Condensing boiler technology

Product Catalog 2022-06

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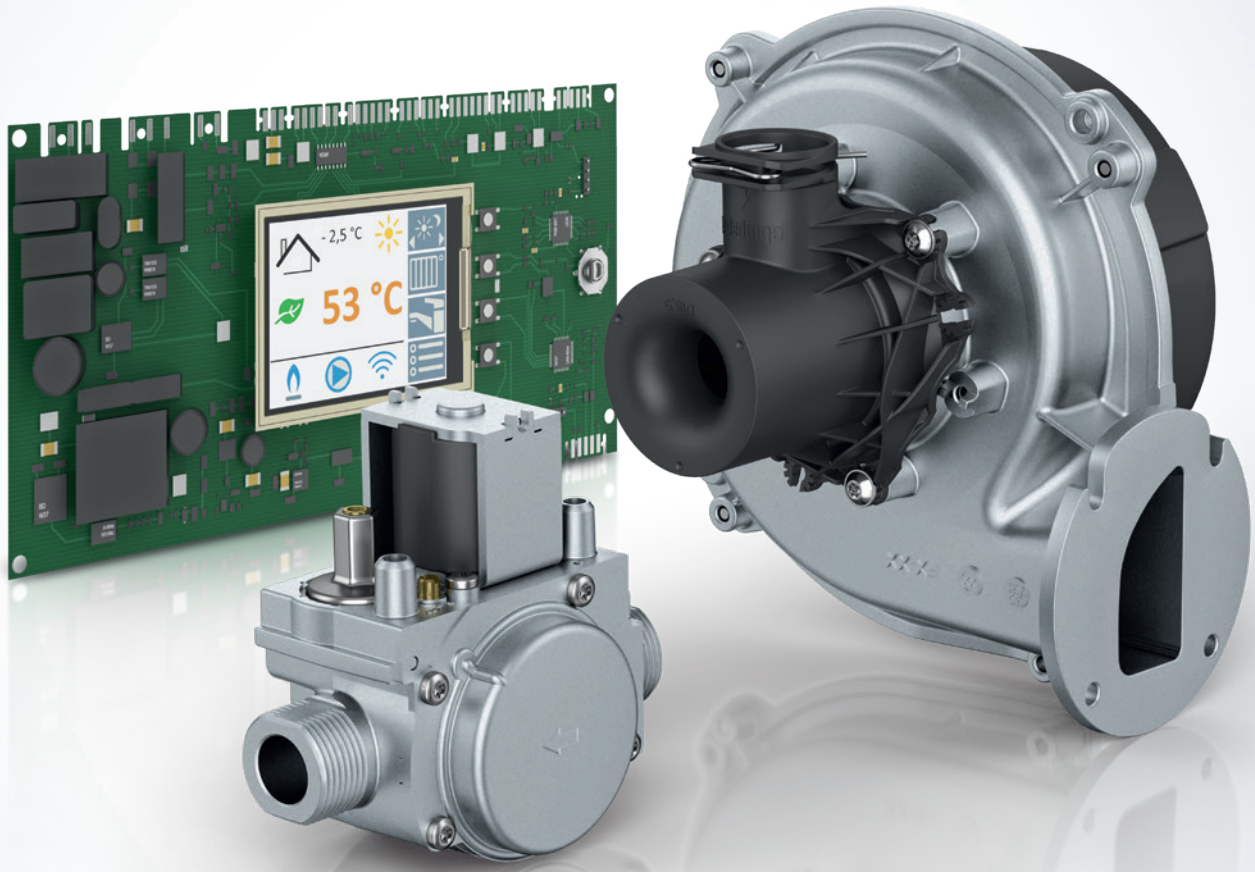

EC radial blowers for condensing boiler technology

ebmpapst

engineering a better life

GreenIntelligence.
Making Engineers Happy.

Why do our customers look so happy? Because when it comes to digitalization and sustainability, we provide them with a clear competitive edge with GreenIntelligence. The intelligent control and networking of fans and drives makes applications more powerful and efficient. Together with a long product life and highly efficient EC technology, we achieve lasting reductions in energy costs and emissions.

In heating technology, the greatest demand is for innovative, reliable and energy-efficient products that reach the market quickly. GreenIntelligence gives you system solutions with intelligent networking capabilities that can be used to schedule service assignments according to needs and reduce variance. With the platform principle, you also save lots of time and money during development.

ebm-papst. Engineering a better life.

Who we are.

With over 20,000 different products, ebm-papst offers the right solution for just about any challenge. As the logical next stage in the development of our highly-efficient GreenTech EC technology, we believe that industrial digitization offers the greatest future prospects for our customers. With GreenIntelligence, we already represent intelligently interconnected complete solutions that are unrivaled worldwide.

Because we are always committed to making each of our innovative hardware and software solutions more powerful, compact, efficient and sustainable than its predecessor, we have evolved over the years into the global technology leader for ventilation and drive technology.

What drives us.

But our consistent pursuit of efficiency and progress has even deeper roots. After all, there is something that excites us even more than our market position. It is the deep awareness that, with our solutions, we are making the lives of many people around the globe more pleasant, safer and thus better. Therefore, the central driving force in all our thoughts and actions is Engineering a better life. It is the reason why it is worthwhile for us to get up every day and do our best.

More about this under **ebmpapst.com/betterlife**

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engineering a better life

What you get out of it.

1. **Technological edge.**
With our EC technology and GreenIntelligence, we combine the highest energy efficiency with the advantages of IoT and digital networking.

2. **Our sustainable approach.**
We take our responsibility seriously with energy-saving products, environmentally-friendly processes and through social engagement.

3. **System expertise.**
As experts in advanced motor technology, electronics and aerodynamics, we provide perfect system solutions from a single source.

4. **The ebm-papst spirit of invention.**
Over 800 engineers and technicians will develop a solution that precisely fits your needs.

5. **Personal proximity to you.**
Thanks to numerous sales locations worldwide.

6. **Our standard of quality.**
Our quality management is uncompromising, at every step and in every process.

André opts for ready-to-install system solutions when it comes to condensing technology, which saves him a lot of adjustment effort.

GreenIntelligence helps us turn our commitment to *Engineering a better life* into reality.

What exactly does this mean? Watch the video now:

Gas condensing technology
That's ebm-papst

Since creating the world's first gas blower for condensing technology, we have been the market leader for efficient components and complete, perfectly matched systems. We develop blowers, venturis, valves and burner controls together with our customers and supply everything as a full package. Enjoy the benefits of our well-established and constantly updated technology combined with unique system expertise.

More than just combustion

Modern gas condensing units are known for their productivity and efficient energy utilization. They have to be supplied with exactly the right amount of gas and air in an ideal ratio for every operating status and under all ambient conditions. Only then is hygienic and efficient combustion guaranteed. Compact dimensions keep the installation space to a minimum and at the same time provide better accessibility.

ebm-papst offers the world's most extensive product range for condensing technology. From just a few kilowatts for use in private households to several megawatts for supplying entire residential areas: We will always find the right solution. Our portfolio contains efficient EC radial blowers, gas valves and perfectly matched system solutions for every application.

Advantages at a glance

- System and development expertise from the market leader
- Unrivaled power and modulation spectrum
- Well-established technology guarantees a long service life
- High power density thanks to compact design
- Outstanding efficiency levels
- Extremely smooth operation with a low noise level
- Pre-matched components for easy adaptation to the respective application
- Future-proof thanks to BUS connection option

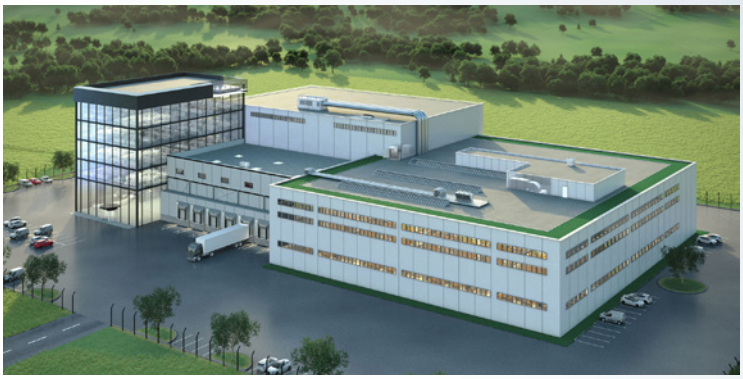
Ideally suited
for all applications

Residential Heating

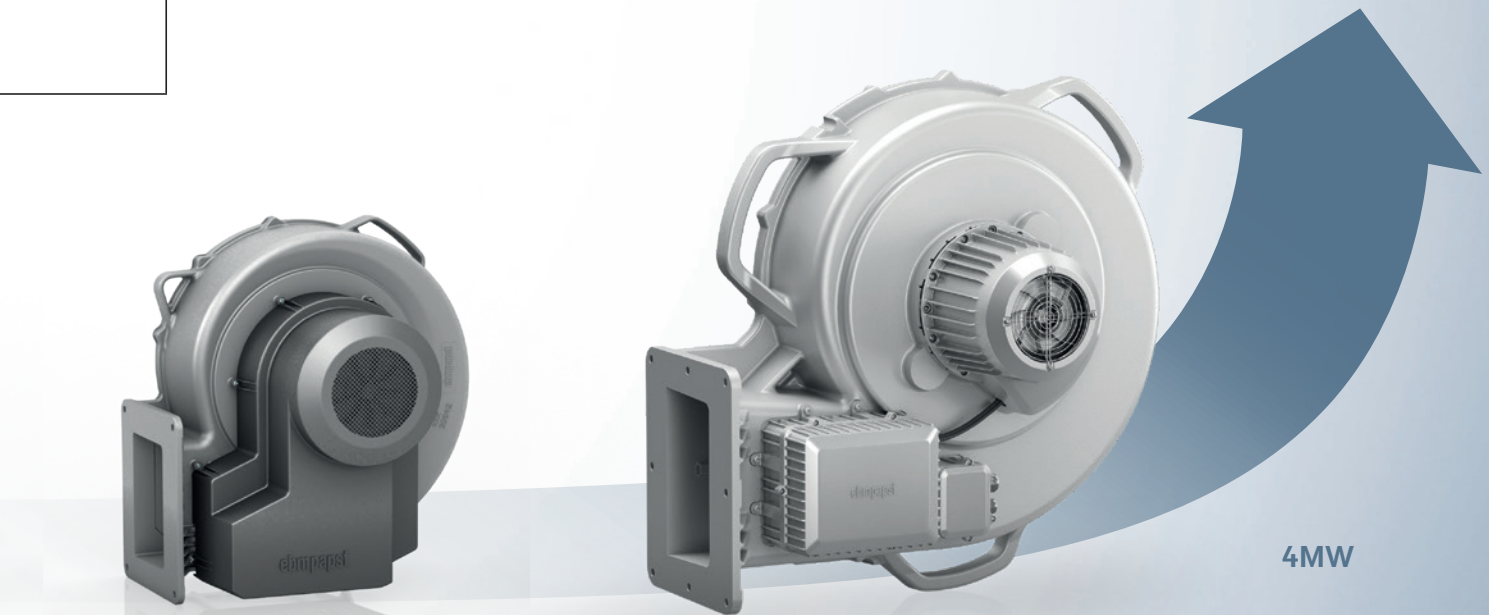
- Gas condensing heating systems for private households
- Use as heating unit only, as combi-boiler
  or in conjunction with regenerative energies

2kw

Commercial Heating



- Gas condensing heating systems for applications ranging from small trade businesses to heating installations in large industrial plants
- From single boiler to cascade system installations
- The first condensing blower for heat output up to 4 MW rounds off our extensive product portfolio
- For decentralized heating solutions keeping construction work and heat loss from long pipes to a minimum compared to large Combined Heat and Power stations



Laboratory equipment

As market and technology leaders, we are constantly endeavoring to improve our performance and provide our customers with the best possible complete solution. Our engineers and technicians assist our customers with the development of their application right from the start to help advance the process of improvement. Before series launch we conduct extensive tests to ensure compliance with legal requirements and customer specifications. We have a wide range of measuring equipment at our disposal for this purpose.

For example our checks include examining design influences such as modifications to the gas-air mixing device, the backflow flaps or the venturi. All these factors can affect the efficiency, noise level and functionality of a condensing heating system. We take measurements on combustion control systems directly in the heating unit to ensure ideal matching of the individual components and motor performances. This is accompanied by flow simulation with direct incorporation of the results obtained.

Gas laboratory:

- Highly advanced measuring equipment with all the standard test and limit gases used in Europe, America and Asia
- Exhaust gas measurements (CO_2, CO, air ratio), measurements with variable aerodynamic parameters (venturi pressure, mass flow, exhaust gas back pressure) to increase and optimize the modulation range
- Measurement of thermal and electrical performance data
- Simulation of wind and turbulence in the exhaust gas area, e. g. for electronic gas-air composite systems
- Communication with all standard bus systems, e. g. CANbus, LINbus, Modbus, ebus, OpenTherm

Climate chambers:

- Environmental simulation and service life tests with more than 30 climatic, cold and warm chambers
- Simulation of temperature range from 70°C to 300°C possible

Air performance test stands:

Checking of the operating characteristics of blowers and systems with recording of the air performance curves

Endurance test rooms:

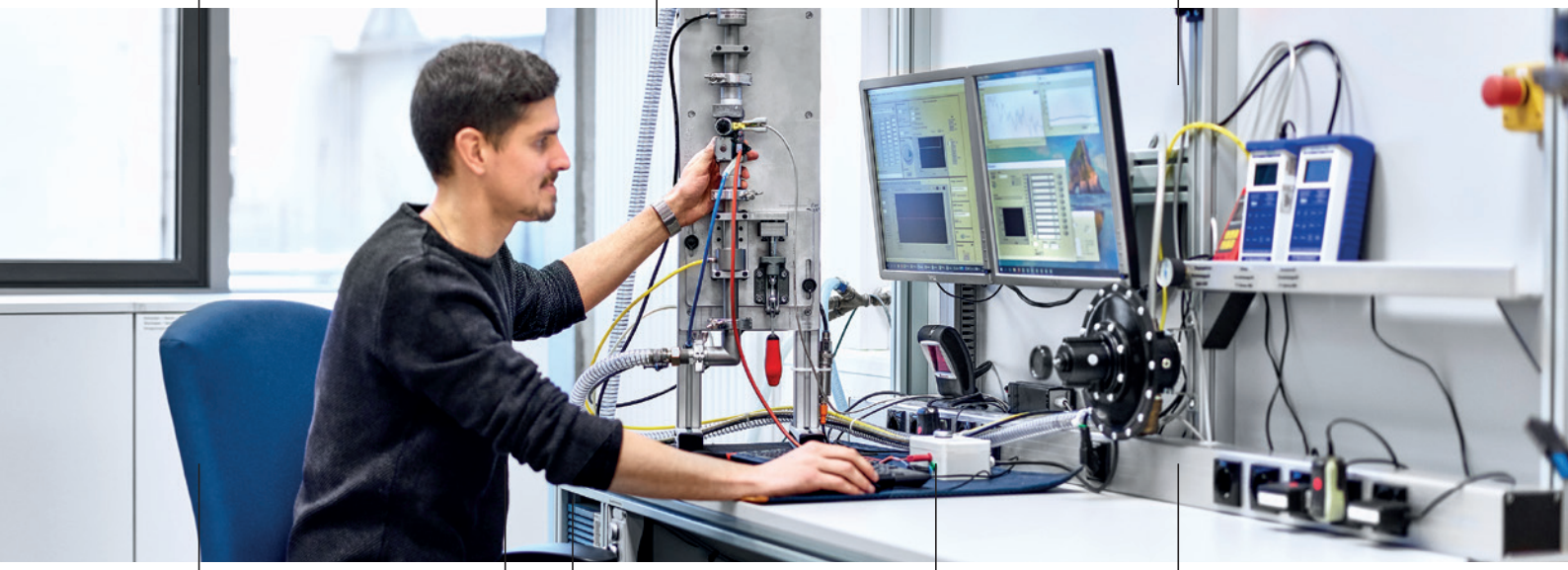
About 150 different endurance tests with over 700 specimens in progress

Sound measurement laboratory:

Precise sound power and gas measurement technology with incorporation of real conditions

Vibration test:

For simulation of transportation and operation with different vibration profiles



EMC measurement room:

Emission and immission measurements

Approvals:

AGA, CCC, CSA, DVGW, EAC, KIWA, TÜV, UL, VDE

Standards and Directives:

– Low-Voltage Directive
– Machinery Directive
– Gas Appliance Regulation
– EMC Directive

Additional equipment:

– 3D microscope
– 3D plotter

Gas valve test stands:

For gas valves with pneumatic and electronic modulation

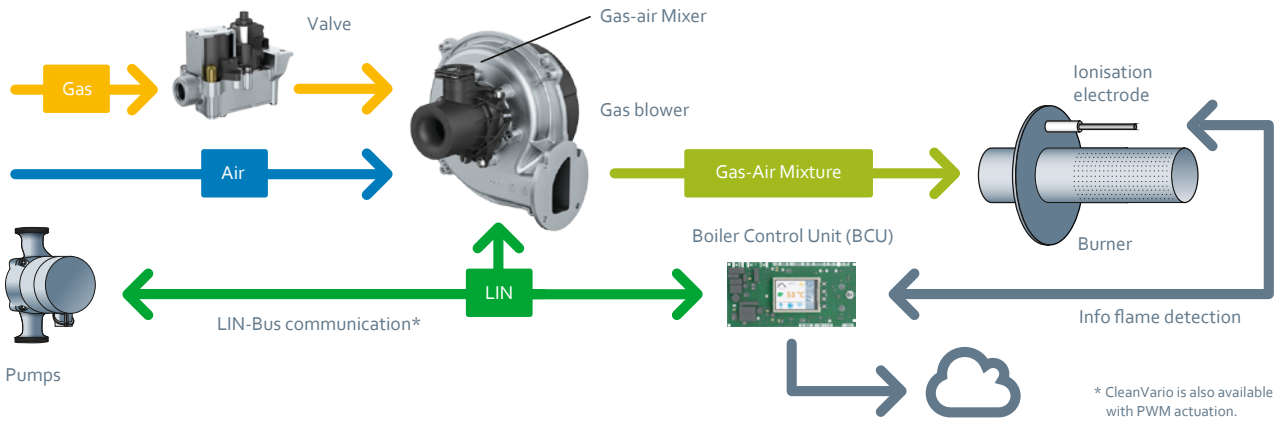
Systems
for condensing boiler technology

An optimum gas-air mixing ratio is crucial to the energy yield realized during combustion. The mixing ratio needs to be exactly adjusted to the heating value of the gases being used (e.g. natural gas, LPG Hydrogen or biogas). An additional challenge is the flexibility of heat output. The greater the modulation range of a heating system, the better its heating output can be adjusted to actual needs.

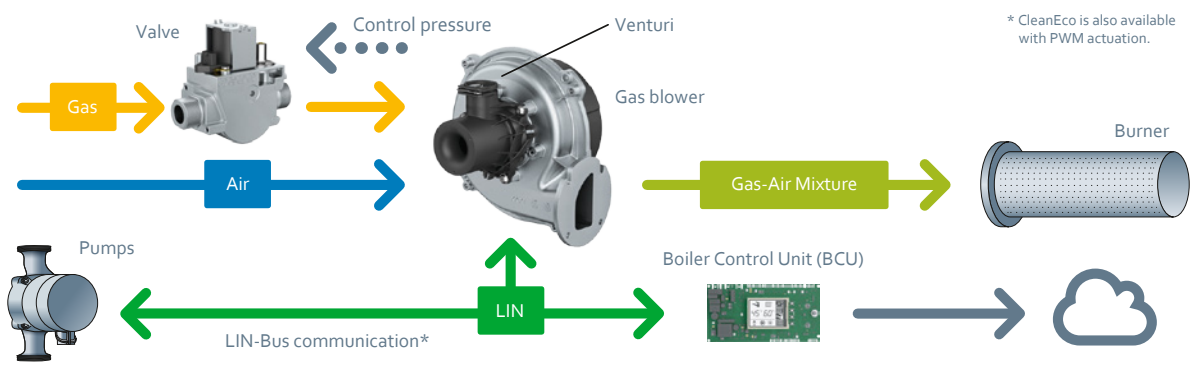
The limits of the modulation level are determined among others by the minimum and maximum output of the premixing blower. This means its components need to be perfectly matched. That's why we offer complete heating systems including gas blowers, venturis, gas valves and boiler control units from a single source.

Ideally suited for use in electronic or pneumatic gas-air control systems

CleanVario – electronic gas-air control system



CleanEco – pneumatic gas-air control system



Gas blower:
State-of-the-art blower technology for modulating operation with low noise and a long service life

Venturi:
The pressure generated by the venturi effect provides an optimum mixture of gas and air in the pneumatic gas-air control system

Gas valve:
The component required for the reliable supply of gas has a particularly compact design

Boiler control unit:
The electronic control is matched precisely to the system. Signals from the boiler control unit can be evaluated in the lab.

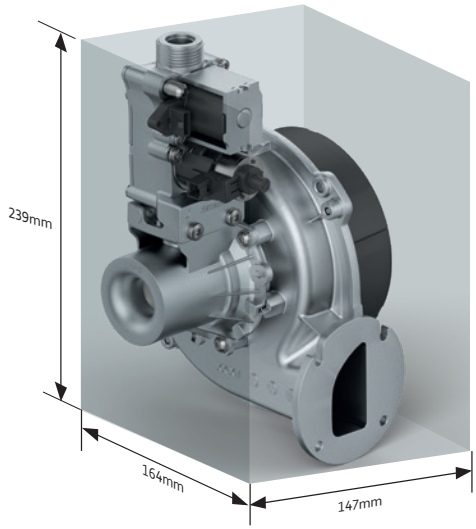
Our system solutions
at a glance

All heating technology components must be perfectly harmonized in order to achieve optimum performance and efficiency. This is why we offer complete heating systems, including gas blower, venturi, gas valve and boiler control unit from a single source.

