Mechanical flow-rate controller MRP-4 (Square)

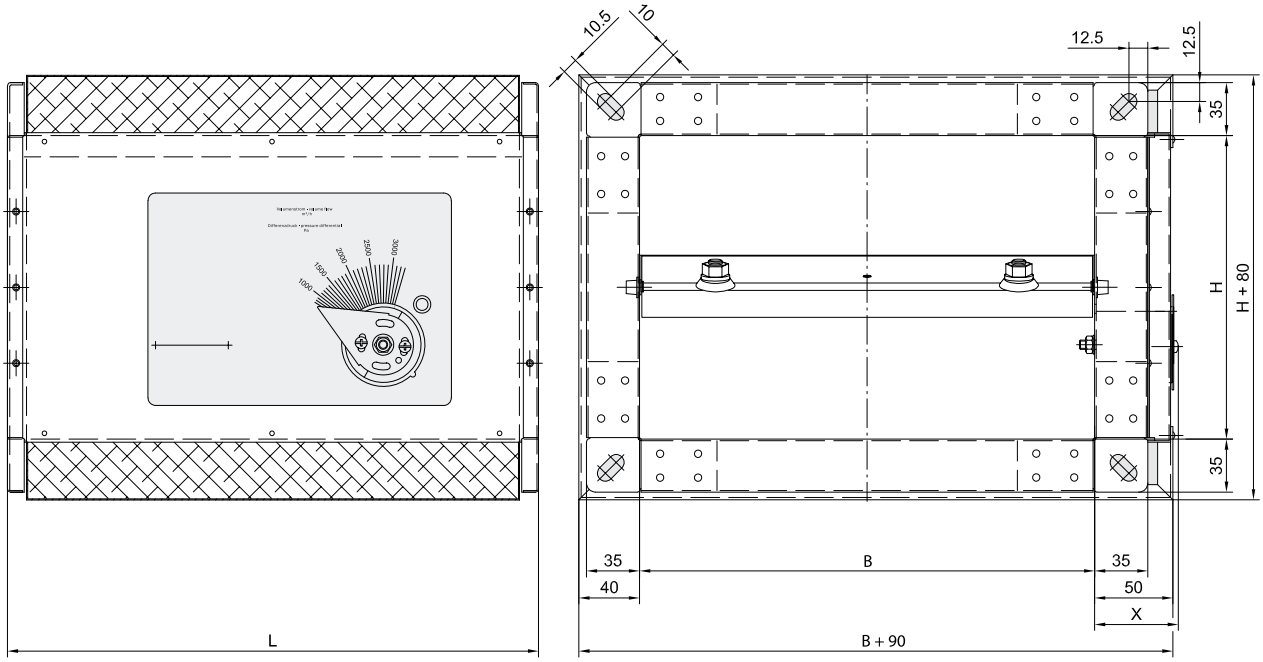
Description
The rectangular mechanical flow rate controller provides a constant volume flow rate in ventilation and air conditioning installations. The controllers operate without an auxiliary power supply. The air flow is regulated mechanically via a regulatory panel, which is mutually bearing and through the leverage of the spring training. The setting of the desired flow can be manual or motor driven. Rectangular flow rate controller may also have acoustic insulation with 40 mm of mineral wool enclosed with galvanised sheet steel.

Application
These controllers are designed to control air flow rate in circular duct systems.Their application temperature range is -20 to 70 °C. The volume flow rate shall be maintained constant, with a deviation between ± 5 % and ± 10 % at variable pressures between 50 and 1000 Pa. External measurements of the controller must suit the measured channel, so as to avoid mechanical failures: pressure loss and a higher level of noise.

