X-VENTISO® by earthcore®

WSPRDraft Passive Gas Flue Silencers

Installation, Operation and Maintenance

XV-WDR-8, -10, -12, -14, -16 Sized to the gas flue diameter

XV-WDR-13 Fits Earthcore Eco-Steel 13" all-fuel pipe, insulated or air-cooled (gas use only)

For gas appliances: hearth appliances, non-condensing boilers and condensing boilers. Installs inline in the gas flue run, vertical, angled or (hearth only) horizontal.

GAS APPLIANCES ONLY. NOT FOR SOLID FUEL.

1 Read First

Read this manual fully before installing, and leave it with the homeowner or building owner. Installation and service are for qualified personnel familiar with the codes that apply to the job.

DANGER: Do not use with solid fuel. WSPRDraft is not designed or certified for solid fuel (wood, pellet, coal). Creosote and soot load the absorber and create a fire hazard. Gas appliances only.

WARNING: Every joint must be gas-tight. A leaking joint can let flue gas, including carbon monoxide, into the building.

CAUTION: Follow all national, state and local codes and the gas flue manufacturer's instructions. Where they differ from this manual, the code governs.

THE TWO MOST COMMON INSTALL MISTAKES. CHECK THESE BEFORE YOU CLOSE THE CHASE.

1. **Only one attachment method at a joint.** Every joint between the flue pipe and the silencer needs **both** mechanical fasteners (minimum four #8 stainless screws) **and** a bead of high-temp RTV silicone. Screws alone leak. Sealant alone lets the joint pull apart. See Section 3. (XV-WDR-13 is the one exception: its Eco-Steel joints follow the Eco-Steel instructions.)
2. **Horizontal install on a boiler.** Horizontal runs are for hearth appliances only, where there is no condensate to manage. On any boiler, condensing or not, install the silencer vertical or angled. See Section 6.

Annual inspection is required. Have a qualified professional inspect the silencer every year for liner deterioration, soot build-up and condensate or sulfur deposits, and clean it when the inspection shows it is needed (Section 8). **2-year warranty**, valid with proper installation and use per this manual and a documented annual inspection. Skipping the annual inspection voids the warranty.

What this manual covers

1. Read First
2. Applications and What You Need
3. Joint Attachment (Every Joint)
4. Vertical Installation
5. Angled Installation
6. Horizontal Installation (Hearth Only)
7. Condensate Drain
8. Annual Maintenance
9. Specifications
10. Installation Checklist and Record

The silencer in one paragraph

WSPRDraft is a passive, absorptive silencer that installs inline in a gas flue run, between two sections of flue pipe. It has no moving parts and no power connection. Flue gas passes straight through a 316L stainless mesh lining backed by mineral wool, which takes draft inducer noise out of the flue before it reaches the appliance and the room. Insertion loss is measured to ISO 7235 by an independent laboratory (Section 9). The silencer must be carried by its own non-combustible supports and wall bands, never by the flue pipe, and every joint gets both screws and sealant (except the XV-WDR-13, which joins like Eco-Steel pipe).

2 Applications and What You Need

Pick the orientation from the appliance type first. The orientation decides which installation page (4, 5 or 6) you follow.

Appliance	Vertical	Angled	Horizontal	Condensate drain
Gas hearth appliance	Yes	Yes	Yes	Capped, not connected
Non-condensing gas boiler	Yes	Yes	No	Capped, unless required (Section 7)
Condensing gas boiler	Yes	Yes	No	**Required.** Connect (Section 7)
Any solid fuel appliance	Not permitted. Do not install.			