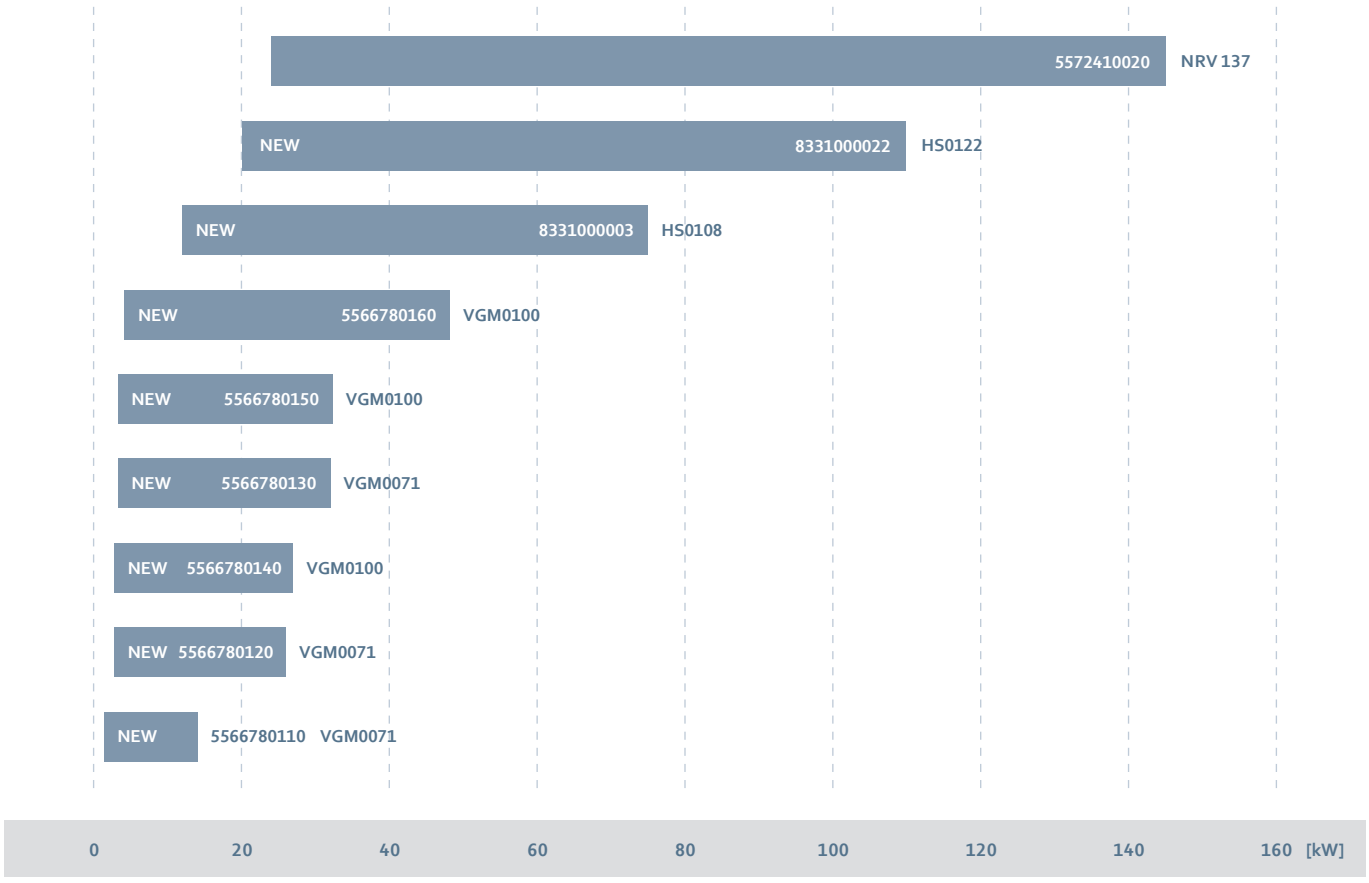
A key benefit of our combustion control systems is their optimal mixing ratio with simultaneously high modulation ranges.
To achieve this high level of efficiency, we provide different venturis i.e. high-efficiency venturi or multiventuri, depending on the heat output range.

Our venturi solutions provide you with a wide variety of motor performances and options for assigning our systems to your devices. This gives you the benefit of flexible integration into compact spaces.

We supply our systems as completely tested, harmonized units with optimized interfaces to minimize your effort.



Heat load in kW



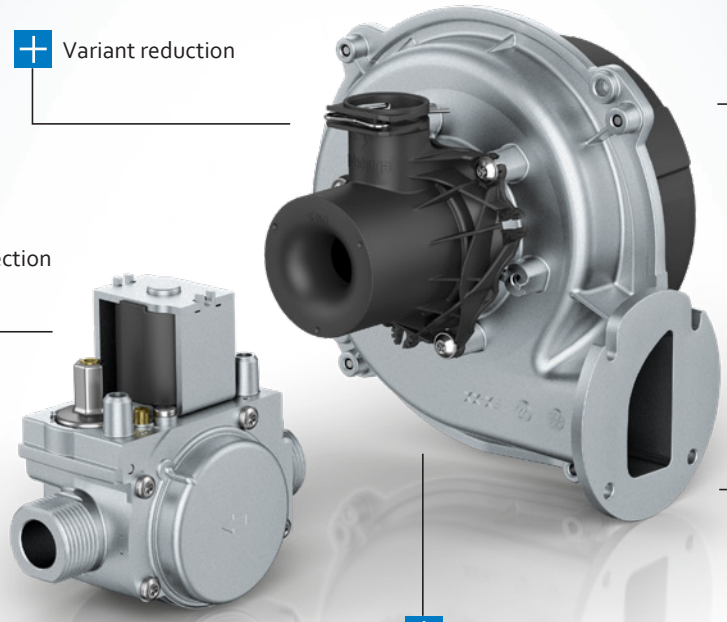
Heat output range depending on type of gas concerned and system conditions. Additional system solutions on request (see page 17).

High efficiency and flexibility at the same time

Variable installation of venturi in 30° steps

Convenient in the application

Variant reduction



Simple gas pipe connection

Compact dimensions

Low amount of qualification work

Mounting positions

With horizontal shaft or vertical shaft with motor positioned at top

Illustration examples

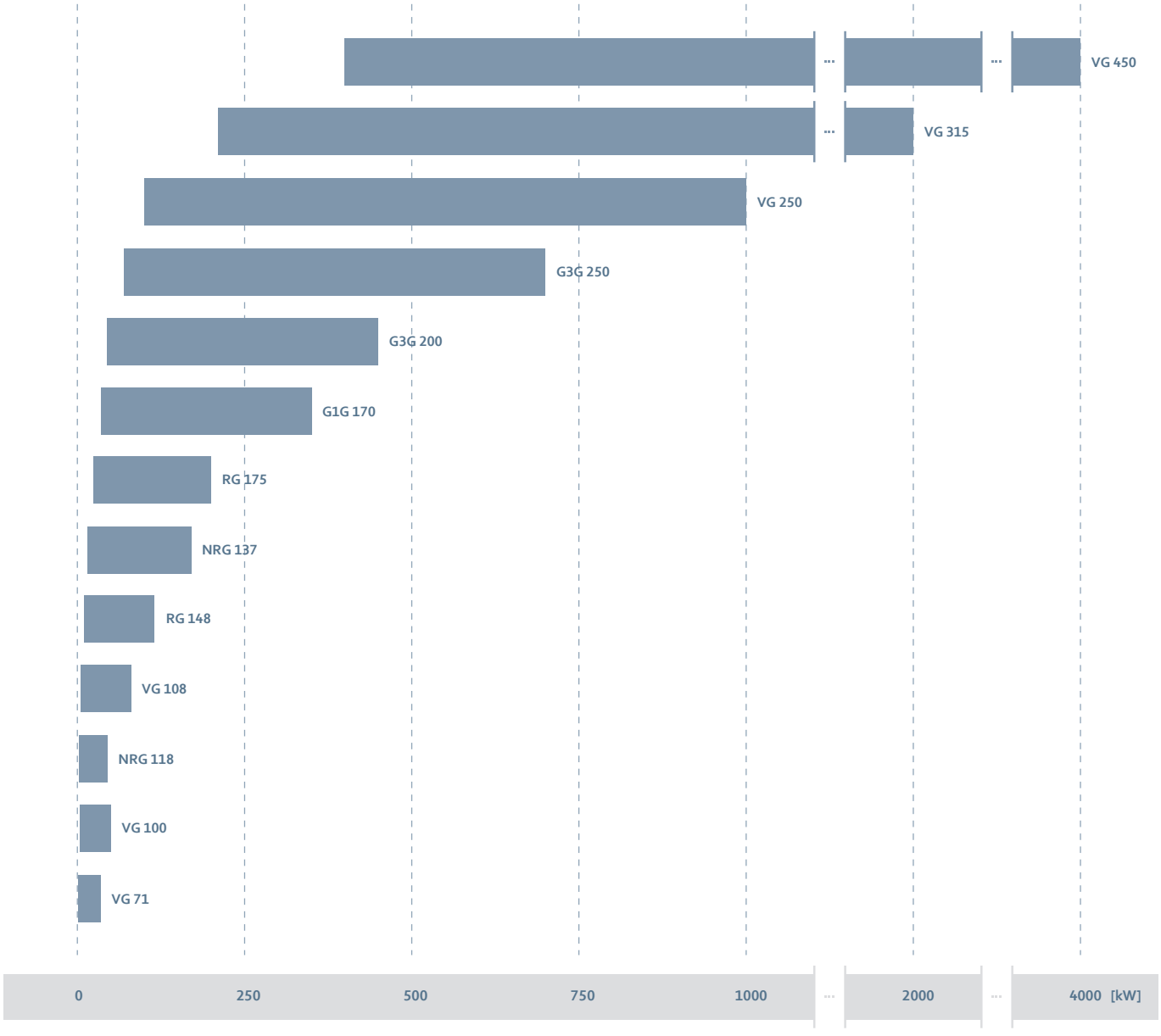
System solutions

Heat output range	System solution	Gas blower	Venturi	Gas valve	Boiler control unit	Part number
[kW]						
1.4 – 14	VGM0071	RadiMix VG 71	High-effiency venturi	E01	CleanEco	5566780110
3 – 23	HS0118	NRG 118	Multiventuri	E01	CleanEco	8331000007
2.8 – 26	VGM0071	RadiMix VG 71	High-effiency venturi	E01	CleanEco	5566780120
2.8 – 27	VGM0100	RadiMix VG 100	High-effiency venturi	E01	CleanEco	5566780140
5 – 28	HS0118	NRG 118	Multiventuri	E01	CleanEco	8331000008
3.3 – 32	VGM0071	RadiMix VG 71	High-effiency venturi	E01	CleanEco	5566780130
3.3 – 32	VGM0100	RadiMix VG 100	High-effiency venturi	E01	CleanEco	5566780150
7 – 42	HS0118	NRG 118	Multiventuri	E01	CleanEco	8331000009
4.2 – 48	VGM0100	RadiMix VG 100	High-effiency venturi	E01	CleanEco	5566780160
12 – 75	HS0108	RadiMix VG 108	Multiventuri	D01	CleanEco	8331000003
20 – 110	HS0122	RadiMix VG 122	Multiventuri	D01	CleanEco	8331000022
24 – 145	NRV 137	NRG 137	Multiventuri	D01	CleanEco	5572410020

EC radial blowers

Modern gas-fired modulated condensing units have to be supplied with the optimum volume and mixture of air and fuel in all operating modes and ambient conditions. They require adjustable blowers with steep pressure/air flow characteristic curves and high maximum pressures. ebm-papst played a significant role in developing EC blowers for this purpose and now offers the widest range of solutions for this application area. The technical data in this catalogue relate to intended use in gas condensing boilers with interior installation. The special features of these blowers also make them suitable for many other applications upon consultation. Examples include gas-powered cooking appliances for the food service industry or gas-powered deep fryers for commercial use.

Heat load in kW



Heat output range depending on type of gas concerned and system conditions.

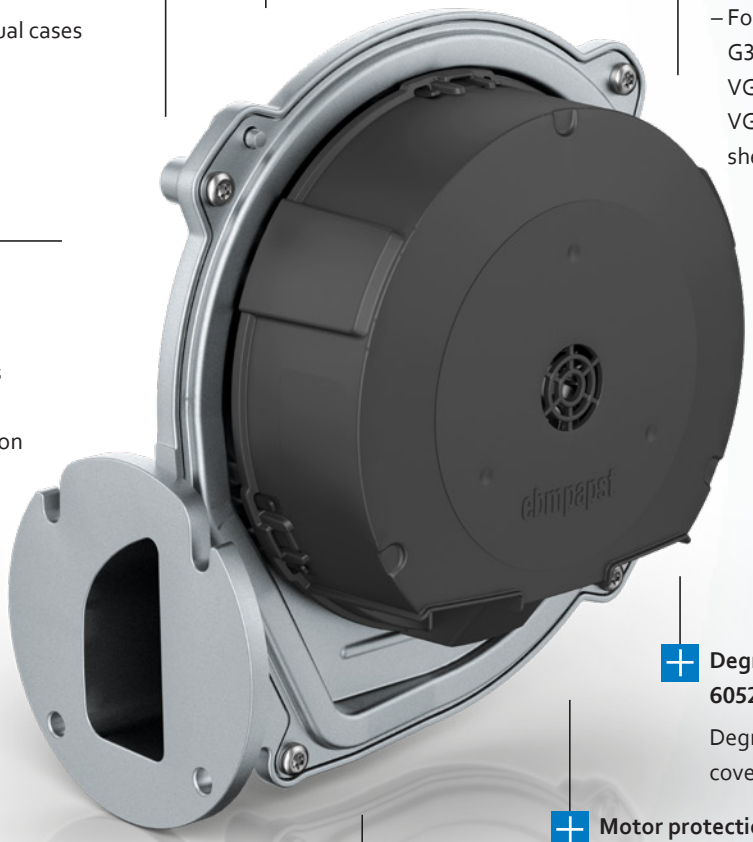
Drive:
– Brushless DC (EC) motors with integrated electronics
– Vibration-free mounting to minimize structure-borne sound
– Adjustment of motor power on an individual basis

Commutation electronics:
– Integrated into the blower unit and perfectly harmonized with the motor
– Integrated blockage switch-off and overheating protection as per EN 60335
– Various standard interfaces available for the respective burner control
– Optimized in accordance with EMC emissions and pollution

Housing:
– Made of die-cast aluminum
– (respectively cast aluminum/sheet steel)
– Required density thanks to special seal for housing halves and drive shaft conduit
– Outlet flange adjustable to many designs

Impellers:
– For type VG 71, 100 and 108, NRG and RG blowers of pentane-resistant plastic: dynamically fine balanced
– For the G1G 170, G3G 200, G3G 250, VG 250, VG 315 and VG 450 models made of sheet aluminum

Speed controls:
– Adjustment required in individual cases
– Controlled via PWM signal
– 0–10 V input optional
– Bus communication optional



Bearings:
– Maintenance-free ball bearings covered on both sides for long service life and smooth operation
– Use of lubricants suited for the particular application

Protection class:
Protection class I

Degree of protection DIN EN 60529:2014:
Degree of protection IP00, with cover hood, as a built-in component

Motor protection cap:
The adjustable rotation of the motor protection cap enables easy accessibility to the plugs and protection against dripping water in the application.

Mounting positions:
– With horizontal shaft or vertical shaft with motor positioned at top
– For vibration-cushioned motor installation, the motor's weight is additionally supported by a flexible element.

Speed output:
– With Hall IC signal output; in case of motors for line voltage operation, speed signal output is galvanically isolated

Air performance, recommended operating range & heating power modulation

EC radial blower

Air performance curve:

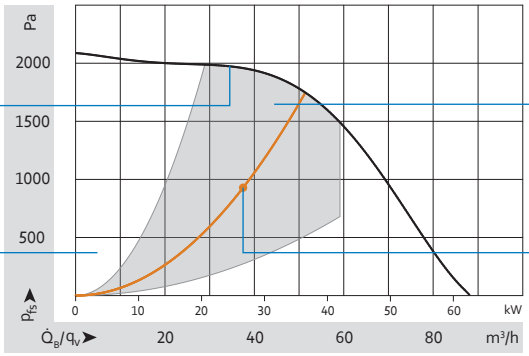
Air performance curves are determined in accordance with DIN ISO 5801, installation type A or C, on a chamber testing platform with outlet side connection.

They indicate the pressure increase p_{fs} as a function of the air flow q_v and apply to an air density of $\rho = 1.14$ kg/m³ ± 3.5%.

Recommended operating range:

Our gas blowers are developed for operation in the recommended operating range, which is highlighted in gray in the characteristic curve below.

In this range, you will benefit from the blower's maximum overall efficiency and optimized acoustics.
The service life is tested in this range. The recommended operating range makes it easier to select the right blower for your application.



Outside the highlighted range in gray, the electronics, motor and parts of the blower that carry air only convert a reduced portion of the electrical input power into usable air performance. The motor and electronics have been optimally designed to comply with strict energy guidelines (ErP2015). Therefore, it is important to operate the blower in the recommended operating range in order to achieve maximum efficiency and minimal noise emissions.

Definitions:
q_v : Air flow rate [m³/h]
$\dot{Q}_B$: Heat output in [kW]
P_W: Electrical power consumption in [W]
p_{fs} : Pressure increase in [Pa]

The operating point of the blower moves along the system characteristic curve at a variable speed. The mostly quadratic characteristic curve arises from the pressure loss in the system (venturi mixer, intake and exhaust pipe, heat exchanger, burner) at a given air flow rate.

Efficiency and losses of the blower:

System characteristic curve:

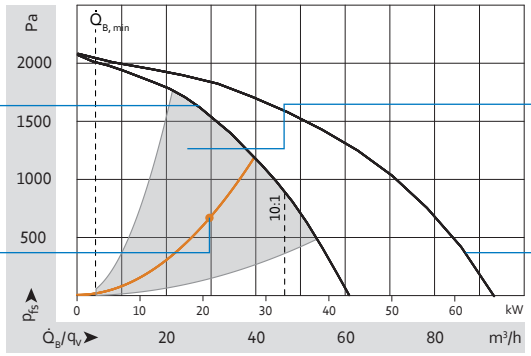
System solution (blower & venturi)

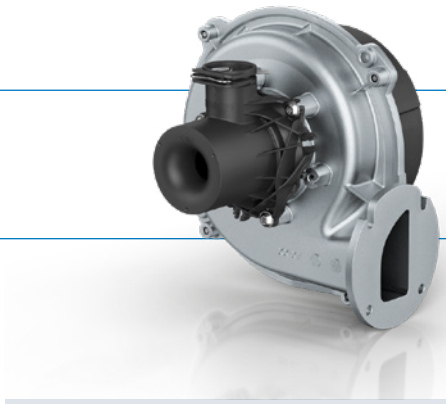
Air performance curve:
(of the system, consisting of venturi and blower)

The air performance curve indicates the pressure increase p_{fs} of the system (venturi and blower). It is measured in accordance to DIN ISO 5801, installation category A.
It indicates the pressure increase p_{fs} as a function of the air flow q_V and applies to an air density of ρ = 1.14 kg/m³ ± 3.5%.

Recommended operating range:
(of the system, consisting of venturi and blower)

Our systems, which consists of the high-efficiency venturi and a blower, are optimized to perform in a certain operating range.
In this range (highlighted in grey), you will benefit from the system's maximum overall efficiency and a wide modulation range, depending on your additional application pressure losses (intake, burner, heat exchanger, exhaust-pipe).





The operating point of the system (venturi-mixer and blower) moves along the, typically quadratic, system characteristic's curve.
Assuming a known gas type e.g. G20, the minimum heat load $\dot{Q}_{B,min}$ for a system is only determined by the venturi-mixer nozzle diameter.
Given a minimum venturi pressure of 40Pa for a typical mechanical-pneumatic gas valve, $\dot{Q}_{B,min}$ is stated on page 21.

The maximum heat load is a function of the blower's maximum aerodynamic power and the remaining pressure losses in the application. In this example the remaining system pressure losses are 955Pa at 33kW heat load.
Our gas blowers and venturi assembly options offer a high modulation range of the heat load with high efficiency.

The air performance curve of the blower indicates a higher p_{fs} as the pressure losses in the venturi show a nearly quadratic behavior with volume flow q_V. The blower itself is still working in an optimal manner when the venturi is installed and the system is operated as recommended.

Operating curve of the application:
($\dot{Q}_{min}$ and modulation)

Air performance curve:
(blower)

High-efficiency venturi

Gas-air mixing device

Heat output range[1]

- Up to 53kW

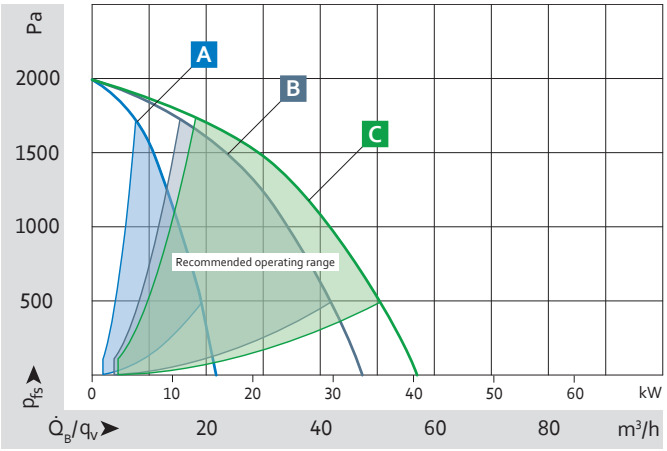
Material/surface

- Plastic

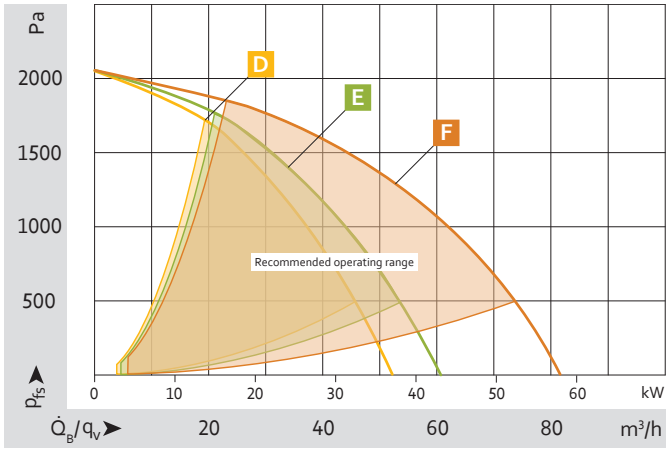
Mechanical data

- Material approval: UL and VDE
- Can be combined with RadiMix VG 71 and RadiMix VG 100
- Depending on the tuning and application pressure losses, modulations up to 1:10 are possible

on page 21	Possible mounting positions
from page 18	Air performance and recommended operating ranges
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com



RadiMix VG 71 **with high-efficiency venturi**



RadiMix VG 100 **with high-efficiency venturi**

Measuring requirements
Air performance measured in accordance with ISO 5801, installation category A.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

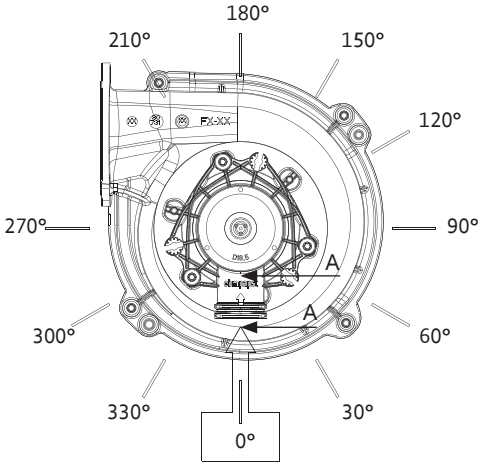
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Venturi nozzle diameter	Minimum heat load $\dot{Q}_{B,min}$	Heat load at x Pa application pressure loss	Pressure loss application	Weight
			mm	kW	kW	Pa	kg
Nominal voltage 220/240VAC, 50/60Hz							
	RadiMix VG 71 **with high-efficiency venturi**						
A	VGM0071MSGBS	**5566780110**	10	1.4	14	500	1.0
B	VGM0071MSGBS	**5566780120**	14	2.8	28	750	1.0
C	VGM0071MSGBS	**5566780130**	15.5	3.3	33	825	1.0
	RadiMix VG 100 **with high-efficiency venturi**						
D	VGM0100MSGBS	**5566780140**	14	2.8	28	945	1.0
E	VGM0100MSGBS	**5566780150**	15.5	3.3	33	955	1.0
F	VGM0100MSGBS	**5566780160**	18.5	4.2	42	1170	1.0

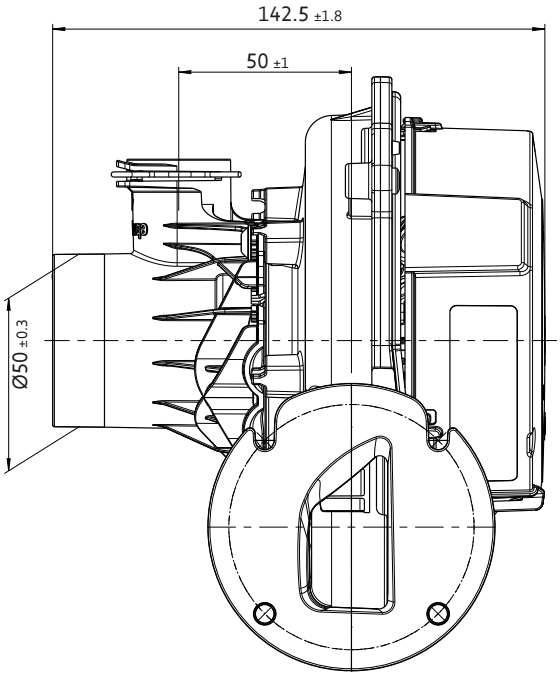
Subject to change. Type specifications as system solution consisting of fan and mounted venturi with gas pipe connection position 0°. Other versions on request.
Only available in combination with an ebm-papst gas valve. Heat output range depending on type of gas concerned and system conditions.

