Lambda 465 Rapid Mixing Accessory with Pneumatic Drive Installation Instructions

This instruction sheet describes the installation of this accessory which is used with the Lambda 465 Spectrophotometer.

NOTE: *Read these instructions before you install this accessory.*

Contacting PerkinElmer

Supplies, replacement parts, and accessories can be ordered directly from PerkinElmer, using the part numbers.

See our website:

http://perkinelmer.com

PerkinElmer's catalog service offers a full selection of high-quality supplies.

To place an order for supplies and many replacement parts, request a free catalog, or ask for information:

If you are located within the U.S., call toll free 1-800-762-4000, 8 a.m. to 8 p.m. EST. Your order will be shipped promptly, usually within 24 hours.

If you are located outside of the U.S., call your local PerkinElmer sales or service office.

Features

- The rate constants define the reaction kinetics
- Easy to mix two liquid sample
- Mixing rate-controllable by press drive
- Simultaneously measure right after injection

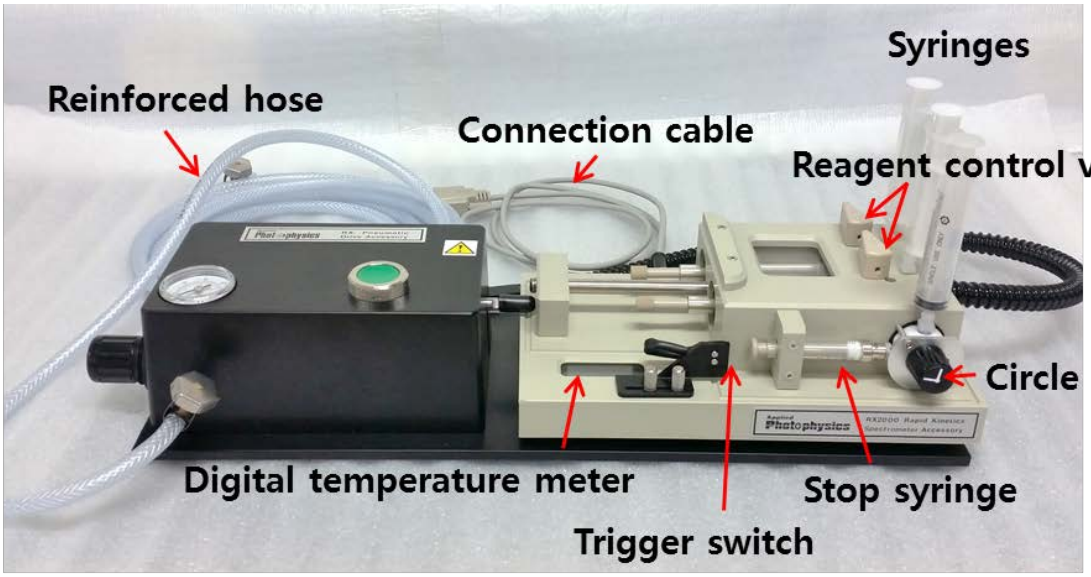
Figure 1 Lambda 465 Rapid Mix Accessory with the Pneumatic Drive [P/N: N4104015]

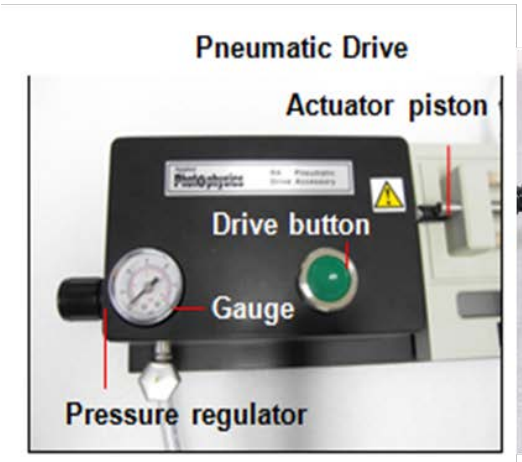
Dimensions and Specifications

Physical Characteristic		Specification
Rapid Mixing Accessory Only	Dimensions (mm)	70 (H) x 250 (W) x 150 (D)
Rapid Mixing Accessory with Pneumatic Drive	Dimensions (mm)	85 (H) x 455 (W) x 150 (D)
	Weight (kg)	4.62
Dead Time		8 ms
Optical Pathlength		2 mm and 10 mm for absorbance/fluorescence/circular dichroism
Widow Size		40 mm^2 for fluorescence detection
Cell Material		Silica
Beam Height		15 mm from base of cuvette holder
Minimum Vol./Shot		120 µl/Shot for each reactant
Syringe Volume		2.5 ml
Ratio mixing		1:1 as standard, but different ratio is also available by altering syringes (up to 1:10)
Temperature Range		4 to 60°C
Triggering		TTL, open-collector and switch-contact
Flow Circuit		Biocompatible and chemically inert

