LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com

SPBT-1 Bench Top Solvent Purification System

Operation Manual

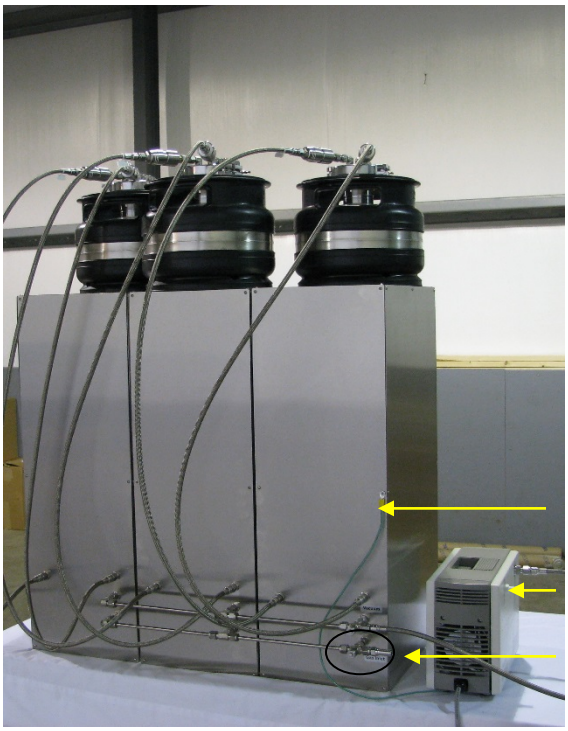
LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com

Table of Contents

LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com

SPBT-1 Bench Top Solvent Purification Operation Manual

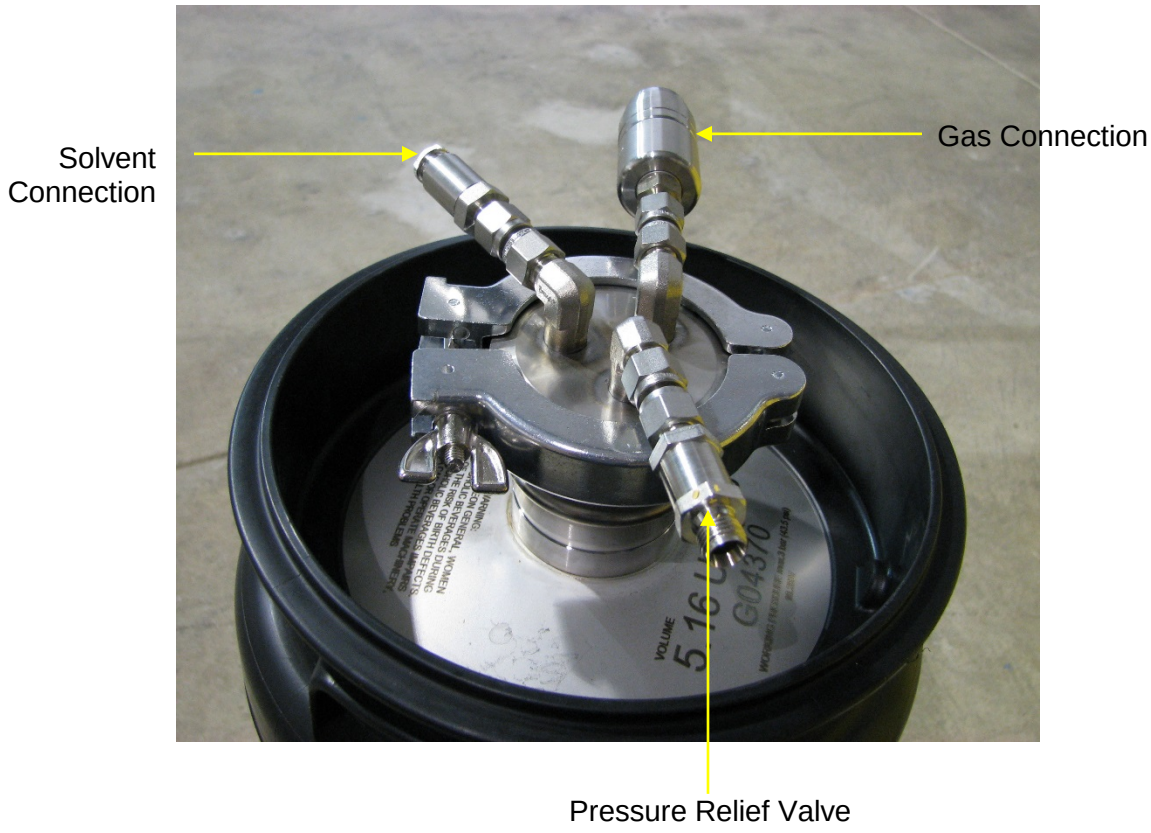
Section 1: System Overview



LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com

Gas Regulator

LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com



The Project Number is located on a sticker on the back of your system. Please have this number available when calling for service information.

