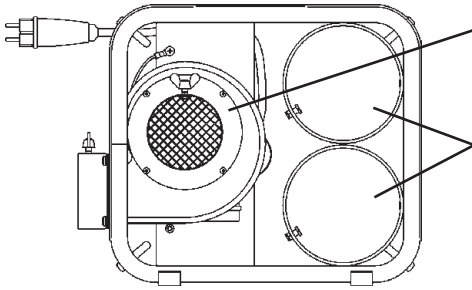


FLIS-EX / FLIS

Operating Instructions



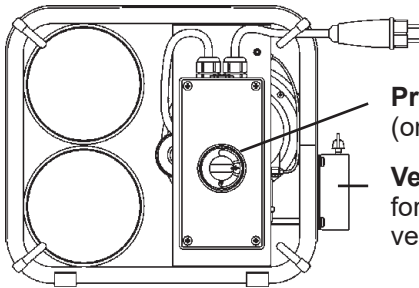
Side view A



Suction port
for connecting the suction
hose

Holder
with bayonet lock
for hose storage

Side view B



Protective motor switch
(only for **FLIS-EX**)

Venting port
for connecting the
venting hose

Operating instructions

FLIS-EX / FLIS

15.11.2018 a – 104163 – en



CAUTION!

This symbol is used to indicate dangers which may either result in hazards for the operators or in severe damage – or even destruction – of the product.



Note:

This symbol is used to call attention to information and tips which may be helpful and which are exceeding the basic operating procedures.

1	General information	1
1.1	Warranty	1
1.2	Application	2
1.3	Intended use	2
2	Equipment.....	3
2.1	Device variants.....	3
2.2	Device components.....	3
2.3	Hoses and their connections	3
3	Operation	4
3.1	Preparation.....	4
3.1.1	Notes on using the hoses.....	5
3.1.2	FLIS in venting mode (blowing air in).....	5
3.1.3	FLIS in suction mode (blowing air out).....	5
3.2	Putting the device into operation.....	5
3.3	Air flow rates	6
3.4	Switching the device off.....	6
4	Maintenance and service.....	6
4.1	Visual check of the device.....	7
4.2	Cleaning	8
5	Storage and transport.....	8
6	Hose storage	8
7	Appendix.....	9
7.1	Technical data	9
7.2	Explosion protection.....	9
7.3	Scope of delivery/Accessories	10
7.4	EU declaration of conformity	10
7.5	Inspection Protocol.....	11

1 General information

1.1 Warranty

To ensure reliable operation and safety, it is required to pay attention to the following notes.

Hermann Sewerin GmbH is not liable for damage caused by failure to comply with these notes. The guarantee and liability conditions of the sales and delivery conditions of Hermann Sewerin GmbH are not extended by the following notes.



This product may only be taken into operation after reading thoroughly the accompanying operating instructions.

- This product may only be taken into operation by sufficiently qualified staff who is familiar with the legal requirements (in Germany: BGI regulations governing safety and the protection of health at work).
- This product may only be used for intended applications.
- This product is exclusively destined for industrial and commercial applications.
- Repairs may only be performed by qualified experts or appropriately trained staff.
- Modifications and conversions may only be carried out with prior written consent of Hermann Sewerin GmbH. The manufacturer is not liable for damage resulting from arbitrary modifications of the product and for the explosion-proof of the relevant device variant.
- Only accessories manufactured by Hermann Sewerin GmbH may be used in conjunction with the product.
- Only spare parts which are approved by Hermann Sewerin GmbH may be used for repairs.
- Technical changes within the scope of further development reserved.

Apart from the notes and instructions included in these operating instructions, adhere also strictly to all generally valid safety and accident prevention rules!

1.2 Application

In case of spontaneous pressure expansion in mineshafts, pits or ventilation ducts, large quantities of CO₂ can be released. High CO₂ concentrations in the inhaled air may lead to cloudiness of consciousness, disorientation, unconsciousness and even death.

FLIS (also: **F.L.I.S**[®], short for: fresh air in the pit) made by SEWERIN is used for the aeration and venting of pits.

1.3 Intended use

Do not use the FLIS-EX in oxygen-enriched atmospheres. Otherwise it will not be explosion-proof.

FLIS may be used to perform the following work in pits:

- Blowing in of fresh air
- Venting of potentially hazardous gases

When using **FLIS**, observe the valid national regulations for the respective application.

