

# KDV HIGH ACCURACY GLASS TUBE ROTAMETER



Flow  
Pressure  
Level  
Temperature  
measurement  
monitoring  
control

S2



- Industrial and Sanitary Designs
- Body Sizes 1/2" Through 2"
- Reliable, Time Proven Glass Tube Design
- Flanged, Threaded or Tri-Clamp Fittings
- $\pm 1.0\%$  of Full Scale Accuracy
- Optional Surface Finishes for Food and Pharmaceutical Applications
- Optional Switches
- Special Calibrations for Compressed Gases and Viscous Media



## USA

KOBOLD Instruments Inc.  
1801 Parkway View Drive  
USA- Pittsburgh, PA 15205  
☎ +1 412-788-2830  
☎ +1 412-788-4890  
E-mail: info@koboldusa.com



## CANADA

KOBOLD Instruments Canada Inc.  
9A Aviation  
Pointe-Claire, QC H9R 4Z2  
☎ +1 514-428-8090  
☎ +1 514-428-8899  
E-mail: kobold@kobold.ca

Visit KOBOLD Online at  
[www.kobold.com](http://www.kobold.com)

Model:  
KDV



### Features

- Industrial and Sanitary Designs
- Body Sizes 1/2" Through 2"
- Reliable, Time Proven Glass Tube Design
- Flanged, Threaded or Tri-Clamp Fittings
- ±1.0% of Full Scale Accuracy
- Optional Surface Finishes for Food and Pharmaceutical Applications
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- Special Calibrations for Compressed Gases and Viscous Media

The KDV series are high quality glass tube variable-area flowmeters (rotameters). This classic design is still the most widely used flowmeter style in the world today. The simple variable-area design makes the flowmeter a perfect choice when ease of installation and operation is a must.

The KDV features a tempered glass measuring tube which is inert to most chemicals. This tube is suitable for measurement of both liquids and gases. Liquid flow ranges are available from 0.01 to 0.1 GPH through 265 to 2645 GPH water. Gas flow ranges are available from 0.025 to 0.25 SCFH through 670 to 6700 SCFH air.

### Custom Calibrations are Standard

Each KDV series is built specifically for the application. The KDV will arrive with a direct reading scale which is calibrated for your operating conditions. The KDV can be calibrated for viscous media, chemicals, and various compressed gases. The scale will be provided in any measuring units the user specifies when ordering. The application datasheet provided with the operating conditions will provide all the data required to properly factory calibrate the flowmeter.

### A KDV for Every Application

The KDV is ideal for industrial and sanitary applications. The standard model is available with NPT threaded or flanged connections. Polished finishes and Tri-clamp® fittings for food and pharmaceutical applications are available.



## KDV Series Glass Tube Rotameter

### Specifications

#### Flow Ranges

**Water:** 0.01 to 0.1 through 265 to 2645 GPH

**Air:** 0.025 to 0.25 through 670 to 6700 SCFH

**Body Size:** 1/2", 1", 1-1/2" and 2"

#### Maximum Operating Pressure:

1/2" through 1": 145 PSIG

1-1/2": 131 PSIG

2": 102 PSIG

#### Process Temperature Range:

**w/o Switch Contact:** -4°F to 212°F

#### Ambient Temp. Range:

**With Proximity Switch:**

Switch: -13°F to 212°F

With Reed Switch: -4°F to 185°F

#### Wetted Materials

**Measuring Tube:** Borosilicate Glass  
**Float:** 316 SS, Hastelloy®, aluminum, PTFE or PP, based on model code  
**Seals:** NBR, FKM, EPDM or FFKM

**Fittings:** 316 SS or PVDF based on model code

**Float Stops:** PVDF

### Body Materials (Non-Wetted)

**Tube Housing:** 316L SS  
**Union Nut:** Painted aluminum or 316 SS based on model code

**Note:** Electropolished finish for food and pharmaceutical applications available for all stainless steel surfaces.

### Switch Specifications

The KDV can be fitted with up to two adjustable switches. Switch types available are bistable reed contacts and NAMUR proximity sensors.

