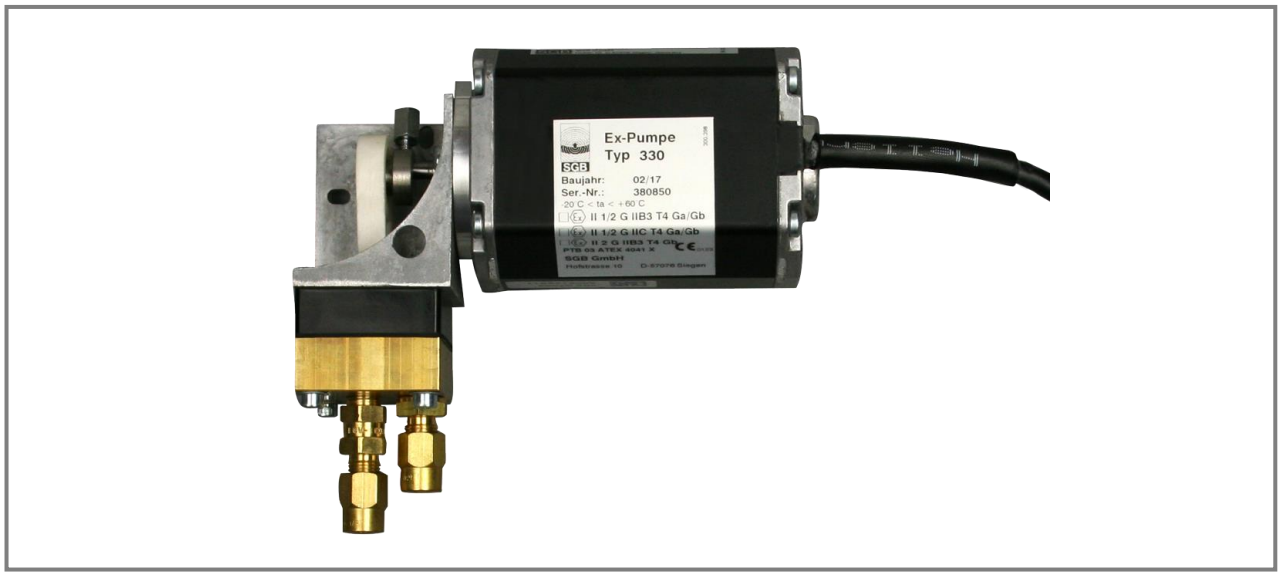
Documentation

Explosion-proof vacuum pump 34-570

(24 V connection)

TÜV-A 18ATEX0056 X (Ex-direct current motor GMEx 24-65-25)

TÜV-A 18ATEX0058 X (Vacuum pump M/K, pneumatic part)



Please read the instructions before commencing any work

Last updated: 11/2019

Art.-No.: 648142

Documentation

Ex-direct current motor GMEx 24-65-25

TÜV-A 18ATEX0056 X

Read the instructions before commencing any work

Last updated: 11/2019

Art. No.: 648082

Table of Contents

1. General

1.1 Information

This manual provides important information on handling the explosion-proof direct current motor GMEx 24-65-25. The pre-requisite for workplace safety is the adherence to all safety and handling instructions specified in this manual.

Furthermore, any local regulations for prevention of accidents applicable at the site of use of the motor and general safety instructions must be complied with.

1.2 Explanation of Symbols

In these instructions, warnings are marked with the adjacent symbol.

The signal word expresses the level of hazard.

DANGER:
Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:
Potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION:
Potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

INFORMATION:
Highlights useful tips, recommendations and information.

1.3 Limitation of Liability

All information and instructions in this documentation have been compiled considering the applicable norms and regulations, the state of the art and our longstanding experience.

SGB does not assume any liability in the case of:

- Noncompliance with these instructions
- Improper use
- Use by unqualified personnel
- Unauthorized modifications
- Connection to systems not approved by SGB

1.4 Copyright

1.5 Warranty conditions

The warranty period on site for the motor GMEx 24-65-25 is 24 months from the date of installation.

The maximum warranty period is 27 months from our date of sale.

Warranty conditions are subject to submission of the functional/test report on initial commissioning by trained personnel.
Stating the serial number of the motor is required.

The obligation of warranty shall cease to exist in case of
- inadequate or improper installation
- improper use
- modifications or repairs without consent of the manufacturer.

1.6 Customer Service

Our customer service is available for any inquiries.

Information for the contact person can be found online at www.sgb.de or on the label on the power supply unit, or device in which the power supply unit is installed.

2. Safety

2.1 Intended Use

WARNING!

Danger from misuse

- Only for powering elements which are approved by SGB GmbH.
- Grounding in accordance with applicable regulations (e.g. EN 1127)
- Installation only in Zone 1, Zone 2 or outside of the EX area
- Explosive vapor-air mixtures: II A to II C and T 1 to T4
- Ambient temperature max. 90°C
- Ambient temperature min. -40°C
- Where applicable, lead-throughs in manhole pits or inspection chambers shall be sealed gas-tight
- Installation of the motor in a protective housing
- Electrical connection in Ex-area only via an EX "e"-approved (or comparable) terminal box.

Any claims arising from misuse are excluded.

2.2 Obligation of the Operating Company

The GMEx 24-65-25 motor is used for commercial purposes. The operating company is therefore subject to statutory occupational safety obligations.

In addition to the safety instructions in this documentation, all applicable safety, accident prevention and environmental regulations must be adhered to. In particular:

- Compiling a risk assessment and implementing its results in a directive
- Performing regular checks as to whether the directive is in compliance with the current standards
- The directive includes, among other things, how to react to a malfunction/alarm that might arise
- Arranging for an annual functional check

2.3 Qualification

WARNING!

Danger to humans and the environment in case of inadequate qualification

The personnel must be capable of independently recognizing and avoiding potential risks based on their qualifications.

Companies commissioning the power supply unit should have completed respective training with SGB, through SGB or its authorized representative.

Electrical connection must be completed by an electrically instructed person (EIP) - or a higher qualification.

