UNIVERSAL SILENCER

A DIVISION OF NELSON INDUSTRIES, INC.

We're Leading A Quiet Revolution®

Rotary Positive Blower Silencers

Product Catalog No. 244-D

General Information

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 rotative 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 approximately 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, generally 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 silencers for blowers, there are two basic considerations: 1) the silencer must be the correct size i.e., have sufficient capacity for the volume flow and, 2) the silencer must be the proper type for the given 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 type (design) must be selected with consideration of the blower size and operating speed. (Complete application and capacity information is given on page 4.)

Generally, there are two types of silencers commonly used on positive blowers. There is the reactive type silencer which consists of a series of expansion chambers having interconnecting tubes. A more sophisticated silencer design is the combination chamber-absorptive type. This 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 pitch line velocity is usually the criterion for selection of the silencer type. If the blower is operating in the critical PLV range, it will generate objectionable high frequency noise which likely will 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.

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Discharge Silencers . . . . . Pages 7-11
Accessories. . . . . Page 11

Vacuum Pump Water Separator Silencers are listed in Catalog 222

Inlet Silencers

For **inlet** service, a Pitch Line Velocity of 3300 FPM 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 3300 FPM are considered critical for the purpose of inlet silencer application. Those operating below 3300 FPM 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 3300 FPM will almost 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. See Universal Catalogs No. 241 and 242 for complete listing of Filters and Filter Silencers.

Discharge Silencers

For the more severe **discharge** conditions of typical blower installations, a PLV of 2700 FPM is accepted as the critical transition speed. Blowers operating below 2700 FPM are considered subcritical and can usually be adequately silenced on the discharge side by use of a chamber-type silencer—Universal UCD or URD Series. Machines operating above the 2700 FPM transition speed will require combination chamber-absorptive silencers such as Universal 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 can cause fatigue and eventual fracture of the silencer or piping. It is also a 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 on the individual pages. 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 below) may be a consideration and will require separate analysis, since it is not airborne noise in the sense the term is used for silencer performance rating.

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

We invite your inquiry concerning these special applications where EPA, OSHA or other noise specifications apply. These are handled on an individual basis and recommendations are made according to specific requirements of the installation.

Information, Descriptions

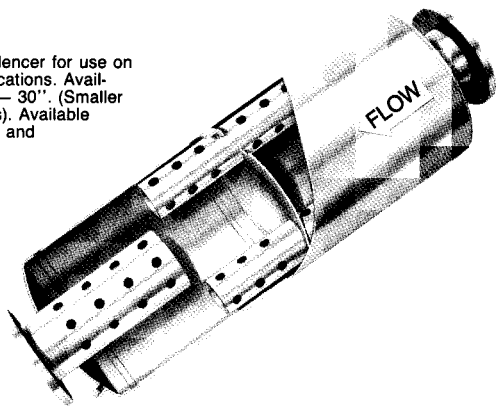
The silencers shown below are more fully described on the individual catalog pages. These units are designed specifically for use on Rotary Positive Blowers.

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 the severe pulsations produced by the blower.

All silencers described are standard with end inlet and end outlet. Low or high side inlet and outlet connections are available and are described on the individual catalog pages.

UCI Series
Inlet Silencer

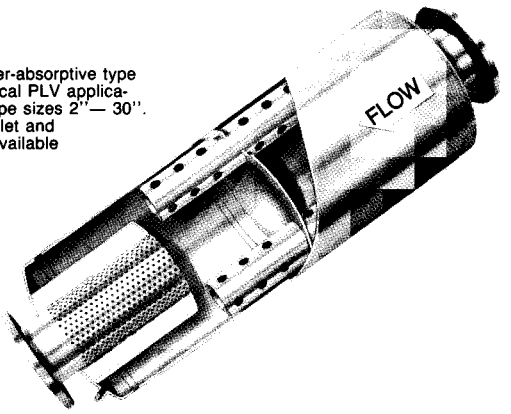
Chamber-type inlet silencer for use on sub-critical PLV applications. Available in pipe sizes 8"— 30". (Smaller sizes use URB Series). Available with side connections and mounting brackets.



Page 5

RIS Series
Inlet Silencer

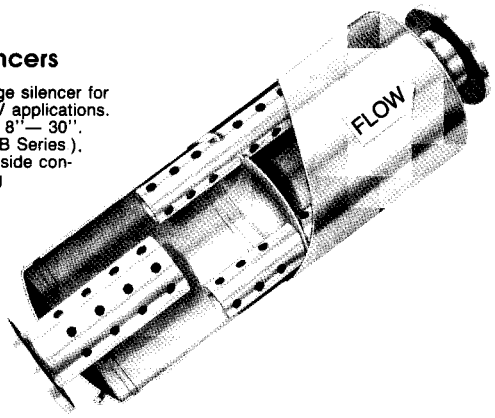
Combination chamber-absorptive type inlet silencer for critical PLV applications. Available in pipe sizes 2"— 30". Low or high side outlet and mounting brackets available on most sizes.



Page 6

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.



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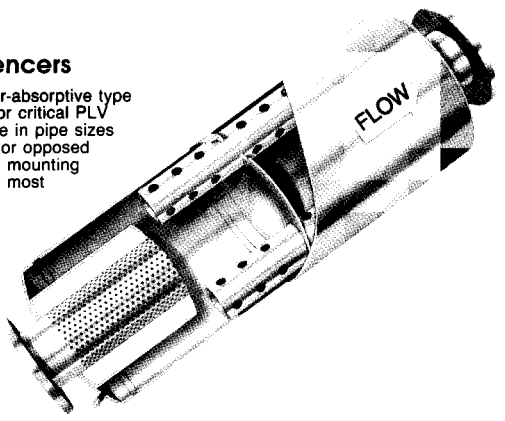
SD Series
RD Series
Discharge Silencers

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.



