

Pressure Regulators

Single vs. Two-Stage

Single-stage pressure regulators reduce cylinder pressure to delivery or outlet pressure in one step. Two-stage pressure regulators reduce cylinder pressure in two steps. Since the performance of each is influenced by mechanical characteristics, the choice of regulator depends on the requirements of the application.

The two most important variables to be considered are droop and supply pressure effect. Droop is the difference in delivery pressure between zero flow conditions and the regulator's maximum flow capacity. Supply pressure effect is the variation in delivery pressure as supply pressure decreases while the cylinder empties.

Single-stage and two-stage regulators have different droop characteristics and respond differently to changing supply pressure. The single-stage regulator shows little droop with varying flowrates, but a relatively large supply pressure effect. Conversely, the two-stage regulator shows a considerable droop, but only small supply pressure effects. Generally, a single-stage regulator is recommended where inlet pressure does not vary greatly, or where periodic readjustment of delivery pressure does not present a problem. A two-stage regulator, however, provides constant delivery pressure with no need for periodic readjustment.

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Performance Characteristics

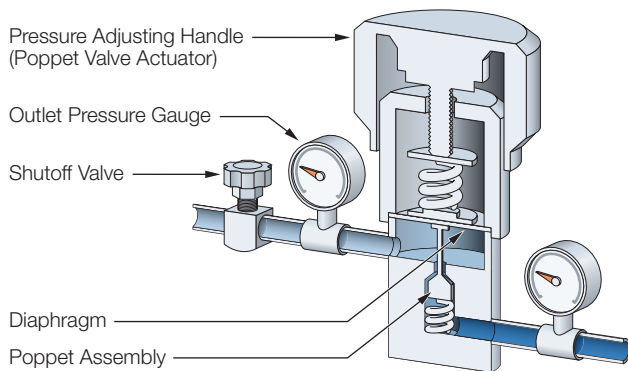
Droop The change in delivery pressure as flow is initiated and increased through the regulator.

Supply and Pressure Effect The change in delivery pressure as the inlet pressure changes. For most regulators, a decrease in inlet pressure causes the delivery pressure to increase.

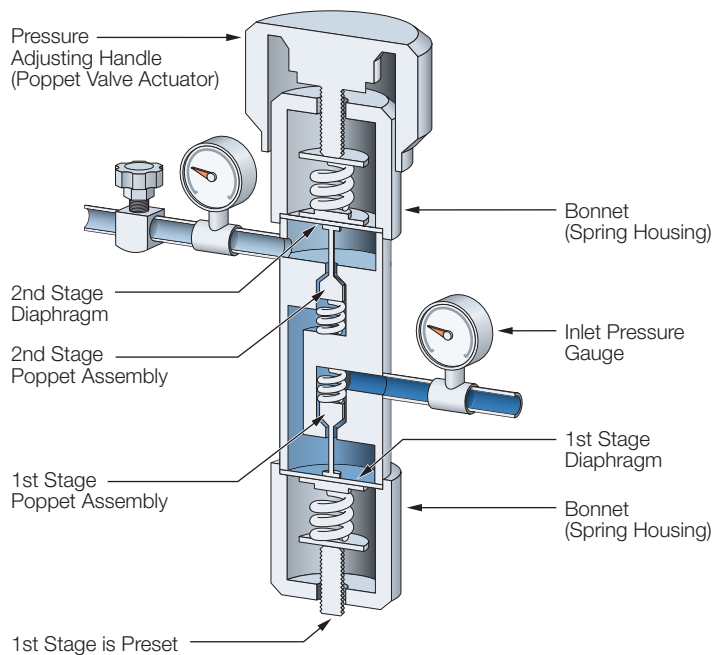
Repeatability The change in delivery pressure after pressure has been set by turning gas flow on and off using an external valve.

Delivery Pressure Creep There are two types of creep. The first type is normal as a result of internal spring forces equalizing when the flow stops. The second type of creep is a result of contamination that, when left unchecked, can lead to regulator and/or supply line failure.