Description

Configuration of the Rapid Mixing Accessory with Pneumatic Drive





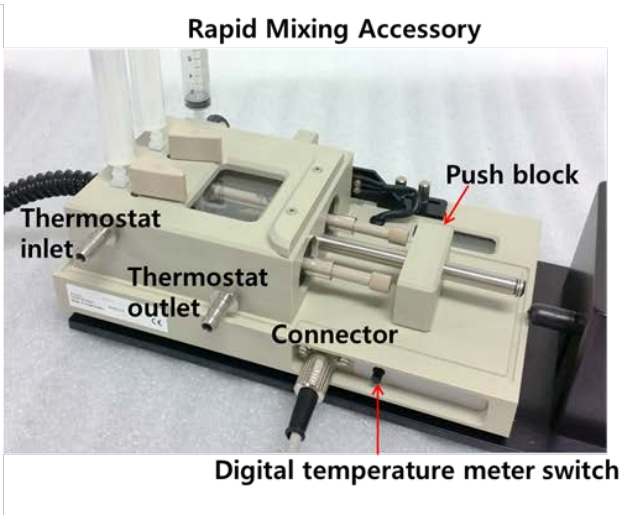


Figure 2 Lambd 465 Rapid Mixing Accessory and interface cables

Installation

1. Connect the connection cable with Rapid Mixing Accessory and Lambda 465 as shown below.

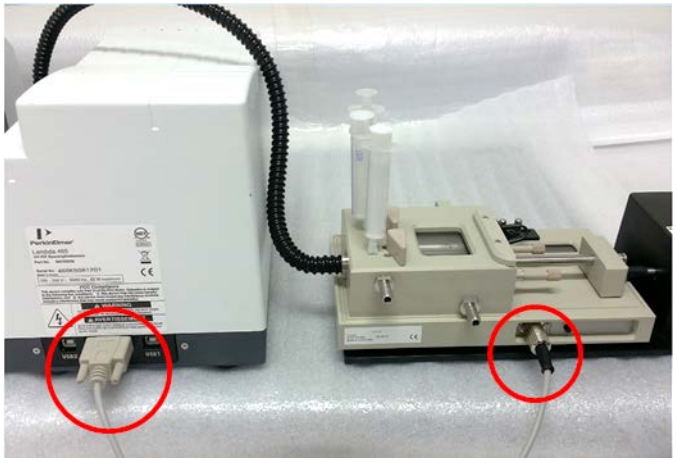


Figure 3 Connections

2. Place the Micro Cell which is connected with Rapid Mixing Accessory into the cell holder of Lambda 465.

3. Connect the power cord and USB cables between USB (1) & USB (2) and the PC.

   * USB (1) Port of Lambda 465: Connected to the PC for communication

   * USB (2) Port of Lambda 465: Connected to the PC which is related to triggering the signal to the Rapid mix accessory.

Figure 4 Connections

4. Turn on the power of the Lambda 465.

5. Connect the reinforced hose line to air or N_2 gas supplier and open the pressure regulator entirely by turning it counterclockwise. And then open the gas valve of supplier to push gas into the pneumatic drive.

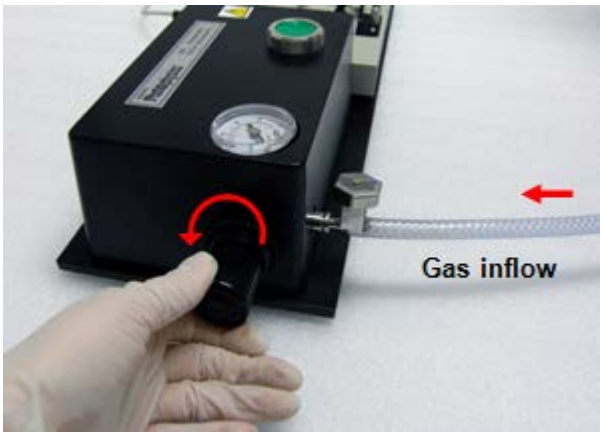
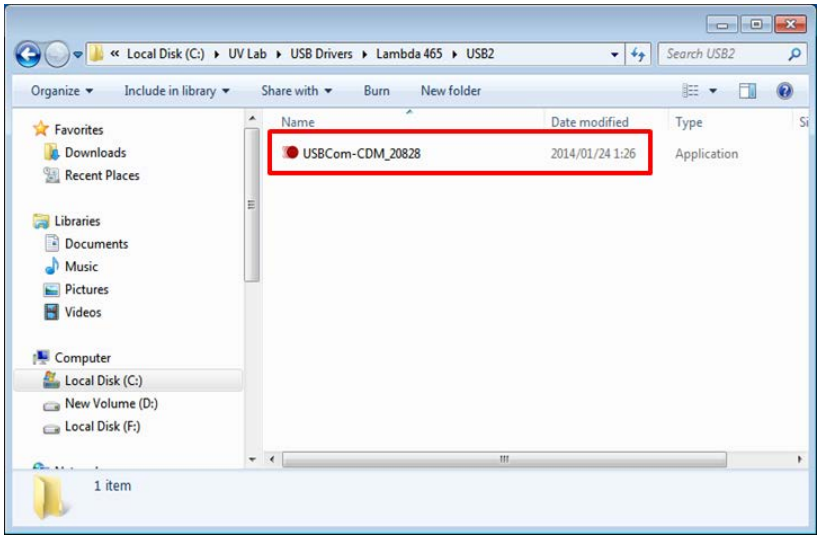


Figure 5 Connecting the reinforced hose

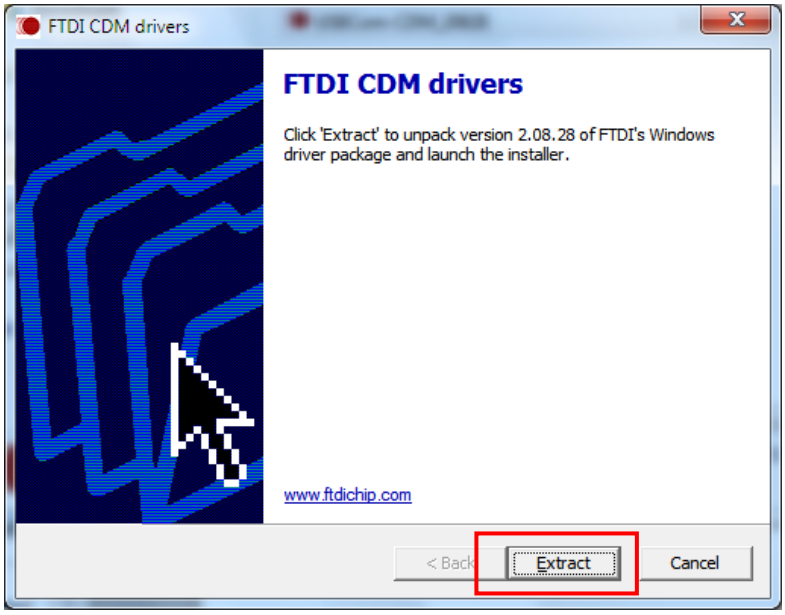
Installing the Driver

When using the rapid mix accessory, install the COM port drive properly according to the following procedure.

