

# OVERSILENCING

By selecting a silencer on the basis of a single octave band requirement, (e.g. 20 dB in the 250 Hz octave). It may well be oversilencing in other octaves. This will cause it to have greater than necessary pressure drop. Hence long term costs will also be increased correspondingly.

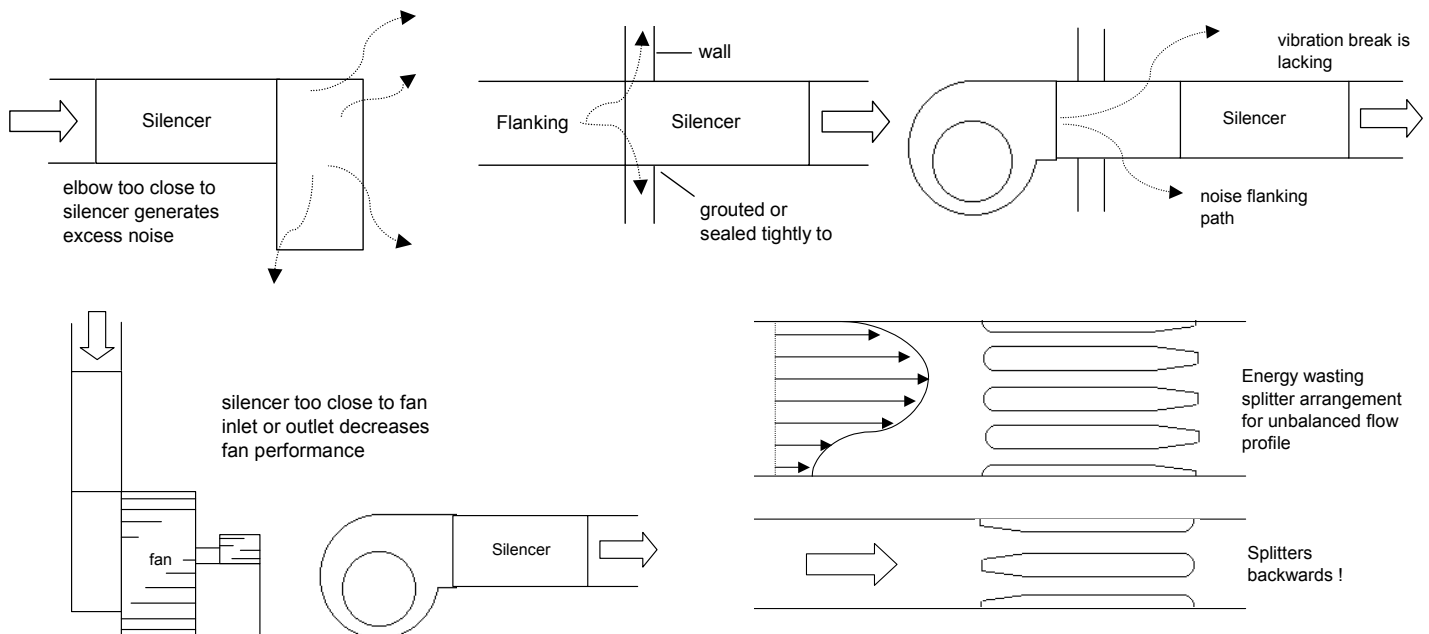
From an energy cost view point. the most efficiently energy-costed selection is a silencer that provides only the proper amount of attenuation in all octaves. and no more.

Hence, you should energy-cost several silencers, (varying type, model. module, length), and choose the one that most nearly approximates your entire octave band spectrum requirement.

EXAMPLE	PRESSURE DROP		OCTAVE BAND Hz							REMARKS
	In. H <sub>2</sub> O		125	250	500	1000	2000	4000	8000	
Total Requirement	lowest		5	20	25	26	17	13	8	@ 1200 fpm for 20 years excess silencing excess silencing least amount of oversilencing & lowest energy-cost due to lower $\Delta p$ (20-30% saving over 12 module)
12R40-72L			10	20	34	46	43	30	17	
16R40-96L			11	20	33	44	36	24	15	
24R40-108L			11	21	33	40	19	13	11	
NOTE: Less oversilencing may appear possible with other models. However, the conflict of purchase, installation and operation costs dictate tht the "R" models in this example give least \$/dB total cost.										

