

# SFH-1 and SFH-6

## FOG SIGNAL INSTRUCTION MANUAL



## DOCUMENT REVISION HISTORY

| Revision | Date                        | Comments                           | Made By |
|----------|-----------------------------|------------------------------------|---------|
|          |                             |                                    |         |
|          |                             |                                    |         |
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|          |                             |                                    |         |
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## CONTENT

|   |           |
|---|-----------|
| <b>1. INTRODUCTION.....</b>                                 | <b>4</b>  |
| <b>2. TECHNICAL DETAILS .....</b>                           | <b>4</b>  |
| 2.1. Performance .....                                      | 5         |
| 2.2. Energy Consumption .....                               | 5         |
| <b>3. INSTALLATION .....</b>                                | <b>6</b>  |
| 3.1. Mechanical Installation .....                          | 6         |
| 3.2. Electrical Installation.....                           | 6         |
| 3.3. Applying power .....                                   | 9         |
| <b>4. TROUBLESHOOTING .....</b>                             | <b>10</b> |
| 4.1. If horn not functioning at correct volume check: ..... | 10        |
| 4.2. If horn is functioning intermittently: .....           | 10        |
| <b>5. SCHEMATIC DIAGRAMS .....</b>                          | <b>11</b> |
| 5.1. SFH-1 Electrical.....                                  | 11        |
| 5.2. SFH-6 Electrical.....                                  | 12        |
| 5.3. Exploded mechanical view of SFH-1 .....                | 13        |
| 5.4. Exploded mechanical view of SFH-6.....                 | 14        |
| 5.5. Exploded mechanical view of SFH-6 Slave Unit.....      | 15        |
| <b>6. DECLARATION OF CONFORMITY .....</b>                   | <b>15</b> |
| <b>7. NOTES .....</b>                                       | <b>16</b> |

This equipment shall only be installed by Service Persons having appropriate technical training and experience necessary to be aware of all hazards that are involved in the installation procedure. Oy Sabik Ab takes no responsibility of installation made by other than Sabik personnel. Sabik Oy takes no responsibility for typing errors in this manual.



# 1. INTRODUCTION

This manual is intended for qualified authorized personnel only.

SFH-1 is a single (standalone) unit and SFH-6 consists of SFH-1 and a slave unit with three drivers. The main unit is bolted on the slave unit. The power amplifier is always placed inside the top unit.

SFH-1 and SFH-6 Fog Signals are a 0,5 and 3,0 nm audio signals. The Fog Signal is a new development, compact and lightweight unit designed for marine applications. SFH-1 is equipped with three compressor drivers and with an integrated power amplifier. SFH-6 is equipped with six compressor drivers. SFH-1 and SFH-6 complies with standard IEC 60079-0 Ex components intended for use in explosive atmospheres.

## Standard features

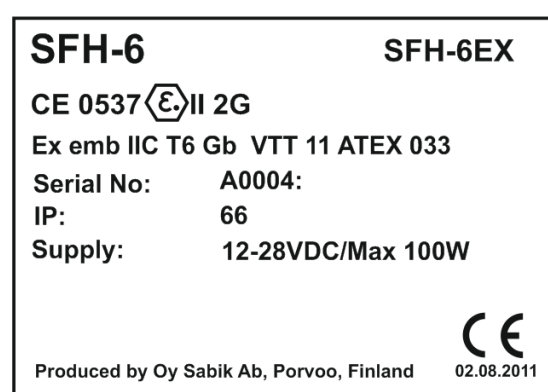
- Signal range SFH-1: 0,5 nm SFH-6 2,0 nm
- Output SFH1:120,5 dB at a frequency of 653 Hz 12W  
SFH-6:133 dB at a frequency of 653 Hz 100W
- Corrosion resistant aluminium housing
- Low power consumption, suitable for solar and battery operation
- Maintenance free design
- As standard delivered with Morse U 30 (0,75+1+0.75+1+2.5 +24 sec) audio signal, on request other characters
- Used on fixed offshore structures, oil/ gas platforms, offshore wind farms, FSO and FPSO tankers

## Optional features

- As standard delivered with Morse U 30 sek audio signal, on request other characters
- Cable synchronization between signal units on request
- Can be installed together with a Sabik fog detector



