Installation and Operating Instructions

Software Version 6.1

5O5XY Robot

PB0193 Issue 3

Contents

505XY one-year warranty

Watson-Marlow Limited warrants, subject to the conditions below, through either Watson-Marlow Limited, its subsidiaries, or its authorised distributors, to repair or replace free of charge, including labour, any part of this product which fails within one year of delivery of the product to the end user. Such failure must have occurred because of defect in material or workmanship and not as a result of operation of the product other than in accordance with the instructions given in this manual.

Conditions of and specific exceptions to the above warranty are:

- Consumable items are excluded.
- Products must be returned by pre-arrangement carriage paid to Watson-Marlow Limited, its subsidiaries, or its authorised distributor.
- All repairs or modifications must have been made by Watson-Marlow Limited, its subsidiaries, or its authorised distributors or with the express permission of Watson-Marlow Limited, its subsidiaries, or its authorised distributors.
- Products which have been abused, misused, or subjected to malicious or accidental damage or electrical surge are excluded.

Warranties purporting to be on behalf of Watson-Marlow Limited made by any person, including representatives of Watson-Marlow Limited, its subsidiaries, or its distributors, which do not accord with the terms of this warranty shall not be binding upon Watson-Marlow Limited unless expressly approved in writing by a Director or Manager of Watson-Marlow Limited.

Safety

In the interests of safety, this unit should only be used by competent, suitably trained personnel after they have read and understood this manual, and considered any hazard involved.

Any person who is involved in the installation or maintenance of this equipment should be fully competent to carry out the work. In the UK this person should also be familiar with the Health and Safety at Work Act 1974.

Do not place any part of the body within the working envelope of the 505XY during operation.

There are dangerous voltages (at mains potential) inside the unit. If access is required, isolate from the mains supply before removing the cover.

Information for returning the robot

Any equipment which has been contaminated with, or exposed to, body fluids, toxic chemicals or any other substance hazardous to health must be decontaminated before it is returned to Watson-Marlow or its distributor.

A certificate (a suitable blank form is included at the rear of these operating instructions), or signed statement, must be attached to the outside of the shipping carton.

This certificate is required even if the equipment is unused. If the 505XY has been used, the fluids that have been in contact with the 505XY and the cleaning procedure must be specified along with a statement that the equipment has been decontaminated.

Part 1: Installation

Siting

The 505XY should be situated on a flat surface and is fitted with adjustable feet to ensure that the unit can be levelled. Adequate area must be given to allow tubing to pass from the 505L pumphead to the dispensing head of the robot without kinking or unnecessary bends.

Electrical connection

The 505XY operates on single phase mains electricity only. It is fitted with a mains voltage selector which must be set to either 120V for 100-120V 50/60Hz supplies or 240V for 220-240V 50/60Hz supplies.

The on/off switch of the 505XY is located at the mains socket as is the fuse. A spare fuse is incorporated in the fuse holder and should be replaced with the same value of fuse if used.

A mains cable fitted with a moulded plug is supplied with the 505XY, but if another plug is to be fitted, the colour coding of the mains lead must be observed.

The mains cable for 220-240V supplies is coded so that the live lead is coloured brown, the neutral lead is coloured blue, and the earth lead is coloured green and yellow.

The mains cable for 100-120V supplies is coded so that the live lead is coloured black, the neutral lead is coloured white, and the earth lead is coloured green.

Failure to operate

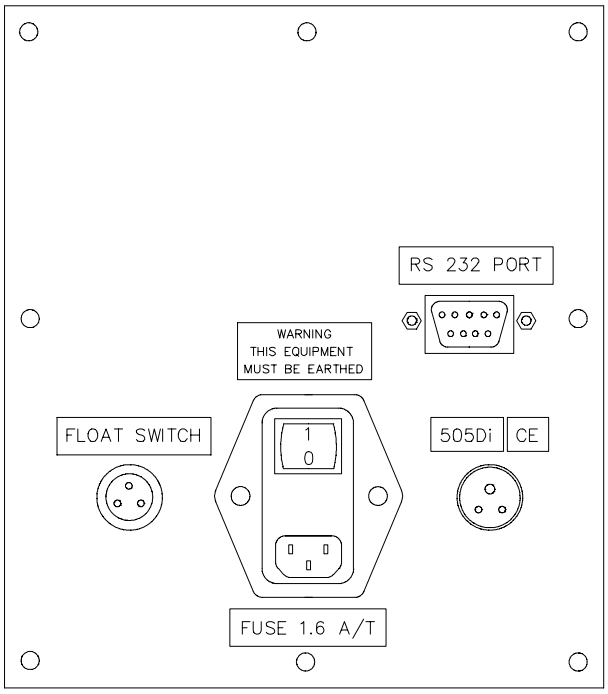
Should the robot fail to operate, check that mains electricity is available at the unit, that the voltage selector switch is in the correct position and that the mains fuse is in tact.

There are dangerous voltages (at mains potential) inside the unit. If access is required, isolate the pump from the mains before removing the cover.

Interfacing with the 505Di

The 505XY has four connector/sockets on the rear panel.

- Mains socket
- 505Di socket
- RS 232 connector
- Floatswitch socket



- Ensure that the voltage selector, found on the underside of the unit, is switched to the appropriate voltage - either 120V for 110V-120V operation, or 240V for 220-240V operation.
- Plug the mains power lead into mains socket at rear of unit.
- Level the robot using the adjustable feet.
- Connect the interface lead into socket at rear of unit marked 505Di socket. Connect the other end into the 25 pin Dee connector on the rear panel of the 505Di using the interface lead provided, Watson-Marlow part number 059.7021.000.
- An RS 232 connector is provided to allow connection to a P.C. for remote control.
- The float switch socket enables a remote stop facility to be set up providing an over-ride to a preset dispensing run.
- Attach the delivery end of the tubing from the 505L pumphead to the dispensing head of the XY Robot.

505Di setup procedure

The 505Di which is to be used in conjunction with the 505XY should be fitted with EPROM version **2.03**.

Ensure that mains power to the 505Di is on and the interface lead to the 505XY is correctly in position. The main menu of the pump will display:

```
DDSE  CAL  MANUAL
NETWORK  SETUP
```

Step to **SETUP** and press ***Enter***.

```
ROM  DATE/TIME
BEEP  RAMP  DRIP  >
```

```
BAUD=9600  AUXIL
PUMP=1    MAX      >
```

Using the step key, step through to **AUXIL** and press ***Enter***, you will be given an option under Line 1 of **Dose** or **Motor**:

```
LINE  1
          DOSE  MOTOR
```

Press Enter at **Dose.**

The pump will then display the following message:

```
LINE-1
HIGH=RUN  STOP
```

Step to **Stop** and press ***Enter***.

```
LINE-2 DIRECTION
HIGH=CW
```

Press Enter at CW. The pump can be set to operate in a counter-clockwise or clockwise direction for this setup procedure. The following screens will then be called:

```
LINE-1 HIGH=STOP
LINE-2 HIGH=CW
```

```
BAUD=9600 AUXIL
PUMP=1    MAX    >
```

Press ***Main Menu*** calling up the display:

```
DDSE CAL MANUAL
NETWORK SETUP
```

The 505Di can now be calibrated and the dosing parameters set in the normal way. (For more information reference the 505Di operating instruction.

