



# Big Dutchman®



## Heating Systems

An ideal temperature in every pig house

# Heating systems – for ideal house temperatures

Ideal house temperatures have a substantial influence on pig health and performance. Adequate heating systems are therefore required in many climate zones. The overall goal is to maximise the

thermal yield and transfer it to the pigs in the best possible way to keep energy costs as low as possible.

Big Dutchman offers several different systems for full-space or zone heating

powered by gas, oil or hot water. Please let our experts advise you to find the ideal heating system for your house!

## JetMaster – heaters with 100 % heat output

JetMaster is available for operation with natural gas or propane. It is controlled by means of a thermostat and equipped with a flame guard. If, for some reason, the heater does not ignite or the flame is extinguished, the gas supply is immediately shut down so that no unburnt gas

escapes. The built-in fan provides a wide throwing range and distributes the warm air ideally. The Burner Control Unit (BCU) makes it possible to balance uneven temperatures inside the house using the JetMaster's air circulation mode by switching it to »ventilate only«.

A connection to a chimney is not required. The heat generated is 100 % beneficial to the animals. Depending on the house size and type of equipment, different models are available.



JetMaster GP 70



JetMaster NG-L 80



ERA 33

## Technical data

Type		ERA 33*	GP 14	GP 40	GP 70	NG-L 30	NG-L 50	NG-L 80	GP 95
Output	kW	33	14	40	70	30	50	80	95
Gas consumption:									
- Natural gas	m <sup>3</sup> /h	3.0	1.3	3.6	6.1	3	5	7.7	8.4
- Propane gas	kg/h	2.4	1.1	3.1	5	2.3	3.9	5.7	6.8
Burner pressure:									
- Natural gas	mbar	11.2	8	8.1	9.1	13	11	9.6	13.3
- Propane gas	mbar	29	28	49	46	21	21	22	24.8
Gas connection	"	1/2	1/2	3/4	3/4	1/2	3/4	3/4	3/4
Air capacity	m <sup>3</sup> /h	1700	1200	3900	4500	1600	2300	4100	6500
Air pressure monitoring		MS	-	MS	MS	PS	PS	PS	MS
Flame monitoring		Thermoelectric	Ionisation	Ionisation	Ionisation	Photocell	Photocell	Photocell	Ionisation
Throwing range	m	30	15	40	50	30	40	50	40
Weight	kg	17	13	36	36	35	41	49	48

Connection values: 220-230 V, 50 Hz for all types;

Connection pressure: 20 mbar for natural gas and 50 mbar for propane gas

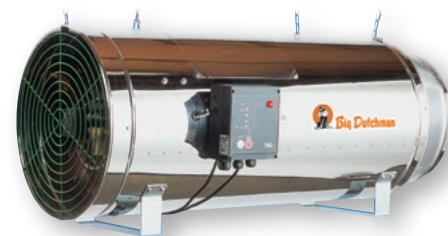
\* Atmospheric burner – should not be used in houses with high dust levels

MS = microswitch PS = pressure switch

## JetMaster (P series) for operation with fuel oil

Type		P 40	P 60	P 80
Output	kW	40	60	80
Fuel consumption	l/h	4	6	8
Air capacity	m <sup>3</sup> /h	4400	6200	7700
Throwing range	m	30	40	50
Weight	kg	48	51	55

Connection values: 230 V, 50 Hz for all types  
Flame monitoring via photocell



JetMaster type P 80

## RGA heating devices with flue gas exhaust

RGA heating devices are operated by a closed combustion process. This means that the house air remains free of flue

gases as these are guided towards the outside via a chimney. In addition, fire danger is minimised significantly.

The built-in fan provides a wide throwing range and distributes the warm air ideally in the house.

Type		RGA 60	RGA 95
Output	kW	60	95
Combustible		Fuel oil	Fuel oil
Fuel consumption	l/h	6	10
Air capacity	m <sup>3</sup> /h	5600	7000
Throwing range	m	35	50
Weight	kg	82	132

Connection values: 230 V, 50-60 Hz  
Flame monitoring via photocell



RGA 65



RGA 95

## Hot-water convection heaters – no open combustion inside the house

Convection heaters are becoming increasingly popular, since they significantly improve the house climate (reduced CO<sub>2</sub> concentration in the house air). The objective is to maximise the heat output. This is achieved by a radiator with a large surface. The heating elements are mounted directly beneath the air inlets to heat the incoming air.

In piglet rearing houses with two-climate systems, mainly Twin pipes are installed directly in the resting area. This saves energy costs as temperatures in the rest of the pen can be significantly lower.

The 135*pro* and 235*pro* climate computers regulate the entire house climate, including the stepless three-way control of the hot-water heaters from 0 to 100 %. The pigs thus do not have to suffer from fluctuating temperatures, an important benefit which maximises growth.



