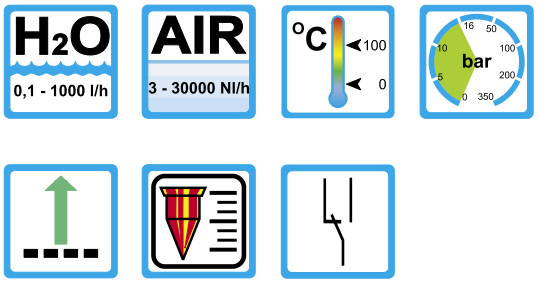
Flow monitor

2100, 2150
2300, 2340



Range of Applications

Operation

- Float measuring principle

Application

- Control panels
- Pilot plants
- Water treatment
- Chemical industry
- Medical industry
- Cosmetic industry
- Heat treatment

Features

- Easy installation
- Small size
- No flow straightening section necessary
- Horizontal ports
- Low pressure drop
- Options:
  Adjustable limit switches, constant flow regulation
  (with differential pressure controller RCA and RCD)

Installation hints

- The operating instruction for types series 2000 must be observed!
- Download: www.meister-flow.com

Operating Data

	2100	2150	2300	2340
Operating pressure max.	PN 15			
Pressure drop	see table page 3 and 4			
Ambient temperature	0 - 80 °C			
Media temperature	0 - 100 °C			
Accuracy classified VDE / VDI 3513	± 3,5 %	± 3,0 %	± 1,6 %	± 1,6 %

Measuring Ranges

Type	Flow ranges (water at 20 °C) [l/h]		[l/h]
C110/0001	0,1 - 1	C212/0025	2,5 - 25
C110/0002,5	0,2 - 2,5	C213/0040	4 - 40
C111/0005	0,5 - 5	C214/0060	6 - 60
C111/0010	1 - 10	C215/0100	10 - 100
C111/0016	1,6 - 16	C311/0025	2,5 - 25
C112/0025	2,5 - 25	C311/0040	4 - 40
C113/0040	4 - 40	C311/0060	6 - 60
C114/0060	6 - 60	C312/0100	10 - 100
C115/0100	10 - 100	C312/0160	16 - 160
C210/0001	0,1 - 1	C312/0250	25 - 250
C210/0002,5	0,2 - 2,5	C313/0400	40 - 400
C211/0005	0,5 - 5	C313/0630	60 - 630
C211/0010	1 - 10	C313/1000	100 - 1000
C211/0016	1,6 - 16		

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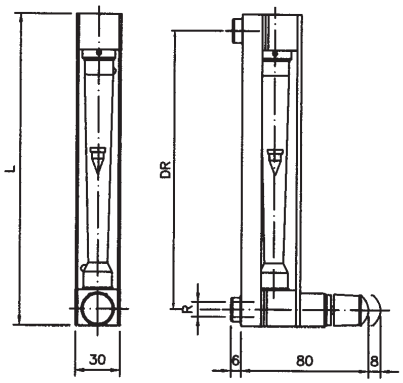
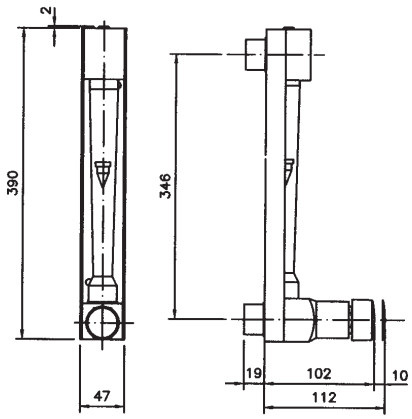
Technical data



Type 2100, 2150, 2300



Type 2340

Type overview

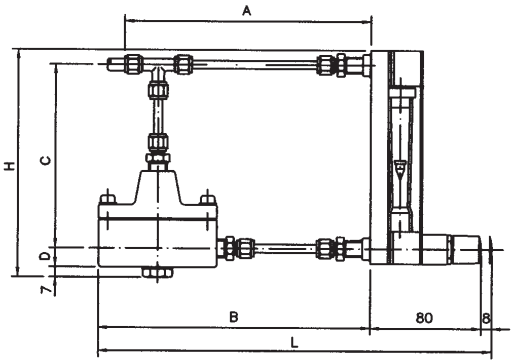
			Connection (female thread)	
Type	DR	L	Size	Type of thread
2100	136	158	1/4"	BSP/NPT
2150	186	208	1/4"	BSP/NPT
2300	336	358	1/4"	BSP/NPT
2340	346	390	1/2"	BSP/NPT

