

**USER HANDBOOK**  
Camlab Cub Electronic Laboratory Glassware  
Washing Machines, Models GW3050 and  
GW4050

**NOTE**

This manual includes various routine maintenance procedures that must be carried out to ensure maximum reliability of the equipment. It is therefore recommended that this manual remains available to all operators and that their attention is drawn to the relevant procedures.

## 1 DESCRIPTION

The Camlab Cub and Cub Extra (Models GW3050 and GW4050 respectively) are laboratory glassware washers designed to handle a wide range of equipment used in different types of laboratory. Excellent results can be obtained, even where glassware etc is difficult to clean by hand.

The GW4050 differs from the GW3050 model by having a drying capability.

In order to obtain the best results it is strongly recommended that operators familiarise themselves with the contents of this manual before installing or using the machine.

### 1.1 SPECIFICATIONS

<b>Dimensions</b>	<b>GW3050</b>	<b>GW4050</b>
Height mm	860	860
Depth mm	680	680
Width mm	600	900
<b>Power</b>		
Three-phase 400V with neutral	7.0 kW	7.0 kW
Three-phase 230V	7.0 kW	7.0 kW
Single-phase 230V	2.7 kW	2.7 kW
Wash pump	0.6 kW	0.6 kW
Empty pump	0.08 kW	0.08 kW
Peristaltic pumps	0.12 kW	0.12 kW
Deionised water pump	0.08 kW	0.08 kW
Dryer motor		0.08 kW
Dryer heater		1.8kW
<b>Water supply</b>	Cold/hot water supply pressure 1 - 6 bar DI options: 1/Deionised water pressure 1 - 6 bar standard 2/Deionised water pressure 0.2-1 bar with fitted deionised water pump 3/Deionised water with no pressure with self priming water pump  Volume of water for each fill 8-10 litres	
Washing tank material: 18/10 AISI 316 L stainless steel		
External material: 18/8 AISI 304 stainless steel		
Electromagnetic compatibility <b>CE</b> (EN55014; EN61000-3-2; EN61000-3-3 EN55104)		

## 2. INSTALLATION

Before use, the Camlab Cub must be correctly connected to electrical power, inlet hoses connected to SM/GW3050.4050/Jan02

their respective water supply and the outlet hose properly positioned.

### SITING THE UNIT

The Camlab Cub may be placed alongside adjacent units provided the steam vent on the rear is unobstructed. It may be installed under a worktop providing that adequate clearance is left for ventilation. It is advisable to ensure that the surface behind the machine is made of masonry or waterproof material as steam issuing from the vent may cause condensation on this surface.

Water inlet and outlet hoses, may be run to the left or the right according to installation requirements.

#### 2.1 LEVELLING

After siting, adjust the height of the machine and level it by screwing the feet in or out. The Camlab Cub must be horizontal (maximum error 2°). Good levelling is essential for effective operation and will ensure that the door fits correctly.

#### 2.2 WATER SUPPLY CONNECTION

The machine is provided with three water supply hoses (see Fig. 2.1) which are connected to an air break inside the machine to comply with directives CENELEC HD27451. The hoses are designed to be connected to taps with threaded 3/4" BSP outlets.

The hoses are identified by colour, as follows:

- blue = cold
- white or red = hot

FIG.2.1



clear = deionised water (not shown in illustration)

Before connecting the hoses to their respective taps, fit filters B provided (see Fig. 2.2).

If new pipework has been installed, or alterations made to the plumbing, it is advisable to bleed the system to clear any deposits of rust or sludge before connecting the hoses.

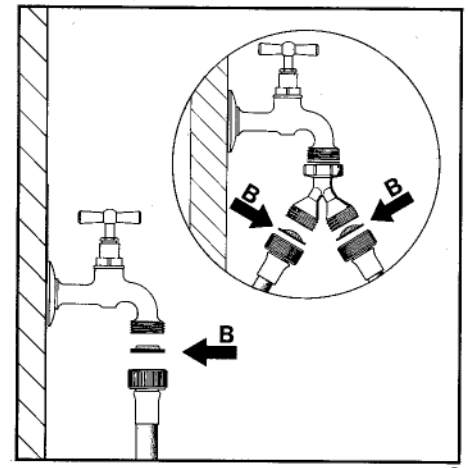
## IMPORTANT

If two separate water supplies (hot/cold) are not provided, the two black supply hoses (hot and cold) may be connected together using the Y fitting (see Fig. 2, ringed section).

