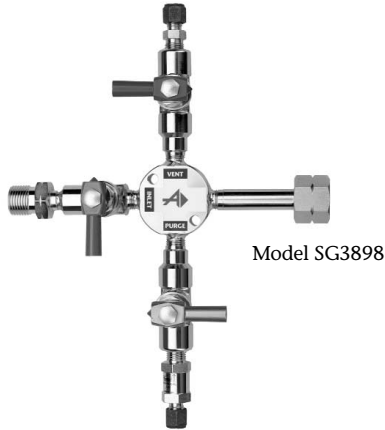


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# INSTRUCTIONS FOR MODELS SG3897 AND SG3898 CROSS PURGE ASSEMBLIES

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THIS BOOKLET CONTAINS PROPRIETARY INFORMATION OF ADVANCED SPECIALTY GAS EQUIPMENT CORP. AND IS PROVIDED TO THE PURCHASER SOLELY FOR USE IN CONJUNCTION WITH MODELS SG3897 AND SG3898 PURGE ASSEMBLIES.



## IMPORTANT

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These instructions are for experienced operators who know the general principles and safety precautions to be observed in handling specialty gases and operating gas handling equipment. If you are not certain you fully understand the safety precautions for handling gases, we urge you to obtain and read the Material Safety Data Sheet (MSDS) for each gas being used.

Do not permit untrained persons to install, operate, or maintain these assemblies. Do not attempt to install or operate purge assemblies until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your Advanced Specialty Gas Equipment Distributor.

**Be sure this information reaches the operator. Your supplier has extra copies.**



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## **SAFETY PRECAUTIONS**

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Protect yourself and others. Read and understand the following instructions before attempting to use this equipment. Failure to understand and follow these instructions could result in serious personal injury and/or damage to equipment.

- Know and understand the physical and chemical properties of the gas being used.
- Observe general precautions for the use of gases.
- Observe safety precautions for the gas being used.
- Read and follow precautions on cylinder labels.
- Never use this equipment with gases not compatible with the materials of construction. The use of gases not compatible with the materials of construction may cause damage to equipment or injury to personnel.
- If flammable gases are used, do not locate this equipment near open flames or any other source of ignition.
- If toxic or flammable gases are used with this equipment, emergency equipment applicable to the gases in use should be available in the operating area.
- Many gases can cause asphyxiation by displacing oxygen in the atmosphere. Make certain the area where this equipment is operated is well ventilated. Provide a device to warn personnel of oxygen depletion in the work area.
- Do not release toxic or flammable gases in the vicinity of personnel. Use this equipment only in well ventilated areas. Vent gases to the outside atmosphere, and in an area away from personnel. Be sure that venting and disposal methods are in accordance with Federal, State and local requirements. Locate and construct vent lines to prevent condensation or gas accumulation. Be sure the vent outlet cannot be obstructed by rain, snow, ice, insects, birds, etc. Do not interconnect vent lines; if more than one vent is needed, use separate lines.
- Relief devices should be installed and properly vented in all gas handling systems to protect against regulator failure and overpressurization.
- Never use oil or grease on this equipment. Oil and grease are easily ignited and may combine violently with some gases under pressure.
- Never connect this equipment to a supply source having a pressure greater than the maximum rated pressure. Refer to Product Specifications (page 13) for maximum inlet pressures.

## **MANUFACTURER STATEMENT**

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The information contained in this instruction booklet has been compiled by Advanced Specialty Gas Equipment Corp., (the Company), from what it believes are authoritative sources and is offered solely as a convenience to its customers. While the Company believes that this information is accurate and factual as of the date printed, the information including design specifications is subject to change without prior notice.

## **DESCRIPTION**

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Models SG3897 and SG3898 are cross type purge assemblies designed to be used between a gas cylinder and a pressure regulator. They provide a means to allow the operator to flush the gas distribution system with an inert, "purge" gas prior to initial start-up, or upon a cylinder change. This procedure, when done prior to a change of cylinders, will remove any residual of the process gas from the system, thereby promoting safety by reducing the potential for operator exposure to the gas. When done prior to start-up of the system or after a cylinder has been changed, purging will effectively remove any atmospheric contaminants (e.g. oxygen and moisture) that may have entered the system while it was open, thus protecting the process from these contaminants.

