Fans and blowers
for solid fuel heating systems

ebmpapst

engineering a better life

Product Catalog 2022-06

The perfect combination of

size, performance and efficiency

Environmentally friendly, cost effective and constantly renewable – heating with biomass offers many advantages compared to burning fossil fuels. However, wood pellet and wood chip heating systems have very special requirements: the air flow required for different functions must be provided economically in each operating state and regardless of the heating power. There is also limited space in stoves. The fans required for this must be robust and compact.

ebm-papst offers the right fans to overcome these challenges. The fans for the combustion air supply, exhaust gas removal and distribution of hot air in the installation area are tailored to different power classes and equipped with fan impellers optimized for biomass applications. Due to their compact design, they are robust, durable and require hardly any space. This facilitates having the optimum size, performance and cost-effectiveness in any application.

Particularly efficient with EC and condensing technology

In solid-fuel heating systems, a distinction is made between traditional conventional heating and modern condensing technology. Whereas with conventional heating most of the waste heat can get into the open air via the chimney, condensing technology makes as much use of this energy as possible. Heat from the water vapor produced when the wood pellets or wood chips burn is recovered and fed back into the heating system. This increases the efficiency and reduces the heating costs.

ebm-papst offers a wide range of AC and EC fans for traditional conventional heating. In modern condensing technology, using more efficient EC fans is particularly worthwhile, as they can be optimally adapted to the relevant operating point using their variable speed.

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Fans and blowers for solid fuel heating systems

Contents

What *Engineering a better life* **means to us.**

ebmpapst

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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, like the **VSW0210**, 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**

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, environmentallyfriendly 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.

Fans and blowers for solid fuel heating systems

Induced draft fan

ebmpapst

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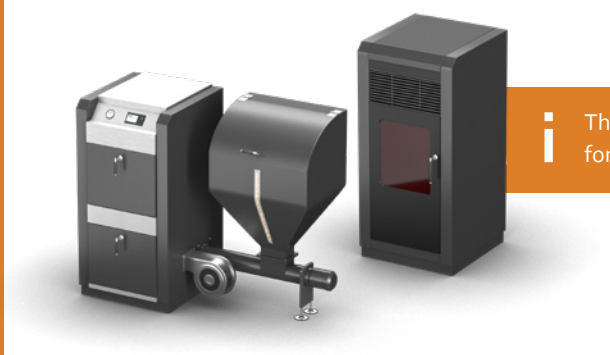
Induced draft fan

Product overview

Dimensions in mm	Heat output range	Type	Part number	Page
AC:				
Ø 140	4 – 12kW	VSW0140X2MCS	**R2E140CD76****	10
Ø 150	5 – 18kW	VSW0150X2MCS	**R2E150AO91****	12
Ø 150	5 – 18kW	VSW0150X2MCS	**R2E150AN91****	12
Ø 150	5 – 18kW	VPW0150X2MCS	**G2E150DO91****	14
Ø 150	5 – 18kW	VPW0150X2MCS	**G2E150DN91****	14
Ø 150	5 – 20kW	VSW0150X2MES	**R2E150AP82****	16
Ø 150	5 – 20kW	VSW0150X2MES	**R2E150AK82****	16
Ø 150/160	10 – 35kW	VSW0160X2MGS	**R2E160BG34****	18
Ø 150/160	10 – 35kW	VSC0150X2NGS	**R2E150AL06****	18
Ø 152	5 – 15kW	VBS0152XQFFS	**55462.09170**	20
Ø 152	5 – 15kW	VCS0152XQFFS	**55462.50050**	22
Ø 180	24 – 35kW	VSW0180X2MES	**R2E180CV82****	24
Ø 180	24 – 35kW	VSW0180X2MES	**R2E180CG82****	24
Ø 180	24 – 35kW	VPW0180X2MES	**G2E180CV82****	26
Ø 180	24 – 35kW	VPW0180X2MES	**G2E180GV82****	26
Ø 210	35 – 55kW	VSW0210X2MGS	**R2E210AA34****	28
Ø 210	35 – 55kW	VSW0210X2MGS	**R2E210AB34****	28
Ø 250	55 – 80kW	VSW0250X2NKS	**R2E250BE0310**	30
EC:				
Ø 140	10 – 24kW	VSW0140XSLBS	**R3G140AG03****	32
Ø 150	10 – 24kW	VSW0150XSLBS	**R3G150AA03****	34
Ø 150	10 – 24kW	VSW0150XSLCS	**R3G150AC01****	34
Ø 150	10 – 24kW	VSW0150XULCS	**R1G150AA63****	36
Ø 150	10 – 24kW	VPW0150XSLBS	**G3G150DA03****	38
Ø 160	10 – 24kW	VSW0160XSLCS	**R3G160AE01****	40
Ø 180	25 – 50kW	VSW0180XSLCS	**R3G180AH01****	42
Ø 180	25 – 50kW	VSW0180XSLES	**R3G180AJ11****	42
Ø 180	25 – 50kW	VPW0180XSLES	**G3G180FJ11****	44
Ø 180	25 – 50kW	VPW0180XSLES	**G3G180GJ11****	44
Ø 210	50 – 150kW	VSW0210XSNEZ	**R3G210AE5310**	46
Ø 250	100 – 250kW	VSC0250XSPGZ	**R3G250BE04H1**	48



The induced draft blowers from ebm-papst are used, for example, in biomass boilers and pellet stoves.

Induced draft fan

Induced draft fans are used in biomass stoves in living rooms and biomass heating systems in cellars. There, they extract the hot exhaust gases that form when wood pellets, wood chips or firewood are burned and send them to the chimney. They have to withstand high temperatures. For this reason, the motor for these blowers is located outside the fan housing. Condensing units have an additional advantage here: as their exhaust gas temperatures are much lower, they are much more efficient.

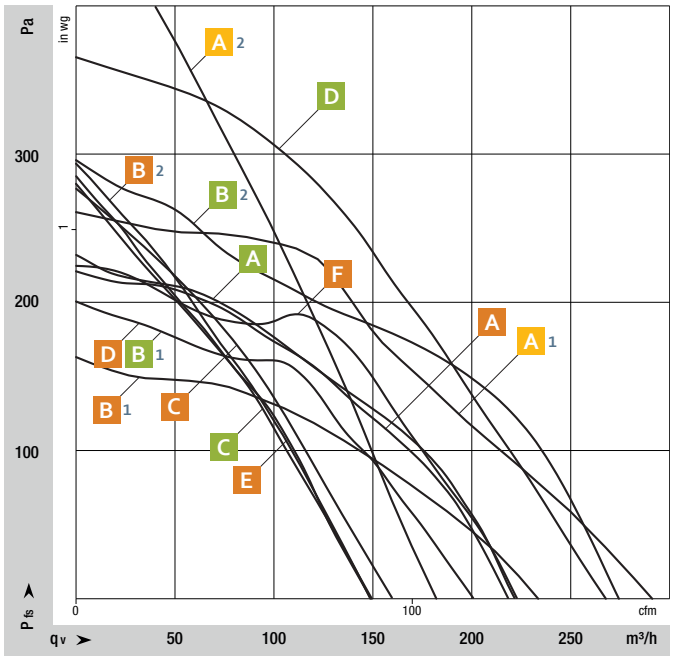
Suction power can be optimally adapted

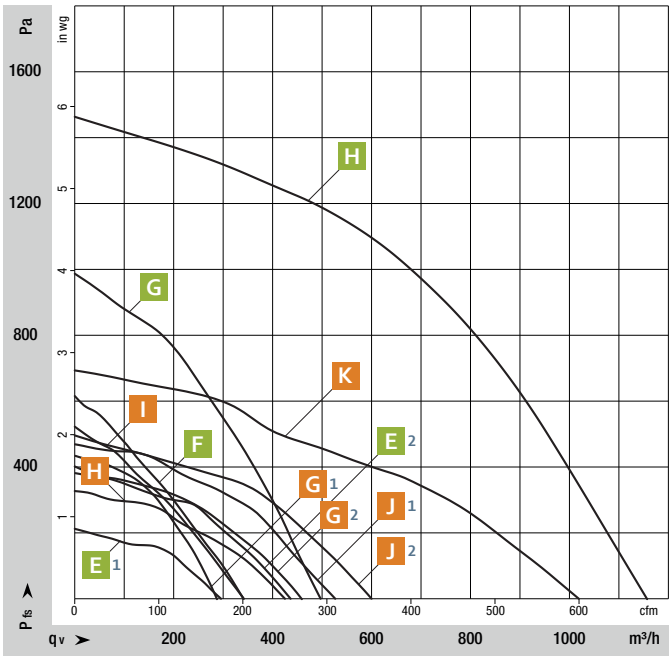
ebm-papst offers induced draft fans with and without fan housing, with various blades and, depending on the air flow requirement, in different fan impeller diameters. They are also available in versions with AC and EC motors. The fan impellers are curved backwards. In the EC version, the induced draft fans are particularly economical thanks to a highly efficient motor and thanks to their controllability. By adjusting the speed, the suction power can always be optimally adjusted to the relevant heat load. At partial load, this also reduces the fan's power requirement at the same time.

For special application conditions, the fans can also be equipped with a special shaft seal that is specifically adapted to the flow medium. Further information can be found on page 88.

Comparison characteristic curves

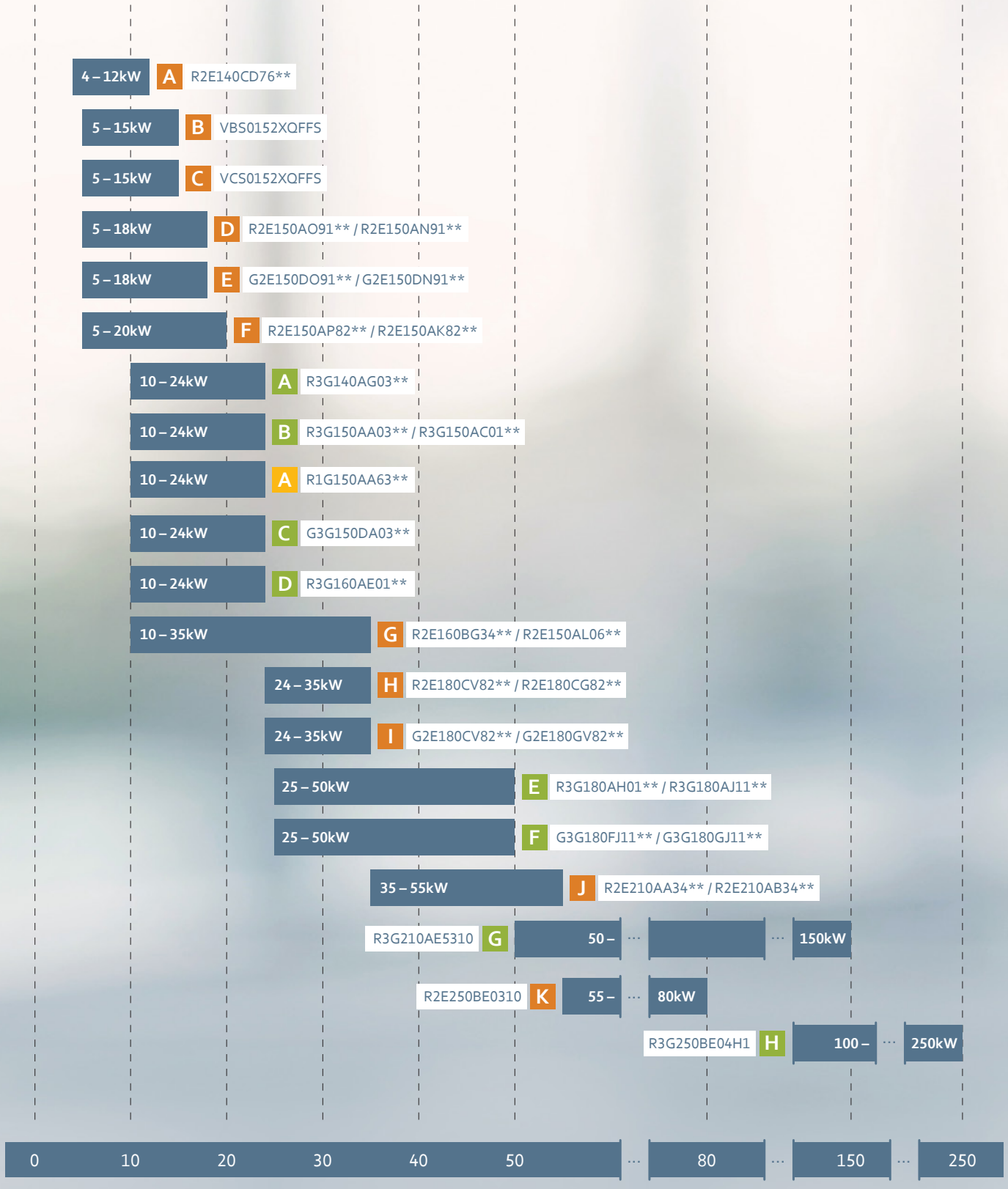
AC EC DC





Induced draft fan heat output range

Overview



AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 140

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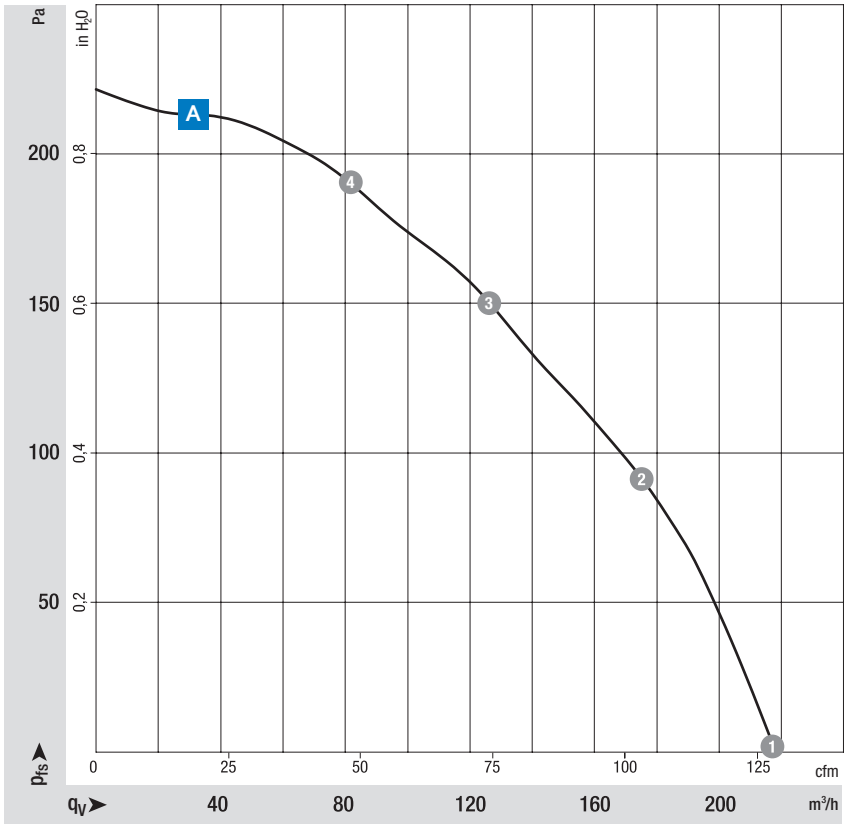
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 4–12kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Also possible without protection hood
- Additional shaft seal see page 88

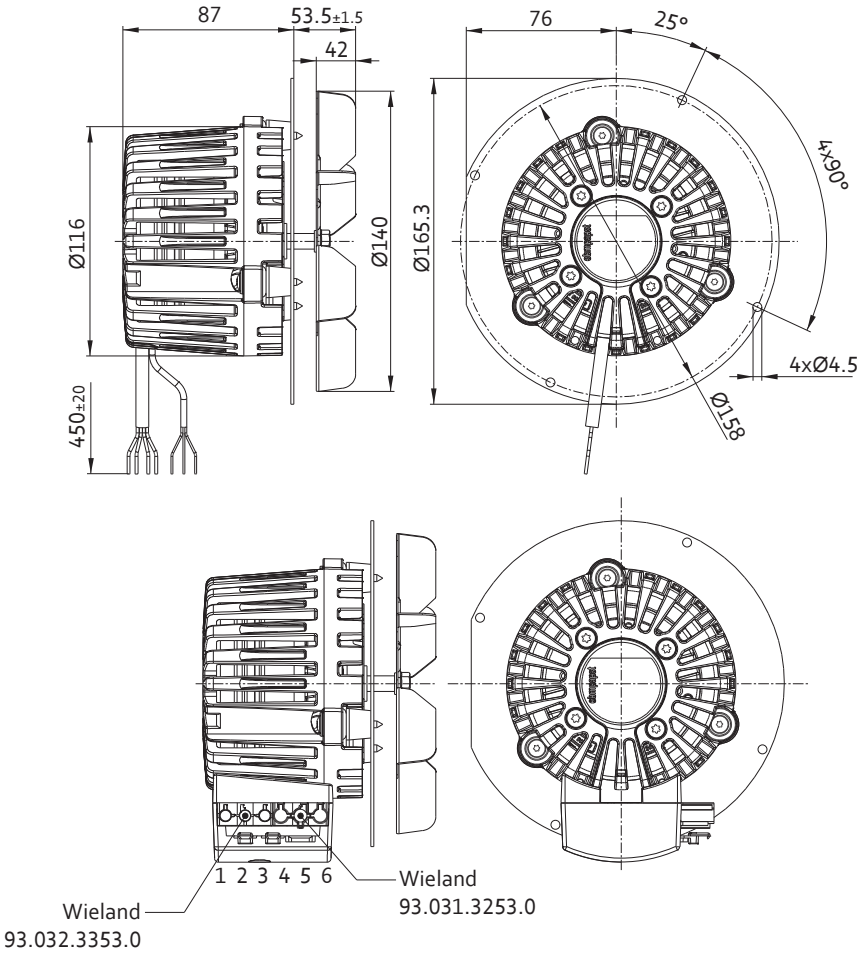
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VSW0140X2MCS	R2E140CD7601	Cable design		M2E 068-BF	A	1	215	2650	28	0.14	0.68/400	-25...+60	1.6
						2	215	2635	28	0.14			
						3	215	2660	28	0.13			
	R2E140CD7605	Plug design				4	215	2695	26	0.12			

Subject to changes.

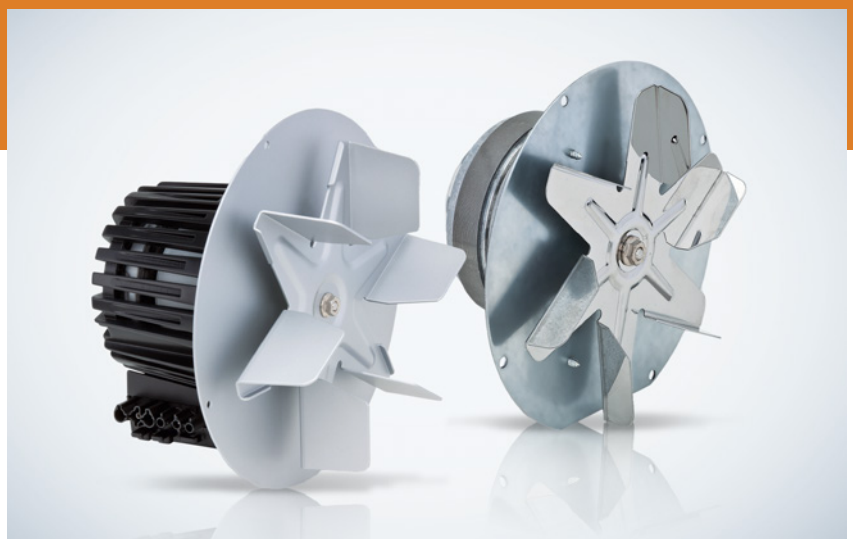
Technical drawing

Dimensions in mm



AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 150



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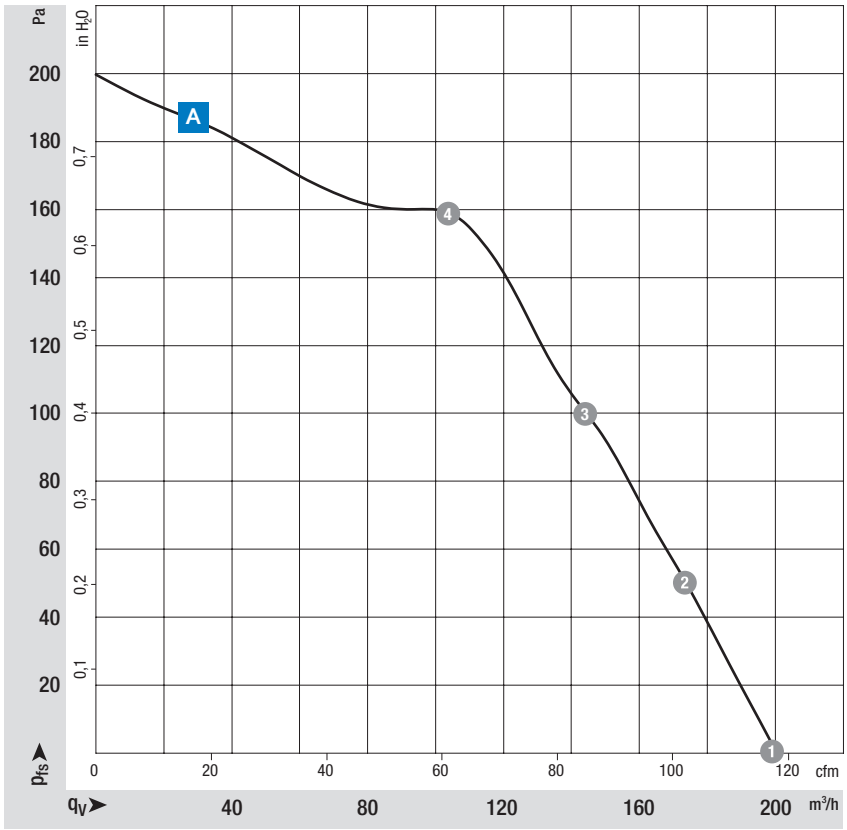


Heat output range[1]

- 5–18kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

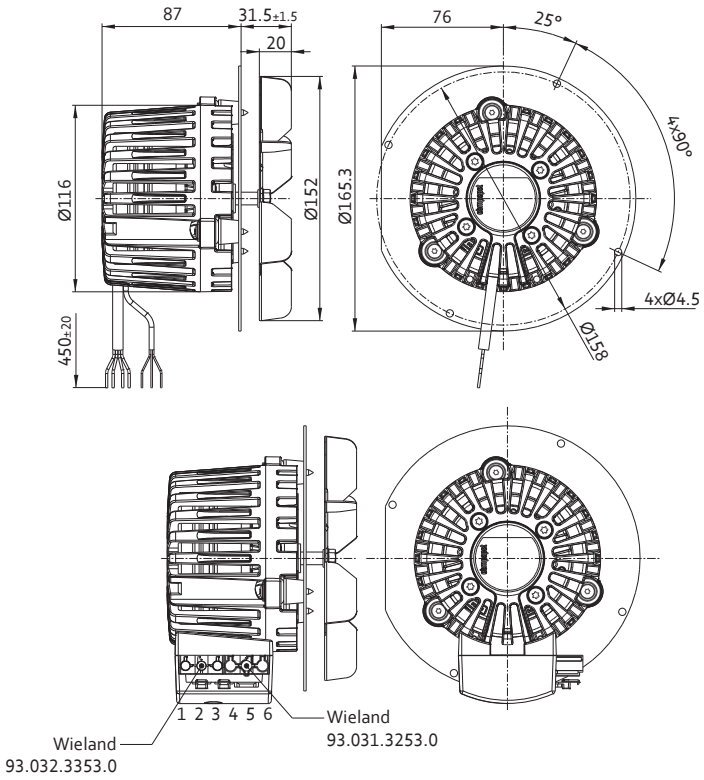
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VSW0150X2MCS	**R2E150AO9101**	Cable design		M2E 068-BF	A	1	200	2400	32	0.15	1.0/400	-25...+55	1.7
	R2E150AO9105	Plug design				2	200	2410	31	0.14			
						3	200	2435	31	0.14			
						4	200	2485	30	0.13			
VSW0150X2MCS	**R2E150AN9101**	without motor protection hood											

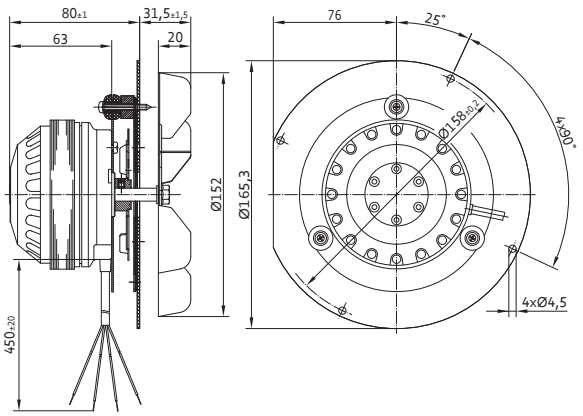
Subject to changes.

Technical drawing

Dimensions in mm



Connection		
No.	Function	Color
1	L	blue
2	PE	green/yellow
3	N	black
4	GND	black
5	OUT	white
6	VCC	red



AC centrifugal blowers (exhaust air)

for solid fuel heating systems, single inlet, Ø 150

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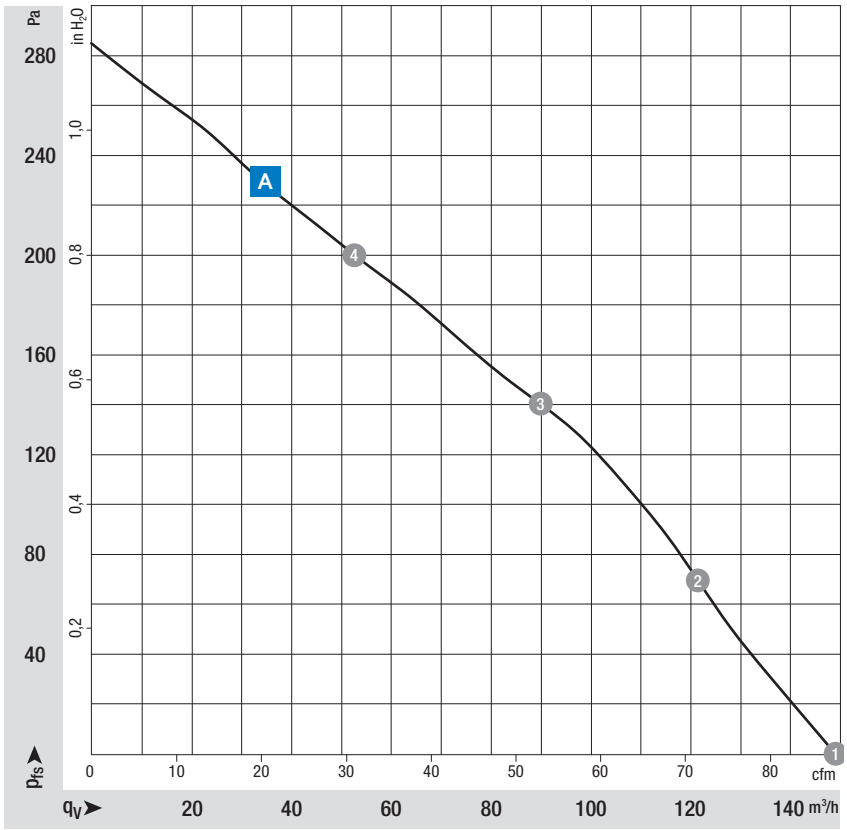
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 5–18kW

Material/surface

- Impeller: Corrosion resistant sheet steel
- Housing: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

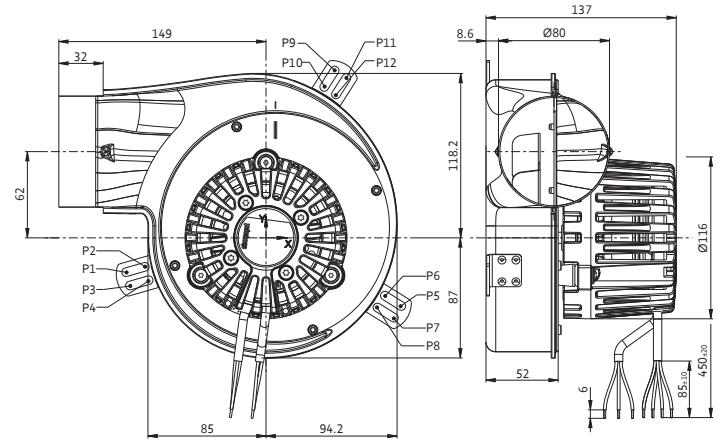
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VPW0150X2MCS	G2E150DO9101	Cable design										-25...+50	2.3
	G2E150DO9105	Plug design		M2E 068-BF	A	1 2 3 4	145 145 145 145	2480 2505 2560 2620	30 30 29 28	0.14 0.13 0.13 0.12	1.0/400	-25...+50	2.3
VPW0150X2MCS	G2E150DN9101	Cable design without protection hood										-25...+70	2.3

Subject to changes.

