



Design and applications

Measuring units RA 87 and FA 87 are based on the variable area float principle.

In pipelines the RA 87 is installed by means of screwed pipe joints and the FA 87 is mounted between flanges. The borosilicate glass measuring cone is located inside a protective stainless steel tube with an inspection window. All parts in contact with the measured medium are made of 1.4571.



VA flow meters RA 87 and FA 87 are most suitable for the flow measurement of transparent fluids, air, and gases. Each unit is customized with a scale specific for the medium to be measured. RA 87 and FA 87 are mainly used in the chemical industry, in water treatment plants, in the food industry, and in other plant engineering applications.

By installation of electrical limit switches, which are adjustable throughout the entire measuring range, these units can be employed as detectors too.

- calibrated borosilicate measuring glass
- armature completely made of stainless steel
- reliable due to simple mode of operation
- optional lining for flow measurement of acids, alkaline solutions, and aggressive gases
- with limit switches usable as detectors
- scales specific for the media to be measured
- CE 0085BN0045



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RA 87/FA 87

Technical data

Nominal pressure rating	RA 87: PN 10 at 20 °C FA 87: PN 10 at 20 °C
max. operating pressure	see table of meas. ranges on page 3
Temperature resistant	80 °C at 5 bar overpressure
Measuring range	1:10
Accuracy class	1.6 acc. to VDI/VDE 3513
Connection RA 87	1) Cylindrical female fastening thread acc. to ISO 288 2) Two-part pipe fitting: One with cylindrical female thread acc. to ISO 7-1
Connection FA 87	Flanges PN 10 acc. to DIN 2501, other connections on request

Dimensions

RA 87 with female thread						
Size	G	DN	S ²⁾	d ¹⁾	L	H
9,5	1/4	10	20	12	266	25
	3/8	15		16		
19	1/2	15	40	20	366	44,5
	3/4	20		25		
30	1	25	55	32	366	60
	1 1/4	32		40		
36	1 1/4	32	65	40	366	70
	1 1/2	40		50		
43	1 1/2	40	82	50	366	89
	2	50		63		