SFH-1 Nameplate



SFH-6 Nameplate



## 2. TECHNICAL DETAILS

### 2.1. Performance

The main technical specifications below:

| Specification          | Value                             |                                   |
|------------------------|-----------------------------------|-----------------------------------|
| Standard configuration | SFH-1                             | SFH-6                             |
| Input voltage range    | 12 - 28 V DC                      | 12 - 28 V DC                      |
| Max power consumption  | 12 W                              | 100W                              |
| Signal Output          | 120,5 dB                          | 133 dB                            |
| Standby Power          | 12 mW (less than 1.0 mA @ 12 VDC) | 12 mW (less than 1.0 mA @ 12 VDC) |
| Nominal range          | 0,5 Nautical miles                | 2,0 Nautical miles                |
| Body material          | Corrosion resistant Aluminum      | Corrosion resistant Aluminum      |
| Weight                 | 33 kg                             | 65 kg                             |
| Protection class       | IP 66                             | IP 66                             |
| Temperature range      | -20°...+40°C (-40F...+122F)       | -20°...+40°C (-40F...+122F)       |
| Certification          | II 2G, Ex emb IIC T6 Gb           | II 2G, Ex emb IIC T6 Gb           |
| Certificates           | VTT 11 ATEX 033                   | VTT 11 ATEX 033                   |

### 2.2. Energy Consumption

The fog signal is designed for a wide range of power supplies including solar power, primary battery and other DC supplies. A high overall efficiency is maintained over a wide range of supply voltages, and consumption between signals is minimized.

When calculating the daily power consumption also the consumption between signals and the consumption of any of the options installed should be considered.

## 3. INSTALLATION

### 3.1. Mechanical Installation

**Installation and maintenance must only be carried out by specially trained staff.**

The SFH-1 Fog Signal unit should be mounted and bolted down either to a suitable support structure or directly to a concrete base using the 3 x M12 – A4 stainless steel bolt through the holes provided on 212PCD with insulating shoulder washers above and below, Flat washers and Nyloc nuts to ensure they do not vibrate loose with Fog signal frequency.

No fixings are provided unless requested at time on order as some customers fabricate studs into their supporting structure and prefer to control their own fixing schedule. The Horn should be positioned at least 5 metres away from any flat wall or obstruction. Preferably the horn should have unobstructed 360 degree view around it. While this is not always possible it should be remembered that any solid flat wall or fence will reflect the sound in that direction and reflected sound may cancel or create dead spots diametrically opposite their position to seaward of the horn. This affect will vary depending on the strength and direction of the wind at time of use so the horn position must be chosen carefully.



Since the horn may be started remotely or automatically by means of the FD7100 fog detector the public must not be able to walk round the horn perhaps at the end of a breakwater and warning signs should be displayed if there is a possibility of this happening. Remember the horn can generate between 120 and 132 dB at 1 meter so **CARE MUST BE EXERCISED** when the system is live.

### 3.2. Electrical Installation

All maintenance operations must be carried out according to the directions of the European Standards EN 60079-17 (current edition). **Do not open cover in explosive atmosphere when power is connected!**

**WARNING: do not apply power to the Fog Signal yet!**

**First connect the ground terminal!**



Ground terminal

Cables supplied by Sabik are marked as follows:

|     |  |
|-----|--|
| PE  | Protective Earth (connect first)                                 |
| B+  | Battery Positive (+)   |
| B-  | Battery Negative (-)   |
| COM | Common for feedback relay  |
| NO  | Feedback relay Normally Open (follows signal)<br>Max load 24V/1A |
| OFF | Remotely OFF (connect to B-)                                     |
| ON  | Muting (2h) (Connect to B-)                                      |



If the cover clips are secured by padlocks, open and remove them first. Open the 6 stainless steel clips provided and lift off the top casting cover.

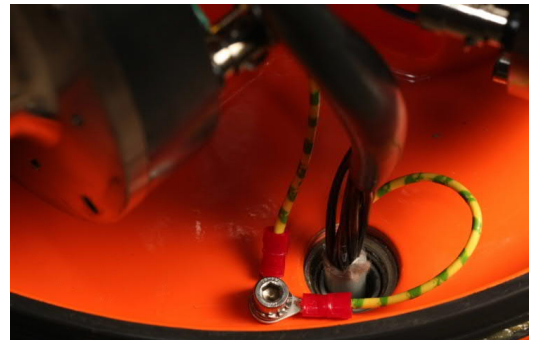


*Padlock on clip*

The main drive board is located between the drivers on the top unit.

If unit is supplied without cables, the cable should be attached to the driver board inside the top cover.

First connect the Protective earth (green/yellow) using a 4mm Allen key



Input  
connection  
terminal

SFH-6 Fog Signal



Sealed Driver Board



## Insert/Change Fuse

The SFH-1 and SFH-6 are fitted with its own fuse. Each driver is also protected by its own 2 Ampere internal automatic fuse (not replaceable). The internal fuses are reset by powering off for at least 15 minutes. The size of the main fuse depends of the voltage applied (12V fuse 10A and 24V fuse 6A). Use an Allen key (8mm) to unscrew the top of fuse box.