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Accessories, Special Features

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

Page 11

Application, Capacity, Pressure Drop Data

Silencer Recommendations

As mentioned on page 2, pitch line velocity (PLV) is the speed of the timing gear in feet per minute (FPM). For purposes of silencer application. PLV is considered "critical" at about 3300 FPM for intake and about 2700 FPM for discharge.

Table 1 gives transition speeds in RPM. Blowers running at these speeds or greater will have critical PLC. 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. Those in the critical range require more sophisticated, 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:

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.

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, which is 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.

Table 3 - Silencer Capacity

SIZE	CAPACITY (Inlet CFM 14.7 psia & 70°F)					
		DISCHARGE SILENCER				
	INLET 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

Table 1 - Blower Transition Speed

BLOWER GEAR SIZE	TRANSITION SPEED - R.P.M.	
	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

Table 2 - Silencer Model Specifications

PITCH LINE VELOCITY	INLET Silencer	DISCHARGE Silencer
Below Transition	UCI, URB	URB, UCD, URD
Above Transition	RIS	SD, RD

Pressure Drop

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

INLET: $\Delta P = \left(\frac{V}{4005}\right)^2 C$ (assumes silencer inlet is open to atmosphere)

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 H_2O

V = Air velocity through silencer, feet per minute(1)

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)

(1) To calculate velocity through silencer, divide flow in acfm by cross sectional area of silencer inlet diameter in square feet.

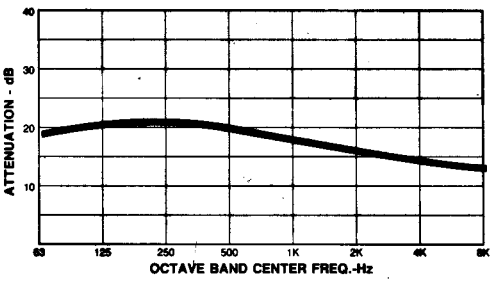
Table 4 - Pressure Drop Coefficients

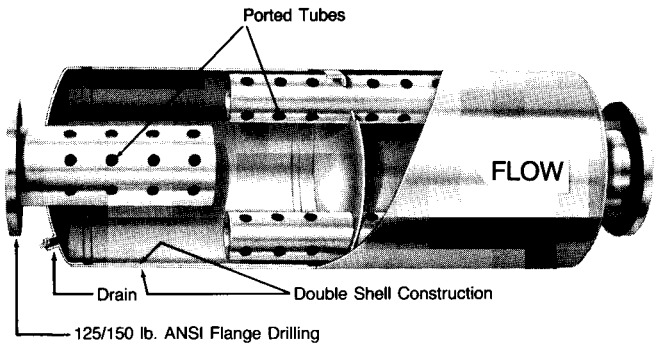
SILENCER MODEL	PRESSURE DROP COEFFICIENT - C
URB, URBY	4.2
UCI, UCIY, UCIH	4.2
RIS, RISY, RISH	4.2
UCD, UCDY	4.2
URD, URDY, URDH	4.2
SD, SDY, SDH	4.2
RD, RDY, RDH	4.2
RDS, SDS, URDS	7.0

Specifications
UCI Group

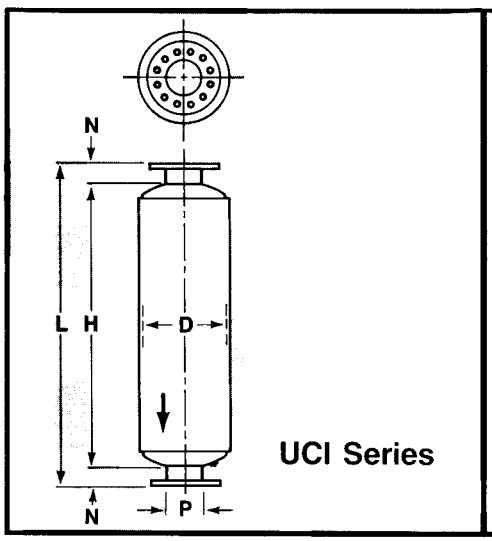
Chamber Type
Inlet Silencer

Attenuation Curve, Typical

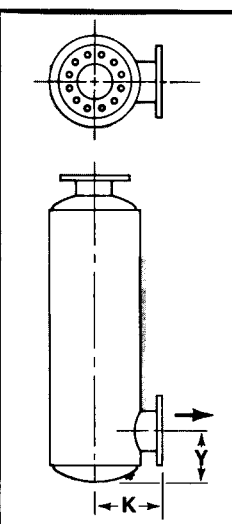




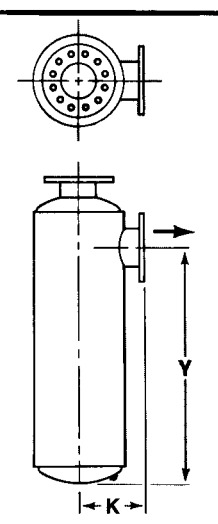
The UCI Series Inlet Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides pulse control and adequate silencing for most subcritical PLV applications. Sizes 8" and larger are equipped with flanged connections drilled to 125/150 lb. ANSI specifications. Exterior 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 model and is the conventional end inlet/end outlet 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 11.