Single-Stage Regulator



Two-Stage Regulator



Regulator Selection

Materials

General Gas Use

General purpose regulators commonly have elastomeric diaphragms and are most often used in conjunction with packed valves. These regulators are typically forged brass but may be stainless steel depending on the corrosivity of the gas. Performance is satisfactory where slight contamination or diffusion from an elastomeric diaphragm is not important. Brass regulators with stainless steel diaphragms prevent air diffusion and adsorption of gases on the diaphragm. This is particularly important with low concentration mixtures of hydrocarbons where the trace component may be adsorbed on the elastomeric diaphragm. Regulators with Buna-N or neoprene diaphragms are not suitable for GC analysis that can be affected by the diffusion of atmospheric oxygen through the elastomer diaphragm or the outgassing of monomers and dimers from the elastomer.

High-Purity Gas Service

Specialty gases can be effectively delivered by regulators that are classified as high-purity or ultra-high-purity. High-purity regulators are typically made of brass and have stainless steel diaphragms. Ultra-high-purity regulators are typically constructed of brass or stainless steel bar stock with convoluted stainless steel diaphragms having metal-to-metal sealing without using backup O-Rings. Ultra-high-purity regulators used with highly corrosive gases typically have stainless steel diaphragms mechanically linked to the poppet assembly to provide additional sealing integrity.

A high-purity regulator equipped with a stainless steel diaphragm does not outgas organic materials. It also prevents the diffusion of atmospheric oxygen into the carrier gas whereas Buna-N and neoprene diaphragms are permeable to oxygen.

Operating Delivery Pressure Range

Determining the proper delivery pressure can be confusing. It is important to determine two application requirements: the gas pressure that is needed and the maximum pressure that the system may require (these two pressures may be the same). Then, select the regulator's delivery pressure ranges so the desired pressures are between 5 and 90% of the regulator's delivery range. A regulator's performance is at its best within this range.

Regulator Placement (Cylinder or Line)

Specialty gas regulator applications are divided into two types. The first is where the regulator is fastened to a gas cylinder using a Compressed Gas Association (CGA) fitting. The second application is where a regulator is located in a gas line, providing a means to further reduce the line pressure. A line regulator is identified by having the inlet and outlet opposite of each other with a single gauge in the 12 o'clock position to indicate the reduced pressure.

Maintenance Schedule

Regulator maintenance is an important part of maximizing your system's performance and extending the service life of your regulator. Adherence will minimize downtime and enhance safety in your work area.

Service Noncorrosive or corrosive. See the Regulator Selection Guide to help you select the correct regulator for your application.

Leak Check With the regulator under pressure, check all connections using Snoop®. Shut down the gas source if you detect a leak, reduce atmospheric pressure and tighten or redo the connection. If you are using toxic or corrosive gases, you must purge the connection first with an inert gas. Then retest.

Creep Test Regulator creep is a phenomenon in which delivery pressure rises above the setpoint and occurs two ways: 1) changes to the motion of the regulator springs when gas flow is stopped, and 2) foreign material becomes lodged between the poppet and seat preventing tight shutoff.

Inert Purge In order to maintain cylinder integrity and obtain optimum performance, ALL regulators should be purged. For best results, utilize dilution purging – where alternating pressurizing and depressurizing the regulator with purge gas helps eliminate internal dead pockets that tend to hold contaminants.

Overhaul Remove all regulators from service periodically and return them to Air Liquide for inspection and overhaul.

Replacement Once the life expectancy of a regulator has been exceeded, it should be replaced to protect against unexpected failure.

Contact Air Liquide for more information on purging methods and regulator maintenance.