It is a recommended that a trial run of the 505XY setup is completed before full process operation. This will ensure that the traversing limits of the 505XY have been programmed correctly. (Refer to Part 5 of this operating instruction).

Following calibration and dose setup the pump screen will indicate:

```
****ML  *****DOSE
PRESS START
```

The **GO** button can then be pressed on the 505XY Robot and dispensing will commence.

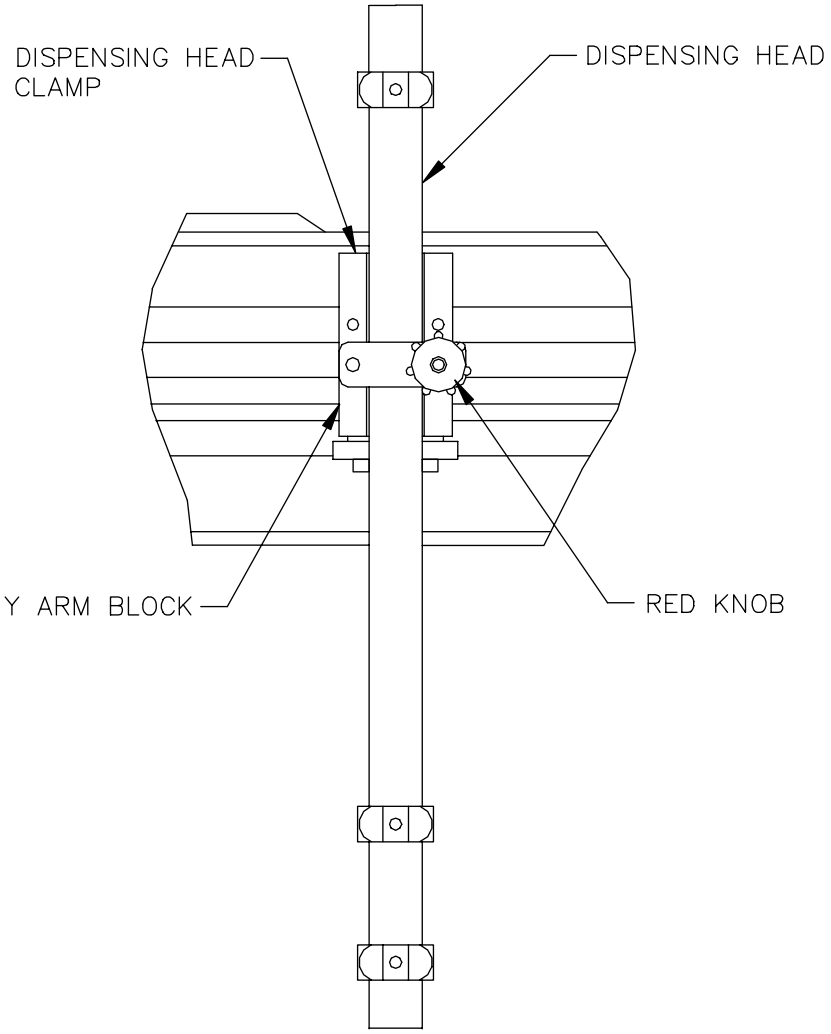
The 505Di should be set up normally as if for a manual dispensing run. The 505XY robot filler controls when the pump should start dispensing ensuring that the pump will always wait for the dispensing head to finish moving to the next position before it starts pumping again.

Note: If the 505Di setup is complete and the pump is ready to start a dispensing cycle, turning the mains power of the 505XY robot on or off will initiate a single dose from the 505Di.

Dispensing head

The appropriate dispensing head for the size of tubing being used should be attached to the Y arm block by loosening the red knob and lifting the dispensing head clamp.

The dispensing head can then be inserted into the slot, the clamp lowered and the red knob re-tightened.



In order to obtain the correct dispensing height, adjustable feet are fitted to the base of the system.

An adjustable tray guide is also fitted to ensure that the filler trays locate correctly.

Fine adjustment can be made using the dispensing head. It can be raised or lowered by simply undoing the adjustable red knob, and sliding the guide to the correct (200mm max) height, then re-tighten.

Quick start for a pre-programmed robot

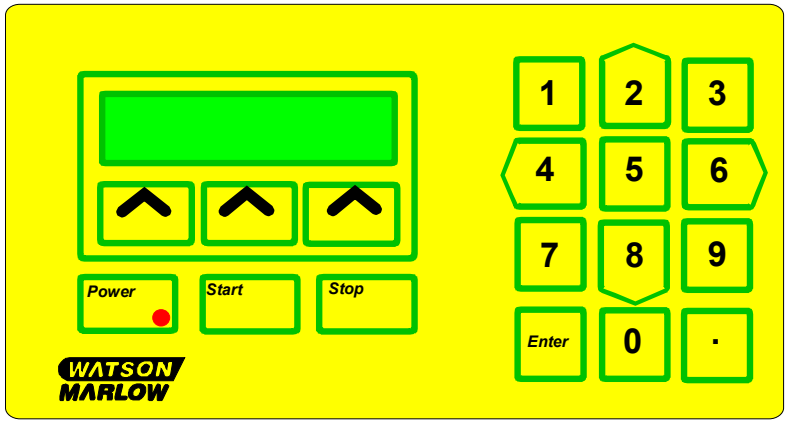
To initiate a fill sequence on a pre-programmed XY robot filler switch on power to the unit and the following screen will be displayed:

```
SOFTWARE  VER  X.X
MEMORY      SETUP      GO
```

Ensure that the vial tray is located correctly within the tray guides and press the 'GO' button to begin a fill cycle.

The remainder of the manual explains how to program the system for a variety of filling applications using different tray sizes and equipment configurations.

Keypad layout



Beneath the display are three rectangular soft function keys. The function of each key at any one time in a procedure is denoted by the text in the bottom line of the LCD display.

The keypad serves two functions;

- To enable parameters to be entered into the operating programme of the XY robot.
- To enable the operator to move the fill head
- The keys and functions are listed below::

Key	Function
2	Move fill head to fill rear of XY robot filler
4	Move fill head left
6	Move fill head right
8	Move the fill head forwards (towards the front of the XY robot filler)

Conventions used in the manual

Throughout the manual conventions are used to describe the keyboard keys:

The soft keys are referred to as 'buttons', e.g. from the main menu press the ***MEMORY*** button.

The keypad keys and the START/STOP keys are shown enclosed thus <*START*>.

Part 3: Setup

Accessing the setup mode

This section illustrates how various parameters such as language used and serial communication speed are set up upon receipt of a new machine. It also shows that **this procedure need only be carried out once,** as all parameters are stored, even when the unit is switched off.

Setup mode is accessed by holding down the soft key, which is positioned to the extreme left of the three keypad softkeys, whilst the power is switched on at the rear of the machine. When the key is released the display will show the following message:

```
SETUP PROGRAMME
ENTER PASSWORD
```

Enter the system password (**1212**) the display will show the following message:

```
SETUP PROGRAMME
COUNTRY MEMORY  NEXT
```

Selecting a language

Press the key beneath the "country" option on the display. The display will show the following message:

```

ENGLISH NEXT ACCEPT
```

Press the ***NEXT*** button to step through each available language option. Press ***ACCEPT*** to select the desired option and return to the setup menu.

