



ISO 9001:2015  
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# SILENCER AND INLET FILTER



Silencer and Filter for Industrial, Ventilation and Process applications



## Efficient Silencer and Filter for Industrial, Ventilation and Process applications are an excellent combination.

Industrial fans produce noise which is one of the most predominant noise sources in an industrial plant. The magnitude and intensity of noise vary depending on fan size, power, air flow, type and number of blades, static pressure, rotational speed etc.

- Fans normally deliver a large volume of air at relatively low static pressure. The rotating action of vanes produces a broad band noise spectrum which requires to be treated for accomplishing noise control.
- Silencers and filters are used at intake and discharge of fan installations for treating air borne noise.
- The noise control is achieved by means of absorption. The acoustic energy propagating through the silencer is effectively absorbed into the fibrous absorption material and converted into heat energy.
- Silencers are designed to match the dimensions of the connecting equipment or ductwork. These silencers generally employ straight through design and have a low pressure drop as it imposes very little restriction to the flow.

Efficient offers variety of types and construction options which offers versatility and flexibility for selecting the best combination suitable to meet system requirements.



Type : Fan Inlet Silencer  
Customer : MRF Ltd.  
Weight : 1200 Kg



Type : Fan Inlet Silencer With Inlet Filter  
Customer : Sms Group Drever International  
Weight (Silencer) : 800 Kg  
Weight (Filter) : 900 Kg

## SILENCERS

Silencers are broadly classified under the following types:

- Circular Silencer
- Rectangular Silencer

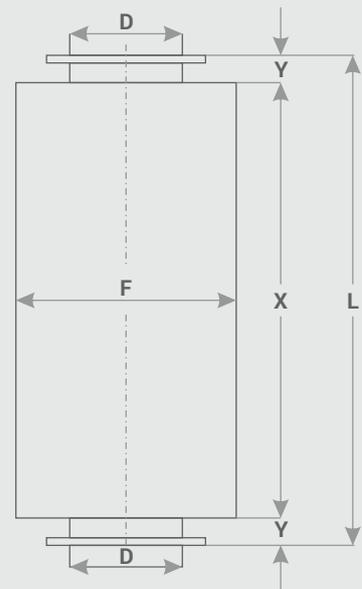
### CIRCULAR SILENCER

- The circular silencers have been designed to prevent flow losses when used for high pressures.
- The acoustic material of the circular silencers is composed of a non-combustible rigid rock wool protected from air stream with a black mineral liner. The central baffle is manufactured of the same material.
- The standard construction is heavy duty all welded carbon steel sheets and plates.
- The exterior is protected by SA 2.5 blasting, epoxy primer and topcoat by epoxy paint. The interior metal parts are treated with epoxy primer.



MODEL	PIPE SIZE D	X	Y	F	WEIGHT Kg
NW80	80	500	70	180	2.2
NW100	100	500		200	2.6
NW125	125	500		225	3.2
NW160	160	500		260	4.5
NW180	180	500		280	7.5
NW200	200	500		300	8.3
NW250	250	1000		350	10.4
NW315	315	1000		415	13.0
NW355	355	1000		455	14.7
NW400	400	1000		500	16.6
NW450	450	1000	95	550	18.8
NW500	500	1000		600	20.9
NW560	560	1000		660	23.6
NW630	630	1000		730	26.8
NW710	710	2000	115	810	42.6
NW800	800	2000		900	48.4
NW900	900	2000		1000	55.0
NW1000	1000	2000		1100	61.7