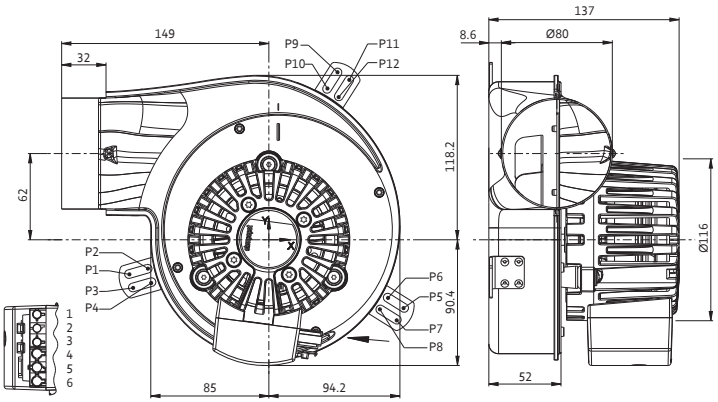
Technical drawing

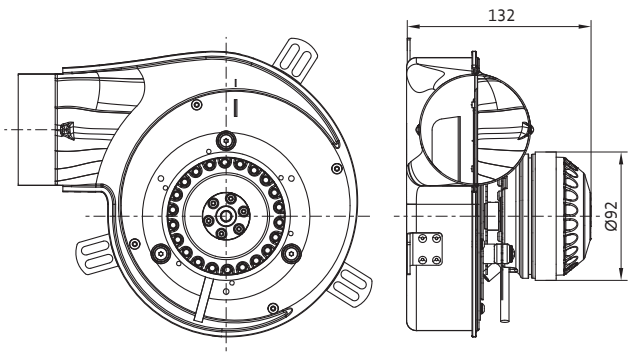
Dimensions in mm



P	X	Y
1	-24.7	-100.6
2	-20.8	-87.1
3	-34.3	-97.8
4	-30.4	-84.4
5	-49.0	97.3
6	-41.6	85.4
7	-57.5	92.0
8	-50.1	80.1
9	120.3	49.4
10	108.5	41.9
11	114.9	57.8
12	103.1	50.3

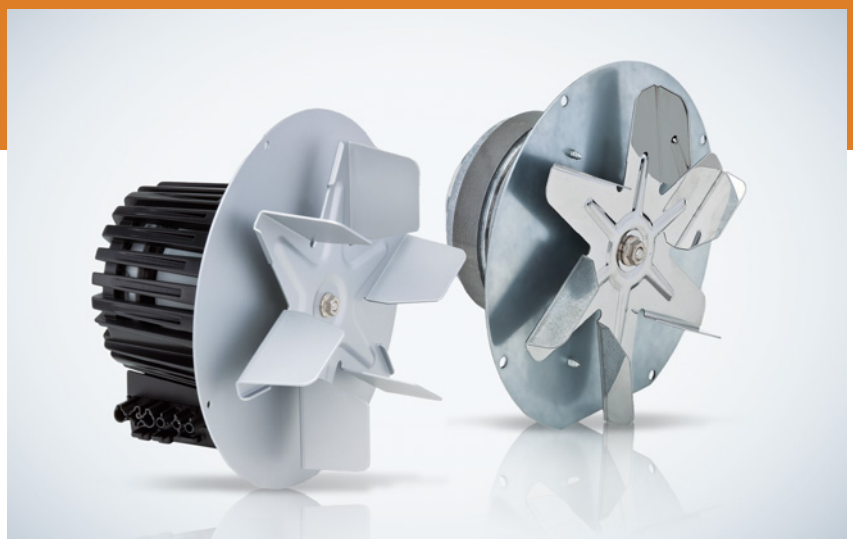
Connection		
No.	Function	Color
1	L	blue
2	PE	green/yellow
3	N	black
4	GND	black
5	OUT	white
6	VCC	red





AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 150



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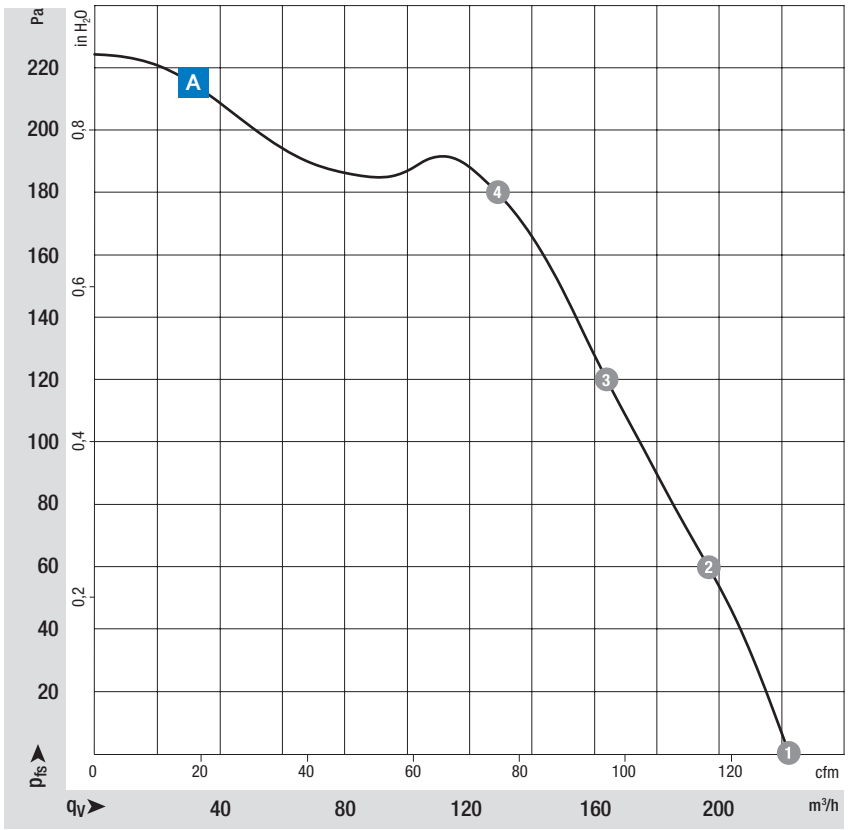


Heat output range[1]

- 5 – 20kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

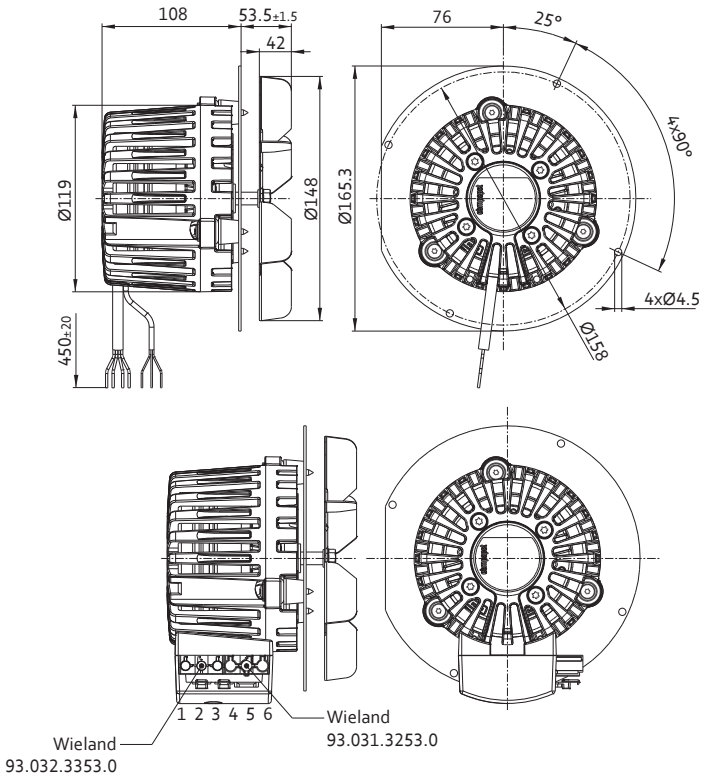
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

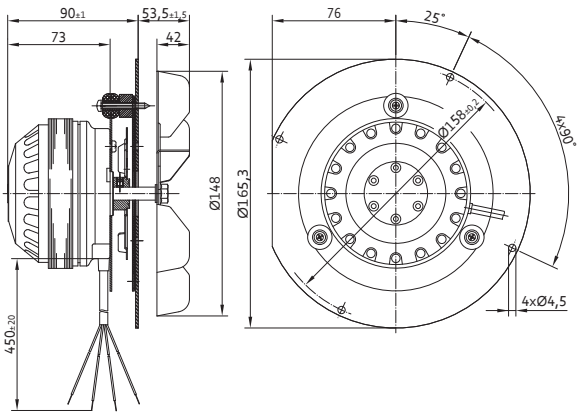
Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VSW0150X2MES	**R2E150AP8201**	Cable design		M2E 068-CF	A	1 2 3 4	220 220 220 220	2750 2760 2770 2795	44 44 43 41	0.27 0.27 0.26 0.26	1.0/400	-25...+60	1.8
	R2E150AP8205	Plug design										-25...+60	1.8
VSW0150X2MES	**R2E150AK8201**	without motor protection hood										-25...+70	2.0

Subject to changes.

Technical drawing

Dimensions in mm





Connection		
No.	Function	Color
1	L	blue
2	PE	green/yellow
3	N	black
4	GND	black
5	OUT	white
6	VCC	red

AC centrifugal fans (exhaust air)

for solid fuel heating systems, special designs, Ø 150/160

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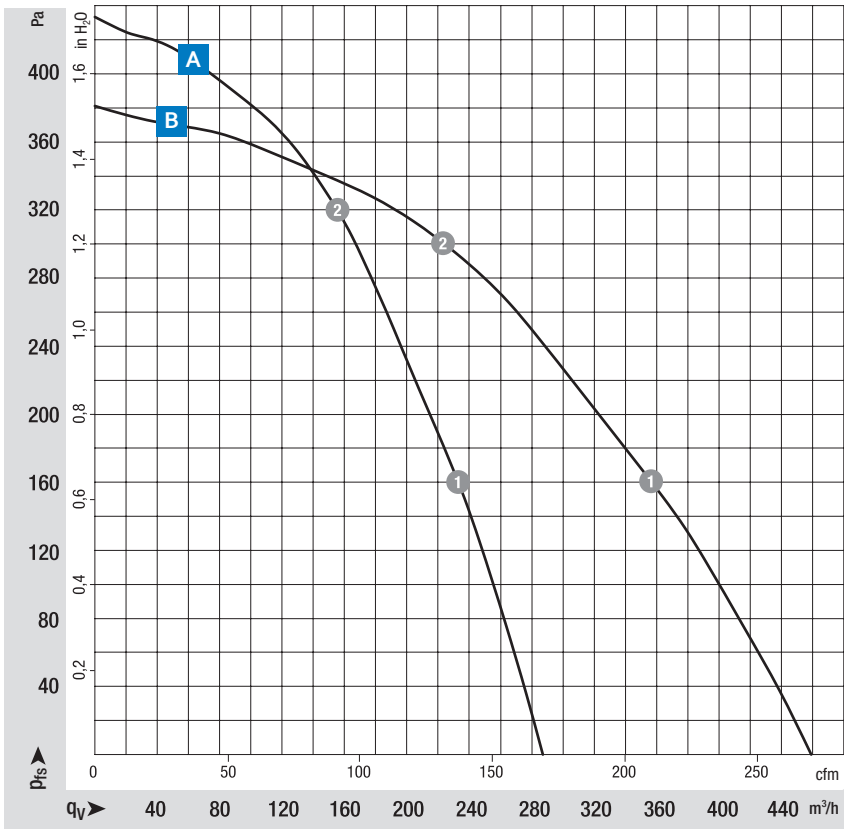
More at	www.ebmpapst.com



Heat output range[1]

- 10 – 35kW

Material/surface

- Impeller: Sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

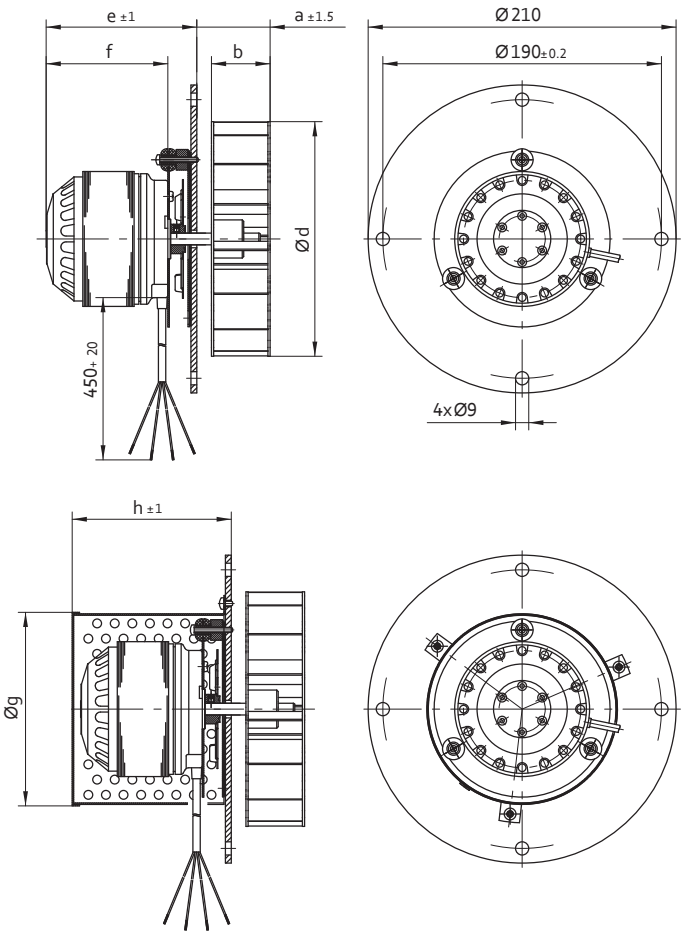
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Sound pressure level	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	db(A)	°C	kg
Type	Part number	Fan type												
VSW0160X2MGS	**R2E160BG3401**	without motor protection hood		M2E 068-DF	A	1 2	285 285	2780 2830	57 48	0.26 0.22	1.5/400	64	-25...+90	3.8
	R2E160BG3405	with motor protection hood												
VSC0150X2NGS	**R2E150AL0601**	without motor protection hood		M2E 074-DF	B	1 2	460 460	2785 2840	78 65	0.35 0.30	3.0/400	67	-25...+85	4.0
	R2E150AL0605	with motor protection hood												

Subject to changes.

Technical drawing

Dimensions in mm

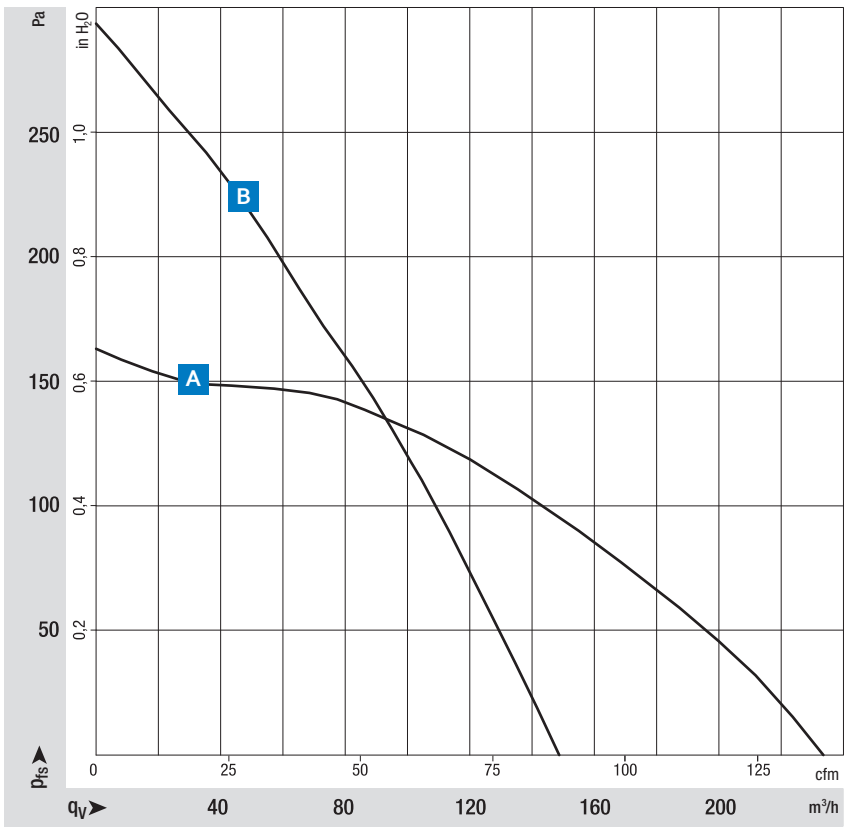


Dimensions		
	VSW0160X2MGS	VSC0150X2NGS
	R2E160BG34**	R2E150AL06**
a	50	84
b	40	74
d	160	150
e	103	135
f	83	110
g	132	144
h	109	146

AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 152

from page 86	Scroll dimensions
page 93	Electrical connections B)
More at	www.ebmpapst.com



Heat output range[1]

- 5–15kW

Material/surface

- Impeller: corrosion resistant stainless steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "H"
- Mounting position: Shaft position horizontal
- Mode of operation: Continuous operation (S1)
- Bearings: Sleeve bearings / ball bearings
- Electrical Connection: via flat pin
- Protection class: I

Standards and approvals

- Standards: EN 60335-1; Confirmation UKCA possible
- Approvals: VDE-compliant design, optionally UL-compliant design possible

Optional

- Hall IC-Connection
- Motor protection hood
- Additional shaft seal (see page 88)

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

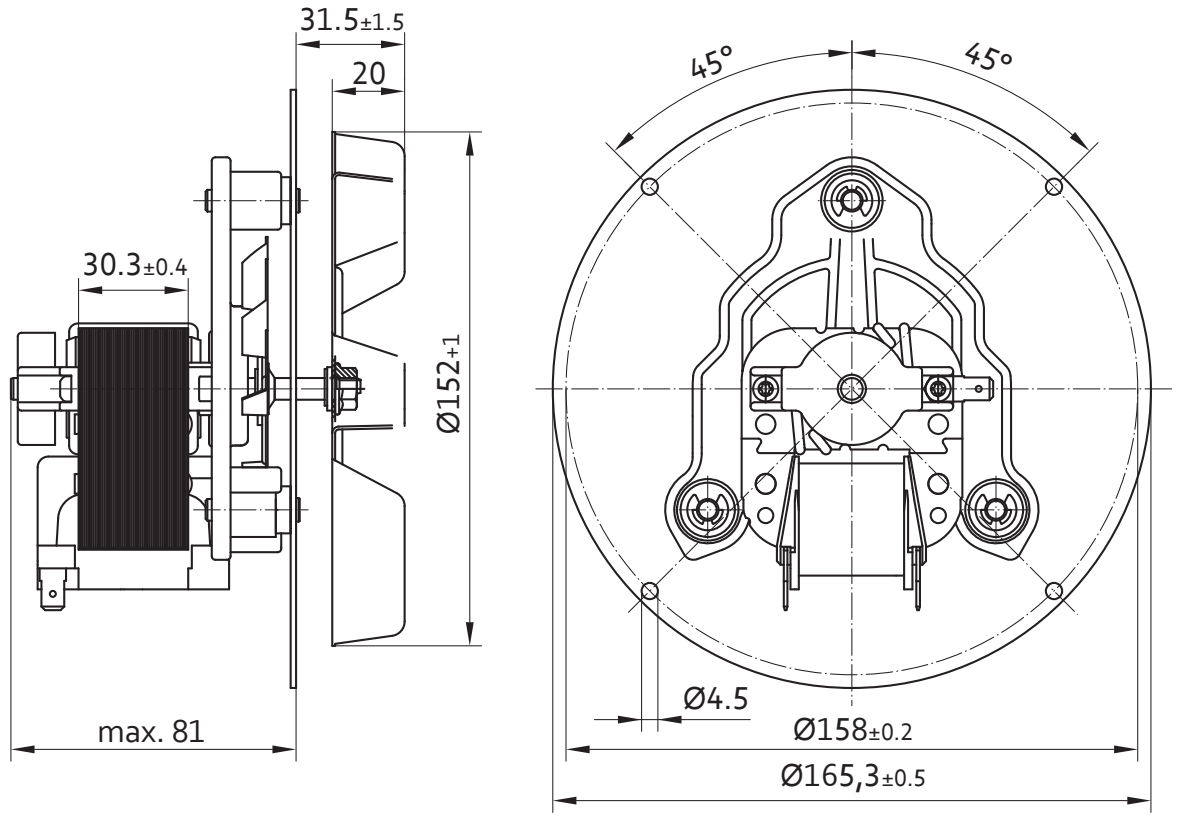
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Characteristic Curve	Air flow	Speed free air flow	Max. input power	Max. current draw	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz			m³/h	rpm	W	A	°C	kg
VBS0152XQFFS	55462.09170	A	235	2575	49	0.4	0...+60	1.0
		B	150	2600	49	0.4	0...+60	1.0

Subject to changes. A measured without ebm-papst scroll housing. B measured with ebm-papst scroll housing.

Technical drawing

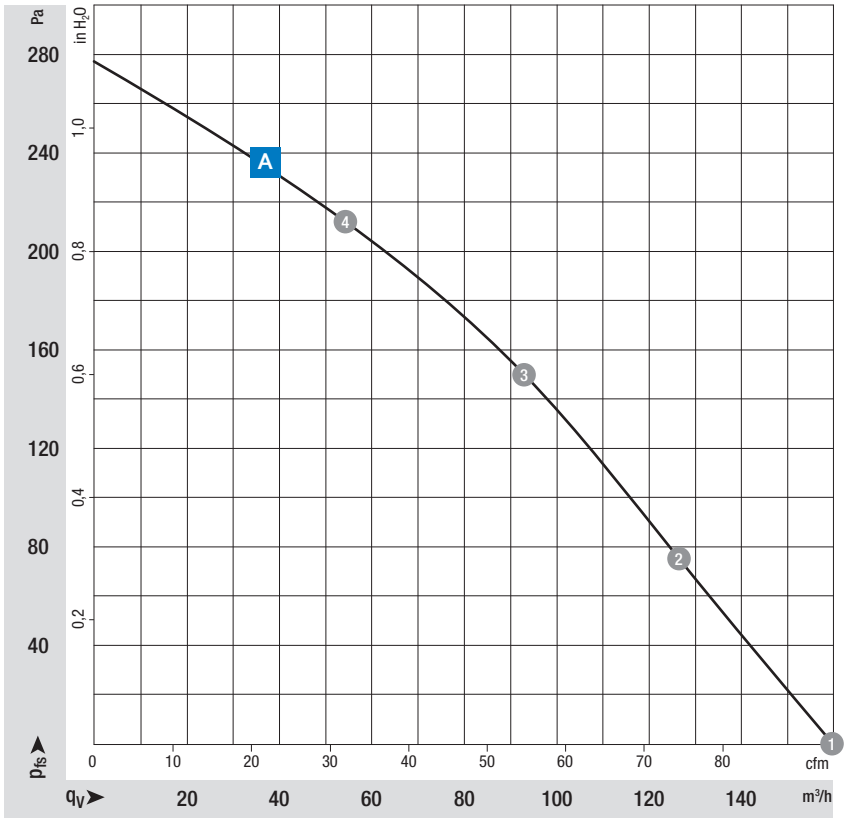
Dimensions in mm



AC centrifugal blowers (exhaust air)

for solid fuel heating systems, single inlet, Ø 152

from page 86	Scroll dimensions
page 93	Electrical connections B)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 5 – 15kW

Material/surface

- Impeller: Corrosion resistant sheet steel
- Housing: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "H"
- Mounting position: any, except motor overhead
- Mode of operation: Continuous operation (S1)
- Bearings: Ball bearings / sleeve bearings
- Max. exhaust gas temperature 250°C
- Motor protection: TOP wired internally
- Standard: Speed monitoring via Hall IC
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE; Confirmation UKCA possible
- Approvals: EAC is applied for; CCC, UL, CSA on request

Optional

- Additional shaft seal (see page 88)

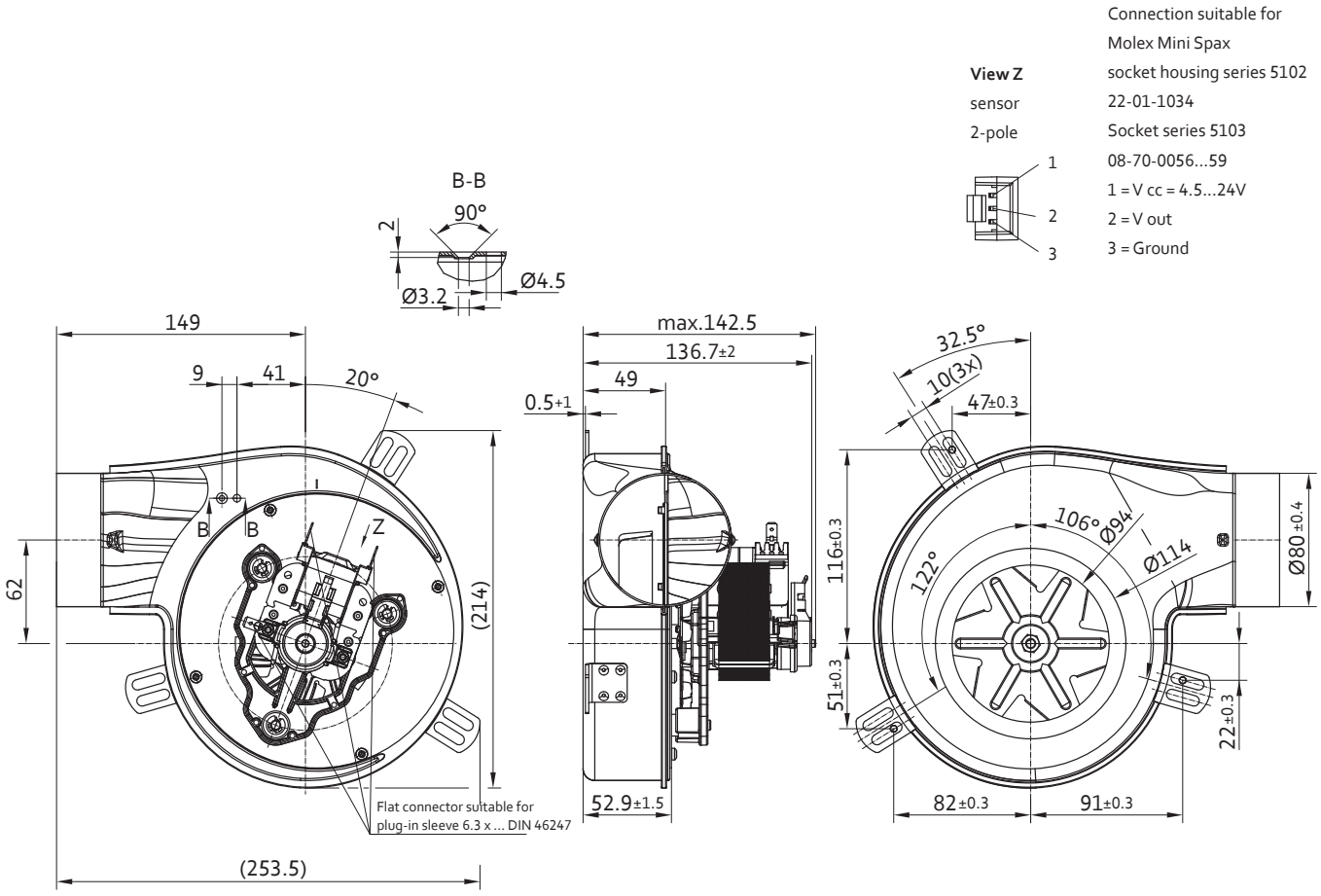
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Characteristic Curve	Operating point	Air flow	Speed free air flow	Max. input power	Max. current draw	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz				m³/h	rpm	W	A	°C	kg
VCS0152XQFFS	55462.50050	A	1	160	2600	43	0.38	0...+60	2.3
			2	127	2630	43	0.37		
			3	93	2660	42	0.37		
			4	54	2700	39	0.35		

Subject to changes.

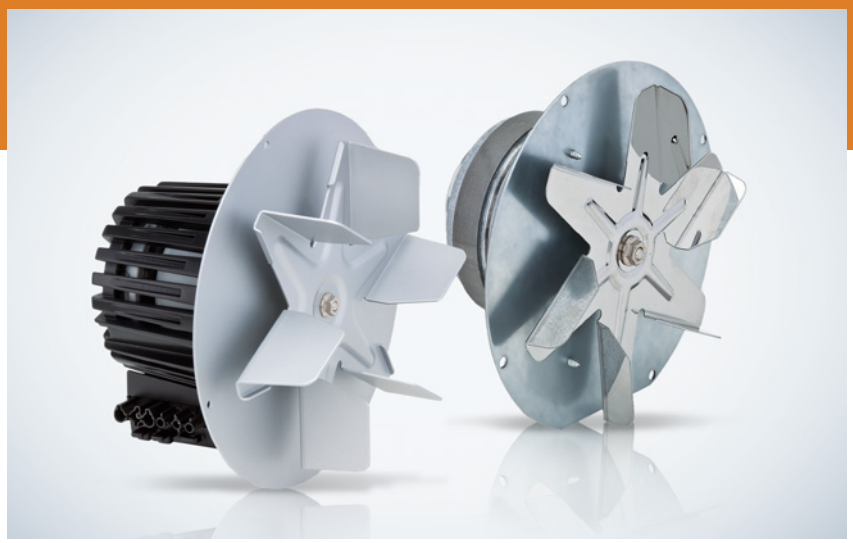
Technical drawing

Dimensions in mm

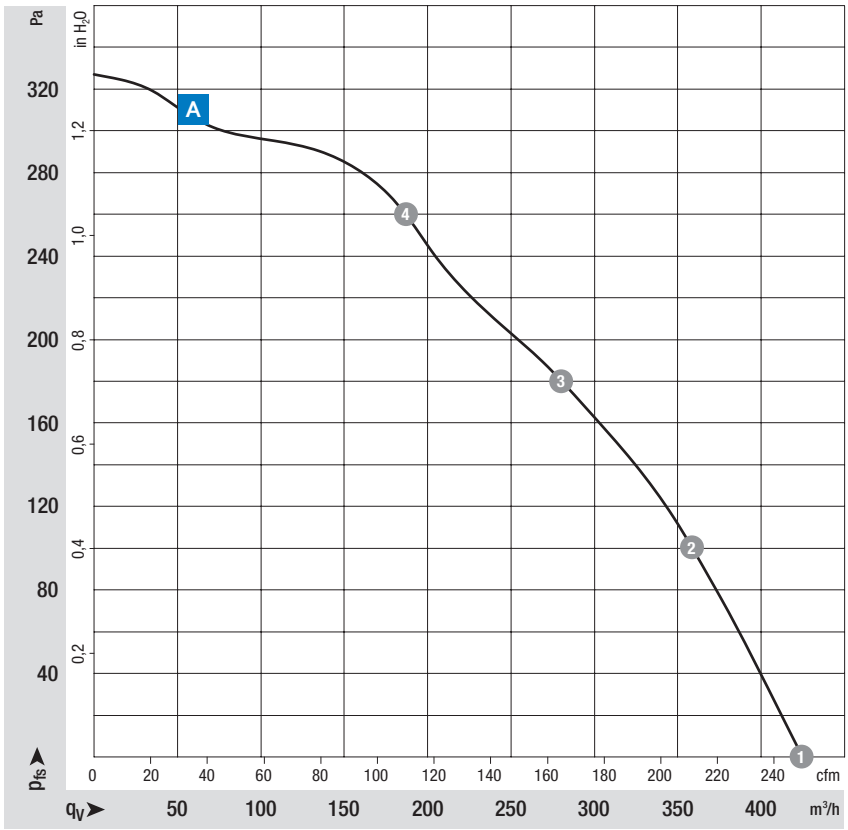


AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 180



from page 86	Scroll dimensions
page 93	Electrical connections A1), D)
More at	www.ebmpapst.com



Heat output range[1]

- 24 – 35kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

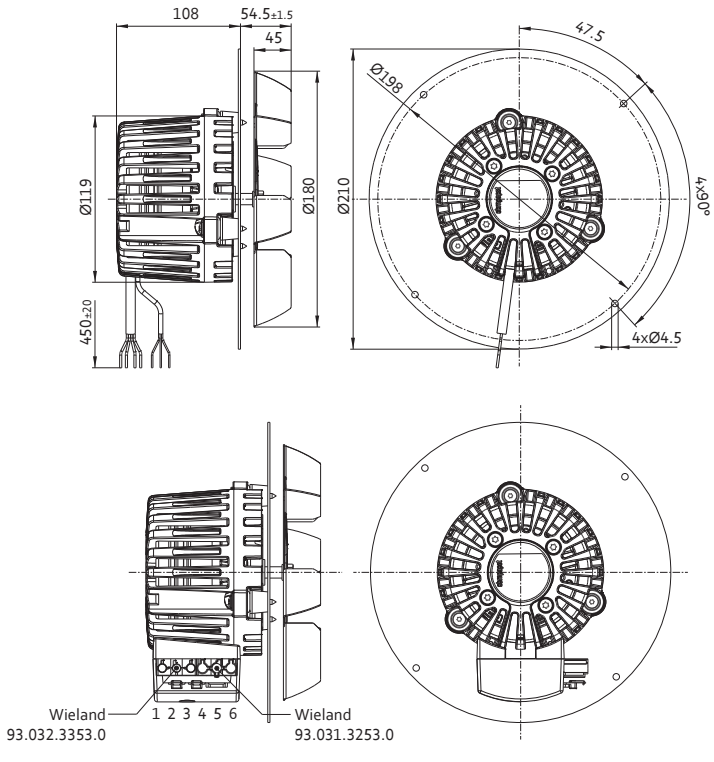
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

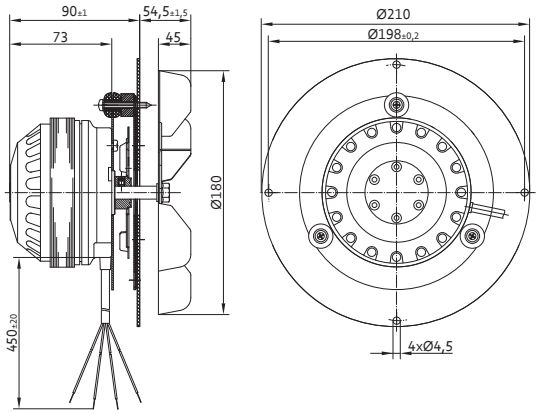
Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VSW0180X2MES	**R2E180CV8201**	Cable design		M2E 068-CF	A	1	420	2500	75	0.34	2.0/400	-25...+45	1.7
	R2E180CV8205	Plug design				2	420	2490	74	0.33		-25...+45	1.7
						3	420	2520	72	0.32			
						4	420	2585	67	0.30			
VSW0180X2MES	**R2E180CG8201**	without motor protection hood										-25...+60	2.3

Subject to changes.

