

Operating Instructions

Direct driven centrifugal fans

(Translation of the original)

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BA-DDM-DD-TEA-TZA 7.2 - 07/2014

		DD
		DDM TZA
		TEA

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Further languages see www.nicotra-gebhardt.com or on request!

Revision index

Revision	Date
BA-TEA-TZA 6.2	03/2012
BA-DDM-DD-TEA-TZA 7.0	10/2012
BA-DDM-DD-TEA-TZA 7.1	01/2013
BA-DDM-DD-TEA-TZA 7.2	07/2014

1. Important information

Nicotra Gebhardt Fans are of state of the art design and comply with the requirements for health and safety of the EU Machinery Directive.

Nicotra Gebhardt Fans offer a high level of operational safety and a high standard of quality which is guaranteed through a certified Quality Assurance System (EN ISO 9001). All fans leave the factory after being subjected to testing and are provided with a test seal.

All fans however can be dangerous,

- if they are not installed, operated and maintained by trained personnel
- if they are not used for approved applications.

This can endanger the life and limbs of personnel, provoke material damage to buildings and equipment and influence the use of the product.



Attention!

These Operating Instructions must be read and observed by all personnel engaged on works involving fans!

The Operating Instructions

- describe the approved applications for the fans and protect against misuse.
- contain safety notes which must be closely observed.
- warn of dangers which can exist even with correct applications.
- give important information on safety and the economic use of the fan while ensuring the full benefits of the product are available.
- are to be complemented with the trade and national Standards, Regulations and Directives.

Nicotra Gebhardt accepts no responsibility for damage or breakdowns which can be traced back to non-observance of the Operating Instructions.

The manufacturer's guarantee does not apply following unauthorised and unacceptable conversions and alterations to the fan.

There is no responsibility accepted for resultant damages!

2. Safety Notes



This danger symbol identifies all safety and danger information concerning danger to life and limbs of personnel.

CAUTION

This draws attention to all information at all points in the Operating Instructions which must be particularly well observed in order to ensure the correct procedures for the work as well as helping to prevent damage and the destruction of the fan.

3. Technical Description

3.1 Product description DDM / DD / TZA / TEA

The centrifugal fans, with single (TEA) or double (DDM/DD/TZA) inlet and with direct drive through built-in motors in the fan output stream, are suitable for the transport of dust-free air and other non-aggressive gases or vapours.

The scroll casing, which is not gas-tight, is made of galvanised sheet steel and may optionally be provided with flange connections (see technical catalogue).

