



TYPICAL APPLICATIONS

- Safety Relief Valves.
- Steam, Air and Gas Vents.
- Process Gas Blowdowns.
- Compressor Blowdowns.
- Boiler Start-Up and Purge.
- Switch Valves.

DESIGN

The SDA silencer is modular in concept and design and is backed by many years of proven performance. It's compact multi-splitter cylindrical design combines strength and rigidity to insure excellent overall performance and long life.

Thermal expansion is contained within each of the modular sections which are designed to withstand the cyclic effect of temperature and flow forces in both continuous and intermittent services. The outer perforated cylinder adjacent to the shell is free to move in both the X and Y axis to compensate for the differences in temperature.

The inlet diffuser is designed and constructed to withstand the full impact (reaction forces) of the pressure expansion and incoming flow. The inlet nozzle and diffuser are constructed of quality material with full penetration welding in accordance with the ASME code, section IX, welding procedures.

BASIC SDA SERIES DESIGN CRITERIA

Silencer Flow Area				
50-60% open				
Splitter Configuration				
Sizes 17-50 center plug / 1 cylindrical splitter				
54-112 center plug / 2 cylindrical splitters				
SDA Model	-1	-2	-3	-4
Splitter Length/Gap	5:1	10:1	15:1	20:1
TSA Splitters/	10:1	20:1	30:1	40:1
X-Sectional Flow Area				

STANDARD FEATURES

- All-welded, heavy-duty carbon steel construction. (Max. operating temperatures 650°F.)
- Acoustic lined inlet plenum.
- Modular silencer section / fiberglass or mineral wool acoustic fill protected / 1 wrap of glass cloth and heavy-gauge perforated face sheet.
- Inlet nozzle (BFW).
- Prime paint (exterior only).
- Vertical or horizontal installation.
- Lifting lugs.
- Bottom drain.
- Single diffuser (standard/SDA series).

OPTIONAL FEATURES

- Inspection openings.
- Mounting brackets and special supports.
- Outlet nozzle (BFW).
- Inlet and outlet flanges (Drilled to 150 lb. ANSI STD).
- Weather hood (fabricated elbow).
- Tailpipe.
- Special materials, s/s, other.
- High temperature acoustic fill (above 650°F).
- S/S metallic acoustic fill.
- Prime paint (interior).
- Finish paint.
- Monel diffuser (or impingement plate only).
- Multi-port inlet orifice for flow control.
- Double diffuser (specify 2 SDA series).

SIZING

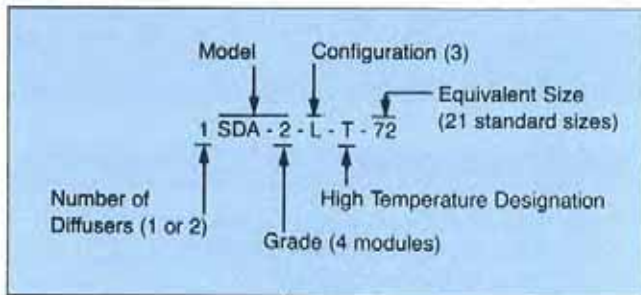
The selection and sizing of the SDA is typically a function of velocity, pressure drop and required acoustical performance.

Typical operating velocities are —
10,000-15,000 fpm continuous
15,000-20,000 fpm intermittent (non-critical)

These velocities are based on the silencer ACFM at the operating temperatures after expansion to atmospheric conditions.

**FOR SPECIAL OR UNUSUAL APPLICATIONS CONTACT
THE BURGESS-MANNING REPRESENTATIVE IN YOUR AREA.**

SDA SERIES MODEL and SIZE DESIGNATION

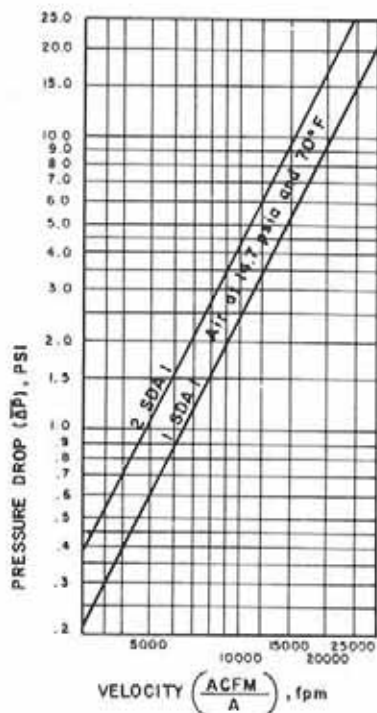


SDA Vent and Blowdown Silencers are available with 1 or 2 diffusers, 4 standard modular grades, 3 configurations, 2 temperature ranges and 21 sizes.

