User Manual for Calibrated Culture Delivery System

USER INSTRUCTION

WARNINGS

1. **Keg is pressurized to 10 to 15 psi with Nitrogen before shipping.**

2. **Wear suitable eye and face protection, gloves and protective clothing.**

3. **Gas cylinders used to dispense culture MUST be equipped with a proper pressure regulator.**

4. **During operation DO NOT exceed the keg's maximum working pressure of 15 psi.**

UNPACKING

1. **Carefully remove keg and measuring cylinder from shipping container and stand keg upright.**

2. **Attach measuring cylinder to the keg by using the black Velcro straps.**

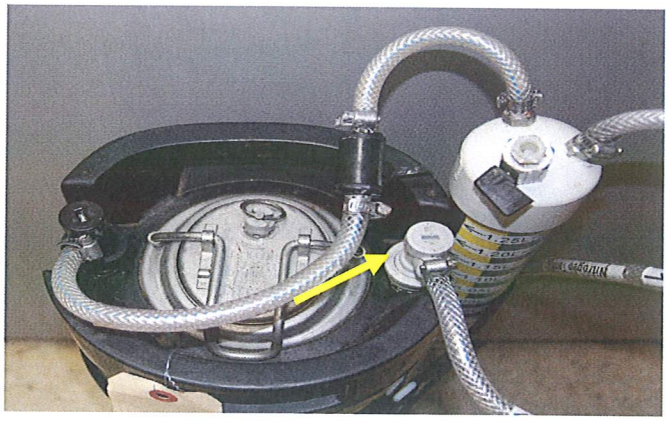
3. **Carefully check the keg, measuring cylinder, connectors, valves and tubing for any damage or defects. If any defects or damage is observed, do not use. Report any damage to Shaw Environmental, Inc. immediately at 609-895-5376. A back-up set of quick connects is provided in the packaging material.**

4. **Check and ensure that black, white and green valves are in the CLOSED position and brass three-way valve is in position "1" (handle of the valve should be directed to position perpendicular to the body of the valve).**

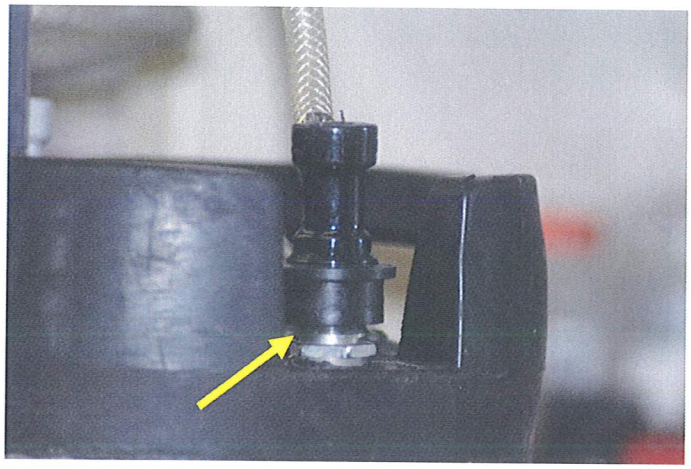
SET-UP

1. **Using an appropriate length of reinforced ¼" ID tubing, connect the tubing marked "Nitrogen tank →" to the gas tank regulator. Another end of the tubing is connected to position "1" of three way brass valve.**