Regulator Selection Guide

Regulator Model Series	Gas Service										Materials						Inlet Pressure					
	Type			Properties							Body				Diaphragm		Maximum Inlet Range					
	General Purpose	High-Purity	Ultra-High-Purity	Inert	Flammable	Oxidant	Toxic	Noncorrosive	Corrosive	Reactive	Brass	Stainless Steel	Aluminum	Other	Stainless Steel	Elastomer/Plastic	0 – 6000 psig	0 – 3000 psig	0 – 1000 psig	0 – 500 psig	0 – 400 psig	0 – 250 psig
14		•		•	•	•		•		•				•			•					
14A-165		•		•	•	•		•		•				•			•					•
14DFR	•			•	•	•		•		•				•	•							•
19VOC			•	•	•	•	•	•	•		•			•			•					
20B	•			•	•	•		•		•				•			•					
23A	•			•	•	•		•		•			•	•			•					•
23S	•			•	•	•		•		•		•		•			•					•
24	•			•	•	•		•		•				•			•			•		
27	•			•	•	•		•		•				•			•		•			
38	•			•	•	•		•	•	•				•			•					
202	•			•	•	•		•		•				•			•					
202-510A	•			•	•	•		•		•				•	•		•					
205		•		•	•	•		•		•				•			•					
206B		•		•	•	•		•		•				•			•					
206S		•		•	•	•		•	•	•				•			•					
208B		•		•	•	•		•		•				•			•					
208S		•		•	•	•		•	•	•				•			•					
209	•			•	•	•	•	•	•	•				•			•					
211		•		•	•	•		•		•				•			•					
213			•	•	•	•		•	•	•				•			•					
215			•	•	•	•		•	•	•				•			•					
216B		•		•	•	•		•		•				•			•					
216S		•		•	•	•	•	•	•	•				•			•					
217			•	•	•	•	•	•	•	•				•			•					
220S		•		•	•	•		•		•				•			•					
226		•		•	•	•		•	•	•			•				•		•			
228B		•		•	•	•		•		•				•			•					
228S		•		•	•	•		•	•	•				•			•					
229B	•			•	•	•		•		•				•			•					
242	•			•	•	•		•		•				•			•					
247A80	•			•	•	•		•		•				•			•			•		
261	•			•	•	•		•		•			•				•					•
262	•			•	•	•		•		•				•			•					•
318			•	•	•	•		•		•				•			•					
500	•			•	•	•		•		•				•			•					
720	•			•	•	•		•		•				•			•					•
730	•			•	•	•		•		•			•				•					•
750B		•		•	•	•		•		•				•			•					
750S		•		•	•	•		•	•	•				•			•					
2172			•	•	•	•	•	•	•	•				•			•					
2700B/10B			•	•	•	•		•		•				•			•					
2700S/10S			•	•	•	•		•	•	•				•			•					
2800B		•		•	•	•		•		•				•			•					•
2800S		•		•	•	•		•	•	•				•			•					•
2900B		•		•	•	•		•		•				•			•					•
2900S		•		•	•	•	•	•	•	•				•			•					•
3300			•	•	•	•		•		•				•			•					

Most regulators offered are approved for oxygen service as per CGA 4.1 "Cleaning Equipment for Oxygen Service."

