American-Larson Ventilating Co.

324 Fourth Ave., PITTSBURGH, PA.

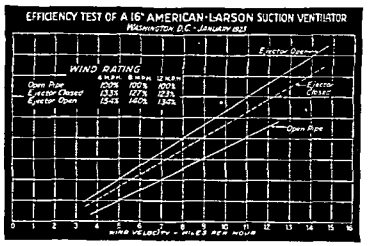
Product: American-Larson Rotary Suction Ventilators—proven, by competitive tests, to be the most efficient ventilator on the market.

Efficiency: In a recent (January, 1923) test conducted by a disinterested party, more than 50 makes of ventilators were tested over a wide range of wind velocities and temperature differences with the result that the American-Larson Ventilator was shown to have the **highest** rating.

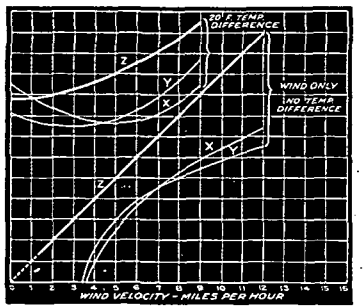
Here are the reasons:

The American-Larson Ventilator offers less resistance to the passage of air than any other ventilator, be it of the stationary or of the rotary type.

The patented ejector tube effects air movement in direct ratio to wind velocities and temperature differences. Most ventilators do not function at all in wind only (no temperature difference) velocities below 3½ miles per hour; furthermore, under temperature differences as great as 20 deg. fahr., the efficiency of these ventilators actually decreases in gentle breeze up to 4 or 5 miles per hour velocity.



Further proof of the efficiency of American-Larson Ventilators is furnished by a comparative test conducted by Professor Trinks of the Carnegie Institute of Technology of Pittsburgh, in 1921. The results are shown below:



X = 18" Stationary Siphon Ventilator.
Y = 18" Rotary Siphon Ventilator.
Z = 18" American-Larson Suction Ventilator.

The official report of the Institute says, in part: "The comparison shows that the American-Larson is far superior to both types at all wind velocities. At very low velocities of wind, it still ventilates while the other types do not move any air. Similarly, the American-Larson Ventilator utilizes wind to increase the effect of temperature differences, while in the other types a gentle breeze actually diminished the ventilating effect."

Number and Size of Ventilators Required

The air supply per person and per hour, or the number of reversals of air contents per hour may be taken from the following table:

Type of Room to be Ventilated	Number of Renewals of Air Contents per Hour
Workshops and barracks	2 to 3
Offices	4
Schools	5 to 8
Hospitals	5 to 8
Churches, theatres	5 to 8
Dining rooms	5 to 10
Kitchens	8 to 12
Toilet and bathrooms	8 to 12
Foundries	10 to 12
Pickling rooms	15 to 20
Tanneries, paint rooms	10 to 12
Restaurants	5 to 6

To obtain effective, uniform ventilation and avoid local drafts, ventilators should be placed not more than 30 ft. apart; 20 ft. is a good average. It is best to locate them at the ridge unless the building exceeds 40 ft. in width, when two rows of smaller ventilators may be used. Where the building is surrounded by higher buildings, it is desirable to extend ventilators above them by mounting on stacks.

Example Showing Method of Calculation—In a building 100 ft. long, 35 ft. wide and 28 ft. average height the air is to be renewed 5 times per hour. How many and what size ventilators are required?

With a spacing of ventilators 20 ft. apart and 10 ft. from the ends, in one row along the ridge, 5 ventilators are required.

$$\frac{(100 \times 35 \times 28 \text{ ft.}) \times 5 \text{ changes hr.}}{5 \text{ ventilators}} = 98{,}000 \text{ cu. ft.}$$

per hour to be exhausted by each ventilator. From the table of capacities of American-Larson ventilators under average wind and temperature conditions, the nearest size is 24-in. size.

Requirements: Five 24-in. ventilators.

For specified conditions of height, temperature and wind, the capacity of the American-Larson ventilator is:

$$Q = A\left[\frac{36\sqrt{H\,(t^1-t^0)}}{6+V} + 20 \times V\right]$$

where Q is cu. ft. of air exhausted per hour, through a ventilator having the throat area of A sq. in., mounted on a roof at a height of H ft. from the center of the ventilator outlet to the floor, and with a wind velocity of V miles per hour, and average temperatures t^1 inside, and t^0 outside the building.

The above is based on sufficient area of openings in the sides of the building for inlet of fresh air.

Suggested Form of Specification

(1) All ventilators shall be American-Larson Suction Ventilators, as manufactured by the AMERICAN-LARSON VENTILATING COMPANY, of Pittsburgh, Pa., and shall [shall not] be equipped with dampers.

(2) The ventilators shall be made of *(see Note 1)* and shall be of the following gauges:

Below 18-in. diam., No. 24 gauge; 20 to 24-in. diam., No. 22 gauge; 30 to 48-in. diam., No. 20 gauge; 54-in. diam., No. 18 gauge.