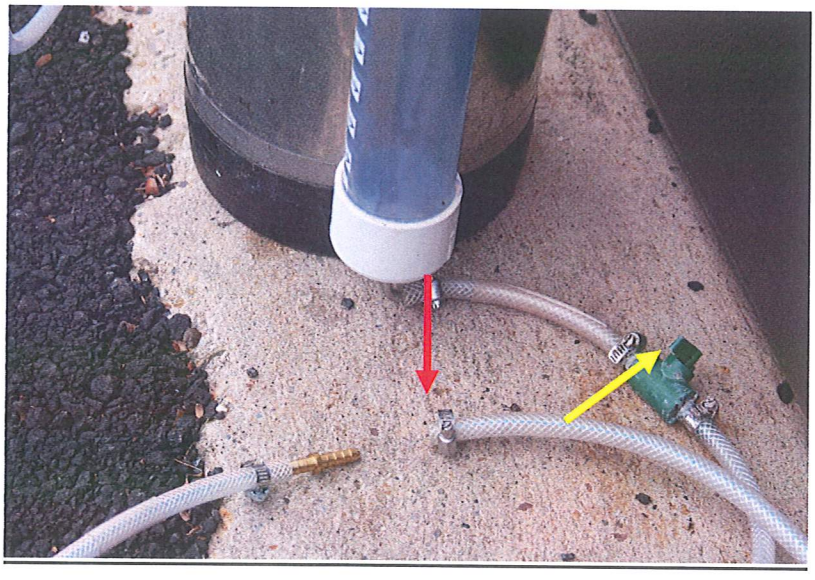
2. **Connect the GREY connector to Gas "In" fitting of the keg. Be sure that the GREY connector is designed to be connected only to Gas "In" keg's fitting. Lubricate fitting with water before attachment.**

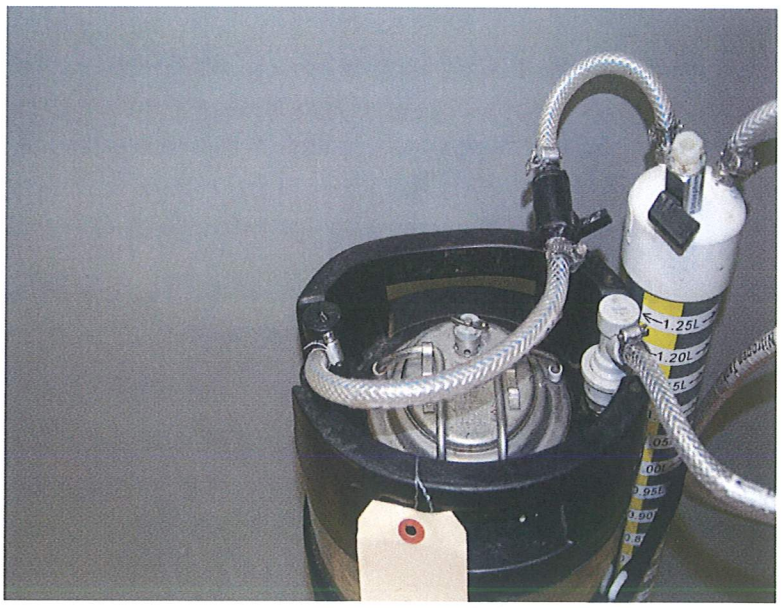


3. **Connect the Black connector to Liquid "Out" fitting of the keg. Be sure that the Black connector is designed to be connected only to Liquid "Out" keg's fitting. Lubricate fitting with water before attachment. Ensure that the black valve attached to the BLACK quick connect is tightly closed.**

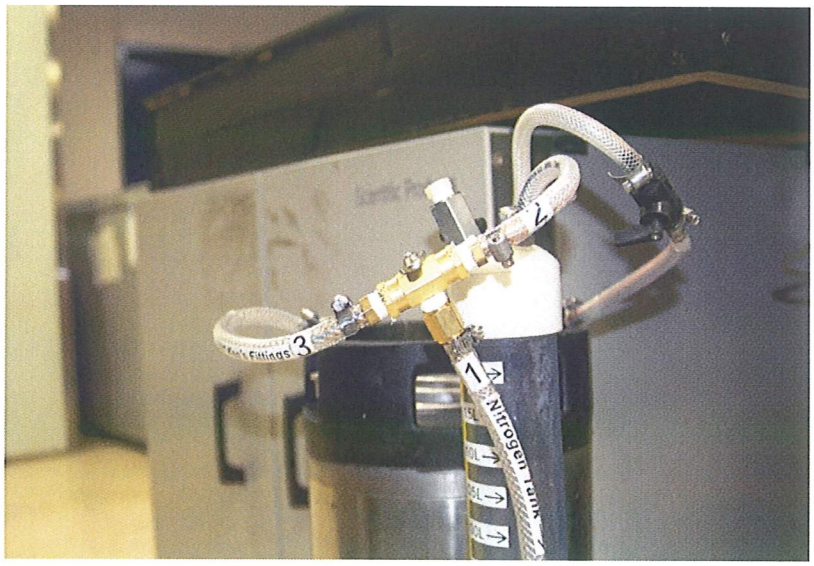


4. **Connect an appropriate length of reinforced ¼" ID tubing marked "Bacteria→" by the barbed fitting to the site tubing to distribute bacterial culture to the desired injection point. Be sure that the green valve is closed. Do not connect this line to the injection line yet.**





