

General Information

Blower Silencers

Rotary Positive Blowers

The Rotary Positive Blower is a two impeller compressor that delivers a large quantity of gas or air relative to the individual pulses. Blower capacities are expressed in CFM at inlet conditions (ICFM). Blower size is usually expressed as gear diameter by rotor length. Pitch Line Velocity (PLV) is the peripheral velocity of the timing gear—equal to the product of the gear circumference and the rotational speed of the blower, usually expressed in feet per minute (FPM).

The blower presents two problems:

- 1) pulsation within the piping system and,
- 2) noise radiation in the vicinity of the blower and piping.

The importance of these relative to each other is a function of blower size and speed; both increase proportionately to the blower size and the square of the speed.

Pulsation is more pronounced on the discharge side. Peak pulse pressures are quite severe and can result in unsilenced discharge sound power levels up to 140–145 dB. The inlet, although producing less severe pulsation and noise, receives equal attention since the inlet is usually open to atmosphere and the noise much more apparent.

Silencers

There is little question that silencers are a necessity on any blower installation. Regardless of the size or speed of the blower, silencers of some type are nearly always used.

In the selection of blower silencers, there are two basic considerations: 1) the silencer must be the correct size (i.e., sufficient capacity for the volume flow) and, 2) the silencer must be the proper type for the application. The nominal silencer size need only be based on the gas volume, (i.e., the CFM of the gas or air at the operating conditions). However, the silencer (design) must be selected with consideration of the blower size and operating speed. Complete application and capacity information is given on page 2.3.

There are two types of silencers commonly used on positive blowers: a reactive type silencer which consists of a series of expansion chambers having interconnecting

In a closed blower discharge system, structure-borne noise—such as that radiated by pipe wall and silencer shell—may be a consideration, particularly where a stringent, close-proximity noise specification applies. For these applications, various means are available to treat the pipe and shell radiated noise, such that most reasonable specifications may be met.

For instance, it is possible to lag the silencer

tubes, a more sophisticated silencer design. is the combination chamber-absorptive type. This combination silencer is similar to the reactive type with the exception that an acoustically-packed, sound absorbing section is included, comprising an extension of the silencer connection closest to the blower. The inlet of a discharge silencer and the outlet of an inlet silencer are the ends having the packed section.

A third basic type of silencer—the simple, straight-through packed type—is occasionally used on blowers. This type of silencer is usually used on small, high speed machines which characteristically produce significant high frequency noise and relatively mild pulsations.

The PLV is normally the criterion for silencer type selection. If the blower is operating in the critical PLV range, it will generate objectionable high frequency noise which may cause shell ring or tank hammer in the piping and silencer. These critical PLV conditions will always require a combination chamber-absorptive silencer for satisfactory results.

Inlet Silencers

For inlet service, a PLV of 3,300 ft/min or greater is considered critical. This transition speed is empirically established and is somewhat arbitrary, however, it is commonly accepted that blowers operating at or above 3,300 ft/min are considered critical for the purpose of inlet silencer application. Those operating below 3,300 ft/min are considered subcritical. Subcritical PLV applications can usually be silenced adequately with a chamber-type silencer, such as Universal URB or UCI Series. Blowers operating above the critical PLV of 3,300 ft/min will invariably require the RIS Series combination chamber-absorptive type silencer. Inlet Filters or Filter Silencers are commonly used on blower inlets, either individually or in series with a separate inlet silencer. Please reference the Filters and Filter Silencers section of this catalog for further information.

shell externally and reduce any shell noise contribution to below the casing and mechanical noise of the blower and driving machinery.

Universal Silencer invites your inquiries concerning special applications where EPA, OSHA or other noise specifications apply. Special applications are handled on an individual basis and recommendations are made according to specific requirements of the installation.

Discharge Silencers

For the more severe discharge conditions of typical blower installations, a PLV of 2,700 ft/min is accepted as the critical transition speed. Blowers operating below 2,700 ft/min are considered subcritical and can usually be adequately silenced on the discharge side by use of a chamber-type silencer UCD or URD Series. Machines operating above the 2700 ft/min transition speed will require combination chamber-absorptive silencers such as SD or RD Series.

In some larger blower installations, piping requirements or space restrictions may preclude the use of a large, single discharge silencer such as the SD or RD Series.

Where two or more blowers discharge into a common header, individual silencers upstream of the header are required to subdue the individual blower pulsations. Otherwise, the pulsations tend to beat with each other and can be extremely objectionable.

Note: Silencers should be mounted as close to the blower as possible since any piping between the blower and silencer will radiate noise. Standard silencer connections are not designed to carry external piping or valve loads, so good piping support practices should be used to prevent stresses that cause fatigue and eventual fracture of the silencer or piping. It is also good practice to isolate the blower from the silencer with a flexible expansion joint. Contact Universal Silencer for special design considerations where loading is a factor.

Attenuation Curves

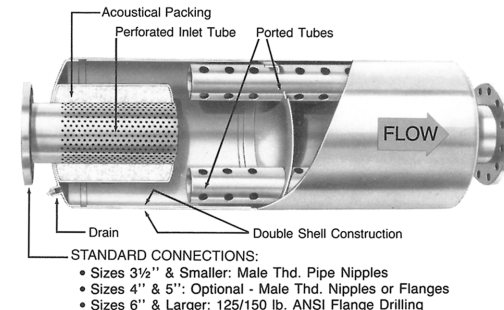
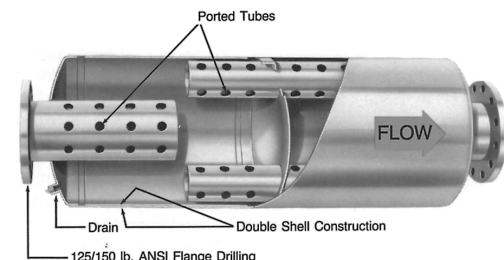
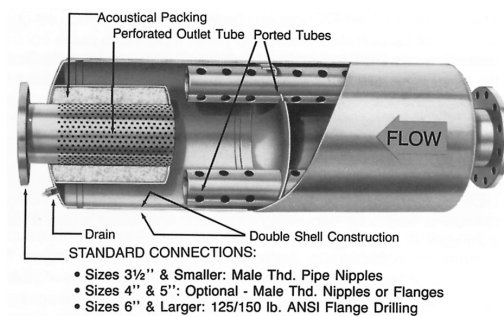
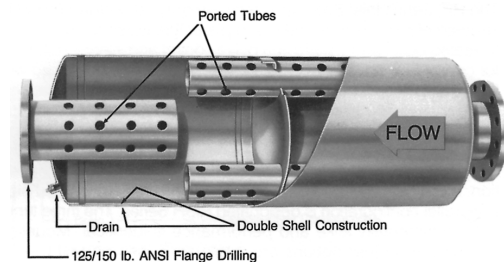
Noise attenuation curves are given for the various models within this section. The curves represent insertion loss of airborne noise for typical applications under average conditions. It is not feasible to chart the expected performance of a silencer over a wide range of applications and conditions, therefore, the curves must be used with discretion. Structure-borne noise (see above) may be a consideration and will require separate analysis, since it is not airborne noise and not used for silencer performance rating.

The silencers shown below are more fully described on the individual catalog pages. These units are designed specifically for use on Rotary Positive Blowers.

