

ATEX

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EXPLOSION PROTECTION ACCORDING TO EUROPEAN DIRECTIVE

9/94/EG

ARTICLE 100 a

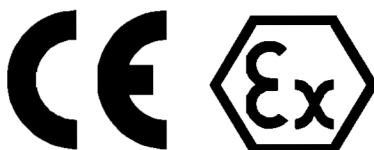
ATEX
ATEX 100
ATEX 100 a

ATEX 95

**Introduced by law and valid since 01.07.2003
in the member states of the European Community.**

B, DK, D, GR, E, F, IRL, I, L, NL, A, P, FIN, S, UK

(01.05.04 : EST, LT, LV, PL, H, CZ, SL, M, CY)





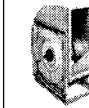






























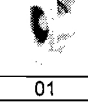







**ATmosphère EXplosible
DIRECTIVE 94/9/EG**

GebhardtVentilatoren

26.01.2005 2

ALL RV CENTRIFUGAL FANS

	1	2	3	3G	5	6	7	8	9
RER									
RZR									
									
TZR			TZR B2-Z	TZR 04					
VZR		VZR 72							
RZM								RZM 18	
REM									
TEM									
RLM			RLM 53		RLM 55				
RZA									
RZP									
TEA									
	E1	01	F1						
TZA									
	E1	01	61	94					

GebhardtVentilatoren

26.01.2005

3

3 G

II	Apparatus Group II. Non electrical apparatus except mining.
3	Category 3 (inside and outside) applicable in zone 2
G	Gas medium
c	Explosion protection by construction safety
T3	Temperature class T3 for transportation of gases with ignition temperature $\geq 200^{\circ}\text{C}$
IIB	Explosion group (s. TAB)

TYP	II 3G c T3 IIB (inside and outside)							
RER	11	12	13	13G	15		17	
	0200-0710	0200-0710	0200-1000	1320			0200-1000	
RZR	11	12	13	13G	15			18 19
	0200-0710	0200-0710	0200-1000					0400-1000
TZR	04							
				0210				
VZR	71	72						
	0200-0710	0200-0710						
RZM			13		15			18
			120-1800					0400-1000
REM	11		13					18 19
	0200-0710		0200-1000					0200-1000
TEM	01							08
	0200-0710							0100-1000
RLM						56		
						0280-1430		

ZONES AND CATEGORIES

ATEX 95 01.07.03	DEVICE GROUP			
	I		II	
	GAS, VAPOUR, MIST	DUST/AIR MIXTURES	GAS, VAPOUR, MIST	DUST/AIR MIXTURES
1	M1		1G	1D
2	M2		2G	2D
3			3G	3D

ASSIGNMENT OF CATEGORIES AND ZONES				
ZONE Gas/Dust	EXPLOSIVE ATMOSPHERE	DEVICE IGNITION SOURCES	CERTIFICATION	CATEGORY
0 / 20	permanently or long time or frequently existing	no effective ignition sources during rare plant disturbances and occurrence of two independent failures	EU sample check test	1
1 / 21	occasionally existing	no effective ignition sources under normal conditions and during frequently occurring disturbances	declaration of conformity and deposition of technical documents at a notified body	2
2 / 22	seldom or short time existing	no effective ignition sources under normal conditions	declaration of conformity and deposition of technical documents at manufacturer.	3

TEMPERATURE CLASSES AND PROTECTION MODES

TEMPERATURE CLASS					T5	T6
Ignition temperature of the gas in deg C	> 450	300 – 450	200 - 300	135 - 200	100 - 135	85 - 100
Maximum acceptable surface temperature	450	300	200	135	100	85
EXPLOSION GROUP						
I	Methan					
II A	Aceton Ammoniak Benzol Acetic acid Ethan Ethylacetat Carbon monoxide Methanol Propan Toluol	Ethylalkohol n-Butan n-Butyl-alkohol	Fuel, fuel oil	Acetaldehyd		
II B	City gas	Ethylen	Hydrogen sulfide	Ethyläther		
II C	Hydrogen	Acetylen				Carbon disulfide