Keg and measuring cylinder attached to the keg's fittings black and grey connectors.



Measuring cylinder with attached three-way brass valve.

Keg and measuring cylinder connected to delivery gas tank.

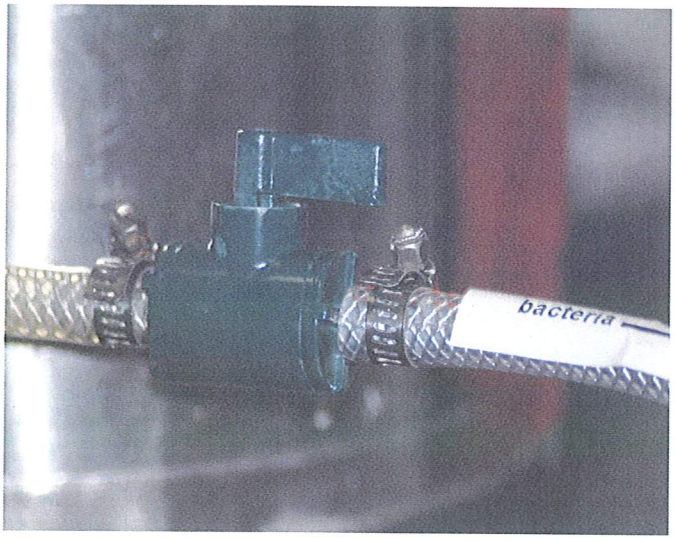
OPERATION

1. **Set up the gas pressure on the delivery gas (Nitrogen or Argon) tank regulator at 10 to 15 psi.**

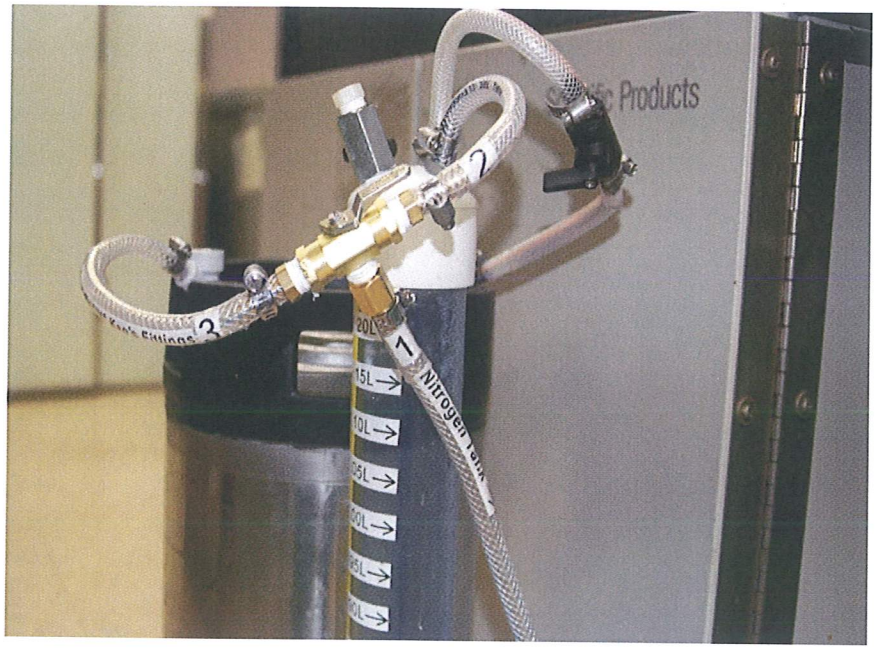
2. **Remove air from injection line by the following procedure:**

