

# Power-Flow® Silencers

A Complete Range of Engineered Noise Control  
for Heavy Duty Air & Gas Handling Equipment



- Power-Flow Type PS
- Power-Flow Type PL
- Power-Flow Type PMS
- Power-Flow Type PML
- Power-Flow Type PLFS
- Power-Flow Type PLFM
- Power-Flow Type PLFL
- Power-Flow Type PCS
- Power-Flow Type PCL
- Power-Flow Type PFCL
- Power-Flow Type PNS
- Power-Flow Type PNL



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# Power-Flow<sup>®</sup> Silencers

## A Complete Range of Engineered Noise Control for Heavy Duty Air & Gas Handling Equipment

IAC Acoustics — acknowledged as the pioneering leader in aeroacoustic noise control — has more than four decades of experience in the design and manufacture of silencers for jet engines, gas turbines, forced draft fans and air handling systems. This experience has resulted in significantly improved silencers with patented design features, as shown in the cut-away renderings inside back cover.

IAC's **Power-Flow Silencers** for heavy duty air and gas handling equipment satisfy the most rigorous acoustic, aerodynamic, thermal and mechanical performance requirements. The quality and performance of IAC silencers are field tested and proved in thousands of installations throughout the world.

There is a modular rectangular or tubular IAC Power-Flow Silencer, engineered to your specific needs, to solve the noise problems of every heavy-duty gaseous flow system.

Performance Ratings for both Dynamic Insertion Loss and aerodynamic pressure drop for all Power-Flow Silencer designs have been certified by tests in our fully equipped laboratory and corroborated by independent laboratories.

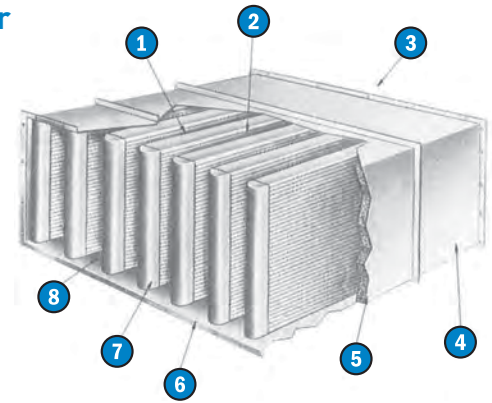
### Typical Applications:

- Gas Turbines
- Compressors
- Diesel Engines
- Cooling Towers
- Mechanical Draft Fans
- Air Cooled Condensers
- Power Plants
- Wind Tunnels
- Test Facilities
- Dust Collectors
- Scrubbers
- Steel Mills
- Refineries

# Leadership in Silencer Development & Technology

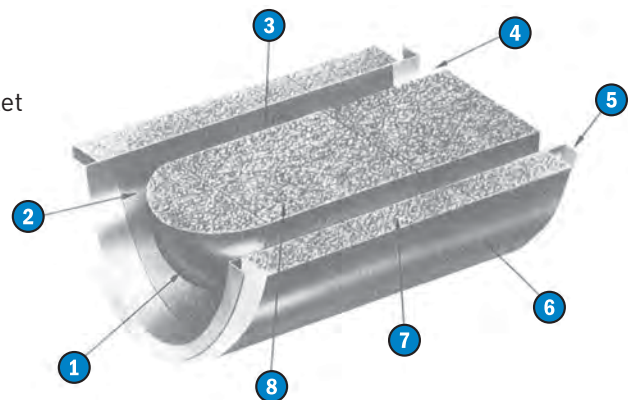
## Cut-Away View of Typical Rectangular Power-Flow Silencer

- |                                 |                                  |
|---------------------------------|----------------------------------|
| 1. Acoustic throat              | 5. Compressed long-fiber blanket |
| 2. Straight acoustical passages | 6. Heavy punched flanges         |
| 3. Aerodynamic exit             | 7. Solid rounded nose            |
| 4. Rugged braced housing        | 8. Bell mouth entry              |



## Cut-Away View of Typical Tubular Power-Flow Silencer

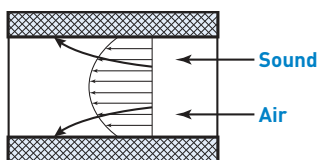
- |                                 |                                  |
|---------------------------------|----------------------------------|
| 1. Solid rounded nose           | 5. Heavy punched flanges         |
| 2. Bell mouth entry             | 6. Rugged outer jacket           |
| 3. Straight acoustical passages | 7. Thick absorptive outer jacket |
| 4. Aerodynamic exit             | 8. Inner acoustic "bullet"       |



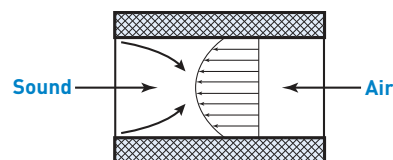
## Forward & Reverse Flow

In 1972, IAC developed silencer Dynamic Insertion Loss and Self-Noise ratings both under Forward Flow (+) and Reverse Flow (-) conditions for rectangular and cylindrical silencers.

Since attenuation values are generally higher in the first five octave bands in the reverse flow mode compared to the forward flow mode, more economical silencer selections can often be made on return air systems.



**Forward Flow** occurs when air and sound waves travel in the same direction, as in an air conditioning system or fan discharge. Under forward flow conditions, high frequency sound is refracted into the duct silencer walls.



**Reverse Flow** occurs when air and sound waves travel in opposite directions, as in a typical return-air system. Under reverse flow conditions, sound is refracted away from the walls and towards the center of the duct silencer.

# One Stop for Silencer Information & Specification

## Benefits of Passive Silencer Design

All of the silencers manufactured by IAC are of passive design which means that they do not require mechanical or electrical means to function. They work by providing a trouble-free static means for dissipating sound energy by converting it into minute quantities of heat. Passive silencers provide low first cost, simple installation, and maintenance-free lifetime operation to make them the natural choice in HVAC-engineered noise control.

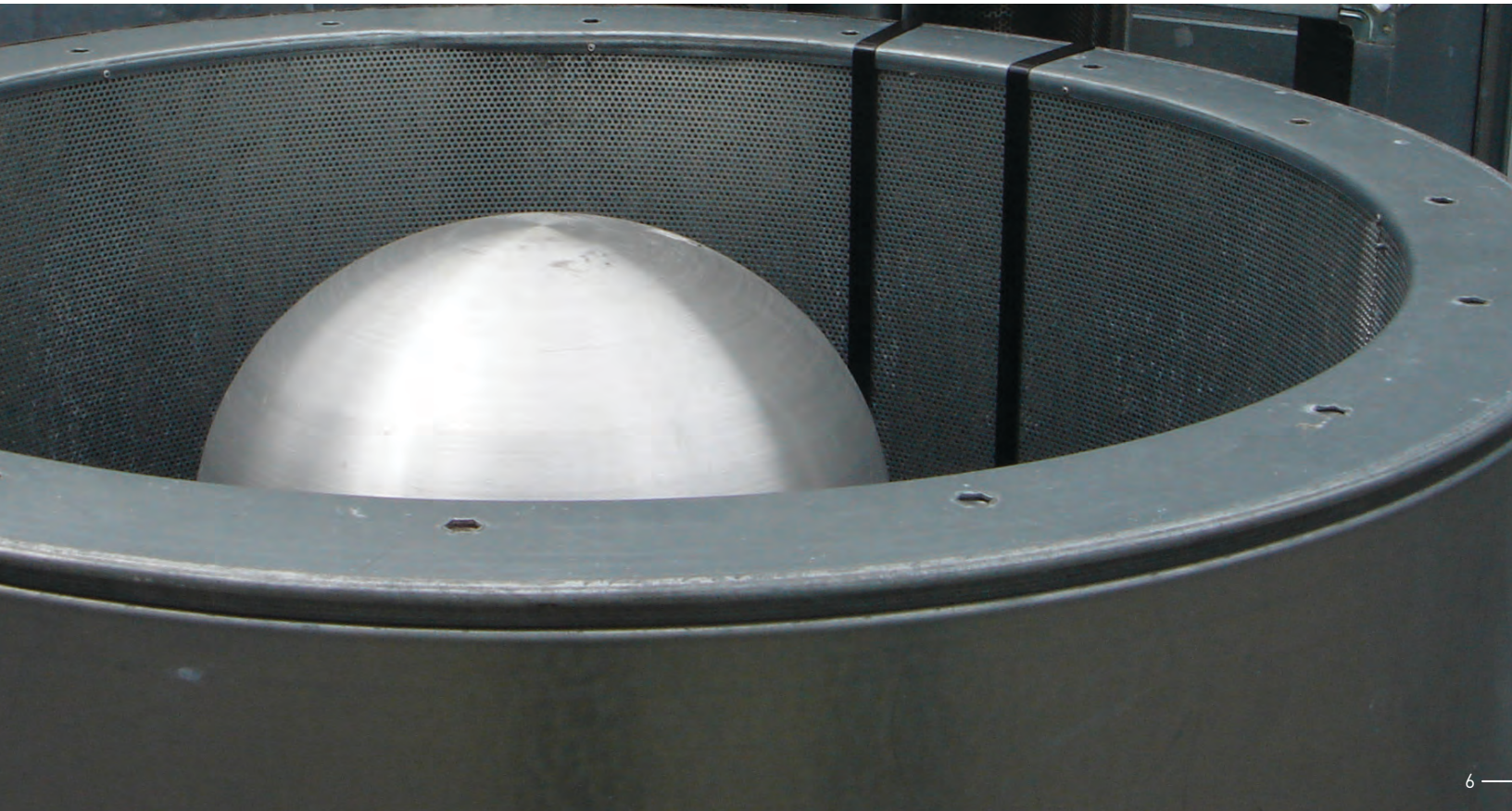
## Sources of Design Information

The effective and economical application of noise control methods depends on an accurate knowledge of the system's silencing requirements. There are several sources of information available for determining the required noise reduction for a wide range of HVAC applications. The ASHRAE Handbook presents a procedure for calculating the noise reduction required. IAC also offers several methods which conform to the guide and quickly yield accurate results for specific issues.

<b>HVAC Noise Control Issue</b>	<b>Methodology</b>
Evaluation of the Entire HVAC Air Distribution System	<b>IAC HVAC Virtual Tool</b> A cloud-based sales and engineering tool for our HVAC products. This tool simplifies the process for identifying compatible products through modest customer input. It is a robust software with automatic calculation of product performance built in based on user identified operating conditions. <b>The IAC Snap Form</b> The analysis starts with the acoustic criterion for the occupied space and then accounts for the system effects of each component such as terminals, mixing boxes, branch take-offs, elbows, ductwork, fan sources, plus room characteristics.
Cross-Talk Noise Transmission	<b>The IAC Quiet-Vent® Catalog</b> Silencers installed in the connecting ductwork between spaces must provide airborne noise reduction to at least match the sound transmission loss of the separating structure (wall, window, door, whichever is the least effective noise barrier). This catalogue of air-transfer silencers includes relevant comparative transmission loss data.
Cooling Tower Noise	<b>IAC Noise Control for Cooling Towers</b> Bulletin 1.0401.1, explains how to calculate the noise reduction required and how to apply the noise control equipment selected.
Louver Applications	<b>IAC Noishield Louvers, Bulletin 1.0502 &amp; the Snap II Form</b> Bulletin 1.0503
Deciding Among Silencers	<b>Short-Form Silencer Availability Guide</b> This guide suggests the most effective model of silencer configuration based on 250 Hz octave band DIL attenuation. It also lists typical applications where the individual silencer models would most often be used. When a particular model has been selected, more complete aero-acoustic data can be found on the technical data sheet for that model contained in this manual.
Additional Questions or Unusual Noise Control Products	<b>Consult Your Local IAC Representative</b> Or Contact the HVAC Product Manager: <a href="mailto:driley@iacacoustics.com">driley@iacacoustics.com</a> or (630) 270-1790.