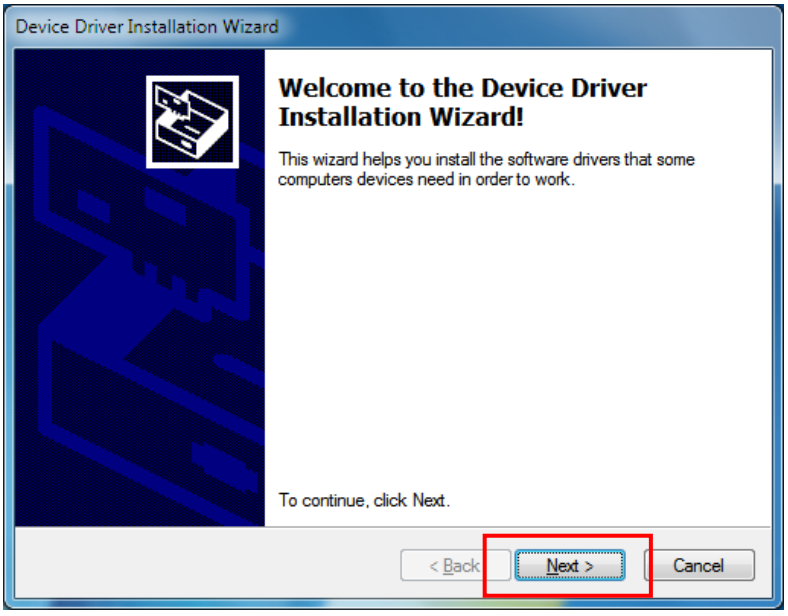
1. Turn on the computer and the Lambda 465.
2. Connect the two USB cables between the computer and the Lambda 465.
3. Select **C>UV Lab> USB Drivers> Lambda 465> USB2** folder.
4. Double click **USBCom-CDM_20828**.



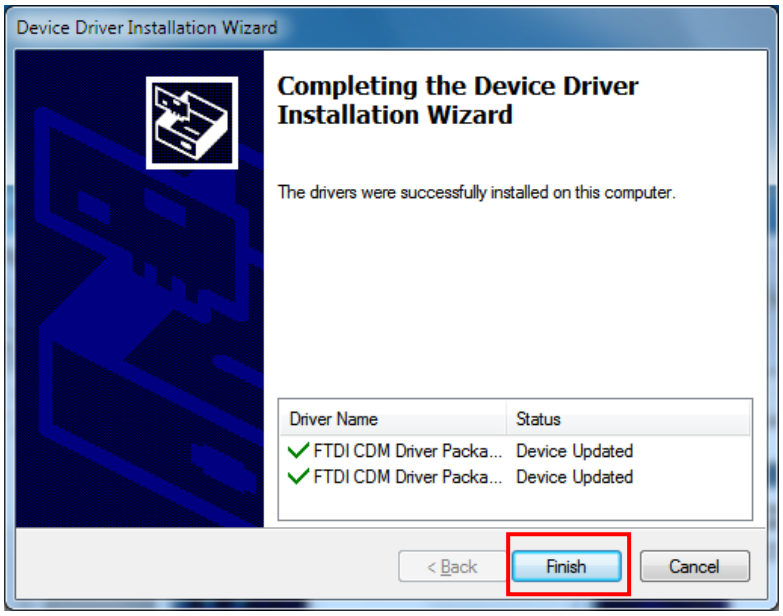
5. Click **Extract**.



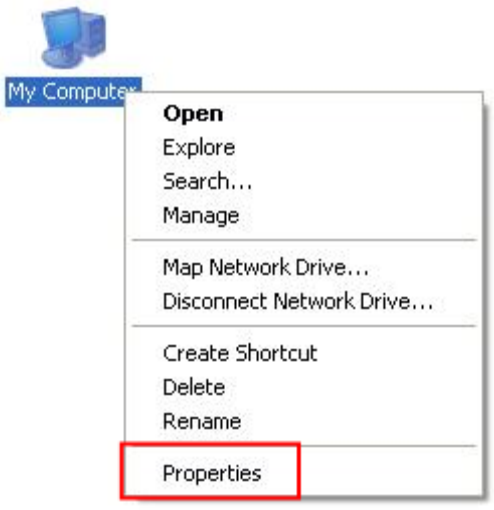
6. Click **Next**.



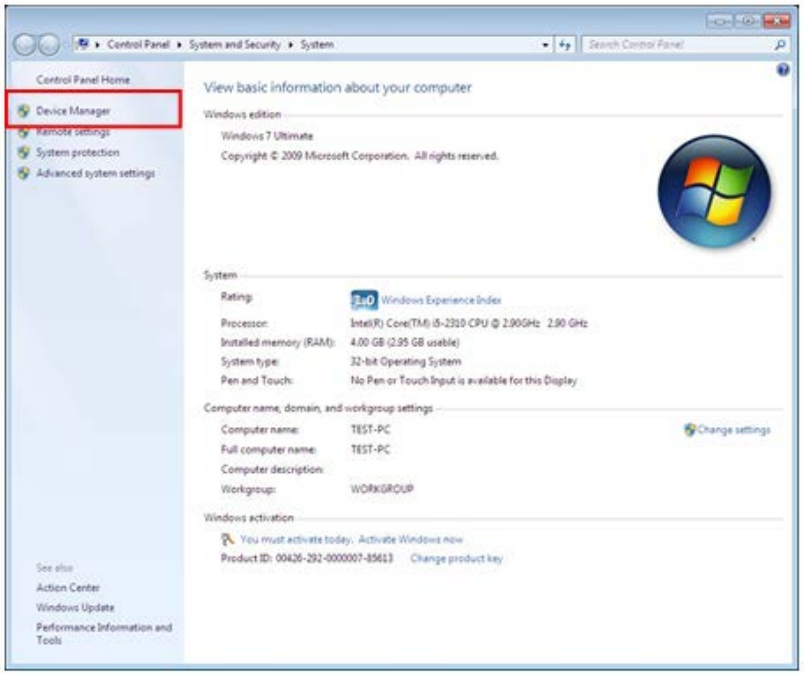
7. The following dialog box will appear. After installation is completed successfully, click **Finish**.



