

KDV
HIGH ACCURACY GLASS TUBE ROTAMETER



Flow
Pressure
Level
Temperature
measurement
monitoring
control



- 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

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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
- Optional Switches
- 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. Meters for other specialized applications can always be considered.



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": 130 PSIG
2": 100 PSIG

Process Temperature Range:

SS, Hastelloy or PTFE Float: -40°F to 212°F
Hard Rubber Float: 14°F to 140°F
With Proximity Switch: -10°F to 212°F
With Reed Switch: -14°F to 140°F

Wetted Materials

Measuring Tube: Borosilicate Glass
Float: 316 SS, Hastelloy, aluminum, PTFE or rubber, based on model code
Seals: Buna-N, FKM, EPDM or FFKM (Kalrez®)
Fittings: 316 SS or PVDF based on model code
Float Stops: PVDF (FDA Compliant)

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 or REL-6004 as a proximity sensor isolation relay/intrinsic safety barrier)
NEMA 6/IP67

Electical Connection: Terminal box

Subject to change without prior notice.



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

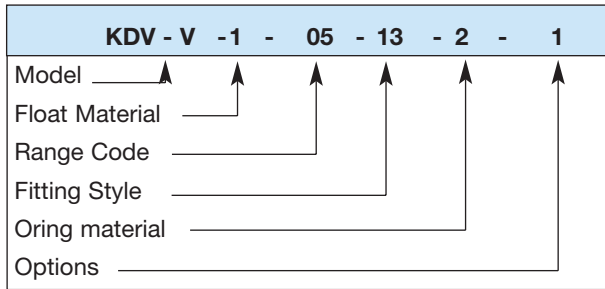


Table 1: Base Model

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

Table 2: Float Materials

1 = 316 Stainless Steel	5 = Hard Rubber
2 = PTFE Clad	6 = Hastelloy B2
3 = PTFE	7 = Hastelloy C4
4 = Aluminum	

S2

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	5	
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

13 = Female NPT thread 316 stainless steel 33 = Female NPT thread, PVDF	AB = 150 LB ANSI flange, 316 stainless steel LL = Tri-clamp connection, 316 stainless steel
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Table 5: O-ring Materials

1 = Buna-N (N/A for ranges 1-10) 2 = FKM 3 = N/A (Material no longer offered) 4 = FFKM (FDA Compliant) (N/A for ranges 1-10) A = EPDM (FDA Compliant)
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Table 6: Options

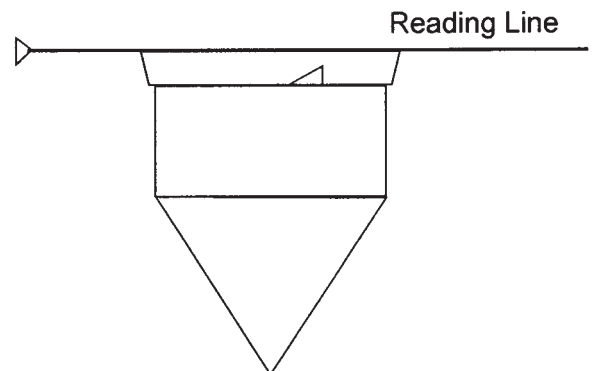
0 = None 1 = 5 point calibration report 2 = 10 point calibration report H = Cleaned and tagged for oxygen service S = 316 Stainless steel union nut in place of painted aluminum (standard on Tri-Clamp version)

Accessories (order as separate line items)

