

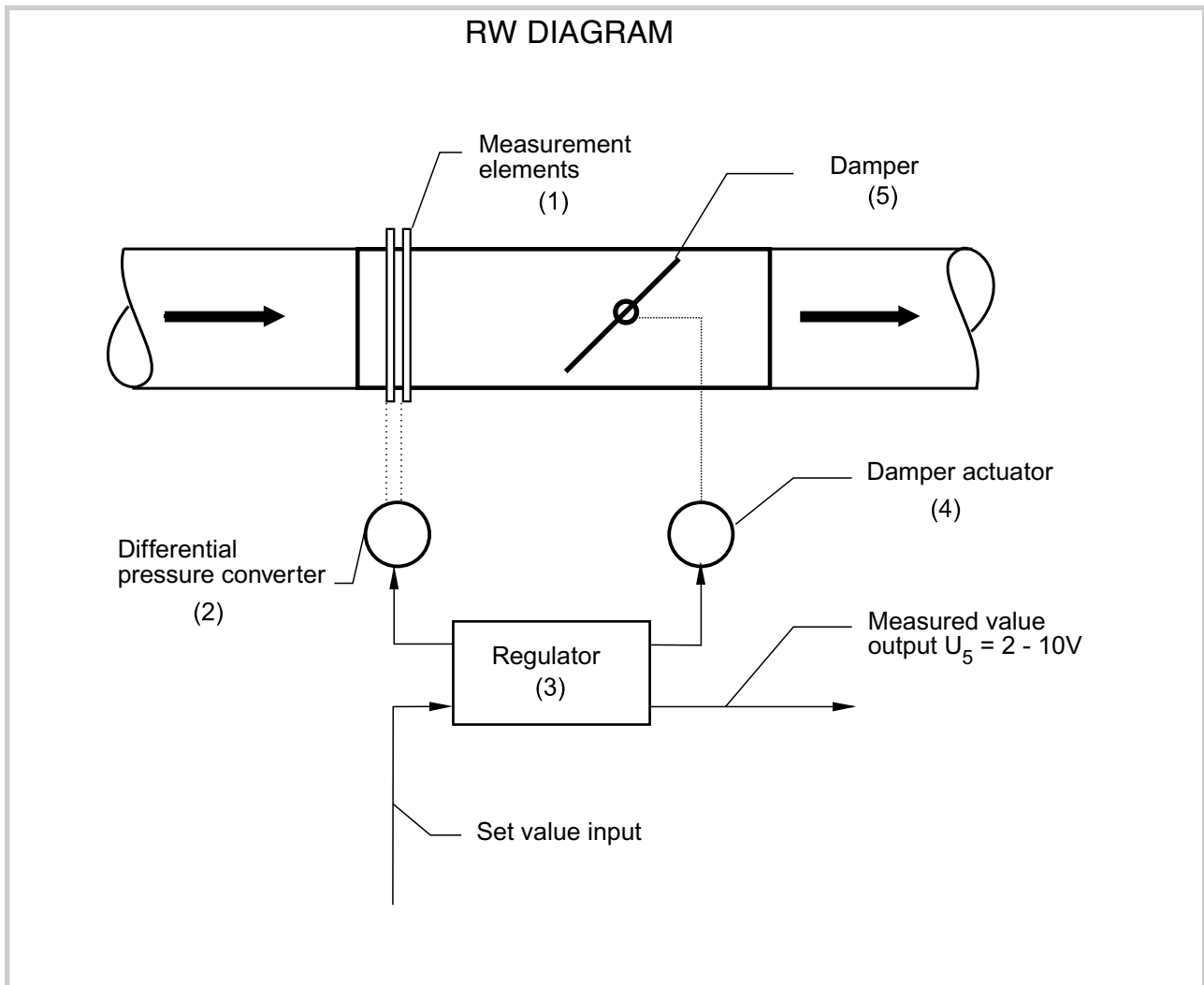
## ***AIR VOLUME FLOW REGULATOR RW***



## GENERAL INFORMATION

Efficiency regulator RW enables automatic air flow control. RW is suitable for use in systems with variable air volume VAV and in other cases, where constant air flow is required.

Regulator can work in connection with other automatic control devices e.g. quality-quantity temperature control systems.



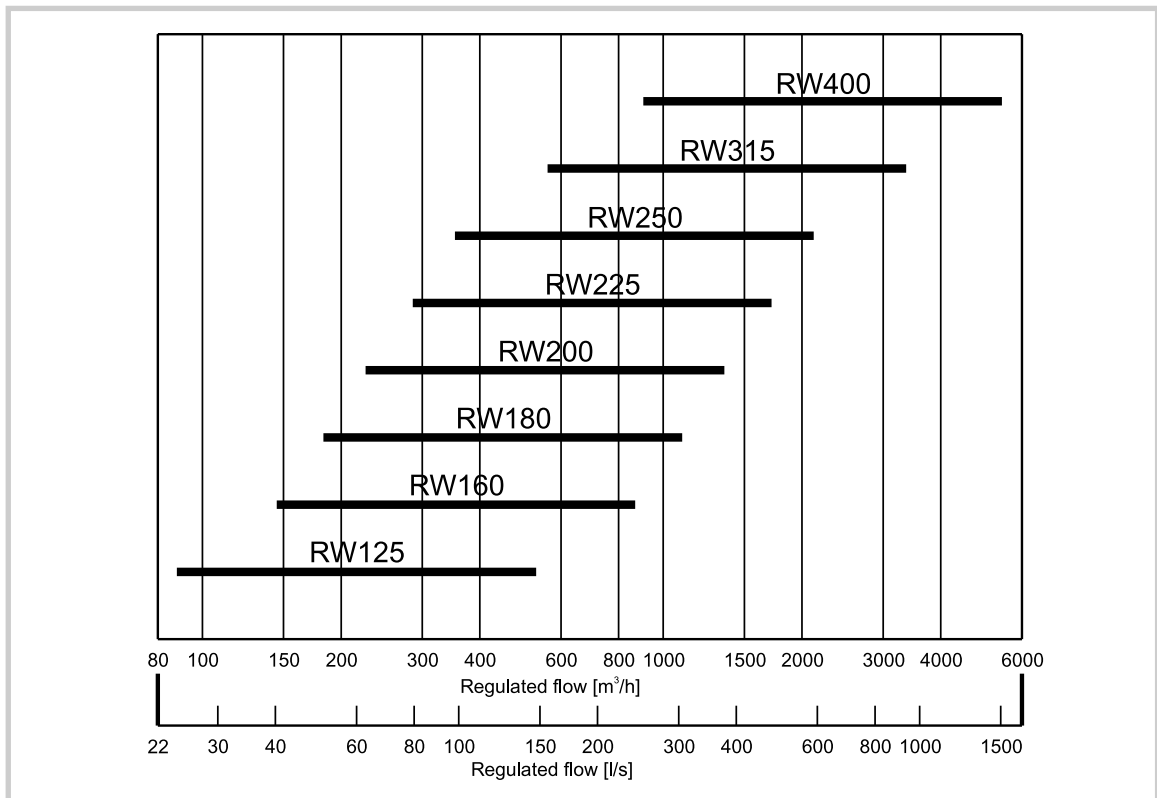
## PRINCIPLE OF OPERATION:

Pressure from measurement elements (1) is converted by differential pressure converter (2) onto electric signal and then transmitted to regulator (3). Regulator controls damper actuator (4) accordingly to the result of set and measured value comparison.

