

---

# INSTRUCTIONS FOR SERIES SG4820 LOW PRESSURE, SINGLE STAGE INSTRUMENT REGULATORS

---

THIS BOOKLET CONTAINS PROPRIETARY INFORMATION OF  
ADVANCED SPECIALTY GAS EQUIPMENT CORP. AND IS PROVIDED  
TO THE PURCHASER SOLELY FOR USE IN CONJUNCTION WITH  
SERIES SG4820 REGULATORS.



## **IMPORTANT**

---

These instructions are for experienced operators who know the general principles and safety precautions to be observed in handling specialty gases and operating pressure regulation 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 this regulator. Do not attempt to install or operate this regulator 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.**



## **SAFETY PRECAUTIONS**

---

Protect yourself and others. Read and understand the following instructions before attempting to use these regulators. 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 these regulators 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 with these regulators, do not locate the regulators near open flames or any other source of ignition.
- If toxic or flammable gases are used with these regulators, 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 regulators are 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 these regulators. Oil and grease are easily ignited and may combine violently with some gases under pressure.
- Never connect a regulator to a supply source having a pressure greater than the maximum rated pressure of the regulator. Refer to Product Specifications (page 8) for maximum inlet pressures.

## **MANUFACTURER STATEMENT**

---

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**

---

Series SG4820 regulators are designed primarily for use in analytical instrument applications and are suitable for line or panel mounting. These high precision direct acting, non-relieving regulators provide bubble-tight shutoff even with helium.

## **OPTIONAL EQUIPMENT**

---

In-Line Filters – A 2-Micron Type 316 Stainless Steel or Aluminum Alloy Inlet Filter provides additional protection from particulates for regulator and downstream system.

Aluminum Filter for Model SG4820 FM4741

Type 316 Stainless Steel  
Filter for Model SG4821 FM4746

## INSTALLATION

---

**WARNING:** Before attempting to install and operate these regulators, read and fully understand the safety precautions on page 2 in this booklet. Failure to follow the safety precautions may result in serious personal injury and/or damage to equipment.

1. Inspect the regulator for physical damage or contamination. Do not connect the regulator if you detect oil, grease or damaged parts. If the regulator is contaminated or damaged contact your Advanced Specialty Gas Equipment Distributor to have the regulator properly cleaned or repaired (see “Repairs”).

**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.

2. Close the regulator by turning the pressure adjusting knob counterclockwise until it rotates freely.
3. It is extremely important to prevent any foreign particles from entering the regulator. A two micron filter installed in the inlet port is recommended (see “Optional Equipment”).
4. The regulator may be installed in any position supported by system piping or panel mounted. If supported by system piping, be sure that inlet and outlet piping are rigidly supported to prevent undue strain on the regulator body.
5. If a delivery pressure gauge is required, install it in the regulator gauge port. If not, plug the gauge port with a 1/8 in. NPT pipe plug made of either aluminum or 316 stainless steel depending on the model being used.
6. For panel mounting, a single 3/8 in. diameter hole is required (Fig. 1, see pg. 9). To panel mount, remove the regulator knob, the knurled packing nut and one hex panel nut. Insert the regulator stem in the panel opening. Replace and tighten the hex panel nut, packing nut and knob. Do not overtighten the knurled packing nut or damage to equipment may result.
7. Ensure that inlet and outlet process lines are at atmospheric pressure before connecting regulator. Connect regulator to gas line. Use Teflon<sup>®</sup> tape on pipe threads to prevent galling.

## LEAK TESTING AND PURGING

---

1. If it is nonhazardous, use the process gas to leak test and purge the regulator and gas delivery system.  
If the process gas is hazardous (flammable, toxic and/or corrosive) or sensitive to atmospheric contaminants, use clean dry nitrogen as a purge gas to leak test and purge the regulator and gas delivery system.
2. Isolate downstream side of gas delivery system by closing instrument or process isolation valve.
3. Stand to one side of the regulator and slowly introduce the purge gas into the regulator.
4. Open the regulator by turning the pressure adjusting knob clockwise until the desired pressure is obtained.
5. Leak check all connections with either a soap solution, such as Snoop<sup>®</sup> or a gas leak detector.

