

Double L Group, Ltd. TJP Inlets – Number & Placement of Inlets Using Summer Fans with Minimum Ventilation on Endwalls

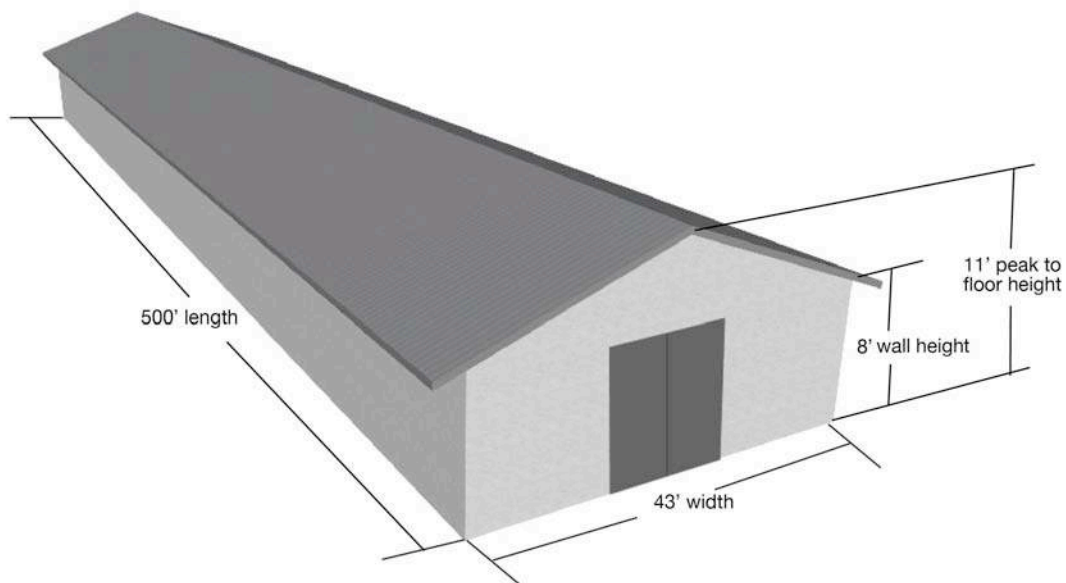
Poultry customers worldwide use TJP wall inlets to ventilate poultry houses with minimal expense. TJP wall inlets are patented, gravity, counterweighted inlets that will open automatically with static pressure caused by ventilation fans.

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.

Example 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.

$$\text{Average Ceiling Height} = (8' + 11') \div 2 = 9.5'$$

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).

$$\text{cubic volume of house} = 500'L \times 43'W \times 9.5'H = 204,250 \text{ cubic feet.}$$

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).

$$\text{Cubic volume of house} \div \text{air exchange rate} \\ 204,250' \div 8 = 25,532 \text{ cfm}$$

Then divide by the amount of air one summer fan can displace. In this example, a 48" – 52" summer fan can displace approx 21,500 cfm. Always round up or down to the nearest whole number.

$$48'' - 52'' \text{ summer fan} = \text{approx. } 21,500 \text{ cfm (check fan for accurate performance)}$$

$$\text{cubic ft/min} \div \text{approx. fan capacity} = \text{quantity of fans needed} \\ 25,532 \text{ cfm} \div \text{approx. } 21,500 \text{ cfm} = 1.187 \text{ (1 Fan)}$$

For this example, you will need 1 summer fan for this house to run on a cycle timer and temperature override. The fan 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 air exchange rate of 5.

$$\text{Cubic volume of house} \div \text{air exchange rate} \\ 204,250' \div 5 = 40,850 \text{ cfm}$$

Then divide by the amount of air one minimum fan can displace in cubic feet per minute. Always round up or down to the nearest whole number.

$$\text{cubic ft / min} \div \text{approx. fan capacity} = \text{qty of fans needed} \\ 40,850 \text{ cfm} \div \text{approx. } 10,200 \text{ cfm} = 1.9 \text{ (2 fans)}$$

To determine the number of inlets needed, take the number of fans (2 fans) and multiply by amount of air 1 summer fan can displace in cfm.

$$48'' - 52'' \text{ summer fan} = \text{approx. } 21,500 \text{ cfm} \\ \text{(check your fan for accurate performance cfm)}$$

$$\text{Qty of fans} \times \text{approx. fan capacity} \\ 2 \text{ fans} \times 21,500 \text{ cfm} = 43,000 \text{ cfm}$$

Then, divide 43,000 cfm by inlet volume of 900 cfm.

$$\text{Inlet volume} = 900 \text{ cfm per inlet} \\ \text{Cubic ft/min} \div \text{inlet volume} = \text{quantity of inlets needed} \\ 43,000 \text{ cfm} \div 900 \text{ cfm} = 48 \text{ inlets}$$

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
48 inlets x 125% = 60 total lighter weighted inlets needed for minimum ventilation

In this example, you need 2 summer fans and 60 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. Summer fan equals 21,500 cfm

Fan volume that equals one air exchange every 3 minutes

48" – 52" Summer Fan = approx 21,500 cfm
(check your fan for accurate performance cfm)

cubic volume of house ÷ air exchange rate of 3
204,250 ÷ 3 = 68,083

cubic ft/min ÷ approx fan capacity = quantity of fans needed
68,083 cfm ÷ 21,500 cfm = 3.1666 (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.