Ensure that the water supply pressure is within the operating limits (min. 1 bar, max. 6bar). The hot water temperature must not be higher than 60°C. Higher temperatures may damage the water softener resins and reduce its efficiency.

The water supply taps should be in an easily accessible position  
**It is advisable to turn off the water supply taps when the machine is not being used**

Fig 2.2



## Washing glassware and stainless steel materials

If the supply water contains  $Fe^{2+}/Fe^{3+}$  ions in a quantity greater than 2 ppm and/or the supply water is harder than 450 ppm, the water should be pre-treated by installing a deioniser/water softening system to which the appliance must then be connected.

**NOTE: Chemical constituents of mains water may adversely affect washing:**

## Washing surgical instruments and stainless steel materials

If there is an excessive concentration of silicates in the water supply, it is essential to use deionised water for the final rinse. This will prevent the formation of scales and oxidation of stainless steel materials.

## 2.3 DEIONISED WATER CONNECTION

The machine has been supplied ready for connection to the type of deionised water supply advised by the purchaser. There are three deionised water supply options. Please contact the Camlab Service Department for advice should you wish to convert your machine to another option.

### 2.3a PRESSURISED DEIONISED WATER (VALVE ONLY)

The machine is supplied ready to be connected to a pressurised deionised water line at a pressure of between 1 bar and 6 bar. The transparent hose for the deionised water line must be connected to a tap with a threaded  $\frac{3}{4}$ " BSP fitting.

The tap should be in an accessible position.

**It is advisable to turn off the tap when the machine is not in operation.**

### 2.3b LOW PRESSURE DE-IONISED WATER CONNECTION (PUMP & VALVE 0.2-1.0 bar)

The machine is supplied ready for connection to a low-pressure de-ionised water supply (e.g. gravity tank with a head of water up to 4m above the machine). This option requires a deionised water boost pump that will have been fitted prior to dispatch. The boost pump will be damaged if connected to a supply with a pressure of greater than 1.0 bar.

### 2.3c FLOOR MOUNTED DE-IONISED WATER TANK (SPECIAL, SELF-PRIMING PUMP)

The machine is supplied ready for connection to a deionised water container at floor level with a head of water lower than 0.7m. The container should have a  $\frac{3}{4}$ " BSP outlet at its base and a tap. The deionised water valve is removed with this option.

**The head of water must not exceed 0.7m to prevent deionised water continuously siphoning into the machine**

#### 2.4 OPERATION WITHOUT DEIONISED WATER SUPPLY

A deionised water supply is recommended for use in the final rinse to completely eliminate saline/scale residues on the wash load. However, effective washing can be achieved without deionised water.

#### **IMPORTANT**

**If a deionised water supply is not available, use only program 1, 2 or 3 as these do not call for deionised water. If programmes 4, 5 or 6 are used, the program will stop at the first deionised water rinse and display the error message "LACK OF WATER". (The programming can be altered to overcome this problem. See P.7 of programming manual).**

#### 2.5 DRAIN HOSE CONNECTION

The drain hose must be inserted into a standpipe with a height between 32cm and 80cm. See installation diagram, Fig.2.3. Note, Fig 2.3 depicts the SM/GW3050. The layout for the SM/GW4050 is generally similar but for the drier cabinet mounted alongside the wash chamber and the hot air duct from the drier to the wash chamber.

#### ELECTRICAL CONNECTION

**IMPORTANT:** The appliance must be installed in accordance with all applicable regulations. Particular care should be taken with the electrical connections. Camlab recommend that a fused isolation switch be sited close to the machine.

The Camlab Cub is designed, manufacturer and approved in accordance with EC standards for connection to the standardised European 400 V - 50 Hz three phase or 230 V 50 Hz 30 amp electrical SM/GW3050.4050/Jan02

power supply. It is possible to supply the machine adapted for a standard 13 Amp supply, however this is not recommended as it severely prolongs wash cycles. Heating times are trebled and the overall cycle time (for the same cycle) is more than doubled with respect the other options. The machine will be delivered ready for connection to the supply advised by the purchaser. If conversion to a different supply is required, please contact the Camlab Service Department (01954 233130) for assistance.