For Germany:

If the motor is installed in a leak detector then a certified company qualification is required for the installation, commissioning and maintenance of leak detection systems.

2.4 Personal protective equipment (PPE)

Personal protective equipment must be worn during work.

- Wear necessary protective equipment for the relevant work
- Note and comply with existing PPE signs

Entry in the "Safety Book"

Wear HV vest

Wear safety footwear

Wear hard hat

Wear gloves – where necessary

Wear safety goggles – where necessary

2.5 Fundamental Hazards

DANGER

from electric current

When working on the motor or equipment being driven, these must be disconnected from the power supply unless stated otherwise in the documentation.

Comply with relevant regulations regarding electric installation, explosion protection (e.g. EN 60 079-17), and accident prevention.

CAUTION

from moving parts

If work is being done on the pump (possible use of the motor), it must be disconnected from the power supply.

DANGER

from explosive vapor-air mixtures

Generally, the motor will be installed in a housing. Explosive vapor-air mixtures can exist inside these housings.

Ensure there is no gas present prior to performing work.

Comply with explosion regulations, e.g. BetrSichV (and/or directive 1999/92/EC and the laws of the respective member states resulting therefrom) and/or others.

DANGER

from working in chambers

Before inspecting the appropriate protective measures should be taken. Ensure no gas is present and sufficient oxygen is available.

3. Technical Data of the Motor

3.1 General Data

Dimensions	D = 77 mm; L = 90 mm (+ shaft end)
Weight	1.00 kg
Storage temperature range	-40°C to +90°C
Operating temperature range	-40°C to +90°C
Torque	20 Ncm
Safety class	IP 54
Nominal speed	3000 1/min

3.2 Electrical Data

Supply	24 (± 10) V DC
Peak current	20 A at 40°C housing temperature
Output	65 W
Safeguard (supply)	max. 25 AT

3.3 EX data

Motor	⟨Ex⟩ II 2G Ex mb IIC T4 Gb

3.4 Field of Application

Application on components such as membrane pumps. The component must also have an Ex-approval. The motor itself must either be operated

- with a standard power supply unit (installed and operated outside the Ex-area) or
- with an Ex-protected power supply unit (e.g. NTEx 24-4500) or
- using an operational existing 24-V network

The electrical connection must be made using an Ex “e” terminal box provided the motor and the connected component are approved for the Ex-area and both are being used inside the Ex-area.

The motor design is 100% duty cycle (continuous duty); it should be noted that the motor must be replaced after a maximum of 100,000 hours of operation (in connection with a membrane pump with diameter = 35 mm and an underpressure of -800 mbar).

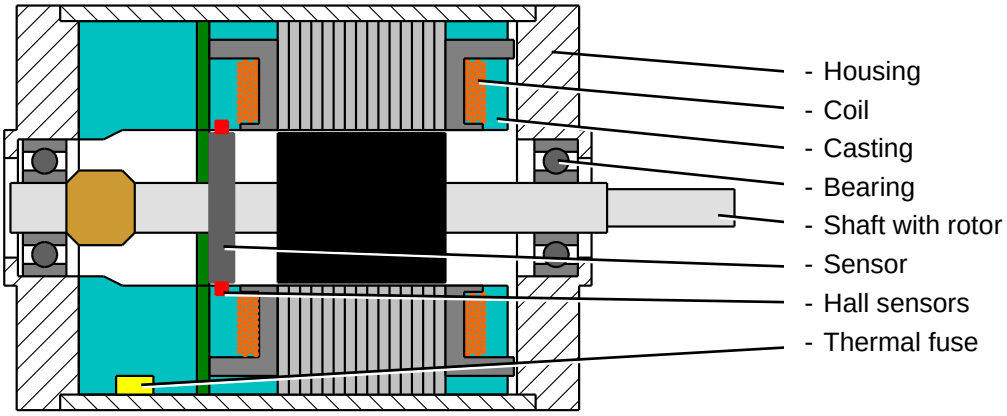
For other applications a new lifetime calculation must be conducted.

An additional protective housing must be installed on the motor.

4. Design and Function

4.1 Design

Sectional view of the motor including explosion protection with



4.2 Description of the explosion protection

The explosion protection of the motor is manufactured using the “casting” type of ignition protection. The warmest part of the motor is equipped with an additional thermal fuse. This unit is cast with a suitable casting compound.

The exact description of the individual elements is found in the approval documents.

4.3 Normal Operating Condition

After the motor is connected to the power supply it can go into operation.

The motor will work without malfunctioning as long as

- no impermissible high loads occur,
- there are no mechanical tensions on the shaft or
- no impermissible high temperatures occur.

4.4 Malfunction

A possible malfunction with a resulting warming leads to the activation of the thermal fuse; the motor will be switched off.

5. Assembly of the components

5.1 Basic Instructions

- Prior to commencing work, read and understand the documentation. In the event of any ambiguity ask the manufacturer.
- Comply with the safety instructions in this documentation.
- Lead-throughs for electrical connection lines through which the explosion atmosphere can carry over must be sealed gas-tight.

5.2 Motor GMEx 24-65-25

- The motor must be installed in an additional housing (suitable for the Ex-area).
  This may not be freely accessible, i.e. should not be able to be opened without tools.
  No Zone 0 condition may arise in the interior of this housing.
- Establish the grounding for this housing.
- The consumers connection, or the connection of the supply line (within the Ex-area) may only be made using an Ex “e” terminal box.

Specifically for the use/replacement of the motor as the drive for a membrane pump in a leak detector:

- Confirm that there is no gas present in and around the leak detector. Work may only be conducted if the concentration lies a min. of 50% below the LEL (lower explosion limit). It is recommended that you ensure that there is absolutely no gas present.
- Disconnect the leak detector from the power supply and while doing so ensure that the potential equalization is maintained. Disassemble leak detector.
- Replace pump outside of the explosive area.
- Re-install the leak detector, connect to the electrical supply and put into operation.
- Perform a functional check on the leak detector.

