

## FTA125 and FTA188 Kloehn Pump Quick Start

Last updated October 19, 2005

### Unpacking

The pump is shipped with the glass syringe installed. It should not be operated if the syringe appears damaged. A complete description of the pump, including how to change the syringe, is contained in Versa3.pdf included with your documentation and available on the FTA website in the Papers section.

### Software Installation

The Koehn pump requires a separate serial port. If your computer lacks enough ports, they can be easily added with PCI cards or inexpensive USB to RS232 converters.

### Initial Startup

You will get a warning message when you click OK on the LogOn screen if the computer can not establish communication with the pump.

### Pump Operating Parameters

Certain operating parameters of the pumps and motion axes can be changed by the user. This provides flexibility in running the instrument, but also is an opportunity for mischief. The numbers must be reasonable. Numbers which appear in blue are for information only – they may not be directly changed by the user.

“Total syringe capacity”: This must match the capacity of the syringe to be driven by a motorized pump. You can change syringe sizes to scale the pump for very fast or slow operation. The value is in microliters.

“Automatic rate”: This is the rate in microliters per second used in constant-rate dispenses which are run as part of capturing a Movie. The rate for manual “jogging” is separate, as is the rate used when the Pump Program is used. Rates which are too fast, typically above 50 $\mu$ l/s, may

result in motor stalling or loss of steps. The Kloehn pumps have 12000 steps full scale. The slowest rate is one step per minute.

“Manual rate”: The rate used for user on/off control when clicking *Pump In* and *Pump Out* on the Live screen.

“Automatic volume”: This is the volume to be dispensed during automatic constant-rate operation. Use a positive number for dispense (pumping out) and a negative number for aspirate (pumping in). It is possible for the pump to be stopped early if, say, the Movie is triggered.

The Kloehn pump has a replaceable glass syringe with Teflon-tipped plunger. A valve at the top of the syringe directs the flow. The tip connects to the very top port (“A”). The source vial or bottle connects to the port 120° clockwise (“B”). Port “C: is not used at this time.

You must always click *Home* for the pump before requesting any syringe moves. The pump will automatically put the valve to port B, the right hand port, before homing. Home leaves the syringe near, but not exactly at the very top.

You can always manually click the valve position (to tip, “A”, or source, “B”). You should not do this during a move however. Stopping the pump during a valve move will generate an error. Errors are reported to the user and require a new Home for the pump.