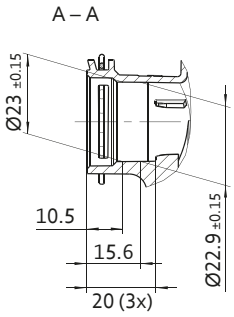
F Technical drawing

Dimensions in mm



position gas pipe connection





EC radial blower

RadiMix VG 71

H_2

Heat output range[1]

- Up to 41kW

Material/surface

- Housing: Die-cast aluminum/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

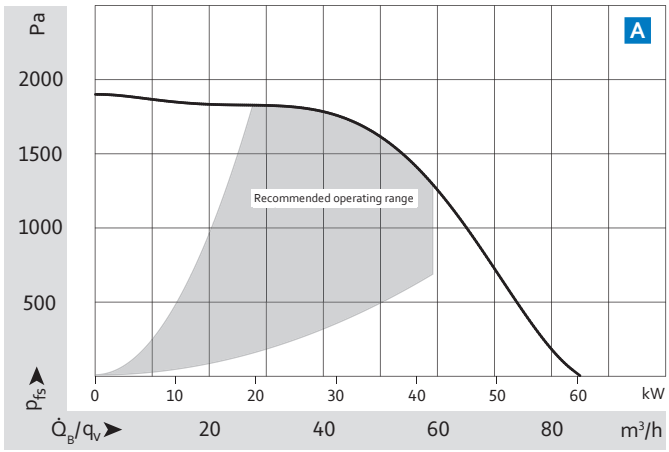
Mechanical data

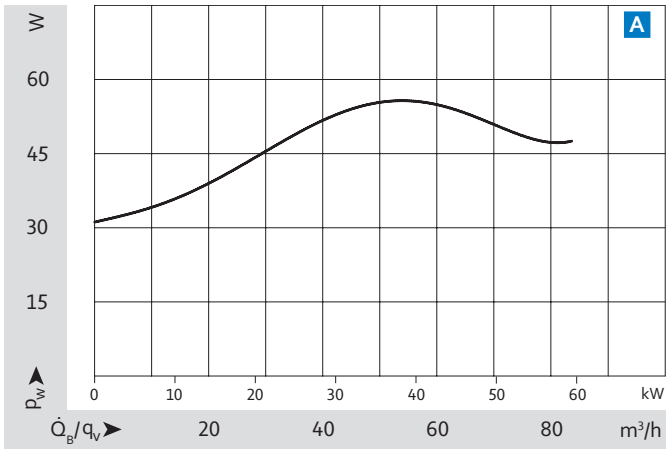
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- High-efficiency venturi available

Electrical data

- Designed for protection class I

on page 17	Possible mounting positions and system solutions
from page 18	Air performance and recommended operating ranges
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

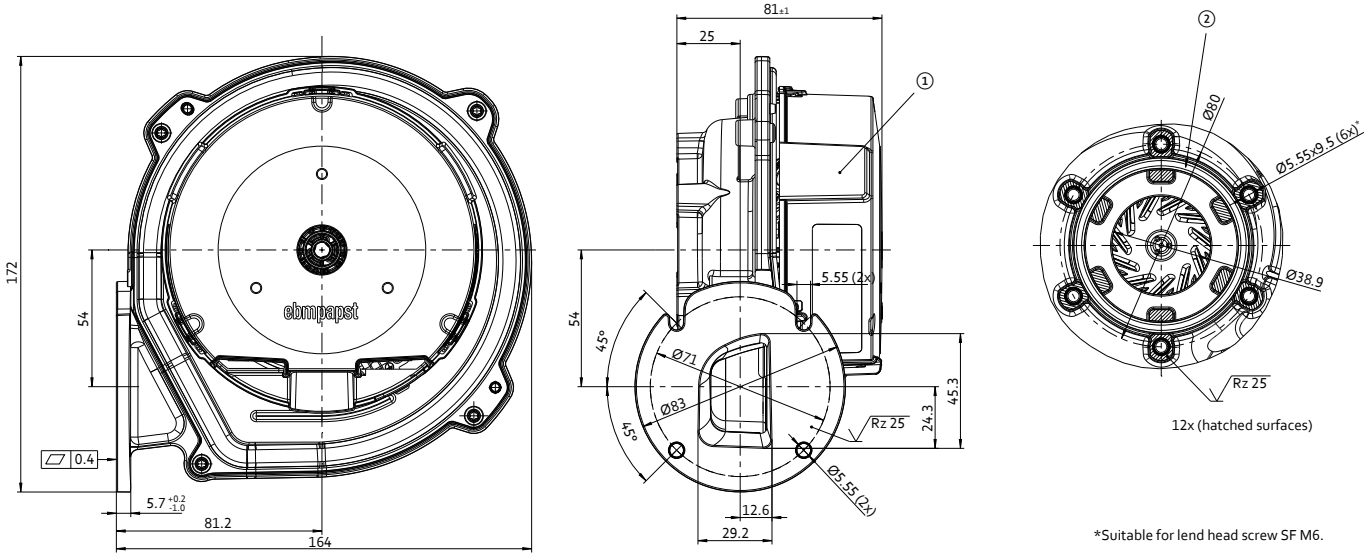
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 220/240VAC, 50/60Hz							
A	VGR0071MSGBS	**8331000001**	14000	65	0 up to 60	-15 up to 60	0.9

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



① no handling on the motor cap permitted

② groove suitable for round sealing ring 63x3

EC radial blower

RadiMix VG 100

H_2

on page 17	Possible mounting positions and system solutions
from page 18	Air performance and recommended operating ranges
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 57kW

Material/surface

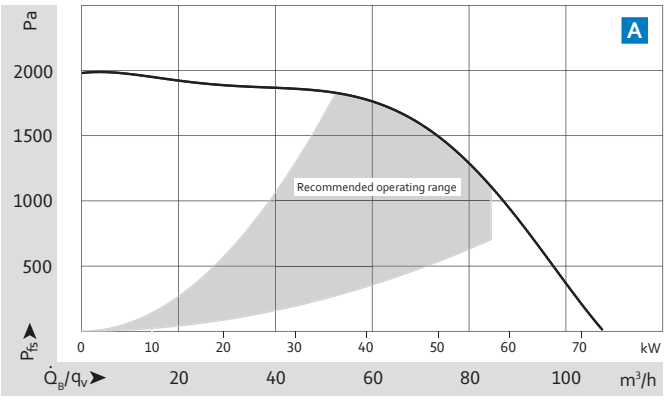
- Housing: Die-cast aluminum/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

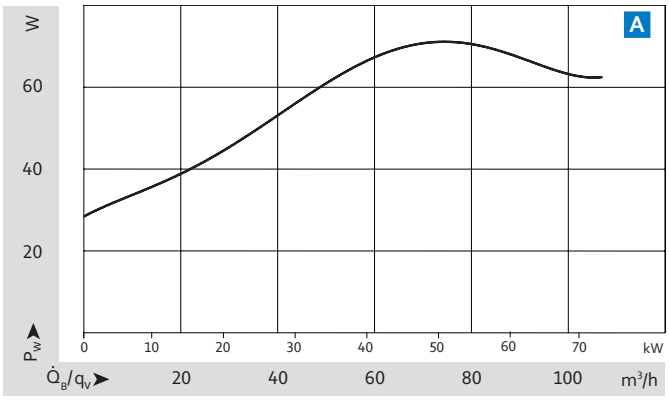
Mechanical data

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- High-efficiency venturi available

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

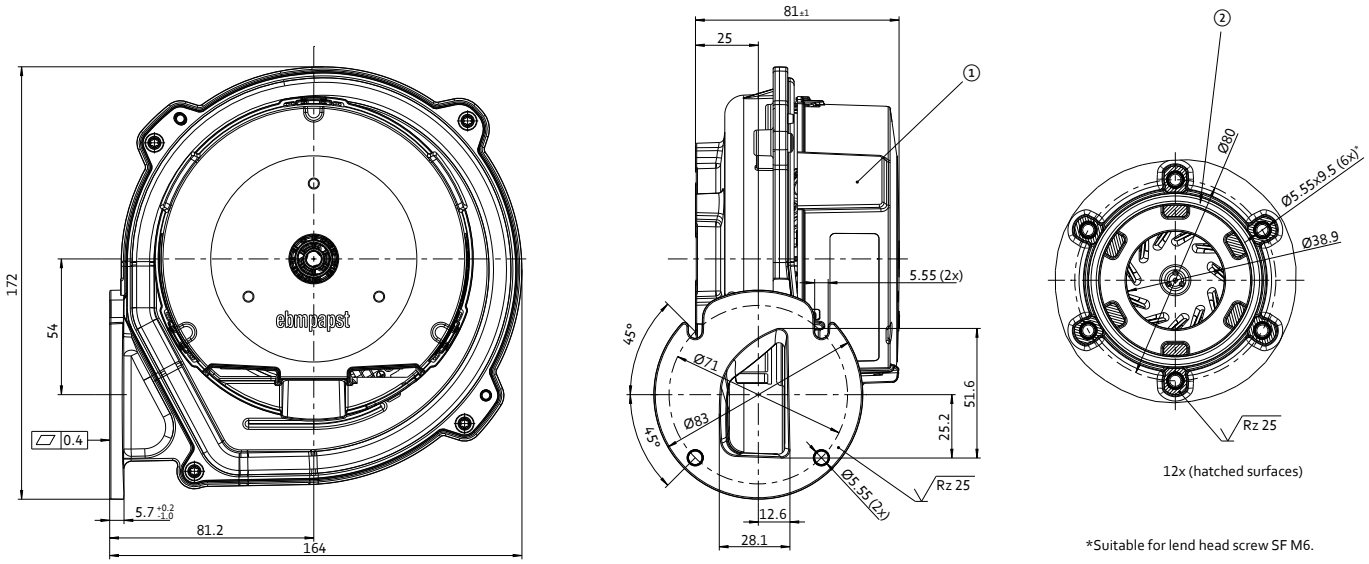
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 220/240VAC, 50/60Hz							
A	VGR0100MSGBS	**8331000002**	10000	90	0 up to 60	-15 up to 60	0.9

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



① no handling on the motor cap permitted

② groove suitable for round sealing ring 63x3

EC radial blower

RadiMix VG 108

H_2

Heat output range[1]

- Up to 93kW

Material/surface

- Housing: Die-cast aluminum/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

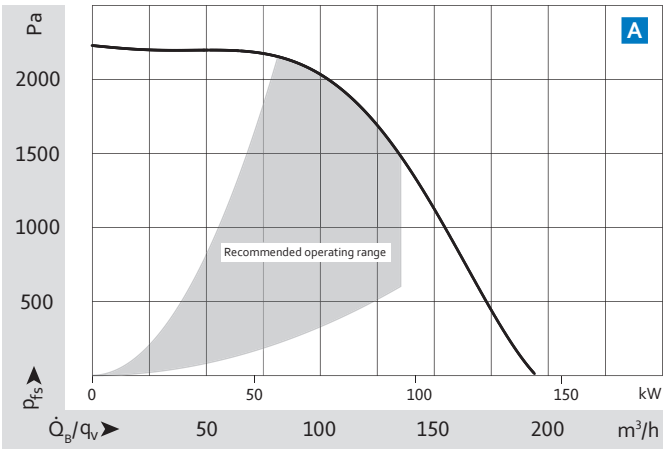
Mechanical data

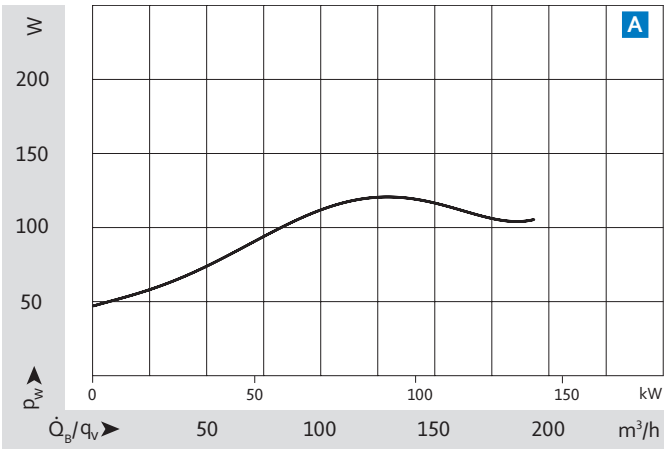
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- High-efficiency venturi available on request

Electrical data

- Designed for protection class I

on page 17	Possible mounting positions and system solutions
from page 18	Air performance and recommended operating ranges
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com





Measuring requirements

Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

[1] **Heat output range**

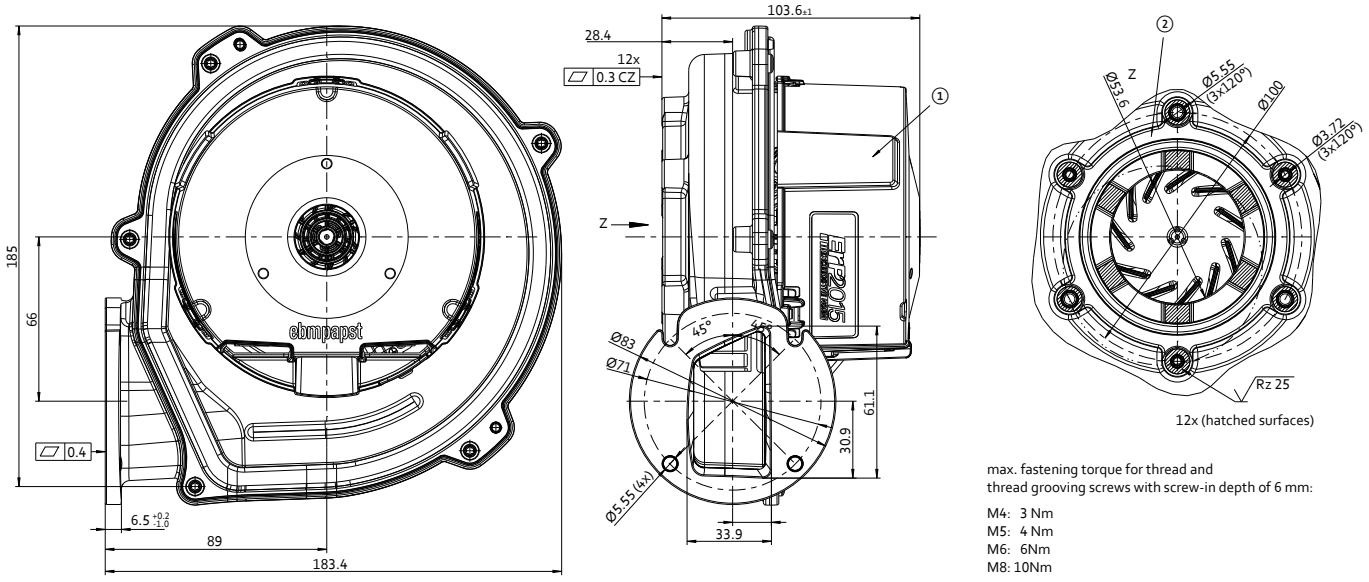
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 220/240VAC, 50/60Hz							
A	VGR0108MSGDS	**5566780260**	10000	135	0 up to 60	-15 up to 60	1.2

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



max. fastening torque for thread and thread grooving screws with screw-in depth of 6 mm:

M4: 3 Nm
M5: 4 Nm
M6: 6Nm
M8: 10Nm

① no handling on the motor cap permitted

② groove suitable for round sealing ring 70x3

EC radial blower

NRG 118

H_2

Heat output range[1]

- Up to 42kW

Material/surface

- Housing: Aluminum
- Impeller: Plastic
- Motor protection cap: Plastic

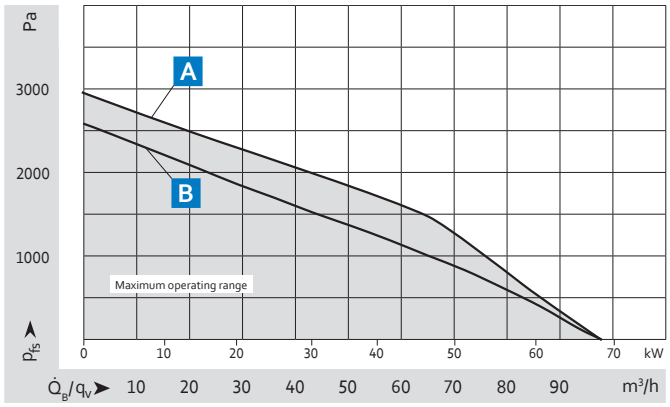
Mechanical data

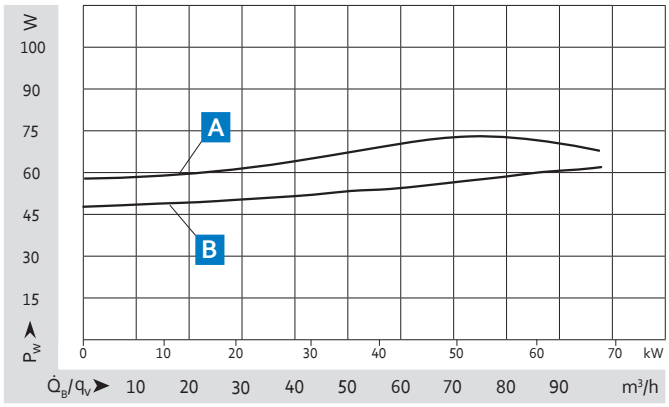
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- Multi-venturi available

Electrical data

- Designed for protection class I

on page 17	Possible mounting positions and system solutions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

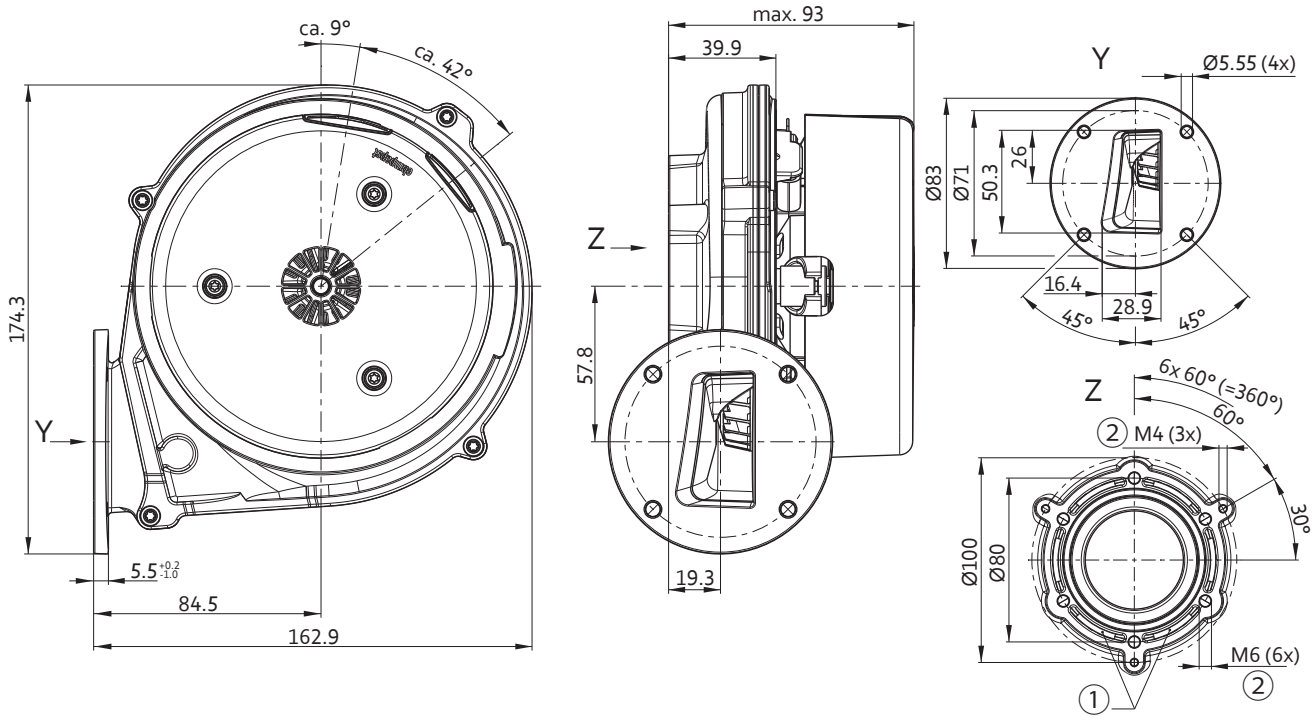
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 230VAC, 50Hz							
A	VGR0118NSHCS	**5566731160**	10000	70	0 up to 60	-15 up to 60	1.0
Nominal voltage 115VAC, 60Hz							
B	VGR0118NSHCS	**5566730030**	10000	61	0 up to 60	-15 up to 60	1.0

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 63 x 3
(2) 6.5 deep

EC radial blower

RG 148

on page 17	Possible mounting positions and system solutions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 110kW

Material/surface

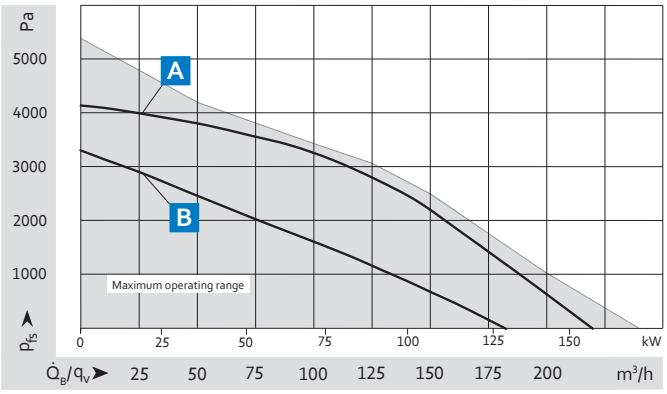
- Housing: Aluminum
- Impeller: Plastic
- Motor protection cap: Plastic

