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1. General chapter

These fans have especially been designed for the use with exhaust arms, telescopic arms and exhaust cranes.

The impeller wheel and the powder coated housing consist of spark proved aluminium casting. The impeller wheel is balanced statically and dynamically. Therefore, excellent operating characteristics are achieved and the fan produces a very low noise level.

The housing is powder coated. The fan is supplied with snap fasteners for an easy and fast installation to the *KEMPER* wall brackets, exhaust arms for rail channels, grinding tables, hose reel motor driven etc. without any additional accessories.

1.1 Introduction

This manual is a part of the product and can only be used for the unit type *KEMPER* fans series M. Please read this instruction and installation manual carefully, before commissioning. It contains important information and details concerning the safe operation of the unit. Please mind the details for a safe handling. Keep this manual and hand it to the successor, when changing the operator. This instruction and maintenance manual has to be accessible to the staff at any time. Subject to change without notice. In case of doubt contact the manufacturer.

1.2 Exclusion of liability

It is not in accordance with the regulations, if the unit is used other than explained in this instruction and maintenance manual. The manufacturer is not liable for damage which is caused by improper use. Modifications on the unit are prohibited. The unit can only be used, if it runs flawless. Any misuse will lead to invalidity of the guarantee, the warranty and general liability of the manufacturer.

1.3 Copyright

The Copyright of this instruction manual lies with the *KEMPER GmbH*. Any duplication, even on electronic data medium, has to be reported in written form and approved by the manufacturer. The reprint - or an extract - is prohibited. Misprints and technical modifications reserved.

2. Safety

To prevent accidents please note the following safety information. Only if followed correctly injuries, damage to property or machines can be avoided.

2.1 Safety symbols

The safety symbols as shown below show in this manual the activities and circumstances of potential risk. It is important to follow the safety precautions as recommended. Not following the safety precautions may lead to damage to persons or machines.



Attention, general safety information
Take notice of the notes which follow the symbol.



Warning of high voltage
This work may only be carried out by qualified staff.



Warning of hot surface
Risk of burning or scalding. Non adherence could result in damage to persons.

Non adherence to the instructions in this manual can result in serious injuries, damage or modification of the product or even in life threatening situations and can also result in losing the claims for damages.

2.2 Intended application

Fans of the M series may only transport extracted air. It is not in accordance with the regulations, if the unit is used other than explained in this manual. The unit may not be used to exhaust very moisture, explosive, aggressive or poison substances. The temperature of the transport medium may not rise above +60 °C. Dirt and solids have to be filtered out, before the air is entering the fan.

The environmental temperature of + 40 °C / -20 °C has to be maintained.
The fan is not suited to be installed in an explosive atmosphere or to transport explosive substances.



The fan may not be modified

2.3 Improper use

If the unit is used other than described in chapter 2.2, the guarantee will get invalid and the manufacturer is no longer liable. The use of the unit is considered as improper use, if the unit is used when it is damaged, if there are parts missing or damaged as well as if it is modified in a mechanical or electrical way.

2.4 Protective circuit

Before commissioning the fan, the drive motor of the fan has to be secured with a motor protection switch.



The fan may only be connected by qualified staff!

2.5 Temperature

During operation, the housing of the fan is absorbing the temperature of the transported air. If the temperature of the housing reaches more than +50 °C, due to the transportation of hot material, the operator has to protect the fan from direct contact.



If the housing of the fan is reaching a temperature of more than +50 °C, there is a risk of burning!

2.6 Suction performance



The suction performance of the M series fans is very high; this can result in a risk of injury! Clothes, hair and objects can be sucked in the intake sleeve of the fan. During the operation of the fan, persons or objects may not be near the intake opening.

The protective grid may only be removed, if a tube or pipe of at least 1 meter is connected to the fan, or if other measures are taken to prevent accidents.

Do not operate the fan if the intake opening is open! This may result in a risk of injury, due to the impeller wheel, which is no longer protected!

2.7 Blow out performance



The blow out performance of the fan is very high. The air flow as well as the exhausted objects are of very high speed, when they are projected from the fan.

