SEWERIN
Technologies for leak detection.

FLIS-EX

Operating Instructions

24.01.2023 a – 104163 – en

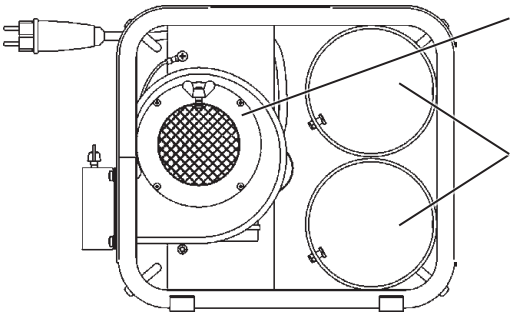

Fig. 1: Side view A

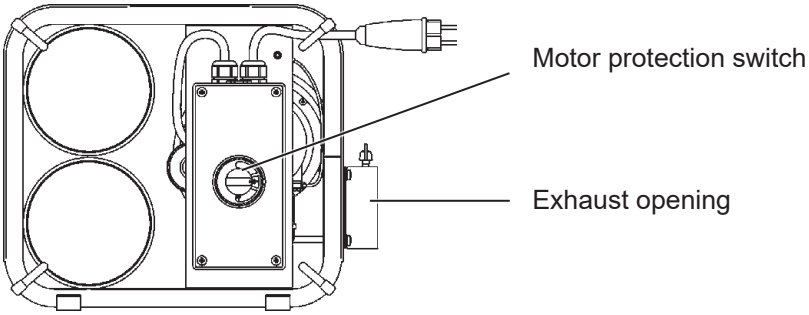

Fig. 2: Side view B

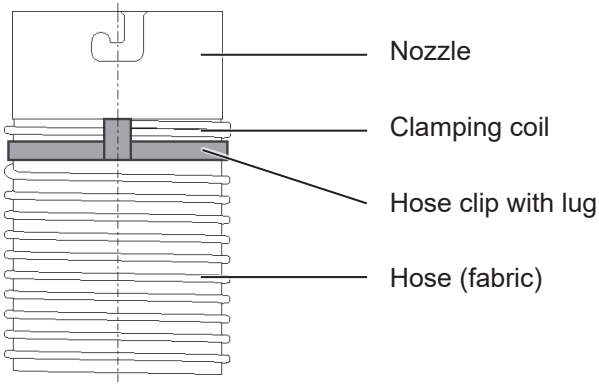

Fig. 3: End of hose with bayonet fitting

Illustration of warnings in this document

WARNING!
Risk of personal injury. Could result in serious injury or death.

1 General

1.1 Warranty

The following instructions must be complied with in order for any warranty to be applicable regarding functionality and safe operation of this equipment.

Hermann Sewerin GmbH accepts no liability for any damages resulting from non-compliance with these instructions. The warranty and liability provisions of the terms of sale and delivery of Hermann Sewerin GmbH are not affected by the information given below.

This product must only be operated after the relevant operating instructions have been read and understood.

- This product must only be commissioned by qualified professionals who are familiar with the legal requirements (Germany: occupational health and safety regulations of the BGI (Chemical Employer's Liability Insurance Association)).
- This product must only be used for its intended purpose.
- This product is only suitable for use in industrial and commercial applications.
- Repairs must only be carried out by a specialist technician or by other suitably trained personnel.
- Changes or modifications to this product must not be carried out without approval from Hermann Sewerin GmbH. The manufacturer cannot be held responsible for damages or the explosion protection of the relevant model if unapproved modifications have been made.
- Only accessories supplied by Hermann Sewerin GmbH may be used with this product.
- All repairs must be carried out using replacement parts that have been approved by Hermann Sewerin GmbH.
- The manufacturer reserves the right to make technical modifications in the course of further development.

Generally applicable safety and accident prevention regulations must be complied with, in addition to the information provided in this manual.

1.2 Purpose

Large volumes of CO_2 can be released in well shafts and ventilation and purge shafts as a result of pressure drops. High concentrations of CO_2 in respiratory air leads to disorientation, unconsciousness and death.

SEWERIN's **FLIS-EX** (**FLIS** for short) helps ventilate and purge shafts.