All Cub machines leave the factory with either a 3-phase or single-phase cable fitted. This cable is colour coded to BS6500:

3 PHASE	
Blue	Neutral
Brown	Live
Black	Live
Black	Live
Green/Yellow	Earth

SINGLE PHASE	
Blue	Neutral
Brown	Live
Green/Yellow	Earth

**THE CAMLAB CUB MUST BE EARTHED.**

**Always ensure that the earth connection is efficient. Camlab accepts no liability for personal injury or damage to property where the machine is not connected to an effective earth.**

**WARNING - IMPORTANT**

BEFORE TURNING ON THE THREE-PHASE POWER SUPPLY (400V 3N~), ENSURE THAT THE SOCKET/PLUG CONNECTIONS ARE THE RIGHT WAY ROUND. IF A LIVE AND NEUTRAL WIRE ARE REVERSED, THE ELECTRONIC PCB WILL BE EXPOSED TO 400V INSTEAD OF 230V RESULTING IN SEVERE DAMAGE TO THE ELECTRONIC PCB. NO LIABILITY IS ACCEPTED BY CAMLAB FOR DAMAGE CAUSED IN THIS WAY.

## 2.7 OPENING WASH CHAMBER AND DRYER COMPARTMENT DOORS

The wash chamber door in both SM/GW3050 and GW4050 may be opened by turning knob **A** anti-clockwise. Then press button **B** (see figs below). The dryer compartment door is opened by pressing the left side of the door which will then spring partly open.

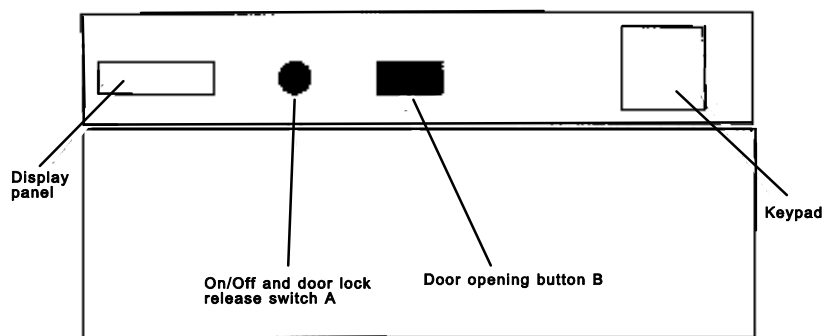
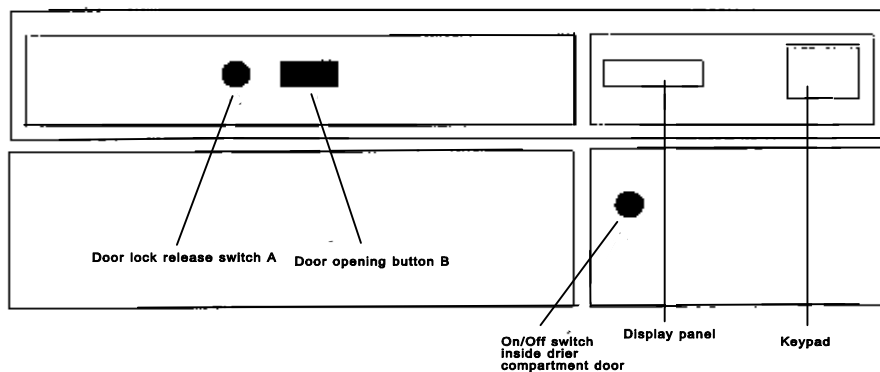


Fig 2.4 (GW3050)

Fig 2.5 (GW4050)



## 2.8 SOFTENER SYSTEM

The Camlab Cub is equipped with a water softener for mains water. The ionic exchange resins of the water softener are regenerated using sodium chloride, i.e. granular salt (NaCl).

Softener salt is available from Camlab in 25Kg bags (Part Number CCC.50S).

When first switching on the machine, the error message **Before Starting Add Salt** will appear on the display. The message may be cancelled by pressing the **RESET** button after adding salt (see below).