Protection modes according to DIN IEC 34-5, VDE 0530-5				
IP = International Protection				
Motor	Protection mode	1. Code number		2. Code number
		Protection against touching and penetration of particles		Protection against penetration of water
	IP 00			
	IP 10			
	IP 21			vertically dropping water
Inside cooled	IP 22	Touching with fingers	Medium size solid particles over 12 mm ø	Droiping water up to 15° to vertical
	IP 23			Splashing water up to 60° to vertical
Surface cooled	IP 44	Touchin with tools or similar things	Small solid particles over 1 mm ø	Splashing water from all directions
	IP 45			
	IP 54	Total protection against touching	Harmful deposition of dust	Splashing water from all directions
	IP 55			Hose water from all directions
	IP 56			Heavy sea, strong water jets
	IP 65			Hose water from all directions
IP 67		Protection against entering of dust	Motor under water	

EU Declaration of Conformity

EGKE-RV-01.001.2003
English

Manufacturer : Gebhardt Ventilatoren GmbH & Co. KG

Address : D -74638 Waldenburg
Germany

Product description : **Centrifugal fans without drive** for use in explosive areas.

Rating : The devices comply with the ATEX directive 94/9/EG through their safe construction and design in accordance with DIN EN 13463-1:2002-04.

Classification : Device group II, category 3G
(interior/exterior), temperature class T1-T3.

Fan types RER / RZR 11-, 12-, 13-, 15-, 17-, 18-, 19- size 0200 -1000
Fan types RER / RZR 13- size 1120 - 1600
Fan type VZR 71- size 0200 - 0710
Fan type TZR 04- size 0215

The identification on the fans includes the following details :



II 3G c T1-T3

The products described comply with the regulations in the following European directive :

94/9/EG : Directive 94/9/EG of the European parliament and council dated 23 March 1994 for the alignment of the legal requirements of member states for devices and safety systems for use in accordance with specifications in explosive areas.

Proof of conformity with the regulations of this directive is provided by compliance with the harmonized standards DIN EN 13463-1 and EN 1127 as well as the applied national directive VDMA 24169-1.

The devices described become operational machines only after being completed with motors and drive units. In this case the user or device manufacturer nominated by him or the plant contractor is responsible for complying with all directives for the manufacture of a device in accordance with ATEX. The conformity of the end product must be proven by the device or plant manufacturer.

Waldenburg, 01.10.2003

.....
M. Funke
Manager SGE Centrifugal fans

.....
Dr. J. Anschütz
Manager Development

This declaration is not an assurance of characteristics in the spirit of product liability. The safety instructions contained in the product documentation must be observed.

EU Declaration of Conformity

EGKE-RV-01.002.2003
English

Manufacturer : Gebhardt Ventilatoren GmbH & Co. KG

Address : D -74638 Waldenburg
Deutschland

Product description : **Centrifugal fans with motor and belt drive** for use in explosive areas.

Rating : The devices comply with the ATEX directive 94/9/EG through their safe construction and design in accordance with DIN EN 13463-1:2002-04.

Classification : Device group II, category 3G (interior/exterior), temperature class T1-T3.

Fan types RER / RZR 11-, 12-, 13-, 15-, 17-, 18-, 19-	size 0200 -1000
Fan types RER / RZR 13-	size 1120 - 1600
Fan type VZR 71-	size 0200 - 0710
Fan type TZR 04-	size 0215

The identification on the fans includes the following details :



The products described comply with the regulations in the following European directive :

94/9/EG : Directive 94/9/EG of the European parliament and council dated 23 March 1994 for the alignment of the legal requirements of member states for devices and safety systems for use in accordance with specifications in explosive areas.

Proof of conformity with the regulations of this directive is provided by compliance with the harmonized standards DIN EN 13463-1, EN 1127, DIN EN 50014, DIN EN 50018, DIN EN 50019, DIN EN 50021 as well as the applied national directive VDMA 24169-1.

This conformity declaration applies to the factory installed fan, equipped with drive and checked out. If any changes are made to the fan the conformity must be re-confirmed.

