

## CALIBRATION

Each field rotameter is calibrated at the factory. Zefon recommends that its accuracy be periodically checked using a primary calibration standard.

It is important to understand that a rotameter is affected by variations in temperature and air pressure. This rotameter has been calibrated at the Standard operating conditions of 14.7 psia (0 psi) pressure and 70° F. When using the rotameter at a different temperature and pressure than where it was calibrated, the following formula will provide a correction factor:

$$Q_2 = Q_1 \times \sqrt{\frac{P_1 \times T_2}{P_2 \times T_1}}$$

Where:  $Q_1$  = Actual or Observed Flowmeter Reading  
 $Q_2$  = Standard Flow Corrected for Pressure and Temperature  
 $P_1$  = Actual Pressure (14.7 psia + Gage Pressure)  
 $P_2$  = Standard Pressure (14.7 psia, which is 0 psig)  
 $T_1$  = Actual Temperature (460 R + Temp °F)  
 $T_2$  = Standard Temperature (530 R, which is 70°F)

## MAINTENANCE

The only maintenance normally required is occasional cleaning to assure reliable operation and good float visibility.

## DISASSEMBLY

The rotameter can be disassembled for cleaning by simply disconnecting the tubing connections, dismantling the unit from the panel (if panel mounted) and removing the top-plug-ball stop. Take out the ball or float by inverting the body and allowing the float to fall into your hand. (Note: It is best to cover the discharge port to avoid losing the float through that opening.)

## CLEANING

The flow tube and rotameter body can best be cleaned with a little pure soap and water. Use of a bottle brush or other soft brush will aid the cleaning. Avoid benzene, acetone, carbon tetrachloride, alkaline detergents, caustic soda, liquid soaps (which may contain chlorinated solvents), etc. and avoid prolonged immersion.

## REASSEMBLY

Reinstall the float, remount, connect and place the unit back in service. A little stop cock grease or petroleum jelly on the "O" rings will help maintain a good seal as well as facilitate assembly. No other special care is required.

## Operating Instructions

### Zefon Field Rotameters



#### Features:

- Low Cost
- Easy to use and maintain
- Durable
- Choice of flow ranges
- Includes brass hose barb, Tygon tubing, and luer adapter

Zefon Field Rotameters are a low cost way to measure airflow in air sampling applications. They feature a durable acrylic housing with direct reading scales printed on them. Available in three different flow ranges covering a range of 0.2 through 30 LPM. Operation and maintenance are very simple; only a few common sense precautions must be observed to assure long, trouble-free service.



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## PRODUCT SPECIFICATIONS

Measuring Range (LPM Air)	Scale Size	Accuracy (full scale)	Product #
0.2 - 4.0	4"	3%	116116
1-20	4"	3%	195380
3-30	4"	3%	195505

Connections: 1/8" Female NPT at the inlet and outlet of rotameter body  
 Fittings: 1/8" NPT x 1/4" ID Brass hose barb with Tygon tubing & male slip luer at end of provided tubing, fits common 25mm & 37mm cassette inlets.  
 Temperature: 150 F (65 C) Max  
 Pressure: 100 psi (7 bar) Max  
 Materials: Housing: Acrylic  
 O-ring: Buna-N  
 Metal Parts: Brass  
 Float Ball: Stainless Steel or Black Glass  
 Tubing: Tygon Brand PVC  
 Male Slip Luer Connector: Polycarbonate  
 Weight: 7.5oz - 7.8oz (.21 - .22kg) (rotameter body only)  
 8.5oz - 8.8oz (.24 - .25kg) (rotameter with hose barb and tubing)

## CAUTION

Zefon field rotameters are exceptionally tough and strong. They are designed for use with non hazardous gases at pressures up to 100 psi (7 bar) and temperatures up to 150°F (66°C). DO NOT EXCEED THESE LIMITS! Do not use with any hazardous gas or liquid and do not expose the rotameter to strong chlorine atmospheres or solvents such as benzene, acetone, carbon tetrachloride, etc.

## CONNECTIONS

Zefon has provided this field rotameter with 1 hose barb connection fitting along with a short piece of tubing and luer adapter. Connect this hose barb to the top rotameter port as shown in Figure 1. If the tubing and/or luer fitting does not work for the application, remove or modify as necessary to connect to your sample media.

### Parts

1. Outlet Port (always make connection to pump here when measuring vacuum)
2. Inlet Port (normally nothing connected)
3. Hose Barb
4. Tubing
5. Luer adapter



## CONSIDERATIONS FOR USE

Always position the rotameter in a vertical position with the inlet connection at the bottom and outlet at the top. If mounting the rotameter into a mounting panel or holding stand, it should be free of excessive vibration since it may prevent the unit from operating properly. Always using piping or tubing at least as large as the connection to the rotameter (1/8" pipe size). It is good practice to have as few elbows and restrictions in the tubing and/or piping as possible and always keep the length of tubing/piping to a minimum. This is very important when measuring vacuum flow as it allows operation closer to atmospheric pressure and thereby ensuring accuracy of the rotameter.

## SETUP FOR USE

The correct way to setup and use this field rotameter for measuring vacuum during air sampling is to place the sample media in the middle of the "sample train" and connecting the field rotameter as close as possible to the inlet of the sample media. See Figure 2. DO NOT connect the rotameter in the middle of the sample train as shown in Figure 3. Doing so will provide erroneous readings.

Figure 2



CORRECT setup with sampling media in middle of sample train

Figure 3



INCORRECT setup with sampling media at the end of the sample train

## OPERATION

Turn on the vacuum pump. View the rotameter straight-on at eye level. The flow rate is read according to the location of the center of the float ball and the adjacent flow graduation mark. Adjust the vacuum flow rate on the pump up or down as desired.