### 2.8.1 ADDING SALT

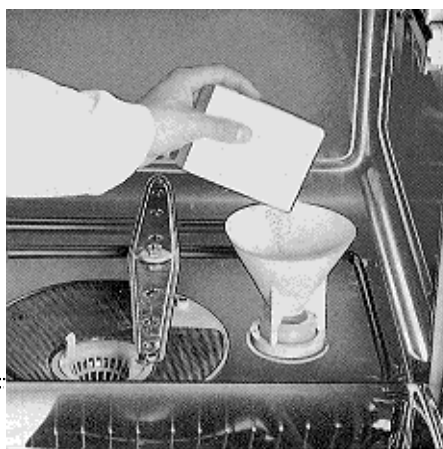
The salt container is located at the bottom of the wash chamber. The salt regenerates the water softener resins. Granular salt must be used as fine salt will form a slurry that can obstruct the regeneration valve and clog the resin beds.

Unscrew the container filler cap anticlockwise to open it.  $\frac{3}{4}$  fill, using the funnel provided (about 1 kg of salt), see Fig. 2.6.

Screw on the cap clockwise to close, ensuring salt does not obstruct the fitting. The cap must be tightened firmly using finger pressure (a little silicone grease smeared on the o-ring will make this easier). If resistance is felt, check that it is not blocked by salt granules.

After filling, if the machine is not to be used immediately, it is advisable to run program 1 (**RINSE**) to eliminate salt residues left in the tank and to remove the initial excess of salt.

FIG 2.6



After adding salt for the first time, initial conditioning of the softener takes place over a number of wash cycles. This may result in milky deposits on glassware etc for the first 2 -3 washes. Thereafter, softener regeneration takes place automatically when required.

### 2.9 DETERGENT AND ACID DISPENSERS

The Camlab Cub washing machines are equipped with peristaltic pumps for liquid detergent and acid dispensing.

The detergent and acid suction hoses must be inserted into the detergent and acid containers, which should be placed in a convenient position which, as peristaltic pumps are suction pumps, may be at a distance from the machine, if necessary.

The hoses are colour coded: Blue = Detergent, Red = Acid.

**Take care to identify the hoses correctly.**

The detergent and acid pump dispensers have been adjusted to deliver the recommended amount of CamClean and CamAcid into the wash chamber to obtain optimum cleaning and neutralisation.

If you wish to change these settings, consult "Programming & Advanced Settings Manual" section 3.3 or contact the Camlab Service Department for advice.

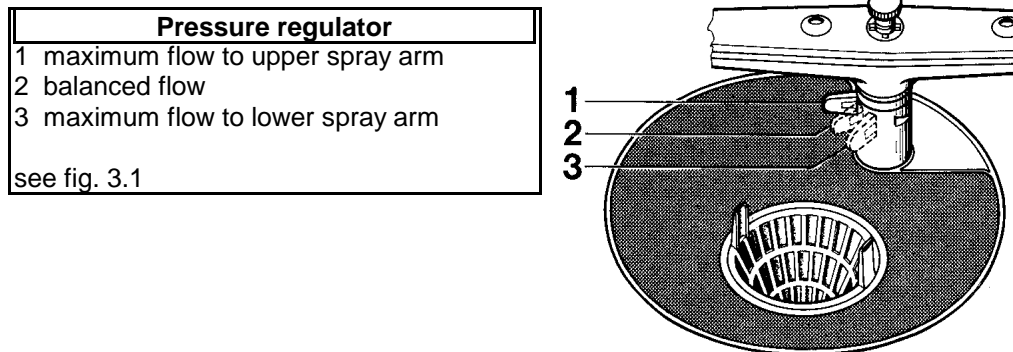
## 3. OPERATING INSTRUCTIONS



### 3.1 SPRAY ARM ADJUSTMENT

The adjusting device located under the sprayer may be used to change the water washing pressure in the upper and lower spray arms. Moving the adjustment lever rearwards with respect to the normal position (2) sets the maximum pressure on the upper spray arm or jet rack. Moving the lever forward sets the maximum pressure on the lower spray arm as the upper level is fully restricted.

Fig 3.1



### 3.2 BASKET TRAYS

The Camlab Cub is supplied with two basket trays for the upper and lower levels. This mode of operation is ideally suited for washing wide mouth vessels, beakers, petri dishes, evaporating dishes etc, by spray arm action. Two spray arms are supplied with each machine. Spray arms are also ideally suited to washing large quantities of test tubes on one or both levels. Tubes must be inverted and stacked in baskets which should be full or packed to ensure the tubes remain vertical during the washing process.

### 3.3 JET RACKS

Tall narrow items such as measuring cylinders or narrow necked vessels like conical or volumetric flasks can only be effectively washed and rinsed by injecting wash or rinse water into the body of the item. This is achieved using the jet rack system. Each item should be inverted over a suitable sized spigot.