TABLE 1.1



## SILENCERS

### RECTANGULAR SILENCER

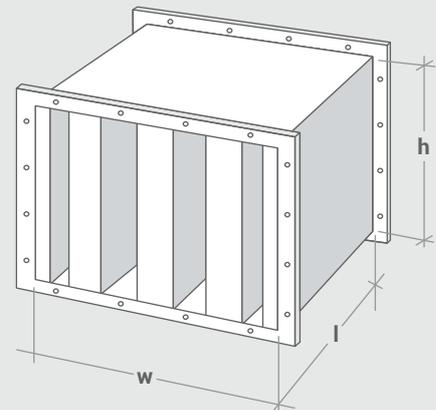
- The silencer is composed of inner baffles (number according Silencer size) and side panels designed to enhance air flow.
- The simple design, relatively low cost, and high level of Performance flexibility makes rectangular silencers a reliable and cost-effective choice.
- Wide range of design and performance options allows rectangular silencers to be easily integrated into any HVAC system.

Type : Fan Inlet Silencer  
 Application : Wind Box Exhaust Fan For 6.5MTPA Pellet Plant  
 Customer : Essar Steel Paradeep  
 Size : 7000 X 4000 X 4000mm  
 Weight : 18000kg



MODEL	LENGTH l (mm)	WIDTH w (mm)	HEIGHT h (mm)	WEIGHT Kg
EEPL600	600	600	600	30
EEPL900	900	1200	600	74
EEPL1200	1200	1800	600	146
EEPL1500	1500	1800	1200	224
EEPL1800	1800	2400	600	253
EEPL2100	2100	2400	1200	442
EEPL2400	2400	2400	1800	665

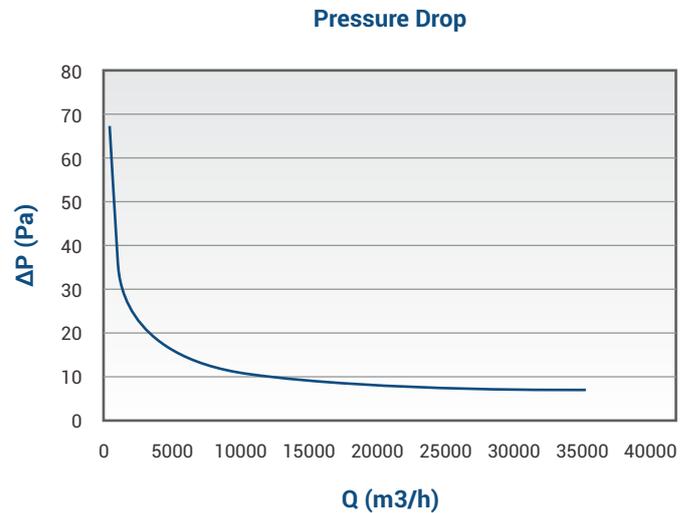
TABLE 1.2



## Pressure Drop Graph Data for Circular Silencer

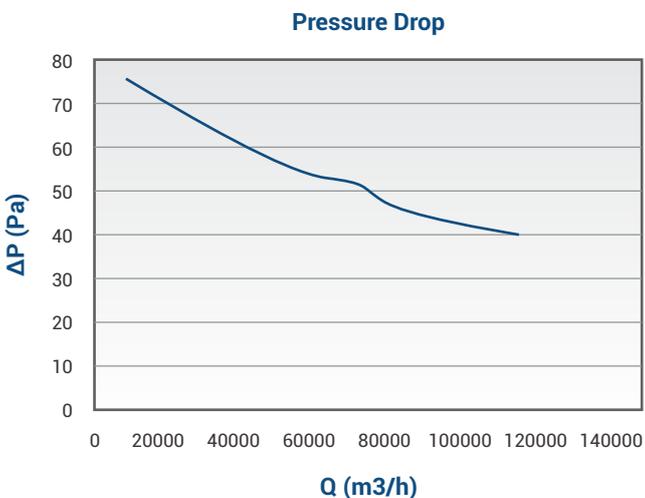
SIZE	Q min (m3/h)	Q max (m3/h)	$\Delta P$ min (Pa)	$\Delta P$ max (Pa)
80	69	206	7	67
100	109	326	6	54
125	171	513	5	43
160	282	847	4	34
180	358	1075	3	30
200	443	1330	3	28
250	696	2087	2	22
315	1108	3324	2	18
355	1409	4228	2	17
400	1792	5375	2	15
450	2270	6810	2	14
500	2805	8415	1	12
560	3521	10564	1	11
630	4460	13381	1	10
710	5669	17007	1	9
800	7202	21606	1	8
900	9120	27361	1	7
1000	11265	33794	1	7