There are fundamental similarities between blower silencers and other types, particularly reciprocating engine silencers, which also require a silencer design that provides effective pulse control as well as noise

attenuation. However, blower silencers generally must be constructed more ruggedly to withstand prolonged exposure to severe pulsations produced by the blower.

All silencers described are of standard with end in, end-out design. Low or high side inlet and outlet connections are available and are described on the individual catalog pages.



Accessories, Special Features

- ✧ Mounting Brackets
- ✧ Inspection Openings
- ✧ Pressure Vessel Construction
- ✧ Oversize Flanges
- ✧ Special Finishes
- ✧ Special Materials

General Information

Rotary Positive Blowers

UCI Series Inlet Silencer

Chamber-type inlet silencer for use on sub-critical PLV applications. Available in pipe sizes 8"-30". Smaller sizes use URB Series. Available with side connections and mounting brackets.

RIS Series Inlet Silencer

Combustion chamber-absorptive type inlet silencer for critical PLV applications. Available in pipe sizes 2"-30". Low or high side outlet and mounting brackets available on most sizes.

UCD Series URB/URD Series Discharge Silencers

Chamber-type discharge silencer for use on sub-critical PLV applications. Available in pipe sizes 8"-30". (Smaller sizes use URB Series). Low, high, or opposed side connections and mounting brackets available.

SD Series RD Series Discharge Silencers

Combination chamber-absorptive type discharge silencers for critical PLV applications. Available in pipe sizes 2"-30". Low, high, or opposed side connections and mounting brackets available on most sizes.

Application, Capacity, Pressure Drop Data

Blower Silencers

1 Blower Transition Speed

Blower Gear Size	Transition Speed-RPM	
	Inlet	Discharge
2	6,300	5,155
2½	5,040	4,125
3	4,200	3,435
4	3,150	2,575
5	2,520	2,060
6	2,100	1,720
7	1,800	1,470
8	1,575	1,290
10	1,260	1,030
12	1,050	860
14	900	735
16	785	645
18	700	570
20	630	515
22	570	470
24	525	430

2 Silencer Model Specifications

Pitch Line Velocity	Inlet Silencer	Discharge Silencer
Below Transition	UCI, URB	URB, UCD, URD
Above Transition	RIS	SD, RD

4 Pressure Drop Coefficients

Model	Pressure Drop Coefficient (C)
URB, URBV	4.2
UCI, UCIV, UCIIH	4.2
RIS, RISY, RISH	4.2
UCD, UCDY	4.2
URD, URDY, URDH	4.2
SD, SDY, SDH	4.2
RD, RDY, RDH	4.2
RDS, SDS, URDS	7.0

Silencer Recommendations

As mentioned on page 2.1 pitch line velocity (PLV) is the speed of the timing gear in feet per minute (ft/min). For purposes of silencer application, PLV is considered “critical” at 3,300 ft/min for intake and 2,700 ft/min for discharge.

Table 1 gives transition speeds in RPM. Blowers running at these speeds or greater will have critical PLV. Operating speeds below transition will be in the sub-critical range. Blowers operating in the sub-critical speed range usually require only simple chamber-type silencers while those in the critical range require combination chamber-absorptive type silencers. If there is doubt, it is best to use the combination-type silencers. When gear size and operating speeds are known, the proper type silencer is easily selected.

Silencer Size Selection, Capacity

Table 3 gives the nominal capacity of the various size silencers. “Size” in this table refers to the silencer “nominal size,” or its “inlet size.” Capacities are expressed in inlet CFM (ICFM), thus, discharge silencers are rated at higher capacities than inlet silencers since the air is compressed to reduced volume at the discharge operating pressure.

A From Table 1 determine whether blower RPM is above or below the transition speed for critical PLV.

B Consult Table 2 for recommended silencer models.

Pressure Drop

The following formulas may be used to calculate pressure drop through the silencers covered in this catalog.

$$\text{Inlet: } \Delta P = \left(\frac{V}{4005} \right)^2 C$$

(assumes silencer inlet is open to atmosphere)

$$\text{Discharge: } \Delta P = \left(\frac{V}{4005} \right)^2 C \times \frac{P}{14.7} \times \frac{530}{T}$$

ΔP = pressure drop through silencer, inches of water

V = air velocity through silencer, ft/min*

C = individual silencer restriction coefficient—empirical constant (see Table 4)

P = discharge pressure, PSIA (operating pressure in PSIG + 14.7)

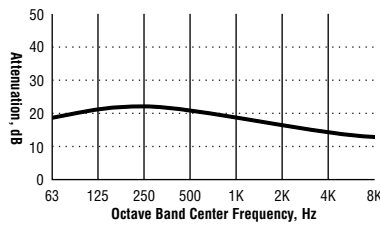
T = discharge temperature, °R absolute (operating temperature in °F + 460)

* To calculate velocity through silencer, divide flow in ACFM by cross-sectional area of silencer inlet diameter in square feet.

3 Silencer Capacity

Size	Inlet Silencer	Capacity (Inlet CFM 14.7 PSIA at 70°F)				
		Discharge Silencer				
		4 PSIG	6 PSIG	8 PSIG	10 PSIG	15 PSIG
1	30	35	40	40	40	45
1½	70	80	85	90	95	105
2	120	140	150	160	165	185
2½	190	220	235	245	255	285
3	270	320	335	355	370	415
3½	370	430	455	480	505	560
4	480	560	600	630	660	735
5	750	880	935	985	1,030	1,150
6	1,080	1,260	1,340	1,410	1,480	1,650
8	1,920	2,250	2,390	2,510	2,630	2,940
10	3,000	3,520	3,730	3,930	4,110	4,590
12	4,300	5,070	5,370	5,660	5,920	6,600
14	5,900	6,890	7,310	7,700	8,060	8,990
16	7,700	9,000	9,550	10,000	10,500	11,800
18	9,700	11,400	12,100	12,700	13,300	14,900
20	12,000	14,000	14,900	15,700	16,400	18,400
22	14,500	17,000	18,100	19,000	19,900	22,200
24	17,300	20,200	21,500	22,600	23,700	26,400
26	20,300	23,800	25,200	26,600	27,800	31,000
28	23,500	27,600	29,300	30,800	32,200	36,000
30	27,000	31,700	33,600	35,400	37,000	41,300
Est Temp.	70°F	115°F	140°F	165°F	190°F	240°F

Typical Attenuation Curve



Specifications UCI Group

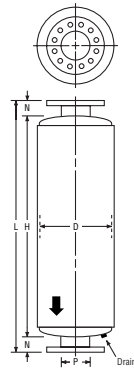
Chamber Type
Inlet Silencer

The UCI Series Inlet Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides pulse control and silencing for most subcritical PLV applications. Sizes 8" and larger are equipped with flanged connections drilled to

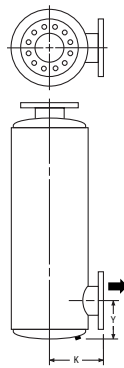
125/150 lb ANSI specifications. Exterior surfaces receive a shop coat of rust-inhibitive primer and may be finish painted in the field if desired. The UCI Series is the basic inlet model and is the conventional end-in, end-out version. The low side inlet

model is designated UCIY Series and the high side inlet type is designated UCIH Series. The three types are fundamentally alike and performance is identical. Mounting brackets and other options are available—see page 2.11.