2 SDA (Double Diffuser) models are not available in either the standard L or LB configuration.

FOR WINDLOAD and SEISMIC RATINGS OF SDA SILENCERS CONTACT FACTORY.

PRESSURE DROP (to atmosphere)



For Pressure Drop other than air at 14.7 psia and 70°F —

$$\text{SDA-1 } \overline{\Delta P} = \text{Chart } \overline{\Delta P} \times 18.34 \left(\frac{MW}{sR} \right) \times 1.0 = \text{psi}$$

	multiplier
-2	1.023
-3	1.047
-4	1.070

MODEL & SIZE (EQUIV.)	FLOW AREA (SQ. FT.)	FLOW RATE (ACFM AT 15,000 FPM)
SDA-17	1.64	24600
-22	2.60	39000
-26	3.59	53850
-30	4.87	73050
-35	6.53	97950
-40	8.69	130350
-44	10.63	159450
-50	13.66	204900
-54	15.96	239400
-59	18.77	281550
-63	21.78	326700
-68	25.25	378750
-72	28.50	427500
-77	32.00	480000
-82	36.66	549900
-88	42.53	637950
-93	47.12	706800
-97	51.51	772650
-102	57.02	855300
-107	62.73	940950
-112	68.27	1024050

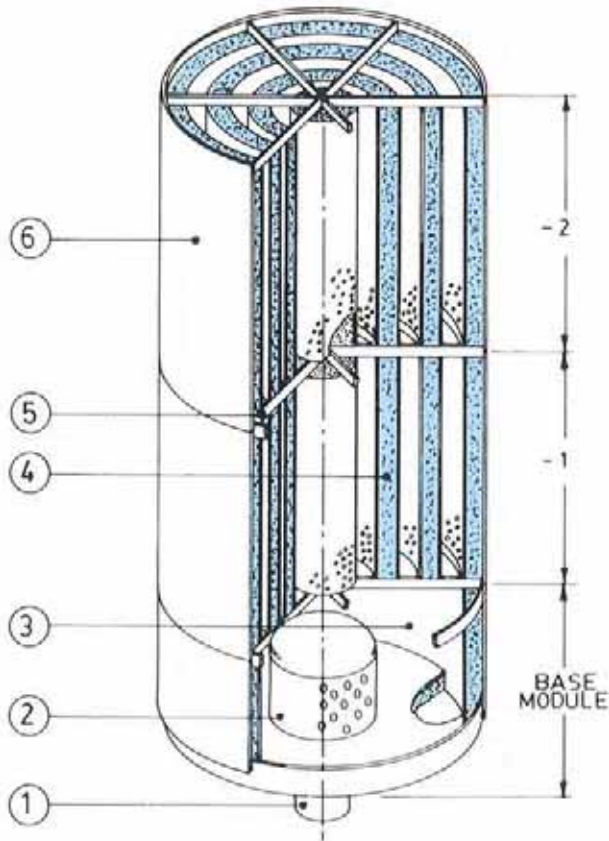
The SDA may be direct coupled to the valve when the pressure and temperature at the inlet nozzle of the silencer are within the design limits of the silencer. However, a short length of piping (of somewhat larger size than the valve outlet) will reduce the possibility of excessive impact noise at the silencer inlet. In high pressure applications, the ratio of the area increase should be generally in the range of 4:1. When heavy weight XS piping is used, acoustic lagging is generally not needed to prevent excessive pipe radiated noise ahead of the silencer.

In high pressure applications, an optional multi-port s/s orifice may be placed in the inlet nozzle at the factory to provide a staged reduction in pressure to atmosphere for both noise and flow control.

The pressure drop across the silencer should not exceed the critical flow pressure of the system which is 53% of the upstream pressure for air and gases (58% for steam).

SILENCER VELOCITIES ABOVE 15,000 FPM SHOULD BE REFERRED TO THE FACTORY FOR REVIEW.

