

**TECHNICAL DATA SHEET**

# DEBIMO AIR FLOW MEASURING BLADES

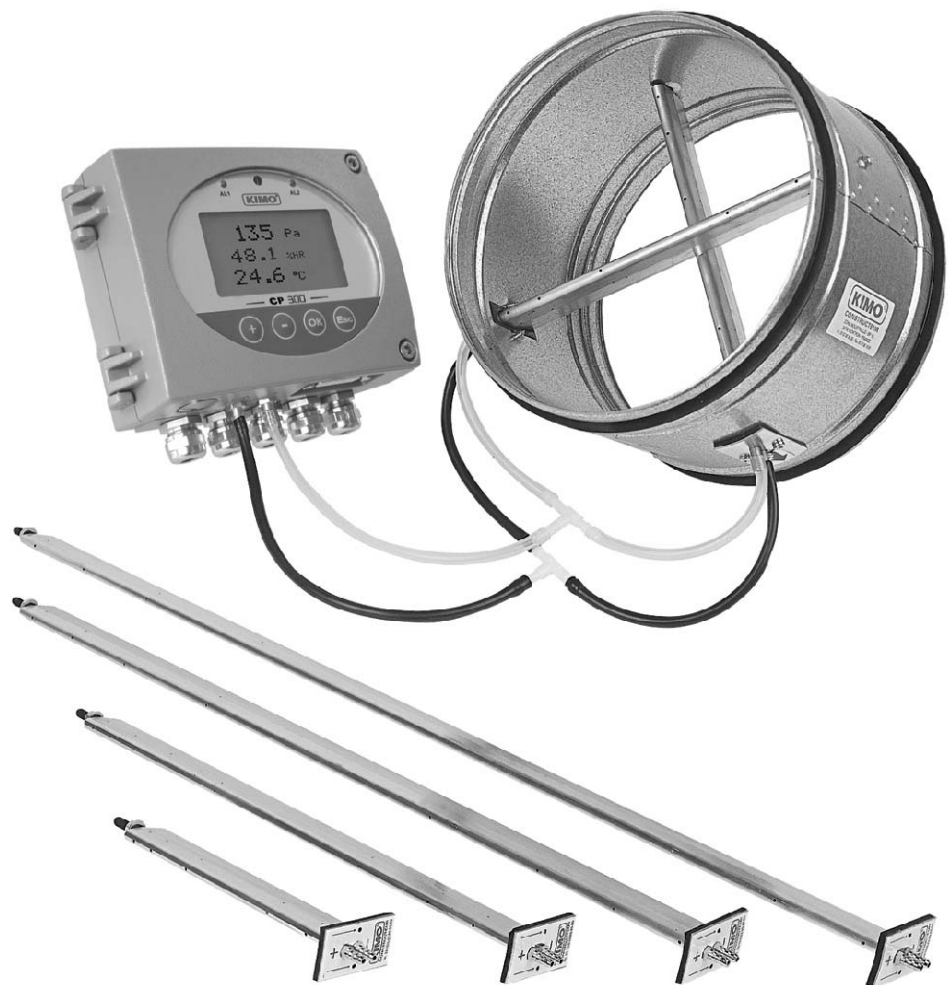


KIMO DEBIMO flow measuring blades are a simple and cost effective method of providing permanent air flow measurement in rectangular or circular ducts. When used with a KIMO differential pressure device (pressure, transmitter, electronic micromanometer, liquid column manometer, differential pressure switch, ...).

DEBIMO air flow measuring blades ensure accurate indication, control and recording of air flow velocity and

KIMO has designed and manufactured the DEBIMO measuring blades for use in all types of air flow systems. DEBIMO flow measuring blades, when correctly placed in an air flow, generate a differential pressure, the square root of which is proportional to the air flow.

Applications : air supply systems  
laboratories, air conditioning systems  
air flow test rigs, fume extraction  
exhaust systems, vacuum cleaning  
systems.



- **Permit velocity measurements from 3 to 100 m/s (9 Pa to 10000 Pa).**
- **Airfoil section limiting differential heads (<3%) and turbulences.**
- **Distribution of the measurement apertures on the airfoil permitting the medium air flow control (average of the differential pressures).**

## DESCRIPTION

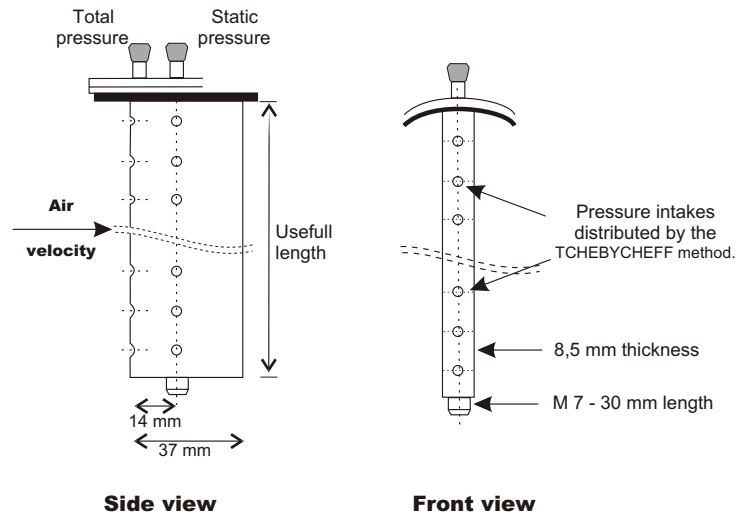
The choice of the number of blades depends on the shape of the duct and the accuracy wished. One or several DEBIMO blades can be used depending on the applications (see mounting examples)

