

Stethophon® 04

Operating Instructions




SEWERIN

Measurable success by Sewerin equipment

You settled on a precision instrument.

A good choice!

Our equipment stands out for guaranteed safety, optimal output and efficiency.

They correspond with the national and international guide-lines.

These operating instructions will help you to handle the instrument quickly and competently.

Please pay close attention to our operating instructions before usage.

In case of further queries our staff is at your disposal at any time.

Yours

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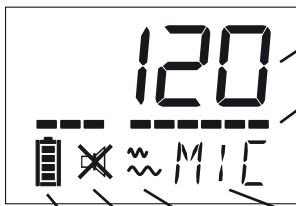
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Reading (current minimum level)

Volume, also: frequency range

- Missing segment symbolises selected volume or visible segments symbolise frequency range let through

Status notification, also: menu item / last reading / filter stage

Filter symbol

- Filter stage can be changed

Loudspeaker symbol (crossed out)

- Measuring ready to start
- Noise stopped

Battery symbol

- Current capacity of the batteries/ rechargeable batteries; the more segments are visible, the greater the available remaining capacity



Note:

All figures (except for zero) in the displays are examples. You usually get other figures when working with the device.

Abbreviations:

Status notification/Menu item	Abbreviation for	See
APF	Auto Power Off	Chap. 3.5
BAT	Battery	Chap. 3.5
END	End	Chap. 5
LDS	Loudspeaker	Chap. 5.2
MIC	External microphone	Chap. 4.3.2
PRO	Protect (threshold value hearing protection)	Chap. 5.2
RES	Reset (factory settings)	Chap. 5.2
SET	Setup	Chap. 5.1
VOL	Volume (hearing protection)	Chap. 5.2

Operating Instructions

Stethophon[®] 04

30.07.2006 – 104854 – en

Warranty & Used symbols

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 used for intended applications.
- This product is destined for industrial and commercial applications.
- Repairs may only be performed by the manufacturer or appropriately trained staff.
- The manufacturer is not liable for damage resulting from arbitrary modifications of the product.
- Only spare parts may be used which are approved by Hermann Sewerin GmbH.
- Only approved battery types may be used.

Technical changes within the scope of further development reserved.

Used symbols:



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.

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1 Intended purpose

The **Stethophon 04** is an electro-acoustic listening device for tracing leaks.

The device's sensor tip picks up the intrinsic oscillations of the object of investigation. Following internal oscillation strengthening, the **Stethophon 04** displays a relative reading and emits the attendant noise via the headphones.

Fields of use:

- Detecting leaks in the water distribution network
- Inspection of house service lines
- Examination and localization of defects in compressed air systems
- Looking for defects in heating and sanitary installations in buildings
- Check on bearings in machinery

2 Safety instructions

Personal risks (health hazard)

- The device's sensor tip could injure both yourself and others. Thus make sure you handle the device properly in transport and when measuring.
- The device has an automatic hearing protection function. Even so, only select that volume needed for noise analysis. Over-loud noises may permanently damage your listening!

Risks for the device

- Do not drop the device. Otherwise the internal microphone might get damaged.
- Never open the housing (exception: battery compartment). Otherwise this would invalidate any guarantee claims.
- Treat the device with particular care when using an extension for the sensor tip. Mechanical loading of the extended sensor tip might lead to forces arising that could ruin the internal microphone.

3 Things worth knowing about the device

3.1 Setup

Overviews with

- Designation of all **Stethophon 04** parts and
- Explanation of the symbols/abbreviations on the display can be found on the inside pages of the front cover

3.2 Operative ranges

The device has two operative ranges:

- **Measuring** > see Chapter 4
- **Basic settings** > see Chapter 5

No change is possible directly from measurement to the basic settings. The device needs to be turned off beforehand.

3.3 Factory settings

All menu items of the basic settings are set to "0". The filter stage is "5".

3.4 Hearing noises

The main purpose of **Stethophon 04** is **hearing** noises. That is why the device is almost always used with headphones.

The point of the minimum levels shown on the display is to re-inforce the “findings heard”. These digital readings on their own are not always of sufficient substance.



Note:

For effective working with the device after a short familiarization period, it is in the interests of inexperienced users to actually practise hearing (see below).

Although hearing is more important than reading the measurement values, more attention is paid in these instructions to the display. This is simply because the visible changes can be described more precisely than those of the audible ones.

The volume with which the noises are picked up can be set (see Chapter 3.4.1).

An over-loud noise posing a health risk for the user is automatically turned off (see Chapter 3.4.2).

Practise hearing this way

Train your hearing, for instance, at an exposed water pipe with tap. Learn to recognise the sound of different flows.

