
INSTRUCTIONS FOR MODELS SG9011, SG9012 & SG9014 NITROUS OXIDE & CARBON DIOXIDE SINGLE-STAGE REGULATORS

THIS BOOKLET CONTAINS PROPRIETARY INFORMATION OF
ADVANCED SPECIALTY GAS EQUIPMENT CORP. AND IS PROVIDED
TO THE PURCHASER SOLELY FOR USE IN CONJUNCTION WITH
MODELS SG9011, SG9012 AND SG9014 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.



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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 other than nitrous oxide or carbon dioxide. The use of gases not compatible with the materials of construction may cause damage to equipment or injury to personnel.
- Nitrous Oxide supports combustion, therefore do not locate the regulators near open flames or any other source of ignition.
- 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.
- 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 over-pressurization.
- 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 (see page 9) 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

Models SG9011, SG9012 and SG9014 cylinder regulators are designed to prevent freeze-up frequently encountered with ordinary regulators used in nitrous oxide and carbon dioxide service. All three models will handle these gases at flow rates up to 100 scfh at 70°F without freeze-up and without the need for electrical connections.

The Model SG9012 is equipped with a flowmeter which is calibrated for carbon dioxide. Since nitrous oxide and carbon dioxide have relatively the same specific gravities, the same flowmeter can be used to accurately read nitrous oxide flows.

Note: These regulators are not manufactured to meet FDA standards and should not be used for medical gases.

INSTALLATION

WARNING: Before attempting to install and operate these regulators, 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.

1. Inspect the regulator and cylinder valve for physical damage and 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"). 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. All associated equipment used with nitrous oxide should be cleaned as for oxygen service.

2. Close the manually adjusted regulator (Model SG9011 or SG9014) by turning the pressure adjusting knob counterclockwise until it rotates freely.
3. Secure cylinder in place using a suitable restraining device recommended by your gas supplier (such as a Model SG6202 bench clamp or a Model SG6203 wall clamp).
4. Connect regulator directly to the cylinder valve. Securely tighten connection nut.
5. Ensure that the delivery line is at atmospheric pressure before connecting regulator. Connect the regulator outlet to the delivery line.

Note: The use of joint compounds, pastes or lubricants other than Teflon® tape should be avoided since they may contaminate the regulator and process gas.

LEAK TESTING AND PURGING

1. Use the process 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 open the process gas. Check inlet gauge for pressure into the regulator.
4. For Models SG9011 and SG9014, open the regulator by turning the pressure adjusting knob clockwise until the desired flow rate or pressure is indicated on the outlet gauge. This will immediately pressurize the downstream side of regulator.

For Model SG9012, slowly open the flowmeter valve by turning knob counterclockwise until knob stops turning.

5. Leak check all connections with either a soap solution, such as Snoop[®] 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.

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 is sensitive to atmospheric contaminants.
7. Vent system to atmospheric pressure. Close system vent valve. Close regulator (Models SG9011 & SG9014 only) by turning pressure adjusting knob counterclockwise. Close flowmeter control valve on Model SG9012.

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 (Models SG9011 & SG9014 only) by turning the pressure adjusting knob counterclockwise until it rotates freely. Close flowmeter control valve on Model SG9012.
2. Ensure that any purge and system vent valves are closed.
3. Slowly open cylinder valve to admit process gas to regulator.
4. For Models SG9011 and SG9014, open the regulator by turning the pressure adjusting knob clockwise until the desired flow rate or pressure is indicated on the outlet gauge.

For Model SG9012, slowly open the flowmeter control valve and adjust it to the desired flow rate.

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

SHUTDOWN

1. If regulator is not to be removed from service, close cylinder or process supply valve. Always keep cylinder or supply valve closed whenever the system is not in use.
2. Close the regulator (Models SG9011 & SG9014 only) by turning the pressure adjusting knob counterclockwise until it rotates freely. This will prevent a sudden pressure surge from damaging downstream components when gas flow is restarted. Close flowmeter control valve on Model SG9012.

REMOVAL FROM SERVICE

1. Close cylinder or process supply valve. Always keep cylinder or 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 until all gauges read zero.
3. After venting is complete, close the regulator (Models SG9011 & SG9014 only) by turning the pressure adjusting knob counterclockwise until it rotates freely. Close flowmeter control valve on Model SG9012.

CAUTION: Always remove regulator and reinstall cylinder cap before moving cylinder.

4. Remove regulator from cylinder or supply line.

REPAIRS

If a regulator leaks or malfunctions, take it out of service immediately.