The fan may never be operated with an open blow-out sleeve and has therefore to be secured with a protective grid, according to DIN EN ISO 13857.

It is necessary to take measures in order to prevent persons to reach into the fan.

2.8 Noise emission

The noise level produced by the fan changes with the performance. In some cases noise insulation is necessary.



We recommend the user to measure the noise level.

The installation of noise insulation has to be carried out by the user, so that the maximum noise level which is tolerated by law is not exceeded.

The sound pressure level of fans which freely extract and blow out and rotate at maximum speed should be 80 dB(A).

The sound pressure level has been calculated by holding a measuring instrument with a distance of 1 meter to the machine surface (blow out opening) and 1,6 m above the ground; according to the EG machine guideline 2006/42/EG.

3. Installation

3.1 Transport

Before installing and/or commissioning the fan, check if there is damage to the parts of the fan. The fan has to be protected from moisture and may not be stored outside unless it is protected.

The fan may only be transported e.g. by hoisting devices, if the hoisting devices or a load bearing devices are having enough load capacity. Take the necessary measures during hoisting or transporting the fan, in order to prevent accidents and to guarantee a safe hoisting and transporting.

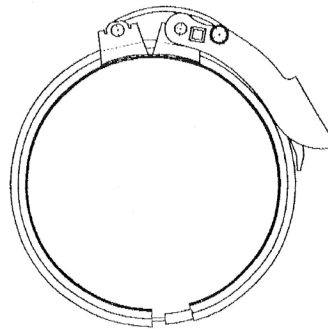
3.2 Setting up and Installation

- The fans may only be operated if protected from weather.
- Protect the fan from impact- or swivel load.
- Make sure that the motor of the fan is sufficiently ventilated and keep an environmental temperature of +40 °C / -20 °C.



An environmental temperature above or beneath the given degrees can result in damage to the electrical drive!

- Open intake - or blow out sleeves have to be covered by protective grids, according to DIN EN ISO 13857.
- The fan is supplied with snap fasteners Ø 160 mm for the sleeves (Part no. 1460013) for an easy and fast installation to the *KEMPER* wall brackets, - grinding tables, - hose reel motor driven etc. without any additional accessories.



Snap fastener Ø160 mm for the sleeve

3.3 Electrical connection

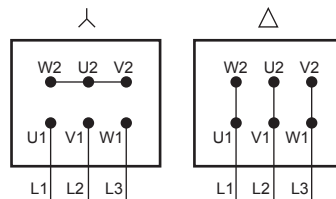
The electrical connection has to be carried out according to the circuit diagram in the terminal box of the electrical drive and according to the local regulations.



The electrical connection of the fan may only be carried out by qualified staff!

Depending on the delivered fan type (see table in chapter 6.1), the attached drive motor can be a three-phase motor or a single-phase alternating current motor. The drive has to be secured with a motor protection switch. You can find an earth conductor in the terminal box of the drive.

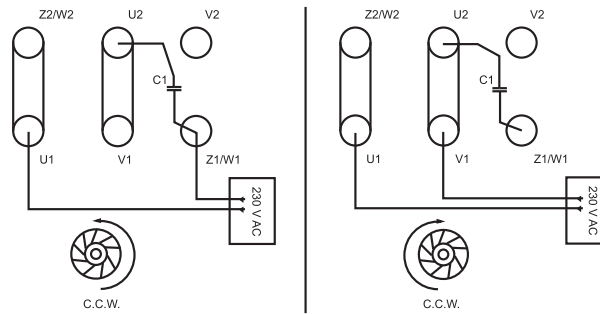
3.3.1 Connection plan for three-phase fans



Three-phase current connection plan

- ⋈ - Circuit (high voltage)
- △ - Circuit (low voltage)

3.3.2 Connection plan for single-phase alternating current motor



Single-phase connection plan

3.3.3 Testing the rotation direction

The rotation direction of the impeller wheel has to be tested before operating the fan. The rotation direction has to correspond with the arrow on the housing.

4. Commissioning

Connect the fan as explained in chapter 3.3 of the instruction and installation manual. Please also note chapter 2.4 Protective circuit



The electrical connection of the fan may only be carried out by qualified staff!

