Big Dutchman®

Fresh air supply systems

Optimum fresh air supply for every poultry house

Fresh air supply systems: the right solution for every type of poultry house!

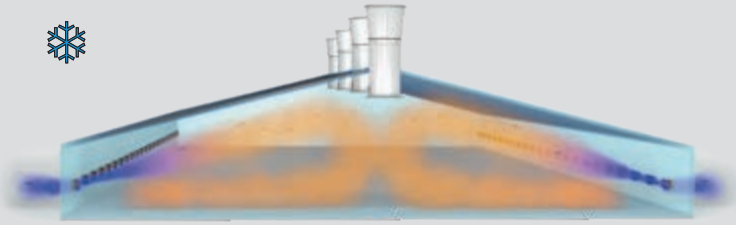
Big Dutchman offers a wide range of fresh air supply systems to ensure optimal provision of fresh air. Depending on the building conditions and the specific requirements of your birds, you can select from a variety of fresh air supply systems that can be used for negative or balanced pressure systems, side or CombiTunnel ventilation:

- fresh air inlets for installation into the wall or ceiling
- fresh air chimneys for negative and balanced pressure ventilation
- large air inlets for tunnel ventilation

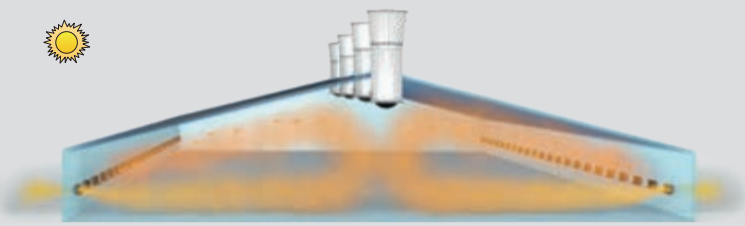
Let the Big Dutchman experts advise you with a detailed consultation to design the ventilation system that best suits your poultry house.

FRESH AIR INLETS FOR INSTALLATION INTO THE WALL OR CEILING

Wall and ceiling inlets are well-suited for non-centralised fresh air supply in poultry houses. Whether the inlet is designed to be embedded in the wall, used as a flange inlet for walls made of sandwich panels or installed in the ceiling, Big Dutchman can provide the ideal solution for every application. The objective is to create optimal air circulation inside the building at all times, delivering a consistent internal environment that meets the birds' requirements and does not fluctuate when external temperatures rise or fall.



When outside temperatures are low, the fresh air flows along the ceiling, where it warms up before it slowly enters the bird area.



When outside temperatures are high, the inlets are fully opened and the birds directly benefit from the fresh air.

The new CL-3-1200 and CL-3-1911/F series

For uniform fresh air supply in the entire poultry house

CL-3-1220 fresh air inlet for installation into the wall

CL-3-1211/F Anti-Freeze flange inlet with optimal frame insulation for temperatures below -25 °C

CL-3-1211 F orange flange inlet

CL-3-1211 F black flange inlet

Big Dutchman's well-proven fresh air inlets are made from a shock-proof, recyclable, non-deformable and UV-stabilised plastic material. The insulated inlet flap is kept closed by stainless steel springs, thus sealing the building and making it airtight. The inlet flap opens through downward pull. This allows very precise regulation of the inlet opening in response to climatic temperature changes. The corresponding control set opens the fresh air inlets either all at once or individually. With the patented advanced inlet control (AIC), a single action at each inlet pre-defines which inlets open first and which open later. If the number of open inlets is reduced, particularly during the colder months of the year or while heating is necessary, the remaining inlets can be opened further, so maintaining a more stable air flow.

CL-3-1911/F orange flange inlet with high air flow rate

CL-3-1911/F black flange inlet with high air flow rate

Air flow rate with inlet fully open (in m³/h)

Type	CL-3-1220	CL-3-1224	CL-3-1229	CL-3-1233	CL-3-1211/F	with light trap*	CL-3-1911/F
-10 Pa	1 200	1 250	1 280	1 350	1 000	990	1 750
-20 Pa	1 700	1 750	1 800	1 940	1 450	1 420	2 500
-30 Pa	2 050	2 120	2 170	2 300	1 700	1 680	3 050
-40 Pa	2 400	2 490	2 550	2 700	2 000	2 000	3 550

* When using the light trap, all wall inlets of the CL-3-1200 series have the same reduced air flow rate.

