

# **DK800 Glass Rotor Flow Meter**

**OPERATION INSTRUCTION**

## Overview

DK800 glass rotor flow meter is suitable for measuring small flow rates. It is a process detection instrument used to measure the flow rate of single-phase non-pulsating fluids (liquids or gases) in closed pipelines. The cone tube and float can be easily replaced without dismantling the entire machine. The flow scale is clear and comes with a regulating valve. It is widely used in many industries.

Types include: ordinary type, anti-corrosion type, panel type, alarm type, flange type. Various connection methods.

Its working pressure and working temperature are higher than those of the original glass rotor flow meter products of the same diameter series.

## Model specifications and technical parameters

| model     | Measuring range ( L/H )                                                                                 |                                                                                                                                       |
|-----------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
|           | Water ( 20 °C )                                                                                         | Air ( $1.2 \times 10^5$ Pa , 20 °C )                                                                                                  |
| DK800-3/F | 0.15-1.5 L/H                                                                                            | 0.18-1.8 L/H<br>0.36-3.6 L/H                                                                                                          |
| DK800-4/F | 0.25-2.5 L/H                                                                                            | 0.5-5 L/H 1.6-16 L/H<br>0.8-8 L/H 6-60 L/H                                                                                            |
| DK800-6/F | 0.5-5 L/H 6-60 L/H<br>1.2-12 L/H 10-100 L/H<br>2-20 L/H 16-160 L/H<br>2.5-25 L/H 20-200 L/H<br>4-40 L/H | 10-100 L/H 180-1800 L/H<br>25-250 L/H 240-2400 L/H<br>50-500 L/H 300-3000 L/H<br>80-800 L/H 350-3500 L/H<br>100-1000 L/H 430-4300 L/H |

| model      | Measuring range                                                                                                              |                                                                                                                  |
|------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|            | Water ( 20 °C )                                                                                                              | Air ( $1.2 \times 10^5$ Pa , 20 °C )                                                                             |
| DK800-3/F  | 0.4-4 ml/min<br>0.6-6 ml/min<br>1-10 ml/min<br>1.6-16 ml/min<br>2.5-25 ml/min<br>4-40 ml/min<br>6-60 ml/min<br>10-100 ml/min | 6-60 ml/min<br>10-100 ml/min<br>16-160 ml/min<br>30-300 ml/min<br>60-600 ml/min<br>0.1-1 L/min<br>0.15-1.5 L/min |
| DK800-4/F  | 16-160 ml/min<br>25-250 ml/min                                                                                               | 0.3-3 L/min<br>0.6-6 L/min                                                                                       |
| DK800-6/F  | 40-400 ml/min<br>60-600 ml/min<br>0.1-1 L/min                                                                                | 0.7-7 L/min<br>1-10 L/min<br>1.5-15 L/min                                                                        |
| DK800-10/F | 0.1-1 L/min<br>0.16-1.6L/min                                                                                                 | 3-30L/min<br>5-45L/min                                                                                           |

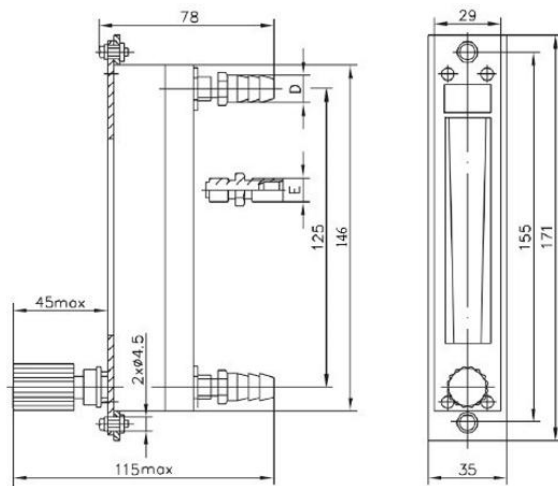
**Note: For special measuring ranges, please contact us.**