- Listen first to the sounds when the tap is turned off. Place the sensor tip on the water pipe and check as described in Chapter 4.
- Then listen to the noise with the tap turned on. Measure at the same measurement point as before.
- Compare the two noises.

A radiator with controllable thermostat (differences between closed/open thermostat) is another object of investigation to be practised on.

3.4.1 Setting the volume



The missing segment of the volume display symbolises the volume chosen.

- loud



- low



Change volume	
What to do?	What happens?
Keep  pressed	Noise becomes louder
OR	
Keep  pressed	Noise becomes less
Release key	The chosen volume is saved

The volume can also be changed during measuring.

3.4.2 Automatic hearing protector

The device is fitted with an automatic hearing protector. To protect the user, a noise picked up which exceeds a certain limit is turned off.

The limit for deploying the automatic hearing protector is laid down in the basic settings under **PRO**. Deactivation of the automatic hearing protector is possible.

This is how the automatic hearing protector functions

- You check.
- The current minimum level of the measurement exceeds the limit laid down.
- The noise is turned off. The crossed-out loudspeaker symbol appears in the display.

How to hear again





- Continue the measurement without any interruption. The noise is heard again as soon as the minimum level falls below the limit as the measurement is continued.

OR

- Interrupt the measurement. Lower the volume.

3.4.3 Turn off noise

You constantly pick up noises when the headphones are put on. To protect your hearing the noises between two measurements can be turned off.

Turn off/turn on noise		
What to do?	What happens? / Why?	Indication on the display
1. Press 	<ul style="list-style-type: none"> ● Noise is turned off ● Loudspeaker symbol appears 	
5. Press 	<ul style="list-style-type: none"> ● Noise can again be heard ● Loudspeaker symbol removed 	



Note:

Measurements are both started and ended with the loudspeaker key. This means you have to take off the headphones should you not want to hear any noise during measuring.

3.5 Automatic switchoff

The **Stethophon 04** turns itself off automatically

- **When the battery/rechargeable battery output is no longer adequate.** (**BAT** is briefly shown on the display). This might also arise immediately after turning on the device! Replace the batteries or charge the replaceable batteries (see Chapter 6.3).
- When the device has not been operated for **10 min** (no key pressed) or the display has remained constant. (**APF** is briefly shown on the display)


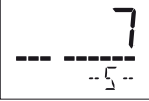

The automatic switchoff does not function with the microphone plugged in.

3.6 Display illumination

The device automatically turns on the display illumination (20 second illumination span) when **a key is pressed**.

4 Measuring

4.1 Turn the device on (measuring mode)

Turn on device (measuring mode)		
What to do?	What happens? / Why?	Indication on the display
1. Press  for some 2 seconds	<ul style="list-style-type: none"> ● Device turns itself on 	
2. Wait	<ul style="list-style-type: none"> ● Internal query as to whether power is from battery or rechargeable battery 	
3.	<ul style="list-style-type: none"> ● Battery symbol appears ● Device ready to check 	

4.2 This is the way to check







The device is turned on (see Chapter 4.1).

- Put on the headphones.
- Plug the headphones into the headphone socket.



CAUTION!

You are not aware of all surrounding noises when working with the headphones on. Thus do be extremely careful when moving in a risk-prone environment e.g. in traffic).

Measuring		
What to do?	What happens? / Why?	Indication on the display
1. Press 	<ul style="list-style-type: none"> ● Device is prepared for measuring ● Noise turned off 	
2. Place sensor tip on the object of investigation (note instruction below)		
3. Press 	<ul style="list-style-type: none"> ● Measuring is started ● Current minimum level counts downwards ● Noise turned on 	
4. Wait till the reading has set to a constant value		
5. Press 	<ul style="list-style-type: none"> ● Measuring finished ● Readout in the example on the right: Minimum level = 361 ● Noise turned off 	

Note the following when checking:

- Press the device onto the object of investigation to **ensure contact**. Avoid any damage to the object of investigation.
- Keep on measuring until you get a clear impression of the measurement point.

4.2.2 What you need to know about the noise picked up

With the device turned on you will hear noises over the headphones. Irregular background noises dominate when no measuring is being done (e.g. carrying around the switched-on device). As soon as the sensor tip is placed on an object of investigation an even hissing sound is heard. **Although the noise is still even when checking near a leak, it is considerably louder and clearer than at an undisturbed measurement point.**

You might need to practise hearing to be sure about assessing the noises (see Chapter 3.3).

4.2.3 What you need to know about the indicated reading



The reading shown on the display during measuring (here: 859) expresses the **current minimum value** of the noise intensity. Values above the minimum value are not shown.