# Operation & Maintenance Instructions

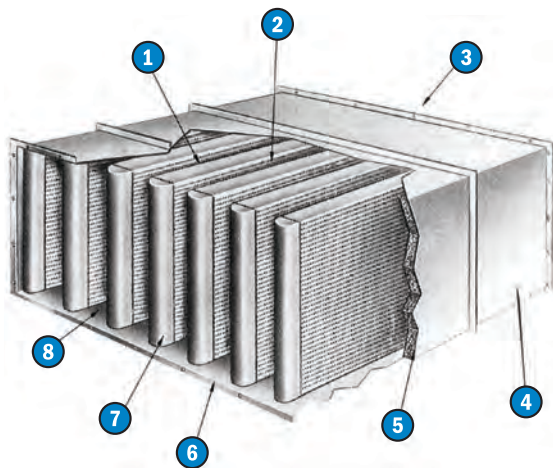
1. IAC Silencers have no moving parts and therefore require no lubrication or routine maintenance.
2. All silencers are furnished rigidly constructed, well-made and free of any defects in materials or workmanship. To ensure continuing proper operation, the silencers should be visually inspected at least once a year to verify that:
  - a. Perforated acoustic splitters are undamaged, remaining parallel and true.
  - b. Airspaces between the acoustic splitters are free of any debris.
  - c. The holes in the perforated steel are open and free of dust or other foreign material.
3. In the event that debris must be cleaned from the airspaces or the perforated metal, the silencer should be vacuum-cleaned or wiped clean with a cloth dampened in a mild detergent solution.
4. In no event should solutions that might affect the galvanized protection on the steel be used to clean IAC Silencers.
5. The occurrence of "White Rust" (zinc oxide) on galvanized silencers is a normal event and not a maintenance item. It occurs when the zinc in the galvanizing reacts electrolytically with moisture to protect the steel.
6. In the event of fire, flood, structural damage or other severe occurrences, contact your local IAC Representative or the IAC Factory direct for specific instructions and recommendations.



# Power-Flow<sup>®</sup> Rectangular Silencers

## Type: PS

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
7. Solid rounded nose
8. Bell mouth entry

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PS 48x48 and 5 PS-T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PS (3 ft)	-2000	7	14	21	31	37	33	24	13
	-1000	7	13	17	30	36	33	26	13
	+1000	7	12	16	28	35	35	28	17
	+2000	6	10	15	25	34	35	28	17
5 PS (5 ft)	-2000	11	23	26	44	48	44	37	22
	-1000	11	21	25	43	47	44	39	22
	+1000	8	18	24	40	45	46	41	26
	+2000	7	16	22	38	45	46	41	26
7 PS (7 ft)	-2000	12	24	38	48	53	46	42	30
	-1000	12	23	37	46	51	48	44	30
	+1000	10	20	35	45	50	48	45	34
	+2000	9	17	34	44	49	49	45	35
10 PS (10 ft)	-2000	13	25	43	54	55	49	49	42
	-1000	13	26	42	52	55	54	51	42
	+1000	13	23	42	52	55	51	51	46
	+2000	12	18	41	52	55	51	51	48

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PS	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.16	0.22	0.28	0.33	0.41	0.55	0.69
			1000	0.02	0.04	0.05	0.07	0.09	0.11	0.14	0.18	0.22	0.27	0.36	0.45
		5 PS	60	0.06	0.11	0.17	0.22	0.28	0.33	0.44	0.55	0.66	0.83	1.10	1.40
			500	0.03	0.06	0.09	0.12	0.15	0.18	0.24	0.30	0.36	0.46	0.61	0.77
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20	0.24	0.30	0.40	0.51
		7 PS	60	0.06	0.12	0.18	0.24	0.30	0.36	0.48	0.60	0.72	0.90	1.20	1.50
			500	0.03	0.07	0.10	0.13	0.16	0.20	0.26	0.33	0.40	0.50	0.66	0.83
			1000	0.02	0.04	0.06	0.09	0.11	0.13	0.17	0.22	0.26	0.33	0.44	0.54
		10 PS	60	0.07	0.13	0.20	0.27	0.34	0.40	0.54	0.68	0.80	1.00	1.26	1.70
			500	0.04	0.07	0.11	0.15	0.19	0.22	0.30	0.37	0.44	0.55	0.75	0.94
			1000	0.02	0.05	0.07	0.10	0.12	0.14	0.20	0.25	0.29	0.36	0.49	0.61
					Airflow in acfm										
	24 x 24	4	Type PS Standard Pressure Drop	1480	2100	2580	2960	3400	3640	4200	4700	4960	5760	6640	7440
	24 x 36	6		2200	3150	3870	4440	5100	5460	6300	7050	7440	8640	9960	11160
	24 x 48	8		2960	4200	5160	5920	6800	7280	8400	9400	9920	11520	13280	14880
24 x 60	10	3700		5250	6450	7400	8500	9100	10500	11750	12400	14450	16600	18600	
24 x 72	12	4440		6300	7740	8880	10200	10920	12600	14100	14880	17280	19920	22320	
24 x 96	16	5920		8400	10320	11840	13600	14560	16800	18800	19840	23040	26560	29760	
36 x 36	9	3330		4725	5805	6660	7650	8190	9450	10575	11160	12960	14940	16740	
36 x 48	12	4440		6300	7740	8880	10200	10920	12600	14100	14880	17280	19920	22320	
36 x 60	15	5550		7875	9675	11100	12750	13650	15750	17625	18600	21600	24900	27900	
36 x 72	18	6660		9450	11610	13320	15300	16380	18900	21150	22320	25920	29880	33480	
36 x 96	24	8880		12600	15480	17760	20400	21840	25200	28200	29760	34560	39840	44640	
48 x 48	16	5920		8400	10320	11840	13600	14560	16800	18800	19840	23040	26560	29760	
48 x 60	20	7400		10500	12900	14800	17000	18200	21000	23500	24800	28800	33200	37200	
48 x 72	24	8880		12600	15480	17760	20400	21840	25200	28200	29760	34560	39840	44640	
48 x 96	32	11840		16800	20640	23680	27200	29120	33600	37600	39680	46080	53120	59520	
60 x 60	25	9250		13125	16125	18500	21250	22750	26250	29375	31000	36000	41500	46500	
60 x 72	30	11130		15750	19350	22200	25500	27300	31500	35250	37200	43200	49800	55800	
60 x 96	40	14800		21000	25800	29600	34000	36400	42000	47000	49600	57600	66400	74400	
72 x 72	36	13320		18900	23220	26640	30600	32760	37800	42300	44640	51840	59760	66960	
72 x 96	48	17760		25200	30960	35520	40800	43680	50400	56400	59520	69120	79680	89280	
96 x 96	64	23680		33600	41280	47360	54400	58240	67200	75200	79360	92160	106240	119040	
Face Velocity, fpm				370	525	645	740	850	910	1050	1175	1240	1440	1660	1860

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PS (all sizes)	-2000	68	62	61	66	61	64	67	66
	-1500	62	57	57	61	59	61	60	55
	-1000	54	51	50	51	54	56	52	40
	-750	48	46	46	46	52	53	45	29
	-500	40	40	39	36	47	48	37	<20
	+500	36	29	35	30	31	35	22	<20
	+750	47	41	42	40	40	43	33	22
	+1000	55	49	49	47	46	49	42	32
	+1500	66	61	56	57	55	57	53	46
	+2000	74	69	63	64	61	63	62	56

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

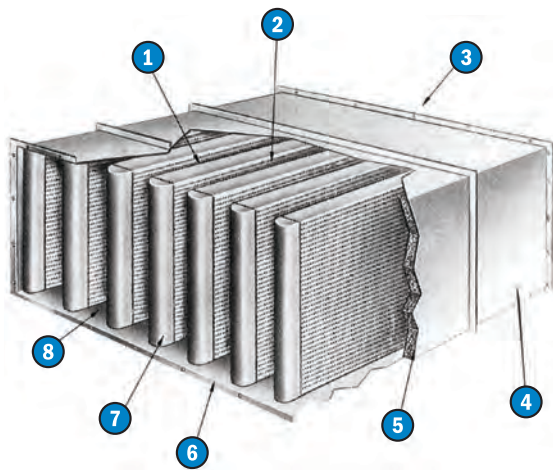
DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477



# Power-Flow® Rectangular Silencers

## Type: PL

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
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In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PL 48x48 and 5 PL-T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PL (3 ft)	-5000	7	9	11	16	25	18	13	7
	-2000	5	6	10	15	25	19	13	8
	+2000	4	5	9	14	23	24	14	10
	+5000	3	4	7	12	21	25	16	12
5 PL (5 ft)	-5000	9	11	15	24	31	32	17	10
	-2000	7	8	14	23	31	33	17	11
	+2000	6	9	13	21	29	39	20	14
	+5000	5	6	11	19	27	39	20	15
7 PL (7 ft)	-5000	11	17	20	31	43	40	24	14
	-2000	8	14	19	30	43	41	24	15
	+2000	8	13	18	28	40	47	26	18
	+5000	7	9	16	27	38	47	27	19
10 PL (10 ft)	-5000	14	26	27	41	55	55	34	20
	-2000	10	23	26	40	55	55	34	21
	+2000	10	22	25	38	55	55	35	24
	+5000	10	13	23	38	54	55	37	25

