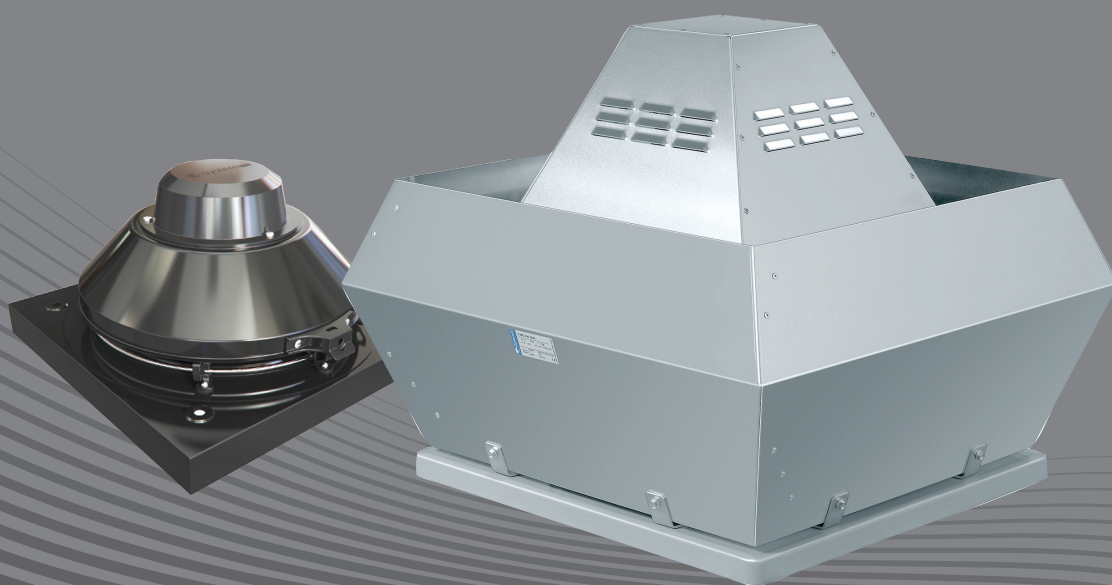


WALPOL

Assembly and operating instructions

Roof fan TYPE WDV



Version 6.1
B05

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1. General information

1.1. Note symbols



Danger

Immediate danger

Failure to observe the warning will result directly in death or serious injury.



Caution

Hazard with low risk

Failure to observe the warning may result in moderate injury.



Warning

Potential danger

Failure to observe the warning may result in death or serious injury.

Important

Danger with risk of property damage

Failure to observe the warning may result in damage to property.



Note

Useful information and instructions

2. Important safety instructions

Planners, plant constructors and operators are responsible for proper installation and operation in accordance with the intended use.

- Read the operating instructions completely and carefully.
- Operating instructions and other applicable documents, such as electrical connection diagrams or operating instructions for the motor, must be kept with the fan. They must be available on site at all times.
- Local and national laws and regulations must be observed and complied with.
- Consider the plant-relevant conditions and requirements of the plant manufacturer or plant builder.
- Safety devices must not be dismantled, bypassed or rendered inoperative.
- The fan may only be used when in perfect condition.
- The generally prescribed electrical and mechanical protective devices must be provided.
- During installation, electrical connection, commissioning, troubleshooting and maintenance, secure the installation site and the premises against access by unauthorized persons.
- Safety devices must not be dismantled, bypassed or rendered inoperative.
- Ensure that all warning labels on the fan are complete and legible.
- This appliance is not intended for use by persons (including children) with reduced physical or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children are not allowed to play with the device.

2.1. Personal

The fan may only be operated by qualified, instructed and trained personnel. These persons must know the relevant safety regulations in order to recognize and avoid possible dangers. The individual actions and qualifications can be found in Table 1 Qualifications, page 3.

Table 1 Qualification

Actions	Qualification	
Storage, operation, transport, cleaning, disposal	Trained personnel (see following notes)	
Electrical connection, commissioning, electrical isolation	Qualified electrician or persons with corresponding qualification	
Installation, disassembly	Assembly specialist or persons with corresponding qualification	
Maintenance	Qualified electrician or persons with corresponding qualification	Assembly specialist or persons with corresponding qualification
Repair	Qualified electrician or persons with corresponding qualification	Assembly specialist or persons with corresponding qualification



Note

The operator must ensure that the personnel have been instructed in the operation and have understood the operating instructions. If you are unsure, please contact Walpol or our representatives.

