



LABORATORY ROTAMETERS

SK Type 20-1900 Laboratory Rotameters are simple, inexpensive variable area flow meters which may be installed directly in glass, plastic or metal pipe lines. They measure and indicate the rate of flow of a wide variety of gases and liquids - viscous, corrosive, dense or light. Fluid must be transparent enough to permit viewing of the float. These rotameters are ideal for laboratory or pilot plant use, or any installation where connection can be effected with hoses. They should not be used where OSHA or other safety requirements dictate the use of an armored meter such as the SK Safeguard® meter. High pressure gases and liquids operating at temperatures above the atmospheric boiling point of the liquid are examples of such unsafe applications

SPECIFICATIONS

CONNECTIONS: Cotton fabric reinforced SBR (styrene butadiene rubber) hose secured with all stainless steel adjustable hose clamps to fit over 1/4-2" pipe. Hoses lined with other materials such as Tygon or Viton available on application.

MAXIMUM PRESSURE: See table 1 - limited by the pressure rating of the glass tube and connecting hose, and by the manner in which the meter is shielded in use.

MAXIMUM TEMPERATURE: 150°F - limited by hose rating.

FLOAT: Standard materials, 316 stainless steel. Standard option, Hastalloy C. Other materials on application as dictated by corrosive characteristics of fluid.

TUBES: Borosilicate Glass. R type are unfluted but use shaped floats which maintain relatively steady readings. HCF types are fluted and provide more stable readings.

FLOAT STOPS: Polypropylene with Hastalloy rod or stainless steel spring extension in outlet. Other materials available on application.

SCALE: Meters are stocked with millimeter graduations fired onto the tubes. A chart giving flow rate at fluid conditions versus float position in millimeters is supplied at no charge.

Standard scale option: Meters are also stocked with blank tubes. Graduations and numerals can be etched onto the tube to provide a scale reading directly in desired units of flow.

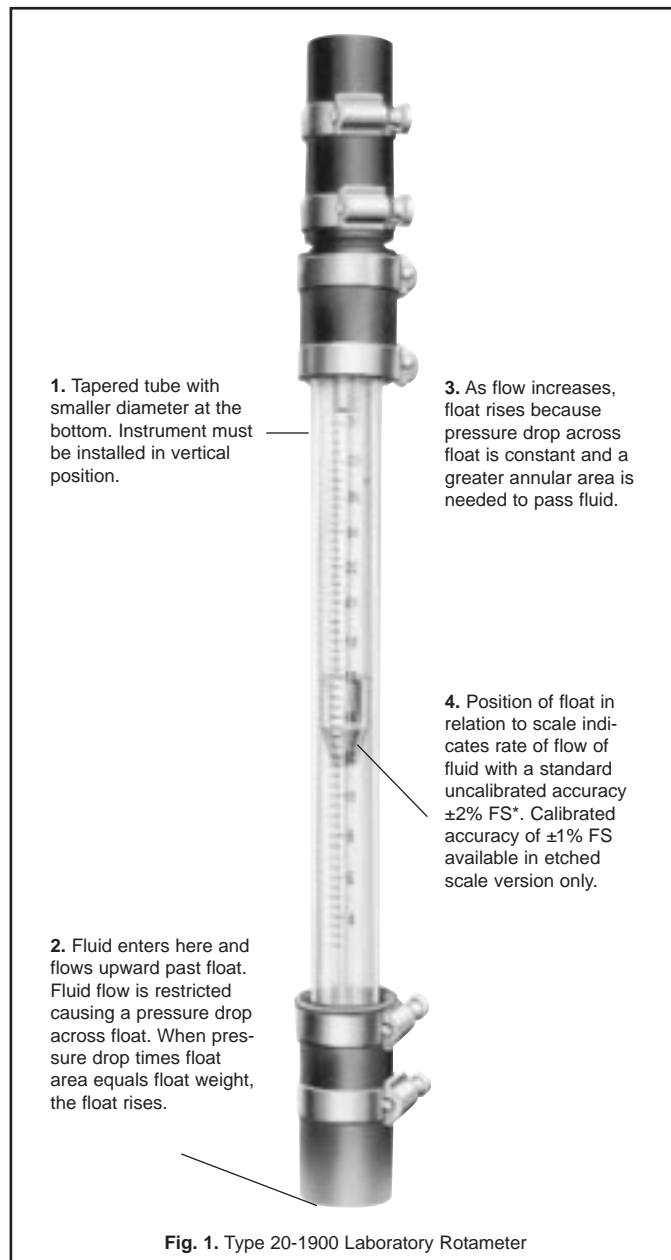
The etched or decal scales can also be provided as percent scales with multiplier.