Replace with fuse type gG/gL (14x51mm)

12V: Bussmann C14G10

24V: Bussmann C14G6



Fuse

## 3.3. Applying power

Activate power to the horn **WEARING HEARING PROTECTION!** The horn will cycle on its selected character until de-activated or until the external switch induces a 2-hour delay.

**WITH POWER ON, THE HORN WILL IMMEDIATELY START SOUNDING ON CHARACTER IF THE DELAY IS DE-ACTIVATED, SO ALWAYS WEAR HEARING PROTECTION IF THE SYSTEM IS LIVE.**

**Warning: The delay switch will not operate with the horn powered off thus on first power connection the horn will activate immediately and ear defenders are required.**

## 4. TROUBLESHOOTING

### 4.1. If horn not functioning at correct volume check:

- (a) Supply voltage on and off load. If supply voltage dips below min voltage on fog signal label when sounding, check size of cable used, connections between battery and horn, and battery condition.
- (b) Check that un-authorised personnel have not disconnected plug and socket to horn or cable to second section.
- (c) With power off check that main fuse is intact. Replace with spare provided after checking (d) and (e) below.
- (d) Check that local fishermen have not stuffed old newspaper or other objects into the horn to silence it!
- (e) Check that each driver has a continuity of approximately 4.5 ohms and is not open circuit. Should any of the above conditions be identified, rectify and check operation of horn again.

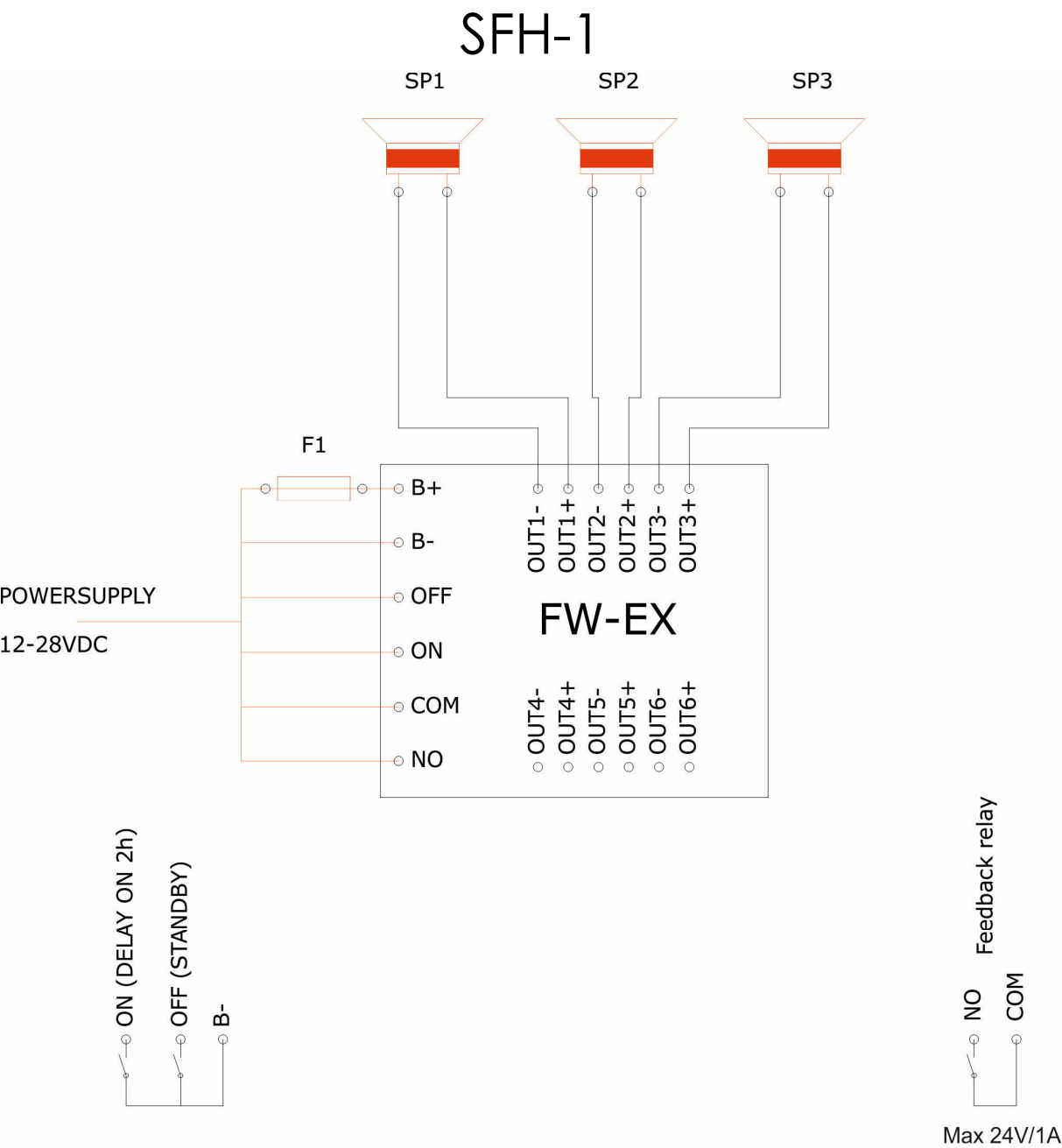
### 4.2. If horn is functioning intermittently:

- (a) Check that un-authorised personnel are not tampering with the delay switch.

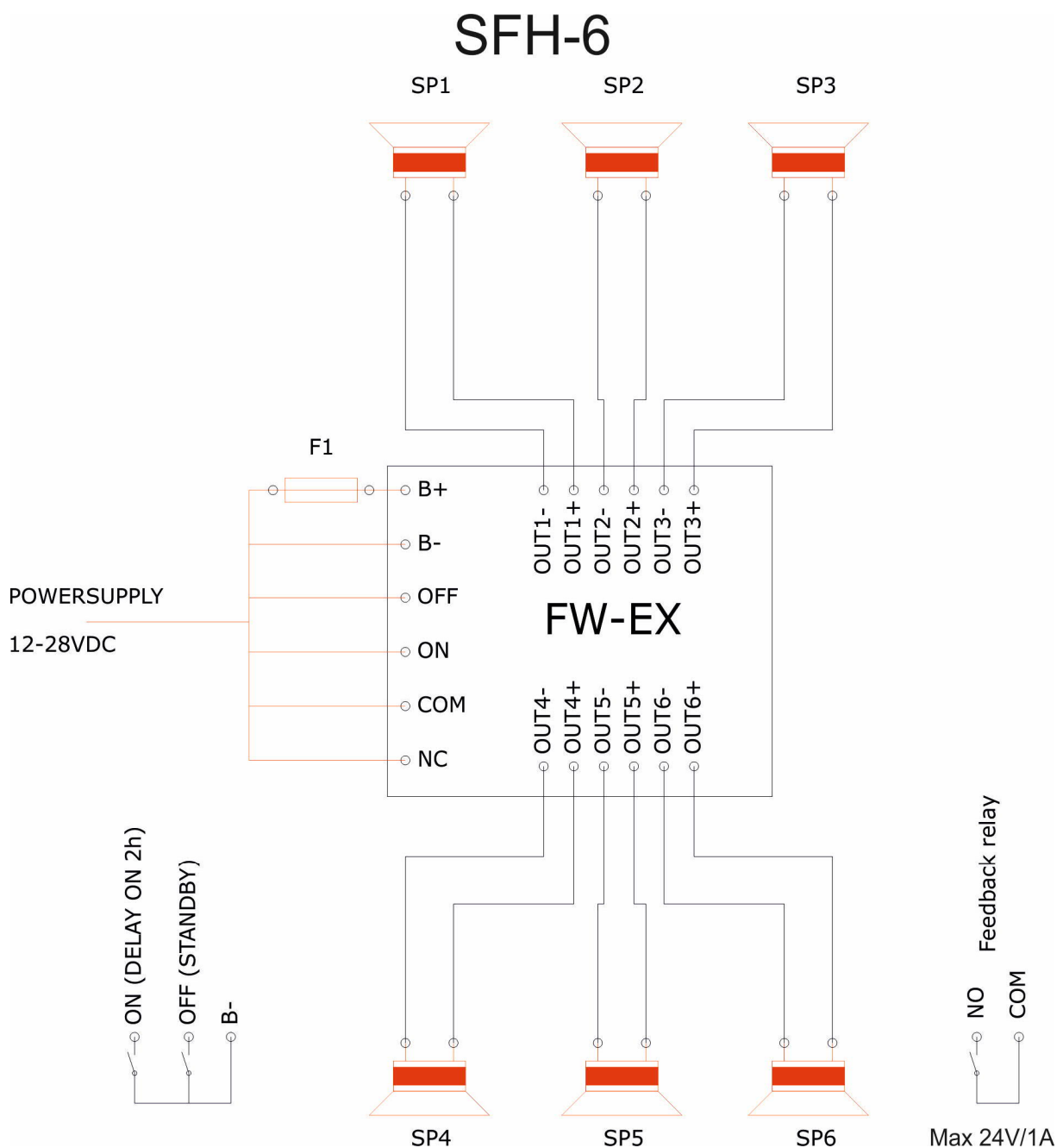
Should the above basic checks not solve the problem please consult with Sabik Oy.