In the box

- WSPRDraft silencer with custom end collars sized to the flue
- Built-in 3/4" smooth condensate outlet on the bottom end panel, capped at the factory
- This manual

Supplied by the installer

- #8 self-tapping sheet metal screws, 304 or higher grade stainless, 1/2" minimum shank: at least four per joint (not used on XV-WDR-13)
- High-temp RTV silicone sealant, the type the gas flue manufacturer specifies (if none is specified, rated to at least 600°F / 315°C) (not used on XV-WDR-13)
- Metal wall bands sized to the flue, as specified by the flue manufacturer
- Non-combustible supports or strapping
- Condensing boilers: trap, corrosion-resistant drain line and neutralizer (where required)

Before you start, confirm the site

- **Fuel:** the appliance burns gas. If there is any chance the flue will serve solid fuel, do not install.
- **Clearance:** keep the same clearance to combustibles around the silencer that the gas flue manufacturer requires for the flue pipe, in all chase framing.
- **Support:** plan non-combustible support for the full weight of the silencer. The flue pipe must not carry it. Design the supports for **100 lb**, which covers every WSPRDraft size.
- **Inspection:** the annual inspection is done from inside the flue, normally with a chimney camera run in from the termination or the appliance connection. No access opening at the silencer is needed for that. Where the drain is connected, keep the drain line and trap where they can be checked.
- **Flue:** follow the flue manufacturer's instructions for joints, supports, spans and wall bands. Silencer ends join either a straight length or an elbow.
- **Draft inducer:** published sound performance applies to WSPRDraft used with XV Series draft inducers.

3 Joint Attachment (Every Joint)

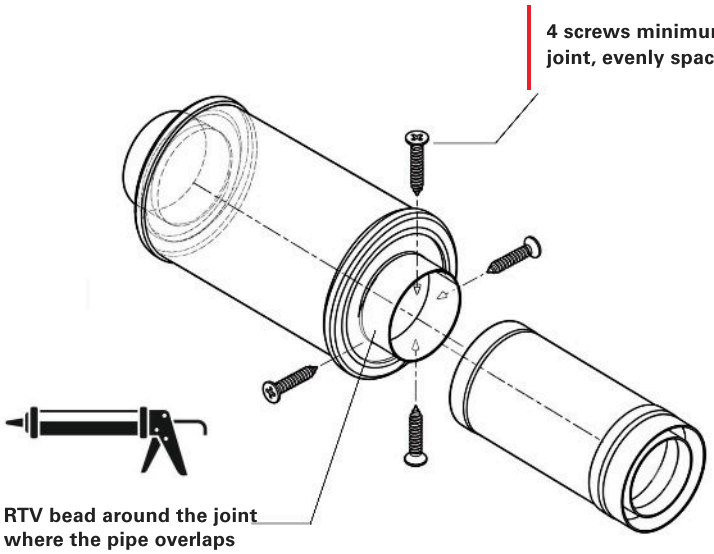
Each silencer has two joints, one at each end collar. Make both the same way, in every orientation.

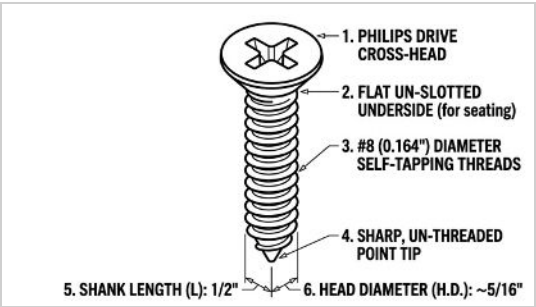
> XV-WDR-13 **Eco-Steel collars: skip this section.** The XV-WDR-13 has Earthcore Eco-Steel collars factory-attached to the silencer body. Join each end exactly as you would join two sections of Eco-Steel pipe, following the Earthcore Eco-Steel installation instructions. No screws or sealant are needed at these joints. Every other section of this manual still applies to the XV-WDR-13, including support, clearance and orientation.