CUT-AWAY OF TYPICAL SDA-2



- ① The inlet nozzle and diffuser are designed to withstand the thermal and impact stresses encountered in high pressure (and high temperature) blowdowns to atmosphere. The standard inlet nozzle is beveled for welding. Flange is optional
- ② The diffuser provides controlled pressure expansion to atmosphere insuring optimum flow distribution within the silencer plenum and is constructed of quality carbon steel with continuous full penetration welding for long life trouble-free service. The diffuser provides a shift (or conversion) of low frequencies to the more easily attenuated high frequency bands and counteracts and/or largely neutralizes the reaction forces from the valve.
- ③ The inlet plenum is provided with an ample depth of dense acoustical fill and is faced with a sparsely perforated or solid impingement liner to prevent or reduce shell radiated noise. The plenum TL is compatible with the silencer DIL.

- ④ Panel depth, density and length/gap ratios have been optimized to provide broad-band performance (NR) based upon anticipated frequency content and noise amplitude (dependent upon the application, service and unit size). The standard acoustic fill is either fiberglass or mineral wool both of which are inert, moisture-resistant and non-combustible. The fill is packed under not less than 5% compression to eliminate voids and is provided with annular spacers to prevent settlement under the severe operating conditions. The fill provided in the standard silencer is protected with 1 wrap of glass cloth. In high temperature-high velocity service (above 650°F and in excess of 15,000 fpm), the acoustic fill is protected with an additional wrap of s/s mesh screen. All standard perforated face sheets are 23% open with $\frac{3}{16}$ " dia. (min.) holes on staggered centers. The heavier gauges for the larger sizes have correspondingly larger holes. The open area may range anywhere from 11-40%, depending upon the required frequency range of performance.

Optional mylar moisture and dust protection for acoustical fill is available (This material substantially reduces the silencer performance, particularly in the upper bands.) The temperature limit of mylar is approx. 200°F.

S/S mesh acoustic fill, when specified, will reduce the silencer performance by approx. 20%.

- ⑤ The splitter panels are supported by a cylindrical cross member ring assembly positioned at the bottom of each of the shell modules. The ring-type support assembly is designed to transfer the panel weight to the shell and to minimize flow turbulence and vibration under maximum flow conditions.
- ⑥ The shell is designed to support the splitter panel assemblies without the need for external reinforcement. The shell is acoustically lined, consistent with the splitter panel construction, to prevent or reduce shell radiated noise. The shell TL is compatible with the silencer DIL.

TYPICAL DYNAMIC INSERTION LOSS (DIL.) dB
 (Based on silencer velocity of 15,000 fpm at 100°F)

MODEL	SIZE	OCTAVE BAND CENTER FREQUENCY, Hz							
		63	125	250	500	1	2	4	8k
1 SDA-1	17- 26	6	6	8	14	18	20	20	20
	30- 40	7	6	9	14	19	21	20	19
	44- 54	8	9	11	16	20	21	20	19
	59- 68	8	7	11	16	20	22	20	19
	72- 82	8	8	11	16	19	21	19	18
	88- 97	8	9	12	16	19	20	19	18
	102-112	9	9	13	17	20	21	20	19
1 SDA-2	17- 26	8	9	13	25	31	33	33	32
	30- 40	10	11	16	25	31	33	32	30
	44- 54	13	16	22	29	33	34	31	29
	59- 68	11	14	21	29	34	35	31	28
	72- 82	12	16	22	30	33	33	29	27
	88- 97	13	18	24	29	32	33	30	27
	102-112	13	18	25	31	34	34	32	28
1 SDA-3	17- 26	10	13	20	36	43	45	45	44
	30- 40	13	17	24	36	44	46	43	40
	44- 54	17	24	32	41	47	46	43	39
	59- 68	14	20	30	42	48	49	43	35
	72- 82	16	23	32	43	46	46	40	35
	88- 97	17	26	35	43	46	45	40	35
	102-112	17	26	36	45	48	47	43	38
1 SDA-4	17- 26	13	17	26	48	56	58	58	56
	30- 40	17	22	32	47	56	58	56	50
	44- 54	22	32	42	54	60	59	55	49
	59- 68	18	26	40	55	62	62	55	47
	72- 82	19	30	42	57	60	59	51	44
	88- 97	22	34	46	56	59	57	51	44
	102-112	22	35	48	59	62	60	55	47

Silencer DIL is several dB lower below 1k and several dB higher above 1k at elevated temperatures. Contact factory for DIL above 650°F.