TABLE 1.3



Pressure Drop Graph

## Pressure Drop Graph Data for Rectangular Silencer



Pressure Drop Graph

MODEL	LENGTH l (mm)	WIDTH w (mm)	HEIGHT h (mm)	AIR FLOW Q (m3/h)	PRESSURE LOSS (pa)
EEPL600	600	600	600	9720	76
EEPL900	900	1200	600	19440	72
EEPL1200	1200	1800	600	29160	68
EEPL1500	1500	1800	1200	58320	54
EEPL1800	1800	2400	600	68040	52
EEPL2100	2100	2400	1200	77760	46
EEPL2400	2400	2400	1800	116640	40

TABLE 1.4

## SILENCER SELECTION CRITERIA

The fan silencers are normally selected on the basis of maximum allowable pressure drop at rated flow and the silencing criteria. These silencers are usually sized for around 25.4 to 27.94 m/s velocity but not exceeding 38.1 m/s velocity to prevent excessive self-generated noise.

After calculating the pressure drop for the silencer size selected check the pressure drop against the maximum allowable pressure drop. If the pressure drop is too high, select the next larger size and recalculate.

### PRESSURE DROP

The calculations assume air as the flowing gas.

Input design data required:

- Air Flow Rate (Actual CMH)
- Temperature (°C)
- Pressure (Pa)
- Maximum allowable pressure drop (mmWG)
- Inlet/discharge Connection size of the fan(mm)
- Existing noise frequency spectrum (63Hz to 8KHz)

### TEMPERATURE LIMITS :

Various options for acoustical absorption materials are available with temperature limits ranging from 162°C to 537°C.

### PRESSURE RATING :

The silencers described herein are designed to a maximum operating pressure of 6.89 KPa. For applications where pressure exceeds 15 KPa, the silencers can be designed to ASME Code, Section 8, Div. 1 for pressure vessel construction. The dimensions are similar to standard models, but the material type and thicknesses are selected to meet code requirements.



## INLET FILTERS

### HDPE FILTER

**Capacity :** Efficiency : 90% - 5 microns

#### Features

TYPE	Flange
FRAME	Galvanized Iron
PRESSURE DROP	245 Pa
TEMPERATURE	70°C to Max 160°C
SEALING	Epoxy
MEDIA	HDPE / Synthetic Combination

#### Technical Parameters

MODEL	DIMENSIONS (mm)	FILTRATION AREA (sq.m.)	CAPACITY AT 63 Pa Pressure Drop (CMH)	APPROX. WEIGHT (Kgs.)
EEPLM - 1	610 X 610 X 300	10.22	3400	11.6
EEPLM - 2	508 X 508 X 300	7.5	2380	10.7
EEPLM - 3	610 X 610 X 152	5.1	1725	8.2
EEPLM - 4	508 X 508 X 152	3.7	1190	7.4
EEPLM - 5	508 X 375 X 152	2.6	885	6.8
EEPLM - 6	406 X 406 X 100	1.5	510	5.5
EEPLM - 7	504 X 245 X 95	1.2	325	4.4