Typical broiler house in Northern Europe with fresh air supply through CL-3-1911/F flange inlets

Aviary house with CombiTunnel ventilation, equipped with CL-3-1911/F flange inlets and MVT shutters

ADVANTAGES

- ✔ ideal supply of fresh air with negative pressure ventilation;
- ✔ advanced inlet control creates stable air jets, especially with minimum ventilation;
- ✔ strong tension springs close the insulated and non-deformable inlet flap (integrated profile made from aluminium) so the building is airtight;
- ✔ the inlet opening is controlled precisely by strong tension springs: stable air circulation throughout the house, uniform temperatures in the entire house while heating requirements remain low;
- ✔ the use of high-quality materials ensures a long service life of the inlets;
- ✔ very versatile application;
- ✔ a high-pressure washer can be used without any concern.

- ✔ The best series of fresh air inlets with the best accessories!
- ✔ Practically maintenance-free!
- ✔ A service life of 20 years or more is not unusual!

CL Flex

The flange inlet for very large poultry houses

CL Flex is available in different widths, allowing the realisation of different air flow rates.
Using a counterweight of one kilogram, the inlet opens when the flap is lowered, i.e. no longer pulled close. The inlet's optimised geometry and the lateral guide plates create stable air jets and deliver good air circulation in the entire room. During development, special attention was paid to achieving a reliable seal when the inlet is closed. The inlet flap has exceptional aerodynamic properties with a tear-off edge and integrated air guide at the frame, which enables greater air flow stability.
The inlet's size is flexible so it can easily be adjusted to many different building requirements.

Air flow rate with inlet fully open (in m³/h)

Type	CL 2400 Flex	CL 3000 Flex	CL 3400 Flex	CL 3800 Flex
-10 Pa	2400	3000	3400	3800
-20 Pa	3350	4200	4800	5350
-30 Pa	4150	5250	5950	6650
-40 Pa	4800	6050	6900	7700

AviMax transit: fresh air supply through the CL Flex flange inlet

ADVANTAGES

- ✔ ideal supply of fresh air with negative pressure ventilation;
- ✔ available in four different sizes to suit various building requirements;
- ✔ the inlet is pulled closed to control the opening: stable air circulation throughout the house, uniform temperatures in the entire house;
- ✔ an air deflector ensures perfect air flow towards the ceiling;
- ✔ a manual advanced inlet control set closes individual inlets;
- ✔ the use of high-quality materials ensures a long service life of the inlets;
- ✔ a high-pressure washer can be used without any concern.

Aviary house with NATURA Step: fresh air supply through the CL Flex flange inlet

The ideal accessories for Big Dutchman wall inlets

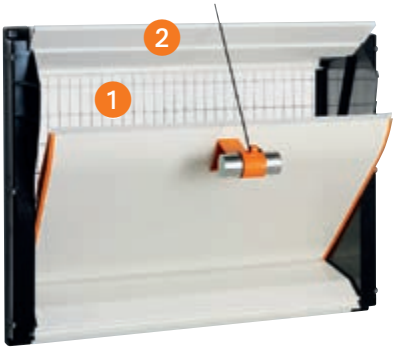
Useful, effective and sometimes indispensable!

1 Protective grille against birds

This pest guard prevents birds and small animals from entering the building through the inlet.
For the CL-3-1200 series, Big Dutchman offers a self-supporting plastic grille that is available with two different mesh sizes. The grille is attached to the outside of the inlet by a simple locking mechanism.
For CL Flex inlets, the guard is made of galfan-coated wire mesh, which attaches easily to the outside of the inlet.

2 Air deflector

With the air deflector (also available for the CL-3-1200 and CL-3-1900 series), the direction of the air flow can be adjusted individually for each building, simply by changing the angle between deflector and wall. This enables the precise distribution of fresh air. The deflector also reduces the angle at which fresh air enters the building, thus preventing cool air from dropping directly onto the birds. The air deflector is easy to mount at the upper edge of the inlet. Big Dutchman offers a short version along with a 15 cm long version for ceilings that are not smooth.