The 235*pro* climate computer ensures a constant temperature level in two compartments in combination with the three-way heating control

## 1. Delta pipe and Twin pipe – ideally suited for diffuse fresh air systems

Delta and Twin pipes are especially well-suited for ceilings with spray-cooling channels and DiffAir ceilings. They are made of aluminium and are operated with hot water, of which they require only a limited amount, however. Thanks to their good thermal conductivity (heat output of 180-200 watts/m) they ensure constant room temperatures inside the house. These heating systems can also be used as pre-heating in the central aisle. The pipes have an anodic coating for a better protection against ammonia. They are of comparatively low weight and can be delivered in different sizes up to a length of 6 m. The pipes are easy to assemble.



Delta pipe – ideal for installation below the DiffAir ceiling



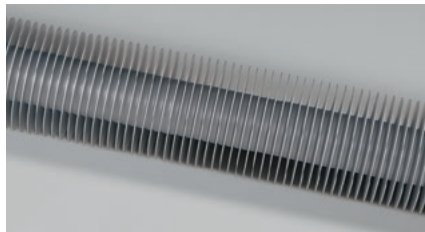
Twin pipe – less dust on pipes

## 2. Fin heater – large surface area for high heat output

The fin heater consists of a galvanized tube or of an aluminium tube with epoxy powder coating through which hot water is pumped. Fins are welded to the tube like a spiral, creating a large surface of 1 m<sup>2</sup>/running metre of tube. Heat emerges from these fins and causes a strong thermal. The heat output can be as high as 600 watts/running metre. The spacing between the fins is large enough to ensure that dust does not accumulate. The tubes are fastened to the wall by means of angle brackets or suspended from the ceiling, which is very easy to carry out.

An automatic ventilation (for Delta and Twin pipes as well) ensures a high functional reliability of the heating system. The aluminium fin heater is characterised by the following advantages:

- ✓ reduced weight;
- ✓ increased heat output → up to 750 watts/running metre;
- ✓ simple, time-saving assembly by means of a special coupling with clamps.



Galvanized fin heater



Special coupling for time-saving assembly



Aluminium fin heater as a full-space heating system – ideal in combination with fresh air inlets



Fin heater as a full-space heating system – ideal in combination with ceiling inlets

### 3. HeatMaster and Heat-X® compact – energy-saving air-to-water heat exchangers

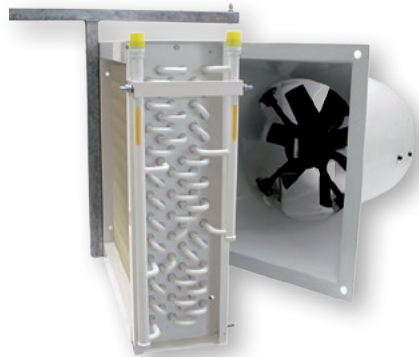
Both HeatMaster and Heat-X work on a hot-water basis. A gas, fuel oil or wood chip system or the waste heat produced by a biogas plant or CHP can be used to heat the water.

The main components of both air-to-water heat exchangers are a fan and a system of fins made of stainless steel, which are easy to clean by means of a high-pressure cleaner, and corrosion-free.

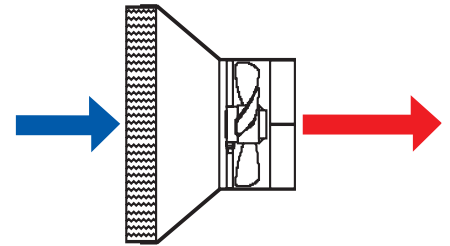
**HeatMaster** is either suspended along the sides at the height of the fresh air inlets or mounted to the wall. In case of the sucking version, the fan sucks the air through the exchanger element. The throwing ranges achieved in this manner are very wide.