**Reed Contact:** Bistable reed contact  
 Max. 12 VA, 30 VDC, 0.5 Amp  
 NEMA 3R/IP44

**Proximity Sensor:** Intrinsically safe output, NAMUR per DIN 19234 (use the REL-6003, -6004 or -6005 as a proximity sensor isolation relay/intrinsic safety barrier)  
 NEMA 6/IP67

**Electical Connection:** Terminal box



Ordering Information

KDV series model code key

(use tables 1 through 6 on the following pages to completely specify your model)

Example KDV Part Number

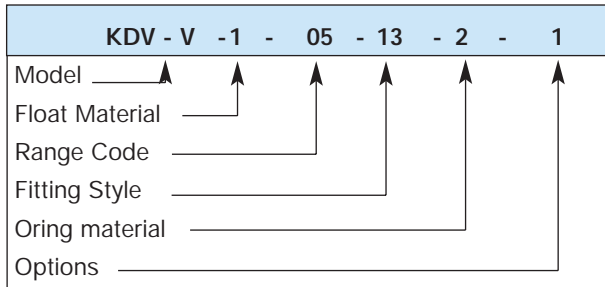


Table 1: Base Model

KDV-V	=	Flowmeter with threaded connection
KDV-F	=	Flowmeter with 150 LB ANSI flange
KDV-A	=	Tri-clamp® fitting, wetted surfaces electropolished to <Ra 32 μ In. (0.8 μ M)

Table 2: Float Materials

1 = 316 Stainless Steel	6 = Hastelloy® B2
2 = PTFE Clad	7 = Hastelloy® C4
3 = PTFE	8 = Polypropylene
4 = Aluminum	

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Table 3: Meter Size/Range Code

Meter Size	Range Code	Cone Shape	Flow Range (GPH Water)			Flow Range (SCFH Air)				Max. Pressure drop (PSI)
			Float Material (reference Table 2 for material codes)							
			1,6 or 7	2	3	1,6 or 7	3	4	8	
1/2"	01	G13.11	0.01-0.10	-	-	0.06-0.56	0.025-0.25	0.025-0.25	-	0.03
	02	G14.06	0.017-0.17	-	-	0.09-0.9	0.042-0.42	0.042-0.42	-	0.04
	03	G14.08	0.026-0.26	-	-	0.14-1.4	0.07-0.7	0.07-0.7	-	0.06
	04	G15.07	0.040-0.40	-	-	0.21-2.1	0.1-1.0	0.1-1.0	-	0.06
	05	G15.09	0.066-0.66	-	-	0.31-3.1	0.14-1.4	0.14-1.4	-	0.07
	06	G15.12	0.1-1.0	-	-	0.49-4.9	0.2-2	0.2-2	-	0.09
	07	G16.08	0.16-1.6	-	-	0.7-7	0.35-3.5	0.35-3.5	-	0.09
	08	G16.12	0.26-2.6	-	-	1.5-10	0.6-5.6	0.6-5.6	-	0.10
	09	G17.08	0.42-4.2	-	-	1.7-17	0.88-8.8	0.88-8.8	-	0.10
	10	G17.12	0.66-6.6	-	-	2.8-28	1.0-10	1.0-10	-	0.12
1/2"	11	N18.07	1-10	0.66-6.6	0.34-3.4	5.3-53	2.1-21	2.8-28	1.7-17	0.13
	12	N18.09	1.6-16	1-10	0.6-5.8	7.7-77	3.3-33	4.2-42	2.4-24	0.13
	13	N18.13	2.6-26	1.6-16	0.92-9.2	11-105	5.3-53	6.3-63	4.2-42	0.13
	14	N19.09	4.2-42	2.6-26	1.4-14	17-175	7.7-77	9-90	6.3-95	0.19
	15	N19.13	6.6-66	4.2-42	2.2-22	28-280	11.5-115	15-155	9-95	0.23
	16	N19.19	11-105	6.6-66	3.7-37	-	-	-	-	0.30
	17	N19.26	17-165	11-105	6-60	-	-	-	-	0.40
1"	18	N21.09	17-165	11-105	6-60	63-630	31-310	39-390	25-245	0.32
	19	N21.13	26-260	17-165	9.3-93	99-990	49-490	63-630	42-420	0.33
	20	N21.18	45-420	26-260	16-150	-	-	-	-	0.38
	21	N21.25	66-660	45-420	25-250	-	-	-	-	0.48
1-1/2"	22	N41.09	45-420	26-260	16-150	160-1590	77-770	100-980	63-630	0.46
	23	N41.13	66-660	45-420	24-240	250-2470	130-1270	160-1590	100-980	0.55
	24	N41.19	105-1050	66-660	40-400	-	-	-	-	0.55
2"	25	N51.10	105-1050	66-660	40-400	425-4230	200-1975	250-2470	160-1590	0.62
	26	N51.15	160-1585	105-1050	63-630	670-6700	320-3175	380-3880	250-2470	0.68
	27	N51.21	265-2645	160-1585	93-930	-	-	-	-	0.80

Table 4: Fittings

<b>13</b> = Female NPT thread 316 stainless steel <b>33</b> = Female NPT thread, PVDF	<b>AB</b> = 150 LB ANSI flange, 316 stainless steel <b>LL</b> = Tri-clamp connection, 316 stainless steel (N/A for ranges 1-10)
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Table 5: O-ring Materials