3 (quantity of fans) x 21,500 (approx. Summer Fan cfm capacity) = 64,500 cfm

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

Cubic ft/min ÷ inlet cfm = quantity of inlets needed
64,500 cfm ÷ 900 cfm = 71.66 inlets (round up to 72 inlets)

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

Quantity of inlets x 125% = quantity of inlets need
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 total inlets – 60 minimum inlets = 30 heavier inlets

This means you will need 60 of the lighter inlets and 30 of the heavier inlets for a total of 90 inlets evenly spaced on both sides of the house and evenly mixed from side to side. These inlets can be installed in 45 locations if desired.

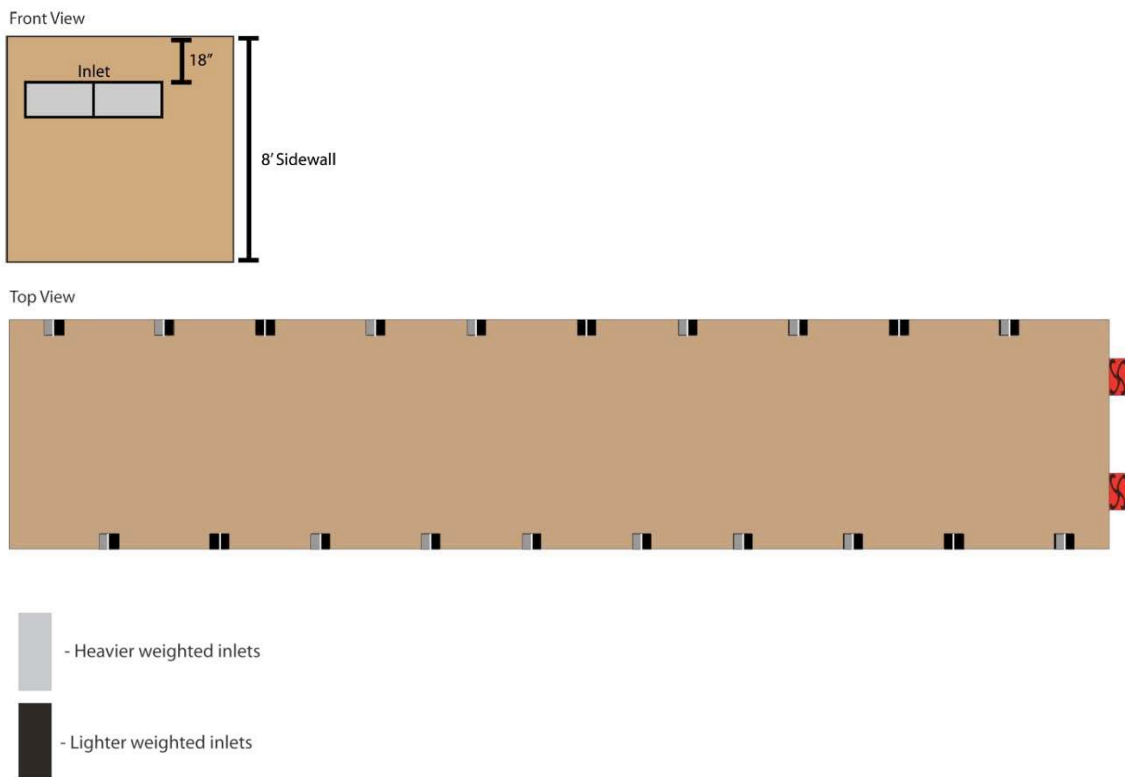
Inlets

You have three choices of TJP inlets: the TJP1255 (lighter-weighted) that opens at 0.055 SP, the TJP1265 (heavier-weighted) that opens at 0.065 SP, and the TJP1275 (heaviest-weighted) that opens at .075 SP.

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. With fans on endwalls of the house, both lighter and heavier-weighted inlets will be evenly spaced on both sides of the house.



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 lighted 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 into 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.



TJP1355LT, TJP1365LT, TJP1375LT TopJet Air Inlets

TJP1355LT Part #90750
TJP1365LT Part #90751

Model TJP1355LT opens at .055 SP
Model TJP1365LT opens at .065 SP
Model TJP1375LT opens at .075 SP



TJP2655LT, TJP2665LT, TJP2675LT TopJet Air Inlets

TJP2655LT Part #90735
TJP2665LT Part #90738

Model TJP2655LT opens at .055 SP
Model TJP2665LT opens at .065 SP
Model TJP2675LT opens at .075 SP

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!