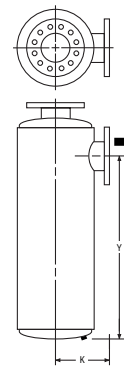
UCI Series



UCIY Series (Low Side Outlet)



UCIH Series (High Side Outlet)



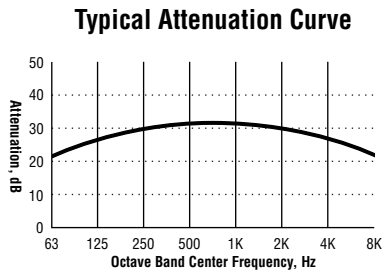
Chamber Type Inlet Silencers

P (Size)	Part Number	D	L	N	H	K	Y		Y		Weight
							UCIY Min	Max	UCIH Min	Max	
1											
1½											
2											
2½											
3											
3½											
4											
5											
6											
8	53-108-AA	22	61	3½	54	14½	9	21	28½	45½	250
10	53-110-AA	26	74	3½	67	16½	11	27	34½	57	360
12	53-112-AA	30	87	3½	80	18½	12½	34	41	69	550
14	53-114-AA	30	99	3½	92	18½	13½	40	47½	80½	650
16	53-116-AA	36	113	3½	106	21½	15½	48	53½	91½	950
18	53-118-AA	42	126	3½	119	24½	17½	55½	59½	103½	1,200
20	53-120-AA	42	140	4½	131	25½	19	60½	67	114	1,350
22	53-122-AA	48	153	4½	144	28½	20½	66½	75	126	1,950
24	53-124-AA	54	167	4½	158	31½	22½	72	83	138	2,500
26	53-126-AA	54	179	4½	170	31½	23½	85	84	149	2,750
28	53-128-AA	60	193	4½	184	34½	25½	87	91	161	3,400
30	53-130-AA	66	206	4½	197	37½	27½	95	100	173	4,650

Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

Specifications RIS Group

Combination Chamber-Absorptive Type Inlet Silencer

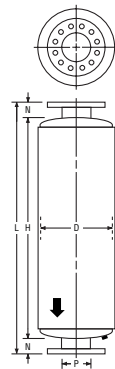


The RIS Series Inlet Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It features an acoustically-treated outlet and will provide pulse control and silencing suitable for critical PLV applications. Sizes 4" and larger are equipped with flanged connections drilled to 125/150 lb ANSI specifications.

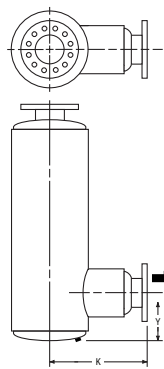
Smaller sizes are standard with male threaded pipe nipples. Units sized 4" and 5" are available in either flanged or male pipe threads. Exterior surfaces receive a shop coat of rust inhibitive primer and may be finish painted in the field if desired. The RIS Series is the basic model, having conventional end-in, end-out configuration.

A low side outlet version is designated RISY Series and high side outlet configuration is designated RISH Series. The three types are fundamentally alike and performance is identical. Mounting brackets and other options are available—see page 2.11.

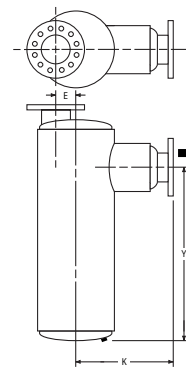
RIS Series



RISY Series
(Low Side Outlet)



RISH Series
(High Side Outlet)



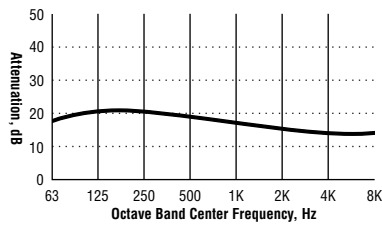
Combination Chamber-Absorptive Type Inlet Silencers

P (Size)	Part Number	D	L	N	H	K		E	Y		RISH		Weight
						RISY	RISH		Min	Max	Min	Max	
1	Sizes 1"–1½" use U5 Series (page 3.2)												
1½													
2	54-102-AA	8	28½	3	22½	8½	—	—	FIXED AT 6				25
2½	54-125-AA	8	33	3	27	9	—	—	FIXED AT 7				25
3	54-103-AA	8	39	3	33	10	—	—	FIXED AT 7				30
3½	54-135-AA	10	39½	3	33½	11	—	—	FIXED AT 8				40
4	54-104-AA *	10	45	3	39	12½	14½	2¼	7½	16½	30½	32½	50
5	54-105-AA *	12	57½	3	51½	15½	17½	2¾	9	23	40	43½	80
6	54-106-AA	14	64	3	58	17	20	3¼	9	25½	43½	49	110
8	54-108-AA	18	72	3½	65	21½	26½	4	12	30½	49½	54	190
10	54-110-AA	22	85	3½	78	25½	32½	5	13½	37	61½	65½	380
12	54-112-AA	26	98	3½	91	29½	38	6	15	44	69	77	550
14	54-114-AA	30	111	3½	104	30	40	7½	16½	50	81	89½	800
16	54-116-AA	36	113	3½	106	35½	49½	0	18½	51	56½	88½	1,050
18	54-118-AA	42	126	3½	119	41	57½	0	20½	58½	62½	100½	1,350
20	54-120-AA	42	140	4½	131	47	62½	0	22	63½	70	111	1,500
22	54-122-AA	48	153	4½	144	46½	65½	0	23½	69½	78	123	2,100
24	54-124-AA	54	167	4½	158	54	75½	0	25½	75	86	135	2,700
26	54-126-AA	54	179	4½	170	55½	76	0	25½	87	86	147	3,050
28	54-128-AA	60	193	4½	184	61	84½	0	29½	91	95	157	3,850
30	54-130-AA	66	206	4½	197	66½	93½	0	30½	98	103	170	5,150

Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

*Specify -TT for male pipe threaded units.

Typical Attenuation Curve

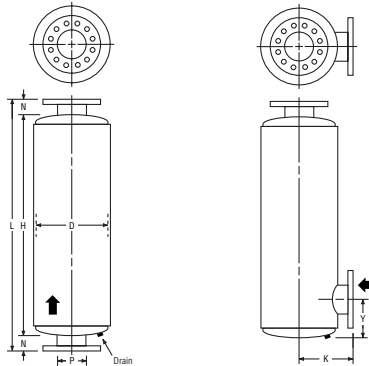
Specifications
UCD GroupChamber Type
Discharge Silencer

The UCD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides pulse control and silencing for subcritical PLV applications where the higher performance of the URD Series on page 2.7

is not warranted. Sizes 8" and larger are equipped with flanged connections drilled to 125/150 lb ANSI specifications. Exterior surfaces receive a shop coat of rust-inhibitive primer and may be finish painted in the field if desired. The UCD Series is the

basic end-in, end-out configuration. A low side inlet version is designated UC DY Series. The two types are fundamentally alike and performance characteristics are identical. Mounting brackets and other options are available—see page 2.11.