**OTHER UNEXPECTED OVERSILENCING COSTS:** It may be necessary to re-introduce background sound to regain speech privacy lost through oversilencing.

# FLANKING & FLOW PROBLEMS



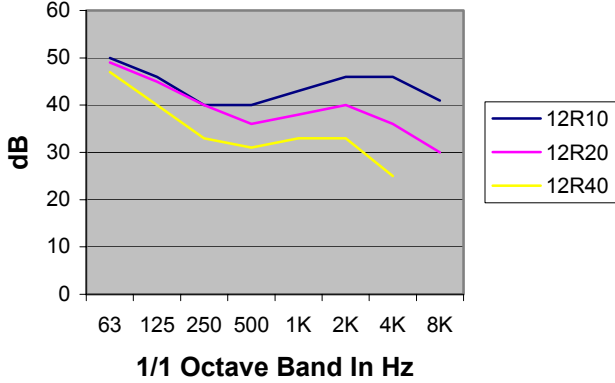
# GENERATED NOISE RATINGS

dB re  $10^{-12}$  watt

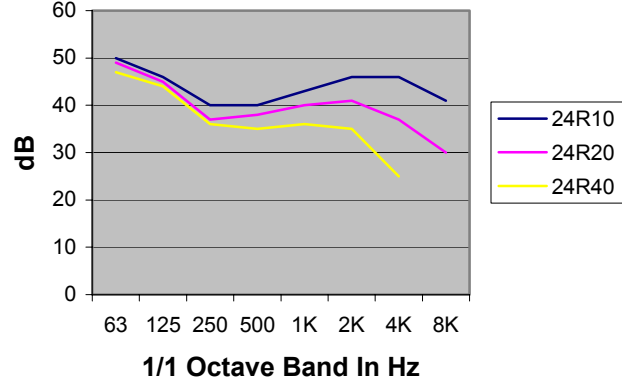
FROM 24" X 24" TEST DATA

## DUCT-TO-ROOM AIRFLOW @ 1000 FPM

12 MODULE

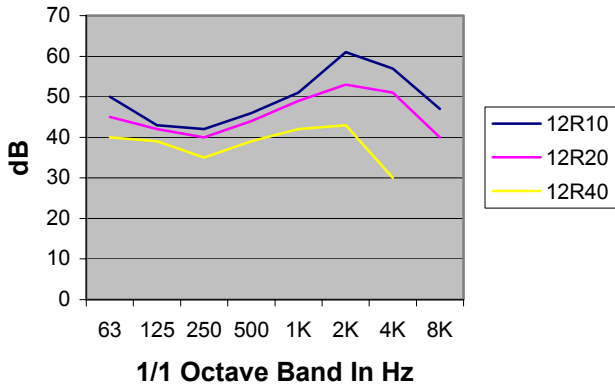


24 MODULE

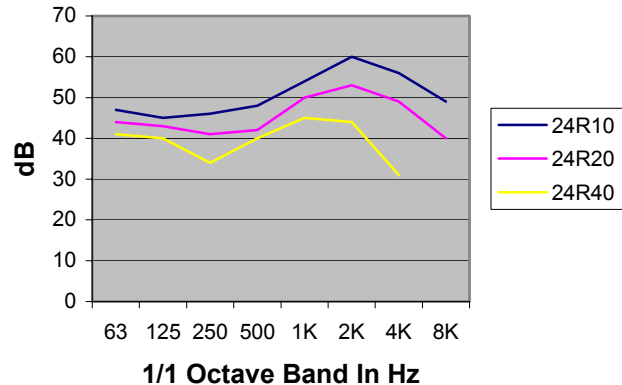


## ROOM-TO-DUCT AIRFLOW @ 1000 FPM

12 MODULE



24 MODULE



## CORRECTIONS TO GENERATED NOISE RATINGS:

### a) Velocity changes

Velocity	fpm	500	750	1000	1500	2000
	m/s	2.5	3.8	5.1	7.6	10.2
add	dB	-18	-8	0	+10	+18

### c) Frontal area changes

Area	ft <sup>2</sup>	2	4	8	16	32
	m <sup>2</sup>	0.19	0.37	0.75	1.5	3.0
add	dB	-3	0	+3	+6	+9

### b) Peak shift

Approximately

- one octave right if velocity doubles
- one octave left if module doubles

### d) Silencer length changes

- negligible correction since GN depends mostly on inlet & outlet design