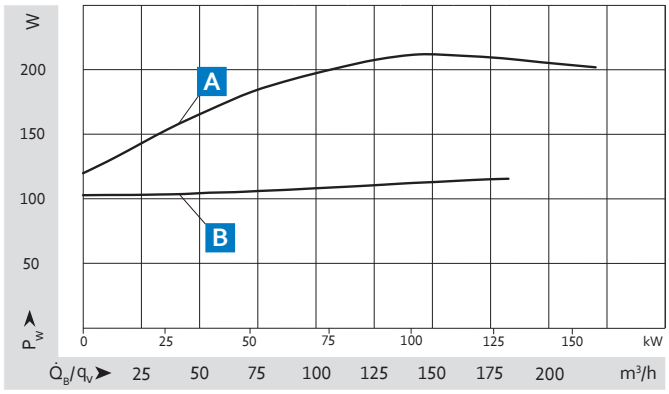
Mechanical data

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- Multi-venturi available

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

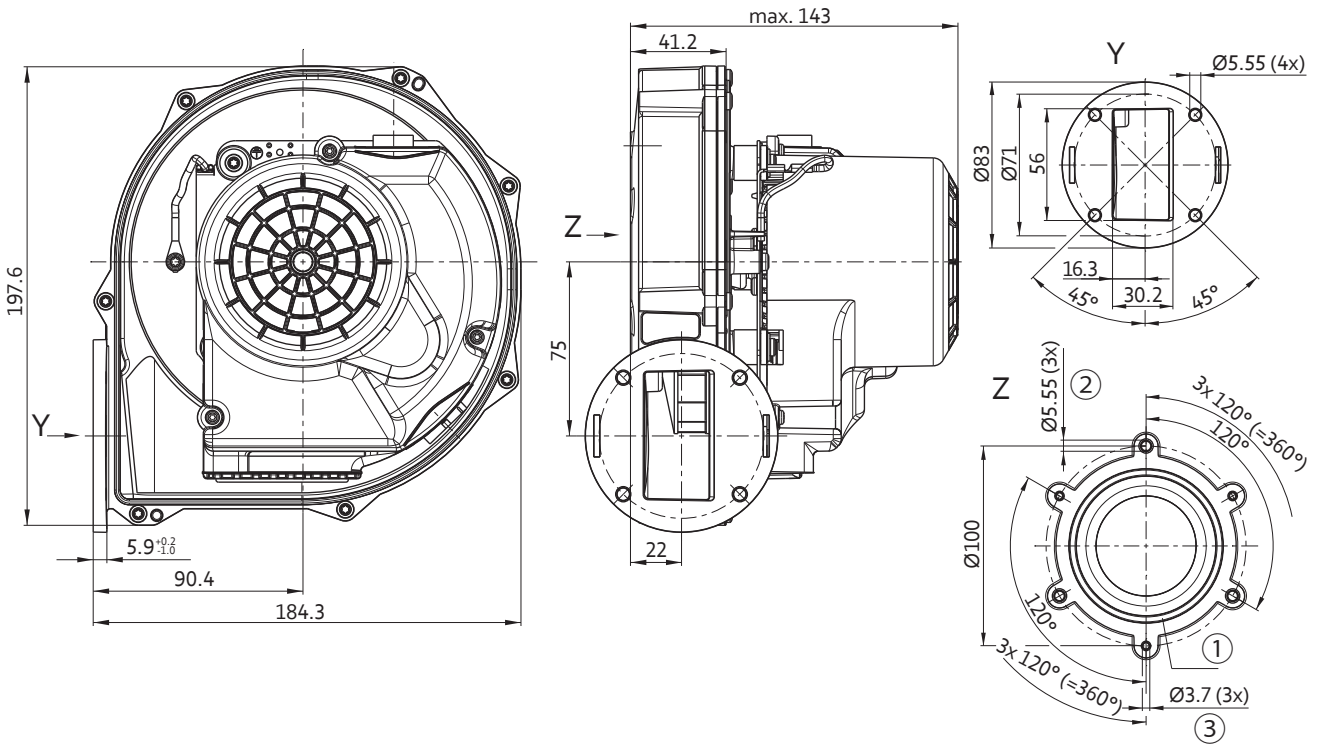
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 230VAC, 50/60Hz							
A	VGR0148XSHGS	**5566725230**	9000	200	0 up to 60	-15 up to 60	2.1
Nominal voltage 120VAC, 60Hz							
B	VGR0148XSHGS	**on request**	8200	130	0 up to 60	-15 up to 60	2.0

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 70 x 3

(2) 10.5 deep

(3) 9.5 deep

EC radial blower

NRG 137

on page 17	Possible mounting positions and system solutions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 150kW

Material/surface

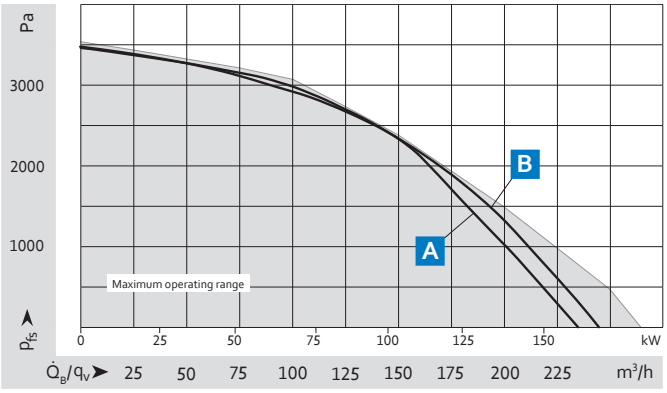
- Housing: Aluminum
- Impeller: Plastic
- Motor protection cap: Plastic

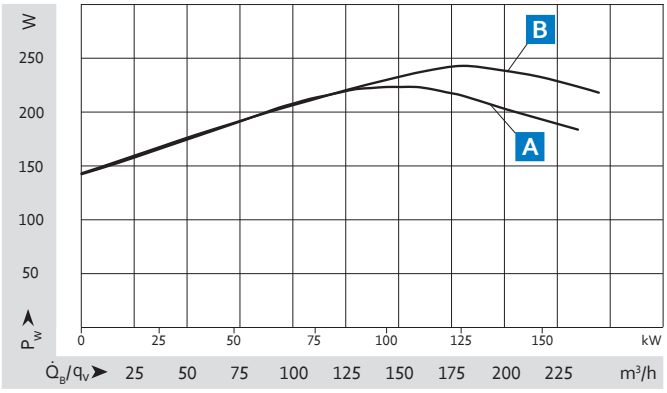
Mechanical data

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings
- Multi-venturi available

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

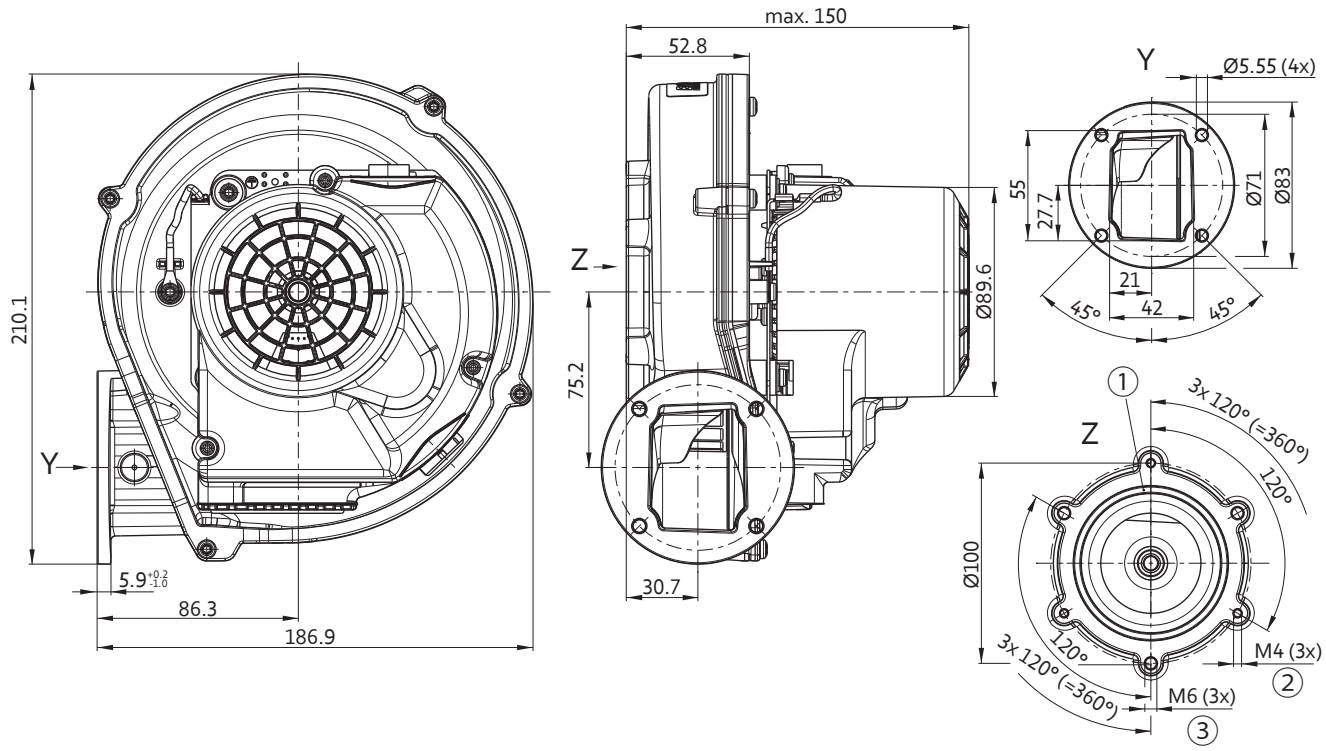
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 230VAC, 50/60Hz							
A	VGR0137NSHGS	**5566733110**	8500	220	0 up to 60	-15 up to 60	1.9
Nominal voltage 120VAC, 60Hz							
B	VGR0137NSHGS	**5566733040**	8500	250	0 up to 60	-15 up to 60	2.4

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 70 x 3
(2) 6.5 deep
(3) 7.5 deep

EC radial blower

RG 175

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 200kW

Material/surface

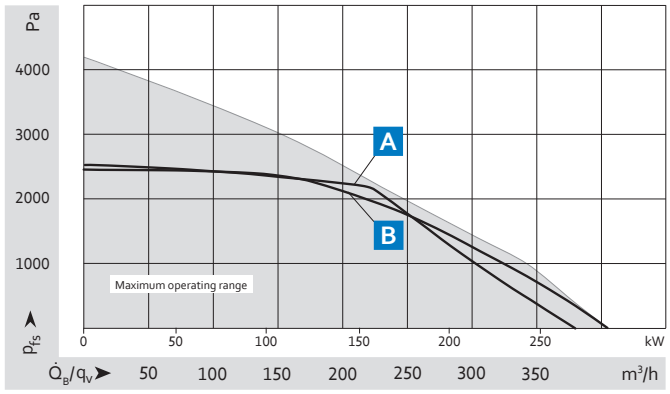
- Housing: Aluminum
- Impeller: Plastic
- Motor protection cap: Plastic

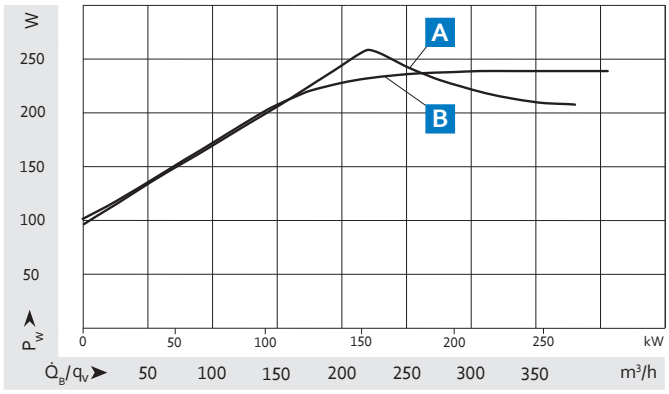
Mechanical data

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

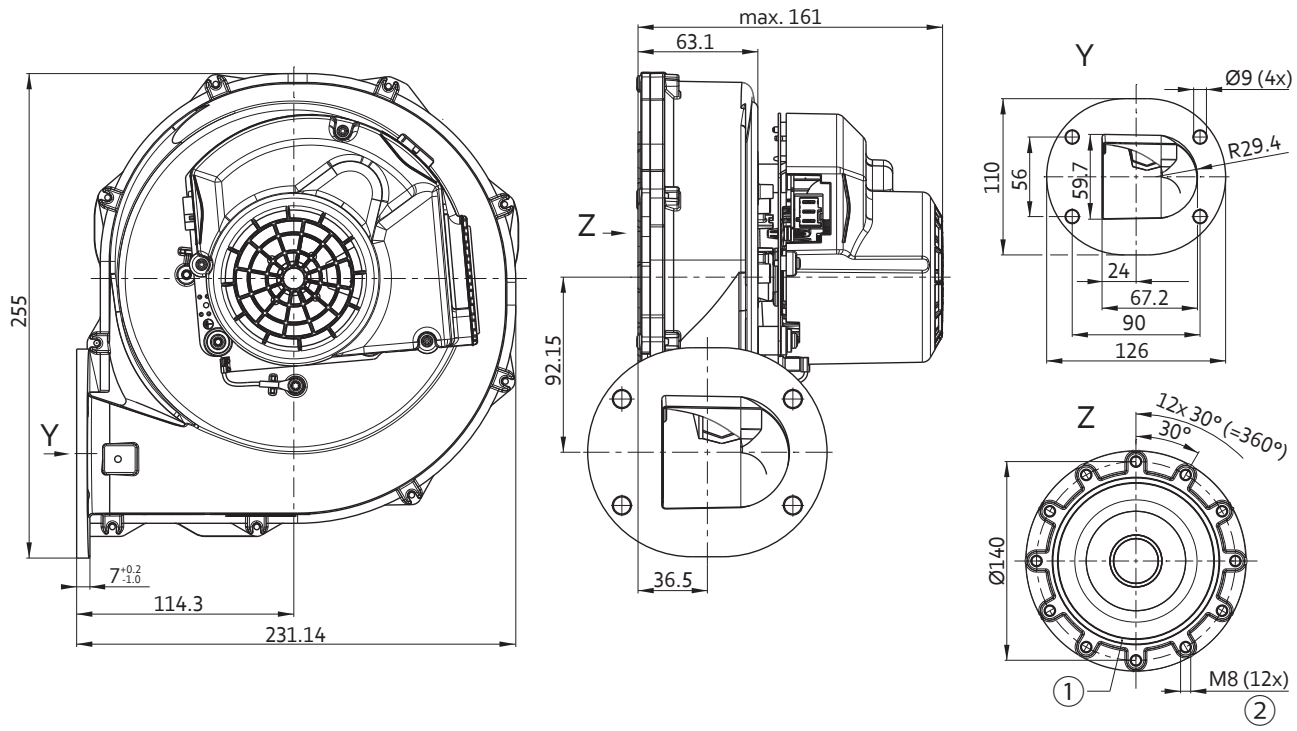
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 230VAC, 50/60Hz							
A	VGR0175XSHGS	**5566714090**	6250	270	0 up to 60	-15 up to 60	2.9
Nominal voltage 120VAC, 60Hz							
B	VGR0175XSHGS	**5566714002**	6250	240	0 up to 60	-15 up to 60	2.8

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 110 x 3.4
(2) 8.5 deep

EC radial blower

G1G 170

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 300kW

Material/surface

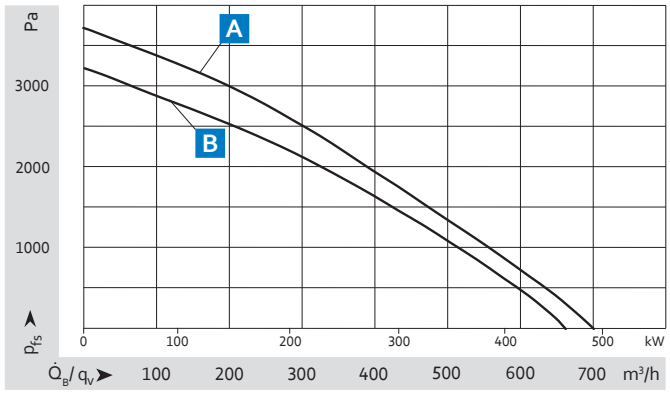
- Housing: Aluminum
- Impeller: Sheet aluminum
- Motor protection cap: Plastic

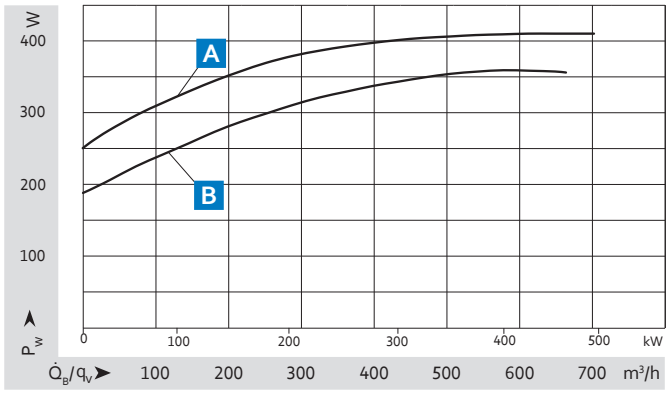
Mechanical data

- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

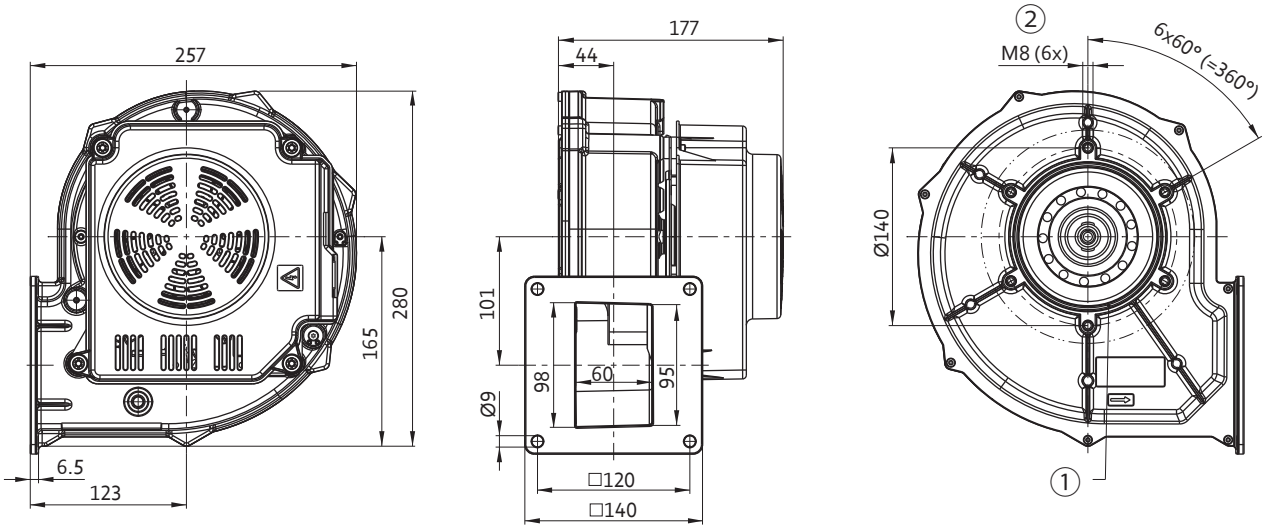
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 1~230VAC, 50/60Hz							
A	VGR0170XSPGS	**5560001182**	7200	420	0 up to 55	-15 up to 55	5.0
Nominal voltage 1~115VAC, 50/60Hz							
B	VGR0170XSPGS	**5560001011**	7200	360	0 up to 55	-15 up to 55	5.0

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 110 x 3.2
(2) 9.5 deep

EC radial blower

G3G 200

Heat output range[1]

- Up to 500kW

Material/surface

- Housing: Aluminum
- Impeller: Sheet aluminum
- Motor protection cap: Plastic

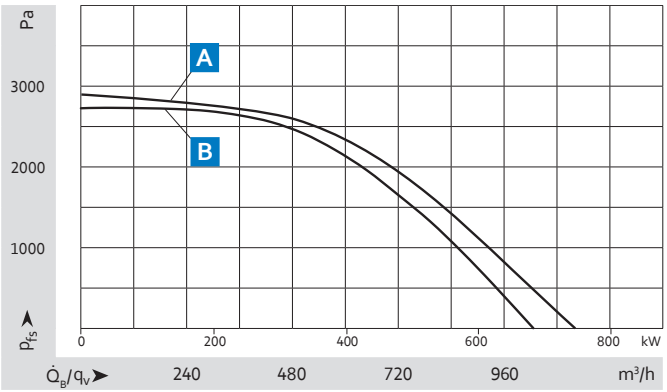
Mechanical data

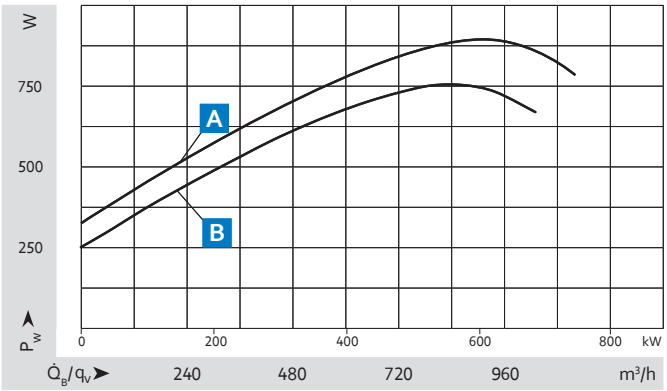
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings

Electrical data

- Designed for protection class I

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

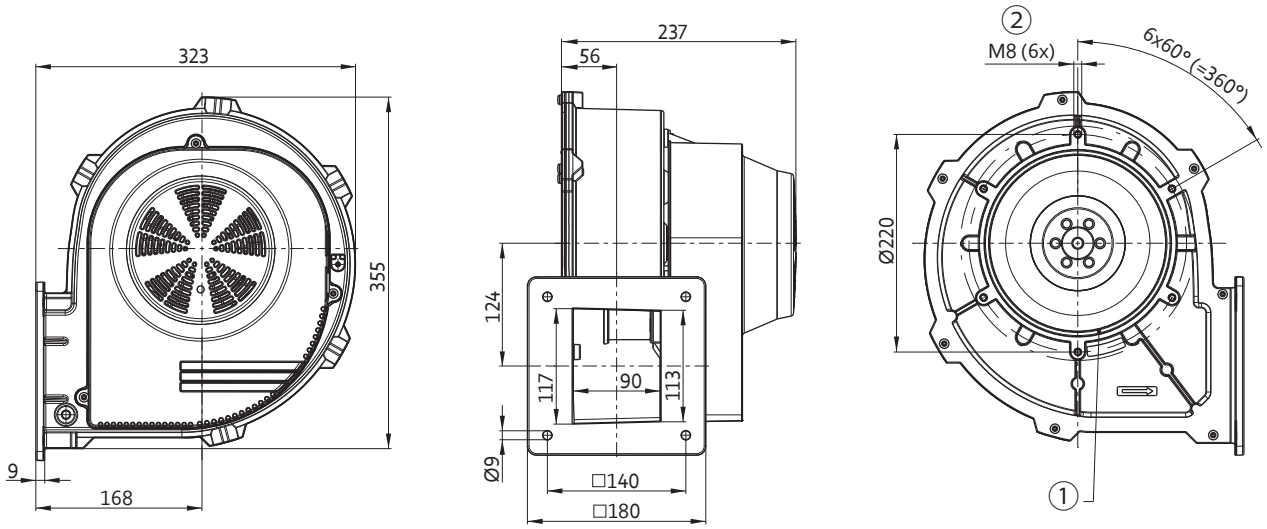
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 1~230VAC, 50/60Hz							
A	VGR0200XSPKS	**5560003030**	6100	890	0 up to 50	-15 up to 50	10
Nominal voltage 1~115VAC, 50/60Hz							
B	VGR0200XSPKS	**5560003051**	5700	800	0 up to 60	-15 up to 60	10

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm

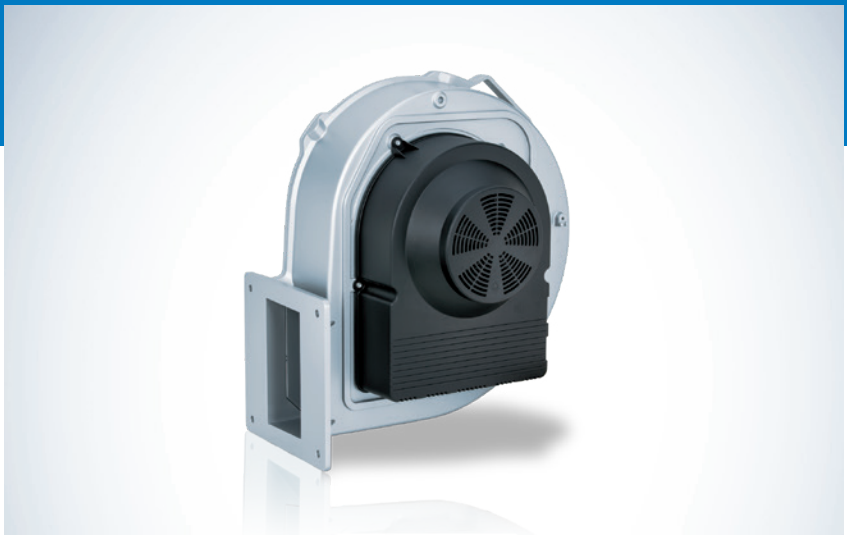


(1) Groove suitable for round sealing ring 180 x 3.5

(2) 12 deep

EC radial blower

G3G 250



Heat output range[1]

