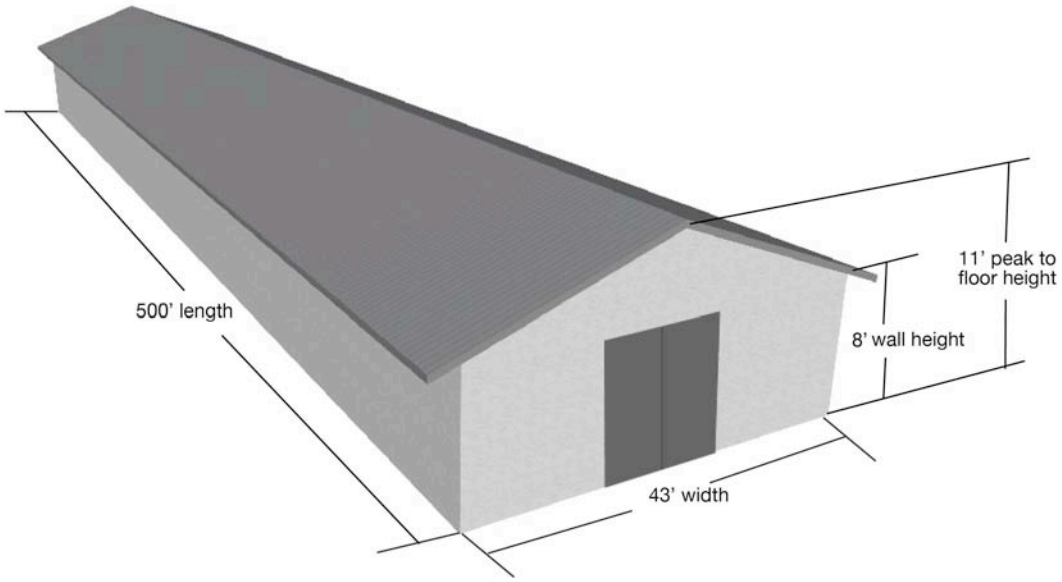
Double L Group, Ltd. TJP Inlets –
Number and Placement of Inlets with Minimum Ventilation Fans on Sidewalls

Poultry customers worldwide use TJP wall inlets to ventilate poultry houses with minimal expense. TJP wall inlets are patented, gravity, counterweighted inlets that will open automatically with static pressure caused by ventilation fans.

Some of our customers ask us about the number of fans and inlets they will need to properly ventilate their poultry houses. Here, we will cover the basic information you will need to know. We will help you to calculate overall house size as well as how to determine how many fans and inlets you will need for minimum and transition ventilation.

Size of House

To get things started, let's calculate the size of your poultry house.



We need to calculate the *average* ceiling height. To do this, we will take the wall height (8 feet tall) and add it to the height of the ceiling at its peak (11 feet tall). Then, we will divide by 2.

Average Ceiling Height = (8' + 11') ÷ 2 = 9.5'

That gives us 9.5 feet as our average ceiling height.

To get the cubic volume of the house, we multiply the house length (500 feet) by the house width (43 feet) by the house average ceiling height (9.5 feet).

500 feet length x 43 feet width x 9.5 feet average height = 204,250 cubic feet.

The cubic volume of the house in this example is 204,250 cubic feet.

Minimum Ventilation

Now that we have the cubic volume of the house, let's discuss how to calculate the number of fans and TJP inlets needed during minimum ventilation.

First, we need to determine the number of fans needed at actual working pressure.

First Stage

Fan volume that equals one air exchange every 8 minutes during the first stage of minimum ventilation (to run on a cycle timer and temperature override).

To determine number of fans needed, take the cubic volume of house and divide by 8 (air exchange rate every 8 minutes).

cubic volume of house ÷ air exchange rate
204,250' ÷ 8 = 25,532 cubic feet minute

Then divide by the amount of air one fan can displace. A 36" fan can displace 10,200 cfm. Always round up or down to the nearest whole number.

36" fan = approx. 10,200 cfm (check your fan for accurate performance cfm)

cubic ft/min ÷ approx. fan capacity = quantity of fans needed
25,532 cfm ÷ approx. 10,200 cfm = 2.5 (3 fans)

You need 3 fans for this house for the first stage of minimum ventilation to run on a cycle timer and temperature override. The timer only has to run 20% of the time as long as air quality is acceptable.

Maximum of Minimum

For the maximum of minimum ventilation, you will need fan volume that equals one air exchange every 5 minutes.

To determine number of fans needed, take cubic volume of house and divide by 5.

Cubic volume of house ÷ air exchange rate
204,250' ÷ 5 = 40,850 cfm

Then divide by the amount of air one minimum fan can displace in cubic feet per minute. A 36" fan equals approximately 10,200 cfm. Always round up or down to the nearest whole number.

36" fan = approx 10,200 cfm
(check your fan for accurate performance cfm)

cubic ft / min ÷ approx. fan capacity = qty of fans needed
40,850 cfm ÷ approx. 10,200 cfm = 4.0049 (4 fans)

To determine the number of inlets needed, take the number of fans and multiply by air displaced by 1 minimum fan in cfm.

Qty of fans x approx. fan capacity
4 fans x 10,200 cfm = 40,800 cfm

Then, divide by inlet volume in cfm. Allow 900 cfm per inlet.

Cubic ft/min ÷ inlet volume = quantity of inlets needed
40,800 cfm ÷ 900 cfm = 45 inlets

You need to spec inlets 25% higher to prevent inlets from ever reaching 100% of capacity.

Qty of inlets x 125% = quantity of inlets needed
45 inlets x 125% = 56 inlets

For minimum ventilation these will be wider weighted inlets. In this example, you need 4 fans and 56 inlets for this house for maximum of minimum ventilation.