Both the SG3897 and SG3898 purge assemblies feature diaphragm-seal type valves, along with stainless steel construction and welded connections, making them ideal for high purity applications. The three diaphragm-seal valves incorporated in each assembly allow for: 1. isolation of the system downstream of the purge assembly (isolation valve), 2. introduction of the purge gas (purge valve), and 3. an exit to a vent/disposal system (vent valve). Both models also incorporate a check valve installed in the purge gas inlet port to prevent back flow of the process gas into the purge line should the purge valve be inadvertently left open.

The Model SG3898 features ¼-turn valves which allow for easy cycling, while also providing a visual indication of the valve's condition (open or closed).

## INSTALLATION AND LEAK TESTING

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**WARNING:** Before attempting to install and operate these purge assemblies, read and fully understand the safety precautions on page 3 in this booklet. Failure to follow the safety precautions may result in serious personal injury and/or damage to equipment.

Inspect the purge assembly and cylinder valve for physical damage and contamination. Do not install if you detect oil, grease or damaged parts. If the purge assembly is contaminated or damaged contact your Advanced Specialty Gas Equipment Distributor to have it properly cleaned or repaired (see "Repairs"). Contact your gas supplier if the cylinder valve is damaged or contaminated.

**Note:** Make sure that the components and materials used in this gas handling system are compatible with the gas and have the proper pressure rating.

Refer to Figure 1 (page 6) for a typical purge assembly installation.

1. Secure cylinder in place using a suitable restraining device (such as a Model SG6202 bench clamp, or Model SG6203 wall clamp) and remove cylinder cap.
2. Install the purge assembly between the process gas cylinder and its pressure regulator. Connect the purge assembly to the cylinder first, then connect the regulator to the purge assembly. Double wrench where appropriate.
3. Use stainless steel tubing to connect the vent port (Figs. 2 or 3, see pgs. 8 and 9) of the purge assembly to a suitable system for disposing of the purged process gas.

**Note:** More effective purging can be achieved by connecting the vent line to a vacuum pump that is compatible with the process gas. The vacuum will remove the purge gas and contaminants more quickly, reducing the time and volume of the purge gas required.

4. Close the regulator by turning the pressure adjusting knob counterclockwise until it reaches the stop. Do not turn the adjustment knob past the stop. Damage to the regulator could result.

**Note:** The Model SG3898 has ¼-turn valves with lever-type handles which operate from "fully closed" to "fully opened" in a 90° arc. The valves are open when the lever-type handle is parallel to the piping system.

5. Ensure that the system vent and process valves located downstream of the regulator are closed. (Figure 1, see page 6)
6. Close the purge, vent and inlet isolation valves on the purge assembly by turning the handknobs or levers clockwise.

**Note:** Make sure that the pressure of the purge gas does not exceed the maximum inlet pressure of the regulator and purge assembly.

7. Connect a regulated source of clean dry nitrogen to the purge gas inlet port (Figs. 2 or 3, see pgs. 8 and 9).
8. Stand to one side of the purge assembly and open purge valve by turning hand knob or lever counterclockwise.
9. Stand to one side of the regulator and slowly open inlet isolation valve by turning hand knob or lever counterclockwise. Check inlet gauge for pressure into the regulator.
10. Open the regulator by turning the handknob clockwise to the stop. Open regulator outlet valve (if installed).
11. Leak check all connections with either a soap solution, such as Snoop<sup>®</sup> or a gas leak detector. If a leak is detected, vent system to atmospheric pressure and repair. Do not repair any leaks while system is under pressure.
12. Close the purge valve on the purge assembly.
13. Vent the system to 0 psig by opening the system vent valve.