    A. **Be sure that at this point that the injection line is not connected to the injection point.**

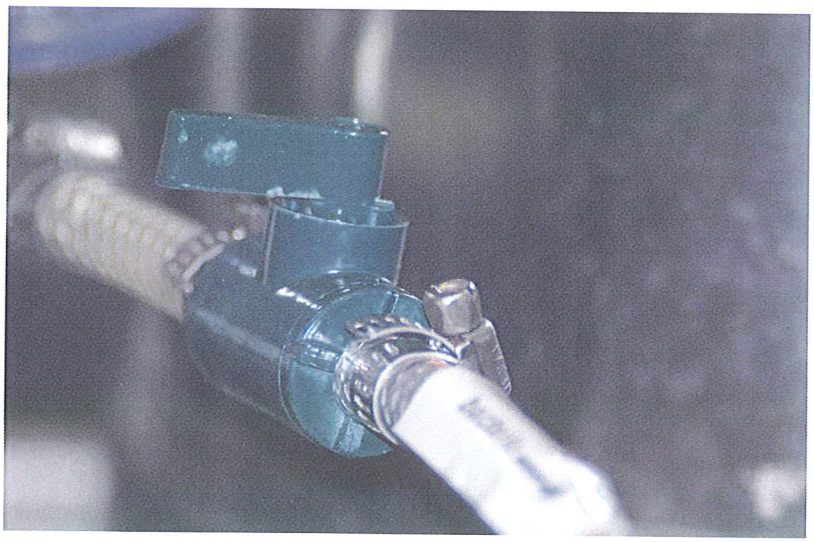
B. **Open the green valve located on the bottom of measuring cylinder.**



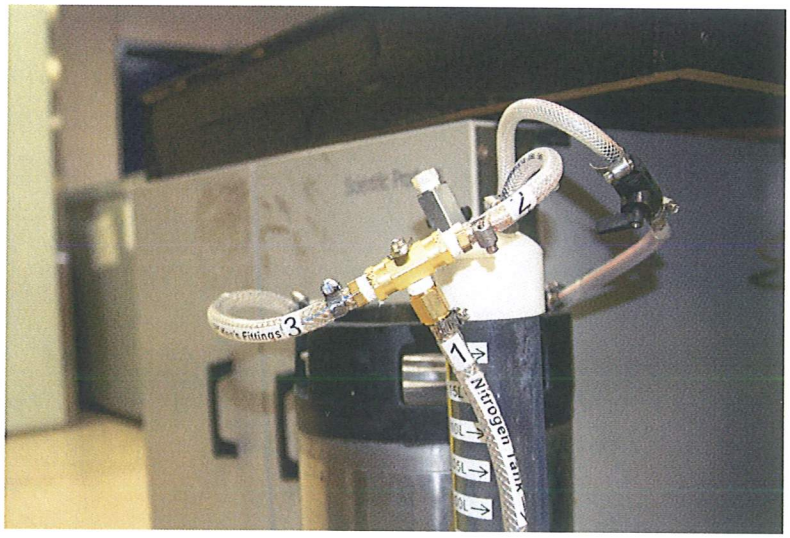
C. **Slowly turn the three way brass valve to position "2" to start supplying the delivery gas (nitrogen, argon) to the measuring cylinder and injection tubing. Flush the cylinder and injection tubing with gas for 2-3 min.**



