SECTION 23 51 00

BREECHINGS, CHIMNEYS, AND STACKS

MECHANICAL DRAFT SYSTEM FOR FIREPLACES, HEARTH AND COOKING APPLIANCES

SPECIFIER NOTE: *This guide specification is written for an X-VENTISO mechanical draft system as the basis of design. Edit to suit the project. Text in [brackets] is an option or a value to fill in. Delete paragraphs for components not used. Delete these notes before issue. For help with sizing or this section, call 800.642.2920 or send plans to plans@x-ventiso.com.*

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes a mechanical draft system for each scheduled flue, consisting of:

1. Draft inducer at the end of the flue run (vertical or horizontal termination).
2. Draft controller.
3. [Automatic flue damper.]
4. [Passive gas flue silencer.]
5. [Pressure-controlled makeup air unit.]
6. [Building automation interface.]

B. Related sections: Division 01 substitution procedures; [Section 23 05 13, Common Motor Requirements]; [Division 26 for the 120 V receptacle serving each controller]; [Section 23 09 00, Instrumentation and Control for HVAC].

1.2 REFERENCES

A. UL 378, Draft Equipment.

B. UL 705, Power Ventilators, including Supplement SC (restaurant exhaust).

C. UL 508, Industrial Control Equipment.

D. CSA B255, Mechanical Flue-Gas Exhausters.

E. CSA C22.2 (fans and ventilators).

F. ULC-S645 (restaurant exhaust, Canada).

G. ANSI S12.51 / ISO 3741, Determination of sound power levels of noise sources, reverberation room methods.

H. ISO 7235, Laboratory measurement procedures for ducted silencers.

J. NFPA 54, National Fuel Gas Code.

K. NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances.

SPECIFIER NOTE: *Cite the editions adopted by the authority having jurisdiction.*

1.3 ACTION SUBMITTALS

A. Product data: manufacturer's submittal sheet for each draft inducer, controller, damper, silencer and makeup air unit, with tag numbers.

B. Performance: airflow vs static pressure curve for each draft inducer, with the design point marked.

C. Sound: sound power test report from an independent laboratory, tested to ANSI S12.51 / ISO 3741, reporting LwA at full speed and at the commissioned operating speed. [For silencers: insertion loss by octave band, tested to ISO 7235.]

D. Listings: evidence of listing by a nationally recognized testing laboratory for each component, with the listing file or control number.

E. Connection diagrams: external connections only (power, draft inducer, damper, gas interlock, building automation).

F. Installation, operation and maintenance manual for each component.

> **SPECIFIER NOTE:** *Items C and D carry the performance intent of this section. A substitution request that cannot supply an independent sound power test and component listings does not provide the information needed to evaluate it.*

1.4 CLOSEOUT SUBMITTALS

A. Completed installation and commissioning record for each flue, including the commissioned operating speed.

B. Operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Draft inducer, controller and automatic flue damper furnished by one manufacturer, with single-source responsibility for the system.

B. Each component listed by a nationally recognized testing laboratory and labeled.

C. Each controller factory-assembled, factory-sealed and bench-tested before shipment.

1.6 WARRANTY

A. Manufacturer's standard warranty: 2 years from the invoice date, parts and shipping. Maintain the documented annual inspection that the warranty requires.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of design: X-VENTISO by earthcore, Jacksonville, FL. 800.642.2920. x-ventiso.com.

B. Substitutions: per Division 01, with every submittal listed in 1.3.

2.2 DRAFT INDUCER

A. Basis of design: X-VENTISO XV Series, model [XV150] [XV250] [XV350] as scheduled.

B. Listed to UL 378 and UL 705, including Supplement SC for restaurant exhaust; CSA B255, CSA C22.2 and ULC-S645.

C. Housing and impeller: 316L stainless steel. Motor outside the flue gas stream.

D. Temperature rating: 1,000°F continuous, 1,400°F intermittent.

E. Discharge: 45° upward, away from the roofline.

F. Integrated spark arrestor.

G. Hinged body for cleaning and service. Maintain the service clearance shown on the submittal.

H. Service disconnect at the draft inducer, factory-installed.

J. Factory-wired cable with plug-in connection to the controller. No line-voltage branch circuit at the roof.

K. Performance: [___] CFM at [___] in. w.c. at the commissioned speed, as scheduled.

L. Sound power: tested as specified in 1.3.C.

> **SPECIFIER NOTE:** *Size each flue with the manufacturer's flue calculator or project review. Where several draft inducers share a chase, the basis of design requires 12 in. minimum spacing, edge to edge.*