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PL	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.16	0.22	0.28	0.33	0.41	0.55	0.69
			1000	0.02	0.04	0.05	0.07	0.09	0.11	0.14	0.18	0.22	0.27	0.36	0.45
		5 PL	60	0.06	0.11	0.17	0.22	0.28	0.33	0.44	0.55	0.66	0.83	1.10	1.40
			500	0.03	0.06	0.09	0.12	0.15	0.18	0.24	0.30	0.36	0.46	0.61	0.77
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20	0.24	0.30	0.40	0.51
		7 PL	60	0.06	0.12	0.18	0.24	0.30	0.36	0.48	0.60	0.72	0.90	1.20	1.50
			500	0.03	0.07	0.10	0.13	0.16	0.20	0.26	0.33	0.40	0.50	0.66	0.83
			1000	0.02	0.04	0.06	0.09	0.11	0.13	0.17	0.22	0.26	0.33	0.44	0.54
		10 PL	60	0.07	0.13	0.20	0.27	0.34	0.40	0.54	0.68	0.80	1.00	1.26	1.70
			500	0.04	0.07	0.11	0.15	0.19	0.22	0.30	0.37	0.44	0.55	0.75	0.94
			1000	0.02	0.05	0.07	0.10	0.12	0.14	0.20	0.25	0.29	0.36	0.49	0.61
				Airflow in acfm											
24 x 24	4	Type PL Lowest Pressure Drop													
24 x 36	6	4000	5680	7000	8000	9000	9880	11360	12720	14000	15600	18000	20120		
24 x 48	8	6000	8520	10500	12000	13500	14820	17040	19080	21000	23400	27000	30180		
24 x 60	10	8000	11360	14000	16000	18000	19760	22720	25440	28000	31200	36000	40240		
24 x 72	12	10000	14200	17500	20000	22500	24700	28400	31800	35000	39000	45000	50300		
24 x 96	16	12000	17040	21000	24000	27000	29640	34080	38160	42000	46800	54000	60360		
36 x 36	9	16000	22720	28000	32000	36000	39520	45440	50880	56000	62400	72000	80480		
36 x 48	12	9000	12780	15750	18000	20250	22230	25560	28620	31500	31500	40500	45270		
36 x 60	15	12000	17040	21000	24000	27000	29640	34080	38160	42000	46800	54000	60360		
36 x 72	18	15000	21300	26250	30000	33750	37050	42600	47700	52500	58500	67500	75450		
36 x 96	24	18000	25560	31500	36000	40500	44460	51120	57240	63000	70200	81000	90540		
48 x 48	16	24000	34080	42000	48000	54000	59280	68160	76320	84000	93600	108000	120720		
48 x 60	20	16000	22720	28000	32000	36000	39520	45440	50880	56000	62400	72000	80480		
48 x 72	24	20000	28400	35000	40000	45000	49400	56800	63600	70000	78000	90000	100600		
48 x 96	32	24000	34080	42000	48000	54000	59280	68160	76320	84000	93600	108000	120720		
60 x 60	25	32000	45440	56000	64000	72000	79040	90880	101760	112000	124800	144000	160960		
60 x 72	30	25000	35500	43750	50000	56250	61750	71000	79500	87500	97500	112500	125750		
60 x 96	40	30000	42600	52500	60000	67500	74100	85200	95400	105000	117000	135000	150900		
72 x 72	36	40000	56800	70000	80000	90000	98800	113600	127200	140000	156000	180000	201200		
72 x 96	48	36000	51120	63000	72000	81000	88920	102240	113380	126000	140400	162000	181080		
96 x 96	64	48000	68160	84000	96000	108000	118560	136320	152640	168000	187200	216000	241440		
Face Velocity, fpm		64000	90880	112000	128000	144000	158080	181760	203520	224000	249600	288000	321920		
		1000	1420	1750	2000	2250	2470	2480	3180	3500	3900	4500	5030		

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
Silencer Face Velocity, fpm		Self-Noise Power Levels in Decibels							
PL (all sizes)	-5000	74	67	67	73	65	67	73	78
	-4000	69	63	63	68	63	64	68	69
	-3000	64	59	58	62	60	62	62	58
	-2000	55	52	52	53	56	56	53	43
	-1000	41	41	41	38	49	48	38	<20
	+1000	38	31	37	32	32	36	24	<20
	+2000	57	51	51	49	47	50	44	35
	+3000	68	63	59	60	56	58	56	50
	+4000	76	71	65	66	62	64	64	59
	+5000	82	77	70	72	67	69	71	67

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

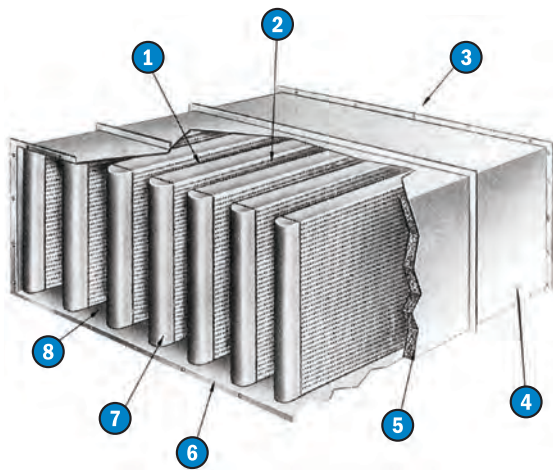
- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

# Power-Flow® Rectangular Silencers

## Type: PMS

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
7. Solid rounded nose
8. Bell mouth entry

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PMS 48 x 48 and 5 PMS-T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PMS (3 ft)	-4000	6	8	14	23	27	20	12	8
	-2000	6	8	14	23	27	20	14	8
	+2000	2	7	12	19	23	23	18	11
	+4000	2	6	11	15	22	23	18	11
5 PMS (5 ft)	-4000	9	12	21	34	43	33	22	9
	-2000	8	11	18	32	42	33	22	11
	+2000	6	10	18	30	42	34	23	14
	+4000	4	9	17	29	38	34	23	14
7 PMS (7 ft)	-4000	11	15	27	38	50	40	27	13
	-2000	10	15	26	36	49	40	28	14
	+2000	10	14	24	36	48	44	31	16
	+4000	9	12	22	36	47	44	31	19
10 PMS (10 ft)	-4000	14	24	36	44	55	50	34	19
	-2000	13	21	35	38	55	50	37	20
	+2000	12	20	34	37	55	52	43	22
	+4000	11	16	32	36	55	53	43	23

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PMS	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.17	0.22	0.28	0.33	0.41	0.55	0.69
			1000	0.02	0.04	0.05	0.07	0.09	0.10	0.14	0.18	0.22	0.27	0.36	0.45
		5 PMS	60	0.06	0.12	0.18	0.24	0.30	0.36	0.48	0.60	0.72	0.90	1.20	1.50
			500	0.03	0.07	0.10	0.13	0.17	0.20	0.26	0.33	0.40	0.50	0.66	0.83
			1000	0.02	0.04	0.06	0.09	0.11	0.13	0.17	0.22	0.26	0.33	0.43	0.54
		7 PMS	60	0.07	0.15	0.22	0.30	0.38	0.45	0.60	0.75	0.90	1.13	1.50	1.88
			500	0.04	0.18	0.12	0.17	0.21	0.25	0.33	0.41	0.50	0.62	0.83	1.04
			1000	0.02	0.05	0.08	0.11	0.14	0.16	0.22	0.27	0.33	0.41	0.54	0.68
		10 PMS	60	0.09	0.18	0.27	0.37	0.47	0.55	0.74	0.93	1.11	1.40	1.85	2.32
			500	0.05	0.10	0.15	0.20	0.26	0.30	0.41	0.51	0.61	0.77	1.02	1.28
			1000	0.03	0.06	0.10	0.13	0.17	0.20	0.27	0.34	0.40	0.51	0.67	0.84
				Airflow in acfm											
15 x 24	2.50			1765	2500	3065	3525	3950	4350	5000	5600	6125	6850	7925	8875
15 x 36	3.75			2645	3750	4595	5290	5925	6525	7500	8400	9190	10275	11890	13315
15 x 48	5.00			3525	5000	6125	7050	7900	8700	10000	11200	12250	13700	15850	17750
15 x 60	6.25			4410	6250	7660	8815	9875	10875	12500	14000	15315	17125	19815	22190
15 x 72	7.50			5290	7500	9190	10575	11850	13050	15000	16800	18375	20550	23775	26625
15 x 96	10.00			7050	10000	12250	14100	15800	17400	20000	22400	24500	27400	31700	35500
30 x 36	7.50			5290	7500	9190	10575	11850	13050	15000	16800	18375	20550	23775	26625
30 x 48	10.00			7050	10000	12250	14100	15800	17400	20000	22400	24500	27400	31700	35500
30 x 60	12.50			8815	12500	15315	17625	19750	21750	25000	28000	30625	34250	39625	44375
30 x 72	15.00			10575	15000	18375	21150	23700	26100	30000	33600	36750	41100	47550	53250
30 x 96	20.00			14100	20000	24500	28200	31600	34800	40000	44800	49000	54800	63400	71000
45 x 48	15.00			10575	15000	18375	21150	23700	26100	30000	33600	36750	41100	47550	53250
45 x 60	18.75			13220	18750	22970	26440	29625	32625	37500	42000	45940	51375	59440	66565
45 x 72	22.50			15865	22500	27565	31725	35550	39150	45000	50400	55125	61650	71325	79875
45 x 96	30.00			21150	30000	36750	42300	47400	52200	60000	67200	73500	82200	95100	106500
60 x 60	25.00			17625	25000	30625	35250	39500	43500	50000	56000	61250	68500	79250	88750
60 x 72	30.00			21150	30000	36750	42300	47400	52200	60000	62700	73500	82200	95100	106500
60 x 96	40.00			28200	40000	49000	56400	63200	69600	80000	89600	98000	109600	126800	142000
75 x 72	37.50			26440	37500	45940	52875	59250	65250	75000	84000	91875	102750	118875	133125
75 x 96	50.00			35250	50000	61250	70500	79000	87000	100000	112000	122500	137000	158500	177500
90 x 96	60.00			42300	60000	73500	84600	94800	104400	120000	134400	147000	164400	190200	213000
Face Velocity, fpm				705	1000	1225	1410	1580	1740	2000	2240	2450	2740	3170	3550

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PMS (all sizes)	-4000	74	67	67	71	64	67	73	75
	-3000	67	63	61	66	61	64	67	67
	-2000	60	56	56	56	57	59	58	49
	-1500	53	52	50	51	54	56	52	41
	-1000	46	45	45	41	50	41	43	23
	+1000	44	32	36	34	31	32	29	21
	+1500	55	47	45	43	40	42	40	34
	+2000	63	54	52	50	47	48	47	44
	+3000	74	64	60	58	56	58	59	57
	+4000	82	72	67	65	63	64	67	67

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

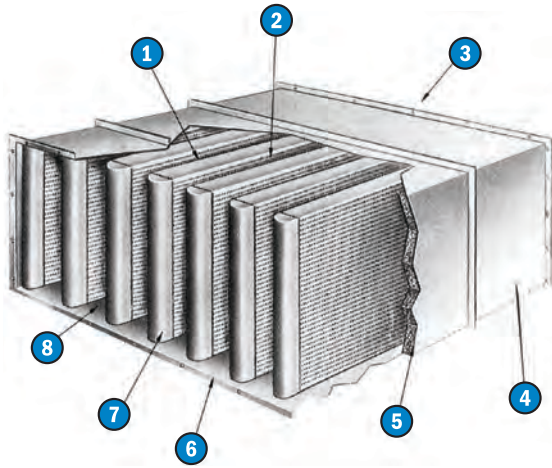
- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

# Power-Flow® Rectangular Silencers

## Type: PML

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
7. Solid rounded nose
8. Bell mouth entry

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PML 48 x 48 and 5 PML-T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PML (3 ft)	-5000	4	6	13	18	19	11	7	5
	-2000	3	5	10	17	19	12	8	6
	+2000	2	5	10	17	17	13	10	8
	+5000	2	4	9	15	17	14	10	9
5 PML (5 ft)	-5000	5	9	18	29	33	18	11	8
	-2000	4	8	15	28	32	18	11	9
	+2000	3	8	15	28	30	21	14	10
	+5000	2	6	14	27	28	24	14	11
7 PML (7 ft)	-5000	6	14	22	40	45	23	15	9
	-2000	5	13	21	38	39	23	16	10
	+2000	4	12	20	36	38	38	18	12
	+5000	4	11	18	34	37	32	18	12
10 PML (10 ft)	-5000	10	21	28	55	55	30	21	10
	-2000	9	20	27	51	51	32	22	11
	+2000	8	18	27	47	47	40	23	12
	+5000	7	18	24	44	45	44	24	13

