WEIL-McLAIN®

SVF™ | STAINLESS VERTICAL FIRETUBE

SlimFit®

SVF Models 500-3000

SlimFit Models 550-2000

Application Guide

for

Common Venting SVF and SlimFit Boilers

Hazard Definitions

The following defined terms are used throughout these Instructions to bring attention to the presence of hazards of various risk levels or to important information concerning the life of the product.

⚠WARNING

Warning indicates the presence of hazards that can result in severe personal injury, death, or substantial property damage.

IMPORTANT

Important indicates additional information that is important, but is not related to personal injury or property damage.

Manual Part Number 550-100-297/0623

Common Venting Methods and Requirements

SVF Boilers (SVF 500-3000)

The SVF boilers can be common vented when the following requirements are met.

- Common venting of the SVF boiler can only be done in a Category II vent system. All requirements for the SVF boiler to be vented in a Category II configuration must be met as stated in the related SVF Boiler Manual or all subsequent addenda.
- SVF boilers can only be common vented with other SVF Boilers.
- The maximum number of SVF boilers to be common vented together is eight.
- The Vent system for a Category II SVF boiler is considered a Designed / Engineered vent system and should be designed by a professional using accepted engineering practices.
- Vertical Vent only.
- Combustion air must come from the boiler room. See the Direct Exhaust sections in the boiler manuals for more information.
- Venting must be increased using a bell reducer at the boiler vent adapter for Category II vent connection after the first three feet of venting. See Table 1.
- The Vent System should be designed so that the pressure in the vertical vent pipe immediately following the bell reducer is between the ranges provided in Table 2, during all operating conditions (i.e., High Fire through Low Fire, prepurge, post purge and ignition). If a negative pressure cannot be guaranteed at prepurge and post purge, a backflow preventer is required on each boiler's vent.

Table 1 Venting increases for SVF using a bell reducer

Models	Original Piping Diameter	Increased Size after 3 ft.
SVF 500/600	4"	6"
SVF 725-1000	6"	8"
SVF 1500-2000	8"	10"
SVF 2500-3000	10"	12"

Table 2 Rating and vent data for SVF

Boiler Model	Input Btuh	Stack / Vent flow rate (scfm)	Negative pressure at the vent connection (inches w.c.)	Vent Adapter Size
SVF 500	500,000	105	-0.001 to -0.100	6"
SVF 600	600,000	125	-0.001 to -0.100	6"
SVF 725	725,000	149	-0.001 to -0.100	8"
SVF 850	850,000	175	-0.001 to -0.100	8"
SVF 1000	1,000,000	232	-0.01 to -0.05	8"
SVF 1500	1,500,000	350	-0.01 to -0.05	10"
SVF 2000	2,000,000	470	-0.01 to -0.05	10"
SVF 2500	2,500,000	580	-0.01 to -0.05	12"
SVF 3000	3,000,000	696	-0.01 to -0.05	12"

⚠WARNING

To prevent backflow through boiler, negative pressure must be maintained in vent system at all times including prepurge and post purge cycles. Failure to comply can result in severe personal injury, death, or substantial property damage.

- Flue gas temperature should not exceed 200°F; the boiler will shut down and recycle if it does. The flue gas temperature should typically be within 20°F of the return water temperature of the boiler. If there is the potential for a wide variation in return water temperatures, the lowest possible temperature should be used for any calculations.
- Stack / Vent Flow Rate for each individual boiler model is listed in Table 2. This flow rate is based on the unit running at the CO_2 (natural gas - Table 3, page 3), and the maximum flue gas temperature of 210°F. The values can vary depending on the location of the installation and operating conditions.

SVF Boilers (SVF 500-3000), continued

- Stack/Vent Flow Rate for each individual boiler model is listed in Table 2, page 2. This flow rate is based on the unit running at the CO_2 (natural gas) value shown in Table 3 for each model, and the maximum flue gas temperature of 200°F. Values can vary depending on the location of the installation and operating conditions.
- A carbon monoxide detector(s) is required in the boiler room for SVF boilers installed in a Category II configuration. The carbon monoxide detector must be wired on the same electrical circuit as the boiler. Check your local codes for any additional requirements of carbon monoxide detectors.

⚠WARNING

Improper Installation of a Category II vent system resulting in positive pressure in the vent system can cause flue gas spillage and carbon monoxide emissions, which can result in severe personal injury or death.