¹⁾ only with PVC gluing sleeves and PP-, PVDF welding sleeves

²⁾ only with sst (1.4571) design

Materials

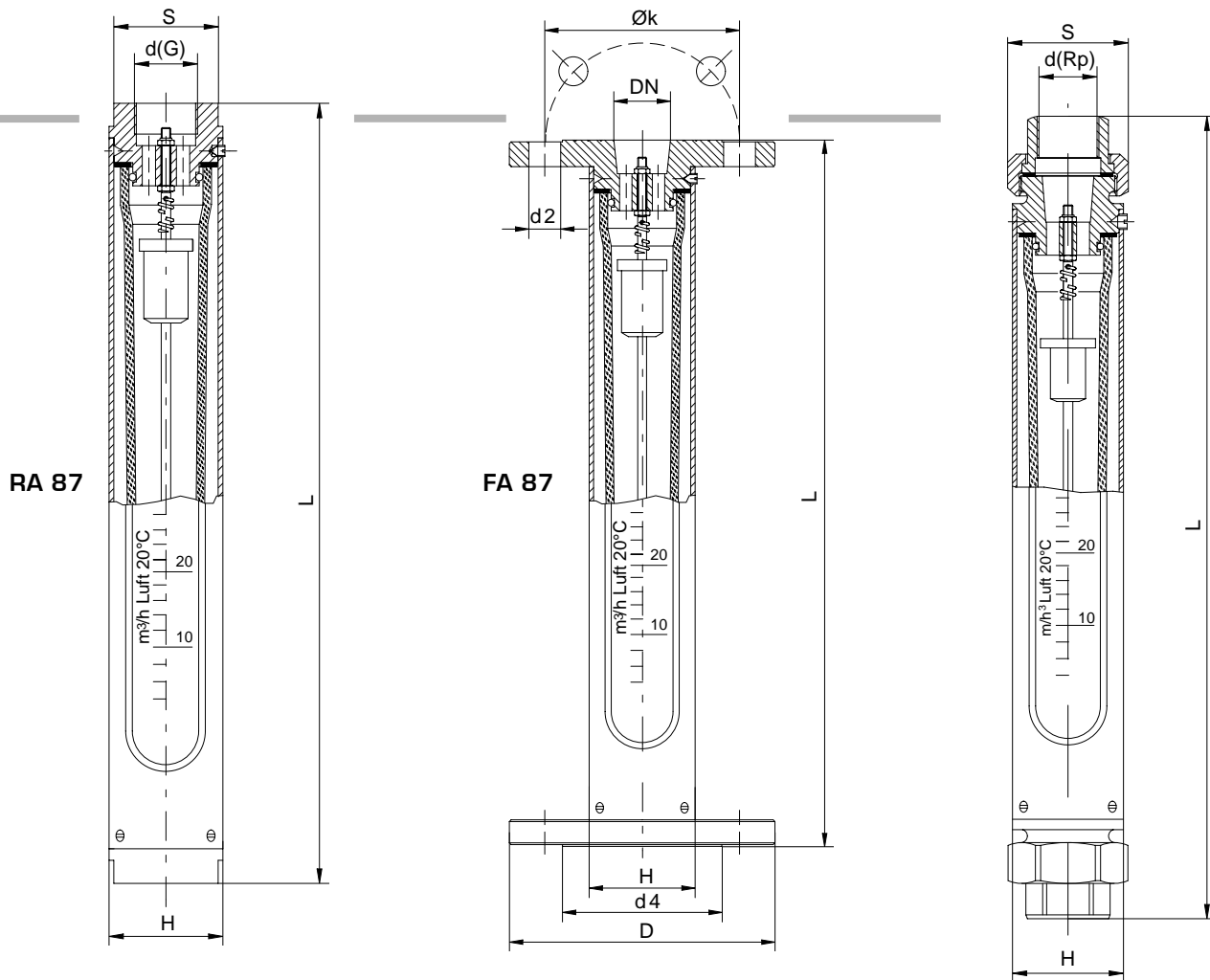
Protective tube	1.4301
Heads RA 87	1.4571
2-part fitting	1.4571
Flanges FA 87	1.4571
Measuring cone	Borosilicate glass
Seals	Standard: Viton optionally EPDM, FPM, silicone
Floats for fluids ¹⁾	Standard: 1.4571 optionally: Hastelloy C4
Floats for gases ¹⁾	Standard: PTFE optionally: PVC, PVDF, PP, aluminium
with limit switches ¹⁾	Standard: 1.4571 with metal core for air: PVC with metal core, optionally: PP, PVDF, PTFE (each with metal core)
Special design:	Corrosion protection of all parts in contact with media
RA 87	PVC, PP, PVDF, PTFE
FA 87	PVC, PP, PVDF, PTFE

¹⁾ With small sizes VA flow meters floats unguided, from size 30 B partly with guide rod. We will send you a detailed table on request.

FA 87										
Size	DN	L	H	D	d ₄	k	Screws		d ₂	
							Qty.	Thread		
9,5	10	260	25	90	40	60	4	M 12	14	
	15			95	45	65	4	M 12	14	
19	15	360	44,5	95	45	65	4	M 12	14	
	20			105	58	75	4	M 12	14	
	25			115	68	85	4	M 12	14	
30	25	360	60	115	68	85	4	M 12	14	
	40			150	88	110	4	M 16	18	
36	40	360	70	150	88	110	4	M 16	18	
	50			165	102	125	4	M 16	18	
43	50	360	89	165	102	125	4	M 16	18	
	65			185	122	145	4	M 16	18	