Technical drawing

Dimensions in mm



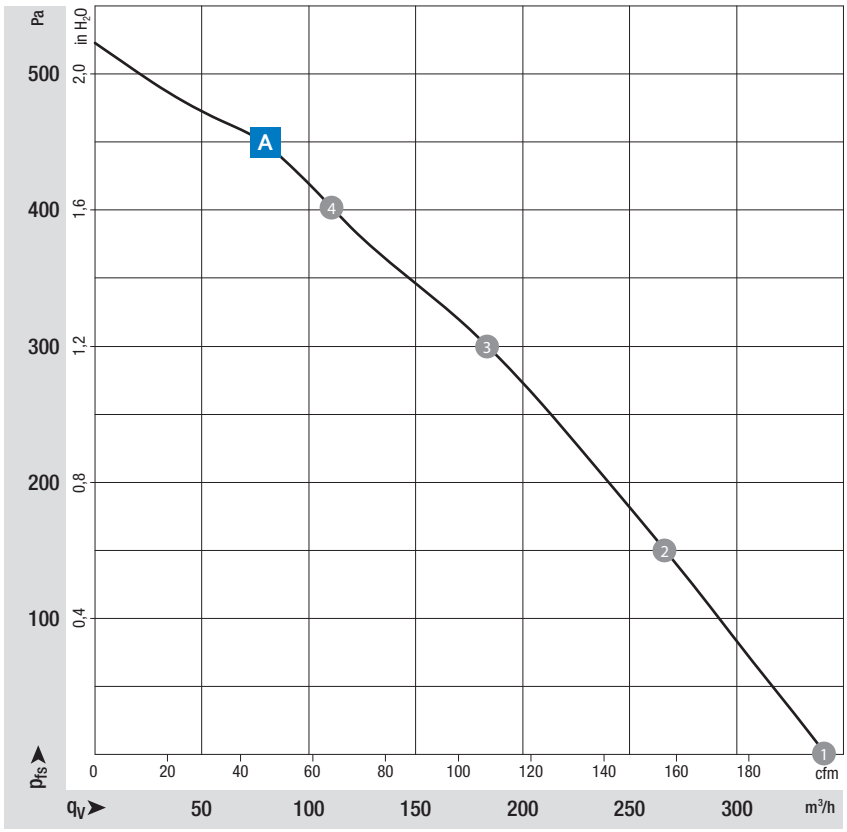


Connection		
No.	Function	Color
1	L	blue
2	PE	green/yellow
3	N	black
4	GND	black
5	OUT	white
6	VCC	red

AC centrifugal blowers (exhaust air)

for solid fuel heating systems, single inlet, Ø 180

from page 86	Scroll dimensions
page 93	Electrical connections A1), D)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 24 – 35kW

Material/surface

- Impeller: Corrosion resistant sheet steel
- Housing: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

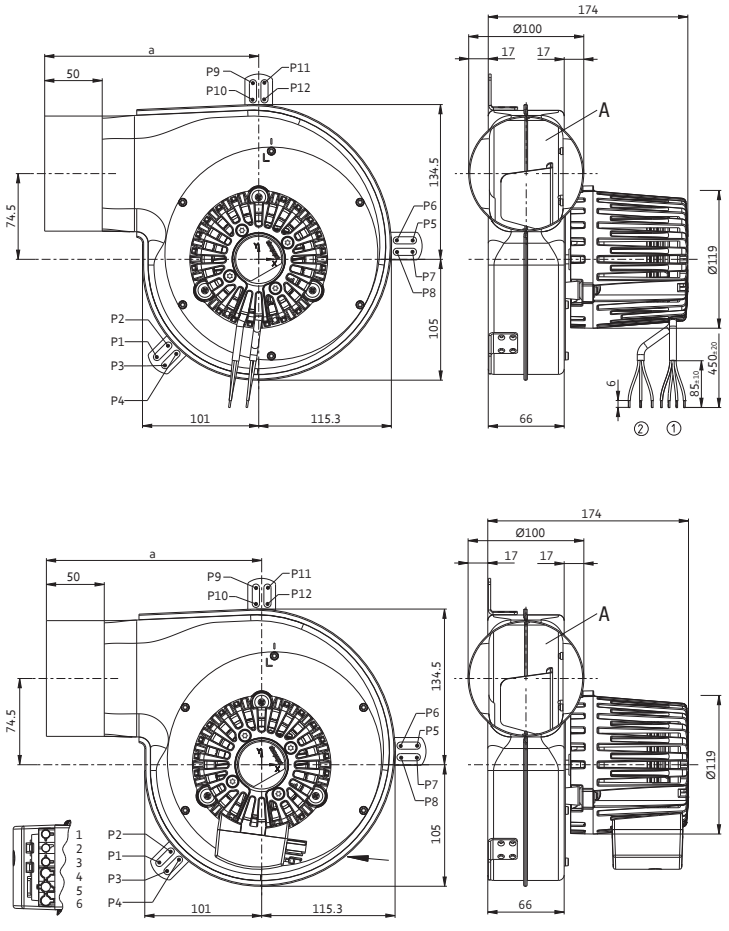
[1] Heat output range
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Sound pressure level	Perm. ambient temperature	Weight
Type	Part number	Fan type					m³/h	rpm	W	A	µF/VDB	db(A)	°C	kg
VPW0180X2MES	G2E180CV8201	Cable design*		M2E 068-CF	A	1	340	2600	65	0.30	1.0/400	73	-25...+60	3.0
	G2E180CV8205	Plug design				2	340	2645	60	0.26		70		
						3	340	2700	55	0.24		64		
						4	340	2765	48	0.21		62		
VPW0180X2MES	G2E180GV8201	Cable design*												
	G2E180GV8205	Plug design												

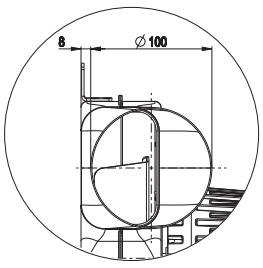
Subject to changes. * Cable design also possible without protection hood

Technical drawing

Dimensions in mm



Detail A
G2E180GV82**



Connection		
No.	Function	Color
1	L	blue
2	PE	green/yellow
3	N	black
4	GND	black
5	OUT	white
6	VCC	red

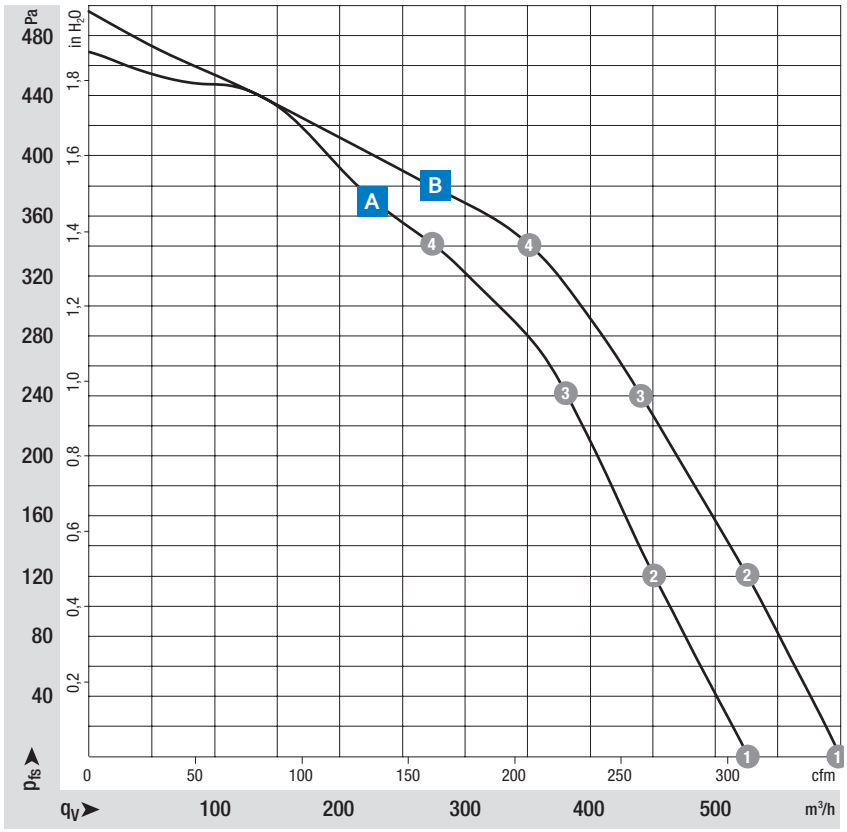
P	X	Y
1	-84.9	-88.4
2	-75	-78.5
3	-92	-81.3
4	-82	-71.4
5	16.5	134
6	16.5	120
7	6.5	134
8	6.5	120
9	153	-5
10	139	-5
11	153	5
12	139	5

Dimensions		
	VPW0180X2MES G2E180CV82**	VPW0180X2MES G2E180GV82**
a	186	223

AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 210

from page 86	Scroll dimensions
page 93	Electrical connections A1), D)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 35 – 55kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

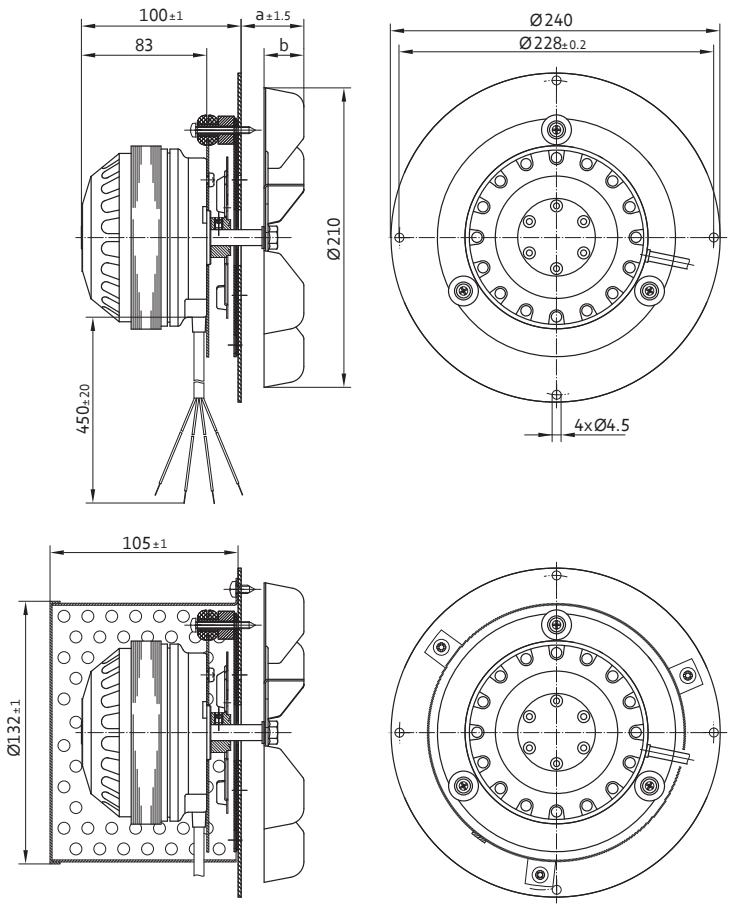
[1] Heat output range
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz			Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature [1]	Weight
						m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type										
VSW0210X2MGS	R2E210AA3401	without motor protection hood	M2E 068-DF	A	1	520	2500	110	0.49	2.0/450	-25...+90	2.9
					2	520	2495	109	0.48			
					3	520	2550	102	0.44			
					4	520	2660	87	0.38			
	R2E210AA3405	with motor protection hood										
VSW0210X2MGS	R2E210AB3401	without motor protection hood		B	1	600	2400	125	0.56	2.5/400	-25...+70	3.1
					2	600	2420	125	0.54			
					3	600	2455	122	0.53			
					4	600	2545	111	0.48			
	R2E210AB3405	with motor protection hood										

Subject to changes. [1] measured with motor protection hood: A = -25..+70°C B = -25..+45°C

Technical drawing

Dimensions in mm

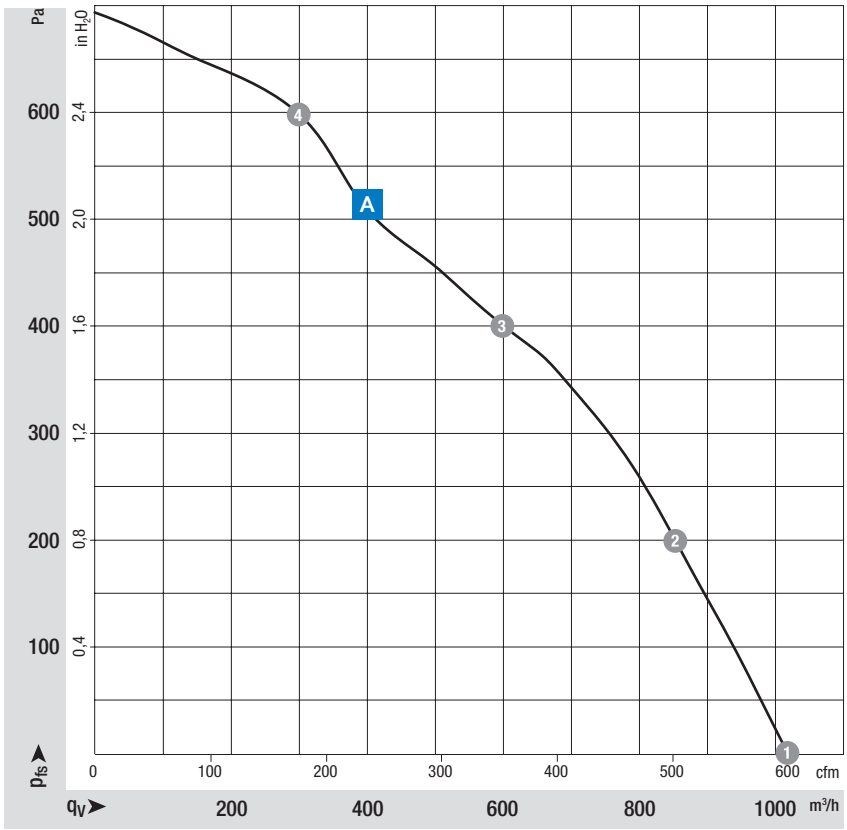


Dimensions		
	VSW0210X2MGS	VSW0210X2MGS
	R2E210AA34**	R2E210AB34**
a	39,5	54,5
b	30	45

AC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 250

from page 86	Scroll dimensions
page 93	Electrical connections A1), D)
More at	www.ebmpapst.com



Heat output range[1]

- 55 – 80kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Standard: Speed monitoring via Hall IC
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

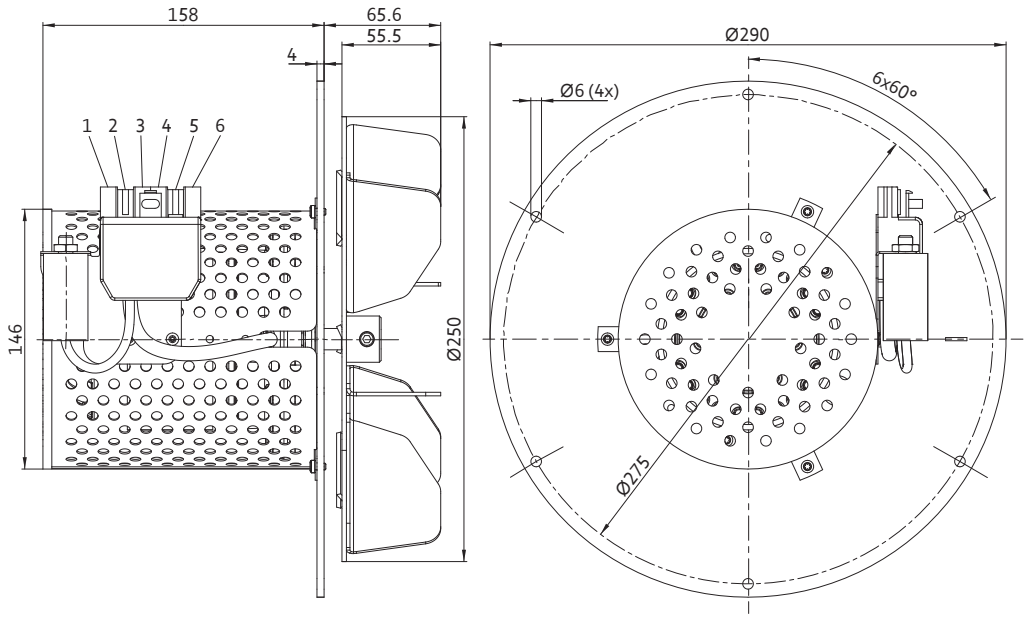
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230VAC, 50Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	µF/VDB	°C	kg
Type	Part number	Fan type											
VSW0250X2NKS	**R2E250BE0310**	with motor protection hood		M2E 074-EI	A	1 2 3 4	1010 1010 1010 1010	2500 2540 2590 2700	260 258 243 204	1.15 1.13 1.06 0.89	7.0/400	-25...+50	8.1

Subject to changes.

Technical drawing

Dimensions in mm

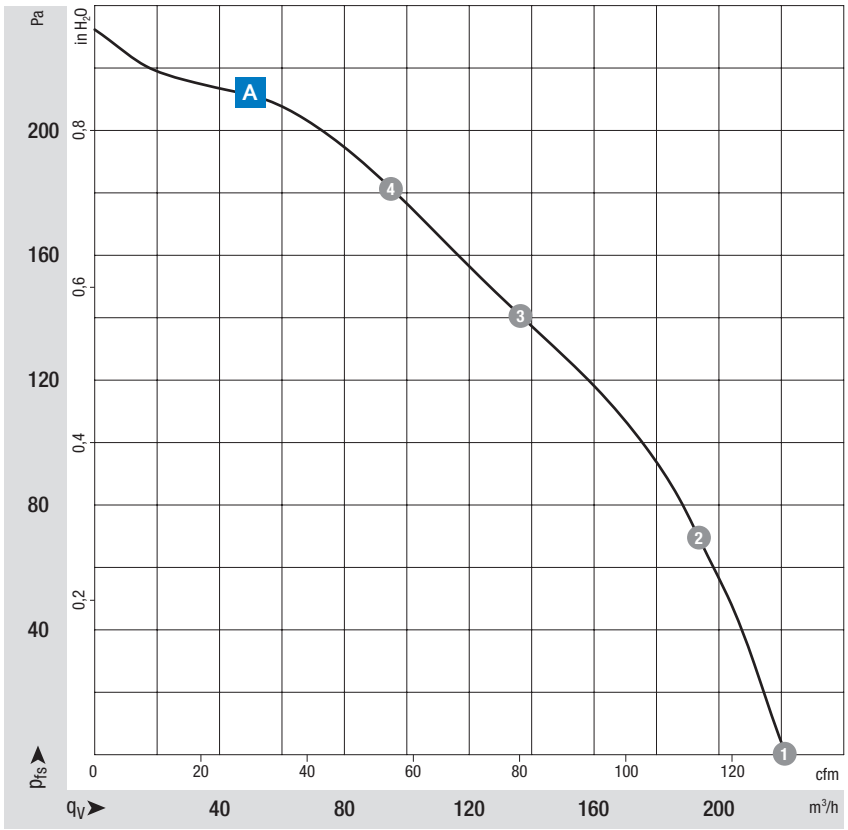


Connection		
No.	Function	Color
1	Hall-IC	black
2	Hall-IC	white
3	Hall-IC	red
4	black + Capacitor	
5	–	green/yellow
6	–	blue

EC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 140

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Heat output range[1]

- 10 – 24kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

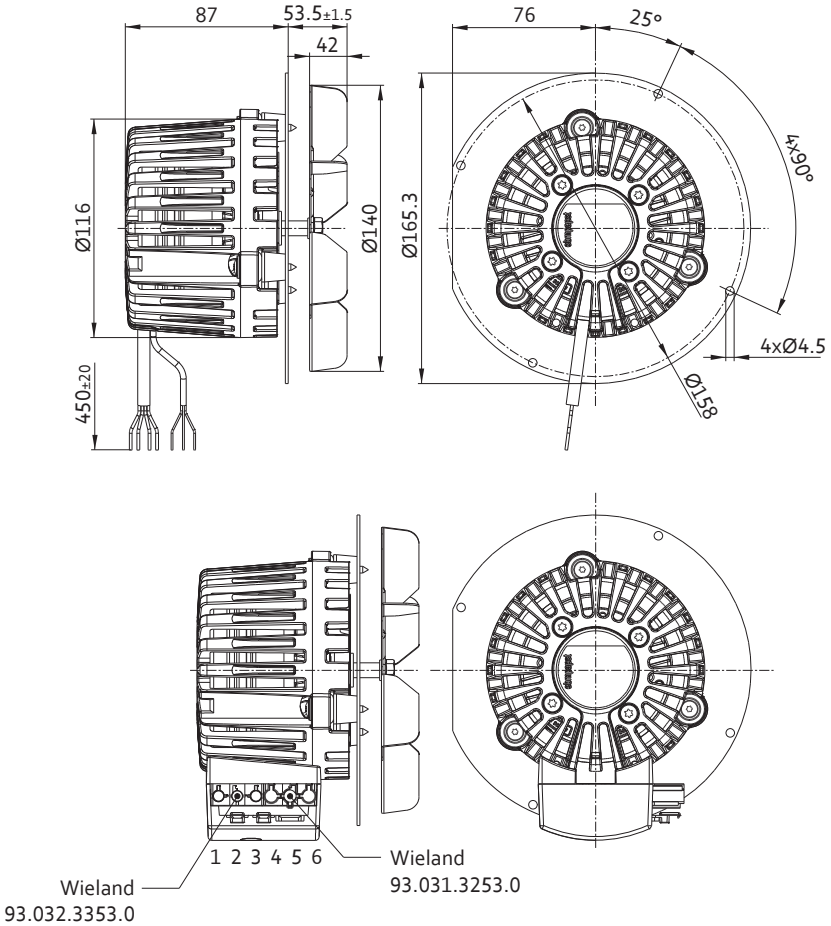
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 1~200-240, 50/60Hz							m³/h	rpm	W	A	db(A)	°C	kg
VSW0140XSLBS	R3G140AG0301	Cable design		M3G 055-AI	A	1	220	2650	18	0.15	65	-25...+60	1.3
						2	220	2635	18	0.15			
						3	220	2660	18	0.14			
						4	220	2690	16	0.13			
	R3G140AG0305	Plug design											

Subject to changes.

Technical drawing

Dimensions in mm

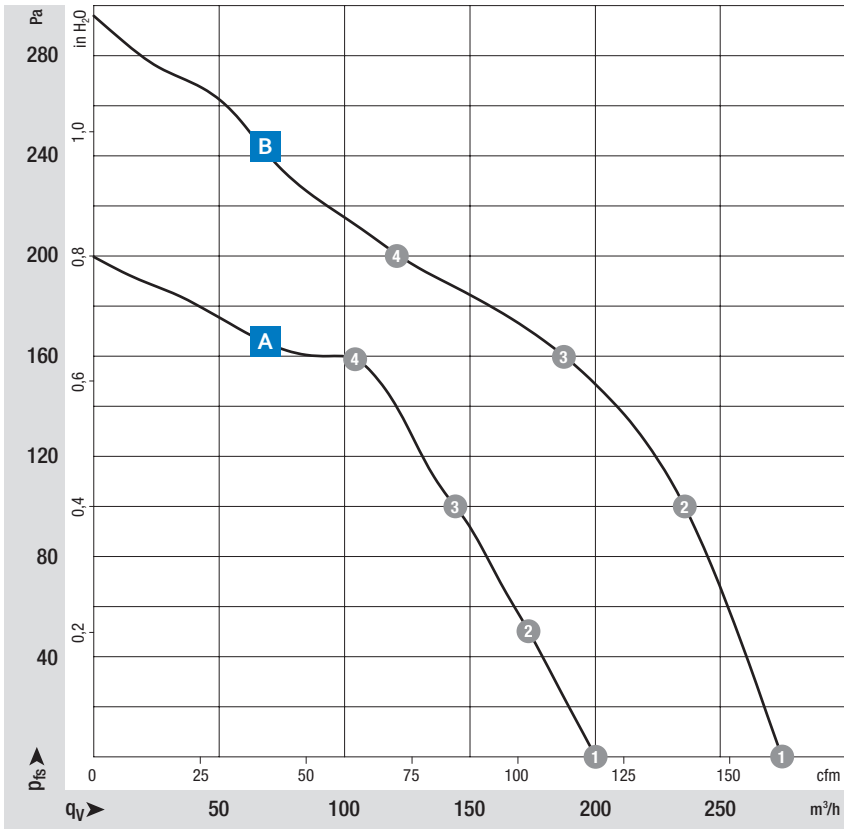


Connection		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	yellow
5	GND	blue
6	Tacho	white

EC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 150

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Heat output range[1]

- 10 – 24kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

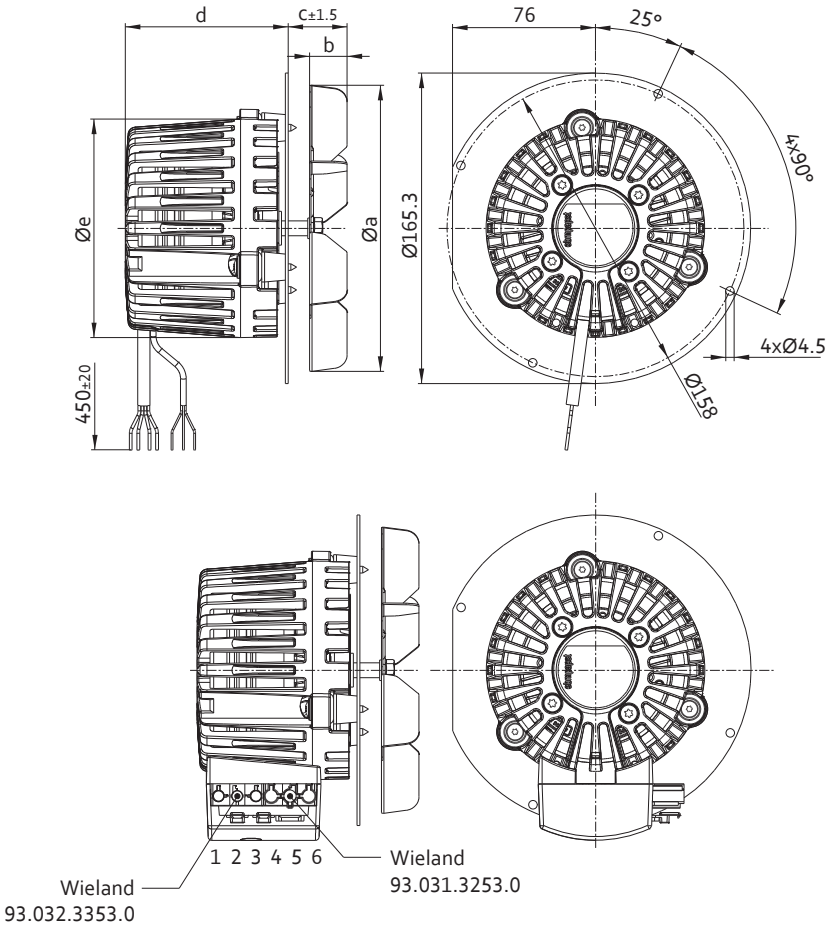
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Perm. ambient temperature	Weight
Nominal voltage 1~200-240, 50/60Hz							m³/h	rpm	W	A	°C	kg
VSW0150XSLBS	R3G150AA0301	Cable design		M3G 055-AI	A	1 2 3 4	145 145 145 145	2530 2540 2600 2650	16 16 14 13	0.17 0.17 0.16 0.15	-25...+60	1.25
	R3G150AA0305	Plug design										
VSW0150XSLCS	R3G150AC0101	Cable design		M3G 055-BD	B	1 2 3 4	275 275 275 275	2803 2770 2796 2830	29 30 29 27	0.30 0.30 0.30 0.29	-25...+60	1.45
	R3G150AC0105	Plug design										

Subject to changes.

Technical drawing

Dimensions in mm



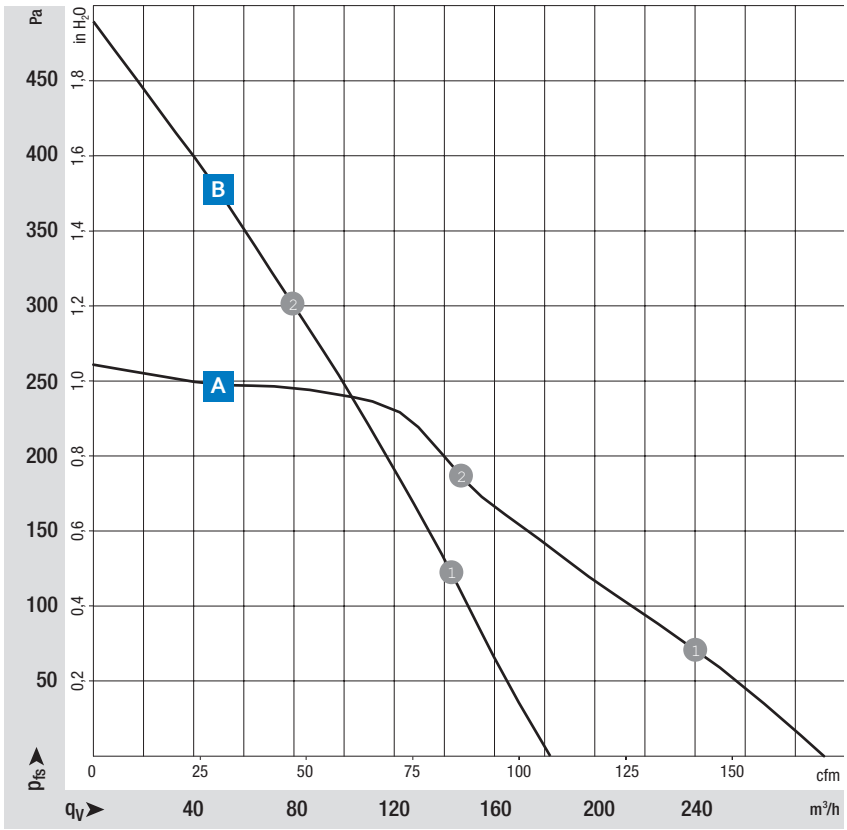
Connection		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	black
5	GND	white
6	Tacho	red

Dimensions		
	VSW0150XSLBS	VSW0150XSLCS
	R3G150AA03**	R3G150AC01**
a	152	148
b	20	42
c	31,5	53,5
d	87	108
e	116	119

DC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 150

from page 86	Scroll dimensions
page 90	Electrical connections J5)
More at	www.ebmpapst.com



Heat output range[1]

- 10 – 24kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 20
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: Tach output; Control input 0-10VDC / PWM; Reverse polarity and locked-rotor protection; Motor current limitation; Line undervoltage detection; Soft start
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

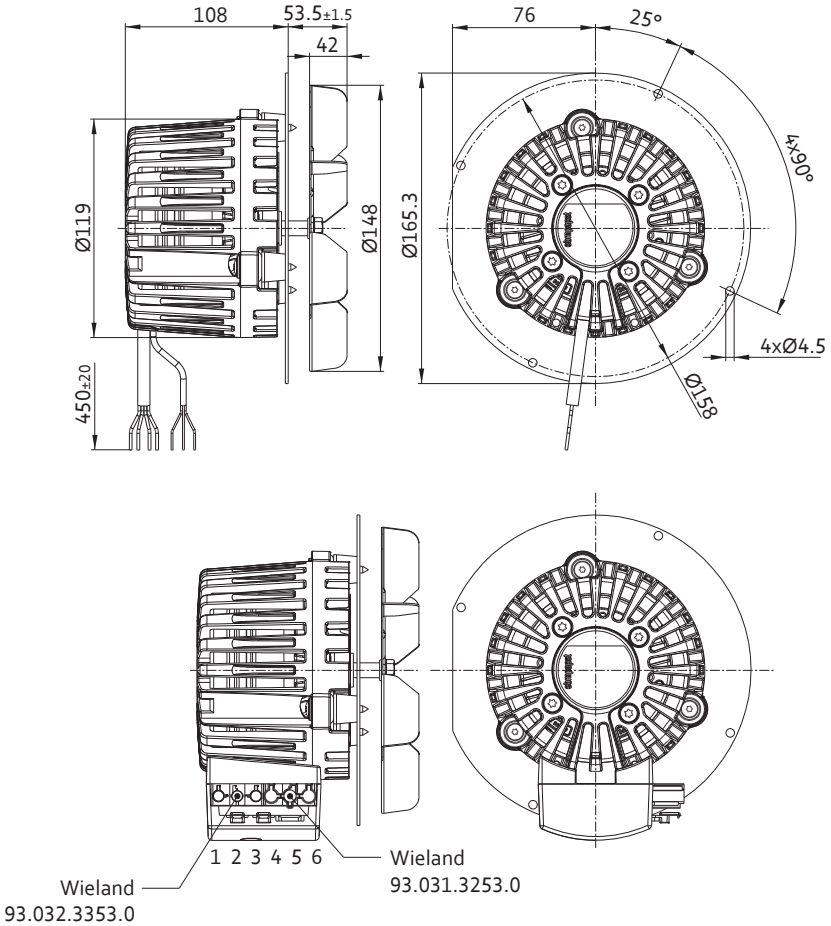
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve*	Operating point	Air flow	Speed	Max. input power	Max. current draw	Sound pressure level	Min. back pressure	Perm. ambient temperature	Weight
Nominal voltage 24 V DC, Nominal voltagesbereich 16-28 V DC							m³/h	rpm	W	A	db(A)	Pa	°C	kg
VSW0150XULCS	R1G150AA6301	Cable design		M1G 055-BD	A	1	290	3030	31	1.40	66	0	-25...+50	1.3
						2	290	3110	29	1.30	66			
					B	1	180	3190	26	1.20	67			
						2	180	3360	22	1.00	67			
	R1G150AA6305	Plug design												

Subject to changes. * A measured without scroll housing. B measured with scroll housing

Technical drawing

Dimensions in mm

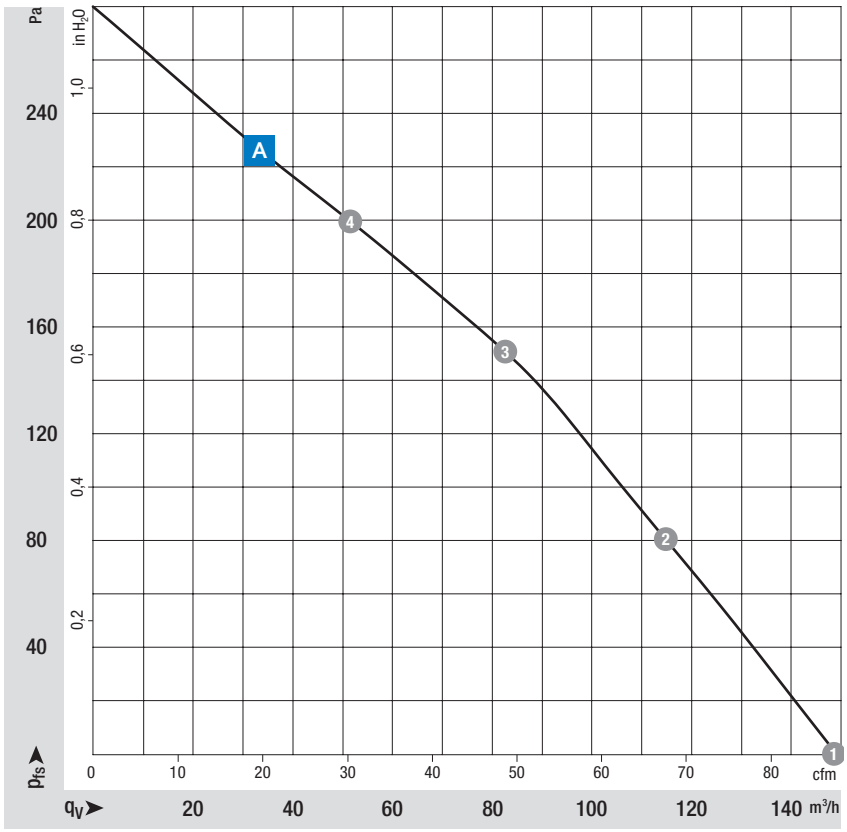


Connection		
No.	Function	Color
1	GND	blue
2	unlined	
3	UN + 24 VDC	red
4	Tach	white
5	unlined	
6	0-10 VDC	yellow

EC centrifugal blowers (exhaust air)

for solid fuel heating systems, single inlet, Ø 150

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 10 – 24kW

Material/surface

- Impeller: Corrosion resistant sheet steel
- Housing: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

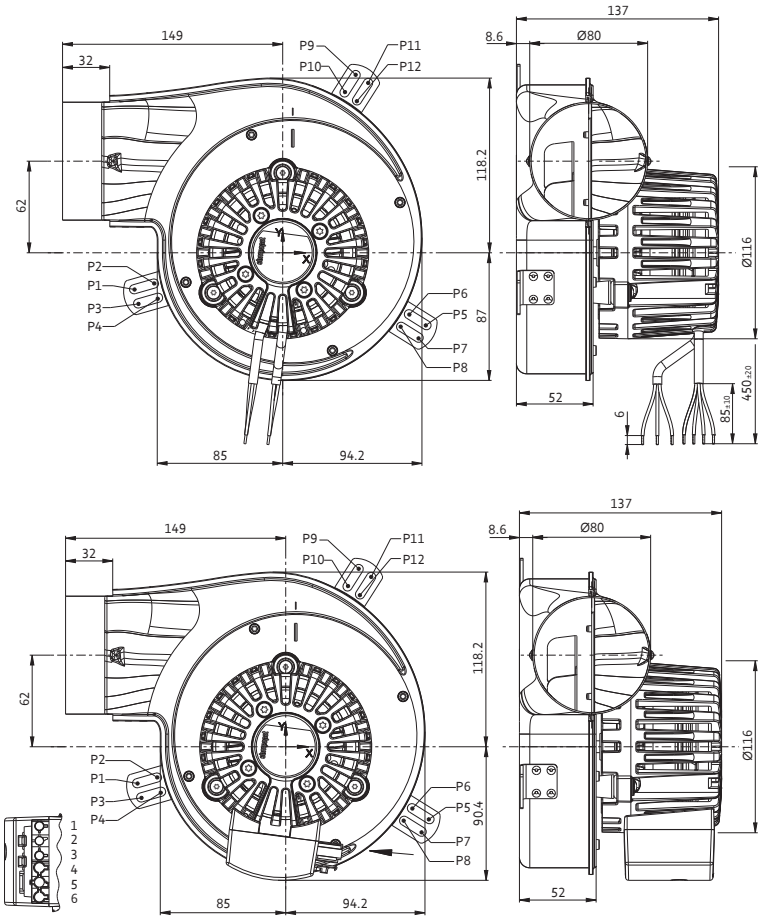
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 1~200-240VAC, 50/60Hz							m³/h	rpm	W	A	db(A)	°C	kg
VPW0150XSLBS	G3G150DA0301	Cable design		M3G 055-AI	A	1	149	2535	16	0.17	66	-25...+60	2.0
						2	149	2545	16	0.17			
						3	149	2585	15	0.16			
						4	149	2635	14	0.16			
	G3G150DA0305	Plug design											

Subject to changes.