Section 2: Ordering Solvents

Solvents need to be ACS grade with a starting water content of 250 ppm or less. If you are using THF or ether it must be inhibitor free.

NOTE: For initial start up of the system you will need 8L each of solvent. The Kegs hold 4L.

The following list includes some vendors who provide these types of solvents.

Sigma Aldrich
http://www.sigmaaldrich.com/Area_of_Interest/Research_Essentials/Solvents.html

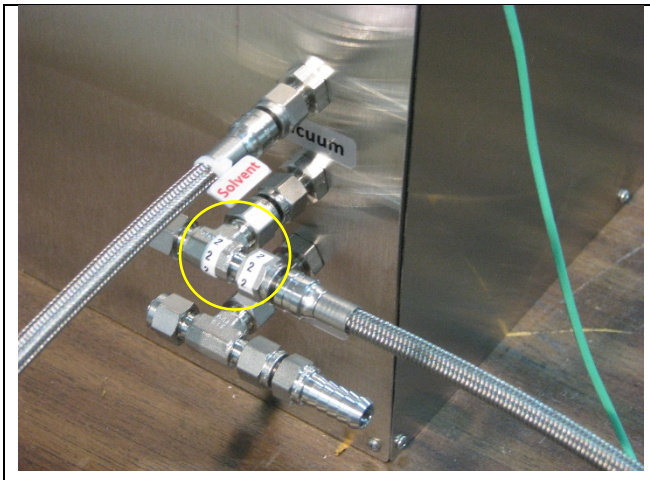
Avantor Materials
http://www.avantormaterials.com/

Fisher Scientific
http://www.fishersci.com/

LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com

Section 3: Installation Instructions

3.1 System Piping Connections



1. Connect all inter-connecting piping supplied with system. Connections will be labeled by the factory.

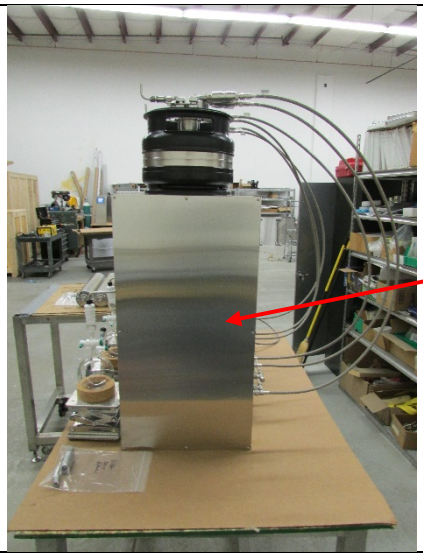
2. Match the corresponding numbers on component with the corresponding number on system.

   NOTE: See system pictures for connection details.

3.2 Special Instructions for Methanol

NOTE! Your system has been marked with a Methanol designated channel and solvent keg. You must use this channel only for Methanol.

If you have not told us that you will be using Methanol in your system, please contact LC Technology. We will provide you with the appropriate filter for use with your system.



NOTE: It is always recommended to wear personal protective equipment (PPE) when handling solvents.

1. After filling solvent keg with Methanol remove right side panel.

2. Locate the Methanol Filter.

3. Gently twist open small white bleed valve on top of filter.

   NOTE: Do not remove cap completely!

   Methanol level will rise and fill entire filter.

   Once filled retighten bleed valve.

4. Reattached right side panel.

5. Resume normal operation.

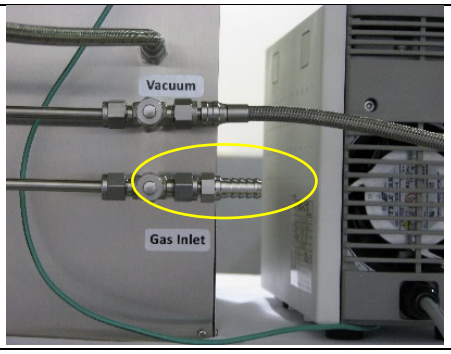
NOTE: It is very important to fill the system slowly with methanol. Methanol has a tendency to cause the filter column to heat up. This excessive heat can cause the filter material to breakdown.

