Installation and maintenance manual GB/en

TROX® TECHNIK
The art of handling air

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MFI-Ex

Mini Pleat filters

Important notes

Information on the installation manual

This manual enables operating or service personnel to correctly install the product described below and to use it safely and efficiently.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

Safety

Correct use

The explosion-proof filter insert MFI-Ex is used as a prefilter or final filter in ventilation and air conditioning systems to separate fine dusts from the air. The filter may be used in areas with potentially explosive atmospheres, namely zones 1 and 2 as well as 21 and 22.

The filter must be connected to the earth. All conductive and electrostatic dissipative parts must be interconnected and connected to the earth.

Do not use the filter for conductive dusts. Make sure that no metal particles can get into the filter.

ATEX labelling:

Ex	II 2G Ex h IIC Gb
	II 2D Ex h IIIB Db

Conformity with directive	2014/34/EU
Equipment group (2014/34/EU)	II
Equipment category (2014/34/EU)	2
Hazardous areas (1999/92/EC)	Zones: 1, 2, 21, 22

Other procedural instructions and documents related to areas with potentially explosive atmospheres as defined in directive 1999/92/EC as well as the industry-specific guidelines for use, handling, maintenance and disposal of air filters for ventilation and air conditioning systems SWKI 2003 and VDI 6022 also apply.

Airflow velocity and nominal volume flow rate

If the filter is used correctly and if the nominal volume flow rate is maintained, the airflow velocity on the filter will usually not exceed the maximum airflow velocity (see technical data), not even when the final differential pressure is reached.

Use test and monitoring systems, e.g. differential pressure monitors or flow meters, to ensure that the nominal volume flow rate is maintained.

Incorrect use

WARNING!

Danger due to incorrect use!

Incorrect use of the filter can lead to dangerous situations.

– Use the filter only in the zones mentioned above.
– Use the filter only with the earth cable in place.

Qualified staff

The work described in this manual has to be carried out by individuals with the qualification, training, knowledge and experience described below:

Properly trained person
Properly trained persons are trained individuals who understand any potential hazards related to the work under consideration, and who recognise and avoid any risks involved. Training is provided by the HVAC contractor when the system is handed over.

Properly trained persons are responsible for cleaning the unit, and for carrying out functional tests, regular checks and smaller adjustments.

Personal protective equipment

Personal protective equipment is equipment that protects the user against health or safety risks at work.

Personal protective equipment must be worn for various types of work; the protective equipment required is listed in this manual together with the description of each type of work.

Supply package, transport and storage

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness. Then put the product back into its packaging.

Supply package:

- Filter MFI-Ex
- Earth cable
- ATEX label
- Installation and maintenance manual

Transport

Do not remove the protective wrapping until just before installation.

Storage

Please note:

- Store the product only in its original packaging
- Protect the product from the effects of weather
- Protect the product from humidity, dust and contamination
- Storage temperature: 14 °F to 122 °F.
- Relative humidity: 95% max., no condensation

Technical data

Product description	Explosion-proof filter with earth cable
Name	MFI-Ex
Filter class according to ISO 16890/EN 1822	see product sticker
Nominal volume flow rate	
Initial differential pressure	
Airflow velocity at nominal volume flow rate	Calculated from nominal volume flow rate and cross-sectional area ↳ example below
Max. rel. humidity	90%
Ambient temperature range	+41 °F[1)] ≤ Ta ≤ +176 °F
Filter medium	Micro glass fibre paper
Filter frame material	GAL = galvanised steel

1) There is a risk of ice buildup on the filter with temperatures below +41 °F. Be sure to prevent this, e.g. with a filter preheater. Maximum range according to ATEX: -40 °F ≤ Ta ≤ +176 °F

Calculation example

qv - 2001 cfm

B - 23.3 in (2 ft)

H - 23.3 in (2 ft)

$$V = \frac{qv_{Nenn}}{\frac{(B \times H)}{3600}} \qquad V = \frac{2001\ [cfm] * 60}{\frac{(2 \times 2)\ [ft^2]}{3600\ [s/h]}} = 8.34\ [ft/s]$$

Result: V = 8.34 ft/s

Filter change, inserting filters

Before installation

- Be sure to install the explosion-proof filter only in a place that is suitable. This includes:
  - Specify the installation location as a hazardous area according to directive 1999/92/EC
  - Make sure that the internal ATEX documentation according to directive 1999/92/EC and the operational safety regulations are available
- Unpack the filter outside of areas with potentially explosive atmospheres.
  - Handle the filter with care to not damage the filter medium.

    Hold the filter only by the edges.
  - Check the filter for external damage and completeness, ↬ *Chapter 3 'Supply package, transport and storage' on page 2*. Do not install a damaged or incomplete filter.

Installation

Personnel:

- Properly trained person

Protective equipment:

- Industrial safety helmet
- Light respiratory protection
- Protective gloves

Before you start changing filters, switch off the ventilation and air conditioning system; if necessary, purge the system with fresh air beforehand.

1. ▸ Remove the existing filter and the earth cable.
2. ▸ Then clean the system as required.
3. ▸ Insert the new explosion-proof filter and secure it.

   Be sure to not damage the filter medium: Handle the filter with care and only touch the frame.

Fig. 1: Earth cable

4. ▸ After you have inserted the filter, make an electrical connection between the earth cable with the terminal (1) and an earthed system component. Make the connection in such a way that it cannot come loose, but can only be separated with a tool.

WARNING!

Explosion hazard due to incorrect installation.

If the electrical connection between the filter frame and the earthed system component is not correct, electrostatic charges could lead to an explosion.

– Make sure that the terminal connection cannot come loose.
– Check the electrical resistance between the filter frame and the system component with an ohmmeter. The electrical resistance must not exceed 1 MΩ (mega ohms).

5. ▶ Finally, affix the supplied ATEX sticker to the outside of the filter inspection access so that people can see it.

Maintenance

Explosion-proof filters are based on the same technology as conventional filters, and they work in the same way as conventional filters of the same type and construction

Maintenance applies mainly to the filter element. Check the filter regularly and replace it, if necessary.

The service life of a filter depends mainly on how contaminated the air is. Check the filter in intervals that are short enough so that you can anticipate any defects or problems before they actually occur.

Replace the filter immediately if any of the following is true:

- the filter is defective
- there are hygiene problems (micro-organisms, fungal spores, odours, etc.)
- the maximum filter usage time has been reached (VDI 3803, part 4)
- the defined final differential pressure has been reached

For more recommendations regarding the maximum usage time see SWKI 2003-5, VDI 6022, VDI 3803 and EN 13053.

You may replace a filter even before the defined final differential pressure has been reached if this is more economic.

Disposal

ENVIRONMENT!

Risk of harm to the environment due to the incorrect handling of hazardous materials and substances.

Filters and cleaning materials that have been contaminated with bacterial, toxic or radioactive particles are considered hazardous waste and have to be disposed of by an authorised business in compliance with local regulations.

Disposing of filter elements with household waste is allowed only in the following cases:

- For unused filter elements
- For filter elements that have been exposed only to atmospheric outdoor air

Ordering replacement filters

To ensure permanent protection from particulate matter and other pollutants we recommend using only original TROX filters.

Original TROX filters carry a sticker on the frame with information on how to order replacements.

To avoid downtime of the ventilation and air conditioning system, we recommend you to always have the required filters in stock.

To order replacement filters:
https://www.trox.de/onlineshop/filtergeraete-und-filterelemente-1df986693c21980d