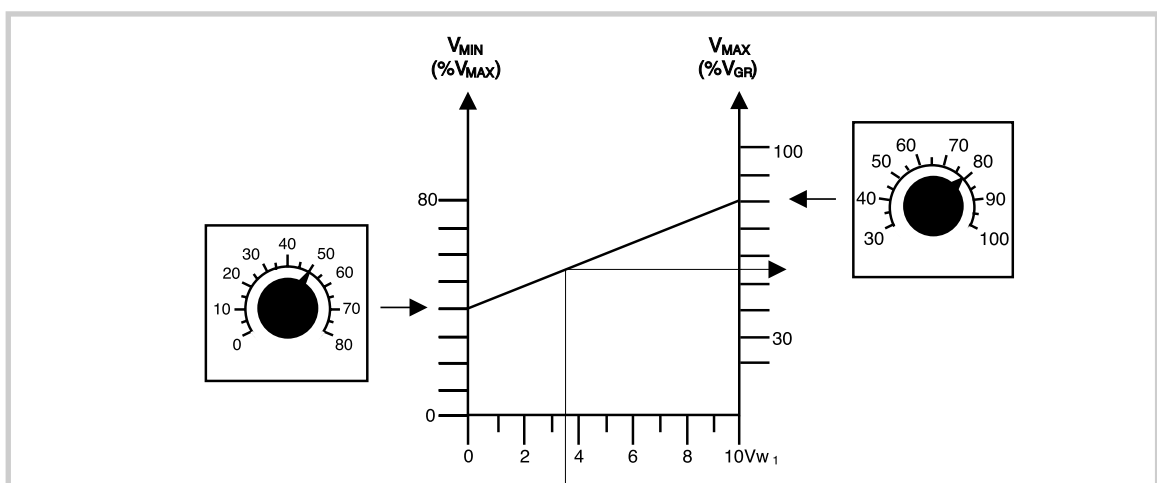
Construction of RW regulator includes elements of automation manufactured by Belimo. Regulator has limiting flow value  $V_{GR}$  preset by manufacturer.

Operating range of regulator can be changed by setting maximal regulated flow value  $V_{MAX}$  and minimal regulated flow value  $V_{MIN}$ . User can set both values according to needs, but none of these values can exceed limiting flow value  $V_{GR}$ .

