Measurement and regulation device MRS

MRS is designed for fast and accurate regulation and measurement of air flow.

FläktWoods

Construction

The casing of MRS is manufactured from galvanized sheet steel. Regulation plate sizes 100 and 125 are made of perforated and larger sizes of non-perforated galvanized sheet steel.
The patented MR measuring ring is made of profiled aluminium.
Connections with sealing caps for measuring the pressure differential and a scale for indicating the angle of the regulation blade quarantee accurate measurement.
The MRS unit is fitted with rubber duct sealing gaskets, giving low leakage installation characteristics.

Installation

MRS is installed in the duct so that the regulation blade is downstream from the measuring ring in direction of air flow.
The recommended lengths of straight duct:

- generally 4xD in front of MRS and 0xD behind MRS
- 2xD behind T-branch
- 0xD behind 90° -bend

Regulation and measurement of air flow

Each damper is provided with manometer connections for measuring the pressure differential which can be used directly to read flow rate from the performance charts. Air flow is easy to regulate with control handle.

Accessories

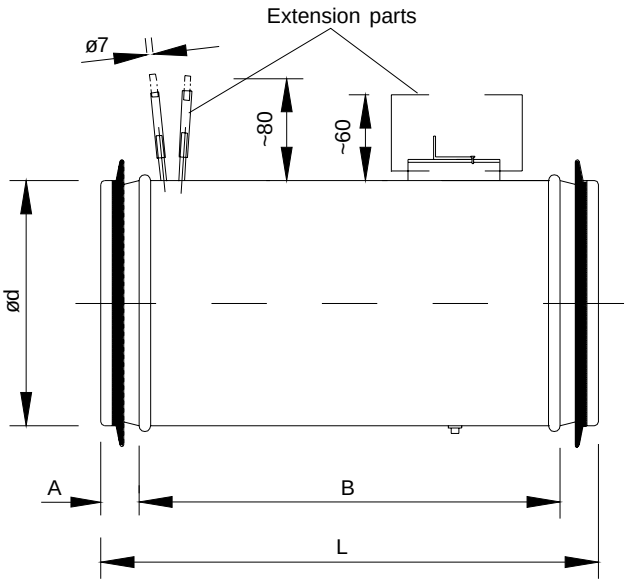
- Extension tubes for measuring points (50 mm) and extended shafts for regulation blade