3 Intake nozzle with protective grille against birds for CL-3-1911/F

This nozzle significantly reduces the turbulence when the air flows into the inlet, thus ensuring more stable air jets, even with a small inlet opening. When the inlet is opened fully, air flow rates will increase by approx. 20 per cent! This means that either the number of wall inlets to be installed can be reduced, or the maximum negative pressure is lowered, thus increasing the fans' efficiency. The nozzle can be used up to a wall thickness of 10 cm and can be retrofitted.

In poultry houses, fresh air inlets should be protected against wind and light. If installing a continuous wind/light plate in front of the inlets is not possible or not requested, Big Dutchman can provide the following accessories:

4 Anti-wind cap

The anti-wind/anti-weather cap is recommended for houses without eaves. The cap is a reliable protection against the weather.
If specific lighting programs are used, natural light needs to be blocked out entirely or partially for certain periods during the day, depending on the management type.

5 Light trap

When used in combination with the anti-wind cap, the light trap reduces the incidence of natural light entering the poultry house, hardly compromising air flow. To facilitate cleaning, the air trap is easy to remove.

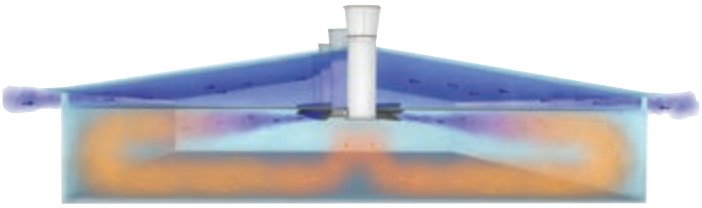
6 Light trap for CL-3-1200 series

This light trap can be fitted to wall-mounted CL-3-1200 series inlets and is suitable for both breeder and rearing houses. It fully reduces the incidence of light ("dark-out").

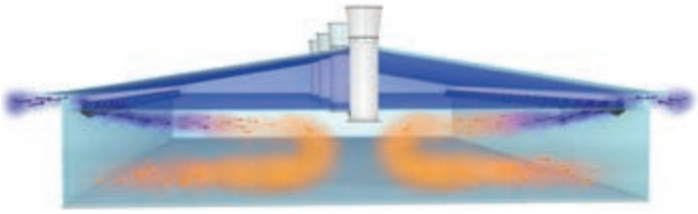
CL 1540

Fresh air inlet for installation in a ceiling below a roof space

The CL 1540 ceiling inlet is made from a recyclable, shock-proof, non-deformable and UV-stabilised plastic material. Where possible, it should be installed into a ceiling that has been insulated. Even with a ceiling inclination of up to 15 degrees, CL 1540 will seal securely, due to the strong, corrosion-resistant steel springs that keep the insulated inlet flap firmly closed. Fresh air enters the house through the roof space. The roof itself should also be insulated to prevent heat building up during warm weather conditions. The inlet flap opens through downward pull, which controls the amount of air moving into the building. The air always flows along the ceiling (which should be as barrier-free as possible), whether the inlet is fully opened or only slightly. With the corresponding control set, the ceiling inlets are either opened all at once or individually.
For laying aviaries, the inlets are often installed in the centre of the house, where most of the heat is located.



Installation in the ceiling in the centre of the house for increased air flow near the outer walls



Installation in the ceiling near the side walls

One of the main characteristics of the CL 1540 inlet is the inlet flap, which is shaped like a large shovel. This unique selling point ensures that even when the inlet flap is completely open, the air flows along the ceiling, where it mixes with the warm house air.