Technical drawing

Dimensions in mm



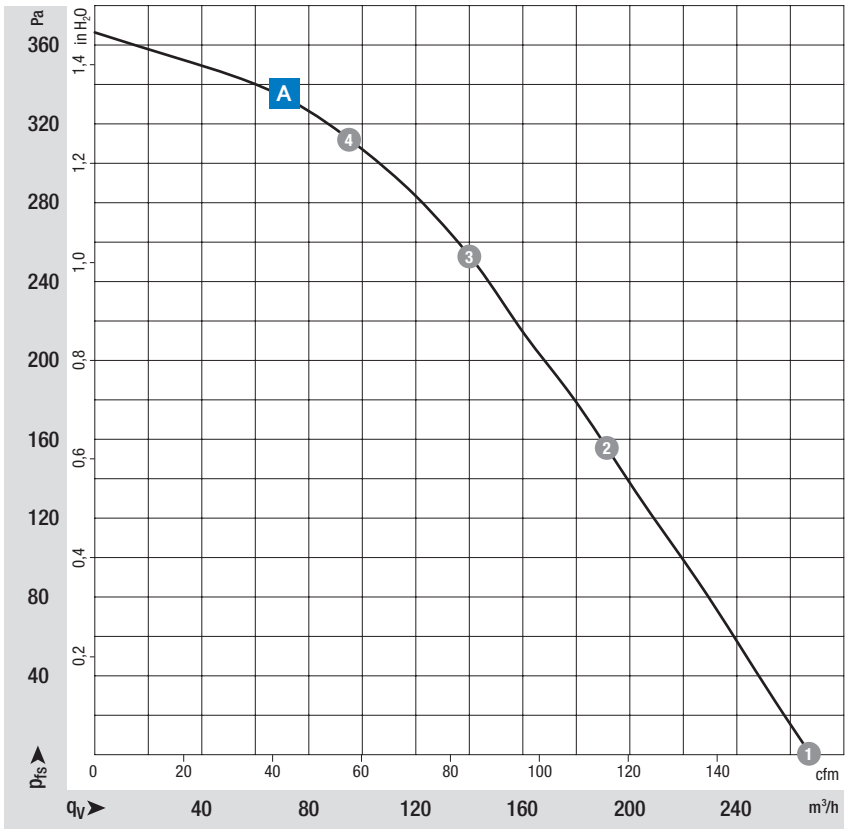
Connection Z		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	yellow
5	GND	blue
6	Tacho	white

P	X	Y
1	-24.7	-100.6
2	-20.8	-87.1
3	-34.3	-97.8
4	-30.4	-84.4
5	-49.0	97.3
6	-41.6	85.4
7	-57.5	92.0
8	-50.1	80.1
9	120.3	49.4
10	108.5	41.9
11	114.9	57.8
12	103.1	50.3

EC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 160

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 10 – 24kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

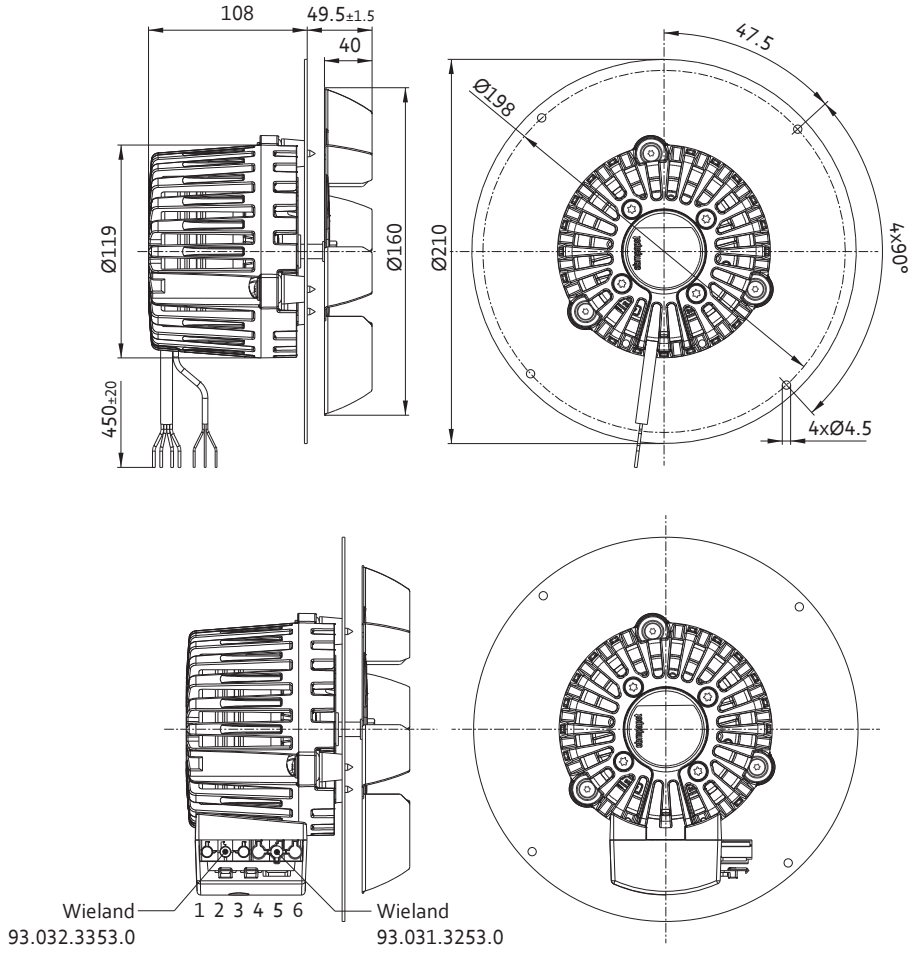
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 1~200-240VAC, 50/60Hz							m³/h	rpm	W	A	db(A)	°C	kg
VSW0160XSLCS	R3G160AE0101	Cable design		M3G 055-BD	A	1	305	2600	40	0.33	66	-25...+60	1.55
						2	305	2650	40	0.33			
						3	305	2670	38	0.27			
						4	305	2740	35	0.26			
	R3G160AE0105	Plug design											

Subject to changes.

Technical drawing

Dimensions in mm

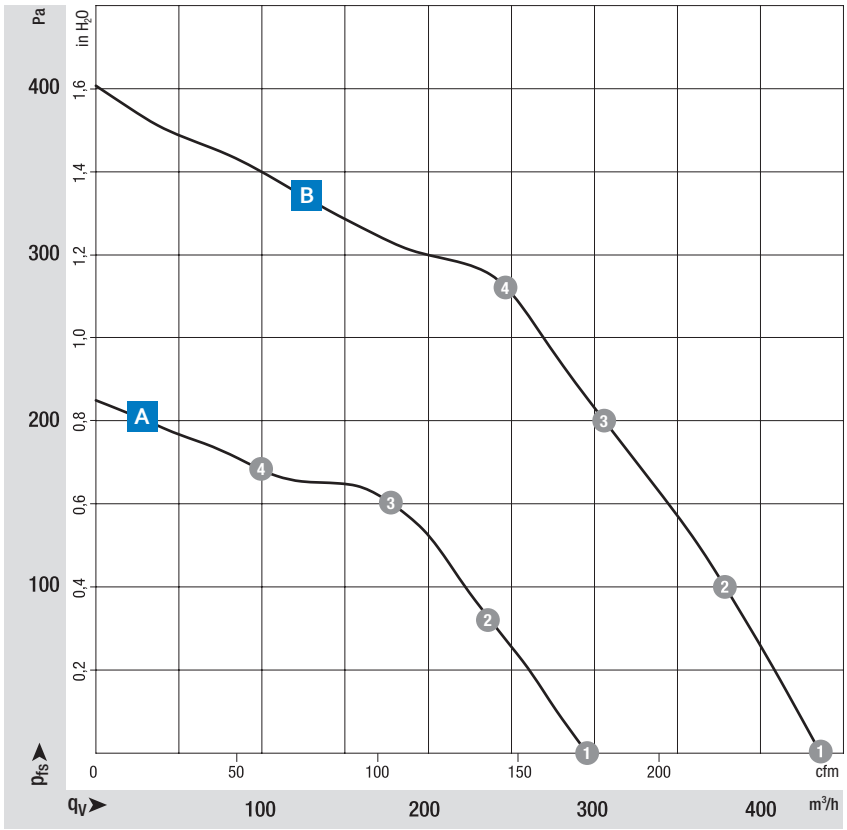


Connection		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	yellow
5	GND	blue
6	Tacho	white

EC centrifugal fans (exhaust air)

for solid fuel heating systems, single inlet, Ø 180

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Heat output range[1]

- 25 – 50kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

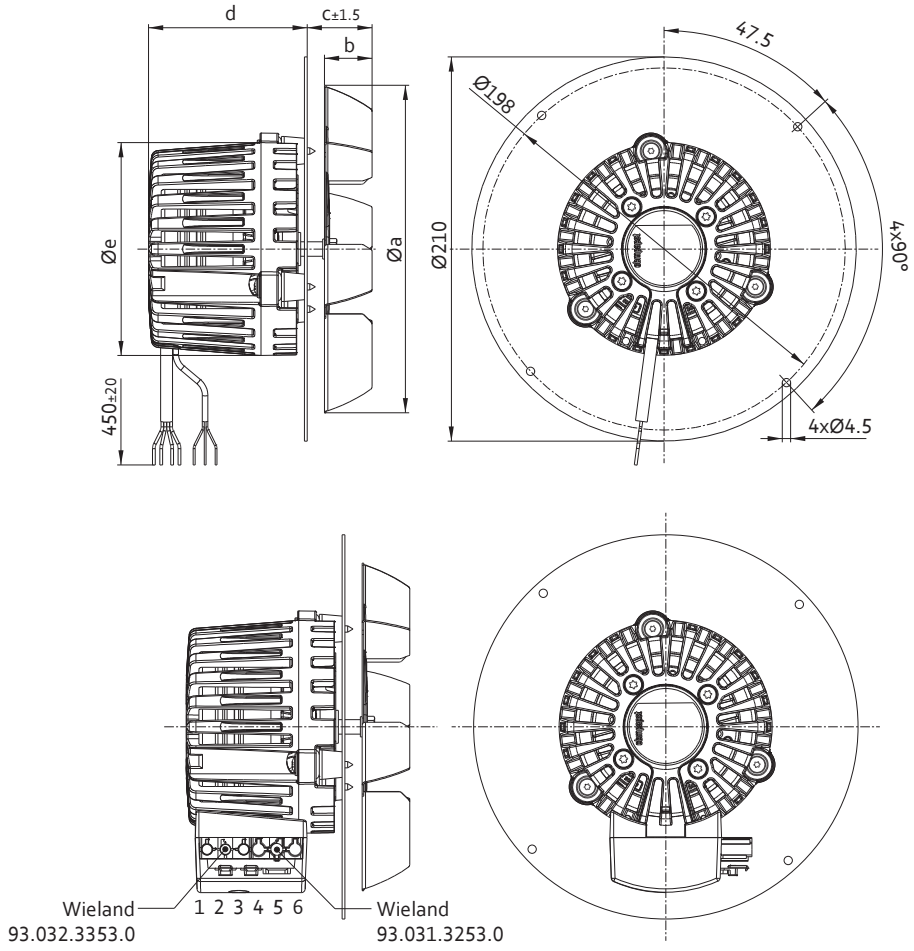
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Perm. ambient temperature	Weight
Nominal voltage 1~200-240VAC, 50/60Hz							m³/h	rpm	W	A	°C	kg
VSW0180XSLCS	**R3G180AH0101**	Cable design		M3G 055-BD	A	1	295	2150	25	0.28	-25...+50	1.65
						2	295	2150	25	0.28		
						3	295	2220	23	0.26		
						4	295	2285	20	0.24		
	R3G180AH0105	Plug design										
VSW0180XSLES	**R3G180AJ1101**	Cable design		M3G 055-CF	B	1	440	2660	60	0.55	-25...+50	1.90
						2	440	2635	60	0.52		
						3	440	2685	59	0.50		
						4	440	2730	56	0.49		
	R3G180AJ1105	Plug design										

Subject to changes.

Technical drawing

Dimensions in mm



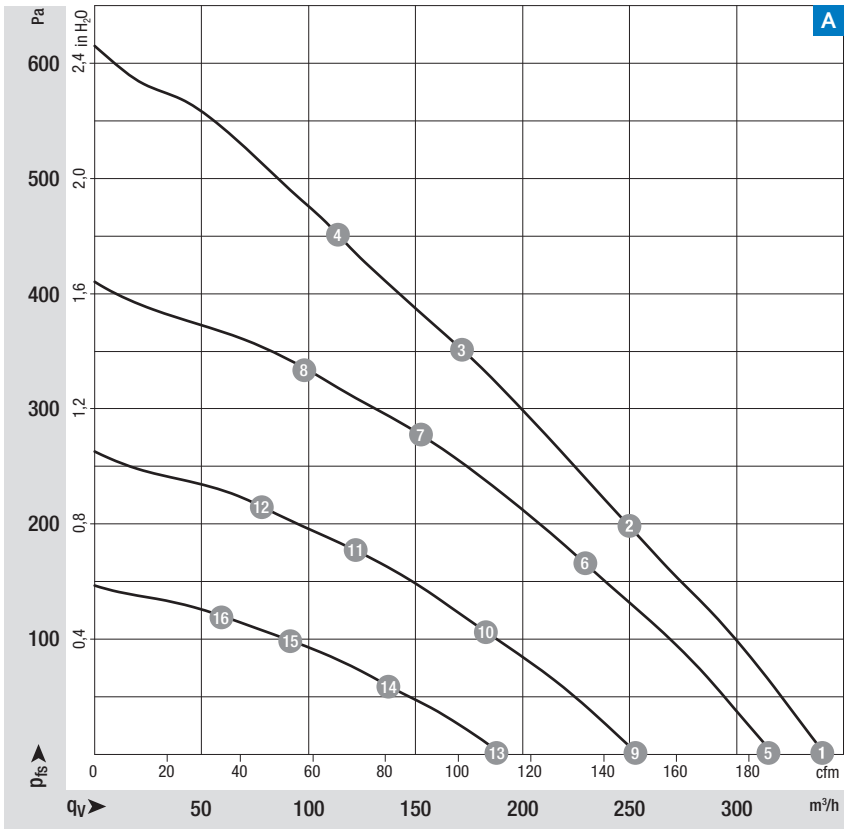
Connection		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	yellow
5	GND	blue
6	Tacho	white

Dimensions		
	VSW0180XSLCS	VSW0180XSLES
	R3G180AH01**	R3G180AJ11**
a	180	180
b	26	45
c	44,5	54,5
d	108	108
e	119	119

EC centrifugal blowers (exhaust air)

for solid fuel heating systems, single inlet, Ø 180

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Heat output range[1]

- 25 – 50kW

Material/surface

- Impeller: Corrosion resistant sheet steel
- Housing: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none, open rotor
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Max. exhaust gas temperature: Continuous operation 250°C
- Technical features: See electrical connections p. 91 and 93
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: VDE, UL, CSA, CCC, EAC are applied for

Optional

- Additional shaft seal see page 88

Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

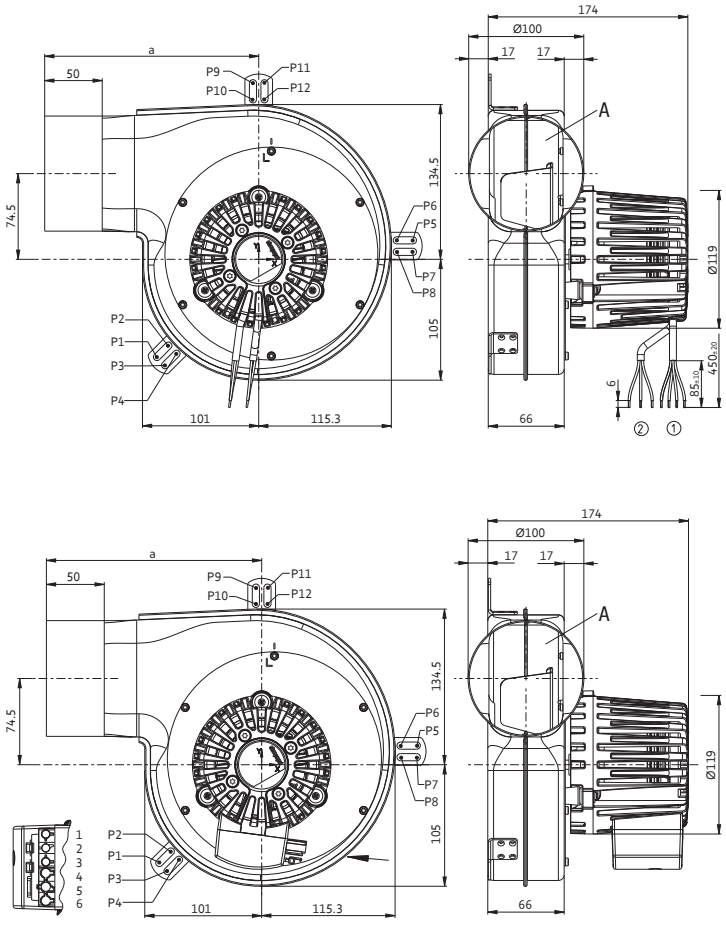
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 1~200-240VAC, 50/60Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Type	Part number	Fan type					m³/h	rpm	W	A	db(A)	°C	kg
VPW0180XSLES	G3G180FJ1101	Cable design		M3G 055-CF	A	1	340	2690	55	0.50	74	-25...+60	2.9
						2	340	2725	52	0.48	70		
						3	340	2810	46	0.44	66		
						4	340	2895	39	0.38	64		
	G3G180FJ1105	Plug design				5	340	2500	44	0.40	72		
						6	340	2500	40	0.37	67		
						7	340	2500	32	0.31	63		
						8	340	2500	25	0.25	61		
						9	340	2000	22	0.21	66		
						10	340	2000	20	0.19	62		
						11	340	2000	16	0.16	57		
						12	340	2000	13	0.13	55		
VPW0180XSLES	G3G180GJ1101	Cable design				13	340	1500	9	0.09	59		
						14	340	1500	9	0.08	55		
						15	340	1500	7	0.07	50		
	G3G180GJ1105	Plug design				16	340	1500	5	0.05	48		

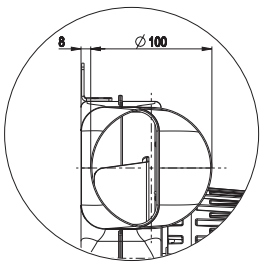
Subject to changes.

Technical drawing

Dimensions in mm



Detail A
G3G180GJ11**



Connection Z		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	0-10V/PWM	yellow
5	GND	blue
6	Tacho	white

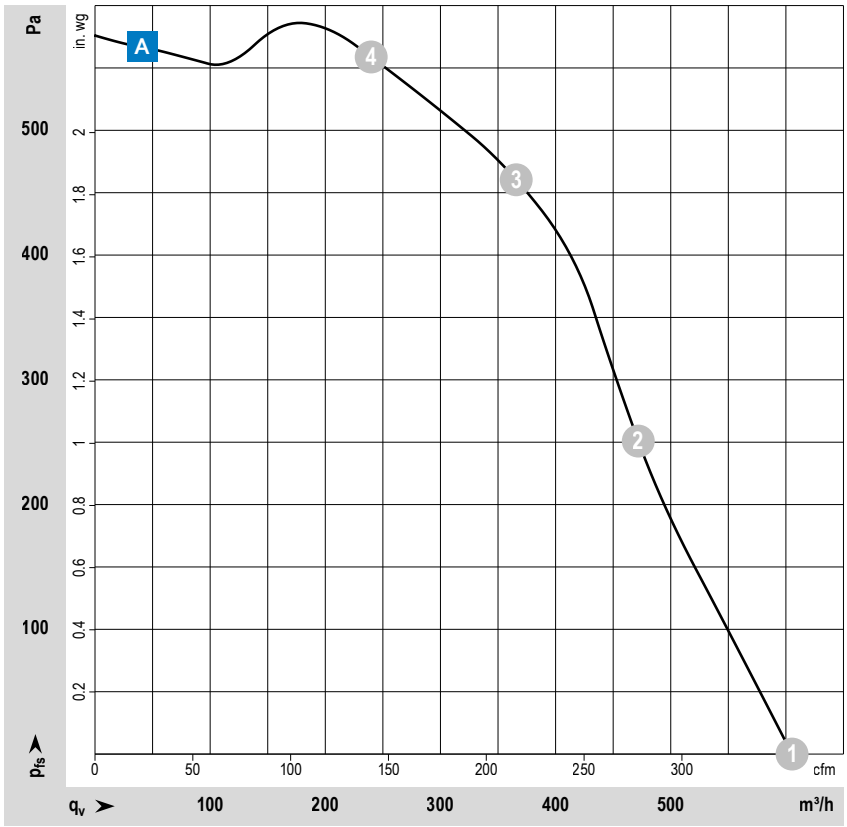
P	X	Y
1	-84.9	-88.4
2	-75	-78.5
3	-92	-81.3
4	-82	-71.4
5	16.5	134
6	16.5	120
7	6.5	134
8	6.5	120
9	153	-5
10	139	-5
11	153	5
12	139	5

Dimensions		
	VPW0180XSLES G3G180FJ11**	VPW0180XSLES G3G180GJ11**
a	186	223

EC circulation blower

for solid fuel heating systems, Ø 210

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Heat output range[1]

- 50 – 150kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44, depending on installation and position
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Hybrid bearings
- Technical features: Tach output; Control input 0-10VDC / PWM; Over-temperature protected electronics / motor; Output 10 VDC, max. 10 mA
- EMV: Interference emission acc. EN 61000-6-4 Interference immunity acc. EN 61000-6-2
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60034-1; EN 60204-1; EN 60335-1; CE

Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

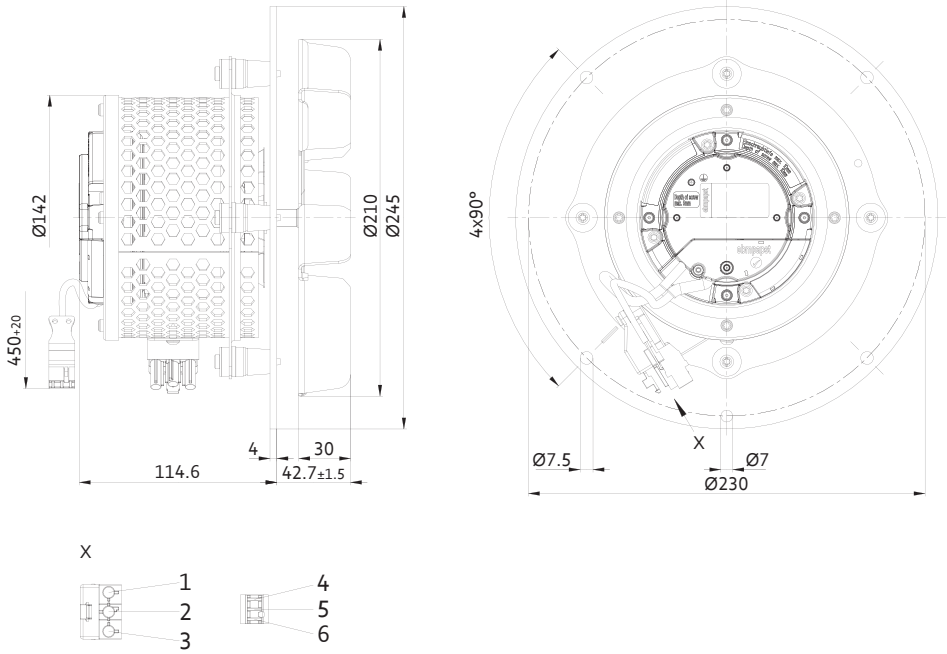
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Nominal voltage 230 VAC, 50 Hz				Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Perm. ambient temperature	Weight
							m³/h	rpm	W	A	°C	kg
Type	Part number	Fan type										
VSW0210XSNEZ	**R3G210AE5310**	with motor protection hood		M3G074-CF	A	1 2 3 4	605 470 365 240	3050 3055 3195 3295	160 160 139 119	1.30 1.30 1.14 0.99	-25...+55	4.3

Subject to changes.

Technical drawing

Dimensions in mm

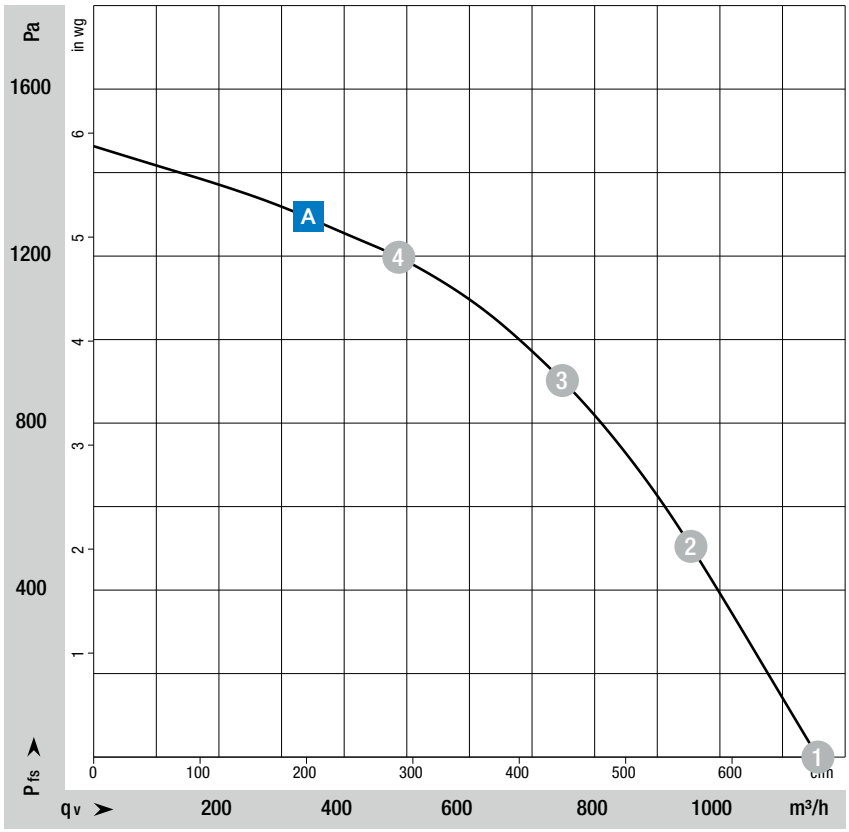


Connection X		
No.	Function	Color
1	N	blue
2	PE	green/yellow
3	L	black
4	GND	blue
5	Tacho	white
6	0-10V/PWM	yellow

EC centrifugal fans (exhaust air)

for solid fuel heating systems, backward curved, single inlet, Ø 250

from page 86	Scroll dimensions
page 91, 93	Electrical connections H4), C)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, without scroll housing without protection against accidental contact. Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Heat output range[1]

- 100 – 250kW

Material/surface

- Impeller: Corrosion resistant sheet steel

Characteristics

- Direction of rotation: counterclockwise, seen on rotor
- Type of protection: IP 20
- Insulation class: "F"
- Mounting position: Shaft horizontal or rotor on bottom; rotor on top on request
- Condensate discharges: Rotor-side
- Mode of operation: Continuous operation (S1)
- Bearings: Hybrid bearings
- Technical features: PFC (active); Tach output; Control input 0-10VDC / PWM; Over-temperature protected electronics / motor; Output 10 VDC, max. 10 mA
- EMC: Interference emission acc. EN 61000-6-3 Interference immunity acc. EN 61000-6-2 Harmonics acc. EN 61000-3-2/3
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

- Standards: EN 60335-1; CE
- Approvals: UL, CSA

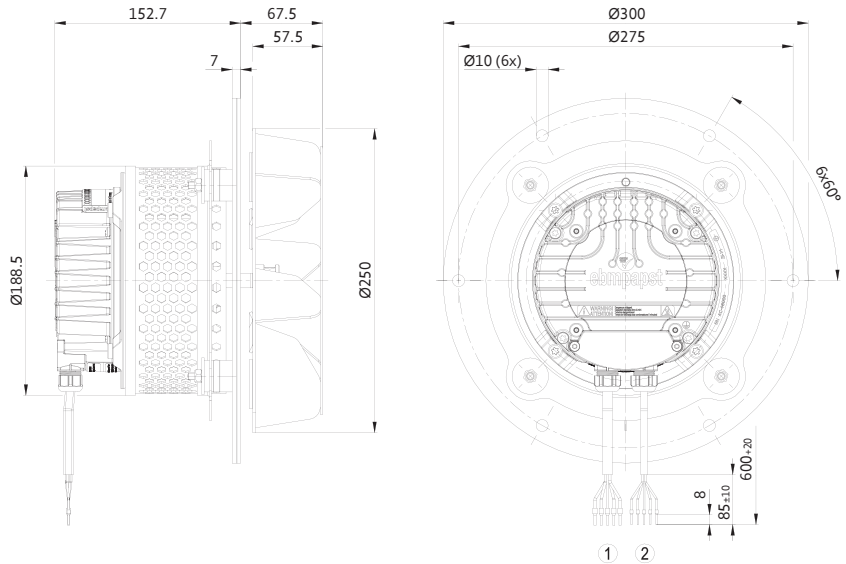
[1] **Heat output range**
approx. data; heat output depends on the specific system conditions.

