



**GASTEC**



## **Chapter 6**

### **Gastec Measurement Support Systems**

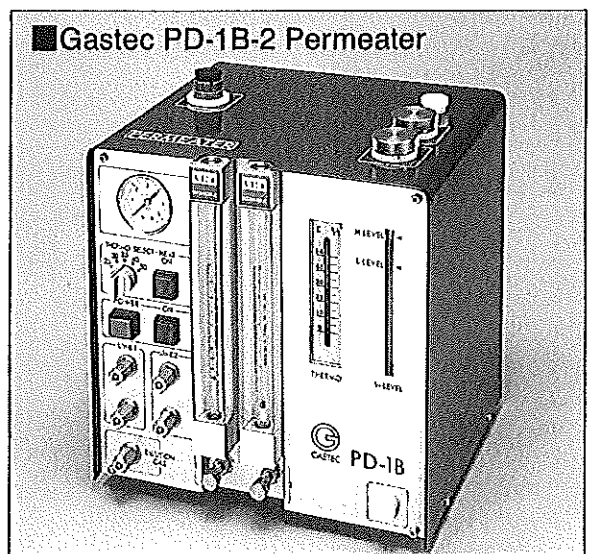
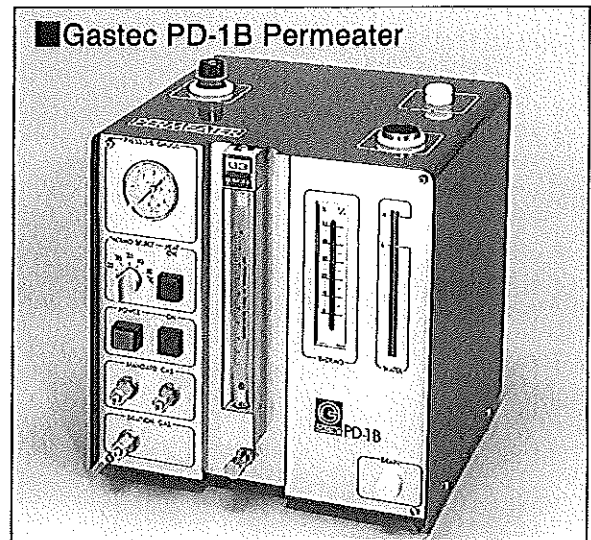
Accurate calibration of detector tubes is of prime importance for accurate measurements. In this chapter, Gastec's very high-precision calibration gas generators called Gastec Permeaters are introduced. The No. 500 Smoke Tester Kit which is also helpful to perform accurate measurements is explained.

# High-Precision Calibration Gas Generators (Gastec Permeaters)

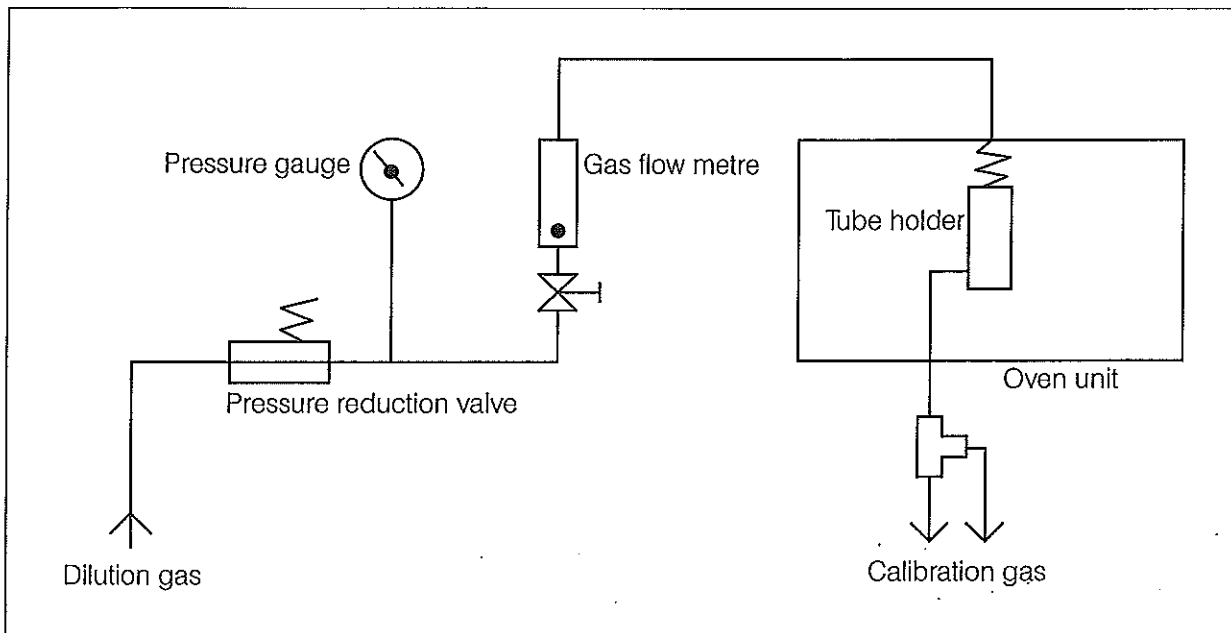
Gastec Permeaters can generate calibration gases either by the permeation tube method (see page 1-38) or the diffusion tube method (see page 1-39). A variety of (inorganic and organic) gases in very low concentrations can be generated accurately and constantly for a prolonged time. A wide range of concentrations can be obtained by selecting the types and the number of tubes to be used, and by adjusting the quantity of dilution gas and the temperature in the water bath. The permeation tube method is employed as the standard calibration gas generation method by U.S. National Institute of Science & Technology (NIST) and Environmental Protection Agency (EPA). The Gastec Permeaters are available in two models: the Gastec PD-1B Permeater has a single gas passage (with a single tube holder and a single gas flow metre) and the Gastec PD-1B-2 Permeater has dual gas passages (with two tube holders and two gas flow metres). Two types of diffusion tubes are available: the No.3100 to generate a single gas and the No.3200 to generate up to four gases at a time.

## ● Application examples

- Calibrations of detector tubes, gas sensor units and other measurement or analysis units
- Durability and corrosion tests
- Animal/plant exposure tests



## ■ Structure of Gastec Permeator



When the permeation tube or diffusion tube is kept in the oven unit, the liquefied gas in the tube is permeated or diffused at a constant rate. By mixing this

gas with a specific amount of dilution gas at a constant rate, you can continuously get an accurate calibration gas of any desired concentration.

## ■ Gastec Permeators specifications

| Model                                   |                  | PD-1B   | PD-1B-2 |
|---|------------------|---|---------|
| Gas generation methods                  |                  | Permeation tube method or diffusion tube method   |         |
| No. of gas flow metres                  |                  | 1   | 2       |
| Accuracy of generated gas               |                  | ±3%   |         |
| Adjustable gas flow rates               |                  | 0.2 to 2 l/min, 1 to 10 l/min   |         |
| Temperature settings & setting accuracy |                  | 25, 30, 35, 40, 50°C ±0.15°C<br>(77, 86, 95, 104, 122°F ±0.27°F)                            |         |
| Tube holder capacity                    | Permeation tubes | Standard tubes: max. 10 tubes<br>High concentration tubes: max. 5 tubes<br>} Either one set |         |
|   | Diffusion tubes  |   |         |
| Dimensions & weight                     |                  | 306mm (W) × 270mm (D) × 301 mm (H), 1.3kg<br>(12.0 in × 10.6 in × 11.8 in, 2.8lb)           |         |
| Power supply                            |                  | AC100V, 50/60 Hz, 200W  |         |