2.2. Personal protective equipment

Wear protective equipment during any work in the vicinity of the fan.

- Protective clothing
- Protective gloves
- Safety goggles
- Safety shoes
- Safety helmet
- Hearing protection

2.3. The 5 safety rules for working in and on electrical installations

- | | | |
|---|-----------------------------------|---|
| 1. Disconnecting (all-pole disconnection of an electrical system from live parts) | 2. Secure against restarting | 4. Grounding and shorting |
| | 3. Determine freedom from voltage | 5. Cover or fence off adjacent live parts |

3. Warranty

For warranty claims to be valid, the products must be properly connected and operated and used in accordance with the data sheets. Prerequisites are also a fully completed maintenance plan and commissioning report, which are requested by Walpol in the event of a warranty claim. The commissioning report is part of this document, the maintenance plan is to be prepared by the operator, see chapter 13.3 Maintenance

4. Delivery, transport, storage

Safety instructions

Warning: Danger due to rotating fan blades

- Prevent unauthorized persons from entering by security personnel or an access guard.

Warning: Suspended loads

- During any work in the vicinity of the fan, the protective equipment must be worn, see 2.2 Personal protective equipment,
- Never step under suspended load.
- Ensure that no one is under a suspended load.

Delivery

Every fan leaves our factory in perfect electrical and mechanical condition. It is recommended that the fan be transported to the installation site in its original packaging.

Check delivery

- Check the packaging for transport damage. Any damage must be noted in the cargo manifest.
- Check if the delivery is complete.

Unpacking



Warning

When removing the transport packaging, there is a risk of damage from sharp edges, nails, staples, splinters, etc.

- Carefully unpack the fan.
- Check the fan for obvious transport damage.
- Do not remove the packaging until just before assembly.
- During any work in the vicinity of the fan, the protective equipment must be worn, see 2.2 Personal protective equipment

Transportation

Safety instructions

- The fan must never be carried by the connecting cable, plenum box, impeller, guard grille, inlet nozzle or silencer.
- In the case of open transport, ensure that no water can penetrate the motor or other sensitive components.
- It is recommended that the fan be transported to the installation site in its original packaging.

Caution: Careless loading or unloading may cause damage to the fan.

- Carry out the loading or unloading carefully.
- Use lifting equipment designed for the load.
- Observe the transport arrows on the packaging.
- The packaging serves exclusively as transport protection and must not be used for lifting.

Storage

- Store the fan in its original packaging in a dry, dust-free place protected from the weather.
- Avoid exposure to extreme heat or cold.

Important

Danger due to loss of function of the motor bearing

- Avoid too long storage periods (recommendation: max. 1 year).
- Before installation, check that the motor bearing is working correctly.

5. Description

5.1. Roof fans EC motor series WDV-A

The fans are driven by EC motors. The fans must be controlled with a potentiometer (0-10V). All motors are suitable for 50/60 Hz. The input voltage for single-phase devices is in the range of 200 and 277 V; for three-phase devices, the input voltage is 380 and 480 V.

The maximum temperature of the pumped medium is +120°C.



Note

When installing EC motors, it must be ensured that the residual current circuit breaker of type class: B or B+ are present in the circuit.

5.2. Roof fans with AC motor WDV-A and WDV-K series

Speed control options:

- 400V IE2/3 motors with frequency inverter with built-in sine filter control
- control 230V motors with transformer speed controller