Order example

MRS - 200 - E

Product
Size
Extension tubes and extended shaft

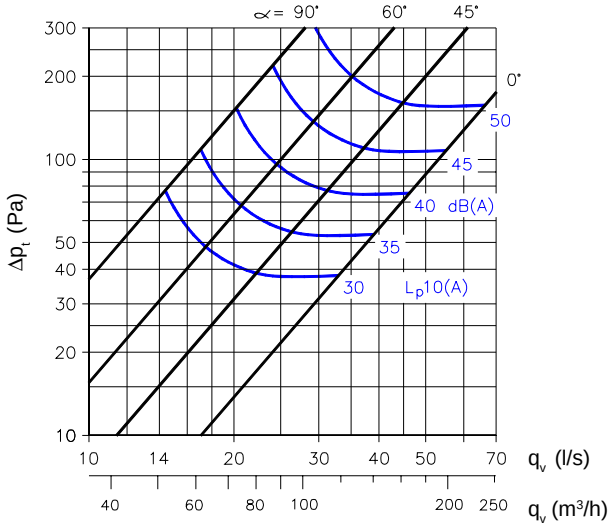
Dimensions



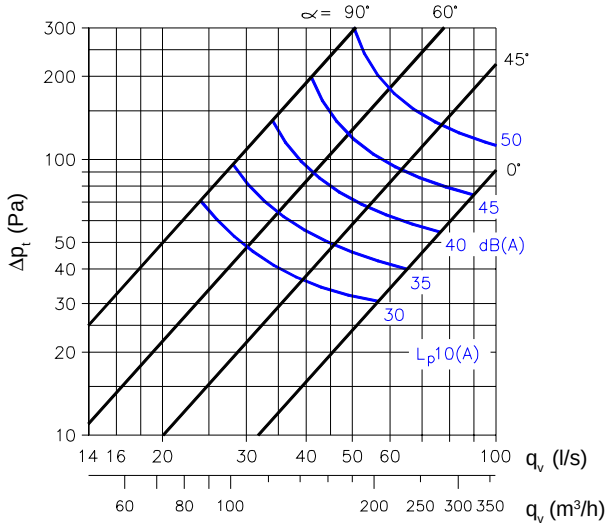
Size	ød	A	B	L	Weight kg
100	99	30	185	245	0,5
125	124	30	205	265	0,7
160	159	30	230	290	0,9
200	199	30	270	330	1,3
250	249	40	315	395	1,8
315	314	40	400	480	2,8