To fill the system slowly, open the dispensing valve for about 30 seconds and then close the valve. Check the filter columns to see if they are warm. If they are not warm, open the dispensing valve for another 30 seconds and check again. If they are warm wait for them to cool and then dispense again. Do this until the methanol begins to flow out of the dispensing port. This process can take several hours to an entire day.

3.3 Special Instructions for THF Ether & Dioxane

NOTE: You must use inhibitor-free solvent when using THF, Ether and/or Dioxane.

3.4 Utility Connections



Inert Gas Connection

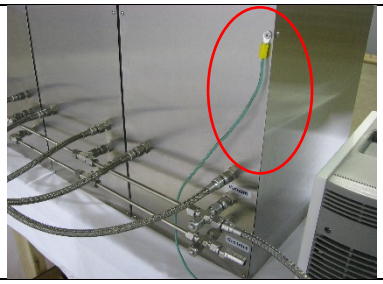
1. Connect inert gas supply to the Gas Inlet connection.

- 3/8” Hose barb included.
- Recommend connecting to 3/8” reinforced tygon tubing.
- Inert gas supply should be nitrogen or argon at 15 psi.

Power Connection for the Vacuum Pump

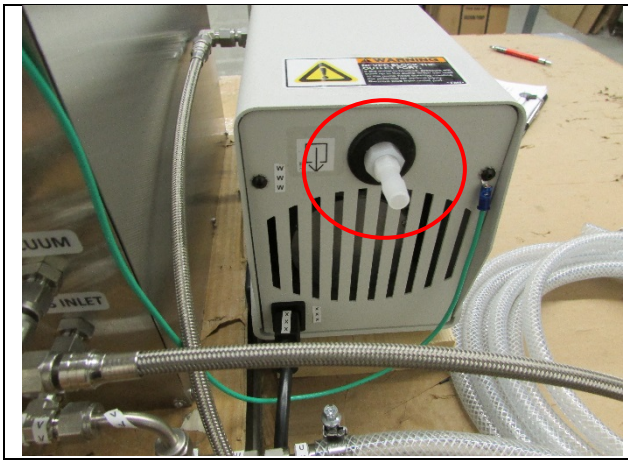
US locations plug the vacuum pump into 115V power supply.

International locations plug the vacuum pump into 220V power supply.



Important Safety Note

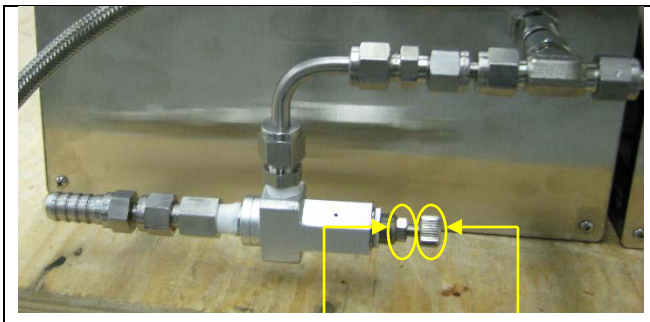
Verify the system is grounded properly.



Connect Vacuum Pump Exhaust to Fume Hood

- 3/8” Hose barb included.
- Recommend connecting to 3/8” reinforced tygon tubing.

LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com



Locking Nut Set Screw

Setting Gas Regulator / Pressure

The inlet gas regulator has been set by the factory at 7 psi.

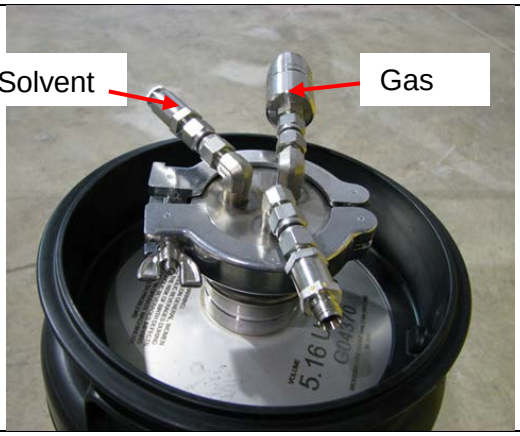
If you need to adjust this, adjust by turning the set screw on the regulator.