1. Slip the end collar of the silencer into the flue pipe (the collars are slip fittings sized for standard gas vent), to the full overlap the flue manufacturer specifies.
2. Fasten the pipe to the collar with a **minimum of four (4) #8 stainless sheet metal screws**, evenly spaced around the joint.
3. Run a continuous bead of **high-temp RTV silicone** around the joint where the flue pipe overlaps the collar, to make the gas seal. Use the sealant the gas flue manufacturer specifies for its joints. If it does not specify one, use high-temp RTV rated to at least **600°F (315°C)**.
4. Repeat at the other end.

TWO METHODS AT EVERY JOINT.

Screws **and** sealant, at every joint between the flue pipe and the silencer body. One without the other does not meet the installation requirements. The XV-WDR-13 is the only exception (Eco-Steel joints, see above).



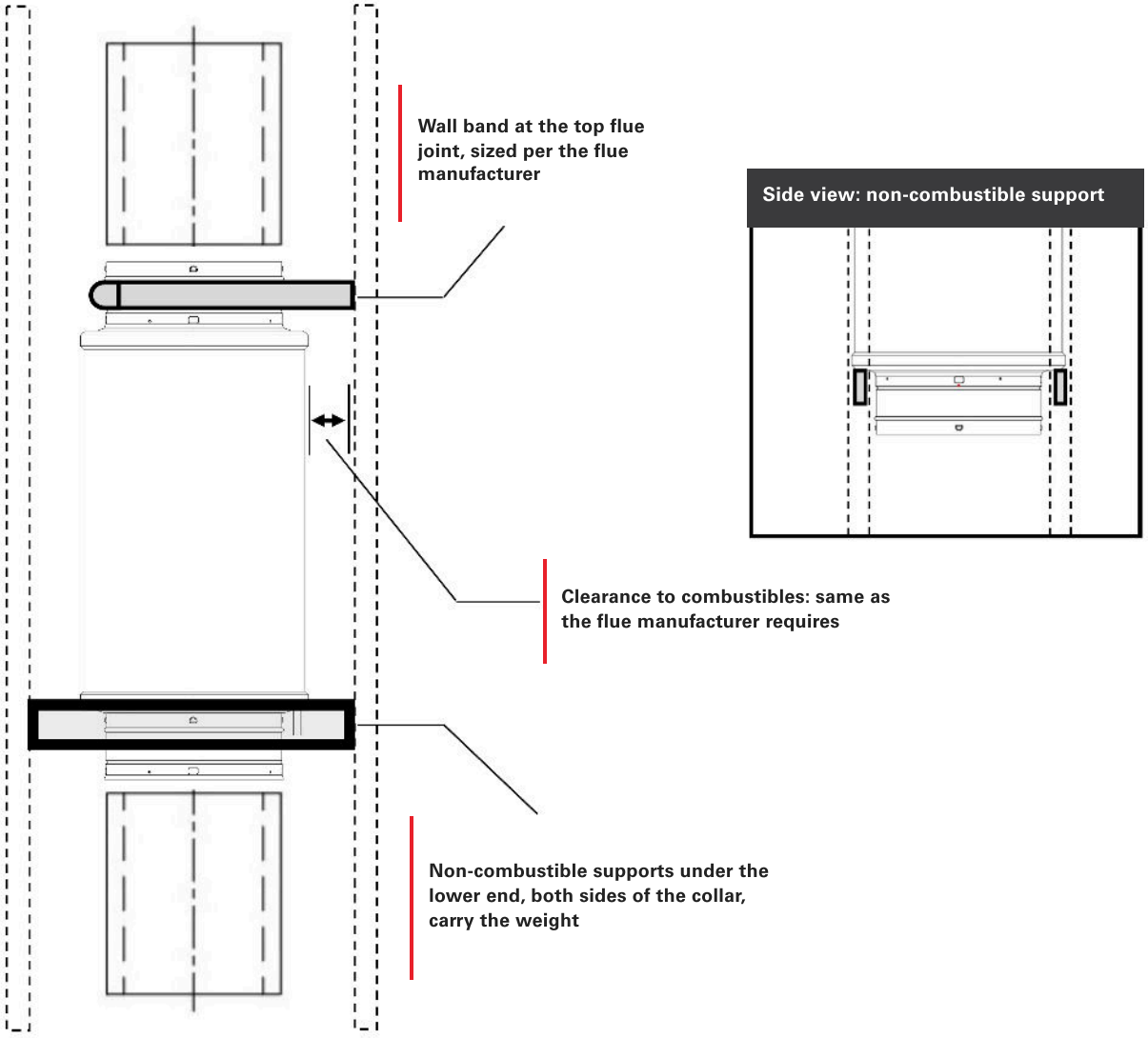


Fastener requirement	
Type	#8 self-tapping sheet metal screw