UCD Series

UC DY Series
(Low Side Inlet)

Chamber Type Discharge Silencers

P (Size)	Part Number	D	L	N	H	K	Y		Weight
							Min	Max	
1									
1½									
2									
2½									
3									
Sizes 1"–6" use URB Series (page 2.7)									
3½									
4									
5									
6									
8	56-108-AA	22	61	3½	54	14½	9	21	250
10	56-110-AA	26	74	3½	67	16½	11	27	360
12	56-112-AA	30	87	3½	80	18½	12½	34	550
14	56-114-AA	30	99	3½	92	18½	13½	40	650
16	56-116-AA	36	113	3½	106	21½	15½	48	900
18	56-118-AA	42	126	3½	119	24½	17½	55½	1,200
20	56-120-AA	42	140	4½	131	25½	19	60½	1,350
22	56-122-AA	48	153	4½	144	28½	20½	66½	1,950
24	56-124-AA	54	167	4½	158	31½	22½	72	2,500
26	56-126-AA	54	179	4½	170	31½	23½	85	2,750
28	56-128-AA	60	193	4½	184	34½	25½	87	3,400
30	56-130-AA	66	206	4½	197	37½	27½	95	4,650

Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

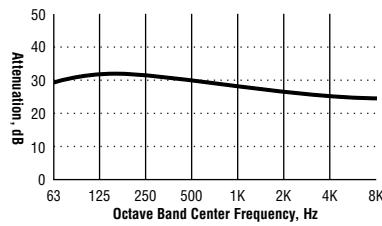
Specifications

URB Group

URD Group

Chamber Type Discharge Silencer

Typical Attenuation Curve



Note: Sizes 1"–6" are URB Series; sizes 8"–30" are URD Series. Both series are fundamentally the same in design and the performance characteristics are identical.

The URB/URD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides pulse control and silencing for subcritical PLV applications. Sizes 4" and larger are equipped with flanged connections drilled to 125/150 lb ANSI specifications. Smaller sizes are standard with male threaded pipe

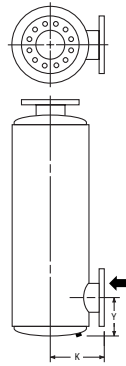
nipples. Units sized 4" and 5" are available in either flanged or male pipe threads. Exterior surfaces receive a shop coat of rust-inhibitive primer and may be finish painted in the field if desired. The URB/URD Series is the basic end-in, end-out configuration. A low side inlet version is designated URBY/URDY Series; high side inlet is

designated URDH Series; and low opposed connection is designated URDS Series. The four types are fundamentally alike and performance characteristics are identical. Mounting brackets and other options are available—see page 2.11.

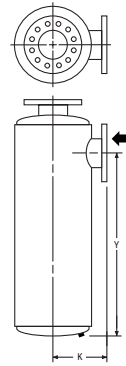
**URB,
URD Series**



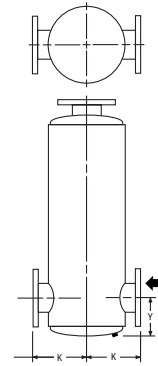
**URBY,
URDY Series**
(Low Side Inlet)



URDH Series
(High Side Inlet)



URDS Series
(Opposed Connections)



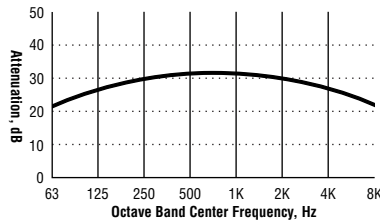
Chamber Type Discharge Silencers

P (Size)	Part Number	D	L	N	H	K	URBY, URDY		Y URDH		URDS		Weight
							Min	Max	Min	Max	Min	Max	
1	55-101-AA	4½	21	2	17	—	—	—	—	—	—	—	10
1½	55-115-AA	6½	24	2	20	—	—	—	—	—	—	—	15
2	55-102-AA	8	33	3	27	7	FIXED AT 6		—	—	—	—	20
2½	55-125-AA	10	34	3	28	8	FIXED AT 7		—	—	—	—	30
3	55-103-AA	10	46	3	40	8	FIXED AT 7		—	—	—	—	40
3½	55-135-AA	12	52	3	46	9	FIXED AT 8		—	—	—	—	55
4	55-104-AA *	14	53	3	47	10	6	22	—	—	8	16	70
5	55-105-AA *	16	65	3	59	11	6½	29	—	—	9	19	120
6	55-106-AA	18	72	3	66	12	8	32	—	—	10	22	160
8	55-108-AA	22	97	3½	90	14½	9	48	62	82	12	29	370
10	55-110-AA	26	122	3½	115	16½	11	63½	76½	106	14	40½	550
12	55-112-AA	30	135	3½	128	18½	12½	69	88	117½	15½	42	800
14	55-114-AA	36	161	3½	154	21½	14½	81	107	141	17½	49	1,250
16	55-116-AA	42	181	3½	174	24½	16½	92½	119½	158½	19½	55½	1,600
18	55-118-AA	48	188	3½	181	27½	18½	98	126½	164½	21½	56½	2,300
20	55-120-AA	48	202	4½	193	28½	19½	103	134	175½	22½	61	2,500
22	55-122-AA	54	204	4½	195	31½	21½	103	137	175½	24½	60	2,950
24	55-124-AA	54	239	4½	230	31½	22½	126	156½	210½	25½	76½	3,450
26	55-126-AA	60	259	4½	250	34½	25	132	175	228	27	78	4,400
28	55-128-AA	66	279	4½	270	37½	27	144	188	246	31	85	6,150
30	55-130-AA	72	304	4½	295	40½	29	161	203	272	32	96	7,250

Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

*Specify -TT for male pipe threaded units.

Typical Attenuation Curve



Acoustical packing is suitable for 325°F

Specifications SD Group

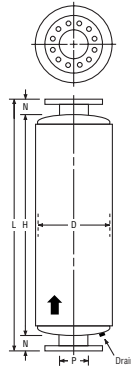
Combination Chamber-Absorptive Type Discharge Silencer

The SD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It will provide excellent pulse control and is equipped with an acoustically-treated inlet for use on critical PLV applications. Its pulse and noise performance is recommended for all but the most demanding applications, which may require the RD Series on page 2.9. Sizes 4" and larger are equipped with flanged connections drilled to 125/150 lb ANSI specifications. Smaller sizes are standard with male threaded pipe nipples. Units sized 4" and 5" are available in either flanged or male pipe threads. Exterior surfaces receive a shop coat of rust-inhibitive primer and may be finish painted in the field if desired. The SD Series is the basic end-in, end-out

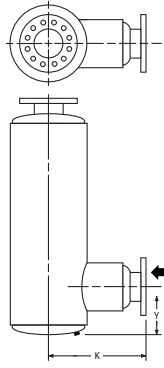
configuration. A low side inlet is designated the SDY Series; high side inlet, SDH Series; and low opposed connection, SDS Series. The four types are fundamentally alike and performance characteristics are identical. Mounting brackets and other options are available—see page 2.11.