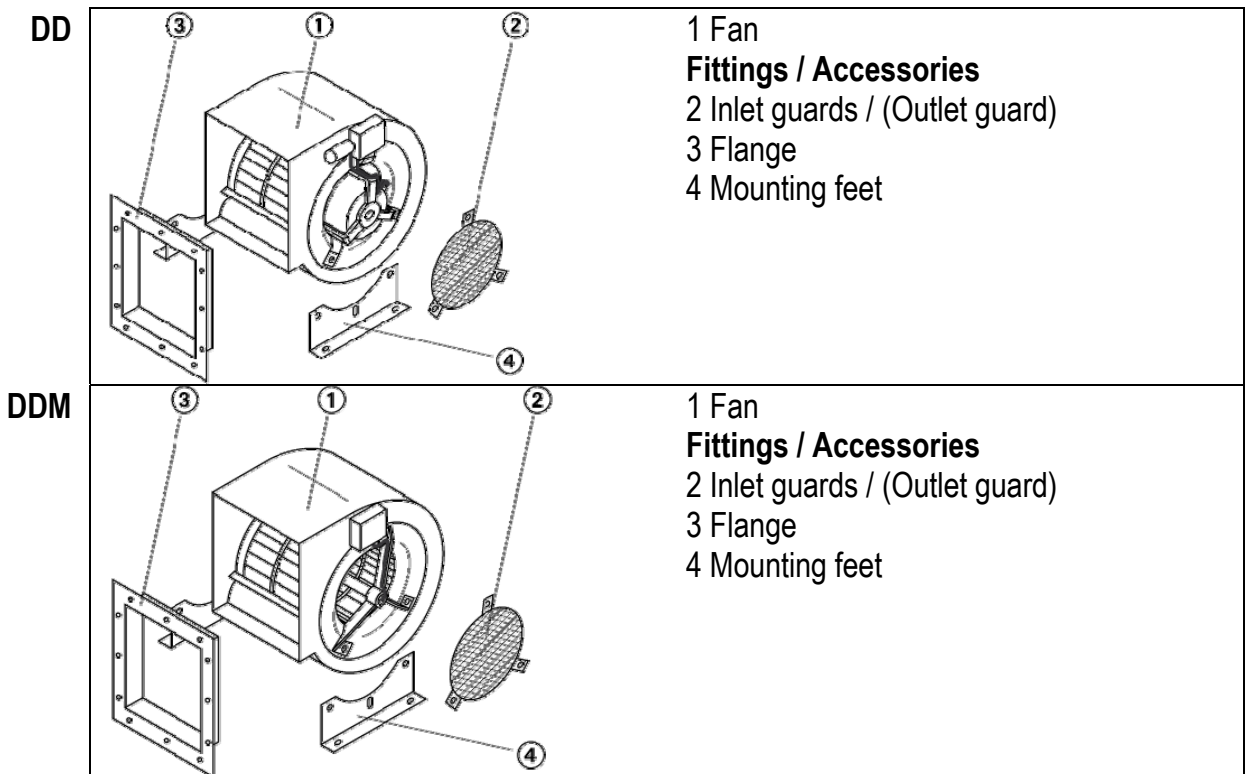
The cylindrical impeller with forward-curved centrifugal blades may be mounted directly onto the rotor of the external-rotor motor (DDM/TZA/TEA), or on the output shaft of the built-in motor (DD).

The built-in motor can be designed to protection classes IP 10/20/44/54 and thermal insulation either to class F or B, as specified on the number-plate applied to each product.

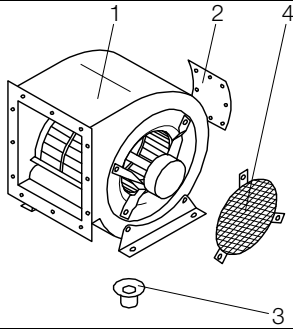
The motors may be provided with thermal contacts to prevent overheating (as described on the nameplate and on the wiring diagram of each product).

Connection may be done by a terminal box, connection stripe or loose cable, with or without a connector

If the motor is to be set up outdoors or if very damp air is to be moved, then a condensation drain plug - available as an accessory - should be inserted in the lowest point in the casing.

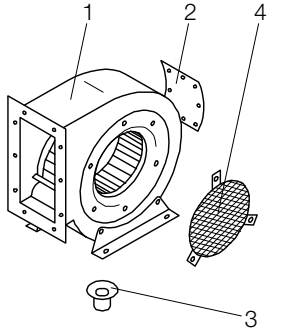


TZA



- 1 Fan
- Important accessories**
- 2 Inspection cover
- 3 Condensation drain plug
- 4 Inlet guard

TEA



- 1 Fan
- Important accessories**
- 2 Inspection cover
- 3 Condensation drain plug
- 4 Inlet guard



The fans are intended for incorporation into equipment and do not have their own contact protection fitted as standard. The appropriate protective measures are to be taken in accordance with DIN EN ISO 13857. Only then the fan can be set in operation!

3.2 Technical Data

Technical data and the permissible limits are to be taken from the type plate, the technical datasheets or the appropriate technical catalogue and must be adhered to.

3.3 Authorised use

The fans are intended for the transport of dust-free air and other non-aggressive gases or vapours.