Clearing memory

NOTE. This should only be necessary after maintenance work or after a software upgrade. This operation will erase all settings stored in the module.

At the setup menu press the ***MEMORY*** button. The display will show the following message:

```
ERASE MEMORY
ACCEPT  QUIT
```

Press the ***ACCEPT*** button to erase all memory locations, or the ***QUIT*** button to cancel the operation and return to the setup menu. After pressing the ***NEXT*** button, the display will show:

```
SETUP PROGRAMME
RS232   REMOTE      NEXT
```

Press the ***RS232*** button, the display will show:

```
1200BPS  NEXT  ACCEPT
```

Press the ***NEXT*** button until the desired baud rate is shown in the display. Press the ***ACCEPT*** button to store the selected value. The previous setup menu will be displayed.

Remote control operation

Press the ***REMOTE*** button, the display will show:

```
XY KEYPAD MODE
          NEXT  ACCEPT
```

Press the ***NEXT*** to alternate between XY keypad and XY remote mode, followed by the ***ACCEPT*** button to store the selected value and return to the setup menu.

NOTE: After selecting XY remote mode, the keypad will become redundant, all control will be via a remote keypad. For diagnostic help, refer to the engineering mode flow chart on page 24.

Exit setup mode

To exit the setup mode press the ***ACCEPT*** button, the XY robot filler will reset and display the following screen, prompting to press <START> to move the dispensing head to the home position.

```
PRESS <START>
TO HOME MACHINE
```

When the dispensing head has been moved to the home position the main menu will be called:

```
SOFTWARE VER X.X
MEMORY    SETUP    GO
```

Part 4: Setting the operating parameters

Requirements

Before a fill sequence the XY robot filler needs to know the following:

1. Size of fill in rows & columns.
2. Fill pattern, the way the tray of bottles are arranged.
3. The delay from the end of dispensing liquid to moving to the next fill point drip delay.
4. The speed at which the head will move from one fill point to the next.
5. Whether the XY robot filler will run continuously after finishing a fill pattern or stop.
6. The number of trays to be placed within the working envelope.
7. The direction of the fill sequence.
8. The start point for each tray.
9. The end point, for each tray position.
10. The corner point, for each tray position.

Setting the number of rows and columns

Initially the screen will show:

```
SOFTWARE VER X.X
MEMORY   SETUP   GO
```

Press the ***SETUP*** button and the display will show:

```
SETUP/TEST TRAY NO1
TEST LIMITS OPTIONS
```

From the setup menu select ***OPTIONS***, calling the display:

```
SETUP   FILL   OPTIONS
COLUMNS   ROWS   NEXT
```

```
PRESS ENTER TO RET
COLUMNS   ROWS   NEXT
```

The option to return to the previous setup/test menu will also toggle with this display.

Press the ***COLUMNS*** button to call the display:

```
ENTER NO OF COLS 00
ACCEPT   QUIT
```

The display will show the previously entered value (if any). Enter the number of columns to be filled using the keypad (between 01 & 99). Press the ***ACCEPT*** button to store the value, or the ***QUIT*** button to return to the previous setup/fill/options menu without changing any settings. Press the ***ROWS*** button to call the display:

```
ENTER NO OF ROWS 00
ACCEPT      QUIT
```

Again, using the keypad, enter the number of rows to be filled and press the ***ACCEPT*** button to store the value, or the ***QUIT*** button to return to the previous setup/fill/options menu without changing any settings.

NOTE: Using the ***QUIT*** button provides a quick verification of the set number of rows and columns.

Press the ***NEXT*** button, the display will show:

```
SETUP   FILL   OPTIONS
PATTERN DRIPDEL NEXT
```

```
PRESS ENTER TO RET
PATTERN DRIPDEL NEXT
```

The option to return to the previous setup/fill/options menu will also toggle with this display.

Setting the tray fill pattern

The XY robot may, in addition to a straight fill, perform fill sequences on trays with bottles arranged in a honeycomb pattern. Four distinct patterns are available and these are shown on page 23, together with their associated start/end points and number of columns/rows.

Press the ***PATTERN*** button, the display will show:

```
000000 STRAIGHT FILL
000000   NEXT   ACCEPT
```

The display will show the previously entered fill pattern (if any), if no pattern was previously stored the straight pattern will be displayed.

Press the ***NEXT*** button to scroll through the available fill patterns, press the ***ACCEPT*** button to store the desired pattern. The previous setup/fill/options menu will then be displayed.

Setting up the drip delay and fill head speed

The drip delay, is the time period between the XY robot filler completing one delivery, and moving to the next fill point. Press the ***DRIPDEL*** button and the display will show:

```
DRIP DELAY 0.1S
ACCEPT    QUIT
```

The previously entered drip delay (if any) will be shown. Enter the drip delay in multiples of 0.1 seconds and press either the ***ACCEPT*** button to store the new value, or the ***QUIT*** button to return to the previous setup/fill/options menu without making any changes.

NOTE: Using the ***QUIT*** button provides quick verification of drip delay.

Press the ***NEXT*** to call the display:

```
SETUP FILL OPTIONS
SPEED   MODE   NEXT
```

```
PRESS ENTER TO RET
SPEED   MODE   NEXT
```

The option to return to the previous setup/fill/options menu will also toggle with this display.

Press the ***SPEED*** button, the display will show:

```
SET POSITIONER SPEED
  X.XCM/S  NEXT  ACCEPT
```

Use the ***NEXT*** button to select the desired filler head traversing speed. Options of 6, 9 or 12cm/s are available. Press the ***ACCEPT*** button to store the selected speed and return to the previous setup/fill/options menu.

Setting the operating mode

There are two modes of operation with the XY robot. Batch mode is where the XY robot will perform a fill sequence and then stop, whilst continuous mode is where the XY robot will repeat its fill sequence until stopped manually.

Press the ***MODE*** button, the display will show:

```
BATCH MODE
          NEXT   ACCEPT
```

Press the ***NEXT*** button to change the operating mode to continuous. Press the ***ACCEPT*** button to store the selected mode and the previous setup/fill/options menu will be displayed.

Press the ***NEXT*** button, the display will show:

```
SETUP FILL OPTIONS
TRAYS   STEPDIR   NEXT
```

```
PRESS ENTER TO RET
TRAYS   STEPDIR   NEXT
```

The option to return to the previous menu will also toggle with this display.

Setting the number of trays and the fill direction

In order for the XY robot to operate correctly, it needs to know the number of individual trays within the working envelope which are to be part of a fill sequence.

For example, if three tray positions have been programmed into the system setup, and all three are to be filled, then by setting the number of trays as 3, all three trays will be filled.

If however, only tray 1 of the three trays was required to be filled, then by setting the number of trays as 1 then this will be achieved.

This is a general setting applicable to fill sequences which can be set under any individual tray setup option.

Press the ***TRAYS*** button, the display will show:

```
NO OF TRAYS 1
ACCEPT   QUIT
```

Use the numeric keypad to enter the number of trays to be filled. Press the ***ACCEPT*** button to exit and store the value, or the ***QUIT*** button to exit without changing anything. The previous menu will be displayed.