**Note: Jet racks and upper basket** - To prevent damage to the central post, ensure that the top of the plastic connector just touches the underside of the water supply port in the roof of the wash chamber. If adjustment is required, loosen the screw collar and slide the connector to the required position before re-tightening the collar.

### 3.4 WASHING PROGRAMMES

All functions of the Camlab Cub models GW3050 and GW4050 are controlled by a microprocessor that is pre-programmed with six standard and one test programme stored in memory. It is possible to store up to 23 further programmes or modify the six standard programmes if required - see Advanced Operation.

The standard and test programmes are as follows:

PROG.		DESCRIPTION OF PROGRAMME					
		PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6
1	RINSE	COLD RINSE 3 Mins					
2	LIGHT WASH	COLD RINSE 3 Mins	WASH @ 60°C 5 Mins +Detergent	ACID RINSE 2 Mins +Acid	COLD RINSE 2 Mins	HOT RINSE 75°C 3 Mins	
3	STANDARD WASH	COLD RINSE 3 Mins	WASH @ 75°C 5 Mins +Detergent	ACID RINSE 2 Mins +Acid	COLD RINSE 2 Mins	COLD RINSE 2 Mins.	HOT RINSE 90°C 3 Mins.
4	LIGHT DEMIN	COLD RINSE 3 Mins	WASH @ 60°C 5 Mins +Detergent	ACID RINSE 2 Mins +Acid	COLD RINSE 2 Mins	DEMIN RINSE 75°C 3 Mins	
5	STANDARD DEMIN	COLD RINSE 3 Mins	WASH @ 75°C 5 Mins +Detergent	ACID RINSE 2 Mins +Acid	COLD RINSE 2 Mins	DEMIN RINSE 2 Mins	DEMIN RINSE 90°C 3 Mins.
6	INTENSE DEMIN	COLD RINSE 3 Mins	WASH @ 90°C 10 Mins +Detergent	ACID RINSE 2 Mins +Acid	COLD RINSE 2 Mins	DEMIN RINSE 2 Mins	DEMIN RINSE 90°C 3 Mins.
30	TEST PROG	WASH @ 60°C 1 Mins +Detergent	ACID RINSE 1 Mins + Acid	DEMIN RINSE 1 Mins			

[After phase 6, the GW4050 will carry out a hot air drying program (if selected).]

For example, Programme No 2, LIGHT WASH, will perform an initial cold rinse for 3 minutes followed by a washing phase with CamClean alkaline detergent at 60°C for 5 minutes. Then follows a neutralisation rinse, with the addition of CamAcid, for 2 minutes and cold mains water rinse for 2 minutes. Finally, there is a hot rinse at 75°C for 3 minutes.

Glassware drying can be enabled or disabled as required (see drying programme section GW 4050 only).

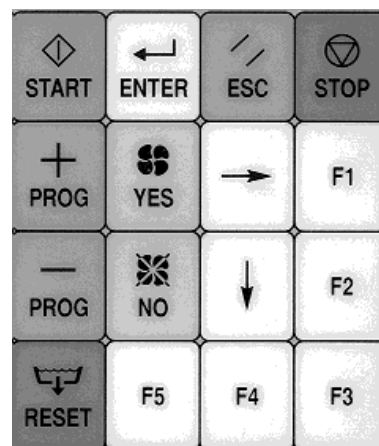
Programme No. 1 is not a washing programme but simply a 3-minute rinse. This can be useful when the machine is partially loaded with glassware and the washing programme is not performed immediately.

Programme No. 30 is a test programme for use by Service Engineers.

**Be sure to run this Programme No 1 immediately whenever the machine is loaded with glassware containing strong acids (hydrochloric, nitric, sulphuric,). This program prevents drops of concentrated solution from the glassware collecting at the bottom of the chamber and causing corrosion.**