If during the operation of the electrical drive the current consumption is exceeded, check if the rated voltage and the rated frequency correspond with the data of the fan (type plate of the drive)

- Check all phases if there is a phase failure.
- Check if there is voltage (loss of voltage).
- Check if the fan is correctly connected according to chapter 3.3.1 / 3.3.2 .
- Check if the impeller wheel is blocked by objects.

If the drive does not run, even if connected properly etc., please contact the dealer or the *KEMPER* service team.



The ventilator may only be operated if it is connected to the main machine and if all necessary safety measures are taken and if all requirements according to the EG machine guideline regarding safety and health are met.

5. Maintenance

The fans are basically maintenance free. Please check regularly the function and condition of the impeller wheel.



The fan may only be checked, if it is not running. Make sure that the fan can not be switched on by accident.

Only the manufacturer may repair the fans. We are not liable if the fans are repaired by a third party.

6. Technical data

The following data are intended for the standard design. The data for special fans can differ (see chapter 6.2 / name plate).

6.1 Performance data

	92101	92102	92103	92104	92105	92106	92104100	92104116
Max. extraction capacity [m³/h]	1.000	1.000	1.000	2.000	2.000	2.000	2.200	2.200
Max. increase of the total pressure [Pa]	350	350	350	1.400	1.400	1.400	1.700	1.700
Max. allowed rotation speed of the fan [U/min]	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Theoretical motor rotation speed [U/min]	1.500	1.500	1.500	3.000	3.000	3.000	3.000	3.000
Voltage [V]	3 x 230/400	1 x 230	3 x 500	3 x 230/400	1 x 230	3 x 500	3 x 230/400	3 x 500
Frequency [Hz]	50	50	50	50	50	50	50	50
Motor power [kW]	0,55	0,55	0,55	0,75	0,75	0,75	1,1	1,1
Weight incl. motor [kg]	ca. 23	ca. 23	ca. 23	ca. 23	ca. 23	ca. 23	ca. 24	ca. 24



Before connecting the fan, note the rated current on the name plate of the electrical drive.

6.2 Name plate

The illustration of the name plate is just an example and can differ from the used motor.

KEMPER		EN 60034	EFF2
Art.-Nr. 1300025		AS.MOT 7AA 80M-02	IM B5
No 10/145974/013 Isol.KI F		IP 55	
50 Hz	Δ/λ 230/400 V		
1,1 kW	4,2/2,4 A		
cos phi 0,87	2845/min		
CE	Δ/λ 220 - 240/380-420 V		
	4,25 - 4,35/2,45 - 2,5 A		

Motor name plate

Declaration of Conformity

The manufacturer: *KEMPER GmbH*
Von-Siemens-Str. 20
D-48691 Vreden

Mr. Manfred Könning is authorized to compile the technical documentation.

As explained in our sole responsibility that the product to which this declaration relates is in conformity with the below standards or normative documents. This explanation loses its validity, if a change not co-ordinated with the manufacturer in written form is made.

Description: Fan series M
Part No.: 92 101 – 92 106
92 104 100 – 92 104 174

The above mentioned unit is an incomplete unit according to article 2g and is meant to be connected to another unit or equipment. The specific technical documents according to the appendix VII B have been compiled and are transferred to the national authority, if demanded.

This incomplete machine corresponds to the following relevant regulations:

2006/42/EG Machine safety guideline
2004/108/EG Low-voltage - guideline

Applicable harmonized standards (or parts of it), especially:

EN 60204-1:2007-06 Electrical equipment of machines
EN 12100-1 Security of machines
Basic concepts - general principles for design
Part 1: Basic terminology, methodology
EN 12100-2 Security of machines
Basic concepts – general principles for design
Part 2: Technical principles