The maximum fluid temperature is +120°C for series WDV-A

The maximum fluid temperature is +60°C for series WDV-K

5.3. Description roof fans

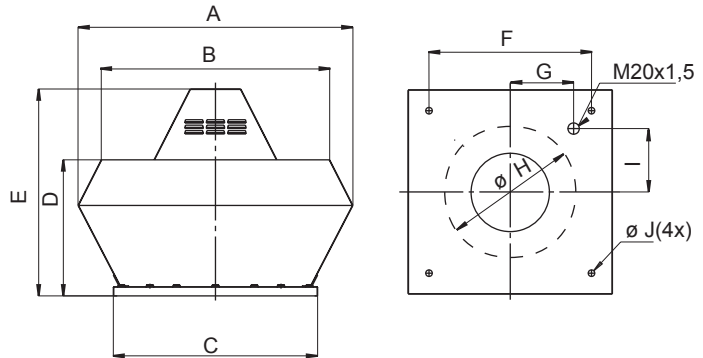


Table dimensions roof fans TYPE A

Dimensions (in mm)	WDV-A 355 EC	WDV-A 400 EC	WDV-A 450	WDV-A 500	WDV-A 560	WDV-A 630
A	720	720	900	900	1150	1150
B	618	618	730	730	955	955
C	595	595	665	665	939	939
D	390	390	465	465	560	560
E	600	600	675	675	900	900
F	450	450	535	535	750	750
G	200	200	237	237	293	293
H	438	438	438	438	605	605
I	200	200	237	237	293	293

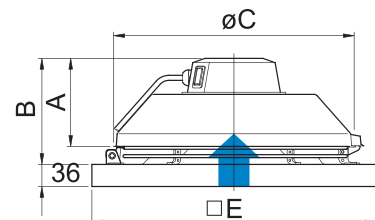
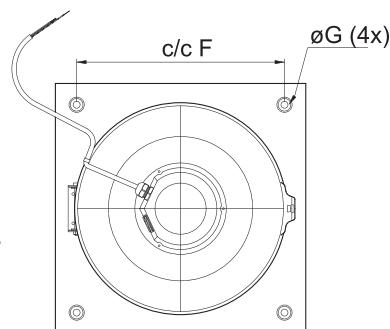
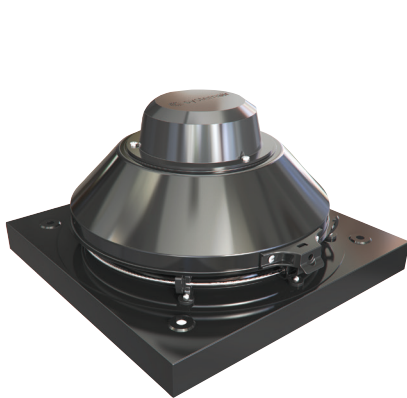


Table dimensions roof fans TYPE K

Dimensions (in mm)	WDV-K 315
A	160
B	206
ØC	404
E	521
c/cF	450
ØG	11

5.4. Fan and motor data

- Max. Temperature of transported air, Max. Ambient temperature, Sound pressure level -> See general catalog, available on our website.
- Voltage, amperage, protection class, weight -> See nameplate
- The motor data can be found on the motor nameplate or in the motor manufacturer's technical documentation.

5.5. Intended use

Roof ventilators type WDV-A, WDV-K

- The fans are designed for installation in ventilation systems.
- The fan is suitable for the transport of clean air.
- The maximum permissible operating data on the nameplate apply to an air density of 1.2 kg/m³ (NN) and a maximum humidity of 80%.
-

Roof ventilators type WDV-K

- **Roof fan with horizontal air outlet (discharge) Motor in air flow**
- Not suitable for commercial kitchens, which must be executed according to VDI 2052.

All types:

Improper use is mainly when the fan is used in a way other than described. The following examples are contrary to regulations and dangerous:

- Conveying explosive and flammable media
- Conveying aggressive media
- Operation in explosive environment
- Operation without duct system or protective grille
- Operation with closed air connections
- Conveying extremely polluted air without pre-filtering



Note

We generally recommend pre-filtering the supply air before the fan

For example with a filter box or an activated carbon module, see WALPOL product range

6. Nameplate and type key

Each fan has a nameplate

Please compare the fan type/data with the version you ordered to avoid misunderstandings or wrong deliveries.

7. Accessories

We recommend original accessories from the company Walpol. For information contact the company Walpol

8. Installation

Safety instructions

Warning: Risk of impact from falling fan or fan parts.

- Before installation, check the surface for load-bearing capacity.
- Consider all static and dynamic loads when selecting lifting equipment and fasteners.

General safety instructions

- Installation may only be carried out by appropriately qualified persons, for details, see Table 1 Qualification, page 2.
- Move the impeller of the fan by hand before installing it to check its freewheeling.
- Provide contact protection, suction protection and safety distances according to DIN EN ISO13857 and DIN 24167-1.
- Prevent foreign particles from being sucked in.
- To prevent vibration transmission to the duct system, we recommend using the flexible connectors from our accessories, see chapter Accessories.