Permissible transport media temperatures:

Fan Type	DD (Standard)	DDM (Standard)	TZA	TEA	Special
Temperature	-20°C ... +40°C				See type plate



Any installation deviating from the above shall be considered unauthorised. Nicotra Gebhardt will not be responsible for any injury to personnel and/or material damage resulting from any deviations from the above!

Should any control equipment utilising electronic components be employed, the recommendations of the manufacturer are to be observed concerning the avoidance of electromagnetic radiation (EMV) (through suitable earthing, cable lengths, cable screening, etc.).

3.4 Improper use

An improper installation would be e.g. the transporting of :

- media with unacceptable high or low temperatures
- aggressive media.
- very dusty media.

The results are: Bearings damage, corrosion damage, loss of balance, vibration, deformation, abrasion damage.

Unauthorised operation

- No operation above the indicated rpm (see type plate, data sheet)!
- No operation at rpm ranges with increased vibration (resonance)!
- No operation at rpm ranges out of permitted fan curve area (unstability of flow pattern)!
- No operation if fan becomes polluted!



Danger points:

There can be injury to personnel and material damage through impeller breakage, shaft breakage, fatigue failure, fire from spark creation.

4. Transport

4.1 Transport damage

Deliveries are to be immediately checked in the presence of the carrier as being intact and complete.

Fans must be carefully transported!

Improper transport as e.g. unyielding, tilted positioning can lead to:

CAUTION

- **the impeller becoming jammed**
- **the shaft becoming deformed**
- **the occurrence of bearing damage**

4.2 Transport safety

- The transport material is to be selected according to the weight and packaging of the fan (type plate, data sheet)
- Ensure that loading is done in accordance with the instructions
- Four-point lifting is to be provided when transporting by crane (2 slings)

The attachment points on the fans are:

- packaging
- fan casing (slings)
- carrying unit (Series TZA/TEA)

The following are not attachment points:

- bearing supports
- inlet and outlet flanges
- spacers

4.3 Intermediate storage

For intermediate storage of the fans the following points must be observed:

- The fan is to be stored in its transport packaging or this can be added to in accordance with external influences.
- The place of storage must be dry and dust free and must not have high humidity (<70%)
- Max. permissible storage temperature: -20°C to +40°C.

5. Mounting / Installation

5.1 Safety notes



- Mounting may only be carried out by trained personnel in accordance with these Operating Instructions and with regard to the regulations in force.
- Safety devices that have been removed for mounting work must be replaced immediately afterwards, and before the electrical connection is made.
- The fans must be mounted such that secure fixing is guaranteed at all times during operation.
- Fans must be fixed to plinths or base frames.

CAUTION Shoring up the weight at other points leads to fan damage and is dangerous

5.2 Installation site

- The installation site must be suitable for each fan with regard to type, composition, ambient temperature and ambient medium (points 3.3 and 3.4 are to be observed).
- The supporting construction must be level and have sufficient bearing strength.
- When installing outdoors or if very damp air is to be moved, then a condensation drain plug - available as an accessory - should be inserted in the lowest point in the casing.

5.3 Installing / Fixing

- The fan or base frame must be fixed without stresses to the supporting structure.
- If feet are part of the delivery (mounted or not), set up the feet in the desired position before final fixing!

CAUTION Stresses can lead to bearing damage and fatigue failures! They also affect the functioning of the fan.

- No forces should be transferred from other parts of the plant.
- Use flexible connecting supports for duct connection.
- Ensure even spring of the vibration dampers.

5.4 Electrical connection

5.4.1 Safety notes



- The electrical installation of the fans and components may only be carried out by trained personnel in observance of these Operating Instructions and the regulations in force.
- The following Standards and guidelines are to be observed:
 - EN 60204-1, IEC 60364-1 / DIN VDE 0100
 - site regulations of the Electricity Supply Companies
- Equipment in accordance with DIN EN 60204 is to be installed as protection during unexpected events (e.g. an isolation switch for inspections).

5.4.2 Motor / Motor connections

Motor connections are to be taken from the attached wiring diagram.