(3) Where so indicated the ventilators shall be mounted on extension piping of sufficient height to raise ventilators above surrounding obstruction.

(4) The ventilators shall be erected plumb and in a substantial manner. Where extension pipes are used they shall be anchored to four points with heavy gauge guy wires.

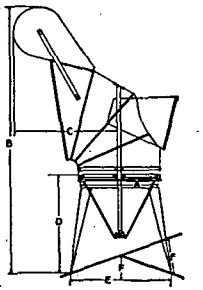
(5) Ventilators for——shall be equipped with fusible links to close dampers automatically in case of fire.

Note 1:

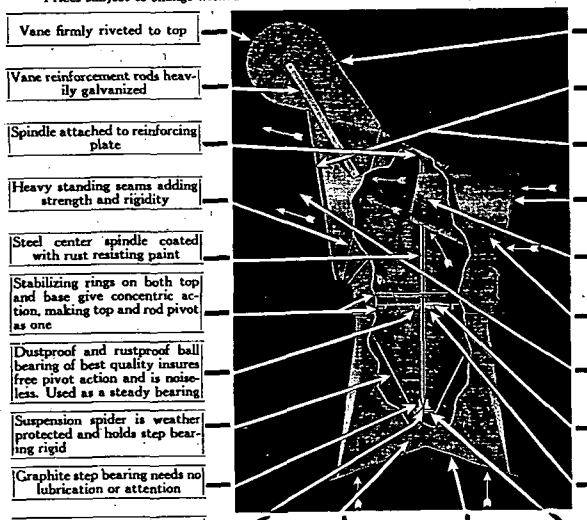
Material of Ventilator	Uses of Ventilator
Galvanized iron	1. All purposes for which no acid or corrosive fumes pass; standard practice.
Copper	2. All purposes for which long life is desired, provided that no strong acid or alkaline fumes pass.
Choice of metal	3. For ventilating buildings or rooms from which acid or other corrosive fumes rise.
Monel metal	4. Same as No. 3; has longer life, but is more expensive.
Zinc	5. Similar to copper, but a little cheaper.

Dimensions, Gauges, Weights, Prices and Capacities

Size (throat diam.), in.	B in.	C in.	D in.	E in.	Iron gauge No.	List price, damper	List price, ventilators only	Net weight, lb.	Crated weight lb.	Average conservative discharge 5 miles velocity
8	27	10	10	10	24	$1.50	$20.00	12	26	11,550 cu. ft. per hr.
10	34	13	12	12	24	2.15	20.00	18	35	17.820 " "
12	41	16	13	13	24	2.90	30.00	26	46	24,800 " "
14	48	18	17	17	24	3.30	35.00	32	57	34,980 " "
16	55	21	20	20	24	3.80	40.00	39	70	46,200 " "
18	62	24	21	21	24	4.30	45.00	49	85	58,410 " "
20	69	26	25	25	22	4.80	50.00	68	115	71,940 " "
24	83	32	30	30	22	5.80	60.00	92	145	103,620 " "
30	104	40	38	38	20	7.15	75.00	146	206	161,700 " "
36	125	48	46	46	20	9.30	110.00	225	325	232,890 " "
40	139	53	51	51	20	11.50	140.00	282	412	287,760 " "
48	167	64	61	61	20	17.00	170.00	390	560	412,500 " "
54	187	72	63	63	18	20.00	220.00	620	820	524,700 " "
60	208	80	76	76	18	25.00	300.00	790	1025	646,800 " "
66	229	88	84	84	18	35.00	375.00	930	1215	782,100 " "



Prices subject to change without notice. Discounts furnished on request.



Vane firmly riveted to top

Vane reinforcement rods heavily galvanized

Spindle attached to reinforcing plate

Heavy standing seams adding strength and rigidity

Steel center spindle coated with rust resisting paint

Stabilizing rings on both top and base give concentric action, making top and rod pivot as one

Dustproof and rustproof ball bearing of best quality insures free pivot action and is noiseless. Used as a steady bearing

Suspension spider is weather protected and holds step bearing rigid

Graphite step bearing needs no lubrication or attention

Hard steel pivot point

Base made to specifications but not included in price

Flashing flange cut to proper pitch

Vane keeps ejector presented to outside air currents, prevents back-draft and makes ventilator stormproof and dustproof

Unrestricted area permitting easy discharge minim. friction

Mouth weather protected offering unrestricted area for exhaust

Ejector tube an exclusive patented feature. The air currents passing through create a suction that makes this the most efficient ventilator

Direction of outside air current through the ejector

Axis of ejector in line with exhaust which is always upward

Counterweight which gives ventilator perfect balance

Line of exhaust upwards offering low resistance to upward draft

Easily rotating design of spindle and ball bearing and made of best materials

Design of working parts increases maximum efficiency

Noiseless pivoting—is foolproof and requires no attention

AMERICAN-LARSON SUCTION VENTILATOR (Patented)

5939 S. E.—2/2—17.5