Weight

Type	Weight [kg] flowmeter	Weight [kg] flow regulator
2100	0,70	2,5
2150	0,85	2,5
2300	0,85	2,5
2340	1,80	3,0

Combination with flow regulator (optional)

	flow water [l/h]		flow air [Nl/h]	
Type	min.	max.	min.	max.
2100				
2150	1	250	10	4000
2300				
2340	60	400	700	7000

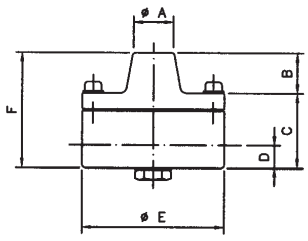


Dimensions (flowmeter and flow regulator)

	Dimensions					Connections
Type	A	B	C	H	L	D
2100	150	170	136	172	266	1/4" BSP/NPT
2150	150	170	186	222	266	1/4" BSP/NPT
2300	150	170	336	372	266	1/4" / 1/2" BSP/NPT
2340	180	200	346	397	320	1/2" BSP/NPT

Dimensions (flow regulator)

Type	R	A	B	C	D	E	F
RCA RCD	1/4" BSP/NPT	35	11	52	13	88	63
RA40 RD40	1/2" BSP/NPT	40	16	65	18	100	81



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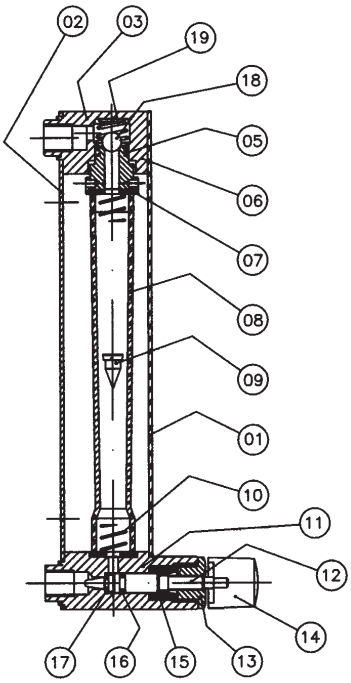
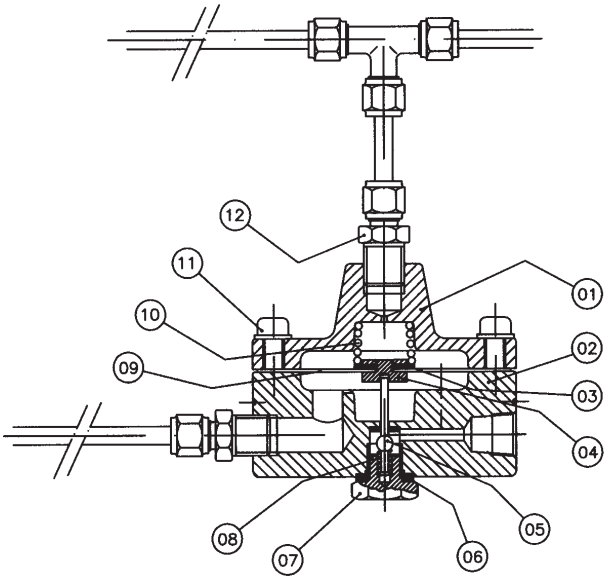
Material

Flow monitor



Constant flow regulator



Material flow monitor

No.	Description	Marterial
1	Protection Shield *	Polycarbonate
2	Body	Stainless steel 1.4401
3	End piece	Stainless steel 1.4401
5	O - Ring	NBR / Viton® / EPDM
6	Piston	Stainless steel 1.4401
7	Gaskets	NBR / Viton® / EPDM
8	Measuring tube	Borosilicate Glass
9	Float	Stainless steel 1.4404 Glass / Aluminium Plastic
10	Spring	Stainless steel 1.4401
11	Valve body	Stainless steel 1.4404
12	Valve stem	Stainless steel 1.4404
13	Guide Nut	Stainless steel 1.4404
14	Adjusting knob	Plastic
15	Valve guide	PTFE
16	O - Ring	NBR / Viton® / EPDM
17	Valve seat	PTFE
18	Option	Stainless steel 1.4401
19	Option	Stainless steel 1.4401