CL 1540 multi-purpose ceiling inlet

Air flow rate with inlet fully open (in m³/h)

Type	CL 1540	
-10 Pa	1 250	1 450*
-20 Pa	1 750	2 100*
-30 Pa	2 100	2 550*
-40 Pa	2 400	2 850*

* with intake funnel, code no. 60-40-1323

ADVANTAGES

- ✔ ideal supply of fresh air from the roof space with negative pressure ventilation;
- ✔ very versatile;
- ✔ advanced inlet control creates stable air jets, especially with minimum ventilation;
- ✔ strong tension springs close the insulated inlet flap so the building is absolutely airtight;
- ✔ the inlet opening is controlled precisely by tension springs: stable air circulation throughout the house, uniform temperatures while heating requirements remain low;
- ✔ fresh air remains at ceiling height for longer: a lower negative pressure is sufficient to ventilate the house efficiently;
- ✔ the use of high-quality materials ensures a long service life of the inlets;
- ✔ operation is virtually maintenance-free;
- ✔ a high-pressure washer can be used without any concern.

Use of the CL 1540 ceiling inlet in the ceiling of a broiler house

Balanced pressure inlet CL 1200-Balance

For installation in the walls of smaller, narrow houses for free range egg production

This special fresh air unit consists of a standard CL 1200 wall inlet, a cowl and a small fan. It is mainly used in houses in which a constant negative pressure ventilation cannot be guaranteed, generally smaller buildings for free range egg production where using fresh air chimneys would not be practical. The large pop holes used in these houses make it impossible to create a consistent air circulation. The fresh air is therefore pushed into the house by a fan, i.e. the ventilation system works with balanced pressure. Usually, every third wall inlet is a CL 1200-Balance inlet.

Cowl with W1G200 fan

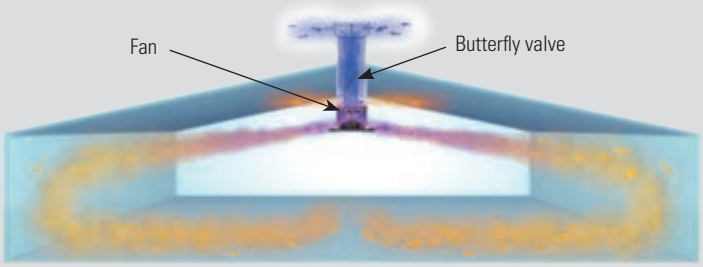
Side view with CL 1200

FRESH AIR CHIMNEYS FOR NEGATIVE AND BALANCED PRESSURE VENTILATION

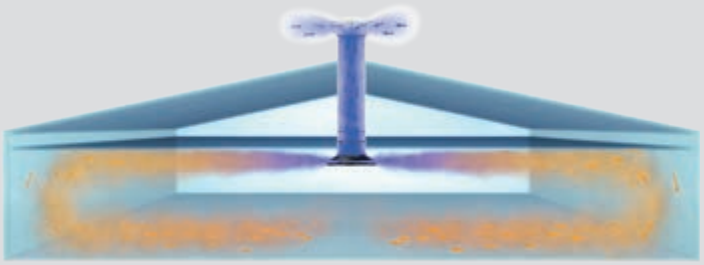
Fresh air chimneys draw fresh air from the roof and distribute it evenly throughout the house. They are particularly useful when:

- ✔ the fresh air should flow from the centre to the side wall;
- ✔ fresh air supply via the side walls is not possible due to structural conditions, or not requested;
- ✔ the building is extremely wide and low and cannot achieve good air circulation from wall inlets alone;
- ✔ balanced or positive pressure ventilation is to be used, e.g. for free range egg production.

Both fresh air chimneys offered by Big Dutchman, Fumus and F.A.C., come with a stable pipe system that is GRP-coated on both the inside and the outside. The pipes are also well insulated with 30 mm of polyurethane. This makes cleaning easier and guarantees durability and a long service life. Both chimneys are available with central and individual control. For individual control, the actuator is installed directly in the chimney. Central control requires a single actuator plus cables and tension rods. The two fresh air chimneys can each be equipped with an optional wire mesh guard to ensure that birds and airborne debris cannot enter the house.