UCI Series



UCIY Series
(Low Side Outlet)



UCIH Series
(High Side Outlet)

P (SIZE)	D	L	N	H	K	Y UCIY MIN.	Y UCIY MAX.	Y UCIH MIN.	Y UCIH MAX.	WGT.
1 1½ 2										
2½ 3 3½				SIZES 1" - 6": USE URB SERIES - PAGE 8						
4 5 6										
8	22	61	3½	54	14½	9	21	28½	45½	250
10	26	74	3½	67	16½	11	27	34½	57	360
12	30	87	3½	80	18½	12½	34	41	69	550
14	30	99	3½	92	18½	13½	40	47½	80½	650
16	36	113	3½	106	21½	15½	48	53½	91½	950
18	42	126	3½	119	24½	17½	55½	59½	103½	1200
20	42	140	4½	131	25½	19	60½	67	114	1350
22	48	153	4½	144	28½	20½	66½	75	126	1950
24	54	167	4½	158	31½	22½	72	83	138	2500
26	54	179	4½	170	31½	23½	85	84	149	2750
28	60	193	4½	184	34½	25½	87	91	161	3400
30	66	206	4½	197	37½	27½	95	100	173	4650

Dimensions In Inches, Weight In Lbs.

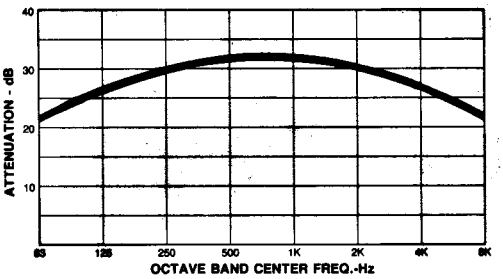
NOTE: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

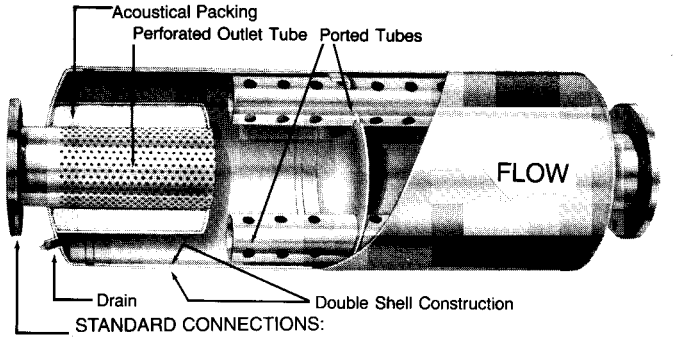
Specifications
RIS Group

Combination Chamber - Absorptive Type Inlet Silencer

Acoustical packing is suitable for 325° F

Attenuation Curve, Typical

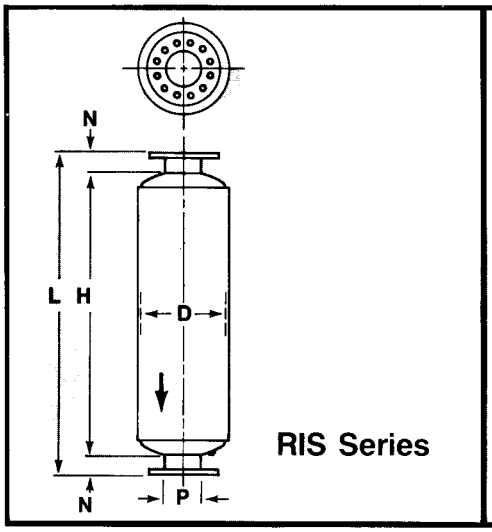




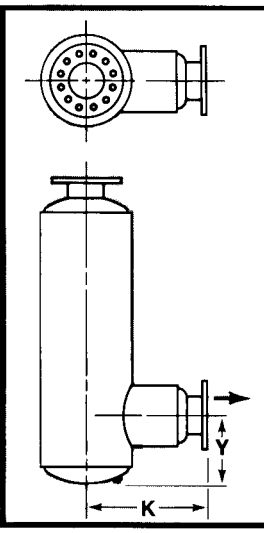
STANDARD CONNECTIONS:

- Sizes 3½" & Smaller: Male Thd. Pipe Nipples
- Sizes 4" & 5": Optional - Male Thd. Nipples or Flanges
- Sizes 6" & Larger: 125/150 lb. ANSI Flange Drilling

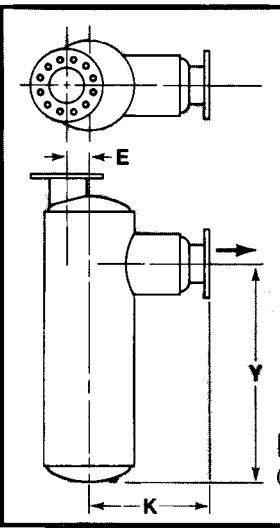
The RIS Series Inlet Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It features an acoustically treated outlet and will provide pulse control and silencing suitable for critical PLV applications. Sizes 4" and larger are equipped with flanged connections drilled to 125/150 lb. ANSI specifications. Smaller sizes are standard with male threaded pipe nipples. 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 inlet/end outlet 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 11.