Transition ventilation

Let's talk about using TJP inlets with transition ventilation. During transition ventilation, fan volume that equals one air exchange every 3 minutes.

To determine number of fans needed, take the cubic volume of the house and divide by 3. Then, divide by how much air one summer fan can displace in cubic feet per minute. Always round up or down to nearest whole number.

Cubic Volume = 204,250 cubic feet
36" Summer Fan = 21,500 cfm
Fan volume that equals one air exchange every 3 minutes

cubic ft / min ÷ approx. fan capacity
204,250' ÷ 3 = 68,083 cfm

cubic volume of house ÷ air exchange rate
68,083 cfm ÷ 21,500 cfm = 3.1666 fans (round down to 3 fans)

To determine number of inlets needed, take the number of fans and multiply by the amount of air displaced by 1 summer fan in cfm. Then, divide by inlet cfm. Allow 900 cfm per inlet.

3 (qty of fans) x 21,500 (approx. summer fan cfm) = 64,500 cfm

64,500 cfm ÷ 900 cfm = 71.66 inlets (round up to 72 inlets)

You need to spec inlets 25% higher. This is to prevent inlets from ever reaching 100% of capacity.

72 inlets x 125% = 90 Inlets

To determine the number of heavier inlets needed, take the total number of inlets needed minus minimum ventilation inlets.

Qty of inlets needed – minimum ventilation inlets = heavier inlets needed
90 weighted inlets – 56 minimum inlets = 34 heavier inlets

In this example, you need 3 summer fans, 56 lighter-weighted inlets, and 34 heavier-weighted inlets for this house for transition ventilation.

Inlets

You have three choices of TJP inlets: the TJP1255 (lighter-weighted), the TJP1265 (heavier-weighted), and the TJP1275 (heaviest-weighted).

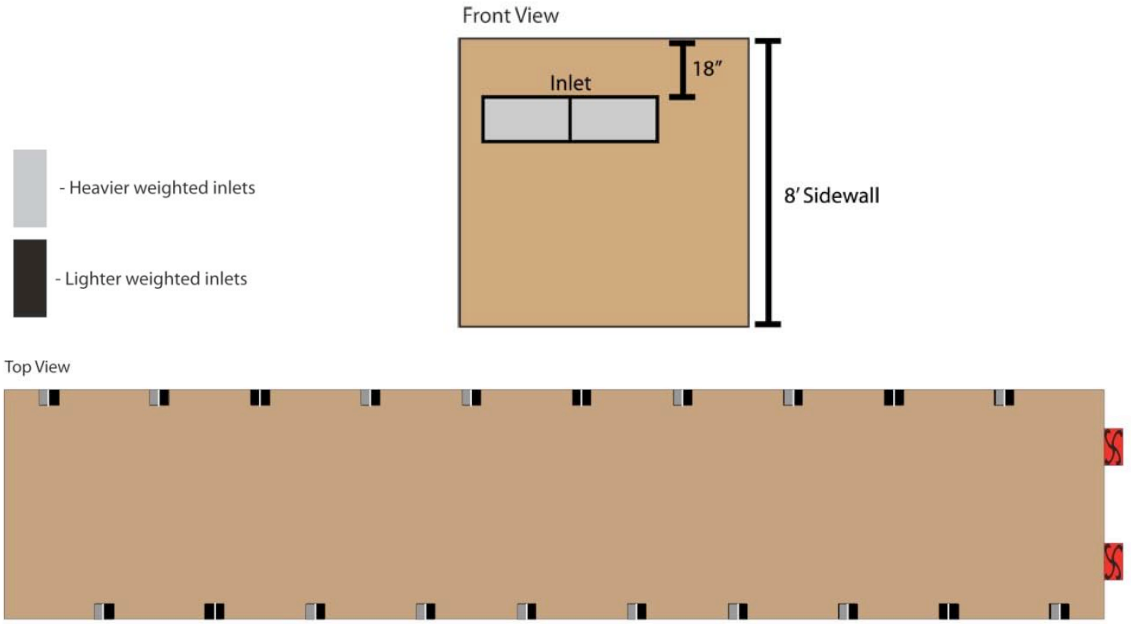
The heavier the rod, the greater the static pressure (SP) needed to pull TJP Inlets open.

In houses up to 43 feet (or 13 meters) wide use a combination of TJP1255 (lighter-weighted) & TJP1265 (heavier-weighted).

In houses wider than 43 feet or 13 meters use a combination of TJP1265 (heavier-weighted) & TJP1275 (heaviest-weighted).

Placement

When possible always install inlets down 18 inches (or 46 cm) from top of sidewall. If minimum fans are on the sidewall, the lighter-weighted inlets are on the opposite wall from fans. If there is not enough opening, place the remainder on the fan side.



Options in installing TJP Inlets

TJP inlets are designed to give you the option of snapping two inlets together and installing a double inlet into one location. If you install double inlets, you only need to install half the number of openings. For example, if you calculate that you need to install 34 inlets into a poultry house, you only need 17 openings. Keep in mind that double inlets will need a larger opening during installation.

Features of the TJP inlets

- When minimum fans are on, the lighter-weighted inlets open to allow fresh air into the poultry house.
- When transition fans turn on, the lighter and heavier-weighted inlets open to allow fresh air in the poultry house.
- When the house goes into tunnel ventilation, the static pressure will drop and the TJP wall inlets will close.

Light Trap Inlet Options

Double L Group offers light trap inlet options that will fit your needs. Let us help you find what you need for your poultry houses.

We want to help you find what would work best for your needs. Give us a call (563-875-6257) or email us (info@DoubleL.com) with your questions and we will be happy to help!