Storing values and returning to the main menu

The XY robot can work either forwards (starting at the start point), or backwards (starting at the end point). Press the ***STEP-DIR*** button, the display will show:

```
NORMAL TRAY STEP
          ACCEPT   NEXT
```

With ***NORMAL TRAY STEP*** displayed as shown below, the XY robot will start at the nearest point to home and proceed from there.

Press the ***NEXT*** button to change the option to ***REVERSE TRAY STEP.***

```
REVERSE FILL
          ACCEPT   NEXT
```

Press the ***ACCEPT*** button to exit and store the selection and the previous setup/fill/options menu will be displayed.

Press the ***NEXT*** to call the following screen:

```
SETUP FILL OPTIONS
          DELAY      NEXT
```

Setting batch fill delays

Press the ***DELAY*** button and the display will show:

```
BATCH FILL DELAY OOS
ACCEPT     QUIT
```

Set the time delay between each batch fill sequence in seconds using the numeric keypad. Press ***ACCEPT*** to store the value or ***QUIT*** to return to the previous display without changing any settings.

When all parameters have been entered the program will return to the setup menu, from here press <ENTER> to return to the main menu.

If the limits have been set outside the fill area, or the start is further than the end point an appropriate error message will appear on the display for approximately 1.5 seconds. These setting errors must be rectified before the program will return to the main menu.

Multiple tray setup

The setup for multiple trays within the fill area is identical to the setup of an individual tray. Each individual setup procedure must be repeated for the relevant position of each individual tray. Each tray number should be entered at the following screen prior to its positional information being inputed. Fill tests on specific trays can be carried out by entering the relevant tray number and then running the fill test procedure.

```
SETUP/TEST TRAY NO1
TEST LIMITS OPTIONS
```

The "1" in the figure above shows that the limits for a tray No.1 can be changed. Pressing the <***2***> key will increase the number up to a maximum of nine pressing the <***8***> key will decrease the number back down to "1".

Setting the XY robot filler start/end/corner points

```
SETUP/TEST TRAY NO1
TEST LIMITS OPTIONS
```

Press the ***LIMITS*** button and the following display will be called:

```
SET FILL LIMITS-1
START     END     CORNER
```

PRESS ENTER TO RET
START END CORNER

The option to return to the previous setup/test menu will also toggle with this display.

The start point

NOTE. The start point is always nearest the home position. When using a honeycomb fill pattern refer to page 23 for an illustration of various patterns and start/end points.

Press the ***START*** button, the display will show:

MOVE TO START POINT
ACCEPT QUIT HOME

The fill head will move to the previously set start point. Using the keypad cursor keys move the fill head to the first fill point.

Press the ***ACCEPT*** button to store the setting. The XY robot will warn the operator that the Y corner point has been reset by calling the display:

Y CORNER POINT RESET

Press the ***HOME*** button to move the fill head to the home position, or the ***QUIT*** button to return to the previous menu without changing any settings.

NOTE. If the start point is moved, the end point will move with respect to the change in co-ordinates. This is useful if the same tray is used but positioned in a different position as the start point is then the only change required.

The end point

Press the ***END*** button, the display will show:

MOVE TO END POINT
ACCEPT QUIT HOME

The fill head will move to the previously set end point. Using the keypad cursor keys move the fill head to the last fill point. Press the ***ACCEPT*** button to store the setting. The XY robot will warn the operator that the X corner point has been reset by calling the display:

X CORNER POINT RESET

Press the ***HOME*** button to move the fill head to the home position, or the ***QUIT*** button to return to the previous set fill limits menu without changing any settings.

The corner point

The corner point feature is generally the point furthest away (in a horizontal line) from the first fill point. When using a honeycomb fill pattern refer to page 23 for an illustration of various patterns and start/end points.

NOTE: The corner point will be calculated by the robot and will generally not need altering. The feature is included to allow for possible tray misalignment.

Press the ***CORNER*** button, the display will show:

```
MOVE TO CORNER POINT
ACCEPT   QUIT   HOME
```

The fill head will move to the corner point which has been calculated using the ***START*** and ***END*** point settings. If tray misalignment is experienced use the cursor keys to move the fill head to the actual corner point (the point furthest left along the first fill row).

Press the ***HOME*** button to move the fill head to the home position, or the ***QUIT*** button to return to the previous menu without changing any settings.

Press the <ENTER> key to return to the set fill limits menu. Within the setup menu option the <***2***>and <***8***> keys can be used to select any one of a number of possible trays within the fill area. Please refer to the section covering multiple tray setup.

Performing a test fill

Press the ***SETUP*** button, the display will show:

```
SETUP/TEST TRAY NO1
TEST   LIMITS   SIZE
```

The display shows that the ***LIMITS*** and ***TEST*** options refer to tray No 1, pressing key <***2***> increases the value up to 9, pressing key <***8***> decreases the value down to 1. With the tray number shown as '1', pressing key <***8***> will change the display to ***'TEST ALL TRAYS'***, this allows the testing of the programmed fill sequence for the number of trays entered.

Press the ***TEST*** button, the display changes to show the fill status:

```
00:RXC   FF   TRAY X
```

- **00** is the number of the current memory setup.
- **R** is the programmed number of rows in the tray.
- **C** is the programmed number of columns in the tray.
- **FF** is the tray fill pattern, e.g.

  ST = Straight

  H1 - H4 = Honeycomb
- **TRAY X** shows the tray number that is currently being filled.

A test fill sequence is now performed with the head passing over the vials/bottles without the XY robot operating.

If at anytime the fill sequence must be stopped, press ***STOP***, the display changes to the pause screen:

```
POSITIONER   PAUSED
RESUME   ABORT
```

Press the ***RESUME*** button or the <START> key to continue. Press the ***ABORT*** button to stop the test pattern.

The fill head moves to the home position after the sequence has finished or if the sequence is aborted.

Fill in conjunction with the 505Di/L or 505Di/RL

Connect the dispenser to the XY robot using the 3 pin cable.

Setup the XY robot or load a setup from memory.

At the main menu press the ***GO*** button, the fill sequence will now begin and the display changes to show the final status:

00:RXC FF TRAYX M MODE

- **M** is the operating mode Batch/Continuous.

Pressing the ***MODE*** button will change the operating mode from Batch to Continuous or vice versa.

If at any time the fill sequence must be stopped follow the procedure shown on the previous page, otherwise the fill head will move to the home position after the sequence has finished or if it is aborted.

If the XY robot detects an error in the signal from the 505Di the display will change to show:

WAITING FOR PUMP RESUME ABORT

Check the connections between the XY robot and the 505Di.

Press the ***RESUME*** button to continue or the ***ABORT*** button to reset the XY robot and finish the fill sequence.

Part 6: Memory facilities

Storing/recalling/reviewing memories

The XY robot has the ability to store and recall up to 50 settings, each setting may have up to 20 character descriptions attached to it in order to describe the type of fill, tray size etc. All operating information for the XY robot is stored in a memory location, including the language in use as well as the head speed and serial interface speed.

```
SOFTWARE VER X.X
MEMORY   SETUP    GO
```

Press the ***MEMORY*** button to call the following screen:

```
RECALL/STORE/REVIEW
RECALL STORE REVIEW
```

```
PRESS ENTER TO RET
RECALL STORE REVIEW
```

The option to return to the previous main menu will also toggle with this display. Press the ***ENTER*** key to return to the main menu.