Use of Fumus with mixed air for a constant warm breeze



Use of F.A.C. with low ceiling heights

Fumus 3

The fresh air chimney for fresh air, mixed air and recirculated air

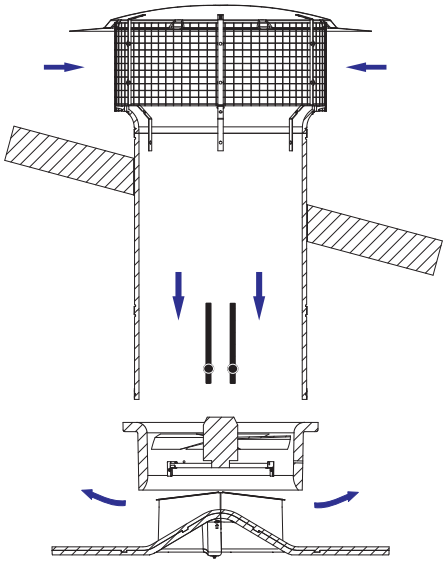
Fumus 3 is equipped with a fan in the lower part of the chimney as standard. This fan pushes the fresh air drawn in by the chimney through the fresh air distributor and into the building. The butterfly valve above the fan regulates the amount of fresh air entering the house. The position of the valve controls how much fresh and recirculated air is drawn into the building. The mix can be anywhere between 100 per cent fresh air and 100 per cent recirculated air. With this control system, a designated amount of fresh air is mixed with the house air, as it is drawn in through the 10 cm wide opening at the chimney. This means that the house can be adequately ventilated using fresh air, a mixture of fresh and recirculated air, or just recirculated air. For minimum ventilation (during the cold seasons or while heating is necessary), Fumus 3 works with balanced pressure or slightly positive pressure. It is available in two diameters: 730 mm and 920 mm.
The spreader disc at the lower end of Fumus 3 is equipped with two deflectors, which let the incoming air flow into the house as required, thus expanding the throwing range.
In addition to the standard K-version, Big Dutchman can also offer Fumus 3-S, a chimney with cables, which is better suited to poultry houses with high ceilings. The cables allow the fan housing and spreader disc to be lowered, which makes cleaning easier.

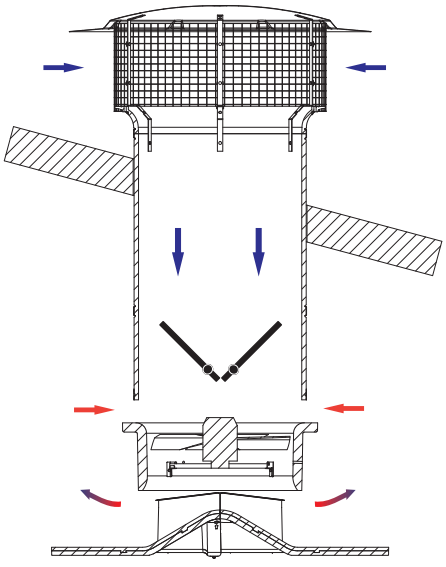
Fumus 3: K-version with hinge (standard)

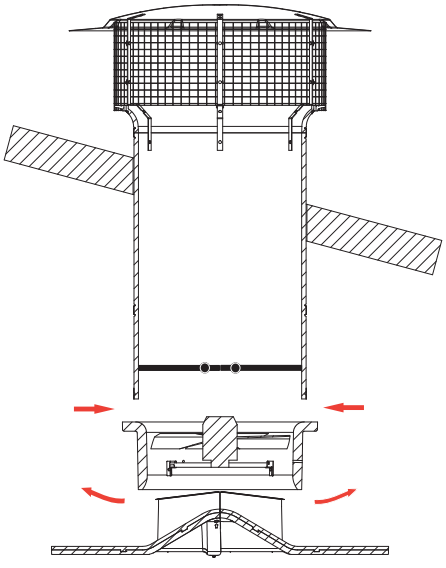
Fresh air
When the butterfly valve is fully open, the fan draws in 100 per cent fresh air and distributes it into the house.

Mixed air
When the butterfly valve is partially open or partially closed, the fan sucks in fresh air together with air from the inside of the house. This pre-heated air is then pushed into the house.

Recirculated air
When the butterfly valve is closed, the fan continuously circulates the air inside the house, using the fresh air distributor.

