

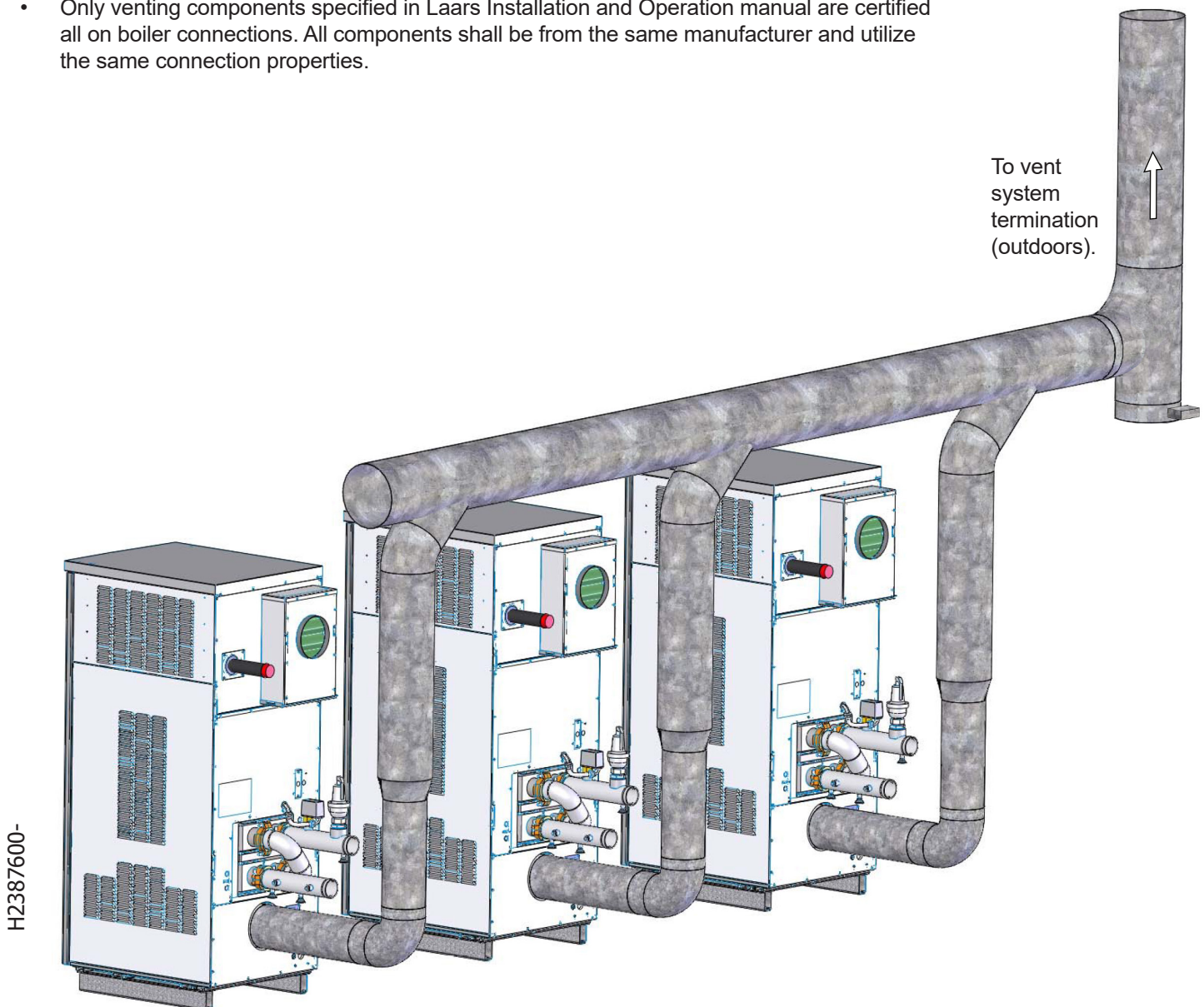
This guide describes methods and requirements for common vent installations of the MagnaTherm / MagnaTech boiler and water heater products. Only products produced after 01 July 2017 are approved for Category II and IV vent systems. The Vent System Engineer may choose to design for Category II or Category IV, as long as the system remains within the pressure ranges specified.