Storing a setup in memory location

From the memory menu press the ***STORE*** button, the display will show:

```
STORE MEMORY NO1
ACCEPT    QUIT
```

Enter the memory number in which you wish to store the current setup, using the numeric keypad. Press the ***ACCEPT*** button to store the setup, or the ***QUIT*** button to return to the previous memory menu. When the ***ACCEPT*** button is pressed the operator is taken to the memory description screen as shown below:

```
24:3X4 ST TRAY2  M
ACCEPT  QUIT
```

The display will show the current description stored for that location, or if the location was previously unused the XY robot will suggest a description for you as shown above, the format being the same as the status line when the XY robot is operating. When the unit offers a description for a setup which is being stored into a memory location, ensure that the description is different from any previously stored setups to avoid any programs being overwritten.

Use the <**4**> and <**6**> keys to move the cursor left and right and the <**2**> and <**8**> keys to increase or decrease the character to the left of the cursor.

Pressing the <**5**> key will copy the character to the left of the cursor to the current cursor position. Press the ***ACCEPT*** button to store the description. The operator is returned to the memory menu.

Recalling memories

From the memory menu press the ***RECALL*** button, the display will show:

```
RECALL MEMORY NO 01
ACCEPT      QUIT
```

Enter the memory number to recall using the numeric keypad, press the ***ACCEPT*** button to recall the setup, or the ***QUIT*** button to return to the previous memory menu. If the memory number entered does not contain a valid setup, then the display will show:

```
     ***ERROR***
  MEMORY IS EMPTY
```

Re-enter a valid memory location number, or use the ***REVIEW*** button, as described below, to select from the valid memories stored.

Reviewing memories

Press the ***REVIEW*** button, the display will show:

```
00:RXC FF TRAYX M
NEXT     QUIT     RECALL
```

This is the description attached to memory location 01, pressing the ***NEXT*** button moves to the next location with a valid setup stored in it, when the last stored location is displayed and the ***NEXT*** button is pressed, the first location is redisplayed. Press the ***RECALL*** button to load the contents of the selected memory location and return to the main menu. Press the ***QUIT*** button to return to the memory menu without recalling the memory location.

Error messages

If an attempt has been made to load an empty memory location, the display will show:

```
     ***ERROR***
  MEMORY IS EMPTY
```

Re-enter a valid number or use ***REVIEW*** to select. If 0 is entered as a memory number or a the number of rows or columns the display will show:

```
     ***ERROR***
ONLY 01-50 ALLOWED
```

A memory number, or the number of rows/columns as has been entered as 0. Re-enter with a number between 01 and 50.

If the calculated fill area exceeds the area the XY robot can cover then display will call:

```
INVALID START OR END
POINTS-RESET LIMITS
```

This can be a result of changing the ***START*** point when the ***END*** is near the left hand limit or selecting a honeycomb pattern which has a fill point outside the available fill area.

If the set ***START*** point is to the left of the ***END*** point the display will call:

```
INVALID START/FINISH
POINTS-RESET LIMITS
```

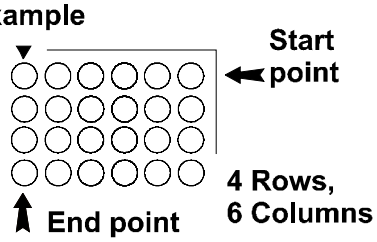
Reset so that the ***START*** point is to the right of the ***END*** point.

Specification

Power supply	110/120V&220/240V 50/60Hz Single phase
Power consumption	40W
Fuse rating	T type 1.6A
Electronics	Microprocessor controlled
Number of memories	50
Languages	English, French, German, Spanish & Italian(selectable)
In/Out ports	Float switch, Serial RS232 300,600 1200, 2400,4800, 9600 Baud (selectable)
Dimensions	Width 735mm x height 280mm x depth 385mm
Weight	14Kg
Number of fill points	99 (X), 99 (Y).
Fill patterns	Straight & 4 Honeycomb patterns
Fill head speed	120mm/Sec (selectable 60, 90, 120mm/Sec, excluding acceleration and deceleration times)
Fill direction	Normal (start at start point) or Reverse (start at end point)
Fill area	420x245 (Between fill centres)
Operating mode	Batch (finishes after filling all trays), Continuous (repeats the fill tray sequence until reset)
Positional accuracy	Better than 0.3mm
Drip delay	0.0 - 0.9 Seconds (increment 0.1seconds)
Number of trays	9
Maximum vial height	200mm
Minimum vial diameter	6.5mm

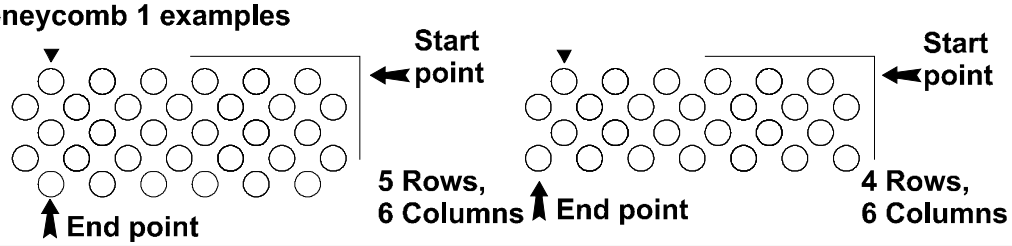
Fill pattern examples

Straight fill example

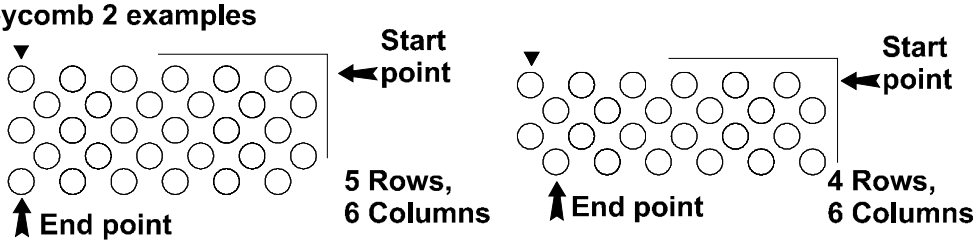


▼ *Denotes the position of the corner point, generally this is the centre of the vial/tube furthest to the left on the first row.*