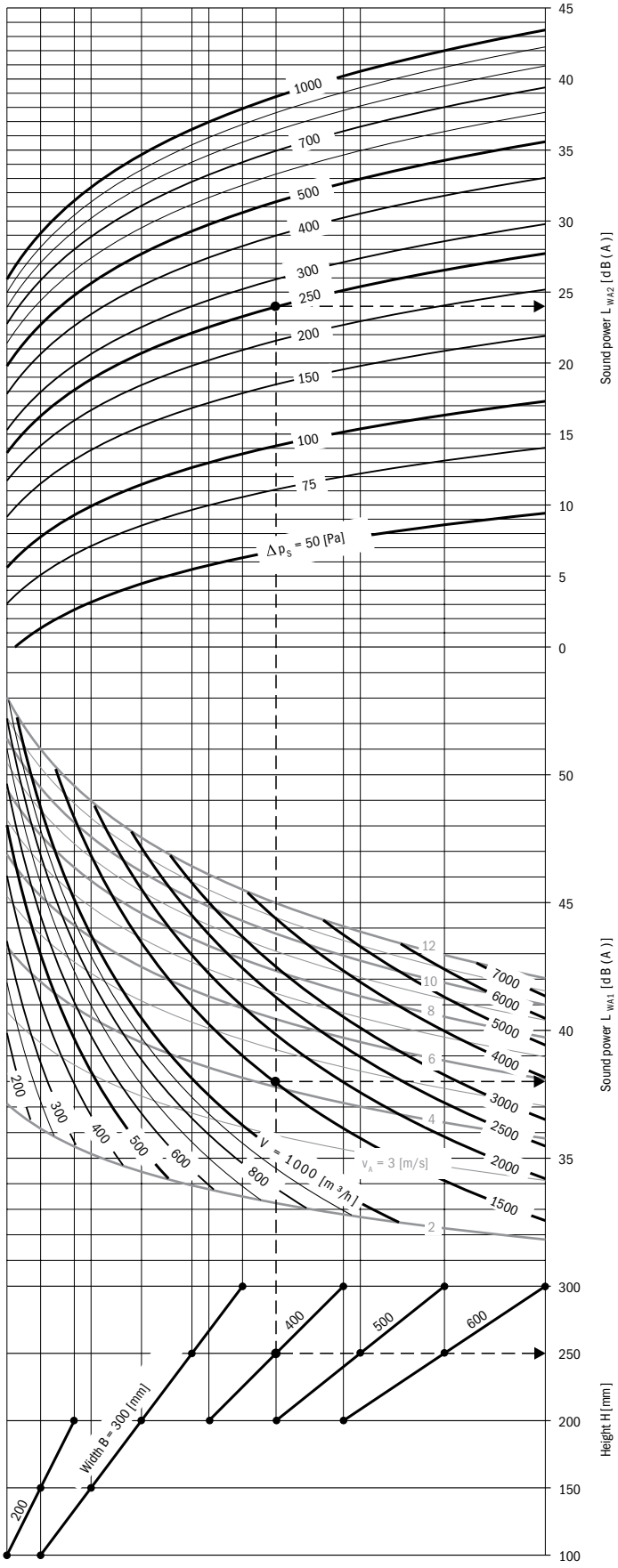
Material
Mechanical flow rate controllers is made of galvanised steel sheet. The housing of regulator and connecting parts comply with the leak tightness classification B in accordance with EN 1751.

Installation
The controller can be easily installed in the ventilation system by means of its flange section. An important requirement is stable fixing of the ducting system, to prevent oscillations of the ducting in the flexible part during fast opening or closing of the control flap.

Widht B (mm)	Height H (mm)	Lenght (mm)	L V_{min} (m^3/h)	Air flow volume V_{max} (m^3/h)
200	100	300	200	800
	150	325	250	1200
	200	425	350	1550
300	100	300	250	1200
	150	325	350	1650
	200	350	500	2100
	250	450	600	2800
	300	500	750	3500
400	200	375	700	3300
	250	450	800	3700
	300	500	1000	4250
500	200	375	875	4125
	250	400	1000	4375
	300	500	1200	5200
600	200	350	1125	4750
	250	500	1400	6000
	300	500	1600	7000


10.5
10
12.5
12.5
35
H
H + 80
35
35
B
35
40
50
X
L
B + 90

Sound power level outside the connecting duct (noise radiation)



Example

Specified:

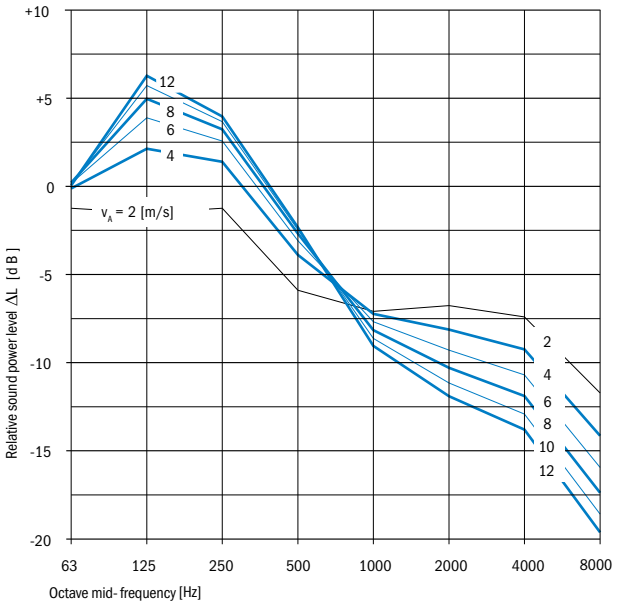
Width B	400 mm
Height H	250 mm
Volume flow rate	V = 1500 (m³/h)
Flow velocity	V_a = 4.2 (m/s)
Static pressure drop	Δp_S = 250 (Pa)