5.3 Electrical Cables

Consistent with regards to the atmosphere in which the motor will be operated. There is a standard 0.5 m on the motor for laying up to the Ex “e” terminal box.

Cable between Ex “e” terminal box and power supply:

- 2 x 1.5^2 up to a length of 100 m
- 2 x 2.5^2 up to a length of 250 m

Connection diagram:

- White: + 24 V DC
- Brown: 0 Volt (GND)

6. Commissioning

Prior to commissioning check again whether the motor is appropriate for the application.

The operator must conduct an ignition risk assessment in accordance with the applicable rules in order to ensure proper operation.

6.1 Commissioning steps

DANGER

Ensure gas is not present

(1) The assembly of the motor, the component to be drive and the necessary terminal boxes, is complete.

(2) Use appropriate cables

(3) Only the complete cable (NOT individual strands) may be inserted into the cable gland.

(4) Prepare wiring, pay attention to polarity

(5) Tighten the seals of the cable entries

(6) Seal the lid of the terminal boxes

(7) Switch on power supply

(8) The motor is in operation.

7. Functional Check and Maintenance

7.1 General

A functional check for the motor only is not intended. The inspection of the motor generally occurs through the intended application such as functional check of a leak detector.

7.2 Maintenance

- Once a month for operating noise
- Once a year for visual/obvious defects
- If cleaning is necessary then wipe the power supply unit with a damp cloth.

7.3 Functional Check

A regular function check of the power supply unit occurs as a result of the conditions of use such as the functional check of a leak detector.

8. Malfunction

8.1 Malfunction description

a) Excessive load on the motor

As a result of excessive load on the motor an impermissible excessive warming can arise.

In this case the thermal fuse of the motor activates and the motor is out of operation.

b) Short circuit

Same as under a).

c) Excessive temperatures

Same as under a)

d) Operating noises of the bearing(s)

In this case the lifetime of the motor has been reached, or there is an impermissible excessive mechanical load on the shaft.

8.2 How to Behave

Place motor out of operation immediately and notify installation operation. They must search for the failure and eliminate it, i.e. replace the motor if necessary.

After repair a functional check must be conducted.

9. Spare Parts

Due to its construction the motor itself can only be completely replaced.

10. Disassembly and Disposal

10.1 Disassembly

Make sure the unit is free of gas before and during removal

Seal any openings gas-tight through which an explosion atmosphere can carry over.

Avoid using spark-producing tools (saws, parting grinders, etc.) for disassembly whenever possible. Should this be unavoidable, however, comply with EN 1127 or the area must be free of explosive atmosphere.

Avoid the build-up of electrostatic charges (e.g., through friction).

10.2 Disposal

Electronic component, i.e. dispose of appropriately.

11. Appendix

11.1 Ex-Approval (EU type-examination certificate)

ZERTIFIKAT | CERTIFICATE | CERTIFICAT | CERTIFICADO | СЕРТИФИКАТ | شهادة | 证书 | 인증서

TÜV AUSTRIA

Certificate

(1) **EU - TYPE EXAMINATION CERTIFICATE**

(2) Equipment or Protective System Intended for use in potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) Certificate Number: TÜV-A 18ATEX0056 X

(4) Product: Motor GMEX 24-65-25
Power supply NTEX 24-4500

(5) Manufacturer: SGB GmbH

(6) Address: Hofstraße 10
57076 Siegen
GERMANY

Online Verification

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) TÜV AUSTRIA SERVICES GMBH, Notified Body number 0408, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report No. TUV-A 2018-TAD-000045_1.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012/corr. 2013 EN 60079-18:2015

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Ex II 2 G Ex mb IIC T4 Gb

Filderstadt	12.07.2018	Michael Reuschel
Ort *Place*	Datum *Date*	freigegeben durch approved by

FM-INE-EXS-ExG-0200f
Rev. 06
ZTFK TÜV-A
18ATEX0056_2417_ENG.docx

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Email: explosionsschutz@tuv.at
Web: www.tuv-ad.de

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(13) # ANNEX

(14) EU - TYPE EXAMINATION TÜV-A 18ATEX0056 X

(15) **Description of Product**

The power supply consists of one of the switching power supplies listed in section 1.3. These are installed in a housing and with the point 1.3. compounds. In addition, the power supply is protected on the primary side by an irreversible temperature fuse, and on the secondary side by a resettable temperature switch against impermissible surface temperatures.

The DC motor is based on the motor listed in point 1.3. Coil and Hall sensors are with the item 1.3. compound. Against impermissible surface temperatures, the motor is protected with an irreversible temperature fuse and complies to the type of protection "mb".

Motor:

The DC motor is used to drive devices (diaphragm pumps) from SGB GmbH. This can be supplied via a power supply of the company SGB GmbH, type NTEX 24-4500. The DC motor can also be supplied by alternative suitable power supply if they have identical electrical parameters and explosion protection characteristics.

Power supply:

The power supply is exclusively for the supply of approved consumers of the company SGB GmbH.

Technical data power supply

Manufacturer switching power supply	MEAN WELL Enterprises Co., Ltd.	TRACO ELECTRONIC AG	TRACO ELECTRONIC AG
Type switching power supply	RS-100-24	TOP 100-124	TOP 200-124
Switching power supply rated voltage primary	88 - 264 VAC	187 – 264 VAC	100 - 240 VAC
Switching power supply rated current primary	1.5A / 230VAC	4A / 250 V	6 A
Switching power supply rated frequency primary	47 - 63Hz	47 – 63 Hz	47 – 63 Hz
Switching power supply rated voltage secondary	24 VDC	24 VDC	24 VDC
Switching power supply rated current secondary	4,5A	4,2 A	8,3 A
Switching power supply rated power secondary	108W	100 W	200 W

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Technical data motor

Manufacturer motor	Dunkermotoren GmbH
TypeMotor Typ	BG65x25KI
Rated voltage motor	24 VDC
Rated current motor	Depend on switching power supply
Rated power motor	65 W
Driving speed motor	3000 1/min

Compound

Manufacturer compound	Henkel AG & Co. KGaA
Type compound	LOCTITE® EA 9483

Additional specification acc. explosion protection:

Group:	II	
Category :	2 G	
Equipment protection level:	Gb	
Type(s) of protection	Ex mb	
Temperature class:	T4	
Explosion group:	IIC	
Temperature range T_{amb}	Type GMEX 24-65-25 -20°C to +40°C „X“: -40°C to +90°C	NTEX 24-4500 -20°C to +40°C „X“: -40°C to +70°C
Rel. humidity	15% bis 90% r. H. not condensed	
IP Rating:	IP 54	

(16) **Test report**

TUV-A 2018-TAD-000045_1

(17) **Special conditions of use**

The "X" sign after the certificate number indicates special operating conditions.
The intended use of the device, which is specified by the manufacturer, must be observed.

