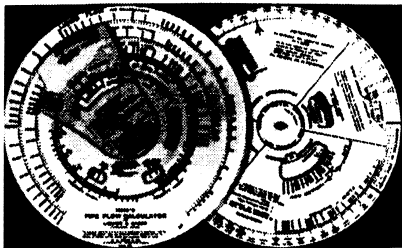


# FLOW CALCULATORS

## PIPE FLOW CALCULATOR For Liquids & Gases (Turbulent Flow)

### Model M.5

The majority of practical problems fall within the Turbulent Flow range and this calculator determines the required pipe size, flow or pressure loss for any liquid and also for any gas (at low pressures) flowing under Turbulent conditions.



Pressure loss, flow or pipe size are found from the front of the calculator by a simple setting of two dials to the known details of length, viscosity, specific gravity, etc. Scales on the reverse side permit an instant determination on whether the flow conditions are Turbulent or Laminar. Viscosities of over 50 liquids at various temperatures are also given on the reverse side along with their specific gravities. Further scales are incorporated for viscosity conversion, including Redwood, Saybolt, Centistokes, and on the metric model, Engler degrees.

#### Scale Ranges:

Diameter: 1/4" to 40" Liquid flow: 5 to 1,000,000 g.p.h.

Length: 5 ft. to 5,000,000 ft.

Gas Flow: 50 to 1,000,000 c.f.h.

Pressure Drop: .01 to 500 lbs./sq. in.

Metric model also available

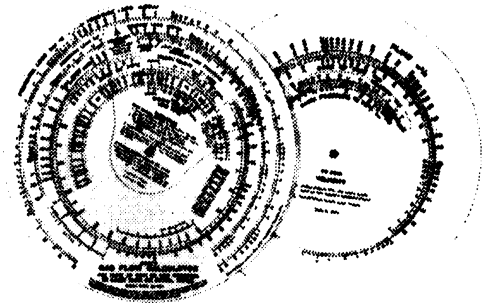
7-5/8" Diameter

## GAS FLOW CALCULATOR for LOW or HIGH PRESSURE FLOW

WITH VELOCITY SCALES

### Model M.8

This instrument is for calculations relating to the flow of all gases in pipes. It has two pressure loss scales, one dealing with the



majority of the problems where the Terminal pressure is substantially atmospheric and the other for pipes at pressure up to 4,000 lbs./sq. in. Handles all fuel gases, air, nitrogen carbon dioxide, etc., and is widely used for sizing factory compressed air and fuel gas systems, pipelines in chemical plants, coke ovens and process plants, manufactured gas and natural gas distribution.

#### Scale Ranges

Diameter: 0.4" to 60"

Length: 10 ft. to 300 miles

Flow: 150 to 16,000,000 c.f.h.

Metric Model also available

7-5/8" Diameter

#### Specify

**Model M.8A**

(For Cast Iron & Steel Pipes)

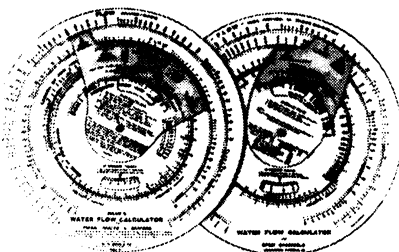
**Model M8B**

(For Plastic Pipes)

## WATER FLOW CALCULATOR

### Model M.7

For steel, cast-iron, non-ferrous, plastic, asbestos cement, concrete, vitrified and coated pipes and also open channels in earth, rock, concrete, metal and wood.



One side of the calculator solves the rational formula for water flow in pipes and ducts of circular sections. The answers have been checked against a large number of well authenticated practical tests on actual pipelines from small metal tubes to long concrete tunnels up to 18 feet diameter and give accuracy appreciably better than usual formulas.

**Flow** 1.5 to 1,000,000 g.p.m.

**Diameter** 0.5" to 240"

The reverse side solves the Manning formula for the flow in open channels. **Flow** 50 to 5,000,000 g.p.m.

**Channel area** 0.7 to 2,000 sq. ft.

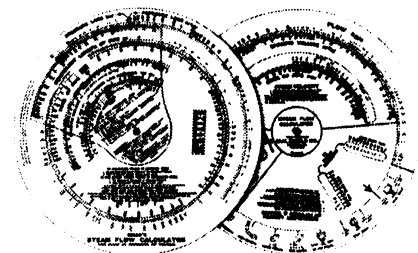
Metric model also available

7-5/8" Diameter

## STEAM FLOW CALCULATOR

### Model M.9

Determines the pressure loss of steam flowing in pipe lines under any conditions from high vacuum up to the critical pressure of 3,200 p.s.i., and at all velocities up to and



including sonic flow. Valves, bends and fittings contribute considerably to the total pressure loss and a section is included to give the equivalent lengths of a wide variety of these fittings so that accurate allowances can be made for them.

The design for the calculator is based upon the modern rational formula. It takes account of the deviation of steam from the laws of a perfect gas and for the variation of its viscosity with temperature and pressure. Pipe sizes up to 48" diameter.

Metric Model also available

7-5/8" Diameter