- Up to 800kW

Material/surface

- Housing: Aluminum
- Impeller: Metal
- Motor protection cap: Plastic

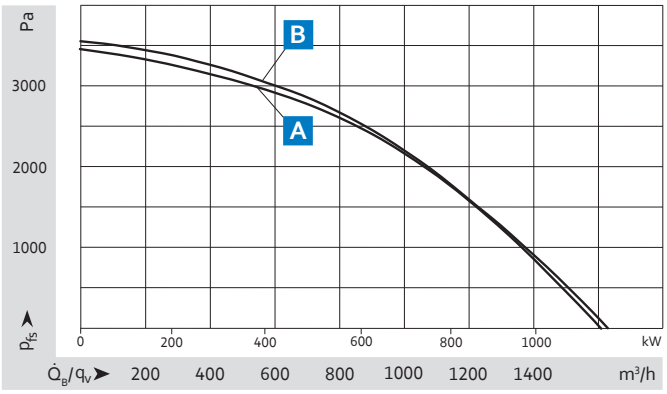
Mechanical data

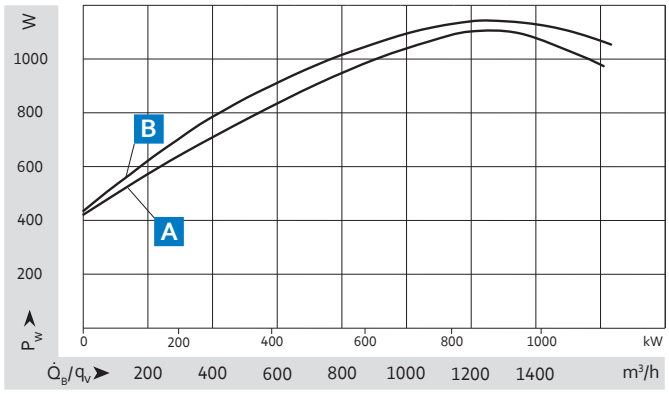
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings

Electrical data

- Designed for protection class I

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

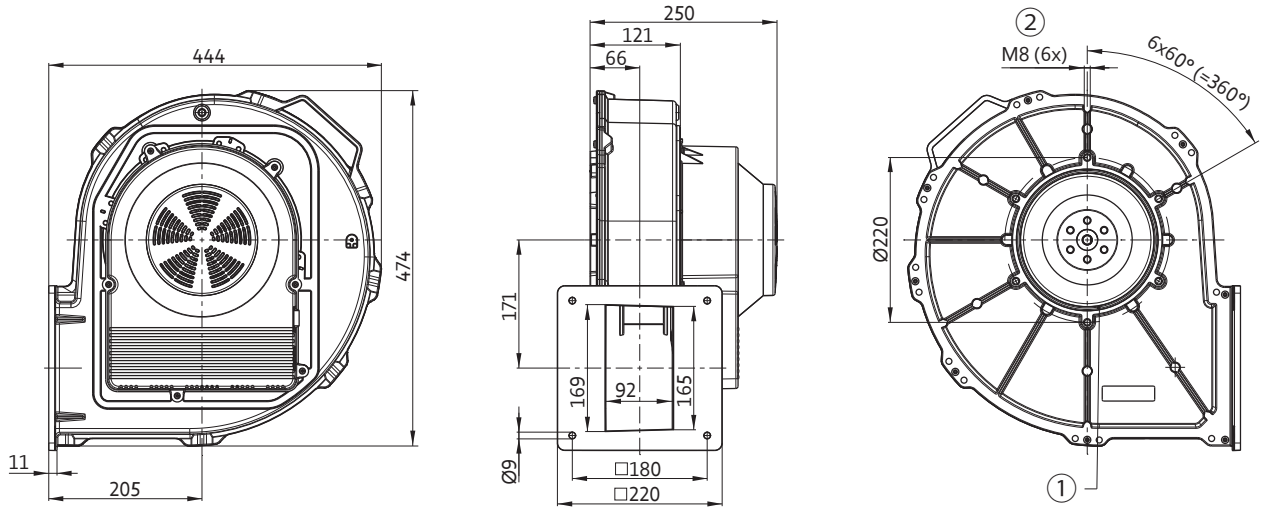
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 1~230VAC, 50/60Hz							
A	VGR0250XSPKS	**5560005021**	5200	1150	0 up to 60	-15 up to 60	13
Nominal voltage 1~115VAC, 50/60Hz							
B	VGR0250XSPKS	**5560005051**	5200	1200	0 up to 60	-15 up to 60	13

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



(1) Groove suitable for round sealing ring 180 x 3.5

(2) 12 deep

EC radial blower

VG 250

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 1100kW

Material/surface

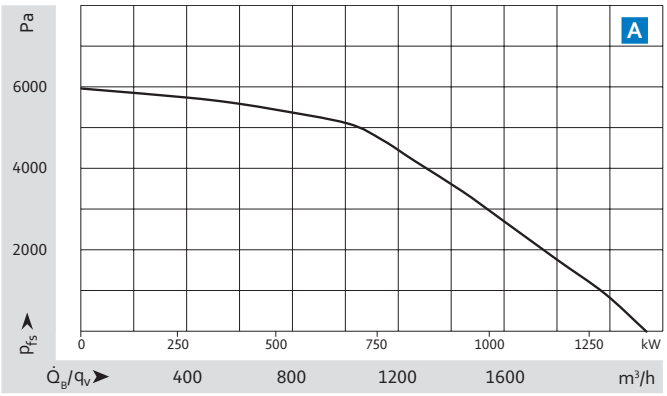
- Housing: Aluminum
- Impeller: Sheet aluminum
- Motor housing: Metal

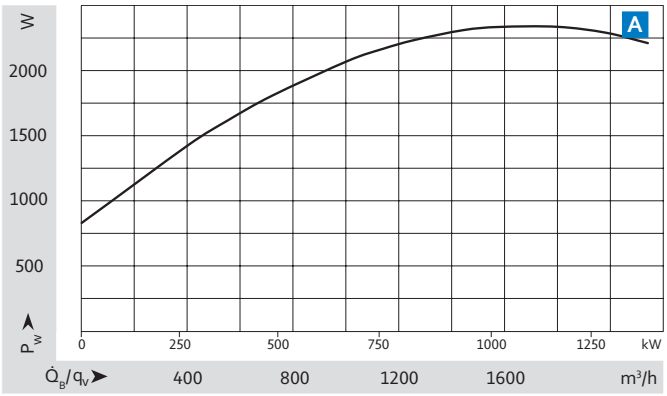
Mechanical data

- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Bearing: Ball bearings

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

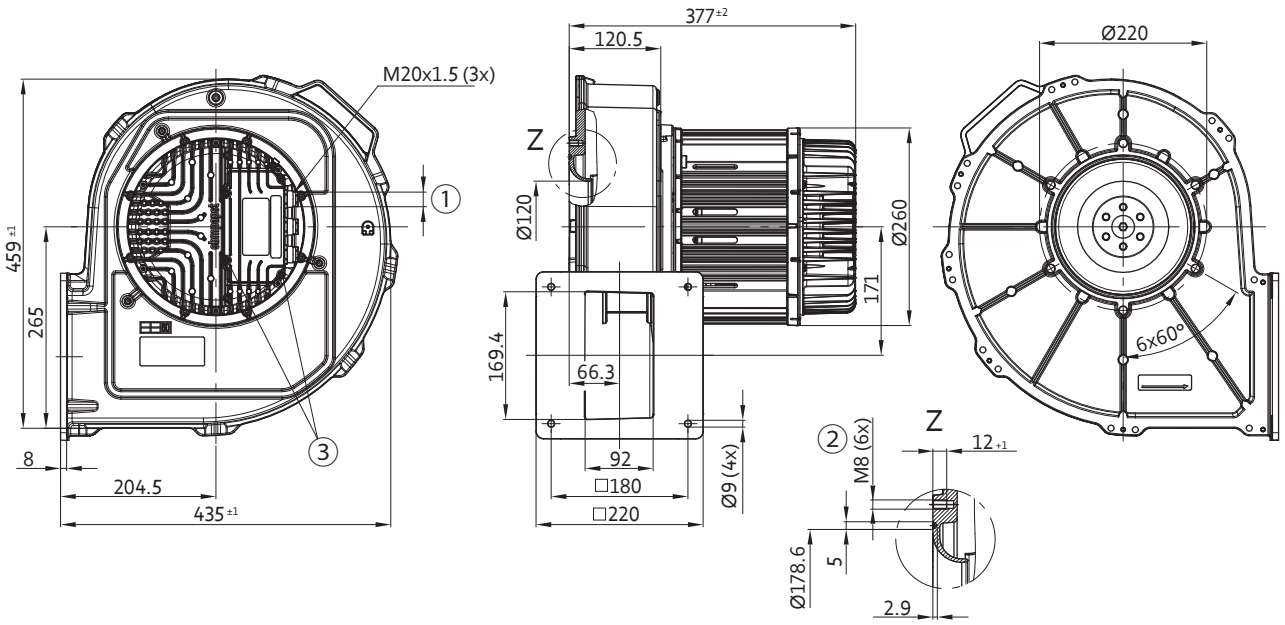
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 3~380 – 480VAC, 50/60Hz							
A	VGR0250XTRHS	**5560006010**	6400	2500	0 up to 50	-15 up to 50	24

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



(1) Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm

(2) Clearance for screw 10-12 mm, tightening torque 20 ± 3 Nm

(3) Tightening torque 3.5 ± 0.5 Nm

EC radial blower

VG 315

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 2000kW

Material/surface

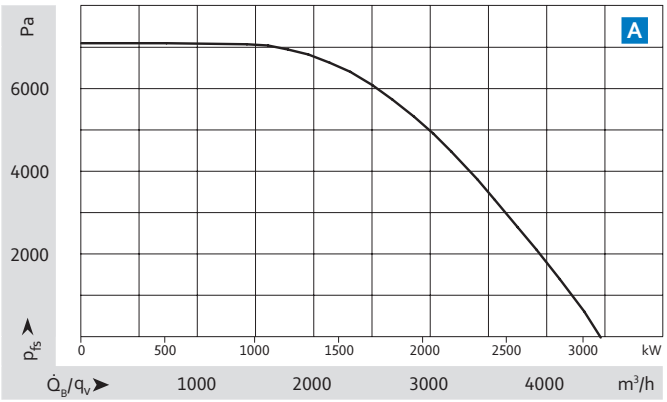
- Housing: Aluminum
- Impeller: Sheet aluminum
- Motor protection cap: Plastic

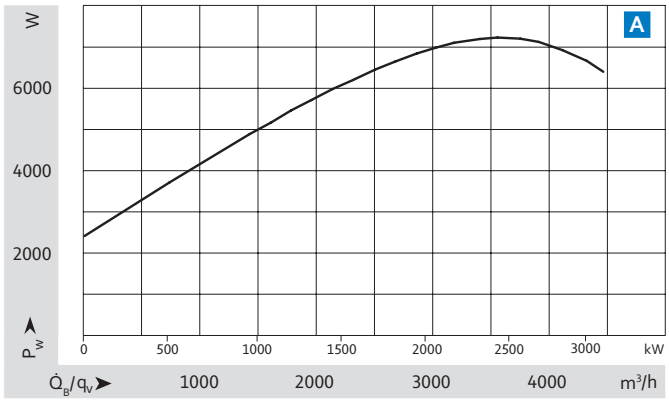
Mechanical data

- Degree of protection: IP20 with cover hood
- Installation position: Any
- Bearing: Ball bearings

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

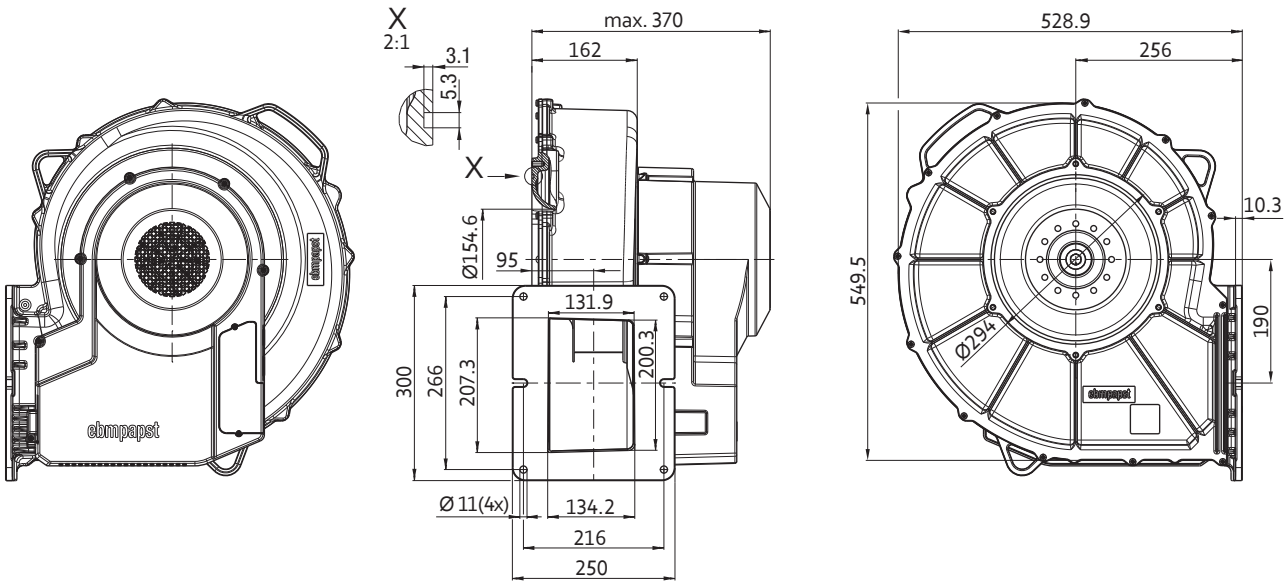
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 3~380 – 480VAC, 50/60Hz							
A	VGR0315XTTLS	**5560007000***	6000	8000	0 up to 60	-15 up to 60	36
Nominal voltage 3~200 – 240VAC, 50/60Hz							
	VGR0315XTTLS	**5560007030**	6000	8000	0 up to 50	-15 up to 60	36

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. * Also available with 0 – 10V interface.

A Technical drawing

Dimensions in mm



EC radial blower

VG 450

on page 17	Possible mounting positions
from page 48	Mains connector X, interface connector W
from page 50	Electrical interfaces
More at	www.ebmpapst.com

Heat output range[1]

- Up to 4000kW

Material/surface

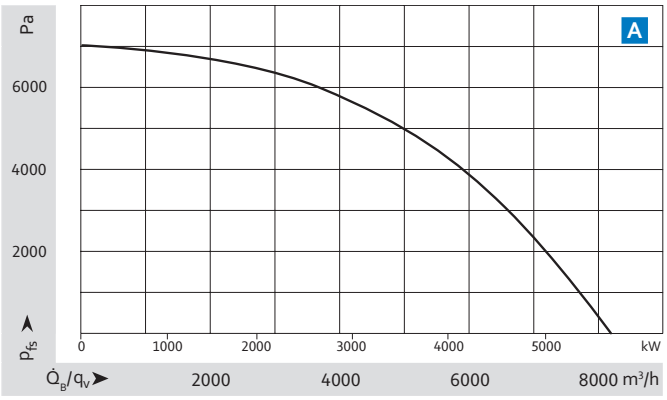
- Housing: Cast aluminum
- Impeller: Sheet aluminum
- Motor casing: Die-cast aluminum
- Electronics box: Die-cast aluminum

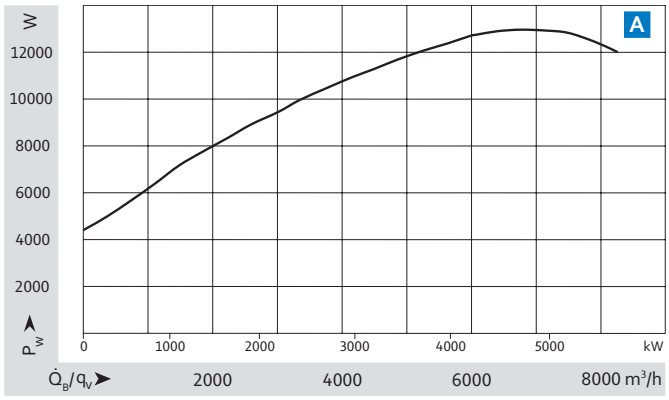
Mechanical data

- Protection class electronics: IP54
- Protection class motor: IP20
- Installation position: Any
- Bearing: Ball bearings

Electrical data

- Designed for protection class I





Measuring requirements
Air performance measured in accordance with ISO 5801, installation category C.
The specifications only apply under the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions.
Heat output $\dot{Q}_B$ for gas type G20 with air-fuel ratio λ=1.3.

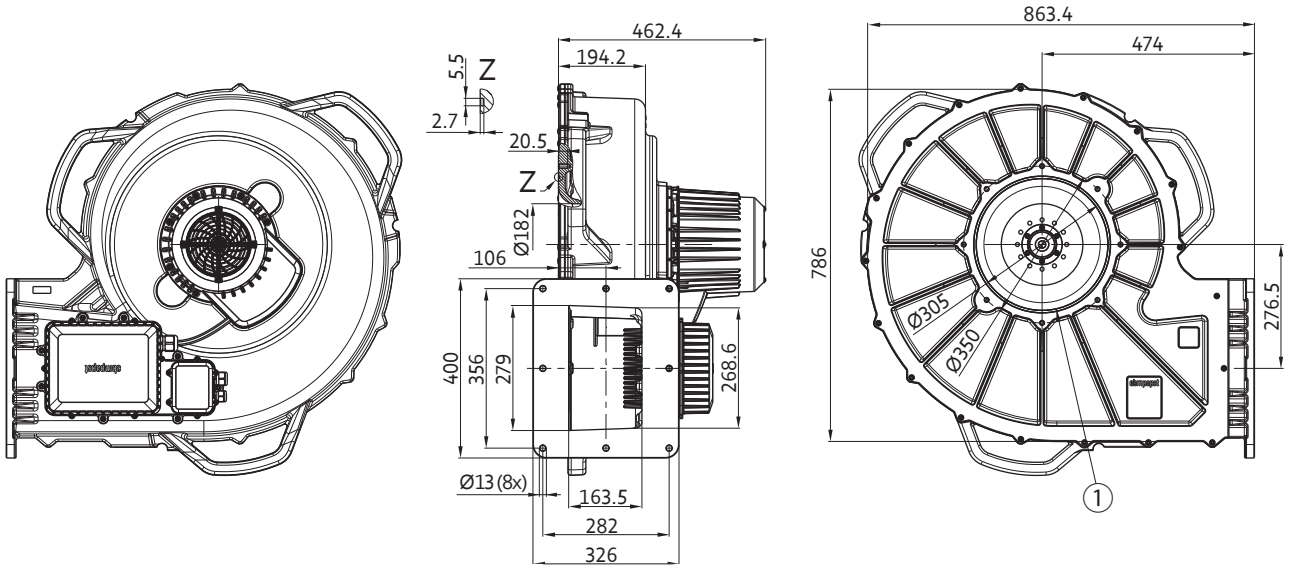
[1] **Heat output range**
approx. data; heat output depends on gas type and the system conditions.

Curve	Type	Part number	Max. speed n	Max. input power P_{ed}	Perm. motor ambient temperature range	Perm. conveying medium temperature range	Weight
			rpm	W	°C	°C	kg
Nominal voltage 3~380-480VAC, 50/60Hz							
A	VGR0450XTTPS	on request	4250	14000	0 up to 40[1)]	-15 up to 50	85

[1)] Short-term 60°C.
Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

A Technical drawing

Dimensions in mm



(1) Seal groove

Connectors

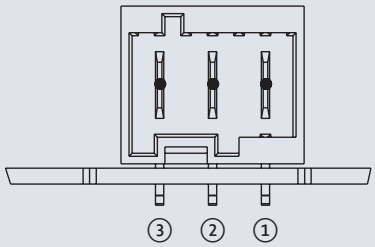
Connector		VG 71	VG 100	VG 108	NRG 118	RG 148	NRG 137	RG 175	G1G 170	G3G 200	G3G 250	VG 250	VG 315	VG 450
1	Mains connector X	x	x	x	x	x	x	x				see operating instructions	see operating instructions	see operating instructions
2	Mains connector X				x	x	x	x	x	x	x			
3	Interface connector W	x	x	x										
4	Interface connector W				x	x	x	x	x					
5	Interface connector W									x	x			
6	Interface connector W													
	Interface 04600451...	03	03	03	04	04	04	04	38	39	39	64	61	63

Connectors refer to 230 V versions. Other plug and interface versions on request.

