

Product Information

CJ Tee Syringe Adapter - CGA 180 Inlet

Catalog Number **Z741033**
Store at Room Temperature

TECHNICAL BULLETIN

Procedures

The CJ Tee Syringe Adapter is used to transfer volumes of gas from a gas cylinder into a syringe. The additional equipment required for the transfer assembly is dependent on the following:

- The gas cylinder outlet connection (CGA 180 or ¼" NPT)
- The gas pressure within the cylinder as the maximum gas pressure that can be used with the CJ Tee Syringe Adapter is 60 psig.

Two procedures were developed for gas cylinders with gas pressure ≤ 60 psig, one for cylinders with a CGA 180 outlet connection and another for cylinders with a ¼" NPT outlet connection. A similar set of procedures was developed for gas cylinders with gas pressure > 60 psig.

A. Gas cylinder with a CGA 180 Outlet Connection and Gas Pressure ≤ 60 psig

Equipment Required but Not Provided

- gas cylinder with CGA 180 outlet connection
- gas-tight syringe
- vacuum source

1. Remove the plastic cap from the CGA 180 inlet (nut marked "180") of the CJ Tee Syringe Adapter, ensuring the PTFE washer remains in place (see Figure 1).
2. Attach the CGA 180 inlet of the syringe adapter to the cylinder 180 CGA outlet connection, making sure the PTFE washer is in place (see Figure 2). Do not use PTFE tape. Tighten with a wrench.

3. Insert the needle of a compressed "gas-tight" syringe into the septum of the syringe adapter.
4. To evacuate the assembly (including the syringe needle), remove the plastic cap from the vacuum valve of the syringe adapter, attach a vacuum source, and open the vacuum valve (see Figure 2).
Note: **Do Not Open** the cylinder valve! Doing so will empty the gas cylinder.
5. Once an adequate vacuum has been achieved, **completely** close the vacuum valve of the CJ Tee Adapter. Only then open the cylinder valve, watching for a pressure rise on the adapter gauge. This will fill the CJ Tee Syringe Adapter with gas from the cylinder.
6. **Close** the cylinder valve, then withdraw the desired volume (maximum of 10–15 mL) into the syringe and then remove the syringe from the septum.
Note: If a greater volume is desired, keep the cylinder valve open while withdrawing the gas into the syringe. Be sure to close the cylinder valve once the gas is withdrawn.
7. If air contamination is not a concern, additional withdrawals from the adapter can be made without opening the cylinder valve, provided the gauge shows positive pressure.
Note: If all of the gas contained within the CJ Tee Syringe Adapter has been removed, repeat evacuation and sampling steps (steps 3–6).

Or

If air contamination is a concern, repeat evacuation and sampling steps (steps 3–6) before additional withdrawals from the adapter.