* not available for the type 2340

Material constant flow regulator

No.	Description	Marterial
1	Diaphragm body	Stainless steel 1.4404
2	Valve body	Stainless steel 1.4404
3	Diaphragm	NBR / Viton® / PTFE
4	Valve guide	Stainless steel 1.4404
5	Regulating valve	Stainless steel 1.4404
6	Gasket	PTFE
7	Stop for spring	Stainless steel 1.4404
8	Valve spring	Stainless steel 1.4401
9	Diaphragm plate	Stainless steel 1.4401
10	Diaphragm spring	Stainless steel 1.4401
11	Screw	Stainless steel 1.4401
12	Connectors	Stainless steel 1.4401

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Measuring ranges

Measuring ranges*

Tube No.	Tube length [mm]	Water 20 °C [l/h]	
		Stainless Steel	Glass
Type 2100			
C110/0001	100	0,1 – 1	0,05 – 0,5
C110/0002,5	100	0,2 – 2,5	0,1 – 1
C111/0005	100	0,5 – 5	0,2 – 2
C111/0010	100	1 – 10	0,4 – 4
C111/0016	100	1,6 – 16	0,6 – 6
C112/0025	100	2,5 – 25	1 – 10
C113/0040	100	4 – 40	1,6 – 16
C114/0060	100	6 – 60	2 – 20
C115/0100	100	10 – 100	4 – 40
Type 2150			
C210/0001	150	0,1 – 1	0,05 – 0,5
C210/0002,5	150	0,2 – 2,5	0,1 – 1
C211/0005	150	0,5 – 5	0,2 – 2
C211/0010	150	1 – 10	0,4 – 4
C211/0016	150	1,6 – 16	0,6 – 6
C212/0025	150	2,5 – 25	1 – 10
C213/0040	150	4 – 40	1,6 – 16
C214/0060	150	6 – 60	2 – 20
C215/0100	150	10 – 100	4 – 40

Measuring ranges*

Tube No.	Air 20 °C, 1013 mbar abs. [Nl/h]		
	Stainless Steel	Glass	Plastic
Type 2100			
C110/0001	3 – 30	1 – 15	0,5 – 5
C110/0002,5	8 – 80	4 – 40	1,5 – 16
C111/0005	15 – 160	7 – 70	3 – 30
C111/0010	30 – 350	15 – 180	8 – 110
C111/0016	40 – 450	20 – 240	10 – 140
C112/0025	80 – 800	40 – 400	20 – 250
C113/0040	120 – 1200	70 – 700	40 – 400
C114/0060	200 – 2000	100 – 1000	70 – 700
C115/0100	300 – 3500	150 – 1600	100 – 1100
Type 2150			
C210/0001	3 – 30	2 – 20	0,5 – 5
C210/0002,5	8 – 80	5 – 50	1 – 16
C211/0005	15 – 180	10 – 100	3 – 30
C211/0010	30 – 300	15 – 180	10 – 100
C211/0016	50 – 500	30 – 300	10 – 150
C212/0025	80 – 800	40 – 400	20 – 250
C213/0040	100 – 1000	70 – 700	40 – 400
C214/0060	150 – 1500	100 – 1000	70 – 700
C215/0100	300 – 3000	150 – 1500	100 – 1100

Pressure drop*

Tube No.	Pressure drop [mm H_2O]		
	Stainless Steel	Glass	Plastic
Type 2100			
C110/0001			
C110/0002,5			
C111/0005	20	10	5
C111/0010			
C111/0016			
C112/0025			
C113/0040	35	20	10
C114/0060			
C115/0100	50	25	15
Type 2150			
C210/0001			
C210/0002,5			
C211/0005	20	10	5
C211/0010			
C211/0016			
C212/0025			
C213/0040	35	20	10
C214/0060			
C215/0100	50	25	15

*Measuring ranges for

float types ECG  and AC 

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Measuring ranges, pressure drop

Measuring ranges*

Tube No.	Tube length [mm]	Wasser 20 °C [l/h] Stainless Steel
Type 2300		
C311/0025	300	2,5 – 25
C311/0040	300	4 – 40
C311/0060	300	6 – 60
C312/0100	300	10 – 100
C312/0160	300	16 – 160
C312/0250	300	25 – 250
Type 2340		
C313/0400	300	40 – 400
C313/0630	300	60 – 630
C313/1000	300	100 – 1000