Regulator Model Series	Delivery Pressure							Pressure Reduction Design						Regulator Type				Gauges			Page No. or Online	
	Maximum Outlet Range							Diaphragm	Piston	Preset	Adjustable	Single-Stage	Two-Stage	Cylinder	In-Line	Back Pressure	Lecture Bottle	SCOTTY™	Inlet	Outlet		Outlet Valve
	0 – 30 psig	31 – 75 psig	76 – 150 psig	151 – 250 psig	251 – 500 psig	501 – 1000 psig	1001+ psig															
14	•	•	•					•	•		•		•				•	•	•	•	○	275
14A-165	•							•	•		•		•				•	•	•	•	○	296
14DFR								•	•	•			•					•	•	•		275
19VOC		•									•			•					•	•		277
20B	•	•	•					•	•		•						•	•	•	•	•	294
23A	•	•	•	•				•	•		•				•				○	○	○	278
23S	•	•	•	•				•	•		•							○	○	○	○	278
24	•	•	•	•				•	•		•							•	•	•	○	297
27		•							•	•								•	•		▲	298
38		•							•	•								•	•		▲	298
202	•	•	•	•				•	•		•								•	•	•	268
202-510A	•	•	•	•				•	•		•								•	•	•	280
205	•	•	•	•				•	•		•								•	•	•	269
206B	•	•	•	•				•	•		•								•	•	○	291
206S	•	•	•	•				•	•		•								•	•	○	291
208B			•	•	•	•	•		•		•								•	•	•	281
208S			•	•	•	•	•		•		•								•	•	•	281
209	•	•	•	•				•	•		•			•					•	•	•	268
211	•	•	•	•				•	•		•								•	•	•	269
213	•	•	•	•	•			•	•		•				•				•	•	•	271
215	•	•	•	•	•			•	•		•								•	•	•	271
216B	•	•	•	•				•	•		•							•	•	○	○	291
216S	•	•	•	•				•	•		•							•	•	○	○	291
217	•	•	•	•				•	•		•								•	•	•	272
220S	•	•	•	•				•	•		•						•	•	•	○	○	295
226	•	•	•	•				•	•		•							•	▲	▲		299
228B	•	•	•	•				•	•		•								•	•		282
228S	•	•	•	•				•	•		•								•	•		282
229			•	•	•	•	•		•		•								•	•		283
242	•							•	•		•								•	•		300
247A80	•							•	•		•								•	•		285
261		•						•	•		•							•	•	•		301
262	•							•	•		•							•	•			301
318	•	•	•	•	•			•	•		•								•	•	•	270
500				•	•				•		•									•		292
720	•							•	•		•									•	•	286
730	•							•	•		•									•	•	287
750B	•							•	•		•			•					•	•	○	288
750S	•							•	•		•								•	•	○	288
2172	•	•	•					•	•		•								•	•	•	272
2700B/10B	•	•	•	•	•			•	•		•									•		274
2700S/10S	•	•	•	•	•			•	•		•									•		274
2800B	•	•	•	•				•	•		•									•		289
2800S	•	•	•	•				•	•		•						•					289
2900B					•	•	•		•		•								•	•	•	290
2900S					•	•	•		•		•								•	•	•	290
3300	•	•	•	•	•			•	•		•								•	•	•	270

○ Optional feature ▲ Comes with or without

GAS HANDLING EQUIPMENT

Brass Regulators

General Purpose Regulators

For Noncorrosive Service

Models 202 and 209

These regulators are designed for general purpose, noncorrosive service. Single-stage is recommended where inlet pressure does not vary greatly. Two-stage is ideal when constant delivery pressure is desired.



Model 202

Benefits/Features

Neoprene diaphragm permits accurate delivery pressure settings.

Outlet needle valve provides flow control.

Sintered metal filter in the seat assembly traps foreign particles and extends regulator life.

Specifications

Inlet Pressure:

202A, B, C, D; 209: 3000 psig (207 bar) max
202-300, 202-510: 400 psig (28 bar) max

Operating Temperature Range:

-40°F to 140°F (-40°C to 60°C)

Flow Coefficient:

202: Cv = 0.18

209: Cv = 0.15

Supply Pressure Effect:

202: 1 psi per 100 psi (0.1 bar per 7 bar)

209: 0.1 psi per 100 psi (0 bar per 7 bar)

Regulator Inlet Port: 1/4" NPT Female

Inlet Connection: Specify CGA

Outlet Connection: 1/4" NPT Male

and all other configurations

Gauge: 2" (53 mm) face

Weight:

202: 3.4 lbs. (1.5 kg)

209: 5.1 lbs. (2.3 kg)