### • Sizes available

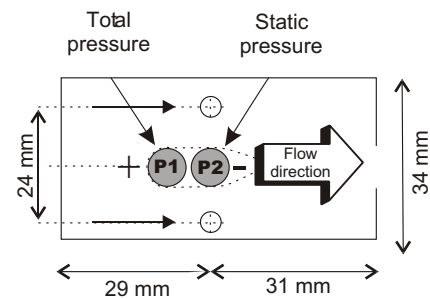
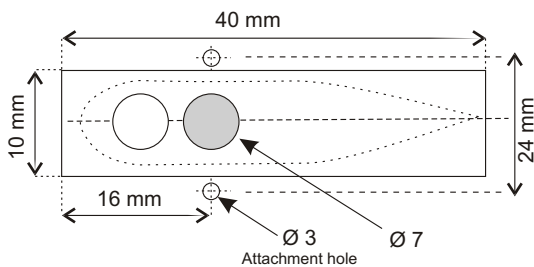
Ref.	Usefull length in mm
<b>DEBIMO 100</b>	100
<b>DEBIMO 125</b>	125
<b>DEBIMO 160</b>	160
<b>DEBIMO 200</b>	200
<b>DEBIMO 250</b>	250
<b>DEBIMO 315</b>	315
<b>DEBIMO 400</b>	400
<b>DEBIMO 500</b>	500
<b>DEBIMO 630</b>	630
<b>DEBIMO 800</b>	800
<b>DEBIMO 1000</b>	1000
<b>DEBIMO 1500</b>	1500
<b>DEBIMO 2000</b>	2000
<b>DEBIMO 2500</b>	2500
<b>DEBIMO 3000</b>	3000

Special dimension on demand (from 100 to 3000 mm).

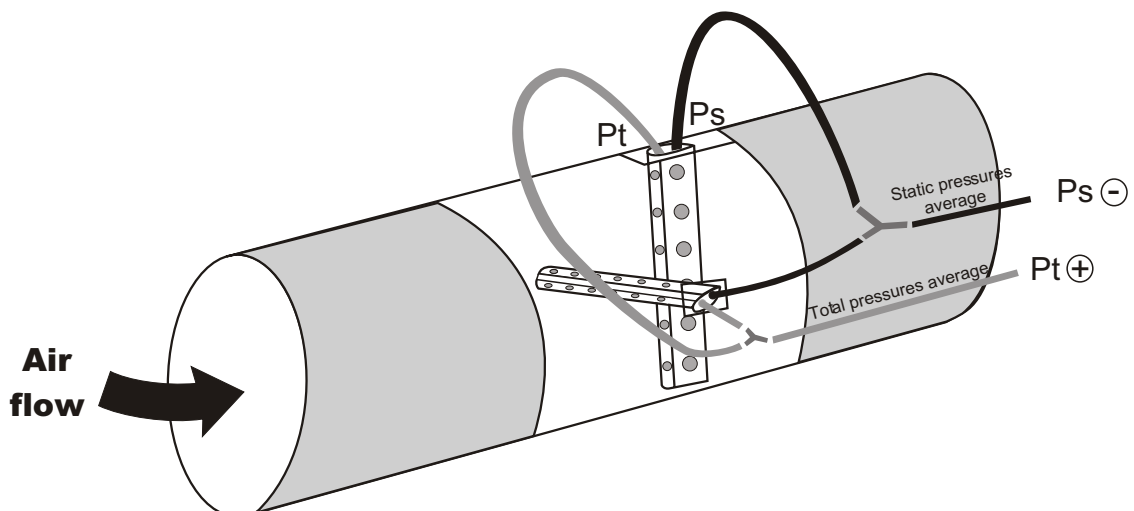
### • Features



### • Fixing details



## OPERATION



## • Calculation formula

$$\text{Velocity (m/s)}^* = K_L \times \sqrt{P_t - P_s}$$

with  $P_t$  and  $P_s$  in Pa

$$\text{Air flow (m}^3/\text{h)}^* = K_L \times \sqrt{P_d} \times S \times 3600$$

with  $P_d$  in Pa and  $S$  in  $\text{m}^2$

$K_L$  : DEBIMO blade factor

$P_t$  : total pressure

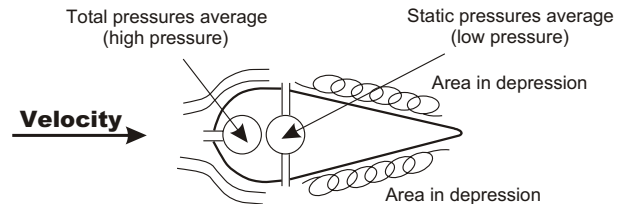
$P_s$  : static pressure

$S$  : duct section ( $\text{m}^2$ )