Requirements

- Make sure that the fan and all its components are undamaged.
- Make sure that there is sufficient space for mounting the fan.
- When mounting the device, protect it from dust and moisture.
- Make sure that the specifications on the type plate (fan and motor) correspond to the operating conditions.
- Mount the fans so that there is sufficient access for troubleshooting, maintenance and repair.

9. Installation of the ventilation system

Important

Leaky roof due to incorrect installation

The roof seal (e.g. plastic or bitumen foil) must be pulled under the base plate of the roof fan and fastened there.

Important

Leaky duct system

When installing the roof fan and accessories, all mounting surfaces must be sealed airtight.

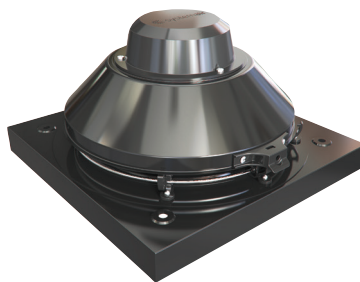
Important

Condensate formation due to cold bridges

If the fan and accessories are insufficiently insulated, condensate may form.

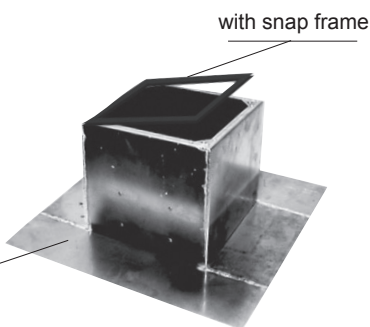
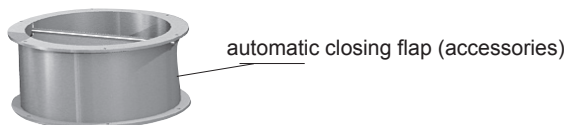
1. Check whether the fan and accessories form a cold bridge.
2. Insulate the fan and accessories sufficiently

Installation example WDV-K series



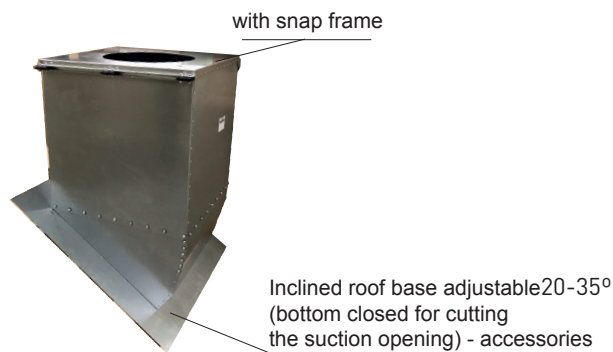
Roof plinth must be created on site

Installation example WDV-A series



Flat roof base
(bottom closed for cutting
the suction opening) - accessories

AIR CURRENT



Inclined roof base adjustable 20-35°
(bottom closed for cutting
the suction opening) - accessories

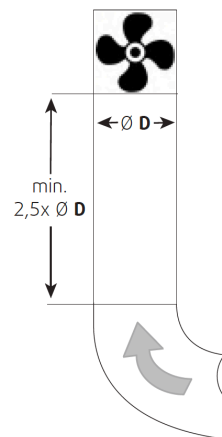
AIR CURRENT

Important

There is a risk of damage to the bearings or fan parts.

- A duct bend must not be placed directly before or after the fan
- A uniform and constant air flow to the unit must be ensured. Free exhaust air must be ensured.

Rectangular duct system: D = Hydraulic diameter
Round duct system: D = nominal diameter



9.1. Assembly/disassembly of impeller - internal rotor motor WDV-A series

Important

Damage to the motor and impeller.

The ball bearings of the motor and the balanced impeller can be damaged by violent impacts.