The following additional "Special conditions" for safe installation and operation of the equipment must be included in the EU-Type Examination Certificate:

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AT-1230 Vienna
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Email: explosionsschutz@tuv.at
Web: www.tuv-ad.de

The power supply unit must be protected by an external circuit breaker (6A).
With the housing variant made of the material aluminum, the power supply unit is to be protected against impacts.

In order to avoid effective sources of ignition caused by the shaft bearing of the motor, the motor must be replaced after 100,000 hours at a duty cycle of ED = 100%.

The installation, including the wiring, is carried out by the installer and must be carried out in accordance with the requirements of EN 60079-14.

An extended temperature range of -40 ° C ≤ Ta ≤ + 90 ° C (motor) / -40°C to +70°C (power supply) applies.

The electrical installation must be carried out in accordance with the requirements of EN 60079-14

(18) **Essential health and safety requirements**

Met by the standards mentioned above.

Filderstadt	12.07.2018	Michael Reuschel
Ort *Place*	Datum *Date*	freigegeben durch approved by

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AT-1230 Vienna
Phone: + 49 711 722 336-18
Email: explosionsschutz@tuv.at
Web: www.tuv-ad.de

11.2 Declaration of Conformity

We,

SGB GmbH

Hofstr. 10

57076 Siegen

Germany,

hereby declare in sole responsibility that the motor

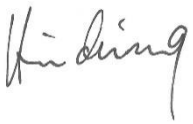
GMEx 24-65-25

are in conformity with the essential requirements of the EU directives listed below.

In case the device is modified or used in a way that has not been agreed with us, this declaration shall lose its validity.

Number/short title	Satisfied regulations
2014/30/EU EMC Directive	EN 60 034-1: 2010/AC 2010 EN 61 000-6-1: 2007 EN 61 000-6-2: 2005 EN 61 000-6-3: 2007/A1:2011/AC:2012 EN 61 000-6-4: 2007/A1:2011
2014/34/EU Equipment for EX Areas	TÜV-A 18 ATEX 0056 X (-40°C ≤ ta ≤ 90°C) with: EN 60 079-0: 2012 + AII: 2013 EN 60 079-18: 2015
Notified body: with the code number	TÜV Austria Services GmbH: 0408

Conformity is declared by:



As of: 02/2019

ppa. Martin Hücking
(Technical Director)

Documentation

Vacuum pump, pneumatic part

M 30-570 and K 500-950

TÜV-A 18ATEX0058X

Please read instructions prior to commencing any work
As of: 11/2019
Art. No.: 648052

Table of Contents

1. General

1.1 Information

This manual provides important information on handling the vacuum pump M 30-570/K 500-950. The pre-requisite for workplace safety is the adherence to all safety and handling instructions specified in this manual.

Furthermore, any local regulations for prevention of accidents applicable at the site of use of the pump and general safety instructions must be complied with.

1.2 Explanation of Symbols

In these instructions, warnings are marked with the adjacent symbol.

The signal word expresses the level of hazard.

DANGER:
Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:
Potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION:
Potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Information:
Highlights useful tips, recommendations and information.

1.3 Limitation of Liability

All information and instructions in this documentation have been compiled considering the applicable norms and regulations, the state of the art and our longstanding experience.

SGB does not assume any liability in the case of:

- Noncompliance with these instructions
- Improper use
- Use by unqualified personnel
- Unauthorized modifications
- Connection to systems not approved by SGB

1.4 Copyright

The contents, texts, drawings, images and other representations are copyrighted and subject to industrial property rights. Any misuse is punishable.

1.5 Warranty Conditions

The warranty conditions on site for the pump are 24 months from the date of installation.

The maximum warranty period is 27 months from our date of sale.

Warranty conditions are subject to submission of the functional/test report on initial commissioning by trained personnel.
Stating the serial number of the leak detector is required.

The obligation of warranty shall cease to exist in case of
- inadequate or improper installation,
- Improper operation, e.g. excessively long run times for the pump and with it failure of a wear and tear part,
- Modifications/repairs without consent of the manufacturer.

1.6 Customer Service

Our customer service is available for any inquiries.

For information on contacts, please refer to our website www.sgb.de or the label of the display unit.

2. Safety

2.1 Intended Use

WARNING!

Danger from misuse

- Only for use in leak detectors, other fields of application only after consultation with the manufacturer.
- Material resistance must be reliable
- Grounding, or potential equalization in accordance with applicable regulations (e.g. EN 1127)
- Assembly of the pump in a housing of safety class IP 54, housing has passed an impact/shock test in accordance with EN 13463-1.
- Assembly of the housing in Zone 1, Zone 2 or outside the explosive area, whereby the pump, depending on the interior design can be a Category 1, or 2.
- Explosive vapor-air mixtures and pressures see technical data
- Ambient temperature max. 90°C
- Installation site of the pump and the detonation flame arresters as desired, the tank is always the component which should be protected.

Any claims arising from misuse are excluded.

2.2 Obligation of the Operating Company

The detonation flame arrester is used in the commercial sector. The operating company is therefore subject to statutory occupational safety obligations.

In addition to the safety instructions in this documentation, all applicable safety, accident prevention and environmental regulations must be adhered to. In particular:

WARNING!

