Operating manual

RG CPAP EBM PAPST 24 V

Product type, manufacturing date (calendar week/year of construction) and if required, conformity mark can be found on the nameplate on the product.
Please provide us with the contents of the nameplate when making enquiries about the product.

ebm-papst St.Georgen GmbH & Co. KG
Hermann-Papst-Straße 1
D - 78112 St.Georgen

Phone: +49 (0) 7724 / 81-0
Fax: +49 (0) 7724 / 81-1309

info2@de.ebmpapst.com
www.ebmpapst.com

As per: 11.07.2016
Version: 1.1
Article number: 9393020003

Original operating manual

INDEX

1 SAFETY REGULATIONS AND INFORMATION	**1**
2 INTENDED USE	**3**
3 TECHNICAL DATA	**3**
4 CONNECTION AND COMMISSIONING	**4**
5 FAULTS, POSSIBLE CAUSES AND REMEDIES	**5**

1 SAFETY REGULATIONS AND INFORMATION

Read the operating manual carefully before commencing work at the product. Pay attention to the following warnings to avoid risk to persons or malfunctioning.
This operating manual is an integral part of the product.
In the event of resale or change of ownership the operating manual must accompany the product. This operating manual may be copied and provided as information on potential risks and their avoidance.

Hazard classification of warning notices

The following risk ratings are used in this operating manual to denote potential risk situations and important safety instructions:



DANGER
This is a potentially dangerous situation and warns of an impending health risk or risk of fatal injury if this warning is not observed. Observe this warning.

WARNING
The dangerous situation can occur and can result in major or fatal injuries if the warning is not observed. Work with extreme care.

CAUTION
The dangerous situation can occur and can result in minor injuries or damage to property if the warning is not observed.

NOTE
A potentially dangerous situation can occur and results in damage to property if not avoided.

Qualification of personnel

Only skilled electricians are permitted to install the product, to carry out the test run and to work at the electrical unit.
Only instructed and authorized skilled personnel are permitted to transport, unpack, operate and service the product.

Basic safety regulations

Safety risks related to the product must be reassessed after installing in the final device.
The operating manual was developed in accordance with European market requirements and may need adapting to the market requirements of the country in question.

When working at the product, observe the following:

- Do not make any changes to the product.



WARNING
Impermissible high load

- Stop the product immediately after impermissible loading (e.g. impact, heat, overvoltage).

Electrical voltage and current



DANGER
Electrical voltage

Regularly check the electrical equipment of the product.
- Eliminate immediately loose connections and defective cables.

Safety and protective functions



DANGER
Missing safety device and faulty protective equipment.

Without protective equipment severe injuries can occur, e.g. by taking hold of the rotating equipment.
- Operate the product with protection guards only.

Electromagnetic radiation

Electromagnetic compatibility (EMC) may affect the system integration of the product due to interaction.

- Ensure the electromagnetic compatibility of the entire system.

Moving parts

DANGER
Self-starting product



If voltage is applied, the motor automatically restarts after a mains failure or when blocking has been eliminated.
- Do not stand in the danger zone of the product.
- Switch off the mains voltage when working on the product and secure against switching on again.

DANGER
Rotating impeller





Contact with the impeller may result in injuries. Long hair, loose-fitting garments and jewellery can be caught and pulled into the product. Risk of injury.
- Before starting the product, ensure that it is securely fixed and that the guards are in place.
- Do not wear loose-fitting garments or jewellery when working on moving parts.
- Protect long hair by wearing a hair net.



CAUTION
High risk of fire spreading

Can cause fire to spread.
- Never direct the airflow (intake/exhaust side) at a potential source of fire.

Hot surface



CAUTION
High temperature at motor housing.
Risk of burns

- Provide adequate protection against accidental contact.

Transport

Only transport the product in its original packaging. Secure during transport.
The vibration values, temperature and climate ranges should not be exceeded during transport.

Storage

Store the product in a dry and clean environment that is well protected. Ensure that the storage temperature is adhered to,*see Chapter 3, Technical Data*.If the product is not operated for a longer period of time, we recommend running it for approx. 15 minutes annually to move the motor bearings.

Cleaning

Disposal

When disposing of the product, observe all requirements and regulations that are relevant in your country.