Warning:

To prevent the backflow of flue gas, a negative pressure must be maintained in at the appliance's outlet per Table 1, during all modes of startup and operation, including boiler purge cycles.

The boiler can be common vented (more than one boiler vented into a single vent system) only if the following requirements are followed:

- A common vent system has been designed and engineered by a licensed professional.
- Venting installation meets the requirements of the MagnaTherm IO Manual (Section 3) as provided with the product or from the Laars web site: www.laars.com.
- Only venting components specified in Laars Installation and Operation manual are certified all on boiler connections. All components shall be from the same manufacturer and utilize the same connection properties.



Warning:

To prevent the backflow of flue gas, use only venting components from the same special gas vent manufacturer, utilizing a lateral (45-degree) tee, per Laars Installation and Operation manual

- The common vent diameter shall be specified by the system design engineer (not provided by Laars)
- The common vent system must maintain the system pressure for exhaust flow ranges specified in the Table 1 – Category II & Category IV Vent Data.
- If the proper outlet pressure (from Table 1) cannot be maintained, then the appropriate mechanical draft and/or draft control, designed to prevent flue gas recirculation in idle appliances, shall be installed.
- Flue gas temperature is maintained in the range per the vent system engineer's specifications. The lowest possible flue temperature used in the system (based on return water temperature +10°F) shall be used in engineer's vent system pressure calculations.
- Ducted combustion air is not recommended when common venting without mechanical draft.
- If mechanical draft, or other induced draft equipment (e.g. chimney fan or power venter), is NOT provided to maintain a constant negative pressure in the vent system, then the special gas vent shall have sufficient vertical height to ensure the outlet pressures in Table 1 are provided, and be increased as designated in the Product Installation and Operating Manual.
- A carbon monoxide detector is installed near the boiler(s), in the same room. Local codes (which must be followed) may have more specific requirements, such as hard-wiring of detectors in the same room, and on other floors in the building.
- The boilers and vent system must have appropriate drain/trap provided to prevent condensate or flue gas leakage.

Table 1 – MagnaTherm / MagnaTech Vent Design Data (@ Specified 9.0% CO₂ setting)