Danger in case of incomplete documentation

- Preparation of a risk assessment, in particular it should be noted when the pump (the leak detector) is installed outside the explosive area, and implementation of the results into operating instructions
- Performing regular checks as to whether the directive is in compliance with the current standards
- The directive includes, among others, how to react to an alarm that might arise
- Arranging for an annual functional check

2.3 Qualification

WARNING!

Danger to humans and the environment in case of inadequate qualification

The personnel must be capable of independently recognizing and avoiding potential risks based on their qualifications.

Companies commissioning leak detectors should have completed respective training with SGB, through SGB or its authorized representative.

National guidelines must be adhered to.

For Germany: Technical service qualification for assembly, commissioning and maintenance of leak detection systems.

2.4 Personal protective equipment (PPE)

Personal protective equipment must be worn during work.

- Wear necessary protective equipment for the relevant work
- Note and comply with existing PPE signs

Entry in the "Safety Book"

Wear suitable HV vest

Wear suitable safety footwear

Wear suitable hard hat

Wear suitable gloves – where necessary

Wear safety goggles – where necessary

2.5 Fundamental Hazards

DANGER

from explosive vapor-air mixtures

Explosive vapor-air mixtures can exist in the sensors, connection lines and the pump unit.

Ensure there is no gas present prior to performing work.

Comply with explosion regulations, e.g. BetrSichV (and/or directive 1999/92/EC and the laws of the respective member states resulting therefrom) and/or others.

DANGER

from working in chambers

The detonation flame arresters are installed, among other things, in access chambers. Therefore, the chamber must be entered for assembly.

Before inspecting the appropriate protective measures should be taken. Ensure no gas is present and that sufficient oxygen is available.

3. Technical data of the detonation flame arrester

3.1 General Data

Dimensions, M 30-570	W x H x D = 43 x 82 x 43 mm
Dimensions, K 500-950	W x H x D = 46 x 105 x 54 mm
Weight, M 30-570	0.4 kg
Weight, K 500-950	0.5 kg
Storage temperature range	-40°C to +100°C
Operating temperature range	-40°C to +90°C
Permissible operating pressure:	0 to -995 mbar
Permissible overpressure:	0 to 100 mbar

3.2 EX data

Temperature code:	T1 to T4
Gas group:	IIA to IIB3 or II C, depending on design
Category, exterior:	2
Category, interior:	2
As before, however with F 501:	1, to IIB3
As before, however with F 502:	1, to IIC

3.3 Field of Application

Usually the pump is used in vacuum leak detectors in order to create the negative pressure for monitoring.

The exhaust line is generally connected to the tank ventilation, due to the limitation of the overpressure in the exhaust line (pressure line) the following length limitations of the exhaust line result:

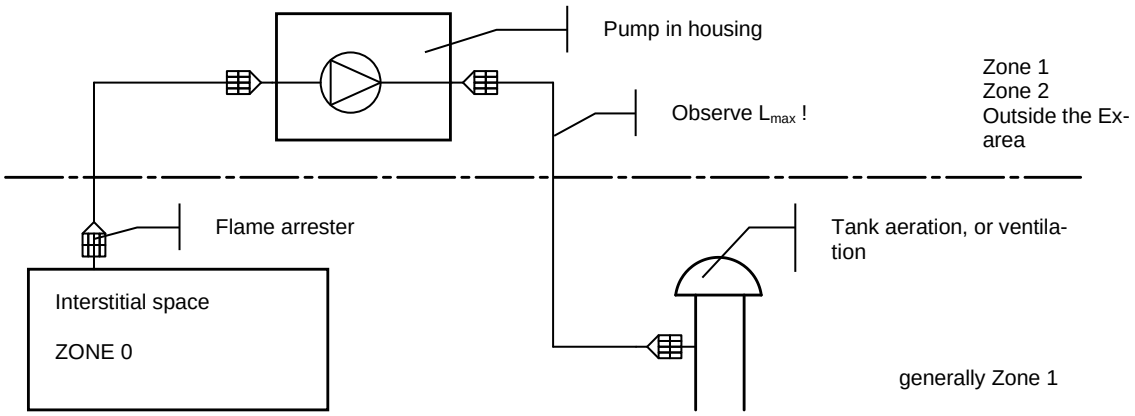
M 30-570,	**with F 501**	**with F 502**
4 mm clear width:	max. 15 m	max. 10 m
6 mm clear width:	max. 50 m	max. 50 m
K 500-950,	**with F 501**	**with F 502**
4 mm clear width:	max. 10 m	max. 5 m
6 mm clear width:	max. 25 m	max. 45 m

Other applications are possible if the conditions of the authorization and this documentation are met.

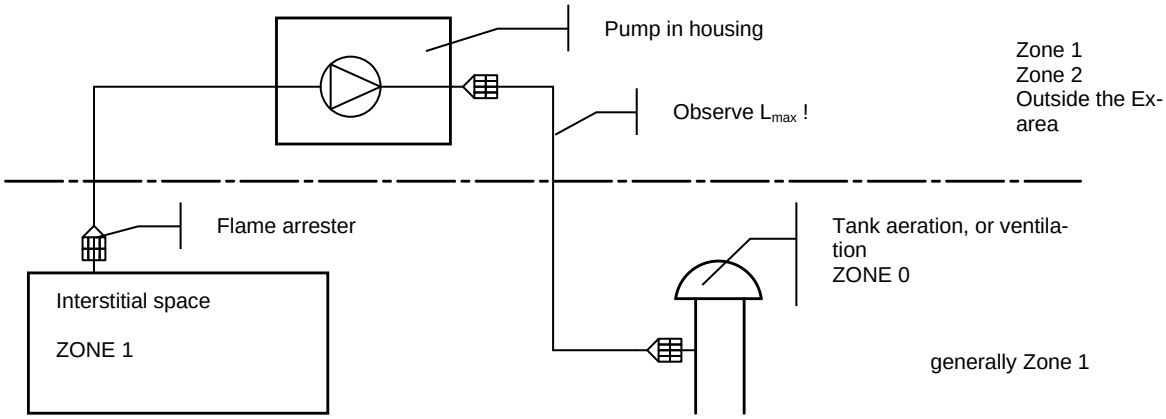
Pump design: 100% DC (duty cycle)

The drive power of the motor may not exceed 65 watt (output power at the shaft).