RIS Series



RISY Series
(Low Side Outlet)



RISH Series
(High Side Outlet)

P (SIZE)	D	L	N	H	K		E	Y				WGT.
					RISY	RISH		RISY		RISH		
								MIN.	MAX.	MIN.	MAX.	
1 } 1½ }				SIZES 1" - 1½": USE U-5 SERIES – CATALOG NO. 245								
2	6	28½	3	22½	8½	—	—	FIXED AT 6				15
2½	8	33	3	27	9	—	—	FIXED AT 7		2½" THRU 3½"		25
3	8	39	3	33	10	—	—	FIXED AT 7		AVAILABLE ON		30
3½	10	39½	3	33½	11	—	—	FIXED AT 8		SPECIAL ORDER		40
4	10	45	3	39	12½	14½	2¼	7½	16½	30½	32½	50
5	12	57½	3	51½	15½	17½	2¾	9	23	40	43½	80
6	14	64	3	58	17	20	3¼	9	25½	43½	49	110
8	18	72	3½	65	21½	26½	4	12	30½	49½	54	190
10	22	85	3½	78	25½	32½	5	13½	37	61½	65½	380
12	26	98	3½	91	29½	38	6	15	44	69	77	550
14	30	111	3½	104	30	40	7½	16½	50	81	89½	800
16	36	113	3½	106	35½	49½	0	18½	51	56½	88½	1050
18	42	126	3½	119	41	57½	0	20½	58½	62½	100½	1350
20	42	140	4½	131	47	62½	0	22	63½	70	111	1500
22	48	153	4½	144	46½	65½	0	23½	69½	78	123	2100
24	54	167	4½	158	54	75½	0	25½	75	86	135	2700
26	54	179	4½	170	55½	76	0	25½	87	86	147	3050
28	60	193	4½	184	61	84½	0	29½	91	95	157	3850
30	66	206	4½	197	66½	93½	0	30½	98	103	170	5150

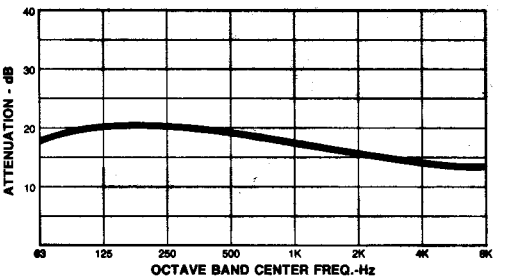
Dimensions In Inches, Weight In Lbs.

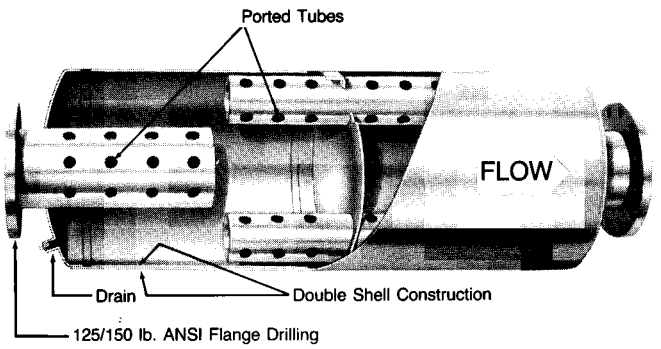
NOTE: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

Specifications
UCD Group

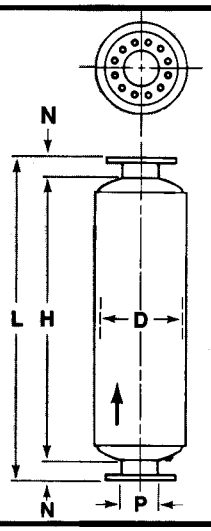
Chamber Type
Discharge Silencer

Attenuation Curve, Typical

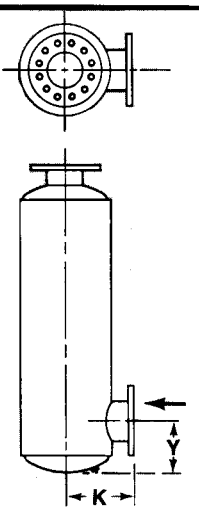




The UCD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. Individually, it provides pulse control and adequate silencing for sub-critical PLV applications where the higher performance of the URD Series on page 8 is not warranted. Sizes 8" and larger 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 inlet/end outlet configuration. A low side inlet version is designated UCDY Series. The two types are fundamentally alike and the performance is identical. Mounting brackets and other options are available – see page 11.



UCD Series



UCDY Series
(Low Side Inlet)

P (SIZE)	D	L	N	H	K	Y MIN.	Y MAX.	WGT.
1 1½ 2								
2½ 3 3½			SIZES 1" - 6": USE URB SERIES - PAGE 8					
4 5 6								
8	22	61	3½	54	14½	9	21	250
10	26	74	3½	67	16½	11	27	360
12	30	87	3½	80	18½	12½	34	550
14	30	99	3½	92	18½	13½	40	650
16	36	113	3½	106	21½	15½	48	900
18	42	126	3½	119	24½	17½	55½	1200
20	42	140	4½	131	25½	19	60½	1350
22	48	153	4½	144	28½	20½	66½	1950
24	54	167	4½	158	31½	22½	72	2500
26	54	179	4½	170	31½	23½	85	2750
28	60	193	4½	184	34½	25½	87	3400
30	66	206	4½	197	37½	27½	95	4650

Dimensions In Inches, Weight In Lbs.

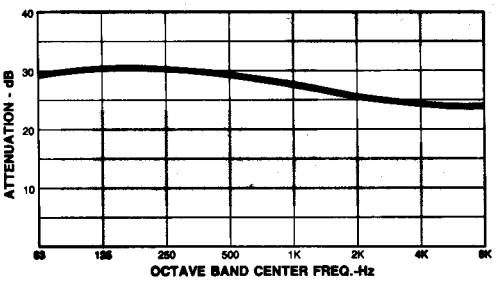
NOTE: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

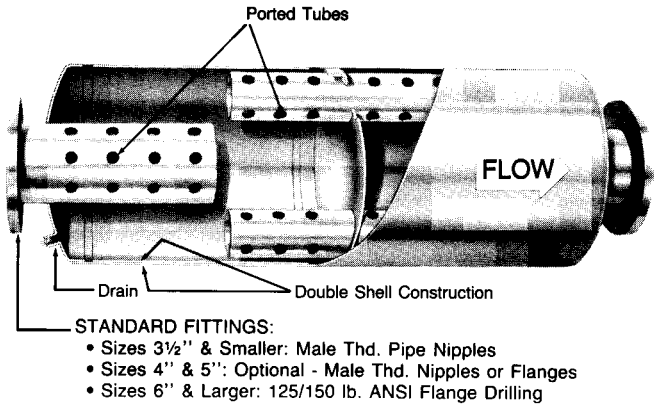
Specifications
URB Group
URD Group

Chamber Type
Discharge Silencer

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.