- Attach the impeller and/or shaft extensions to the shaft or rotor without forcing.
- **The impeller and the hub must not be separated. These were balanced by Walpol as one unit.**



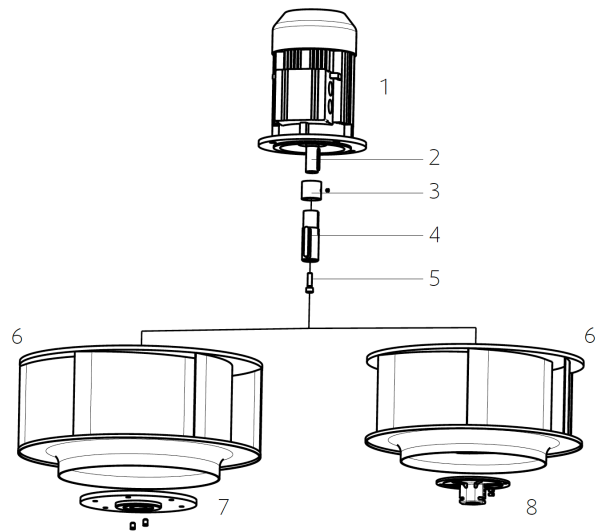
Note

The hub can be heated for easier assembly and disassembly, e.g. with a hot air blower.

- Prerequisite for assembly: The wedge lies correctly in the groove provided for it.
- Tools: Suitable Allen key, suitable extraction tool, torque wrench for the clamping bush.

- 1 Motor
- 2 Motor shaft
- 3 Sleeve (Not used with every fan)
- 4 Shaft extension (Not used with every fan)
- 5 Hexagon socket screw
- 6 Impeller
- 7 Steel hub
- 8 Aluminum hub

The hub is shown without the impeller for better clarity

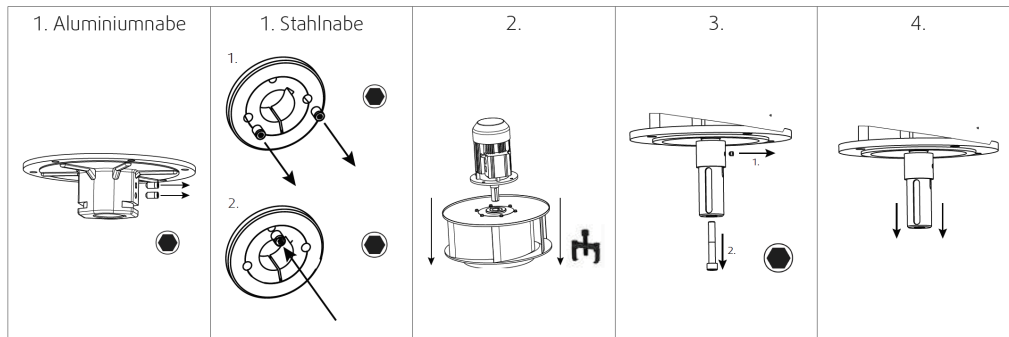


Note

Series WDV-K:

With this model the disassembly of the Mototr impeller unit is not possible!

Demontage



Montage

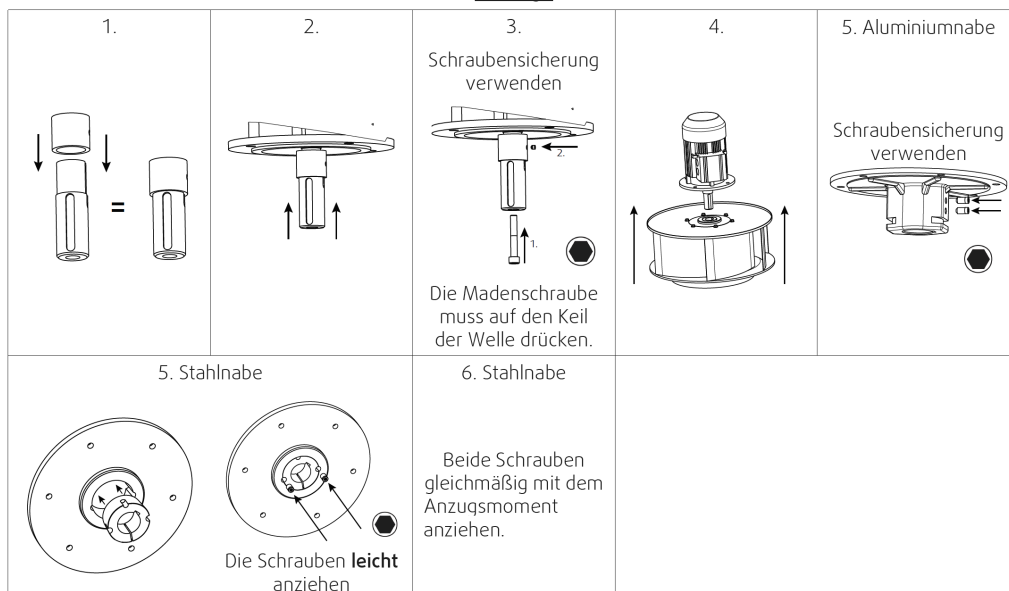


Table of tightening torques for different bushing types

Socket type	1008	1108	1210	1215	1310	1610	1615	2012	2517	3020
Tightening torques (Nm)	5.7	5.7	20	20	20	20	20	31	49	92