Materials of Construction

Body: Brass

Diaphragm: Neoprene

Seat: Teflon®

Seal: Teflon®

Gauge: Brass

Bonnet: Painted zinc

Model 202, 209	Delivery Pressure Range		Flow Capacity Air	Delivery Pressure Gauge (dual scale)		Cylinder Pressure Gauge (dual scale)	
	psig	bar		psig	bar	psig	bar
Brass			scfh				
Single-Stage							
Q1-202-300 or 510	4 – 50	0.3 – 4	750	0 – 100	0 – 7	0 – 400	0 – 28
Q1-202A-(*)	2 – 15	0.1 – 1	350	0 – 30	0 – 2	0 – 4000	0 – 276
Q1-202B-(*)	4 – 50	0.3 – 4	750	0 – 100	0 – 7	0 – 4000	0 – 276
Q1-202C-(*)	10 – 125	0.7 – 9	1000	0 – 150	0 – 10	0 – 4000	0 – 276
Q1-202D-(*)	20 – 250	1 – 17	1500	0 – 400	0 – 27	0 – 4000	0 – 276
Two-Stage							
Q1-209-(*)	2 – 15	0.1 – 1	250	0 – 30	0 – 2	0 – 4000	0 – 276
Q1-209A-(*)	4 – 50	0.3 – 4	500	0 – 100	0 – 7	0 – 4000	0 – 276
Q1-209B-(*)	10 – 125	0.7 – 9	750	0 – 150	0 – 10	0 – 4000	0 – 276
Q1-209C-(*)	20 – 250	1 – 17	1000	0 – 400	0 – 27	0 – 4000	0 – 276

* Specify CGA. Other cylinder connections are available – please contact your Air Liquide representative.

Chrome-Plated Regulators

High-Purity for Noncorrosive Service

Models 205 and 211

Chrome-plated regulators are designed for high-purity laboratory applications involving noncorrosive gases. Single-stage design is recommended for use where inlet pressure does not vary greatly such as with liquefied gases, or where periodic readjustment of delivery pressure setting does not present a problem. Two-stage design is recommended for use where constant delivery pressure is desired.



Model 211

Benefits/Features

Stainless steel diaphragm minimizes diffusion of air into regulator and eliminates off-gassing.

High-purity regulator design permits vacuum purging of regulator.

Sintered metal filters in seat assembly trap foreign particles and extend regulator service life.

Chrome-plated surface provides polished appearance for easy cleaning.

Chrome-plated outlet valve with diaphragm seal provides on/off flow control and helps maintain gas purity.

Two-stage design ensures constant delivery pressure as inlet pressure decreases.

Specifications

Inlet Pressure: 3000 psig (207 bar) maximum

Operating Temperature Range:
-40°F to 140°F (-40°C to 60°C)

Flow Coefficient:
Single-stage design: Cv = 0.18
Two-stage design: Cv = 0.15

Supply Pressure Effect:
Single-stage design: 1 psi per 100 psi
(0.1 bar per 7 bar)
Two-stage design: 0.04 psi per 100 psi
(0 bar per 7 bar)

Regulator Inlet Port: 1/4" NPT Female
Inlet Connection: Specify CGA

Outlet Connection: 1/4" NPT Female and all other inlet/outlet configurations

Gauge Size: 2" (53 mm) face

Weight:
Single-stage design: 4.3 lbs. (1.9 kg)
Two-stage design: 5.8 lbs. (2.6 kg)

Materials of Construction

Body: Chrome-plated brass

Diaphragm: 304 Stainless Steel

Seat: Teflon®

Seal: Teflon®

Bonnet: Chrome-plated zinc

Gauges: Chrome-plated brass

Model 205, 211 Chrome-Plated Brass	Delivery Pressure Range		Delivery Pressure Gauge (dual scale)		Cylinder Pressure Gauge (dual scale)	
	psig	bar	psig	bar	psig	bar
Single-Stage						
Q1-205A-(*)	2 – 15	0.1 – 1	30" Vac – 0 – 30	-1 – 0 – 2	0 – 4000**	0 – 276
Q1-205B-(*)	4 – 50	0.3 – 4	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000**	0 – 276
Q1-205C-(*)	10 – 125	0.7 – 9	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-205D-(*)	20 – 250	1 – 17	0 – 400	0 – 28	0 – 4000	0 – 276
Two-Stage						
Q1-211A-(*)	2 – 15	0.1 – 1	30" Vac – 0 – 30	-1 – 0 – 2	0 – 4000	0 – 276
Q1-211B-(*)	4 – 50	0.3 – 4	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000	0 – 276
Q1-211C-(*)	10 – 125	0.7 – 9	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-211D-(*)	20 – 250	1 – 17	0 – 400	0 – 28	0 – 4000	0 – 276

* Specify CGA. Other cylinder connections are available – please contact your Air Liquide representative.

