



# armfield

## AERATION UNIT

**W10**  
issue 8



The Aeration Unit with sparger tube diffuser installed

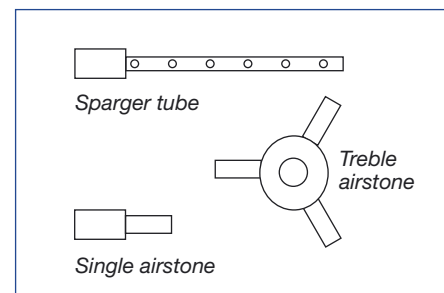


Figure 1

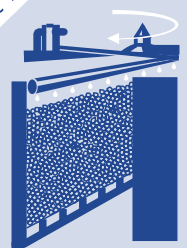
*The purpose of the Armfield Aeration Unit is to permit study of the oxygen transfer characteristics of diffused air systems and the physical and chemical parameters which influence their oxygenation capacity. These studies are a necessary prelude to the understanding of the biological treatment of waste waters*

### DEMONSTRATION CAPABILITIES

- effects of oxygen transfer under non-steady state conditions
- measurement of the absorption coefficient  $K_s$  and the oxygenation capacity  $R$
- the effect on  $K_s$  and  $R$  of:
  - degree of fluid mixing,
  - water temperature,
  - gas flow rate,
  - depth of water,
  - diffuser arrangement (Fig. 1),
  - water composition.

Water Treatment Processes

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## DESCRIPTION

The Armfield Aeration Unit comprises an open tank equipped with a paddle stirrer. Air is supplied by an electrically driven pump through a control valve and flow meter to a diffuser, adjustable for position, within the tank. A variety of diffusers is included. The dissolved oxygen content of the water in the tank is measured by means of an oxygen electrode and dissolved oxygen meter. The meter supplied gives an additional direct reading of water temperature. Operating from internal batteries, the meter may be used for field trials independently of the apparatus.

The equipment consists of a base and backboard standing on four rubber feet.

Mounted on the base is the clear acrylic water tank which has a capacity of 24.5 litres. On the front of the tank is a depth scale and at the base a drainage tap. The lid of the tank is partially removable to allow filling. On the fixed part of the lid are mounted the stirrer motor, stirrer and clamping positions for the temperature probe, oxygen probe and aerator tube.

The oxygen/temperature meter is mounted on the backboard with the connecting leads to the appropriate probes.

Air is supplied to the tank by means of a pump (with filter and silencer assembly) and is controlled by a valved flow meter discharging through the aerator tube.

Three diffusers, sparger tube, treble airstone and single airstone, may be separately attached to the aerator tube.

Variable speed adjustment of the stirrer paddle provides different levels of turbulence in the tank.

Armfield Limited  
Bridge House West Street Ringwood  
Hampshire England BH24 1DY  
Tel: +44 (0)1425 478781  
Fax: +44 (0)1425 470916  
E mail: sales@armfield.co.uk  
URL: <http://www.armfield.co.uk>

USA Office:  
Armfield Inc.  
436 West Commodore Blvd (#2)  
Jackson NJ 08527  
Tel: (732) 928-3332  
Fax: (732) 928-3542  
E mail: armfield@optonline.net

## TECHNICAL DETAILS

Pump:	Diaphragm type
Tank capacity:	24.5 litres
Flow meter range:	1-12 litres/min
Oxygen/temperature meter ranges:	-5 to 199%DO <sub>2</sub> -5 to 25.0%DO <sub>2</sub> -5 to 19.99mg/l -10 to 105°C
Oxygen probe length:	300mm
Paddle:	Variable speed controlled by D.C. shunt wound motor
Chemicals required:	Sodium sulphite, (not supplied) Cobaltous chloride

## ORDERING SPECIFICATION

- An aeration unit to permit the study of oxygen transfer characteristics of diffuse air systems.
- Comprises a 24.5 litre open tank with variable speed motor driven stirrer paddle and pumped air supply, via a valve and flow meter, to a diffuser.
- Sparger, single and treble airstone diffusers are included in the supply.
- A battery powered dissolved oxygen meter provides instrumentation including direct reading of water temperature.

## RECOMMENDED INSTRUMENTS

Stop clock  
Triple beam top loading balance  
100ml measuring cylinder

## SERVICES REQUIRED

Electrical supply:

W10-A:	220-240V/1ph/50Hz
W10-B:	120V/1ph/60Hz
W10-G:	220V/1ph/60Hz

Water supply: Initial fill and laboratory drain

## OVERALL DIMENSIONS

Height:	0.75m
Width:	0.6m
Depth:	0.5m

## SHIPPING SPECIFICATION

Volume	0.70m <sup>3</sup>
Gross weight:	100kg

Specifications may change without notice  
iss8/5k/0404/B&S.