2 INTENDED USE

The product is designed exclusively as a built-in device for conveying air according to the technical data.
Every use that is not in accordance with the intended purpose, is regarded as misuse of the product.
On-site installations must comply with the mechanical, thermal and service life requirements, *see Chapter 3, Technical Data.*

Intended use includes:

- Operating the product with all protective equipment
- Do not put the product into operation before it has been installed in the customer's application
- Observation of the operating manual

Use for other than the intended purpose

Using the product for the purposes mentioned below is prohibited and can be dangerous:

- Conveyance of air that contains abrasive particles.
- Conveyance of air that has a highly corrosive effect.
- Conveyance of air that has a high dust load, e.g. vacuuming sawdust.
- Conveyance of inflammable gases/particles.
- Contact with materials that can damage the product, e.g. acids, caustic solutions, solvents.
- Exposure to radiation that can damage product components, e.g. strong UV rays or thermal radiation.
- Operating during external vibration.
- Operating the product close to inflammable materials or components.
- Operating the product in an explosive atmosphere
- Use of the prouct as a safety component or for performing safety-relevant functions.
- Operating in medical devices with life-sustaining or life-saving function if not validated together with ebm-papst.
- Operating in non-stationary systems, e.g. railway vehicles, aircraft and spacecraft if not validated together with ebm-papst.
- Operating with fully or partially dismantled or manipulated protective equipment.
- Operating the product under conditions other than those mentioned in the technical data.
- Furthermore, all fields of application not mentioned under intended use.

An in situ assessment must be conducted of the heating behavior (appropriate and inappropriate operation), the protection against contact, electrical shocks, impact of foreign objects or water and the usage at altitudes higher than 2000 meters.

Contact ebm-papst if you have specific queries regarding the product.

3 TECHNICAL DATA

Drawing, see annex

Technical description

Ambient conditions

Vibration and shock load

The mechanical Vibration and Shock data for the product is available. If the operation of the product should take place in a sinusoidal vibration containing environment or fixing the product on sinusoidal vibrating surface, please contact our technical support.

Do not operate your product in the resonance range.

4 CONNECTION AND COMMISSIONING

Connect mechanical parts



CAUTION
Risk of cutting/squashing when removing the product from the packaging and during mounting.

Grasp the housing and lift the product carefully out of the packaging. Avoid impact.

➢ Wear safety boots and cut-resistant gloves.

Connect electrical parts

Connect to the mains after installation.



DANGER
Compliance with the electrical installation regulations

➢ Observe the connection regulations that are valid in your country. (e.g. fusing, GFCI)



CAUTION
Electrical voltage
The product is a built-in component and has no switch for disconnecting power.

➢ Only connect the product to current circuits that can be switched off by a switch (all poles disconnected). When working on the product, secure the system/machine in which the product is installed against switching on again.

NOTE
Electromagnetic compatibility (EMC) may affect the system integration of the product due to interaction.

➢ Ensure the electromagnetic compatibility of the entire system.

Requirements:

- Before connecting the product, ensure that the supply voltage corresponds with the product voltage.
- Check whether the data on the nameplate corresponds with the interface data.



Only use cables that are designed for the current on the nameplate and the corresponding ambient conditions. Ensure that the electrical interface data is adequately protected (mechanical).

Find additional information in drawing or label.

Check connections

NOTE
Connect product

Check the product for visible damage and the operability of protective equipment before switching on.
If damage is visible, do not start the product.

5 FAULTS, POSSIBLE CAUSES AND REMEDIES

Replace your product by a new one, do not repair it.



DANGER
Electrical voltage at motor

- Wait five minutes after the voltage (all poles) has been switched off before opening the product.