### HEPA FILTER

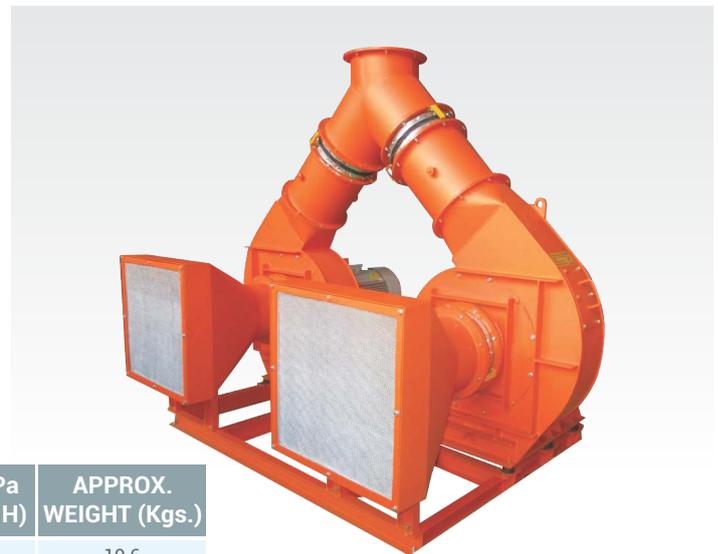
**Capacity :** Efficiency : 95% - 3 microns

#### Features

TYPE	Flange / Box Type
FRAME	Aluminum
PRESSURE DROP	135 Pa
MEDIA	Micro glass filter paper media with aluminum separator

#### Technical Parameters

MODEL	DIMENSIONS (mm)	FILTRATION AREA (sq.m.)	CAPACITY AT 63 Pa Pressure Drop (CMH)	APPROX. WEIGHT (Kgs.)
EEPLH - 1	610 X 610 X 300	10.25	14750	10.6
EEPLH - 2	508 X 508 X 300	7.5	10195	9.8
EEPLH - 3	610 X 610 X 152	5.2	7375	8.2
EEPLH - 4	508 X 508 X 152	3.75	5100	7.8
EEPLH - 5	508 X 375 X 152	2.6	3865	7.0
EEPLH - 6	610 X 610 X 50	1.75	2465	4.0
EEPLH - 7	610 X 508 X 50	1.55	2140	3.2
EEPLH - 8	508 X 508 X 50	1.25	1700	2.8
EEPLH - 9	635 X 406 X 50	1.15	1360	2.2
EEPLH - 10	406 X 406 X 50	0.76	1090	1.6

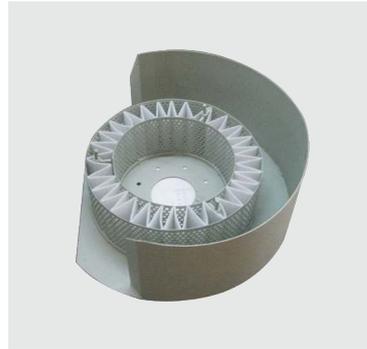
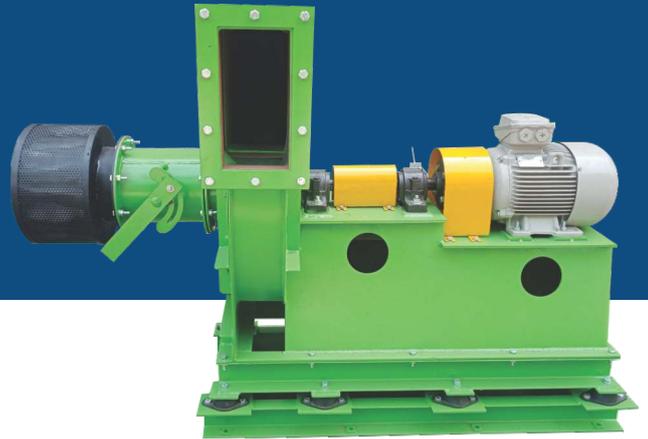


## CIRCULAR FILTER

**Capacity :** Efficiency : 97% - 3 microns

### Features

TYPE	Cartridge
MATERIAL	Synthetic Filter Media
PRESSURE DROP	420 Pa
FILTRATION MEDIUM MATERIAL	Synthetic Fiber
TEMPERATURE	47°C



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