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PML	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.17	0.22	0.28	0.33	0.41	0.55	0.69
			1000	0.02	0.04	0.05	0.07	0.09	0.10	0.14	0.18	0.22	0.27	0.36	0.45
		5 PML	60	0.06	0.12	0.18	0.24	0.30	0.36	0.48	0.60	0.72	0.90	1.20	1.50
			500	0.03	0.07	0.10	0.13	0.17	0.20	0.26	0.33	0.40	0.50	0.66	0.83
			1000	0.02	0.04	0.06	0.09	0.11	0.13	0.17	0.22	0.26	0.33	0.43	0.54
		7 PML	60	0.07	0.15	0.22	0.30	0.38	0.45	0.60	0.75	0.90	1.13	1.50	1.88
			500	0.04	0.18	0.12	0.17	0.21	0.25	0.33	0.41	0.50	0.62	0.83	1.04
			1000	0.02	0.05	0.08	0.11	0.14	0.16	0.22	0.27	0.33	0.41	0.54	0.68
		10 PML	60	0.09	0.18	0.27	0.37	0.47	0.55	0.74	0.93	1.11	1.40	1.85	2.32
			500	0.05	0.10	0.15	0.20	0.26	0.30	0.41	0.51	0.61	0.77	1.02	1.28
			1000	0.03	0.06	0.10	0.13	0.17	0.20	0.27	0.34	0.40	0.51	0.67	0.84
				Airflow in acfm											
18 x 24	3.0	Type PML Medium Pressure Drop	3030	4305	5250	6060	6810	7395	8610	9675	10500	11760	13605	15240	
18 x 36	4.5		4545	6460	7875	9090	10215	11095	12915	14515	15750	17640	20410	22860	
18 x 48	6.0		6060	8610	10500	12120	13620	14790	17220	19350	21000	23520	27210	30480	
18 x 60	7.5		7575	10770	13125	15150	17025	18490	21525	24190	26250	29400	34015	38100	
18 x 72	9.0		9090	12915	15750	18180	20430	22185	25830	29025	31500	35280	40815	45720	
18 x 96	12.0		12120	17220	21000	24240	27240	29580	34440	38700	42000	47040	54420	60960	
36 x 36	9.0		9090	12915	15750	18180	20430	22185	25830	29025	31500	35280	40815	45720	
36 x 48	12.0		12120	17220	21000	24240	27240	29580	34440	38700	42000	47040	54420	60960	
36 x 60	15.0		15150	21525	26250	30300	34050	36975	43050	48375	52500	58800	68025	76200	
36 x 72	18.0		18180	25830	31500	36360	40860	44370	51660	58050	63000	70560	81630	91440	
36 x 96	24.0		24240	34440	42000	48480	54480	59160	68880	77400	84000	94080	108840	121920	
54 x 48	18.0		18180	25830	31500	36360	40860	44370	51660	58050	63000	70560	81630	91440	
54 x 60	22.5		22725	32290	39375	45450	51075	55465	64575	72565	78750	88200	102040	114300	
54 x 72	27.0		27270	38745	47250	54540	61290	60555	73490	87075	94500	105840	122445	137160	
54 x 96	36.0		36360	51660	63000	72720	81720	88740	103320	116100	126000	141120	163260	182880	
72 x 60	30.0		30300	43050	52500	60600	68100	73950	86100	96750	105000	117600	136050	152400	
72 x 72	36.0		36360	51660	63000	72720	81720	88740	103320	116100	126000	141120	163200	182880	
72 x 96	48.0		48480	68880	84000	96960	108960	118320	137760	154800	168000	188160	217680	243840	
90 x 96	60.00	60600	86100	105000	121200	136200	147900	172200	193500	210000	235200	272100	304800		
Face Velocity, fpm			1010	1435	1750	2020	2270	2465	2870	3225	3500	3920	4535	5080	

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PML (all sizes)	-4000	70	64	63	68	63	66	67	70
	-3000	64	59	59	63	60	62	63	59
	-2000	56	53	52	53	56	58	52	44
	-1500	50	48	48	48	53	54	48	33
	-1000	42	42	41	38	49	50	37	<20
	+1000	39	35	30	27	26	28	28	<20
	+1500	51	45	39	36	35	38	38	29
	+2000	58	52	46	43	42	45	45	39
	+3000	71	61	55	53	51	55	56	52
	+4000	77	68	62	60	58	61	63	61

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

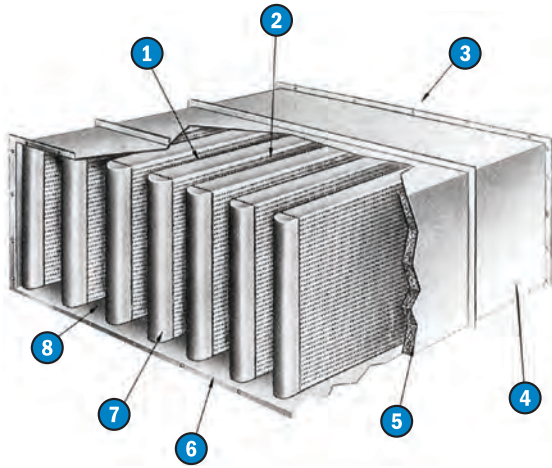
- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

# Power-Flow<sup>®</sup> Rectangular Silencers

## Type: PLFS

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
7. Solid rounded nose
8. Bell mouth entry

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PLFS 48x48 and 5 PLFS -T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PLFS (3 ft)	-2000	10	15	25	28	26	20	16	12
	-1000	9	14	24	27	25	19	16	14
	0	8	12	23	26	25	19	16	13
	+1000	10	13	23	27	26	22	17	14
	+2000	8	12	21	25	25	21	17	14
5 PLFS (5 ft)	-2000	16	22	37	42	42	28	19	14
	-1000	16	21	35	41	41	28	21	15
	0	15	20	33	38	40	27	21	16
	+1000	13	19	31	36	39	27	22	16
	+2000	10	18	28	33	36	29	21	16
7 PLFS (7 ft)	-2000	17	27	44	51	52	35	23	16
	-1000	16	26	44	49	50	35	25	17
	0	14	25	42	48	49	35	27	18
	+1000	13	24	40	48	49	37	29	19
	+2000	11	21	38	46	49	39	29	19
10 PLFS (10 ft)	-2000	22	31	47	53	54	43	26	17
	-1000	23	33	50	52	52	45	30	20
	0	22	31	49	53	53	45	33	21
	+1000	21	29	47	53	53	46	36	23
	+2000	17	26	47	53	53	47	36	24

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PLFS	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.16	0.22	0.27	0.33	0.41	0.54	0.68
			1000	0.02	0.04	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.27	0.36	0.45
		5 PLFS	60	0.05	0.11	0.16	0.22	0.28	0.33	0.44	0.55	0.66	0.83	1.10	1.37
			500	0.03	0.06	0.09	0.12	0.15	0.18	0.24	0.30	0.36	0.45	0.60	0.74
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20	0.24	0.30	0.39	0.49
		7 PLFS	60	0.06	0.12	0.17	0.23	0.29	0.35	0.46	0.58	0.70	0.87	1.16	1.45
			500	0.03	0.07	0.09	0.12	0.16	0.19	0.25	0.31	0.38	0.47	0.63	0.79
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.21	0.25	0.31	0.41	0.52
		10 PLFS	60	0.06	0.13	0.19	0.25	0.31	0.38	0.51	0.63	0.87	0.97	1.26	1.58
			500	0.03	0.07	0.10	0.14	0.17	0.21	0.28	0.34	0.47	0.53	0.68	0.86
			1000	0.02	0.05	0.07	0.09	0.11	0.14	0.18	0.22	0.31	0.35	0.45	0.56
					Airflow in acfm										
	24 x 24	4	Type PLFS Medium Pressure Drop	1188	1680	2056	2376	2656	2908	3356	3752	4112	4596	5308	5932
	24 x 36	6		1782	2520	3084	3564	3984	4362	5034	5628	6168	6894	7962	8898
	24 x 48	8		2376	3360	4112	4752	5312	5816	6712	7504	8224	9192	10616	11864
24 x 60	10	2970		4200	5140	5940	6640	7270	8390	9380	10280	11490	13270	14830	
24 x 72	12	3569		5040	6168	7128	7968	8724	10068	11256	12336	13788	15924	17796	
24 x 96	16	4752		6720	8224	9504	10624	11632	13424	15008	16448	18384	21232	23728	
48 x 48	16	4752		6720	8224	9504	10624	11632	13424	15008	16448	18384	21232	23728	
48 x 60	20	5940		8400	10280	11880	13280	14540	16780	18760	20560	22980	26540	29660	
48 x 72	24	7128		10080	12336	14256	15936	17448	20136	22512	24672	27576	31848	35592	
48 x 96	32	9504		13440	16448	19008	21248	23264	26848	30016	32896	36768	42464	47456	
72 x 72	36	10692		15120	18504	21384	23904	26172	30204	33768	37008	41364	47772	53388	
72 x 84	42	12474		17640	21588	24948	27888	30534	35238	39396	43176	48258	55734	62286	
72 x 96	48	14256		20160	24672	28512	31872	34896	40272	45024	49344	55152	63696	71184	
72 x 108	54	16038		22680	27756	32076	35856	39258	45306	50652	55512	62046	71658	80082	
96 x 108	72	21384		30240	37008	42768	47808	52334	60408	67536	74016	82728	95544	106776	
96 x 120	80	23760		33600	41120	47520	53120	58160	67120	75040	82240	91920	106160	118640	
96 x 132	88	26136		36960	45232	52272	58432	63976	73832	82544	90464	101112	116776	130504	
96 x 144	96	28512		40320	49344	57024	63744	69792	80544	90048	98688	110304	127392	142368	
120 x 120	100	29700		42000	51400	59400	66400	72700	83900	93800	102800	114900	132700	148300	
120 x 132	110	32670		46200	56540	65340	73040	79970	92290	103180	113080	126390	145970	163130	
120 x 144	120	35640	50400	61680	71280	79680	87240	100680	112560	123360	137880	159240	177960		
144 x 144	144	42768	60480	74016	85536	95616	104688	120816	135072	148032	165456	191088	213552		
Face Velocity, fpm			297	420	514	594	664	727	839	938	1028	1149	1327	1483	

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
Silencer Face Velocity, fpm		Self-Noise Power Levels in Decibels							
PLFS (all sizes)	-2000	58	54	58	61	62	62	65	63
	-1500	51	49	53	56	56	59	60	53
	-1000	45	42	45	43	45	49	44	37
	+1000	46	42	45	43	45	49	44	37
	+1500	56	54	57	56	52	56	57	51
	+2000	68	64	65	66	61	61	64	61

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

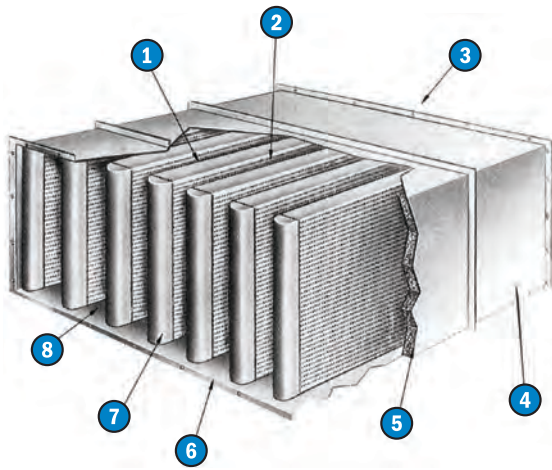
DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477