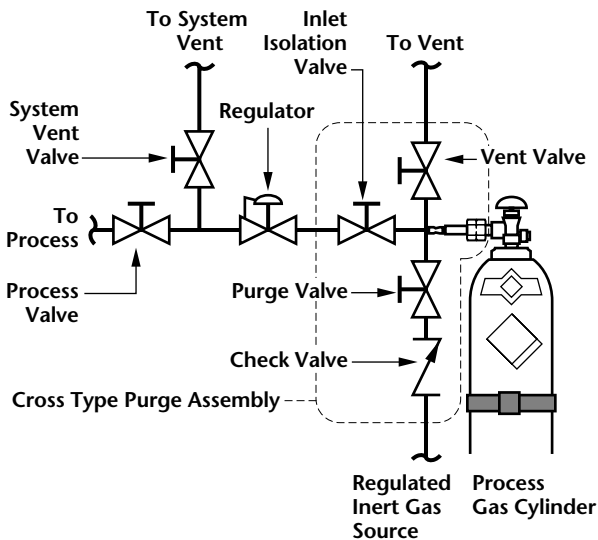


Figure 1- Typical Purge System with Cross Type Purge Assembly

## **OPERATION – INITIAL START-UP**

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**WARNING: Never operate a regulator or purge assembly under any circumstances if it is leaking or otherwise malfunctioning. DO NOT repair any leaks while system is under pressure. Damage to equipment and/or injury to personnel may result.**

This step will remove entrapped air in the system prior to introduction of the process gas.

1. Ensure that the purge, vent and inlet isolation valves on the purge assembly are closed.
2. Ensure that the system vent and process valves located downstream of the regulator are closed.
3. Open the purge valve located on the purge assembly by turning hand knob or lever counterclockwise.
4. Slowly open inlet isolation valve by turning hand knob or lever counterclockwise. Check inlet gauge for pressure into the regulator.
5. Open the regulator by turning the handknob clockwise to the stop. Open the regulator outlet valve (if installed).
6. Close purge valve on purge assembly.
7. Open system vent valve located downstream of regulator and vent system until pressure is reduced to 0 psi, then close vent valve.
8. Purge and vent with **8 to 10 cycles** as follows:
  - a. Open the purge valve to pressurize system (100 psig minimum recommended), then close it.
  - b. Open the system vent valve to vent system pressure to 0 psig, then close it.
9. Close the regulator by turning the pressure adjusting knob counterclockwise.
10. Slowly open cylinder valve to admit process gas to the regulator.
11. Turn regulator pressure adjusting knob clockwise until desired delivery pressure is indicated on delivery gauge.