Figure 1.
CJ Tee Syringe Adapter - CGA 180 Inlet

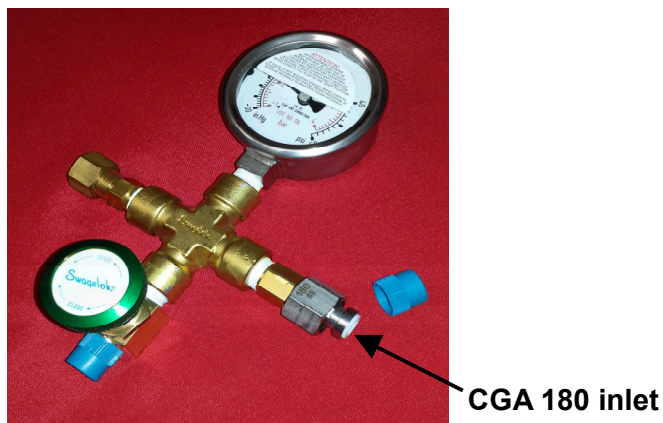
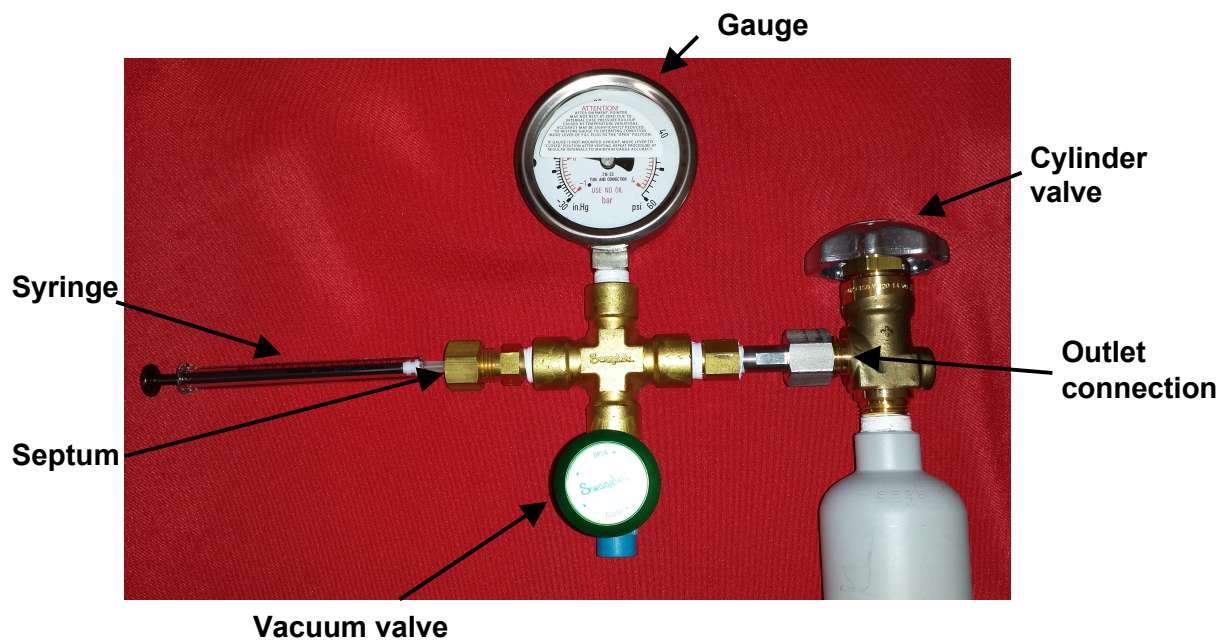


Figure 2.
Assembly of Syringe Adapter and Gas Cylinder



B. Gas cylinder with a 1/4" NPT Outlet Connection and Gas Pressure ≤60 psig

For cylinders with a 1/4" NPT outlet connection, an adapter must be added to the transfer assembly used in Procedure A.

Equipment Required but Not Provided

- gas cylinder with a 1/4" NPT outlet connection
- CGA to 1/4" adapter (Catalog Number Z147303)
- gas-tight syringe
- vacuum source
- PTFE tape

1. Wrap PTFE tape 3–5 times around the 1/4" NPT threads of the cylinder outlet connection and attach the CGA to 1/4" adapter (Catalog Number Z147303). This is a thread seal and must be tightened with wrenches to engage the threads for a leak-proof seal. Make sure to use 2 wrenches to prevent removal of the cylinder outlet connection - one on the cylinder outlet connection body and the other on the adapter (see Figure 3).
2. Remove the plastic cap from the CGA 180 inlet (nut marked "180") of the CJ Tee Syringe Adapter, ensuring the PTFE washer remains in place, and connect this to the other end of the CGA to 1/4" adapter. Do not use PTFE tape. Tighten with a wrench (see Figure 4).
3. Insert the needle of a compressed "gas-tight" syringe into the septum of the syringe adapter (see Figure 5).

4. To evacuate the assembly (including the syringe needle), remove the plastic cap from the vacuum valve of the syringe adapter, attach a vacuum source, and open the vacuum valve (see Figure 5).

Note: **Do Not Open** the cylinder valve! Doing so will empty the gas cylinder.

5. Once an adequate vacuum has been achieved, **completely** close the vacuum valve of the CJ Tee Adapter. Only then open the cylinder valve, watching for a pressure rise on the adapter gauge. This will fill the CJ Tee Syringe Adapter with gas from the cylinder.

6. **Close** the cylinder valve, then withdraw the desired volume (maximum of 10–15 mL) into the syringe and then remove the syringe from the septum.