<b>1</b> = NBR <b>2</b> = FKM  <b>4</b> = FFKM (N/A for ranges 1-10) <b>A</b> = EPDM (std on Tri-Clamp ver.)
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Table 6: Options

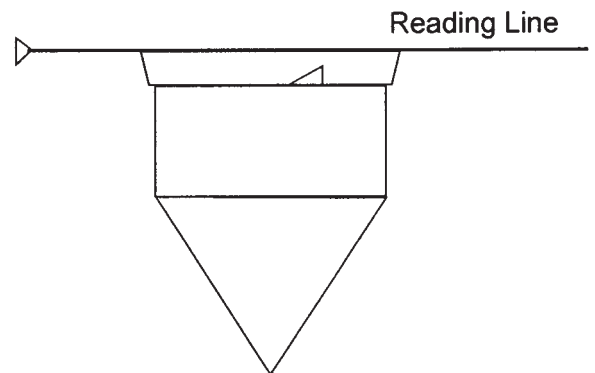
<b>0</b> = None <b>1</b> = 5 point calibration report <b>2</b> = 10 point calibration report <b>H</b> = Cleaned and tagged for oxygen service <b>S</b> = 316 Stainless steel union nut in place of painted aluminum (standard on Tri-Clamp® version)
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Accessories (order as separate line items)

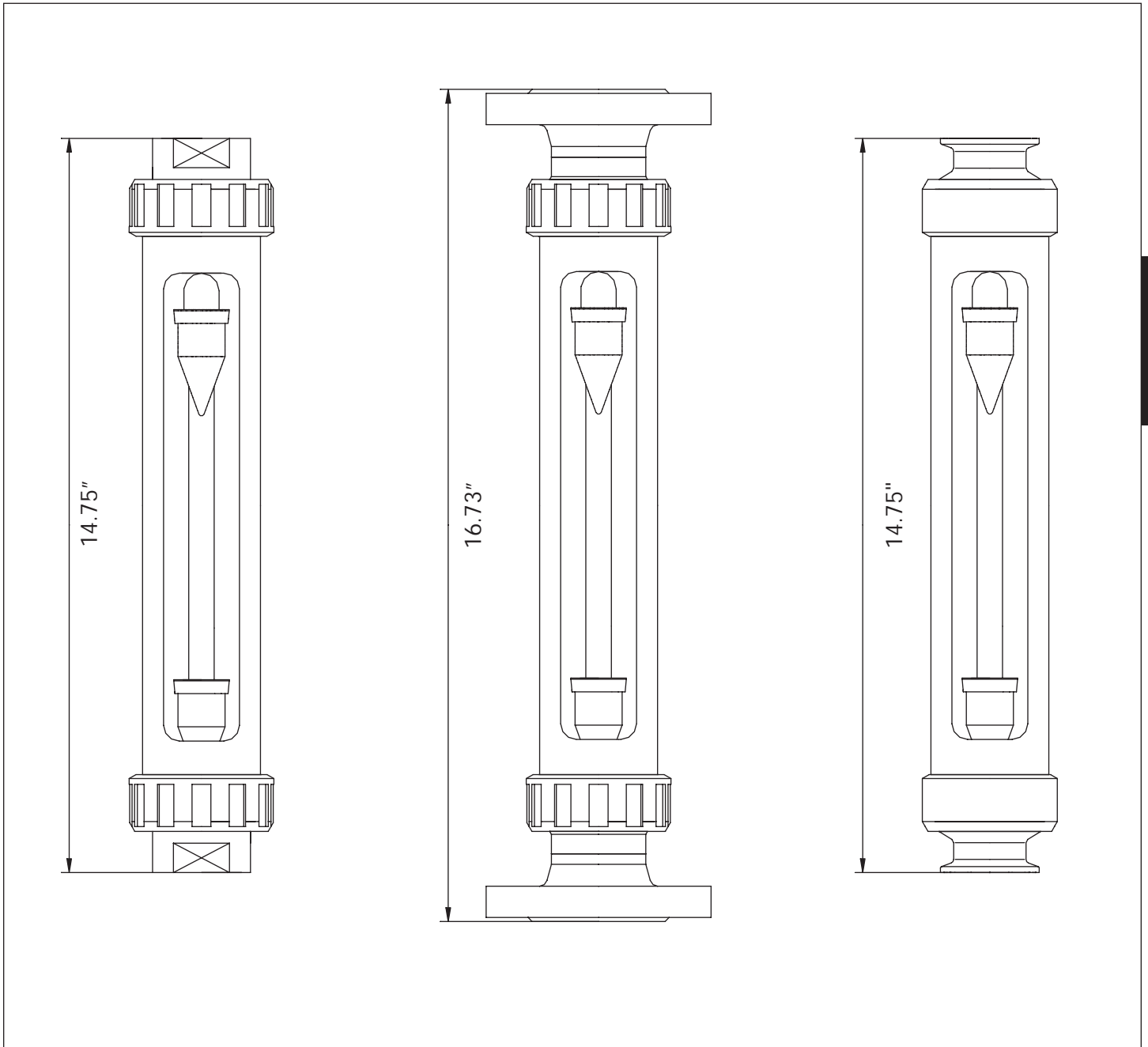
Part Number	Description
KDV-TG21	Adjustable NAMUR Proximity Switch (2 Max. for range codes 18 through 27 only)
KDV-MS141	Adjustable Bistable Reed contact (2 Max. for range codes 11 through 27 only)