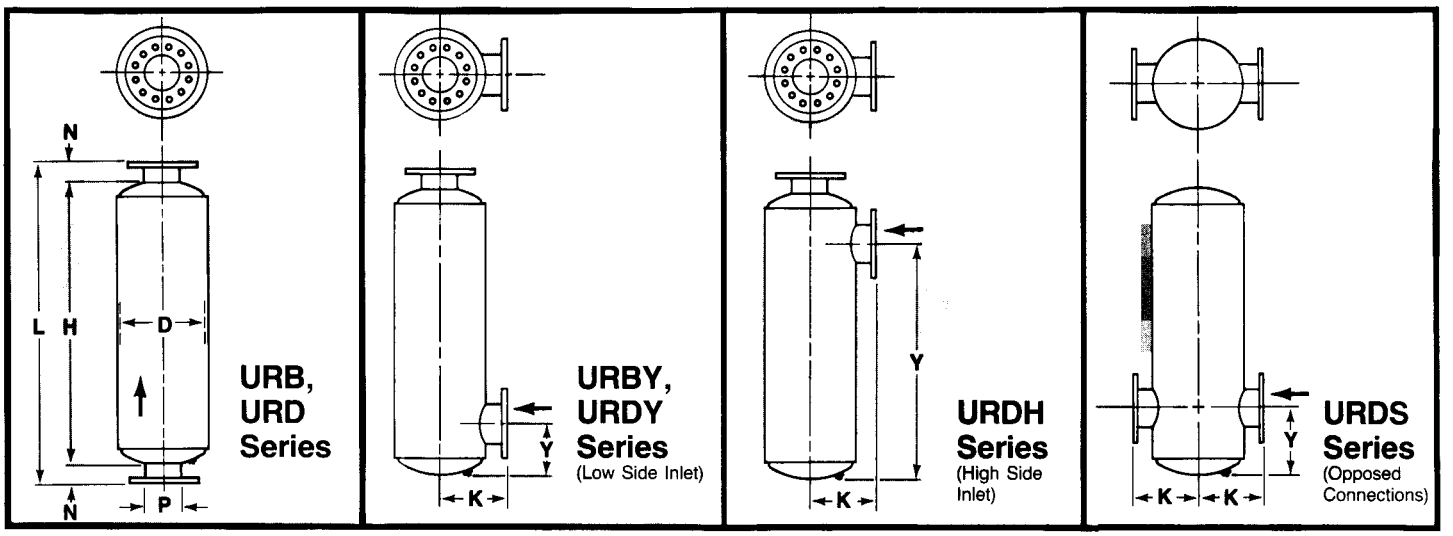
Typical Attenuation Curve





STANDARD FITTINGS:
- Sizes 3½" & Smaller: Male Thd. Pipe Nipples
- Sizes 4" & 5": Optional - Male Thd. Nipples or Flanges
- Sizes 6" & Larger: 125/150 lb. ANSI Flange Drilling

THE URD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It provides pulse control and silencing adequate for most sub-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. Exterior surfaces receive a shop coat of rust inhibitive primer and may be finish painted in the field if desired. The URD Series is the basic end inlet/end outlet configuration. A low side inlet version is designated the URDY Series; high side inlet, URDH Series; and low opposed connections, URDS Series. The four types are fundamentally alike and the performance is identical. (Sizes 6" and smaller are URB Series rather than URD.) Mounting brackets and other options are available – see page 11.



P (SIZE)	D	L	N	H	K	URBY, URDY MIN.	URBY, URDY MAX.	URDS MIN.	URDS MAX.	URDH MIN.	URDH MAX.	WGT.
1	4½	21	2	17	—	—	—	—	—	—	—	10
1½	6½	24	2	20	—	—	—	—	—	—	—	15
2	8	33	3	27	7	FIXED AT 6		—	—	—	—	20
2½	10	34	3	28	8	FIXED AT 7		—	—	—	—	30
3	10	46	3	40	8	FIXED AT 7		—	—	—	—	40
3½	12	52	3	46	9	FIXED AT 8		—	—	—	—	55
4	14	53	3	47	10	6	22	8	16	—	—	70
5	16	65	3	59	11	6½	29	9	19	—	—	120
6	18	72	3	66	12	8	32	10	22	—	—	160
8	22	97	3½	90	14½	9	48	12	29	62	82	370
10	26	122	3½	115	16½	11	63½	14	40½	76½	106	550
12	30	135	3½	128	18½	12½	69	15½	42	88	117½	800
14	36	161	3½	154	21½	14½	81	17½	49	107	141	1250
16	42	181	3½	174	24½	16½	92½	19½	55½	119½	158½	1600
18	48	188	3½	181	27½	18½	98	21½	56½	126½	164½	2300
20	48	202	4½	193	28½	19½	103	22½	61	134	175½	2500
22	54	204	4½	195	31½	21½	103	24½	60	137	175½	2950
24	54	239	4½	230	31½	22½	126	25½	76½	156½	210½	3450
26	60	259	4½	250	34½	25	132	27	78	175	228	4400
28	66	279	4½	270	37½	27	144	31	85	188	246	6150
30	72	304	4½	295	40½	29	161	32	96	203	272	7250

Dimensions In Inches, Weight In Lbs.