On conclusion of a measurement, the device shows the **minimum value across the whole measurement** (here: 361).

The minimum level established is a **relative** value which is only of significance when compared with the readings of other measurement points.

Assessing two measurements one after the other is helped by always contrasting the current reading with the minimum value of the previous one (here: 007).

4.3 This is how you affect readout quality

Various factors can affect the quality of a measurement.

- Preferably only check when the number and intensity of **background noises** (e.g. opened water pipes, vibrating machinery, talking) is **low**.
- Test whether **choosing a different filter stage** produces a more explicit finding (see Chapter 4.3.1).
- **Keep the device still** when measuring. Otherwise the readings will not be true.

Use an **external microphone** that does not need to be held (see Chapter 4.3.2), if needed or **extend** the sensor tip to make it easier to get to the object of investigation (see Chapter 4.3.3).

- Never check just once.

Firstly familiarise yourself with the acoustic surroundings by carrying out a number of **test measurements**.

Repeat the actual check at a number of points around the suspected leak. In this way you will obtain a **series of significant measurements**.

4.3.1 Change filter stage

The device can operate with eight different filter stages. The choice of filter stage affects the individual perception of noise.

Each filter stage specifically emphasises certain noise constituents.


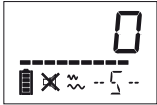



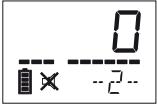
Suitability of the filter stages			
Filter stage	Frequency	Noise	Select for
1	low	dull	<ul style="list-style-type: none"> ● Large pipe diameters ● Plastic tubes ● Floors
.	⋮	⋮	⋮
.	⋮	⋮	⋮
.	⋮	⋮	⋮
.	⋮	⋮	⋮
.	⋮	⋮	⋮
8	high	clear	<ul style="list-style-type: none"> ● Small pipe diameters ● Metallic pipes

The filter stages also let through frequency ranges of differing widths.

Frequency range width in the filter stages					
Filter stage	low	<	Frequency	>	high
1					
2					
3					
4					
5					
6					
7					
8					

**Note:**

The filter stage affects internal-device calculation of the minimum level. Therefore only compare readings from one and the same filter stage.

Change filter stage		
What to do?	What happens? / Why?	Indication on the display
1. Press 	<ul style="list-style-type: none"> ● Filter symbol appears ● Current filter stage flashes ● The frequency range is shown instead of the volume 	
2. Press  OR Press 	<ul style="list-style-type: none"> ● Filter stage is raised ● Filter stage is lowered 	
3. Press 	<ul style="list-style-type: none"> ● New filter stage is taken over ● Filter symbol is removed ● Volume can be seen again 	

The last filter stage used is saved on switching off and replacing battery/rechargeable battery.

4.3.2 Use external microphone

The **Stethophon 04** can pick up the structure-borne noise of the object of investigation either through the internal-device microphone or through the external microphone.

It makes sense to work with the external microphone if, as a result, the object of investigation can be inspected more easily (e.g. setting up the microphone on surfaces).

The **BM 04 ground microphone** is an external microphone (optional extra, see Annex). It can be used outside on paved and unpaved ground and inside on floors.

Particular features when working with an external microphone

- The external microphone jack can be plugged into the microphone socket whether the device is on or off.
- The **MIC** status notification appears in the display when the microphone is connected.
- The device can **only then be turned off when the microphone jack is pulled beforehand** from the microphone socket.
- Only **Filter Stages 1-5** are available.
- The device's **automatic shutdown function is deactivated**. Remember to turn off the device if it is not in use for some time to save the batteries/rechargeable batteries.

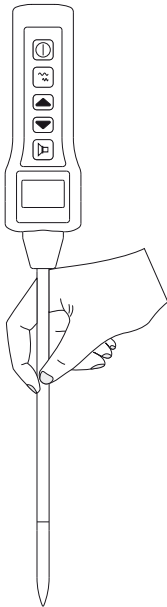
4.3.3 Extend sensor tip

The **Stethophon 04** sensor tip can be extended if the object of investigation is too far away or in an unfavourable position.

One or several sensor tip extensions (optional accessory, see Annex) are screwed on between device and sensor tip.

Note the safety instructions in Chapter 2 when working with an extended sensor tip.





The following applies when measuring with an extended sensor tip:








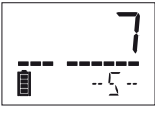

Get hold of the device **at the sensor tip** near the housing **and not at the housing itself**.

