

EN

OPERATING MANUAL
RADIAL FAN

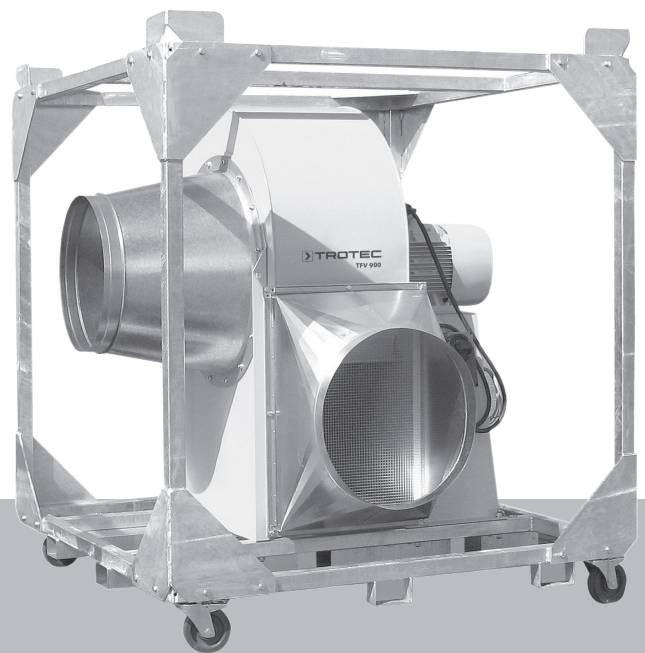


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Notes regarding the operating manual

Symbols



Hazardous electric current!

Warns about hazards from electric current which can lead to injuries or even death.



Danger!

Warns of a hazard which can result in moderate to severe injuries.



Caution!

Warns of a hazard which can result in minor injuries or property damage.



Wear hearing protection!

Indicates the activities during which hearing protection is to be worn.

TFV 900

The current version of the operating manual can be found at:

<http://download.trotec.com/?sku=1510002050&id=1>



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Warranty and liability

Damages caused by incorrect use by untrained people or start-up by unauthorised people are excluded from the warranty.

The device complies with the fundamental health and safety requirements of the applicable EU regulations and was tested at the factory for perfect functionality multiple times. However, if faults in the functionality occur and cannot be remedied with the measures in the chapter Errors and faults, please get in touch with your dealer or distributor. When invoking the guarantee, the data given on the fan info sheet supplied with the device is to be quoted. When manufacturer's instructions or legal regulations have not been followed, or after unauthorised changes to the device are made, the manufacturer is not responsible for the resulting damages. Changes to the device or unauthorised replacement of individual parts can drastically impact the electrical safety of this product and leads to the forfeit of the warranty. Liability does not extend to damages to people or property caused by the device being used other than as described in the instructions in this operating manual. Subject to changes to technical design and model changes as part of constant development and product improvement without prior notice.

No liability is accepted for damages resulting from improper use. In such cases, entitlements to a warranty are then also forfeited.

Safety

Carefully read the operating manual before using the device and keep it within reach!



Danger!

Improper handling can lead to injuries due to parts being whirled up.

- Do not use the device in rooms with a fire hazard or in potentially explosive rooms and do not install it there. The device is optionally also available for the operation in ex-proof areas – **and only these devices may be operated in an explosive environment.**
- Only put up the device in an upright, stable position on firm ground.
- Ensure that the air inlet and outlet are not obstructed.
- Make sure that there are no loose items located in the immediate surroundings of air inlet and air outlet.
- Never reach or put objects into the device.
- Do not transport the device during operation.
- Ensure that all electric cables outside of the device are protected from damage (e.g. from animals). Never use the device if the cable or power connection is damaged!
- Only use connecting cables which are appropriate to the device power consumption, the length of its cable and its use. Avoid electrical overload.
- Connection cables must always be reeled off completely.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Observe the storage and operating conditions (see chapter Technical data).
- Unplug the device from the mains before starting with maintenance, service or repair work.
- Only use original spare parts, for otherwise safe and functional operation cannot be ensured.

