# 6. Technical data

**Measuring range:** 2-65 l/s, 7-233 m3/h
Measuring method: Mass flow, net of hot wires over 180cm2
Shaft adjustable length: 45...80 cm
Measurement opening (inner): 19 x 20 cm
Height: 33 cm
Weight: 1.75 kg
Meassuring media: Dry and moist air, nonaggressive gases

### Uncertainty with coverage probability of 95% (New instrument):

Instrument uncertainty including calibration uncertainty ($m_1$)
±4% read value, minimum 1 l/s at:
2…65 l/s at +18…+25°C, 2…30 l/s at –10…+40°C
±6% read value at: 30…65 l/s at 0…+40°C.

**After re-calibration use the following:**
Instrument uncertainty including calibration uncertainty.

$$m_1 = \sqrt{m_i^2 + m_{kal}^2}$$

**$m_i$ - Instrument uncertainty (uncertainty of calibration not included)**
±2,8% read value, minimum 1 l/s at
2…65 l/s at +18…+25°C, 2…30 l/s at –10…+40°C
±5,3% read value, minimum 1 l/s at
30…65 l/s at 0…40°C
To obtain ±2,8% you need to compensate for the temperature:
+0,15% of read value per °C at +25...40°C
-0,15% of read value per °C at 0...+18°C
**$m_{kal}$ - uncertainty of calibration - shall be given by calibration office.**

Note: The user should correct the measured values with corrections on the calibration protocol to obtain stated uncertainty.

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SwemaFlow 233

# Operating instructions

vers 01.02 CW20090402

# 1. General

Thank you for choosing a quality instrument from Swema. SwemaFlow 233 measures airflow directly in l/s or m3/h. The instrument is turned on and off with the lower button next to the display. When the instrument is turned on the display shows the voltage of the battery. After a few seconds the instrument is ready for measurement. The instrument is automatically turned off after ten minutes.

## The measuring equipment includes:

- Flow capture instrument for exhaust flows up to 190x200 mm
- Telescopic handle
- Carrying case
- Charger

## Accessories:

**Foldable hood** for measurement on supply and exhaust air valves up to 330x330 mm. The height is = 640 mm, three hydraulic diameters according to the recommendations of the Nordic Ventilation Group. Part.nr. 459.096

**Exhaust hood** 300 x 300 mm, h = 100 mm
Part.nr 762.330

# 2. Function

Swemaflow 233 calculates the average value of the airflow during 0.5 seconds. The average flow is presented on the display with an update two times per second.

### HOLD function

If the blue button is pressed down shortly the dispaly will freeze the measured value, this will be shown with a * on the display. Realese it by pressing down shortly again.

### l/s or $m^3/h$

Chose by holding down the blue button (approx. 2s). If the value is in HOLD function it will be changed to corresponding value.

### Display light

The light in the display is activated when booth buttons are pressed down when turning on the instrument. The light is shut off when turning off the instrument. The light is automatically shut off if the voltage is below 4.6V.

# 3. Charging

SwemaFlow 233 has built-in rechargeable NiMH-batteries. A fully charged battery lasts for approximately 4 hours of continued measurement. The quick charger charges the battery in 1.5 hours. The charger can be connected to the instrument longer without damaging the battery. Red fixed light - charging, Flashing light - battery fully charged. You can use the instrument while charging. Caution! Use only the original charger other charger can damage the batteries.

### Battery check

When turning on the instrument the display shows the voltage of the battery. A fully charged instrument shows approximately 5.7 V. When the supply voltage is lower than 4.6 V a battery symbol will be visible on the display and the instrument can be used for another 15 minutes. When the supply voltage is lower than 4.2 V the instrument will be automatically shut off.



# 4. Measurment

Place the hood with the sealing list makeing a proper seal around the valve. Read the airflow value from the display.

### Pressure drop

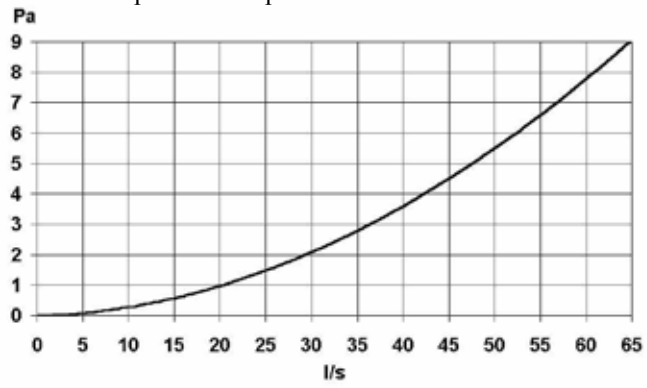
The pressure drop over the hood is low but the flow can be reduced if the pressure drop over the valve is low. If the pressure drop over the hood is larger than 5% of the pressure drop over the valve, adjustment of the measured value can be made according to the diagram below.

**Correction table:**

A= Pressure drop over the hood in % of the pressure drop over the valve
B= Correction factor (multiply read value with B)

| A% | B= |
|---|---|
| 5 | 1.01 |
| 10 | 1.05 |
| 20 | 1.11 |

The pressure drop over SwemaFlow 233




# 5. Calibration

SwemaFlow 233 is calibrated and adjusted by SWEMA before shipment. It is not possible to adjust SwemaFlow 233 without special instrument. If there is any problems the instrument should be sent to Swema or Swema distributor for repair. Swema recommends a calibration and adjustment interval of six months.

# 6. Telescopic handle

To adjust the length of the telescopic shaft, place one hand on the handle and the other at the top of the shaft. Turn the handle counter clock-wise (see picture) and adjust the shaft to the desired length. Turn the handle clock-wise to lock it. Don't try to turn the plastic fitting between the two metal shafts.