

# General Specifications

## Model RAGG Rotameter

This type of Rotameter is designed for measurement of liquids and gases. The conical glass metering tube has a free rotating float. This float is mounted in a vertical pipeline with flow direction upwards.

The flow is indicated by the top of the float and can be read on the standard scale of the metering tube or on a pin-on scale.

When the process conditions are changed the scale needs to be replaced by a new one of which the values should be calculated.

### FEATURES

- Large selection of measuring ranges
- High accuracy by free rotating float even at low flow rates
- Low pressure loss
- Visual check of the medium
- Non-powered local indication
- Large selection of scales
- High corrosion resistance
- Exact scale calculation at changed process medium according to VDE/VDI guidelines 3513 with the use of the flow table (option /PT)



### STANDARD SPECIFICATIONS

Measurable flow rates

- Water (20 °C) : 2.5 l/h to 10 m<sup>3</sup>/h
- Air (20 °C ; 1 bar abs.) : 40 l/h to 100 m<sup>3</sup>/h

Measuring range : metering tube G: 10:1

Metering tubes : L6; L7; G0 to G4

Accuracy : according to VDI 3513 class 1,6

Max. pressure

Metering tube	G0; G1	G2	G4
Pmax (bar)	10	8	6

Max. Temperature

- Standard : 100 °C

Material process connection

- Loose flange : 1.4404
- Gasket : 1.4404; PTFE

Housing material:

- : steel; plastic (gasket PTFE)

Length

- : approx. 500 mm

Weight

- : 6 to 14.5 kg (depending on design)

## OPTIONS

### LIMIT SWITCH (OPTION CODE: /GM1 AND /GM2)

(for float with magnet only and flow  $Q_{\min} > 2.5$  l/h water or 100 l/h air)

Type	: reed contact with bistable switching
Max. switching voltage	: 230 V
Max. switching current	: 0.6 A
Max. switching capacity	: 12 VA or 12 W
Temperature range	: -10 °C to +70 °C
Protection	: IP 65
Internal capacity	: 0 nF
Internal inductivity	: 0 mH
Electrical connection	: LIYY 2 x 0.34mm <sup>2</sup> ; 1 m long
Housing	: Polystyrol
Weight	: 35 g
Explosion proof	: Intrinsic safe acc. EN50020 chapter 5.4 "Simple electrical instruments".
Group	: IIC
Category	: 2
Expl. atmosphere	: G
Temperature class	: T6
Entity parameter	: $U_i = 15V$ ; $I_i = 50mA$ ; $P_i = 187mW$ $L_i \approx 0mH$ ; $C_i \approx 0nF$

### POWER SUPPLY FOR LIMIT SWITCH (OPTION /W\_\_)

Type	: Transmitter relay acc. DIN EN 60947-5-6 (NAMUR)
Power supply	: 230V AC (/W2_) 115V AC (/W1_) 24V DC (/W4_)
Switching capacity	: max. 250 V AC; max. 4A or max. 500 VA
Relay output	: 1 or 2 potential free changeover contacts
Explosion proof	: Intrinsic safe [EEx ia] II C acc. PTB 00 ATEX 2081 (/W2_) acc. PTB 00 ATEX 2080 (/W4_)

## MODEL SPECIFICATIONS

Process connection	Model	Process connection Flange	Process connection Material	Housing material	Design (valve)	Metering tube length/dia.	
DIN flange with Loose flange DN 15 PN 40	Code RAGG01	Code D4	Code SS; PF	Code ST	Code NNN	Code G0;G1	
Loose flange DN 25 PN 10	RAGG02	D1	SS; PF	ST	NNN	G2	
Loose flange DN 40 PN 10	RAGG04	D1	SS; PF	ST	NNN	G4	
Process connection    DIN flange PN 10 DIN flange PN 40		D1 D4					
Process connection material (gasket)	1.4404 .....		SS PF				
Material Rotameter	steel/plastic .....			ST			
Design	without valve .....				NNN		
The suffix code of the metering tube - float combination can be read from the flow tables .....						-XXXX XXXX	
Options (see separate tables) .....							/xx