Intended use

The radial fan TFV 900 may be used for the large-scale ventilation of channel and pipe or tunnel systems, during welding work or sealing and floor coating in underground working, whilst adhering to the technical data and the safety instructions.

The radial fan was designed for large volume flows of atmospheric air, also through connected air transport hoses over very long transport routes with high a counter-pressure. All other applications are considered improper use.

Improper use

The radial fan TFV 900 is not suited for installation in fluids or on flooded or boggy grounds. The device must not be used for transporting media other than atmospheric air, e.g. fluids or other gases.

Any unauthorised changes, modifications or alterations to the device are forbidden.

Personnel qualifications

People who use this device must:

- be aware of the dangers that occur when working with high-pressure fans.
- have read and understood the operating manual, especially the Safety chapter.

Electrically skilled person

Electrically skilled personnel must be able to read and understand electric circuit diagrams, to put electrical systems into service and to maintain them, to wire control cabinets, to ensure the functionality of electrical components and to identify possible hazards from electrical and electronic systems.

Instructed person

Instructed persons have been informed of the tasks they were entrusted with as well as of potential hazards resulting from inappropriate behaviour.

They are allowed to operate and transport the device and perform simple maintenance activities (cleaning the housing, cleaning the fan).

The device is to be maintained and looked after by instructed personnel.

Personal protective equipment



Wear hearing protection!

Wear hearing protection when spending a longer period of time in the vicinity of the device.

Residual risks



Hazardous electric voltage!

Work on the electrical components must only be carried out by an authorised specialist company!



Hazardous electric voltage!

Before any work on the device, remove the mains plug from the mains socket!



Danger due to strong air current!

Risk of injury from parts being whirled up.

Before switching the device on, make sure that there are no loose parts located near air inlet or outlet!



Danger!

Improper handling entails a risk of injury. Only use the device as intended!



Danger!

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!

Behaviour in the event of an emergency

1. Immediately switch the device off via the emergency stop switch at the upstream distributor or the main switch at the device.
2. Remove persons from the danger area.
3. Disconnect the device from the electric circuit.

4. Do not reconnect a defective device to the mains power.

Information about the device

Description of the device

The high-pressure radial fan TFV 900 conveys up to 25,000 m³/h of air even over long hose distances with high counter-pressure. Freely blowing the devices reaches values of up to 33,600 m³/h. The fan motor is located outside of the main air stream and so enables the operation even in dusty surroundings.

The device is splash-proof and suited for use outside under rough and aggressive surrounding conditions.

The device can be connected to both intake and exhaust ducts.

The device is provided with a star-delta connection for smooth start-up.

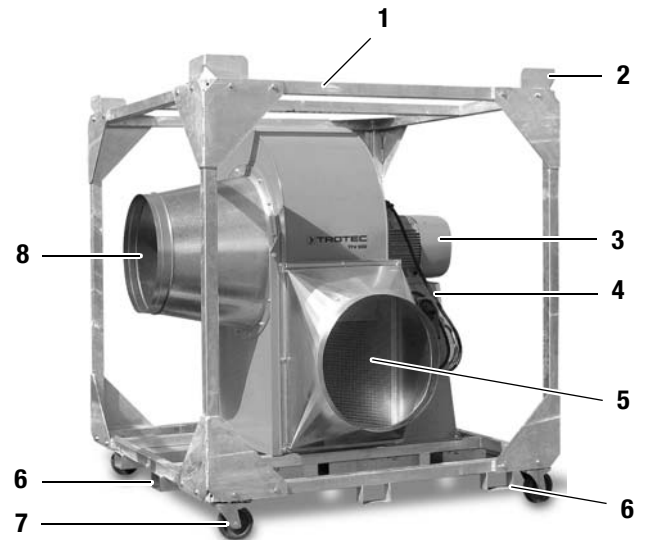
In the standard version the device is delivered without a frame for stationary application.

Optionally the device is also available with a frame (as depicted) for variable areas of use.

As for a further option the device is also available as ex-proof version for the use in potentially explosive surroundings; only these devices may be operated in an explosive environment.