** For low-pressure cylinders with <300 psig (21 bar), the Model 205 regulator is available with 0 – 400 psig (28 bar) cylinder gauges. Add "4G" to the model number before the specified CGA. Example: Q1-205B4G-510.

Ultra-High-Purity Regulators

For Noncorrosive Service

Models 3300 and 318

Brass regulators provide excellent service wherever precise high-pressure delivery of ultra-high-purity gases is needed. Brass construction protects gas purity and ensures long regulator service life. Single-stage design is recommended for use where inlet pressure does not vary greatly such as with liquefied gases, or where periodic readjustment of delivery pressure setting does not present a problem. Two-stage design provides constant delivery pressure with no need for periodic readjustment.



Model 318

Benefits/Features

- Stainless steel diaphragm minimizes diffusion of air into regulator and eliminates off-gassing.
- Brass diaphragm-sealed outlet valve provides on/off flow control and helps maintain gas purity.
- Filter traps foreign matter, extends regulator life and reduces maintenance.
- Threaded bonnet allows for easy panel mounting.
- Threaded holes in rear of single-stage regulator allow for front panel mounting.

Specifications

- Inlet Pressure:** 3000 psig (207 bar) maximum
- Operating Temperature Range:** -40°F to 140°F (-40°C to 60°C)
- Flow Coefficient:**
Single-stage: Cv = 0.06
Two-stage: Cv = 0.05
- Supply Pressure Effect:**
Single-stage: 1 psi per 100 psi (0.1 bar per 7 bar)
Two-stage: 0.04 psi per 100 psi (0.003 bar per 7 bar)
- Regulator Inlet Port:** 1/4" NPT Female
- Inlet Connection:** Specify CGA

- Outlet Connection:** 1/4" NPT Female and all other inlet/outlet configurations
- Gauge Size:** 2" (53 mm) face
- Weight:**
Single-stage design: 4 lbs. (1.8 kg)
Two-stage design: 5.5 lbs. (2.5 kg)

Materials of Construction

- Body:** Brass
- Diaphragm:** 316 Stainless Steel
- Seats:** PCTFE
- Seals:** Teflon®
- Bonnet:** Brass
- Gauges:** Brass

Model 3300, 318	Delivery Pressure Range		Delivery Pressure Gauge (dual scale)		Cylinder Pressure Gauge (dual scale)	
	psig	bar	psig	bar	psig	bar
Brass						
Single-Stage						
Q1-3300A-(*)	1 – 30	0.1 – 2	30" Vac – 0 – 60	-1 – 0 – 4	0 – 4000	0 – 276
Q1-3300B-(*)	2 – 75	0.1 – 5	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000	0 – 276
Q1-3300C-(*)	4 – 150	0.3 – 10	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-3300D-(*)	7 – 300	0.5 – 21	0 – 400	0 – 28	0 – 4000	0 – 276
Q1-3300E-(*)	10 – 500	0.7 – 35	0 – 600	0 – 41	0 – 4000	0 – 276
Two-Stage						
Q1-318A-(*)	1 – 30	0.1 – 2	30" Vac – 0 – 60	-1 – 0 – 4	0 – 4000	0 – 276
Q1-318B-(*)	2 – 75	0.1 – 5	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000	0 – 276
Q1-318C-(*)	4 – 150	0.3 – 10	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-318D-(*)	7 – 300	0.5 – 21	0 – 400	0 – 28	0 – 4000	0 – 276
Q1-318E-(*)	10 – 500	0.7 – 35	0 – 600	0 – 41	0 – 4000	0 – 276

* Specify CGA. Other cylinder connections are available – please contact your Air Liquide representative.

