

## Why check if air inlets are opened correctly for minimum ventilation?

- Correct air inlet management is a crucial aspect of minimum ventilation.
- During minimum ventilation air inlets must be opened the right amount to ensure correct airflow into the house to ventilate the birds effectively.
- Evenly and correctly opened air inlets will create:
  - Correct direction of airflow for bird comfort and effective ventilation.
  - Even distribution of airflow throughout the house.



## Procedure for checking if air inlet openings are correct for minimum ventilation

Before determining whether or not air inlet openings are correct it is important to know that the pressure within the house is correct and that the house is adequately sealed (see *How To... Measure House Air Tightness*).

Ideally, to ensure that air is being warmed adequately the best time to test if air inlets are opened correctly is when the difference between outside and inside temperature is at its greatest (for example, during brooding when air temperature inside the house is at its hottest).

Determining if air inlets are opened correctly for minimum ventilation should be completed once per flock or if there are concerns about the ventilation in the house (e.g if litter quality deteriorates, condensation forms, or bird behavior changes).

**Step 1** Calculate approximate required house pressure to achieve correct air speed.

**Example calculation:**

GUIDELINE: For every decrease in pressure of approximately 3 - 4 Pa (0.012 - 0.016 inches of water column) incoming air will be thrown approximately 1 m (3.3 ft) into the house.

So for a 12 m (40 ft) wide house the operating pressure to pull air into the **center** of the house from either side should be approximately:

$3 - 4 \text{ Pa (0.012 - 0.016 inches of water column)} \times 6 \text{ m (20 ft)} = 18 - 24 \text{ Pa (0.072 - 0.096 inches of water column)}$ .



Step 1

**Step 2** Turn on 1 or 2 minimum ventilation (91 cm / 36 in) fans or the desired number of fans used for minimum ventilation settings in the house.



Step 2

**Step 3** Open air inlets until calculated estimated pressure is achieved (**step 1** above). Be aware that it is unlikely all inlets will need to be opened. The opened inlets should be evenly distributed around the house and all inlets being used should be opened by the same amount. If installed, air direction plates should be adjusted to ensure air is directed up toward the apex of the roof.



Step 3

**Step 4** Complete a smoke test to determine if the air flow is correct. As long as all air inlets are opened an equal amount the smoke test can be completed on any inlet. Hold the smoke bomb approximately 5 - 10 cm (2 - 4 in) below or away from the inlet or curtain opening to allow sufficient volume of smoke to be emitted so direction of flow can be seen clearly.



Step 4

## Interpreting results



1.

Smoke heads up to the peak of the roof before circling back down to the floor.

**No Action Required:**

Air inlets open correctly, cold air will not fall onto the birds.



2.

Smoke goes along the roof line and down the opposite side of the house.

**ACTION REQUIRED:**

Air pressure is too high and air speed into the house is too fast. Either open air inlets more or reduce fan speed. Once adjustments have been made redo a smoke test and continue to adjust (inlets or fans) until situation 1 is reached. The correct combination of air inlet opening and fan capacity is essential for good ventilation.



3.

Smoke falls directly to the floor.

**ACTION REQUIRED:**

Air pressure is too low and air speed into the house is too slow, indicating that the air inlets are open too much or that fan speed is too low. Ventilation will be inadequate and risk of wet litter is increased. Either close air inlets more or increase fan speed and check that air direction plates (where installed) are in the correct orientation. Once adjustments have been made redo a smoke test and continue to adjust (inlets or fans) until situation 1 is reached.

**Note**

*Final ventilation settings should be determined by bird behavior. If bird behavior indicates that ventilation is not correct (e.g. birds are huddling, or congregating in one particular area) ventilation settings may need to be altered. After alterations to ventilation settings have been made leave the house for 15 - 20 mins and re-assess bird behavior making further alterations if required.*