The radial fan is integrated in a powder-coated steel housing with highly resistant two-component finish. The device is designed ready-to-install, the power box contains the relevant control and monitoring components for safe and functional operation.

Device depiction



No.	Designation
1	Frame (optional)
2	Crane lifting lugs (frame option)
3	Motor
4	Power box with control panel and mains connection with CEE plug 32 A
5	Air exhaust connection
6	Forklift pockets (frame option)
7	4 castors, lockable (frame option)
8	Air intake connection

Transport and storage

- Remove all packing materials which serve to protect the device during transport.
- Should the device be damaged, please contact the responsible dealer or manufacturer, where the purchase was made.
- The device with frame may only be lifted at the points provided with lifting gear (forklift pockets (6), crane lifting lugs (2)).
The carrying capacity of the lifting gear must be suitable for the weight of the device (see Technical data).
- The device without frame may only be lifted at the lifting lugs provided at motor and fan. The carrying capacity of the lifting gear must be suitable for the weight of the device (see Technical data).
- For transport with a forklift drive in from the motor side, that's where the centre of gravity is to be found. The other forklift pockets are for the later fine adjustment on site.
- Only wheel the device with frame on firm, level ground. Make sure that nobody is situated in the direction of movement. Avoid pulling the device, this increases the risk of tripping and injury.

The following should be observed **before** transporting the device using the **castors**:



Caution!

Trip hazard! Make sure that nobody is situated in the immediate proximity.

The following should be observed **before** transporting the device using **lifting gear**:



Danger!

Risk of injury from suspended loads. Make sure that nobody is situated in the immediate proximity.

- Only instructed persons are allowed to perform the transport by use of lifting gear.
- Consider the centre of gravity when transporting the load.

Storage

- Store the cleaned device in a dry location and protect it against dust.
- Before restarting the device, check the power cable for perfect condition.

Start-up

Installation of the device

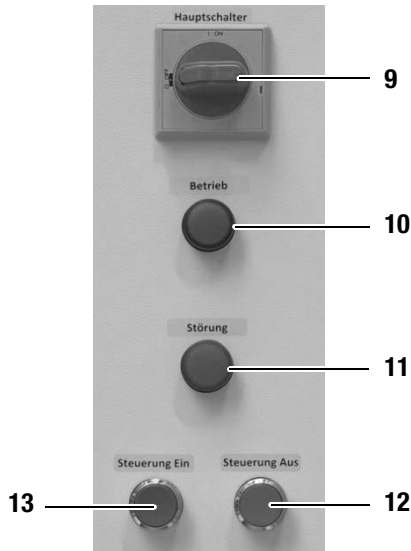
- Position the device on firm, dry and level ground. Depending on the permissible floor load capacity a panel for weight distribution may be required.
- When setting up the device, ensure a sufficient distance for air inlet and outlet as well as for operation (see Technical data).
- Ensure that extension cords are completely unrolled.
- Option with frame: **Apply the parking brakes prior to start-up** and secure the device against rolling away.

The following points are to be checked **before** start-up:

- Make sure that both air inlet and air outlet are free from objects and/or obstacles.
- Manually check the freewheeling of the fan:
 - Carefully rotate the rotor by hand, it should not rub against the housing.
- Connect the required air transport hoses with suitable tension belts with clamping lock to the air intake connection (8) or as needed to the air exhaust connection (5).
- Compare the values of the power connection to the technical data of the TFV 900. Observe the starting current of the device, the upstream fuse must be dimensioned accordingly.
- Before connecting the device to the mains, check the rotary field: **clockwise rotating field** required!
- First connect the fan plug to the power cable and then the cable to the distribution!

