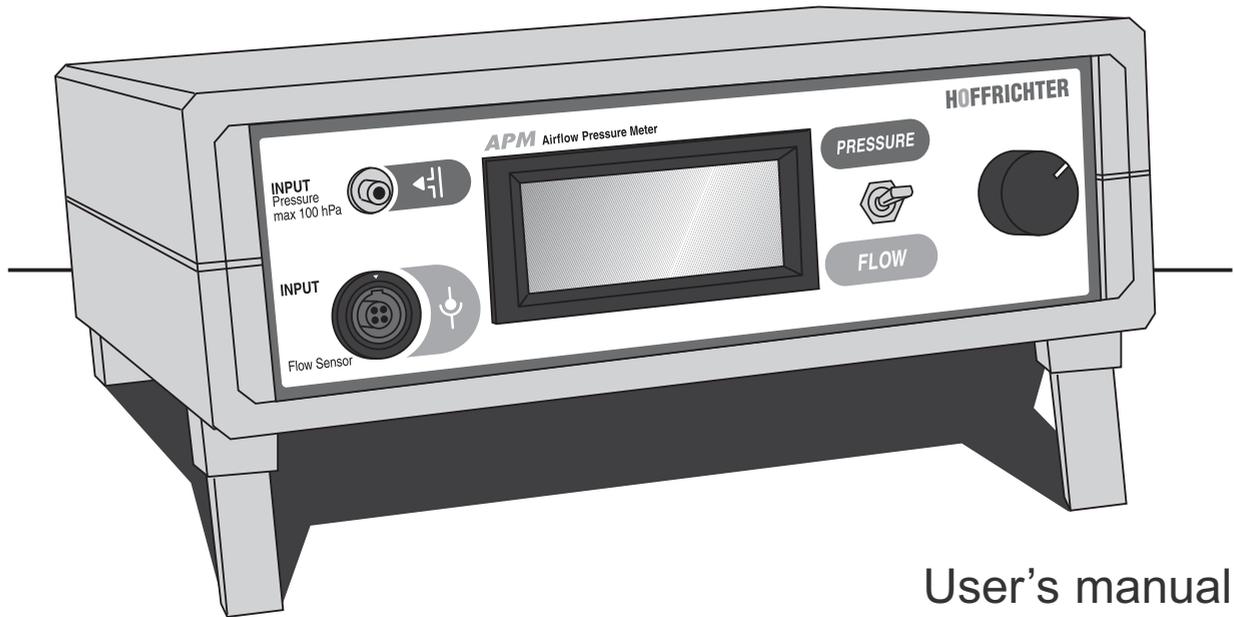


HOFFRICHTER

Airflow Pressure Meter



User's manual

Serial number

Each HOFFRICHTER device is provided with a serial number which guarantees the product can be traced back. The serial number is on the type identification plate to be found on the reverse of the device.

In case of any query or complaint, please always state the serial number

Conformity

The device complies with the requirements of the directives 73/23/CEE.



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1. Safety Instructions

1.

1. Safety Instructions

Before first use of your **Airflow Pressure Meter** (APM), please read this manual thoroughly.

Keep the manual in a safe place, so that you will be able to consult it whenever necessary.

Attention!

HOFFRICHTER GmbH shall not be held liable for any damages or consequential damages, consequences for safety, reliability and performance of the device in case of:

- Tampering, modifying, adding expansion features, adjustment, repair and maintenance executed by persons who have not been authorized by us.
- Building in accessory and spare parts which have been fabricated by other manufactures and not been released by us for use in the **Airflow Pressure Meter**.
- Using the **Airflow Pressure Meter** in a different way than what has been described in the manual.

Make sure the APM and the Flow-sensor has the same serial number. Otherwise the measurements will not be correct.

Do not connect other devices than the Flow-sensor into the plug socket on the front of the APM.