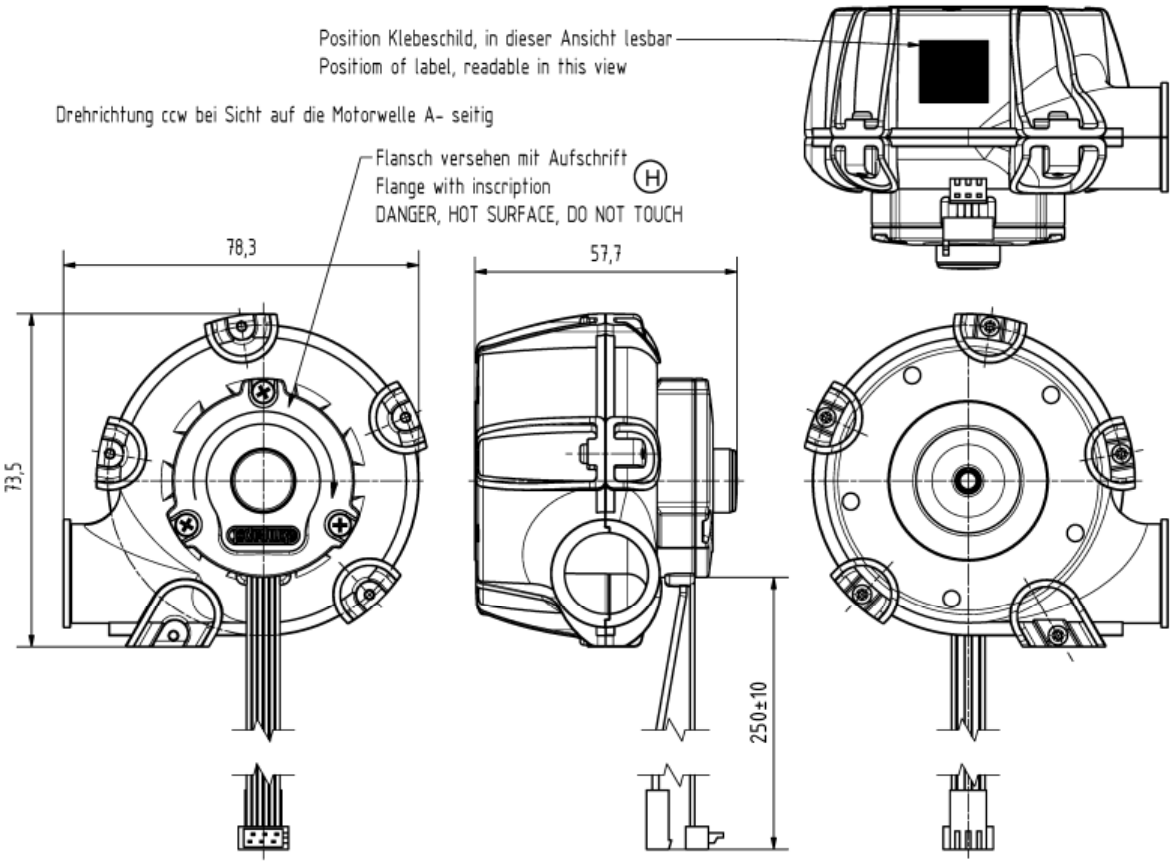
Fault/ Error	Possible cause	Possible remedial action
Motor is not rotating	Mechanical blocking	Switch off, de-energize and eliminate mechanical blocking.
	Mains voltage fault	Check mains voltage, re-connect voltage supply.
	Connection faulty	Rectify connection, see pin connection.
	Motor is too hot	Allow motor to cool / identify cause of fault.
	Motor winding interrupted	Exchange product.
	Ambient temperature too high	Reduce ambient temperature if possible.
Impeller out of true	Unbalance of rotating parts	Clean product if still unbalanced after cleaning, exchange product.



In case of further faults, contact ebm-papst.

Technical safety inspection

What requires checking?	How to check?	Frequency
Protection against accidental contact/ protective clothing	Visual inspection	min. 1/2 yearly
Check product for damage	Visual inspection	min. 1/2 yearly
Fixation of product	Visual inspection	min. 1/2 yearly
Fixation of wires	Visual inspection	min. 1/2 yearly
Insulation of wires	Visual inspection	min. 1/2 yearly
Check impeller for wear/sediments/ corrosion	Visual inspection	min. 1/2 yearly



Technische Ausführung, elektrische Daten und
Maße nach Prüfung freigegeben
Technical Specification, Electrical Data
And Dimensions Approved

