

E. H. Sheldon Equipment Company

Muskegon, Michigan

SHELDON INDUCTION FUME HOODS

Manufacturers of Laboratory Equipment for Schools, Industry, and Hospitals.

SHELDON'S *induction* hoods are designed for use in air-conditioned laboratories or in any situation where it is necessary to conserve room air.

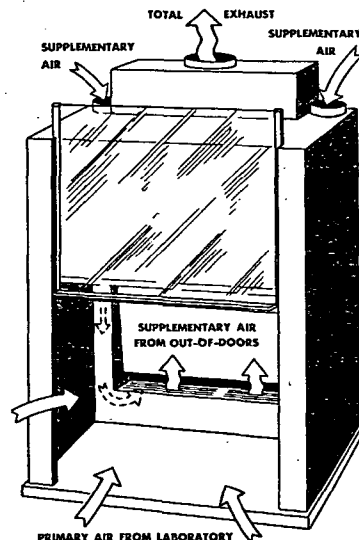
By injecting regulated volumes of "out-door" air into the working areas of the hood to supplement the primary airflow from the laboratory, the following controlled conditions may be achieved:

1. Sufficient volume of air passes through the working areas of the hood at the face velocity required to insure complete evacuation of fumes from the system. The exhaust system of the Sheldon induction-type hood handles the same *volume* of air that the exhaust system of the conventional hood handles at a face velocity of 70-80 linear feet per minute.

2. At the same time, air movement from the room into the hood has a low enough velocity to minimize turbulence within the hood and assure quiet operation, and to prevent objectionable drafts in the work area, and excessive drain on the heating, cooling, and air-conditioning systems of the room. The difference between the exhaust volume and the volume of intake from the room is provided by adjusting the supplementary-air supply.

3. Sufficient volume of air flows into the hood from the room to carry generated fumes into the fast-moving, high-volume evacuation air currents, and also to insure optimum laboratory air changes.

If air movement from adjacent parts of the building to the laboratory is desired, a condition of negative pressure in the laboratory may be induced by lowering the supply-fan capacity or increasing the exhaust-fan capacity. Also, even if the front sash is closed, the hood will purge of fumes because a definite part of the exhaust capacity is still being supplied



mechanically and passes through the hood.

Except for minimum filter requirements, provided for in the hood design, supplementary air seldom needs to be treated, since it does not enter the room.

The following table gives the velocity, velocity pressure and total entrance loss for both exhaust and supply for various lengths of hoods with duct sizes as shown in diagrams below. These values are for volumes as shown. These values are based on exhaust fan capacity capable of producing a face velocity of 75 lfm with only the exhaust fan operating and with a supply fan capable of introducing $\frac{2}{3}$ the exhaust capacity and producing a face velocity of 25 lfm with both fans operating.

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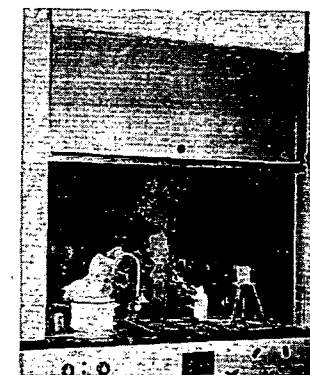
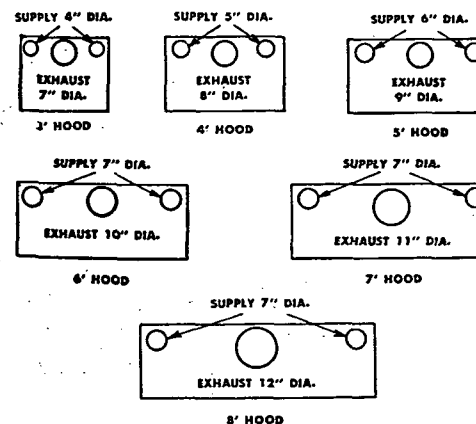
EXHAUST @ 75 L.F.M. face Vel.					SUPPLY @ $\frac{2}{3}$ of exhaust			
Hood Length	cfm	Vel	V P	Entrance Loss	cfm	Vel	V P	Entrance Loss
3'	487	1800	0.20	0.30	324	1900	0.23	0.34
4'	690	2000	0.25	0.37	460	1800	0.20	0.30
5'	900	2000	0.25	0.37	600	1650	0.17	0.25
6'	1087	1900	0.23	0.42	724	1400	0.13	0.20
7'	1275	2000	0.25	0.44	850	1600	0.16	0.24
8'	1500	2000	0.25	0.44	1000	1800	0.20	0.30

* Total negative static developed by the hood.

The conversion factor to obtain entrance loss from velocity pressure is 1.5 for 3 ft, 4 ft and 5 ft hoods, and 1.75 for 6 ft, 7 ft and 8 ft hoods.

** Total positive static developed by the hood.

The conversion factor for all hoods for the supply air static is 1.5. These statics should be added to the duct resistances when computing fan sizes.



5' Hood operating under the above conditions.

The duct stubs are located on the top of the hoods as shown. The supply air can enter from below when building conditions require such arrangement. The values given in the table for various lengths of hood are for average conditions.

Consultation is solicited without obligation on other or unusual conditions. Since the hoods use a definite volume of "conditioned" air, their requirements should be considered very early in the

work of designing and specifying heating and/or conditioning plants.

Sheldon engineers welcome new problems arising out of recent production and development programs. A laboratory at Muskegon is maintained for this purpose. A list of satisfied users of a wide variety of industrial installations is available upon request.

Contact the Muskegon office for the field engineer nearest you.