### 3.5 KEYPAD

KEY	OPERATING FUNCTION	PROGRAMMING FUNCTION
START	START	N/A
ENTER	TEMP/TIME CHECK	STEP THROUGH MENU
ESC	N/A	EXIT PROGRAMMING FUNCTION
STOP	STOP	STEP THROUGH DIAGNOSTICS
PROG+	SELECT NEXT PROG	INCREASE PROG VALUE
PROG-	SELECT PREVIOUS PROG	DECREASE PROG VALUE
RESET	RESET	N/A
YES	SELECT DRIER ON	CONFIRM DATA
NO	SELECT DRIER OFF	CANCEL DATA
↵	N/A	MOVE CURSOR
⤵	N/A	PHASE ADVANCE
F1	ACCESS PROG MODE	INCREASE DRYING TEMP
F2	N/A	DECREASE DRYING TIME
F3	MACHINE SETTINGS	RESTORE DEFAULT PROGS (WITH PROG+)
F4	N/A	LOAD PROG
F5	N/A	SAVE PROG



### 3.6 START UP AND PROGRAM SELECTION

The coloured keypad keys only are active when the Camlab Cub is switched on. The white keys have no function except for programming.

<b>POWER-ON</b> <b>P 1 RINSE</b>	<b>OK-READY</b> <b>+ D</b>	On switch on, after diagnostic functions have run, this will be shown on the display panel. The machine is now ready for use. The program number displayed will be the one that was last selected before the machine was switched off.
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<b>POWER-ON</b> <b>P 2 LIGHT WASH</b>	<b>OK-READY</b> <b>+ D</b>	Use the <b>PROG+</b> and <b>PROG-</b> keys to cycle through the available programs. The display will indicate the current program number ( <b>P 1</b> , <b>P 2</b> , <b>P 3</b> etc). For example, from the initial display, press <b>PROG+</b> once and this will be displayed.
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This indicates that Program No 2, Light Wash, is selected, with drying, indicated by **+ D (GW 4050)**.

<b>POWER-ON</b> <b>P 1 RINSE</b>	<b>OK-READY</b> <b>--</b>	To cancel drying, press <b>NO</b> key when the display will change from <b>+ D</b> to <b>--</b>
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Any program may be selected, (with or without drying), using the **PROG+**, **PROG-**, **YES** and **NO** keys. Once the desired program is selected, press **START** to begin the cycle. The display panel will indicate which phase the program has reached, the time remaining for the phase, temperature in a heating phase, and the current operation. This display is constantly updated.

<b>P 2 - 1</b> <b>FILLING</b>	<b>COLD RINSE</b> <b>5</b>	This display shows that Program 2 is running, in phase 1 which is a cold rinse. The machine is currently filling the tank with water.
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### 3.7 STOPPING A WASH PROGRAM BEFORE IT IS COMPLETE

<b>P 2 - STOP</b>
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When a program is running the **STOP** key is the only one that is active. Press once to stop the program and STOP will be displayed.

Pressing **START** will resume the program where it was stopped. If the program is to be abandoned, press **RESET**, and hold for 5 seconds, to run the condition reset program which performs the following operations:

1. Water is drained from the tank
2. Water circuits are flushed with mains water
3. Water used to flush the water circuits is drained

After completing the RESET cycle, the door knob must be turned off and on again before being ready to begin a new wash cycle.

**Note:** If a program is interrupted using the ON/OFF switch, the cycle may not be resume and may require a system reset. **DO NOT USE THE ON/OFF SWITCH TO INTERRUPT A WASH CYCLE.**

*If pausing a cycle to add or inspect glassware, do so whilst the machine is filling or emptying.*

### 3.8 PROGRAM COMPLETE

<b>P 2 CYCLE END - OPEN</b>
---------------------------------

At the end of the cycle, this will be displayed. The door may now be opened and the contents removed. If the **STOP** key is pressed during the drying phase, the programme will go immediately to the cycle end.

## 4 PROGRESS DISPLAYS

### 4.1 PROGRAM

While a programme is running, information about the current phase is displayed. Further information can be displayed by pressing **ENTER**.

<b>P 2 - 2 WASH 60°C FILLING</b>
--------------------------------------

This display indicates that Program 2 is running in phase 2, which is a WASH. The machine is filling with water.

<b>P 2 - 2 WASH 60°C HEATING 45 60</b>
--------------------------------------------

Now, the machine is heating. The temperature is now 45°C whilst the set point is 60°C.

<b>P 2 - 2 WASH 60°C EXTENSION 2:30</b>
---------------------------------------------

This display shows the timer countdown for this section of the phase.

### 4.2 REGENERATION

#### 4.3

<b>P 1 - 1 RINSE</b>
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This message appears at the end of a program when the regeneration cycle is activated.