Waldenburg, 01.10.2003

.....
M. Funke
Manager SGE Centrifugal fans

.....
Dr. J. Anschütz
Manager Development

This declaration is not an assurance of characteristics in the spirit of product liability. The safety instructions contained in the product documentation must be observed.

EU Declaration of Conformity

EGKE-RV-01.003.2003

English

Manufacturer : Gebhardt Ventilatoren GmbH & Co. KG

Address : D -74638 Waldenburg
Deutschland

Product description : **Centrifugal fans with direct drive** for use in explosive areas.

Rating : The devices comply with the ATEX directive 94/9/EG through their safe construction and design in accordance with DIN EN 13463-1:2002-04.

Classification : Device group II, category 3G (interior/exterior), temperature class T1-T3.

Fan types RZM 13-, 15-, 18-	size 0200 - 1600
Fan types REM 11-, 13, 18-, 19-	size 0200 - 0630
Fan types TEM 01-, 08-	size 0166 - 0355
Fan type RLM 56-	size 0280 - 1400

The identification on the fans includes the following details :



II 3G c T1-T3

The products described comply with the regulations in the following European directive :

94/9/EG : Directive 94/9/EG of the European parliament and council dated 23 March 1994 for the alignment of the legal requirements of member states for devices and safety systems for use in accordance with specifications in explosive areas.

Proof of conformity with the regulations of this directive is provided by compliance with the harmonized standards DIN EN 13463-1, EN 1127, DIN EN 50014, DIN EN 50018, DIN EN 50019, DIN EN 50021 as well as the applied national directive VDMA 24169-1.

This conformity declaration applies to the factory installed fan, equipped with drive and checked out. If any changes are made to the fan the conformity must be re-confirmed.

Waldenburg, 01.10.2003

.....
M. Funke
Manager SGE Centrifugal fans

.....
Dr. J. Anschütz
Manager Development

This declaration is not an assurance of characteristics in the spirit of product liability. The safety instructions contained in the product documentation must be observed.

ATEX DANGER ANALYSIS

On attaining / exceeding the ignition temperature, gas and mixtures of gas and dust can burn explosively – ignition may occur on hot surfaces, through sparks and flames or through internal heating :

- Hot surfaces arise through friction e.g. in bearings or belt drives
- Sparks occur mechanically through sudden or frictional contact between components or they occur through discharge of electrostatically charged components
- Flames occur through the ignition of substances with a glow or ignition temperature which lies below that of the medium being transported, often they are consumables or agents such as greases, adhesives, oils, sealing compounds, etc.
- Internal heating of the transport medium occurs in fans through turbulent flow and compression.

Through proper design and safe construction the manufacturer must ensure that adequate measures are carried out to avoid the sources of danger quoted in the analysis. At the same time the operator is obliged to observe the installation and operating instructions demanded by the manufacturer.

ATEX

Assessment table for centrifugal fans Device group II, category 3, without / with drive

Possible ignition source (1)			Measures undertaken to prevent an ignition source from becoming active (2)	Applied ignition protection (3)
Normal operation (1a) Category 3	Predictable fault 1(b) Category 2	Rare fault (1c) Category 1		
SPARK FORMATION Mechanical through a blow and/or foreign body and/or friction. Electrostatic through discharge and/or electrically through flashover.				
Spark formation through a blow			Make housing sufficiently impact-resistant in accordance with impact test.	DIN EN 13463 VDMA 24169
Spark formation through particles entering the impeller			Protection grid (IP 20). Set up the fan only with horizontal shaft.	DIN EN 13463 VDMA 24169
Spark formation through friction between stationary and rotating components			Gap \geq 1% of the relevant contact diameter. Material pairing powder-coated or galvanized sheet steel with brass plate. Permitted rpm 85% of maximum rpm. Trial run at operating rpm. Secure impeller against shifting on the shaft.	DIN EN 13463 VDMA 24169
Electrostatic and/or electrical spark formation			Use of electrical conducting belts. Motors with "increased safety" or "non-sparking".	DIN EN 13463 VDMA 24169
FLAME FORMATION Through the ignition of materials, consumables and agents or dust deposits due to sparks or high surface temperature.				
Flame formation through the ignition of materials, consumables and agents or ignition of dust deposits.			No materials and/or consumables and agents with an ignition temperature $<$ 200 °C. Fans permitted for use only with dust-free transport media.	DIN EN 13463 VDMA 24169
FORMATION OF HOT SURFACES Mechanical through friction and/or vibration.				
Formation of hot surfaces through friction in bearings.			Bearing temperatures $<$ 200 °C, bearing useful life \geq 20,000 h.	DIN EN 13463 VDMA 24169
Formation of hot surfaces through friction between belt and belt pulley.			No adjustable belt pulleys, check the belt tension to prevent slipping and increased load on bearings.	DIN EN 13463 VDMA 24169
INCREASE IN TRANSPORT MEDIUM TEMPERATURE Through internal friction, turbulent flow, compression, etc.				
Increase in medium temperature through adiabatic compression and/or turbulent flow.			Fan pressure increase \leq 3000 Pa. Permitted temperature of the transport medium + 60 °C.	DIN EN 13463 VDMA 24169

