



Big Dutchman®



Exhaust air chimneys

for efficient and optimised air extraction

Exhaust air chimneys – the right solution for every type of barn!

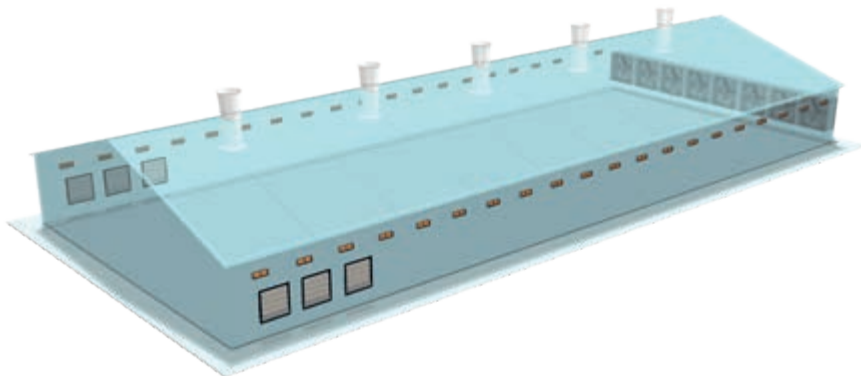
Big Dutchman offers an extensive product line of exhaust air chimneys and corresponding chimney fans to ensure that exhaust air extraction is ideally aligned with the animals' needs. Thanks to the flow-optimised chimneys, the fan's air performance improves while power consumption is reduced. The fans with sickle-shaped blades used in the

chimneys are of a very high quality. The blades are made of aluminium in a moulded die-casting process and are therefore absolutely winter-proof and resistant to corrosion. Due to their aerodynamic shape, they save more energy, are more resistant to pressure and produce less noise than traditional fans. The following chimneys and exhaust air principles

can be used:

- CL 600 and CL 820 exhaust air chimneys
- wall chimneys
- MultiStep®, Dynamic MultiStep and DynamicAir control principles
- BD exhaust air chimneys VC
- centralised exhaust air extraction

What are the advantages of exhaust air chimneys?



- ✓ clear separation of fresh air and exhaust air for better hygiene;
- ✓ multiple small, decentralised extraction points for a more uniform air distribution throughout the barn;
- ✓ significantly reduced influence of the wind;
- ✓ emergency opening by means of thermics in case of power failures;
- ✓ temperature-controlled emergency opening with motor-driven dampers.

CL 600 and CL 820 – the originals for climate pros Versatile exhaust air chimneys with a unique design

The exhaust air chimneys of our CL series have been in use for more than 25 years. They have proven their worth hundreds of thousands of times and come with the following exceptional characteristics:

- ✓ aerodynamic design for efficient air extraction;
- ✓ made of polypropylene and with a smooth, dirt-repellent surface for high stability;
- ✓ insensitive to sunlight and frost and therefore very durable;
- ✓ easy to clean with a high-pressure cleaner;
- ✓ labyrinth seal installed between roof duct and roof sheet for watertightness;
- ✓ no additional sealing material required;
- ✓ the self-supporting design means that

supplementary suspension or bracing is unnecessary;

- ✓ roof sheet and external ducts are made of GRP to allow for adjustments on site;
- ✓ the roof sheet is supplied according to roof slope and profile, side or ridge installation, height above roof and colour of the roof;
- ✓ easy to assemble and to dismantle;
- ✓ the CL 74 actuator closes the chimney securely or reduces the volume flow exactly as required for minimum ventilation.



CL 820 exhaust air chimney



- ❶ Diffusor → increases the air extraction performance (Venturi effect)
- ❷ Rain run-off
- ❸ Roof duct → connects the cone and the roof sheet
- ❹ Labyrinth seal → prevents water from entering through the roof
- ❺ Built-in chimney fan → saves power, is resistant to pressure, produces little noise
- ❻ Roof sheet → is available with different profiles
- ❼ Exhaust air pipe → can be extended
- ❽ Butterfly valve → closes off the chimney and reduces the air flow in a speed-controlled system
- ❾ Suction head → shaped specifically for higher air performance



Because the individual chimney components can be combined very flexibly, many different requirements can be met.

