

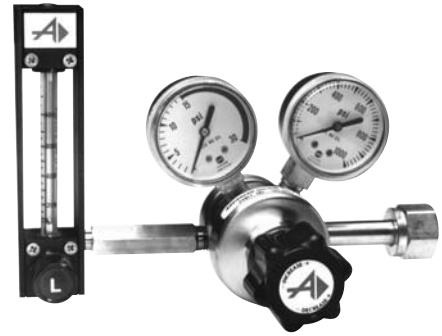
SG3090 Series

Equipment for Fruit Ripening Gases

Ethylene, and ethylene containing mixtures (such as Banana Gas) are specialty gases which are commonly used to initiate the de-greening or ripening of fruits and vegetables. Typically this process is conducted in “controlled atmosphere” ripening rooms where the temperature and humidity is controlled. The pressure and flowrate of the ripening gas must also be properly controlled for the process to be both safe and effective.

Advanced has developed special equipment for this application. The Model SG3091 is a regulator/flowmeter combination designed to mount directly to a ripening gas cylinder. This can be used for either stationary, single-room applications, or as a portable ripening package by mounting the cylinder on a suitable cylinder cart. It provides for flowrates between 100 and 950 standard cubic centimeters/minute. Conversely, the Model SG3092 regulator is designed to be used in conjunction with our flowmeter control panels (SG3093 – SG3096) for stationary, multiple-room applications. This combination allows control of the ripening gas feed to between 2–5 ripening rooms simultaneously – using just a single ripening gas cylinder.

Dependent on the specific fruit or vegetable, ripening or de-greening is achieved by maintaining specific Ethylene and Carbon Dioxide concentrations within the ripening room (along with specific temperature, humidity and time controls). The Ethylene and Carbon Dioxide levels can be inexpensively monitored using our optional Gastec Gas Detector in conjunction with the appropriate Gas Detector Tubes (see optional equipment).



SG3091 Regulator

Standard Features

- Two-Stage Regulator Design ensures constant delivery pressure (to flowmeter) over varying inlet pressures.
- Filter in Each Regulator Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.
- Ribbed Flowmeter Tubes stabilize float and improve accuracy and readability.
- Flowmeter Valve Design allows metering control and bubbletight shutoff.
- Unique Stationary Control Panel Design allows additional flowmeter stations (up to a maximum of five) to be added to meet future requirements.

Optional Features

- Gastec Gas Detector and Detector Tubes allow periodic monitoring of ethylene and carbon dioxide levels within the ripening room(s).
- Flowmeter Station Kit provides the necessary equipment for adding a flowmeter station to a control panel.
- Optional Flowmeters can be substituted to custom fit a flow requirement.

Specifications

Regulators:

- Maximum Inlet Pressure: See Table I
- Inlet Pressure Gauge: See Table I
- Delivery Pressure Range: 3–15 psig
- Delivery Pressure Gauge: 0–30 psig red-lined above 15 psig
- Gauge Size: 2" Dial
- Operating Temperature Range:
 - SG3091: 32°F to 165°F
 - SG3092: -40°F to 165°F
- Flow Coefficient: $C_v = 0.02$
- Inlet Connection: See Table I
- Outlet Connection: 1/4" compression
- Supply Pressure Effect: 0.05 psi per 100 psi
- Approximate Weight:
 - Model SG3091: 6 lbs
 - Model SG3092: 5 lbs

Flowmeters:

- Maximum Operating Pressure and Temperature: 200 psig at 250°F
- Minimum Operating Temperature: 32°F
- Accuracy: $\pm 10\%$ of full scale from 10% to 100% of range
- Repeatability: Within 0.5% of full scale
- Tube Graduations: Standard cubic centimeters per minute of Air (optional flowmeter tubes may be graduated in standard liters per minute of air depending on range)
- Scale Length: 65 millimeters
- Flow Range: 100–950 sccm (0.21–2.0 scfh) other ranges are available

Stationary Control Panels:

- Maximum Operating Pressure: 35 psig
- Operating Temperature Range: +32°F to 165°F
- Relief Valve (self re-seating): 50 psig
- Inlet and Outlet Connections: 1/4" compression
- Approximate Weight: 5 lbs

Materials of Construction

Regulators:

- Body: Brass Forging
- Gauges: Brass
- Other Metal Parts Exposed to Gas: Brass and Stainless Steel
- Seats and Seals: Teflon®
- Diaphragms: Neoprene

Flowmeters:

- Tube: Borosilicate Glass with float stops of Teflon®
- Floats: Type 316 Stainless Steel or Glass
- End Blocks, Inlet/Outlet Adaptor and Side Plates: Aluminum
- Back Plate: White Plastic
- Front Plate: Clear Plastic
- Seals and Packing: Viton®
- Valve: Type 316 Stainless Steel

Stationary Control Panels:

- Compression Fittings: Brass
- Tubing: Polyethylene
- Panel: Painted Drawn Steel
- Relief Valve: Brass and Stainless Steel
- Relief Valve Seals: Buna-N

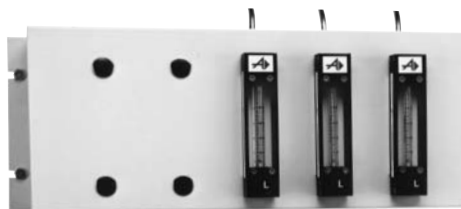
Table I, Cylinder Regulators

Part No.	Configuration	Inlet Pressure (psig)		Delivery Range
		Max.	Gauge	
SG3091-320	Banana Gas Cylinder Regulator with Flowmeter for use with portable packages	1000	1000	100–950 sccm (Air)
SG3091-350	Ethylene Gas Cylinder Regulator with Flowmeter for use with portable packages	2000	2000	100–950 sccm (Air)
SG3092-320	Banana Gas Cylinder Regulator for use with stationary control panels	1000	1000	3–15 psig
SG3092-350	Ethylene Gas Cylinder Regulator for use with stationary control panels	2000	2000	3–15 psig

Table II, Stationary Control Panels

Part No.	Description
SG3093	Two-Room Control Panel
SG3094	Three-Room Control Panel
SG3095	Four-Room Control Panel
SG3096	Five-Room Control Panel

Note: Control Panels are designed so that additional flowmeter stations (up to a maximum of five) may be added to meet future requirements.



SG3094 Three-Room Control Panel



SG3092 Regulator

Optional Equipment

Equipment	Part No.
Flowmeter Station Kit – Parts required for adding a flowmeter station to a stationary control panel	SG3097
Flowmeters with the following flowrates (Air @70°F and 14.7 psia) can be substituted in place of the standard 100–950 sccm range flowmeter:	
8.0–50 sccm (0.017–0.10 scfh)	FM4350-0
5.0–85 sccm (0.011–0.18 scfh)	FM4350-1
40–440 sccm (0.085–0.93 scfh)	FM4350-2
0.2–1.8 slpm (0.42–3.8 scfh)	FM4350-4
0.4–3.6 slpm (0.85–7.6 scfh)	FM4350-5
0.5–7 slpm (1.1–14.8 scfh)	FM4350-6
1.0–13 slpm (2.1–27.5 scfh)	FM4350-7
6.0–24 slpm (12.7–50 scfh)	FM4350-8
4.0–44 slpm (8.5–93 scfh)	FM4350-9
Gastec Gas Detector (See page 166)	SG4010
Ethylene Gas Detector Tubes (25–800 ppm measurable range) for use with SG4010 Gas Detector – Box of 10 Tubes (See page 168)	SG4102-172
Carbon Dioxide Gas Detector Tubes (0.13 – 6% measurable range) for use with SG4010 Gas Detector – Box of 10 Tubes (See page 167)	SG4100-2L
Cylinder Wall Brackets and Stands	See page 158
Cylinder Carts	See page 159