1 Mains connector X

3-pin pin-connector with coding type 0A according to RAST 5
in 90° angled / horizontal design
with locking feature on top or down for locking device suitable for mating connector according to RAST 5
with coding type 0A as e. g.
CoHaMo YY-A5002-H03-K01 or Lumberg 3623 03 K01

Part number for mating connector:
2431045025



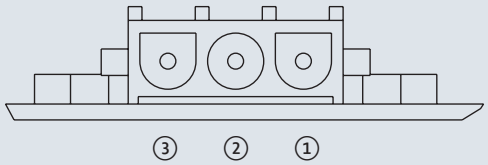
(3) Power supply AC
(2) Protective earth
(1) Power supply AC

2 Mains connector X

3-pin pin-connector according RAST 6.35
in 90° angled / horizontal design
suitable for mating connector according to RAST 6.35
e. g. Tyco Universal MATE-N-LOK

Order number: 1586847-1 and 3 x socket 926882-1

Part number for mating connector:
Connector shell 2430945012; Crimp socket 2430745002/3



(3) Protective earth
(2) Power supply AC
(1) Power supply AC

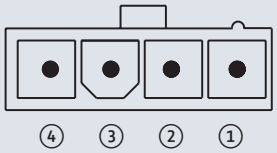
3 Interface connector W

4-pin pin-connector according RAST 4.2
in 90° angled / horizontal design
suitable for mating connector
e. g. Stocko STO-FIT, CoHaMo

Order number Stocko:
EH 705-004-004-960 and 3 x socket RBB 8230.120

Order number CoHaMo:
YY-5700-H04AS-GT and 3x socket YY-5700-TTAMA

Part number for mating connector:
Plug shell 2431045201; Crimp socket 2430045116



4 PWM Input
3 Power supply - (GND)
2 Hall Sensor OUT
1 NC

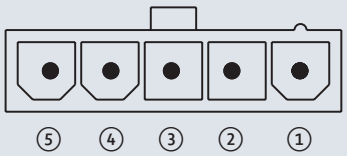
4 Interface connector W

5-pin pin-connector according RAST 4.2
in 90° angled / horizontal design
suitable for mating connector
e. g. Stocko STO-FIT, CoHaMo

Order number Stocko:
EH 705-005-004-960 and 5x socket RBB 8230.120

Order number CoHaMo:
YY-5700-H05AS-GT and 5x socket YY-5700-TTAMA

Part number for mating connector:
Connector shell 2431045200; Crimp socket 2430045116



5 Power supply - (GND)
4 PWM Input
3 NC
2 Hall Sensor OUT
1 Power supply +

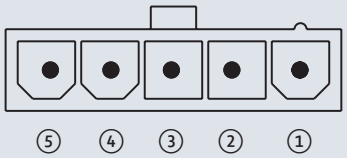
5 Interface connector W

5-pin pin-connector according RAST 4.2
in 90° angled / horizontal design
suitable for mating connector
e. g. Stocko STO-FIT, CoHaMo

Order number Stocko:
EH 705-005-004-960 and 5x socket RBB 8230.120

Order number CoHaMo:
YY-5700-H05AS-GT and 5x socket YY-5700-TTAMA

Part number for mating connector:
Connector shell 2431045200; Crimp socket 2430045116



5 Power supply - (GND)
4 PWM Input
3 Input 0-10 V DC Control
2 Hall Sensor OUT
1 Power supply +

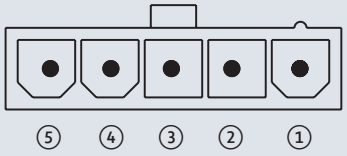
6 Interface connector W

5-pin pin-connector according RAST 4.2
in 90° angled / horizontal design
suitable for mating connector
e. g. Stocko STO-FIT, CoHaMo

Order number Stocko:
EH 705-005-004-960 and 5x socket RBB 8230.120

Order number CoHaMo:
Y-5700-H05AS-GT and 5x socket YY-5700-TTAMA

Part number for mating connector:
Connector shell 2431045200; Crimp socket 2430045116

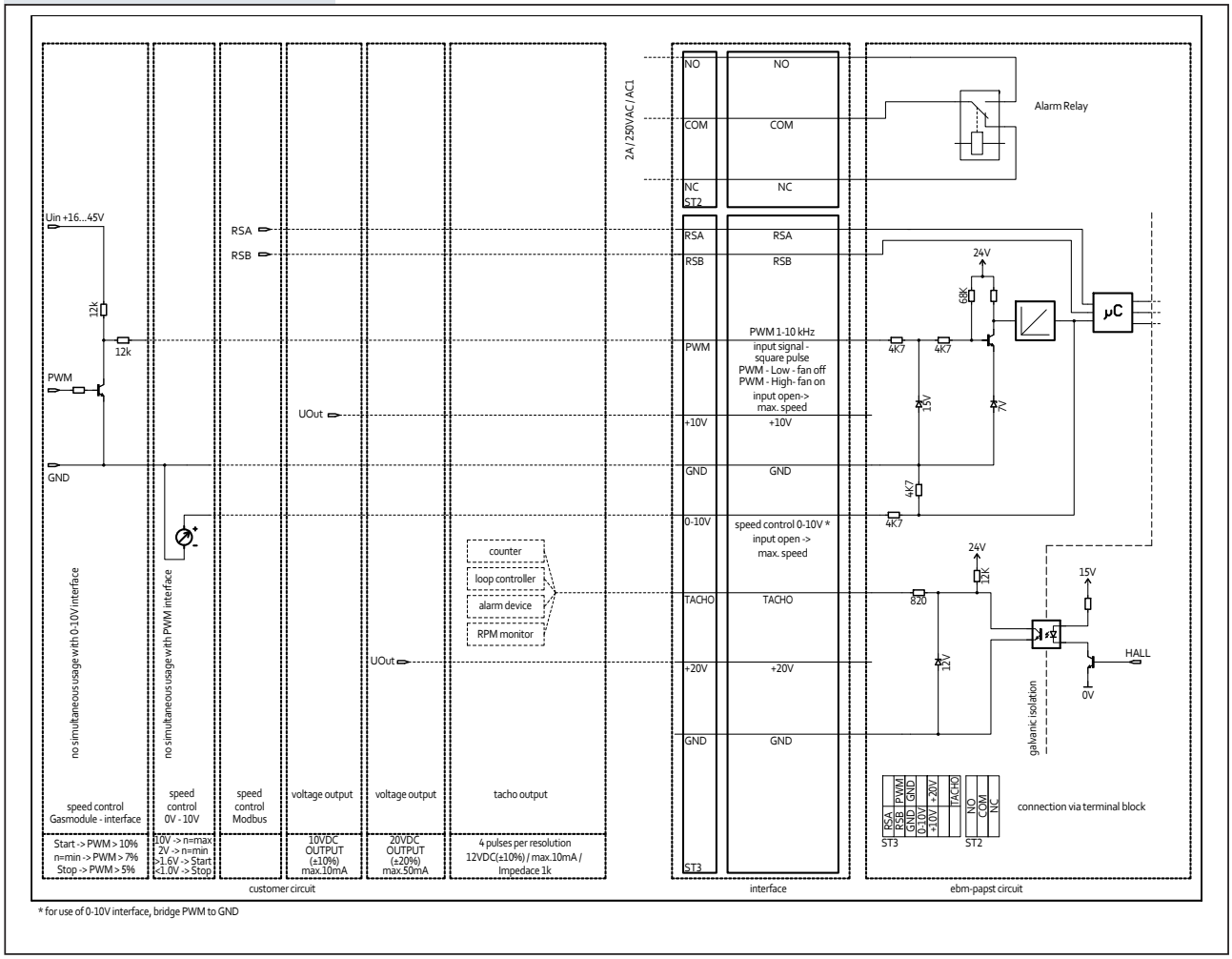


5 Power supply - (GND)
4 PWM Input
3 Input 0-10V DC Control
2 Hall Sensor OUT
1 Voltage Output

Electrical interfaces

	VG 71	VG 100	VG 108	NRG 118	RG 148	NRG 137	RG 175	G1G 170	G3G 200	G3G 250	VG 250	VG 315	VG 450
Interface 04600451...	03	03	03	04	04	04	04	38	39	39	64	61	63

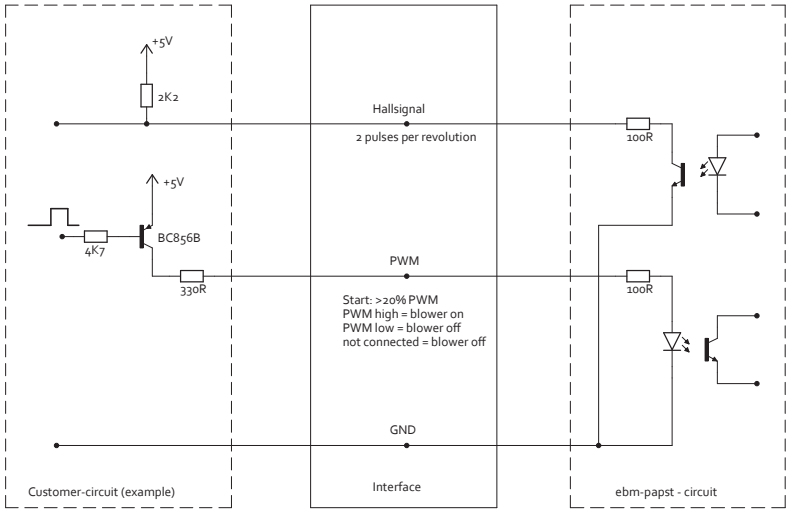
Interface 64 3~ 380 – 480VAC, 50/60Hz



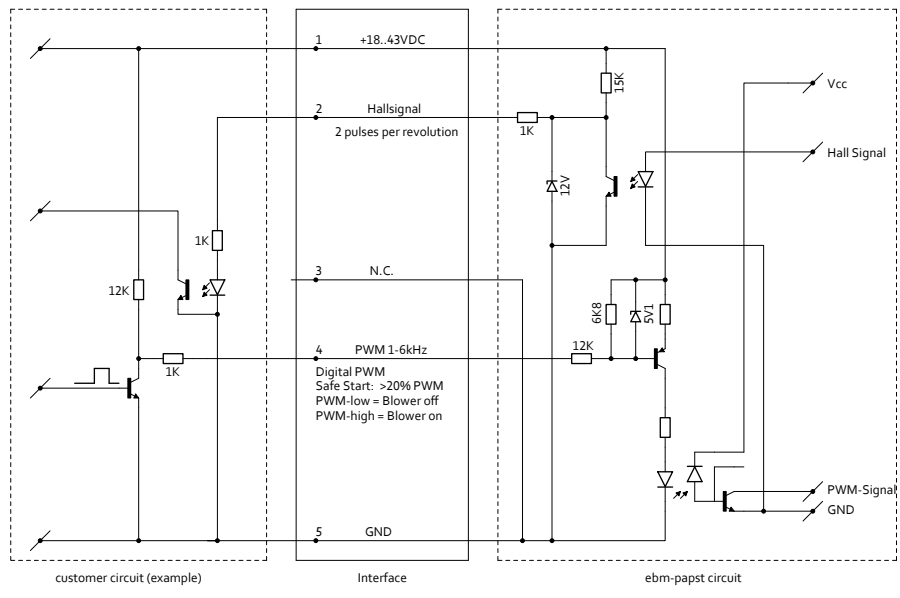
* for use of 0-10V interface, bridge PWM to GND

Further types available on request.

Interface 03 120/230VAC, 50/60Hz



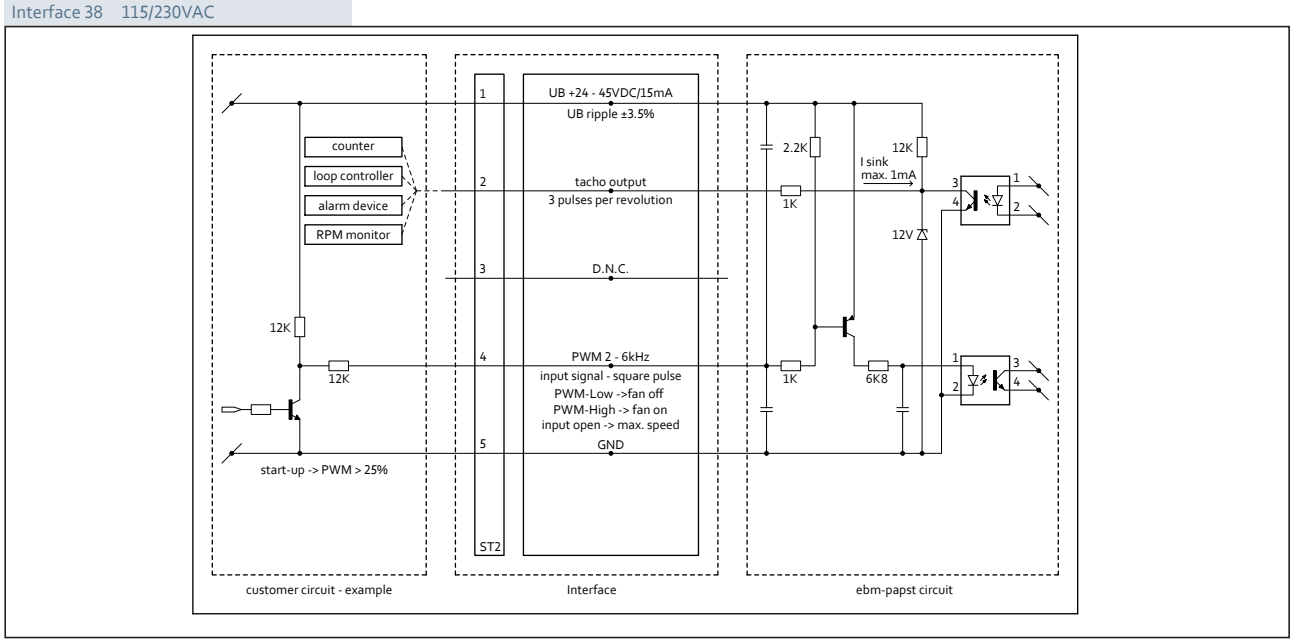
Interface 04 120/230VAC, 50/60Hz



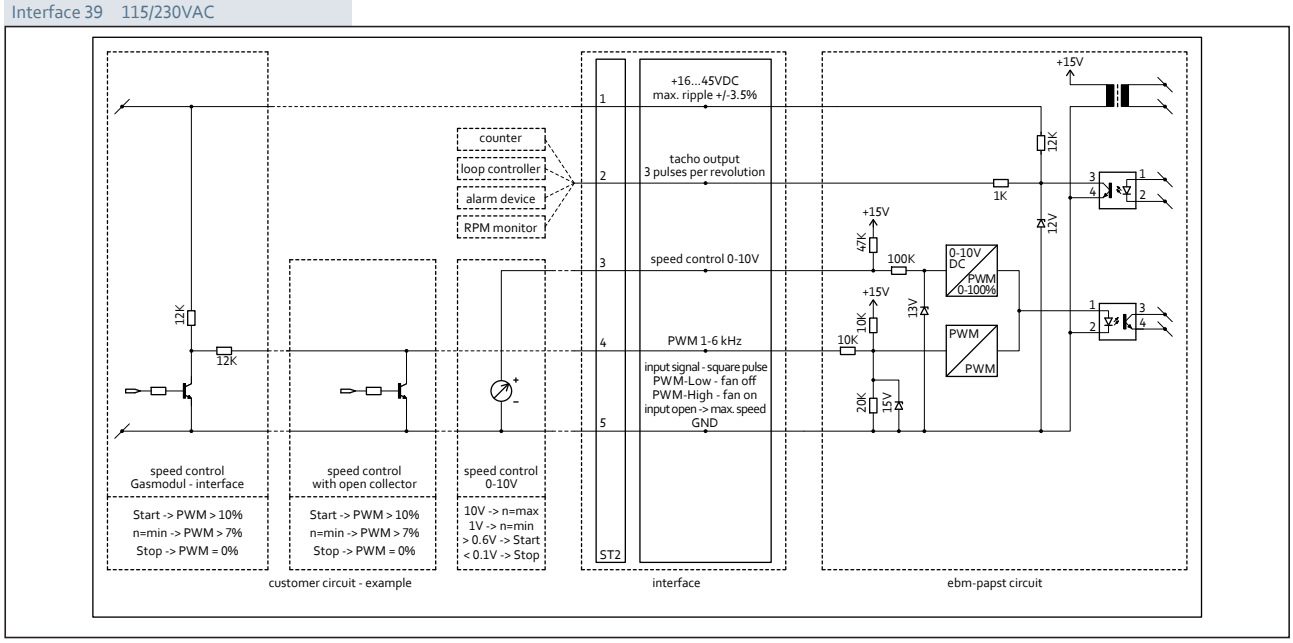
Further types available on request.

Electrical interfaces

Interface 38 115/230VAC

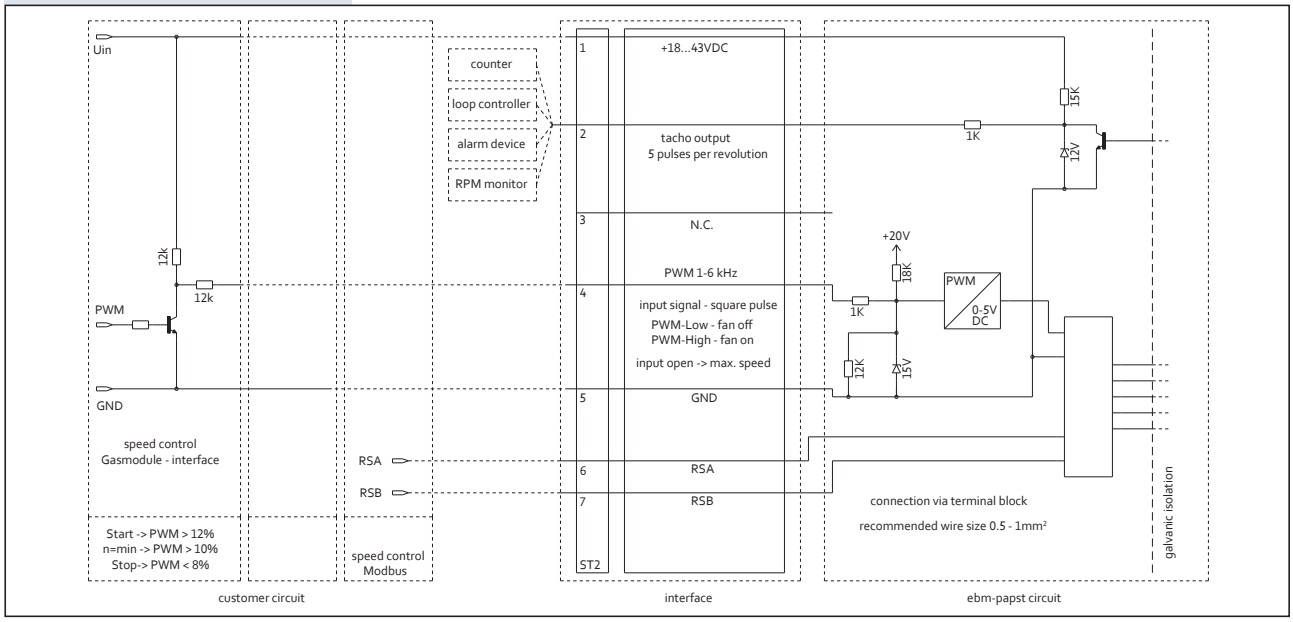


Interface 39 115/230VAC

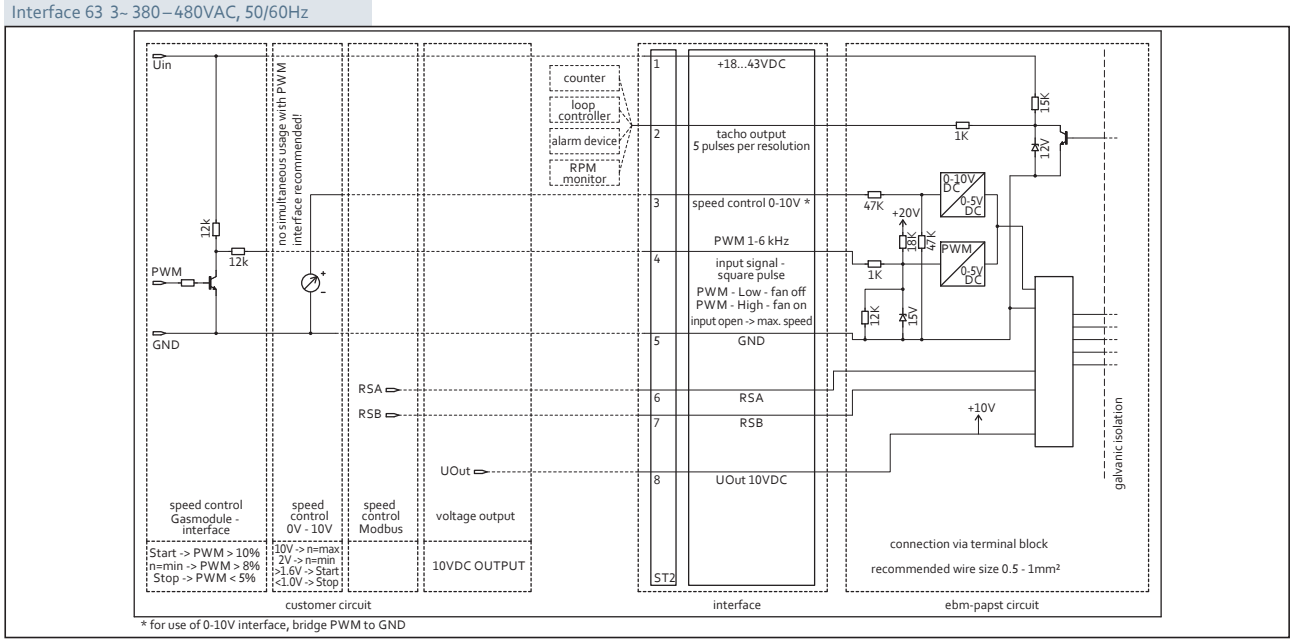


Further types available on request.

Interface 61 3~ 380–480VAC, 50/60Hz



Interface 63 3~ 380–480VAC, 50/60Hz



Further types available on request.

Gas valves

Pneumatic and electronic gas-air control system

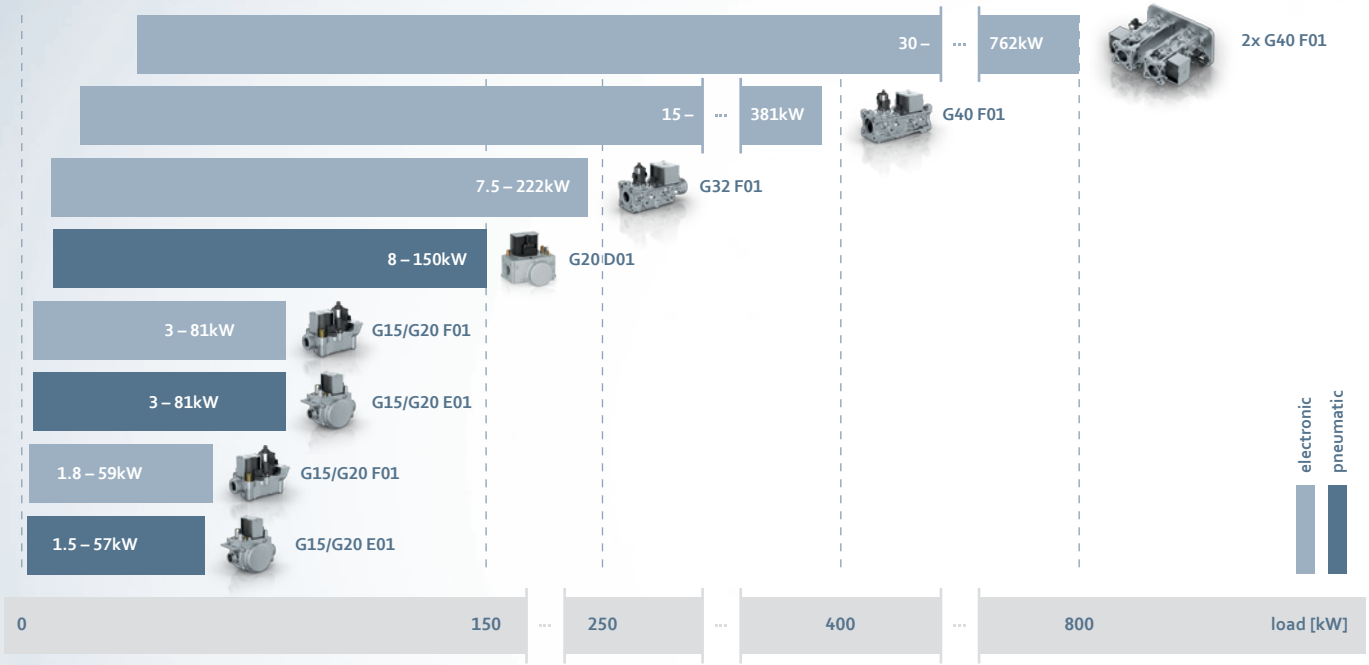
Our gas valves are mainly used in condensing unit applications for domestic heating technology in the low-to-medium output range. They ensure precise gas-air ratio adjustment.

The G20 D01 and G15/G20 E01 gas valves are suitable for condensing units with pneumatic gas-air control systems.

Regardless of the suction pressure generated by the premix blower, these gas valves always keep the offset pressure at zero and compensate for pressure fluctuations in the supply network as well.

The offset (zero point shift) can be configured at the servo controller. At the same time, the desired gas quantity is adjusted using an integrated flow control element. Depending on the design, reference pressure can be connected to the servo controller if required.

The G15/G20 F01,G32 F01 and G40 F01 gas valves are suitable for condensing units with electronic gas-air control systems. Regardless of gas quality and any pressure fluctuations in the supply network, these gas valves regulate the constant gas-air ratio without relying on mechanical gas valve settings.

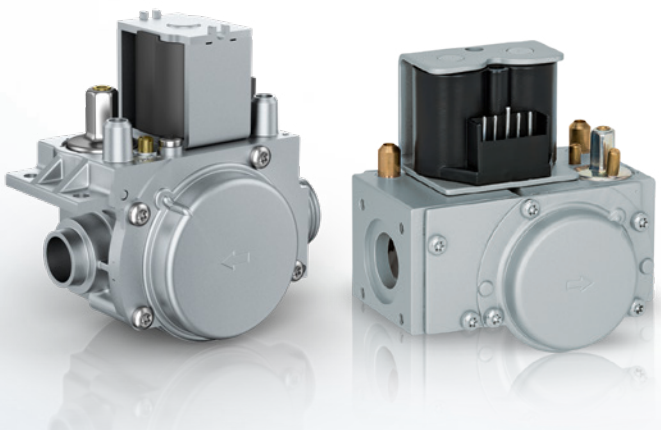


Additional notes

– Work on the gas valve is to be performed by authorised specialists only.

– Please ensure observation of the corresponding installation instructions.

– Corresponding documents with safety instructions are available upon request or on the Internet.