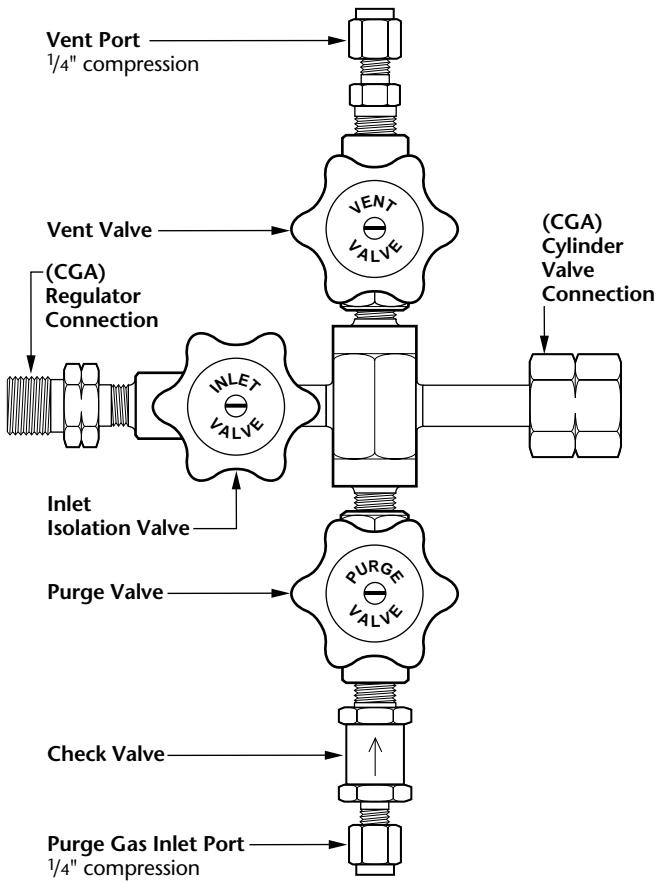


Figure 2- Model SG3897 Cross Type Purge Assembly



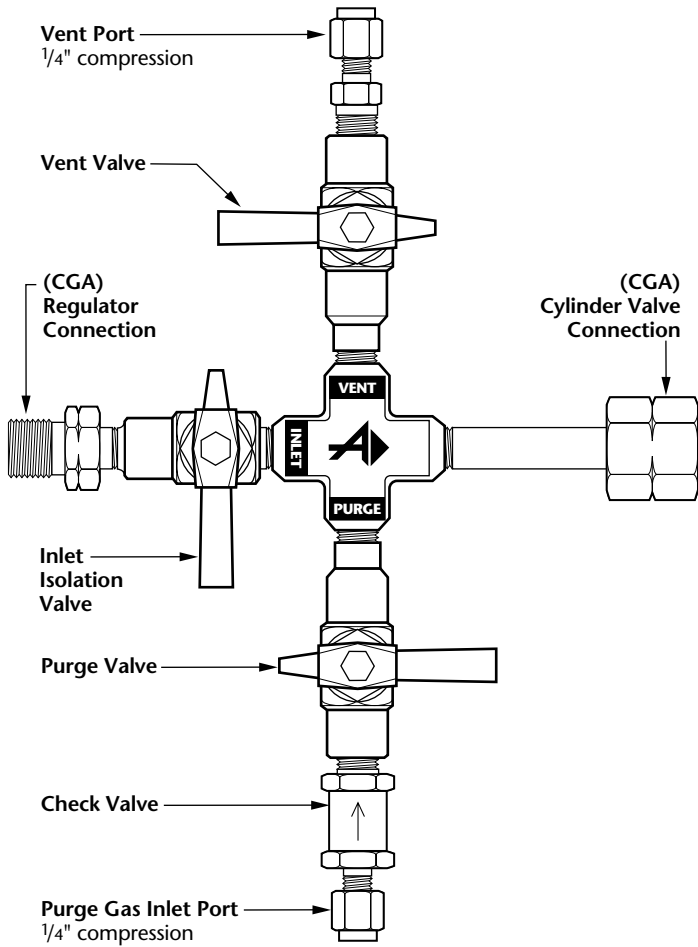


Figure 3- Model SG3898 Cross Type Purge Assembly

## **REPLACING PROCESS GAS CYLINDER**

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**WARNING: Hazardous gases must be discharged into a safety vent. Be sure to use a venting procedure that is environmentally acceptable and complies with Federal, State and local requirements.**

This step will remove residual traces of the process gas from the purge assembly prior to opening system.

1. Close the process gas cylinder valve tightly. Always keep cylinder or supply valve closed whenever the system is not in use.
2. Close the inlet isolation valve on the purge assembly by turning hand knob or lever clockwise.
3. Vent the process gas by opening the purge assembly vent valve until pressure is reduced to 0 psig, then close the vent valve.
4. Purge and vent with **8 to 10 cycles** as follows:
  - a. Open the purge valve until system is pressurized, then close it.
  - b. Open the vent valve located on the purge assembly until pressure is reduced to 0 psig, then close it.
5. Disconnect the purge assembly from the process gas cylinder.
6. Replace the empty cylinder with a full one and secure it in place.
7. Connect the purge assembly to the cylinder.

The following step will remove entrapped air that has entered the system while changing the cylinder.

8. Purge and vent with **8 to 10 cycles** as described in step 4 above.
9. Slowly open cylinder valve to admit process gas to the purge assembly.
10. Slowly open inlet isolation valve on purge assembly by turning handknob or lever counterclockwise.
11. Adjust regulator pressure adjusting knob until the desired delivery pressure is indicated on the delivery gauge.

## **REMOVAL FROM SERVICE**

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**WARNING: Hazardous gases must be discharged into a safety vent. Be sure to use a venting procedure that is environmentally acceptable and complies with Federal, State and local requirements.**

1. Close the process gas cylinder valve tightly.
2. Vent the process gas by opening the system vent valve until pressure is reduced to 0 psig, then close the vent valve.
3. Purge and vent with **8 to 10 cycles** as follows:
  - a. Open the purge valve until system is pressurized, then close it.
  - b. Open the system vent valve until pressure is reduced to 0 psig, then close it.
4. Close the regulator by turning the pressure adjusting knob counterclockwise. Close the regulator outlet valve (if installed).
5. Shut off regulated purge gas to inlet port of purge assembly.
6. Open the purge valve on purge assembly.
7. Open vent valve located on the purge assembly until system pressure is reduced to 0 psi, then close vent valve.
8. Close purge valve on purge assembly.
9. Close the inlet isolation valve on the purge assembly.
10. Carefully, disconnect the purge assembly.