# 5. SCHEMATIC DIAGRAMS

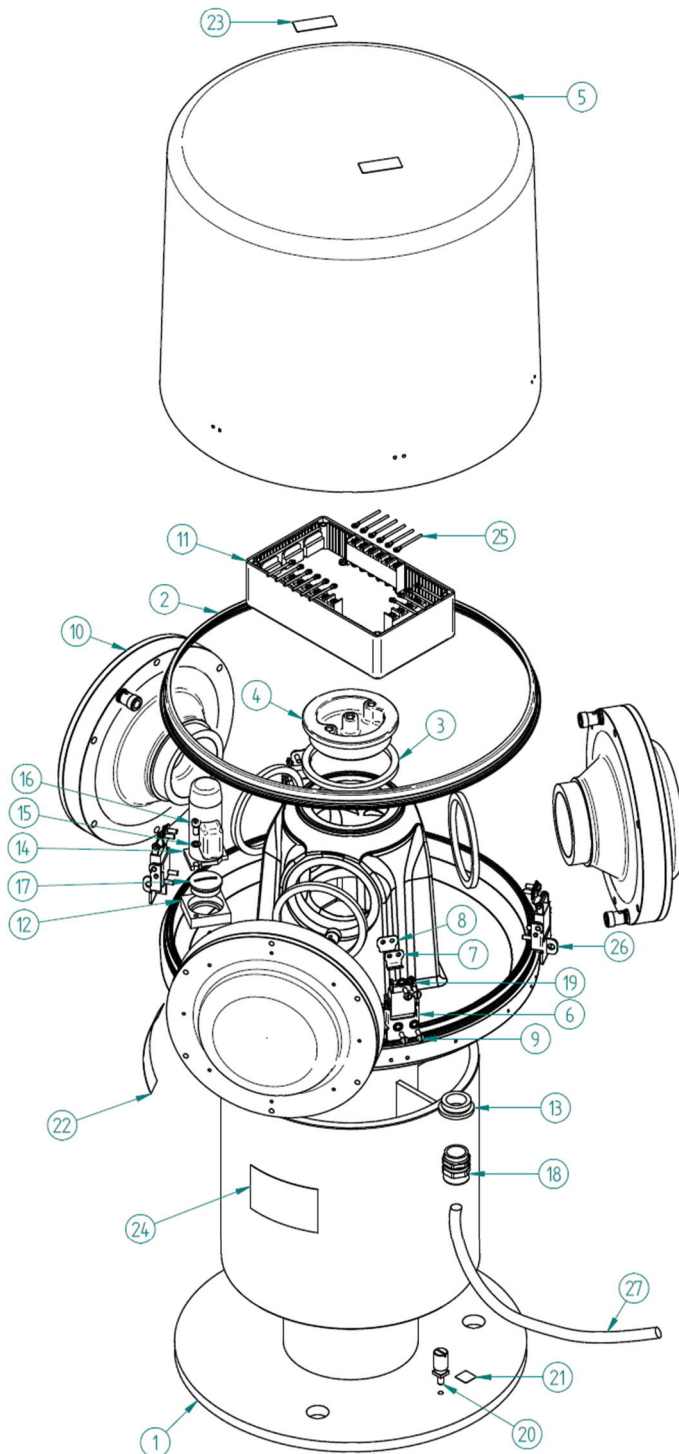
## 5.1. SFH-1 Electrical



## 5.2. SFH-6 Electrical

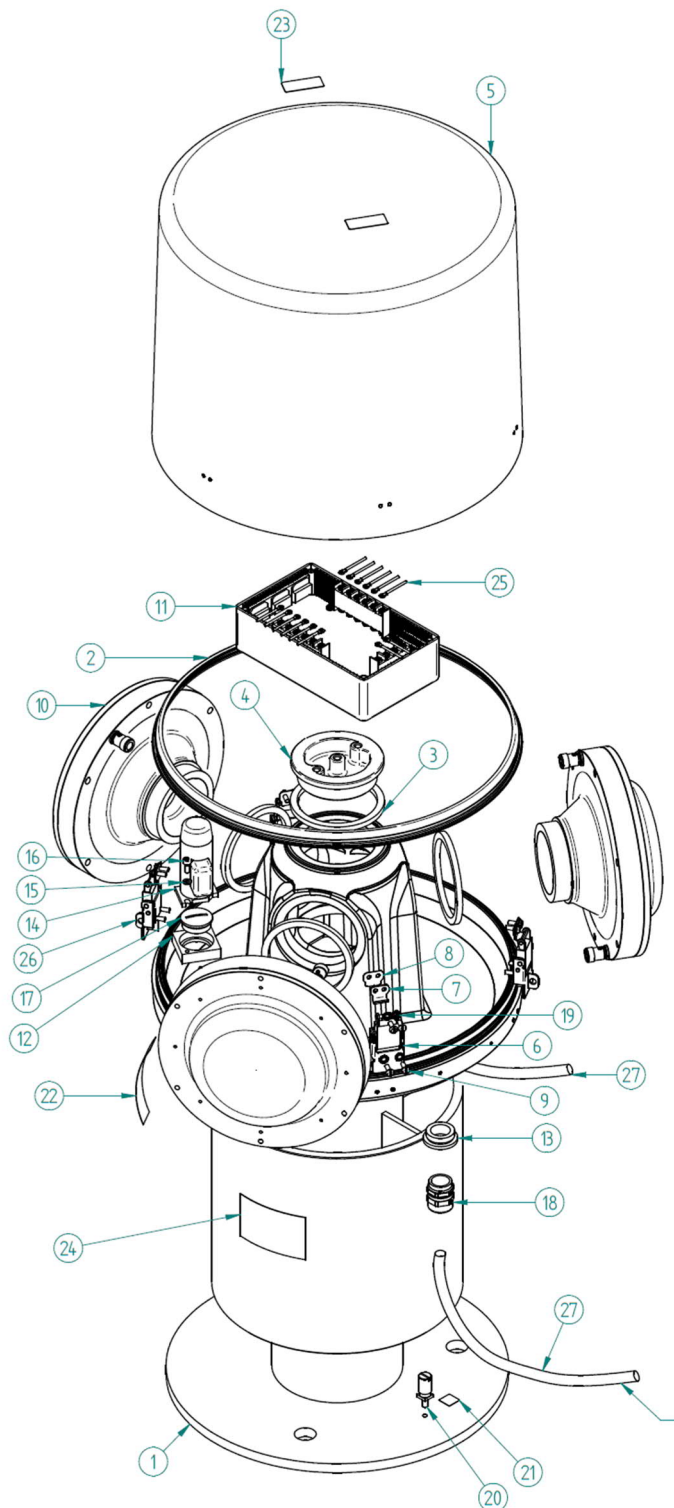


### 5.3. Exploded mechanical view of SFH-1



| Item Number | Document Number | Title  | Quantity |
|-------------|-----------------|--|----------|
| 1           | E001            | Fog tube                                       | 1        |
| 2           | M0000766        | Lid gasket                                     | 1        |
| 3           | M000770         | Plug gasket                                    | 4        |
| 4           | M000768         | Plug   | 1        |
| 5           | E002            | Fog signal Tall-lid diecast                    | 1        |
| 6           | E003            | Latch  | 4        |
| 7           | E004            | Latch catch                                    | 6        |
| 8           | E005            | Latch catch plate                              | 6        |
| 9           | E006            | Slotted pan head screw ISO 1580 - M3,5x10 A4   | 24       |
| 10          | E007            | Fog signal Compressor driver                   | 3        |
| 11          | M000633         | Driver EX                                      | 1        |
| 12          | M0000719        | Fuse attachment plate                          | 1        |
| 13          | 591047          | Reducing socket M25-M20 NI/MS                  | 1        |
| 14          | 511124          | Fuse holder + Fuse 6-10A 1/4x51mm              | 1        |
| 15          | SA634301        | Spring Lock washer M4 A4 DIN127                | 2        |
| 16          | SA619274        | Hexagon socket head cap screw M4x10 DIN 912 A4 | 2        |
| 17          | SA591123        | Block plug M25x15 NI-MS                        | 2        |
| 18          | SA591105EX      | Cable seal M20x15 NI/MS                        | 1        |
| 19          | SA636310        | Serrated lock washer M4 DIN6798 A4             | 24       |
| 20          | SA630130        | Grounding screw                                | 1        |
| 21          | S001            | Grounding mark                                 | 1        |
| 22          | S002            | Fuse sign                                      | 1        |
| 23          | S003            | Warning mark                                   | 2        |
| 24          | S004            | Type sign                                      | 1        |
| 25          |                 | Cable kit                                      | 1        |
| 26          | E008            | Locking Latch                                  | 2        |
| 27          | 715700          | SAB S200 7x1,5mm2                              | 1        |