**Note:** These regulators do not vent downstream system pressure when the pressure adjusting knob is turned counterclockwise to reduce delivery pressure. For applications where atmospheric constituents could contaminate your gas system, install a vent valve on the downstream system to vent pressure. Connect outlet of vent valve to a safe disposal area.

6. Purge entire system of air if the process gas is hazardous or sensitive to atmospheric contaminants.
7. Vent system to atmospheric pressure. Close system vent valve. Close regulator by turning pressure adjusting knob counterclockwise.

## **OPERATION**

---

**WARNING: Never operate a regulator 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.**

1. Close the regulator by turning the pressure adjusting knob counterclockwise until it rotates freely.
2. Ensure that any purge and system vent valves are closed.
3. Slowly open supply valve to admit process gas to regulator.
4. Turn regulator pressure adjusting knob clockwise until desired delivery pressure is obtained.

**Note:** Do not exceed maximum working pressure of downstream system components.

## **SHUTDOWN**

---

1. If regulator is not to be removed from service, close process supply valve. Always keep supply valve closed whenever the system is not in use.
2. Close regulator by turning pressure adjusting knob counterclockwise until it rotates freely. This will prevent a sudden pressure surge from damaging downstream components when gas flow is restarted.

## **REMOVAL FROM SERVICE**

---

1. Close process supply valve. Always keep supply valve closed whenever system is not in use.

**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.**

2. Vent the system to zero psig. If regulator was used with a hazardous gas, purge the regulator and entire system with clean dry nitrogen gas. Continue purging until the hazardous gas level in the system is below the TLV for the gas.
3. After purging and/or venting is complete, close regulator by turning pressure adjusting knob counterclockwise until it rotates freely.
4. Remove regulator from supply line.

## **REPAIRS**

---

If a regulator leaks or malfunctions, take it out of service immediately. Do not attempt to repair these regulators. 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.

Repairs to regulators done after the initial warranty period has expired are chargeable to the customer. Upon receipt at the factory, the regulator will be inspected and you will be contacted 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. All repairs should be arranged through your Advanced Specialty Gas Equipment Distributor.

**Note: All equipment being returned must be purged of all hazardous materials using a clean, dry inert gas (e.g. Dry Nitrogen) prior to return.**

## SPECIFICATIONS

---

Maximum Inlet Pressure	250 psig
Delivery Pressure Range	See Table 1
Maximum Operating Temperature	140°F
Flow Capacity	See Figure 2
Supply Pressure Effect	0.07 psi per 10 psi
Inlet, Outlet and Gauge Connections	½ in. NPT female
Weight (approx.)	0.5 lbs.

**Table 1**

---

Delivery Pressure Range (psig)	Model SG4820 (Aluminum Body)	Model SG4821 (Type 316 SS Body)
0–0.5	SG4820–1	SG4821–1
0–10	SG4820–10	SG4821–10
0–30	SG4820–30	SG4821–30
0–60	SG4820–60	SG4821–60
0–100	SG4820–100	SG4821–100
0–200	SG4820–200	SG4821–200

## MATERIALS OF CONSTRUCTION

---

Body	See Table 1
Bonnet	Aluminum
Valve Stem and Valve Spring	Type 316 Stainless Steel
Seat	Teflon®
Seals	
Model SG4820	Buna-N®
Model SG4821	Viton®
Diaphragm	
Model SG4820	Buna-N®
Model SG4821	Viton®
Adjusting Spring	Zinc-Plated Music Wire