10. Electrical connection

Safety instructions

Warning: Danger due to electrical voltage!

- The 5 safety rules must be observed, see The 5 safety rules for working in and on electrical installations
- Prevent water from entering the terminal box.
- The electrical connection may only be carried out by appropriately qualified persons, for details see table Qualification

Warning: Danger due to electrostatic influence of medical implants!

- Persons with medical implants should keep sufficient distance to the corresponding devices.

Connection

- Check whether the data on the type plate match the connection data.
- Carry out the electrical connection according to the wiring diagram.
- Fans with EC motors must be switched on and off via the control input.
- Use all locking screws.
- Insert the screws by hand so that the thread is not damaged.
- Tighten all screws firmly to ensure IP protection rating.
- Screw down the cover of the terminal box/revision switch evenly.
- Connect the cable end in a dry environment.
- Install a permanent disconnecting device in the electrical installation (all-pole contact opening min. 3 mm).

Protective earth conductor

The cross-section of the protective grounding conductor must be equal to or greater than the phase cross-section.

Ground fault circuit interrupter

For use in AC systems with 50/60 Hz, all-current sensitive residual current circuit breakers are required in conjunction with electronic devices such as EC motors, frequency converters or uninterruptible power supplies (UPS).

10.1. Motor protection



Note

Fans with EC motor do not require additional motor protection. The motor protection is integrated in the motor electronics.

Important

Motor damage due to overvoltage, overload or short circuit.

- Temperature monitors must be integrated in the control circuit in such a way that in the event of a fault they do not switch on again automatically after cooling down.
- Motor cables and temperature monitoring cables must always be laid separately.
- Without thermal protection: Use motor protection switch!

10.2. Fans with variable speed



Warning

Resonant frequencies can result in increased vibrations in certain speed ranges. These vibrations can destroy components.

- Only operate the fan outside these speed ranges.
- Let these speed ranges run through so fast that no oscillation can exceed the values for the Resonance frequency.
- The operating instructions of the frequency inverter must be observed.



Caution

Damage resulting from incorrect commissioning of the frequency inverter.

- The fan and frequency converter must be installed as close as possible to each other.
- Use shielded cables.
- All components (fan, frequency converter and motor) must be grounded.
- All-pole sine filters must be used. (Exceptions are fans with IEC standard motors. This is not mandatory for these motors, but is recommended by Walpol)
- Avoid fan operation with frequency converter below 10 Hz.
- The heating of the motor when using a frequency converter must be checked by the customer in the application.
- Never exceed the maximum impeller speed specified on the fan nameplate.

11. Commissioning

The warranty is only valid if commissioning has been carried out correctly and written proof of this has been provided.

Safety instructions

Commissioning may only be carried out by appropriately qualified persons, for details, see table Qualification Requirements

- Assembly and electrical connection are professionally completed.
- Residual material from the installation and foreign bodies were removed from the fan and ducts.
- Check the fan for visible damage before switching it on and ensure that the protective devices are functioning properly.
- Use all locking screws.
- Inlet and outlet are free.
- The cable glands were tightened firmly.
- The data on the nameplate correspond to the connection data.
- The safety devices have been installed.
- Install a permanent disconnecting device in the electrical installation (all-pole contact opening min. 3 mm).

Tests

The following sequence must be observed during commissioning:

AC motor

1. Switch on the fan.
2. Perform the tests required in the commissioning report (Commissioning report, Speed controllable fans: "Measurement data at startup" at maximum speed.
3. Switch off the fan. When the mains voltage is switched on, the motor starts an initialization (a few seconds). After initialization, the control input is active.

EC motor

1. Switching off the fan via the control input.
2. Perform the tests required in the commissioning report (commissioning report) Speed controllable fans: "Measurement data at startup" at maximum speed.
3. Switching off the fan via the control input.

