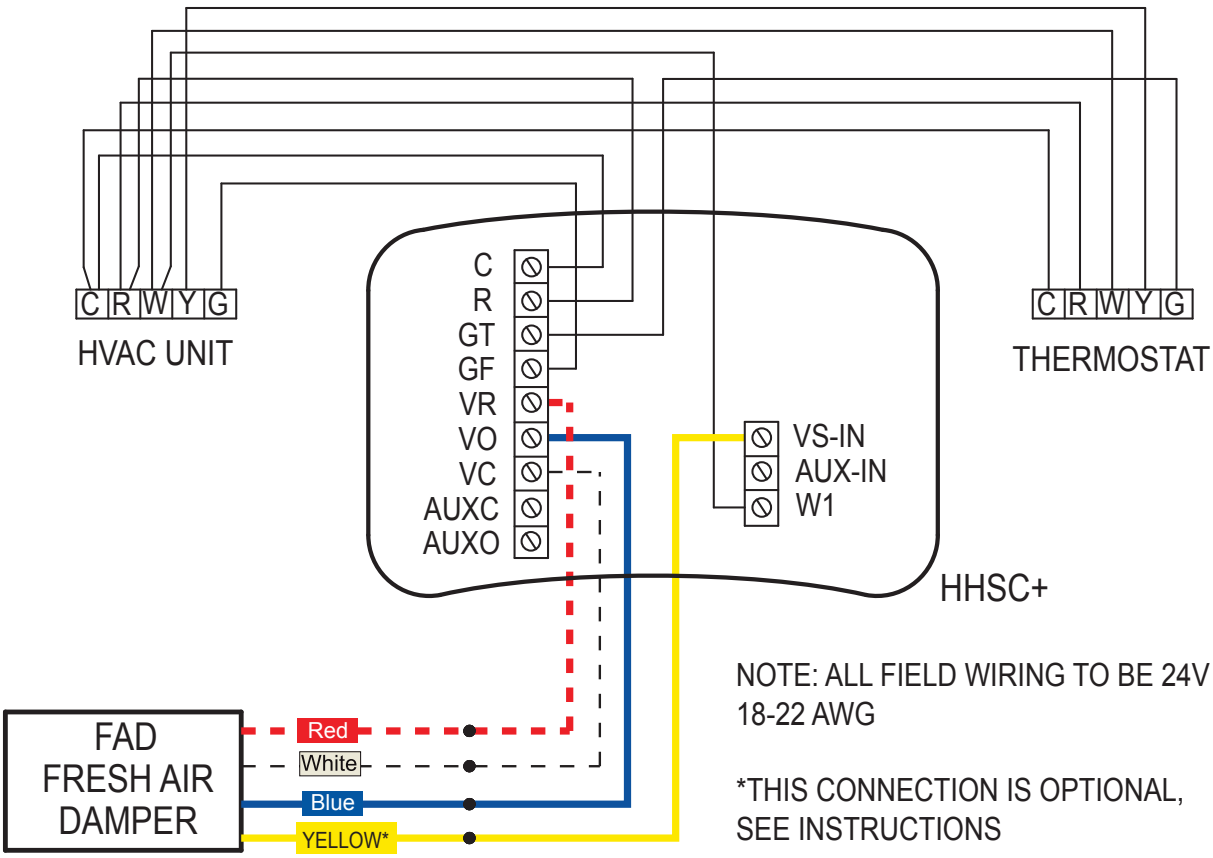
VIEW SHOWING
END OF RECEPTACLE

High Temp
Wire Connector

WIRE CONNECT	