Operation

Control panel



No.	Designation
9	Main switch
10	Operation lamp
11	Fault lamp
12	Control off button
13	Control on button

Switch-on

- Turn the main switch (9) to position I.
 - The control unit is activated.
 - The device is ready for operation.
- Check the fan's direction of rotation!
 - To do so, **briefly** press the green Control on button (13) and **immediately afterwards** the red Control off button (12): the fan must be turning in the direction of the arrow. Observe the arrows at the housing, only then can proper fan operation be guaranteed!
 - If the fan rotates contrarily to the direction of the arrow, check the rotary field directly at the power box.
 - If the rotational direction is correct, the device can be switched on.
- Press the Control on button (13).
 - The Operation lamp (10) is illuminated.
 - The fan starts up smoothly in star operation and after a little while switches over to delta. Hence it supplies its maximum conveying capacity for continuous operation.

Switch-off

- Press the red Control off button (12).
 - The Operation lamp (10) goes out.
 - The fan resumes in rundown operation for a few seconds and then comes to a halt.

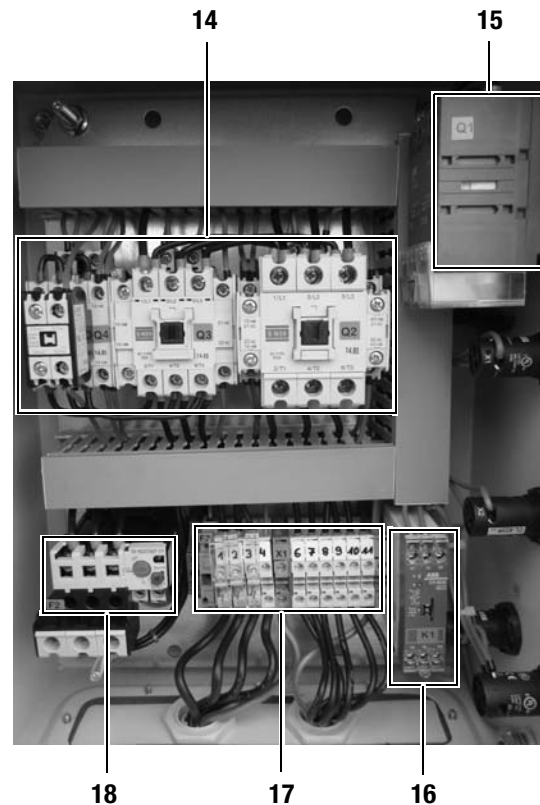
From this operating condition you can switch the device back on at any time.

Shutdown

- Switch the device off as previously described.
- Upon standstill of the fan (wait for the end of the rundown operation!) turn the main switch (9) to position 0.
- Now first pull the plug from the mains and only after that disconnect the plug connection directly at the device.

Power box

The following components are located in the power box:



No.	Designation
14	Changeover contactors Q3
15	Main switch Q1
16	Star-delta changeover switch for smooth start-up K1
17	Terminals 1...11
18	Motor protection switch F2 with blue reset button

Errors and faults

The accurate functionality of the device was tested during production a number of times. If malfunctions occur nonetheless, check the device according to the following list:

Fault	Cause	Possible solution
The motor does not start or automatically switches off again after a short period of time	Missing mains voltage	Check the power connection.
	Operation lamp (10) off	Press the Control on button (13).
	Fault lamp (11) illuminated	Check, whether the motor protection switch F2 (18) has tripped.
	Motor protection switch tripped	Investigate and eliminate the cause: <ul style="list-style-type: none"> • Louvers not free • Air resistance too high • Air transport hoses blocked or bent • Motor or motor bearing defective • Power cable defective • Foreign object in fan Upon elimination of the fault's cause: Acknowledge the fault at the motor protection switch by means of the blue reset button, then take the device back into operation.
The fan performance / air flow rate is not as expected	Wrong rotational direction of the fan	Check the rotary field and change it, if required.



Have the electric installation checked and, if required, defective parts replaced, but only by a qualified electrician.



Repair work may only be performed by qualified electricians or Trotec.

Maintenance

Trotec radial fans are designed for long hours of operation with minimum maintenance effort. Safe operation of the device requires all built-in components to be checked and cleaned after 6 months at the latest or after every 4000 operating hours as well as all damaged components to be replaced. Observe the lubrication and maintenance intervals as indicated on the fan info sheet.