Material	304 stainless or higher grade
Shank	1/2" minimum
Quantity	4 minimum per joint
Sealant	High-temp RTV silicone, as specified by the gas flue manufacturer. If not specified: rated to at least 600°F (315°C).

4 Vertical Installation

For all gas appliances, including condensing and non-condensing boilers.

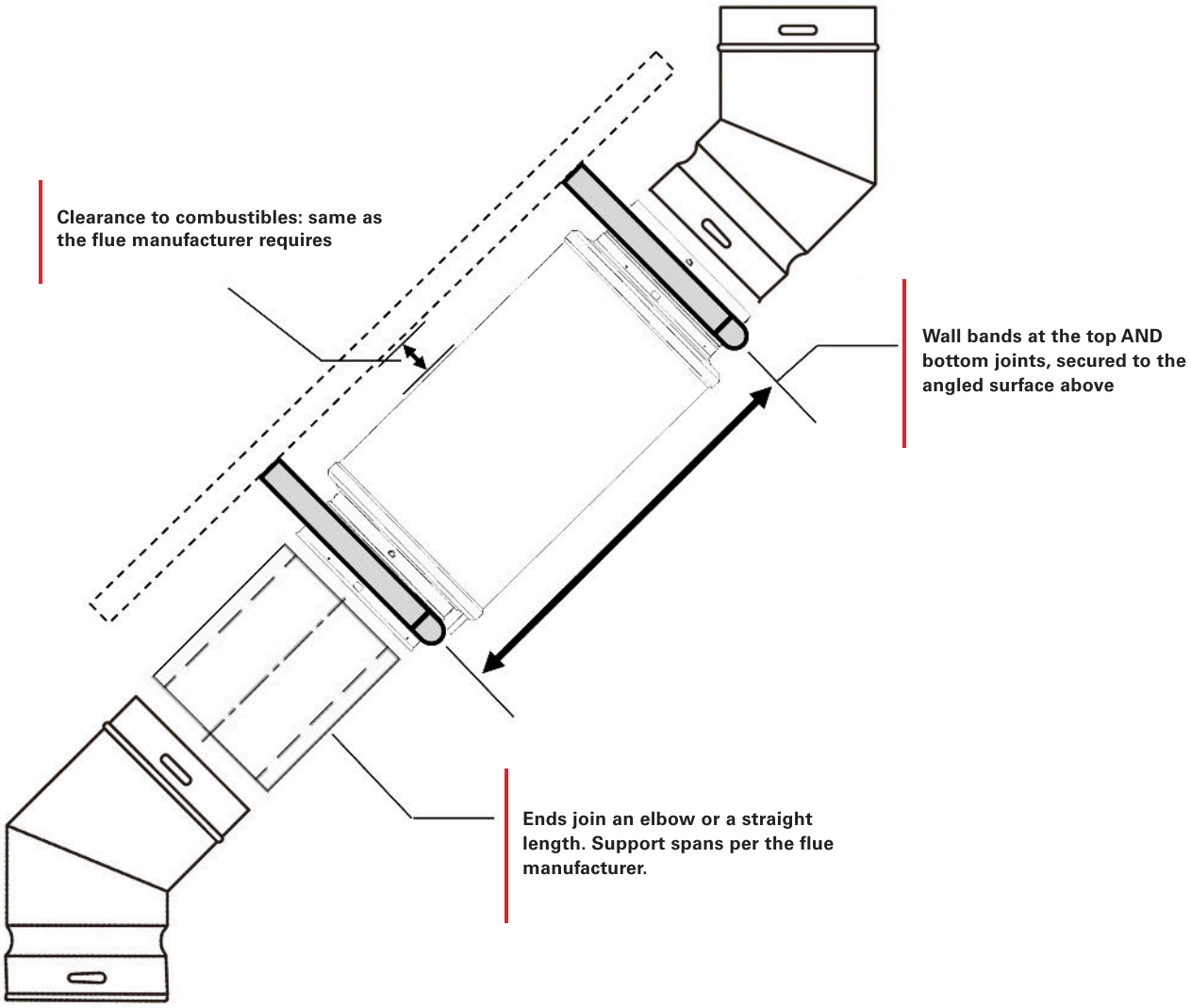
1. Mount non-combustible supports or strapping so they run **under the horizontal end area** at the bottom of the silencer, on two sides of the flue attachment collar. The supports carry the silencer's weight, not the flue.
2. Set the silencer on the supports and make the bottom joint (Section 3).
3. Make the top joint (Section 3).
4. Secure the top of the silencer at the flue joint with a metal wall band sized to the flue, as specified by the flue manufacturer.
5. Confirm clearance to combustibles all around, equal to the flue manufacturer's requirement, in all chase framing.



