

LEAN GREEN MACHINES



Silencers, Liquid Separators and Exhaust Stacks

McGuffy
Energy Services
18635 Telge Rd
Cypress, Texas

Toll Free: 1-800-365-6955
Tel: 281-255-6955
Fax: 281-351-8502

www.mcguffygroup.com

McGuffey Energy: designs and manufactures Vent and Blowdown Silencers and Centrifugal Separators. These products are designed as modular units that can be used together in a common vessel or separately as stand alone products.

Vent and Blowdown Silencers are used in high pressure gas and steam applications. McGuffey uses a cylindrical shape which incorporates a first stage diffuser section and second stage annular rings with acoustic fill. In most applications, an orifice plate is used to control flow.

In many situations it is desirable to remove entrained liquids when venting gases or steam to atmosphere. McGuffey's gas liquid centrifugal separator is incorporated into the vent and blowdown silencer between the diffuser and the acoustic pack section. An integral liquid tank captures the separated liquids which can be removed manually or dumped automatically.

The separator can be used as a stand alone device when noise control is not a requirement. Typical applications are engine and gas turbine lubricated starter exhausts, tank vents, steam vents, pipeline vents, blowdown vents.

Separators and Silencers are also available as portable units. They can be equipped with holding tanks and transfer pumps which be truck or trailer mounted.



Inline Silencer



DC-990 Exhaust Silencer



Blowdown Silencer

Silencer Design—Reactive Silencers:

These are also known as Chambered type silencers. These silencers attenuate the noise by reflection and expansion.

These silencers are primarily effective due to cancellation. As gas expands upon entering the silencer chamber, noise waves tend to reflect back towards the inlet. The induced turbulence from expansion will cause an out of phased cycle with the noise entering the chamber and thus cancellation occurs.

Chambers are connected by side tubes. These tubes may be in line through the center of the silencer. Most designs have 2, 3, or 4 side tubes between chambers.

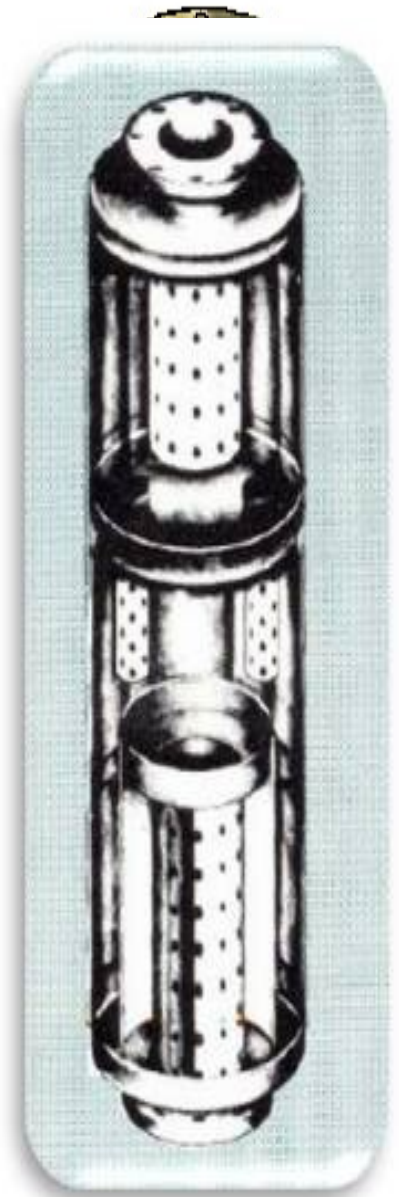
These silencers respond best to low through mid frequency noise, and are used mainly for reciprocating engines, compressors and rotary positive blowers.

Standard design for chambered silencers begins with 2 chambers. Performance increases with length, diameter and number of chambers. For most of the applications these silencers are custom designed to meet the stringent noise and pressure drop requirements.

Absorptive or Dissipative Silencers:

These silencers are typically a straight through design that employs perforated linings containing acoustically absorptive fibrous material. These silencers are mainly designed in round shape.

Absorptive and Dissipative Silencers are primarily effective because of absorption of sound. As the gas enters the silencer and flows through the perforated linings the sound is absorbed by the acoustical material contained in the linings.



Typical example of a Reactive Silencer



BOS 24-2

This arrangement of acoustical material in the perforated linings is referred to as pack sections.

The general design of these silencers accommodates 1 pack section and this can go up to 4 pack sections depending on the Pressure, Temperature, Mass flow and Sound attenuation.