CODE	COLOR
1	WHITE
2	RED
3	GREEN
4	BLACK

WIRING

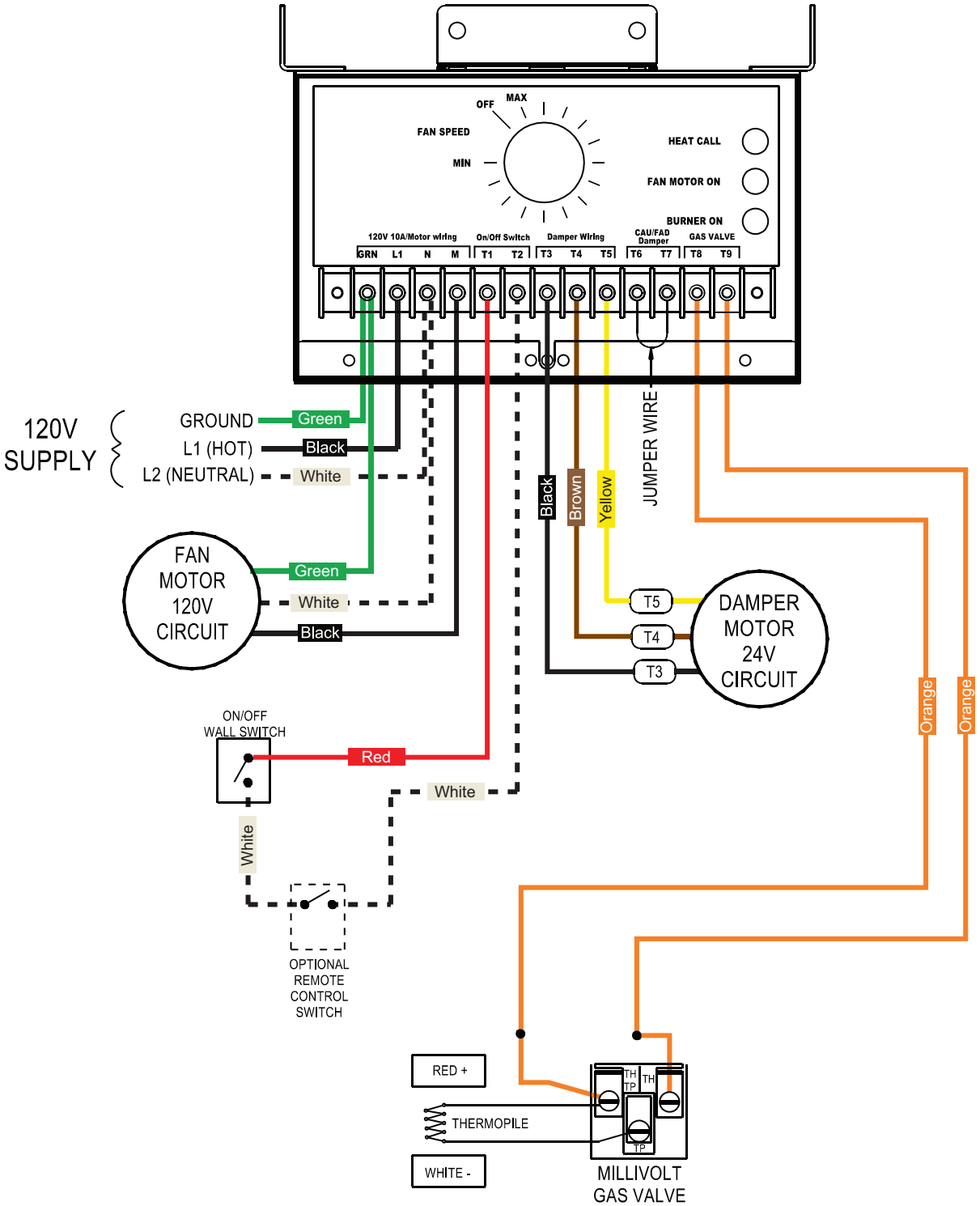