## FLOW TABLE WITH METERING TUBE - FLOAT - COMBINATION FOR WATER / LIQUIDS

Flow table				Suffix code metering tube - float- combination							
Water / liquids 20°C				Metering tube				Float			
Recommended comb. Row 1		Alternative comb. Row 2		-x	x	xx	x	-xx	x	x	x
Max. Flow [l/h]	Pressure drop *) [mbar]	Max. Flow [l/h]	Pressure drop *) [mbar]	Length Code	Diameter Code	Metering tube cone Code	Scale Code	Material Code	Diam. Code	Flow mark. Code	Ins. Code
40	10	25	4	G	0	44	G; A; N	Row 1 SS	0	Row 1 3	M <sup>2)</sup> N
63	12	40	6	G	0	47			1		
100	16	63	8	G	0	51			2		
160	24	100	11	G	0	52			4	Row 2 2	
250	15	160	6	G	1	53					
400	16	250	7	G	1	54					
630	18	400	8	G	1	57					
1000	26	630	10	G	1	61					
1600	26	1000	11	G	2	62					
2500	30	1600	13	G	2	63					
4000	40	2500	16	G	4	64					
6300	44	4000	18	G	4	67					
10000	53	6300	21	G	4	71					

	Description									
Length metering tube	300 mm .....	G								
Diam. metering tube	20 mm to 81 mm .....		x							
Cone metering tube	see flow table .....			xx						
Metering tube-Medium Scale	Scale on metering tube (mm division) <sup>3)</sup> .....				G					
	Pin up scale with mm division (recommended) .....				A					
	Metering tube with mm division only .....				N					
Float material	1.4571 .....						SS			
	PTFE .....						PF			
Float diameter	12 mm to 54 mm .....							x		
Flow mark	Factor 1 (Water) .....								3	
	Factor 0.63 (Water) .....								2	
Float insertion	without magnet .....									N
	with magnet (for limit switch /GM 1 and /GM 2).....									M <sup>2)</sup>

2) For option limit switch /GM1 and /GM2

3) Option /MM is indicated in case no mm scale is desired.

\*) The indicated pressure drop may deviate depending on the flowmeter used.

**Other metering tube - float combinations with other float materials and a variety of measuring ranges are available on request.**

## FLOW TABLE WITH METERING TUBE - FLOAT - COMBINATION FOR AIR / GASES

Flow table				Suffix code metering tube - float- combination											
Air / Gases 20°C 1 bar absolute				Metering tube				Float							
Recommended comb. Row 1		Alternative comb. Row 2		-x	x	xx	x	-xx	x	x	x				
Max. Flow [l/h]	Pressure drop *) [mbar]	Max. Flow [l/h]	Pressure drop *) [mbar]	Length Code	Diameter Code	Metering tube cone Code	Scale Code	Material Code	Diam. Code	Flow mark. Code	Ins. Code				
400	2	1000	6	G	0	44	G; A; N	Row 1 AL ; PP	0	Row 1 5	Row1 N				
630	2	1600	7	G	0	47									
1000	3	2500	9	G	0	51									
1600	3	4000	12	G	0	52									
2500	2	6300	11	G	1	53									
4000	2	10000	14	G	1	54									
6300	3	16000	16	G	1	57									
10000	3	25000	19	G	1	61									
16000	3	40000	19	G	2	62									
25000	4	63000	21	G	2	63									
40000	5	100000	29	G	4	64									
63000	6	160000	32	G	4	67									
100000	7	250000	34	G	4	71									
												Row 2 PP	2	Row2 7	Row2 M <sup>1</sup> ;N
													4		

	Description									
Length metering tube	300 mm .....	G								
Diam. metering tube	20 mm to 81 mm .....		x							
Cone metering tube	see flow table .....			xx						
Metering tube-Medium Scale	Scale on metering tube (mm division) <sup>2)</sup> .....				G					
	Pin up scale with mm division (recommended) .....				A					
	Metering tube with mm division only .....				N					
Float material	Polypropylen .....					PP				
	Aluminium .....					AL				
Float diameter	12 mm to 54 mm .....						x			
Flow mark	Factor 10 (Air) .....							3		
	Factor 25 (Air) .....							2		
Float insertion	without magnet .....									N
	with magnet (for limit switch /GM 1 and /GM 2).....									M <sup>1</sup> )

1) For option limit switch /GM1 and /GM2

2) Option /MM is indicated in case no mm scale is desired.