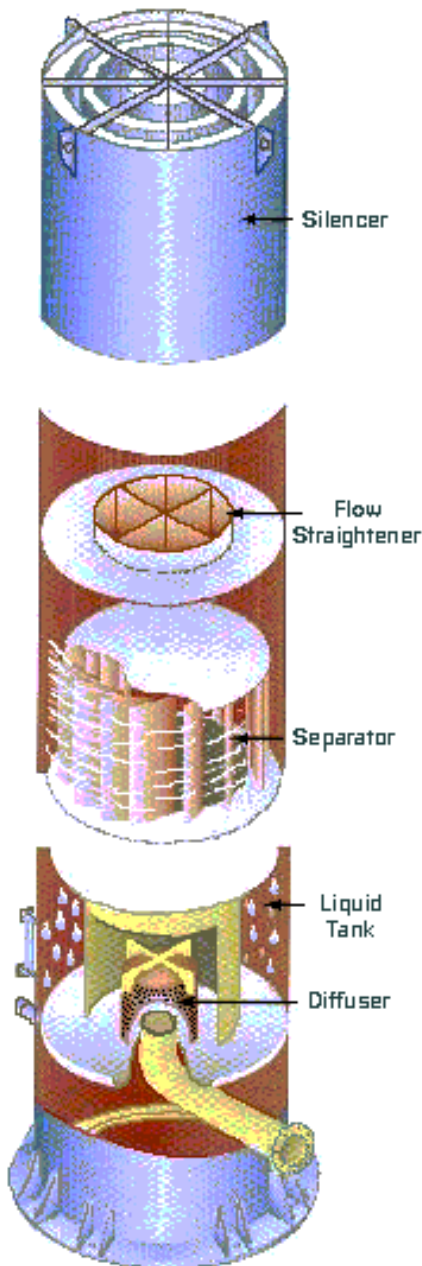
Sometimes these silencers can be incorporated with a Gas liquid Separator (GLS) on the inside. The primary use of this GLS is to separate the liquid droplets from the gas mixture.

These silencers are most effective in the mid to high frequencies. Performance of these Silencers mainly depends on absorptive material, length and internal design.

Typical applications of these silencers are Turbo charged engine intakes, Vent and Blowdown.



W251 Exhaust System



Typical example of Absorptive or Dissipative Silencer

Exhaust Silencer Stacks:

These are mainly used for Gas turbine engines. The design of these Exhaust silencer stacks involves the similar design of the Absorptive silencers and these are designed either in rectangle or square configuration.

The design of the Exhaust silencer stacks involves the arrangement of parallel Baffle panels, which are constructed with perforated facings packed with acoustical fill.

The performance of these silencers can be tuned by increasing the silencer length, increasing or decreasing the panel thickness and the air gap between the panels.

Thick panels respond to low frequency and thin panels to high frequency. Decreasing the air gap between the panels normally increases performance.



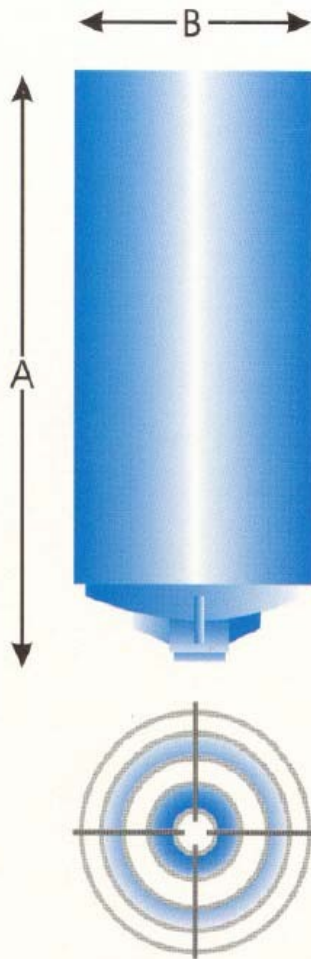
Solar Centaur Exhaust Silencers

Applications:

- GE Frame 5
- GE Frame 7
- GE Frame 9
- Westinghouse 191
- Westinghouse 251
- Solar Mars 100 Type Gas Turbine Engines