- Options: Model No. Q1-HLRI helium leak rate certification
- Model No. Q1-CAPVENTBR captured venting configuration allows for complete capture when connected to vent line
- Model No. Q1-PMNCP chrome-plated panel mounting nut

Ultra-High-Purity Regulators

For Corrosive Service

Models 213 and 215

SCOTT™ stainless steel regulators provide outstanding performance in applications involving high delivery pressure where maintenance of gas purity is essential. The single-stage design is recommended for use where inlet pressure does not vary greatly such as with liquefied gases, or where periodic readjustment of delivery pressure setting does not present a problem. Two-stage design provides constant delivery pressure with no need for periodic readjustment.



Model 213

Benefits/Features

- Stainless steel diaphragm minimizes diffusion of air into regulator and eliminates off-gassing.
- Convolute stainless steel diaphragm (single-stage design) provides excellent delivery pressure accuracy.
- Filter traps foreign matter, extends regulator life and reduces maintenance.
- Threaded bonnet allows for easy panel mounting.
- Threaded holes in rear of single-stage regulator allow for front panel mounting.
- Stainless steel diaphragm-sealed outlet valve provides on/off flow control and helps maintain gas purity.

Specifications

- Inlet Pressure:** 3000 psig (207 bar) maximum
- Operating Temperature Range:** -40°F to 140°F (-40°C to 60°C)
- Flow Coefficient:**
Single-stage: Cv = 0.06
Two-stage: Cv = 0.05
- Supply Pressure Effect:**
Single-stage: 2 psi per 100 psi (0.1 bar per 7 bar)
Two-stage: 0.04 psi per 100 psi (0.003 bar per 7 bar)
- Regulator Inlet Port:** 1/4" NPT Female
- Inlet Connection:** Specify CGA

- Outlet Connection:** 1/4" NPT Female and all other inlet/outlet configurations
- Gauge Size:** 2" (53 mm) face
- Weight:**
Single-stage: 3.4 lbs. (1.5 kg)
Two-stage: 4.9 lbs. (2.2 kg)

Materials of Construction

- Body:** 316 Stainless Steel
- Diaphragm:** 316 Stainless Steel
- Seats:** PCTFE
- Seals:** Teflon®
- Bonnet:** 300 Stainless Steel
- Gauges:** Stainless steel

Model 213, 215 Stainless Steel	Delivery Pressure Range		Delivery Pressure Gauge (dual scale)		Cylinder Pressure Gauge (dual scale)	
	psig	bar	psig	bar	psig	bar
Single-Stage						
Q1-213A-(*)	1 – 30	0.1 – 2	30" Vac – 0 – 60	-1 – 0 – 4	0 – 4000**	0 – 276
Q1-213B-(*)	2 – 75	0.1 – 5	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000**	0 – 276
Q1-213C-(*)	5 – 150	0.3 – 10	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-213D-(*)	7 – 300	0.5 – 21	0 – 400	0 – 28	0 – 4000	0 – 276
Q1-213E-(*)	10 – 500	0.7 – 35	0 – 600	0 – 41	0 – 4000	0 – 276
Two-Stage						
Q1-215A-(*)	1 – 30	0.1 – 2	30" Vac – 0 – 60	-1 – 0 – 4	0 – 4000	0 – 276
Q1-215B-(*)	2 – 75	0.1 – 5	30" Vac – 0 – 100	-1 – 0 – 7	0 – 4000	0 – 276
Q1-215C-(*)	5 – 150	0.3 – 10	30" Vac – 0 – 200	-1 – 0 – 14	0 – 4000	0 – 276
Q1-215D-(*)	7 – 300	0.5 – 21	0 – 400	0 – 28	0 – 4000	0 – 276
Q1-215E-(*)	10 – 500	0.7 – 35	0 – 600	0 – 41	0 – 4000	0 – 276

* Specify CGA. Other cylinder connections are available – please contact your Air Liquide representative.

** For low-pressure cylinders with <300 psig (21 bar), the Model 213 regulator is available with 0 – 400 psig (28 bar) cylinder gauges. Add "4G" to the model number before the specified CGA. Example: Q1-213A4G-660.

Options: Model No. Q1-HLRI helium leak rate certification

Model No. Q1-CAPVENTSS captured venting configuration allows for complete capture when connected to vent line

Model No. Q1-PMNCP chrome-plated panel mounting nut