KDV Series Floats and Measuring Tubes

- The KDV Series measuring tubes are manufactured from heat tempered borosilicate glass to resist cracking and failure in rough environments
- The KDV measuring tubes are available with scales delivered with any measuring units desired. Calibration for compressed gas and viscous liquids is standard. This allows the user to take accurate measurements with no field correction of readings.
- Complete the KDV series application datasheet in order to completely specify your flowmeter.
- Floats are available in several materials including stainless steel, Hastelloy® and PTFE to suit nearly any application. All floats are notched on the upper guide rim to provide a stable reading.



Dimensions



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Approximate Weights

Meter Size	Threaded/ Tri-Clamp	ANSI Flange
1/2"	1.0 LB/0.5 KG	4.0 LB/1.8 KG
1"	2.9 LB/1.3 KG	8.4 LB/3.8 KG
1-1/2"	5.0 LB/2.3 KG	15.0 LB/6.8 KG
2"	8.0 LB/3.6 KG	20.2 LB/9.2 KG



<b>KDV Series Flowmeters Application Guide</b> Form # KDV-001 Rev. 3/12  FAX to: KOBOLD Instruments Inc. 412-788-4890 (USA) 514-428-8899 (Canada)	Customer Name: _____
	Company Name: _____
	Phone: _____
	Fax: _____

Quote #: \_\_\_\_\_ Date: \_\_\_\_\_ Price: \_\_\_\_\_ Each

Part Number: \_\_\_\_\_

\* To ensure fast order processing, please retain the completed quote form and send it along with your purchase order.

Calibrated Measuring Range: \_\_\_\_\_

**Design Conditions**

Accurate design pressure and temperature are essential to ensure the flowmeter will be built to operate without damage. Please fill out accurately and completely.

**List Design Conditions**

1. Pressure: Maximum \_\_\_\_\_ PSIG
2. Temperature: Maximum \_\_\_\_\_ °F

**Calibration Conditions:** Accurate calibration conditions are required to ensure that the flowmeter will be factory calibrated to give accurate readings at the user's **normal operating conditions**. Please fill out accurately and completely.

**Calibration Conditions for Liquid Flow Applications**

1. Type of Liquid: \_\_\_\_\_
2. Normal Operating Temperature: \_\_\_\_\_ °F
3. Viscosity at Normal Operating Temp: \_\_\_\_\_
4. Specific Gravity at Normal Operating Temp: \_\_\_\_\_
5. Desired Measuring Range and Units: \_\_\_\_\_

Note: Items 3 & 4 not required for water flow

**Calibration Conditions for Gas Flow Applications**

1. Type of Gas: \_\_\_\_\_
2. Normal Operating Temperature: \_\_\_\_\_ °F
3. Normal Pressure at Outlet Fitting: \_\_\_\_\_ PSIG
4. Specific Gravity (required for gas mixes only): \_\_\_\_\_
5. Desired Measuring Range and Units: \_\_\_\_\_

Note: The calibration pressure required is the pressure that the meter sees at its outlet fitting.

**Version:**  KDV-V (NPT Threaded)  KDV-F (Flanged)  KDV-A (Tri-Clamp)

**Float Materials:**  316 SS  PTFE Clad  PTFE  
 Polypropylene  Hastelloy® B2  Hastelloy® C4

**O-ring Material:**  NBR  FKM  
 FFKM  EPDM

**Body Size:**  1/2"  1" NPT  1-1/2"  2"

**Fittings:**  Thread 316 SS 150  NPT Thread PVDF  
 LB ANSI 316 SS 5  Tri-Clamp

**Options:**  Point Cal. Cert. O2  10 Point Cal. Cert.  
 Cleaning  316 SS Union Nuts

**Switches:**  None  1  2  Reed Switch  NAMUR Switch