- ✓ colour selection: light grey or black;
- ✓ light damping if light plate, light pan or light helix is used;
- ✓ 0.5 m or 0.75 m exhaust air pipe extension;
- ✓ installation of a chimney cowl instead of the diffusor, fitted to the roof duct;
- ✓ 1.0 m pipe extension for the roof sheet (above roof);
- ✓ pipes in the roof space can easily be heat-insulated by means of additional insulation.

Accessories for the CL 600 and CL 820 chimneys

Water collector, light plate, light pan, chimney cowl, light helix



Water collector, grey

- CL 600: diameter 1.1 m, code no. 60-45-4360
- CL 820: diameter 1.4 m, code no. 60-49-3594
- Used for rain protection

Note: Should be installed 60 cm or 80 cm below the chimney, depending on the chimney diameter. This prevents sunlight from reaching the floor. Performance losses are below 2 percent.



Light plate / water collector, black

- CL 600: diameter 1.4 m, code no. 60-45-4370
- CL 820: diameter 1.7 m, code no. 60-49-3598
- Used for rain protection and light damping

Note: Should be installed 60 cm or 80 cm below the chimney, depending on the chimney diameter. This prevents sunlight from reaching the floor. Performance losses are below 3 percent.



Light pan, black

- CL 600: diameter 1.35 m, code no. 60-40-4264
- CL 820: diameter 1.50 m, code no. 60-52-2748
- Used to reduce the degree of light incidence in the house

Note: Tilttable installation is possible to facilitate cleaning. Performance losses are approx. 20 percent.



Chimney cowl with/without bird guard wire mesh

- CL 600: code no. 60-40-4063 / 60-47-3944
- CL 820: code no. 60-52-2734 / 60-52-2733
- Used for rain protection

Note: Performance losses are approx. 15 percent.



Light helix

- CL 600: code no. 60-43-3075
- CL 820: code no. 60-43-3077
- Used to reduce the incidence of daylight to a minimum with performance losses of approx. 13 percent.

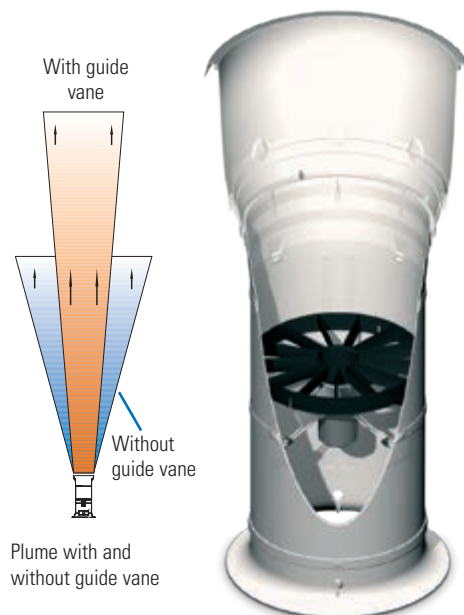


Guide vane for CL 600 and CL 820

For a significantly increased working range of the chimney

The guide vane is simply screwed tightly to the exhaust air chimney, right above the fan. The exhaust air jet is concentrated by deviating the radial and circular air flow

control components. This leads to a significantly increased working range of the chimney. The guide vane can be retrofitted easily.



Advantages

- ✓ up to 80 percent increased working range of the chimney;
- ✓ only minimal decrease (approx. 3 percent) of the chimney's air extraction performance;
- ✓ no chimney extension required, i.e. no storm bracing and no unattractive outward appearance of the barn;
- ✓ economic alternative to a chimney extension;
- ✓ quick and easy assembly.

CL 600 and CL 820 exhaust air chimneys for wall installation

Very good adjustability and pressure resistance even at low performance

The CL 600 and CL 820 exhaust air chimneys are well suited for installation into a gable end or side wall. Compared to simple wall fans, wall chimneys can control the exhaust air volume flow very exactly thanks to the motor-driven shutter, especially with minimum ventilation. They are also less susceptible to wind. The exhaust air volume can thus be aligned more accurately with the animals' actual needs. For space and weight reasons, a diffusor is not part of the standard equipment, but can be ordered optionally.



CL 820 exhaust air chimney for wall installation



Suction head with shutter and actuator

ECblue

The innovative fan with high potential for energy savings

ECblue fans not only save energy but are also extremely resistant to pressure and thus even less susceptible to wind. Pressure stability is especially important with minimum ventilation. The noise level of the ECblue fans is also approx. 50 percent lower than that of standard fans. ECblue is powered by an external-rotor EC motor. When using these fans in combination with Dynamic MultiStep, you can save up to 75 percent in electricity costs compared to traditional systems!