Add to above 1 SDA DIL to obtain typical 2 SDA DIL, dB

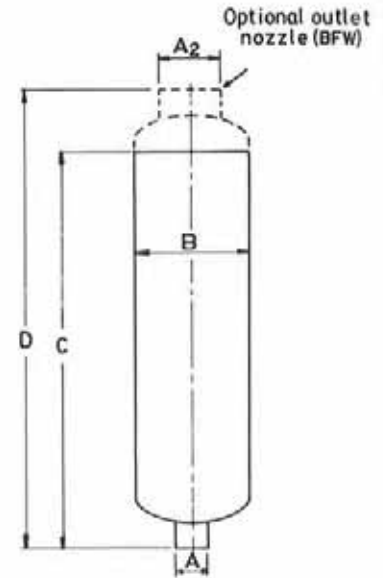
ALL MODELS AND SIZES	+5	+4	+4	+3	+2	+2	+2	+2
-----------------------------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------

STANDARD DIMENSIONS

1 SDA SERIES

MODEL & SIZE (EQUIV.)	DIMENSIONS (INCHES)										EST. WT. LBS.									
	ALL MODELS					-1	-2	-3	-4		-1	-2	-3	-4						
	A	A ₂	B	C	D	C	D	C	D	C					D					
	STD.	MAX.																		
SDA- 17	10%	12%	18	24	55	65	72	82	89	99	108	116	379	555	731	907				
- 22	12%	14	22	30	66	77	86	97	106	117	126	137	565	802	1039	1276				
- 26	14	18	26	36	73	85	95	107	117	129	139	151	1095	1617	2139	2661				
- 30	16	22	30	42	85	98	111	124	137	150	163	176	1368	1906	2444	2992				
- 35	18	24	36	48	97	113	127	141	157	171	187	201	1751	2504	3257	4010				
- 40	22	28	42	54	110	125	145	160	180	195	215	230	2299	3364	4428	5494				
- 44	24	32	48	60	122	138	163	179	204	220	245	261	3073	4462	5851	7240				
- 50	26	36	54	66	137	154	183	200	229	246	275	292	4314	6122	7930	9738				
- 54	30	40	54	72	132	155	188	187	204	222	240	258	4795	6676	8556	10439				
- 59	32	42	60	78	143	162	182	201	221	240	260	279	5597	7692	9787	11882				
- 63	34	44	66	84	153	173	195	215	237	257	279	299	6571	9003	11435	13867				
- 68	36	46	72	90	164	185	209	230	254	275	299	320	7212	9862	12512	15182				
- 72	38	48	72	96	175	197	224	246	273	295	322	344	8403	11675	14947	18219				
- 77	40	54	78	102	181	204	233	255	285	308	337	360	9734	13420	17106	20792				
- 82	44	60	84	108	189	213	244	268	299	323	354	378	11543	15963	20383	24803				
- 88	44	60	90	114	210	235	272	297	334	359	396	421	13645	18498	23351	28204				
- 93	48	66	96	120	215	241	279	305	343	369	407	433	14833	19946	25059	30172				
- 97	48	66	102	126	225	252	291	318	357	384	423	450	18541	25852	33183	40474				
-102	54	72	102	132	234	262	305	333	376	404	447	475	19476	27046	34616	42188				
-107	54	72	108	138	246	275	320	349	394	423	468	497	22050	30562	39074	47586				
-112	60	78	114	144	251	281	327	357	403	433	479	509	23794	32977	42170	51363				

FOR 1 SDA-L DIMENSIONS and WEIGHTS CONTACT FACTORY.
 2 SDA (double diffuser) series dimensions are identical to the 1 SDA series dimensions. contact factory for weights.