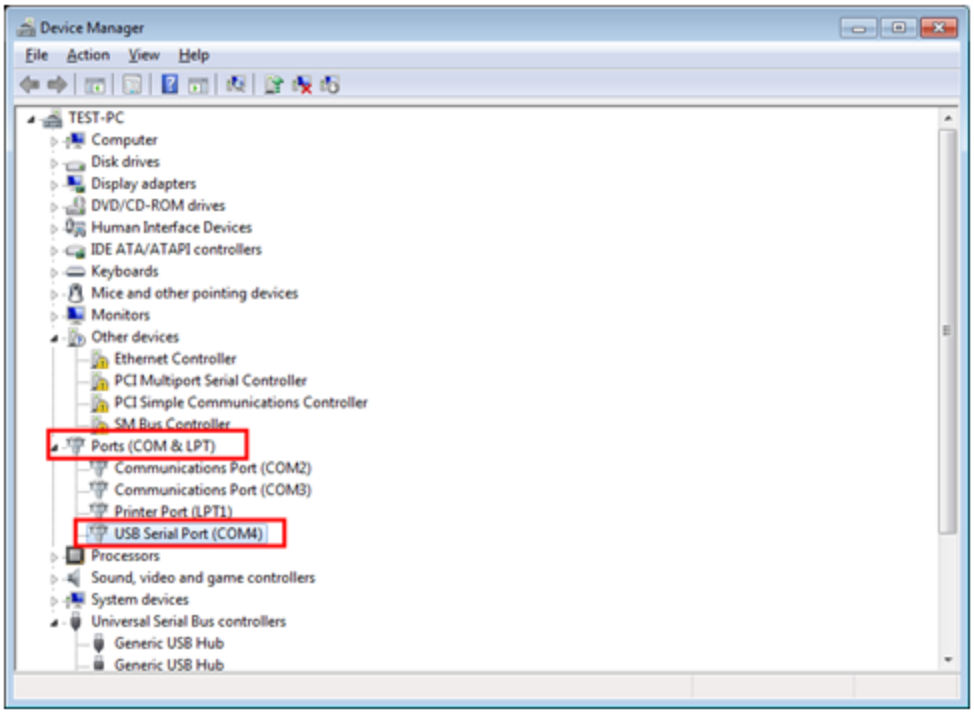
8. Select **My Computer** → **Properties**.



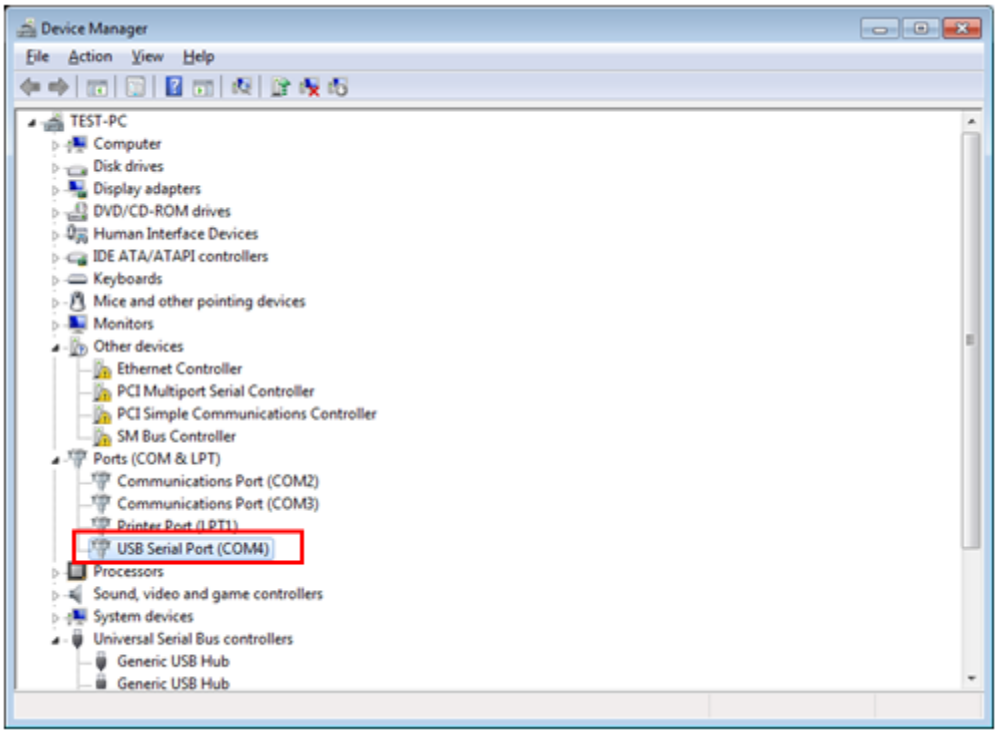
9. Select on **Device Manager**.



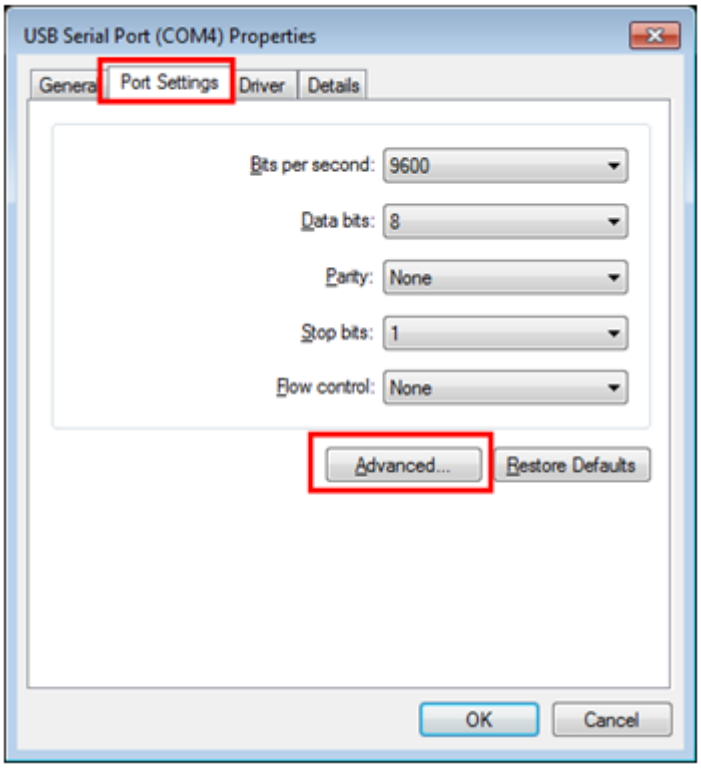
10. Select the **Ports (COM & LPT)** to expand the listing. These are the devices currently connected to the COM ports. The **USB Serial Port (COMx)** is visible when the driver installation is completed successfully.