Note: If a greater volume is desired, keep the cylinder valve open while withdrawing the gas into the syringe. Be sure to close the cylinder valve once the gas is withdrawn.

7. If air contamination is not a concern, additional withdrawals from the adapter can be made without opening the cylinder valve, provided the gauge shows positive pressure.

Note: If all of the gas contained within the CJ Tee Syringe Adapter has been removed, repeat evacuation and sampling steps (steps 3–6).

Or

If air contamination is a concern, repeat evacuation and sampling steps (steps 3–6) before additional withdrawals from the adapter.

Figure 3.
CGA to 1/4" Adapter Attached to cylinder outlet connection

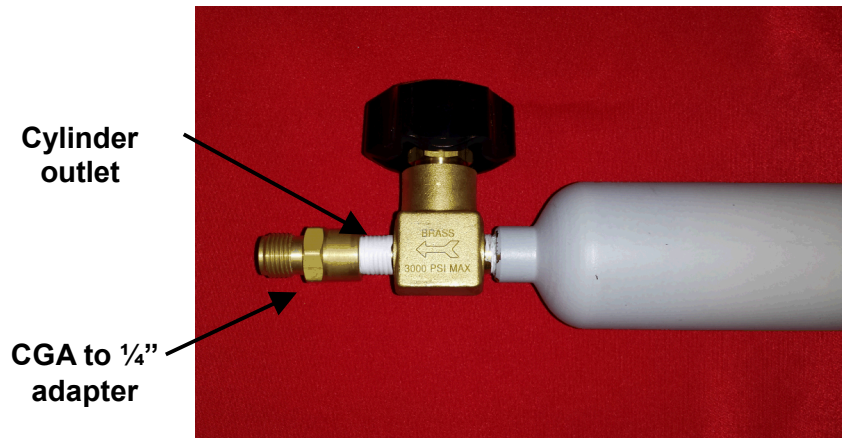


Figure 4.
CJ Tee Syringe Adapter Attached to CGA to 1/4" Adapter

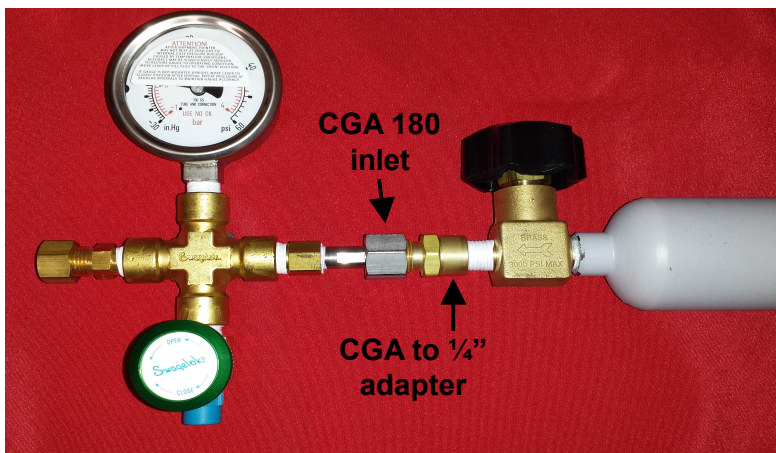
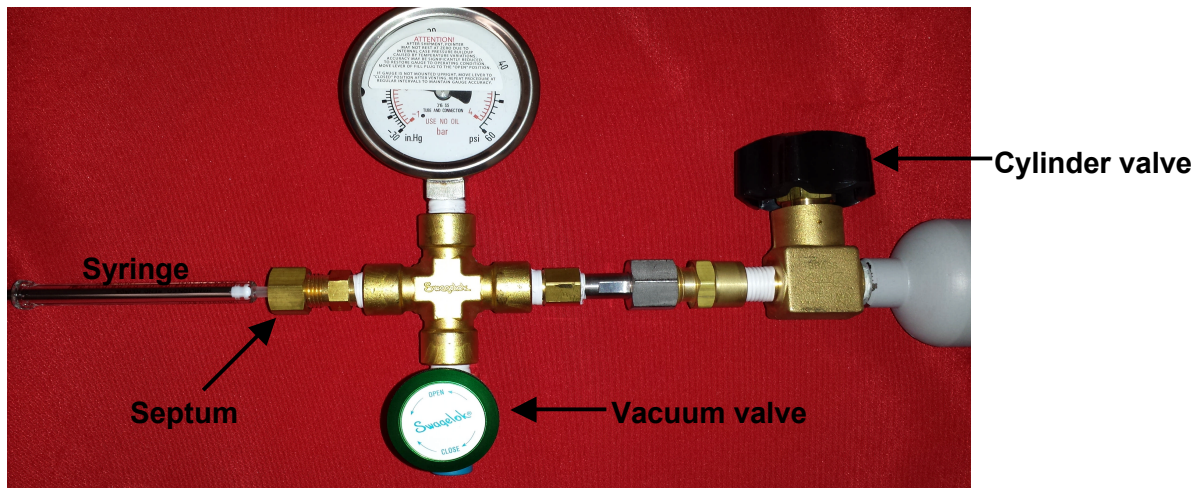