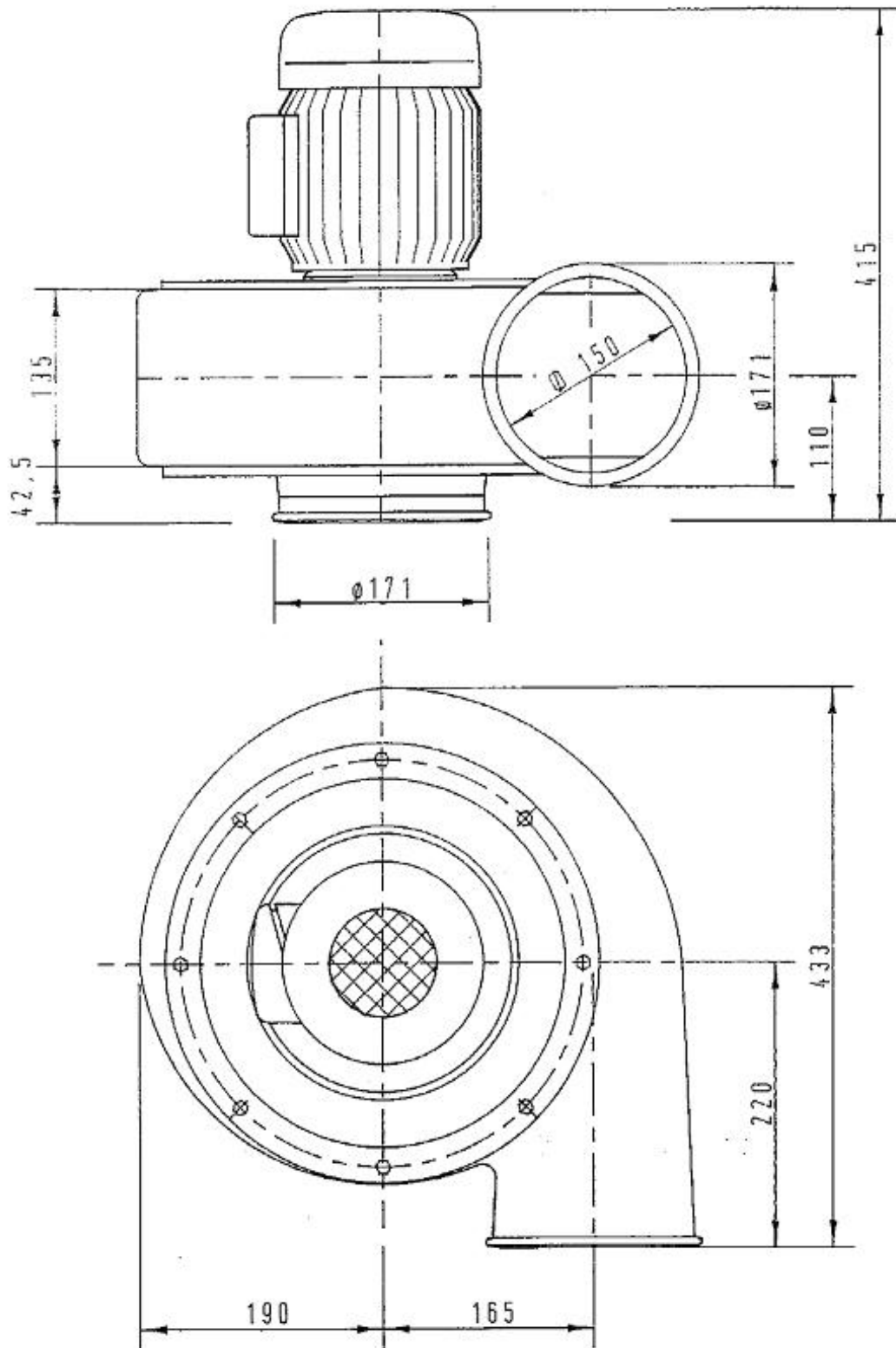
The above mentioned unit may only be commissioned, if the to be connected unit meets the machine guideline 2006/42/EG.