ATEX

SPECIAL INSTALLATION and OPERATING INSTRUCTIONS

Centrifugal fans of category 3G

- 1.) Fans for use in explosive areas are identified as such on the type plate, they are delivered with an EU conformity declaration and with operating and maintenance instructions.
It is imperative that the operating and maintenance instructions are strictly observed. But nevertheless these instructions in connection with the declaration of conformity replace all other statements with respect to explosion protection.
- 2.) The temperature of the transport medium must not go below $-20\text{ }^{\circ}\text{C}$ and must not exceed $+60\text{ }^{\circ}\text{C}$. In case of doubt, the temperature on the fan pressure side must be monitored.
If the transport medium temperature on the pressure side reaches $+60\text{ }^{\circ}\text{C}$, then the fan must be switched off.
- 3.) The maximum permitted speed of rotation of the fan is stated on the type plate.
Under no circumstances may the maximum permitted speed of rotation be exceeded.
- 4.) The fans must be installed in accordance with the manufacturer's instructions.
The fans RER, RZR, VZR, TZR, RZM, RLM must only be installed with the shaft horizontal.
- 5.) Care must be taken to prevent foreign bodies from getting drawn in by or falling into the fan. The contact protection facilities on the belt drives and couplings must be so fitted that they also protect against foreign objects being able to penetrate.
The fans must be equipped with suitable inlet protection grids. Centrifugal fans with a spiral housing must also be equipped additionally with a discharge protection grid when in position "0" (discharge stream upwards). Centrifugal fans type RLM with freely running wheels must be secured in a suitable manner by the customer so that no particles can fall into the chamber or onto the impeller.
- 6.) Belt drives should be equipped with electrically conducting belts. Flexible fittings must also be equipped with an electrically conducting fabric band or bridged in some appropriate manner (e.g. through a copper strip).
The fan must be earthed to allow electrostatic charging to be discharged.
- 7.) Prior to commissioning the fans must be checked that they are in a pristine state and have not been damaged in transportation.
If damage is discovered then the fan must be repaired, with the agreement of the manufacturer, and put back into the state it was when it left the plant and in compliance with ATEX.

2 G

01.04.2005

II	Apparatus Group II. Non electrical apparatus except mining.
2	Category 2 (inside and outside) applicable in zone 1+2
G	Gas medium
c	Explosion protection by construction safety
T3	Temperature class T3 for transportation of gases with ignition temperature $\geq 200^{\circ}\text{C}$
T4	Temperature class T4 for transportation of gases with ignition temperature $\geq 135^{\circ}\text{C}$
IIB	Explosion group (s. TAB)

TYP	II 2G c T3 IIB (inside and outside)							
RER	11	12	13	13G	15		17	
			0200-1000	1120-1600				
RZR	11	12	13	13G	15		18	19
			0400-1000	1120-1600				0200-1000
RZM			13		15		18	
			0400-1600					
REM	11		13				18	19
								0200-0630
TEM	01						08	
RLM						56		
						0280-1400		
TYP								
RLM						56		