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

Non-Warranty Repairs should be made by a qualified repair technician. Repairs are also available by Advanced Specialty Gas Equipment Corporation through your distributor. Upon receipt at the factory, the regulator 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.

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	1500 psig
Inlet Pressure Gauge	0 – 1500 psig
Delivery Range	See Table 1
Delivery Gauge/Flowmeter	See Table 1
Gauge Size	2 in. Dial
Maximum Flow Rate	100 scfh
Inlet Connections	CGA 320 for Carbon Dioxide CGA 326 for Nitrous Oxide
Outlet Connection	¼ in. NPT female
Relief Valve	200 psig – self-reseating
Weight (approx.)	3 lbs.

Table 1

Part No.	Configuration	Delivery Gauge or Flowmeter	Delivery Range
SG9011-(CGA)	Regulator with flow gauge*	0–100 scfh	10–100 scfh
SG9012-(CGA)	Regulator with flowmeter	30–100 scfh	30–100 scfh
SG9014-(CGA)	Regulator with pressure gauge	0–200 psig	10–150 psig

Note: Insert applicable CGA connection number (320 or 326) to complete the part number. Example: SG9011–320.

* A regulator equipped with a flow gauge is not accurate when a backpressure in excess of 2 psig exists at the outlet. In applications where backpressure in excess of 2 psig can be expected, a regulator with a flowmeter should be used.

MATERIALS OF CONSTRUCTION

Body and Bonnet	Aluminum
Gauges	Chrome-plated Brass
Seat	Polyurethane
Seals and Diaphragm	Neoprene
Flowmeter (Model SG9012)	Chrome-plated Brass with Lexan plastic tube and shield

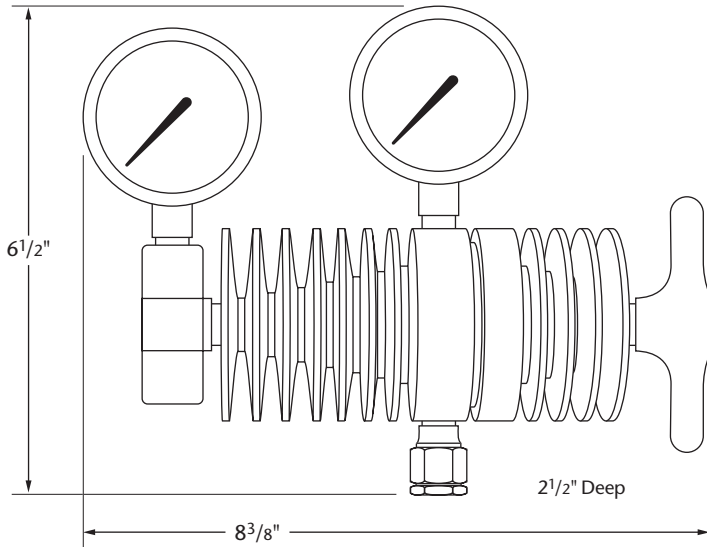


Figure 1 – Models SG9011, SG9014

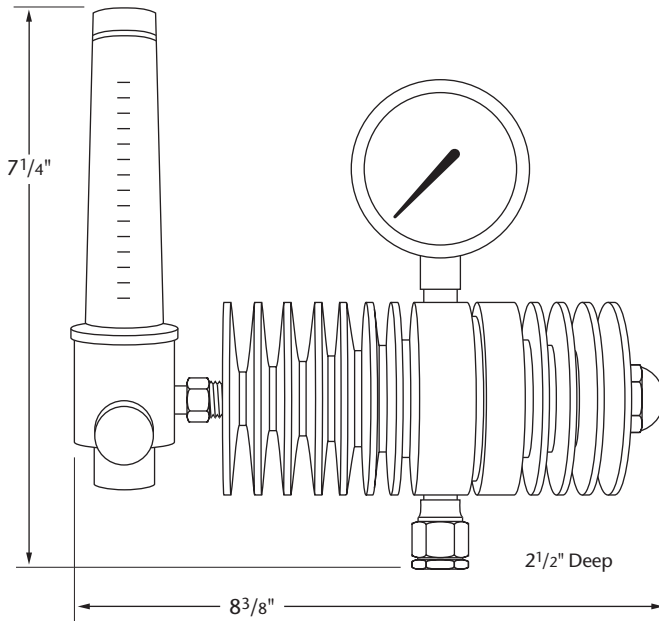


Figure 2 – Model SG9012

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