ECblue chimney fan

Advantages

- ✓ very high energy-saving potential;
- ✓ high efficiency in the entire speed range;
- ✓ universal activation via a 0-10 V analogue signal;
- ✓ the pre-set ventilation level is precisely maintained due to the built-in speed feedback;
- ✓ very low noise level thanks to corrugated blade edges;
- ✓ easy and cost-efficient installation.

MultiStep®

The energy-saving control principle using the CL 74 actuator

MultiStep® combines stepless control and group control. The principle's advantage is a significant reduction in energy consumption while the same air performance can be maintained: compared to Triac-controlled ventilation concepts, annual savings of up to 50 percent are possible. The entire ventilation system is more pressure-stable and less susceptible to wind.

The climate computer controls just one exhaust air chimney steplessly from 0 to 100 percent and only starts up additional chimneys at full capacity (on/off method) when required.

The relay-controlled CL 74V actuator is used to control one or two exhaust air chimneys individually. If more than two chimneys are to be controlled steplessly, the CL 74 actuator is also available for an analogue 0-10 V control signal. For the on/off method, the chimneys are divided into groups. The CL 74 actuator (open/close) is used for this method. All actuators are installed directly at the adjusting axis of the butterfly valve/damper and are supplied with 24 V power. This makes for a simple and safe emergency opening in case of power failures (378 T).

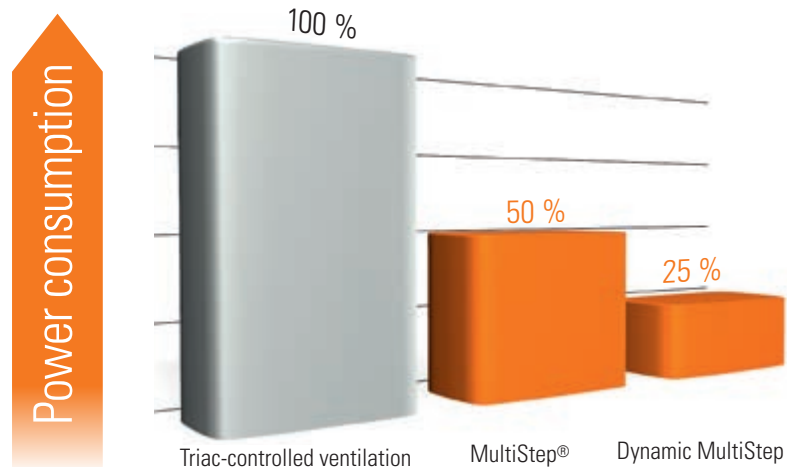


CL 600 with actuator and damper

Dynamic MultiStep

The enhanced version of the MultiStep® control principle

The enhanced version of the well-proven MultiStep principle is called "Dynamic MultiStep". This system works exclusively with the new ECblue fans that save even more energy. Instead of starting at 100 percent speed, these fans begin working as early as 30 percent. Only after all fans have been started one after another at 30 percent is their speed increased simultaneously to 100 percent when the ventilation demand requires this. Compared to the already very energy-efficient MultiStep solution, the power consumption of the new Dynamic MultiStep control principle is another 50 percent lower! The climate computer is responsible for controlling this system as well.



DynamicAir

For precise recording of the volume flow of exhaust air chimneys

The DynamicAir principle was invented to optimise the air exchange in livestock houses even further. Especially with minimum ventilation, it is very important to know exactly how much air passes through the exhaust air chimney to be able to provide optimal climate conditions for the animals and to reduce the heating costs at the same time. For this purpose, a negative-pressure sensor is installed in the aspirating mouth of the chimney. This sensor transmits the measured differential pressure signal to the climate computer. The computer translates this signal into the respective exhaust air rate. This permits a very accurate control of the air exchange. The climate computer contains the characteristic curve of the extraction unit as determined in a test facility. The chimney's volume flow is not reduced!



Advantages

- ✓ very accurate recording of the air rate of exhaust air chimneys without any additional mechanical/moving components;
- ✓ reduction of heating costs thanks to precise minimum ventilation;
- ✓ suitable for both new buildings and for retrofitting*;
- ✓ long service life at a continuously high operational reliability.