2 Equipment

2.1 Device variants

The device can be delivered in two versions:

- **FLIS-EX** 230 V~/50 Hz (with explosion-proof)
- **FLIS** 12 V=

The **FLIS-EX** design complies with the European explosion proof standard ATEX 100a and corresponds to the CENELEC recommendations.



Note:

The descriptions in the following sections apply to both device types, if no explicit reference is made to a specific variant. In these cases, only **FLIS** is used for reasons of convenience.

2.2 Device components

FLIS-EX contains the following electrical components:

	Type	EC-type-examination certificate
Blower motor	EeeA.. 56./..	PTB 03 ATEX 3004
Protective motor switch	8146...	PTB 01 ATEX 1024
Starter/operation capacitor	247 ...	SEV17 ATEX 0165 X

2.3 Hoses and their connections

The basic **FLIS** equipment comprises a suction hose and a venting hose.

At one end, the suction hose is provided with an intake strainer which prevents that foreign bodies (e. g. twigs, leaves) penetrate the device.

Suction hose and venting hose are connected to the appropriate **FLIS** ports with the help of bayonet locks.

3 Operation

FLIS can be used for the aeration and venting of pits. The method to be used depends on

- the type and dimensions of the pit,
- the type of gases to be expected and
- the regulations of the responsible authority.



CAUTION! Danger of life!

Make sure that the **FLIS** is never switched off, as long as persons are still in the pit.

Before entering the pit, always wait until the pre-set time has passed (see chapter 3.3). Always measure the gas concentration before entering the pit.

Always take a gas measuring instrument with you when entering the pit, so that you can react immediately if the suction power of the **FLIS** is no longer sufficient.

3.1 Preparation

Independent of the type of device and application (aeration or venting), the **FLIS** is always prepared for use as follows:

- Place the **FLIS** at a position near the edge of the pit.
 - The **FLIS** must be placed in a stable position and protected from shocks.
 - Prevent any ingress of significant soiling in the **FLIS**.
- Open the cover of the pit.
- Connect the hoses (refer to the illustration on the cover). Pay attention to the notes in chapter 3.1.1.

Connect suction hose to suction port

Connect venting hose to venting port

Tighten the appropriate wing nuts firmly.



CAUTION!

Always tighten the wing nuts at the connecting ports firmly to ensure a safe mechanical and electrical coupling.

3.1.1 Notes on using the hoses

- It is not mandatory to use the hose which is **not** inserted into the pit (suction hose for blowing in; venting hose for blowing out).
You may combine both hoses so that an extended hose is available for use.
- **The venting hose must not be used as suction hose.**
Exception: You are working with an extended hose by combining suction hose and venting hose. In this case, it is required to attach the venting hose to the venting port and to place the strainer of the suction hose down into the pit.

3.1.2 FLIS in venting mode (blowing air in)

- Hang the venting hose into the pit.

3.1.3 FLIS in suction mode (blowing air out)

- Hang the suction hose into the pit.
- If you are working with the venting hose being attached to the venting port:
Route the hose in a way that the gases taken in cannot flow back into the pit.

3.2 Putting the device into operation

After having prepared the device for use (see chapter 3.1), you can put it into operation.

1. Connect the device outside of the explosion hazardous area (FLIS-EX):

FLIS-EX	Connect mains plug to earthing contact socket with GND (e. g. generator)
FLIS	Connect cable to 12 V DC voltage source (e. g. cigarette lighter inside vehicle)

2. Switch the device on using the protective motor switch.
Aeration or venting of the pit is started.

3. Wait until the device has at least changed the volume of the pit six times before entering.

Refer to chapter 3.3 to find more information on air flow rates and delay times.

3.3 Air flow rates

Before entering the pit, it must be absolutely ensured that harmful gases are sufficiently removed and/or diluted. The associated delay time depends on the fan performance and the total spatial volume of the pit.

Device	Typical blower output [m ³ /min]	Waiting time [min] for sixfold air exchange at a spatial volume of	
		3 m ³	10 m ³
FLIS-EX	3.5	5:30	17:30
FLIS	2.5	7:30	24

Note: The times in the table are approximate values.

The delay time for other spatial volumes is calculated using the following formula:

$$\text{Waiting time} = 6 \times \frac{\text{Spatial volume}}{\text{Blower output}}$$

3.4 Switching the device off

1. Switch the device off using the protective motor switch.
2. Disconnect the device from the power supply.

4 Maintenance and service

FLIS is maintenance-free. Use the inspection protocol in the appendix to perform the regular device checks according to DIN 60079-17.



CAUTION!