## RANGE OF USE OF PARTICULAR REGULATOR SIZES:



## PRINCIPLE OF CHANGING OPERATING RANGE OF REGULATOR

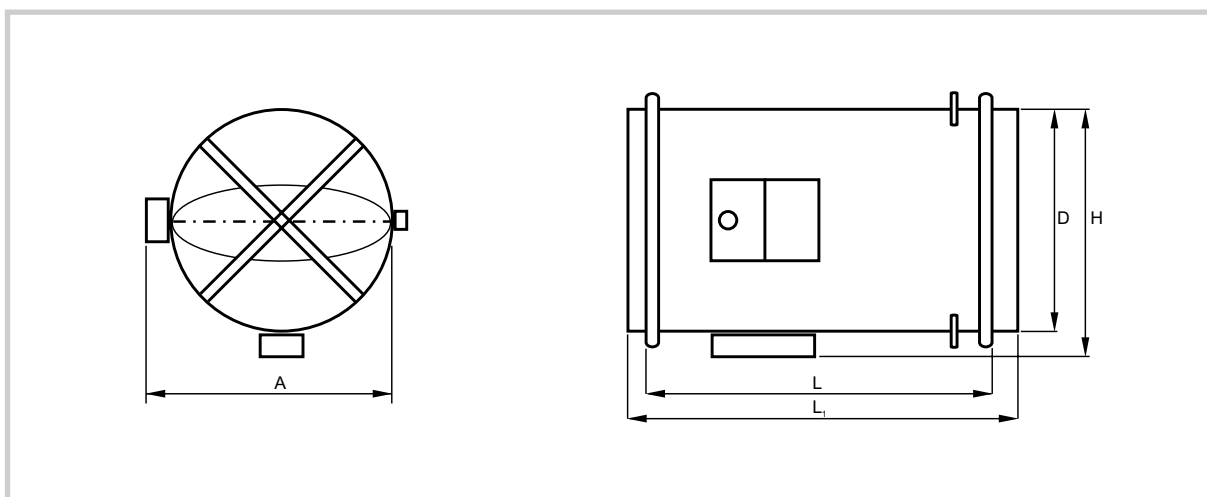


## LIMITING FLOW VALUE VGR [ $\text{M}^3/\text{H}$ ] PRESET BY MANUFACTURER ((\*)).

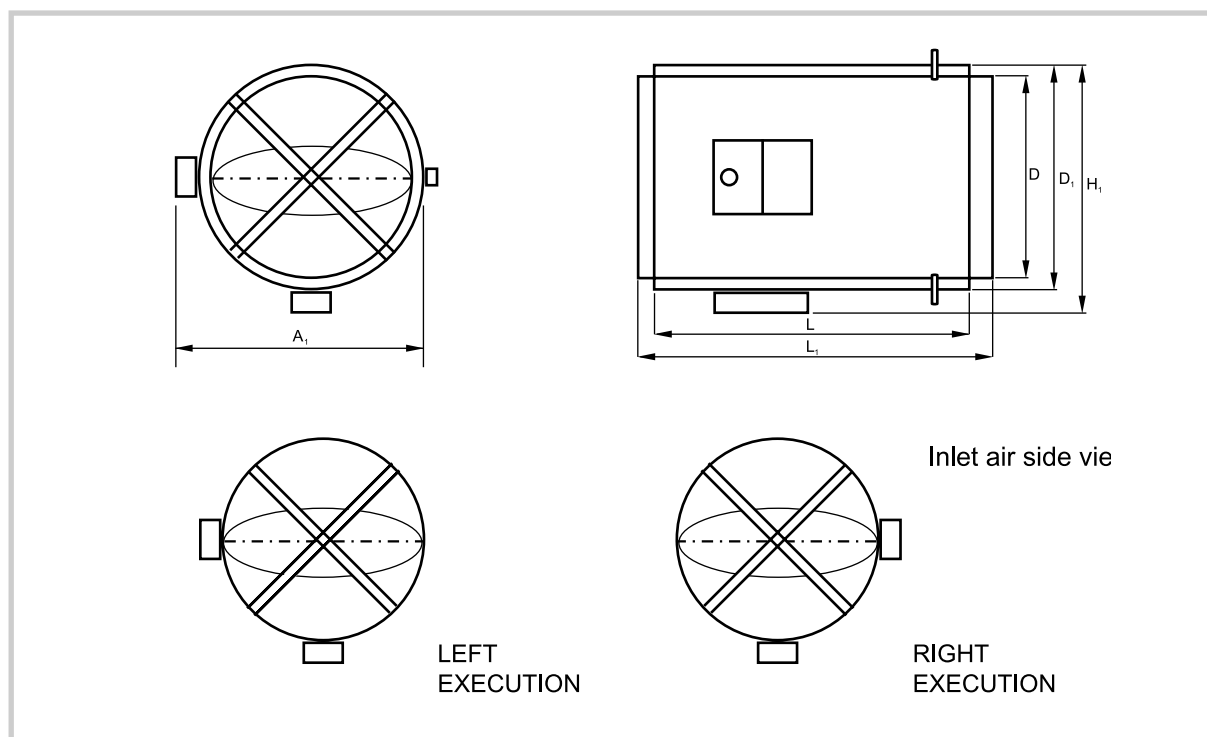
Regulator size	Limiting flow value $V_{\text{GR}}$ [ $\text{m}^3/\text{h}$ ] (velocity $\approx 12\text{m/s}$ )
RW125	530
RW160	870
RW180	1100
RW200	1360
RW225	1720
RW250	2120
RW315	3370
RW400	5430