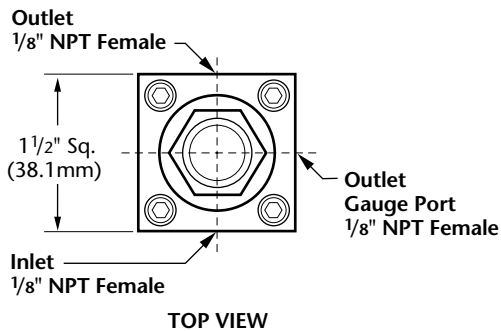
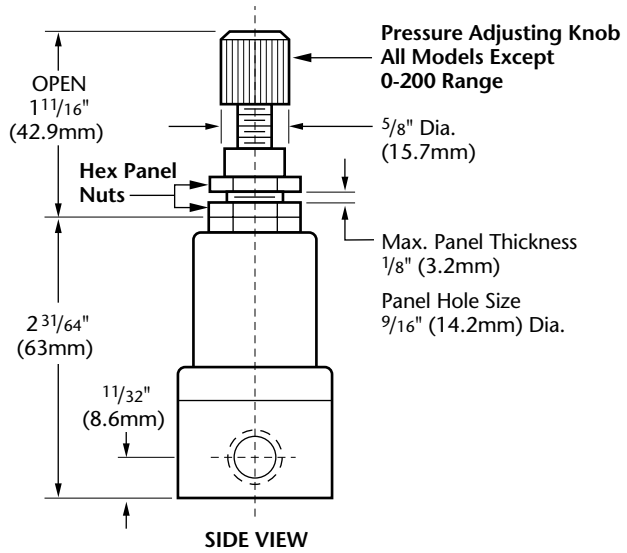
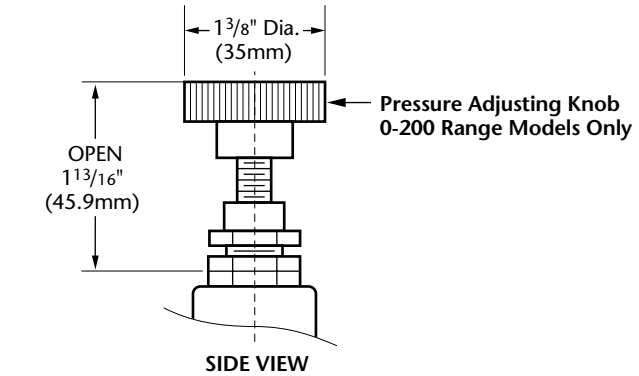


Figure 1 – Models SG4820 and SG4821 Regulators

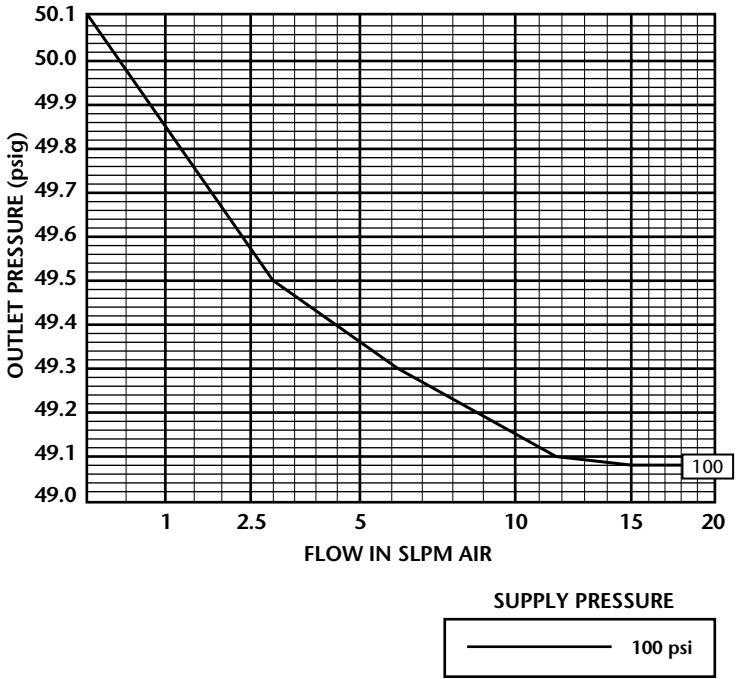


Figure 2 – Typical Performance  
 Models SG4820 and SG4821 Regulators

## **WARRANTY**

---

Advanced Specialty Gas Equipment Corp., (the Company), warrants to the initial purchaser of each regulator 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. Purchaser is aware that this equipment is designed for specific applications and that using this equipment with the wrong or improperly purged gas or at the wrong pressure may damage or corrode the unit and cause personal injury. This warranty does not cover damage or malfunction due to corrosion. 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.



*241 Lackland Drive, Middlesex, NJ 08846*  
*Phone: 732-271-9300 Fax: 732-271-1630 [www.asge-online.com](http://www.asge-online.com)*

---

Printed In U.S.A.

Copyright ©2000 Advanced Specialty Gas Equipment Corporation

AI 2019R

7/00

Buna-N, Teflon, and Viton are registered trademarks of E.I. Du Pont de Nemours & Co.

Snoop is a registered trademark of Nupro Co.

VCR is a registered trademark of Cajon Co.