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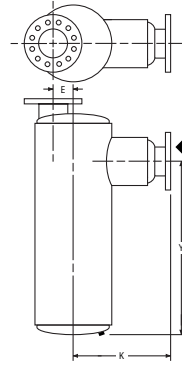
SD Series



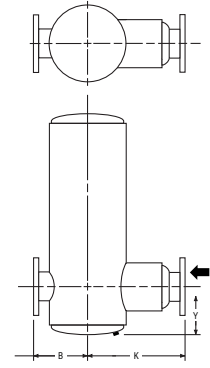
SDY Series (Low Side Inlet)



SDH Series (High Side Inlet)



SDS Series (Opposed Connection)



Combination Chamber-Absorptive Type Discharge Silencers

P (Size)	Part Number	D	L	N	H	K			B	E	SDY		Y		SDH		Weight
						SDY	SDH	SDS			Min	Max	Min	Max	Min	Max	
1	Sizes 1" and 1½" use URB Series (page 2.7)																
1½																	
2	54-102-AA	8	28½	3	22½	8½	—	—	—	—	—	—	—	—	—	—	15
2½	54-125-AA	8	33	3	27	9	—	—	—	—	—	—	—	—	—	—	25
3	54-103-AA	8	39	3	33	10	—	—	—	—	—	—	—	—	—	—	30
3½	54-135-AA	10	39½	3	33½	11	—	—	—	—	—	—	—	—	—	—	40
4	54-104-AA*	10	45	3	39	12½	14½	14½	8	2¼	7½	16½	7½	9½	30½	32½	50
5	54-105-AA*	12	57½	3	51½	15½	17½	17½	9	2¾	9	23	9	12½	40	43½	80
6	54-106-AA	14	64	3	58	17	20	20	10	3¼	9	25½	10	15½	43½	49	110
8	54-108-AA	18	72	3½	65	21½	26½	26½	12½	4	12	30½	12	16½	49½	54	190
10	54-110-AA	22	85	3½	78	25½	32½	32½	14½	5	13½	37	13½	18	61½	65½	380
12	54-112-AA	26	98	3½	91	29½	38	38	16½	6	15	44	15	24	69	77	550
14	54-114-AA	30	111	3½	104	30	40	40	18½	7½	16½	50	16½	25	81	89½	800
16	58-116-AA	36	137	3½	130	35½	47	47	21½	9½	18½	65	18½	36	96	113½	1,250
18	58-118-AA	42	150	3½	143	41	52	52	24½	11½	20½	70½	20½	40½	104½	124½	1,600
20	58-120-AA	42	176	4½	167	47	62	62	25½	10½	21½	87½	21½	48½	120½	147½	1,900
22	58-122-AA	48	195	4½	186	47	61	61	28½	12½	23½	93½	23½	50½	138½	165½	2,700
24	58-124-AA	48	213	4½	204	55½	72	72	28½	11½	24½	110½	24½	60½	146½	182½	3,000
26	58-126-AA	54	233	4½	224	55	76	76	31½	13½	26	117	26	70	157½	201½	3,900
28	58-128-AA	54	250	4½	241	62	81	81	31½	12½	28½	126½	28½	71½	173½	216½	4,400
30	58-130-AA	60	276	4½	267	68	90	90	34½	14½	29½	139	29½	81	190	241½	5,400

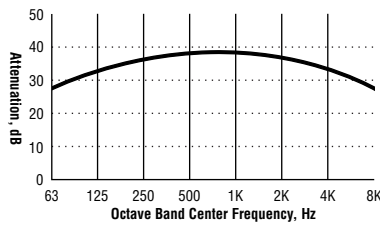
Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

*Specify -TT for male pipe threaded units.

Specifications RD Group

Combination Chamber-Absorptive Type Discharge Silencer

Typical Attenuation Curve



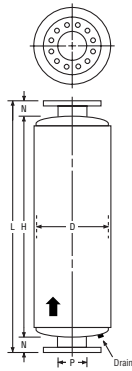
Acoustical packing is suitable for 325°F

The RD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides excellent pulse control and is equipped with an acoustically treated inlet for use on critical PLV applications. Pulse control and noise attenuation provided by the RD Series is the ultimate and is necessary for only the most

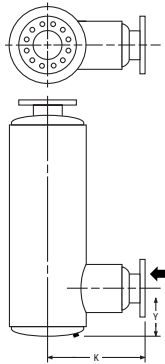
demanding installations. Sizes 4" and larger are equipped with flanged connections drilled to 125/150 lb ANSI specifications. Smaller sizes are standard with male threaded pipe nipples. Units sized 4" and 5" are available in either flanged or male pipe threads. Exterior surfaces receive a shop coat of rust inhibitive primer and may be finish painted in the field

if desired. The RD Series is the basic end-in, end-out configuration. A low side inlet is designated the RDY Series; high side inlet, RDH Series; and low opposed connections, RDS Series. The four types are fundamentally alike and performance is identical. Mounting brackets and other options are available—see page 2.11.

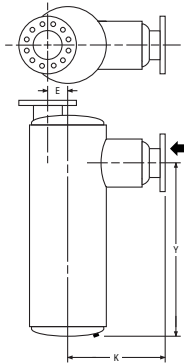
RD Series



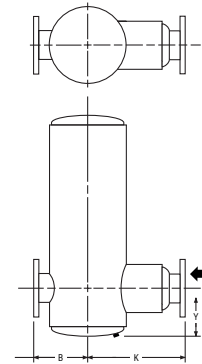
RDY Series
(Low Side Inlet)



RDH Series
(High Side Inlet)



RDS Series
(Opposed Connection)



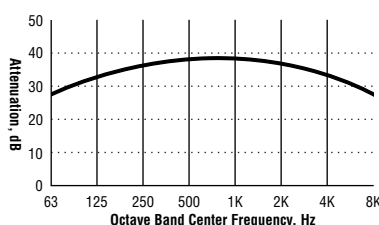
Combination Chamber-Absorptive Type Discharge Silencers

P (Size)	Part Number	D	L	N	H	K			B	E	RDY		Y RDS		RDH		Weight
						RDY	RDH	RDS			Min	Max	Min	Max	Min	Max	
1	Sizes 1"–1½" use URB Series (page 2.7) or use U5 Series: (page 3.2)																
1½																	
2	57-102-AA	8	33	3	27	9	—	—	—	—	FIXED AT 6		—	—	—	—	25
2½	57-125-AA	10	34	3	28	10	—	—	—	—	FIXED AT 7		—	—	—	—	35
3	57-103-AA	10	46	3	40	10	—	—	—	—	FIXED AT 7		—	—	—	—	40
3½	57-135-AA	12	52	3	46	11	—	—	—	—	FIXED AT 8		—	—	—	—	60
4	57-104-AA*	14	53	3	47	14½	16	14½	10	4	8	20	8	14	33	39	80
5	57-105-AA*	16	65	3	59	16½	18	16½	11	4½	9	26½	9	16½	43½	51	130
6	57-106-AA	18	72	3	66	20½	22½	20½	12	5	10	30	10	20	46	56	160
8	57-108-AA	22	97	3½	90	24½	28½	26	14½	6	12	45	12	26	65	79	410
10	57-110-AA	26	122	3½	115	28½	34	32	16½	7	14	60½	14	37½	79½	103	600
12	57-112-AA	30	135	3½	128	35	42	39½	18½	8	15½	66	15½	39	91	114½	900
14	57-114-AA	36	161	3½	154	40½	47½	45½	21½	10½	17½	78	17½	46	110	138	1,400
16	57-116-AA	42	181	3½	174	44½	52½	50	24½	12½	19½	89½	19½	52½	122½	155½	1,800
18	57-118-AA	48	188	3½	181	47	54	52½	27½	14½	21½	95	21½	53½	129½	161½	2,550
20	57-120-AA	48	202	4½	193	53½	65	63½	28½	13½	22½	100	22½	58	137	172½	2,750
22	57-122-AA	54	204	4½	195	59½	72	70	31½	15½	24½	100	24½	57	40	172½	3,300
24	57-124-AA	54	239	4½	230	66	81½	79½	31½	14½	25½	123	25½	73½	159½	207½	3,850
26	57-126-AA	60	259	4½	250	72	87	85	34½	16½	27	130	27	76	177	226	5,000
28	57-128-AA	66	279	4½	270	78	93½	91	37½	18½	31	140	31	81	192	242	6,950
30	57-130-AA	72	304	4½	295	78	95½	94	40½	20½	32	158	32	93	205	266	8,100

Note: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

*Specify -TT for male pipe threaded units.