(\*)Other limiting flow values  $V_{\text{GR}}$  available on request

## REGULATOR RW WITHOUT ISOLATION



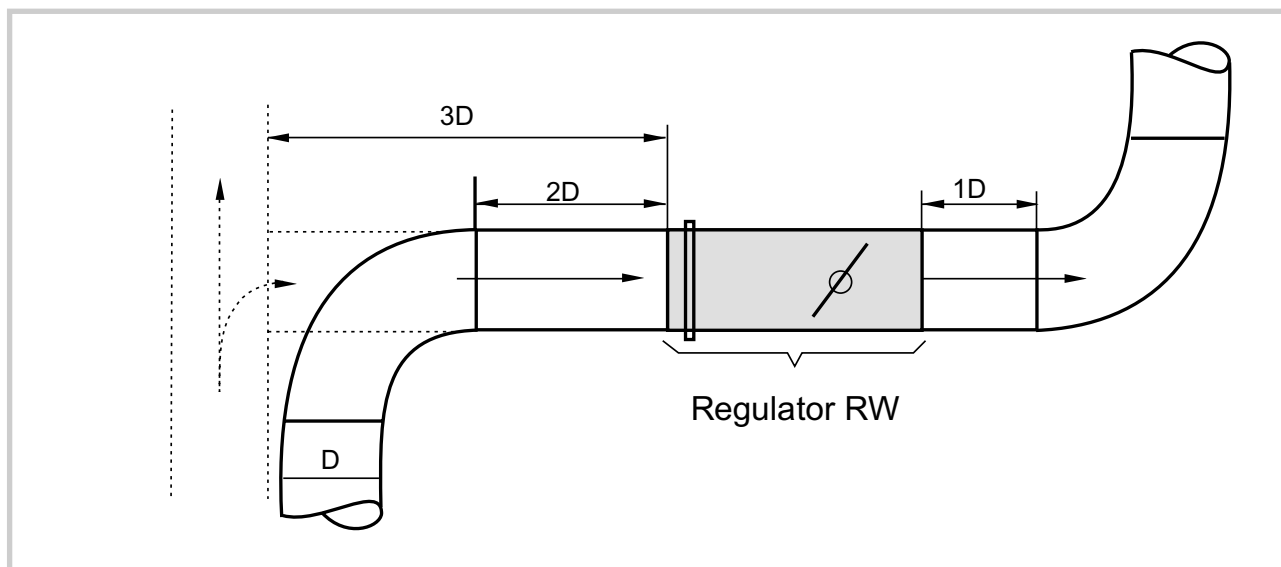
## REGULATOR RW WITH ISOLATION



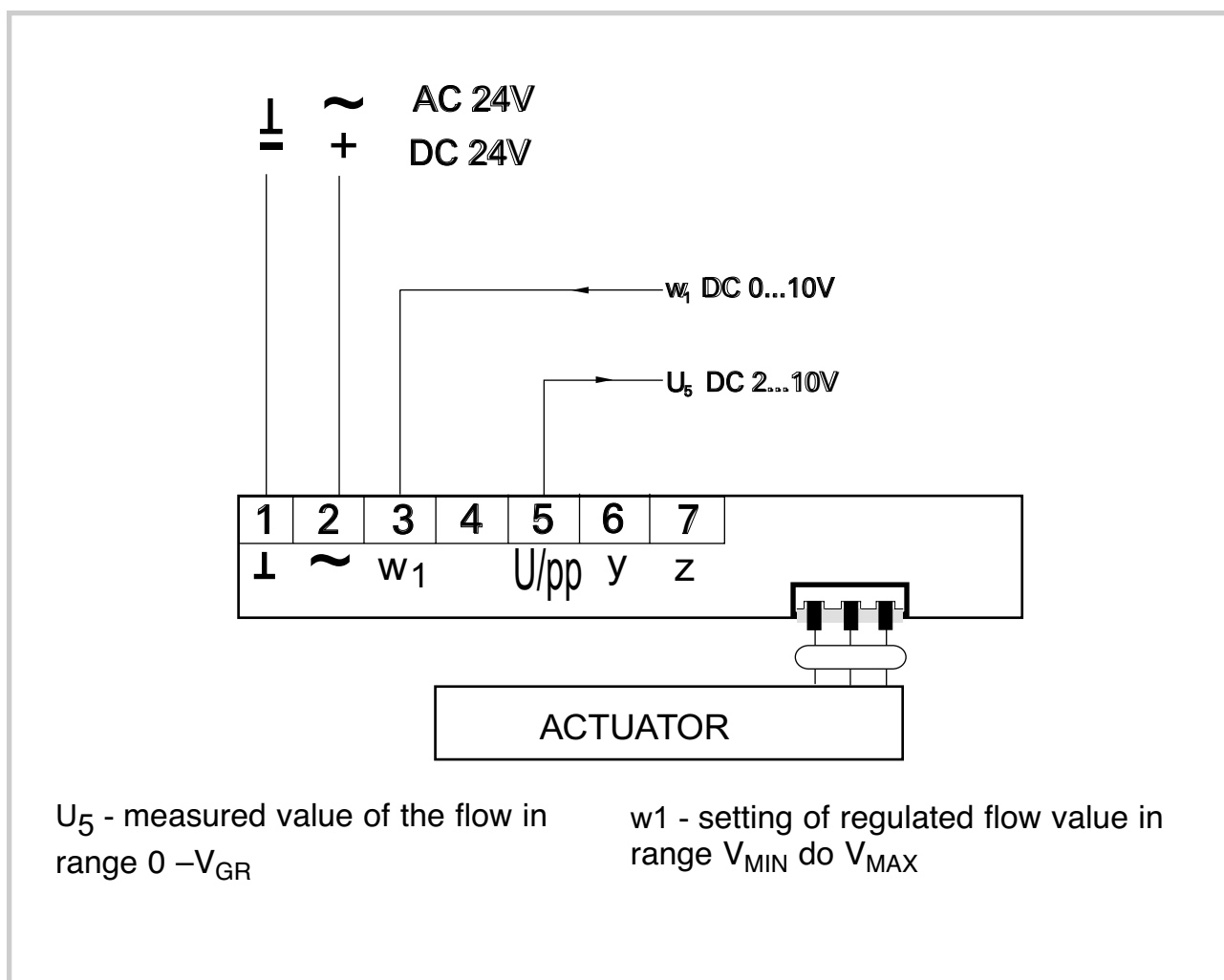
REGULATOR SIZE	NOMINAL DIAMETER	L	D	H	A	A <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	D <sub>1</sub>
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
RW125	125	280	350	124	204	178	258	188	268
RW160	160	280	350	159	239	213	293	213	303
RW180	180	380	450	179	259	233	313	243	413
RW200	200	380	450	198	278	252	332	262	342
RW225	225	380	450	223	303	277	357	287	367
RW250	250	380	450	248	328	302	382	312	392
RW315	315	530	600	313	393	367	447	377	457
RW400	400	530	600	398	478	452	532	462	542

Due to precise control of air flow it is recommended to install RW regulator in a certain distance from other elements of ventilation system disturbing the air flow pattern.

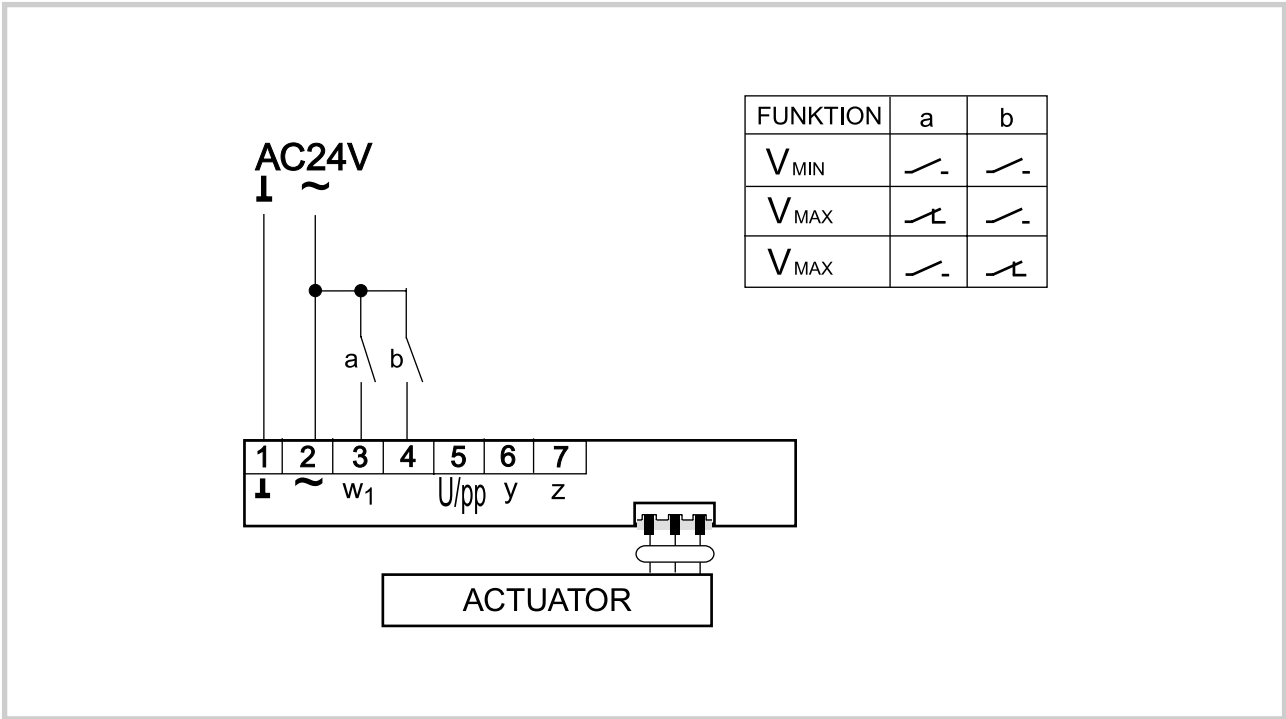
Rules of regulator installation are shown below:



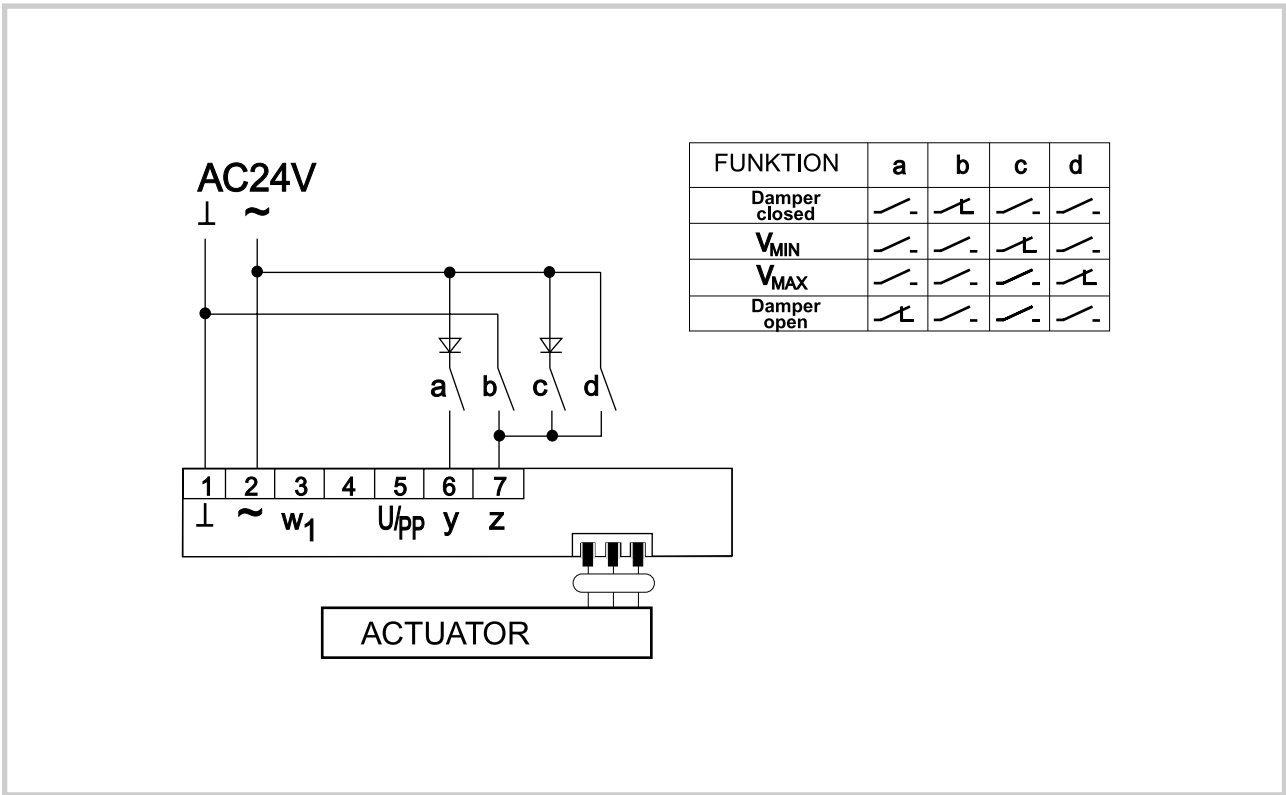
## ELECTRIC TERMINALS OF THE REGULATOR



# OPERATION AT CONSTANT AIR FLOW VALUES



# FUNCTIONS OF ADDITIONAL CONTROL TERMINALS



Functions forced by inputs "y" and "z" are superior and setting of regulated flow value on input  $w_1$  is no longer significant.

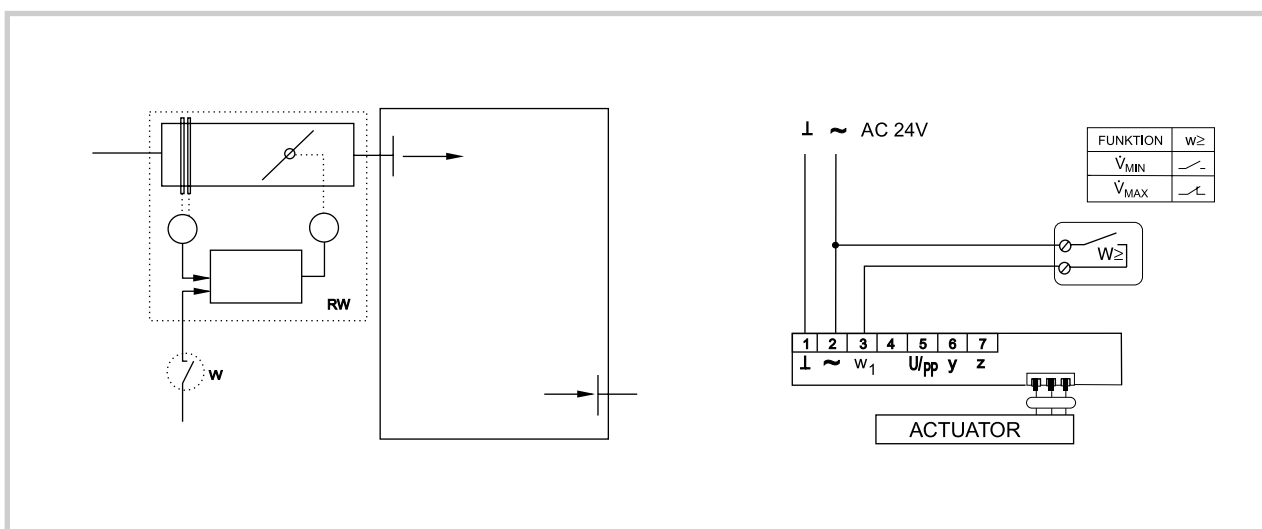
## TECHNICAL DATA

Supply voltage	24VAC +20%(50/60Hz) 24VDC +10%
Power consumption	1.3W (regulator module Belimo VRD2) 2.5W (damper actuator Belimo NM24-V)
Input voltage ( $w_1$ input)	0÷10VDC (input resistance 100k)
Output voltage $U_5$	2÷10VDC or 0 ÷10VDC
Operating range regulation $V_{MAX}$ $V_{MIN}$	30÷100% of limiting value VGR 0÷80% of set value VMAX
Input range of pressure converter	3÷300Pa
Working temperature	0÷50°C