FAD-4, 5, 6, 7, 8, 10 to HHSC+



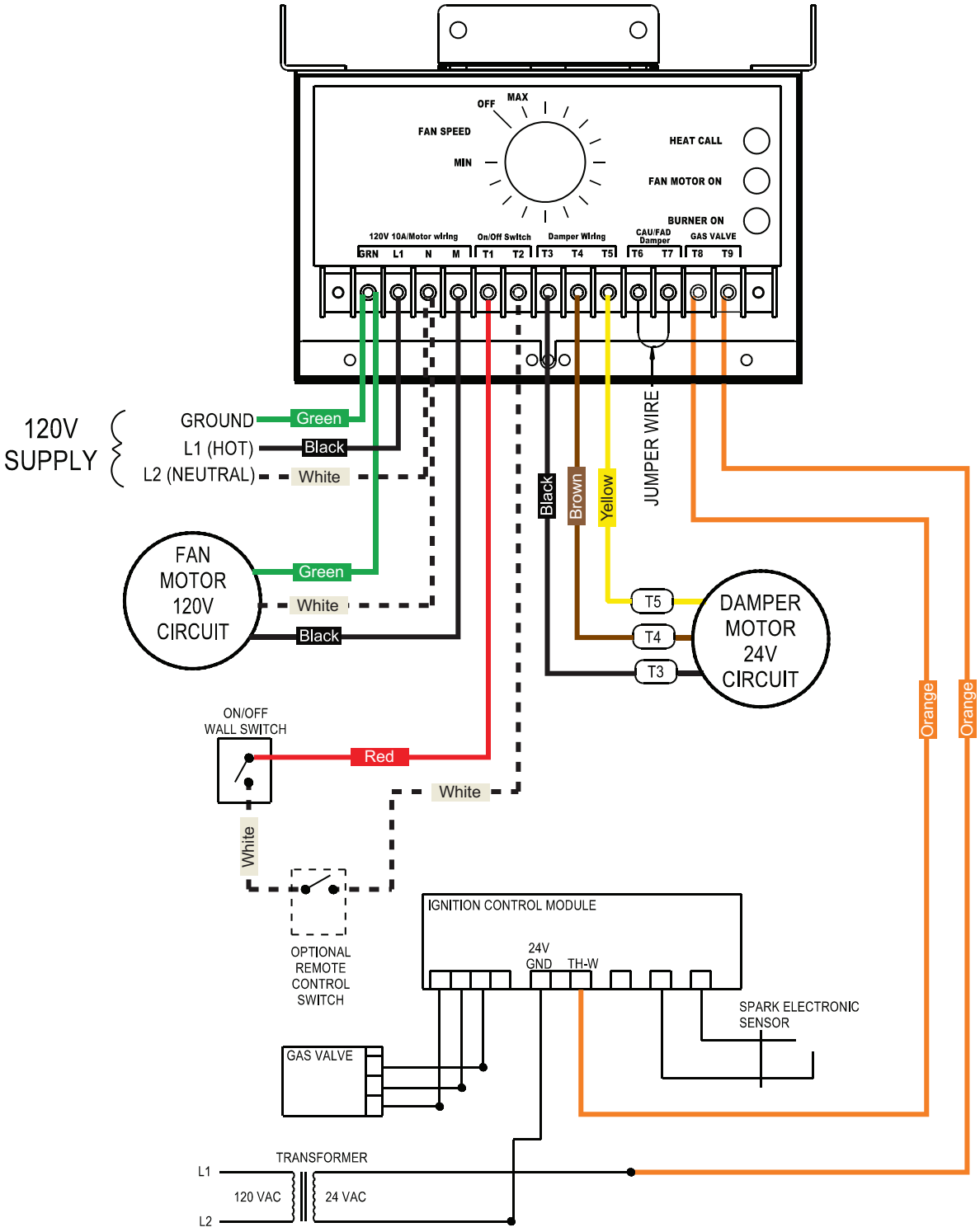
NOTE: ALL FIELD WIRING TO BE 24V
18-22 AWG