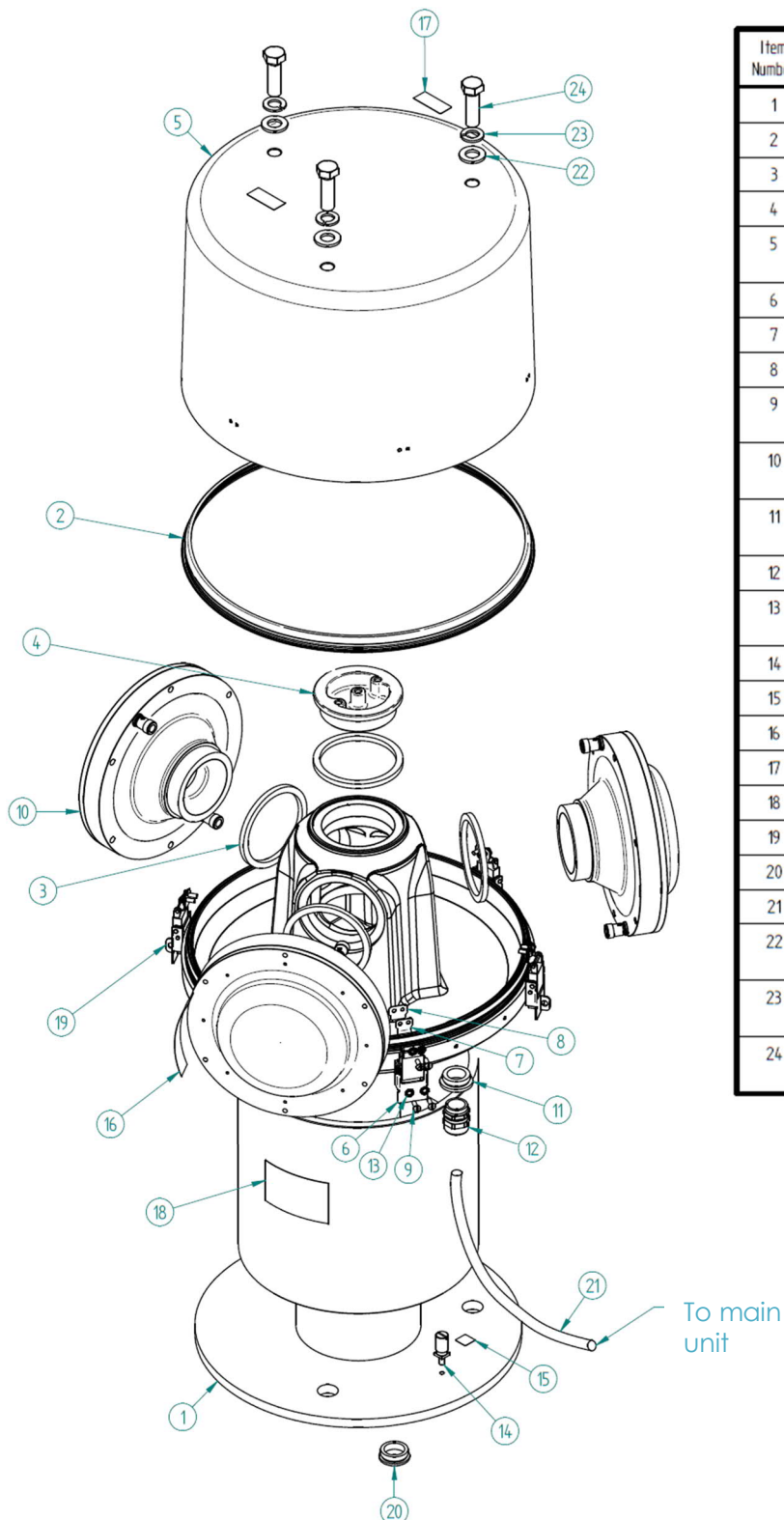
## 5.4. Exploded mechanical view of SFH-6