\*) The indicated pressure drop may deviate depending on the flowmeter used.

**Other metering tube - float combinations with other float materials and a variety of measuring ranges are available on request.**

**OPTIONS**

Options	Option code	Description	Restrictions
Marking	/B1 /B4 /B8 /BG	Tag plate (SS) Neutral version Customer provided marking on label Customer specific notes on scale	Plate 12 x 40 mm; max. 45 digits
Limit switches	/GM1 /GM2	Magnetic contact MIN Magnetic contact MAX	Only with float with magnet Only with float with magnet
Test and certificates	/H1 /P2 /P3 /PP /PT	Certificate of degrease Certificate of Compliance with the order acc. to EN 10204: 2004- 2.1 As /P2 +Test report acc. to EN 10204: 2004- 2.2 Pressure test report for measuring system With flow table for recalculation	
Accessoires metering tube	/MM	No mm- scale (without calculation table)	
Power supply for limit switch(es) (transmitter relay)	/W1A /W1B /W2A /W2B /W4A /W4B	KFA5-SR2-Ex1.W / 115 V AC, 1 channel KFA5-SR2-Ex2.W / 115 V AC, 2 channels KFA6-SR2-Ex1.W / 230 V AC, 1 channel KFA6-SR2-Ex2.W / 230 V AC, 2 channels KFD2-SR2-Ex1.W / 24 V DC, 1 channel KFD2-SR2-Ex2.W / 24 V DC, 2 channels	

**Procedure to select the model code**

Please decide in the following order  
- Measuring range for water / liquids or air / gases  
- Limit switch desired or not

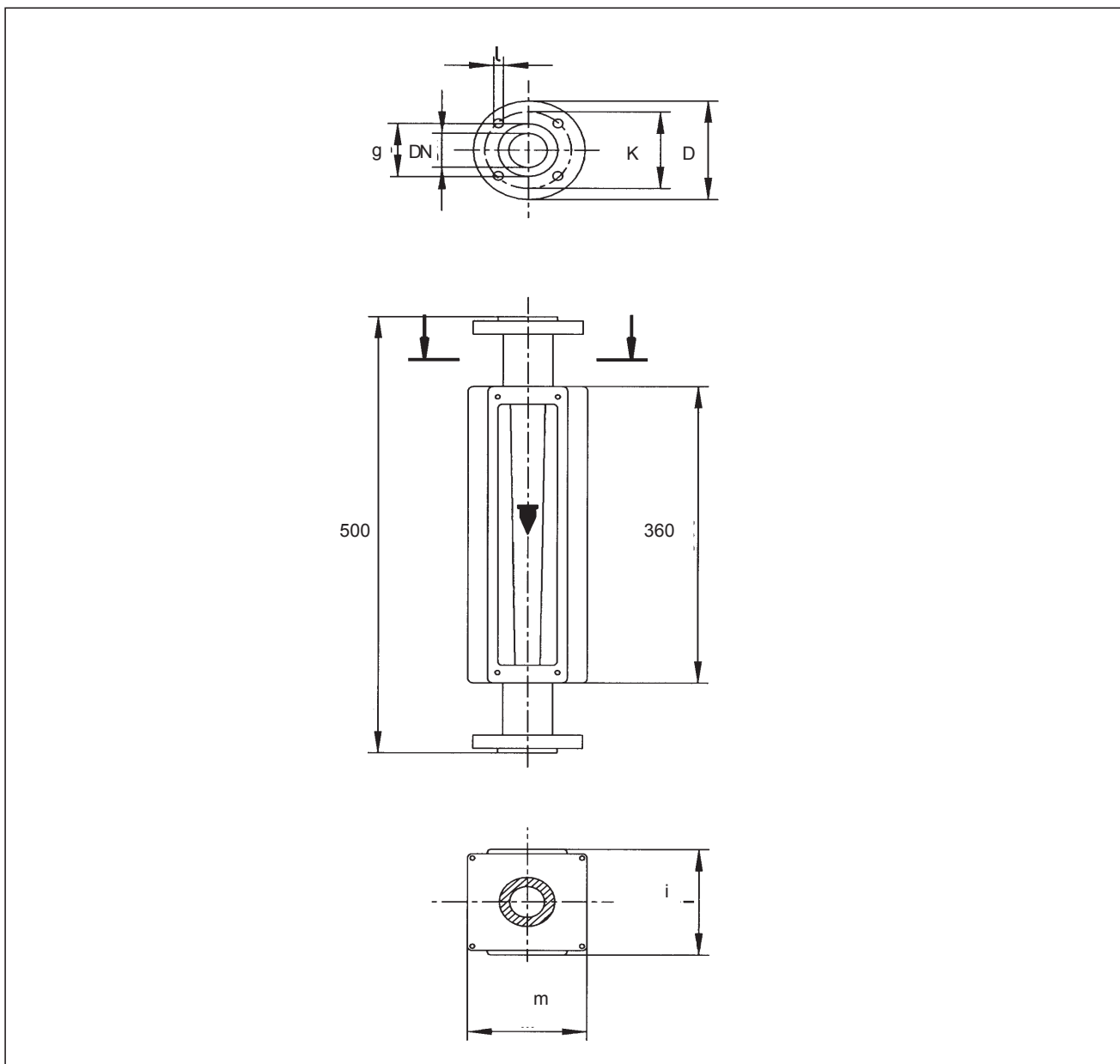
Select the desired measuring range from the concerning flow table. Regard the float insertion (last column) necessary for limit switch.