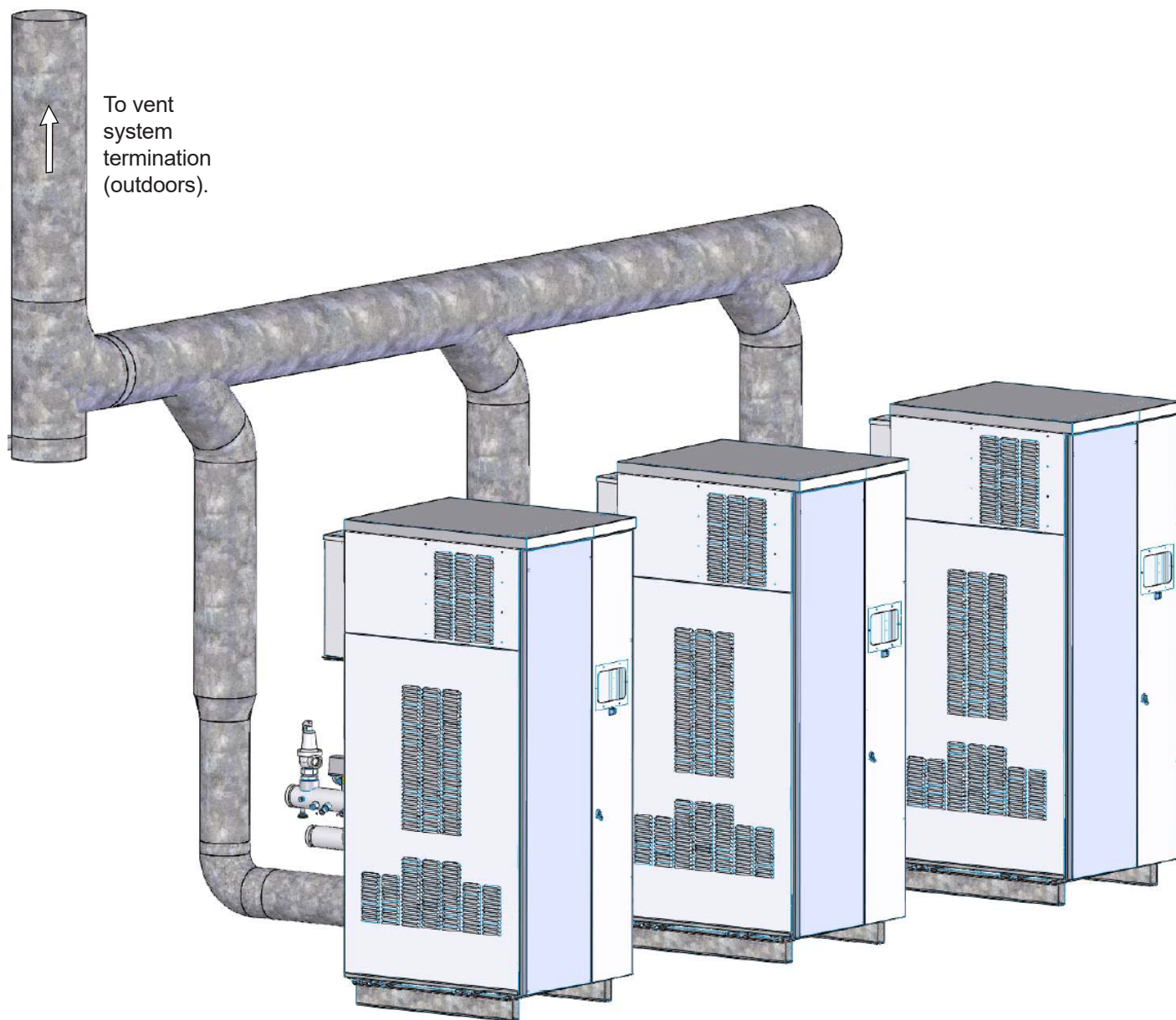
Boiler Model	Max Input Rate (MBH)	Cat II allowable Pressure Range inches w.c.	Cat IV allowable Pressure Range inches w.c.	Minimum CFM (scfm) 20:1 Boiler	Minimum CFM (scfm) 5:1 Boiler	Maximum CFM (scfm)
MGH/V1600	1600	-0.001 to -0.100	0.0 to 1.00	19	74	372
MGH/V2000	2000	-0.001 to -0.100	0.0 to 1.00	23	93	465
MGH/V2500	2500	-0.001 to -0.100	0.0 to 1.00	29	116	581
MGH/V3000	3000	-0.001 to -0.100	0.0 to 1.00	35	139	697
MGH/V3500	3500	-0.001 to -0.100	0.0 to 1.00	41	163	813
MGH/V4000	4000	-0.001 to -0.100	0.0 to 1.00	46	186	929

Table 2 – MagnaTherm FT / MagnaTech FT Vent Design Data (@ Specified 9.0% CO₂ setting)

Boiler Model	Max Input Rate (MBH)	Cat II allowable Pressure Range inches w.c.)	Cat IV allowable Pressure Range inches w.c.	Minimum CFM (scfm) 20:1 Boiler	Maximum CFM (scfm)
CFH1000	1000	-0.001 to -0.100	0.0 to 1.00	15	238
CFH1500	1500	-0.001 to -0.100	0.0 to 1.00	17	358
CFH2000	2000	-0.001 to -0.100	0.0 to 1.00	23	477
CFH3000	3000	-0.001 to -0.100	0.0 to 1.00	34	715

NOTE: Flue gas temperature may be anywhere between 100°F and 250°F at any time (38°C and 121°C)

The following illustration represents the basic common vent design, for use as a guide, along with the data in Table 1 for an engineer familiar with boiler venting systems to design a complete system.