NOTE: Loosen the locking nut before adjusting set screw.

3.5 Filling Solvent Kegs

NOTE: It is always recommended to wear personal protective equipment (PPE) when handling solvents.

1. Remove solvent keg from the top of the system.



2. Disconnect gas and solvent lines.
3. Lines are equipped with quick connects. Remove by pulling gently back on the ridged portion of the quick connect.

4. Take solvent keg to fume hood or other well-ventilated area for filling.

5. Loosen clamp at top of keg.

   NOTE: Relieve gas pressure in keg prior to removing.

6. Remove clamp.

7. Lift and remove solvent connection flange and O-ring.

8. Pour solvent into keg. We recommend you fill the kegs with 4 liters of solvent.

   Note: Upon initial start up you will need a total of 8L each of solvent on hand to run the system.

9. Replace the O-ring and solvent connection flange onto the solvent keg.
10. Replace and tighten the clamp.

11. Reattach gas connection and then the solvent connection.

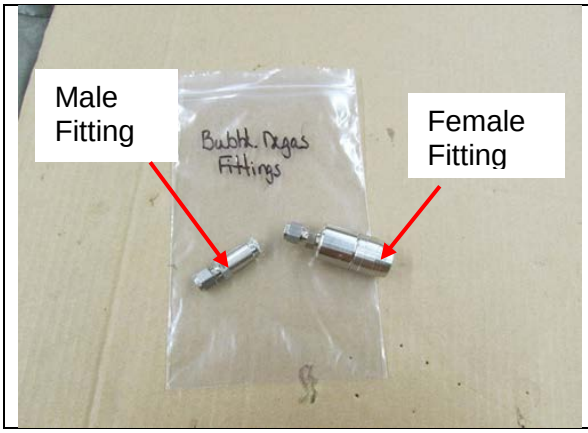
    NOTE: Be sure the color coded labels attached to the gas and solvent lines match the color coded label affixed to the front of the solvent keg.

12. Place the solvent keg back on top of the system.

13. Repeat the above steps as necessary for filling additional solvent kegs.

NOTE: Once you have filled the solvent purifier with a particular type of solvent you cannot change to a different solvent without changing the filter columns and completely cleaning the entire system. If you do not change the filters and clean the system you will experience cross contamination of the solvents. Please contact LC Technology if you decide to change from one solvent to another.

Section 4: Bubble Degas Procedure

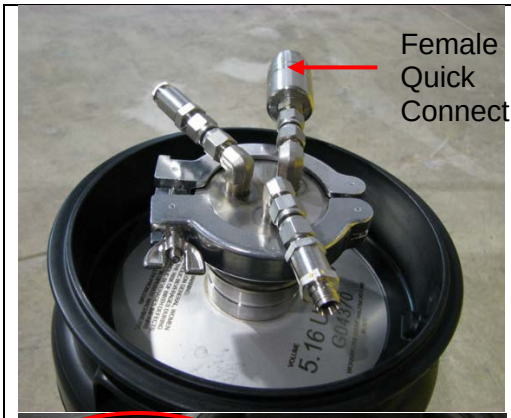


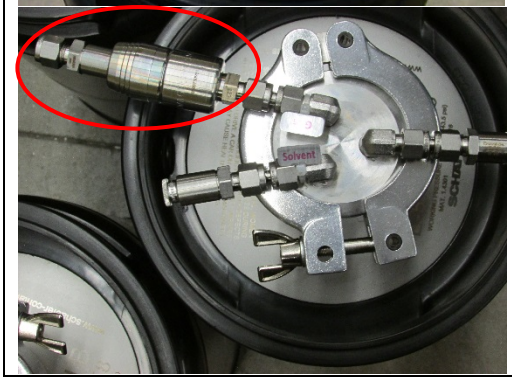
The system was shipped with bubble degas fittings.

NOTE: It is always recommended to wear personal protective equipment (PPE) when handling solvents.

NOTE: Bubble degassing should be performed in a fume hood.