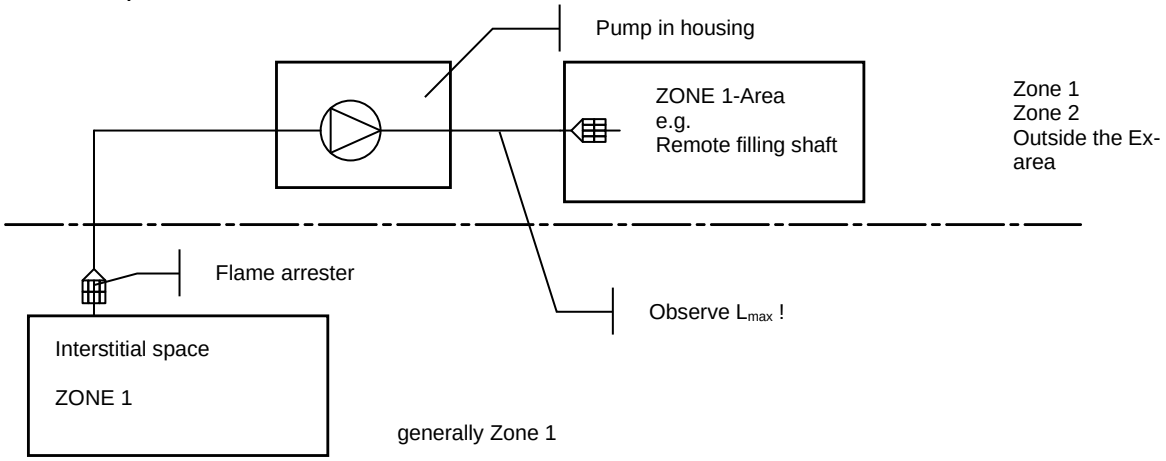
3.3.1 Interstitial space Zone 0 and exhaust line Zone 0



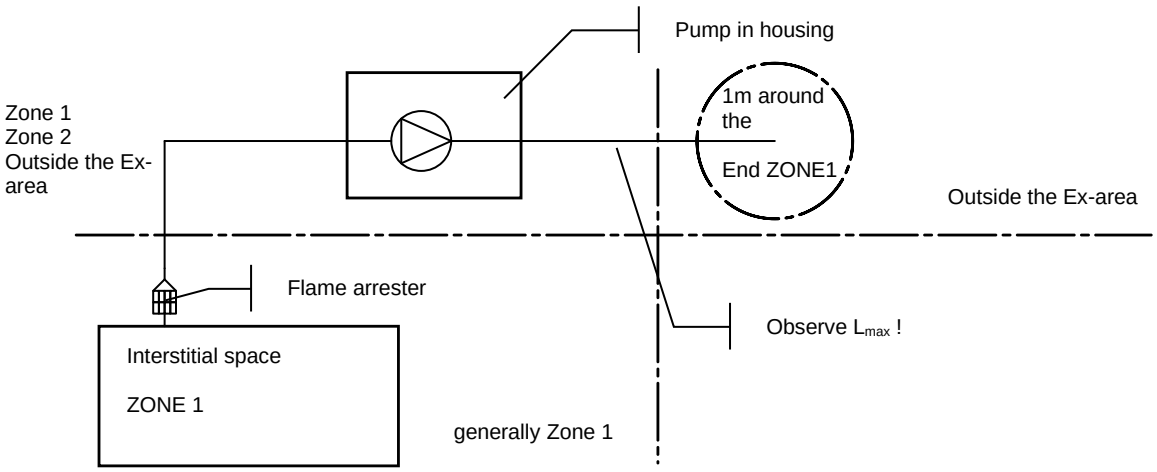
3.3.2 Interstitial space Zone 1 and exhaust line Zone 0



3.3.3 Interstitial space Zone 1 and exhaust line Zone 1



3.3.4 Interstitial space Zone 1 and exhaust line outside every zone (outdoors)



3.3.5 Materials

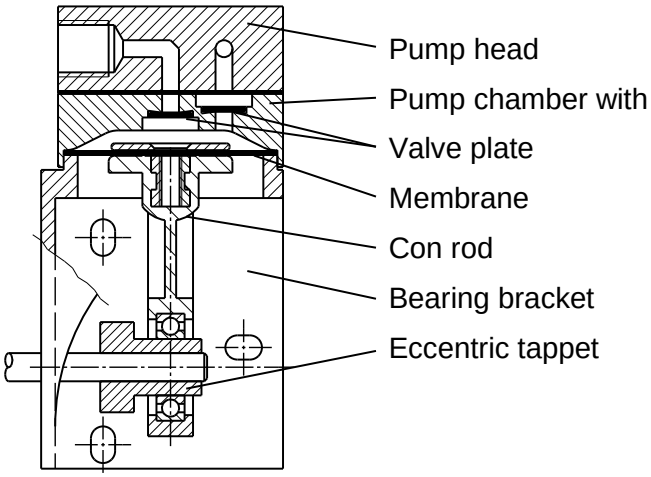
The materials used must be resistant to the relevant vapors and liquids.