Measuring ranges*

Tube No.	Tube length [mm]	Air 20 °C, 1013 mbar abs. [Nl/h] Aluminium	Stainless Steel
Type 2300			
C311/0025	300	40 – 400	120 – 800
C311/0040	300	70 – 700	150 – 1400
C311/0060	300	100 – 1000	150 – 2000
C312/0100	300	170 – 1700	300 – 3000
C312/0160	300	250 – 2500	400 – 4500
C312/0250	300	400 – 4000	700 – 7000
Type 2340			
C313/0400	300	700 – 7000	1000 – 10000
C313/0630	300	1000 – 10000	1800 – 18000
C313/1000	300	1700 – 17000	3000 – 30000

*Measuring ranges for float type AC 

Pressure drop

Tube No.	Pressure drop [mm H_2O] Aluminium	Stainless Steel
Type 2300		
C311/0025		
C311/0040	22	55
C311/0060		
C311/0100		
C311/0160	35	90
C311/0250		
Type 2340		
C313/0400		
C313/0400	50	125
C313/0400		

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Inductive contact 20-AMD and 24-AMD

The magnet inside the float triggers the inductive contact mounted in an aluminium case.
(Type SJ 3,5 n. NAMUR / DIN 19234)

- 1 or 2 adjustable limit switches
- Power supply: 8 V DC (from switch amplifier)
- Ambient temperature: -25 °C to +70 °C

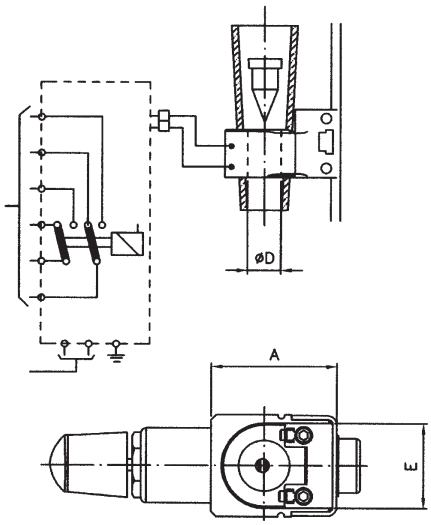
Switch amplifier
Model NAMUR (Din 19234), for 1 or 2 inductive contacts

- Power supply: 24...230 V AC, 50 - 60 Hz
  24...250 V DC
- Input: intrinsically safe circuit EEx ia IIC
- Output: 1 or 2 relays
- Load: 2...5 A / 40 V DC
- Ambient temperature: -25 °C bis +70 °C

Dimensions

Type	A	Ø D	E	Max. flow	
	[mm]	[mm]	[mm]	Air [Nl/h]	Water [l/h]
20 - AMD	37	15	25	300	10
24 - AMD	87	21	45	2000	60

Mechanical drawing



Variable optical contact, type 20-AMO*

The optical contact (infrared light) will be triggered by interruption of the lightbeam through the float. The sensor is mounted in a PVC support. The relay is in a seperate aluminium box. The cable between the control relay and the sensor is 2 m.

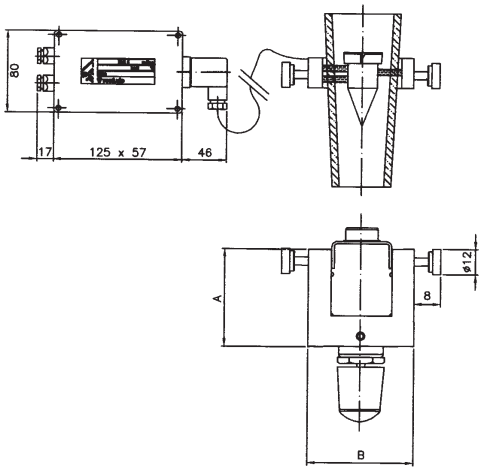
- 1 or 2 adjustable limit switches
- Load: 1 A @ 220 V AC / 50 Hz
- Hysteresis: ± 5 % from the full scale
- Ambient temperature: -10 °C bis +80 °C
- Power supply: 220 V AC / 50 Hz, 24 V DC

Dimensions

Type	A	B	C	Max. flow	
	[mm]	[mm]	[mm]	Air [Nl/h]	Water [l/h]
20 - AMO	48	52	15	700	60

* Glass float not suitable!