Before every use, check the **FLIS** for visible external damage (see chapter 4.1).

4.1 Visual check of the device

The components of the **FLIS** are freely accessible from several sides. For this reason, damage due to external effects cannot be completely ruled out.



CAUTION! Danger of life!

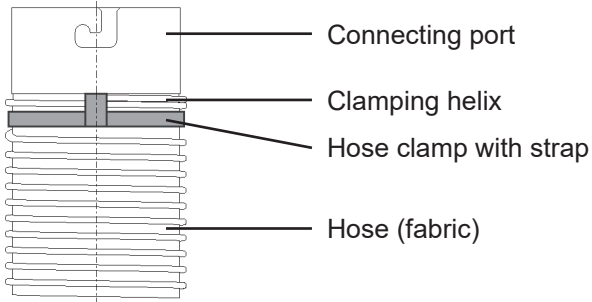
Always perform the device check only after disconnecting the device from the mains (pull mains plug). Never put a defective device into operation.

Return defective devices to the manufacturer to have them repaired. Damaged hoses must be replaced.

Hoses

Check the hoses for mechanical damage.

- Is the hose fabric undamaged?
- Is the contact to the connecting port (clamping helix) still ensured?



4.2 Cleaning



CAUTION!

The device may only be cleaned with a **damp** cloth. Otherwise electrostatic discharges may occur at the housing surface.

- Always pull the mains plug before starting cleaning.
- Remove any significant soiling immediately.

5 Storage and transport

Protect the **FLIS** against mechanical damage during transport. Pay particular attention to the freely accessible bottom of the device.

- Store the device in a dry place. Always wind up the cable before storing or transporting the device.

6 Hose storage

The **FLIS** is provided with two supports for storing the hoses. Locking bolts are located at the open side of the holders.

- Protect the hoses against falling out by engaging the bayonet locks of the hose ends into the locking bolts.

7 Appendix

7.1 Technical data

Device name	FLIS-EX	FLIS
Construction:	230 V~/50 Hz	12 V=
Explosion-proof:	yes	no
Normal position of use	upright	
Protection class without hoses fitted	IP 23	
Protection class with hoses fitted on the suction side	IP 43	
Air flow rate with connected suction hose and exhaust hose (3.3 m each):	approx. 3.5 m ³ /min	approx. 2.5 m ³ /min
Motor capacity:	120 W / 0.7 A	55 W / 4.6 A
Sound level with connected hoses:	60 dB (A) / 1 m	
Weight:	19 kg	15 kg
Dimensions (W x H x D):	500 x 400 x 400 mm	
Cable length:	20 m	
Perm. operating/storage temperatures	-15 °C to +40 °C	
Perm. humidity	0% r.h. to 90% r.h.	
Perm. ambient pressure	860 – 1100 hPa	

7.2 Explosion protection

The **FLIS-EX** is assigned to the explosion-protection group IIG IIC T4 for the following atmospheres:

- Methane CH₄
- Propane C₃H₈
- Butane C₄H₁₀
- Hydrogen sulphide H₂S

- Carbon monoxide CO
- Ammonia NH₃
- Hydrogen H₂

EC-type-examination certificate; TÜV 05 ATEX 2766

7.3 Scope of delivery/Accessories

The delivery includes:

- Exhaust fan with connection cable (20 m)
- Suction hose with intake strainer, flexible, 3.3 m long
- Venting hose with intake strainer, flexible, 3.3 m long

The following accessories are available:

- Spare hose quiver, 3.3 m hose with bayonet locks (without intake strainer)
- Adapter to the mains 230 V~/12 V= for operating the **FLIS** with a supply of 230 V~

7.4 EU declaration of conformity

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

- 2014/34/EU

Hermann Sewerin GmbH hereby declares that the **FLIS 12 V** fulfils the requirements of the following guideline:

- 2014/30/EU


Gütersloh, 2016-04-20



Dr. S. Sewerin
(General Manager)

The complete declarations of conformity can be found online.

7.5 Inspection Protocol

INSPECTION PROTOCOL FAB No. (e. g.: 008 01 xxx) according to DIN EN 60079-17	FLIS-EX <div style="border: 1px solid black; width: 100%; height: 15px; margin-top: 5px;"></div>	
20.07.2018		

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	Venting 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

Hermann Sewerin GmbH
Robert-Bosch-Straße 3 · 33334 Gütersloh · Germany
Telefon +49 5241 934-0 · Telefax +49 5241 934-444
www.sewerin.com · info@sewerin.com