



# THE 'IEC' MASH BATH

This manual covers all models for 2007.

6, 9, 12 and 16 pot bench models and 16, 20, 25 and 30 pot floor models. All use 500ml pots



Bench models do not have distilled water storage but the special bath lids carry extra d/w pots.

Floor standing models have temperature controlled distilled water storage and dispensing system.

Designed and Manufactured by :

Industrial Equipment & Control Pty. Ltd.

Melbourne Australia.

2007

**INDUSTRIAL EQUIPMENT & CONTROL PTY.LTD.**

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### GENERAL DESCRIPTION:

A high quality, electronically controlled Mash Bath with 8 selectable programs that relate bath temperatures with times. Carefully designed to automatically perform the standard mash sequences as required by the various brewing, barley, malt and cereal industries, however its versatility permits it to be easily programmed for variations to these standard tests.

Some of the features of the 'IEC' Mash Bath are:

### ALL MODELS:

- Fully adjustable touch screen controller is mounted above the rear cover to provide a narrow machine with small footprint. Screen can be angled to suit any user. If desired, the controller can be removed from the machine and mounted remotely.
- Fully sealed 'wipe clean' touch screen with no knobs or switches to clean.
- Outer panels are easy to remove and tools not required. All the front and side panels are powder coated for excellent resistance to corrosion.
- Machine can be supplied for either single or three phase power.
- Stainless Steel construction and the whole design has been developed for easy access and quick and simple maintenance.
- Very strong but quiet magnetic stirrers stir the mash samples from below the tank and 30 to 40mm long laboratory 'spinbars' can be used in each sample pot.
- Stirrers are grouped in several separate banks so that if a stirrer belt breaks or one bank is under maintenance, the other banks continue to operate. Spare motors and spare belts are supplied.
- The temperature/time ramping of the bath is held to close accuracy.
- The bath automatically preheats the water to the programmed temperature and provides an audible alert to advise when preheat is achieved.
- All audible alerts can be stopped by the momentary press of a button and can be altered in loudness to suit the environment.
- Different programs are easily created and selected by the touch panel controller. Even the names of the programs can be edited to suit your lab.
- The special IEC designed bath lid accepts 'Industry Standard' 500ml stainless steel pots. The lid seals grip gently to the pots to hold them firmly against floating when empty and to prevent unwanted steam in the laboratory. If ever damaged, they are easily replaced. The lid is easily removable without tools for cleaning but cannot be dislodged when fitted for operation.
- The sides of the bath are lagged to conserve energy.
- At the end of the selected program, a programmed option is provided for either a hot bath finish or to cool the samples slowly or quickly.
- The samples are stirred by magnetic stirrers below the tank. Automatic ON / OFF / INTERMITTENT control over the magnetic stirrers is part of each program but manual override is also provided.
- The 'IEC' Mash Baths have our specially designed quiet circulation pumps that run fully immersed inside the main and the distilled water tanks for best temperature control and for reduction in the complexity of pipes and hoses.
- Good bath circulation ensures accurate temperature through the whole bath.



### FLOOR MODELS:

- Floor models are mounted on small wheels for ease of moving for cleaning.
- The cabinet provided below the bath is for storage of Mash Pots, lab equipment and spare parts.
- The distilled water tank is automatically **gravity filled** from the laboratory's water still which is usually mounted on the wall. Water level and circulation in this tank is automatically controlled and the distilled water is temperature controlled to within +/- 0.3 degrees. The tank is fitted with a cold water heat exchanger coil for quicker cooling of the distilled water between mashes.
- A special hand held gun with press switch dispenses the correct volumes of distilled water into the pots as required both prior to mashing and at the 'top-up' time during the cycle. An alert sounds at exactly the correct moment to remind the operator to dispense the water. By using the touch screen in EDIT mode, the d/w volumes are edited into each program to relate to the correct step.
- The dispensed distilled water volumes in millilitres are normally set inside each program, however pressing a special button permits a manual setting to override the programmed volumes without requiring a change to a program.
- All the larger sized floor mounted machines fit through standard width doorways.

### 20 head mash bath - floor model



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### IEC designs and manufactures a range of excellent Mash Baths:

Floor mounting Mash Baths for 16, 20, 25 or 30 Pots with magnetic stirring and distilled water storage, temperature control and automatic dispensing.

Bench mounting Mash Baths for 6, 9, 12 or 16 Pots with magnetic stirring but without the distilled water and dispensing facilities, but all other design features are retained.



The electrics of the Mash Bath are easily accessible and do not require the removal of the bath. Service and maintenance is very easy. The 500ml beakers and the 100ml to 150ml distilled water tubes are easily visible.



The stainless steel distilled water storage tank used on all the floor models. The mixing and dispensing pump can be seen together with the level switches and the temperature sensor. The distilled water is constantly circulated for accurate temperature control and is filtered before passing through a flow meter that measures the volume filled into each beaker.

An easily removable stainless steel lid is fitted to the tank for easy cleaning and the dispensing gun is parked into a receptacle in the lid.

A heat exchanger is fitted inside the tank to cool the d/w to a temperature suitable for starting the next Mash cycle.