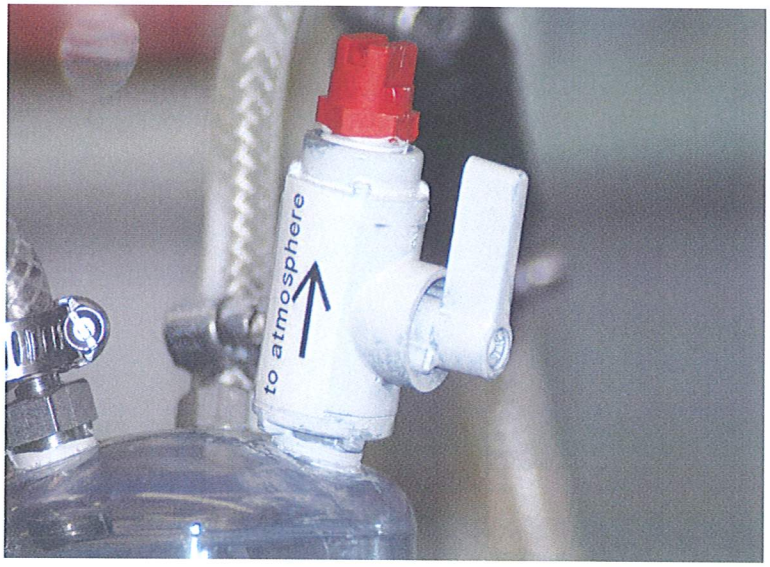
D. **Close the green valve.**



E. **Turn the three way brass valve to position "1".**

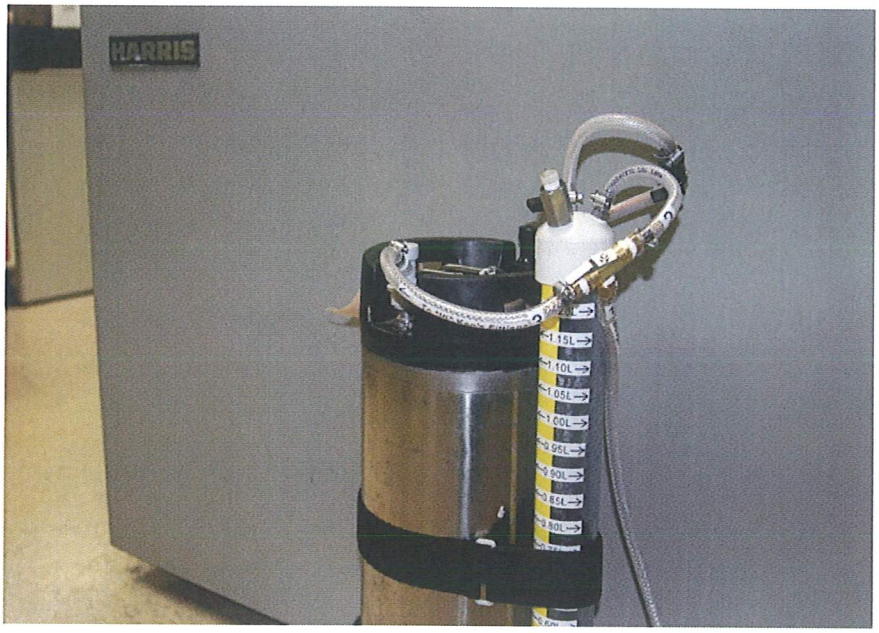


F. **Open the white valve "to atmosphere "position to release any gas pressure in the measuring cylinder. The white valve is equipped with a check valve that prevents the air from being added into the measuring cylinder.**