Type	Part number	Fan type		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Perm. ambient temperature	Weight
Nominal voltage 1~200-277VAC, 50/60Hz							m³/h	rpm	W	A	°C	kg
VSC0250XSPGZ	**R3G250BE04H1**	Cable design		M3G084-DF	A	1 2 3 4	1155 955 750 485	3400 3500 3500 3500	500 500 477 365	2.30 2.30 2.08 1.60	-25...+50	8.5

Subject to changes.

Technical drawing

Dimensions in mm



Connection	
No.	
①	PVC AWG18
②	PVC AWG22

Fans and blowers for solid fuel heating systems

Convection heat

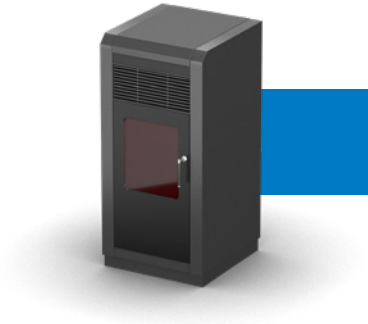
ebmpapst

engineering a better life

Convection heat

Product overview

Dimensions in mm	Type	Part number	Page
Centrifugal fans:			
Ø 108	VHS0108XSHCZ	**55667.27010**	54
Ø 108	VHS0108XQFFS	**55460.97630**	56
Ø 108	VHS0108XQFFZ	**55461.22850**	58
Ø 120	VHS0120XQFHZ	**55460.96461**	60
Ø 120	VHD0120XSLDS	**D3G120AA0311**	62
Ø 120	VHD0120X2MCS	**D2E120AA0104**	64
Ø 175	VBS0175R2LDZ	**R2E175RA5201**	66
Tangential fans:			
Ø 60	VTS0060XQFFS	**55411.20400**	68
Ø 60	VTS0060XQFHZ	**55412.60600**	68
Ø 60	VTS0060XUECS	**auf Anfrage**	70
Ø 60	VTS0060XUECS	**auf Anfrage**	70
Ø 65	VTS0065XQFFS	**55416.30108**	72
Ø 65	VTS0065XQFHS	**83315.00001**	72
Ø 65	VTS0065XQFHS	**55416.40010**	72
Ø 65	VTS0065XUECZ	**55668.49110**	74
Ø 65	VTS0065XUECZ	**55668.49111**	74
Ø 65	VTS0065XUECZ	**55668.49112**	74



The fans and blowers from convection heat are used, for example, in pellet stoves.

Convection heat

Convection heat is a convenient function of stoves and chimney trays. It ensures that the warm air in a room is evenly distributed and warmed up more quickly. Normally, a stove is heated mainly by radiated heat. As warm air rises and colder air drops, it takes a while for the warm air to warm up the entire room.

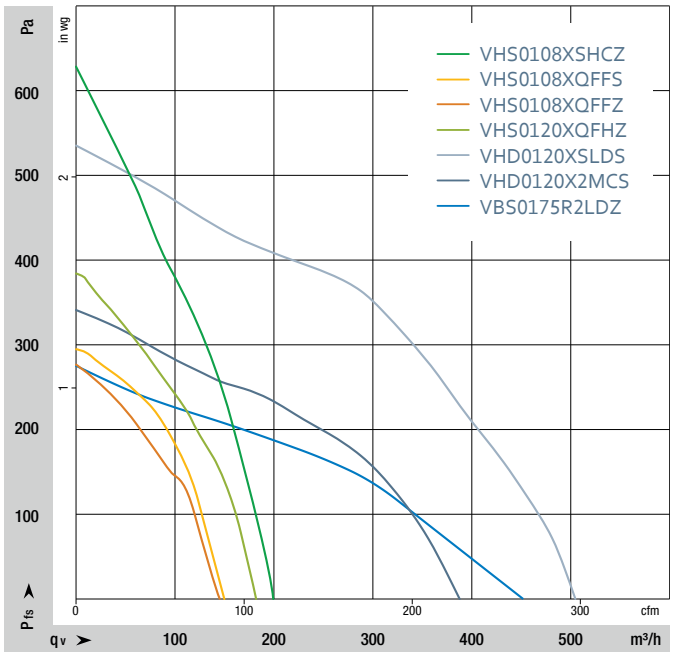
A fan helps to accelerate this process. To do this, it conveys the cooler air via the hot surfaces of the stove and conveys it either directly into the room or into special ventilation ducts. Thanks to the combination of radiated and convection heat generated in this way, users can quickly benefit from pleasant heat throughout the entire room.

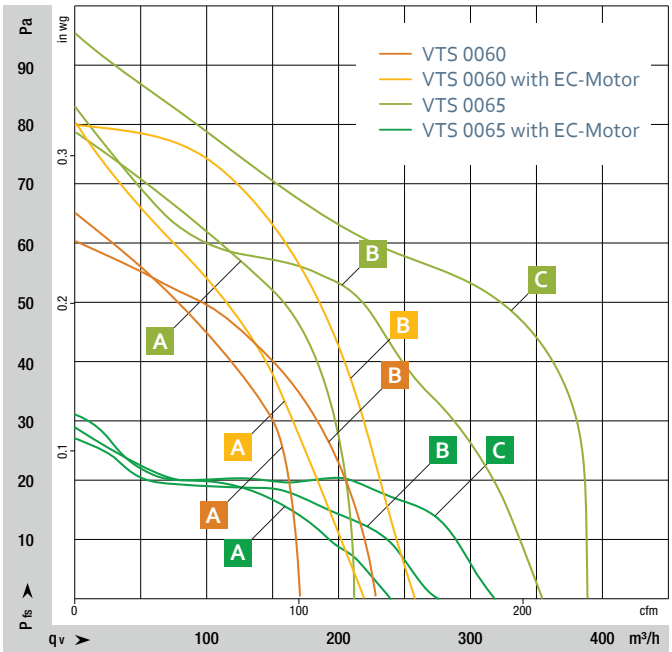
An infinitely adjustable, comfortable climate

The convection heat sector likes to use tangential blowers. Centrifugal fans are particularly suitable for conveying very large quantities of heat. Tangential blowers are characterized by the fact that they generate a laminar and wide air flow because of their design. They are also durable and operate extremely quietly. EC tangential blowers from ebm-papst are very economical thanks to an efficient motor. Since they can be controlled steplessly, the consumer can use them to adjust the air performance to their needs, creating a very pleasant atmosphere for them.

Comparison characteristic curves

Centrifugal fans / Tangential fans





Size, performance and cost-effectiveness

perfectly combined

Wood pellet and wood chip heating systems have very special requirements:
The air flows must be provided economically in each operating state and irrespective of the heating power. In addition, there is little space in the stoves. ebm-papst offers the right AC and EC fans to overcome these challenges. They are tailored to different performance classes and equipped with fan impellers optimized for biomass applications. Due to their compact design, they are robust, durable and space-saving. This facilitates having the optimum size, performance and cost-effectiveness in any application.

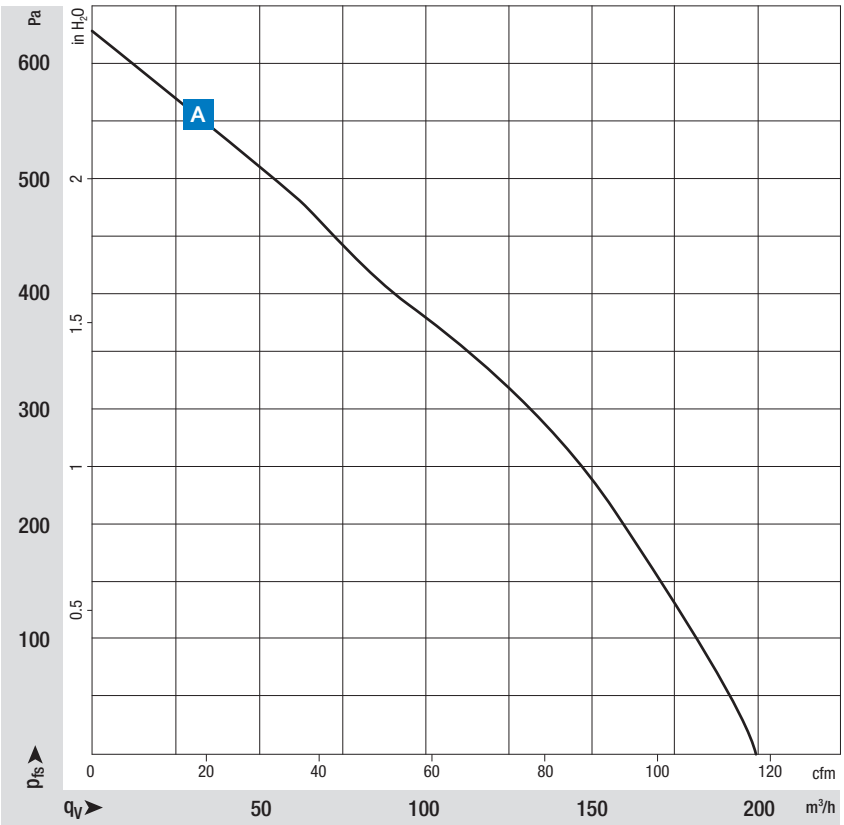
The advantages of fans from ebm-papst in solid-fuel heating technology:

- Suitable for use in intake and exhaust air and for distribution of warm air
- Low noise emissions
- Cost-effective operation
- Robust and compact design
- Fan impellers that are adapted to the special requirements of biomass boilers
- Efficient, speed-controlled EC technology for optimum fuel utilization

EC centrifugal blowers (ambient air)

VHS 108

from page 86	Scroll dimensions
from page 90	Electrical connections
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Hot-dip aluminised sheet steel
- Impeller: Hot-dip aluminised sheet steel

Characteristics

- Efficient EC motor
- Speed control via PWM interface possible
- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "I.Cl. H"
- Mounting position: any, except motor overhead
- Mode of operation: Continuous operation (S1)
- Max. fluid temperature 155°C
- Design: Motor anti-vibration mounted
- Bearings: Maintenance-free ball bearings
- Protection class: I
- Mains connector X, interface connector W and interface see from page 90

Standards and approvals

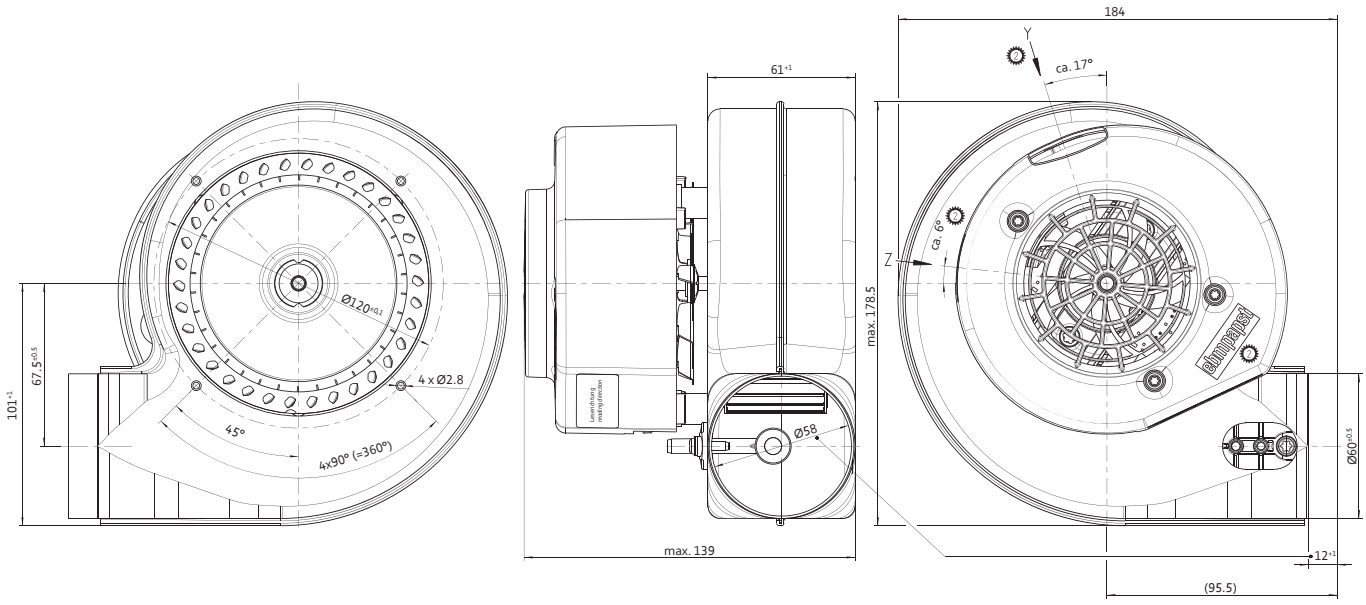
- Standards: EN 60335-1, CE; EAC & UKCA on request

Type	Part number	Characteristic Curve	Air flow	Speed free air flow	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz			m³/h	rpm	W	A	db(A)	°C	kg
VHS0108XSHCZ	**55667.27010**	A	198	2800	55	0.45	–	+55	1.4

Subject to changes.

Technical drawing

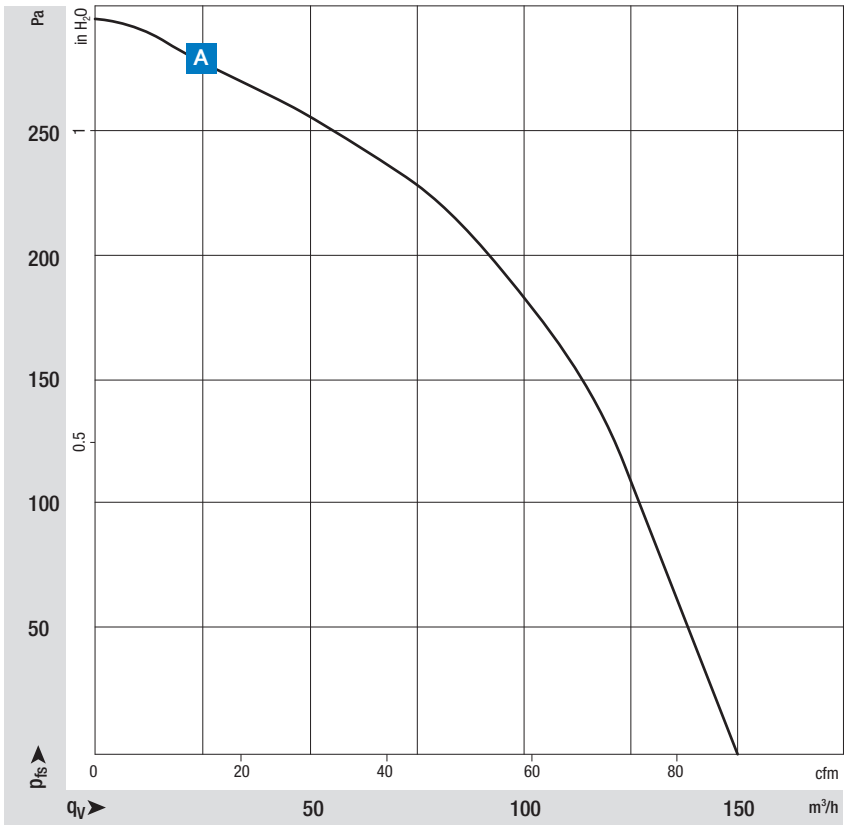
Dimensions in mm



AC centrifugal blowers (ambient air)

VHS 108

from page 86	Scroll dimensions
from page 90	Electrical connections
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Hot-dip aluminised sheet steel
- Impeller: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "I.Cl. H"
- Mounting position: Shaft horizontal, Outlet upwards. More mounting positions on request.
- Mode of operation: Continuous operation (S1)
- Max. fluid temperature 250°C
- Design: Motor anti-vibration mounted
- Bearings: Ball bearings / sleeve bearings
- Motor protection: Impedance protected
- Protection class: I

Standards and approvals

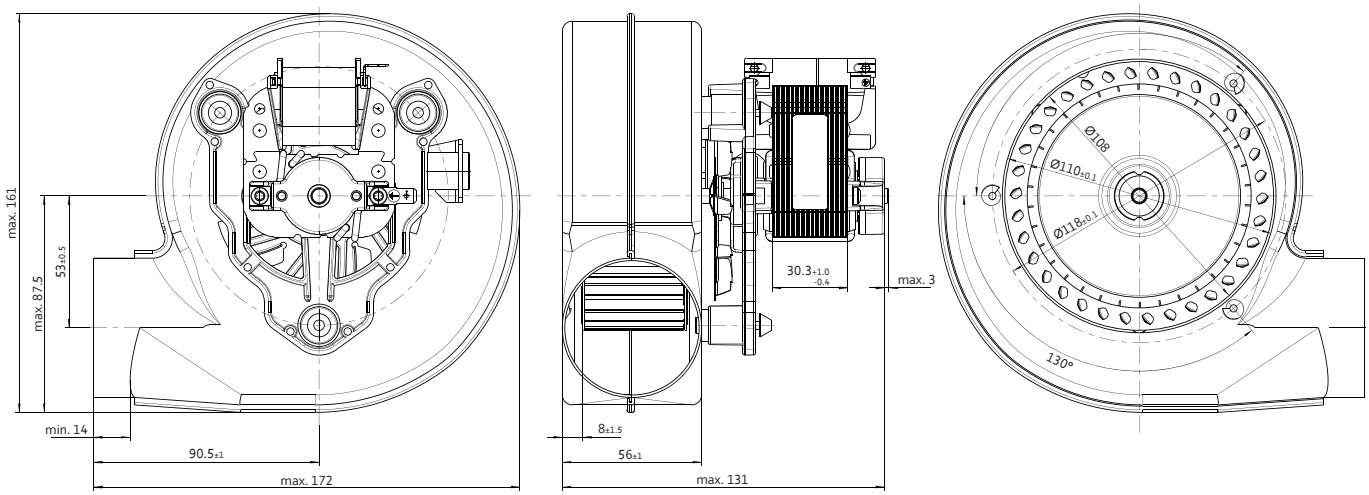
- Standards: EN 60335-1, CE; UKCA on request

Nominal voltage 230VAC, 50Hz		Characteristic Curve	Air flow	Speed free air flow	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
			m³/h	rpm	W	A	db(A)	°C	kg
Type	Part number								
VHS0108XQFFS	55460.97630	A	148	2300	57	0.47	–	+35	1.6

Subject to changes.

Technical drawing

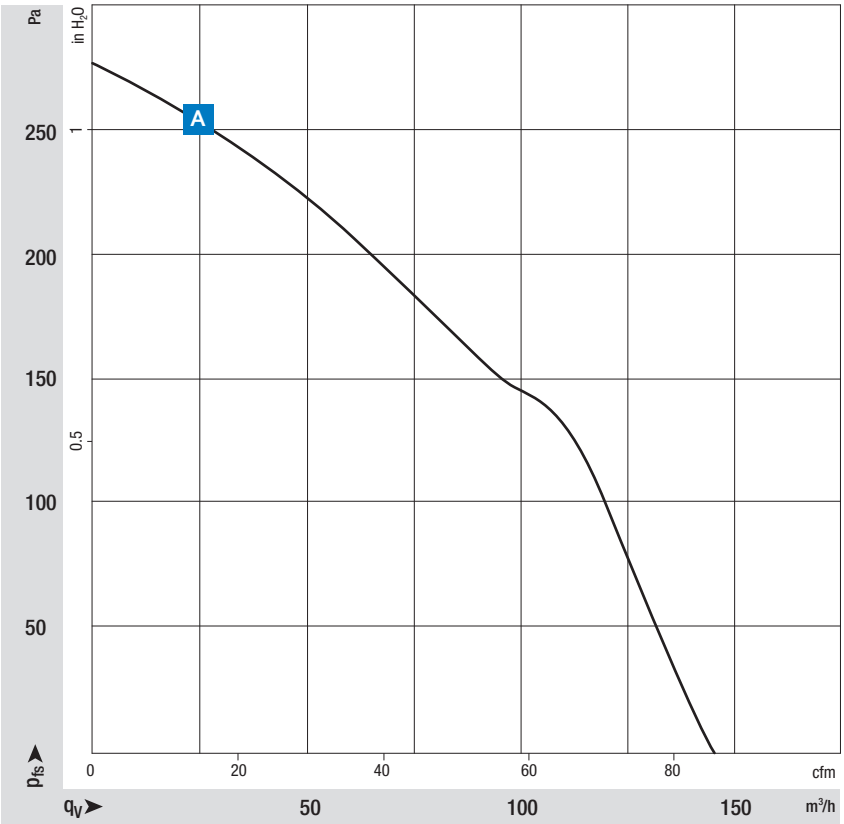
Dimensions in mm



AC centrifugal blowers (ambient air)

VHS 108

from page 86	Scroll dimensions
from page 90	Electrical connections
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Sheet steel, hot-dip aluminized
- Impeller: Aluminum

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "I.Cl. H"
- Mounting position: Shaft horizontal, more mounting positions on request
- Mode of operation: Continuous operation (S1)
- Max. fluid temperature 180°C
- Design: Motor anti-vibration mounted
- Bearings: Ball bearings / sleeve bearings
- Motor protection: Impedance protected
- Protection class: I

Standards and approvals

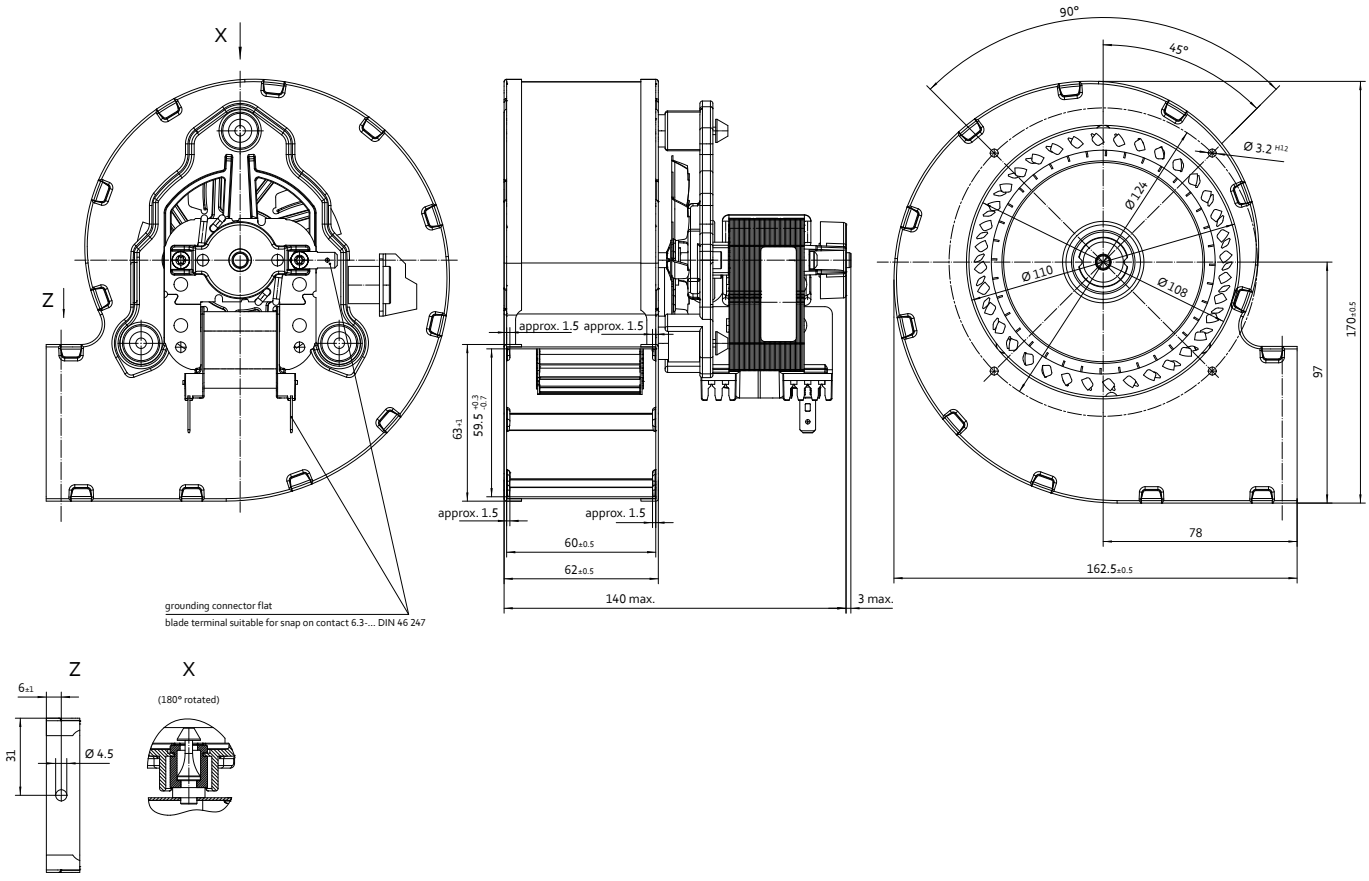
- Standards: EN 60335-1, CE; UKCA on request

Type	Part number	Characteristic Curve	Air flow	Speed free air flow	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz			m³/h	rpm	W	A	db(A)	°C	kg
VHS0108XQFFZ	**55461.22850**	A	144	1870	58	0.5	–	+45	1.6

Subject to changes.

Technical drawing

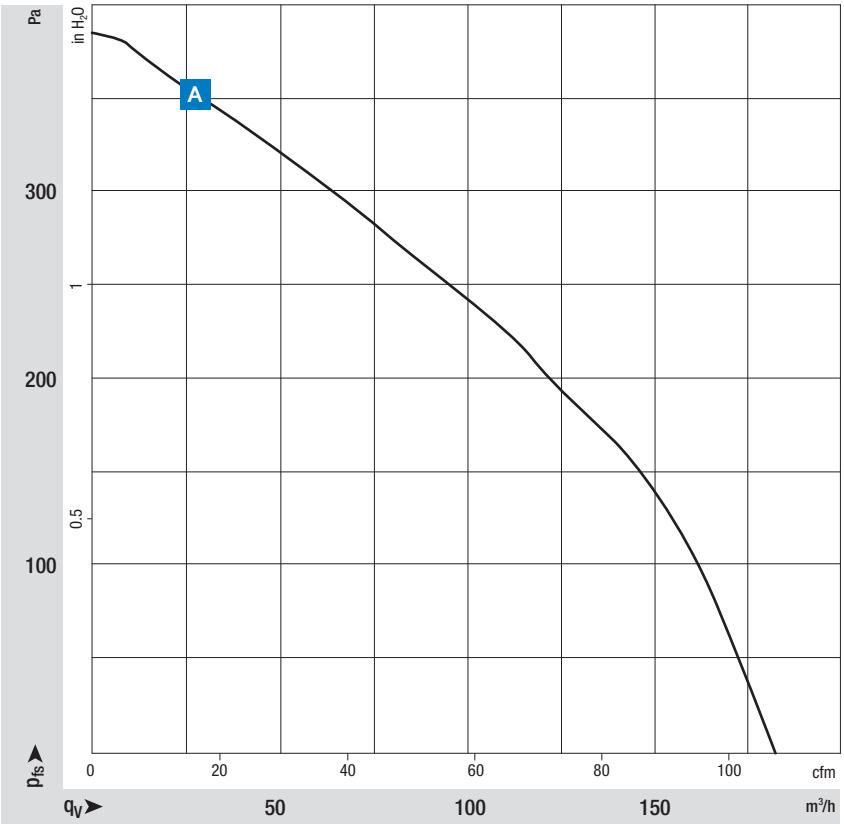
Dimensions in mm



AC centrifugal blowers (ambient air)

VHS 120

from page 86	Scroll dimensions
from page 90	Electrical connections
More at	www.ebmpapst.com



Material/surface

- Housing: Hot-dip aluminised sheet steel
- Impeller: Hot-dip aluminised sheet steel

Characteristics

- Direction of rotation:
  clockwise, seen on impeller
- Type of protection: IP 00
- Insulation class: "I.Cl. H"
- Mounting position:
  Shaft horizontal, Outlet upwards.
  More mounting positions on request.
- Mode of operation:
  Continuous operation (S1)
- Max. fluid temperature 250°C
- Design:
  Motor anti-vibration mounted
- Bearings: Ball bearings / sleeve bearings
- Motor protection: TOP wired internally
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE;
  UKCA on request

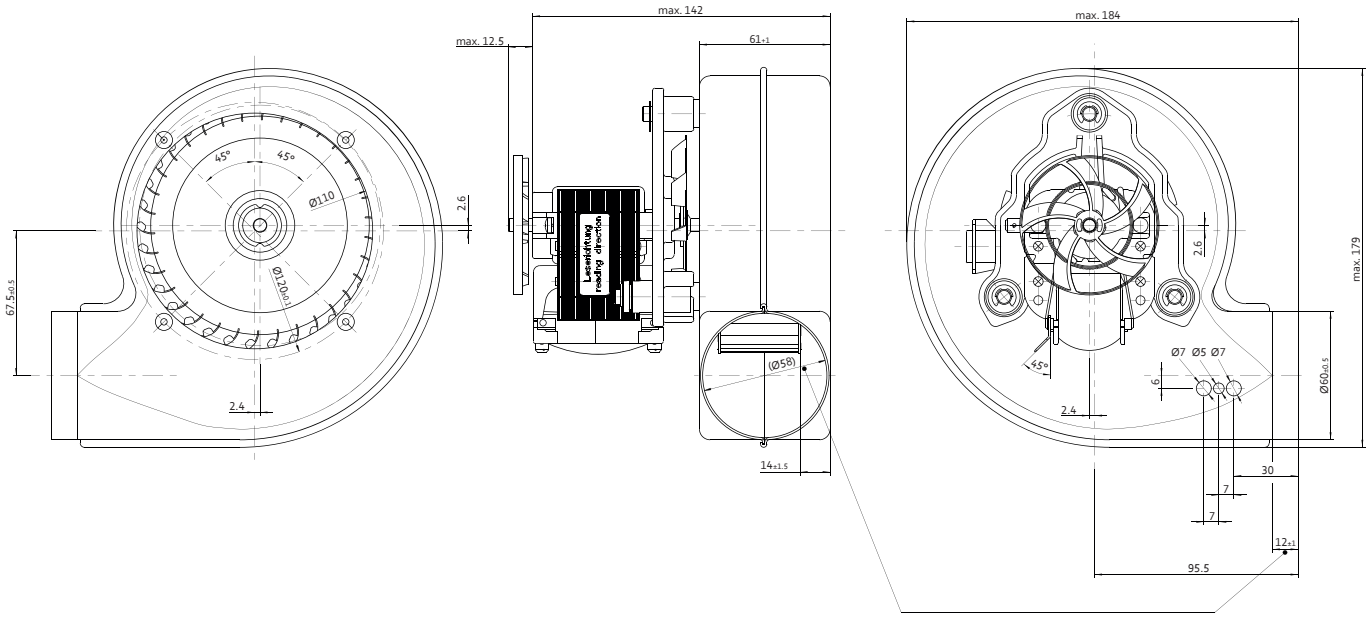
Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Type	Part number	Characteristic Curve	Air flow	Speed free air flow	Max. input power	Max. current draw	Sound pressure level	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz			m³/h	rpm	W	A	db(A)	°C	kg
VHS0120XQFHZ	**55460.96461**	A	184	2300	90	0.8	–	+58	1.8

Subject to changes.