Typical Attenuation Curve



Specifications SURS Group

Chamber Type Multi-Use Silencer

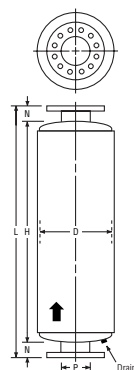
SURS Series blower silencers are heavy-duty, all welded steel construction, suitable for application as either an inlet or discharge silencer on rotary positive. These units are designed for blowers running above critical transition speed, and therefore, no acoustic packing material is included in the design. Instead, these units have a specially designed, high-performance, three chamber system which incorporates a diffuser on the blower side of

the silencer units. The unit will provide excellent pulse control and is designed for the most demanding applications.

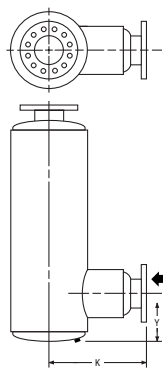
Sizes smaller than four inches are equipped with standard male threaded pipe nipples, while the 4" and larger units have flanged connections drilled to 125/150 lb ANSI specifications. As with other blower silencers, the SURS Series employs a high-heat aluminum paint system.

The SURS is a basic end-in, end-out configuration. A low-side inlet model is designated as the SURSY Series; the SURSY is fundamentally identical to the SURS series in both dimension and attenuation performance. Both series are designed to operate at pressures to 15 psi. Mounting brackets, shell lagging and other accessories are available for both series of blower silencers.

SURS Series



SURSY Series (Low Side Inlet)



Combination Chamber Type Multi-Use Discharge Silencers

SURS		SURSY		P	D	L	N	H	K	Y		Weight
Model	Part	Model	Part							Min.	Max	
SURS-2	55-A02-SS	SURSY-2	55-B02-SS	2	12	40	3	34	9	4½	13	55
SURS-2.5	55-A25-SS	SURSY-2.5	55-B25-SS	2½	12	40	3	34	9	4½	13	55
SURS-3	55-A03-SS	SURSY-3	55-B03-SS	3	12	46	3	40	9	5	15	60
SURS-3.5	55-A35-SS	SURSY-3.5	55-B35-SS	2½	14	59	3	53	10	5½	20	90
SURS-4	55-A04-SS*	SURSY-4	55-B04-SS†	4	14†	59	3	53	10	6	20	100
SURS-5	55-A05-SS*	SURSY-5	55-B05-SS†	5	16†	71	3	65	11	7	25	160
SURS-6	55-A06-SS	SURSY-6	55-B06-SS	6	18	72	3	66	12	8	25	200
SURS-8	55-A08-SS	SURSY-8	55-B08-SS	8	26	111	3½	104	16½	10	41	520
SURS-10	55-A10-SS	SURSY-10	55-B10-SS	10	30	136	3½	129	18½	12	51	810
SURS-12	55-A12-SS	SURSY-12	55-B12-SS	12	36	138	3½	131	21½	14	50	1,130
SURS-14	55-A14-SS	SURSY-14	55-B14-SS	14	36	168	3½	161	21½	16	63	1,400
SURS-16	55-A16-SS	SURSY-16	55-B16-SS	16	42	181	3½	174	24½	18	51	1,800
SURS-18	55-A18-SS	SURSY-18	55-B18-SS	18	48	188	3½	181	27½	20	48	2,500
SURS-20	55-A20-SS	SURSY-20	55-B20-SS	20	48	214	4	205	28½	22	56	2,850

*Specify -TT for male pipe threaded units.

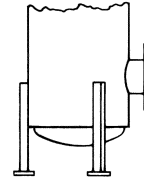
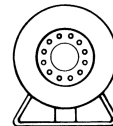
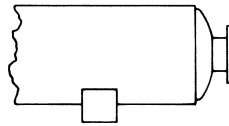
Accessories and Optional Features

UCI, RIS, ICD IRB, IRD, SD, RD, and SURS Blower Silencers

In addition to the standard accessories shown here, other special features such as special materials and finishes will be quoted on request. Contact Universal Silencer with your specific requirements.

Mounting Brackets

Mounting Brackets or legs are available for any of the silencers in this section. Saddle type brackets for horizontal mount and angle legs for vertical mount are standard. See Spec. Sheet No. 1078. Special design brackets will be quoted with your specifications.

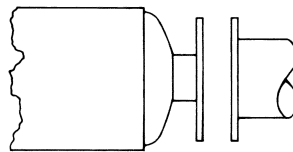
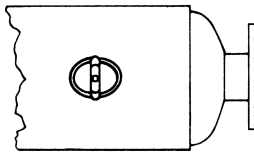
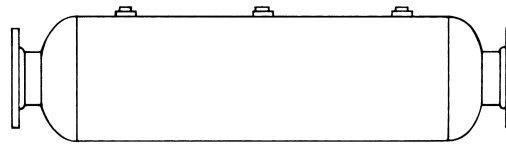


Horizontal

Vertical

Pressure Vessel Construction

All silencers shown in this catalog may be fabricated in accordance with Div. 1, Section VIII—ASME Code for Unfired Pressure Vessels. Dimensions are similar to standard models, but material types and thicknesses are selected to meet code requirements. Prices are quoted on application to meet your pressure and temperature conditions.



Inspection Openings

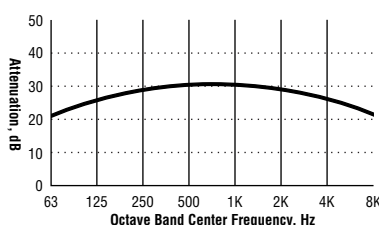
Inspection Openings with bolted and gasketed cover plates are available installed at the time the silencer is fabricated. They are designed to withstand the usual range of pressure encountered with blowers. One inspection opening is usually installed in each silencer chamber for cleaning or inspection. Standard sizes include: 3" x 4", 4" x 6", 6" x 8".

Oversize Flanges

Frequently the blower flange size is larger than the required silencer's connection. Rather than use a larger silencer, it is usually more economical to use an oversize reducing flange on the silencer. This is the conventional piping practice and may be used on either inlet or discharge silencers. Example: a 10" flange size silencer has adequate capacity for a blower with a 12" discharge flange. A flange having a drilling pattern to match the 12" blower flange but with a 10" bore to match the silencer nozzle is substituted on the silencer inlet.

Two pipe sizes, (e.g. 10" to 14"), is the recommended maximum variation. Prices on request.