1.3 Intended use

The following work can be performed in shafts with the **FLIS**:

- ventilating (supplying fresh air)
- purging (extracting harmful gases)

Always observe national regulations for the respective application when using the **FLIS**. For example, in Germany please observe the following:

● DGUV (German Social Accident Insurance Institution) regulation 113-004	Working in tanks and confined spaces
● DGUV provision 22	Accident prevention regulation for wastewater engineering plants
● DGUV regulation 103-003	Working in enclosed spaces in wastewater engineering plants
● DGUV regulation 103-002	District heating distribution plants
● DGUV principle 313-002	Selection, training and commissioning of experts for measuring pursuant to BGR 117 – part 1, DGUV principle 313-002
● DGUV regulation 113-001	Explosion protection regulations (Ex-RL)

The **FLIS** must not be used in oxygen-enriched atmospheres. Otherwise the device will not be explosion-proof.

2 Features

The **FLIS** has been constructed in accordance with the European explosion protection standard ATEX 100a and complies with the CENELEC recommendations.

The **FLIS** contains the following electrical equipment:

	Type	EU type examination certificate
Fan motor	EeeA.. 56./..	PTB 03 ATEX 3004
Motor protection switch	5823/8	DMT 01 ATEX E153 U
Starting/operating capacitor	27 ...	SEV17 ATEX 0165 X

The **FLIS** comes with:

- suction hose with cage
- extension hose
- extension hose in canister holder

The cage of the suction hose prevents dirt from getting into the device (e.g. branches, leaves). Extension hoses do not have a cage.

The hoses are attached to the **FLIS** using the bayonet fitting and secured with a butterfly nut.

Hoses can be connected to each other. Using more than three hoses can reduce the air volume of the FLIS.

3 Operation

The **FLIS** can both ventilate and purge shafts. Either of the two options is selected depending on:

- the type and size of the shaft
- the anticipated gases
- the regulations of the responsible German Social Accident Insurance Institution or other legal stipulations

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WARNING!
Risk of poisoning from toxic gases
Shafts may contain harmful toxic gases.

- When purging, always wait the specified time before entering the shaft (section 3.2).
- Always measure the gas concentration before entering.
- Always take a gas measuring device into the shaft with you, so that you can respond immediately if the suction capacity of the **FLIS** is no longer sufficient.
- Never switch off the **FLIS** if there is anyone in the shaft.

3.1 Preparing the device

Regardless of how the **FLIS** will be used (for ventilating or purging), it is always prepared for use as follows:

1. Place the **FLIS** at the edge of the shaft.
   - The **FLIS** must be stable and protected against shocks.
   - Make sure that coarse dirt does not get into the **FLIS** device.
2. Open the inspection cover.
3. Attach the hoses.
   - The table below contains information about the connection options and the ways in which hoses can be combined.
   - Tighten the butterfly nuts on the nozzle to ensure a secure mechanical and electrical contact.

4. Dangle the hoses in the shaft as follows.
   - Ventilate: extension hose
   - Purge: suction hose

     The cage of the suction hose must be inside the shaft.

Connection options

Type of use	**Suction intake**	**Exhaust opening**
Ventilating	1 × ◍	1 × ◯ or 2 × ◯
	1 × ◍ + 1 × ◯	1 × ◯
	no hose	1 × ◯ or 2 × ◯ or 1 × ◯ + 1 × ◍ or 2 × ◯ + 1 × ◍
Purging	1 × ◍	no hose or 1 × ◯ or 2 × ◯
	1 × ◍ + 1 × ◯	no hose or 1 × ◯
	1 × ◍ + 2 × ◯	no hose

◍ Suction hose ◯ Extension hose

3.2 Switching the device on

Once you have prepared the device (section 3.1), you can start to use it.

1. Connect the device outside of the explosive area.
   - Do this by connecting the **FLIS** to the power supply. Switch on the device at the motor protection switch.

   The device starts to ventilate or purge the shaft.
2. Wait for at least 6× the air volume before you start to enter the shaft.

Air volume (calculating the waiting time)

Before entering the shaft, always ensure that harmful gases are adequately purged or diluted. The respective waiting time depends on the power of the fan and the volume of the shaft.

Typical fan power [m³/min]	Waiting time [min]* for 6-times air volume in a space volume of	
	3 m³	10 m³
3.5	5:30	17:30

* Times rounded up

The waiting time for other space volumes is calculated as follows:

$$\text{Waiting time} = \text{6-times } \frac{\text{volume of space}}{\text{fan power}}$$

3.3 Switching off the device

1. Switch off the device at the motor protection switch.
2. Disconnect the device from the power supply.

4 Maintenance and servicing

The **FLIS** does not require maintenance. An inspection protocol is appended for regularly checking the device in accordance with DIN 60079-17.