Result:

Sound power level:	L_{WA1} = 38 (dB(A))
	L_{WA2} = 24 (dB(A))
	L_{WA} = 62 (dB(A))

Relative sound power level ΔL (dB)

Average values for all sizes and pressure drops



Definition of Symbols

V (m³/h)	Volume flow rate
A (m²)	Incoming cross-section BxH
v_A (m/s)	Flow velocity in A
Δp_s (Pa)	Static pressure drop
L_{wa} (dB(A))	A-weighted sound power level $L_{wa} = L_{wa1} + L_{wa2}$
$L_{w\text{-}oct}$ (dB)	Octave sound power level $L_{w\text{-}oct} = L_{wa} + \Delta L$
ΔL (dB)	Relative sound power level to L_{WA}

Sound power $L_{W\text{-}Oct}$ for the octave mid-frequencies

	[Hz]	63	125	250	500	1000	2000	4000
L_{WA}	[dB(A)]	62	62	62	62	62	62	62
$\Delta L_{4.2\,[m/s]}$	[dB]	0	2	2	-4	-7	-8	-9
$L_{W\text{-}Oct}$	[dB]	62	64	64	58	55	54	53

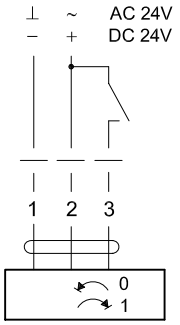
Technical data for actuators

	B2	B1	B3
Connection voltage	230 V~	24 V ∞=	24 V ∞=
Operating range	85 to 265V	19.2 to 28.8V	19.2 to 28.8V
Run time for 90°	150 s	150 s	150 s
Input power supply	≤6 VA	≤4 VA	≤4 VA
Energy consumption	≤2.5 W	≤2 W	≤2 W
Degree of protection	IP 54	IP 54	IP 54
Connection cable 0.75 mm²	approx. 1 m 3 core	approx. 1 m 3 core	approx. 1 m 4 core
Ambient temperature	-30 to + 50 °C	-30 to + 50 °C	-30 to + 50 °C

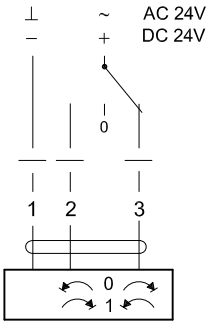
Wiring diagram

Actuator B1

1 wire control

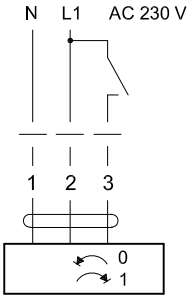


2 wire control

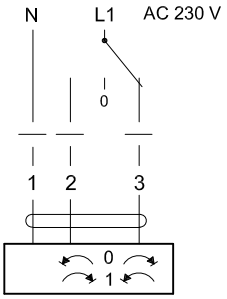


Actuator B2

1 wire control

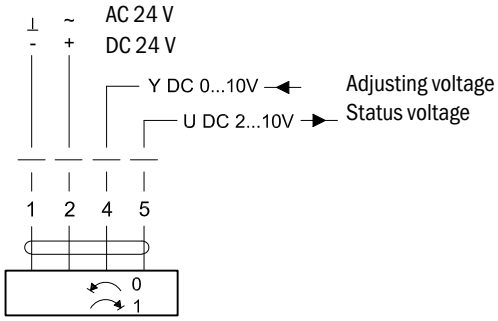


2 wire control



Actuator B3

Continuous



Ordering key

MRP-4/Q/BxH/I/B1

- **B1** 24V ON-OFF
- **B2** 230V ON-OFF
- **B3** 24V continuous
- **I19** Insulation 19 mm
- **I45** Insulation 45 mm
- Size
- **Q** Flow rate
- **4** Square design