2. Intended Use

The **Airflow Pressure Meter** is intended for measurement of airflow or pressure and was especially developed for calibrating the ventilators made by **HOFFRICHTER**.

3. Legend of Symbols

3.

3. Legend of Symbols



Please observe the operating instructions



Do not dispose of device in household waste



CE-declaration of conformity



Input Pressure



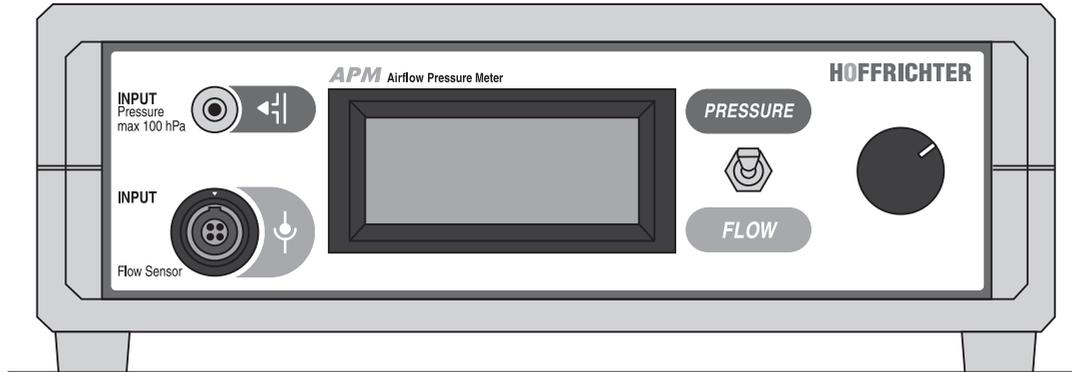
Input Flowsensor

4. Description of the Device

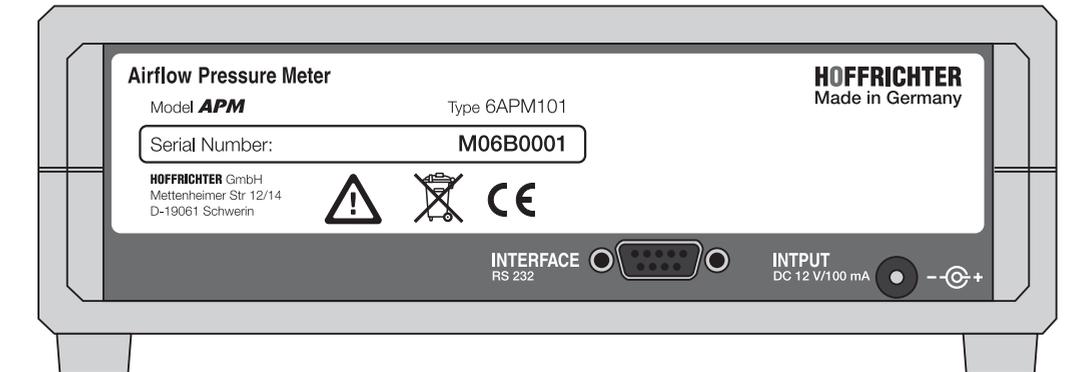
4.