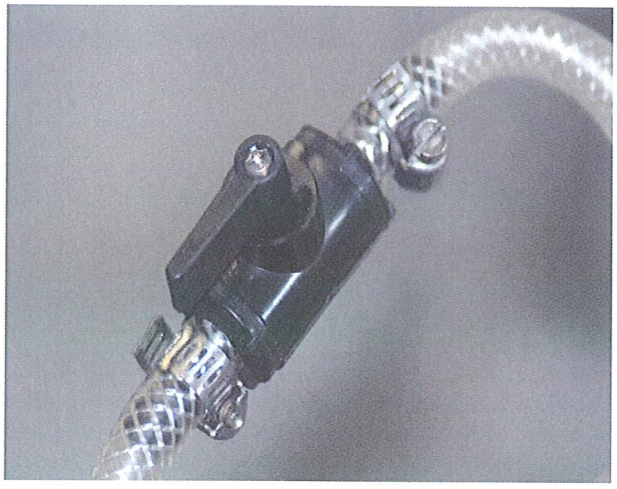


3. **Add the required amount of bacteria to the measuring cylinder:**

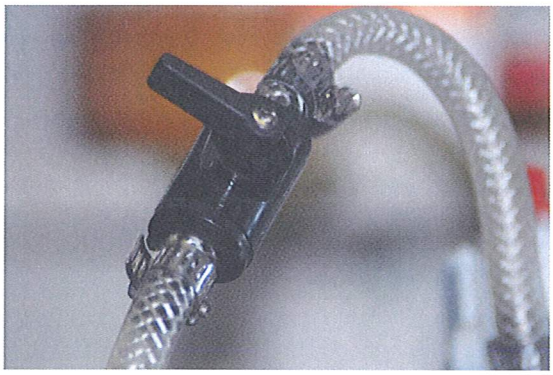
   A. **Turn the brass three way valve to position "3" to pressurize the keg with delivery gas.**



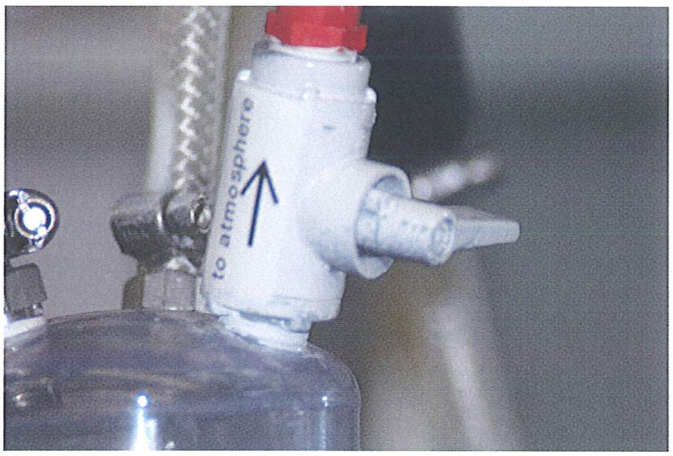
   B. **Slowly open the black valve to add bacteria from the keg to the cylinder.**