4. Design and Function

4.1 Design

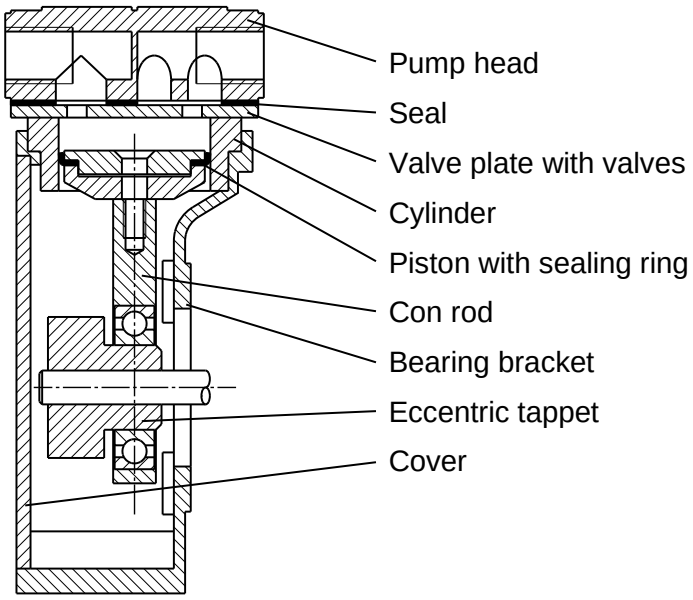
4.1.1 Type M 30-570

The Type M 30-570 is a membrane pump. The membrane is powered by an eccentric tappet and the eccentric tappet is fastened on a motor shaft.



4.1.2 Type K 500-950

The Type M 500-950 is a piston pump. The piston is powered by an eccentric tappet and the eccentric tappet is fastened on a motor shaft.



4.2 Function

The pump must be installed and operated in an above-described housing. The additional switching and display elements of the leak detector may also be installed in it. It is used to maintain the vacuum of a leak detection system.

4.3 Normal operating condition

A leak-proof leak detection system (interstitial space, connection lines and leak detector) is assumed for the normal operating condition (sealing requirement must be maintained in accordance with the documents for the leak detector).

The pump is switched on as a result of a loss of vacuum due to an unavoidable leak and switched off again after the vacuum build-up. That is, the pump has short run times and longer downtimes depending on the size and seal tightness of the interstitial space.

4.4 Frequent operation or continuous operation of the pump

In the event of a leak of the container or due to another leak the pump may run continuously. It is designed for 100% duty cycle (with regard to the Ex-protection, wear and tear parts such as the membrane are not taken into consideration here), up to an ambient temperature of 60°C.

The motor flange-mounted to the pump must also be designed for 100% duty cycle. The operating conditions of the motor must be included in the ignition risk assessment for the leak detector and the corresponding data (e.g. ambient conditions, thermal fuses ...), which results from the approval of the motor, identified.

5. Assembly and maintenance of the pump

5.1 Basic Instructions

- Prior to commencing work, the documentation must be read and understood. In case of ambiguities, please refer to the manufacturer.
- The safety instructions in this documentation must be adhered to.
- Comply with relevant regulations for prevention of accidents.
- Comply with Ex provisions (provisions found in Directive 1999/92/EC such as Betr.Sich.V)

5.2 Assembly

- As a general rule the pump is screwed together with a motor in the manufacturer's factory.
- The motor must be approved, or evaluated for the intended use.
- Installation of the motor only in the appropriate, suitable housing.

5.3 Electrical connection

- The electrical connection of the motor of the pump will be conducted by the manufacturer of the leak detector in an Ex-"e" terminal box.
- Potential equalization must be ensured

5.4 Maintenance / Replacement of the pump

- In general, the pump is maintenance-free, functionality is ensured via the annual inspection of the leak detector.
- Should operating noise be heard on the pump then it should be replaced.

The following points must be taken into consideration:

- Confirm that no gas is present in and around the leak detector, work may only be conducted if the concentration lies a min. of 50% below the LEL (lower explosion limit). It is recommended that you ensure that there is absolutely no gas present.
- Disconnect the leak detector from the power supply and while doing so ensure that the potential equalization is maintained. Disassemble leak detector.
- Replace pump outside of the explosive area.
- Re-install the leak detector, connect to the electrical supply and put into operation.
- Functional check of the leak detector

6. Disassembly and Disposal

6.1 Disassembly

Make sure the unit is free of gas before and during removal

Comply with, or produce grounding/potential equalization of the components.

Seal any openings gas-tight through which an explosion atmosphere can carry over.

Avoid using spark-producing tools (saws, parting grinders, etc.) for disassembly whenever possible. Should this be unavoidable, however, comply with EN 1127 or the area must be free of explosive atmosphere.

Avoid the build-up of electrostatic charges (e.g. through friction).

6.2 Disposal

Properly dispose of contaminated components (possibly through outgassing).

7. Appendix

7.1 Heating

7.1.1 General

The heating is only planned for model “M”. It serves to maintain the membrane’s flexibility and prevents the check valve in the vacuum line from icing up.

The heating is part of the pump and is usually installed in a housing with type of ignition protection “e”.

7.1.2 Description of the function and explosion protection

The heating is used purely as frost protection. I.e., when the temperature falls below the lower switch point, the temperature switch, which can be reset, switches on the heating and switches it off again once the upper switch point has been reached.

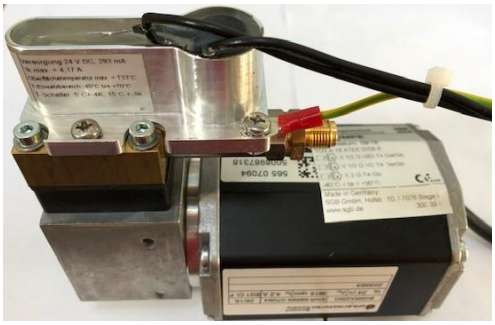
The heating (heat resistance) and temperature switch are cast (type of ignition protection “m”). The temperature switch meets the conditions of a safe component, meaning no thermal fuse is required and it is suitable for casting.

7.1.3 Technical Data

Dimensions, M 30-570	W x H x D = 43 x 82 x 43 mm
Storage temperature range	-40°C to +100°C
Operating temperature range	-40°C to +90°C
Lower switch point (ON)	+5°C ± 4K
Upper switch point (OFF)	-15°C ± 3K
Power supply	24 V DC, 300 mA
Fuse (via the leak detector)	2 A (1500 A)
Overvoltage category	2

7.1.4 Potential equalization

The potential equalization of the heating is integrated in the potential equalization of the device.