5.4.3 Motor protection

The motors are equipped with thermal contacts. (see technical catalogue for exceptions). The thermal contacts either switch directly (in sequence with the motor windings) or in connection with our motor full protection switching device if the maximum permissible temperature of the motor windings is exceeded and thus guarantees optimum motor protection (observe the circuit diagrams!).

CAUTION

Fuses or circuit breakers do not provide sufficient motor protection. Damage due to insufficient motor protection invalidates the manufacturer's guarantee.

5.4.4 Motor starting

Motors with a nominal rating of 4kW can generally be direct started.

Motors with a nominal rating >4kW are usually star-delta or soft started.

In all cases the power limitations provided by the existing power supply company must be taken into account.

In the event that plant conditions necessitate a direct start the suitability of the fan design is to be confirmed with Nicotra Gebhardt.

The motors are designed for **S1** continual operation. With more than three starts per hour the suitability of the motor is to be confirmed by Nicotra Gebhardt.

6. Commissioning

6.1 Safety checking



- It is to be checked whether all mechanical and electrical safety devices have been fitted and connected.
- According to the type of installation of the fan the inlet and discharge openings as well as the drive shafts must be fitted with protection devices in accordance with DIN EN ISO 13857!
- The appropriate protection grids are available and must be expressly ordered.
- If the surface temperature of accessible fan parts exceed +70°C (DIN EN ISO 13732-1) isolating protection devices must be fitted.

Before commissioning the following checks must be carried out:

- The ducts and the fan must be checked for foreign bodies (tools, small components, building debris, etc.)
- The free running of the impeller must be checked by hand.
- The power setting, voltage and frequency for the mains connections must be checked against the fan or motor type plate.
- Connected control devices must be checked for functioning.
- Inspection openings (if they exist) must be closed.



The fan may only be commissioned if all the safety devices have been fitted and if it is ensured that the impeller has been safeguarded according to DIN EN ISO 13857!



The suitability of protection devices and their fixtures to the fan have to be evaluated within the complete security concept of the installation.

6.2 Test run

The fan should be switched on briefly to check that the direction of rotation of the impeller agrees with that indicated by the arrow. In the event of the motor running in the wrong direction the poles are to be changed over while observing the electrical safety instructions.

6.3 Check the current consumption

CAUTION

On reaching the operating speed of the fan immediately measure the current consumption and compare it with the nominal current on the motor or fan type plate. In the event of a substantial overcurrent switch off immediately.

6.4 Check for quiet running

CAUTION

Check on the quiet running of the fan. There should be no unusual rocking or vibration. Check for untypical bearing noises.

7. Upkeep / Maintenance

7.1 Safety notes



Before working on the fan it is imperative to ensure:

- The drive motor is separated from the mains on all poles!
- The impeller has come to rest!
- The surface temperature has been checked to prevent burning!
- There is no possibility of an uncontrolled running of the fan during the maintenance work (e.g. through an isolating switch)!

Any debris or dangerous materials which have arrived in the fan with the transported medium must be removed using a suitable method.

Fan operation may resume after the safety checks of Section 6 "Commissioning / Safety checks" have been carried out.

Only limited work may be carried out while in the operating condition and in observance of the safety and accident prevention regulations:

e.g. measurement of vibration



Non-observance of these points endangers life and limb for the maintenance personnel.

CAUTION

If the state of the fan does not allow adapted action for repair it has to be put out of order immediately and to be replaced if required!

7.2 Recommendations For Maintenance

In order to assure a safe operation we recommend to make checks of the fans in regular intervals by specialised service personnel or by a specialised company and to document the result of these checks.

The type, magnitude, and interval period as well as all works which may be necessary in addition depend on the use and the surrounding conditions of the fan and have to be determined case by case.

The recommendations for checks and maintenance acc. to VDMA 24186-1 may be found at the internet site: www.nicotra-gebhardt.com

CAUTION

No high pressure cleaners (steam rod cleaners) are to be used!