C. **Add the required amount of bacteria and close the black valve.**

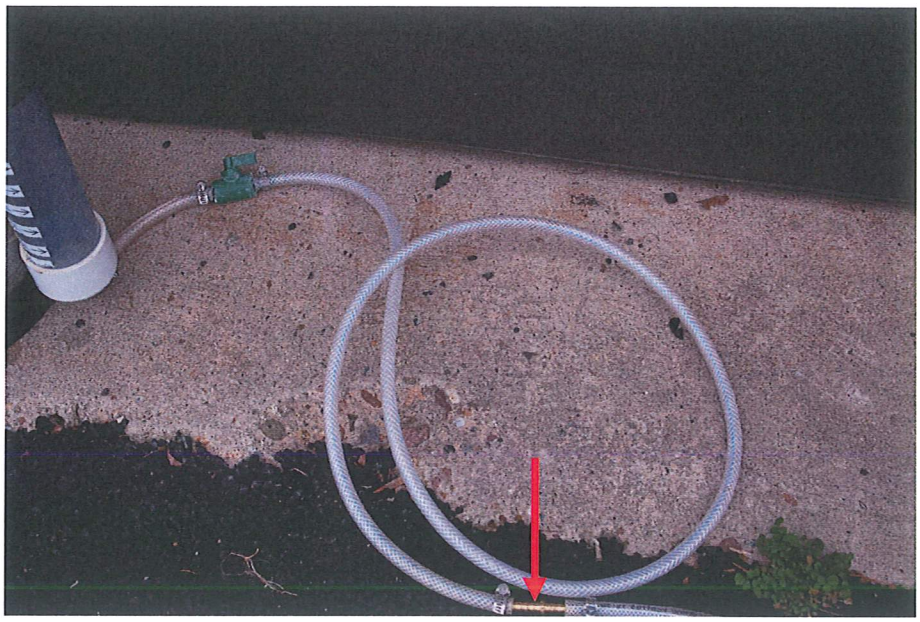


D. **Close the white valve.**

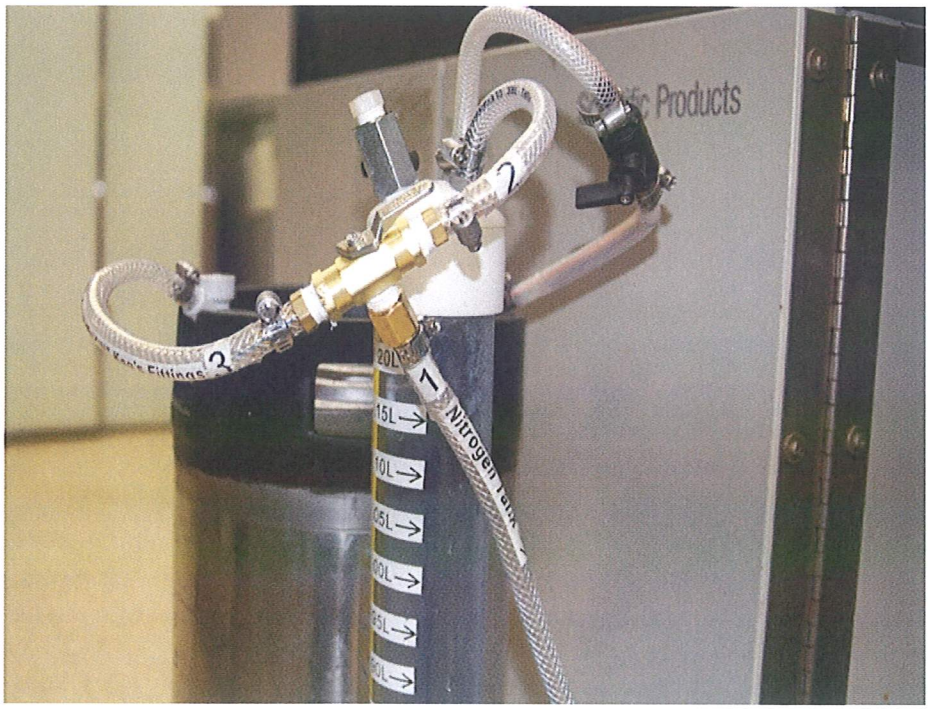


4. **Transferring the measured amount of bacteria from the measuring cylinder to the injection point:**

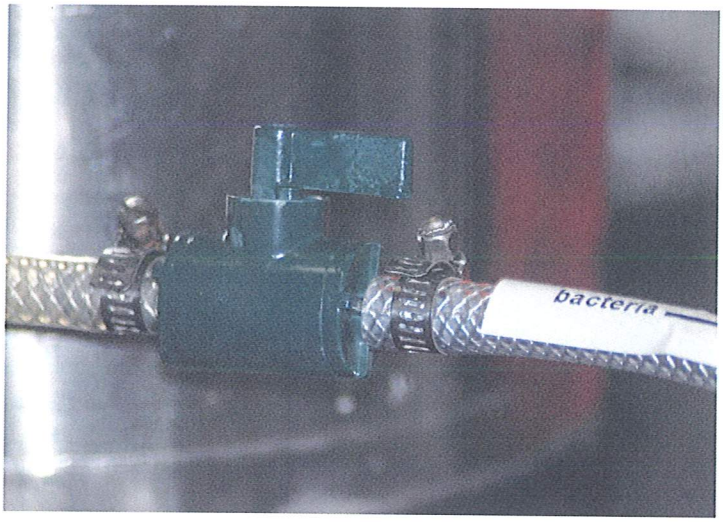
A. **Be sure that at this point that the injection line is connected to the injection point.**



