

OrangeDot Face Shield Version 3B Airflow, 29.09.2020

Fan Manufacturers' Specifications

- A= axial fan, B=centrifugal fan
- A= 0.06m³/min claimed airflow= 60 litres/min
- B= 4 CF/min claimed airflow= 113 litres/min (CF= cubic feet)
- Total airflow volume claimed by manufacturers= 60 + 113 = **173 litres/min**

Testing Undertaken To Check Airflow

- A's air outlet= 3cm circle diameter outlet= radius of 1.5cm. Area = $A = \pi r^2 = 7.065\text{cm}^2 = 0.0007065\text{m}^2$
Air velocity at A = V = at A's outlet measured by anemometer= 300m/min
Airflow = V x A = 0.21195 m²/min = 212 litres/min approximately
- B's air outlet = 1.5 x 2 cm rectangle outlet. Area = A = 1.5 x 2 = 3cm² = 0.0003m²
Air velocity at B = V = at B's outlet measured by anemometer = 100m/min
Airflow = V x A = 0.03 m²/min = 30 litres/min
- Total airflow volume output from both fans into facepiece= 212 + 30 = **242 litres/min**
- **Recommended minimum airflow in a PAPR = 170 litres/min**
- Airflow in centrifugal fans can be checked using a flow meter. Please see the device safety check protocol before use. Visual confirmation of the polystyrene ball reaching the safe level indicates adequate airflow from this fan.



Visual airflow meter



Anemometer- measures air velocity