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

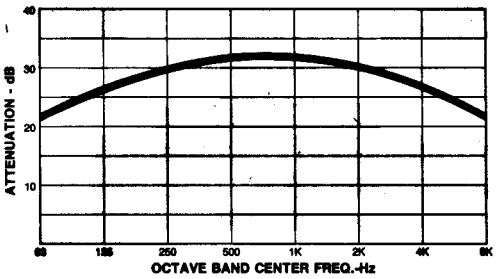
Universal Silencer, A Division of Nelson Industries, Inc., Stoughton, WI 53589

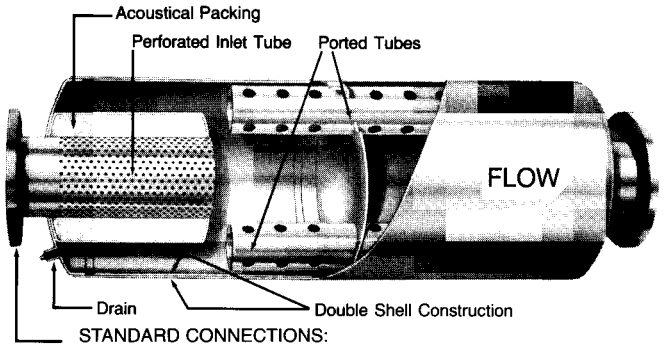
Specifications
SD Group

Combination Chamber—
Absorptive Type
Discharge Silencer

Acoustical packing is suitable for 325° F

Attenuation Curve, Typical

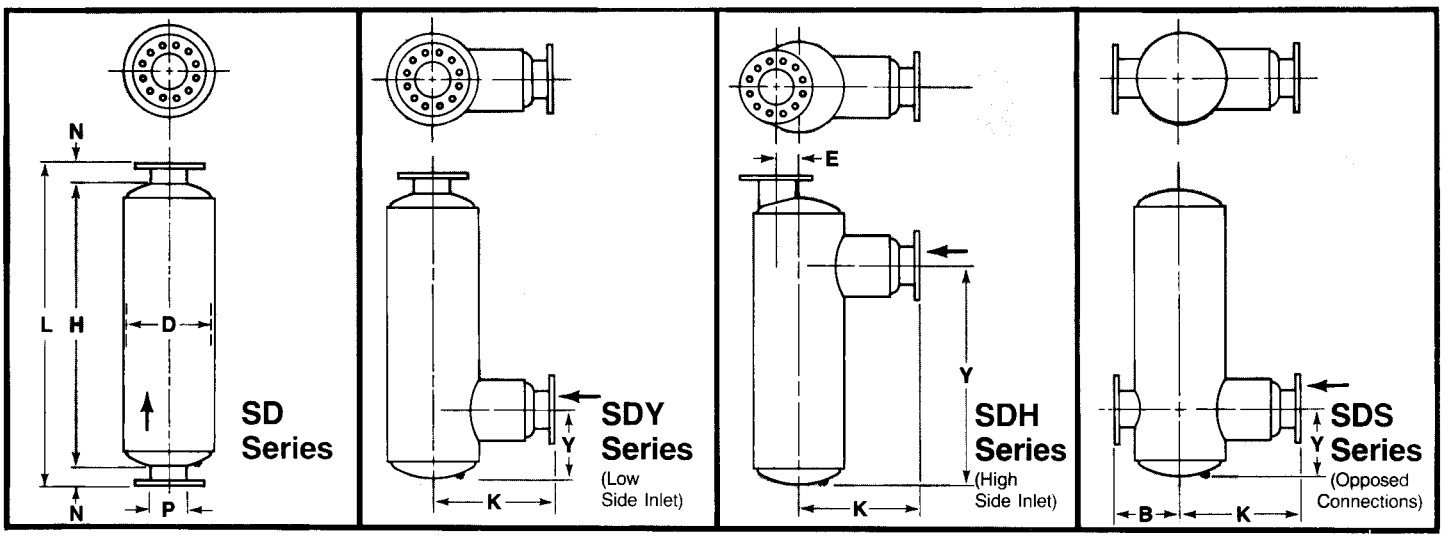




STANDARD CONNECTIONS:

- Sizes 3½" & Smaller: Male Thd. Pipe Nipples
- Sizes 4" & 5": Optional - Male Thd. Nipples or Flanges
- Sizes 6" & Larger: 125/150 lb. ANSI Flange Drilling

The SD Series Discharge Silencer is a heavy-duty, all welded unit constructed of carbon steel sheet and plate. It will provide good pulse control and is equipped with an acoustically treated inlet for use on critical PLV applications. Its pulse and noise performance is suitable for all but the most demanding applications, which may require the RD Series on page 10. 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. 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 inlet/end outlet configuration. A low side inlet is designated the SDY Series; high side inlet, SDH Series; and low opposed connections, SDS Series. The four types are fundamentally alike and the performance is identical. Mounting brackets and other options are available — see page 11.