Technical drawing

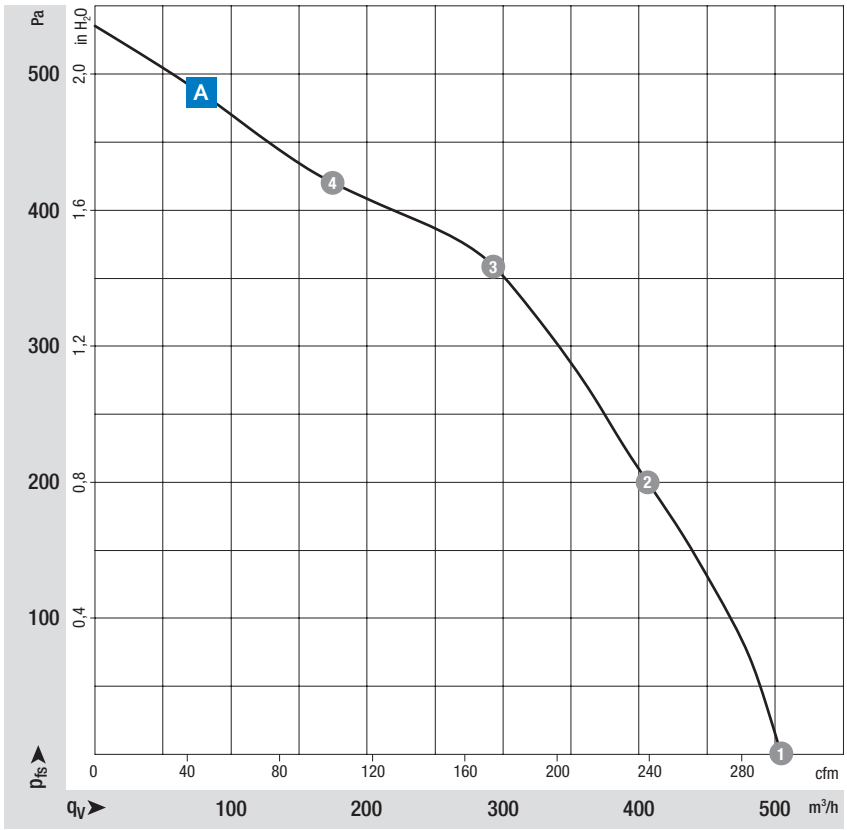
Dimensions in mm



EC centrifugal blowers (ambient air)

for solid fuel heating systems, dual inlet, Ø 120

from page 86	Scroll dimensions
page 91	Electrical connections H4)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Galvanised sheet steel
- Impeller: Galvanised sheet steel
- Rotor: Uncoated

Characteristics

- Direction of rotation: Clockwise, seen on rotor
- Type of protection: IP 54
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none (open rotor)
- Mode of operation: Continuous operation (S1)
- Design: Motor anti-vibration mounted on both sides
- Bearings: Maintenance-free ball bearings
- Technical features: Tach output; Control input 0-10VDC / PWM; Locked-rotor protection; Output 10VDC max. 1,1mA; Line undervoltage detection; Over-temperature protected electronics / motor; Soft start
- Touch current: < 3,5mA acc. IEC 60990 (Test circuit, illustration 4)
- Cable exit: variable
- Protection class: I

Standards and approvals

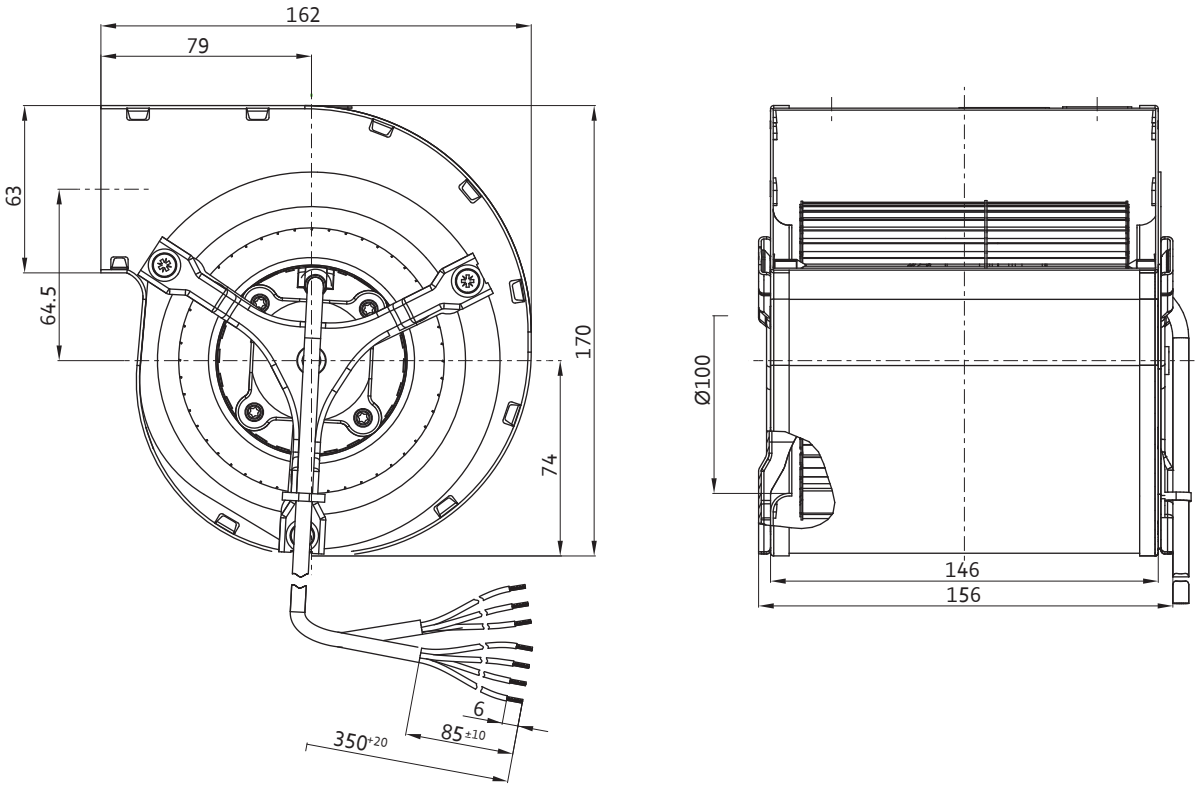
- Standards: EN 60335-1, CE; UKCA on request

Type	Part number	Motor	Characteristic Curve	Operating point	Air flow	Speed [1]	Max. input power [1]	Max. current draw [1]	Sound pressure level	Min. back pressure	Perm. ambient temperature	Weight
Nominal voltage 1~230VAC, 50/60Hz					m³/h	rpm	W	A	db(A)	Pa	°C	kg
VHD0120XSLDS	**D3G120AA0311**	M3G 055-BI	A	1	505	1950	83	0.74	58	0	-25...+40	2.2
				2	505	2465	82	0.70	57			
				3	505	2970	81	0.69	59			
				4	505	3245	66	0.57	60			

Subject to changes. [1] Nominal data in operating point with maximum load and 230VAC

Technical drawing

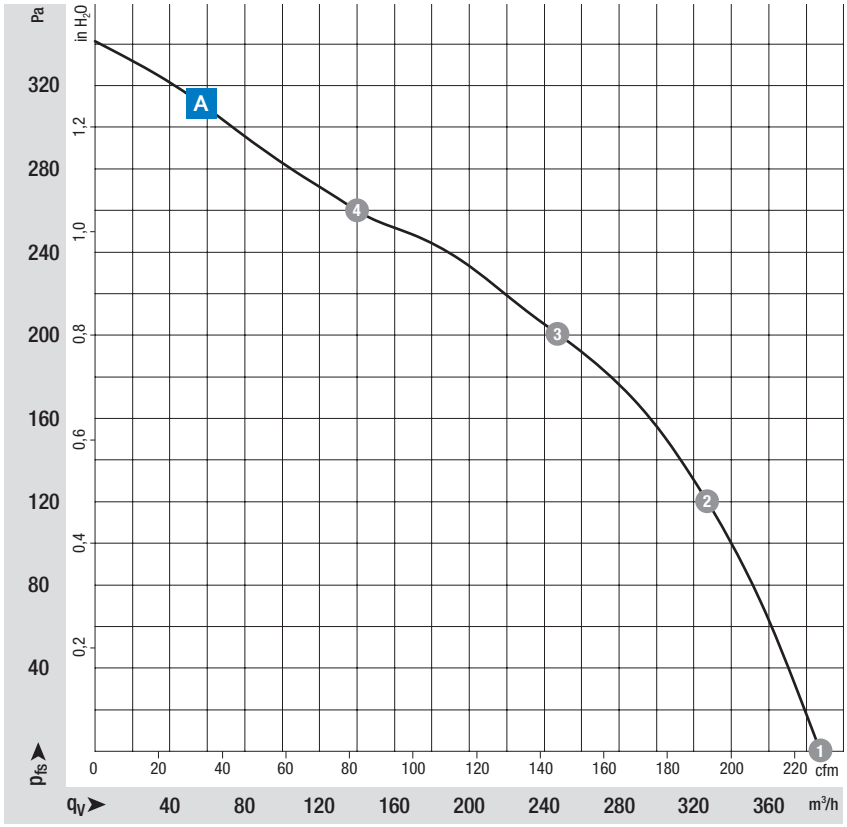
Dimensions in mm



AC centrifugal blowers (ambient air)

for solid fuel heating systems, dual inlet, Ø 120

from page 86	Scroll dimensions
page 93	Electrical connections A1)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Galvanised sheet steel
- Impeller: Galvanised sheet steel
- Rotor: Uncoated

Characteristics

- Direction of rotation: Clockwise, seen on rotor
- Type of protection: IP 44, depending on installation and position
- Insulation class: "F"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Design: Motor anti-vibration mounted on both sides
- Bearings: Maintenance-free ball bearings
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

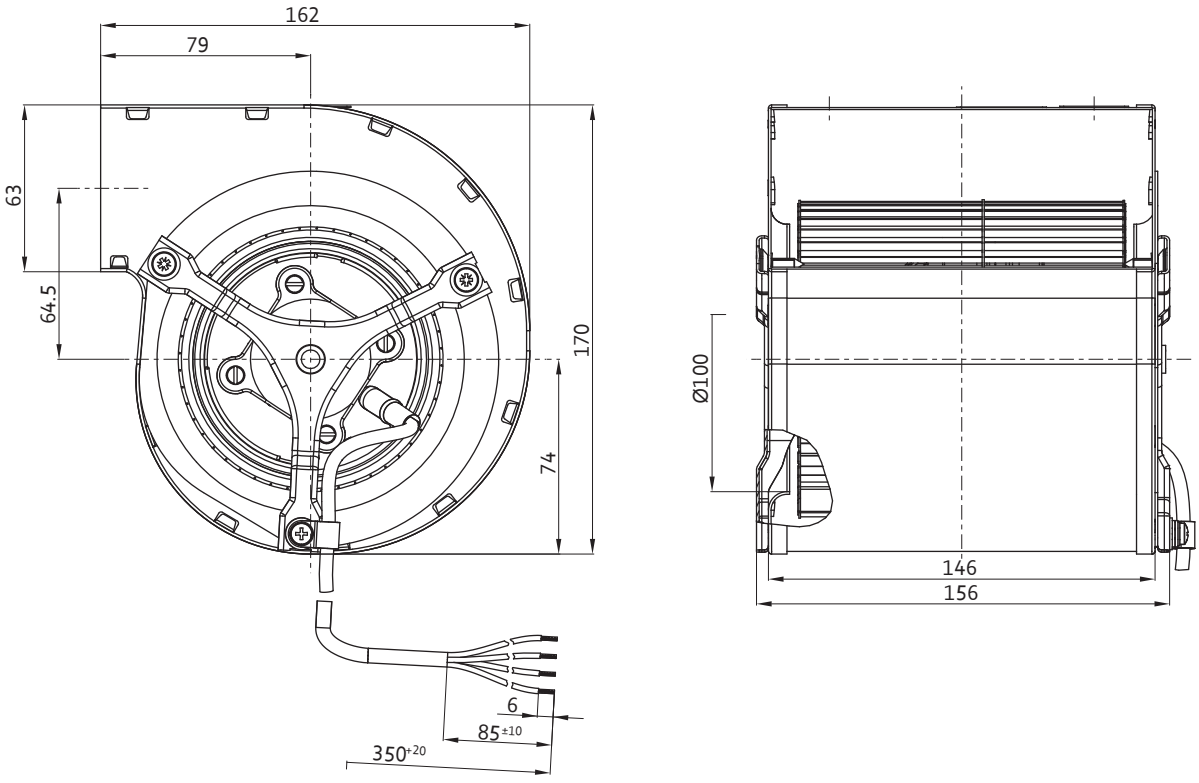
- Standards: EN 60335-1, CE; UKCA on request

Type	Part number	Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Sound pressure level	Min. back pressure	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz					m³/h	rpm	W	A	µF/VDB	db(A)	Pa	°C	kg
VHD0120X2MCS	**D2E120AA0104**	M2E 068-B	A	1	375	1400	85	0.38	2.0/400	50	0	-25...+70	2.4
				2	375	1905	76	0.33		51			
				3	375	2265	65	0.28		52			
				4	375	2500	58	0.25		53			

Subject to changes.

Technical drawing

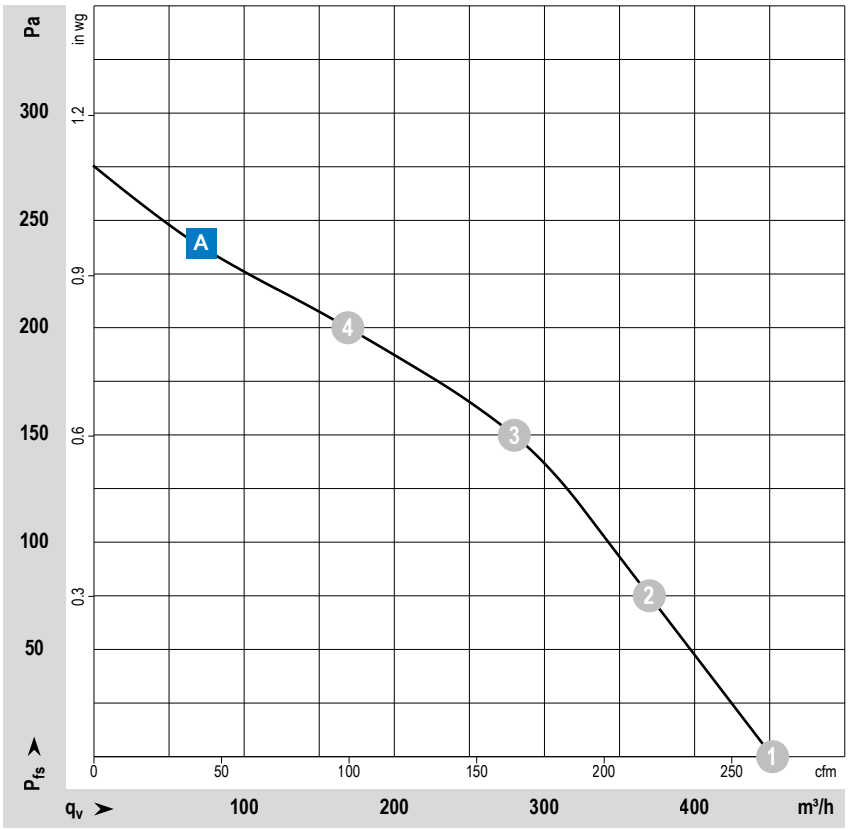
Dimensions in mm



AC centrifugal blowers (ambient air)

backward curved, single inlet, Ø 175

from page 86	Scroll dimensions
page 93	Electrical connections A1), D)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Impeller: Plastic PA
- Rotor: coated black

Characteristics

- Direction of rotation: Clockwise, seen on rotor
- Type of protection: IP 44, depending on installation and position acc. EN 60034-5
- Insulation class: "F"
- Mounting position: Shaft horizontal or rotor on bottom; rotor on top on request
- Condensate discharges: Rotor-side
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Cable exit: variable
- Protection class: I (if customer has provided connection for protective earth)

Standards and approvals

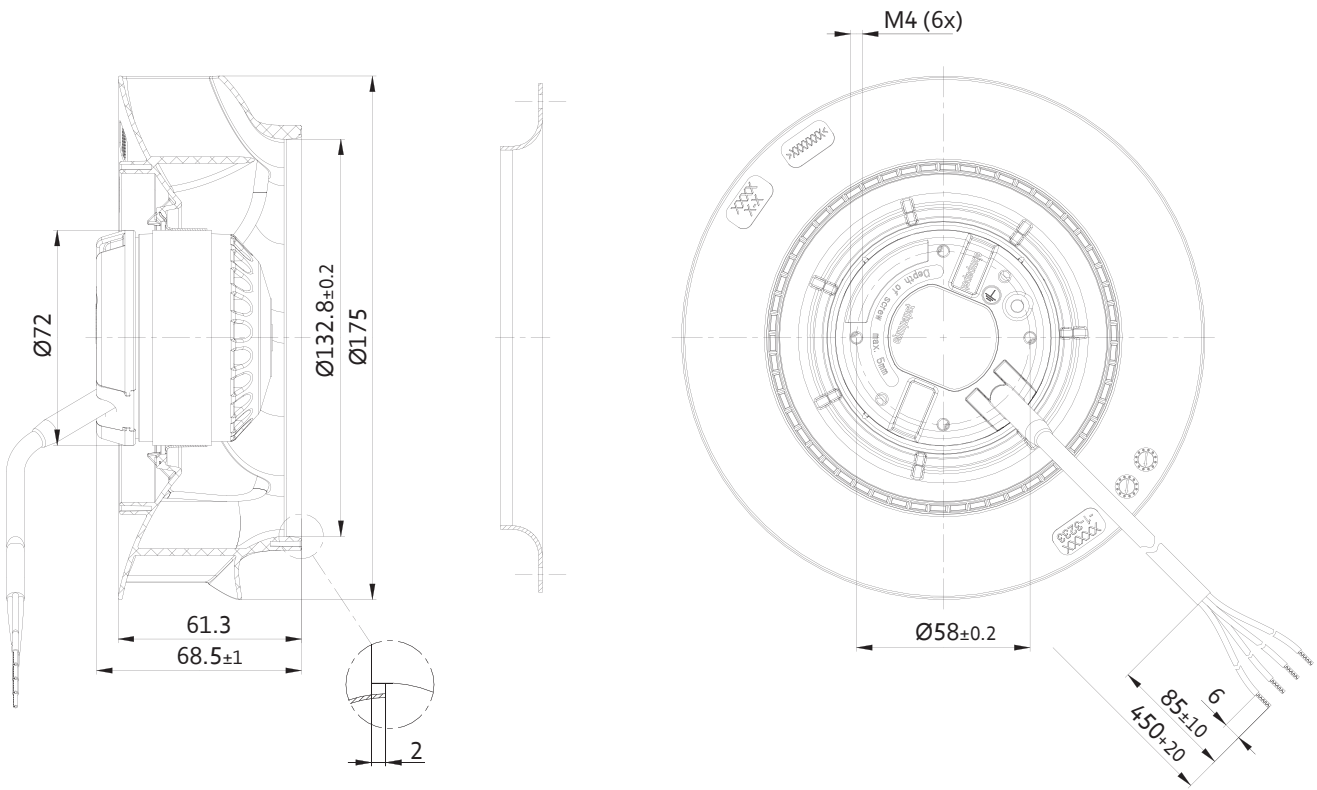
- Standards: EN 60335-1; CE

Type	Part number	Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50 Hz					m³/h	rpm	W	A	µF/VDB	°C	kg
VBS0175R2LDZ	**R2E175RA5201**	M2E052 CA	A	1 2 3 4	450 370 280 170	2565 2480 2450 2500	43 45 46 45	0.19 0.20 0.21 0.20	1.5/400	-25...60	1.1

Subject to changes.

Technical drawing

Dimensions in mm



Tangential blowers (ambient air)

VTS 0060

Material/surface

- Housing: Hot-dip aluminised sheet steel
- Impeller: Aluminum

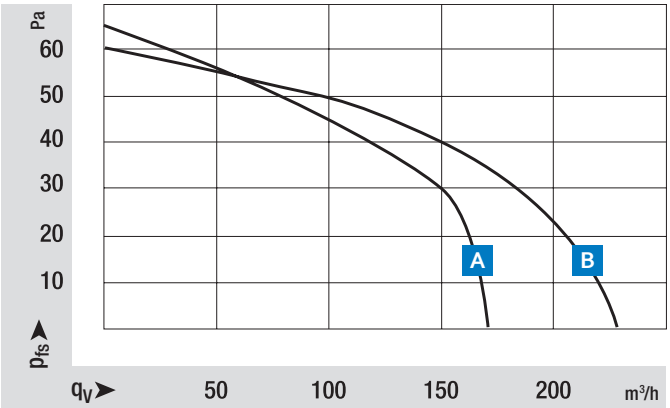
Characteristics

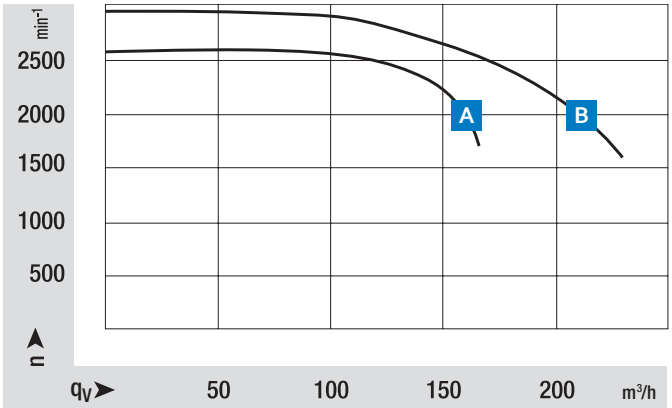
- Impeller diameter: 60 mm
- Mounting position: horizontal
- Permissible fluid temperature 0...+60 °C
- Insulation class: "H"

Standards and approvals

- Standards: EN 60335-1, CE; EAC & UKCA on request

from page 86	Scroll dimensions
from page 89	Electrical connections
More at	www.ebmpapst.com





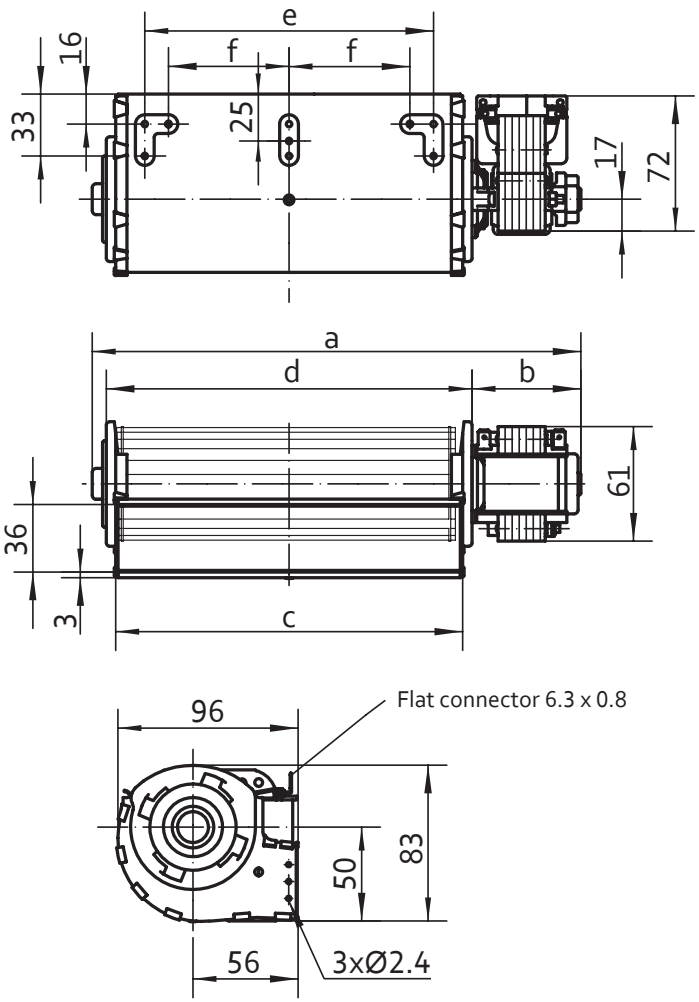
Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Nominal voltage 230VAC, 50 Hz		Characteristic Curve	Impeller lenght	Air flow	Max. pressure increase	Input power	Current draw	Speed free air flow	Perm. ambient temperature*	Weight
			mm	m³/h	Pa	W	mA	rpm	°C	kg
Type	Part number									
VTS0060XQFFS	55411.20400	A	240	170	63	38	290	1700	0...+60	1.40
VTS0060XQFHZ	55412.60600	B	300	230	60	50	350	1600	0...+60	1.70

Subject to changes. Technical data are valid at free air flow and rated voltage. *Higher ambient temperatures on request.

Technical drawing

Dimensions in mm



Dimensions		
	VTS0060XQFFS	VTS0060XQFHZ
	55411.20400	55412.60600
a	329	395
b	64	72
c	243	303
d	253	313
e	212	272
f	93	123

Tangential blowers (ambient air)

VTS 0060 with EC motor

from page 86	Scroll dimensions
from page 89	Electrical connections
More at	www.ebmpapst.com

Material/surface

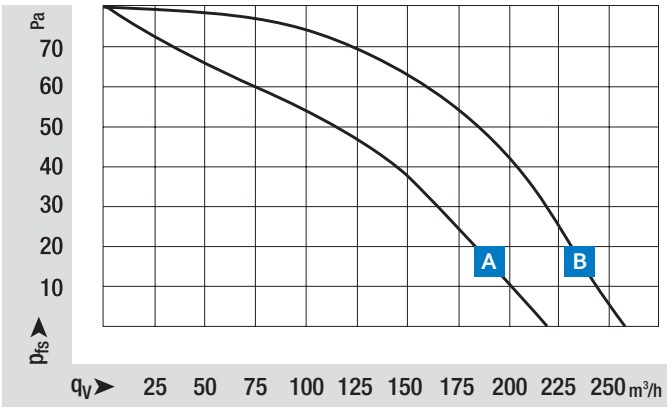
- Housing: Hot-dip aluminised sheet steel
- Impeller: Aluminum

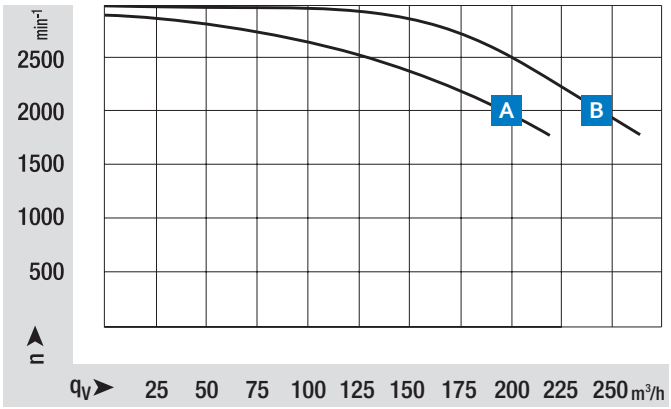
Characteristics

- Electronics: integrated
- Blower speed: variable via 0-10 V analogue voltage signal (Interface 26)
- Impeller diameter: 60 mm
- Mounting position: horizontal or vertical with motor on bottom
- Permissible fluid temperature 0...+60 °C
- Insulation class: "H"
- Type of protection: IP 20
- Protection class: 3; Operation with SELV (safety extra low voltage)

Standards and approvals

- Standards: EN 60335-1; UKCA on request





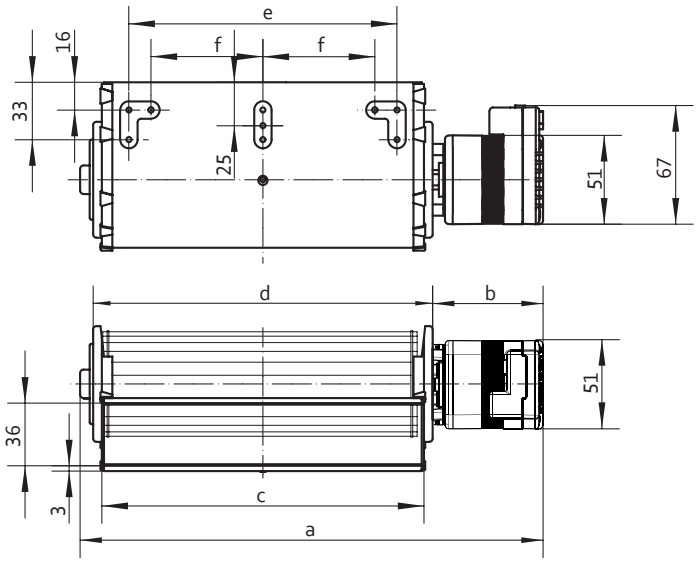
Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

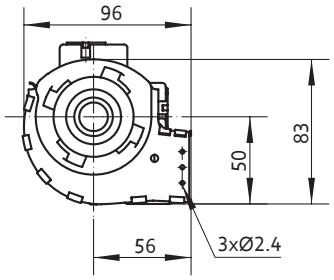
Type	Part number	Characteristic Curve	Impeller lenght	Air flow	Max. pressure increase	Input power	Current draw	Speed free air flow	Perm. ambient temperature*	Weight
Nominal voltage 24VDC			mm	m³/h	Pa	W	mA	rpm	°C	kg
VTS0060XUECS	on request	A	240	220	80	17	–	1800	0...+40	0.80
VTS0060XUECS	on request	B	300	280	80	19	–	1850	0...+40	0.85

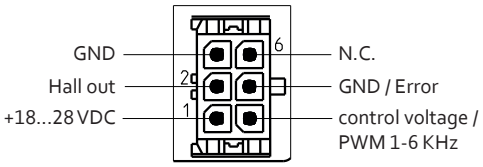
Subject to changes. Technical data are valid at free air flow and rated voltage. * Higher ambient temperatures on request.

Technical drawing

Dimensions in mm







Dimensions	VTS0060XUECS	VTS0060XUECS
	on request	on request
a	327	387
b	64,5	64,5
c	243	303
d	253	313
e	212	272
f	93	123

Tangential blowers (ambient air)

VTS 0065

from page 86	Scroll dimensions
page 89	Electrical connections
More at	www.ebmpapst.com

Material/surface

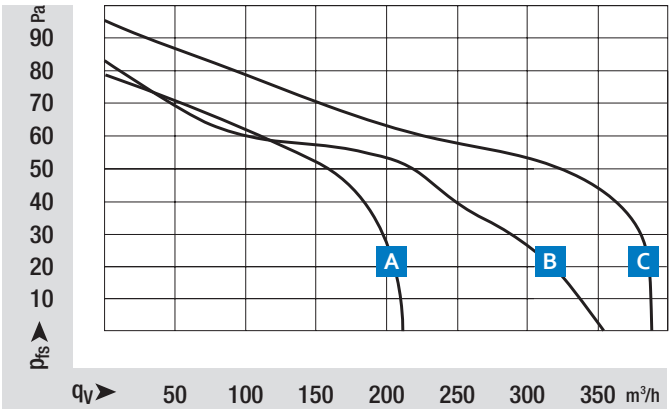
- Housing: Hot-dip aluminised sheet steel
- Impeller: Aluminum

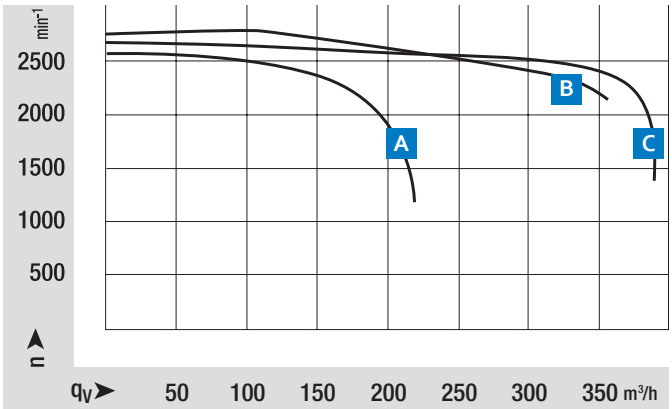
Characteristics

- Impeller diameter: 65 mm
- Mounting position: horizontal
- Permissible fluid temperature: 0...+60 °C
- Insulation class: "H"

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request





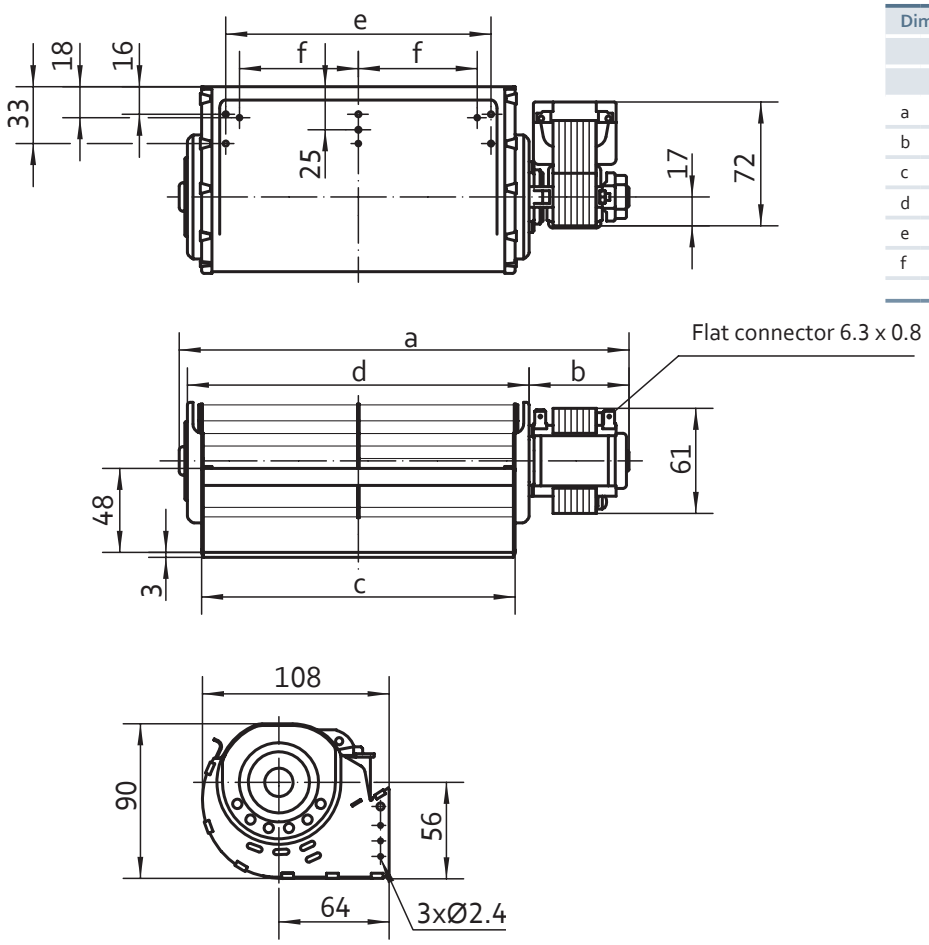
Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Type	Part number	Characteristic Curve	Impeller lenght	Air flow	Max. pressure increase	Input power	Current draw	Speed free air flow	Perm. ambient temperature*	Weight
Nominal voltage 230VAC, 50 Hz			mm	m³/h	Pa	W	mA	rpm	°C	kg
VTS0065XQFFS	**55416.30108**	A	240	220	80	38	360	1200	0...+60	1.45
VTS0065XQFHS	**83315.00001**	B	300	354	83	66	530	2100	0...+60	1.75
VTS0065XQFHS	**55416.40010**	C	360	380	95	75	700	1500	0...+50	1.80

Subject to changes. Technical data are valid at free air flow and rated voltage. * Higher ambient temperatures on request.