*THIS CONNECTION IS OPTIONAL,
SEE INSTRUCTIONS

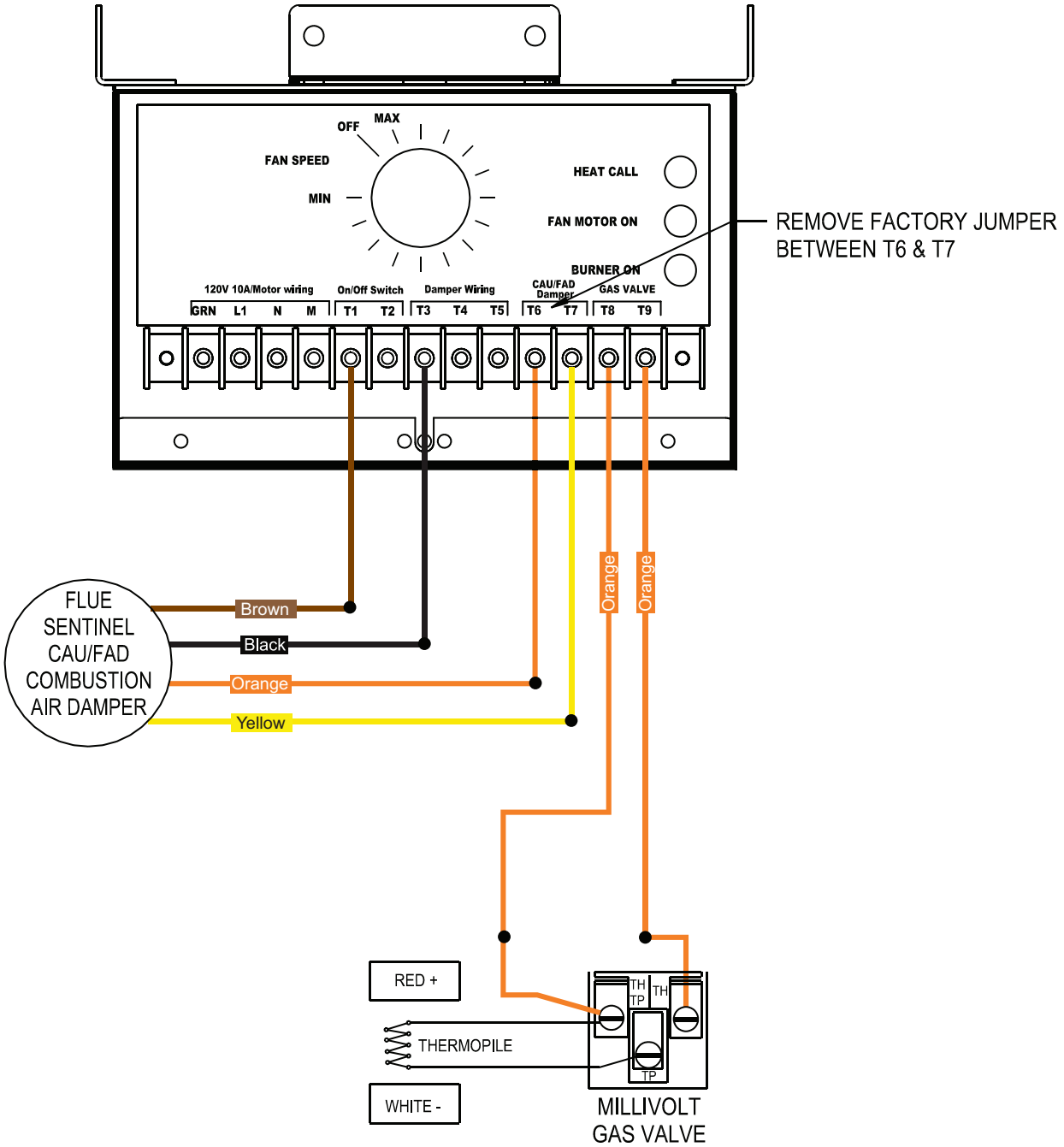
Fan/Damper Control with 750 mV Gas Log Set