## **REPAIRS**

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If a purge assembly leaks or malfunctions, take it out of service immediately. Do not attempt to repair these assemblies. Repairs should be made by Advanced Specialty Gas Equipment Corp. who have the special tools, test equipment and trained personnel required to make a safe repair. Contact your Advanced Specialty Gas Equipment Distributor to arrange for repair.

*Warranty Repairs* are only available through Advanced Specialty Gas Equipment Corp., and will be performed at no charge for parts and labor. For information on warranty, see the last page of this instruction booklet.

*Non-Warranty Repairs* are available through your distributor. Upon receipt at the factory, the purge assembly will be inspected and you will be contacted by your distributor with a repair cost estimate. No item will be repaired until approval is received. There will be an evaluation charge assessed for equipment not repaired.

## **SPECIFICATIONS**

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Maximum Operating Pressure	3000 psig
Operating Temp. Range	-40°F to +140°F
Valve Type	
Model SG3897	Multi-Turn Diaphragm Seal
Model SG3898	¼-Turn Diaphragm Seal
Inlet and Outlet Connections	CGA connections as ordered
Purge and Vent Connections	¼ in. compression-type fitting
Weight (approx.)	3 lbs.

## **MATERIALS OF CONSTRUCTION**

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Internal Metal Parts Exposed to Gas	Type 316 Stainless Steel
Valve Seats/Seals	
Diaphragm Seal Valves	PCTFE/Stainless Steel
Check Valves	Viton <sup>®</sup> /Teflon <sup>®</sup> *
Check Valve Spring	Type 302 Stainless Steel*

\* Under normal operation, check valves are exposed to the purge gas only.

## **WARRANTY**

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Advanced Specialty Gas Equipment Corp., (the Company), warrants to the initial purchaser of each purge assembly described herein, that such equipment will be free from defects in material and workmanship which result in breakdown or failure under normal use during a period of 12 months from date of shipment by the Company if used and maintained according to Advanced Specialty Gas Equipment written instructions. This warranty does not cover damage or malfunction due to corrosion. Purchaser is aware that this equipment is designed for specific applications and that using this equipment with the wrong gas or at the wrong pressure may damage or corrode the unit and cause personal injury. Purchaser must confirm that this equipment is compatible with the gas being passed through it. If there is any doubt about compatibility, consult your Advanced Specialty Gas Equipment Corp. distributor.

The Company's liability under this warranty shall be limited to the repair, or at its option, replacement or refund of the purchase price, of such equipment which proves to be defective, provided; however, that this warranty shall only apply if the purchaser (1) gives the Company written notice within ten (10) days after discovery of such defect, (2) immediately on discovery of the claimed defect, discontinues all use of such equipment, and (3) returns such equipment freight prepaid to plant of manufacture.

**THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SPECIFIED HEREIN. NO WARRANTIES BY ADVANCED SPECIALTY GAS EQUIPMENT CORP. (OTHER THAN WARRANTY OF TITLE AS PROVIDED IN THE UNIFORM COMMERCIAL CODE) SHALL BE IMPLIED OR OTHERWISE CREATED UNDER ANY APPLICABLE LAW, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

No claim against the Company of any kind, whether as to equipment delivery or for nondelivery of equipment and whether or not based on contract, warranty, negligence, strict liability in tort or otherwise, shall be greater in amount than the purchase price of the equipment in respect of which such claim is made. Without limiting the generality of the foregoing, Advanced Specialty Gas Equipment Corp. shall not be liable for any special, indirect, or consequential damage, such as failure of parts resulting from corrosion.

If it is determined by Advanced Specialty Gas Equipment Corp. that the equipment is to be repaired or replaced under the terms of this warranty, the cost of returning said equipment to the initial purchaser will be paid by the Company. If, however, equipment returned to the Company in connection with a claim under this warranty is found by the Company not to be defective hereunder, then such equipment will be returned to the initial purchaser, shipping charges collect, and additionally, a service charge will be paid by the purchaser to the Company to cover the cost of handling and testing such equipment.

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