4. Description of the Device

4.1 Front View



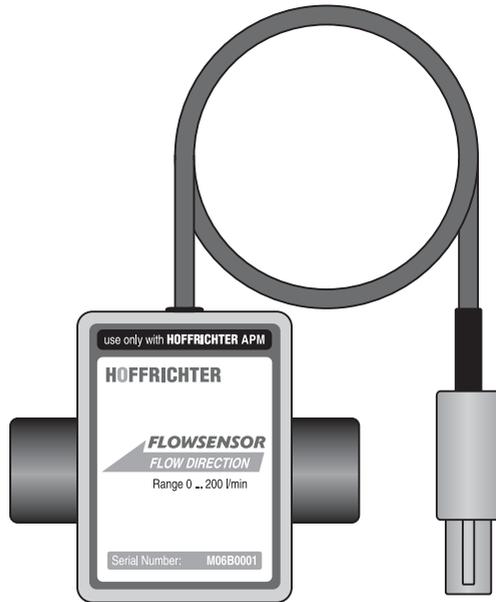
4.2 Back View



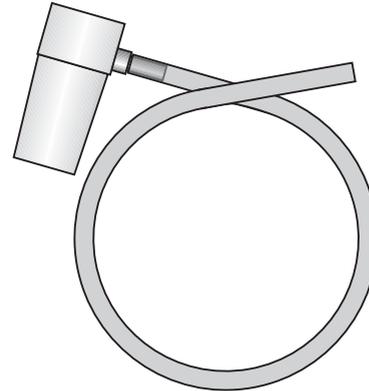
4. Description of the Device

4.5.

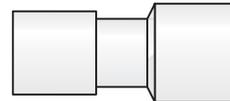
4.3 Flow Sensor



4.4 Blind plug



4.5 Adaptor



4. Description of the Device

4.6.

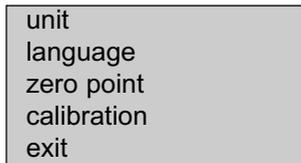
4.6. Display

The **Airflow Pressure Meter** (APM) is provided with a four line display which is activated as soon as the AMP is switched on. The display shows the actual value of the measurement running.

If there are more than four lines in the menue, (indicated by arrows on the right side of the display) you can scroll through the items by turning the multi functional Key (MFK).

To enter the main menue for the pressure measurement, turn the switch to “Pressure”, and press the MFK.

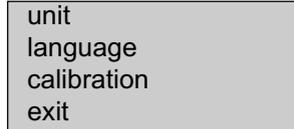
The following items can now be selected:



- unit
- language
- zero point
- calibration
- exit

To enter the main menue for the airflow measurement, turn the switch to “Flow”, and press the MFK.

The following items can now be selected:



- unit
- language
- calibration
- exit

4. Description of the Device

4.7. Included in delivery

4.7.

- APM and Flow sensor
- Power supply
- User's manual
- Measuring tube (Flow)
- Measuring tube (Pressure)
- Y-Connector
- Blind plug
- Adaptor
- Carrier bag

5. Settings of the Device

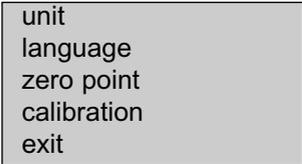
5.1. General operating instructions

- Before taking measurements with APM, the device should be operated online for at least half an hour.
- Changing between the main menu resp. the sub menu is done by pressing the MFK.
- Menu items are selected by turning the MFK.

5.2. Main menu “Pressure”

To enter the main menu “Pressure”, turn the switch to “Pressure” and press the MFK.

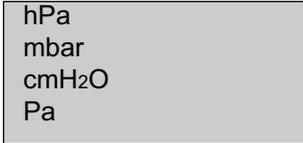
The following items can be selected:



unit
language
zero point
calibration
exit

5.2.1. unit

Here you can select the unit of the measurement. Following units are available:



hPa
mbar
cmH₂O
Pa

5.2.2. language

Here you can select the language of the device. Following languages are available:



german
english

5.2.3. zero point

By selecting this menu item the calibration of the zero point is started.

Pay attention to that there is no pressure on the connection piece of the measuring device before

5. Settings of the Device

5.3.

and after calibration (3 s).

During calibration the message “Please wait” and the average zero point-offset is indicated.

After the calibration has finished the zero point-offset is indicated and you are asked to store the value:

```
xxx hPa
store value
no
yes
```

Turn the MFK to your choice and press the MFK to confirm.

The zero point should be calibrated from time to time because of the change in ambient pressure.

5.2.4. calibration

This menu item only is for calibration of the APM by the manufacturer. The calibration is protected by a PIN.