7.1.5 Mounting

The heating is mounted at the manufacturer’s factory and installed as a unit in the leak detector.

7.2 Declaration of Conformity

We,

SGB GmbH

Hofstrasse 10

57076 Siegen, Germany,

hereby declare in sole responsibility that the components

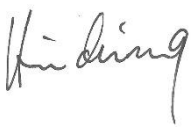
Vacuum pump M 30-570 and K 500-950

are in conformity with the essential requirements of the EC directives listed below.

In case the device is modified or used in a way that has not been agreed with us, this declaration shall lose its validity.

Number/short title	Satisfied regulations
2014/34/EU Equipment for EX Areas	TÜV-A 18 ATEX 0058 X with: EN 80079-36:2016 EN 80079-37: 2016 EN 60079-18:2015 (Heating) EN 60079-0:2012/A11:2013 (Heating) PTB 02 ATEX 4012 X (Detonation flame arrester F 501) PTB 09 ATEX 4002 (Detonation flame arrester F 502) Each with: EN 16852:2017 Marking of the components: II 2 G Ex h IIB T4 Gb (without detonation flame arrester) 1/2 G Ex h IIB3 T4 Ga/Gb (*with F 501)* 1/2 G Ex h IIC T4 Ga/Gb (*with F 502)* Marking of the components (each with heating): II 2 G Ex h mb II B T4 Gb (without detonation flame arrester, with heating) 1/2 G Ex h mb IIB3 T4 Ga/Gb (with *F 501, with heating)* 1/2 G Ex h mb IIC T4 Ga/Gb (with *F 502, with heating)*
Notified body: With the code number:	TÜV Austria Services GmbH: 0408

Conformity is declared by:



As of: 06/2019

ppa. Martin Hücking
(Technical Director)

7.3 Ex-approval

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TÜV AUSTRIA

Certificate

(1) EU - TYPE EXAMINATION CERTIFICATE

(2) Equipment or Protective System Intended for use in potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3)	Certificate Number:	TÜV-A 18ATEX0058 X
(4)	Product:	Vacuum pump M 30-570 und K 500-950
(5)	Manufacturer:	SGB GmbH
(6)	Address:	Hofstraße 10 57076 Siegen GERMANY

Online Verification

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) TÜV AUSTRIA SERVICES GMBH, Notified Body number 0408, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report No. TUV-A 2018-TAD-000046

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN ISO 80079-36:2016 EN ISO 80079-37:2016

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Without detonation arrestor:	**Ex II 2 G Ex h IIB T4 Gb**
With detonation arrestor 501:	**Ex II 1/2 G Ex h IIB T4 Ga/ Gb**
With detonation arrestor F 502:	**Ex II 1/2 G Ex h IIC T4 Ga/ Gb**

Filderstadt	31.07.2018	Michael Reuschel
Ort *Place*	Datum *Date*	freigegeben durch approved by

TÜV AUSTRIA SERVICES GMBH
Auszugsweise Vervielfältigung nur mit Genehmigung des TÜV AUSTRIA SERVICES GMBH gestattet"
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Akkreditierung Austria A 0274 ISO/IEC 17020

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TÜV AUSTRIA

(13) # ANNEX

(14) EU - TYPE EXAMINATION TÜV-A 18ATEX0058 X

(15) **Description of Product**

The pump is used to maintain the negative pressure of a leak detection system. Type M 30-570 is a diaphragm pump.
The type K 500-950 is a piston pump.

The pump must be mounted and operated in a suitable housing. In this also the other switching and display elements of the leak detector can be mounted.

The detonation arrestor comes with a corresponding EU-type examination certificate in accordance with Directive 2014/34/EU.

Technical data power supply

Type	M 30-570	K 500-950
Dimensions	B x H x T = 43 x 82 x 43 mm	B x H x T = 46 x 105 x 54 mm
Weight	0,4 kg	0,5 kg
Storage temperature	-40°C to +100°C	
Permissible operating pressure	0 to -995 mbar	
Tolerated overpressure	0 to 100 mbar	
Drive motor P_{max}	65 W	
Drive motor N_{max}	3000 1/min	

Additional specification acc. explosion protection:

	Without detonation safety barrier	With detonation safety barrier F 501	With detonation safety barrier F 502
Group:		II	
Category	2 G	1/2 G	1/2 G
Equipment protection level:	Gb	Ga / Gb	Ga / Gb
Type(s) of protection		Ex h	
Temperature class:		T4	
Explosion group:	IIB	IIB3	IIC
Temperature range T_{amb}		-20°C bis +40°C „X": -40°C bis +90°C	
Rel. humidity	15% bis 90% r. F. non-condensing		

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Web: www.tuv-ad.de

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TÜV AUSTRIA

(16) **Test report**

TUV-A 2018-TAD-000046

(17) **Special conditions of use**

The "X" sign after the certificate number indicates special operating conditions.

The intended use of the device, which is specified by the manufacturer, must be observed.

An extended temperature range of -40 ° C ≤ Ta ≤ + 90 ° C

The vacuum pump shall only be operated in a housing which has a min. degree of protection of IP 54 and meet the housing requirements of EN 60079-0.

(18) **Essential health and safety requirements**

Met by the standards mentioned above.

Filderstadt	31.07.2018	Michael Reuschel
Ort *Place*	Datum *Date*	freigegeben durch approved by

Deutschstraße 10
AT-1230 Vienna
Phone: + 49 711 722 336-18
Email: explosionsschutz@tuv.at
Web: www.tuv-ad.de

7.4 Marking

Type

Manufacturer or manufacturer symbol

Year (month/year)

Serial number

Approval number

Identification of the notified body

Applications without detonation flame arrester:

⟨Ex⟩ II 2 G T4

Applications with detonation flame arrester F 501:

⟨Ex⟩ 1/2 G IIB3 T4

Applications with detonation flame arrester F 502:

⟨Ex⟩ 1/2 G IIC T4

Contact

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