Figure 5.
Assembly of Syringe Adapter, CGA to 1/4" Adapter, and Gas Cylinder



C. Gas cylinder with a CGA 180 Outlet Connection and Gas Pressure >60 psig

For gas cylinders with gas pressure >60 psig, an adapter and gas regulator must be added to the transfer assembly used in Procedure A.

Note: The maximum gas pressure that can be used with the CJ Tee Syringe Adapter is 60 psig. The use of a gas regulator is required to restrict the gas pressure entering the adapter to ≤60 psig.

Equipment Required but Not Provided

- gas cylinder with a CGA 180 outlet connection
- gas regulator to restrict gas pressure (Catalog Number Z146714, Z146706, Z148504, or Z148512)
- CGA to ¼" adapter (Catalog Number Z147303)
- gas-tight syringe
- vacuum source
- PTFE tape

1. Wrap PTFE tape 3–5 times around the ¼" NPT threads of the gas regulator (flow valve side) and connect the CGA to ¼" adapter (Catalog Number Z147303). Use a wrench to tighten (see Figure 6).
2. Remove the plastic cap from the CGA 180 inlet (nut marked "180") of the CJ Tee Syringe Adapter, ensuring the PTFE washer remains in place. Connect to the other side of the CGA to ¼" adapter. **Do Not** use PTFE tape. Tighten with a wrench (see Figure 7).
3. Connect the right side (regulator valve side) of the gas regulator to the gas cylinder outlet connection. Make sure the PTFE gasket is in place but **Do Not** use PTFE tape. Tighten with a wrench (see Figure 8).
4. Insert the needle of a compressed "gas-tight" syringe into the septum of the syringe adapter (see Figure 8).

5. To evacuate the assembly (including the syringe needle), remove the plastic cap from the vacuum valve of the syringe adapter, attach a vacuum source, open the vacuum valve and **both** regulator valves (the flow valve opens counterclockwise and the regulator valve opens clockwise).

Note: **Do Not Open** the cylinder valve! Doing so will empty the gas cylinder.

6. Once adequate vacuum has been achieved, **completely** close the vacuum valve of the CJ Tee Adapter, the flow valve (clockwise), and the regulator valve (counterclockwise).
7. Open the cylinder valve. Slowly open the regulator valve, adjusting to the desired pressure, **but no greater than 60 psig**.
8. Open the flow valve on the regulator. This will fill the entire assembly with gas from the cylinder. Watch for a pressure rise on the gauge of the CJ Syringe Adapter.
9. **Close** the cylinder valve, then withdraw the desired volume (maximum of 20 mL) into the syringe and then remove the syringe from the septum.
Note: If a greater volume is desired, keep the cylinder valve open while withdrawing the gas into the syringe. Be sure to close the cylinder valve once the gas is withdrawn.
10. If air contamination is not a concern, additional withdrawals from the adapter can be made without opening the cylinder valve, provided the adapter gauge shows positive pressure.
Note: If the maximum volume (20 mL) of gas has been removed, repeat evacuation and sampling steps (steps 4–9).

Or

If air contamination is a concern, repeat evacuation and sampling steps (steps 4–9) before additional withdrawals from the adapter.