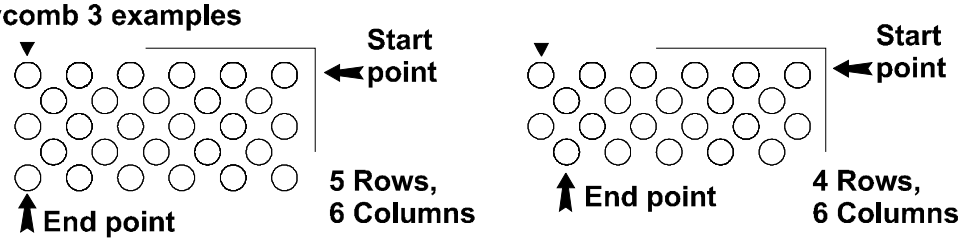
Honeycomb 1 examples



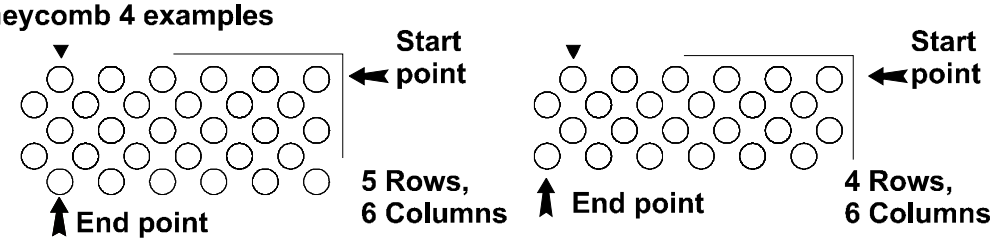
Honeycomb 2 examples



Honeycomb 3 examples

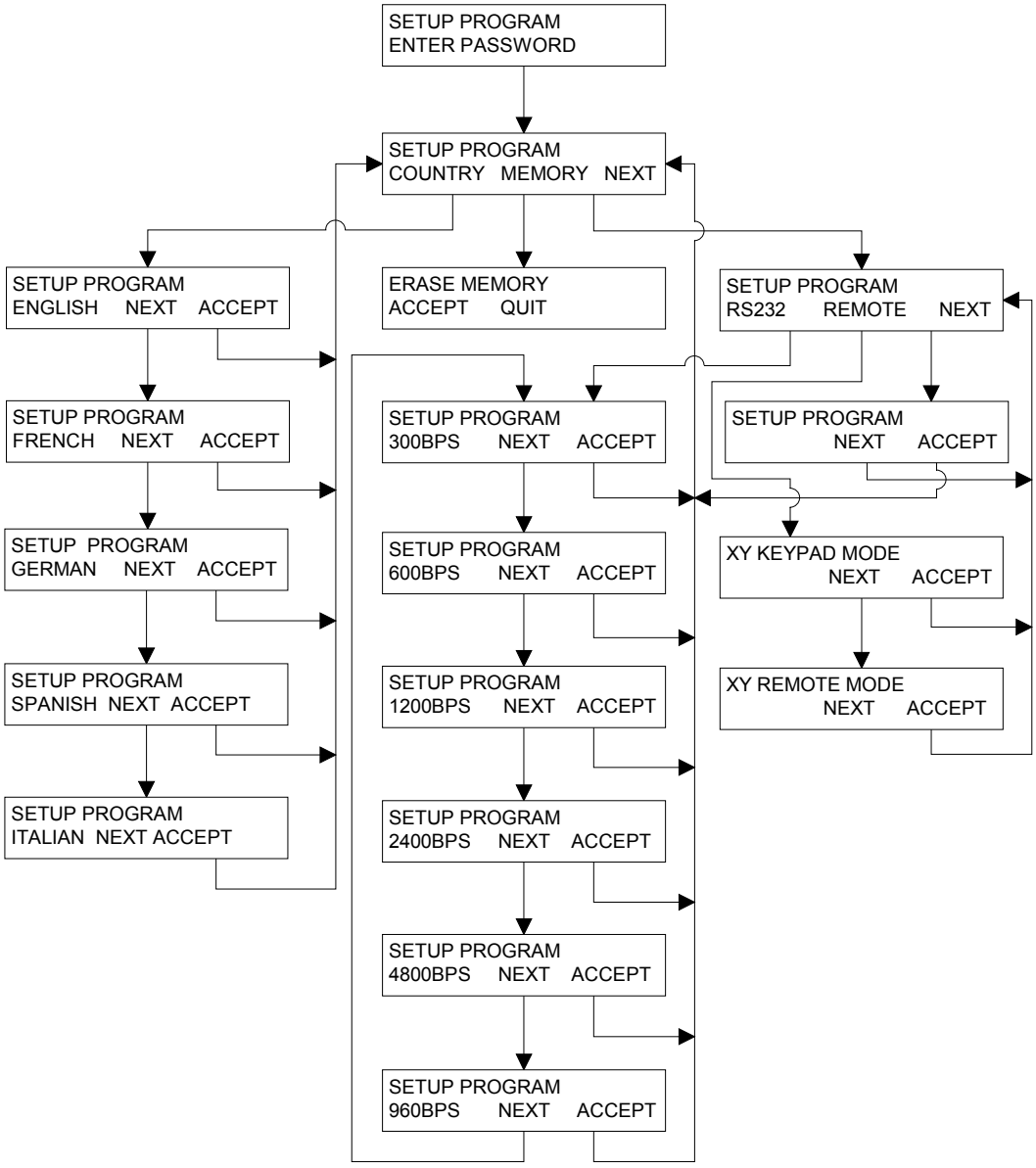


Honeycomb 4 examples



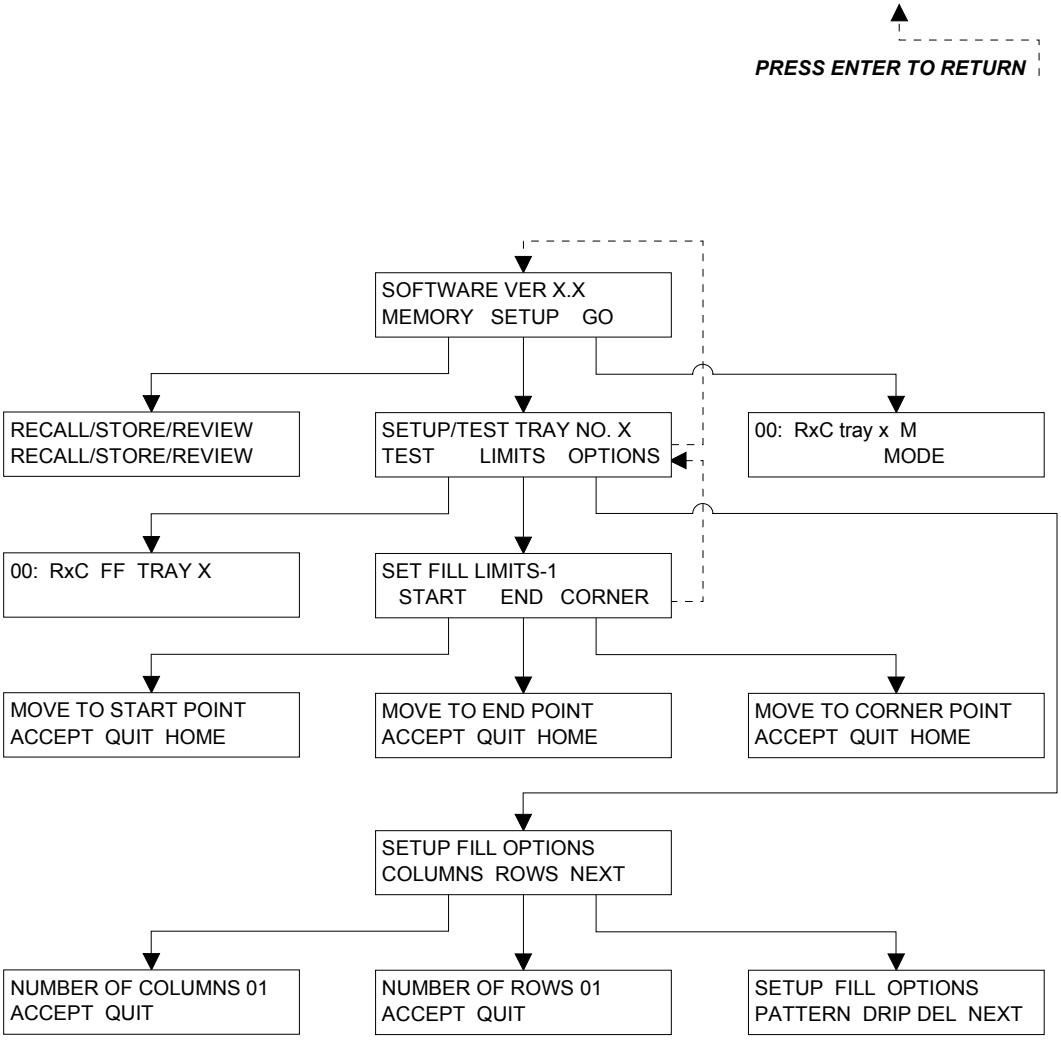
Menu structure

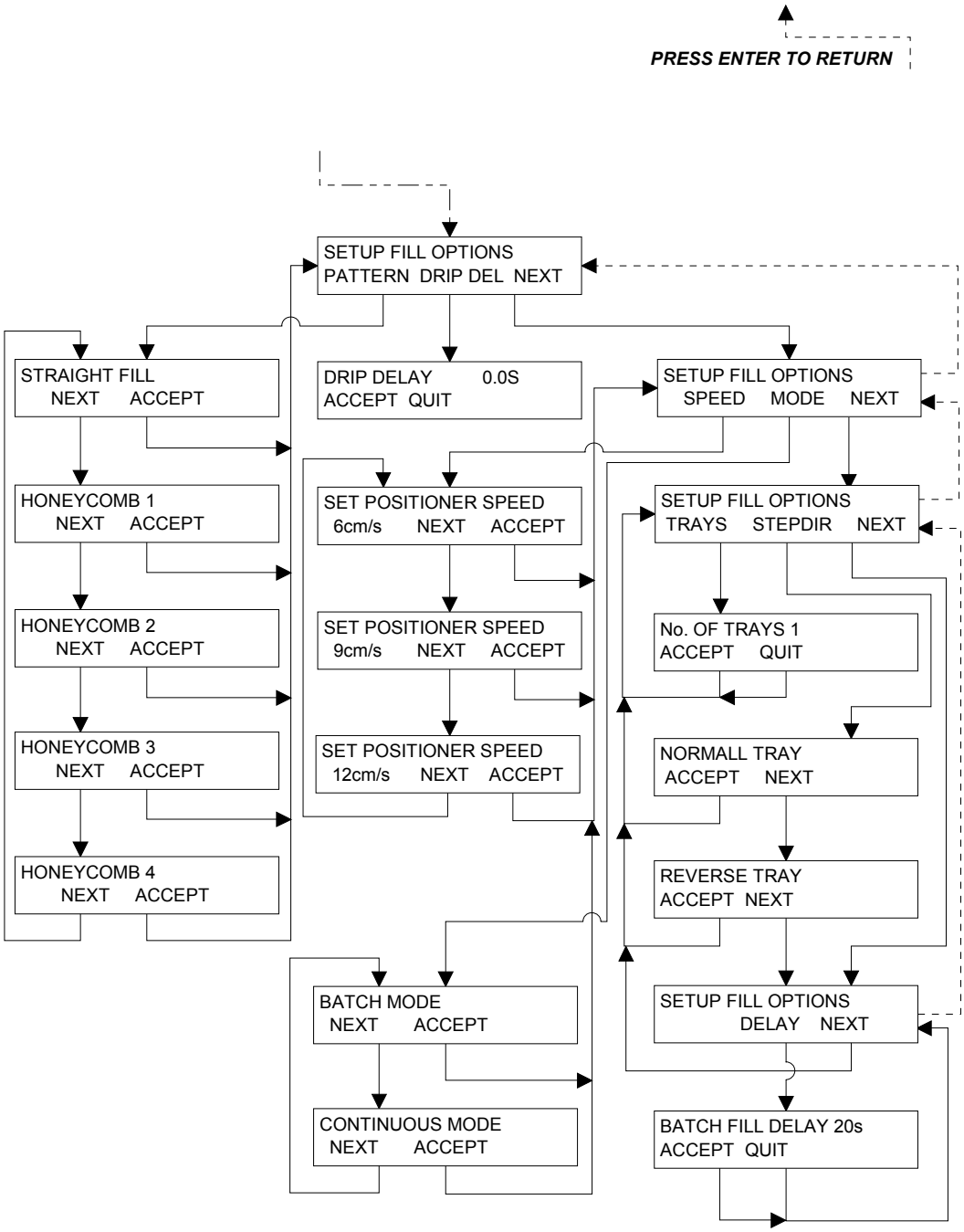
Depress and hold any of the soft keys whilst switching on the XY robot, then release and, at the prompt, enter 1212 as the password.