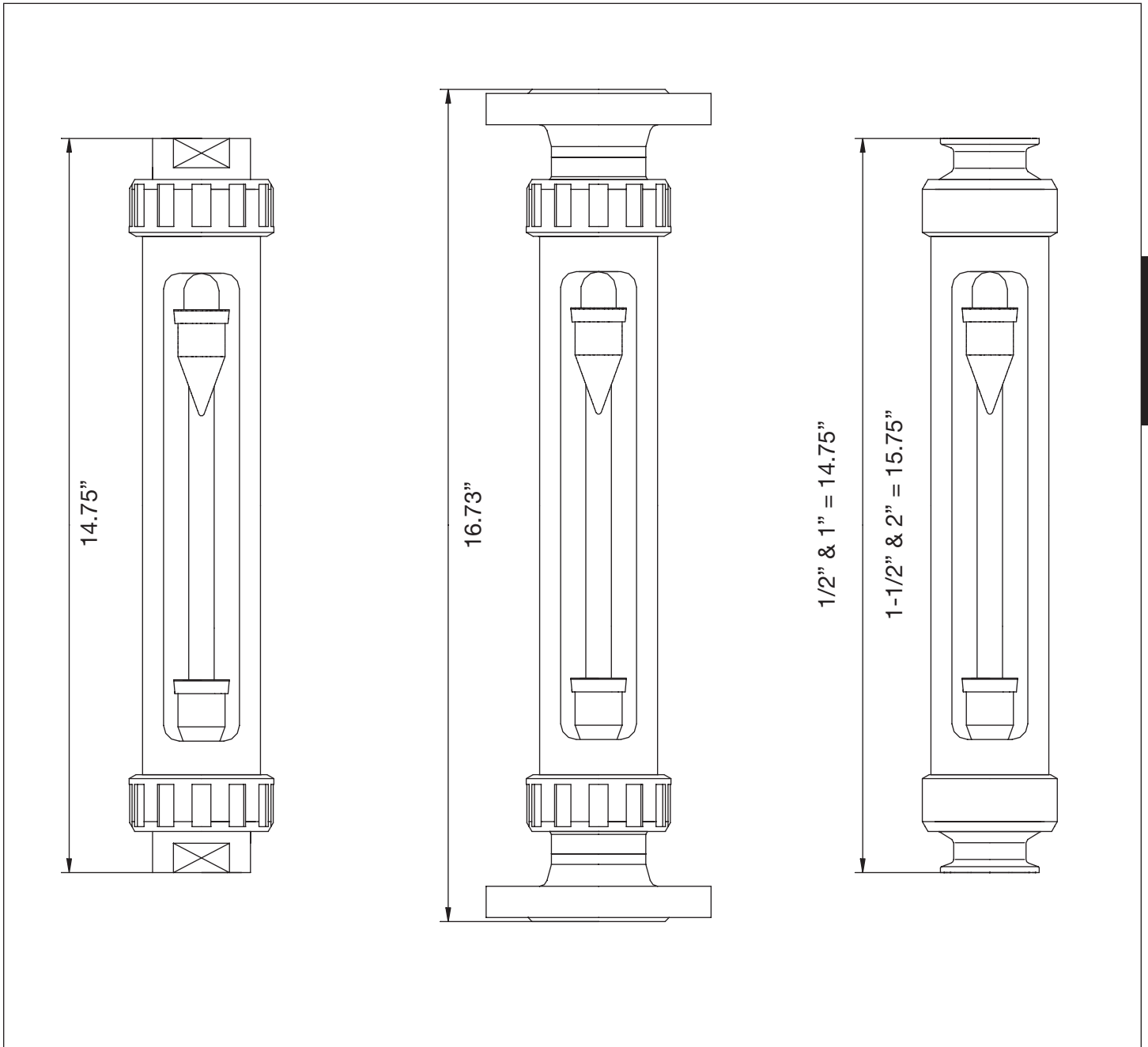
Part Number	Description
KDV-TG21	Adjustable NAMUR Proximity Switch (2 Max. for range codes 18 through 27 only)
KDV-MS141	Adjustable Bistable Reed contact (2 Max. for range codes 11 through 27 only)

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 teflon 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



KDV Series Flowmeters Application Guide Form # KDV-001 Rev. 8/15/09 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
 Hard Rubber Hastelloy B2 Hastelloy C4

O-ring Material: Buna-N FKM
 FFKM (Kalrez®)(FDA Compliant) EPDM (FDA Compliant)

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

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

Options: 5 Point Cal. Cert. 10 Point Cal. Cert.
 O2 Cleaning 316 SS Union Nuts

Switches: None 1 2 Reed Switch NAMUR Switch