* only in combination with the 307pro, 310pro and ViperTouch climate computers

BD exhaust air chimneys VC

With different pipe diameters

BD exhaust air chimneys are available with several different diameters and can therefore be adapted to any ventilation concept and spacing of roof trusses. They are made of 30 mm thick polyurethane pipes coated with

smooth, glass-fibre reinforced polyester. This means that all BD chimneys are well-insulated, condensation water is prevented and noise is reduced.

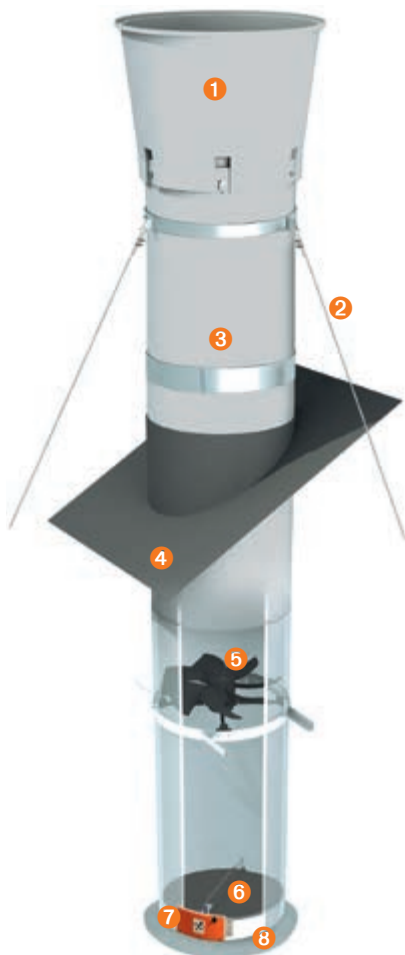
The chimney pipes are delivered in halves (VC)

and are assembled on site, thus saving transport costs. They are, however, also available as full pipes (AF). A roof sheet seals all chimneys.

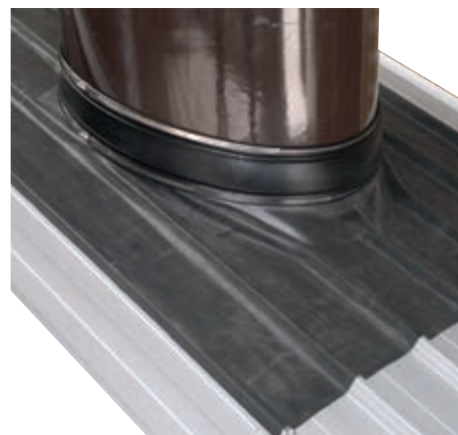
- 1 Diffusor → increases the air extraction performance (Venturi effect)
- 2 Storm bracing
- 3 Exhaust air pipe → is available in lengths of 1.0 m or 1.5 m
- 4 Roof sheet
- 5 Built-in chimney fan
- 6 Shutter
- 7 CL 74 actuator
- 8 Aspirating mouth

Because the individual chimney components can be combined very flexibly, many different requirements can be met.

- ✓ colour selection: light grey or dark brown;
- ✓ chimney is closed off either by a butterfly valve or a pivoting damper;
- ✓ chimney pipe is available as half or full pipe;
- ✓ 1.0 m or 1.5 m chimney extension;
- ✓ chimney suspension: with anchorage fishplates for houses without intermediate ceiling, with anchorage ring for houses with intermediate ceiling.



The TopSeal roof covering is an alternative. This roof covering is made of a weather- and UV-resistant black EPDM film (special rubber) which is permanently elastic and highly tear-proof and therefore has a long service life. TopSeal is delivered pre-assembled including a collar based on the chimney diameter. This makes assembly on site quick and easy. TopSeal can be used for roofs with a slope of up to 20°.



TopSeal roof covering

Thanks to their stability, VC chimneys are a good choice when needing to extend the plume above the roof (prevention of the downwash effect). Due to the higher exit speed, emissions and unpleasant odours are discharged into higher air layers.



Example: exhaust air exits > 3 m above ridge

Centralised exhaust air extraction

To bundle the emission sources

Reducing emissions from livestock houses will continue to become more important in the future. In some countries, authorities already require that the exhaust air be extracted at one central point (bundled), and that this point of exit be installed at a height of no less than 10 metres. A bundled emission source works like a large chimney with a stable air flow. The BD exhaust air chimney VC 920 is a good choice here:

- ✓ very high air performance;
- ✓ exhaust air pipe made of two high-density polyurethane foam half pipes for reduced transport costs;
- ✓ good insulation to prevent condensation;
- ✓ easy to clean;
- ✓ good stability and noise reduction.