IMPORTANT

Weil-McLain recommends the use of a Variable Speed Chimney Fan or Power Venter to ensure that the appropriate negative pressure is maintained for Category II venting. As a result of the boiler's efficiency, the exhaust gas temperatures can be low resulting in less natural draft. A flow proving switch should be wired into the Proof of Closure jumper circuit on the boiler control. See the boiler manual for additional information.

IMPORTANT

Weil-McLain recommends the use of a Double Acting Barometric Damper or Modulating Damper to ensure the appropriate negative pressure range is kept for Category II venting.

Table 3 SVF CO_2 values for flow rates

Models	CO_2 %
SVF 500/600	9.50
SVF 725-1000	9.25
SVF 1500-3000	9.00

IMPORTANT

When using a damper of any kind, it is recommended to use a thermal spill switch to detect any exhaust flow into the boiler room. Verify the temperature range on the thermal spill switch is adequate for the Flue gas temperature from the SVF boiler. The use and set-point of this shall be determined by the system designer. The Auto reset input on the Boiler's control can be used to wire in the thermal spill switch.

IMPORTANT

The thermal spill switch should shut down all boilers connected to the common flue. Each boiler must be wired to its own set of dry contacts activated by the spill switch.

IMPORTANT

Increasing the negative pressure in the vent pipe will slightly increase the firing rate at low fire, thus reducing the boiler's true modulation range. Consider this factor during system design.

Common Venting Methods and Requirements, continued

SlimFit Boilers (SF 550-2000)

The SlimFit boilers can be common vented when the following requirements are met.

- Common venting of the SlimFit boiler can only be done in a Category II vent system. All requirements for the SlimFit boiler to be vented in a Category II configuration must be met as stated in the related SlimFit Boiler Manual or all subsequent addenda.
- SlimFit boilers can only be common vented with other SlimFit Boilers.
- The maximum number of SlimFit boilers to be common vented together is eight.
- The Vent system for a Category II SlimFit boiler is considered a Designed / Engineered vent system and should be designed by a professional using accepted engineering practices.
- Vertical Vent only.
- Combustion air must come from the boiler room. See the Direct Exhaust sections in the boiler manuals for more information.
- Venting must be increased using a bell reducer on the SF 550-750 boilers at the boiler vent adapter for Category II vent connection after the first three feet of venting. See Table 4 and the boiler manual for more information. The SF 1000-2000 boilers do not need a bell reducer.
- The Vent System should be designed so that the pressure in the vertical vent pipe immediately following the bell reducer is between the ranges provided in Table 5, during all operating conditions (i.e., High Fire through Low Fire, prepurge, post purge and ignition). If a negative pressure cannot be guaranteed at prepurge and post purge, a backflow preventer is required on each boiler's vent.

⚠WARNING

To prevent backflow through boiler, negative pressure must be maintained in vent system at all times including prepurge and post purge cycles. Failure to comply can result in severe personal injury, death, or substantial property damage.

- Flue gas temperature should not exceed 210°F; the boiler will shut down and recycle if it does.

Table 4 Venting increases for SlimFit using a bell reducer

Models	Original Piping Diameter	Increased Size after 3 ft.
SF 550-750	6"	8"
SF 1000-2000	10"	N/A

Table 5 Rating and vent data for SlimFit

Boiler Model	Input Btuh	Stack / Vent flow rate (scfm)	Negative pressure at the vent connection (inches w.c.)	Vent Adapter Size
SF 550	500,000	128	-0.001 to -0.100	6"
SF 750	725,000	175	-0.001 to -0.100	6"
SF 1000	1,000,000	279	-0.001 to -0.100	10"
SF 1500	1,500,000	418	-0.001 to -0.100	10"
SF 2000	2,000,000	558	-0.001 to -0.100	10"

The flue gas temperature should typically be within 20°F of the return water temperature of the boiler. If there is the potential for a wide variation in return water temperatures, the lowest possible temperature should be used for any calculations.

- Stack / Vent Flow Rate for each individual boiler model is listed in Table 5. This flow rate is based on the unit running at 9.25% CO_2 (natural gas), and the maximum flue gas temperature of 210°F. The values can vary depending on the location of the installation and operating conditions.

SlimFit Boilers (SF 550-2000), continued

- Stack/Vent Flow Rate for each individual boiler model is listed in Table 5, page 4. This flow rate is based on the unit running at the CO_2 (natural gas) value shown in Table 6 for each model, and the maximum flue gas temperature of 200°F. Values can vary depending on the location of the installation and operating conditions.
- A carbon monoxide detector(s) is required in the boiler room for SlimFit boilers installed in a Category II configuration. The carbon monoxide detector must be wired on the same electrical circuit as the boiler. Check your local codes for any additional requirements of carbon monoxide detectors.

