



Measurement units



	MSD	MSA
Nominal size	100...500	100x100... 1600...1000
Tightness of the casing	Class C EN 1751	Class C EN 1751
Measurement	X	X

Halton measurement unit range

MSA

Airflow Measurement Unit



- Measurement based on differential pressure in measurement probe created by airflow
- Very accurate measurement
- Measurement probes can be removed for cleaning
- Galvanised steel design
- Classification of casing leakage EN 1751 class C
- Measurement inaccuracy less than 10%
- Installation independent of airflow direction

MATERIAL

PART	MATERIAL
Casing	Galvanised steel
Measurement probe pipes	Aluminium
Measurement tubes	PVC and PP plastic



Function

Air flows through the measurement unit, which is installed tightly into the ductwork.

Airflow in a duct creates a pressure difference between the front and rear probes. The corresponding airflow rate can be defined by measuring the pressure difference sensed by the averaging probes.

Measurement

Connect the measurement tubes to the measurement taps and to a manometer.

Read the pressure difference between the probes.

The airflow rate is calculated using the formula below or by reading the airflow rate directly from the diagram described in the performance section.

$$q_v = k * \sqrt{\Delta p_m}$$

where

q_v	calculated airflow rate, l/s
K-factor	see formula below
Δp_m	measured differential pressure, Pa

Formula for K-factor calculation

$$K = W \text{ (mm)} \times H \text{ (mm)} \times 0,000904$$

where,

W	unit width (mm)
H	unit height (mm)

DIMENSIONS

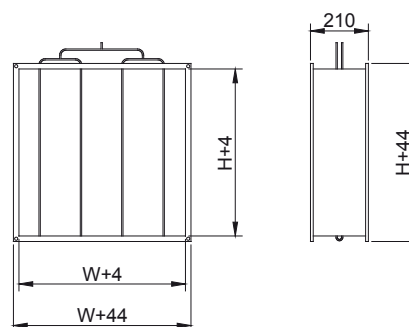
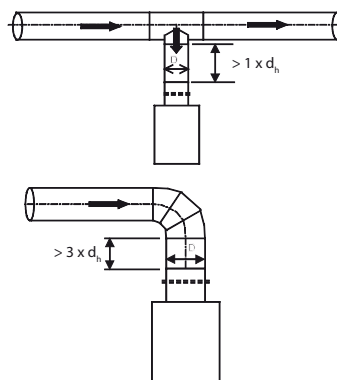
W	H
100,200,...,1600	100,200,...,1000

Installation

Respect the safety distances between the measurement unit and flow disturbances (e.g. bends (2), T-branches (1)) presented in figure below in order to ensure the accuracy of the flow measurement. Installation is independent of airflow direction.

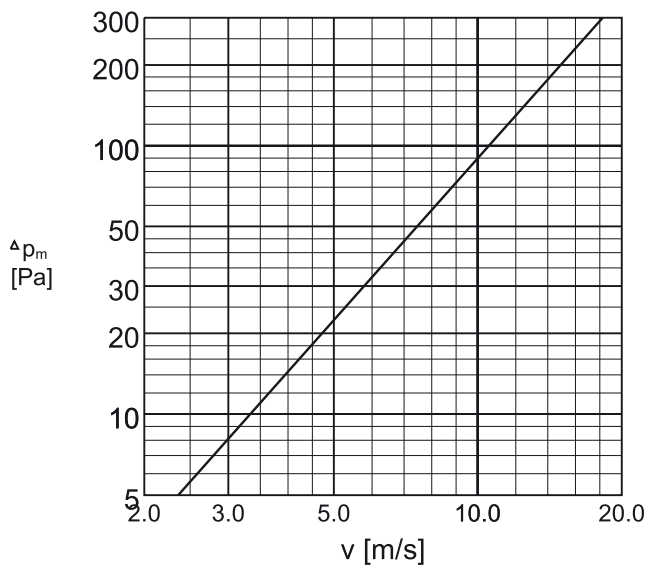
The hydraulic diameter is calculated using the formula below

$$d_h = 2 \times W \times H / W + H$$



Measurement pressure

Pressure difference from measurement taps



Suggested specifications

The casing of the measurement unit shall be made of galvanised steel.

The measurement probe pipes shall be made of aluminium.

Measurement shall be based on the principle of dynamic pressure difference created by airflow. Inaccuracy of the measurement method shall be less than 10 % of the reading.