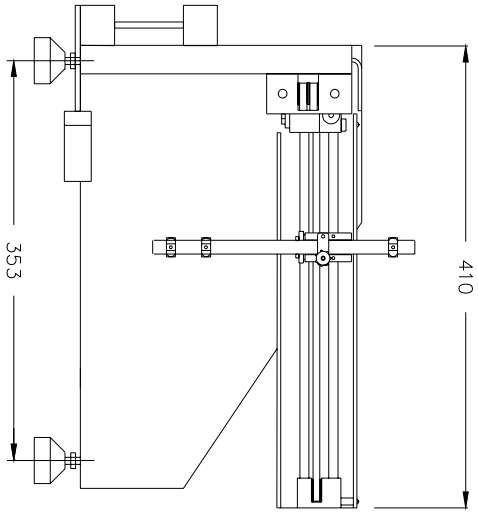
NOTE: Once the remote keypad option has been selected, the XY robot keypad will become redundant.

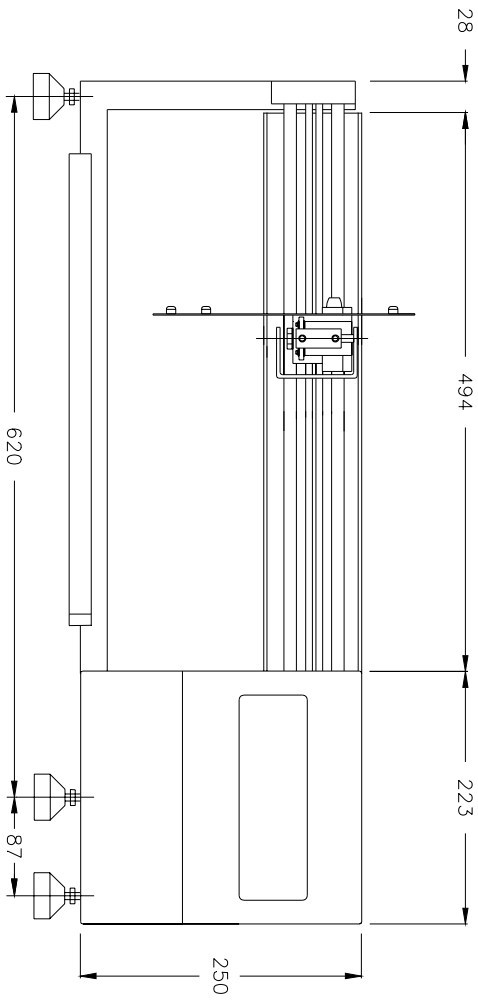
In order to regain control, the keypad mode must be reselected. This may only be done by switching off the machine and returning to the set-up mode as detailed above.