Figure 6.
CGA to 1/4" Adapter Attached to Gas Regulator

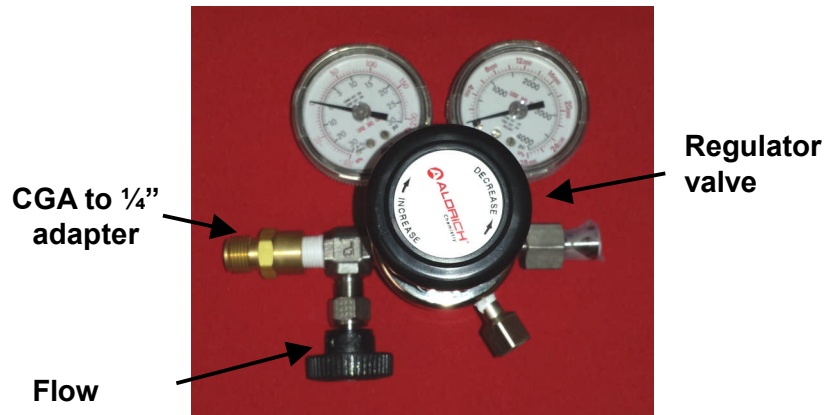


Figure 7.
Assembly of Syringe Adapter, CGA to 1/4" Adapter, and Gas Regulator

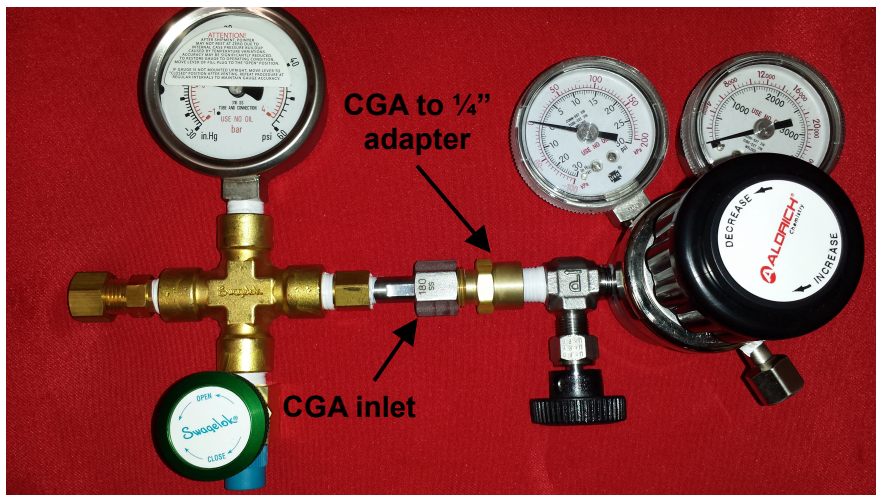
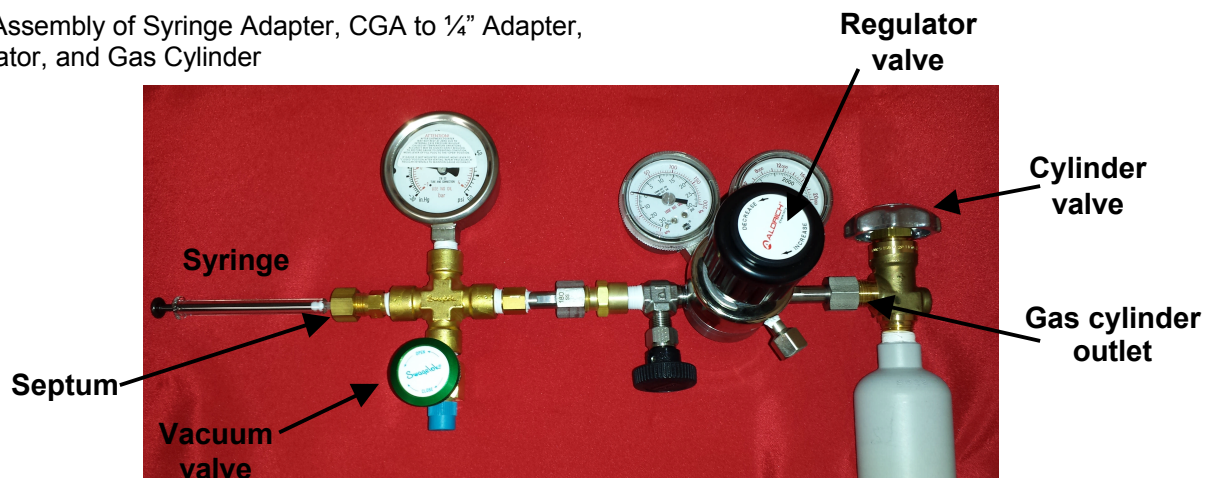