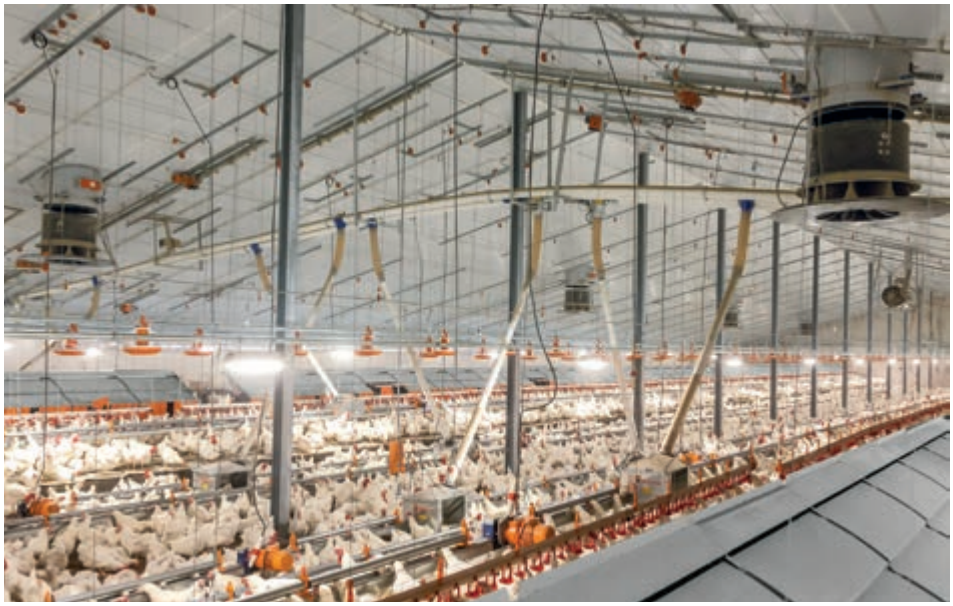






Air flow rate with chimney fully open and different negative pressure values (in m³/h)

Diameter mm	Fan	Power watts	Share of fresh air at 0 Pa neg. pressure (m³/h)	Share of fresh air at 20 Pa neg. pressure (m³/h)	Share of fresh air at 40 Pa neg. pressure (m³/h)
730	FN 036-6DT rev.	630	6 476	8 610	10 606
920	FF 080-6DT rev.	760	11 078	14 511	17 612



Use of Fumus in a broiler breeder house

ADVANTAGES

- ✔ good ventilation of the house due to the large throwing range, ideal to dry the litter;
- ✔ the mixed air creates a constant warm breeze;
- ✔ perfect for cold weather because the air flow always guarantees an ideal throwing range, irrespective of the ventilation level (mixed air);
- ✔ the fan ensures constant air movement: the CL 74 actuator controls the position of the butterfly valve and creates fresh air, mixed air or recirculated air as required (recommendation: individual control).

F.A.C.

Fresh air chimney for fresh air supply from the roof

F.A.C. supplies fresh air from the roof with a high air flow rate. The fresh air distributor at the lower end of the chimney ensures that the incoming air is distributed evenly inside the house. This creates a stable air flow even with minimum ventilation.
F.A.C. can also be equipped with a fan as an option. This fan pushes the fresh air drawn in by the chimney through the fresh air distributor and into the house to create a balanced pressure system. Such a system is recommended when no negative pressure can be created due to constantly open pop holes.
F.A.C. is available in four different diameters of 650 mm, 730 mm, 820 mm and 920 mm.

Air flow rate with chimney fully open (in m³/h)

Neg. pressure / dia	650 mm	730 mm	820 mm	920 mm
-10 Pa	4 900	6 100	6 700	9 500
-20 Pa	7 000	8 900	11 000	13 700
-30 Pa	8 600	11 000	13 500	16 900
-40 Pa	10 000	12 700	16 000	19 500

Use of F.A.C. in an aviary house for layers

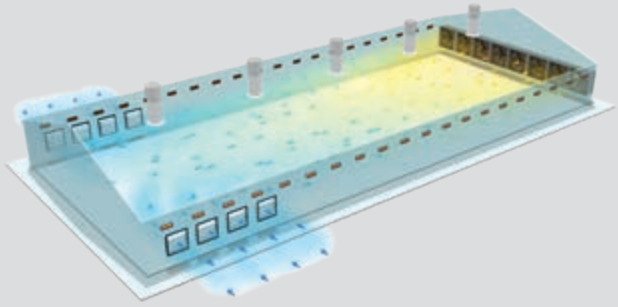
ADVANTAGES

- ✔ supply of fresh air from the roof into the centre of the house for optimal mixing with the warm air in the house;
- ✔ ideally suited for flat houses;
- ✔ excellent value for money.