5 Angled Installation

For all gas appliances. The silencer ends join either an elbow or a straight length.

1. Make both joints (Section 3).
2. Secure the silencer with metal wall bands sized to the flue at **both the top and the bottom** flue joints, fastened to the angled surface above.
3. Support the flue on either side of the silencer per the flue manufacturer's span and support instructions.
4. Confirm clearance to combustibles all around, equal to the flue manufacturer's requirement, in all framing.

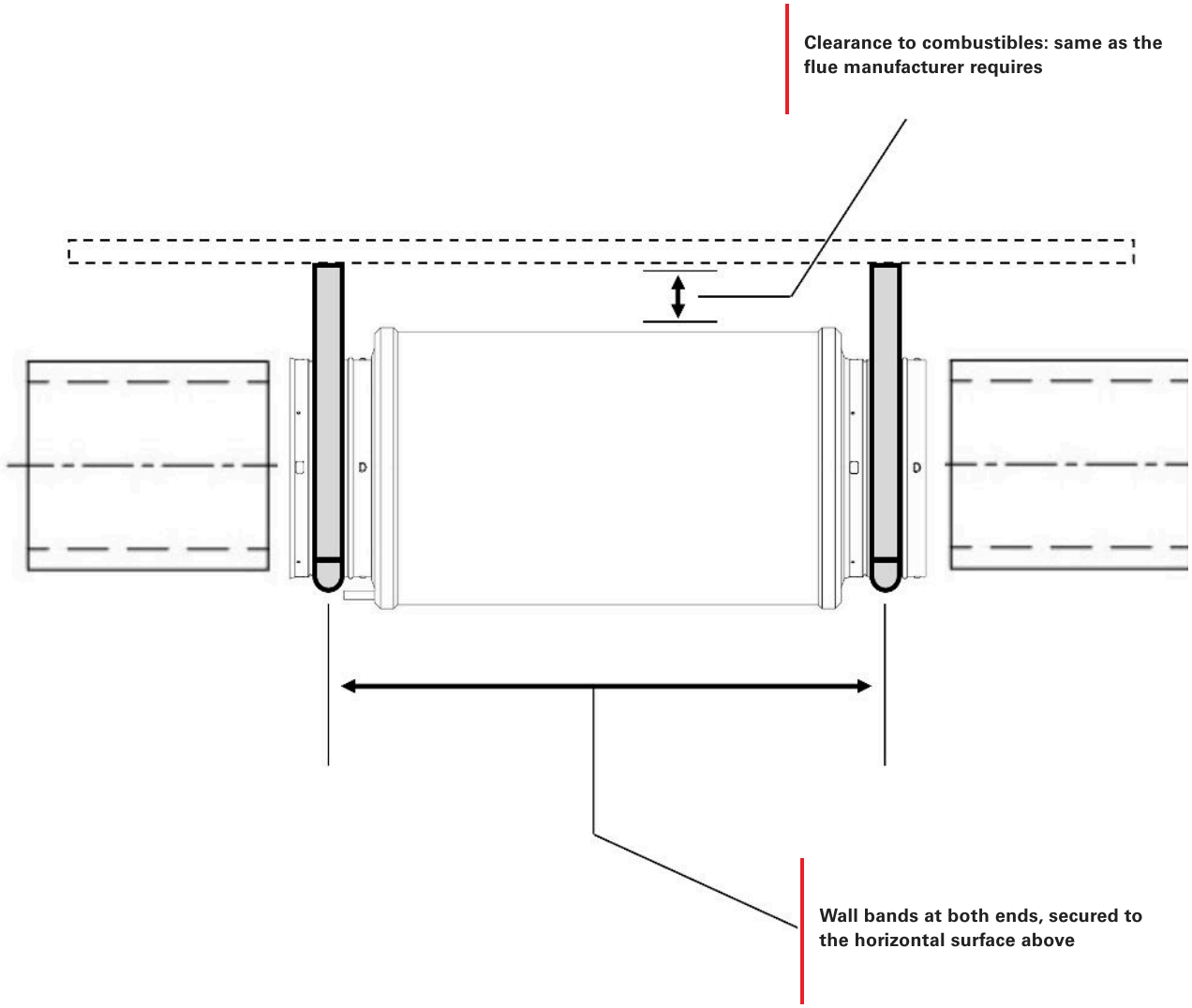


6 Horizontal Installation (Hearth Only)

HEARTH APPLIANCES ONLY. NEVER ON A BOILER.

Horizontal installation is only for applications that do not need condensate management, such as gas hearth appliances. Do not install horizontal on any boiler, condensing or non-condensing.

1. Make both joints (Section 3).
2. Secure **both ends** of the silencer with metal wall bands sized to the flue, fastened to the horizontal surface above.
3. Support the flue on either side of the silencer per the flue manufacturer's span and support instructions.
4. Confirm clearance to combustibles above and around the silencer, equal to the flue manufacturer's requirement.



7 Condensate Drain

Every WSPRDraft has a condensate drain built in: a **3/4" nominal smooth condensate outlet** (not threaded) off the bottom end panel. It **ships capped from the factory**. Uncap and connect it only where the appliance produces condensate in the vent.

Does this job need the drain?

Go by the appliance's vent category, shown on its rating plate and in its installation manual. Never assume it.

Appliance	Typical vent category	Drain	Why
Condensing gas boiler	Category IV (or II)	**Uncap and connect. Required.**	NFPA 54 (National Fuel Gas Code), Chapter 12: provision must be made to collect and dispose of condensate from vents serving Category II and IV appliances.
Non-condensing gas boiler	Category I (III if the vent is under positive pressure)	Leave capped, **unless** the boiler maker requires it or condensation is a known local problem	NFPA 54, Chapter 12: for Category I and III, a drain is required where local experience shows condensation is a problem.
Gas hearth appliance	Category I	Leave capped	Does not produce vent condensate in normal operation.

NEVER INSTALL HORIZONTAL ON A BOILER.

A horizontal silencer has no low point for the drain. Condensate would collect in the absorber. Boilers are vertical or angled only (Section 6).