## EXAMPLE APPLICATIONS OF RW REGULATOR

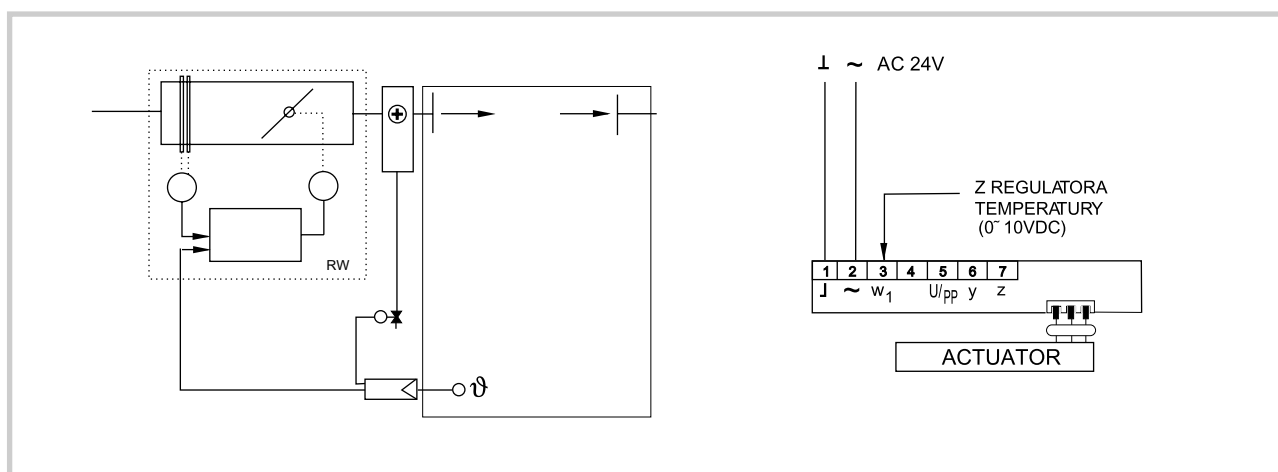
### \* Constant air flow maintenance.

Depending on switch Sw position regulator maintains constant air flow accordingly to set values  $V_{MAX}$ ,  $V_{MIN}$ .

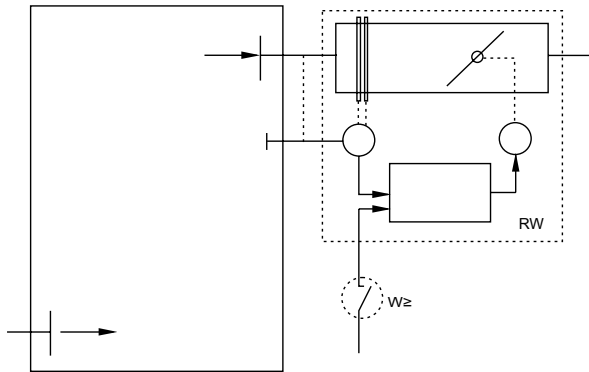


### \* Cooperation with temperature controller in ventilated premise.

Stepless air flow regulation in range  $V_{MIN}$  do  $V_{MAX}$  accordingly to signal from temperature controller.

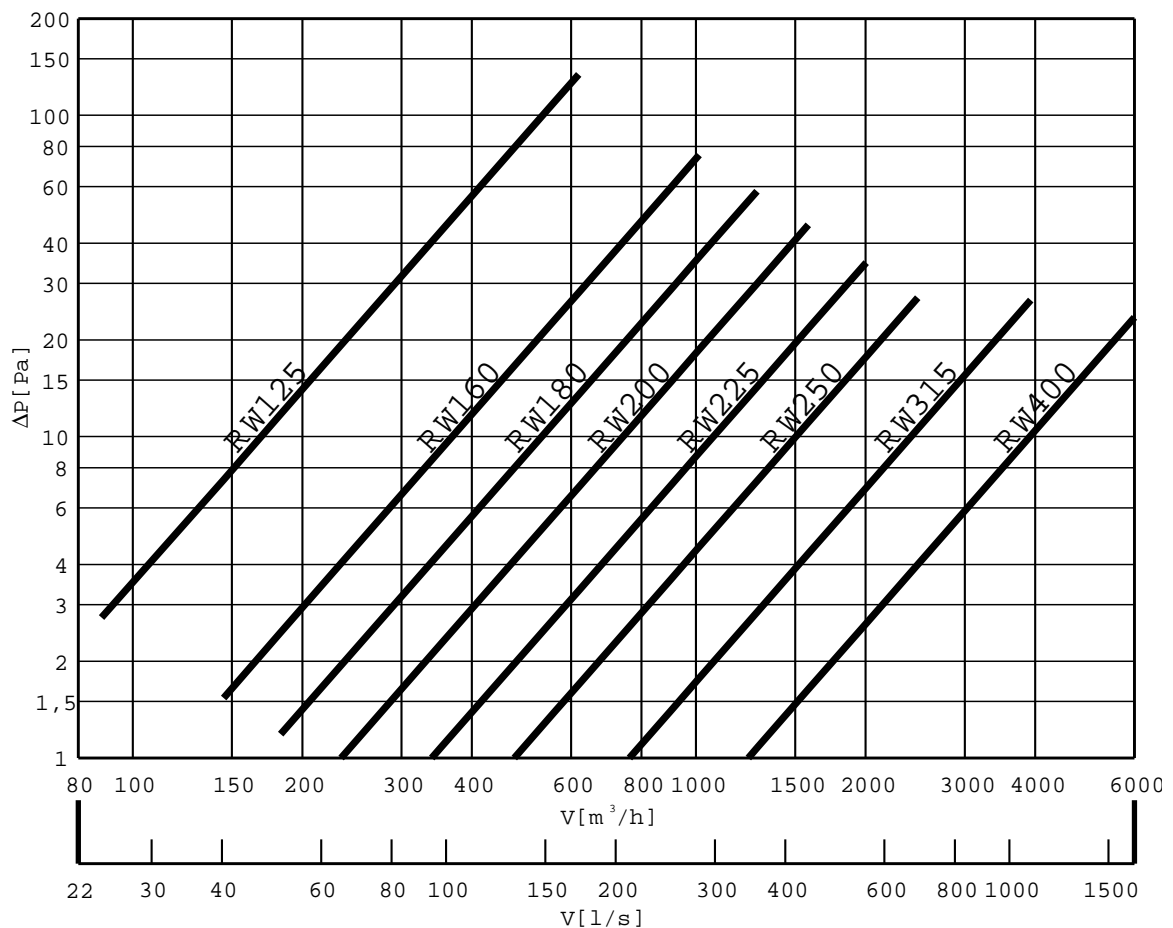


\* **Constant pressure maintenance in ventilation duct or premise.**



In this case air flow measurement elements are not used. One input of the pressure converter is connected to premise space or ventilation duct.

**PRESSURE DROP OVER RW REGULATOR (DAMPER OPENED)**





Following tables show sound power levels [dB ]in octave bands and level LWA [dB(A)],for various air velocities and pressure drops over device.