⚠WARNING

Improper Installation of a Category II vent system resulting in positive pressure in the vent system can cause flue gas spillage and carbon monoxide emissions, which can result in severe personal injury or death.

IMPORTANT

Weil-McLain recommends the use of a Variable Speed Chimney Fan or Power Venter to ensure that the appropriate negative pressure is maintained for Category II venting. As a result of the boiler's efficiency, the exhaust gas temperatures can be low resulting in less natural draft. A flow proving switch should be wired into the Proof of Closure jumper circuit on the boiler control. See the boiler manual for additional information.

IMPORTANT

Weil-McLain recommends the use of a Double Acting Barometric Damper or Modulating Damper to ensure the appropriate negative pressure range is kept for Category II venting.

Table 6 SlimFit CO_2 values for flow rates

Models	CO_2 %
SF 550-750	9.25
SF 1000-2000	9.25

IMPORTANT

When using a damper of any kind, it is recommended to use a thermal spill switch to detect any exhaust flow into the boiler room. Verify the temperature range on the thermal spill switch is adequate for the Flue gas temperature from the SlimFit boiler. The use and set-point of this shall be determined by the system designer. The Auto reset input on the Boiler's control can be used to wire in the thermal spill switch.

IMPORTANT

The thermal spill switch should shut down all boilers connected to the common flue. Each boiler must be wired to its own set of dry contacts activated by the spill switch.

IMPORTANT

Increasing the negative pressure in the vent pipe will slightly increase the firing rate at low fire, thus reducing the boiler's true modulation range. Consider this factor during system design.

Common Venting Methods and Requirements, continued

Code Compliance

⚠WARNING

Provisions for combustion and ventilation air must be made in accordance with the codes listed below. Failure to comply can result in severe injury, death, or substantial property damage.

Installations must provide provisions for combustion and ventilation air in accordance with the section "Venting of Equipment", of the National Fuel Gas Code, ANSI Z223.1 / NFPA 54, or "Venting Systems and Air Supply for appliances" of the Natural Gas and Propane Installation Code, CAN/CSA B149.1, or applicable provisions of the local building codes.

The figures on this page and the following pages represent a general common venting approach. The Vent system for a Category II boiler is considered a designed engineered vent system and should be designed by a professional using accepted engineering practices.