Activities required before starting maintenance

- Do not touch the mains plug with wet or damp hands.
- Wait for the end of the rundown period if the device was in operation beforehand.
- Switch off the device at the main switch.
- Before any work, detach the mains plug!



Repair work may only be performed by qualified electricians or Trotec.



Cleaning the fan

You may use compressed air for a thorough cleaning of the fan. Do not use a high-pressure cleaner for the fan! Always pay attention to unusual sounds, if in doubt, consult the manufacturer.

Technical annex

Technical data

Parameter	Value
Type	TFV 900
Article number	1510002050
Air volume flow - freely blowing - at an air pressure of 1,900 Pa	33,600 m ³ /h 25,000 m ³ /h
Air discharge velocity	34.0 m/s 122.4 km/h
Fan stage	1
Max. air pressure	2,150 Pa
Max. transport medium temperature	80 °C
Nominal voltage	3/N/PE~ 400 V / 50 Hz
Rotary field	clockwise rotating field
Nominal current	32 A
Recommended fusing	32 A gL
Nominal capacity	18.5 kW
Surrounding conditions - permissible temperature range - type of protection	-20°C to +40°C IP 55
Mains plug	CEE 32 A
Engine start-up	star-delta changeover
Noise level (at a distance of 1 m)	82 dB(A)
Weight - without frame - option with frame	450 kg 920 kg
Dimensions (height x width x depth) - without frame - option with frame	1650 x 1200 x 1770 (mm) 2200 x 1950 x 1900 (mm)

Wiring diagram

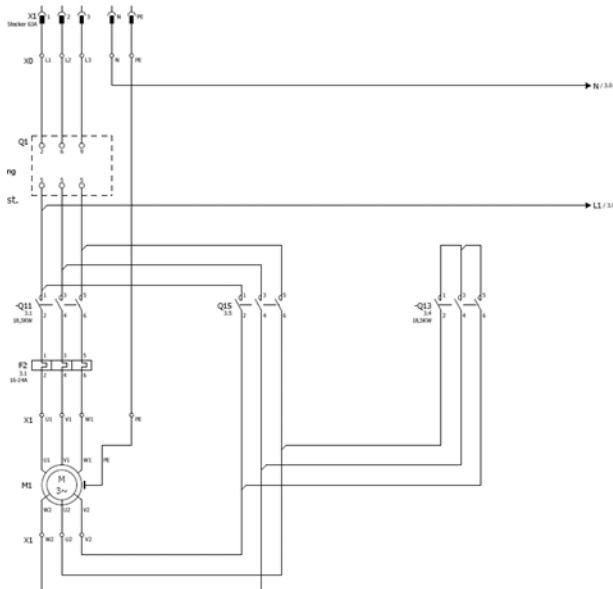
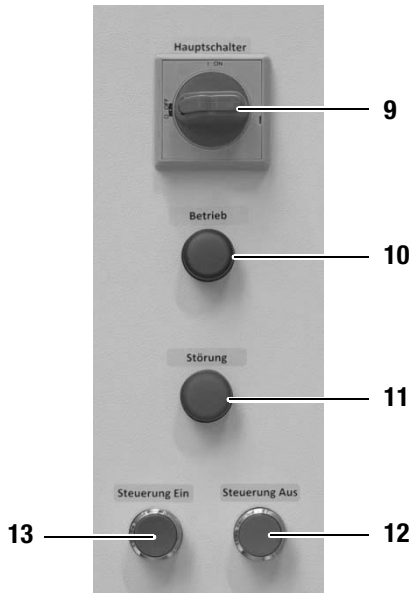
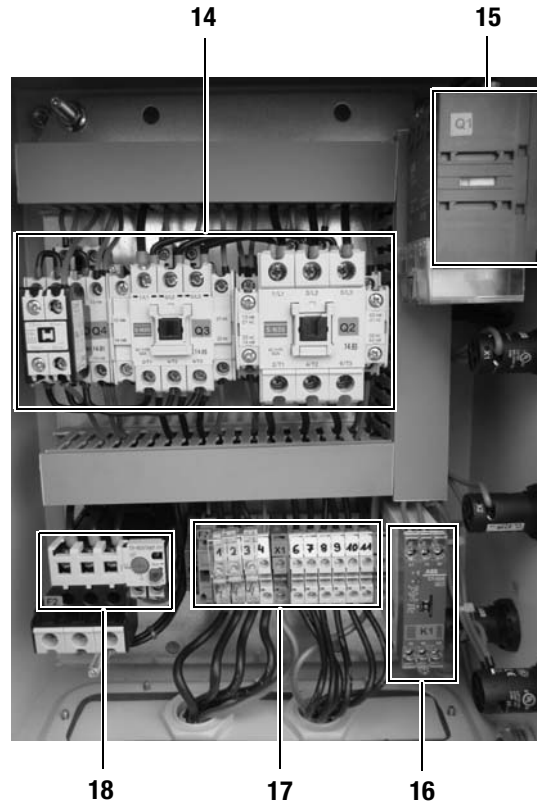
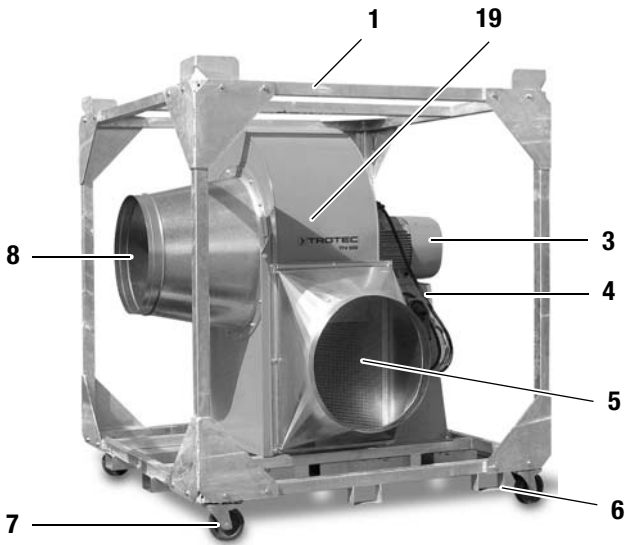