12. Operation

Safety instructions

Warning: Danger from electrical voltage or moving parts.

- The device may only be operated by appropriately qualified persons, for details see Table 1 Qualification,
- Operate the fan only in accordance with its operating instructions and the operating instructions for the motor.

13. Troubleshooting/Maintenance/Repair

13.1. Safety instructions

- Troubleshooting/maintenance/repair may only be performed by appropriately qualified persons, for details see Table 1 Qualification.
- The 5 safety rules must be observed, see 2.3 The 5 safety rules for working in and on electrical installations.
- The impeller must be stationary.

13.2. Troubleshooting

Table 13 Troubleshooting

Malfunction	Remedy	Possible causes	Remedy
Fan runs unsteadily		Impeller has unbalance	If possible, rebalance by a specialist company. Otherwise, please contact Walpol.
		Impeller contamination	Carefully clean, rebalance
		Material degradation on the impeller due to aggressive pumped media.	Contact Walpol
		Direction of rotation of impeller incorrect	Change the direction of rotation if possible. Otherwise, please contact Walpol.
		Deformation of the impeller due to excessive temperature.	Make sure that the temperature does not exceed the certified value/Mount new impeller.
		Vibrations/vibrations	Check the installation of the fan/check the duct system .
		Fan operation in resonant frequency range	Consider chapter 9.2 Fans with variable speed

Malfunction Remedy	Possible causes	Remedy
Air output of the fan too low	Direction of rotation of impeller incorrect	Change the direction of rotation if possible. Otherwise, please contact Walpol.
	Incorrect connection wiring (e.g. star instead of delta).	Check the connection wiring and correct it if necessary.
	Pressure losses too high.	Optimize the channel routing.
	Volume flow controllers are not or only partially open.	Check opening position on site.
	Inlet or pressure paths blocked.	Remove blockage.
Grinding noises during start-up or operation of the fan	Check whether the duct connections on the fan are braced.	Loosen and realign duct connections.
Thermal contact/ PTC thermistor tripped	Direction of rotation of impeller incorrect	Change the direction of rotation if possible. Otherwise, please contact Walpol.
	Missing phase	When using a 3-phase motor (no EC), check that all 3 phases are present.
	Engine overheating	Check impeller cooling (if present), check resistance of motor windings (if possible) / contact Walpol.
	Capacitor (if used) not or not correctly connected	Connect the capacitor correctly.
	Motor blocked	Contact Walpol
Fan does not reach nominal speed	Defective motor winding	Contact Walpol
	Drive motor misaligned	Contact Walpol
	Control devices (if used), such as frequency converter or transformer are set incorrectly.	Set control devices correctly.
	Mechanical blocking	Remove blockage.
	Motor does not rotate	Incorrect supply voltage
Connection defective		Disconnect from power supply, correct connection according to wiring diagram
Temperature monitor has responded.		Allow the engine to cool down. Determine and eliminate the cause of the error.
Electronics/motor overheated	Cooling insufficient	Improve cooling.
	Motor overload	Check that the correct fan is used for the application.
	Ambient temperature too high	Check that the correct fan is used for the application.

13.3. Maintenance

Only if maintenance has been carried out correctly and written proof of this is provided, is the warranty valid.

To ensure continuous fan operation, we recommend regular maintenance intervals. These maintenance intervals are defined in the "Activities" table below. In addition, follow-up activities such as cleaning, replacement of defective components or other corrective measures must be carried out by the operator. For traceability, it is necessary to create a maintenance plan in which the work performed is documented. This must be prepared by the operator. If "extreme operating conditions" prevail, the maintenance intervals must be carried out at shorter intervals. Examples of extreme operating conditions:

- Fans for kitchen exhaust air
- Continuous ambient temperature > 30 °C or < -10 °C, or temperature fluctuations > 20 K

