

Muffler Performance & Noise Comparison



Preface: Two critical components of sound are Decibels & Frequency.

For Radon Contractors: Two critical considerations are Air Flow & Vacuum measurements.

(Testing was performed with a Festa AMG Maverick EC. CFM values are for comparison; actual CFM numbers may vary.)

Airflow & Vacuum Performance

Gate Valve	Muffler	U-tube manometer (inH2O)	CFM	Flow Difference	Percentage
Full Open	None	0.8	205.0	—	—
Full Open	Diamond	0.8	194.6	-10.4	-5.1%
Full Open	Hush Vent	0.4	154.9	-50.1	-24.4%
Half Open	None	1.8	141.4	—	—
Half Open	Diamond	1.8	139.7	-1.7	-1.2%
Half Open	Hush Vent	1.4	123.7	-17.7	-12.5%
Quarter Open	None	2.3	56.8	—	—
Quarter Open	Diamond	2.3	55.4	-1.4	-2.5%
Quarter Open	Hush Vent	2.2	53.4	-3.4	-6.0%

- **Diamond Muffler:** minimal airflow penalty (no change in manometer reading).
- **Hush Vent Muffler:** significant airflow reduction (lowers manometer reading).

Decibel Reduction Performance

Gate Valve	Muffler	dBA	Percentage
Full Open	None	71.8	0%
Full Open	Diamond	67.9	-5.4%
Full Open	Hush Vent	64.9	-9.6%
Half Open	None	70.8	0%
Half Open	Diamond	67.3	-4.9%
Half Open	Hush Vent	64.5	-8.9%
Quarter Open	None	70.5	0%
Quarter Open	Diamond	67.7	-4.0%
Quarter Open	Hush Vent	65.0	-7.8%

- **Diamond Muffler:** moderate decibel reduction (-4.8% avg.)
- **Hush Vent Muffler:** strong decibel noise reduction (-8.8% avg.)

Fundamental Frequency

Muffler	Diamond (Hz)	Hush Vent (Hz)
Full Gate	~72	~78
Half Gate	~70	~75
Quarter Gate	~71	~68

- **Diamond Muffler:** deeper tone at *high flow* (full gate).
- **Hush Vent Muffler:** deeper tone at *low flow* (quarter gate).

Summary

Diamond Muffler:

- Airflow performance: Minimal penalty ($\leq 5\%$ reduction).
- Negligible effect on vacuum readings. Installers will see essentially the same suction on their U-tube manometer as if there was no muffler.
- Moderate decibel noise reduction (-4.8% dBA).
- Preserves strong low-frequency.
- Best choice for balanced performance: maintains system efficiency while improving sound quality.

Hush Vent Muffler:

- Airflow performance: Significant penalty (*up to* -24.4%).
- Lowers vacuum readings. Installers will see weaker suction levels on their manometer, which may raise performance concerns & impact system diagnostics.
- Strongest noise reduction (-8.8 dBA).
- Slightly higher frequency in high air flow setup with lower frequency in low air flow.
- Best choice when maximum noise reduction is critical, but at the expense of system airflow.