| Item Number | Document Number | Title  | Quantity |
|-------------|-----------------|--|----------|
| 1           | E001            | Fog tube                                       | 1        |
| 2           | M0000766        | Lid gasket                                     | 1        |
| 3           | M000770         | Plug gasket                                    | 4        |
| 4           | M000768         | Plug   | 1        |
| 5           | E002            | Fog signal Tall-lid diecast                    | 1        |
| 6           | E003            | Latch  | 4        |
| 7           | E004            | Latch catch                                    | 6        |
| 8           | E005            | Latch catch plate                              | 6        |
| 9           | E006            | Slotted pan head screw ISO 1580 - M3,5x10 A4   | 24       |
| 10          | E007            | Fog signal Compressor driver                   | 3        |
| 11          | M000633         | Driver EX                                      | 1        |
| 12          | M0000719        | Fuse attachment plate                          | 1        |
| 13          | 591047          | Reducing socket M25-M20 NI/MS                  | 2        |
| 14          | 511124          | Fuse holder + Fuse 6-10A 14x51mm               | 1        |
| 15          | SA634301        | Spring lock washer M4 A4 DIN127                | 2        |
| 16          | SA619274        | Hexagon socket head cap screw M4x10 DIN 912 A4 | 2        |
| 17          | SA591123        | Block plug M25x1,5 NI-MS                       | 1        |
| 18          | SA591105EX      | Cable seal M20x15 NI/MS                        | 2        |
| 19          | SA636310        | Serrated lock washer M4 DIN6798 A4             | 24       |
| 20          | SA630130        | Grounding screw                                | 1        |
| 21          | S001            | Grounding mark                                 | 1        |
| 22          | S002            | Fuse sign                                      | 1        |
| 23          | S003            | Warning mark                                   | 2        |
| 24          | S004            | Type sign                                      | 1        |
| 25          |                 | Cable kit                                      | 1        |
| 26          | E008            | Locking Latch                                  | 2        |
| 27          | 715700          | SAB S200 7x1,5mm2                              | 2        |

To slave  
unit

## 5.5. Exploded mechanical view of SFH-6 Slave Unit



| Item Number | Document Number | Title  | Quantity |
|-------------|-----------------|--|----------|
| 1           | E001            | Fog tube                                     | 1        |
| 2           | M000766         | Lid gasket                                   | 1        |
| 3           | M000770         | Plug gasket                                  | 4        |
| 4           | M000768         | Plug   | 1        |
| 5           | E009            | Fog signal Short-lid diecast                 | 1        |
| 6           | E003            | Latch  | 4        |
| 7           | E004            | Latch catch                                  | 6        |
| 8           | E005            | Latch catch plate                            | 6        |
| 9           | E006            | Slotted pan head screw ISO 1580 - M3,5x10 A4 | 24       |
| 10          | E007            | Fog signal Compressor driver                 | 3        |
| 11          | 591047          | Reducing socket M25-M20 NI/MS                | 1        |
| 12          | SA591105EX      | Cable seal M20x1,5 NI/MS                     | 1        |
| 13          | SA636310        | Serrated lock washer M4 DIN6798 A4           | 24       |
| 14          | SA630130        | Grounding screw                              | 1        |
| 15          | S001            | Grounding mark                               | 1        |
| 16          | S002            | Fuse sign                                    | 1        |
| 17          | S003            | Warning mark                                 | 2        |
| 18          | S004            | Type sign                                    | 1        |
| 19          | E008            | Locking Latch                                | 2        |
| 20          | SA591123        | Block plug M25x1,5 NI-MS                     | 1        |
| 21          | 715700          | SAB S200 7x1,5mm2                            | 1        |
| 22          | E012            | Stainless Steel Flatwasher (0,5")            | 3        |
| 23          | E011            | Stainless Steel lockwasher (0,5")            | 3        |
| 24          | E010            | Stainless steel bolt (1,5"x0,5")             | 3        |





## 6. DECLARATION OF CONFORMITY

OY SABIK AB  
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### EU DECLARATION OF CONFORMITY

#### The EU Directives covered by this Declaration

Council Directive 2004/108/EC (December 15, 2004) on Electromagnetic Compatibility  
Council Directive 2006/95/EC (December 12, 2006) on Low Voltage Equipment  
94/9/EC Equipment or Protective System Intended for use in Potentially explosive atmospheres

#### The Products Covered by this Declaration

Sabik Fogsignal SFH-1 and SFH-6 ref: VTT 11 ATEX 033 with marking  
II 2G Ex emb II C T6

#### The Basis on which Conformity is being Declared

The product identified above complies with the requirements of the above EU Directives by meeting the following standards:

EN 60945  
EN 60079-0 (2004)  
EN 60079-7 (2003)  
EN 60079-18 (2004)

The technical documentation required to demonstrate that the product meets the requirements of the above mentioned directives has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities. The CE mark was first applied in: 2011.

The products described above comply with the essential requirements of the directives specified.

Signed: \_\_\_\_\_

Authority: \_\_\_\_\_

Date: \_\_\_\_\_



#### ATTENTION!

The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when the product is taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request.

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SHOWS THE WAY

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## 7. NOTES