# Power-Flow<sup>®</sup> Rectangular Silencers

## Type: PLFM

### Silencers with Forward & Reverse Flow Ratings



1. Acoustic throat
2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
7. Solid rounded nose
8. Bell mouth entry

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are available in any size required for your applications. Assemblies as large as 25' high x 250' wide are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PLFM 48 x 48 and 5 PLFM -T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PLFM (3 ft)	-2000	7	9	18	21	19	14	11	10
	-1000	7	8	17	20	18	13	11	11
	0	5	8	16	19	17	13	11	11
	+1000	5	7	16	19	17	12	10	10
	+2000	5	7	15	18	17	12	10	10
5 PLFM (5 ft)	-2000	12	16	27	32	30	17	13	13
	-1000	12	15	27	31	30	17	14	13
	0	11	14	25	30	28	16	13	13
	+1000	10	13	24	29	28	17	13	13
	+2000	9	13	23	28	27	17	13	12
7 PLFM (7 ft)	-2000	15	19	34	44	39	21	16	14
	-1000	15	19	33	43	39	21	17	15
	0	15	17	32	42	39	21	16	14
	+1000	15	16	31	41	38	22	16	14
	+2000	13	15	29	39	38	22	17	14
10 PLFM (10 ft)	-2000	20	25	42	52	51	26	20	16
	-1000	20	25	43	52	51	27	22	17
	0	18	24	42	51	51	27	21	16
	+1000	16	21	39	51	50	28	22	17
	+2000	16	21	39	51	50	28	22	17

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PLFM	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.16	0.22	0.27	0.33	0.41	0.54	0.68
			1000	0.02	0.04	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.27	0.36	0.45
		5 PLFM	60	0.05	0.11	0.16	0.21	0.26	0.32	0.43	0.53	0.64	0.80	1.07	1.33
			500	0.03	0.06	0.09	0.11	0.14	0.17	0.23	0.29	0.35	0.43	0.58	0.72
			1000	0.02	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.23	0.28	0.38	0.47
		7 PLFM	60	0.06	0.12	0.17	0.22	0.28	0.34	0.45	0.56	0.67	0.84	1.12	1.40
			500	0.03	0.07	0.09	0.12	0.15	0.18	0.24	0.30	0.36	0.46	0.61	0.76
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20	0.24	0.30	0.40	0.50
		10 PLFM	60	0.06	0.13	0.19	0.25	0.32	0.38	0.51	0.64	0.77	0.96	1.28	1.60
			500	0.03	0.07	0.10	0.14	0.17	0.21	0.28	0.35	0.42	0.52	0.69	0.87
			1000	0.02	0.05	0.07	0.09	0.11	0.14	0.18	0.22	0.27	0.34	0.46	0.57
				Airflow in acfm											
24 x 24	4	Type PLFM Medium Pressure Drop	2060	2908	3560	4116	4600	5040	5820	6504	7128	7968	9200	10280	
24 x 36	6		3090	4362	5340	6174	6900	7560	8730	9756	10692	11952	13800	15420	
24 x 48	8		4120	5816	7120	8232	9200	10080	11640	13008	14256	15936	18400	20560	
24 x 60	10		5150	7270	8900	10290	11500	12600	14550	16260	17820	19920	23000	25700	
24 x 72	12		6180	8724	10680	12348	13800	15120	17460	19512	21384	23904	27600	30840	
24 x 96	16		8240	11632	14240	16464	18400	20160	23280	26016	28512	31872	36800	41120	
48 x 48	16		8240	11632	14240	16464	18400	20160	23280	26016	28512	31872	36800	41120	
48 x 60	20		10300	14540	17800	20580	23000	25200	29100	32520	35640	39840	46000	51400	
48 x 72	24		12360	17448	21360	24969	27600	30240	34920	39024	42768	47808	55200	61680	
48 x 96	32		16480	23264	28480	32928	36800	40320	46560	52032	57024	63744	73600	82240	
72 x 72	36		18540	26172	32040	37044	41400	45360	52380	58536	64152	71712	82800	92520	
72 x 84	42		21630	30534	37380	43218	48300	52920	61110	68292	74844	83664	96600	107940	
72 x 96	48		24720	34896	42720	49392	55200	60480	69840	78048	85536	95616	110400	123360	
72 x 108	54		27810	39258	48060	55566	62100	68040	78570	87804	96228	107568	124200	138780	
96 x 108	72		37080	52344	64080	74088	82800	90720	104760	117072	128304	143424	165600	185040	
96 x 120	80		41200	58160	71200	82320	92000	100800	116400	130080	142560	159360	184000	205600	
96 x 132	88		45320	63976	78320	90552	101200	110880	128040	143088	156816	175296	202400	226160	
96 x 144	96		49440	69792	85440	98784	110400	120960	139680	156096	171072	191232	220800	246720	
120 x 120	100		51500	72700	89000	102900	115000	126000	145500	162600	178200	199200	230000	257000	
120 x 132	110		56650	79970	97900	113190	126500	138600	160050	178860	196020	219120	253000	282700	
120 x 144	120	61800	87240	106800	123480	138000	151200	174600	195120	213840	239040	276000	308400		
144 x 144	144	74160	104688	128160	148176	165600	181440	209520	234144	256608	286848	331200	370080		
Face Velocity, fpm			515	727	890	1029	1150	1260	1455	1626	1782	1992	2300	2570	

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
Silencer Face Velocity, fpm		Self-Noise Power Levels in Decibels							
PLFM (all sizes)	-2000	64	62	64	66	65	64	66	62
	-1500	53	50	54	56	56	59	58	51
	-1000	45	40	43	45	47	46	37	27
	+1000	47	34	36	35	40	37	27	20
	+1500	54	52	58	56	51	56	55	50
	+2000	68	64	64	63	61	63	66	63

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

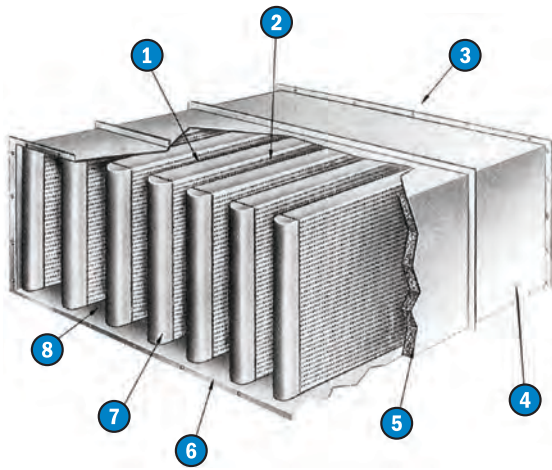
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DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

# Power-Flow<sup>®</sup> Rectangular Silencers

## Type: PLFL

### Silencers with Forward & Reverse Flow Ratings



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2. Straight acoustical passage
3. Aerodynamic exit
4. Rugged braced housing
5. Compressed long-fiber blanket
6. Heavy punched flanges
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8. Bell mouth entry

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Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1,000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 5 PLFL 48x48 and 5 PLFL -T 48 x 48 for high temperature construction.

**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+)/Reverse (-) Flow**

Power-Flow Silencer Model & Length	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
3 PLFL (3 ft)	-2000	5	7	13	17	18	11	11	10
	-1000	5	7	13	17	16	11	10	9
	0	4	7	13	16	16	10	9	8
	+1000	4	7	13	16	15	10	9	8
	+2000	4	7	12	15	15	10	9	8
5 PLFL (5 ft)	-2000	7	13	19	27	27	15	14	14
	-1000	7	12	19	27	27	14	13	13
	0	6	11	18	26	26	14	12	12
	+1000	6	10	17	25	25	14	11	11
	+2000	6	10	16	24	25	14	11	11
7 PLFL (7 ft)	-2000	11	15	25	38	32	17	15	14
	-1000	11	14	25	38	32	17	14	13
	0	9	13	24	37	31	17	14	13
	+1000	8	13	23	37	31	17	13	13
	+2000	7	13	22	36	31	17	13	13
10 PLFL (10 ft)	-2000	14	20	33	45	41	21	16	15
	-1000	14	19	33	45	41	21	15	15
	0	13	18	32	45	41	21	15	15
	+1000	12	18	31	45	41	21	15	15
	+2000	11	18	29	45	41	21	15	15

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data		Model	Temp °F	Static Pressure Drop — In. of H <sub>2</sub> O											
Silencer Size Width x Height, in.	Silencer Face Area, sq ft	3 PLFL	60	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.75	1.00	1.25
			500	0.03	0.05	0.08	0.11	0.14	0.16	0.22	0.27	0.33	0.41	0.54	0.68
			1000	0.02	0.04	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.27	0.36	0.45
		5 PLFL	60	0.05	0.11	0.16	0.21	0.26	0.32	0.43	0.53	0.64	0.80	1.07	1.33
			500	0.03	0.06	0.09	0.11	0.14	0.17	0.23	0.29	0.35	0.43	0.58	0.72
			1000	0.02	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.23	0.28	0.38	0.47
		7 PLFL	60	0.06	0.12	0.17	0.22	0.28	0.34	0.45	0.56	0.67	0.84	1.12	1.40
			500	0.03	0.07	0.09	0.12	0.15	0.18	0.24	0.30	0.36	0.46	0.61	0.76
			1000	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20	0.24	0.30	0.40	0.50
		10 PLFL	60	0.06	0.13	0.19	0.25	0.32	0.38	0.51	0.64	0.77	0.96	1.28	1.60
			500	0.03	0.07	0.10	0.14	0.17	0.21	0.28	0.35	0.42	0.52	0.69	0.87
			1000	0.02	0.05	0.07	0.09	0.11	0.14	0.18	0.22	0.27	0.34	0.46	0.57
				Airflow in acfm											
24 x 24	4	Type PLFL Medium Pressure Drop	3260	4620	5660	6540	7300	8000	9240	10320	11320	12640	14600	16320	
24 x 36	6		4890	6930	8490	9810	10950	12000	13860	15480	16980	18960	21900	24480	
24 x 48	8		6520	9240	11320	13080	14600	16000	18480	20640	22640	25280	29200	32640	
24 x 60	10		8150	11550	14150	16350	18250	20000	23100	25800	28300	31600	36500	40800	
24 x 72	12		9780	13860	16980	19620	21900	24000	27720	30960	33960	37920	43800	48960	
24 x 96	16		13040	18480	22640	26160	29200	32000	36960	41280	45280	50560	58400	65280	
48 x 48	16		13040	18480	22640	26160	29200	32000	36960	41280	45280	50560	58400	65280	
48 x 60	20		16300	23100	28300	32700	36500	40000	46200	51600	56600	63200	73000	81600	
48 x 72	24		19560	27720	33960	39240	43800	48000	55440	61920	67920	75840	87600	97920	
48 x 96	32		26080	36960	45280	52320	58400	64000	73920	82560	90560	101120	116800	130560	
72 x 72	36		29340	41580	50940	58860	65700	72000	83160	92880	101880	113760	131400	146880	
72 x 84	42		34230	48510	59430	68670	76650	84000	97020	108360	118860	132720	153300	171360	
72 x 96	48		39120	55440	67920	78480	87600	96000	110880	123840	135840	151680	175200	195840	
72 x 108	54		44010	62370	76410	88290	98550	108000	124740	139320	152820	170640	197100	220320	
96 x 108	72		58680	83160	101880	117720	131400	144000	166320	185760	203760	227520	262800	293760	
96 x 120	80		65200	92400	113200	130800	146000	160000	184800	206400	226400	252800	292000	326400	
96 x 132	88		71720	101640	124520	143880	160600	176000	203280	227040	249040	278080	321000	359040	
96 x 144	96		78240	110880	135840	156960	175200	192000	221760	247680	271680	303360	350400	391680	
120 x 120	100		81500	115500	141500	163500	182500	200000	231000	258000	283000	316000	365000	408000	
120 x 132	110		89650	127050	155650	179850	200750	220000	254100	283800	311300	347600	401500	448800	
120 x 144	120	97800	138600	169800	196200	219000	240000	277200	309600	339600	379200	438000	489600		
144 x 144	144	117360	166320	203760	235440	262800	288000	332640	371280	407520	455040	525600	587520		
Face Velocity, fpm			815	1155	1415	1635	1825	2000	2310	2580	2830	3160	3650	4080	