Table 14 Activities

Actions	Normal Operating conditions		Extreme Operating conditions	
	Semian-nual	Annual	Quarterly	Semian-nual
Check the fan and its components for visible damage, corrosion and contamination.		X		X
Check the impeller for damage and imbalance.		X		X
Check the correct operation of the condensate drain.		X	X	X
Clean the fan/ventilation system (see 14 Cleaning).	X		X	
Check the screw connections for tightness and for damage/defects.		X	see normal operating conditions	
Make sure that the fan inlet is free of debris.		X		X
Check that the fan and its components are used as intended.	X		see normal operating conditions	
Check the current consumption and compare it with the nominal data.		X		X
Check the vibration dampers (if used) for correct function, visible damage and corrosion.		X	see normal operating conditions	
Check the electrical and mechanical protective devices for correct function.		X	see normal operating conditions	
Check that the nameplate of the fan is legible.		X		X
Check the connection terminals and cable glands for tight fit and visible damage/defects.		X	see normal operating conditions	
Check the flexible connectors for damage.	X		see normal operating conditions	



Note

For all other damage/defects, please contact Walpol.

13.4. Spare parts

- Only use original spare parts from Walpol!
- When ordering spare parts, specify the serial number of the fan. This is indicated on the nameplate.

14. Cleaning

Safety instructions

- Cleaning may only be carried out by suitably qualified persons, for details see Table 1 Qualification. The 5 safety rules must be observed, see 2.3 The 5 safety rules for working in and on electrical installations.
- The impeller must be stationary.

Procedure

Important

For a long period of use, keep the fan clean.

- Install a pre-filter (e.g. filter box from Walpol).
- Do not use hard brushes, steel brushes or sharp-edged objects.
- Never use a high-pressure cleaner ("steam jet").
- Do not bend or scratch the fan blades when cleaning.
- When cleaning the impeller, check for attached balance weights.
- Keep the airways of the fan clean and, if necessary, clean them carefully with a cleaning cloth or a "soft" brush.



Note

Proper operation is only possible with regular "gentle" cleaning.

15. Disassembly / removal

Disassembly and removal of the motor must be performed in the reverse order of assembly and electrical connection.

16. Disposal

- Make sure that the material is recycled. Observe the national regulations.
- The device and the transport packaging consist mainly of recyclable raw materials.
- Disassemble the fan into its component parts.
- Separate the parts after:
 - reusable parts
 - Material groups for disposal (metal, plastic, electrical parts, etc.)

17. EU Declaration of Conformity - Roof Fans

Manufacturer: Walpol Ltd
Benzstr. 13
45891 Gelsenkirchen

Product Name: Thermoventilators

Type designation: WDV, WDV-K

From year of manufacture: 2016

The manufacturer declares that the above-mentioned products in their design and construction as well as the version marketed by us comply with the harmonization regulations listed below:

EU directives:	2006/42/EC	Machinery Directive
	2014/30/EU	Electromagnetic Compatibility (EMC) Directive
	2011/65/EU	RoHS Directive

Location: Gelsenkirchen

Date: 01.012.2021

Maximilian Girnus
Managing Director WALPOL GmbH

18. Commissioning protocol

Fan

Description:

Item no:

Production order no.:

Installer

Company:

Contact person:

Company address:

Tel. no.:

Email:

Operator (installation site)

Company:

Contact person:

Company address:

Tel. no.:

Email:

Connection type

Yes

No

Directly on the net

0-10 V signal (EC motor)

About contactor control

Transformer

Frequency converter

Sine filter

Shielded cables

Motor protection

Yes

No

Motor protection switch or motor protection relay

PTC thermistor

Resistance value [Ω]:

Thermal contact

Electric motor protection

Other

Function test

Yes

No

Impeller easily rotatable (by hand)

Direction of rotation corresponds to direction of rotation arrow

Smooth running without unusual noises / vibrations

Nominal data - fan (nameplate on fan housing)

Voltage [V]

Current [A]:

Frequency [Hz]

Power [kW]

Impeller speed [rpm]

Measurement data during commissioning

Voltage [V]

Temp. of the conveyed air [°C]:

Current L1 [A]*

Impeller speed [rpm]

Current L2 [A]:

Volume flow [m³/h]:

Current L3 [A]:

Differential pressure [Pa]*:

*For single-phase fans, enter in line "Current L1 [A]"

*Δ-pressure between suction and discharge side of the fan

If a volume flow measurement is not possible, the value can be calculated using the following formula:

X

=

Duct cross-section [m²]

Flow velocity [m/s]

Volume flow
[m³/h]:

Grid measurement according to VDI 2044

Yes

No

Start-up of the fan successful?

Date, signature installer

Date, signature operator

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