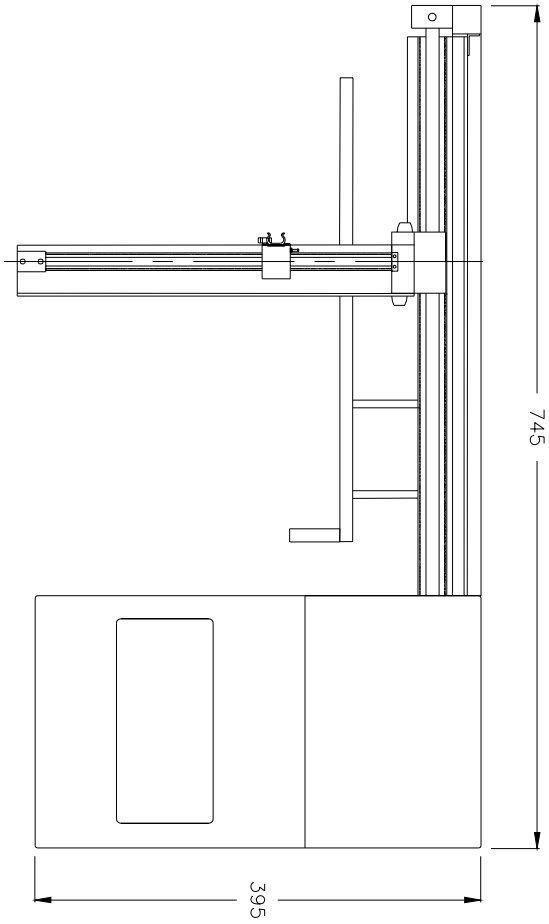

PRESS ENTER TO RETURN
SOFTWARE VER X.X
MEMORY SETUP GO
RECALL/STORE/REVIEW
RECALL/STORE/REVIEW
SETUP/TEST TRAY NO. X
TEST LIMITS OPTIONS
00: RxC tray x M
MODE
00: RxC FF TRAY X
SET FILL LIMITS-1
START END CORNER
MOVE TO START POINT
ACCEPT QUIT HOME
MOVE TO END POINT
ACCEPT QUIT HOME
MOVE TO CORNER POINT
ACCEPT QUIT HOME
SETUP FILL OPTIONS
COLUMNS ROWS NEXT
NUMBER OF COLUMNS 01
ACCEPT QUIT
NUMBER OF ROWS 01
ACCEPT QUIT
SETUP FILL OPTIONS
PATTERN DRIP DEL NEXT


PRESS ENTER TO RETURN
SETUP FILL OPTIONS
PATTERN DRIP DEL NEXT
STRAIGHT FILL
NEXT ACCEPT
DRIP DELAY 0.0S
ACCEPT QUIT
SETUP FILL OPTIONS
SPEED MODE NEXT
HONEYCOMB 1
NEXT ACCEPT
SET POSITIONER SPEED
6cm/s NEXT ACCEPT
SETUP FILL OPTIONS
TRAYS STEPDIR NEXT
HONEYCOMB 2
NEXT ACCEPT
SET POSITIONER SPEED
9cm/s NEXT ACCEPT
No. OF TRAYS 1
ACCEPT QUIT
HONEYCOMB 3
NEXT ACCEPT
SET POSITIONER SPEED
12cm/s NEXT ACCEPT
NORMALL TRAY
ACCEPT NEXT
HONEYCOMB 4
NEXT ACCEPT
REVERSE TRAY
ACCEPT NEXT
BATCH MODE
NEXT ACCEPT
SETUP FILL OPTIONS
DELAY NEXT
CONTINUOUS MODE
NEXT ACCEPT
BATCH FILL DELAY 20s
ACCEPT QUIT

Outline dimensions







Product Use and Decontamination Declaration

In compliance with the **UK Health & Safety at Work Act** and the **Control of Substances Hazardous to Health Regulations** you, the user are required to declare the substances which have been in contact with the product(s) you are returning to Watson-Marlow or any of its subsidiaries or distributors. Failure to do so will cause delays in servicing the product. Therefore, **please complete this form** to ensure that we have the information **before** receipt of the product(s) being returned. **A FURTHER COPY *MUST* BE ATTACHED TO THE OUTSIDE OF THE PACKAGING CONTAINING THE PRODUCT(S)**. **You, the user, are responsible for cleaning and decontaminating the product(s) before returning them.**

Please complete a separate Decontamination Certificate for each pump returned.

RGA No: ……...

1 Company

Address ..... Postcode

Telephone ..... Fax Number

2 Product .....

2.1 Serial Number .....

.....

2.2 Has the Product been used?

.....

YES		NO	

If yes, please complete all the following Sections

If no, please complete Section 5 only

3 Details of substances pumped

3.1 Chemical names:

(a) .....

(b) .....

(c).....

(d) .....

3.2 Precautions to be taken in handling these substances:

(a) .....

(b) .....

(c) .....

(d) .....

3.3 Action to be taken in the event of human contact:

(a) .....

(b) .....

(c).....

(d) .....

3.4 Cleaning fluid to be used if residue of chemical is found during servicing;

(a)

(b)

(c)

(d)

4 I hereby confirm that the only substances(s) that the equipment specified has pumped or come into contact with are those named, that the information given is correct, and the carrier has been informed if the consignment is of a hazardous nature.

5 Signed ……..

Name ……

Position ……..

Date ……..

Note: To assist us in our servicing please describe any fault condition you have witnessed.

ARROWVALE ELECTRONICS DEC NO:- 03/95

DECLARATION OF CONFORMITY

MANUFACTURERS NAME: JENCONS (SCIENTIFIC) LTD
FULL POSTAL ADDRESS: CHERRYCOURT WAY INDUSTRIAL ESTATE
STANBRIDGE ROAD
LEIGHTON BUZZARD
BEDFORDSHIRE
LU7 8UA ENGLAND

PRODUCT DESCRIPTION: ROBOTIC MODULE

MODEL, TYPE "X.Y."

STANDARDS USED INCLUDING NUMBER:

Safety of machine elec equipment BSEN60204-1 (1993)

Machine safety regulations No 3073 (1992)

Elec equipment for measurement/lab use BS EN61010-1 (1993)

EMC BS EN 50081-1/BSEN50082-1 (1992)

NAME OF RESPONSIBLE PERSON M THORNS

POSITION OF RESPONSIBLE PERSON QUALITY MANAGER

RESPONSIBLE BUSINESS NAME: ARROWVALE ELECTRONICS
RESPONSIBLE BUSINESS ADDRESS: ARROW BUSINESS PARK
SHAWBANK ROAD
LAKESIDE
REDDITCH
WORCS B98 8YN

DECLARATION: I declare that as the responsible person, the above information in relation to the manufacture of this product is in conformance with the stated standards and other related documents following the provision of the EEC Directives.

NAME OF AUTHORISED PERSON MR R AMOS

SIGNATURE OF AUTHORISED PERSON R.J. Amos

DATE 10/10/95

AE 1309 ISSUE 2