<b>P 1 - - REG</b>
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The regeneration cycle continues at the start of the next wash program, when this is displayed. This indicates that the second regeneration phase has begun, lasting approximately 2 minutes. When this is complete, the program will begin as normal.

## 5 ERROR MESSAGES

In the event of an error a message will be displayed. The following are examples with an explanation and a description of the action required.

**POWER-ON OK-READY  
MEMORY ERROR**

**Keypad frozen, machine will not accept key entry:** This occurs only if there is a logic error or fluctuations in the power supply are interfering with the programmer. To remedy, turn of the power for at least 20 seconds.

Turn the power on while holding down both the **RESET** and **F2** keys. Keep the keys pressed until an audible 'beep' is heard and the normal start up display returns.

If this fault occurred during a wash program, press **RESET** to run the reset cycle before starting a new wash program.

**BEFORE STARTING ADD:  
SALT**

**Insufficient salt:** When 'BEFORE STARTING ADD: SALT' message appears, switch off machine and refill salt container (see 2.8.1).

Since the sensor may not detect that salt has been added until after a cycle, **after refilling the salt container**, press the **RESET** key, and the message will be replaced by the normal start up display.

**P 1 - 1 SUMP FULL**

**Sump full:** This message indicates that there is water in the machine at start up. Press and hold **RESET** for 5 seconds to run the reset cycle. A new wash cannot be started until the machine is empty.

**P 1 - 1 LACK OF WATER  
FILLING 05**

**Insufficient water:** This message indicates that the machine has not filled with a sufficient quantity of water within the permitted time. Check all water supplies and filters.

**P1 - 1 NO WATER PRES  
EXTENSION**

**Low water level or wash pump failure.** This message indicates that the water level may have fallen after filling. Check that the outlet is at the correct height, see 2.5 above. This message could also mean that the wash pump is not functioning. **Also**, check that the wash chamber does not contain an excess amount of foam caused by some foaming agent left in glassware.

**P1 - 1 DRAIN FAILURE  
DRAIN 4**

**Water not emptied:** This message indicates that not all of the water has been emptied at the end of a phase. Check that the outlet hose is free of obstruction and that the drain pump is not jammed/failed

**P 1 - O RESET**

**GW3050 only.** The machine has been stopped and the door opened during EXTENSION or HEATING. Activate RESET cycle to clear; then re-commence programme.

**P 2 - 2 HEATER FAULT  
HEATING**

**Insufficient heating:** The set temperature has not been reached within the time allowed. Check water heaters, control circuits or thermostat circuit.

**P 2 - 1 HIGH WATER LEVEL  
EXTENSION**

**High water level:** This message indicates that the maximum safety level has been exceeded. The drain pump is operating but unable to restore the correct level. Turn off the water supplies immediately. A water valve could be jammed open.

**P2 – 1 DOOR MEC. OPEN**

**GW4050 only.** This message indicates that the STOP button was pressed, the door opened when the machine was in an EXTENSION or HEATING phase. Only press STOP and open the door when in a “filling” or “draining” phase. Activate RESET cycle.

**P2 – CLOSE THE DOOR**

**GW4050 only.** The machine has been started without the front panel knob being turned from “O” to “I”. Close door, turn knob and press START.

**P1 – DOOR ELE OPEN**

**GW4050 only.** 1) the machine has been stopped by turning the door knob.  
2) After pressing STOP, the door has been opened, closed and START pressed, without door knob being turned from “O” to “I”. Turn knob to “I” and activate RESET cycle.

## 6 CLEANING AND MAINTENANCE

**Before carrying out any maintenance operation, turn off the water and electrical supplies.**

### 6.1 CLEANING SPRAY ARMS

The SPRAY ARMS may be easily removed to allow the nozzles to be cleaned and to avoid the risk of blocking. Periodically undo the knurled nuts and remove the SPRAY ARMS, wash them carefully and refit.

Retighten the knurled nuts. In particular, check that the small circular hole on the end of the upper spray arm is clear. **NB. The nuts fitted to the upper spray arms have a left hand thread.**

### 6.2 CLEANING FILTERS

The filter unit consists of a circular filter with a filter cone, a microfilter and a coarse filter. To ensure efficient operation of the machine it is extremely important to keep the filters clean. They must be inspected frequently and any deposits removed to prevent blockage. The required frequency of clearing will vary according to the wash load but must be cleared after **every cycle** where labels are washed off containers.