Illustration of spare parts

Note!

The position numbers of the spare parts differ from those describing the positions of other parts mentioned in this operating manual.



List of spare parts

No.	Spare part	Article no.	No.	Spare part	Article no.
1	Frame	1510002051	10	SP lamp green TFV 900	7141000625
3	SP motor TFV 900	7110000043	11	SP lamp red TFV 900	7141000626
4	see separate list (9/15 to 13)		12	SP button red TFV 900	7130000092
5	SP air exhaust connection d=630mm	7230000002	13	SP button green TFV 900	7130000093
5b	SP air exhaust connection d=600mm	7230000005	14	SP contactor control TFV 900	7140000122
7	SP castor TFV900	7600000245	16	SP changeover switch star-delta K1 TFV 900	7140000120
8	SP air intake connection TFV 900 d=630mm	7230000003	17	SP terminals TFV 900	7214000009
8b	SP air intake connection TFV 900 d=600mm	7230000004	18	SP motor protection switch F2 TFV 900	7140000119
9/15	SP main switch TFV 900	7130000091	19	SP rotor fan TFV 900	7150000007

Declaration of conformity (Translation of the Original)



EC Declaration of Conformity in accordance with EC Machinery Directive 2006/42/EC

Trotec GmbH & Co. KG

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herewith declares, that due to its design and construction, and in the version introduced by us, the following machinery conforms with the relevant fundamental requirements of the listed EC directives.

Important note:

In case of improper use, installation, maintenance etc. or unauthorized changes of the factory-supplied device version, this declaration loses its legal validity.

Device version: radial fan

Models: **TFV 900**

Year of manufacture: as of 2009

Applicable regulations: 2006/42/EC Machinery Directive
2006/95/EC Low Voltage Directive
2004/108/EC EMC Directive

Applied harmonised standards: EN 12100-1/2:2007 EN 60034-1:2007
EN 13857:2008 EN 60034-5:2001 + A1:2007
EN 60204-1:2006 EN 50081-2

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