## SOUND POWER LEVEL AT RW REGULATOR OUTLET

RW125												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	46	50	57	64	55	63	65	69	61	66	70	71
250	42	47	55	63	53	61	64	68	58	64	68	69
500	38	46	55	61	51	59	63	66	55	63	68	69
1000	35	43	51	56	49	55	57	61	52	59	62	62
2000	32	39	47	54	46	54	55	59	51	58	60	61
4000	25	31	42	47	41	52	50	54	45	53	55	54
L <sub>WA</sub> [dB(A)]	41	48	56	62	54	62	64	67	58	65	69	69
RW160												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	47	55	58	64	54	63	67	71	62	63	71	72
250	44	50	57	63	52	62	66	70	60	61	68	70
500	39	51	57	62	49	59	65	69	56	62	68	70
1000	36	47	52	57	47	55	59	63	54	57	63	63
2000	33	42	48	55	45	54	56	62	53	57	62	62
4000	27	34	43	49	41	51	52	57	48	50	56	55
L <sub>WA</sub> [dB(A)]	42	52	58	63	52	62	65	70	60	64	69	70
RW180												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	47	52	57	63	56	63	65	69	60	67	71	72
250	43	49	54	62	53	60	64	68	59	64	69	70
500	38	48	55	62	52	58	63	68	55	64	68	69
1000	35	45	50	56	49	54	57	62	52	60	63	63
2000	30	40	46	54	48	53	54	61	51	60	61	61
4000	24	32	40	48	42	50	50	55	46	54	57	56
L <sub>WA</sub> [dB(A)]	41	49	56	62	55	60	63	69	58	66	69	70
RW200												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	46	53	57	63	55	60	65	69	63	64	70	74
250	43	48	56	62	52	58	63	69	61	62	68	71
500	37	49	56	60	50	56	62	67	57	61	67	71
1000	35	45	51	55	48	52	57	62	55	57	62	65
2000	30	40	47	53	46	50	54	61	53	57	60	63
4000	25	32	42	47	40	49	50	55	49	51	55	58
L <sub>WA</sub> [dB(A)]	40	50	57	61	53	58	63	69	60	63	68	72
RW225												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	48	57	60	65	55	63	64	72	62	65	69	73
250	46	53	57	65	53	61	62	72	61	63	68	72
500	40	53	58	63	51	58	62	71	57	63	66	71
1000	38	49	53	58	49	54	56	65	54	58	61	65
2000	33	44	50	56	47	53	54	64	52	57	60	64
4000	28	36	44	49	43	51	49	59	47	52	55	57
L <sub>WA</sub> [dB(A)]	43	54	59	64	54	61	63	72	60	65	68	72
RW250												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	47	55	61	66	54	62	64	71	63	65	69	74
250	43	51	58	65	52	59	64	70	61	64	68	71
500	39	52	58	63	51	58	63	69	57	63	67	71
1000	36	48	53	58	48	53	57	64	55	59	61	65
2000	33	43	50	55	45	52	55	62	53	58	60	63
4000	26	36	44	49	42	49	50	57	48	52	55	58
L <sub>WA</sub> [dB(A)]	42	53	59	64	53	60	64	70	60	65	68	72
RW315												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	47	57	60	69	56	62	67	73	62	65	73	78
250	43	52	58	69	53	60	65	73	59	63	70	76
500	39	52	59	68	51	57	64	72	55	64	70	76
1000	36	49	54	62	50	53	59	66	53	59	64	69
2000	32	45	51	59	48	52	56	65	52	59	63	67
4000	26	37	45	54	43	49	52	60	46	53	57	61
L <sub>WA</sub> [dB(A)]	41	54	60	69	55	60	65	73	59	66	71	76
RW400												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	49	56	61	69	58	63	69	73	65	67	74	79
250	44	53	59	68	55	61	67	73	63	66	71	77
500	40	53	60	67	53	60	65	72	58	66	72	77
1000	37	49	54	61	52	55	61	66	56	61	66	70
2000	33	45	52	59	49	53	58	65	55	61	64	68
4000	27	36	44	52	44	51	54	59	50	54	60	63
L <sub>WA</sub> [dB(A)]	43	54	60	68	56	62	67	73	62	68	73	77

# SOUND POWER LEVEL EMITTED TO SURROUNDINGS BY RW REGULATOR. REGULATOR WITHOUT ISOLATION.

RW125												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	33	36	41	44	38	43	47	55	37	40	48	53
250	26	30	36	39	32	39	42	49	33	37	44	50
500	18	26	34	40	25	32	40	49	31	35	41	46
1000	13	20	29	34	21	29	36	43	25	31	38	44
2000	10	19	27	33	18	27	33	41	23	29	38	44
4000	9	15	22	28	16	23	32	41	18	26	37	43
L <sub>WA</sub> [dB(A)]	22	28	35	41	30	36	42	50	32	37	45	51
RW160												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	33	39	41	47	41	46	49	56	45	46	48	56
250	24	33	35	43	36	42	43	51	41	42	45	53
500	18	29	35	43	27	35	41	50	37	40	41	50
1000	12	23	29	37	24	32	36	45	32	37	39	47
2000	10	22	28	36	22	29	32	43	30	36	40	48
4000	10	18	22	30	18	27	32	43	25	32	38	46
L <sub>WA</sub> [dB(A)]	22	31	36	44	32	39	42	52	39	43	46	54
RW180												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	35	40	45	49	44	46	49	72	47	50	52	56
250	26	33	39	45	39	41	43	66	42	45	47	52
500	20	30	37	44	30	34	43	65	39	43	44	49
1000	14	23	32	39	27	31	37	60	34	40	42	46
2000	12	22	30	38	25	28	33	58	31	38	42	47
4000	10	19	26	32	22	25	33	57	28	35	41	45
L <sub>WA</sub> [dB(A)]	23	32	39	46	35	38	44	67	40	45	49	53
RW200												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	34	37	45	50	45	50	51	56	47	48	52	54
250	26	31	40	46	39	46	45	50	42	45	47	51
500	20	26	39	45	31	40	44	50	39	42	45	48
1000	14	20	33	40	28	36	39	44	34	39	42	45
2000	11	19	31	38	24	34	35	42	31	38	42	46
4000	12	15	28	34	21	30	35	42	27	34	40	44
L <sub>WA</sub> [dB(A)]	23	29	40	46	35	43	45	51	40	45	49	52
RW225												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	39	41	47	50	46	48	52	57	46	51	52	57
250	31	35	41	44	40	42	47	50	43	47	48	53
500	23	31	40	44	31	36	46	51	39	44	45	49
1000	18	25	35	39	29	33	40	45	35	41	43	47
2000	16	23	34	37	26	30	37	43	32	39	43	48
4000	15	20	28	33	22	28	37	42	29	36	42	46
L <sub>WA</sub> [dB(A)]	27	33	41	45	36	40	47	52	41	47	49	54
RW250												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	41	48	49	52	48	51	52	58	53	52	54	60
250	33	41	44	47	42	46	46	53	49	48	51	56
500	25	37	42	47	34	40	45	52	46	46	47	54
1000	20	31	36	41	31	37	40	47	40	43	45	51
2000	17	30	34	39	29	35	36	46	38	41	45	51
4000	16	27	30	35	25	31	36	45	34	39	44	51
L <sub>WA</sub> [dB(A)]	29	39	43	48	38	44	46	54	47	49	52	58
RW315												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	43	52	49	56	54	59	55	58	52	58	58	60
250	35	46	45	50	47	54	49	53	49	54	54	57
500	29	42	44	50	39	48	48	52	45	52	50	53
1000	22	35	38	45	36	44	42	47	41	48	48	51
2000	20	34	37	44	34	41	39	46	38	47	48	52
4000	20	30	32	39	31	38	39	44	34	44	47	50
L <sub>WA</sub> [dB(A)]	32	44	45	52	44	51	49	54	47	55	55	58
RW400												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	46	57	54	56	57	61	60	62	58	59	62	65
250	39	50	48	51	51	55	53	56	55	55	57	62
500	32	46	47	50	43	50	53	55	51	53	55	58
1000	26	40	42	45	40	46	47	50	46	49	52	56
2000	23	39	40	43	36	43	44	48	43	48	53	56
4000	23	36	36	39	34	41	43	47	40	44	50	55
L <sub>WA</sub> [dB(A)]	35	48	48	52	47	53	54	57	53	55	59	63