Figure 8.
Complete Assembly of Syringe Adapter, CGA to 1/4" Adapter,
Gas Regulator, and Gas Cylinder



D. Gas cylinder with a 1/4" NPT Outlet Connection and Gas Pressure >60 psig

For gas cylinders with a 1/4" NPT outlet connection and gas pressure >60 psig, 2 adapters and gas regulator must be added to the transfer assembly used in Procedure A.

Note: The maximum gas pressure that can be used with the CJ Tee Syringe Adapter is 60 psig. The use of a gas regulator is required to restrict the gas pressure to ≤60 psig.

Equipment Required but Not Provided

- gas cylinder with 1/4" NPT outlet connection
 - gas regulator to restrict gas pressure (Catalog Number Z146714, Z146706, Z148504, or Z148512)
 - 2 CGA to 1/4" adapters (Catalog Number Z147303)
 - gas-tight syringe
 - vacuum source
 - PTFE tape
1. Wrap PTFE tape 3–5 times around the 1/4" NPT threads of the gas regulator (flow valve side) and connect the CGA to 1/4" adapter (Catalog Number Z147303). Use a wrench to tighten (see Figure 9).
 2. Remove the plastic cap from the CGA 180 inlet (nut marked "180") of the CJ Tee Syringe Adapter, ensuring the PTFE washer remains in place. Connect to the other side of the CGA to 1/4" adapter. **Do Not** use PTFE tape. Tighten with a wrench (see Figure 10).
 3. Wrap PTFE tape 3–5 times around the 1/4" NPT threads of the cylinder outlet connection and attach the second CGA to 1/4" adapter (Catalog Number Z147303). This is a thread seal and must be tightened with wrenches to engage the threads for a leak tight seal. Make sure to use 2 wrenches to prevent removal of the cylinder outlet connection - one on the cylinder outlet connection body and the other on the adapter (see Figure 11).
 4. Connect the other side of this CGA to 1/4" adapter to the gas regulator. Make sure the PTFE gasket is in place but **Do Not** use PTFE tape. Tighten with a wrench (see Figure 12).

5. Insert the needle of a compressed "gas-tight" syringe into the septum of the syringe adapter (see Figure 12).
6. To evacuate the assembly (including the syringe needle), remove the plastic cap from the vacuum valve of the syringe adapter, attach a vacuum source, open the vacuum valve and **both** regulator valves (the flow valve opens counterclockwise and the regulator valve opens clockwise).
Note: **Do Not Open** the cylinder valve! Doing so will empty the gas cylinder.
7. Once adequate vacuum has been achieved, **completely** close the vacuum valve of the CJ Tee Adapter, the flow valve (clockwise), and the regulator valve (counterclockwise).
8. Open the cylinder valve. Slowly open the regulator valve, adjusting to the desired pressure, **but no greater than 60 psig**.
9. Open the flow valve on the regulator. This will fill the entire assembly with gas from the cylinder. Watch for a pressure rise on the gauge of the CJ Syringe Adapter.
11. **Close** the cylinder valve, then withdraw the desired volume (maximum of 20 mL) into the syringe and then remove the syringe from the septum.
Note: If a greater volume is desired, keep the cylinder valve open while withdrawing the gas into the syringe. Be sure to close the cylinder valve once the gas is withdrawn.
12. If air contamination is not a concern, additional withdrawals from the adapter can be made without opening the cylinder valve, provided the adapter gauge shows positive pressure.
Note: If the maximum volume (20 mL) of gas has been removed, repeat evacuation and sampling steps (steps 5–11).