**Note:** The tabulated air flow is in elm based upon tests conducted in accordance with applicable AMCA, ASME and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream for the test specimen. The downstream measurements are made far enough downstream to include "static regain". Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the operating static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.** All acoustic and aerodynamic data obtained on 24" x 24" production units.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
Silencer Face Velocity, fpm		Self-Noise Power Levels in Decibels							
PLFL (all sizes)	-3000	55	54	56	57	56	59	61	56
	-2000	46	45	48	49	50	54	49	42
	-1000	39	37	40	41	44	43	35	25
	+1000	41	33	34	33	37	35	25	20
	+2000	47	42	46	44	46	51	46	38
	+3000	56	53	54	55	53	58	59	53

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	4	8	16	32	64	128	256
Power Level Adjustment Factor, dB	0	+3	+6	+9	+12	+15	+18

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

**When DIL Requirements Exceed 50 dB**

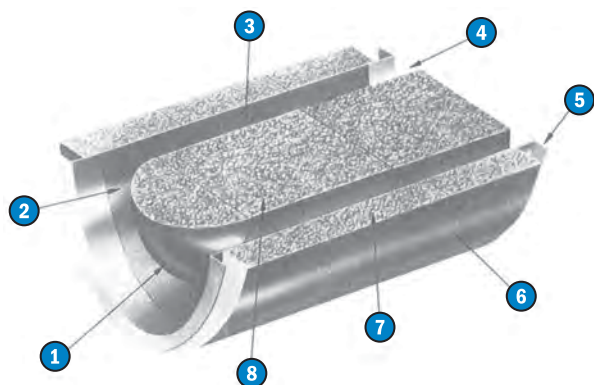
- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

# Power-Flow<sup>®</sup> Tubular Silencers

## Type: PCS

### Silencers with Forward & Reverse Flow Ratings



- 1. Solid rounded nose
- 2. Bell mouth entry
- 3. Straight acoustical passages
- 4. Aerodynamic exit
- 5. Controlled angle
- 6. Rugged outer jacket
- 7. Compressed long-fiber blanket
- 8. Inner acoustic "bullet"

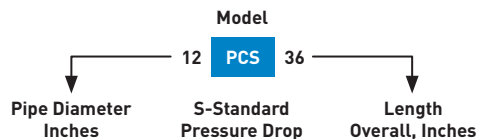
In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings, all measured in the IAC Aeroacoustic Laboratory. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are custom sized to fit any application. Assemblies as large as 20' in diameter are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction are also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 24 PCS 48 and 24 PCS 48-T for high temperature construction.

#### How to Designate Tubular Silencers

Example of a typical designation:



**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow**

Power-Flow Silencer Pipe Diameter (inches)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
12	-6000	9	13	23	33	39	35	30	20
	-4000	9	13	22	32	34	35	31	21
	-2000	7	10	19	31	34	35	32	23
	+2000	4	9	16	30	34	37	33	26
	+4000	3	8	14	24	33	39	33	27
	+6000	3	8	13	28	33	40	33	27
24	-6000	11	14	24	35	44	34	19	10
	-4000	10	12	20	34	43	34	20	11
	-2000	8	11	18	34	40	35	22	13
	+2000	5	11	18	26	36	37	24	20
	+4000	4	10	17	25	34	37	27	21
	+6000	4	10	16	23	33	38	27	22
36	-6000	12	17	25	37	39	27	17	8
	-4000	11	16	22	36	38	28	19	9
	-2000	10	15	20	35	37	29	21	10
	+2000	9	14	19	35	36	31	23	17
	+4000	8	13	18	33	35	32	24	18
	+6000	7	12	17	33	33	32	24	19
48	-6000	13	19	26	38	37	19	10	10
	-4000	12	18	23	37	36	20	11	11
	-2000	11	17	21	36	35	22	13	12
	+2000	10	16	20	34	35	26	20	14
	+4000	9	14	19	34	35	27	21	15
	+6000	8	13	18	33	33	27	22	16
60	-6000	14	20	27	39	34	15	10	9
	-4000	13	20	25	38	33	16	11	10
	-2000	12	19	24	36	32	18	12	11
	+2000	11	17	23	34	31	23	17	12
	+4000	10	15	22	34	31	24	18	13
	+6000	9	14	21	34	31	24	19	14

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data					Temp °F	Static Pressure Drop — Inches of H <sub>2</sub> O								
Pipe Diameter, in.	Silencer Face Area, sq. ft.	Body Diameter, in.	Length in.	Weight lb.	60	.19	.37	.55	.74	.92	1.11	1.48	1.85	
					500	.10	.20	.30	.40	.50	.60	.80	1.00	
					1000	.07	.13	.20	.26	.35	.40	.52	.66	
Airflow in acfm														
12	0.785	20	36	260	1260	1780	2190	2530	2835	3100	3560	4005		
18	1.77	26	36	455	3045	4310	5280	6100	7230	8360	8620	10220		
24	3.14	32	48	725	5620	7950	9750	11250	12600	13800	15900	17800		
30	4.91	38	60	995	8855	12525	15350	17725	19750	21715	25050	27510		
36	7.07	44	72	1265	12910	18260	22390	25800	29070	31670	36520	41120		
42	9.60	50	84	1725	17780	25150	30825	35550	39920	43600	50300	56440		
48	12.57	56	96	2185	23570	33340	40845	47150	52750	57750	66680	74550		
54	15.90	62	108	2650	30100	42575	52220	60365	67700	73840	85150	95700		
60	19.63	68	120	3110	37520	53070	65160	75440	84800	92130	106140	119900		

**Note 1:** The tabulated airflow is in cfm based upon test conducted in accordance with applicable AMCA, ASME, and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream of the test specimen. The downstream measurements are made far enough downstream to include 'static regain'. Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.**

**Note 2:** All tabulated data based on test conducted on production silencers 12", 24", 36" and 48" in diameter. Data for other sizes were interpolated or extrapolated.

**Note 3:** Face velocities must be calculated for each diameter.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PCS	-6000	70	73	70	71	73	74	75	75
	-5000	66	69	67	67	68	69	70	69
	-4000	62	64	63	63	63	64	64	61
	-3000	57	58	58	57	56	57	56	52
	-2000	50	49	51	49	46	47	45	39
	-1000	38	34	39	35	29	30	26	<20
	+1000	44	43	37	37	38	38	<20	<20
	+2000	56	54	50	50	50	50	41	31
	+3000	63	60	57	57	57	57	53	47
	+4000	68	64	63	63	63	63	61	57
	+5000	72	68	67	68	67	68	68	66
	+6000	75	73	70	71	70	71	73	73

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	.75	1.5	3	6	12	20
Power Level Adjustment Factor, dB	-6	-3	0	+3	+6	+8

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

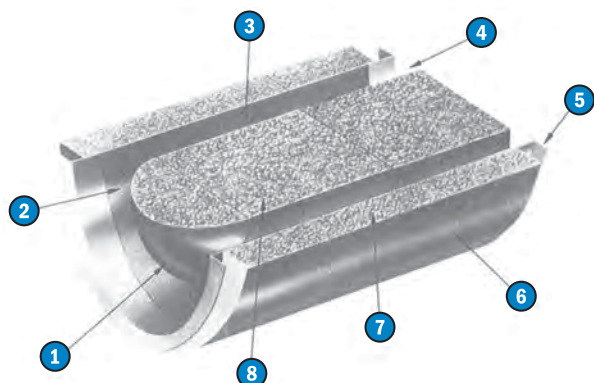
**When DIL Requirements Exceed 50 dB**

- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> (93 m<sup>2</sup>).
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

# Power-Flow® Tubular Silencers

## Type: PCL

### Silencers with Forward & Reverse Flow Ratings



- 1. Solid rounded nose
- 2. Bell mouth entry
- 3. Straight acoustical passages
- 4. Aerodynamic exit
- 5. Controlled angle
- 6. Rugged outer jacket
- 7. Compressed long-fiber blanket
- 8. Inner acoustic "bullet"

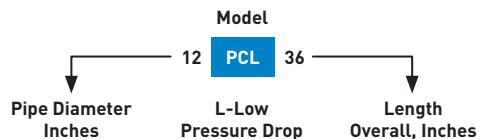
In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are custom sized to fit any application. Assemblies as large as 20' in diameter are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction are also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 24 PCL 48 and 24 PCL 48-T for high temperature construction.

#### How to Designate Tubular Silencers

Example of a typical designation:



**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow**

Power-Flow Silencer Pipe Diameter (inches)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
12	-6000	7	10	21	34	36	33	20	12
	-4000	7	9	17	32	35	34	22	12
	-2000	4	8	16	32	34	34	24	13
	+2000	4	6	13	29	34	36	24	16
	+4000	4	6	13	26	33	36	24	17
	+6000	3	5	12	24	33	36	24	18
24	-6000	9	10	19	31	37	20	15	11
	-4000	7	9	16	28	35	21	17	12
	-2000	6	9	14	27	35	23	18	13
	+2000	5	8	13	26	34	25	22	18
	+4000	4	8	13	25	34	26	22	18
	+6000	3	7	12	23	33	27	23	19
36	-6000	10	13	20	33	32	18	14	10
	-4000	9	12	18	32	30	19	16	11
	-2000	8	12	17	32	29	20	17	12
	+2000	7	11	16	31	29	25	20	17
	+4000	7	10	15	31	28	25	20	17
	+6000	6	9	15	30	27	25	21	18
48	-6000	11	16	21	34	30	15	12	9
	-4000	10	15	21	34	30	17	13	10
	-2000	10	14	20	33	30	18	14	11
	+2000	9	14	18	33	29	22	18	16
	+4000	8	12	17	33	28	22	18	17
	+6000	7	11	17	32	27	23	19	18
60	-6000	12	18	22	36	29	14	10	9
	-4000	12	17	22	35	29	15	11	10
	-2000	11	17	21	35	29	16	12	11
	+2000	11	16	20	35	27	20	16	15
	+4000	10	14	19	35	26	20	16	16
	+6000	9	13	19	34	25	21	17	17

Note: All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data					Temp °F	Static Pressure Drop — Inches of H <sub>2</sub> O										
Pipe Diameter, in.	Silencer Face Area, sq. ft.	Body Diameter, in.	Length in.	Weight lb.	60	.10	.15	.20	.25	.30	.40	.50	.60	.75	1.00	
					500	.05	.08	.10	.14	.16	.22	.27	.32	.41	.54	
					1000	.04	.05	.07	.09	.10	.14	.18	.21	.26	.36	
Airflow in acfm																
12	0.785	20	36	210		1780	2190	2530	2835	3100	3560	4005	4380	4905	5670	
18	1.77	26	36	400		4310	5280	6100	7230	8360	8620	10220	10560	12910	14460	
24	3.14	32	48	655		7950	9750	11250	12600	13800	15900	17800	19500	21750	25200	
30	4.91	38	60	915		12525	15350	17725	19750	21715	25050	27510	30700	34340	39500	
36	7.07	44	72	1175		18260	22390	25800	29070	31670	36520	41120	44780	50390	58140	
42	9.60	50	84	1605		25125	30800	35515	39880	45550	50250	56380	61590	69100	79750	
48	12.57	56	96	2035		33340	40845	47150	52750	57750	66680	74550	81690	91350	105500	
54	15.90	62	108	2470		42570	52220	60370	67700	73830	85160	95700	104450	117340	135400	
60	19.63	68	120	2900		53070	65160	75440	84800	92130	106140	119900	130320	147100	169600	

**Note 1:** The tabulated airflow is in cfm based upon test conducted in accordance with applicable AMCA, ASME, and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream of the test specimen. The downstream measurements are made far enough downstream to include 'static regain'. Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.**

**Note 2:** All tabulated data based on test conducted on production silencers 12", 24", 36" and 48" in diameter. Data for other sizes were interpolated or extrapolated.