Datum *Date* | Firmenstempel *Stamp* | Unterschrift *Signification*

Technische Daten / Technical datas		
Nennspannung / Nominal voltage	VDC	24
Nenndrehzahl geregelt / Nominal speed (controlled)	U/min	18130
Nennvolumenstrom, realisiert durch ausblasseitige Normdüse Ø4 mm Nominal air flow with recommended hole Ø 4 mm in the blower outlet.	l/min	32
Druckerhöhung bei Nenndrehzahl und Nennvolumenstrom Nominal back pressure at nominal speed and nominal air flow	Pa	1000 ± 5%
Gebläse mit Schlauch auf 1 mm dicker Gummimatte auf Vibrex-Platte auf 10 cm dicker Schaumstoffmatte. Einlaßseite nach unten. CPAP-Geräteschlauch mit 4 mm Düse seitlich weggeführt. Messung mit Mikrofon in 0,5 m Abstand in Gerätemitte über Motorseite bei Nenndrehzahl ca. 18.500 U/min. Umgebungsgeräusch ca. 5 dBA. Blower with hose placed on 1 mm thick rubber plate, placed on Vibrex plate placed on 10 cm thick foam mat. Inlet side placed downwards. CPAP-hose with 4 mm nozzle lead away to the side. Measurement made with microfone in 0,5 m distance above the center on the motor side at nominal speed of about 18.500 rpm. Ambient noise level around 5 dBA.	dBA	≤40
Typische Werte / Typical data		
Drehzahl ungeregelt freiblasend / Speed, uncontrolled, freeblowing	U/min	35600 ± 10%
Drehzahl ungeregelt im Stau / Speed at max. back pressure	U/min	40400 ± 10%
Volumenstrom bei ungeregelter Drehzahl, freiblasend Max. airflow	l/min	530 ± 10%
Staudruck bei ungeregelter Drehzahl / Max. back pressure	Pa	4800 ± 20%
Strom bei ungeregelter Drehzahl, freiblasend Current consumption at max. air flow	A	1,53 ± 10%
Zulässiger Umgebungstemperaturbereich / Ambient temperature range	°C	0...40
Wuchtgüte bei Nenndrehzahl / Balancing grade at nominal speed		3
Mechanische Grenzdrehzahl / Speed limit	U/min	45000
Lebensdauer L10 bei Nenndrehzahl, Umgebungstemperatur 50 °C Life expertancy L10 at nominal speed, Tu = 50° C	h	> 20000

Die Leistungsangaben beziehen sich auf eine Umgebungstemperatur von 23°C, nach einer Einlaufzeit von 3 Minuten bei vernachlässigbarer Verlustleistung der Kommutierungselektronik. (Endstufe, FETs mit kleinem Rdson)
Gebläsedaten beziehen sich auf eine spezifische Dichte von 1,08kg/m^3

The technical datas are based on Ta = 23° C, after a run in time of 3 minutes with optimized electronics. (FETs of power stage with small Rdson)
The performance data of the blower is referring to a specific density of 1,08kg/m^3

Motorspezifische Daten und Anschlussbelegung
siehe Motorzeichnung 932 3020 102 Blatt 2

For motor specific data and connection assignment
refer to motor drawing number 932 3020 102 sheet 2

freiblasender Betrieb nicht zugelassen!

operation on free air flow not allowed!

Ⓗ Steckergehäuse, bildliche Darstellung entspricht nicht dem Original
Housing, pictorial representation is not according to the original

Tolerierung/Tolerance:
Allgemeintoleranzen/Gen. Tolerances:

Werkstoff / Material:

Volumen / Volume: 76681.218 mm^3 | Gewicht / Mass: 0.262000000 kg | CAD:

Artikel / Title :

Massstab/Scale: —

Format/Size: A3

Schutzvermerk nach DIN ISO 16016 beachten
Copying of this document, and giving it to others and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.

	Datum	Name
Bearb./ Drawn		
Geprueft/ Checked		
Freig./ Release		

Index	Aend.-Nr./Change No.	SAP-Status / State
H		

Dokumenttyp/Type of Document | Teildokument (Blatt/Page)

ebmpapst
ebm-papst St. Georgen GmbH & Co. KG
78112 St. Georgen / Germany

Zchg.-Nr. / Drawing No:

Ers. f. Zchg. / Replaces:

3D-Modell Index / 3D-Model Index: E

10/13