4.1 Visual inspection

The **FLIS** does not have enclosed housing. Therefore, damage from external influences are possible.

FLIS

- Check the **FLIS** for visible outer damage before each use.
- Always inspect the device when it is powerless (disconnect the mains plug).
- Never use a faulty device.
- Return faulty devices to the manufacturer for repair.

Hoses

- Check the hoses for mechanical damage.
  - − Hose fabric free from damage?
  - − Lug of hose clip:
    ensures contact with nozzle (clamping coil)?
  - − Replace the damaged hoses.

4.2 Cleaning

- Always disconnect the mains plug before cleaning.
- Clean with a damp cloth. Dry cloths run the risk of electrostatic charge on the housing surface.
- Remove significant contamination immediately.

5 Transport, storage, storing the hose

Transport and storage

- Protect the **FLIS** from mechanical damage during transportation. Pay attention in particular to the bottom of the device which is freely accessible.
- Make sure the device is dry when storing.
- Always wind up the connection cable for transport and storage.

Storing the hose

There are two canister holders built into the **FLIS** for storing the hoses. The canister holders have a locking bolt on the open side.

- Secure your hoses to make sure they cannot fall out.
  - − Do this by allowing the bayonet fitting on the end of the hose to engage in the locking bolt.

6 Appendix

6.1 Technical data

Model	230 V~ / 50 Hz
Explosion protection	yes
Position of use	upright
Protection class without the hoses fitted	IP23
Protection class with the hose fitted on the suction side	IP43
Air volume when the suction hose is connected with 2 extension hoses (each 2.3 m)	approx. 3.5 m^3/min
Motor output	120 W / 0.7 A
Sound level when hoses are connected	60 dB (A) / 1 m
Weight	19 kg
Dimensions (W × H × D)	50 × 40 × 40 cm
Cable length	20 m
Permitted operating/storage temperature	-15 – 40 °C
Permitted moisture	0 – 90 % r.h.
Permitted atmospheric pressure	860 – 1100 hPa

6.2 Explosion protection

The **FLIS-EX** is classified in explosion protection group II2G IIC T4 Gb and is suitable for the following atmospheres:

- Methane CH_4
- Propane C_3H_8
- Butane C_4H_{10}
- Hydrogen sulphide H_2S
- Carbon monoxide CO
- Hydrogen H_2

EU type examination certificate: TÜV 05 ATEX 2766 X

6.3 Accessories

Part	Order number
Suction hose with cage	ZG03-Z0401
Extension hose	ZG03-Z0201
Extension hose in canister holder	ZG03-81000

6.4 Declaration of conformity

Hermann Sewerin GmbH hereby declares that the **FLIS-EX 230 V** fulfils the requirements of the following guideline:

- 2014/34/EU

Gütersloh, 2016-04-20

Dr S. Sewerin
(Managing Director)

The complete declarations of conformity can be found online.

6.5 Inspection protocol

INSPECTION PROTOCOL **FAB No. (e. g.: 008 01 xxx)** **according to DIN EN 60079-17**	**FLIS-EX**	SEWERIN

24.01.2023

1.0	**Visual check (to be performed by the user before starting to work)**	
1.1	Housing in perfect condition	
1.2	Mains connection line undamaged	
1.3	Suction hose undamaged	
1.4	Extension hose undamaged	
1.5	Butterfly nut at the connecting pieces runs smoothly and evenly	

2.0	**General functional check**	
	Put the device into operation > Check suction effect at the suction hose	

3.0	**Close examination (check of the original state)**	
3.1	Check identification plates:	
	– FLIS identification plate is present	
	– Identification plate of protective motor switch is present	
	– Identification plate present at the valve unit (with explosion protection marking)	
3.2	Mains connection line of type H07RN-F3G	
3.3	Check all modules for firm seating	
3.4	Sticker with cleaning instructions is present	

4.0	**Detailed check (to be performed by a specialist, e.g. after maintenance)**	
4.1	Resistance of the electrical connection(with connected hoses):	
	– Earthing contact – suction hose (< 100 ohms)	
	– Earthing contact – venting hose (< 100 ohms)	
4.2	Test of the protective motor switch: Block fan roller in switched-off state > switch on: Motor must switch off automatically after max. 16 seconds	
4.3	Equipment test according to BGV A2 (VDE0701/0702): Insulation resistance > 0.5 Mohms / 500V	

Place, date Signature

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