P (SIZE)	D	L	N	H	K			B	E	Y						WGT.
										SDY		SDS		SDH		
					SDY	SDH	SDS			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
1 1½	SIZES 1"-1½": USE URB SERIES - PAGE 8 OR U5 SERIES - CATALOG NO. 245															
2	6	28½	3	22½	8½	—	—	—	—	FIXED AT 6		—	—	—	—	15
2½	8	33	3	27	9	—	—	—	—	FIXED AT 7		—	—	—	—	25
3	8	39	3	33	10	—	—	—	—	FIXED AT 7		—	—	—	—	30
3½	10	39½	3	33½	11	—	—	—	—	FIXED AT 8		—	—	—	—	40
4	10	45	3	39	12½	14½	14½	8	2¼	7½	16½	7½	9½	30½	32½	50
5	12	57½	3	51½	15½	17½	17½	9	2¾	9	23	9	12½	40	43½	80
6	14	64	3	58	17	20	20	10	3¼	9	25½	10	15½	43½	49	110
8	18	72	3½	65	21½	26½	26½	12½	4	12	30½	12	16½	49½	54	190
10	22	85	3½	78	25½	32½	32½	14½	5	13½	37	13½	18	61½	65½	380
12	26	98	3½	91	29½	38	38	16½	6	15	44	15	24	69	77	550
14	30	111	3½	104	30	40	40	18½	7½	16½	50	16½	25	81	89½	800
16	36	137	3½	130	35½	47	47	21½	9½	18½	65	18½	36	96	113½	1250
18	42	150	3½	143	41	52	52	24½	11½	20½	70½	20½	40½	104½	124½	1600
20	42	176	4½	167	47	62	62	25½	10½	21½	87½	21½	48½	120½	147½	1900
22	48	195	4½	186	47	61	61	28½	12½	23½	93½	23½	50½	138½	165½	2700
24	48	213	4½	204	55½	72	72	28½	11½	24½	110½	24½	60½	146½	182½	3000
26	54	233	4½	224	55	76	76	31½	13½	26	117	26	70	157½	201½	3900
28	54	250	4½	241	62	81	81	31½	12½	28½	126½	28½	71½	173½	216½	4400
30	60	276	4½	267	68	90	90	34½	14½	29½	139	29½	81	190	241½	5400

Dimensions In Inches, Weight In Lbs.

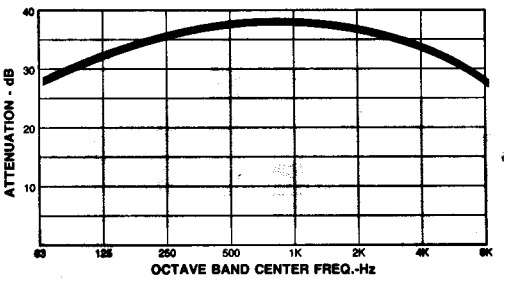
NOTE: Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings of specific models for exact dimensions.

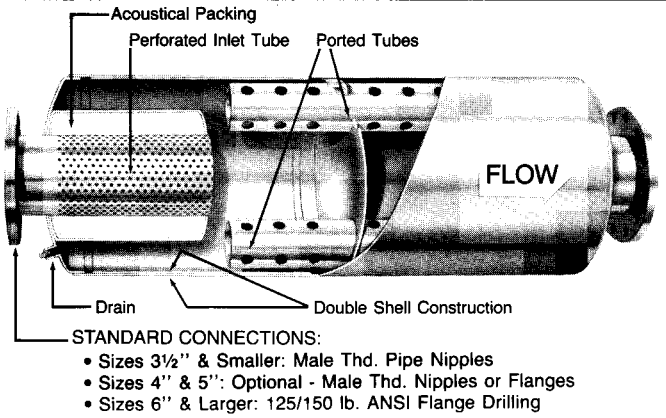
Specifications
RD Group

Combination Chamber— Absorptive Type Discharge Silencer

Acoustical packing is suitable for 325° F

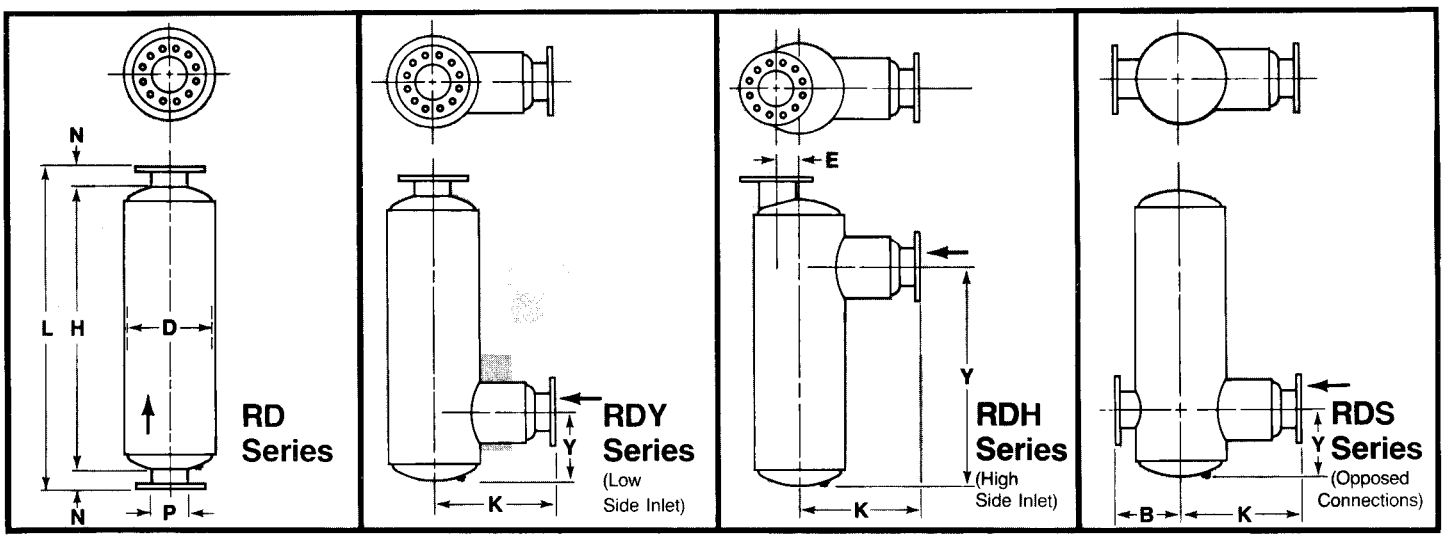
Typical Attenuation Curve





STANDARD CONNECTIONS:
- Sizes 3½" & Smaller: Male Thd. Pipe Nipples
- Sizes 4" & 5": Optional - Male Thd. Nipples or Flanges
- Sizes 6" & Larger: 125/150 lb. ANSI Flange Drilling

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 usually 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. 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 inlet/end outlet configuration. A low side inlet version is designated the RDY Series; high side inlet, RDH Series; and low opposed connections, RDS Series. The four types are fundamentally alike and the performance is identical. Mounting brackets and other options are available — see page 11.