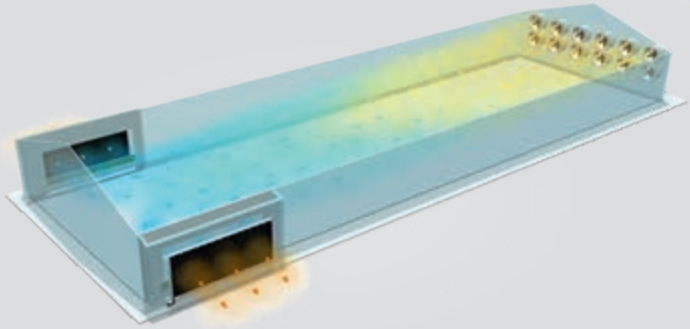
LARGE AIR INLETS FOR TUNNEL VENTILATION

Using a tunnel or CombiTunnel ventilation system requires large air inlets near the gable ends at each side of the house, or directly in the gable. The inlets allow the fresh air to enter the house over a large surface, displacing the stale air without mixing with it.

Constant and high air speeds at bird level (aim: 2 m/s to 3 m/s) reduce the temperature perceived by the birds (windchill factor).



Fresh air supply over a large surface with the MultiVent inlet



Roller curtain reliably closing a tunnel opening, here in connection with RainMaker

MultiVent 10 M and 17 M, and SOB 50

Inlets for fresh air supply over a large surface

The MultiVent inlets are characterised by a very high air flow rate. They can be used as air inlets for tunnel ventilation or for additional summer ventilation. Air flow and air direction can be controlled easily. During colder periods, the inlet flaps close reliably. The flaps are insulated so temperature losses are minimised. MultiVent and SOB 50 have the advantage of being very flexible. They use Big Dutchman actuators CL 175 and EWA, which enable good control over the volume of incoming air.

Depending on the required dark-out strength, Big Dutchman can offer two different light traps: LameliaBrown (light reduction factor of 6 000 : 1) and LameliaBlack (light reduction factor of 7 100 000 : 1). The light trap segments are made from plastic, extremely durable and easy to clean.

MultiVent 17 M in the gable wall for tunnel ventilation

SOB 50: galvanised, motor-driven shutter

LameliaBrown light trap

Air flow rate with inlet fully open (in m³/h)

Type	MultiVent M10	MultiVent M17	SOB 50
-10 Pa	9 530	19 450	17 000
-20 Pa	13 480	27 300	24 300
-30 Pa	16 520	34 250	29 300
-40 Pa	19 170	39 550	33 800

The air flow rate is reduced by approx. 10 per cent when the light trap is used.

Tunnel door with rack and pinion drive (TD-L)

For large tunnel openings: robust, well-insulated and airtight

The Big Dutchman tunnel door TD-L consists of either 40 mm or 50 mm thick composite boards with a robust plastic coating. The frame and the rack and pinion are made from corrosion-resistant aluminium. The EWA actuator allows the infinitely variable opening and closing of the tunnel doors to enable the precise distribution of air. A flexible lip seal ensures tight closing with very little force. Total door lengths of up to 40 m are possible. TD-L is available with heights of 750 mm, 1000 mm, 1200 mm and 1500 mm and can be installed in brick walls or sandwich panels. The maximum opening angle (towards the inside or the outside) is 60 degrees.

