SIPPER PUMP INSTALLATION AND OPERATING INSTRUCTIONS

Order Code: 632 001

Contents:		
	Sipper pump	(632 002)
	Sipper pump probe	(632 063)
	Silicon pump tubing (1 metre)	(023 029)
	PTFE capillary tubing (0.5 metre)	(023 020)
	Power lead	(013 046)

Jenway spectrophotometers are supplied fitted with a 10x10m single (6300/6400 series) or multiple (6500 series) cell holder as standard. The sipper pump may easily be connected to these units using one of the following flow-through cell options:

035 045 (80µl Glass)
035 025 (1.8ml Glass)
035 047 (80µl Quartz)
035 044 (1.8ml Quartz)

NOTE: The appropriate flow-through cell option must be ordered separately. For alternative flow-through cells or non-standard sample holders, refer to local distributor.

INSTALLATION

NOTE: If the sipper pump is to be used in conjunction with a model 6300 or 6305 spectrophotometer, check the spectrophotometer for the presence of tube access ports. (The ports consist of 4 holes covered by rubber caps which are located along the front edge of the sample chamber and are visible when the sample chamber lid is open).

If the access ports are not present the spectrophotometer will require modification through the drilling of 2 x 5.5mm diameter holes to allow tubes to pass between the sipper pump and the flow-through cell.

If a water heated cell block (648 001) is also to be installed, 2 further holes (4 in total) will be required to enable circulation of the heating/cooling fluid.

A jig (ref. J348) is available from your local distributor to facilitate accurate positioning when holes are drilled.

MAINS CONNECTIONS

A suitable plug should be connected to the 3 wires on the mains lead. These are colour coded to conform to the internationally recognised standard such that:

BROWN	**LIVE**
BLUE	**NEUTRAL**
GREEN/YELLOW	**EARTH**

IMPORTANT: THE UNIT MUST BE EARTHED.

The Green/Yellow wire in the a.c. supply cable must be connected to a properly grounded terminal.

1. Place the sipper pump in a convenient position alongside the spectrophotometer.
   NOTE: It is recommended that all tubing runs are kept as short as possible.

2. Open the sipper pump access door and feed the silicon tubing (023 029) around the rollers ensuring that a 60mm (2.5") length protrudes from the right hand securing clip. If necessary, ease the tubing into position by turning the rollers by hand. Ensure tubing is located into both left and right hand securing clips. Close access door.

3. Cut a 170mmm (6.5") length of PTFE capillary tubing (023 020) and pass through the sipper pump probe (623 063). Fit probe (with capillary tubing) into the probe holder as shown and secure with thumbscrew. connect the short length of silicon tube protruding from the pump head to the probe capillary tube as shown.

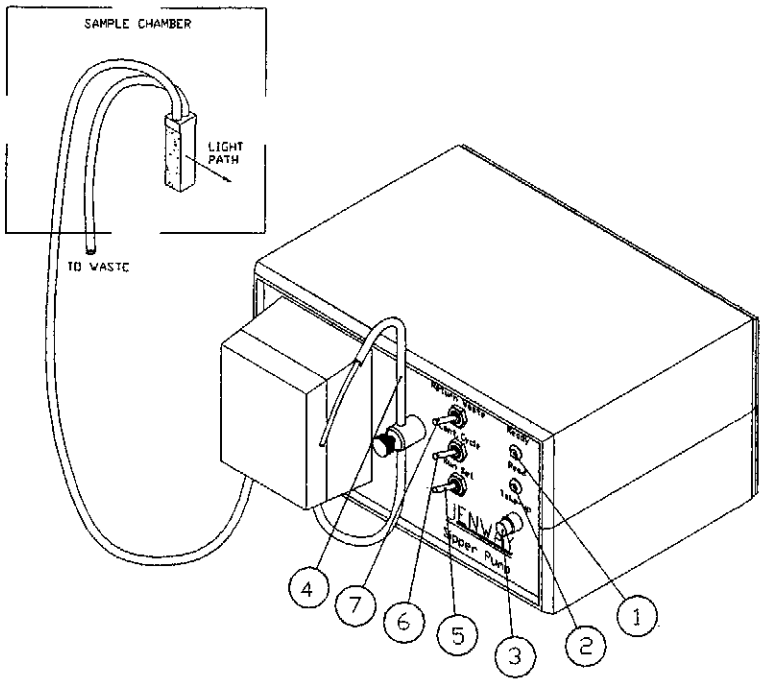
4. Fit the appropriate flow-through cell into the spectrophotometer sample holder.
   NOTE: If a multiple cell holder is being used ensure the cell is fitted in the position in line with the light path.

5. Pass the long length of silicon tubing from the sipper pump (via the access port) into the spectrophotometer sample chamber. Trim tubing to the required length and fit the flow-through cell input connector. Connect the remaining silicon tube to the cell output connector and pass (via the access port) to waste.

6. Check the sipper pump rear panel selector switch is set to the local supply voltage (230 or 115 volts). If incorrect use a small screwdriver to set the switch to the appropriate position.