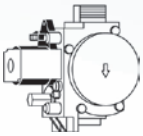
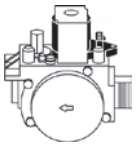
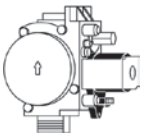
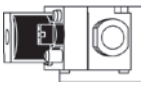
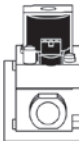
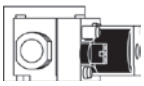


H_2

Our gas valve program is suitable for the natural and liquid gases used in gas heating technology. This also applies to hydrogen. All our gas valves are tested by the German Technical and Scientific Association for Gas and Water (DVGW) for an admixture of 20 percent of the green energy source of the future.

Mounting position

Solenoid at any position between vertical & horizontal – **but not upside down**

Type examination certificate for North America (USA and Canada): Master Contract No. 172723

Applicable standards
ANSI Z21.78 · CSA 6.20 (Reaffirmed):
Combination Gas Controls for gas appliances

Approvals exist for the chief gas consuming countries.

Type examination certificate Product ID number: CE0085CM0036

Applicable directives and standards:

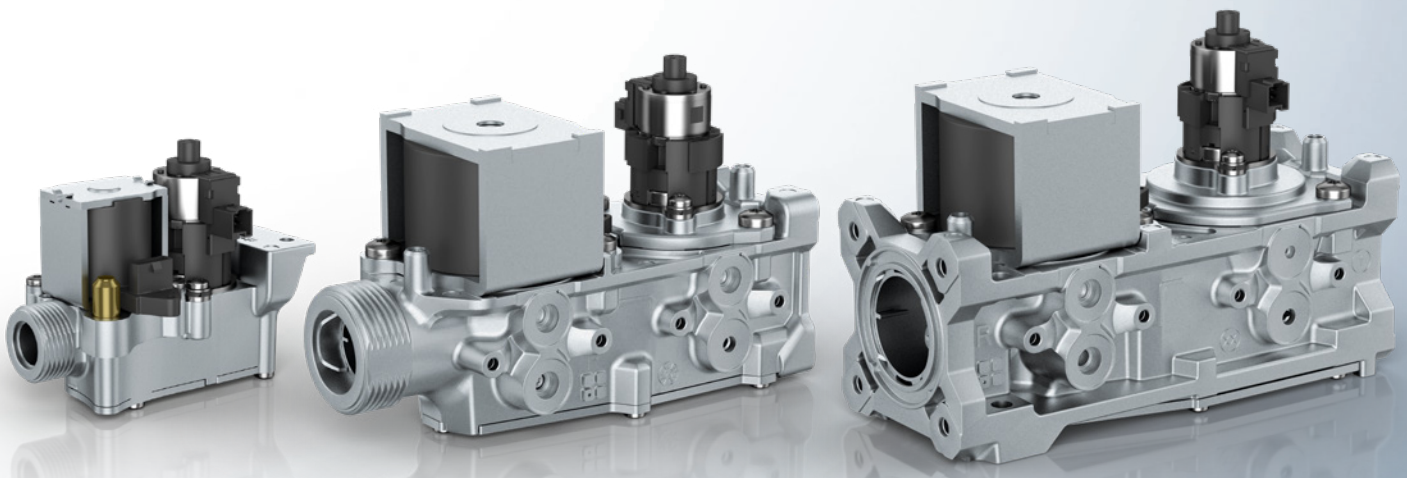
EU/2016/426 Gas Appliances Regulation

– **EN 126:** Multifunctional controls for gas burning appliances

– **EN 13611:** Safety and control devices for gas burners and gas burning appliances – General requirements

– **EN 161:** Automatic shut-off valves for gas burners and gas appliances

– **EN 88-1:** Pressure regulators and associated safety devices for gas appliances – Part 1: Pressure regulators for inlet pressures up to and including 50kPa



Gas valves pneumatic gas-air control system

G15/G20 E01

More at www.ebmpapst.com

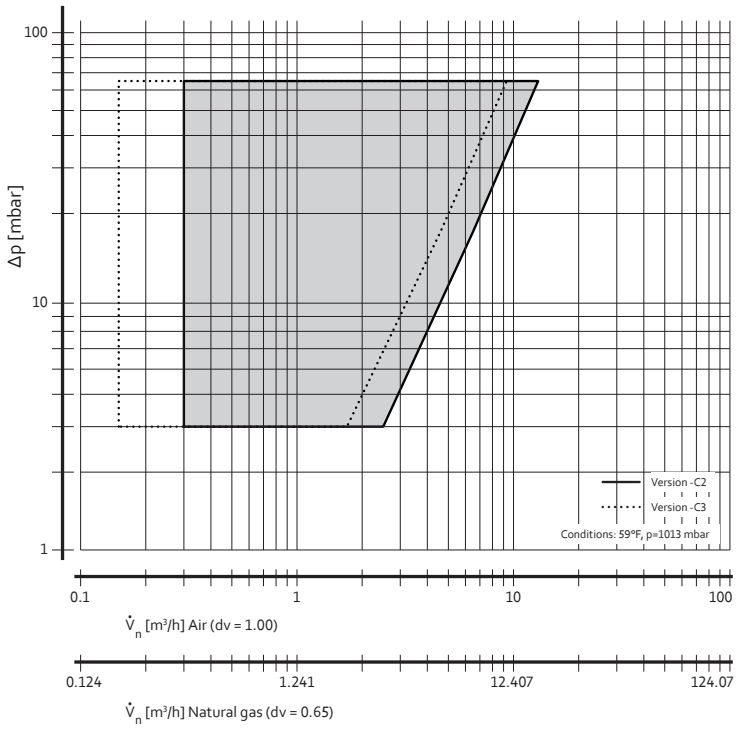
Material/surface

- Housing: Aluminum

Mechanical data

- Degree of protection:
  IP40 in combination with a suitable plug
- Permitted gas families:
  II + III (in accordance with EN 437)
- Maximum inlet pressure:
  65mbar (CE), 0.5psi (CSA)
- Permitted ambient temperature: 0°C to 60°C;
  extended temperature range on request,
  dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Offset correction: +/- 20Pa
- Input (gas connection):
  External thread G¾" or G½" (EN ISO 228)
  or 4 x M4-mounting holes (optional)
- Output: External thread G¾" (EN ISO 228),
  ebm-papst proprietary quick release
- Safety valve:
  Coaxial design: Valve class B/C as per EN 161

Capacity curve – GXXE01-BCXCS-CX



Electrical data

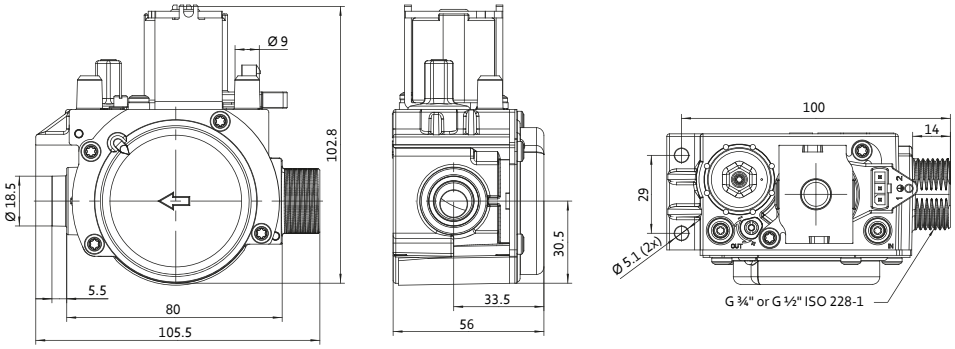
- Designed for protection class I
- Electrical connection:
  Connector shell with 4.20mm grid

Type	Rated voltage	Max. input power	Nominal diameter	Maximum inlet pressure	Flow rate (at Δp = 5mbar)	Automatic shutoff valves (EN 161)	Minimum signal pressure	Opening and closing time	Weight
	V	VA		mbar	m³/h		Pa	s	kg
Nominal data									
	230RAC	9.8	DN15/20	65	3.4	Class B/C	-40	< 1	0.57
	120RAC	9.8	DN15/20	65	3.4	Class B/C	-40	< 1	0.57
GXXE01-BCXCS-CX	24RAC	9.8	DN15/20	65	3.4	Class B/C	-40	< 1	0.57
	24DC	9.8	DN15/20	65	3.4	Class B/C	-40	< 1	0.57
	22DC	11.9	DN15/20	65	3.4	Class B/C	-40	< 1	0.57

Subject to change.

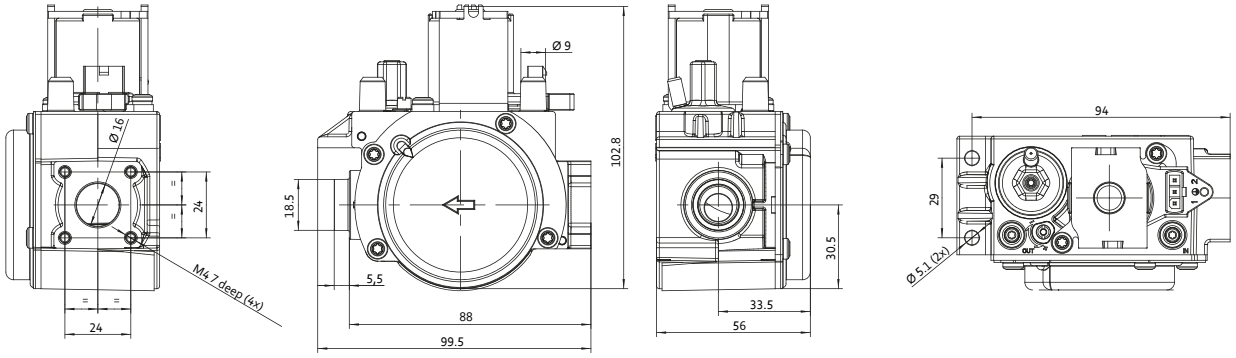
Version with G ¾ connection (optionally also G ½)

Dimensions in mm



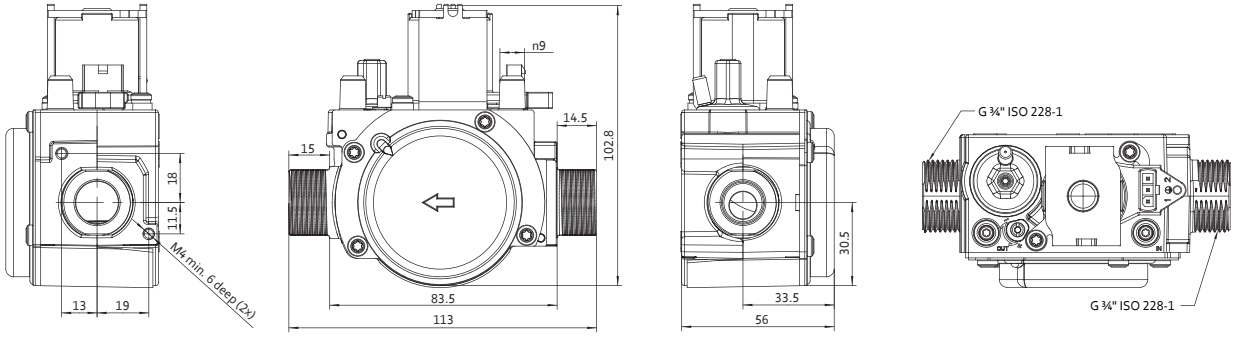
Version with 4 x M4 connection (suitable for NPT ½ flange)

Dimensions in mm



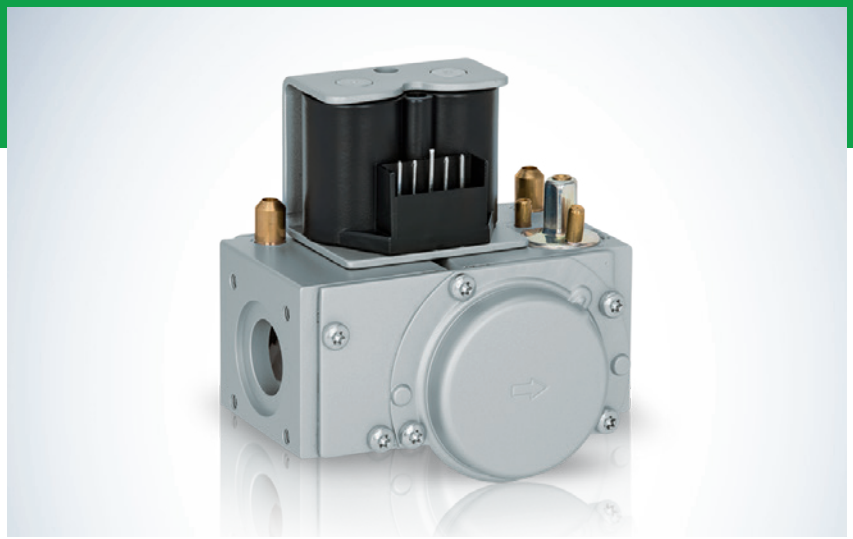
Version with 2 x G ¾ connection

Dimensions in mm



Gas valves pneumatic gas-air control system

G20 D01



More at www.ebmpapst.com

Material/surface

- Housing: Aluminum

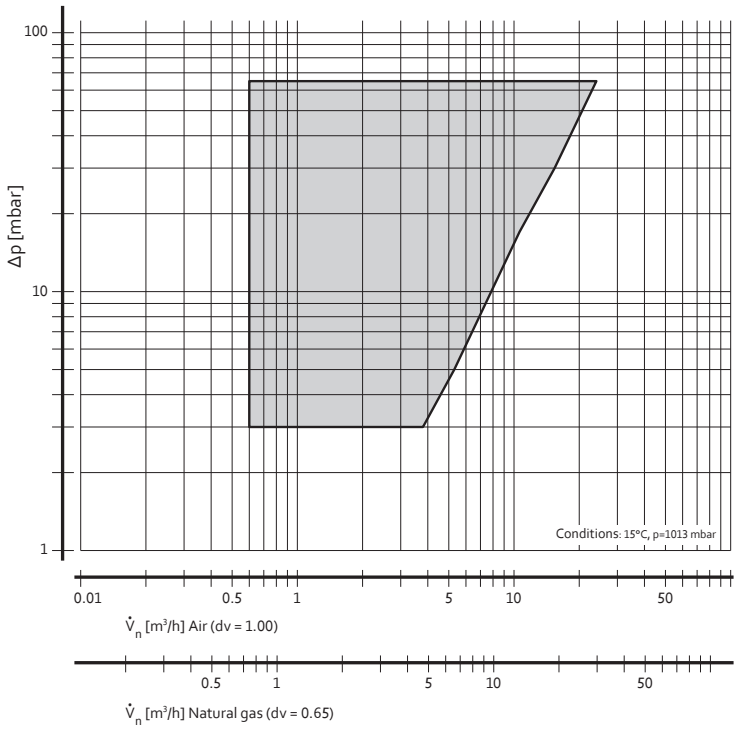
Mechanical data

- Degree of protection:
  IP40 in combination with a suitable plug
- Permitted gas families:
  II + III (in accordance with EN 437)
- Maximum inlet pressure:
  65mbar (CE), 0.5psi (CSA)
- Permitted ambient temperature: 0°C to 60°C;
  extended temperature range on request,
  dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Offset correction: +/- 20Pa
- Input (gas connection):
  4 x M5-mounting holes (hole spacing 36mm)
- Output:
  4 x M5-mounting holes (hole spacing 36mm)
- Safety valve: Valve class B/B as per EN 161

Electrical data

- Designed for protection class I
- Electrical connection:
  Connector shell with 5.08mm grid

Capacity curve – G20D01-BBXCS-CX

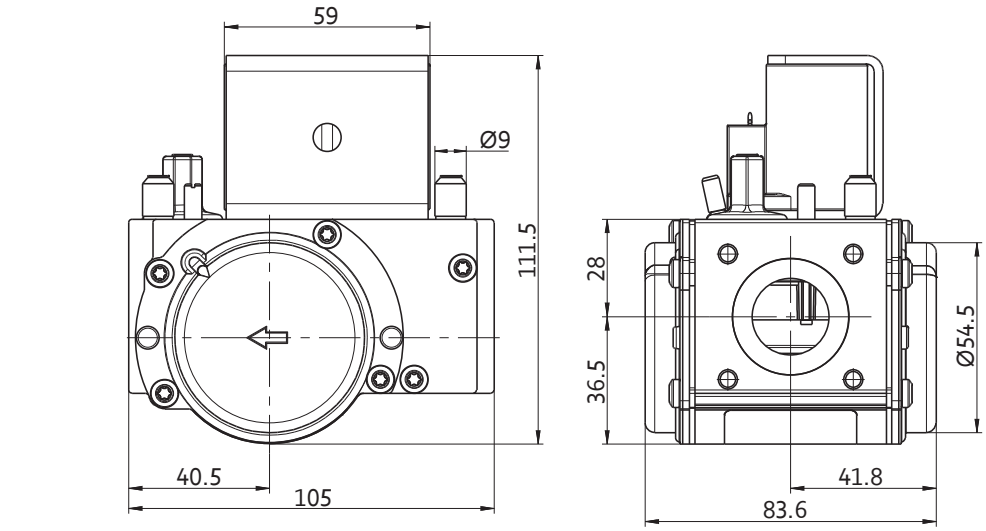


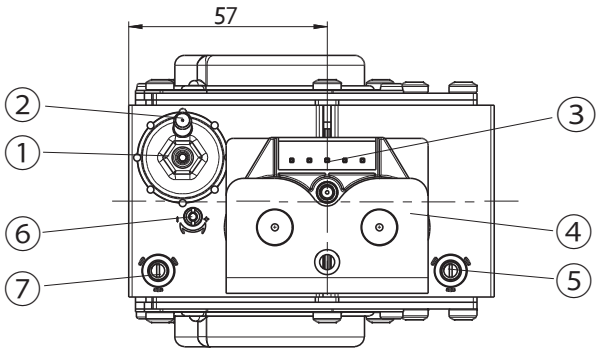
Type	Rated voltage	Max. input power	Nominal diameter	Maximum inlet pressure	Flow rate (at Δp = 5mbar)	Automatic shutoff valves (EN 161)	Minimum signal pressure	Opening and closing time	Weight
	V	VA		mbar	m³/h		Pa	s	kg
Nominal data									
G20D01-BBXCS-CX	230RAC	2 x 12.5	DN20	65	5.3	Class B/B	-40	< 1	1.3
	120RAC	2 x 12.5	DN20	65	5.3	Class B/B	-40	< 1	1.3
	24RAC	2 x 12.5	DN20	65	5.3	Class B/B	-40	< 1	1.3
	24DC	2 x 12.5	DN20	65	5.3	Class B/B	-40	< 1	1.3

Subject to change.

Technical drawing

Dimensions in mm

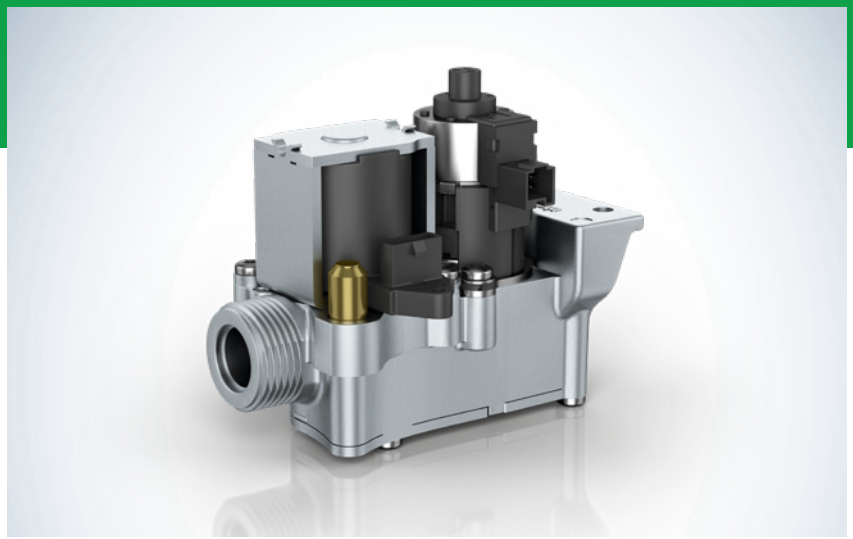




1. Pressure regulator offset adjustment
2. Servo regulator
3. Electrical connection
4. Solenoid coil
5. Pressure test nipple P_1
6. Main flow throttle
7. Pressure test nipple P_2

Gas valves electronic gas-air control system

G15/G20 F01



More at www.ebmpapst.com

Material/surface

- Housing: Aluminum

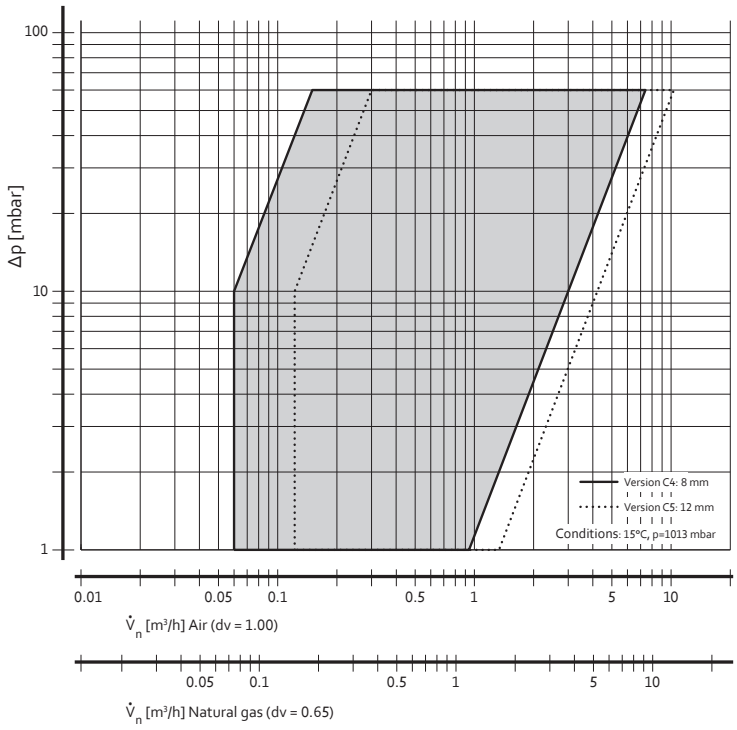
Mechanical data

- Degree of protection:
  IP40 in combination with a suitable connector
- Permitted gas families:
  II + III (in accordance with EN 437)
- Maximum inlet pressure:
  60mbar (CE), 0.5psi (CSA)
- Permitted ambient temperature: 0°C to 60°C;
  extended temperature range on request,
  dependent on time/temperature profile
- Permitted storage temperature:
  -25°C to 70°C
- Input (gas connection):
  External thread G ½" (DN 15) or G ¾" (DN 20)
  (EN ISO 228)
- Output: External thread G¾" (EN ISO 228),
  ebm-papst proprietary quick release
- Safety valves:
  Coaxial design: Valve class B/C as per EN 161

Electrical data

- Designed for protection class I
- Electrical connection:
  Connector shell with 4.20mm grid

Capacity curve – GXXF01-BCXCS-CX

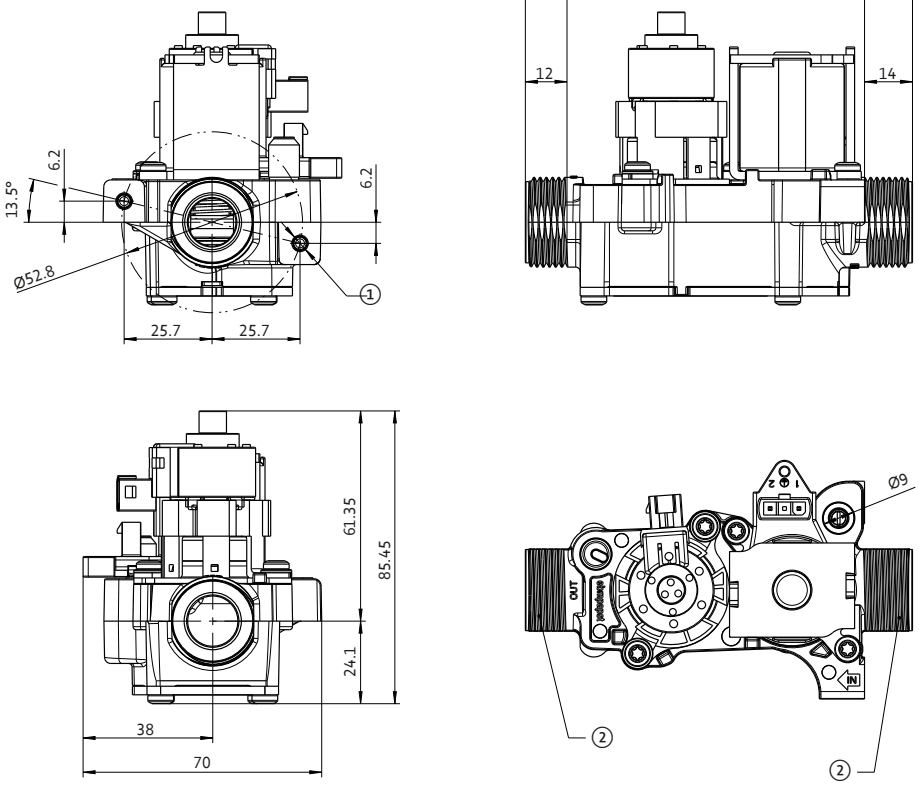


Type	Rated voltage	Max. input power	Nominal diameter	Maximum inlet pressure	Flow rate (at Δp = 5mbar) Stepper motor module with nominal diameter 8mm	Flow rate (at Δp = 5mbar) Stepper motor module with nominal diameter 12mm	Automatic shutoff valves (EN 161)	Opening and closing time	Weight
	V	VA		mbar	m³/h	m³/h		s	kg
Nominal data									
GXXF01-BCXCS-CX	230RAC	9.8	DN15/20	60	2.1	2.9	Class B/C	< 1	0.47
	120RAC	9.8	DN15/20	60	2.1	2.9	Class B/C	< 1	0.47
	24RAC	9.8	DN15/20	60	2.1	2.9	Class B/C	< 1	0.47
	24DC	9.8	DN15/20	60	2.1	2.9	Class B/C	< 1	0.47
	22DC	11.9	DN15/20	60	2.1	2.9	Class B/C	< 1	0.47

Subject to change.