GE Frame 5 Screened Inlet with Silencer

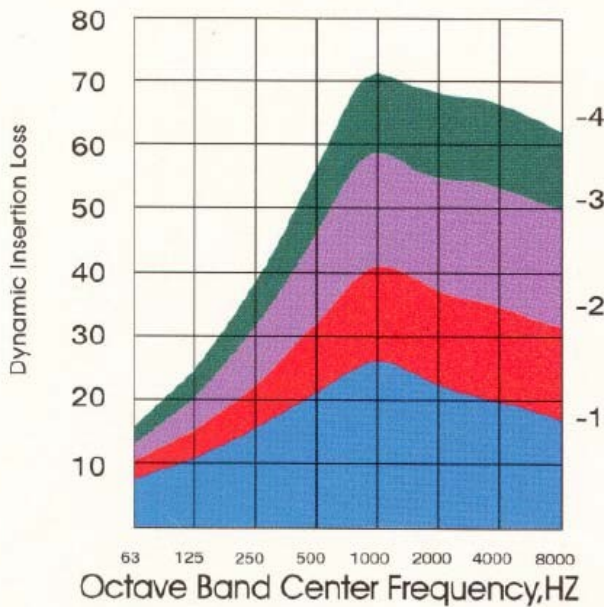


SIZING CHART

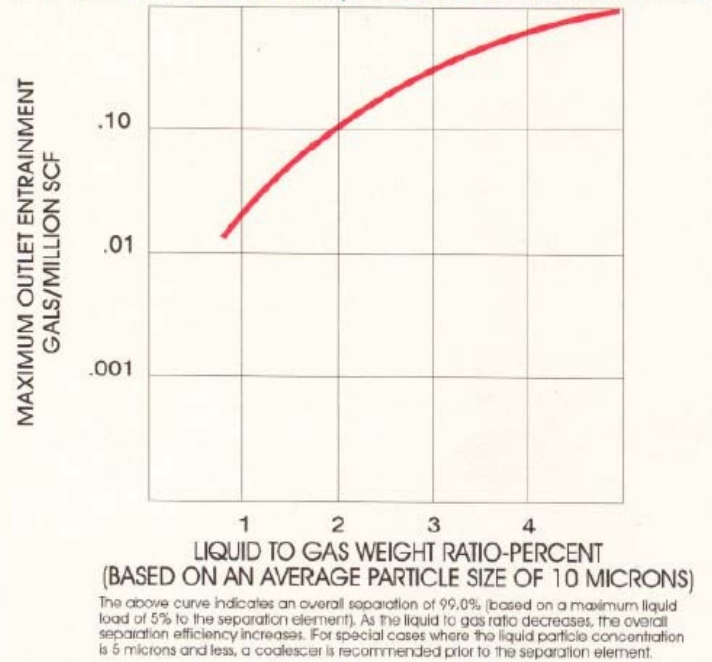
BOS SIZE (SHELL DIA.) Dim. B	NOZZLE		-1		-2		-3		-4		GLS*
	MIN	MAX	DIM. A	WT.	DIM. A	WT.	DIM. A	WT.	DIM. A	WT.	
12	1½	6	41	290	65	350	89	420	113	490	24
18	3	10	57	385	81	500	105	620	129	740	24
24	4	14	61	495	85	735	109	960	133	1185	24
30	6	20	69	695	93	1030	117	1330	141	1635	30
36	6	20	76	985	100	1505	124	2005	148	2535	36
42	8	24	87	1295	117	2090	147	2795	177	3500	36
48	10	30	94	1640	124	2605	154	3425	184	4245	42
54	12	30	105	2030	141	3360	177	4500	213	5640	48
60	12	30	112	2110	148	4270	184	5085	220	5900	48
66	14	32	129	2765	177	4520	225	5910	273	7300	60
72	16	36	149	3800	209	5850	269	7615	329	9380	72
78	16	40	169	4560	241	7210	313	9580	385	11,950	72
84	18	42	175	5130	247	7870	319	10,430	391	12,990	72
96	20	48	186	5680	258	9080	330	11,845	402	14,610	72
102	20	52	191	6505	263	10,265	335	13,230	407	16,195	84
108	24	54	228	8855	324	13,920	420	18,235	516	22,550	84
120	24	60	237	10,720	333	16,480	429	21,155	525	25,830	96
132	30	66	251	13,900	347	23,150	443	29,385	539	35,620	96
144	36	72	259	15,690	355	24,180	451	32,675	547	41,170	96

GLS* Increase the standard BOS length when adding a gas liquid separator.

TYPICAL ATTENUATION CURVE, dB



TYPICAL EFFICIENCY, LIQUID ENTRAINMENT



McGUFFY Energy Services provides, turn-key installation of the complete range of McGUFFY products as well as complete mechanical field services, including turbine overhauls and inspections