Then select the suffix code for the tube - float- combination.

Then complete the code by tube length and tube diameter

To size the Rotameter for other medium - process- conditions use sizing program Durep V.

## DIMENSIONS



DN	D	K	g	l	Ind.	m	i	Weight
15	95	65	45	14	4	100	88	6 kg
25	115	85	68	14	4	125	102	9.5 kg
40	150	110	88	18	4	175	145	14.5 kg

**YOKOGAWA HEADQUARTERS**  
9-32, Nakacho 2-chome,  
Musashinoshi  
Tokyo 180  
Japan  
Tel. (81)-422-52-5535  
Fax (81)-422-55-1202  
E-mail: [webinfo@mls.yokogawa.co.jp](mailto:webinfo@mls.yokogawa.co.jp)  
[www.yokogawa.com](http://www.yokogawa.com)

**YOKOGAWA EUROPE B.V.**  
Databankweg 20  
3821 AL AMERSFOORT  
The Netherlands  
Tel. +31-33-4641 611  
Fax +31-33-4641 610  
E-mail: [info@nl.yokogawa.com](mailto:info@nl.yokogawa.com)  
[www.yokogawa.com/eu](http://www.yokogawa.com/eu)

**YOKOGAWA CORPORATION OF AMERICA**  
2 Dart Road  
Newnan GA 30265  
United States  
Tel. (1)-770-253-7000  
Fax (1)-770-251-2088  
E-mail: [info@yca.com](mailto:info@yca.com)  
[www.yca.com](http://www.yca.com)

**YOKOGAWA ELECTRIC ASIA Pte. Ltd.**  
5 Bedok South Road  
Singapore 469270  
Singapore  
Tel. (65)-241-9933  
Fax (65)-241-2606  
E-mail: [webinfo@yas.com.sg](mailto:webinfo@yas.com.sg)  
[www.yokogawa.com.sg](http://www.yokogawa.com.sg)

Yokogawa has an extensive sales and distribution network. Please refer to the European web-site ([www.yokogawa-europe.com](http://www.yokogawa-europe.com)) to contact your nearest representative.



**YOKOGAWA** ◆