As an alternative to the extension of individual chimneys until they have reached the required height, a separate exhaust air tower can be erected at one gable end. This solution is more

convenient, but also more complex. The CL 920 and VC 1270 exhaust air chimneys are well-suited for exhaust air towers. Both have a very high air performance but do not consume too

much power. VC 1270 has a modular shutter with integrated aspirating mouth so that the chimney produces a uniform and linear air flow.



Exhaust air chimney VC 1270 with modular shutter

Exhaust air tower

CL 920 exhaust air chimney

V125 T chimney fan

Advantages of an exhaust air tower

- ✓ separation of animal area and exhaust air tower for significantly improved hygienic conditions;
- ✓ no leaking air caused by idle fans;
- ✓ no openings for unwanted leakage of rain water into the building;
- ✓ no undesired incidence of light;
- ✓ thorough and easy cleaning of tower and chimneys with a high-pressure cleaner, separately from the barn;
- ✓ no problems with the static values of the roof;
- ✓ simple installation of the chimneys on the tower;
- ✓ no stability problems with strong winds.

Technical data of the most important built-in chimney fans

Description details

FF 063-6ET FF = fan with sickle-shaped blades 063 = impeller diameter 6 = 6-pole E/D = single-phase/three-phase T = chimney fan
FF 080-ZIT FF = fan with sickle-shaped blades 080 = impeller diameter Z = 10-pole I = ECblue (single-phase) T = chimney fan

Fan type		FF063-6ET	FF063-6DT	FF063-ZIT	FF080-6ET	FF080-6DT	FF080-ZIT
Code no.		60-47-7900	60-47-7902	60-47-9007	60-47-7915	60-47-7916	60-47-8999
Nominal current	Ampere	2.5	1.25	4.0	4.0	1.85/3.2	5.8-4.2
Sound power level	dB(A)	71	71	75	80	80	84

Additional fan types are available upon request.

Ventilation performance data

CL 600 Negative pressure	Air rate (m³/h)			Specific fan power (W/1000 m³/h)			Exhaust air exit speed (m/s)		
	FF063-6ET	FF063-6DT	FF063-ZIT	FF063-6ET	FF063-6DT	FF063-ZIT	FF063-6ET	FF063-6DT	FF063-ZIT
0 Pa	12600	12900	15600	34.7	33.3	43.8	10.6	10.8	13.1
10 Pa	12200	12500	15200	37.3	35.5	45.9	10.2	10.5	12.8
20 Pa	11700	12100	14900	39.2	37.4	47.7	9.8	10.1	12.5
30 Pa	11000	11500	14500	42.5	39.9	50.0	9.2	9.6	12.2
40 Pa	10100	10700	14100	47.6	44.0	52.8	8.4	9.0	11.8
50 Pa	8900	9700	13700	54.4	49.5	55.5	7.4	8.1	11.5
60 Pa	5200	7300	13200	90.0	63.9	59.3	4.3	6.1	11.0

CL 820 Negative pressure	Air rate (m³/h)			Specific fan power (W/1000 m³/h)			Exhaust air exit speed (m/s)		
	FF080-6ET	FF080-6DT	FF080-ZIT	FF080-6ET	FF080-6DT	FF080-ZIT	FF080-6ET	FF080-6DT	FF080-ZIT
0 Pa	21600	21700	25000	33.4	28.5	33.6	11.3	11.4	13.1
10 Pa	20500	20900	23900	36.4	30.9	36.4	10.8	11.0	12.6
20 Pa	19600	20100	23600	39.1	33.5	39.1	10.3	10.5	12.4
30 Pa	18800	19100	23000	41.9	36.4	40.9	9.9	10.0	12.1
40 Pa	18000	18300	22400	44.6	39.1	43.7	9.5	9.6	11.8
50 Pa	17200	17400	21700	47.9	42.1	45.7	9.0	9.2	11.4
60 Pa	16100	16500	21200	51.9	45.7	48.6	8.5	8.7	11.1

We recommend using three-phase fans or ECblue fans. They are more resistant to pressure and more efficient than single-phase fans. The indicated values are based on a mains frequency of 50 Hz.

All fans were tested on a DIN 241631 ISO 5801 certified test bench.



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