



**Notes:**

1. Dotted lines on fan inlet indicate an inlet bell and one equivalent duct diameter which may be used for inlet duct simulation. The duct friction shall not be considered.
2. Dotted lines on fan outlet indicate a uniform duct 2 to 3 equivalent diameters long and of an area within  $\pm 1\%$  of the fan outlet area and a shape to fit the fan outlet. This may be used to simulate an outlet duct. The outlet duct friction shall not be considered.
3. The fan may be tested without outlet duct in which case it shall be mounted on the end of the chamber.
4. Variable exhaust system may be an auxiliary fan or a throttling device.
5. The distance from the exit face of the largest nozzle to the downstream settling means shall be a minimum of 2.5 throat diameters of the largest nozzle.
6. Dimension  $J$  shall be at least 1.0 times the fan equivalent discharge diameter for fans with axis of rotation perpendicular to the discharge flow and at least 2.0 times the fan equivalent discharge diameter for fans with axis of rotation parallel to the discharge flow. **Warning!** A small dimension  $J$  may make it difficult to meet the criteria given in Annex A. By making dimension  $J$  at least  $0.35M$  this condition is improved, as well as meeting the criteria given in section 5.3.1 for any fan.
7. Temperature  $t_{d2}$  may be considered equal to  $t_{d5}$ .
8. For the purpose of calculating the density at Plane 5 only,  $P_{s5}$  may be considered equal to  $P_{s7}$ .

**FLOW AND PRESSURE FORMULAE**

$$*Q_5 = \sqrt{2Y} \sqrt{\frac{\Delta P}{\rho_5}} \Sigma(CA_6)$$

$$*P_{v2} = \left( \frac{V_2}{\sqrt{2}} \right)^2 \rho_2$$

$$P_{t2} = P_{s7} + P_v$$

$$Q = Q_5 \left( \frac{\rho_5}{\rho} \right)$$

$$P_v = P_{v2}$$

$$P_t = P_{t2} - P_{t1}$$

$$V_2 = \left( \frac{Q}{A_2} \right) \left( \frac{\rho}{\rho_2} \right)$$

$$P_{t1} = 0$$

$$P_s = P_t - P_v$$

\*The formulae given above are the same in both the SI and the I-P systems except for  $Q_5$  and  $P_{v2}$ ; in the I-P version, the constant  $\sqrt{2}$  is replaced with the value 1097.8.

**Figure 12 - Outlet chamber Setup - Multiple Nozzles In Chamber**