Vreden, den 01.12.2009
KEMPER GmbH



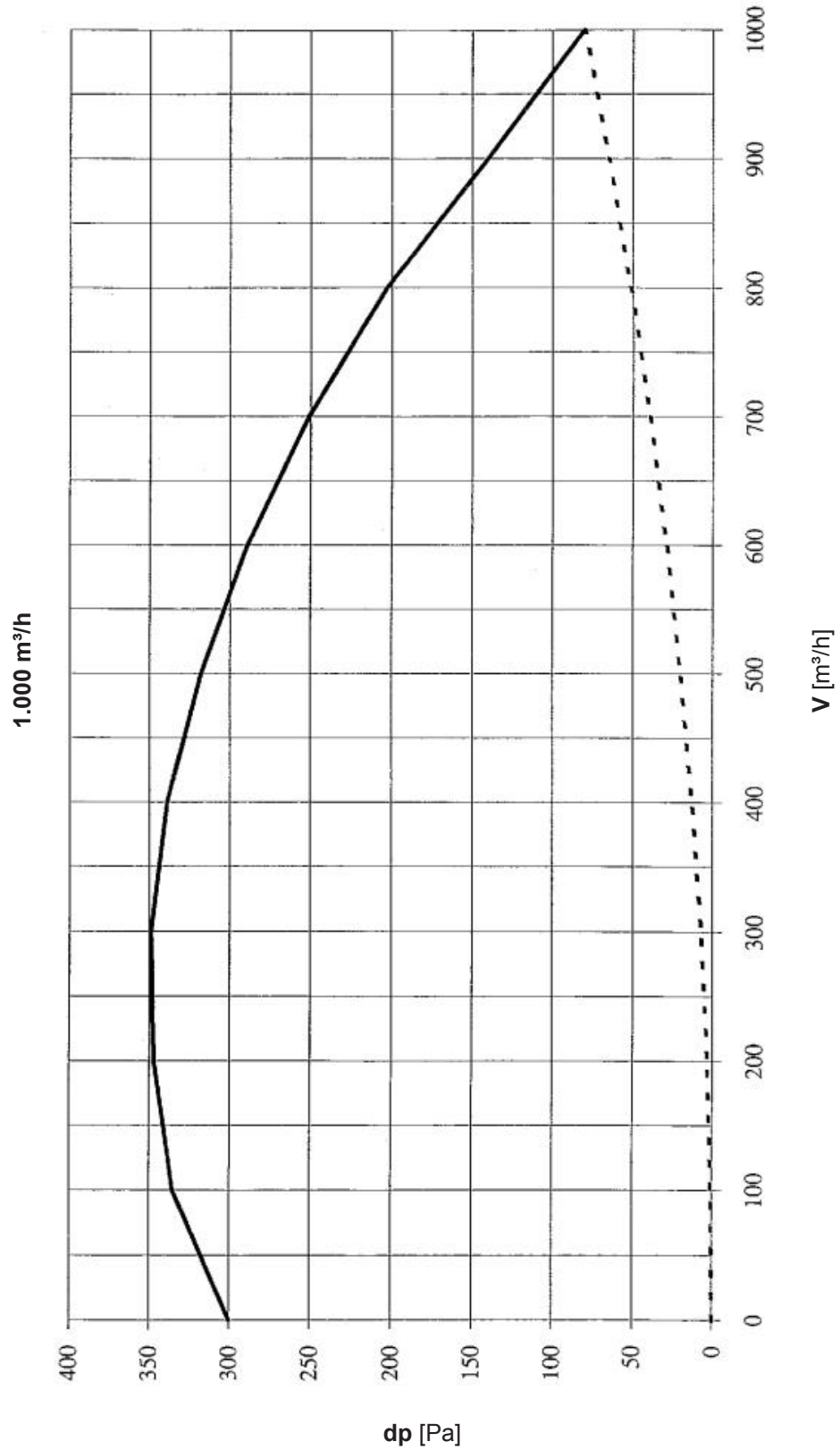
Dipl.-Ing. M. Könning
(Chief Technical Engineer)