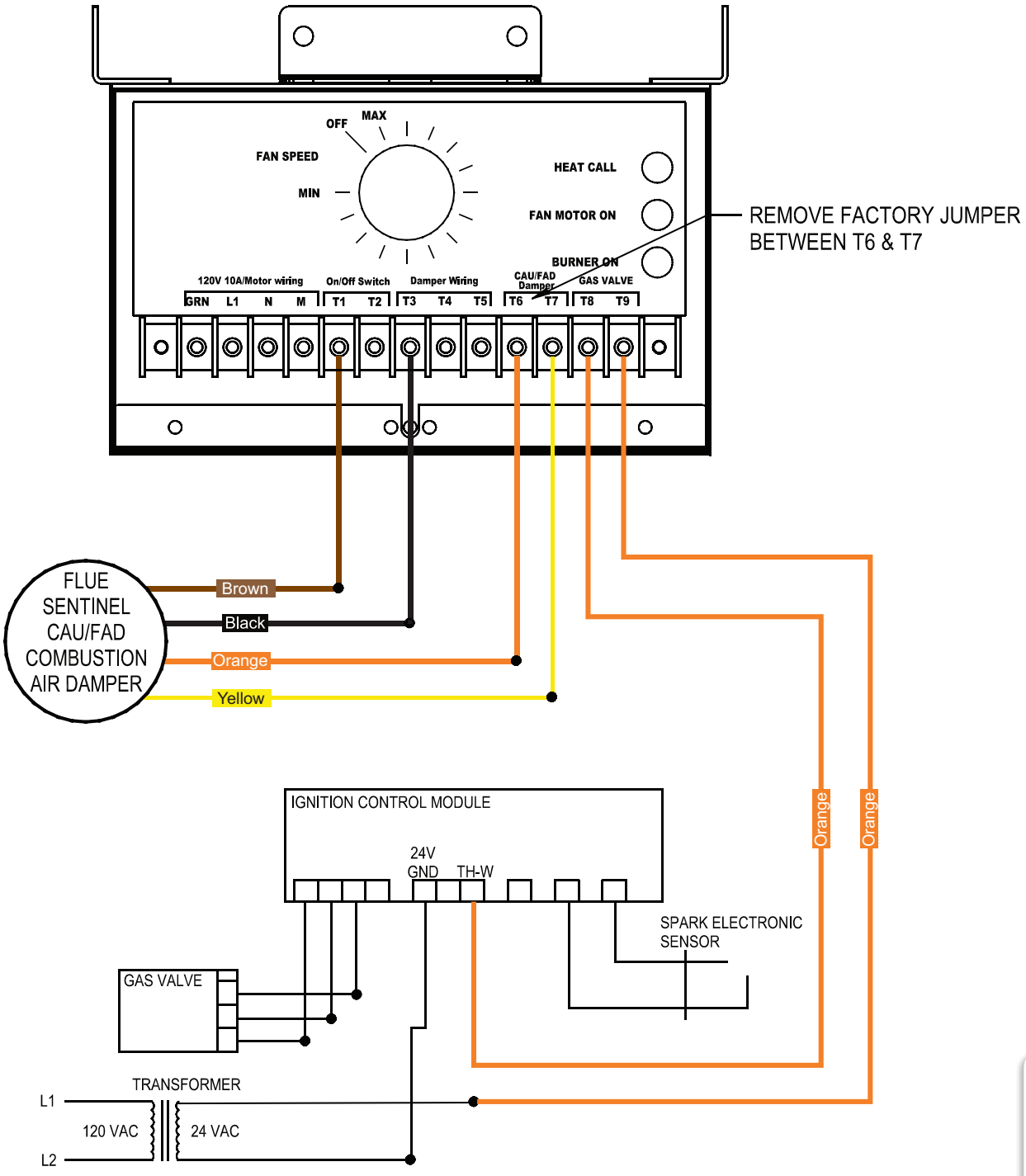
Fan/Damper Control with 24v Gas Valve Log Set



Fan/Damper Control with 750 mV Gas Log Set and CAU/FAD Combustion Air Damper



Fan/Damper Control with 24v Gas Log Set and CAU/FAD Combustion Air Damper



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