**Note 3:** Face velocities must be calculated for each diameter.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PCL	-6000	72	71	70	72	71	71	71	69
	-5000	68	67	66	68	67	67	65	62
	-4000	63	62	61	63	62	62	58	54
	-3000	56	56	55	56	55	55	50	45
	-2000	47	47	47	47	45	45	37	29
	-1000	31	32	32	31	30	30	<20	<20
	+1000	39	35	32	32	30	25	20	<20
	+2000	52	48	46	46	45	42	39	25
	+3000	60	56	54	54	53	52	50	40
	+4000	65	61	60	60	60	58	57	50
	+5000	69	65	64	64	64	64	63	58
	+6000	73	69	68	68	68	68	68	64

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	.75	1.5	3	6	12	20
Power Level Adjustment Factor, dB	-6	-3	0	+3	+6	+8

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

**When DIL Requirements Exceed 50 dB**

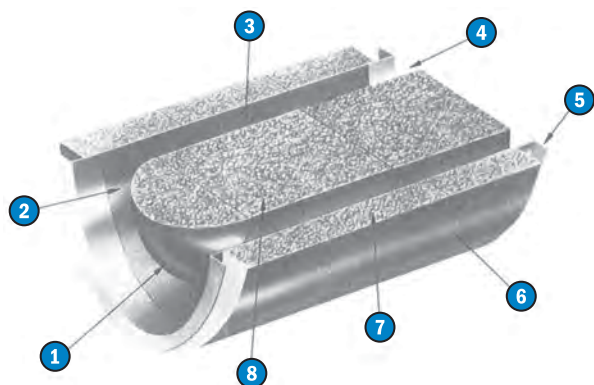
- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> [93 m<sup>2</sup>].
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.



# Power-Flow® Tubular Silencers

## Type: PFCL

### Silencers with Forward & Reverse Flow Ratings



- 1. Solid rounded nose
- 2. Bell mouth entry
- 3. Straight acoustical passages
- 4. Aerodynamic exit
- 5. Heavy punched flanges
- 6. Rugged outer jacket
- 7. Thick, absorptive outer jacket
- 8. Inner acoustic "bullet"

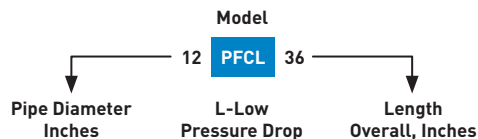
In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are custom sized to fit any application. Assemblies as large as 20' in diameter are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction are also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 24 PFCL 48 and 24 PFCL 48-T for high temperature construction.

#### How to Designate Tubular Silencers

Example of a typical designation:



**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow**

Power-Flow Silencer Pipe Diameter (inches)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
12	-6000	9	17	26	32	36	33	21	17
	-4000	8	17	25	30	35	34	23	18
	-2000	8	16	23	29	34	34	25	19
	+2000	8	14	20	25	32	27	26	23
	+4000	7	12	18	23	31	29	27	23
	+6000	6	11	16	23	31	30	28	23
24	-6000	10	17	27	32	36	20	15	11
	-4000	9	16	26	31	35	21	15	12
	-2000	9	15	24	29	33	21	16	13
	+2000	7	13	21	26	34	25	21	16
	+4000	6	12	20	24	32	25	21	17
	+6000	6	10	19	22	31	26	22	18
36	-6000	11	21	30	34	32	19	15	10
	-4000	11	20	29	33	30	20	17	12
	-2000	10	19	28	33	29	21	18	13
	+2000	8	15	24	31	29	25	20	16
	+4000	7	13	22	30	28	25	20	16
	+6000	6	12	21	30	27	25	21	17
48	-6000	13	23	33	37	30	16	12	10
	-4000	12	22	33	37	30	17	13	11
	-2000	12	20	31	36	30	18	15	13
	+2000	9	17	27	33	29	22	18	16
	+4000	9	16	24	32	28	23	18	17
	+6000	8	15	23	32	27	23	19	18
60	-6000	16	27	37	38	30	14	10	9
	-4000	15	26	36	38	29	15	11	10
	-2000	14	24	34	37	29	16	12	11
	+2000	11	20	31	35	27	21	17	16
	+4000	10	18	28	35	26	20	17	17
	+6000	9	16	26	34	25	21	17	17

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

**Table II: Aerodynamic Performance Data**

Physical Data				Temp °F	Static Pressure Drop — Inches of H <sub>2</sub> O							
Pipe Diameter, in.	Silencer Face Area, sq. ft.	Body Diameter, in.	Length in.	60	.05	.10	.15	.20	.25	.30	.40	.50
				500	.03	.06	.09	.12	.15	.20	.25	.30
				1000	.02	.04	.06	.08	.10	.12	.14	.16
Airflow in acfm												
12	0.785	28	36		1260	1780	2190	2530	2835	3100	3560	4005
18	1.77	34	36		3045	4310	5280	6100	7230	8360	8620	10220
24	3.14	40	48		5620	7950	9750	11250	12600	13800	15900	17800
30	4.91	46	60		8855	12525	15350	17725	19750	21715	25050	27510
36	7.07	52	72		12910	18260	22390	25800	29070	31670	36520	41120
42	9.60	58	84		17780	25150	30825	35550	39920	43600	50300	56440
48	12.57	64	96		23570	33340	40845	47150	52750	57750	66680	74550
54	15.90	70	108		30100	42575	52220	60365	67700	73840	85150	95700
60	19.63	76	120		37520	53070	65160	75440	84800	92130	106140	119900

**Note 1:** The tabulated airflow is in cfm based upon test conducted in accordance with applicable AMCA, ASME, and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream of the test specimen. The downstream measurements are made far enough downstream to include 'static regain'. Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.**

**Note 2:** All tabulated data based on test conducted on production silencers 12", 24", 36" and 48" in diameter. Data for other sizes were interpolated or extrapolated.

**Note 3:** Face velocities must be calculated for each diameter.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
PFCL	-6000	72	71	70	72	71	71	71	69
	-5000	68	67	66	68	67	67	65	62
	-4000	63	62	61	63	62	62	58	54
	-3000	56	56	55	56	55	55	50	45
	-2000	47	47	47	47	45	45	37	29
	-1000	31	32	32	31	30	30	20	20
	+1000	39	35	32	32	30	25	20	20
	+2000	52	48	46	46	45	42	39	25
	+3000	60	56	54	54	53	52	50	40
	+4000	65	61	60	60	60	58	57	50
	+5000	69	65	64	64	64	64	63	58
	+6000	73	69	68	68	68	68	68	64

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	.75	1.5	3	6	12	20
Power Level Adjustment Factor, dB	-6	-3	0	+3	+6	+8

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

**When DIL Requirements Exceed 50 dB**

- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
- Self-Noise interference should be checked out especially for systems with high noise reduction requirements or face areas greater than 1000 ft<sup>2</sup> [93 m<sup>2</sup>].
- Specially designed silencers and full-scale or scale-model testing are available for applications requiring silencing in excess of 50 dB or other unusual requirements.
- Call your local IAC Representative for details.

# Power-Flow® Tubular Silencers

## Type: PNS

### Silencers with Forward & Reverse Flow Ratings



- 1. Solid rounded nose
- 2. Bell mouth entry
- 3. Straight acoustical passages
- 4. Aerodynamic exit
- 5. Heavy punched flanges
- 6. Rugged outer jacket
- 7. Inner acoustic "bullet"

In this catalog IAC gives both Forward (+) and Reverse (-) Flow ratings. Forward Flow (+) occurs when air and noise travel in the same direction as in a typical exhaust system. Reverse Flow (-) occurs when air and noise travel in opposite directions as in a typical Forced Draft Fan inlet.

Power-Flow silencers are custom sized to fit any application. Assemblies as large as 20' in diameter are in continuous operation. Special silencer configurations available to meet the most demanding insertion loss and low self noise requirements. Silencers in light gauge construction are also available.

Included are aerodynamic performance characteristics for 3 temperature ranges, 60° F, 500° F and 1000° F. For temperatures up to 300° F use standard Power-Flow construction; above 300° F specify "T" designation for high temperature construction, that is 24 PNS 48 and 24 PNS 48-T for high temperature construction.