**Float reading position: Top of ball float.**

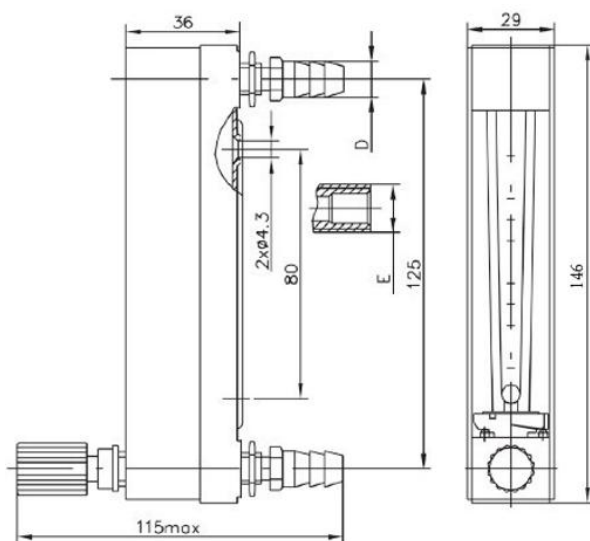
|                                                                              |                                                                     |
|------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Range: 10 : 1                                                                | Accuracy level: 2.5 ; 4 ; 6                                         |
| Cone tube: smooth tube / ribbed tube                                         | Cone tube length : 100mm                                            |
| Allowable measured fluid conditions:<br>Maximum pressure: 1.0MPa             | Allowable measured fluid conditions:<br>Maximum temperature: 120 °C |
| Base: M10*1 internal thread; G1/4<br>internal thread; NPT1/4 internal thread | Total length: 146mm                                                 |
| Float shape : ball                                                           | Connection method: hose , metal pipe                                |

## Appearance and installation connection dimensions

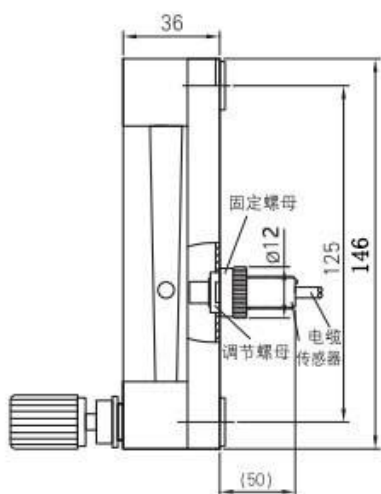
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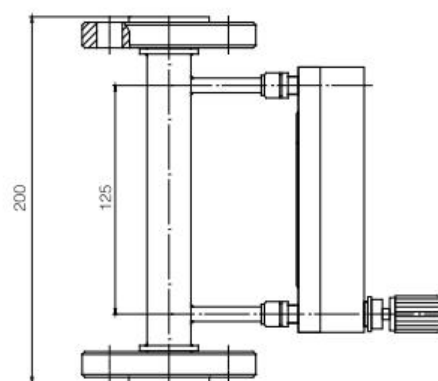
### DK800 base flow meter outline diagram



DK800 type surface plate with regulating valve flow meter outline



DK800 with alarm switch flowmeter outline  
outline



DK800 flange connection flowmeter

## Four Material of parts in contact with the measured fluid

| model           | Float                         | Base                | Stop                             | Seals and gaskets     | Needle valve        |
|-----------------|-------------------------------|---------------------|----------------------------------|-----------------------|---------------------|
| DK800-<br>( )   | Agate or 316L stainless steel | 304 Stainless steel | Polytetrafluoroethylene Ethylene | Nitrile rubber        | 304 Stainless steel |
| DK800-<br>( ) F |                               |                     |                                  | Fluororubber and PTFE |                     |

Note : The base and needle valve can be customized to 316L .