Please, never try to “crack” the PIN. If you

have any doubt in the correctness of the measurement, please contact the manufacturer.

5.2.5 exit

Selecting menu item “exit” will effect re-setting to pressure gauge.

5.3. Main menue “Flow”

To enter the main menue “Flow”, turn the switch to “Flow” and press the MFK.

The following items can be selected:

```
unit
language
calibration
exit
```

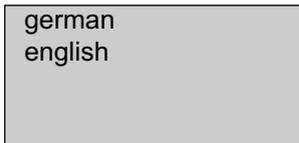
5.3.1. unit

Here you can select the unit of the measurement.
Following units are available:



5.3.2. language

Here you can select the language of the device.
Following languages are available:



5.3.3. calibration

This menu item only is for calibration of the APM
by the manufacturer. The calibration is protected
by a PIN.

**Please, never try to “crack” the PIN. If you
have any doubt in the correctness of the mea-
surement, please contact the manufacturer.**

5.3.4 exit

Selecting menu item exit will effect re-setting to
pressure gauge.

6. Use of the Device

6.1.

6. Use of the Device

The APM can be used either as pressure meter or flow meter, whereas always only one measuring function is possible.

6.1. Calibration of airflow of CARAT I

Follow the instructions:
(see fig. 6.1.01 page 15)

1. Establish the electrical connection between the Flow Sensor and the APM.
2. Connect the first end of the therapy tube to the Tube Connector for Inspiration.
3. Connect the other end of the therapy tube to the Flow Sensor. Observe the flow direction of the Flow Sensor indicated by an arrow.
The diagram shows a grey arrow pointing to the right. Above the arrow, the word "FLOWSENSOR" is written in a bold, italicized font. Below the arrow, the words "FLOW DIRECTION" are written in a smaller, bold, italicized font.
4. Connect the pressure measuring tube to the Connector Measuring Tube on the ventilator.
5. In the Service display, menu item Flow Sensor Calibration can be selected; enter and confirm PIN 0000.

6. Calibration items occurs for 0, 10, 20, 40, 60, 80, 100, 120 and 160 l/min.
7. The value measured is to be brought to the calibration value by turning the MFK and accepted by pressing the Mode key.
8. The value must be set with a precision of ± 0.5 l/min.
9. The calibration can be cancelled by pressing the MFK for 3 seconds.
10. After the calibration has finished, return to the standard screen by pressing the MFK.

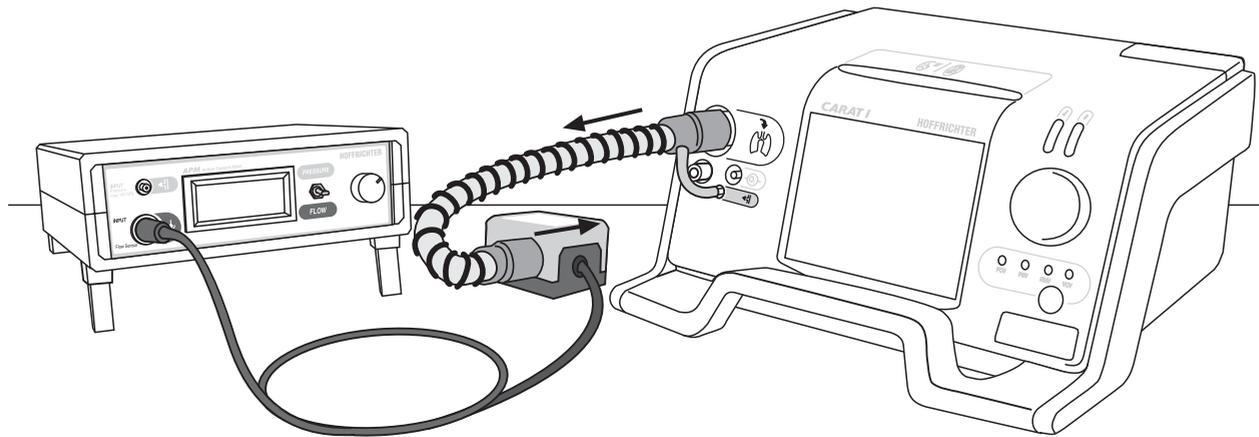


fig. 6.1.01

6. Use of the Device

6.2.