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## Mash Bath



The Mash Bath lid is easily removable for cleaning the bath. Note the beaker 'grabbers' in each hole that hold the beakers in place and prevent floating. All the outer panels of the IEC Mash Bath can be removed without tools.



The 'touch panel' displays the program temperature / time relationship and the progress of the selected program is easily seen. The panel can be tilted and swivelled or removed and mounted remotely.

The magnetic stirrers are belt driven for quiet operation and are speed controlled in banks of 3 or 4 or 5 depending on the model. A spare motor is provided per bank and spare belts are attached to the circuit board.



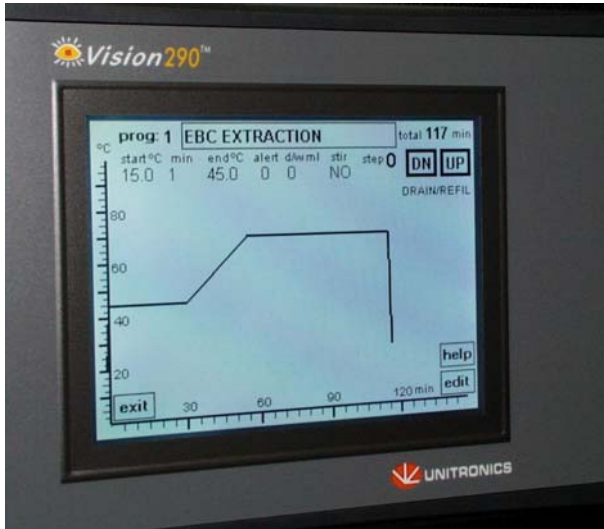
The bath is complete with circulator, drain, overflow, temperature sensor, high and low level switches. Bath construction is all stainless steel and the lid is alloy with chemical resistant powder coated finish. The d/water pot locaters and mesh plate simply lift out for easy bath cleaning.

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Close up of the 'touch panel' showing the screen used for editing or creating a program. It is viewed as a graph of temperature against time.

A close up view of the filling gun used by the operator for filling the beakers and for topping up the Mash with a specific volume of d/water during a cycle.



Image shows a chemist in the process of filling beakers with the initial fill volume prior to starting a Mash cycle.

A thumb operated switch on the gun dispenses the correct volume of distilled water when momentarily pressed.

The gun is designed to be non-drip and, when not in use, it is parked in a receptacle in the d/water tank cover.



## Mash Bath

**SERVICES REQUIRED:** Electrical: Machines can be made for 415V or 220V 3phase or 240V or 110V single phase. Frequency can be either 50 or 60 Hz.

### BENCH MOUNTING MODELS:

SIZE	SINGLE PHASE	AMP	THREE PHASE	AMPS /phase	HEATER (bath)	SIZE WxDxH cm
6 head	240V 1 ph	13	415V 3 ph	4.5	1x 3.1 kW	48x61x46
	110V 1 ph	26	220V 3 ph	9		
9 head	240V 1 ph	13	415V 3 ph	4.5	1x 3.1 kW	59x61x46
	110V 1 ph	26	220V 3 ph	9		
12 head	240V 1 ph	17	415V 3 ph	6	2x 2.0 kW	75x61x46
	110V 1 ph	35	220V 3 ph	13		
16 head	240V 1 ph	17	415V 3 ph	6	2x 2.0 kW	75x72x46
	110V 1 ph	35	220V 3 ph	13		

### FLOOR MOUNTING MODELS:

SIZE	SINGLE PHASE	AMP	THREE PHASE	AMPS /phase	HEATER (bath)	HEATER (d/w)	SIZE WxDxH cm
16 head	240V 1 ph	30	415V 3 ph	10	2x 2.0 kW	2.8 kW	75x72x105
	110V 1 ph	60	220V 3 ph	21			
20 head	240V 1 ph	33	415V 3 ph	11	2x 2.5 kW	2.8 kW	75x83x105
	110V 1 ph	66	220V 3 ph	23			
25 head	240V 1 ph	36	415V 3 ph	12	2x 2.8 kW	2.8 kW	86x83x105
	110V 1 ph	72	220V 3 ph	25			
30 head	240V 1 ph	39	415V 3 ph	13	2x 3.1 kW	2.8 kW	97x83x105
	110V 1 ph	80	220V 3 ph	27			

**WEIGHT:** approximate only ..... Including beakers & D/W tubes.

SIZE / MODEL	TYPE	WEIGHT kg.	PACKED kg. approx
6 head	Bench	82	91
9 head	Bench	90	100
12 head	Bench	98	110
16 head	Bench	106	118
16 head	Floor	119	153
20 head	Floor	127	161
25 head	Floor	135	170
30 head	Floor	143	180

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**PROGRAMS NORMALLY PRE-INSTALLED:**

As normally supplied, the following programs are loaded into the controller but at any time program names can be changed and the user has complete control over the programs.

Any step in any program can be altered to suit the laboratory's requirements. If any variation to this list is required by the customer, it can be done at the time of manufacture.

Program #1: EBC extraction

Program #2: Hartong index extraction

Program #3: EBC Diastase Power.

Program #4: AAL test, cold water added intermittently to keep bath cool.

Program #5: loB extraction, intermittent stir on/off.

Program #6: Fermentability extraction

Program #7: Spare

Program #8: Spare

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