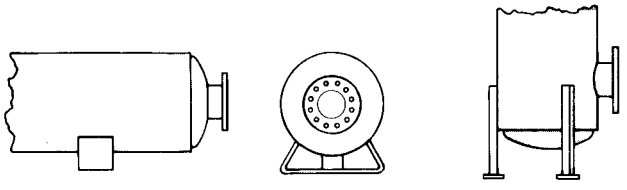
P (SIZE)	D	L	N	H	K			B	E	Y						WGT.
					RDY	RDH	RDS			RDY		RDS		RDH		
										MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
1 1½ 2	SIZES 1"-1½": USE URB SERIES - PAGE 8 OR U5 SERIES - CATALOG NO. 245															
	8	33	3	27	9	—	—	—	—	FIXED AT 6		—	—	—	—	25
2½	10	34	3	28	10	—	—	—	—	FIXED AT 7		—	—	—	—	35
3	10	46	3	40	10	—	—	—	—	FIXED AT 7		—	—	—	—	40
3½	12	52	3	46	11	—	—	—	—	FIXED AT 8		—	—	—	—	60
4	14	53	3	47	14½	16	14½	10	4	8	20	8	14	33	39	80
5	16	65	3	59	16½	18	16½	11	4½	9	26½	9	16½	43½	51	130
6	18	72	3	66	20½	22½	20½	12	5	10	30	10	20	46	56	160
8	22	97	3½	90	24½	28½	26	14½	6	12	45	12	26	65	79	410
10	26	122	3½	115	28½	34	32	16½	7	14	60½	14	37½	79½	103	600
12	30	135	3½	128	35	42	39½	18½	8	15½	66	15½	39	91	114½	900
14	36	161	3½	154	40½	47½	45½	21½	10½	17½	78	17½	46	110	138	1400
16	42	181	3½	174	44½	52½	50	24½	12½	19½	89½	19½	52½	122½	155½	1800
18	48	188	3½	181	47	54	52½	27½	14½	21½	95	21½	53½	129½	161½	2550
20	48	202	4½	193	53½	65	63½	28½	13½	22½	100	22½	58	137	172½	2750
22	54	204	4½	195	59½	72	70	31½	15½	24½	100	24½	57	140	172½	3300
24	54	239	4½	230	66	81½	79½	31½	14½	25½	123	25½	73½	159½	207½	3850
26	60	259	4½	250	72	87	85	34½	16½	27	130	27	76	177	226	5000
28	66	279	4½	270	78	93½	91	37½	18½	31	140	31	81	192	242	6950
30	72	304	4½	295	78	95½	94	40½	20½	32	158	32	93	205	266	8100

Dimensions In Inches, Weight In Lbs.

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

Accessories and Optional Features

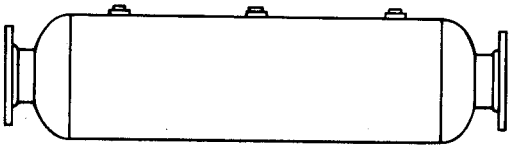
Mounting Brackets



Horizontal Vertical

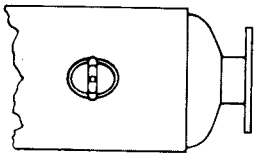
Mounting brackets or legs are available for any of the silencers in this catalog. Saddle type brackets for horizontal mount and angle legs for vertical mount are standard. See Spec. Sheet No. 88-1078. Special design brackets will be quoted to your specifications.

Pressure Vessel Construction



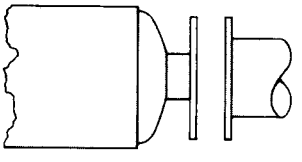
All silencers shown in this catalog may be fabricated in accordance with Div. 1, Section VIII — ASME Code for Unfired Pressure Vessels. Dimensions are similar to standard models, but material types and thicknesses are selected to meet code requirements. Prices are quoted on application to meet your pressure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

Inspection Openings



Inspection openings with bolted and gasketed cover plates are available installed at the time the silencer is fabricated. These are not ASME Code inspection openings; however, they are designed to withstand the usual range of pressures encountered with blowers. One inspection opening is usually installed in each silencer chamber for cleaning or inspection. Standard sizes: 3 x 4, 4 x 6, 6 x 8.

Oversize Flanges



Frequently the blower flange size is larger than the required silencer. Rather than use a larger size silencer, it is usually more economical to use an oversize (reducing) flange on the silencer. This is 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 application.

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

Rotary Positive Blower Silencers

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Complete lines of Silencers and Air Filters/Filter-Silencers for:

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- Reciprocating Engines
- Gas Turbine Engines
- High Pressure Vents & Blowdowns
- Centrifugal Compressors
- Specialty Applications (Such as Pressure Reduction Valves, Rotary Screw Compressors, etc.)

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608-873-4272 Fax 608-873-4298

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