CAPACITIES:

LIQUID: From .032 GPM full scale (.003 minimum reading) to 90 GPM maximum (See table 1). Volumetric capacities are lower for more viscous liquids, higher for less dense materials than water.

GAS: From .16 SCFM air at 70°F and 14.7 psia (atmospheric pressure) to 384 SCFM. Capacities in SCFM are higher for higher pressure air and lower for gases denser than air.

RANGEABILITY (Turndown) : 10 to 1



**Based upon the use of density and viscosity corrections and standard, nominal flow characteristics for the tube and float, maintained by control of the physical dimensions of these flow elements.*

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TABLE 1 - CAPACITIES & MODEL NUMBERS

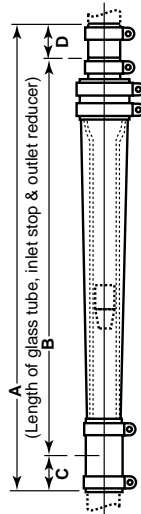
| TUBE TYPE | METER SIZE NO. | METERING FLOATS | MAXIMUM | | MAX. PRESS. DROP INCHES WATER | MAX. OPER. PRESS. psig* | APPROX. WT. LBS. |
|----------------------------------|----------------|-----------------|----------------|------------------------|-------------------------------|-------------------------|------------------|
| | | | WATER gpm 70°F | AIR cfm 70°F 14.7 psia | | | |
| "R" CONICAL TAPERED TUBES | 01-R | R-015 | 0.032 | 0.160 | 1.1 | 60 | 1/2 |
| | | R-014 | 0.036 | 0.172 | 1.3 | | |
| | | R-013 | 0.047 | 0.232 | 1.8 | | |
| | | R-012 | 0.054 | 0.262 | 2.4 | | |
| | 1-R | R-14 | 0.063 | 0.300 | 1.0 | 60 | 1/2 |
| | | R-13 | 0.074 | 0.353 | 1.1 | | |
| | | R-12 | 0.087 | 0.405 | 1.6 | | |
| | | R-11 | 0.109 | 0.530 | 2.7 | | |
| | | R-10 | 0.144 | — | 4.5 | | |
| | 2-R | R-22 | 0.180 | 0.792 | 2.3 | 60 | 1/2 |
| | | 2-C | 0.226 | — | 3.6 | | |
| | | R-21 | 0.233 | 1.01 | 3.6 | | |
| R-20 | | 0.298 | 1.28 | 5.6 | | | |
| 2-B | | 0.304 | — | 5.6 | | | |
| 2-A | | 0.390 | — | 8.9 | | | |
| 3-R | R-33 | 0.387 | 1.68 | 1.8 | 60 | 3/4 | |
| | R-32 | 0.464 | 2.00 | 2.6 | | | |
| | R-31 | 0.575 | 2.49 | 4.0 | | | |
| | 3-C | 0.601 | — | 3.9 | | | |
| | R-30 | 0.703 | 2.95 | 5.5 | | | |
| | 3-B | 0.855 | — | 7.5 | | | |
| 4-R | 4-B | 1.62 | — | 6.2 | 60 | 3/4 | |
| | 4-A | 2.27 | — | 11.2 | | | |
| "HCF" HIGH CAPACITY FLUTED TUBES | 3-HCF | 34-J | 1.26 | 5.46 | 7 | 50 | 3/4 |
| | | 33-J | 1.46 | 6.36 | 8 | | |
| | | 32-J | 1.69 | 7.30 | 11 | | |
| | | 31-J | 1.95 | 8.36 | 13 | | |
| | | 30-J | 2.22 | 9.34 | 17 | | |
| | 4-HCF | 44-J | 2.73 | 11.4 | 12 | 40 | 1 |
| | | 43-J | 3.25 | 13.7 | 15 | | |
| | | 42-J | 3.83 | 16.1 | 19 | | |
| | | 41-J | 4.34 | 18.6 | 25 | | |
| | | 40-J | 5.08 | 21.5 | 32 | | |
| | 5-HCF | 54-J | 5.96 | 24.5 | 11 | 35 | 1-1/2 |
| | | 53-J | 7.49 | 31.0 | 14 | | |
| | | 52-J | 8.71 | 36.7 | 18 | | |
| | | 51-J | 10.6 | 45.3 | 24 | | |
| | | •50-J | 12.5 | — | 33 | | |
| | 6-HCF | 64-J | 14.8 | 62.9 | 25 | 30 | 2-1/4 |
| | | •63-J | 17.0 | 72.6 | 32 | | |
| | | •62-J | 20.2 | 87.5 | 42 | | |
| •61-J | | 23.5 | 101.0 | 57 | | | |
| •60-J | | 28.3 | 122.0 | 80 | | | |
| 8-HCF | •83-J | 33.7 | — | 27 | 20 | 3-1/2 | |
| | •82-J | 38.9 | — | 32 | | | |
| | •81-J | 46.0 | — | 40 | | | |
| | •80-J | 54.8 | — | 54 | | | |
| 9-HCF | •93-J | 60.6 | — | 45 | 15 | 4-1/2 | |
| | •92-J | 68.2 | — | 53 | | | |
| | •91-J | 78.4 | — | 66 | | | |
| | •90-J | 90.2 | — | 88 | | | |