## Installation and Usage

### Install

- Before installing the flow meter, remove the filler that prevents the float from jumping during transportation. If it is equipped with a guide rod, check whether the float can slide freely on the guide rod. Please check whether the glass tube is damaged and whether the product is loose.
- The flow meter should be installed in a vertical position (the angle between the center line of the flow meter and the plumb line should not exceed 5% ) and have a suitable support. The pipeline should not vibrate and should not be subjected to any tension and pressure from the pipeline. The pipeline should be flushed clean before installing the flow meter. The measured fluid enters from the lower end of the flow meter and exits from the upper end.  
Note: Do not use any flow meter by hand.
- There should be no large particles of dirt in the measured fluid, otherwise the float will get stuck or block the flow meter passage. A filter can be installed at the front end of the flow meter as needed. If the measured fluid contains bubbles, an exhaust port should be set at

the front end of the flow meter.

4. The pressure of the measured fluid must be stable. Unstable fluid pressure will cause the float to fluctuate and cannot be accurately measured. A buffer or setter should be set at the front end of the flow meter. It is recommended to install a bypass pipeline for easy maintenance and disassembly.
5. If there is backflow in the pipeline, especially water hammer, a one-way check valve should be installed after the downstream valve of the flow meter to prevent damage to the flow meter.
6. 5-10 times the nominal diameter upstream of the flow meter , and a straight pipe section of at least 250mm downstream.

#### use

1. When using, open the valve upstream of the flowmeter slowly to prevent the float from suddenly rushing up and damaging the glass tube, and then use the downstream regulating valve to adjust the flow. Avoid using it with a solenoid valve. It is forbidden to disassemble the flowmeter before and during use.
2. The flow meter float reading should be read on the measuring side. If the working diameter (reading side) of the float is damaged, the flow meter should be recalibrated.
3. Sudden temperature changes of the measured fluid should be avoided.
4. If leakage is found in the flow meter during use, tighten the inlet and outlet nozzles and the compression nuts of the needle valve. If the above method does not work, it is generally because the sealing ring has failed and should be replaced.
5. When the cone tube and float are contaminated, they should be cleaned in time to avoid reducing the measurement accuracy.
6. Check the flow meter error regularly. If it exceeds the specified error, replace the float and cone tube, or recalibrate.
7. the measured fluid and state (temperature / pressure) are inconsistent with the scale and state on the flow meter, the indication should be corrected according to the measured fluid and state (including density, temperature, pressure, etc.) to obtain the correct flow rate.
8. For general fluid measurement, please use DK800- ( ) type, and for corrosive fluid measurement, please use DK800- ( ) F type.
9. The manufacturer assumes no liability for damages resulting from failure to comply with the glass rotor flowmeter regulations.

## six Indication correction

Correction when measuring liquids: Calculate the flow rate through the flowmeter when in

$$\text{use: } QS = QN \sqrt{\frac{(\rho_f - \rho_s) \rho_N}{(\rho_f - \rho_N) \rho_s}}$$

QS---- actual flow value;  $\rho_s$  ---- density of the wave-measured liquid; QN---- the reading of the flow meter;  $\rho_f$  ---- float density;

$\rho_N$  ---- Density of water at 20 °C and absolute pressure of 101325Pa ( 998.303kg/m<sup>3</sup> ).

Correction when the measured gas is dry gas: Calculate the flow rate flowing through the

$$\text{flow meter in the use state: } QSN = QN \sqrt{\frac{\rho_N P_s T}{\rho_{SN} P T_s}}$$

QSN--- Flow rate of the measured gas under standard conditions; QN--- Reading indication of the flowmeter ( flow value under standard conditions of 0 °C , 101325Pa );  $\rho_{SN}$ --- Density of the measured gas under standard conditions ( 0 °C , 101325Pa );  $\rho_N$ --- Density of air under standard conditions ( 0 °C , 101325Pa );  $P_s$ --- Absolute pressure of the measured gas during measurement;  $T_s$ --- Absolute temperature of the measured gas during measurement;  $P$ --- Absolute pressure marked on the flowmeter scale;  $T$ --- Absolute temperature marked on the flowmeter scale [( 273.15+20 ) K ].

Flow rate through the flow meter in use:

$$Q_s = Q_N \frac{P_N T_s}{P_s T_N}$$

$Q_s$ --- the flow rate of the measured gas in use state;

$P_N$ --- absolute pressure under standard conditions ( 101325Pa );

$T_N$ --- absolute temperature under standard conditions ( 273.15K ).