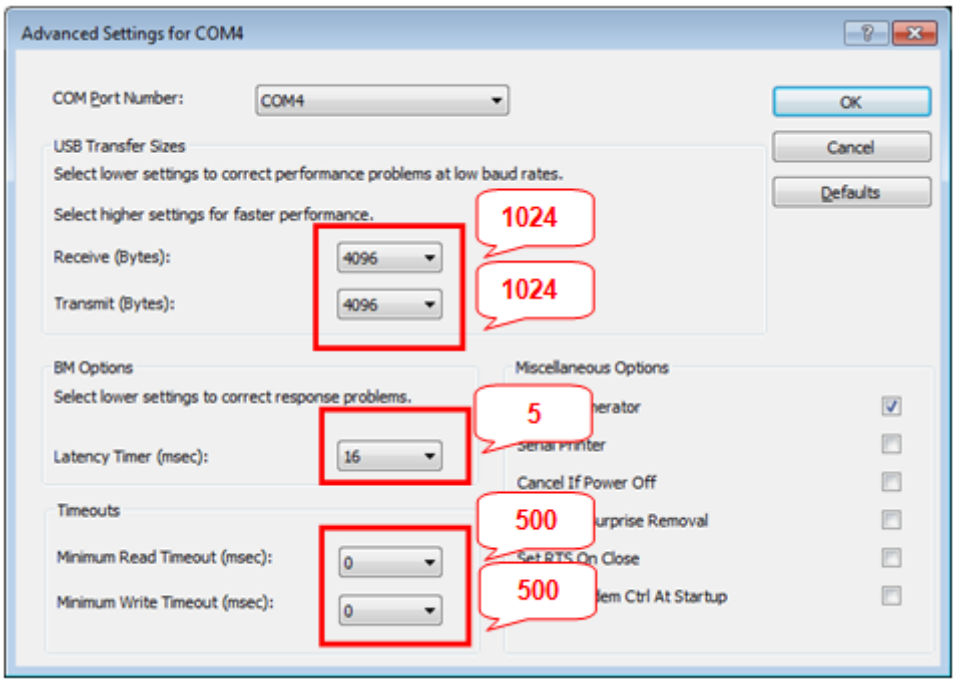
11. Double click on **USB Serial Port (COMx)** of the Ports (COM & LPT) section.



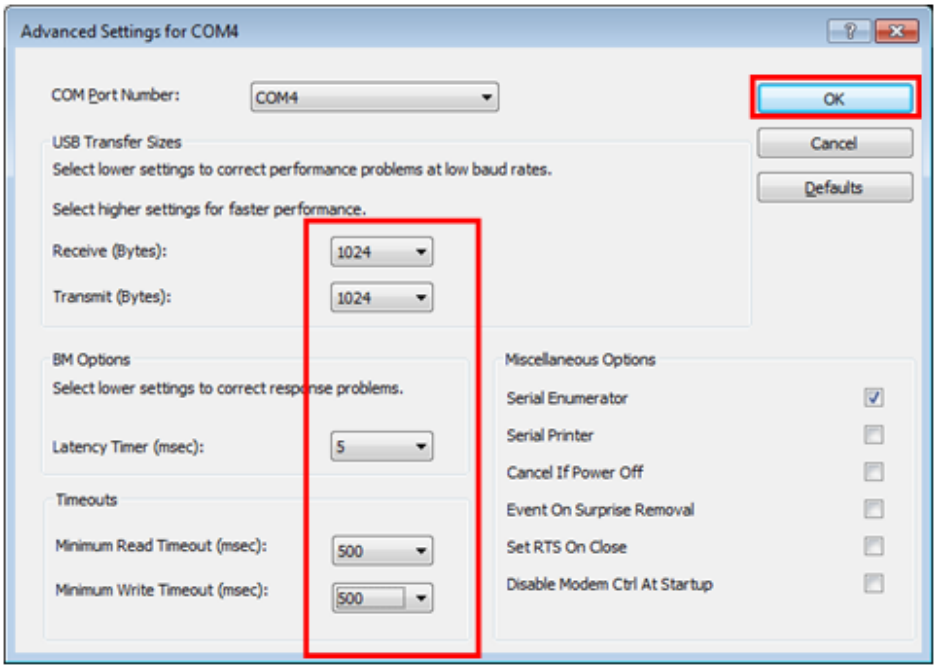
12. Select on the **Port Settings** tab and click on the **Advanced... button**.