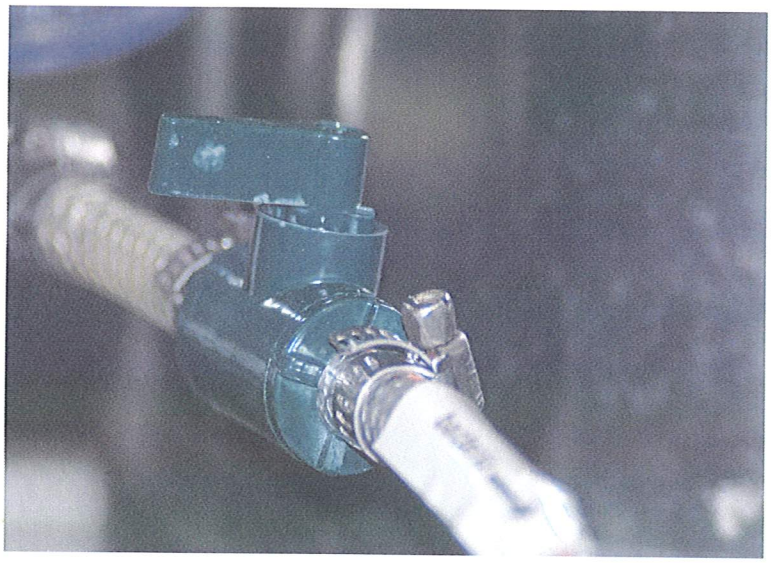
B. Turn **the brass three way valve to position"2" to pressurize the measuring cylinder with delivery gas.**



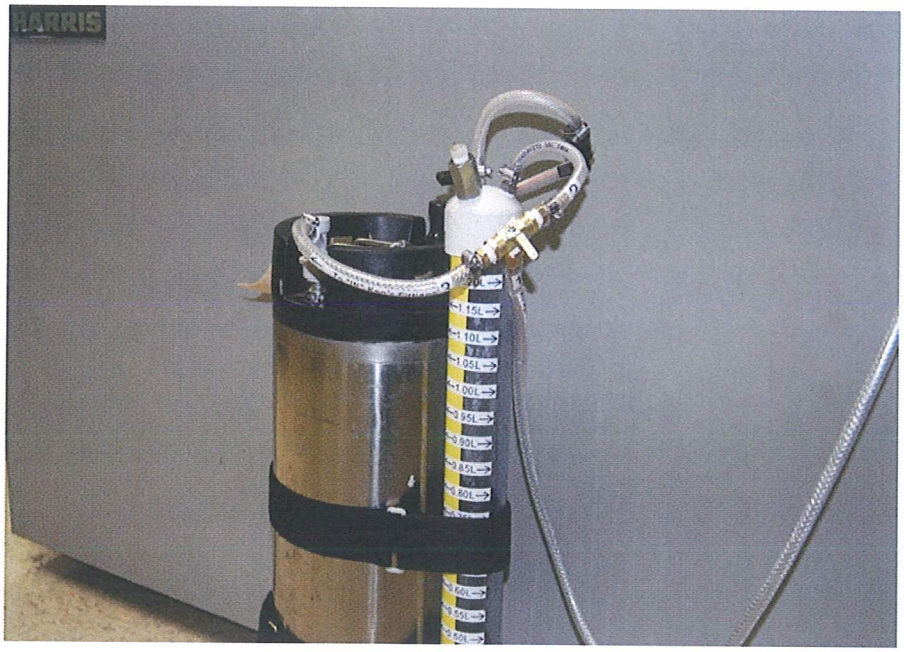
C. Slowly open the green valve on the "bacteria →" line to provide the desired flow of bacterial suspension. Delivery of the culture can be monitored by watching the liquid level in the measuring cylinder.



5. **After delivery of the desired volume of bacterial suspension, close the green valve.**



A. **Turn the brass three way valve to position "1".**



6. **To add more bacteria, follow the instructions according to steps 3 and 4 above.**
7. **After finishing distributing the bacteria, disconnect the black and grey connectors from the keg by pulling up on the barrel of the quick connects.**

STORAGE

If the schedule of bacteria application requires adding the bacteria over a period of more than one day, the keg(s) should be stored at a temperature 2-4 °C, but do not freeze. This can normally be achieved by storing the kegs under ice in the provided coolers. The keg should be pressurized with Nitrogen to pressure 10- 15 psi before storing to ensure a tight seal on the keg cap.

SHIPPING

Cooler and Keg Packed for Return Shipment

After completion of operation, please ship the cooler with keg, delivery system and all spare fittings back to the following address:

Simon Vainberg
CB&I
17 Princess Road, Lawrenceville, NJ 08648