5 Basic settings




5.1 This is the way to work in the basic settings

Open basic settings		
What to do?	What happens?	Indication on the display
1.	Requirement: Device must be turned off	
2.	Keep  pressed for some time and at the same time press  <ul style="list-style-type: none"> ● Device turns itself on ● Software version is briefly shown 	
3.	Wait for a short time	<ul style="list-style-type: none"> ● First menu item of the basic settings appears 

Call in menu items and change values	
What to do?	What happens?
Briefly press 	Next menu item appears
	Value is raised
	Value is lowered

Leaving basic settings		
What to do?	What happens?	Indication on the display
End		
1. Select the END menu item		
2. Press 	<ul style="list-style-type: none"> • Device changes to measuring mode 	
Terminating		
1. Select any menu item but not END		
2. Press  for some time	<ul style="list-style-type: none"> • Device turns itself off 	

5.2 What can be set?

Menu item	The following is set	Significance/function
LDS	Hearing	0 Hearing functions on the turn on/turn off basis Press  > Hearing turned on, loudspeaker symbol removed Again press  > Hearing turned off, loudspeaker symbol can be seen
		1 Hearing functions on the sensor basis ● Hearing turned on as long as  is pressed
PRO	Limit for using the hearing protector	0 Noise is turned off at a medium volume (good hearing protection)
		1 Noise is turned off at a high volume (poor hearing protection)
		2 Hearing protection function turned off (no hearing protection)
VOL	Noise on using the hearing protector	0 Noise is turned off
		1 Noise becomes less
RES	Factory settings	0 Menu items are not re-set to factory settings when the basic settings are ended
		1 All menu items are re-set to factory settings when the basic settings are ended
END	Leaving basic settings	0 Values set are not taken over
		1 Values set are taken over

The values set (except for **END**) are permanently saved up to the next change. They apply to both a renewed turning on and after a replacement of battery/rechargeable battery.

6 Maintenance and care

6.1 Overview:

The maintenance and care of **Stethophon 04** comprises the following:

Maintenance and care			
What?	How?	By whom?	How often?
Simple functional test	See Chapter 6.2	User	Given the impression that Stethophon 04 is not working properly
Care	Wipe with a damp cloth	User	As often as is needed
Battery or rechargeable battery change	See Chapter 6.3	User	As often as is needed

6.2 Simple functional test (fault search)

If no noise can be heard through the headphones, then check the following:

- Has the noise been turned off accidentally (loudspeaker symbol visible)?
- Have the headphones been connected to the right socket?

Carry out the following functional test if you have the impression that the appliance is not working properly:

- Open the basic settings and place the appliance in the factory settings (RES = 1, then END = 1).
- Then raise an oscillation on the sensor tip in the measuring mode. Rub as well, for instance, on the sensor tip. If in doubt increase the volume.

If you cannot hear any noise, the appliance is probably faulty. Send it for repairs to either the manufacturer or an authorised firm.

6.3 Battery or rechargeable battery change

The battery compartment is locked with a quick-release fastener (1/4 turn). It can be opened with, for instance, with a coin or screwdriver.



CAUTION!

The **polarity** of the two batteries/rechargeable batteries in the compartment points **in the same direction**.

7 Specifications

Operating time:	At least 8 hrs
Power supply	2 Mignon alkaline batteries or 2 NiMH rechargeable batteries (each at least 1600 mAh)
Protection class:	IP 54
Operating temperature:	-10 °C to +50 °C
Storage temperature:	-25 °C to +70 °C
Pressure:	950 hPa to 1100 hPa
Air humidity:	15% r.h. to 90% r.h. (not condensing)
Dimensions:	50 x 212 x 30 mm (b x h x d)
Weight:	approx. 250 g

8 Hints on Disposal

The disposal of instruments and accessories is governed by the European Waste Catalogue (EWC).

Type of Waste	Corresponding EWC Code
Instrument	16 02 13
Battery, accu	16 06 05

Old Instruments

Old instruments can be returned to Hermann Sewerin GmbH. We will arrange the qualified disposal free of charge through certified specialists.

9 Accessories



Headphones

Art. No.: EZ12-10000

- with 3.5 mm phone jack



Bag S4

Art. No.: 3204-0039

- Padded transport bag of hard-wearing material
- With compartments for holding the device incl. sensor tip, M6/180 mm extensions, spare batteries and headphones



M6 sensor tip extension

- 180 mm long
(Art. No.: 4002-0140)
- 450 mm long
(Art. No.: 4004-0218)



Floor microphone BM 04

Art. No.: EM35-10000

- For picking up ground-borne sound on paved and non-paved surfaces
- With three feet for secure standing, high-tensile cable (approx. 1.3 m) and phone jack 3.5 mm

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