Typical Attenuation Curve



CBF/CBFI Series

Compact Blower
Inlet Filter-Silencer**Filter and silencer combined in one unit.**

The CBF and CBFI have the acoustic capabilities of the Universal Silencer RIS Series silencers and the filtration performance of CC series filters.

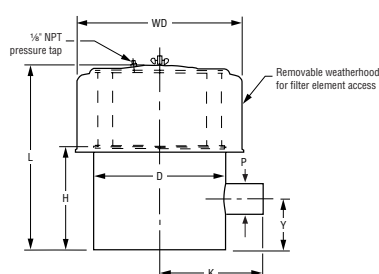
Reduced cost, overall package size, weight, storage space, freight cost and damage.

Approximately one third the size of conventional blower silencer, with the added benefit of excellent, high-efficiency filtration.

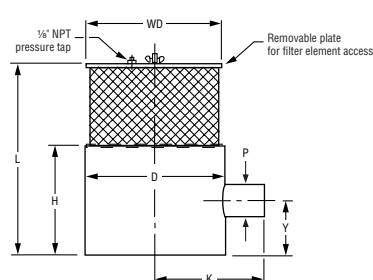
Reduced overall package noise without further acoustic treatment.

Versatile—Suitable for inlet applications in confined areas, outdoor or indoor, without compromising acoustic or pressure drop performance.

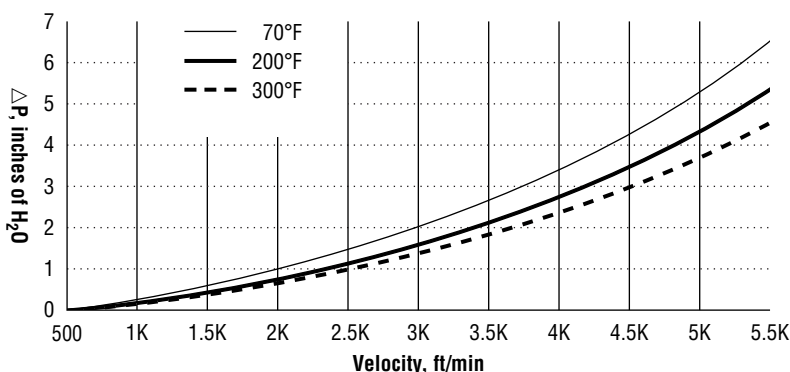
CBF Series (outdoor use)



CBFI Series (indoor use)



Pressure Drop Curves



P (nom.)	Element Part Number		
	Paper	Felt	Wire
2	81-0471*	81-1203*	81-1036*
2½	81-0471*	81-1203*	81-1036*
3	81-1063	81-1205	81-1038
4	81-1063	81-1205	81-1038
5	81-0475	81-1207	81-1040
6	81-0475	81-1207	81-1040
8	81-1163	81-1209	81-1200
10	81-1163	81-1209	81-1200
12	81-1164	81-1210	81-1201

*Pair of elements required (stacked).

Models, Dimensions, Weights and Elements

P (nom.)	CBF/CBFI					CBF				CBFI			
	D	H	Y	K	CFM CAP	Part	WD	L	Weight	Part	B	L ₁	Weight
2	8	8	4	7	120	34-702-AA	10	13¼	20	34-G02-AA	6½	12¾	20
2½	8	9	4¾	7	175	34-725-AA	10	14¾	25	34-G25-AA	6½	14¼	25
3	12	10	5¼	9	275	34-703-AA	16	17	50	34-G03-AA	10	16½	50
4	12	15	7½	9	500	34-704-AA	16	21¼	60	34-G04-AA	10	20¾	60
5	16	17	8½	11	750	34-705-AA	20	26	85	34-G05-AA	12	25¼	85
6	16	23	11½	11	1,100	34-706-AA	20	32	100	34-G06-AA	12	31¼	100
8	24	24½	13¾	15½	2,200	34-708-AA	30	39	200	34-G08-AA	12	39¼	185
10	30	35½	17¾	18½	3,000	34-710-AA	36	46½	305	34-G10-AA	18	45¾	295
12	34	39½	19¾	20½	4,300	34-712-AA	40	54½	385	34-G12-AA	24	53¾	370

Notes: 1. Non-ASME Code construction suitable for 15" Hg vacuum.

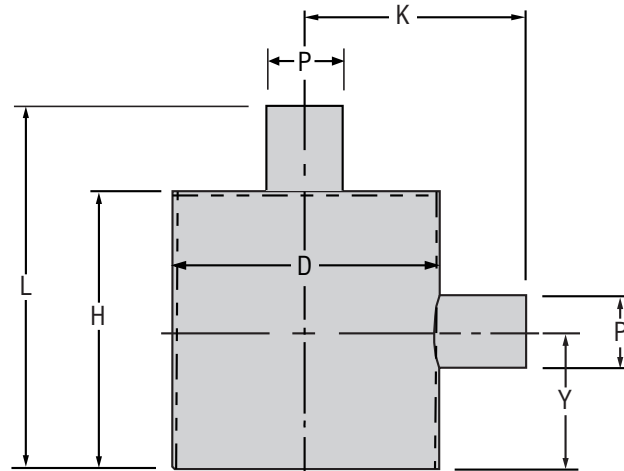
2. Weights are approximate and do not include the weight of the filter element.

CB Series

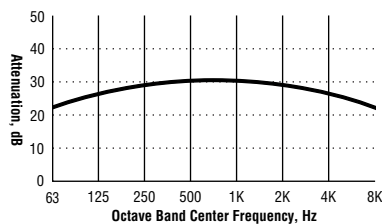
Compact Blower Silencer

This extremely compact blower silencer works as either an inlet or discharge silencer on rotary positive blowers. It is about one-third the size of a standard silencer, and reduces overall package size, cost, weight and storage space. The unit's internal pack material is suitable for temperatures up to 325 degrees. The unit is

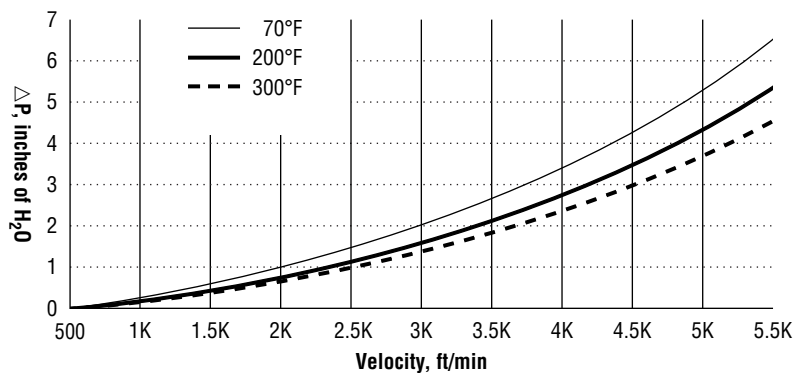
operable in conditions up to 15 psig. Flanged or threaded connections are available. Exterior surfaces receive a shop coat of rust inhibitive primer.