2.3 DRAFT CONTROLLER

A. Listed to UL 508 and UL/ULC 378. Factory-sealed enclosure. Plugs into a 120 V receptacle.

B. Gas appliances. Basis of design: [X-VENTISO XV-GBC] [XV-GBC-DUO, two flues] [Meridian XV-MERD-CTRL] [Meridian DUO XV-MERD-DUO].

1. Proves draft before enabling the appliance, through an interlock with the appliance gas control.
2. On loss of draft: closes the gas interlock and alarms.
3. After the call for heat ends: purges the flue.
4. [Meridian: modulates draft inducer speed to the measured pressure difference between the flue and the room.]

C. Solid fuel appliances. Basis of design: [X-VENTISO XV-WBC] [XV-WBC-DUO, two flues].

1. Proves draft while the appliance is in use, with audible and visual alarm on loss of draft.

2. Alarms on loss of power while in use, with battery backup.

D. Commercial cooking and any gas-fired cooking appliance: custom XV-WBC configured by the manufacturer for the job [with gas interlock].

E. Three or four flues, or makeup air on the same call: XV-INTG, controllers started in sequence, makeup air last [; or XV-MULTICTRL, two Controlled Power controllers on one wall control], as recommended by the manufacturer.

F. Speed: set at commissioning for each flue.

G. Building automation:

1. [Dry contact.]
2. [BACnet through the manufacturer's XV-BACnet INTF gateway, factory-integrated, Ethernet connection to the BAS.]
3. [Modbus, factory-configured.]

2.4 AUTOMATIC FLUE DAMPER

A. Listed to UL 378.

B. Gas appliances (gas appliances only): [top-mount] [inline] automatic damper, spring-return actuator, fails closed. 316L stainless steel body.

C. Solid fuel appliances: automatic solid fuel damper, spring-return actuator, fails open. 316L stainless steel body. Rated 1,000°F continuous, 1,400°F intermittent.

D. Controlled by the draft controller in 2.3. Match the damper to the controller fuel type.

SPECIFIER NOTE: *Never use a gas damper on a solid fuel appliance.*

2.5 PASSIVE GAS FLUE SILENCER

A. Basis of design: X-VENTISO WSPRDraft, size [___], matched to the XV Series draft inducer. Gas appliances.

B. No moving parts and no power connection.

C. Insertion loss by octave band, tested to ISO 7235.

2.6 MAKEUP AIR UNIT

A. Basis of design: X-VENTISO VMASS.

B. Supplies makeup air to hold the served zone at its pressure set point within ±0.02 in. w.c. (±5 Pa), by modulating supply airflow against an outdoor pressure reference.

C. Components: filter cabinet with MERV 8 filter; supply fan with mounted controller; 2.0 kW heater with its own supply temperature set point; exterior pressure sensing; zone pressure sensing; exterior intake hood; integrated backdraft damper.

D. [Second heater.]

E. Power: dedicated 20 A, 120 V circuit, [plus a second dedicated 20 A circuit for the second heater].

F. Interlocked with the draft system as recommended by the manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install per the manufacturer's installation manuals, the listings, and the codes adopted by the authority having jurisdiction.

B. Terminate the draft inducer at the end of the flue run. Maintain termination clearances and the service clearance for the hinged body.

C. Multiple draft inducers on one chase: 12 in. minimum spacing, edge to edge.

D. Keep extension cable connections accessible. Never inside conduit or a closed wall.

E. Provide a 120 V receptacle at each controller location [and the dedicated circuits for the makeup air unit].

3.2 COMMISSIONING

A. Commission each flue per the manufacturer's instructions: set and record the operating speed, verify draft proving, verify the appliance interlock [and the damper operation], and test the alarm.

B. Record the settings on the installation record and turn it over with the closeout submittals.

3.3 DEMONSTRATION AND MAINTENANCE

A. Train the owner on operation, the alarm and its mute, and the annual inspection.

B. Annual inspection per the manufacturer's manuals, recorded.

END OF SECTION 23 51 00