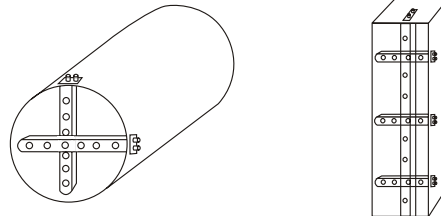
$P_d = P_t - P_s =$  dynamic pressure

Factor of velocity calculation  $K_L = 1$

\* Theoretical, with the specific weight of the air 1,2Kg /



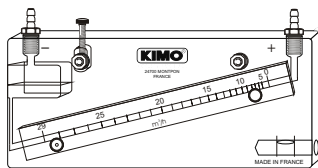
## • Mounting examples



## AIR FLOW MEASUREMENT

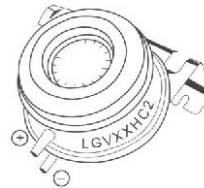
Great care should be given to the choice of differential pressure measuring instrument as it is chiefly this instrument that will determine the accuracy of the air flow measurement.

KIMO is a specialist manufacturer of very low pressure instruments and is able to offer a wide choice of suitable instruments including liquid column manometers, analog and electronic indicators, transmitters and pressure switches.



MG inclined liquid column manometer  
with scale in  $\text{m}^3/\text{h}$

Monitoring,  
direct  
indication of  
flow (volume).



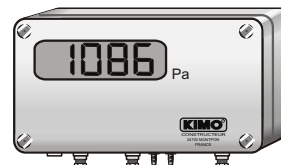
Differential pressure switch  
very low pressure

Alarm or  
control,  
signal at a  
pre-set flow.



Differential low pressure transmitter  
CPN 1 / SQR

Record,  
analyse,  
control.



Differential low pressure sensor  
transmitter with digital display  
CPA 4 / SQR

Direct  
indication,  
alarm or control,  
record or  
analyse.

## TECHNICAL CHARACTERISTICS

**Materials :** extruded aluminium, galvanized steel fixing bracket, stainless steel screws.

**Operating temperature :**  $100^\circ\text{C}$  (maximum  $210^\circ\text{C}$  on demand).

**Maximum pressure :** 2 bars static (check with care the sensor used).

**Repeatability :** better than 0,3%.

**Accuracy :** from 3 to 5% depending on the installation\* (\*\*).

\* Accuracy depends on the very low differential pressure device used.

The blade factor ( $K_L$ ) is theoretical, and the final measure depends on the duckwork installation. (elbow, restriction, T, generating turbulences. ).

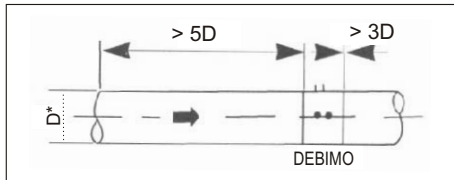
\*\* KIMO recommends that after installation a site measurement is made, with an accurate anemometer, and the differential pressure device adjusted to the real flow value.

## INSTALLATION ADVICE

The greater the length of straight unobstructed duct before the DEBIMO blades the greater the accuracy.

### • Necessary minimum straight length

#### Circular duct



Mounting of a DEBIMO measuring system in a horizontal duct.

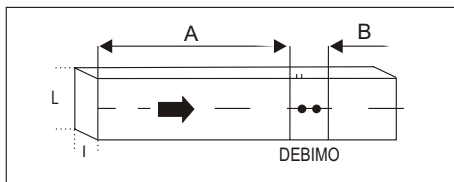
Before the DEBIMO, safety distance :  $5 \times D^*$

After the DEBIMO, safety distance :  $3 \times D^*$

Following NF X 10-114 norm.

\*D = duct diameter in m.

#### Rectangular duct



Mounting of a DEBIMO measuring system in a horizontal duct.

Before DEBIMO, safety distance :

$$A > 5 \times \sqrt{\frac{4 \times L \times I^*}{\pi}}$$

After DEBIMO, safety distance :

$$B > 3 \times \sqrt{\frac{4 \times L \times I^*}{\pi}}$$

Following the NF X 10-114 norm.

\* with L and I in m (length and width of duct).

## OPTIONS AND ACCESSORIES

- Anodic oxidising for harsh environments.
- **TC 5 x 8** : Clear tube 5 x 8 mm.
- **555 F/F** : Female / female isolating ball valve.
- **J.Y.C** : 10 units bag of Y-connection for Ø 5 x 8 tube.
- **J.T.C** : 10 units bag of T-connection for Ø 5 x 8 tube.

#### EXPORT DEPARTMENT

Tel : + 33. 1. 60. 06. 69. 25 - Fax : + 33. 1. 60. 06. 69. 29  
 site : [www.kimo.fr](http://www.kimo.fr) e-mail : [export@kimo.fr](mailto:export@kimo.fr)



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