Connecting the drain

1. Remove the factory cap from the 3/4" condensate outlet. The outlet is a smooth tube, not threaded: connect with flexible condensate tubing pushed over the outlet and clamped.
2. Install a water-seal trap (a P-trap, or a loop in the drain tube) with a **minimum 2" water seal**, so flue gas cannot escape through the drain line. The silencer is rated tight to 200 Pa (about 0.8" w.c.); a 2" seal holds about 500 Pa. If the boiler or vent manufacturer specifies a trap or a tie-in to its own condensate trap, follow theirs.
3. Fill the trap with water before the boiler is first fired. A dry trap lets flue gas out.
4. Run the drain to an approved plumbing fixture or disposal area (IFGC 307.2, or the local plumbing code).
5. Use corrosion-resistant drain piping, never copper, no smaller than the outlet. Slope it at least **1/8" per foot** toward the discharge, with no sags or low spots.
6. Add a condensate neutralizer where the boiler manufacturer or the local authority requires one. Vent condensate is acidic.
7. Keep the supports and strapping clear of the drain stub and drain line.

> Code sections are from NFPA 54 Chapter 12 (Condensation Drain) and IFGC 307.2 (condensate from fuel-burning appliances). The same NFPA 54 wording appears in UMC 802.9. Confirm against the editions adopted where you are installing. Where the code and the boiler manufacturer's instructions differ from this manual, they govern.

8 Annual Maintenance

Have a qualified professional **inspect the silencer once a year**, at the same visit as the appliance and flue service, and clean it when the inspection shows it is needed. Record every inspection in the service record below. **The annual inspection is required. Skipping it voids the warranty.**

Check	Look for	Action
Liner (camera)	Deterioration, corrosion, loose or damaged 316L mesh lining	Replace the silencer if the liner is damaged. The liner is not repairable.
Soot (camera)	Carbon soot build-up on the liner	Clean. Heavy soot means the appliance needs combustion service.
Deposits (camera)	Condensate or sulfur deposits	Clean. If the drain is connected, check it and the trap are clear and flowing.
Joints (where visible)	All screws in place, sealant intact, no gaps	Replace missing screws; reseal with the flue manufacturer's specified RTV
Supports and bands (where visible)	Supports, strapping and wall bands secure; silencer not hanging on the flue	Re-secure
Clearance	Nothing combustible stored or built inside the required clearance	Remove

Inspect with a camera. A chimney inspection camera run down from the termination, or up from the appliance connection, shows the liner, soot and deposits without opening anything. Clean only if the inspection shows it is needed.

Clean from the termination. Clean the silencer from the roof as part of the normal flue cleaning. Do not take the silencer apart; no disassembly is needed. The bore is lined with a **316L stainless mesh over mineral wool**. Pass brushes through it with care, and do not use tools or force that can snag, tear, puncture or crush the mesh. A damaged liner means replacing the silencer.

Service record

#	Date	Findings / work done	Technician / company
1			
2			
3			
4			
5			
6			
7			
8			

9 Specifications

Models	XV-WDR-8, XV-WDR-10, XV-WDR-12, XV-WDR-13, XV-WDR-14, XV-WDR-16 (number = flue size; XV-WDR-13 fits Earthcore Eco-Steel 13" all-fuel pipe, insulated or air-cooled)
Type	Passive absorptive silencer, straight-through. No moving parts, no power.
Fuel	Gas appliances only. Not for solid fuel.
Applications	Hearth appliances, non-condensing boilers, condensing boilers
Orientation	Vertical or angled: all gas applications. Horizontal: hearth only.
Max. flue gas temperature	400°C (752°F)
Support design load	100 lb, all sizes. Silencer must be carried by its own supports, not the flue.
Pressure rating	Positive-pressure tight to 200 Pa
Resistance coefficient	ζ = 0.25
Construction	Stainless steel, custom end collars matched to the flue size
Condensate drain	3/4" nominal smooth outlet, not threaded, built in on every unit, off the bottom end panel. Ships capped. Connect only where the appliance produces condensate (Section 7).
Warranty	2 years, valid with proper installation and use per this manual and a documented annual inspection
Acoustic testing	Insertion loss measured to DIN EN ISO 7235 at the Fraunhofer Institute for Building Physics (IBP)