#### Coarse filter

To remove the coarse filter, press the tabs and pull upward (see Fig.6.1). Clean the filter and replace.

#### Microfilter

This is located below the coarse filter (see Fig. 6.2). Check and clean whenever inspecting the coarse filter. Use a brush and hot water to ensure the filter is properly clean.

#### Circular filter

To remove this filter, hold the tabs on the coarse filter and turn anticlockwise (see Fig. 6.3). Without pressing the tabs, raise the entire unit (i.e. filter, filter cone, coarse filter and microfilter), see Fig. 6.4. It is recommended that all filters are cleaned in the same operation.

### 6.3 CLEANING VALVE INLET FILTERS



Fig 6.1

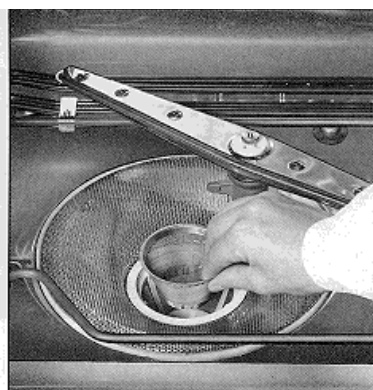


Fig 6.2

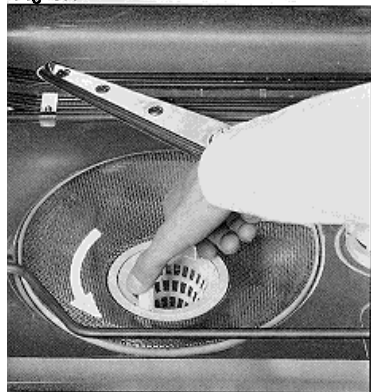


Fig 6.3



Fig 6.4

Periodically remove the inlet filters on the water inlets by unscrewing the supply hoses. The filters on the solenoid valves at the other end of the hoses may be removed by unscrewing the hoses from the machine. Clean and refit the filters.

#### 6.4 CHECK

If the machine does not start, check the following before calling the Camlab Service Dept.

- X the ON/OFF knob is turned to the ON position and the display is lit up
- X the taps are fully turned on
- X the inlet water filters are not blocked
- X the inlet hoses are not kinked

#### 6.5 EXTENDED PERIODS WITHOUT USE

If the machine is to be left for a long period (more than a month) without being used, the following precautions are recommended:

- X run PROG 1 with the machine empty
- X turn off the electricity supply
- X pour a litre of water into the tank
- X leave the door open to avoid foul smells
- X turn off the water supplies

##### 6.5.1 PUMP SEIZURE AFTER EXTENDED PERIODS WITHOUT USE

During extended periods of disuse the rotating carbon shaft seal on the motor may seize due to lack of lubricant. This can be observed at the beginning of the first cycle because the motor does not run. 'NO WATER PRES.' will be displayed after a few minutes.

#### **TURN OFF THE ELECTRICAL SUPPLY AND FREE THE PUMP AS FOLLOWS:**

Remove the chamber filter and identify, in the bottom of the sump, 2 holes. A vertical hole in the centre and a second horizontal hole towards the rear of the sump, through which the vanes of the pump may be seen. Using a finger, feel whether the pump blades turn without effort. If they do not, use a flat-bladed screwdriver and lever delicately (to avoid breaking the pump blades) in one direction and the other, moving the pump blades slowly until the pump is freed. (If this fails to cure the problem, call Camlab service dept.)

Restart the machine

#### 6.6 DRYING AIR FILTER (GW4050)

The air filter on the Cub extra Drying System must be checked and changed at regular intervals. (annually depending on usage).

#### 6.7 EXTERNAL CLEANING

The exterior of the machine should be cleaned periodically.

The front panel should be cleaned with a soft cloth using water and a dilute solution of detergent. Do not use alcohol, solvents or ammonia-based cleaners.

The stainless steel surfaces may be cleaned with alcohol or suitable detergents. In the case of severe scale formation, use a limescale remover. Normal cleaning products can subsequently be used.

In environments where strong acids are used (hydrochloric/sulphuric/nitric acid), it is advisable to clean the exterior with a soft cloth and paraffin oil. This will leave a protective film on the steel.

*For technical advice or service assistance, please contact the Camlab Service Department.*

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