7. Connect the power lead and switch on at outlet if necessary. The sipper pump is now ready for use.

CONTROLS



1.	**READY**	Illuminates when the unit is ready for operation.
2.	**READ**	Illuminates to indicate that the sample has been measured.
3.	**PUSHBUTTON**	In the SET mode this button will allow the uptake rate to be set by pressing and holding it down until the required rate has been set.
4.	**PROBE**	Probe assembly which houses the uptake tube.
5.	**RUN/SET SWITCH**	The RUN position should be selected at all times, except when changing the update cycle parameters. In the SET position this switch allows the uptake cycle to be set prior to sample measurement. A single or two stage cycle can be set. Selection of this mode locks out the "continuous" option.
6.	**CONT/CYCLE SWITCH**	The CONT (continuous) position will not operate in the set mode. When selected, the pump will operate continuously until the CYCLE mode is selected. The motor will turn in a forward direction. The CYCLE position is used for routine measurements. In this mode the unit will operate as per the Set Sample Uptake and Flush routine
7.	**FLUSH RETURN/WASTE SWITCH**	Either position can be selected at any time, and determines which way the sample is directed, i.e. flushes to waste or is returned to the sample vial. If the RETURN mode s selected, the motor will pump backwards for the total uptake time of +0.4 seconds. Flushing to WASTE turns the motor for 1.2 seconds.
8.	**SHUTTER**	Used when calibrating the unit.

OPERATION

Setting Sample Uptake and/or Air Gap Time

Set the preferred Flush mode, i.e; flush to WASTE or flush RETURN (this mode will return the sample to the vial), by selecting the appropriate switch position.

Place the sample uptake tube into a filled vial. Press and HOLD DOWN the pushbutton until the required sample uptake has been achieved. This can usually be determined by viewing the outlet from the cuvette and releasing the pushbutton when the cuvette is seen to be full. Release the pushbutton and the READY light will flash.

If air gap time is needed , press and HOLD DOWN the pushbutton again and release when the required time has been reached.

NOTE: Maximum sample and air gap times are 48 seconds. If this is exceeded the unit will error "beep" and both LED's will illuminate.
The only way to exit this is to go to RUN. The unit will then set whichever setting was in error to 48 seconds.
The times are stored in non-volatile memory.

Select RUN mode and the READ light will illuminate. Press the pushbutton once and the sample will either flush to waste or return to the sample vial, depending on which option has been selected. Set-up is now complete.
If the pushbutton is not pressed after selecting the SET mode, the unit will retain the previous setting.

CALIBRATION

Select the appropriate wavelength for the samples to be measured.

Place the sample uptake tube into a vial of distilled water and fill the cell with distilled water by using the front panel pushbutton. When the READ light illuminates press the spectrophotometer CAL key. The display will update to 100.0%T or 0.00Abs.

Flush the distilled water through the system by pressing the front panel pushbutton. The system is now ready for use.

SAMPLE MEASUREMENT

NOTE: It is recommended that the spectrophotometer should be calibrated between each sample batch for optimum accuracy.
Viscous samples may cause high levels of carryover. A simple test going from a blank to a standard solution and back to a blank, will determine the degree of carryover. If carryover exceeds 1%, it may be necessary to include a wash cycle between samples.

Select the appropriate wavelength on the spectrophotometer. Fill the sample vial(s).

Offer the vial up to the sample tube and press the pushbutton on the front of the sipper pump. The sample will be drawn up for the pre-set time. If an air gap time has been included in the initial set-up parameters, the READY light will flash. Press the pushbutton again and the pump will run for the pre-set time. The READ light will then be illuminated.

When the sample reading has been taken the pushbutton should be pressed. The sample will then be flushed to waste or returned to the sample vial, depending on which position has been selected on the FLUSH switch.

Further readings should now be taken in the same way.

GOOD PRACTICE GUIDELINES

1. Sample Size

The cuvette must be filled with solution.

If sample volume is limited, the two stage uptake cycle can be used, i.e; sufficient sample is taken up to ultimately fill the cuvette, followed by air during the second part of the uptake cycle. The sample will be drawn into the cuvette and only air will occupy the tubing dead space leading to the cuvette.

2. Sample Characteristics

Viscous samples may cause high levels of carryover. A simple test going from a blank to a standard solution and back to a blank will determine the degree of carryover. With normal aqueous solutions it should be possible to keep this figure below 1%. If this cannot be achieved and it is critical to the test, it may be necessary to include a wash cycle between samples.

3. System Cleaning

At the end of a sample run it is important to leave the system clean. This can usually be achieved by pumping deionised water through the system. If the nature of the sample is such that water will not adequately clean the system, other solvents may be used, providing they are compatible with the components that will be contacted during cleaning, i.e; PTFE, glass and silicon rubber tubing.

4. Pump Tubing

The tubing has a finite life and will need to be changed when pumping rates decrease to unacceptable levels or the walls of the tubing stick together.

NOTE: If left under roller pressure for prolonged periods the pump tubing may not pump. In such cases the tubing should be removed from the roller assembly and be reformed by hand. Normal operation should be restored. THIS IS NOT A SIGN OF TUBE WEAR.