Technical drawing

Dimensions in mm



Dimensions	VTS0065XQFFS	VTS0065XQFHS	VTS0065XQFHS
	55416.30108	55416.35280	55416.40010
a	331	400	456
b	65	73	73
c	242	302	362
d	259	319	379
e	212	272	332
f	106	136	166

Tangential blowers (ambient air)

VTS 0065 with EC motor

from page 86	Scroll dimensions
page 89	Electrical connections
More at	www.ebmpapst.com

Material/surface

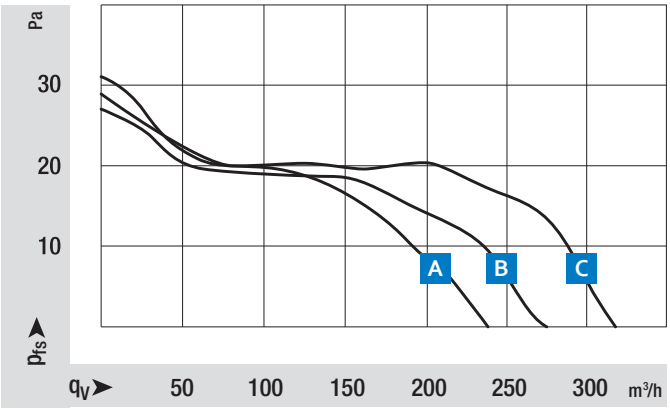
- Housing: Hot-dip aluminised sheet steel
- Impeller: Aluminum

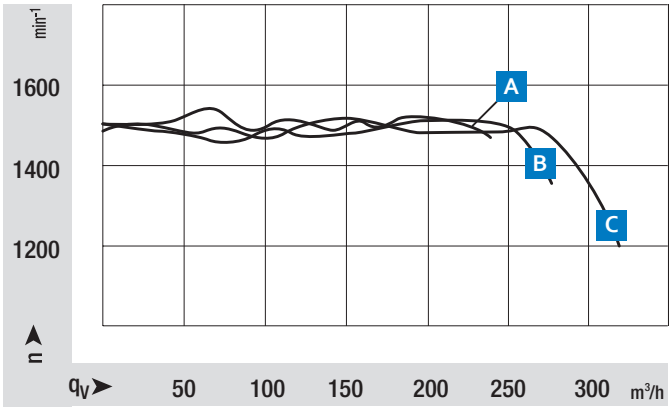
Characteristics

- Electronics: integrated
- Blower speed: variable via 0-10 V analogue voltage signal (Interface 26)
- Impeller diameter: 65 mm
- Mounting position: horizontal or vertical with motor on bottom
- Permissible fluid temperature: 0...+70 °C
- Insulation class: "H"
- Type of protection: IP 20
- Protection class: 3; Operation with SELV (safety extra low voltage)

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request





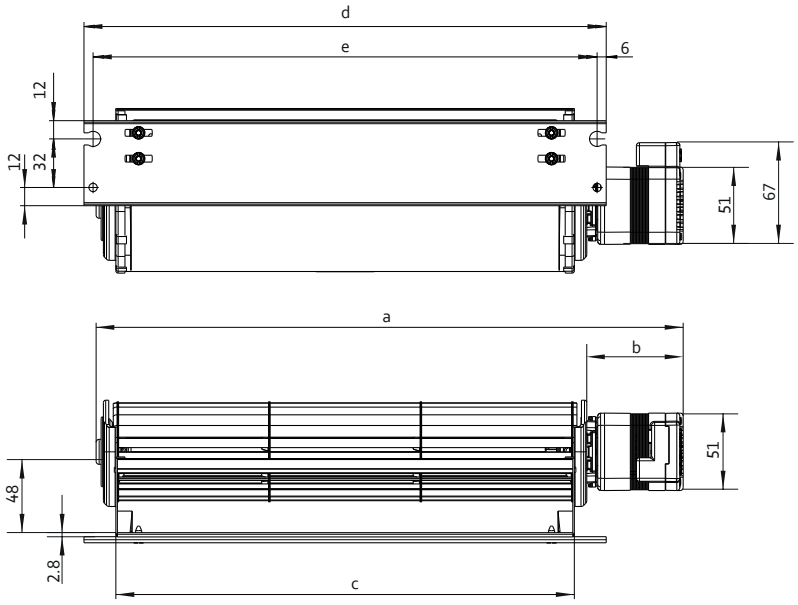
Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

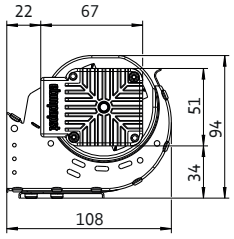
Type	Part number	Characteristic Curve	Impeller lenght	Air flow	Max. pressure increase	Input power	Current draw	Speed free air flow	Perm. ambient temperature*	Weight
Nominal voltage 24VDC			mm	m³/h	Pa	W	mA	rpm	°C	kg
VTS0065XUECZ	**55668.49110**	A	240	260	60	13	–	400-1500	0...+40	0.85
VTS0065XUECZ	**55668.49111**	B	300	320	60	14	–	400-1500	0...+40	0.90
VTS0065XUECZ	**55668.49112**	C	360	360	60	15	–	400-1500	0...+40	0.95

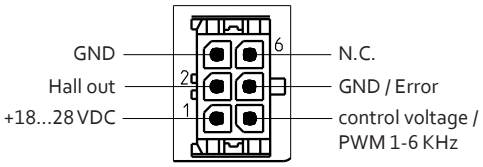
Subject to changes. Technical data are valid at free air flow and rated voltage. * Higher ambient temperatures on request.

Technical drawing

Dimensions in mm







Dimensions	VTS0065XUECZ	VTS0065XUECZ	VTS0065XUECZ
	55668.49110	55668.49111	55668.49112
a	331	391	451
b	64,5	64,5	64,5
c	242	302	362
d	284	344	404
e	272	332	392

Fans and blowers for solid fuel heating systems

Combustion air blower

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Combustion air blower

Product overview

Dimensions in mm	Type	Part number	Page
Ø 140	VHS0140X2MES	G2E140AL4001	80
Ø 160	VHS0160X2MJS	G2E160AY5091	82

Fans for solid fuel heating systems

Combustion air blower

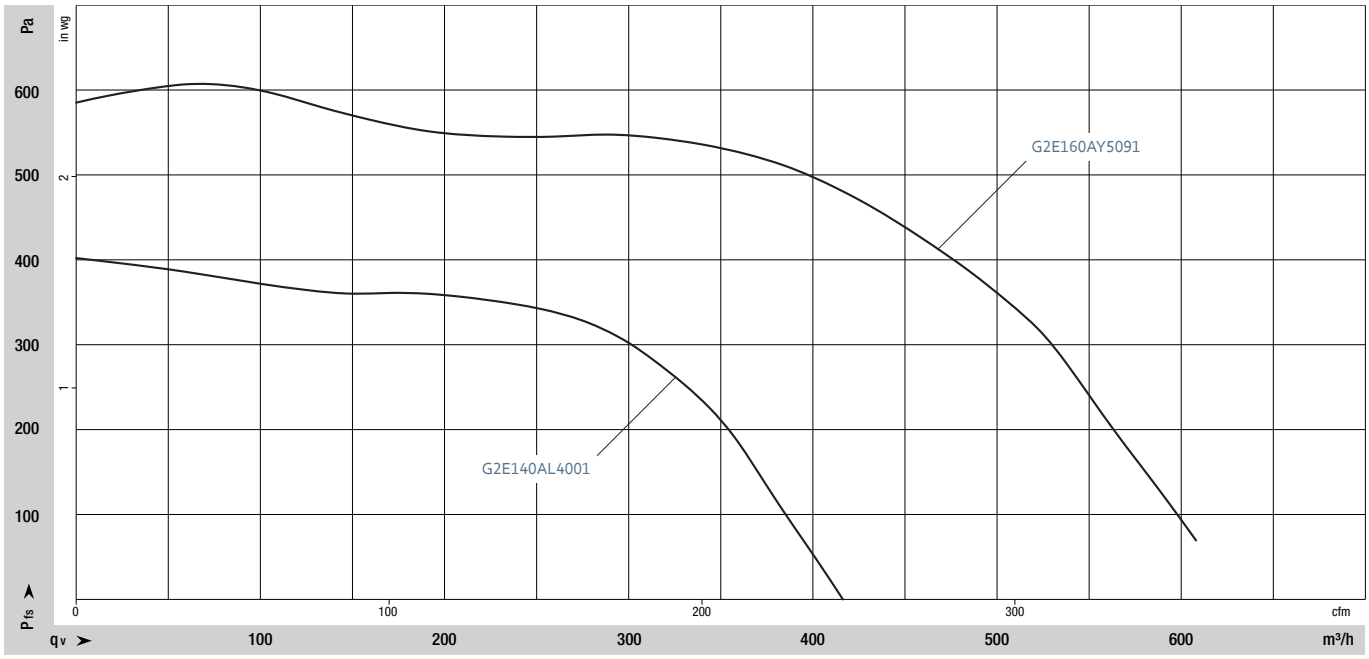
Combustion air blowers convey air from the surroundings to stoves and heaters and convey this into the combustion chamber. This enables the biomass to be burned optimally. A perfect mixture of air and fuel ensures hygienic combustion of wood pellets or wood chips. This reduces the formation of combustion residues to a minimum.

Wide range of sizes

ebm-papst offers a wide range of centrifugal fans in various sizes, with both AC and EC technology. The fan impellers are generally forward-curved. The advantage of EC centrifugal fans is that their speed can be controlled. This means that the air volume can always be optimally adapted to the requirements. If less heat is required, the stove runs at a low level – less fuel is burnt and the demand for air is reduced. If it is very cold outside, the heating system runs at full speed by using more air to burn more biomass. As it adapts optimally to the heating load, the fan operates efficiently and ensures optimum fuel utilization.

Do you want to selectively control the supply of combustion air, for example using a vane anemometer? Then feel free to contact us. Together we will find the ideal solution for your requirements.

Comparison characteristic curves



Clean & efficient *combustion*

Our fans and blowers ensure clean and efficient combustion in solid fuel heating systems, through design and quality, and thus, ultimately, that people can enjoy a cozy home.

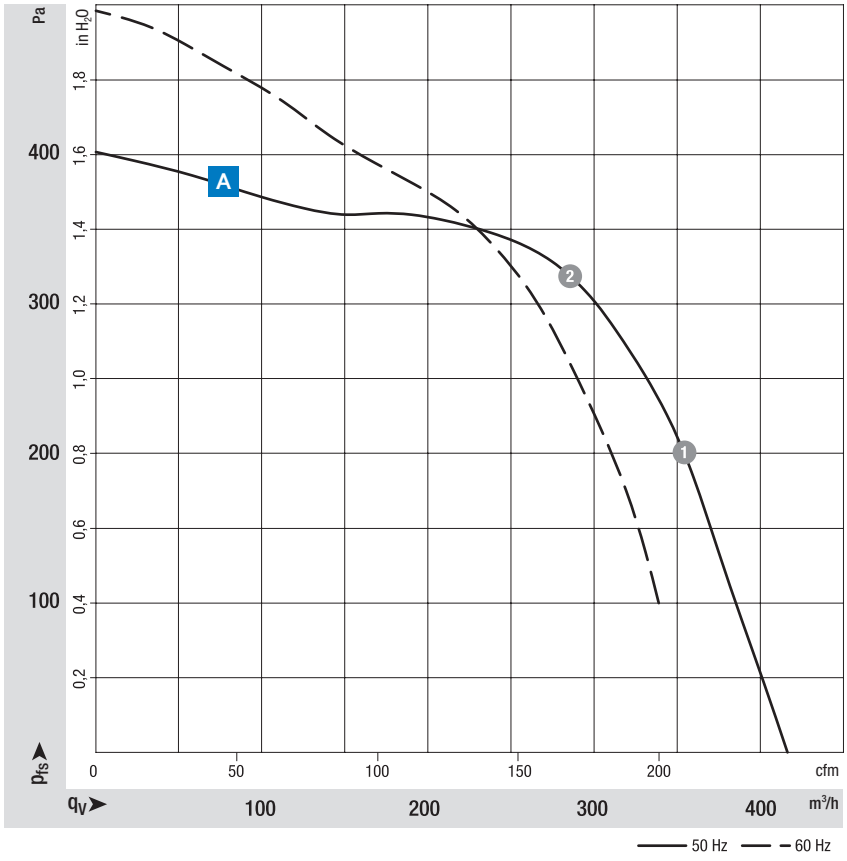
At ebm-papst, we call that:

Engineering a better life

AC centrifugal blowers (intake air)

for solid fuel heating systems, single inlet, Ø 140

from page 86	Scroll dimensions
page 93	Electrical connections A1)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Die-cast aluminium
- Impeller: Galvanised sheet steel
- Rotor: Partially cast in aluminium

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: CCC; EAC is applied for

Optional

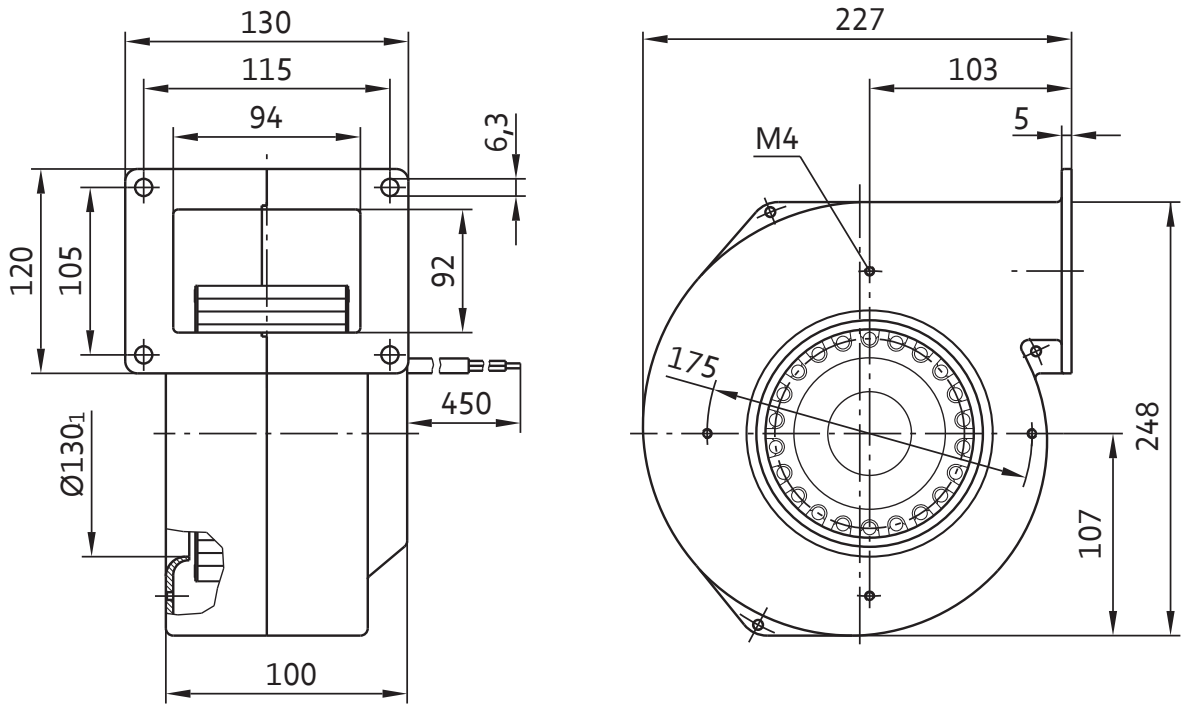
- Speed monitoring via Hall IC

		Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Sound pressure level	Min. back pressure	Perm. ambient temperature	Weight
Nominal voltage 1~230VAC, 50Hz					m³/h	rpm	W	A	µF/VDB	db(A)	Pa	°C	kg
Type	Part number												
VHS0140X2MES	**G2E140AL4001**	M2E 068-CF	A	1 2	415 415	2100 2350	111 98	0.48 0.43	2.0/450	62 62	0	-25...+60	3.0
Nominal voltage 1~230VAC, 60Hz					m³/h	rpm	W	A	µF/VDB	db(A)	Pa	°C	kg
Type	Part number												
VHS0140X2MES	**G2E140AL4001**	M2E 068-CF	A	1 2	340 340	2100 2350	111 98	0.48 0.43	2.0/450	62 62	100	-25...+40	3.0

Subject to changes.

Technical drawing

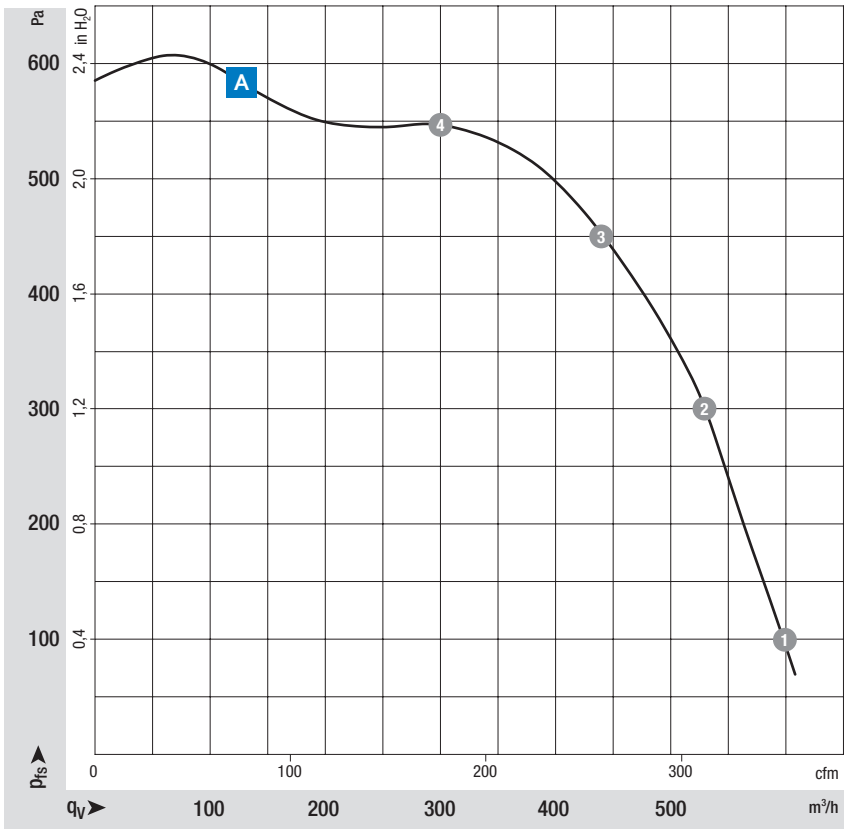
Dimensions in mm



AC centrifugal blowers (intake air)

for solid fuel heating systems, single inlet, Ø 160

from page 86	Scroll dimensions
page 93	Electrical connections A1)
More at	www.ebmpapst.com



Air performance measured as per: ISO 5801, Installation category A, with ebm-papst scroll housing without protection against accidental contact. Suction-side noise levels: Lw_A as per ISO 13347, Lp_A measured at 1m distance to fan axis. The acoustic values given are only valid under the measurment conditions listed and may vary depending on the installation situation. With any deviation to the standard setup, the specifi c values have to be checked and reviewed once installed or fi tted! For detailed information see page 94 ff.

Material/surface

- Housing: Die-cast aluminium
- Impeller: Galvanised sheet steel
- Rotor: Partially cast in aluminium

Characteristics

- Direction of rotation: clockwise, seen on impeller
- Type of protection: IP 44
- Insulation class: "B"
- Mounting position: any
- Condensate discharges: none
- Mode of operation: Continuous operation (S1)
- Bearings: Maintenance-free ball bearings
- Motor protection: TOP wired internally
- Touch current: < 0.75mA acc. to IEC 60990 (test circuit, illustration 4)
- Cable exit: variable
- Protection class: I

Standards and approvals

- Standards: EN 60335-1, CE; UKCA on request
- Approvals: CCC is applied for

Optional

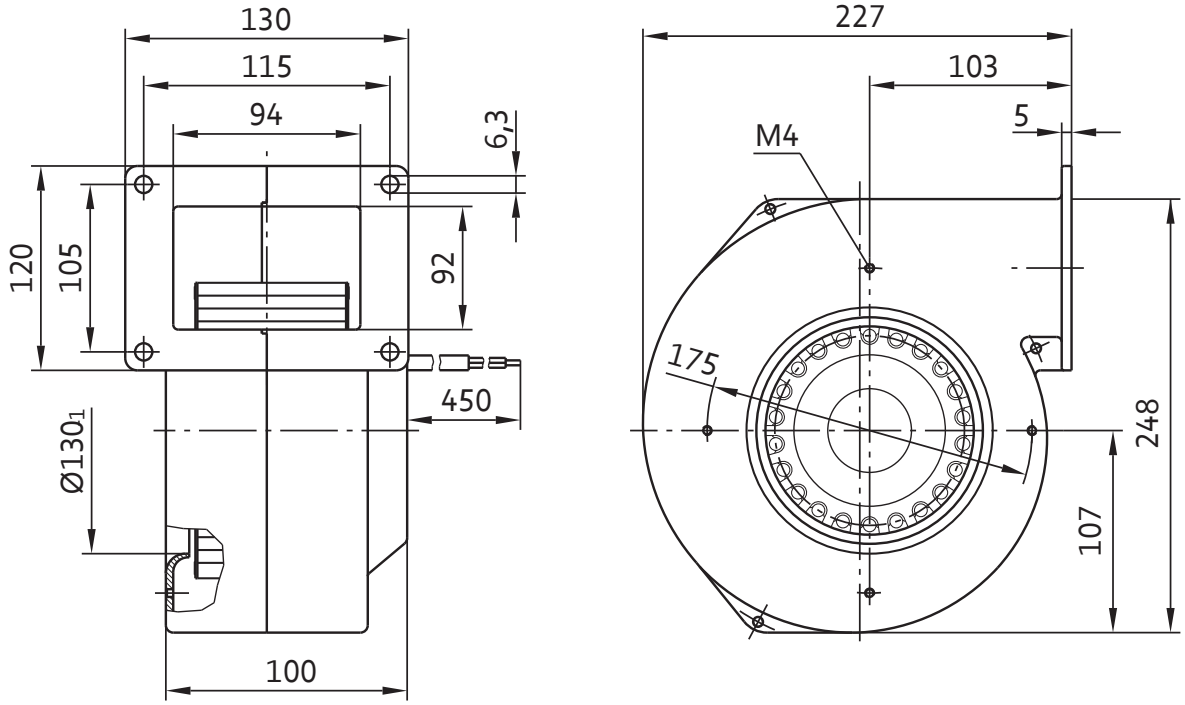
- Speed monitoring via Hall IC

Type	Part number	Motor	Characteristic Curve	Operating point	Air flow	Speed	Max. input power	Max. current draw	Capacitor	Sound pressure level	Min. back pressure	Perm. ambient temperature	Weight
Nominal voltage 230VAC, 50Hz					m³/h	rpm	W	A	µF/VDB	db(A)	Pa	°C	kg
VHS0160X2MJS	**G2E160AY5091**	M2E 068-EC	A	1	600	2280	270	1.18	6.0/400	72	100	-25...+60	4.2
				2	600	2480	227	0.98		70			
				3	600	2620	192	0.83		68			
				4	600	2750	152	0.66		67			

Subject to changes.

Technical drawing

Dimensions in mm



Fans and blowers for solid fuel heating systems

Additional information

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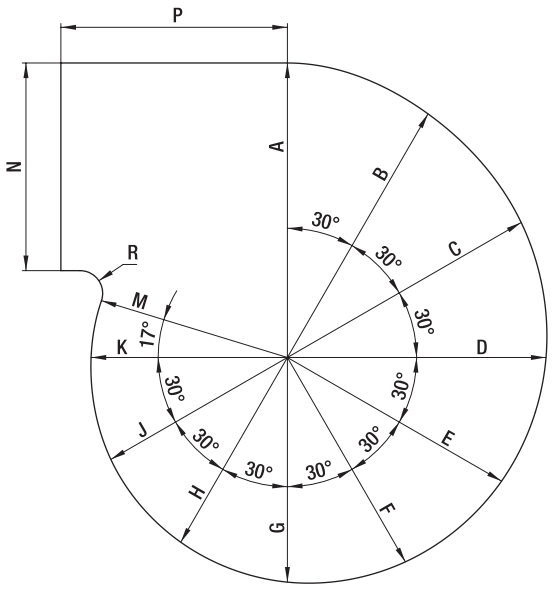
Additional information

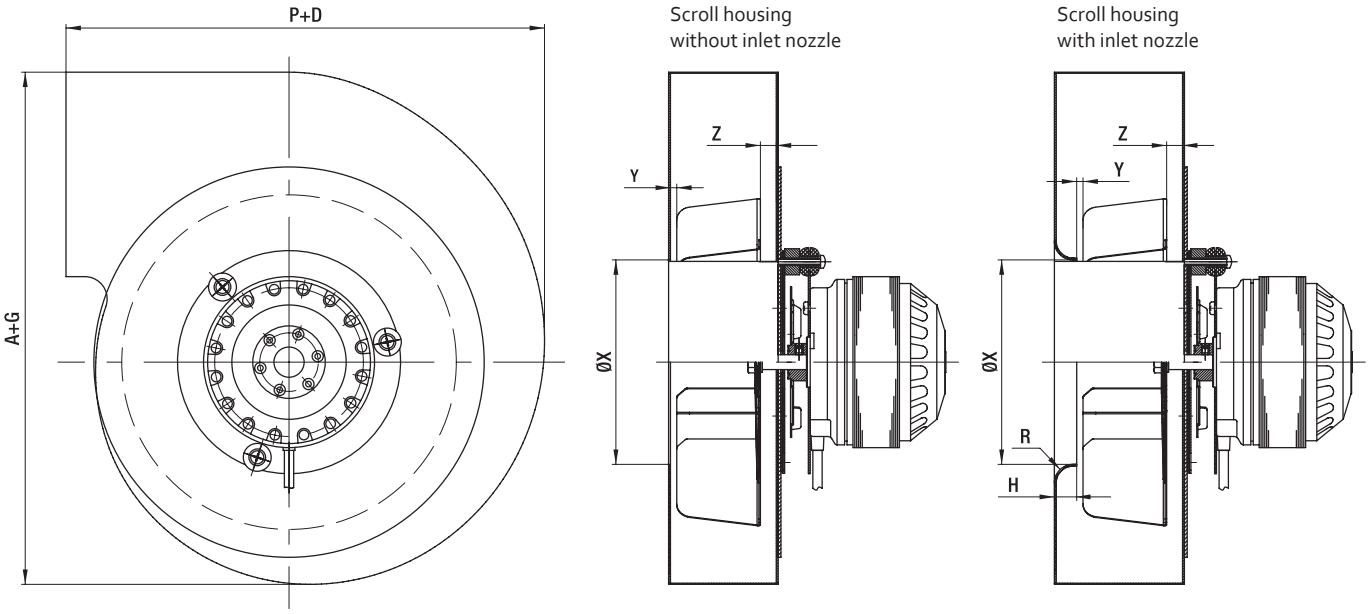
Contents

Scroll dimensions



Scroll dimensions for AC / EC centrifugal fans (recommended by ebm-papst)														
Size	A	B	C	D	E	F	G	H	J	K	M	N	P	R
Ø 140	121	116	111	106	102	97	92	88	84	82	80	86	93	9
Ø 150/152	130	124	119	114	109	104	99	94	90	87	86	92	100	10
Ø 160	139	132	127	122	116	111	106	100	96	93	92	98	107	11
Ø 180	156	149	143	137	131	125	119	113	108	104	103	110	120	12
Ø 210	182	174	167	160	152	146	139	132	127	121	120	128	140	14
Ø 250	218	209	200	192	182	175	167	158	152	145	144	154	168	19

Subject to changes.



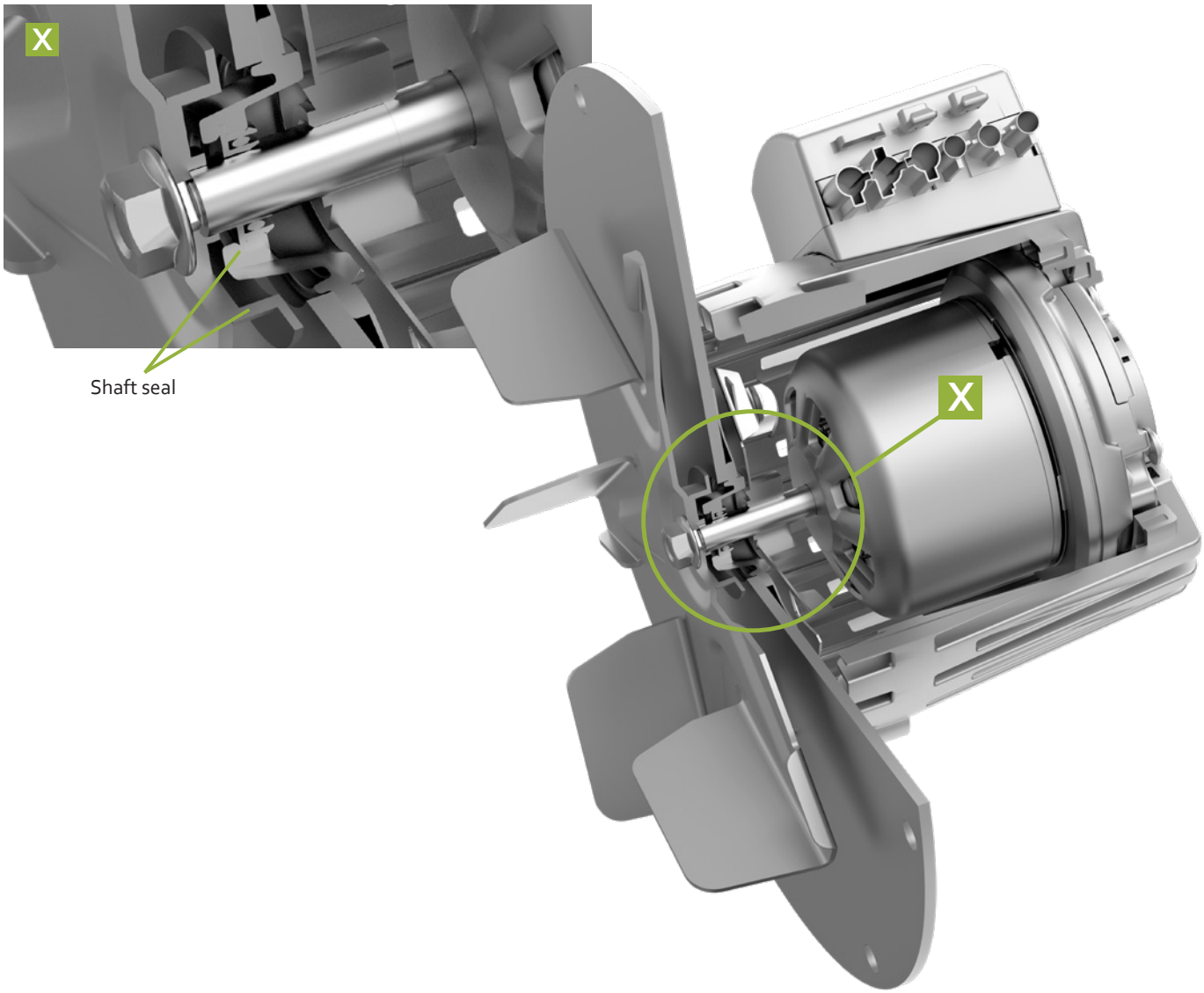
Distance between impeller and scroll housing/inlet nozzle (recommended by ebm-papst)					
Size	X	Y	Z	R	H
Ø 140	80-100	3-5	8-11	10	10
Ø 150/152	90-110	3-5	8-11	10	10
Ø 160	100-120	3-5	8-11	10	10
Ø 180	110-130	3-5	8-11	12	12
Ø 210	120-135	3-5	8-11	12	12
Ø 250	140-160	3-5	8-11	12	12

Subject to changes.