Figure 1 Common venting for SVF 500/600 boilers

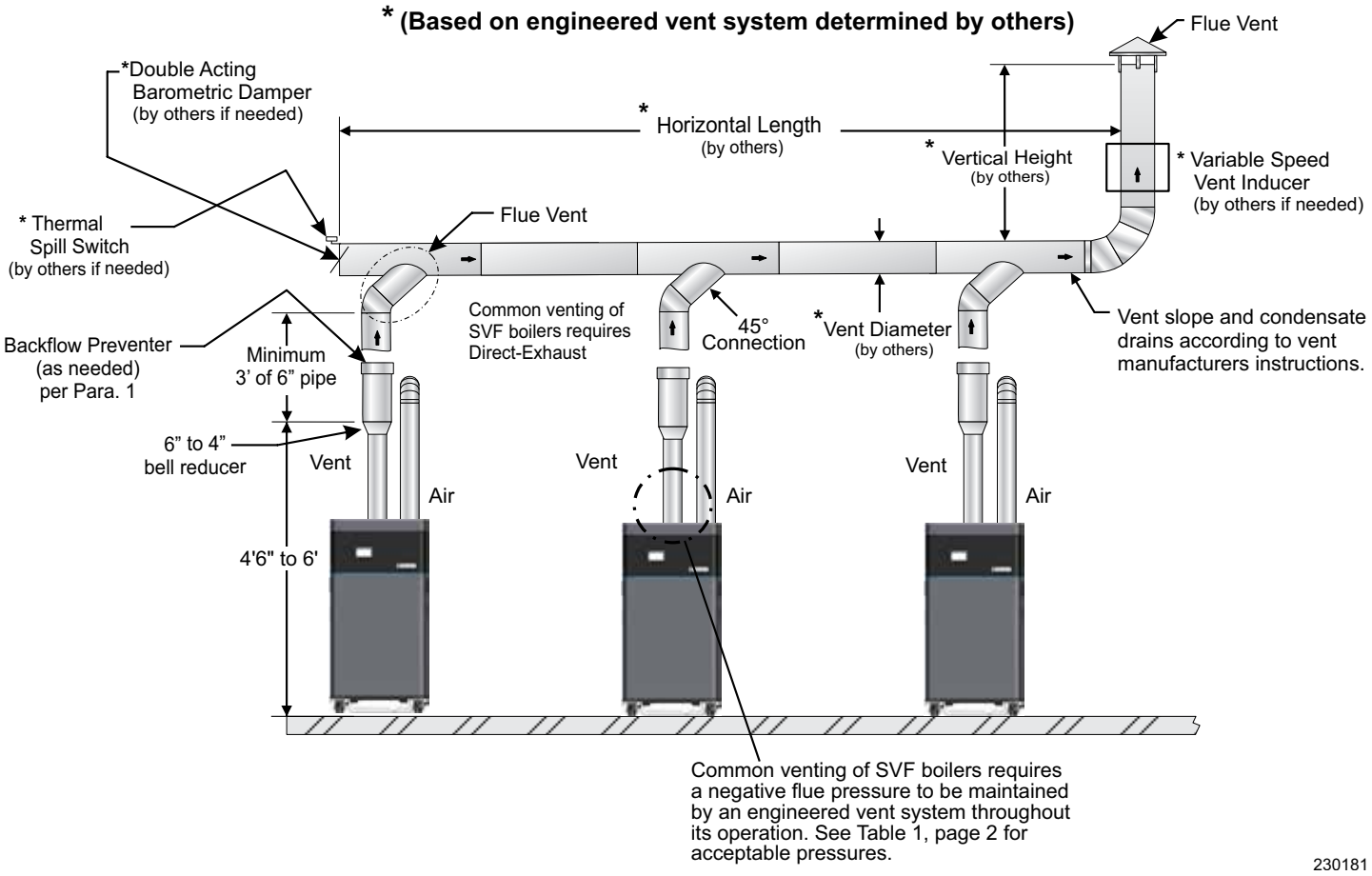
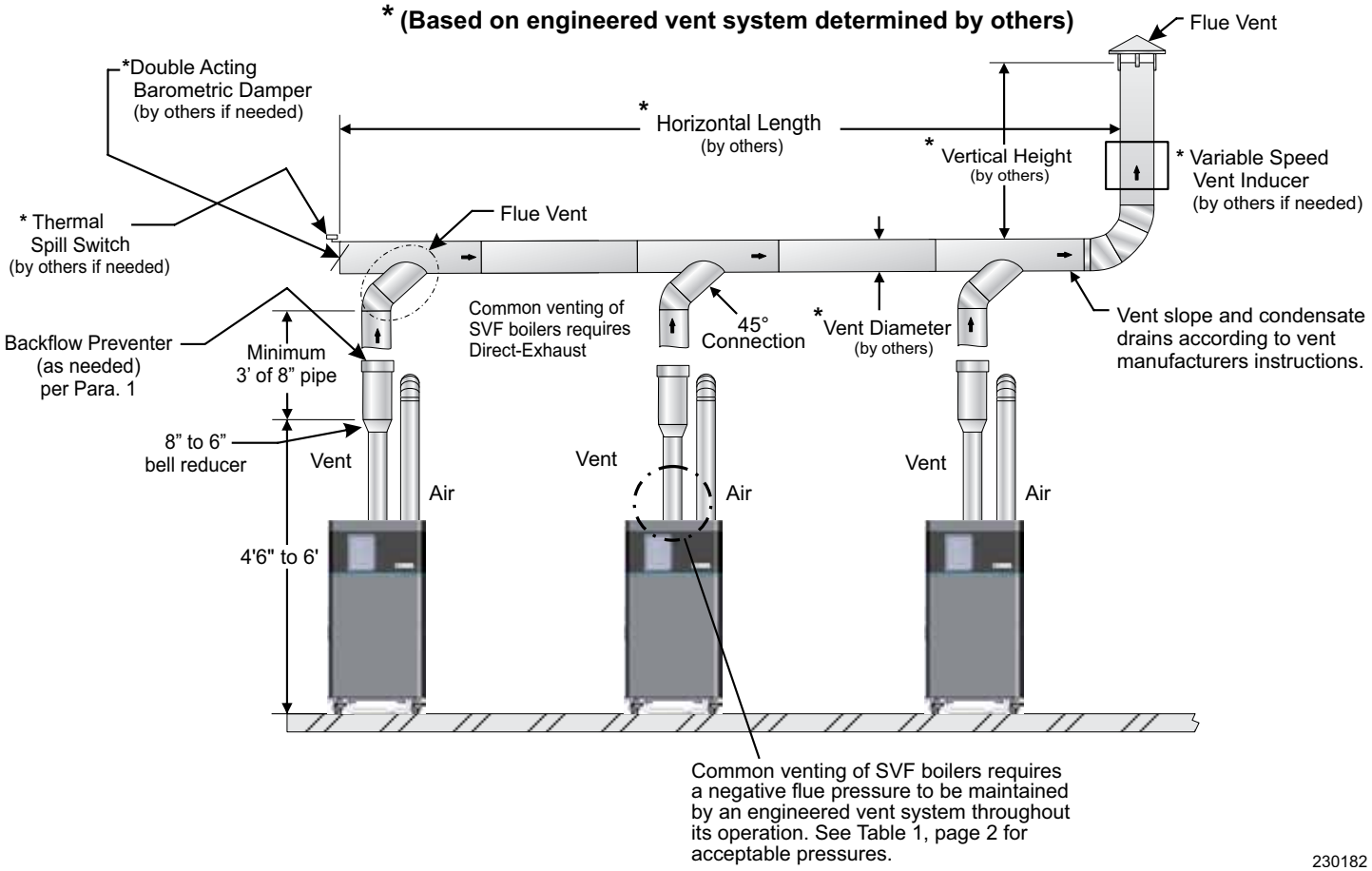