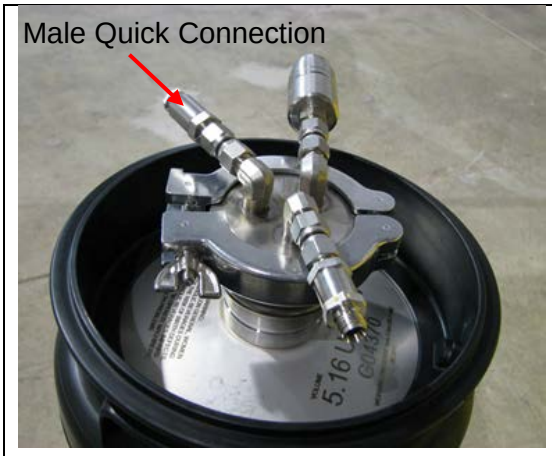
1. Disconnect solvent keg from system and place in a fume hood.

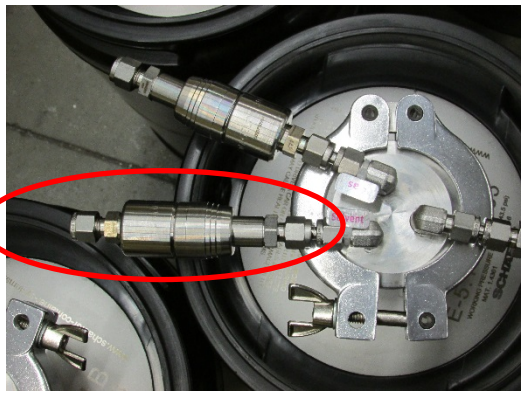




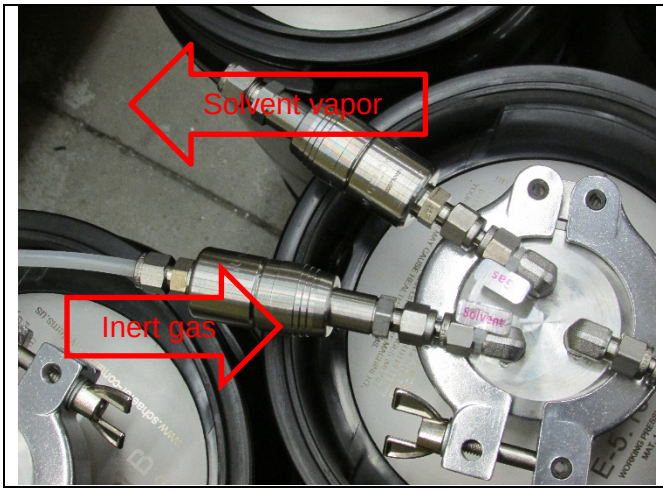
2. Connect ¼" Swagelok fitting (Male bubble degas fitting) to the female quick connection (labeled Gas) on the solvent keg. This is provided to connect a vent line, if necessary. Solvent vapor will be coming out of this connection and should be vented.

LC TECHNOLOGY SOLUTIONS INC.
2C Fanaras Drive, Salisbury, MA 01952 • Phone: 978-255-1620 • Fax: 978-428-0222
E-mail: info@lctechinc.com • Web: www.lctechinc.com





3. Connect female bubble degas fitting to the male quick connection (labeled Solvent) on the solvent keg. This will supply inert gas down the dip tube to the bottom of the solvent keg. Hook this connections up to your inert gas supply.



4. Turn on inert gas supply to approximately (2) two psi. This will force inert gas down the dip tube and let it bubble up through the solvent and out the vent line.

5. Bubble degas for (5) five minutes or desired amount of time.

6. Turn off inert gas supply.

7. Disconnect bubble degas lines and fittings from solvent keg.

8. Reattach solvent keg to system. Make sure all lines match the appropriate color coded connections.

Section 5: Operational Instructions

5.1 Initial Start-Up

1. After assembly of system, filling solvent keg(s) and bubble degassing turn on vacuum pump and inert gas supply.

2. Take an empty beaker, flask, or bottle and place it beneath the 24/40 connector.

3. Turn the lower operational valve to Dispense.

4. Leave lower operational valve in dispense position until a continuous flow of solvent is attained.

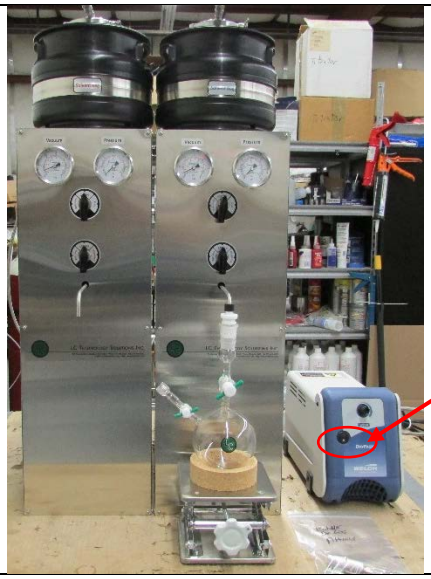
   NOTE: First gas will empty quickly, then slow and finally the solvent will flow. This process can take up to 1-2 minutes.