13. Change the parameter values as shown below.



14. Select **OK** after checking the changed parameter values.

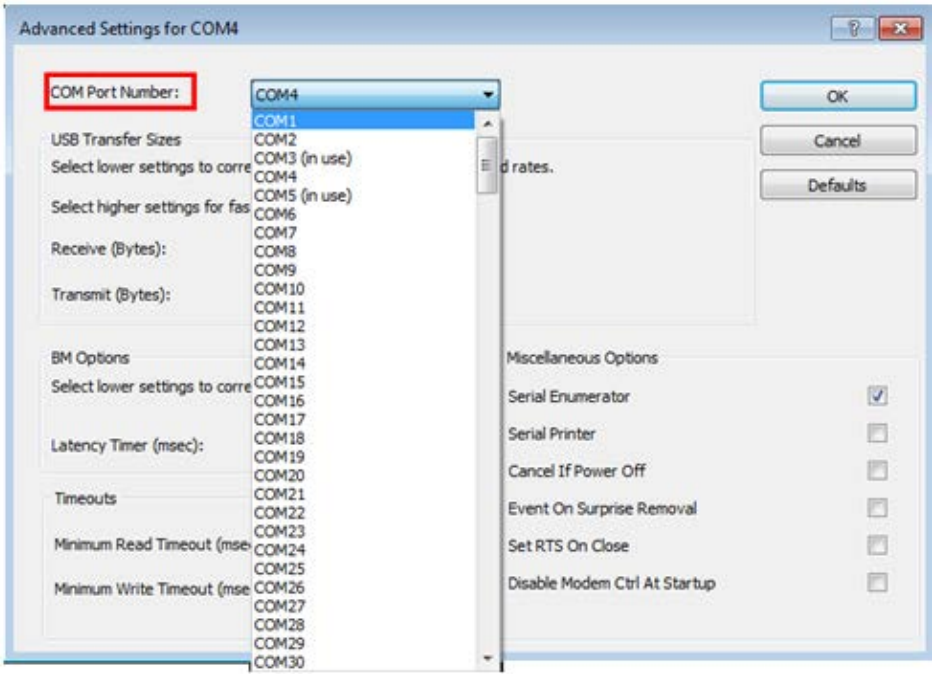


15. Launch the software.

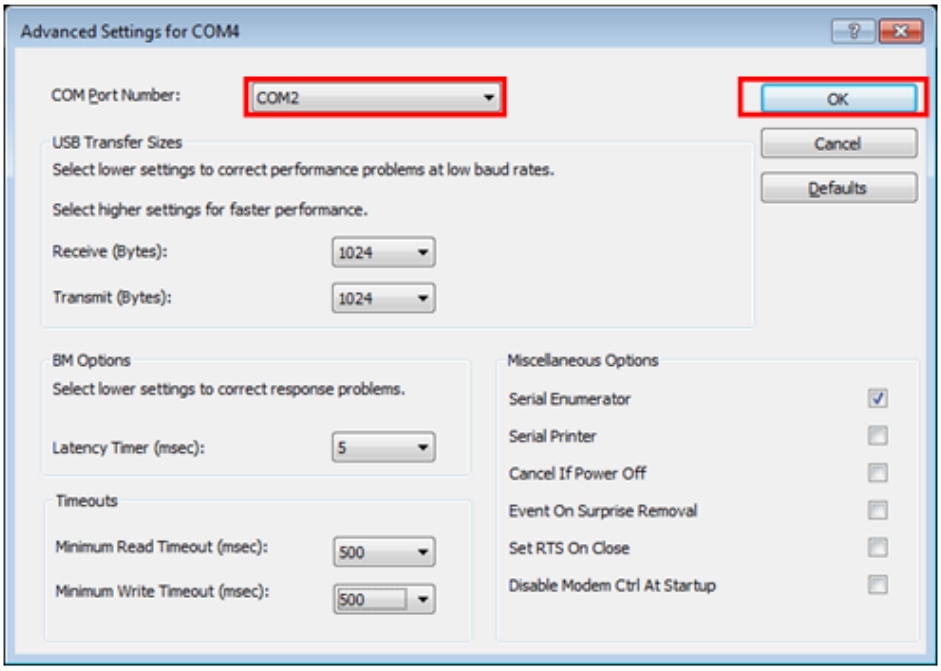
16. If the instrument fails to communicate with the PC, change the COM Port Number as shown in the following steps.

17. Open **Advanced Setting for COMx** window following steps 8 to14.

18. Select on the COM Port number list to expand it and change the COM port number another one which is not in use from COM 1 to COM 10.



19. Make sure that the changed COM Port Number is applied and select **OK**.



20. Restart the computer after finishing driver setting.

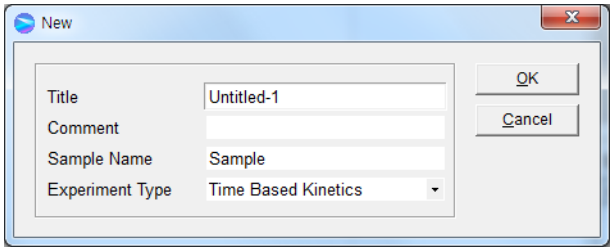
Measurement

NOTE: *Start the sample measurement after more than 20 minutes warming-up of system.*

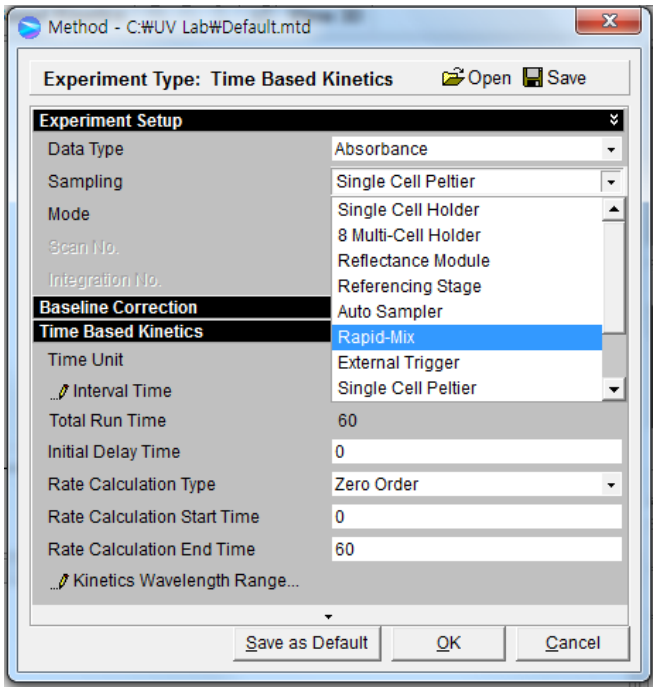
This accessory can be operated in Time Based Kinetics and the Ultra Kinetics functions of Kinetics mode and the Enzyme Activity function in Bio mode.

Blank Measurement

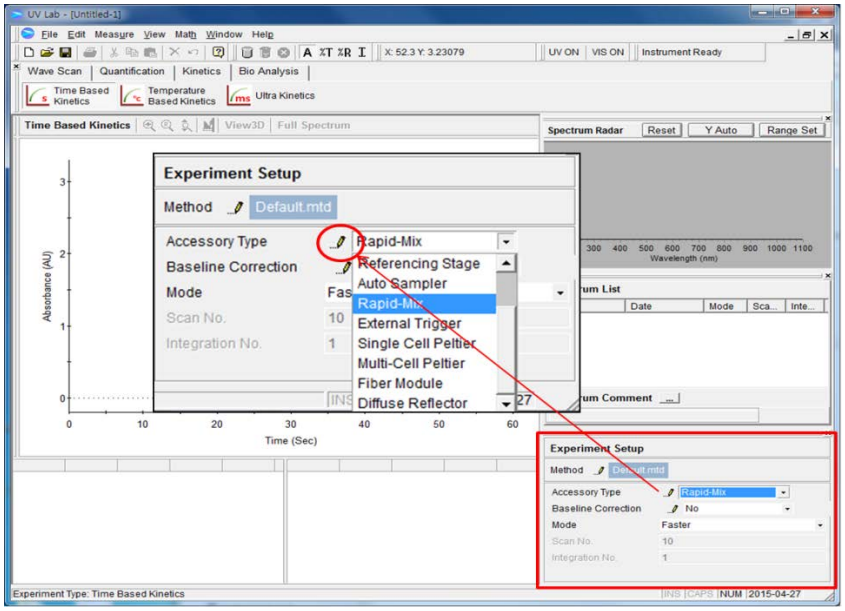
1. Launch the **UV Lab** software. When the window below is appeared, select **Experiment Type** and select **OK**.