*Based on a factor of safety of 10 for a new unprotected glass tube, and a factor of safety of 4 for the hose.

• These floats are not recommended for gas service unless operating pressure (downstream) exceeds 30 psig.

Specifications contained herein are subject to change without notice. Since it is impossible to anticipate or control the many different conditions under which this information and our products may be used, we cannot guarantee the applicability and accuracy of this information, or the suitability of our products in any given situation.

TABLE 2 - DIMENSIONS (in inches)



| METER SIZE NO. | NOMINAL PIPE SIZE | HOSE I.D. | DIMENSIONS | | | |
|----------------|-------------------|-----------|------------|---------|-------|-------|
| | | | A | B | C | D |
| 01-R | 1/8 | 7/16 | 165/8 | 127/8 | 17/8 | 17/8 |
| 1-R | 1/8 | 7/16 | 165/8 | 127/8 | 17/8 | 17/8 |
| 2-R | 1/4 | 1/2 | 165/8 | 127/8 | 17/8 | 17/8 |
| 3-R | 3/8 | 11/16 | 165/8 | 127/8 | 17/8 | 17/8 |
| 4-R | 3/8 | 3/4 | 165/8 | 127/8 | 17/8 | 17/8 |
| 3-HCF | 1/2 | 7/8 | 207/8 | 141/2 | 33/16 | 33/16 |
| 4-HCF | 3/4 | 1 | 207/8 | 141/2 | 33/16 | 33/16 |
| 5-HCF | 1 | 1 1/4 | 207/8 | 1613/16 | 2 | 21/16 |
| 6-HCF | 1 1/4 | 1 1/2 | 207/8 | 175/8 | 15/8 | 15/8 |
| 8-HCF | 1 1/2 | 2 | 261/4 | 1911/16 | 29/16 | 4 |
| 9-HCF | 2 | 2 1/2 | 261/4 | 201/8 | 21/8 | 4 |

Fig. 2. Type 20-1900 Rotameter with "HCF" meter tube. Rotameters with "R" tubes are similar except they have spring-type float stops.

ADDITIONAL LABORATORY ROTAMETERS



Fig. 3. Type 20-5120 Rotameter with 600 MM scale for precise measurement. Detachable metal scales with direct reading calibrations are available for use with different fluids.



Fig. 4. Type 20-5100 Rotameter has stainless steel case and covers. Connections are threaded. End fittings available in stainless steel, PVC, Kynar or other corrosion resistant materials.

FOR MORE INFORMATION REFER TO BULLETIN 20-5000