Technical drawing

Dimensions in mm

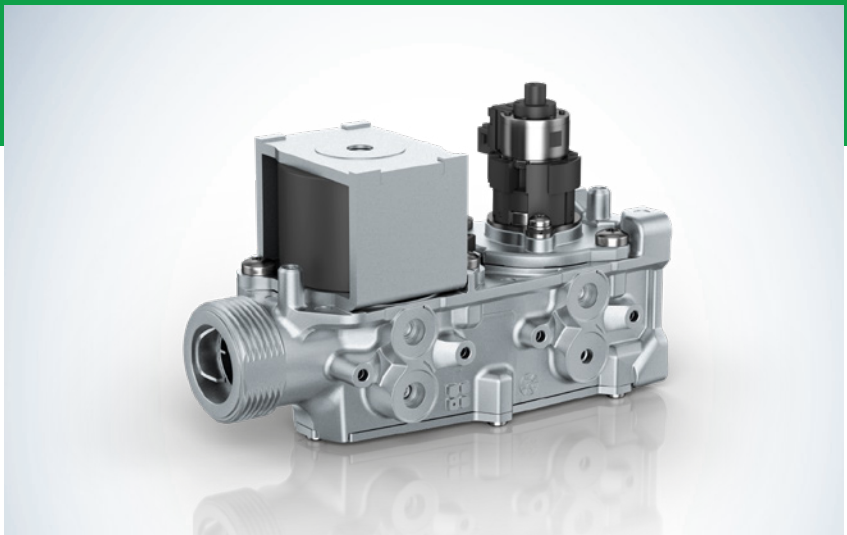


(1) M5 2x min. 8 deep

(2) G 3/4" ISO 228-1

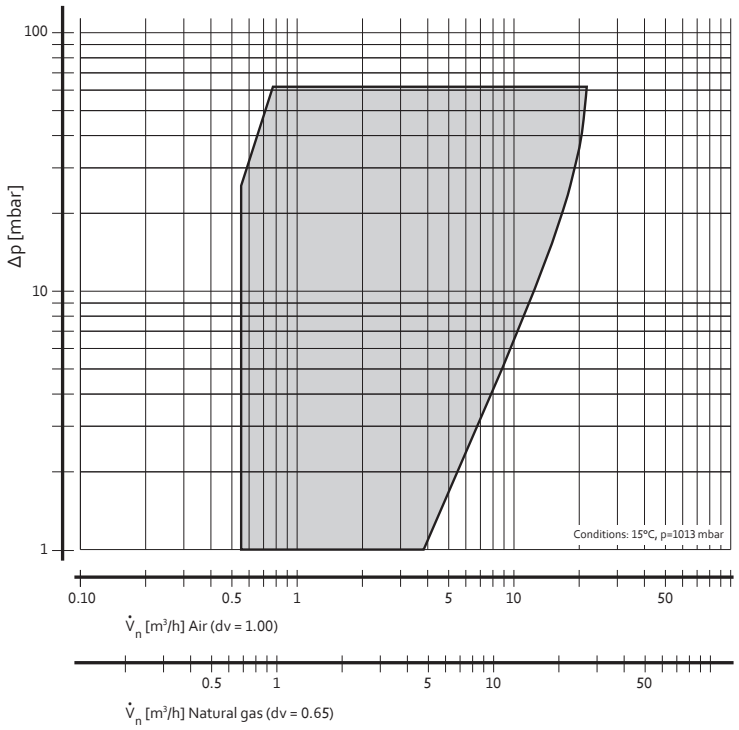
Gas valves electronic gas-air control system

G32 F01



More at www.ebmpapst.com

Capacity curve – G32F01-CBXCS-CX



Material/surface

- Housing: Aluminum

Mechanical data

- Degree of protection:
  IP40 in combination with a suitable connector
- Permitted gas families:
  I + II + III (in accordance with EN 437)
- Maximum inlet pressure:
  60mbar (CE), 0.5psi (CSA)
- Permitted ambient temperature: 0°C to 60°C; extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature:
  -25°C to 70°C
- Input (gas connection):
  external thread G 1 1/4 (EN ISO 228)
- Output: Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 5mm); hole spacing □52.33mm
- Safety valves:
  Coaxial design: Valve class B/C in accordance with EN 161
- Interface to mechanical pressure monitor port:
  Inlet pressure; central chamber pressure
- Pressure test nipple: Inlet and outlet pressure

Electrical data

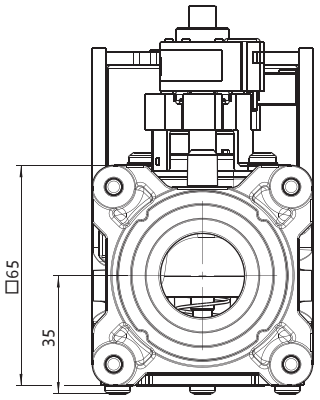
- Designed for protection class I
- Electrical connection:
  Safety module: suitable for connector housing with pitch 4.20mm (e.g., Stocko STO-FIT System, EH 705-103; Würth series WR-MPC4, item no. 649 003 013 322)
- Stepper motor module:
  Connector housing Stocko-Grid MH790-06-001

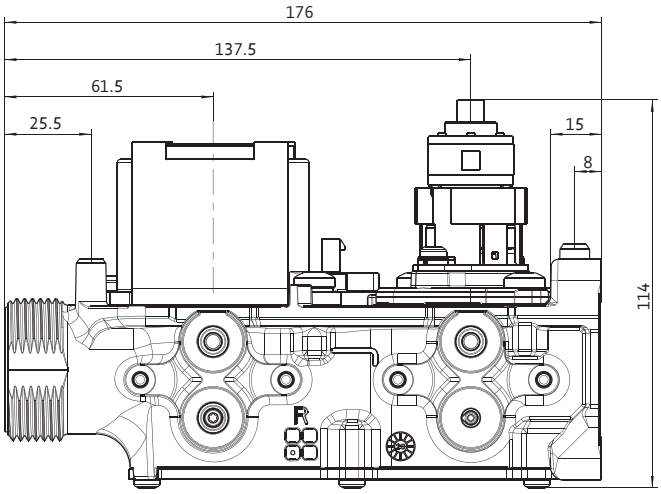
Type	Rated voltage	Max. input power	Nominal diameter	Maximum inlet pressure	Flow rate (at Δp = 5mbar)	Automatic shutoff valves (EN 161)	Opening and closing time	Weight
	V	VA		mbar	m³/h		s	kg
Nominal data								
G32F01-CBXCS-CX	230RAC	14	DN32	60	9.3	Class C/B	< 1	1.55
	120RAC	14	DN32	60	9.3	Class C/B	< 1	1.55
	24DC	14,5	DN32	60	9.3	Class C/B	< 1	1.55

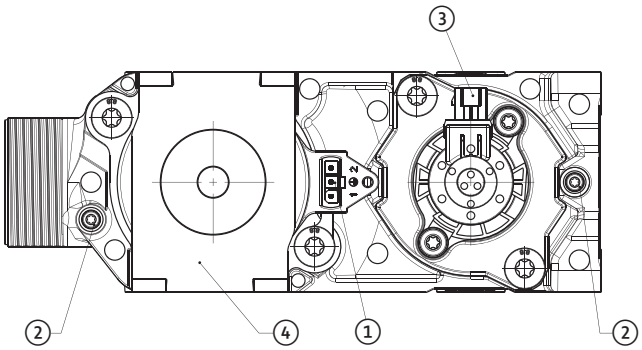
Subject to change.

Technical drawing

Dimensions in mm



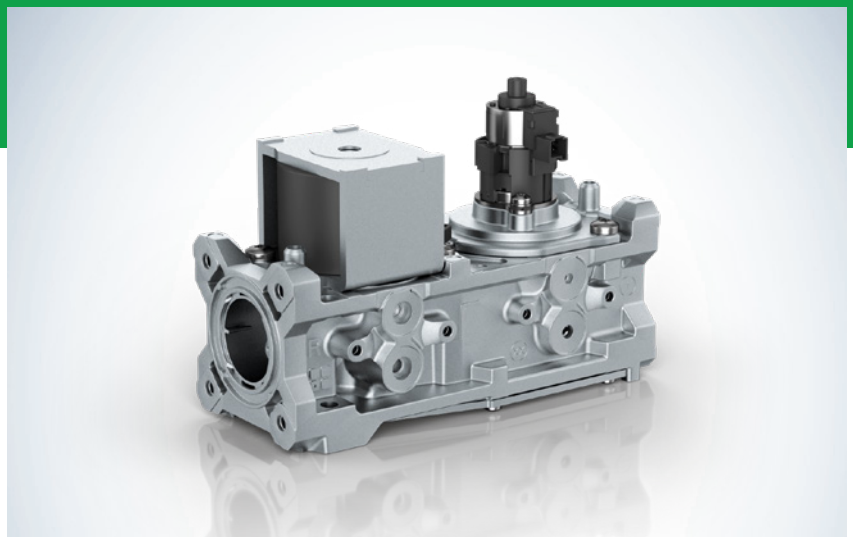




① Electrical connection safety valve
② Pressure test nipple
③ Electrical connection control valve
④ Solenoid coil

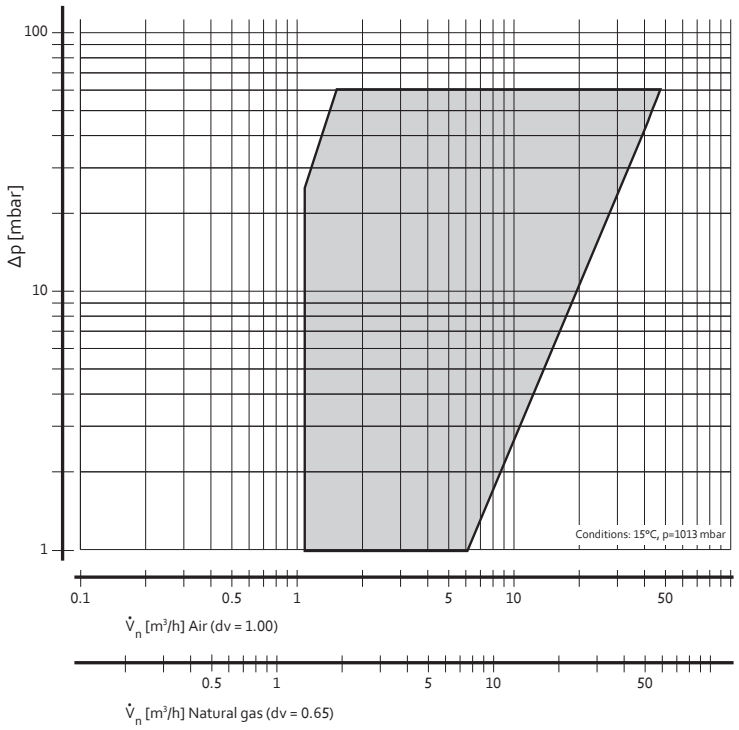
Gas valves electronic gas-air control system

G40 F01



More at www.ebmpapst.com

Capacity curve – G40F01-BBXCS-CX



Material/surface

- Housing: Aluminum

Mechanical data

- Degree of protection:
  IP40 in combination with a suitable connector
- Permitted gas families:
  I + II + III (in accordance with EN 437)
- Maximum inlet pressure:
  60mbar (CE), 0.5psi (CSA)
- Permitted ambient temperature: 0°C to 60°C; extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature:
  -25°C to 70°C
- Input (gas connection):
  Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 6mm); hole spacing □52.33mm; bolt circle diameter 74mm; Input flange G 1 ½" optional
- Output: Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 6mm); hole spacing □52.33mm; bolt circle diameter 74mm
- Safety valve: Coaxial design:
  External thread B/B as per EN 161
- Interface to mechanical pressure monitor port:
  Inlet pressure; central chamber pressure for VPS (optional)
- Pressure test nipple:
  Inlet and outlet pressure

Electrical data

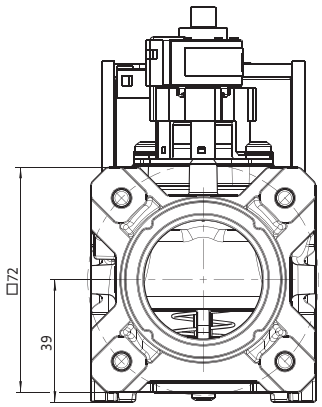
- Designed for protection class I
- Electrical connection:
  Suitable for connector housing with pitch 4.20mm (e.g., Stocko STO-FIT System, EH 705-103; Würth WR-MPC4 series, item no. 649 003 013 322)
- Stepper motor module:
  Connector housing Stocko-Grid MH790-06-001

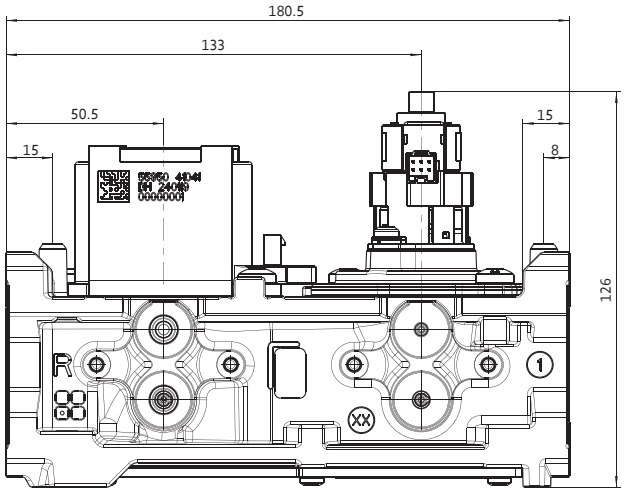
Type	Rated voltage	Max. input power	Nominal diameter	Maximum inlet pressure	Flow rate (at Δp = 5mbar)	Automatic shutoff valves (EN 161)	Opening and closing time	Weight
	V	VA		mbar	m³/h		s	kg
Nominal data								
G40F01-BBXCS-CX	230RAC	17.5	DN40	60	14	Class B/B	< 1	1.97
	120RAC	17.5	DN40	60	14	Class B/B	< 1	1.97
	24DC	21.7	DN40	60	14	Class B/B	< 1	1.97

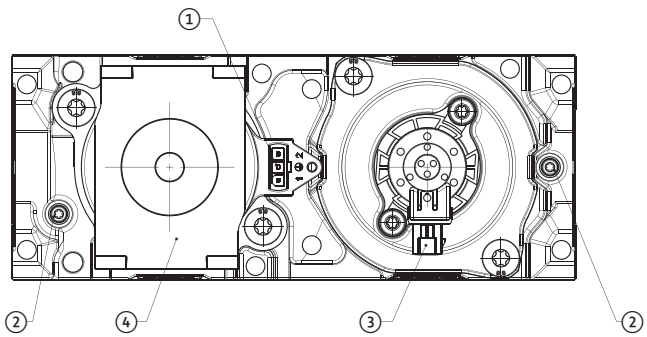
Subject to change.

Technical drawing

Dimensions in mm







1. Electrical connection safety valve
2. Pressure test nipple
3. Electrical connection control valve
4. Solenoid coil

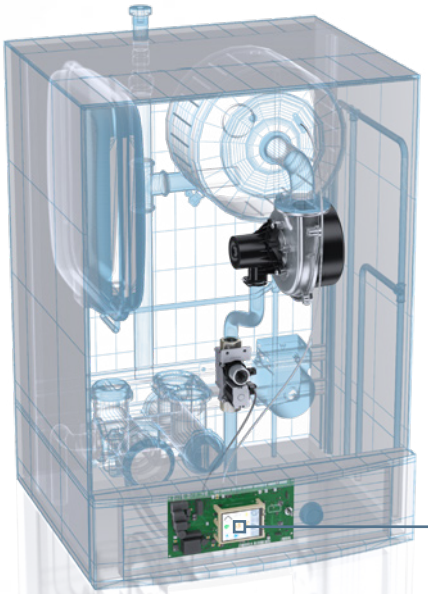
Boiler Control Units

Intelligent and customizable

We supply the right electronics for controlling ignition, performance regulation and monitoring the function of the condensing boiler as well as user interfaces needed for conveniently controlling central heating and hot water. Our product range, consisting of tried-and-tested hardware and software, enables reliable operating performance and short development cycles. The versatile software architecture allows easy interface integration. In addition, as with our blowers, we value having the lowest possible energy consumption.

The BCU 100 boiler controls are specially designed for use in wall-hang boiler: compact design and high integration of all electrotechnical functions of a modern wall-mounted condensing boiler.

The BCU 900 boiler controls are used in particular for commercial building technology: high functional scope with flexible setting options for the configuration of many heating systems.



Compact construction

- Comprehensive electronic functions of a gas-condensing boiler
- Solid-state design for high reliability, long service life and low space requirement
- Integrated user interface
- Space-saving and robust electrical connection with plated contacts

Optimally networked

- Standard interfaces for room devices
- RS 485 interface for user-defined control elements e.g. building management systems
- Prepared for Plug-in modules to realize various communication options
- Predictive maintenance via advance warning messages
- Remote access for improved diagnostics

Boiler Control Units – Residential technology

BCU 100

Technical Data

- Wide range power supply 170 – 264VAC with voltage supervision
- PWM or LIN interface for blower and pump control
- Diverter valve stepper motor interface 24VDC
- DHW turbine 5VDC with supply
- Water pressure switch 5VDC
- Control of pneumatic or electronic gas valve 24VDC
- Ext. spark generator 230VAC
- Flow, return, flue, DHW and outside temperature sensor inputs
- Analog ionization input, all nets, reversed polarity

Mechanical data

- Rast-2.5 and rast-2.5-power direct connection
- PCB dimensions (LxWxH): 200x100x26mm

Benefits of the Boiler Control Unit

- Pneumatic (CleanEco) or electronic (CleanVario) gas-air ratio control
- Starts and monitors the boiler
- Fan control
- Boiler temperature control and safety temperature limiter
- Domestic hot water and central heating control
- Integrated flexible user interface and various display technologies available for standard and customer-specific designs
- Combines tried and tested hardware and software modules from a comprehensive modular system
- Flexible production of variants thanks to different electronic component configurations
- Variant management due to a comprehensive selection of parameter banks
- One product platform for various methods of gas-air ratio controls

Boiler Control Units – Commercial technology

BCU 900

Application

- For commercial applications above 50kW (up to 2MW boilers)
- Integrated cascade control
- Flexibility to configure many systems: preset appliance types
- Configurable inputs and outputs
- Integrated low water cutoff
- Many modes for CH and DHW

User Interfaces

- Touchscreen: communication with boiler control via Modbus
- Ethernet connection to web server via web module
- Graphical LCD interface for boiler status, operation and configuration
- Password-protected user levels
- Includes diagnostics software and a smart app for remote control

Boiler Control Units – Commercial technology

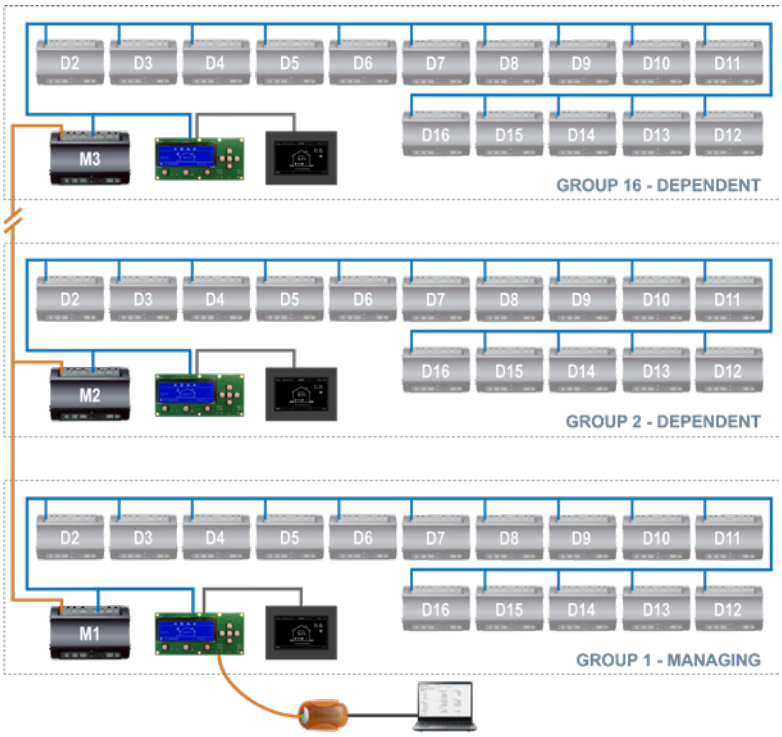
Packages

Description

- Stand-alone and sequenced devices
- Flexible setup and easy configuration
- Multiple heat demand options (on/off, OpenTherm, 0–10V)
- Internal/external spark igniter or hot-surface igniter
- Primary safeguard functions
- Extra safety- and smart control functions

Packages	Cascade operation	Touch screen	User interface	AL-BUS	Modbus	Ethernet	Diagnostics software	Smart app
Commercial Plus	16 boilers × 16 modules	✓	900PB Display + 900TS Touchscreen	✓	✓	✓	✓	✓
Commercial	max. 16 boilers	–	900PB Display	✓	✓	optional	✓	✓
Residential Plus	settings only	–	900LB Display	✓	–	–	✓	✓

Commercial Plus with integrated cascade control: Up to 16 boilers x 16 modules (1 managing group and 15 dependent groups) can be connected (max. 256 boilers).



Managing group 1: M1, D2, D3, ...
Dependent group 2: M2, D2, D3, ...

900PB Display (Cover assembly)

900TS Touchscreen

900LB Display

Contacts – Worldwide

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