Or

If air contamination is a concern, repeat evacuation and sampling steps (steps 5–11) before additional withdrawals from the adapter.

Figure 9.
CGA to 1/4" Adapter Attached to Gas Regulator

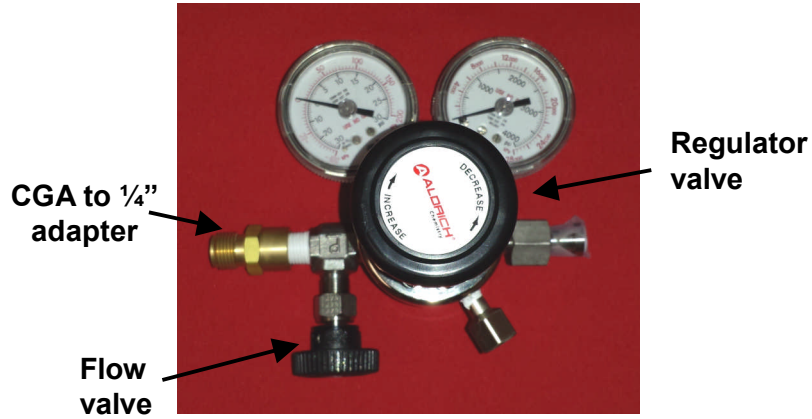


Figure 10.
Assembly of Syringe Adapter, CGA to 1/4" Adapter, and Gas Regulator

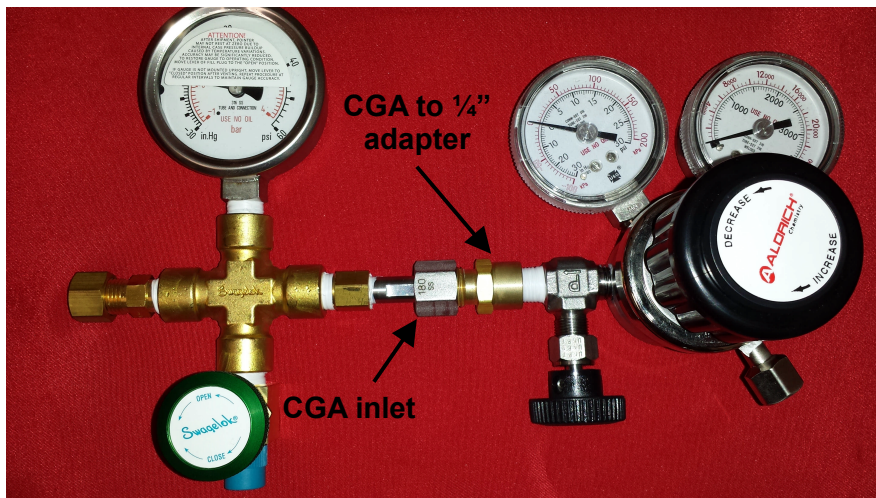


Figure 11.
CGA to 1/4" Adapter Attached to Gas Cylinder

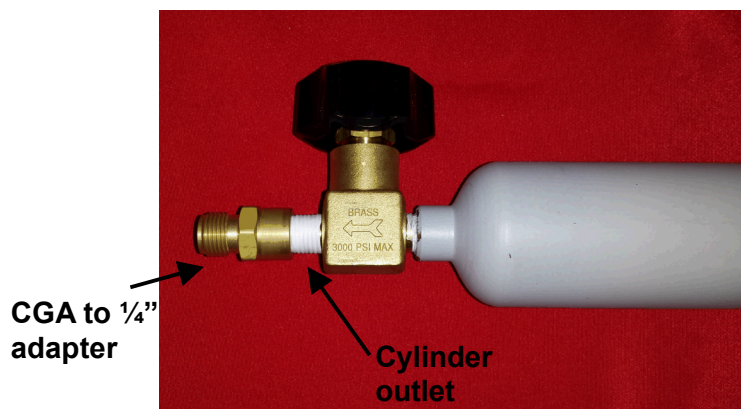


Figure 12.
Complete Assembly of Syringe Adapter, CGA to 1/4" Adapter, Gas Regulator, CGA to 1/4" Adapter, and Gas Cylinder