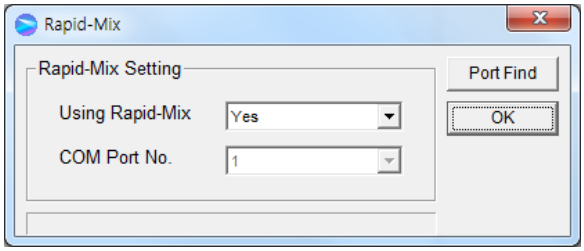
2. The following dialog box will be displayed. Enter each parameter and select **OK**.



3. Click the **red-marked icon (pencil icon)** when you want to change any parameters for the Rapid-Mix.



4. The following dialog box will appear. Then, choose **Yes** for using Rapid-Mix and enter the COM port number of which the Interface Module is connected to the PC.



5. Fill the blank material (solvent, water, etc.) into Syringe 1 and Syringe 2. Syringe 3 is used for draining the mixed blank reagent after blank measurement.

6. Place the position of circle valve as shown below.

Figure 6 Location of the circle valve

7. After placing reagent control valve of Syringe 1 and Syringe 2 at the LOAD position, push syringes 1 and 2 simultaneously to load the blank reagents. After loading, place the valves to the DRIVE position.

Figure 7 Syringes into the reactant

8. Place the position of circle valve as shown below.

Figure 8 Location of the circle valve

9. Charge the gas by closing regulator (turning clockwise) until the pressure is set as desired (3 to 4 bar, 45 to 60 psi).

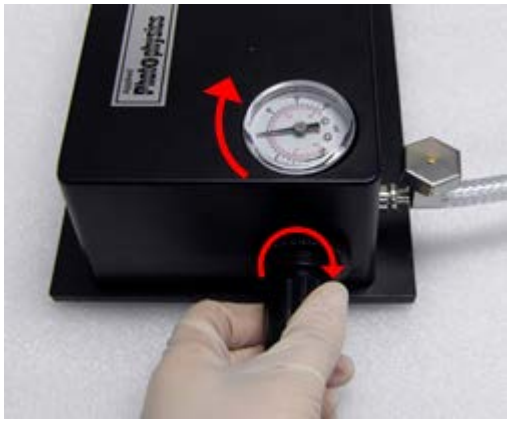


Figure 9 Controlling the gas pressure by closing the regulator

10. Press the **Drive** button and keep pressing until the Actuator piston pushes the Push block entirely.

Figure 10 Location of Push block and Actuator piston

Note 1: *In the blank measurement, even the stop syringe will tap the trigger switch, the blank is not measured automatically. You should click measure Blank in the software.*

Note 2: *Be careful **not** to contact the trigger switch after the Blank measurement. If the trigger switch is contacted, the Rapid Mixing will transfer the sampling signal to the software and automatically UV Lab software will measure the sample even though the sample is not loaded.*

11. When the Actuator piston finishes pressing the Push block, the mixed blank reagent is injected to the cuvette cell to measure blank and then the stop syringe will tap the Trigger switch.

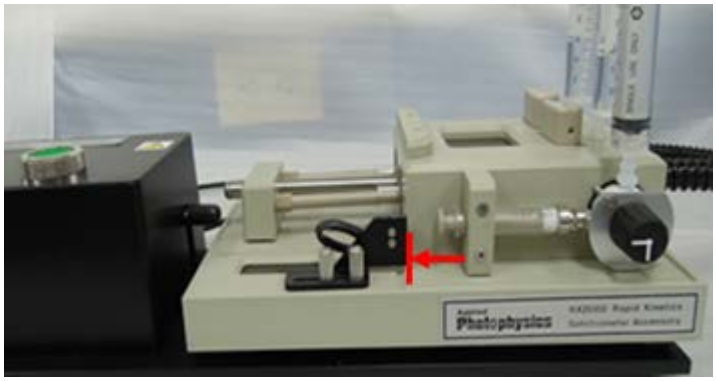


Figure 11 Trigger Switch

12. Click **Blank** in the software and then the Blank will be measured.

13. After the measurement, place the position of circle valve as shown in the following figure and then drain the mixed blank reagent to the syringe 3.

Figure 12 Position of the circle valve

Sample Measurement

1. Fill the samples into syringe 1 and syringe 2. Syringe 3 is used for draining the mixed sample solution after sample measurement.

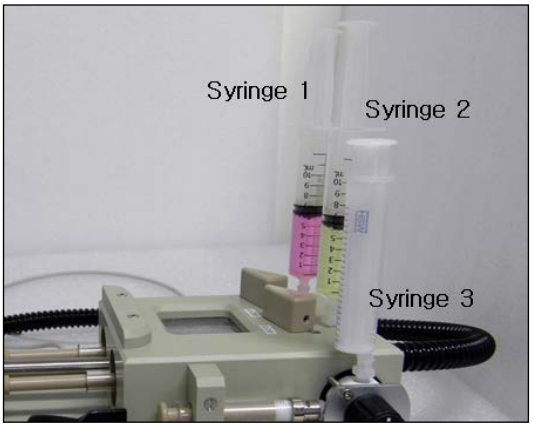


Figure 13 Filling the syringes

2. Place the position of circle valve as shown in the following figure.

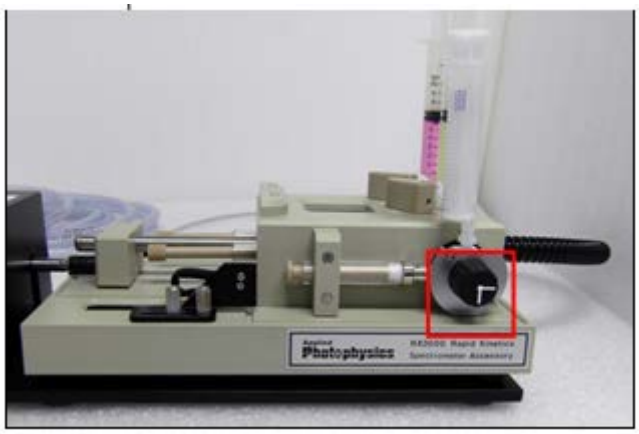


Figure 14 Position of the circle valve

3. Place the Reagent control valves of Syringe 1 and Syringe 2 to the LOAD direction. And then, push the Syringe 1 and 2 simultaneously to load the samples.