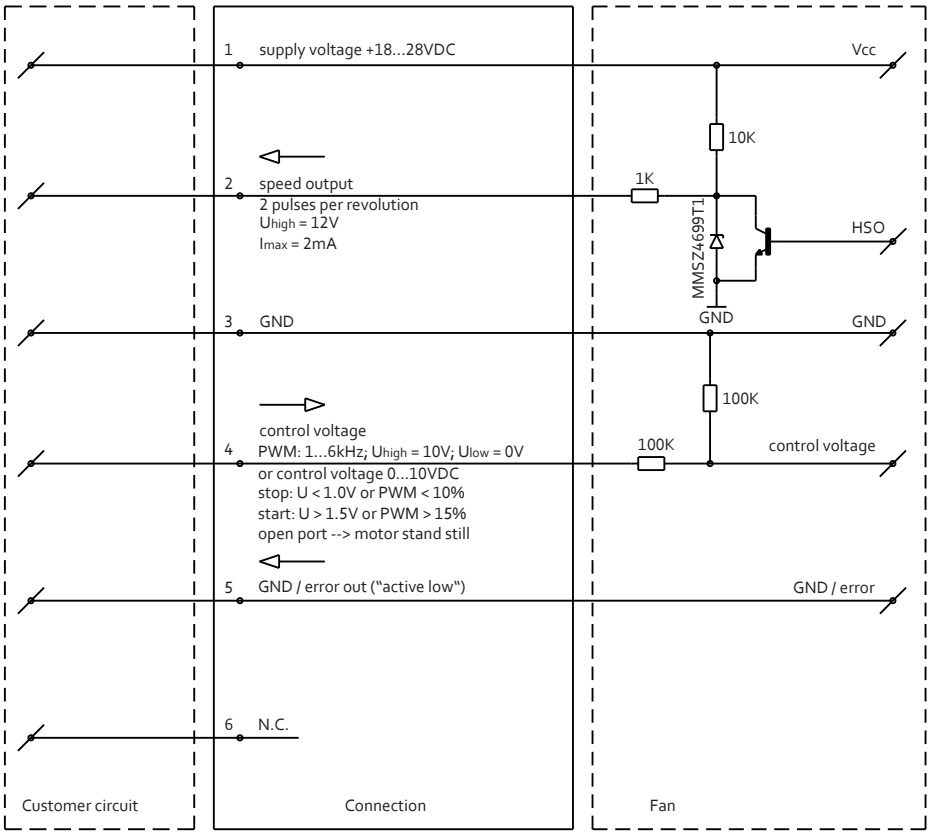
Additional shaft seal

As an option, ebm-papst offers an additional shaft seal for its exhaust blowers. Whether for passive and low-energy houses or condensing boiler applications - there are suitable solutions for all these applications. Our developers have come up with something very special here, especially for condensing boiler applications.

The illustration shows the individual components of this system. By using a multi-stage design, not only the shaft is sealed, but also the harsh environmental conditions are taken into account.
It thus offers a robust solution. The final suitability of the system must be qualified and approved in the end device.



Electrical connection EC
(11) Tangential blowers

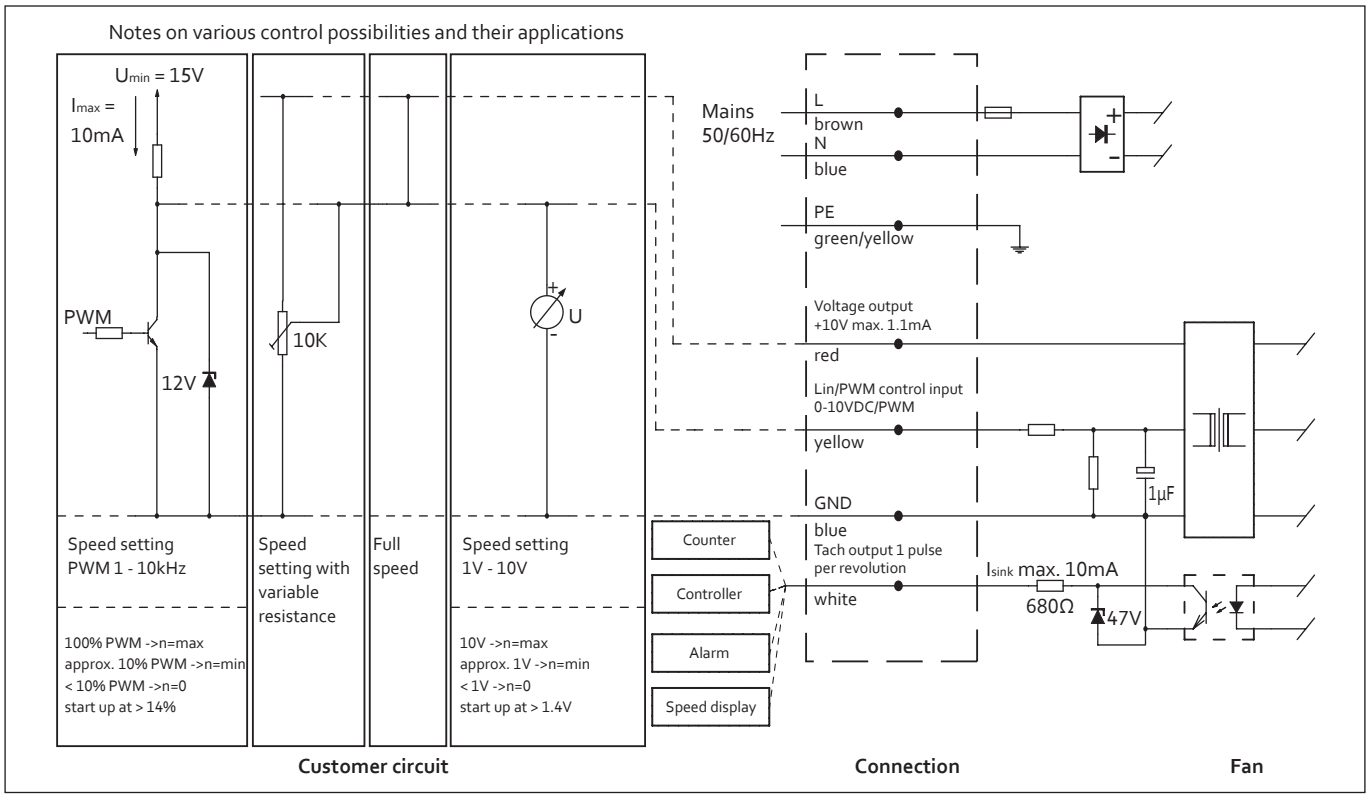


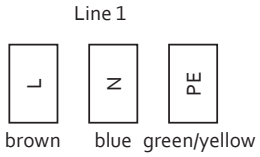
In order to calculate a v alid, stable speed signal a multiple of 4 changes of the hall signal have to be measured. The mean value of the measured time has to be used to calculate the speed.

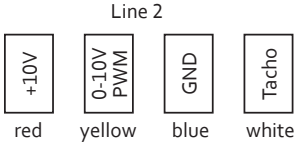
Electrical connection EC H1)

Technical Characteristics:

- PFC (passive)
- Output 10VDC max. 1,1mA
- Tach output
- Control input 0-10VDC / PWM
- Over-temperature protected electronics / motor







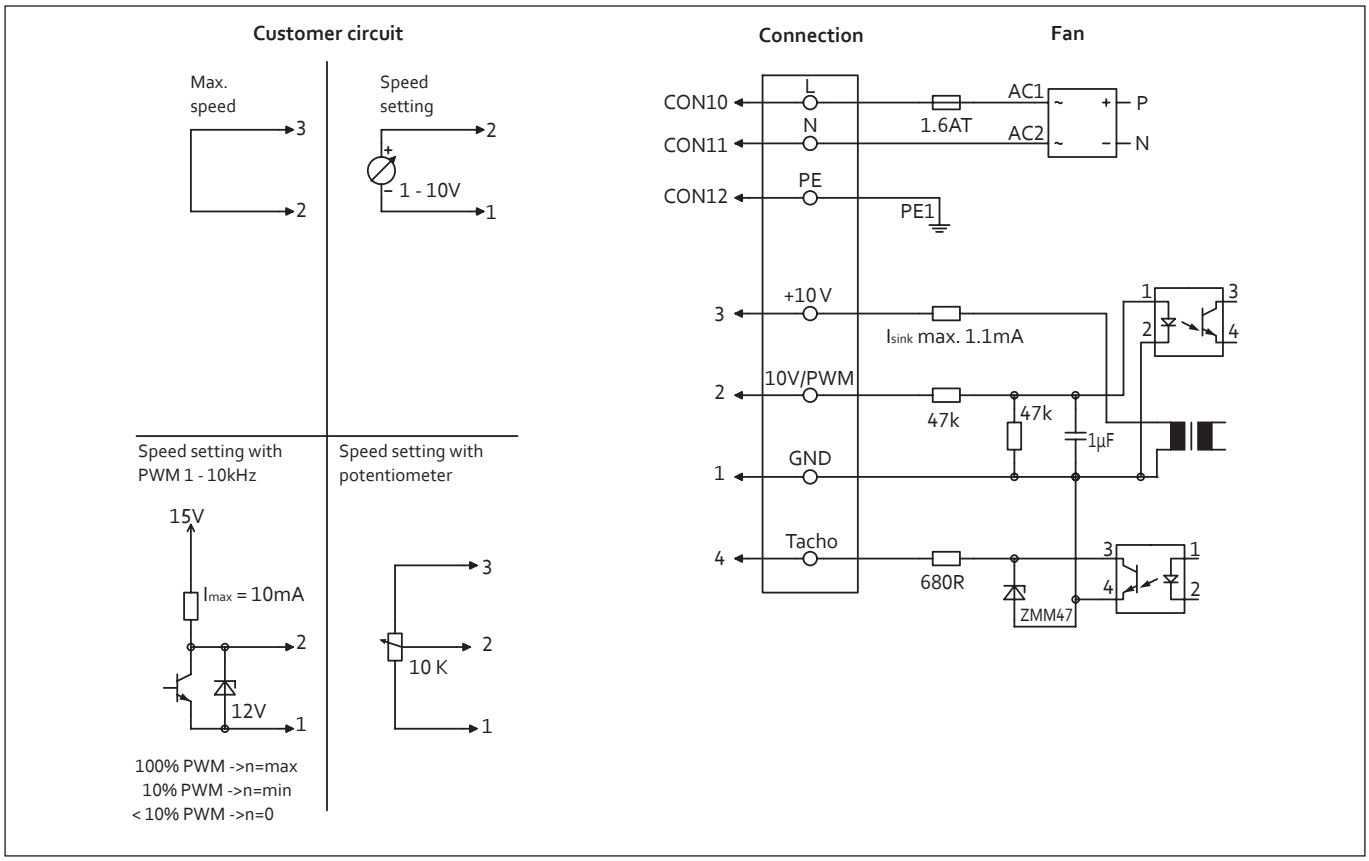
Line	Connection	Color	Assignment / function
1	L	brown	Mains 50/60Hz, phase
	N	blue	Mains 50/60Hz, neutral
	PE	green/yellow	Protective earth

Line	Connection	Color	Assignment / function
2	+ 10V	red	Voltage output +10 V max. 1.1mA
	0-10V / PWM	yellow	Control input (Impedance 100 kΩ)
	GND	blue	GND
	Tacho	white	Tach output: 1 pulse per revolution

Electrical connection EC H4)

Technical Characteristics:

- Control input 0-10VDC / PWM
- Output 10VDC max. 1,1mA
- Tach output
- Line undervoltage detection
- Locked-rotor protection
- Soft start
- Over-temperature protected electronics / motor

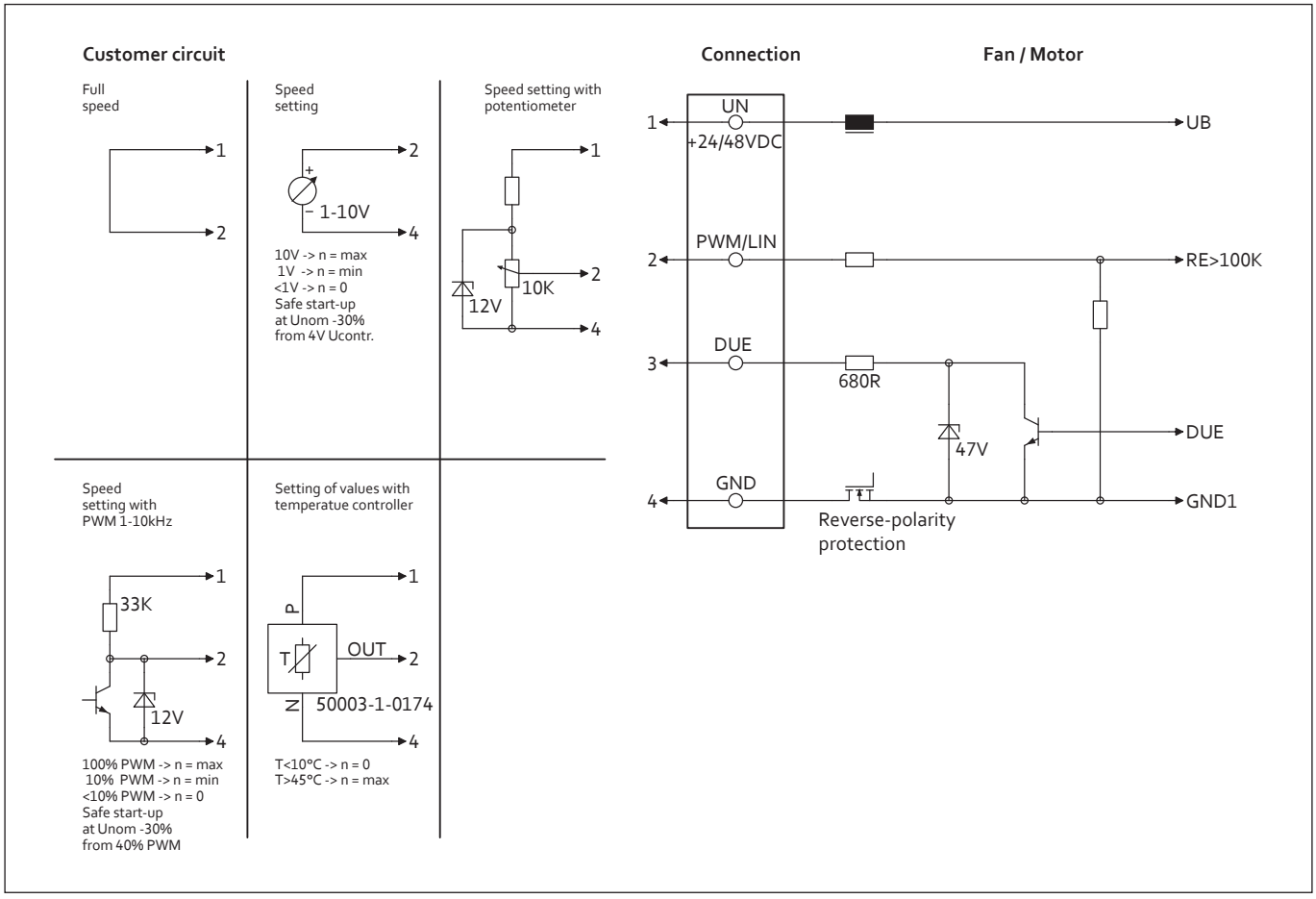


Line	Connection	Color	Assignment / function
CON10	L	black	Power supply 230VAC, 50 - 60Hz, see Type plate for voltage range
CON11	N	blue	Neutral conductor
CON12	PE	green/yellow	Protective earth
1	GND	blue	GND-Connection for control interface
2	0-10V / PWM	yellow	Control input 0-10V or PWM, electrically isolated
3	10V max. 1.1mA	red	Voltage output 10V / 1.1mA, electrically isolated, not short-circuit-proof
4	Tacho	white	Tach output: Open Collector, 1 pulse per revolution, electrically isolated

Electrical connection EC J5)

Technical Characteristics:

- Control input 0-10VDC / PWM
- Tach output
- Motor current limitation
- Reverse polarity and locked-rotor protection
- Soft start

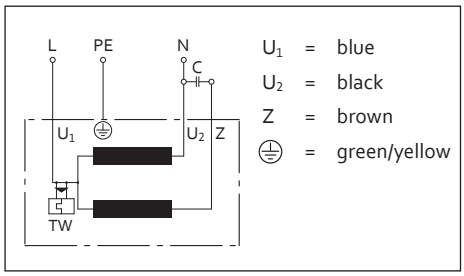


Line	Connection	Color	Assignment / function
1	UN +24/48 VDC	red	Power supply 24/48VDC, maximum ripple ± 3,5%
2	PWM/LIN	yellow	Control input Re >100K
3	Tach	white	Tach output, 3 pulses per revolution, Isink max. = 10mA
4	GND	blue	Reference ground

Electrical connection AC A1) / B)

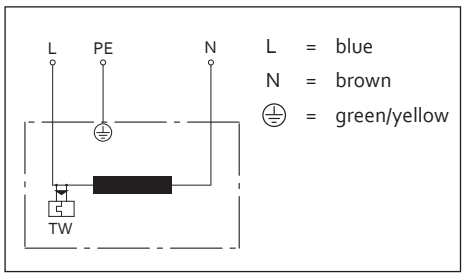
A1) Single-phase capacitor motor

with TOP wired internally



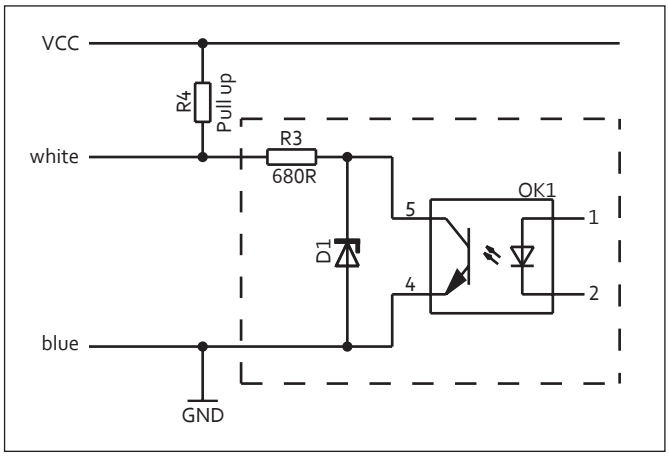
B) Shaded pole motor

with TOP wired internally



Electrical connection Hall IC C) / D)

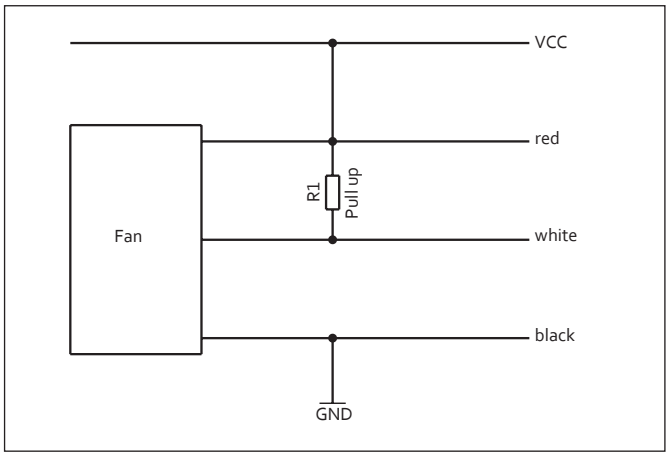
C) Speed monitoring with EC fans



Fan connections: white (OUT): Speed signal
blue (IN): Ground connection

Specification from ebm-papst:
$Isink_{max}$ = 10mA (by transistor in OK1)
VCC_{max} = 40V (external supply to be provided by customer)
Pull up resistor = Pay attention to power loss of the resistors in dimensioning!

D) Speed monitoring with AC fans



Fan connections: red (IN): DC-Voltage
white (OUT): Speed signal
black (IN): Ground connection

Specification from ebm-papst:
VCC = 5VDC (external supply to be provided by customer)
Pull up resistor = 4.5 kΩ

Technical parameters & scope

High standards for all ebm-papst products
Here at ebm-papst, we constantly strive to further improve our products in order to be able to offer you the best possible product for your application. Careful monitoring of the market ensures that technical innovations are reflected in the improvements of our products. Based on the technical parameters listed below and the ambience you want our product to operate in, we here at ebm-papst can always work out the best solution for your specific application.

General performance parameters
Any deviations from the technical data and parameters described here are listed on the product-specific data sheet.

Type of protection
The Type of protection is specified in the product-specific data sheets.

Insulation class
The insulation class is specified in the product-specific data sheets.

Mounting position
The mounting position is specified in the product-specific data sheets.

Condensate discharge holes
Information on the condensate discharge holes is provided in the product-specific data sheets.

Mode of operation
The mode of operation is specified in the product-specific data sheets.

Protection class
The Protection class is specified in the product-specific data sheets.

ErP2015 EXCEEDS THE NORM

Information on ErP directive for hot air blowers
With implementation of the ErP directive, more stringent efficiency requirements apply in two stages as of 2013 and 2015 for fans in the power range between 125 W and 500kW. The corresponding minimum efficiency values for the different Types of fan are stipulated by the EU.
ebm-papst GreenTech EC fans already surpass the minimum values required by law. Users can recognise fans complying with the directive from the CE marking for example. Exceptions not subject to the directive include fans for conveying hot media at temperatures in excess of 100°C.

Service life
The service life of ebm-papst products depends on two major factors:

- The service life of the insulation system
- The service life of the bearing system

The service life of the insulation system mainly depends on voltage level, temperature and ambient conditions, such as humidity and condensation. The service life of the bearing system depends mainly on the thermal load on the bearing. The majority of our products use maintenance-free ball bearings for any mounting position possible. The service life L10 of the ball bearings can be taken as approx. 40,000 operating hours at an ambient temperature of 40°C, yet this estimate can vary according to the actual ambient conditions.
We will gladly provide you with a lifetime calculation taking into account your specific operating conditions.

Motor protection / thermal protection
Information on Motor protection and thermal protection is provided in the product-specific data sheets.
Depending on motor Type and field of application, the following protective Characteristics are realised:

- Thermal overload protection (TOP), either in-circuit or external
- PTC with electronic diagnostics
- Impedance protection
- Thermal overload protection (TOP) with electronic diagnostics
- Current limitation via electronics

If an external TOP is connected, the customer has to make sure to connect a conventional trigger device for switching it off.
Products without fitted TOP and without protection against improper use, a Motor protection complying with the valid standards has to be installed.

Mechanical strain / performance parameters
All ebm-papst products are subjected to comprehensive tests complying with the normative specifications. In addition to this, the tests also reflect the vast experience and expertise of ebm-papst.

Vibration test
Vibration tests are carried out in compliance with

- Vibration test in operation according to DIN IEC 68, parts 2-6
- Vibration test at standstill according to DIN IEC 68, parts 2-6

Shock load
Shock load tests are carried out in compliance with

- Shock load according to DIN IEC 68, parts 2-27

Balancing quality
Testing the balancing quality is carried out in compliance with

- Residual imbalance according to DIN ISO 1940
- Standard balancing quality level G 6.3

Should you require a higher balancing quality level for your specific application, please let us know and specify this when ordering your product.

Chemo-physical strain / performance parameters
Should you have questions about chemo-physical strain, please direct them to your ebm-papst contact.

Fields of application, industries and applications
Our products are used in various industries and applications: Ventilation, air-conditioning and refrigeration technology, clean room technology, automotive and rail technology, medical and laboratory technology, electronics, computer and office technology, telecommunications, household appliances, heating, machines and plants, drive engineering. Our products are not designed for use in the aviation and aerospace industry!

Legal and normative directives
The products described in this catalogue are designed, developed and produced in keeping with the standards in place for the relevant product and, if known, the conditions governing the relevant fields of application.

Standards
Information on standards is provided in the product-specific data sheets.

EMC
Information on EMC standards is provided in the product-specific data sheets. Complying with the EMC standards has to be established on the final appliance, as different mounting situations can result in changed EMC properties.

Leakage current
Information on the leakage current is provided in the product-specific data sheets.
Measuring is according to IEC 60990.

Approvals
In case you require a specific approval for your ebm-papst product (VDE, UL, EAC, CCC, CSA, etc.) please let us know.
Most of our products can be supplied with the relevant approval.
Information on existing approvals is provided in the product-specific data sheets.

Air performance measurements
All air performance measurements are carried out on suction side and on chamber test beds conforming to the specifications as per ISO 5801 and DIN 24163. The fans under test are installed in the measuring chamber at free air intake and exhaust (installation category A) and are operated at nominal voltage, with AC also at nominal frequency, and without any additional components such as guard grilles. As required by the standard, the air performance curves correspond to an air density of 1.2 kg/m³.

Technical parameters & scope

Measurement conditions for air and noise measurement
ebm-papst products are measured under the following conditions:

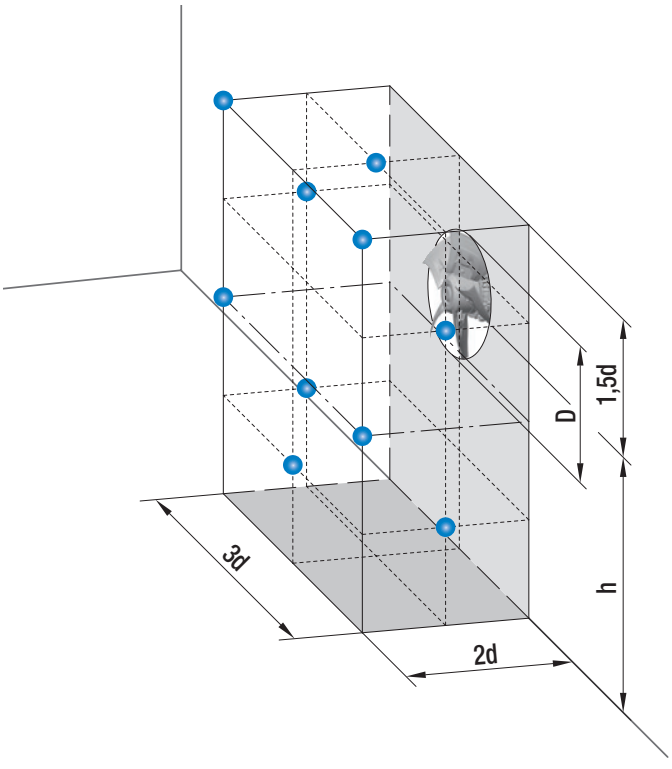
- Axial and diagonal fans in Direction of rotation "V" in full nozzle and without guard grille
- Backward curved centrifugal fans, free-running and with inlet nozzle
- Forward curved single and dual inlet centrifugal fans with housing

Noise measurements
All noise measurements are carried out in low-reflective test rooms with reverberant floor. Thus the ebm-papst acoustic test chambers meet the requirements of precision class 1 according to DIN EN ISO 3745. For noise measurement, the fans being tested are placed in a reverberant wall and operated at nominal voltage (for AC, also at nominal frequency) without additional attachments such as the guard grille.

Sound pressure level and sound level
All acoustic values are established according to ISO 13347, DIN 45635 and ISO 3744/3745 to accuracy class 2 and given in A-rated form.
When the sound pressure level (Lp) is measured, the microphone is on the intake side of the fan being tested, usually at a distance of 1m on the fan axis.
To measure the sound power level (Lw), 10 microphones are distributed over an enveloping surface on the intake side of the fan being tested (see graphic). The sound power level measured can be roughly calculated from the sound pressure level by adding 7 dB.

Measuring confi guration
as per ISO 13347-3 respectively DIN 45635-38:

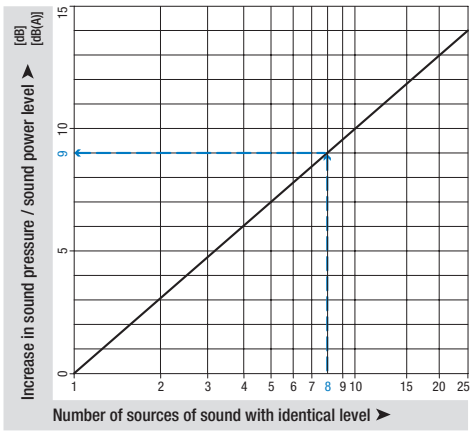
● 10 measuring points
d ≥ D
h = 1.5d ... 4.5d
Measurement area $S = 6d^2 + 7d\ (h + 1.5d)$



Combined level of multiple same-level sound sources

Adding 2 noise sources with the same level results in a level increase of approx. 3dB. The noise characteristics of multiple identical fans can be determined in advance based on the noise values specified in the data sheet. This is shown in the diagram opposite.

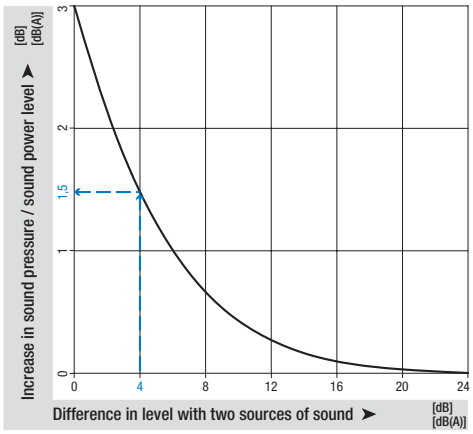
Example:
8 A3G800 axial fans are on a condenser. According to the data sheet, the sound pressure level of a fan is approximately 75dB(A). The level increase measured from the diagram is 9dB. Thus the overall sound level of the installation can be expected to be 84dB(A).



Combined level of two different-level sound sources

The acoustic performance of two different fans can be predetermined based on the sound levels given in the data sheet. This is shown in the diagram opposite.

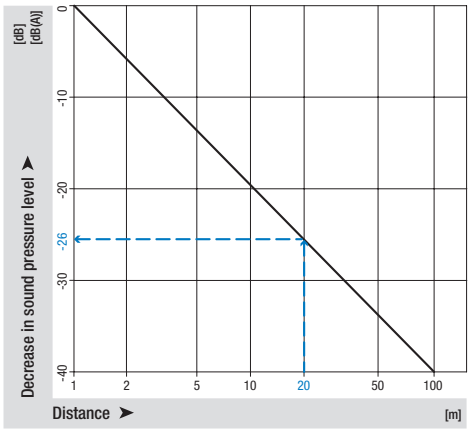
Example:
There is an axial fan A3G800 with a sound pressure level of 75dB(A) at the operating point and an axial fan A3G710 with 71dB(A) in a ventilation unit. The level difference is 4dB. The level increase can now be read in the diagram as approx. 1.5dB. This means that the overall sound level of the unit can be expected to be 76.5dB(A).



Distance laws

Sound power level is independent of distance to the sound source. In contrast to this, sound pressure level decreases the further away the noise source is. The adjacent diagram shows the decrease in level under far sound field conditions. Far sound field conditions apply whenever the distance between microphone and fan is big when compared to fan diameter and wavelength to be considered. For more information on far sound field, please consult the relevant literature on this complex topic. Per doubling of distance, the level in the far sound field decreases by 6dB. In the near field of the fan, other correlations apply and the decrease in levels can be considerably smaller.

The following example only applies to far sound field conditions and can vary strongly depending on the installation effects: With an axial fan A3G300, a sound pressure level of 65dB(A) was measured at a distance of 1m. According to the adjacent diagram, at a distance of 20m we would get a reduction by 26dB, i.e. a sound pressure level of 39dB(A).



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