

# Water Treatment Trainers

Educational Training Equipment for the 21st Century

Bulletin 651-7

## H-6517 Aeration Unit

### Purpose

The Hampden **Model H-6517** Aeration Unit has been developed to investigate oxygen transfer characteristics of diffused air systems along with physical and chemical parameters which effect oxygenation in terms of retention time.

The level of Dissolved Oxygen (DO) in water depends on many physical, chemical and biochemical activities in the sample. The most important factors to consider are pressure, temperature and salinity. The amount of oxygen a sample can hold in a solution will vary with the temperature of the sample, the pressure or altitude at which the sample is measured and the concentration of salts dissolved in the sample.

The analysis of DO is one of the key tests performed in water pollution and waste water treatment studies.

### Description

This unit consists of a steel frame with control panel. A polypropylene tank with variable speed mixer. The control panel contains the mixer variable speed controller, air pump control, AC main control, dissolved oxygen/temperature meter and the air flow rotometer with variable flow control. The DO probe and the air flow diffuser probe are removable from the tank for calibration and changing air diffuser configuration.

### Specifications

#### Steel Frame

- 14-gauge furniture stock steel finished in instrument tan texture.

#### Control Panel

- 11-gauge furniture stock steel finished in instrument white enamel

#### Levelers

- Adjustable

#### Nomenclature

- Silkscreen or 3-ply brown white-core engraving phenolic secured to the panel with stainless steel self-taping screws.

#### Main Control & Protection

- Ground fault circuit breaker with indicating pilot light.

#### Sample Tank

- Polypropylene, 7-1/2 gallon (28.4 ltr.) round tank with split cover, depth scale and drain valve with discharge tube.

#### Air Pump

- Diaphragm with 1/12 HP TEFC motor
- Duty Cycle: Continuous
- Noise Level: 73 db
- Pressure: 18 psi
- Free Air Capacity:
  - 1.1 CFM (31.1 L/min) 60 Hz
  - 0.9 CFM (25.5 L/min) 50 Hz

#### Flowmeter:

- Flow Rate: 0–16.7 L/min
- Scale Length: 150 mm
- Accuracy:  $\pm 2\%$  full scale
- Repeatability:  $\pm 0.25\%$  full scale

#### Dissolved Oxygen Meter:

- Display: Dual LCD
- Range: 0.00 to 20.0 mg/L (ppm)
  - Saturation: 0.0 to 200.0%
  - Temperature: 0.0 to 50.0°C
- Resolution:
  - DO: 0.01 mg/L
  - Saturation: 0.1%
  - Temperature: 0.1°C
- Accuracy:
  - DO:  $\pm 1.5\%$  full scale
  - Saturation:  $\pm 1.5\%$  full scale
  - Temperature:  $\pm 0.1^\circ\text{C}$
- Salinity Compensation:
  - Range: 0.0–50.0 ppt
  - Resolution: 0.1 ppt
- Barometric Pressure Compensation:
  - Range: 555–808 mm Hg



#### MODEL H-6517

Dimensions: 30-1/8"H x 40"W x 20"D

Shipping Weight: 239 lbs

- Resolution: 1 mm Hg
- Temperature Compensation:
  - Automatic from 0–50°C
- Probe: Galvanic with 10 ft. cable
- Memory: 16 data-points
- Power: Battery on AC Adapter

The **Dissolved Oxygen Meter** can be removed from the trainer for external use, it has a water resistant membrane keypad and operates on 4-AAA batteries.

#### Mixer:

- Speed Controller: Solid state with 100:1 adjustment range.
  - Range Switch: forward-off-reverse
  - Regulation:  $\pm 2\%$
  - Protection: Torque limiting
- Mixer Head: TENV permanent magnet DC motor, permanently lubricated ball bearings, through-shaft collet provide shaft adjustment.
- Shaft: Stainless steel with 2" turbine propeller
- Air Flow Diffuser Probe: Stainless steel tube configured to accept the following:
  - Fine bubble diffuser
  - Course bubble diffuser
  - Spauger tube
- Voltage: 120VAC, 1 $\phi$ , 60Hz
- Chemicals required but not supplied:
  - Cobaltous Chloride, colorimetric solution (CS)
  - Sodium Sulphite



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All Hampden units are available for operation at any voltage or frequency

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