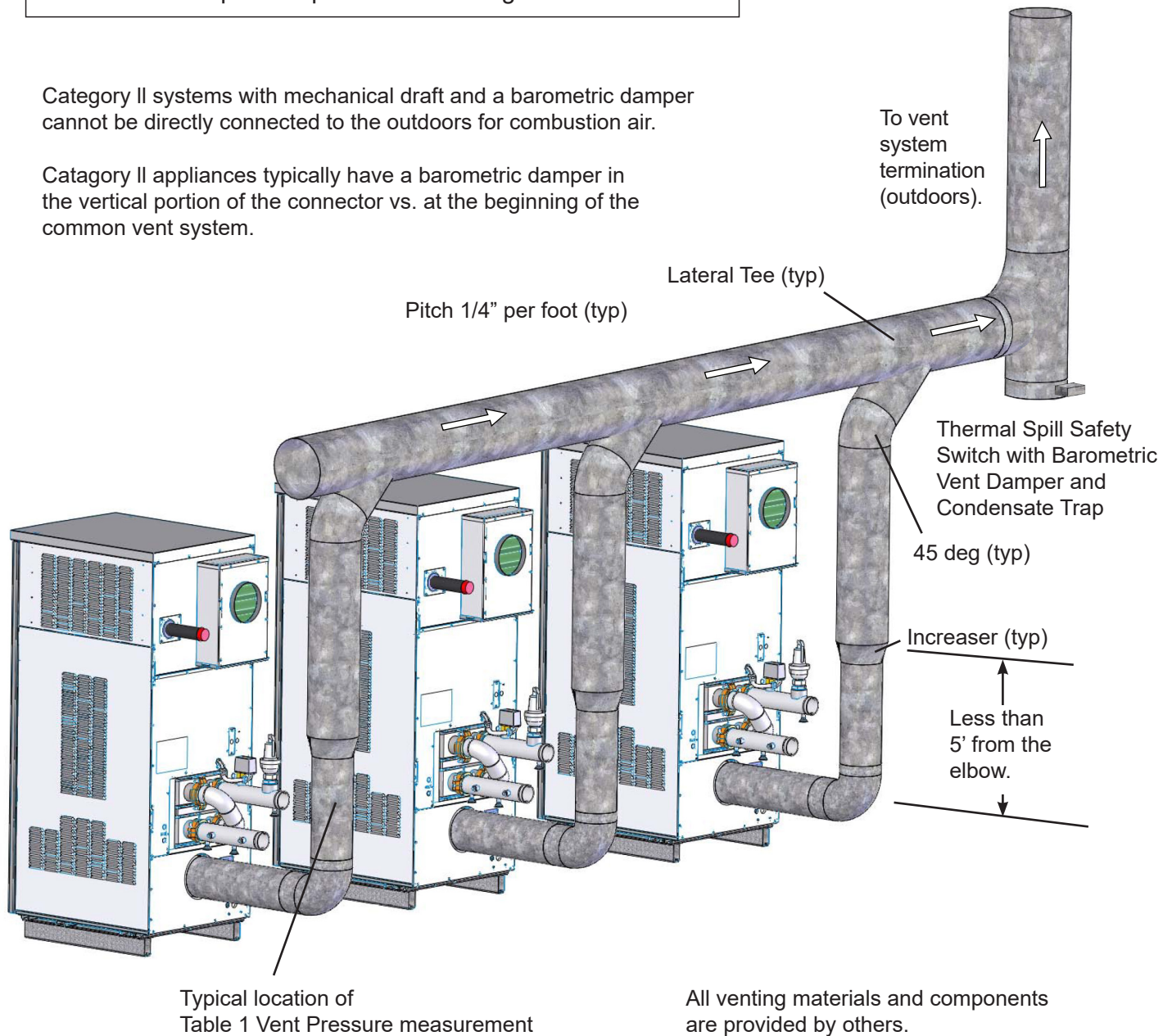
Note: If boilers are intended for Category II, all-gravity venting, then increased vent diameter sizes are required per the Installation and Operating Manual. Contact Venting System Engineer or Laars Heating Systems with all design-related questions.

NOTE: Depicted is a typical common vent layout shown with commonly used components. A professional engineer, competent in venting design (using Best Engineering Practices) shall specify actual design and components, sizes and lengths for all applications of common venting system.

WARNING: Vent system must be maintained at pressures specified per Table 1 on Page 2.

Category II systems with mechanical draft and a barometric damper cannot be directly connected to the outdoors for combustion air.

Category II appliances typically have a barometric damper in the vertical portion of the connector vs. at the beginning of the common vent system.



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