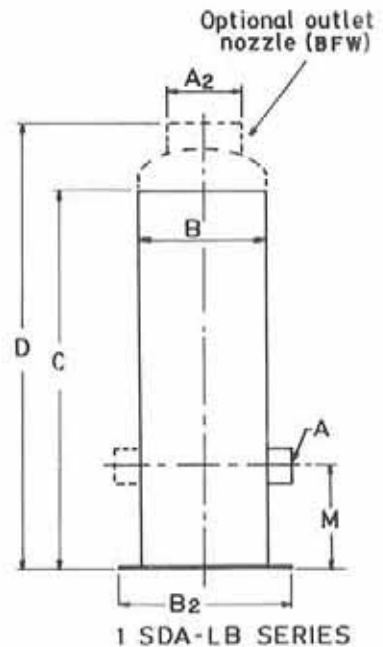


1 SDA SERIES

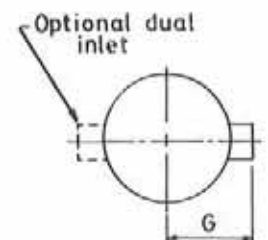
STANDARD DIMENSIONS

1 SDA-LB SERIES

MODEL & SIZE (EQUIV.)	DIMENSIONS (INCHES)										EST. WT. LBS.									
	ALL MODELS					-1	-2	-3	-4		-1	-2	-3	-4						
	A	A ₂	B	B ₂	M	G	C	D	C	D					C	D				
	STD.	MAX.			MIN.	MAX.														
1 SDA-LB- 17	10%	12%	18	24	30	11	14	18	49	59	66	76	83	93	100	110	420	598	772	948
- 22	12%	14	22	30	36	14	20	21	60	71	80	91	100	111	120	131	609	846	1083	1320
- 26	14	18	26	36	42	16	20	24	67	79	89	101	111	123	133	145	1190	1712	2234	2756
- 30	16	22	30	42	48	20	22	27	79	92	105	118	131	144	157	170	1505	2043	2581	3119
- 35	18	24	36	48	54	22	27	30	91	105	121	135	151	165	181	195	1950	2703	3456	4209
- 40	22	28	42	54	62	25	30	33	104	119	139	154	174	189	209	224	2550	3615	4680	5745
- 44	24	32	48	60	68	28	32	36	116	132	157	173	198	214	238	255	3358	4747	6136	7525
- 50	26	36	54	66	74	30	36	41	129	146	175	192	221	239	267	284	4701	6509	8317	10125
- 54	30	40	54	72	80	34	38	44	124	142	180	178	196	214	232	250	5338	7219	9101	10982
- 59	32	42	60	78	86	36	44	47	135	154	174	193	313	232	252	271	6170	8285	10360	12458
- 63	34	44	66	84	92	38	49	50	145	165	187	207	229	249	271	291	7182	9614	12046	14479
- 68	36	46	72	90	98	40	55	53	156	177	201	222	246	267	291	312	7910	10560	13210	15860
- 72	38	48	72	96	104	42	60	56	167	189	216	288	265	287	314	336	9789	13061	16333	19605
- 77	40	54	78	102	110	45	60	59	173	196	225	248	277	300	329	352	11266	14972	18688	22344
- 82	44	60	84	108	116	48	60	64	179	203	234	250	289	313	344	368	13171	17591	22011	26431
- 88	44	60	90	114	122	51	66	67	200	225	262	287	324	349	386	411	15345	20198	25051	29904
- 93	48	66	96	120	128	54	70	70	205	231	269	295	333	359	397	423	16633	21746	26859	31972
- 97	48	66	102	126	134	56	76	73	215	242	281	308	347	374	413	440	20441	27752	35063	42374
-102	54	72	102	132	142	60	76	76	224	252	295	323	366	394	437	465	22661	30231	37801	45371
-107	54	72	108	138	148	60	84	79	236	265	310	339	384	413	458	487	25476	33988	42500	51012
-112	60	78	114	144	154	64	84	82	291	271	317	347	393	423	469	449	27483	36671	45864	55057



1 SDA-LB SERIES



SDA SERIES VENT and BLOWDOWN SILENCERS

Other Burgess-Manning Silencers and Air Filters / Filter-Silencers are available world-wide for —

- Internal Combustion Engines (All types)
- Gas (and Steam) Turbines
- Centrifugal Fans (FD and ID)
- Rotary Positive Blowers (Lobe, Axial, Vane and Centrifugal)
- Vacuum Pumps (Reciprocating, Lobe, Axial and Centrifugal)
- Compressors (Reciprocating, Axial and Centrifugal)
- Expanders (Reciprocating and Turbine)
- Ejectors (Steam and Air Mixture)
- Regulators (Pressure Regulator Valves)
- And Many Other Applications

For more information, contact the Burgess-Manning representative in your area:



BURGESS-MANNING

Burgess-Manning, Inc.
Subsidiary of Nitram Energy, Inc.
227 Thorn Avenue
Orchard Park, New York 14127-2682
(716) 662-6540 Fax: (716) 662-6548
www.burgess-manning.com