X-VENTISO by earthcore

ACOUSTIC DATA

WSPRDRAFT FLUE SILENCERS

Insertion loss by octave band · Independently tested to ISO 7235

Summary. WSPRDraft insertion loss was measured by the Fraunhofer Institute for Building Physics (IBP), an independent laboratory, to ISO 7235. Insertion loss is how much sound the silencer removes from the flue, band by band. WSPRDraft does its best work from 500 to 2,000 Hz, the range where the ear is most sensitive and where XV Series draft inducers make most of their sound. Paired with an XV Series draft inducer, sound traveling down the flue falls by about 16 to 20 dB at full speed and 13 to 19 dB at 38 V, depending on size (calculated). Every 10 dB less is heard as roughly half as loud.

INSERTION LOSS, dB · OCTAVE BAND CENTER FREQUENCY (Hz)

Model	63	125	250	500	1,000	2,000	4,000	8,000
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

Shaded: 500 to 2,000 Hz. XV-WDR-10, 12, 13, and 14 are built on the same silencer body, so their insertion loss is the same; only the collars differ. The 13" model fits Earthcore Eco-Steel 13" all-fuel pipe. Measured on the silencer body, so it applies at any draft inducer speed.

CALCULATED: XV SERIES WITH XV-WDR-10 TO 14 · SOUND POWER DOWN THE FLUE, LwA (dBA)

		Full speed (120 V)		38 V, a typical commissioning setting		
Draft inducer	**Draft inducer**	**With WSPRDraft**	**Reduction**	**Draft inducer**	**With WSPRDraft**	**Reduction**
XV150	67	≤48	**19 dB**	42	≤28	**14 dB**
XV250	74	55	**19 dB**	51	≤33	**18 dB**
XV350	83	64	**19 dB**	49	≤33	**16 dB**

CALCULATED REDUCTION BY SILENCER SIZE, dB (A-WEIGHTED, DOWN THE FLUE)

	Full speed (120 V)			38 V		
Silencer	**XV150**	**XV250**	**XV350**	**XV150**	**XV250**	**XV350**
XV-WDR-8	20 dB	20 dB	20 dB	16 dB	19 dB	17 dB
XV-WDR-10, 12, 13, 14	19 dB	19 dB	19 dB	14 dB	18 dB	16 dB
XV-WDR-16	18 dB	17 dB	16 dB	13 dB	17 dB	15 dB

Calculated by applying each silencer's insertion loss above, band by band (upper table: XV-WDR-10 to 14), to XV Series sound power measured by Riverbank Acoustical Laboratories to ANSI S12.51 / ISO 3741 (report Lw25-004, free-standing, inlet closed), then A-weighting and summing. **≤ Upper limit:** with the mid bands removed, bands that were close to the test room's background level, carry more weight, so the true value is at or below the value shown and the reduction is a minimum. Full octave band data: XV Series Sound Data Sheet. These are sound power levels at the source, not the sound level at a listening position; what is heard depends on the flue, the building, and distance.

SPECIFICATIONS

Fuel	Gas appliances only
Materials	316L stainless body and mesh, mineral wool absorber
Drain	Built in, for condensing applications. Ships capped; connect only where the appliance produces condensate
Flue gas temperature	Up to 400°C (752°F)
Positive pressure	Up to 200 Pa (0.8 in. w.c.)
Resistance coefficient (ζ)	0.25

TEST BASIS

Laboratory	Fraunhofer Institute for Building Physics (IBP), independent
Standard	ISO 7235:2003, insertion loss of ducted silencers
Report	IP-TA 6_2004, 2004
Measured	Silencer body, by octave band, 63 to 8,000 Hz
Applies to	WSPRDraft with XV Series draft inducers on X-VENTISO controllers. Published performance is supported only in that matched system.