Dimensions

Part number	Overall height	Max. dia. (over bands)	Collar
XV-WDR-8	44" (3'-8")	~18-1/4"	7-3/4" / 7-13/16"
XV-WDR-10	44" (3'-8")	20-3/16"	9-3/4" / 9-13/16"
XV-WDR-12	44" (3'-8")	20-3/16"	11-3/4" / 11-13/16"
XV-WDR-13	45-3/4"	20-3/16"	15-7/8" / 15-9/16"
XV-WDR-14	44" (3'-8")	20-3/16"	13-3/4" / 13-13/16"
XV-WDR-16	48" (4'-0")	~24-1/8"	15-3/4" / 15-13/16"

Collars on the 8, 10, 12, 14 and 16 are slip fittings, sized to slip into standard gas vent of the same nominal size. The 13 collar fits Earthcore Eco-Steel 13" all-fuel pipe, both insulated and air-cooled.

Insertion loss, dB, by octave band (ISO 7235)

Part number	63	125	250	500	1k	2k	4k	8k Hz
XV-WDR-8	4.6	9.3	14.6	19.2	26.6	26.8	13.5	12.2
XV-WDR-10, -12, -13, -14	3.2	5.9	12.3	21.6	27.5	17.5	13.2	13.2
XV-WDR-16	2.4	3.6	11.9	24.7	23.3	12.7	12.0	14.8

Measured on the silencer body; sizes sharing a body share data. With XV Series draft inducers at full speed, this works out to about 16 to 20 dB less sound traveling down the flue, depending on size (calculated from independent lab data). Full test data available on request.

10 Installation Checklist and Record

Do not skip steps. Complete before the chase is closed and the appliance is fired.

A. Application

1	Appliance burns gas. No solid fuel can be connected to this flue.	YES / NO
2	Orientation is allowed for the appliance (horizontal on hearth appliances only, never a boiler).	YES / NO
3	Silencer size matches the flue size.	YES / NO

B. Joints

1	**Top/upper joint:** minimum four #8 stainless screws, 1/2" shank, installed.	YES / NO
2	**Top/upper joint:** continuous high-temp RTV bead around the overlap.	YES / NO
3	**Bottom/lower joint:** minimum four #8 stainless screws, 1/2" shank, installed.	YES / NO
4	**Bottom/lower joint:** continuous high-temp RTV bead around the overlap.	YES / NO
5	XV-WDR-13 In place of 1 to 4: both joints made per the Earthcore Eco-Steel installation instructions.	YES / NO

C. Support and clearance

1	VERTICAL Non-combustible supports under the lower end, both sides of the collar; wall band at the top joint.	YES / NO
2	ANGLED Wall bands at top and bottom joints, secured to the angled surface above.	YES / NO
3	HORIZONTAL Wall bands at both ends, secured to the horizontal surface above.	YES / NO
4	Silencer weight is carried by supports and bands, not by the flue pipe.	YES / NO
5	Clearance to combustibles meets the flue manufacturer's requirement in all framing.	YES / NO
6	Flue supported on both sides per the flue manufacturer's instructions.	YES / NO
7	Drain: condensing boiler, uncapped and connected with trap and slope to an approved discharge; otherwise left capped (Section 7).	YES / NO
8	Drain connected: trap has a 2" minimum water seal, is primed with water, and can be checked.	YES / NO

D. Handover

1	Owner told the annual inspection is required to keep the 2-year warranty, and shown the service record (Section 8).	YES / NO
2	This manual left with the owner.	YES / NO

Silencer part no. / serial		**Appliance make / model**	
Orientation		**Installer / date**	

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LEAVE THIS MANUAL WITH THE OWNER.