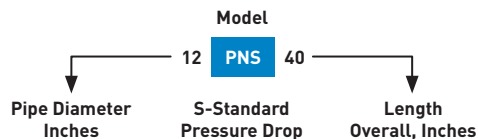
**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow**

Power-Flow Silencer Pipe Diameter (inches)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
12	-6000	4	5	10	17	25	20	13	8
	-4000	3	4	9	15	24	21	13	8
	-2000	3	4	9	14	24	21	13	8
	+2000	3	4	9	14	19	21	14	12
	+4000	3	4	9	14	17	21	14	12
	+6000	3	4	8	13	16	22	14	12
24	-6000	5	13	19	22	25	18	10	9
	-4000	4	11	16	22	25	19	11	10
	-2000	4	10	15	20	24	21	12	11
	+2000	4	10	14	18	23	21	12	12
	+4000	4	9	13	17	23	21	12	12
	+6000	3	9	13	16	23	21	13	13
36	-6000	7	13	18	23	24	15	10	8
	-4000	6	13	17	23	23	15	10	8
	-2000	6	13	17	22	23	16	11	9
	+2000	6	13	17	20	22	17	11	10
	+4000	6	12	16	19	22	17	11	10
	+6000	5	12	15	18	22	17	11	10
48	-6000	8	15	21	25	22	10	8	6
	-4000	7	15	19	25	22	11	9	7
	-2000	7	15	19	23	20	12	10	8
	+2000	7	15	19	23	20	12	10	8
	+4000	7	15	19	22	20	12	10	8
	+6000	7	14	18	22	20	12	11	9
60	-6000	10	18	22	23	20	8	7	6
	-4000	10	17	21	23	19	8	7	6
	-2000	10	17	20	23	18	9	8	7
	+2000	10	17	20	22	17	10	9	8
	+4000	9	16	19	22	17	10	10	9
	+6000	8	15	19	22	17	10	10	9

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

#### How to Designate Tubular Silencers

Example of a typical designation:



**Table II: Aerodynamic Performance Data**

Physical Data			Temp °F	Static Pressure Drop — Inches of H <sub>2</sub> O									
Pipe Diameter, in.	Silencer Face Area, sq. ft.	Length in.		60	.20	.30	.40	.50	.60	.80	1.00	1.20	1.50
			500	.11	.16	.22	.27	.33	.43	.54	.65	.81	
			1000	.07	.11	.14	.18	.21	.28	.36	.43	.53	
				Airflow in acfm									
12	0.785	40		1375	1685	1950	2190	2385	2750	3080	3370	3770	
14	1.07	46		1895	2325	2685	3000	3285	3790	4250	4650	5200	
16	1.40	52		2540	3115	3590	4010	4395	5080	5680	6230	6950	
18	1.77	58		3310	4055	4685	5230	5735	6620	7415	8110	9070	
20	2.18	64		4120	5045	5830	6520	7140	8240	9220	10090	11300	
22	2.64	72		5100	6245	7200	8060	8825	10200	11380	12490	13960	
24	3.14	78		6120	7500	8660	9680	10600	12240	13700	15000	16750	
26	3.69	84		7225	8850	10250	11460	12510	14450	16180	17700	19800	
28	4.28	90		8400	10250	11890	13300	14490	16800	18790	20500	23020	
30	4.91	98		9665	11870	13680	15300	16760	19330	21610	23740	26460	
32	5.59	104		11060	13550	15630	17500	19180	22120	24770	27100	30300	
36	7.07	118		14080	17240	19890	22240	24330	28160	31470	34480	38500	
40	8.73	130		17510	21480	24820	27700	30330	35020	39170	42960	48000	
44	10.56	144		21420	26260	30260	33850	37080	42840	47860	52520	58600	
48	12.57	156		25720	31500	36380	40700	44570	51440	57590	63000	70460	
52	14.75	170		30480	37360	43140	48230	52830	60960	68210	74720	83480	
56	17.10	182		35520	43660	50210	56340	61770	71040	79670	87320	97180	
60	19.63	196		40920	50200	57860	64740	70980	81840	91540	100400	112100	

**Note 1:** The tabulated airflow is in cfm based upon test conducted in accordance with applicable AMCA, ASME, and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream of the test specimen. The downstream measurements are made far enough downstream to include 'static regain'. Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.**

**Note 2:** All tabulated data based on test conducted on production silencers 12", 24", 36" and 48" in diameter. Data for other sizes were interpolated or extrapolated.

**Note 3:** Face velocities must be calculated for each diameter.

**Table III: Self-Noise Power Levels, dB re: 10-12 Watts**

IAC Model	Octave Band	1	2	3	4	5	6	7	8	
	Hz	63	125	250	500	1K	2K	4K	8K	
PNS (all sizes)	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels								
	-6000	73	71	70	72	72	72	74	73	
	-5000	69	67	66	68	68	68	69	67	
	-4000	65	62	61	63	63	64	63	59	
	-3000	59	56	55	57	57	59	55	50	
	-2000	51	48	47	48	49	51	44	36	
	-1000	37	34	33	33	35	38	26	20	
	+1000	44	37	33	32	35	31	20	20	
	+2000	56	48	45	45	47	46	38	28	
	+3000	63	54	52	53	54	55	50	43	
	+4000	68	59	57	58	59	61	58	54	
	+5000	72	63	61	62	63	66	65	62	
	+6000	75	66	64	66	66	70	70	69	

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	.75	1.5	3	6	12	20
Power Level Adjustment Factor, dB	-6	-3	0	+3	+6	+8

\* Add adjustment to Table 3 to obtain Self-Noise Power Level for actual silencer face area involved. For intermediate face areas interpolate to nearest whole decibel.

DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

**When DIL Requirements Exceed 50 dB**

- Noise flanking around the silencer or along duct silencer walls may limit actual performance to approximately 50 dB Dynamic Insertion Loss for many systems.
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# Power-Flow<sup>®</sup> Tubular Silencers

## Type: PNL

### Silencers with Forward & Reverse Flow Ratings



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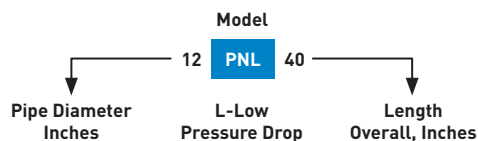
**Table I: Dynamic Insertion Loss (DIL) Ratings: Forward (+) / Reverse (-) Flow**

Power-Flow Silencer Pipe Diameter (inches)	Octave Band	1	2	3	4	5	6	7	8
	Hz	63	125	250	500	1K	2K	4K	8K
	Face Velocity, fpm	Dynamic Insertion Loss, dB							
12	-6000	3	7	11	12	19	15	9	6
	-4000	2	5	10	11	17	15	9	8
	-2000	1	3	9	11	16	15	9	9
	+2000	1	3	9	11	15	15	10	10
	+4000	1	3	8	10	14	15	10	10
	+6000	1	2	8	10	13	16	10	10
24	-6000	7	13	15	18	19	14	10	7
	-4000	5	11	14	17	18	14	10	8
	-2000	3	10	12	16	17	14	10	9
	+2000	3	9	11	15	16	14	11	10
	+4000	3	9	11	15	16	14	11	10
	+6000	2	8	10	15	15	14	11	10
36	-6000	8	13	17	19	17	12	9	5
	-4000	6	12	16	18	16	12	9	6
	-2000	4	11	14	17	15	12	9	7
	+2000	4	10	13	16	15	12	10	8
	+4000	4	10	13	16	15	13	11	8
	+6000	3	9	12	15	14	13	11	9
48	-6000	10	14	19	18	14	10	7	3
	-4000	8	13	18	17	14	10	8	4
	-2000	5	11	16	16	14	10	9	6
	+2000	5	11	15	15	14	11	9	7
	+4000	5	11	15	15	14	11	10	7
	+6000	4	10	14	15	13	11	10	8
60	-6000	12	15	20	18	11	9	6	3
	-4000	10	14	18	17	11	9	6	4
	-2000	7	13	16	16	11	9	7	5
	+2000	7	13	15	15	11	10	7	6
	+4000	7	13	15	15	11	10	8	7
	+6000	6	12	14	15	10	10	8	7

**Note:** All DIL and Self-Noise Acoustic Performance Data were obtained using a duct-to-room reverberant test facility with air flowing through the silencers. See next page for Self-Noise and Aerodynamic Data.

#### How to Designate Tubular Silencers

Example of a typical designation:



**Table II: Aerodynamic Performance Data**

Physical Data			Temp °F	Static Pressure Drop — Inches of H <sub>2</sub> O									
Pipe Diameter, in.	Silencer Face Area, sq. ft.	Length in.		60	.10	.15	.20	.25	.30	.40	.50	.60	.75
			500	.05	.08	.11	.14	.16	.22	.27	.33	.41	.54
			1000	.04	.05	.07	.09	.11	.14	.18	.21	.27	.36
12	0.785	40		1375	1685	1950	2190	2385	2750	3080	3370	3770	4380
14	1.07	46		1895	2325	2685	3000	3285	3790	4250	4650	5200	6000
16	1.40	52		2540	3115	3590	4010	4395	5080	5680	6230	6950	8020
18	1.77	58		3310	4055	4685	5230	5735	6620	7415	8110	9070	10460
20	2.18	64		4120	5045	5830	6520	7140	8240	9220	10090	11300	13040
22	2.64	72		5100	6245	7200	8060	8825	10200	11380	12490	13960	16120
24	3.14	78		6120	7500	8660	9680	10600	12240	13700	15000	16750	19360
26	3.69	84		7225	8850	10250	11460	12510	14450	16180	17700	19800	22920
28	4.28	90		8400	10250	11890	13300	14490	16800	18790	20500	23020	26600
30	4.91	98		9665	11870	13680	15300	16760	19330	21610	23740	26460	30600
32	5.59	104		11060	13550	15630	17500	19180	22120	24770	27100	30300	35000
36	7.07	118		14080	17240	19890	22240	24330	28160	31470	34480	38500	44480
40	8.73	130		17510	21480	24820	27700	30330	35020	39170	42960	48000	55400
44	10.56	144		21420	26260	30260	33850	37080	42840	47860	52520	58600	67700
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52	14.75	170		30480	37360	43140	48230	52830	60960	68210	74720	83480	96460
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**Note 1:** The tabulated airflow is in cfm based upon test conducted in accordance with applicable AMCA, ASME, and ADC Airflow Test Codes. These codes require specified lengths of straight duct both upstream and downstream of the test specimen. The downstream measurements are made far enough downstream to include 'static regain'. Therefore, if silencers are installed immediately before or after elbows, or transitions, or at the intake or discharge of the system, sufficient allowance to compensate for these factors must be included when calculating the static pressure loss through the silencer. **These conditions can add from 1/2 to several velocity heads, depending on specific conditions.**

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PNL (all sizes)	Silencer Face Velocity, fpm	Self-Noise Power Levels in Decibels							
	-6000	73	72	72	71	72	72	74	81
	-5000	70	68	68	67	68	68	68	63
	-4000	65	64	64	63	64	64	62	54
	-3000	60	59	59	58	59	58	53	43
	-2000	53	51	51	51	51	50	41	32
	-1000	40	38	38	38	38	36	20	20
	+1000	39	35	32	32	30	25	21	20
	+2000	52	48	46	46	45	42	39	26
	+3000	59	56	54	54	53	52	40	40
	+4000	65	61	60	60	59	58	57	50
	+5000	69	65	64	64	64	63	63	57
	+6000	73	69	68	68	68	68	68	64

**Table IV: Face Area Adjustment Factors\***

Silencer Face Area, sq ft	.75	1.5	3	6	12	20
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DIL, Self-Noise & Airflow Data certified in accordance with ASTM E 477

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# Making the World a Quieter Place

Markets Served by IAC Acoustics



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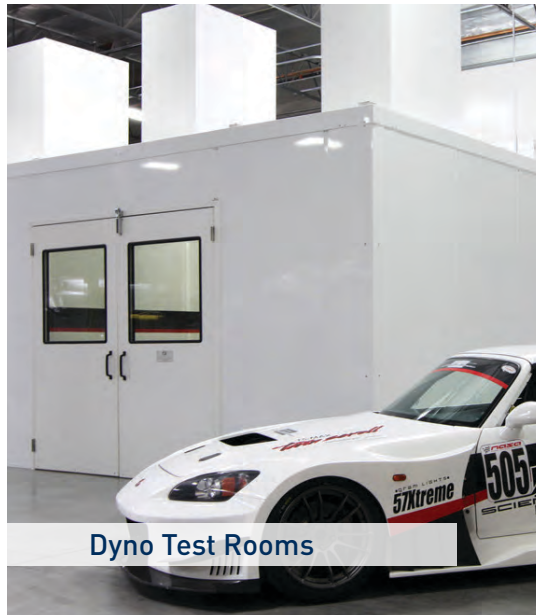
Medical & Life Sciences



Test Facilities



Industrial



Dyno Test Rooms



HVAC