Mechanical drawing



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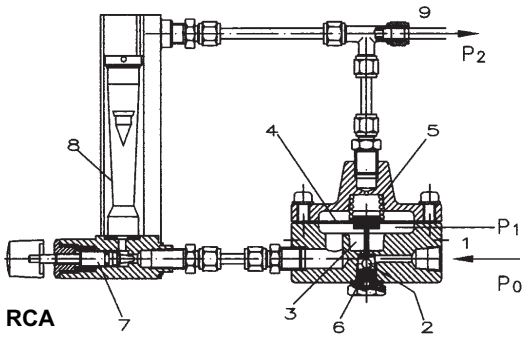
Differential pressure controller RCA

Operation-principle of RCA

The construction of the series 2000 allows the use of the regulator types RCA or RCD. The regulator keeps the flow constant during appearing pressure changes. The RCA will be used for gases with variable input pressure and constant output pressure. The RCD will be used for gases with constant input pressure and variable output pressure.
For liquid media only the type RCA can be used.



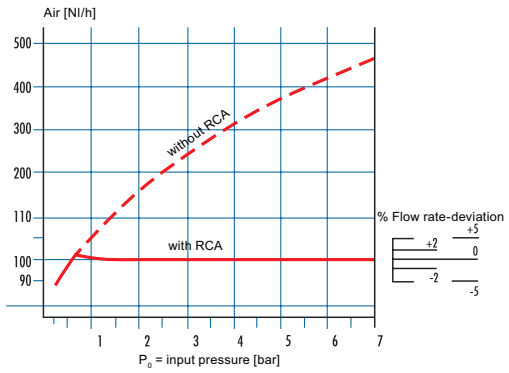
Operation-principle of RCA

The media streams with variable input pressure P_0 through the connector (1), via the regulating valve (2) into the regulation chamber (3) with low pressure P_1 on the diaphragm (4). The valve (2), which is connected with the diaphragm (4), will be held open by force of the spring (5). During the media flow through the control valve (7) and the measuring tube (8) to the outlet (9), exists a constant counter pressure P_2 on the diaphragm (4).
The springs (5;6) are so designed, that the valve (2) opens, when the input pressure P_0 drops and closes when the pressure P_0 rises, so the flow, which is adjusted at the control valve, will be constant.
The differential pressure between P_0 and P_2 must be larger than 200 mbar, for correct function of the RCA flow rate regulator and the springs (5;6) to be operational.

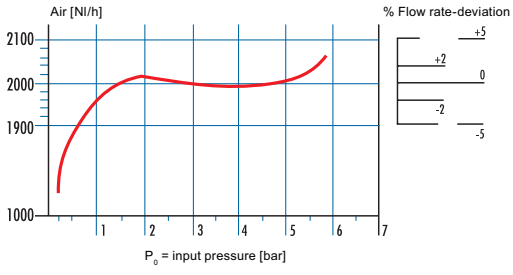
Flow diagrams

The flow curves show the relationship between input pressure P_0 and the counter pressure P_2 in an RCA-regulator. The different flow rates will be adjusted with the control valve (7) to the flow monitor. The counter pressure P_2 in the diagram represents in this case the atmospheric pressure. The flow is constant, when the pressure difference between the input P_0 and counter pressure P_2 is larger than 200 mbar.

RCA at small flow rates



RCA at large flow rates



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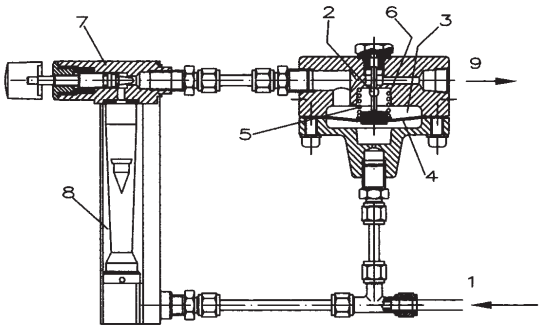
Differential pressure controller RCD

Operation-principle of RCD

The construction of the series 2000 allows the use of the regulator types RCA or RCD. The regulator keeps the flow constant during appearing pressure changes. The RCA will be used for gases with variable input pressure and constant output pressure.
The RCD
will be used for gases with constant input pressure and variable output pressure.
For liquid media only the type RCA can be used.

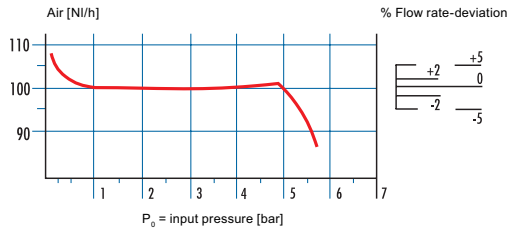


RCD

Operation-principle of RCD

The operation of the flow rate regulator (RCD) is reversed to the RCA. The change of the position of the valve (2) depends on the output pressure and the adjustment of the valve (7).

RCD at low flow rates



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