Figure 2 Common venting for SVF 725-1000 boilers (SVF 850 shown)



Common Venting Methods and Requirements, continued

Figure 3 Common venting for SVF 1500-2000 boilers

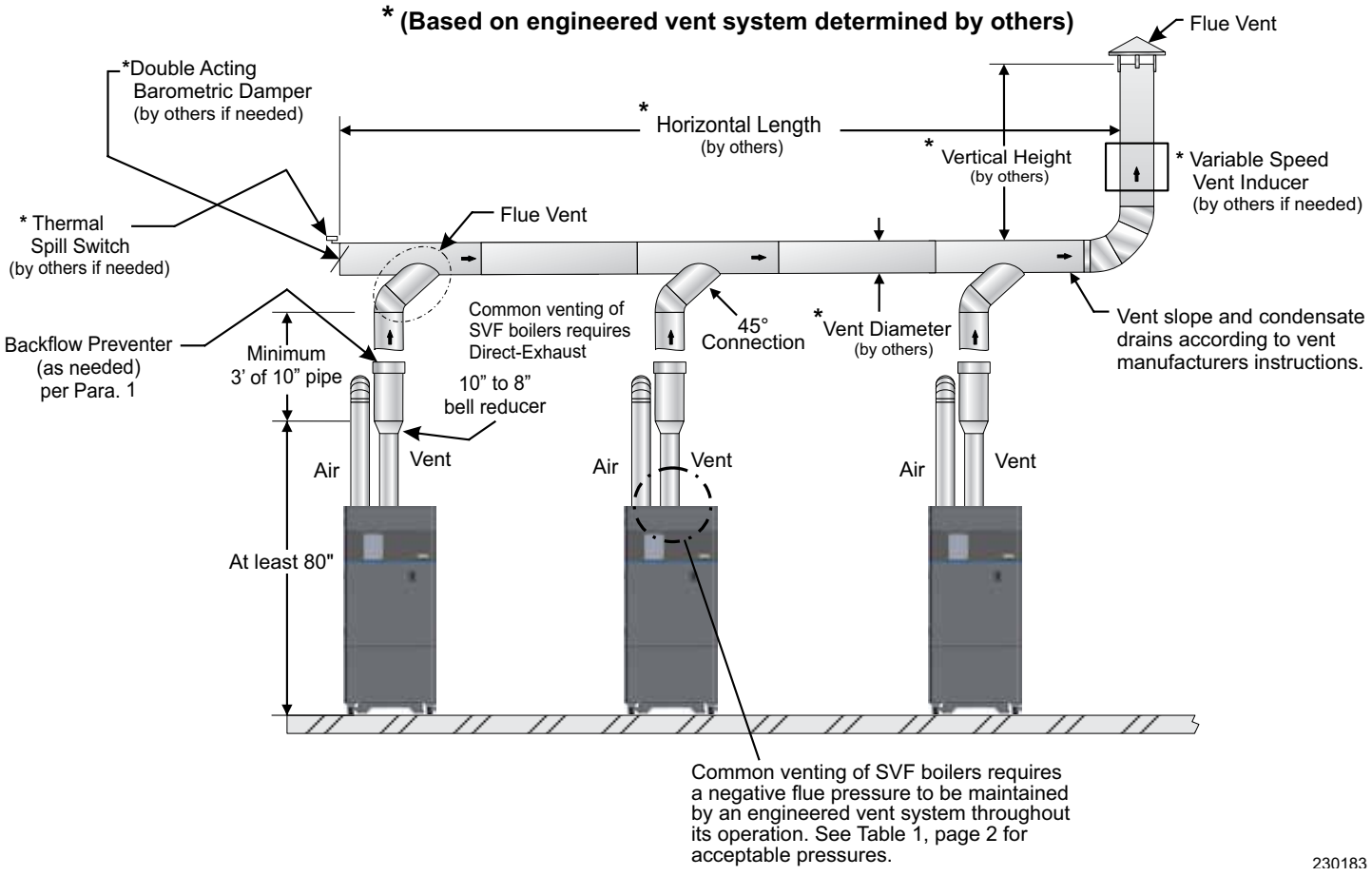
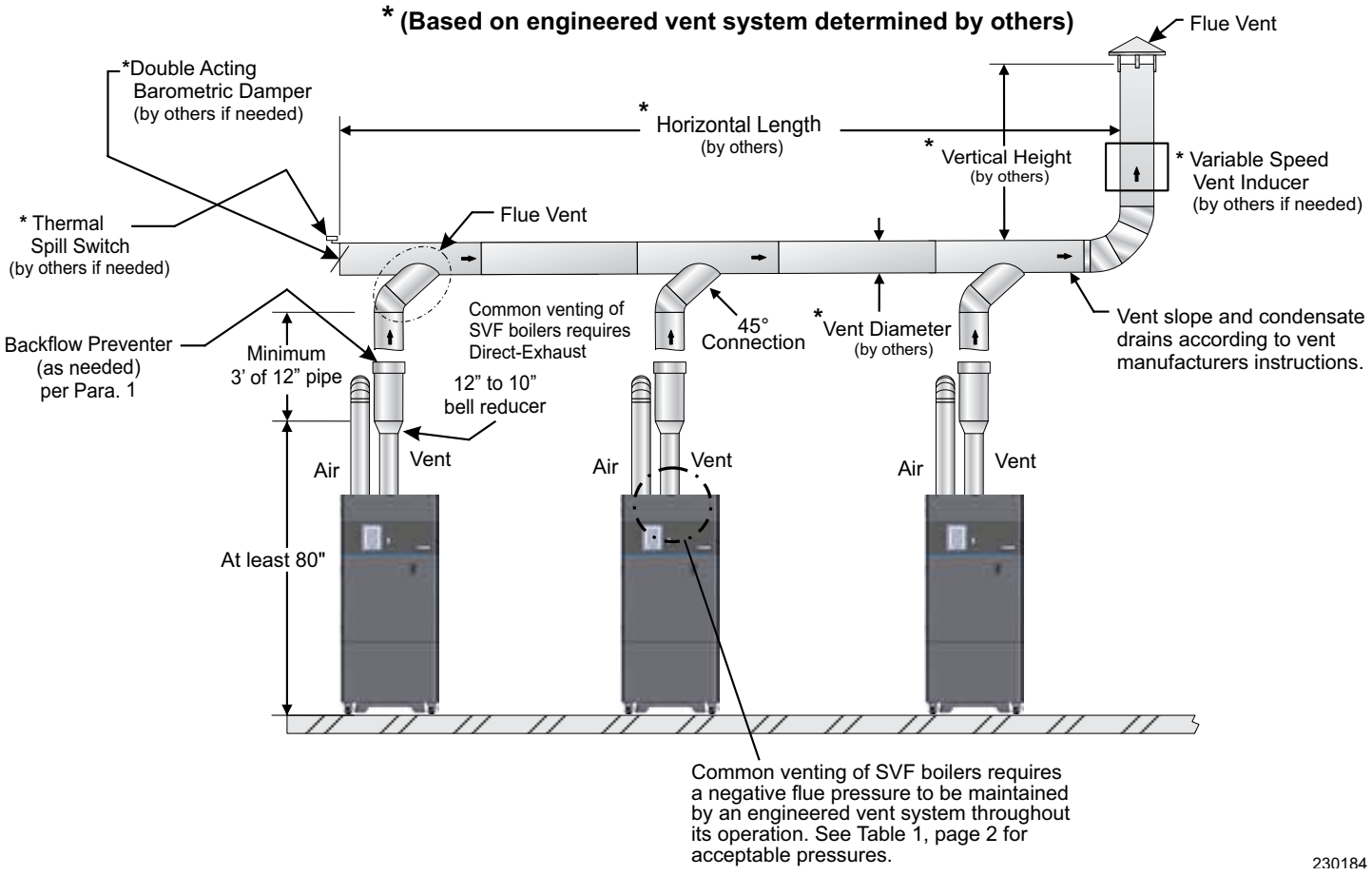