7.3 Intake and pressure side accessories

Flexible sleeving (compensators) between the fan and plant parts are to be checked at regular intervals.

CAUTION

Unsealed sleeving leads to breakdowns and danger from escaping transported medium and must be replaced.

7.4 Spare parts

Only original Nicotra Gebhardt spare parts in accordance with the Spare Parts List are to be used.

CAUTION

Nicotra Gebhardt accepts no responsibility for damages resulting from the use of other parts!

8. Faults

Deviations from normal operating conditions always lead to functional breakdowns and should be looked for immediately by maintenance personnel.



Longer lasting faults can result in the destruction of the fan and give rise to damage in plant parts and injuries to personnel!

In the event that the maintenance personnel cannot eliminate the fault, please make contact with our mobile customer service.

9. Service

We offer to all our partners the following services:

- **Mobile Customer Service**
 - **Spare Parts Service**
- Telephon +49 (0)7942 101 384
Telefax +49 (0)7942 101 385
E-Mail service@nicotra-gebhardt.com
www.nicotra-gebhardt.com

Translation of the original

EC-Declaration of Conformity

We hereby declare that the product named below, based on the efficiency grade of the respective fan type and the measurement and efficiency category specified in the technical documentation, complies with the ecodesign requirements set by Commission Regulation (EU) No 327/2011, according to Annex I, Section 2.

Designation:	Centrifugal fan with forward curved blades (with scroll)		
Fan type:	TZA 01-0200-4E	–	–
TZA E1-0112-2E	TZA 01-0225-4E	–	–
TEA E1-0130-2E	TEA 01-0200-4D	TZA 01-0200-4D	–
–	TEA 01-0225-4D	TZA 01-0225-4D	–
–	TEA 01-0250-4D	TZA 01-0250-4D	–
–	TEA 01-0280-4D	TZA 01-0280-4D	TZA 01-0280-6D
–	TEA 01-0315-4D	TZA 01-0315-4D	TZA 01-0315-6D
–	–	TZA 01-0355-4D	TZA 01-0355-6D

Serial no: See type plate
 Manufacturing date: See type plate

Relevant EC Directives:
EC-Directive for the setting of ecodesign requirements for energy-related products (2009/125/EC)

Waldenburg, 12th June, 2014



i.V. I. Stöbe
 Head of Production



i.V. Dr. J. Anschütz
 Research & Development Director

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Translation of the original

EC-Declaration of incorporation

The manufacturer: **Nicotra Gebhardt GmbH**
Gebhardtstrasse 19-25, 74638 Waldenburg, Germany

herewith declares, that the following product:

Product designation: Centrifugal fan, direct driven

Type nomination: **DDM / DD / TEA / TZA**

Serial n°: see type plate

Year of production: see type plate

qualifies as a partly-completed machine, according to Article 2, clause "g" and does comply to the following basic requirements of the Machine Directive (**2006/42/EC**): Annex I, Article **1.1.2; 1.3.7; 1.5.1**

This partly-completed machine must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machine Directive (2006/42/EC).

The following harmonised standards ¹⁾ have been applied:

DIN EN ISO 12100	Safety of machines – General design principles
DIN EN ISO 13857	Safety of machines – Safety distances to hazardous areas
EN 60204-1	Safety of machines - Electrical equipment of machines, Part 1: General requirements

Applied, national standards and technical specifications ²⁾ particularly:

VDMA 24167	Fans – Safety requirements
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The manufacturer is committing himself to make the special documents of partly-completed machine available to any state authority if required.

Waldenburg, 12th June, 2014

Responsible for the documentation: Michael Hampel

i.V. I. Stöbe

Head of Production
i.V. I. Stöbe

i.V. Dr. J. Anschutz

Research & Development Director
i.V. Dr. J. Anschutz

1) The complete listing of applied standards and technical specifications see manufacturer's documentation

2) As far as harmonised standards are not existing

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