5. Solvent kegs supplied with system hold four (4) liters of solvent. After initial start-up you will have to refill the keg.

   This should only occur at initial start-up.

NOTE: if you use Methanol in your system you may experience some cloudiness in your purified solvent. This is a small amount of dust on the filter material. You will need to flush (2) or (3) liters of Methanol through the system. This should clear up any remaining cloudiness in your Methanol. If it continues to be cloudy, please continue to flush additional Methanol through the system until it becomes clear.

5.2 Operation of Solvent Purification System



1. Turn on the vacuum pump and inert gas supply.

2. Select which solvent to collect.

3. Make sure the operational valves are in the Closed position.

4. Place jack stand, cork ring and collection vessel beneath the appropriate 24/40 connector.

5. Raise the jack stand until the collection vessel connects to the 24/40 connector.

   NOTE: Make sure the connection is tight.

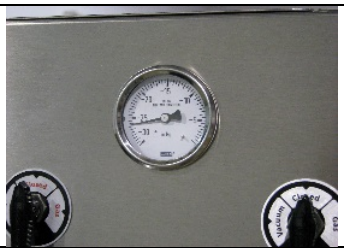
6. Open valve on top of the collection vessel.

7. Close valve on the syringe port.

8. Turn the lower operational valve to Vac/Gas.

9. Turn the upper operational valve to Vacuum.

   NOTE: The vacuum level will be displayed on the vacuum gauge. The recommended vacuum level should be -28.5 in. Hg.



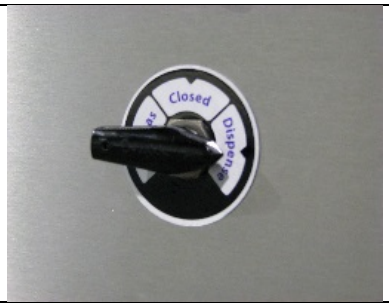
10. Once correct level of vacuum is reached turn the upper operational valve to Gas for one second.

11. **Repeat steps 9-10 two more times for a total of three cycles.

12. Turn upper operational valve to vacuum.

    NOTE: Evacuate collection vessel to -28.5 in. Hg.

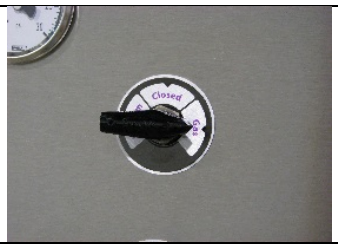
13. Turn upper operational valve to Closed.



14. Turn lower operational valve to dispense to dispense solvent into the collection vessel.

15. Collect the desired amount of solvent.

16. Turn lower operational valve to Vac/Gas position.



17. Turn upper operational valve to Gas for one to two seconds to fill the collection vessel with inert gas.

18. Turn upper and lower operational valves to Closed.

19. Close upper valve on collection vessel.

NOTE: Caution should be used when removing the collection vessel.

20. Remove collection vessel by lowering the jack stand.

Section 6: Technical Support Contact Information from LC Technology Solutions & Partners

LC TECHNOLOGY SOLUTIONS INC.	**GARDNER DENVER (Welch Vacuum) (Solvent Purifiers)**
Tyler Kapsimalis **Tel:** (978) 255-1620 Ext. 107 **Cell:** (978) 992-1729 **Fax:** (978) 428-0222 **Email:** tkapsimalis@lctechinc.com **Web:** www.lctechinc.com It helps to provide your Project #, which can be found on the back of your glovebox.	Frank Dziedzic **Tel:** (847) 588-2365 **Email:** frank.dziedzic@gardnerdenver.com Mark Suda **Tel:** (847) 588-2358 **Email:** Mark.Suda@gardnerdenver.com