6.2. Calibration of airflow of CARAT II

Follow the instructions:
(see fig. 6.2.01 page 17)

1. Establish the electrical connection between the Flow Sensor and the APM.
2. Connect the adaptor to the Tube Connector for Expiration on the ventilator.
3. Attach the Flow Sensor to the adaptor.
Observe the flow direction of the Flow Sensor indicated by an arrow.
The diagram shows a rectangular component labeled 'FLOWSENSOR' with a grey arrow pointing to the right, labeled 'FLOW DIRECTION'.
4. Connect the first end of the therapy tube to the Flow Sensor.
5. Connect the other end of the therapy tube to the Tube Connector for Inspiration.
6. Connect the pressure measuring tube to the Connector Measuring Tube on the ventilator.
7. On the Service Display, menu item Flow Sensor Calibration can be selected; enter and confirm PIN 0000.

8. Calibration items occurs for 0, 10, 20, 40, 60, 80, 100, 120 and 160 l/min.
9. The value measured is to be brought to the calibration value by turning the MFK and accepted by pressing the Mode key.
10. The value must be set with a precision of ± 0.5 l/min.
11. The calibration can be cancelled by pressing the MFK for 3 seconds.
12. After the calibration has finished, return to the standard screen by pressing the MFK.

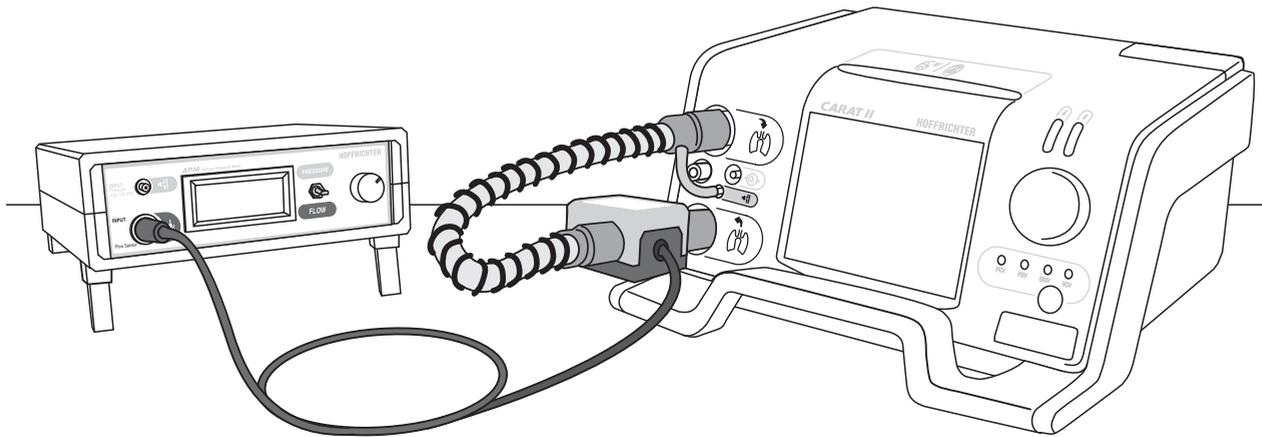


fig. 6.2.01

6. Use of the Device

6.3.