RA 87 with tube fittings								
Size	V4A (1.4571) Design				Versions			H
	Thread	L	S	DN	d ¹⁾	L (PVC)	L (PP, PVDF)	
9,5	Rp 1/4	306	27	10	16	302	304	25
	Rp 3/8	309	32	15	20	305	305	
	Rp 1/2	314	41					
19	Rp 1/2	414	41	15	20	405	405	44,5
	Rp 3/4	416	50	20	25	411	409	
	Rp 1	422	55	25	32	417	413	
30	Rp 1	422	55	25	32	423	419	60
	Rp 1 1/4	428	70	32	40	432	424	
	Rp 1 1/2	429	75	40	50	442	430	
36	Rp 1 1/4	428	70	32	40	432	424	70
	Rp 1 1/2	429	75	40	50	442	430	
	Rp 2	433	90	50	63	456	438	
43	Rp 1 1/2	429	75	40	50	448	436	89
	Rp 2	433	90	50	63	462	444	

¹⁾ only with PVC gluing sleeves and PP-, PVDF welding sleeves



Measuring ranges (min. and max. measuring range; all intermediate measuring ranges are possible)

Size	Measuring range m ³ /h H ₂ O	Measuring range m ³ /h at s.c. air ¹⁾		Connections		max. operat. press. in bar at 20 °C
		Float PTFE, PVDF	Float PVC, PP	RA 87 Female thread	FA 87 Flange connection DN	
9.5	0.5 – 5 l/h	0.008 – 0.08	0.008 – 0.08	1/4	10	10
	20 – 200 l/h	0.28 – 2.8	0.2 – 2	3/8	15	
19	0.012 – 0.12	0.15 – 1.5	0.14 – 1.4	1/2	15	10
	0.12 – 1.2	1.6 – 16	1.2 – 12	3/4	20	
					25	
30	0.1 – 1	1.2 – 12	0.85 – 8.5	1	25	10
	0.3 – 3	3 – 30	2 – 30	1 1/4	40	
36	0.4 – 4	3.5 – 35	2.5 – 25	1 1/4	40	8
	0.8 – 8	8 – 80	5 – 50	1 1/2	50	
43	0.9 – 9	8 – 80	6 – 60	1 1/2	50	8
	1.6 – 16	16 – 160	12 – 120	2	65	

Measuring ranges for other measuring substances and operating conditions on request.

¹⁾ at s.c.: at standard conditions (0 °C and 1.013 bar abs.)

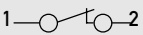
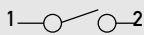


RA 87/FA 87

Limit switches MSK 1/MSK 12

In order to realize a local display with a monitoring function the flowmeter can be equipped with limit switches. The limit switches consists of a bistable reed contact switched by the magnet integrated in the float. The switch is guided in a guide slot on the back of the protective tube and can be adjusted throughout the entire measuring range. In case of inductive or capacitive load applications, e.g. caused by contactors or solenoid valves, uncontrolled current and voltage peaks may occur. In dependence on their geometry such peaks also occur in lines, if they exceed a certain length. It is therefore recommended to use an additionally available arc suppression relay "MSR". This increases the switching capacity and avoids the appearance of inductive and capacitive peaks. It thereby ensures a long lifetime of the contact.

Technical data of the limit switches

Design	MSK 1	MSK 12
Switching voltage	230 V AC/DC	230 V AC/DC
Switched current	0.5 A	0.5 A
Switching capacity	10 W/VA	10 W/VA
Dielectric strength	400 V	400 V
Temperature range	-40 to +50 °C the temperature resistance of the flow meter is decisive	
Switching function	Normally closed contact 	Normally open contact 

Notes on safety

For safety reasons we recommend to use the VA flow meters with glass measuring tubes only in combination with a protective shield in front of the measuring tube.

Avoid extreme pressure shocks.

The equipment from KIRCHNER has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

The KIRCHNER QM-System is certified in accordance with DIN-EN-ISO 9001:2000. The quality is systematically adapted to the continuously increasing demands.



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