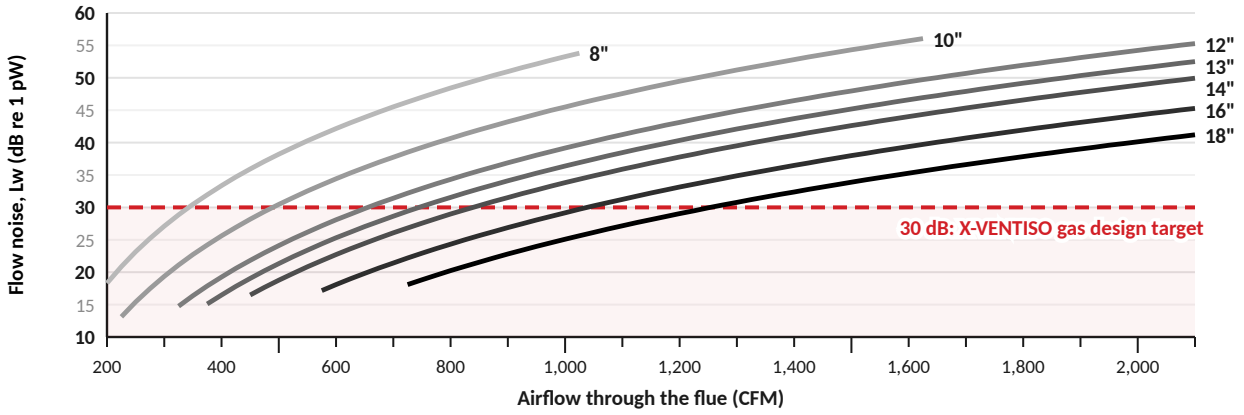
FLUE VELOCITY AND FLOW NOISE

X-VENTISO design target for gas: flue flow noise at or below 30 dB

A gas fire is quiet and steady, so a gas system is designed to a tighter target: flue flow noise at or below 30 dB. Example: 600 CFM through a 12" flue moves at about 760 FPM and makes about 28 dB of flow noise; through a 10" flue, about 1,100 FPM and 34 dB. Every 10 dB less is heard as roughly half as loud.

FLOW NOISE BY AIRFLOW AND ROUND FLUE SIZE



REFERENCE TABLE · EACH CELL: FLOW NOISE, Lw (dB) / VELOCITY (FPM)

CFM	6"	8"	10"	12"	13"	14"	16"	18"	20"
200	**28** 1,019	18 573	—	—	—	—	—	—	—
300	37 1,528	**27** 859	19 550	—	—	—	—	—	—
450	46 2,292	36 1,289	**28** 825	22 573	19 488	16 421	—	—	—
600	—	42 1,719	34 1,100	**28** 764	25 651	23 561	18 430	—	—
700	—	46 2,005	38 1,283	31 891	**29** 759	26 655	21 501	—	—
800	—	48 2,292	41 1,467	34 1,019	32 868	**29** 748	24 573	20 453	—
1,000	—	53 2,865	46 1,833	39 1,273	36 1,085	34 935	**29** 716	25 566	21 458
1,200	—	—	49 2,200	43 1,528	40 1,302	38 1,123	33 859	**29** 679	25 550
1,400	—	—	53 2,567	46 1,783	44 1,519	41 1,310	36 1,003	32 792	**29** 642
Max CFM at 30 dB	**215**	**345**	**490**	**655**	**745**	**840**	**1,040**	**1,255**	**1,485**

Max CFM at 30 dB: the most airflow each flue size carries at or below the design target. **Red:** the smallest flue in each row at or below the 30 dB design target. Larger flues are quieter still. Round flue, inside diameter; 13" matches Earthcore Eco-Steel all-fuel pipe. — : below 400 FPM or above 3,000 FPM, outside the range shown. Other shapes: use the inside area.

WHY 30 dB ON GAS: WSPRDRAFT TAKES THE DRAFT INDUCER DOWN TO MATCH

At 38 V	Draft inducer	With WSPRDraft	Reduction
XV150	42	**≤28**	14 dB
XV250	51	**≤33**	18 dB
XV350	49	**≤33**	16 dB

With a WSPRDraft flue silencer, draft inducer sound traveling down the flue falls to about 28 to 33 dB at 38 V. The flue is sized so its flow noise stays at or below that. Calculated: Riverbank draft inducer sound power less Fraunhofer WSPRDraft 10" to 14" insertion loss, A-weighted, dB re 1 pW. ≤: upper limit.

Scope: air noise generated by flow through a straight run of flue, as sound power, for comparing flue sizes during design. It does not include draft inducer noise, fittings, the termination, or hot flue gas, and it is not a room sound level.

Method: empirical straight-duct flow noise correlation, $L_W = 10 + 50 \log_{10}(v) + 10 \log_{10}(A)$, v in m/s, A in m². Calculated values, not measurements.