6.4 Abmessungen
6.4 Dimensions
6.4 Wymiary



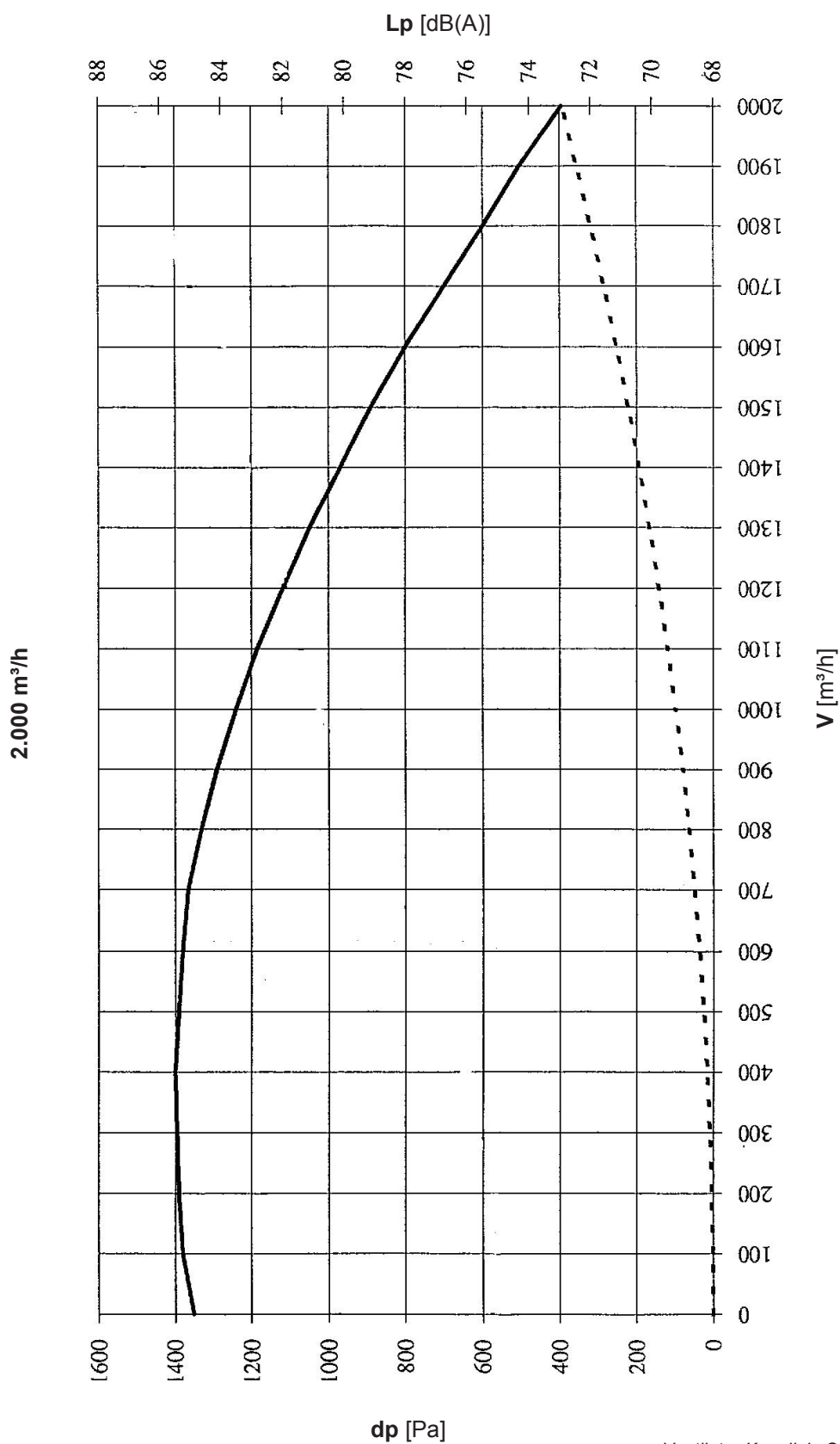
Abmessungen
Dimensions
Wymiary

- 6.5 Kennlinien
- 6.5 Curves
- 6.5 Charakterystyka przebiegu krzywej

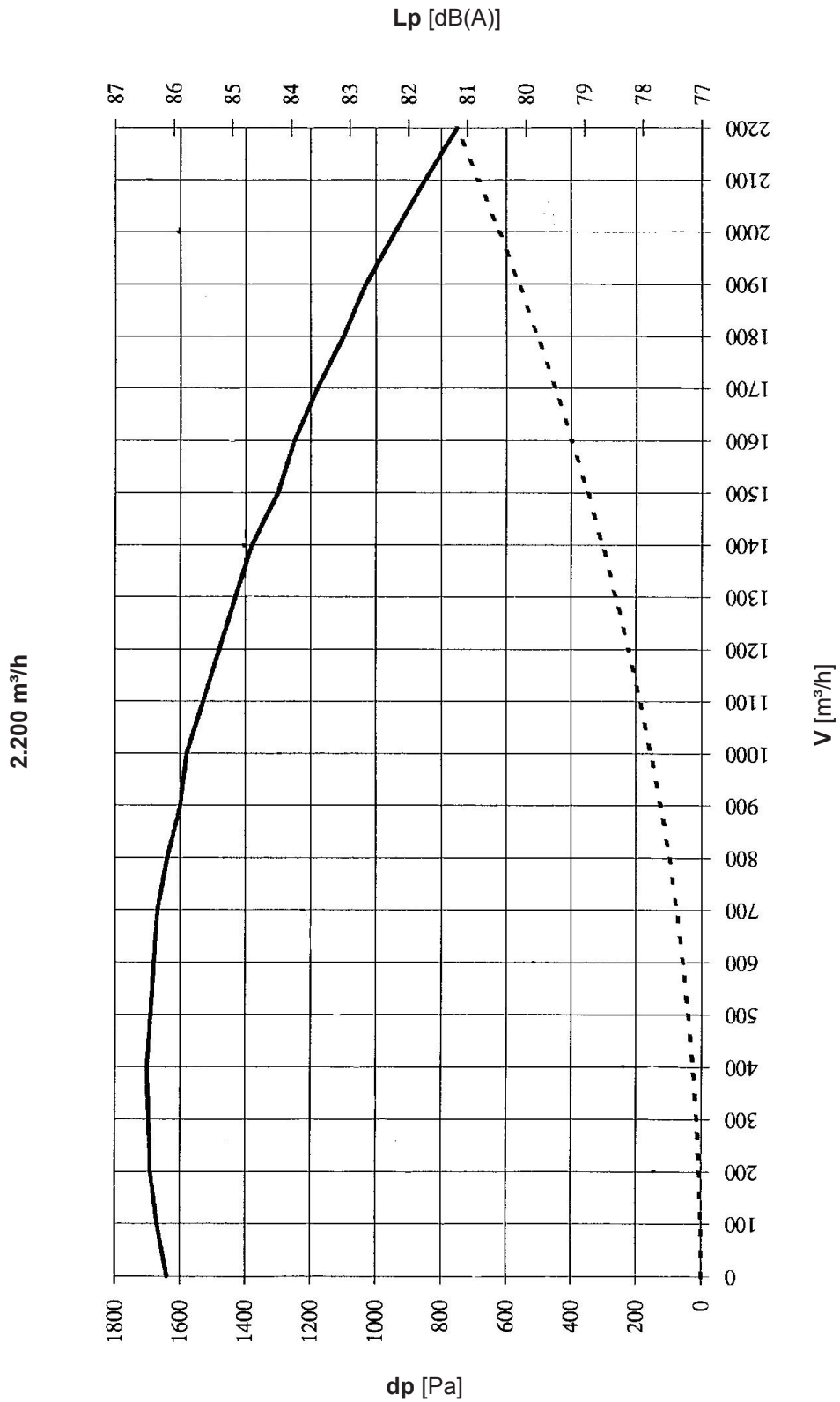


— Gesamtdruckerhöhung
 Total pressure increase
 - - - - - Dynamische Druckerhöhung
 Dynamic pressure increase

Ventilator-Kennlinie Serie M
 Fan curve series M
 Charakterystyka i przebieg krzywej w serii M



Ventilator-Kennlinie Serie M
 Fan curve series M
 Charakterystyka i przebieg krzywej w serii M



Ventilator-Kennlinie Serie M
 Fan curve series M
 Charakterystyka przebiegu krzywej serii M