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Operation Instruction

FOR

SERIES LZB-15～100 ROTAMETER

Operating and Assembling Instructions

Preface

The rotameter with glass tube is used for measuring the flow rate of liquid or gas. And when combined in use with other instruments, it is capable of performing the measurements of liquid level and density, and making on the analysis of some composition. This rotameter, therefore, have found wide application in petroleum, chemical, medical, chemical fertilizer, synthetic fibre, food, sugar dystuff, paper making industries and in scientific research.

Principle and Construction

The main measuring elements in the rotameter are a tapered glass tube and a float. The glass tube, with the small end downward, is mounted vertically and the float can be moved freely in it.When the fluid with a certain flow velocity (kinetic energy) flows upward through the tapered tube, this kinetic energy will create a force which permits the float to move up, thereby increasing the annular orifice between the float and the tapered tube, and at the same time decreasing the flow velocity. While the lifting force of the fluid is in balance with the weight of the float, the float is stable at a certain position. Thus it can be seen that the height of the float depends on the flow rate. It means that the height of the float can be regarded as a measure of the flow rate. The reading of the flow rate is indicated by the edge of the float's largest diameter.

Installation, Operation and Maintenance

A. Installation

1）The rotameter should be vertically mounted on the pipeline which is free from vibration. The installation should be eliminated from any visible inclination of the rotameter, otherwise, it will result in measurement error. And the pipeline should be strong enough for supporting the rotameter.

2）The mounting height of the rotameter should be on the level of the eyes for convenient reading. Around the instrument, a free space should be provided for facilitation of installation.

3）Before installation, check whether there is any damage upon the tapered glass tube and the float can be freely move up and down.

4）During installation, care should be taken not to damage the instrument by strong twisting.

B. Operation

1）Before coming into operation, it is necessary to inspect whether the measuring range of the rotameter is in accordance with that to be measured. Generally, the rating flow rate of the meter is selected to 2/3 upper limit , and the maxium flow rate of the fluid should not exceed the upper limit of the rotameter. Furthermore, the pressure and temperature of the fluid to be measuring must not exceed the permissible range of the instrument.

2）At the beginning of the operation, open the control valves slowly. If not, the float would move rapidly to the top and consequently damages the tapered glass tube. If the float does not move up when the control valves have been opened, close the control valves at once until the troubles are found out and eliminated.

3）During the operation, if the float comes into contact with the wall of the tube, it is strictly forbidden to strike the tapered glass tube with any tools. The troubles may be eliminated by slightly shaking the pipeline or dismantling the tapered tube.

4）When the flow rate of the fluid to be measured is stable (i,e stable flow source and pipeline resistance are existed) the indication of the float is generally also steady, If the float is fluctuated seriously, close slightly the outlet control valve and open the inlet control valve in a small extent. If these processings are in vain, it is necessary to inspect whether there is something out of order with the pipeline or the source of the flow.

5）Caution should be taken to keep the instrument clean and prevent the outer parts from rust.

C. Maintenance and Repair

1） In order to keep the rotameter in good order, it is required to clean the instrument periodically, especially the tapered glass tube and the float.

2） After a long period of operation, the shape of float and inside wall of the tapered glass tube would be deformed or damaged. This will result in the error of measurement. Therefore, after cleaning, the rotameters should be calibrated again for maintaining height pression.

3）If there is any breakage on the tapered glass tube and serious corrosion or deformation of the float, replace them promptly.

Specification of Series LZB-15～100 Rotameter

TYPE	MEASURING RANGE			ACCURACY	FLUID TO BE MEASURED	
	RANGE ABILITY	WATER (20℃)	AIR (1.013×10^{5}P a,20℃)		TEMPERATURE (℃)	PRESSURE (MP a G)
LZB-15	1：10	10～100L/h	0.25~2.5m^3/h	2.5	-20~+120	≤0.6
		16~160L/h	0.4~4m^3/h			
		25~250L/h	0.6~6m^3/h			
		40~400L/h	1.2~12m^3/h			
		60~600L/h	2~20m^3/h			
LZB-25		40~400L/h	1~10m^3/h	1.5		
		60~600L/h	1.6~16m^3/h			
		100~1000L/h	2.5~25m^3/h			
		160~1600L/h	5~50m^3/h			
		250~2500L/h	6~60m^3/h			
LZB-40		160~1600L/h	4~40m^3/h			
		250~2500L/h	6~60m^3/h			
		400~4000L/h	12~120m^3/h			
LZB-50		400~4000L/h	10~100m^3/h			
		600~6000L/h	16~160m^3/h			
		1000~10000L/h	30~300m^3/h			
LZB-80		1000~10000L/h	25~250m^3/h			≤0.4
		1600~16000L/h	40~400m^3/h			
		2500~25000L/h	60~600m^3/h			
		3600~36000L/h	100~1000m^3/h			
LZB-100		5~25m^3/h	120~600m^3/h			
		8~40m^3/h	200~1000m^3/h			
		20~60m^3/h	600~1600m^3/h			
		40~100m^3/h	120~3000m^3/h			