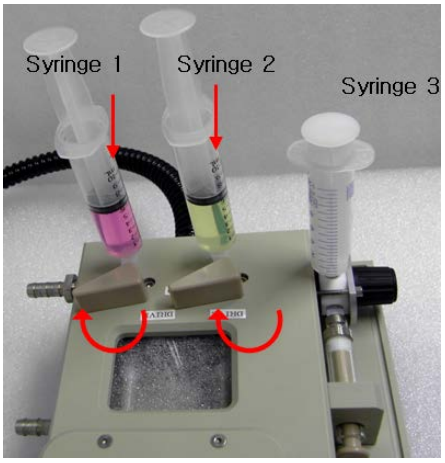


Figure 15 Loading the samples simultaneously

4. Place the reagent control valves into the DRIVE direction.

Figure 16 Placing the Reagent control valves into the DRIVE direction

5. Place the position of circle valve as shown below.

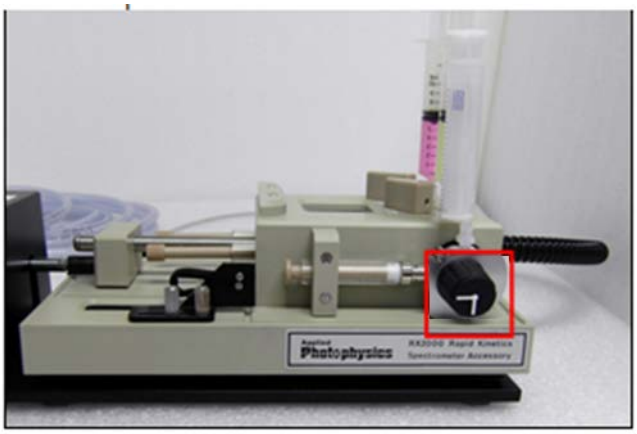


Figure 17 Position of the circle valve

6. Charge the gas by closing regulator (turning clockwise) until the pressure is set as desired (3 to 4 bar, 45 to 60 psi).

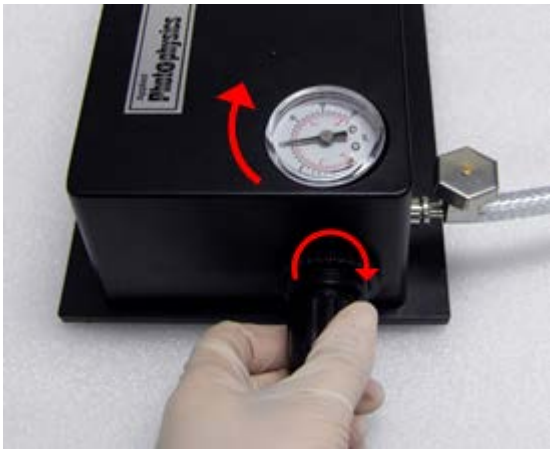


Figure 18 Charging the gas by closing regulator

7. Press the Drive button and keep pressing until the Actuator piston pushes the Push block entirely.

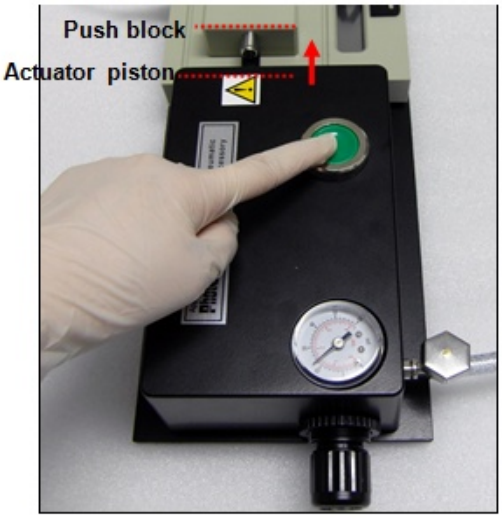


Figure 19 Pressing the Drive button

8. When the Actuator piston finished pressing the Push block, the mixed sample solution is injected to the cuvette cell to measure sample and then the Stop syringe will tap the Trigger switch.

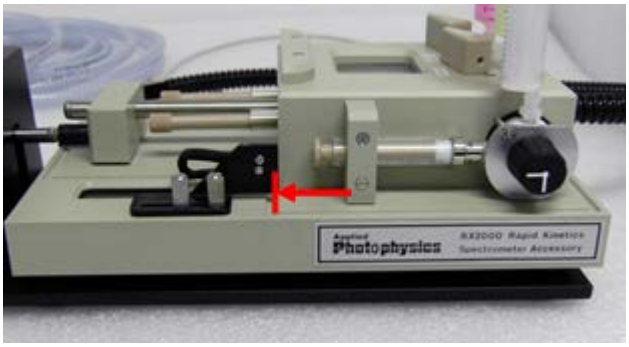


Figure 20 Pressing the Actuator piston

9. After the trigger switch is tapped, the sample will be measured automatically.

10. After the measurement, place the position of circle valve as shown below, and then press the piston of stop syringe to drain the sample solution to syringe 3.

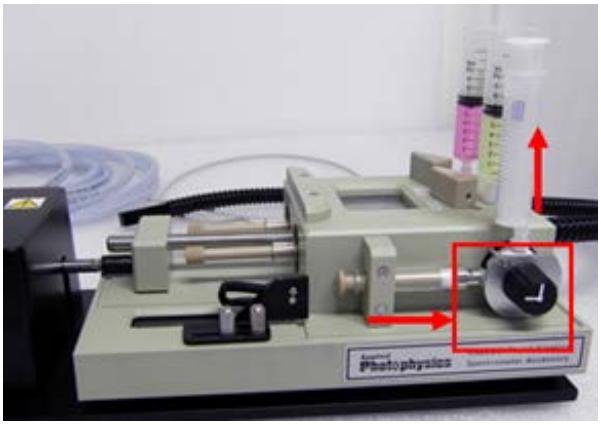


Figure 21 Pressing the piston

Troubleshooting

When sample is not injected from Syringe 1 or 2

1. Check whether the reagent control valve is correctly directed.
2. Check the sample is already fully injected.
3. Make sure that the circle valve direct is rotated correctly.

When Actuator piston does not move

1. Check the gas is charged sufficiently.
2. Check whether the Push block is hooked by some distrubing particles.

When sample is not drained to Syringe 3

- Make sure that the circle valve is rotated to the correct direction.