



## Standard Operating Procedure Optirat® Plus Static Pressure Requirements Conclusion

### Objective

This analysis measured the static pressure necessary to ventilate the Animal Care Systems Optirat Plus rack at recommended flow rates.

### Construction

Two Valterra clear-view adapters were modified as apparatuses for this analysis. They are rigid 5-inch-long sections of the exhaust hose. One was equipped with a hot-wire probe anemometer, and the other was equipped with a high-sensitivity differential pressure sensor. These modified adapters were attached between the exhaust ports on the top of the Optirat Plus rack and the exhaust hoses. Refer to the full test report for details about the apparatuses and other equipment used in this analysis.

### Procedure

A portable, variable-speed air handler was equipped with a Y duct and equipment to connect two standard Animal Care Systems exhaust hoses. Animal Care Systems exhaust dampers also were equipped at the Y duct and used to balance and equalize the hoses' flow rates. The hoses were connected through the sensor-equipped adapters and then to the rack.

The air handler was dialed to its minimum rate. Flow and pressure data was then collected at this setting as well as six intermediate settings, with a final data point taken at the maximum speed setting.

The data was analyzed statistically to determine average pressure and uncertainty at each discrete flow rate.

### Data

All airflow values refer to flow rate per exhaust hose and are expressed in cubic feet per minute; double the values to get total airflow. All pressure values are expressed in inches of water.

<b>Optirat Plus Pressure Results</b>								
Airspeed, ft/min (m/s)	380 (1.93)	470 (2.38)	580 (2.94)	750 (3.81)	870 (4.42)	950 (4.82)	1000 (5.08)	1020 (5.18)
Airflow, CFM (L/min)	15.2 (430)	18.8 (532)	23.2 (657)	30 (849)	34.8 (985)	38 (1076)	40 (1132)	40.8 (1155)
Average Pressure (In. H <sub>2</sub> O)	-0.02330	-0.03155	-0.04836	-0.07377	-0.09615	-0.11495	-0.13190	-0.14071
Standard Deviation	0.00220	0.00233	0.00315	0.00418	0.00518	0.00627	0.00748	0.00768