HeatMaster – high energy efficiency thanks to its aerodynamic shape



The built-in fan ensures an ideal distribution of warm air

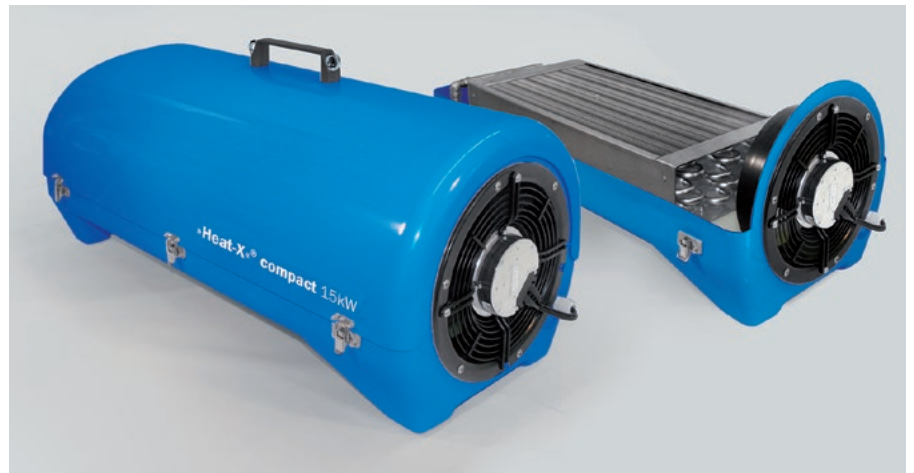


The fan sucks the house air through the fins

**Heat-X® compact** is an extremely handy heater blower based on a heat exchanger. Thanks to its compact construction, the blower can easily be installed in small compartments or service rooms to warm the air. Practical plug-in couplings including dust protection increase flexibility if the heater is to be used in different locations.



Heat-X® compact with plug-in coupling



Heat-X® compact type 1 H/C – can be used variably in small compartments or the service room

Type		1 H	2 H	3 H	4 H	1 H/C
Output at 30°C inside temperature	kW	15*	25*	40*	75*	15**
Air capacity	m <sup>3</sup> /h	1500	3000	5000	7500	1500
Power consumption	W	90	300	530	690	230
Throwing range	m	20	30	45	55	15
Connection pipe thread	"	¾	¾	¾	1	½
Weight with water	kg	51	56	74	118	26
Dimensions (H x W x D)	mm	700 x 700 x 896	700 x 700 x 896	800 x 900 x 976	1000 x 1100 x 1075	335 x 340 x 990

\* at a flow temperature of 80°C and a return temperature of 60°C \*\* at a flow temperature of 80°C and a return temperature of 65°C  
 Connection values: 3 phases 400 V, 50 Hz

## Zone heating – ideal for use in piglet rearing houses

Piglets need a lot of warmth, especially during the first days after moving to the rearing house so as to be able to cope better with the critical weaning period. Ideally, the resting area should have a temperature of approximately 32°C. Apart from traditional full-space heating, zone heating operated with hot water is

becoming increasingly popular for pig rearing houses. Such zones are created using a covering plate or »hover« that is fixed at a distance of 70 to 80 cm above the slatted floor. The required dimensions of the cover depend on the number of piglets and the depth of the pen. An edge of approx. 20 cm in the front area of the

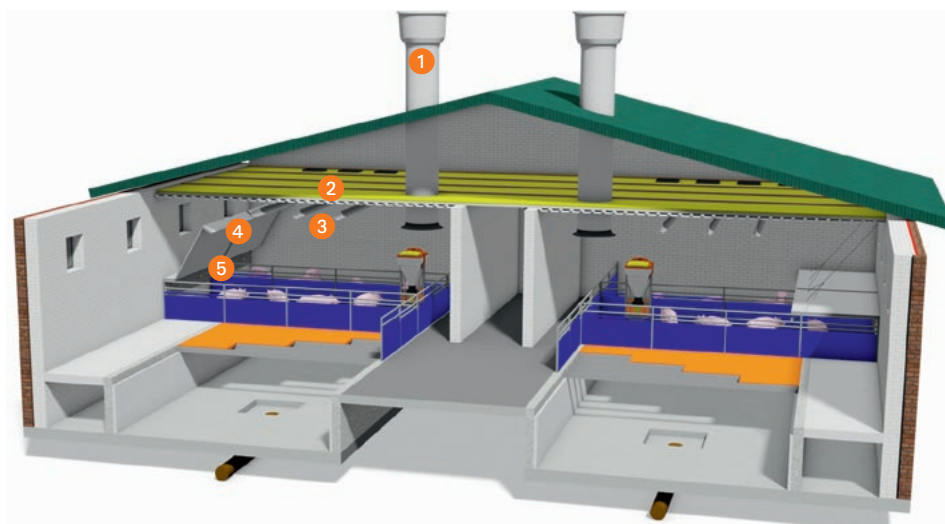
plate helps to create a heat blanket. The heating system (Twin pipe) is installed directly below the plate. The main purpose of this system is to heat the resting area of the piglets. As the rest of the pen does not require as much heat, therefore making lower temperatures possible, heating costs are significantly reduced.



Plastic flooring with only 10 % slatted area is used beneath the covering plate; Twin pipes ensure optimum temperatures in the piglets' resting area

## Two-climate system

We recommend connecting the set temperature values of full-space and zone heating. As a result, the heat requirements of the pigs can be met in an ideal manner, keeping pace with their age. The illustration on the right-hand side shows a DiffAir ceiling in combination with Delta pipes to heat the incoming air (full-space heating), and a zone heating system to provide the required higher temperatures in the piglets' resting area. The 135pro and 235pro climate computers control both full-space and zone heating.



- 1 Exhaust air chimney
- 2 DiffAir ceiling
- 3 Delta pipe
- 4 Zone heating
- 5 Twin pipe



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