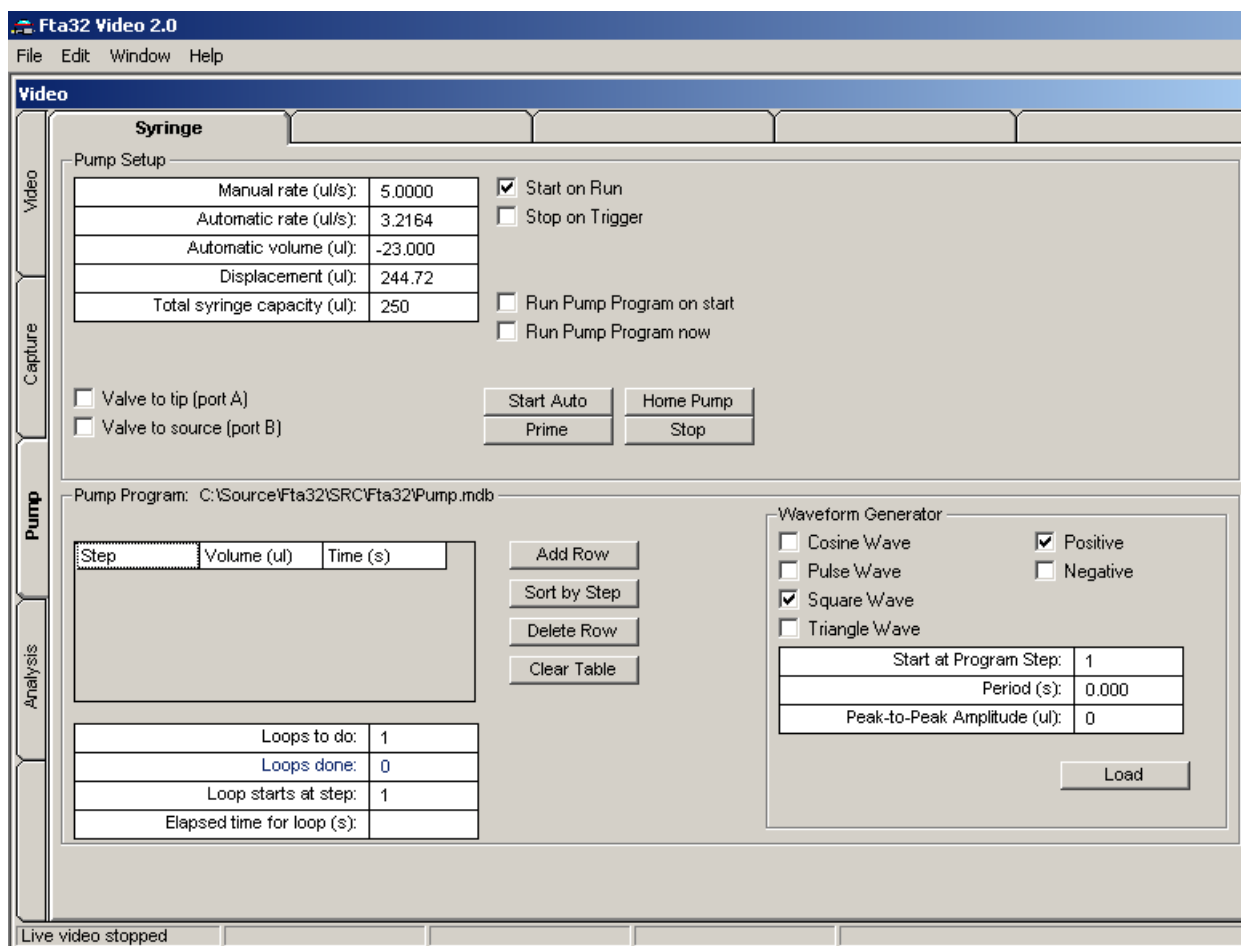
*Prime* will continuously prime liquid towards the tip. Click *Stop* to terminate the priming or any other move. There are no user-set parameters for prime. It will run until stopped by the user.

In multi-pump installations, the checkboxes for *Pump 1*, etc., will determine which pump moves when you click a command button.

*Displacement* is the current syringe position. It is setup so it shows how much of the current syringe has been dispensed. When the syringe tip is at the bottom, so it could dispense the entire capacity, the value is 0. When the syringe is at the top, the value is the capacity. Positive values of *Automatic volume* dispense and negative values aspirate.

Common Kloehn Pump Errors	
Code	Meaning
a	syringe failed to initialize
b	invalid command
c	invalid parameter value
d	communication error
i	syringe overload
j	valve overload
x	valve position error
y	syringe position corrupted
z	syringe may go past home = probably lost steps from load or too fast

*Start Auto* means to start an automatic pumping operation, just as you would expect if you had checked *Start on Run*. You can also *Run Pump Program* now.



## Pump Tubing

The Kloehn pump is shipped with 1/16" (1.6mm) push-on tubing barbs on both the Kloehn pump ports and the needle unions. Normally this is used with Tygon tubing, as this tubing is inexpensive, flexible, and commonly available. However, alternative tubing assemblies are available. The fittings are 1/4-28 threads. Hamilton and Upchurch, to name two well-known suppliers, offer fittings and tubing using Teflon or PEEK. FTA can also supply these. If you use a stuffer tubing, such as Teflon or PEEK, you may wish to route the tubing along the front of the instrument frame and not make the cosmetic loop that the factory makes with Tygon tubing. Note the black Delrin cable and tubing guides are mounted into the frame slots with M5 screws and T-nuts and can easily be re-positioned. Tygon tubing is sold by the major chemistry supply houses (Cole-Parmer, Fisher, VWR, etc.) and their catalogs describe its chemical compatibility.

## 20 Milliliter Bottle Tray

Standard 20cc bottles are provided to hold source liquids. A tray is provided in the accessories to hold these.

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