6.3. Calibration of pressure of CARAT I / II

Follow the instructions:
(see fig. 6.3.01 page 19)

1. Put the blind plug into the Tube Connector for Inspiration on the ventilator.
2. Connect the second leg of the silicon tube with the Connector Measuring Tube on the ventilator.
3. Connect the third end of the silicon tube with the pressure inlet of the APM.
4. Open the Service display menu item Pressure sensor calibration can be selected; enter and confirm the PIN code 0000.
5. Calibration items occurs for 0, 5, 10, 20 and 40 hPa.
6. The value shown on the measuring device is to be brought to the calibration value by turning the MFK and accepted by pressing the Mode Key.
7. The value must be set with a precision of ± 0.05 hPa.
8. The calibration can be cancelled by pressing the MFK for 3 seconds.
9. After the calibration is finished, return to the standard screen by pressing the MFK.

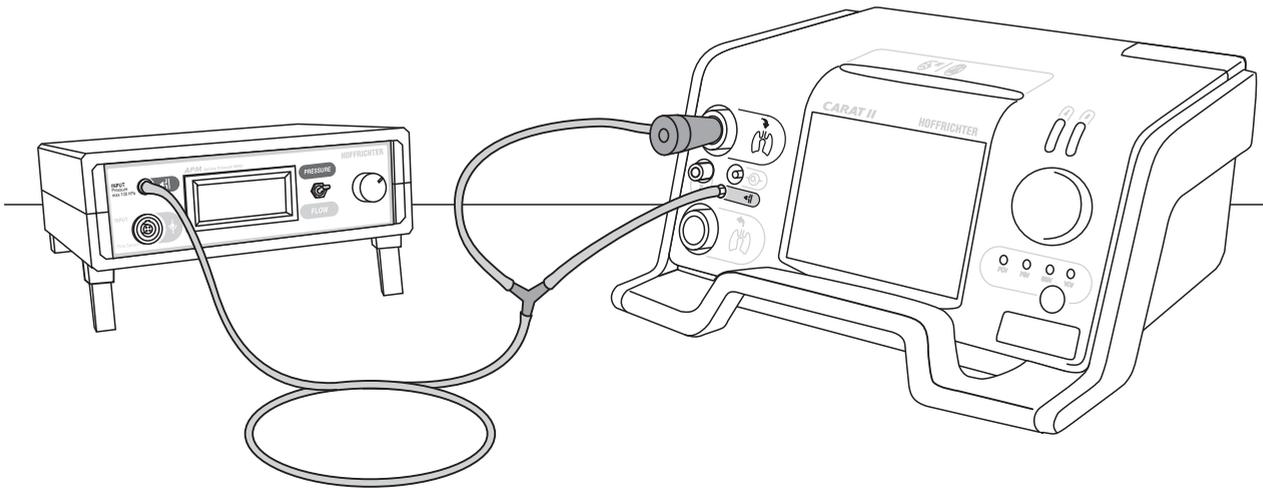


fig. 6.3.01

7. Cleaning Instructions

7. Cleaning Instructions

When cleaning the device, do not use any volatile substances, such as solvents, to avoid damaging the surface. Clean the device only using a soft, dry cloth.

7.

8. Technical Data

Power supply

Input: 230 V/AC
Output: 12 V DC/ 500 mA

SAFETY INSTRUCTION

Only use the supplied power supply unit for operating the APM

Specifications and performance

Dimensions: 225 x 200 x 80 mm

Weight: 1.0 kg

Pressure measuring range:

0...100 hPa

Determined deviation:

+/- 0.5 % of the measuring value

(Calibration by DKD-approved pressure maintaining valve with RS232)

Flow measuring range: 0...200 l/min

(Calibration by Vip EKU, approved flow measuring device)

Display accuracy

Pressure: 0.1 hPa

Flow: 0.1 l/min

Operating conditions

Operating temperature: 0 °C - 50 °C

Relative air humidity: 0 % - 95 %

Storage conditions

Storage temperature: -40 °C - 85 °C

(store in a dry, vibration free and vertical position; store device and accessories in their original packing)

Data subject to technical modification

Notes

Serial number:

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