Typical Attenuation Curve



Pressure Drop Curves



Compact Blower Silencers

Model	Part Number	P (nom.)	D	L	H	Y	K	Weight	CFM CAP
CB-2	56-702-AA	2	8	11	8	4	7	15	120
CB-2½	56-725-AA	2½	8	12½	9½	4¾	7	25	187
CB-3	56-703-AA	3	12	13½	10½	5¼	9	35	270
CB-4	56-704-AA	4	12	18	15	7½	9	45	480
CB-5	56-705-AA	5	16	20	17	8½	11	70	750
CB-6	56-706-AA	6	16	26	23	11½	11	85	1,080
CB-8	56-708-AA	8	24	31	27½	13¾	15½	170	1,920
CB-10	56-710-AA	10	30	39	35½	17¾	18½	275	3,000
CB-12	56-712-AA	12	34	43	39½	19¾	20½	355	4,320

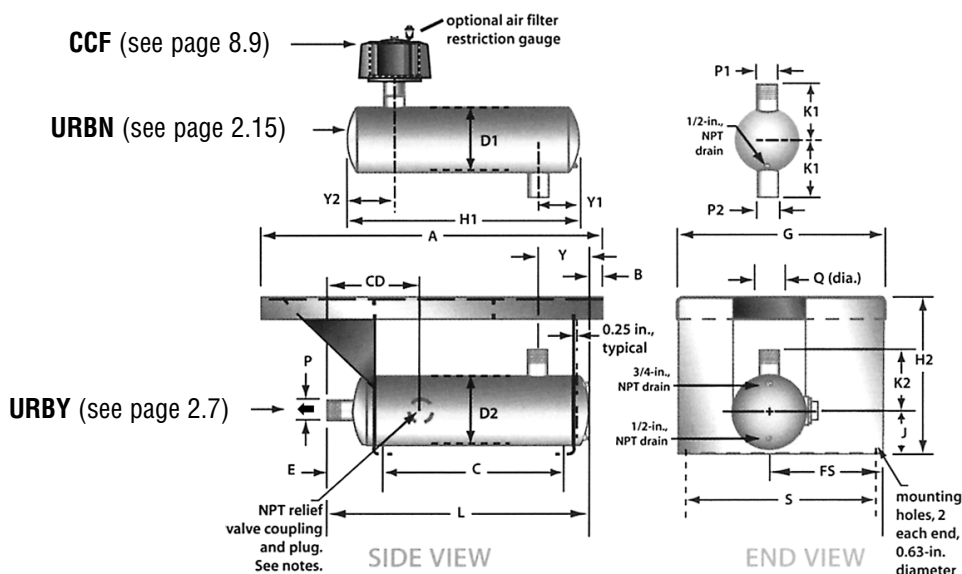
These wide base plate products accommodate a variety of blower package designs. The UNI-BASE package and the USI-BASE base plate use the same basic base plate and discharge silencer. The UNI-BASE package includes the Universal Silencer model URBN high-side inlet silencer and CCF inlet air filter, while the UNI-BASE

base plate is only the basic plate and the URBY discharge silencer. Please see page 2.7 for performance and sizing information for the URBY series silencers, page 2.15 for information on the URBN series silencers, and page 8.9 for performance data, weights and dimensions of CCF filters.

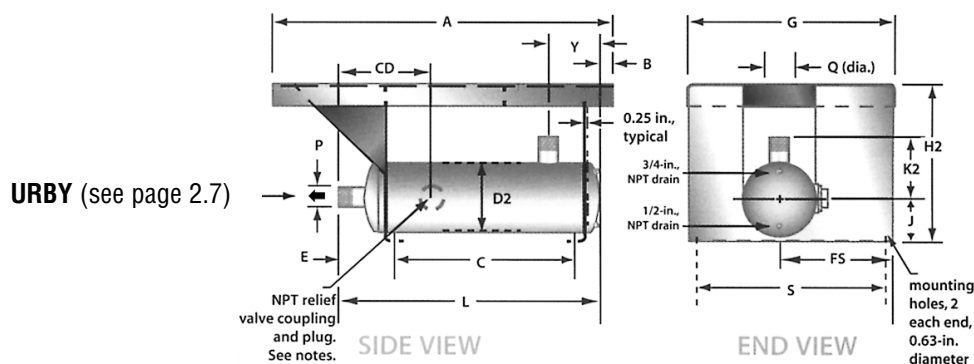
UNI-BASE Ultra-Wide Base Plates/Components

Rotary Positive Blowers

UNI-BASE Package



UNI-BASE Base Plate Only



UNI-BASE Base Plates/Components Part Numbers

Size	UNI-BASE Package	Base Plate Only	URBN Only	URBY Only	CCF Only
2"	80-1873	55-202-ABP	55-502-AA	55-202-AA	34-L02-TT*
2½"	80-1874	55-225-ABP	55-525-AA	55-225-AA	34-L25-TT*
3"	80-1875	55-203-ABP	55-503-AA	55-203-AA	34-L03-TT*
4"	80-1876	55-204-ABP	55-504-AA	55-204-AA	34-L04-TT*
5"	80-1877	55-205-ABP	55-505-AA	55-205-AA	34-L05-TT*
6"	80-1878	55-206-ABP	55-506-AA	55-206-AA	34-L06-TT*

UNI-BASE Ultra-Wide Base Plates/Components

Rotary Positive Blowers

Dimensions and Weights

UNI-BASE Base Plate (w/URBY)

P (nom.)	A	B	C	CD	D2	E	FS	G	H2	J	K2	L	Q (Dia.)	S	Y	Approx. Weight
2	39	1½	20¾	10.56	8	6.31	13	23.38	16	5	7	30	3½	21	6	125
2½	44½	½	20.88	11.13	10	6.56	14¼	27.38	17	6	8	31	4	25	7	170
3	55½	4	31½	12.00	10	7½	15.13	29¾	17	6	8	43	4¾	26¼	7	270
4	56	—	37.31	15.38	14	7.88	16.44	33	24½	8	10	50	6	29¾	11	355
5	66	—	43.38	18¼	16	13¾	14¾	35	23½	9	11	62½	11	30½	12	500
6	66	—	52	18¼	18	10.38	15.13	35¼	26½	10¼	12	69	12	30½	12	645

Notes: 1. Sizes 2"–3" URBY discharge silencers are shipped standard with male pipe threaded connections. 4" and 5" URBY discharge silencers are shipped standard with male pipe threaded discharge connections and plain pipe blower connections. 6" URBY discharge silencers are shipped standard with flanged discharge connection drilled to 125/152 lb. ANSI specifications and plain pipe blower connections.
2. Sizes 2"–3" URBY discharge silencers have a 2" NPT relief valve coupling and plug. Sizes 4"–6" URBY discharge silencers have a 3" NPT relief valve coupling and plug.
3. UNI-BASE base plate kit sizes 2"–4" require gussets.

URBN Silencers

P1/P2 (nom.)	D1	H1	K1	Y1	Y2	Approx. Weight
2	8	27	7	6	3½	25
2½	10	28	8	7	4½	35
3	10	40	8	7	4½	50
4	14	47	10	6	5½	80
5	16	60	11	6	6½	140
6	18	66	12	8	7½	170

Notes: 1. Sizes 2"–4" URBN inlet silencers are shipped with male pipe threaded inlets and plain pipe outlets. Sizes 5" and 6" URBN inlet silencers are shipped standard with flanged inlet connections drilled to 125/150 lb ANSI specifications and plain pipe outlets.

CCF Silencers (please see page 8.9)