# SOUND POWER LEVEL EMITTED TO SURROUNDINGS BY RW REGULATOR. REGULATOR WITH ISOLATION.

RW125												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	30	31	38	44	42	37	43	49	36	36	42	53
250	20	25	31	39	34	32	37	41	31	31	37	47
500	15	20	28	37	25	25	36	40	27	29	34	43
1000	10	14	21	29	18	18	27	32	19	22	28	38
2000	7	11	17	26	14	12	19	26	12	17	23	34
4000	8	9	13	20	12	8	17	24	7	7	17	28
L <sub>WA</sub> [dB(A)]	19	22	29	37	29	28	35	40	28	29	35	45
RW160												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	30	33	37	46	40	40	44	50	42	44	45	50
250	21	26	31	40	32	35	36	44	37	39	40	46
500	16	22	29	39	23	27	34	43	34	36	36	41
1000	10	16	21	30	16	21	26	34	25	29	30	36
2000	9	12	17	27	12	14	20	28	18	24	27	32
4000	9	10	14	21	11	11	17	25	13	14	19	26
L <sub>WA</sub> [dB(A)]	19	24	29	39	28	30	35	43	34	37	38	43
RW180												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	31	36	39	46	41	43	44	77	39	42	47	50
250	22	29	33	40	34	38	38	71	35	38	42	44
500	17	23	31	40	24	30	36	70	30	34	38	41
1000	12	18	23	31	18	24	28	61	23	28	32	35
2000	11	15	20	29	13	17	21	55	15	22	28	32
4000	10	13	16	22	12	14	19	53	10	13	21	24
L <sub>WA</sub> [dB(A)]	21	26	32	40	29	33	36	70	31	35	39	42
RW200												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	32	33	41	48	39	43	47	49	40	47	45	51
250	23	26	35	41	33	38	40	41	36	42	40	47
500	18	22	33	41	24	30	38	40	31	38	37	43
1000	12	16	24	32	17	24	29	32	23	32	31	37
2000	11	13	21	30	12	17	22	27	17	26	27	33
4000	10	11	17	23	12	14	20	23	10	18	19	26
L <sub>WA</sub> [dB(A)]	21	24	33	41	28	33	38	40	32	39	38	44
RW225												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	35	37	42	48	40	43	45	52	44	46	48	51
250	25	30	37	43	33	38	39	44	38	41	43	46
500	20	26	35	41	24	31	36	44	34	37	38	42
1000	15	20	26	33	17	24	28	35	27	31	33	36
2000	13	17	23	30	12	18	22	30	19	25	29	33
4000	13	15	18	24	12	14	19	26	15	17	22	26
L <sub>WA</sub> [dB(A)]	24	28	35	41	28	34	37	44	35	38	40	44
RW250												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	32	38	43	49	49	48	49	54	46	49	49	55
250	23	31	37	44	42	42	41	46	41	44	44	50
500	17	25	35	43	33	36	41	46	37	40	40	45
1000	13	20	27	34	25	29	32	37	28	34	34	40
2000	11	17	24	32	21	22	24	32	21	29	31	36
4000	11	14	20	24	19	18	23	28	15	20	23	30
L <sub>WA</sub> [dB(A)]	21	28	35	43	37	38	40	46	37	41	42	47
RW315												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	34	43	46	51	50	54	52	56	52	52	52	58
250	24	35	40	45	44	48	44	48	47	47	48	52
500	18	30	37	45	35	42	42	48	42	44	44	49
1000	14	25	29	36	27	35	34	39	35	38	38	43
2000	11	21	25	33	23	28	27	33	28	33	34	39
4000	11	20	22	27	22	25	25	30	23	24	26	33
L <sub>WA</sub> [dB(A)]	22	33	38	45	39	44	42	48	43	45	45	50
RW400												
Frequency [Hz]	100Pa				250Pa				500Pa			
	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s	3m/s	6m/s	9m/s	12m/s
125	35	48	49	55	53	57	56	57	52	56	59	60
250	27	40	44	49	48	52	49	50	47	52	54	54
500	21	35	41	49	37	44	47	49	43	49	50	51
1000	16	30	33	40	31	38	38	41	35	42	45	45
2000	13	26	30	38	26	31	31	36	28	36	42	42
4000	13	24	25	31	26	27	29	33	23	27	34	35
L <sub>WA</sub> [dB(A)]	24	38	42	49	42	47	47	49	43	50	52	52

# ORDERING FORM

## Technical data

**Regulator RW**      **160**      -      **L**      -      **I**      -      **V<sub>GR</sub>**      -      ....

SIZE

Left execution    - L

Right execution   - R

with isolation     - I

without isolation   - 0

Optional extra:

V<sub>GR</sub>=m<sup>3</sup>/h on request

Quantity    pcs.



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