Selection diagrams

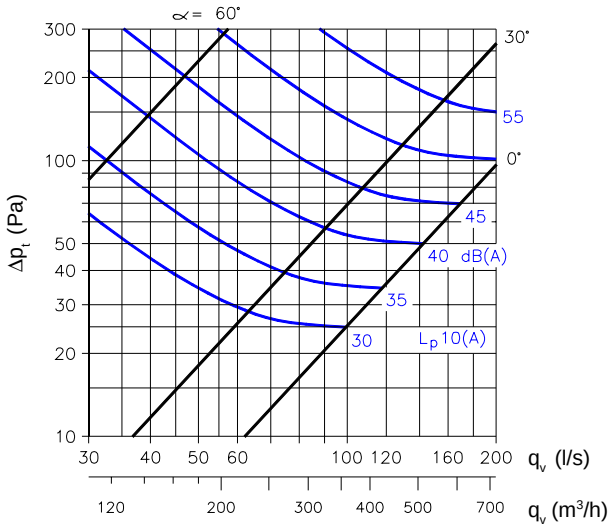
MRS - 100



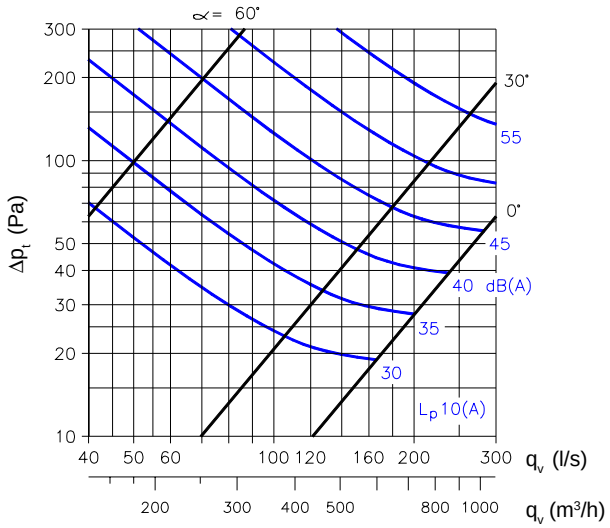
MRS - 125



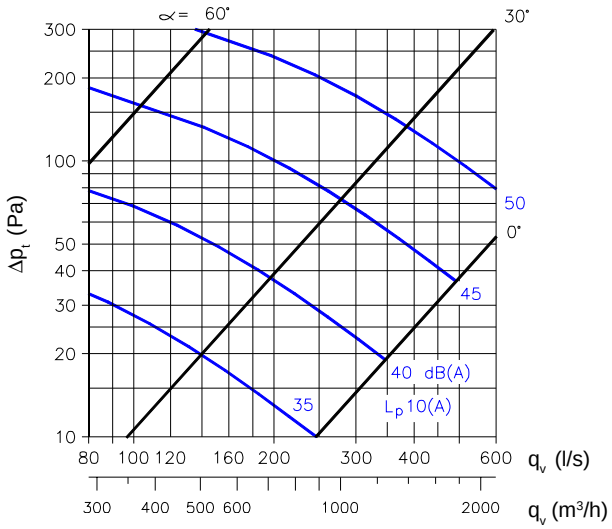
MRS - 160



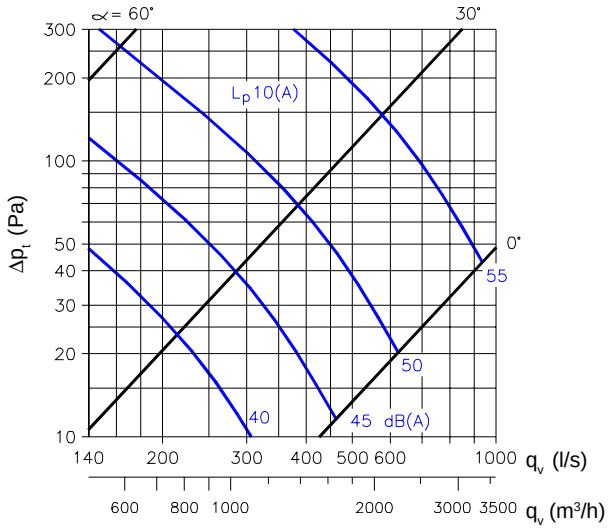
MRS - 200



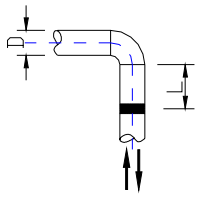
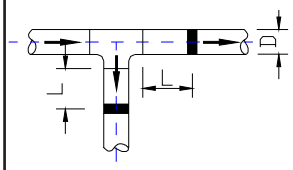
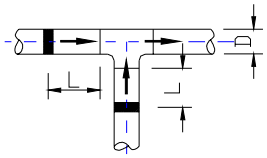
MRS - 250



MRS - 315



Safety distances

Typical example of location	Recommended safety distance L		Correction factor X
	m_2=±7%	m_2=±10%	
	≥ 0D	≥ 0D	0,95 (L=0...8D)
	≥ 3D	≥ 2D	0,92 (L=2...8D)
	≥ 0D	≥ 0D	1,00

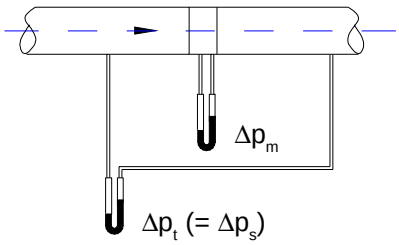
$$q_v = k\sqrt{\Delta p_m}$$

$$\Delta p_m = (q_v / k)^2$$

MRS	k-value
100	4,0
125	7,4
160	13,6
200	23,4
250	40
315	66

Accurate actual air flow according to distance L, is obtained by multiplying the measured air volume with correction factor X presented on the table above.

Accuracy of calibration in disturbance-free laminar air flow is ±5%



Sound power level L_W

MRS	CORRECTION K_{oct} (dB)					
	Middle frequency by octave band (Hz)					
	125	250	500	1000	2000	4000
100	18	10	5	1	-2	-7
125	21	12	3	-2	-2	-10
160	19	13	3	-1	-6	-6
200	19	12	4	-1	-7	-17
250	8	5	3	-1	-5	-10
315	9	6	2	-1	-5	-10
Tol. ±	3	2	2	2	2	2

Sound power levels by octave bands are obtained by adding to total sound pressure level L_{p10A}, dB(A) the corrections K_{oct} presented in the table according to the following formula:

$$L_{Woct} = L_{p10A} + K_{oct}$$

Correction K_{oct} is average value in range of use of MRS unit.

Symbols

q_v	air volume	(l/s), (m^3/h)
L_{p10A}	sound pressure level 10 m^2sab room attenuation (=4 dB)	[dB(A)]
L_{Woct}	sound power level	(dB)
K_{oct}	correction	(dB)
Δp_t	total pressure drop	(Pa)
Δp_s	static pressure drop	(Pa)
Δp_m	pressure difference	(Pa)
v	average velocity	(m/s)

Fläkt Woods Oy P.O.Box 6, 37801 Toijala, FINLAND t +358 20 442 3000 f +358 20 442 3504 w www.flaktwoods.com