Figure 4 Common venting for SVF 2500-3000 boilers



Common Venting Methods and Requirements, continued

Figure 5 Common venting for SlimFit 550/750 boilers

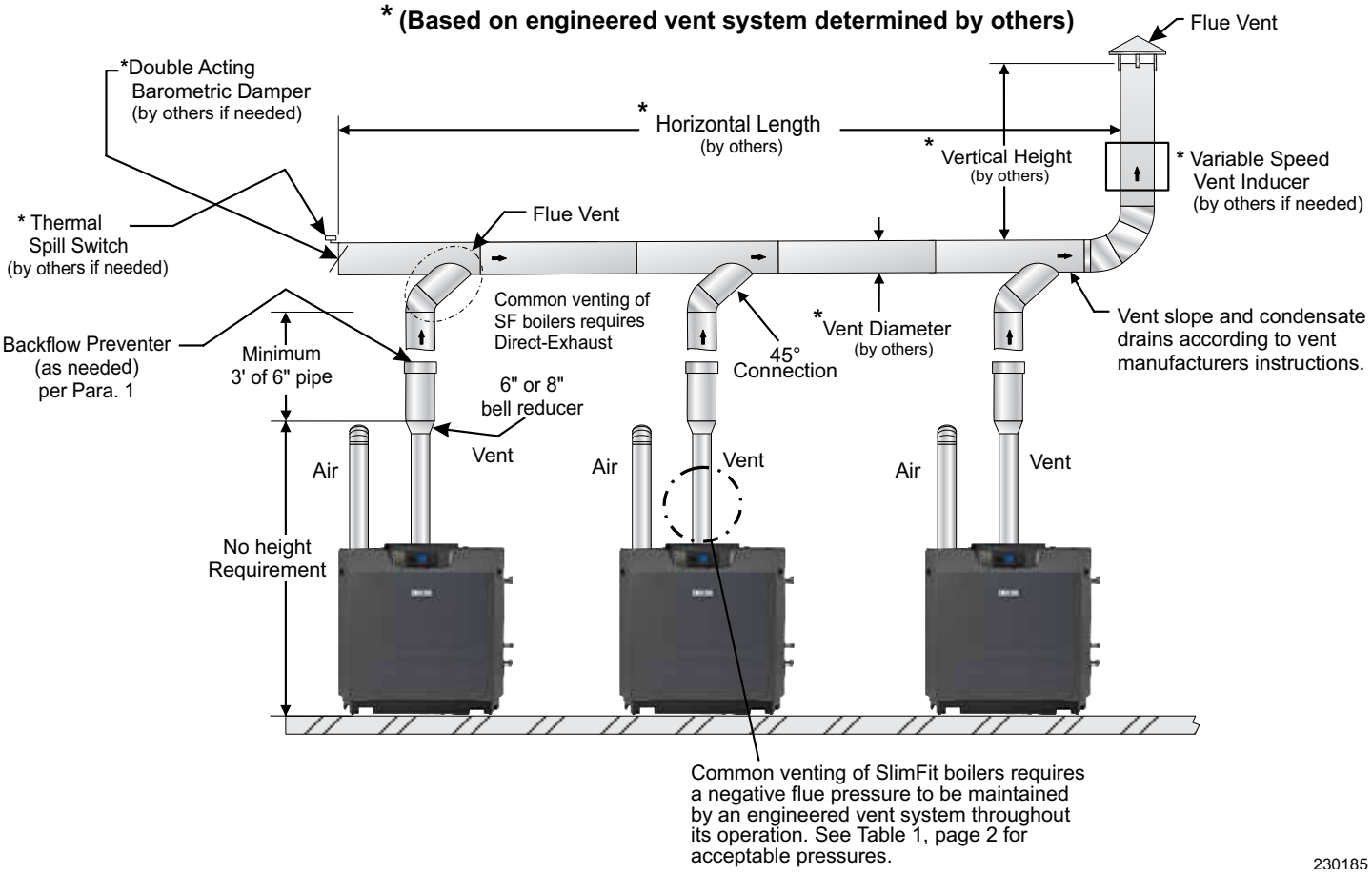
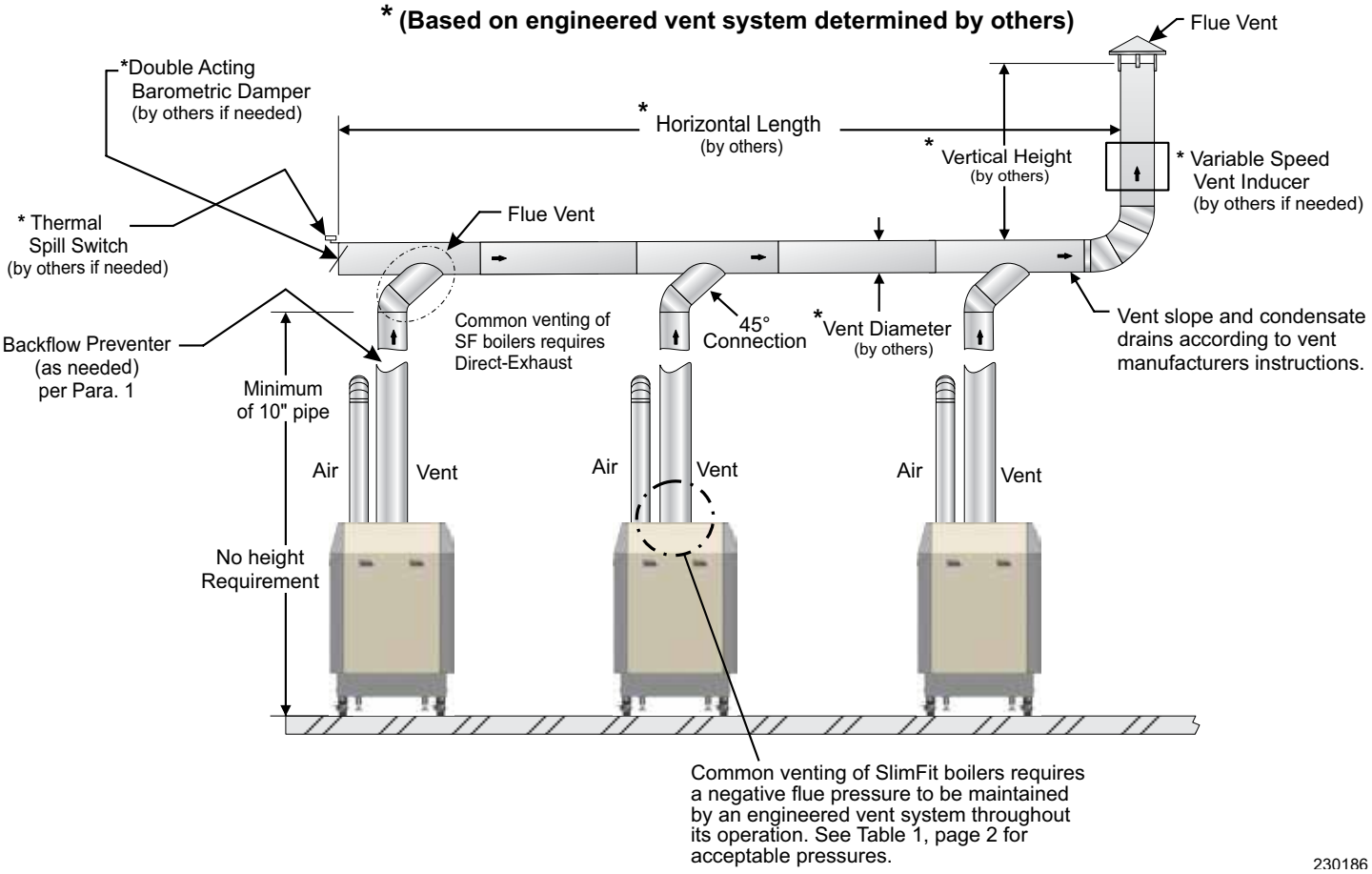


Figure 6 Common venting for SlimFit 1000-2000 boilers



WEIL-McLAIN®

WM Technologies, LLC
500 Blaine Street
Michigan City, IN 46360-2388
Telephone: (800) 654-2109
weil-mclain.com

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