Product code

MSA/S-W-H

S = Measurement probes
N Standard

W = Width
100,+50,...,1600

H = Height
100,+50,...,1000

Specifics and accessories

MA = Material
CS Steel

Code example

MSA/N-100-100, MA=CS

MSD

Airflow Measurement Unit



- Airflow measurement unit based on differential pressure created by measurement probe pipes
- Very accurate measurement, inaccuracy less than $\pm 10\%$
- Classification of casing leakage EN 1751 class C
- Inlet and outlet spigots have integral rubber gaskets

MATERIAL

PART	MATERIAL
Casing	Galvanised steel
Measurement probe pipes	Aluminium
Measurement tubes	PVC and PP plastic
Duct gaskets	1C-polyurethane hybrid



Function

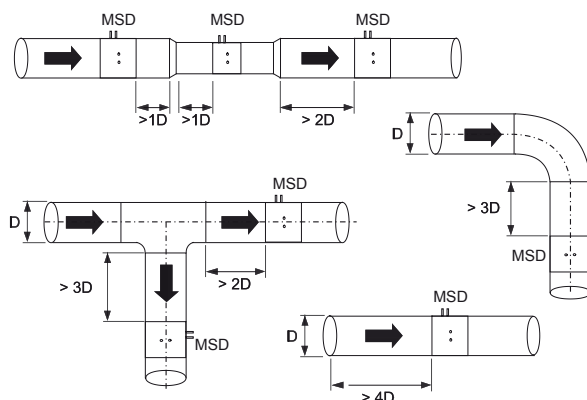
Airflow in a duct creates a pressure difference between the front and rear probes.

The corresponding airflow rate can be defined by measuring the pressure difference sensed by the two crossing sets of averaging probes.

Installation

In order to ensure the accuracy of the airflow measurement the safety distances between the measurement unit and flow disturbances (e.g. bends, T-branches) have to be respected. The necessary safety distances before and after different disturbances are presented in figures.

The figure describes also the recommended axial orientation of measurement probes related to bends and T-branches.



Measurement

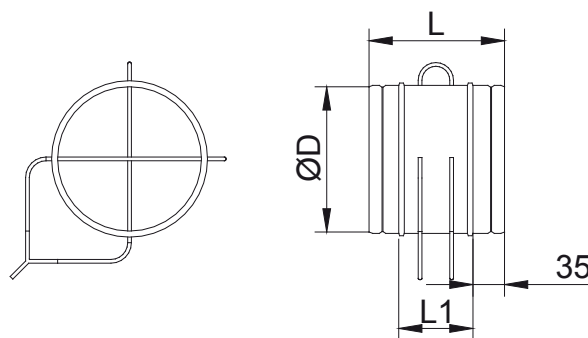
Connect the measurement tubes to the manometer and read the pressure difference. The airflow rate is calculated using the formula below or by reading the airflow rate directly from the diagram.

$$q_v = k * \sqrt{\Delta p_m}$$

K- factor	
100	5.7
125	9.4
160	17.2
200	27.8
250	43.9
315	72.3
400	127.0
500	200.0

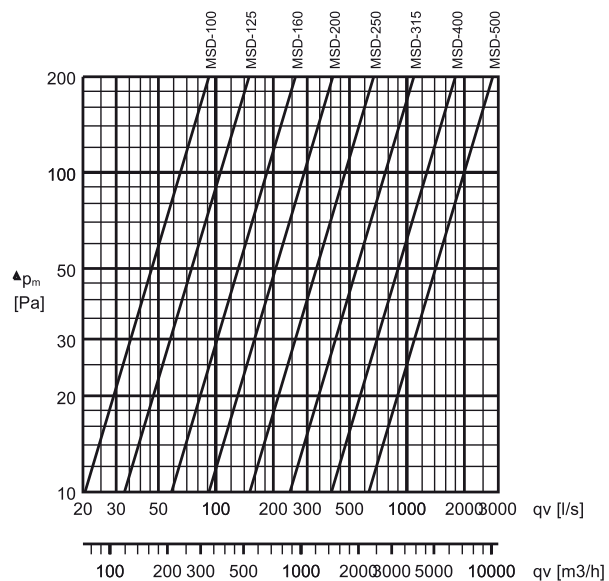
DIMENSIONS

NS	L	L1	ØD
100	142	75	99
160	142	75	159
200	142	75	199
250	142	75	249
315	142	75	314
400	195	125	399
500	195	125	499



Measurement pressure

Pressure difference from measurement taps



Suggested specifications

The casing of the measurement unit shall be made of galvanised steel.

The measurement probe pipes shall be made of aluminium.

The measurement unit shall have integral gaskets.

Product code

MSD-D

D = Diameter of duct connection
100, 125, 160, 200, 250, 315, 400, 500

Code example

MSD-100