Broiler house with tunnel door, opening into the building

EWA rack and pinion drive

Roller curtain

Efficient, cost-effective closing system

Roller curtains are a good option to make the building airtight when the tunnel openings are closed. They fit closely to the tunnel opening because of the negative pressure in the house. As roller curtains are not insulated, they are best suited to warmer regions or as a closure option during colder winter months on free range poultry buildings. Rodents cannot get into the roller curtain because of the winding system, so the curtain remains clean. Big Dutchman offers two winding systems:

1 Opening from the top

This system is recommended for tunnels that should not open fully from the start. The cooler fresh air will enter the house at the top first, without reaching the birds. A specifically designed telescopic coupling with compensation mechanism ensures no stress is placed on the curtain. Re-adjustments are not necessary.

2 Opening from the bottom

With this system, the roller tube is not loaded with weight, but instead relies on a motorised winch to wind the curtain open and closed, also preserving the fabric. Winding systems that open from the bottom are available with a fixed drive or a climbing drive, which means a long telescopic tube is not required, even when very high curtains are used.

Roller curtain opening from the top

Roller curtain in a doghouse with RainMaker

Roller curtain opening from the bottom

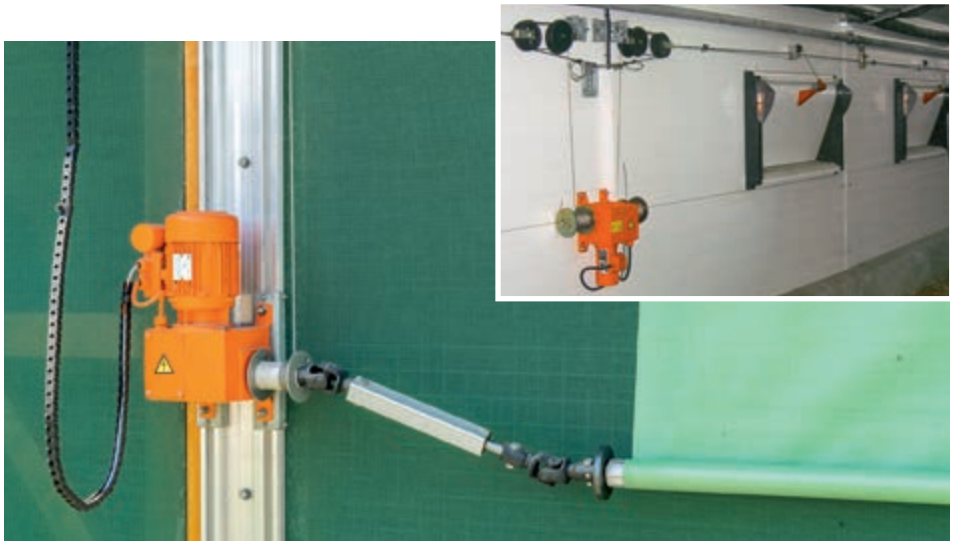
Actuators

Automatic opening and closing of any fresh air inlet

Actuators of a high quality are absolutely necessary for reliable fresh air distribution. They control the flap position of any fresh air inlets, whether these are wall or ceiling inlets, fresh air chimneys, tunnel doors or roller curtains. Essential requirements such as functional reliability and robustness are delivered by the CL 175 and EWA actuators offered by Big Dutchman.

CL 175: the linear motor with a tractive force of up to 6000 N

- ✔ regulates the flap position of wall and ceiling inlets;
- ✔ compact design, robust and maintenance-free;
- ✔ variable travel range between 60 mm and 600 mm;
- ✔ available for 24 V DC and all alternating current (AC) networks;
- ✔ electronic position feedback for highest operational reliability;
- ✔ buttons for manual operation directly on the motor;
- ✔ protection rating IP 65;
- ✔ easy installation without winding of the cable;
- ✔ speed: 1.2 mm/s.



EWA: the winch motor that meets the highest standards

- ✔ controls wall and ceiling inlets, tunnel doors and curtain systems;
- ✔ robust winch, compact form;
- ✔ available for 24 V DC and all AC networks as well as for 3-phase;
- ✔ high speed, perfect for pulse-pause applications;
- ✔ emergency operation possible with cordless screwdriver (without emergency opening);
- ✔ automatic operation even after manual emergency operation for high operational reliability;
- ✔ 10-year guarantee for EWA winches with electronic limit switch.

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