

Flow Limit Safety Shutoff Valves

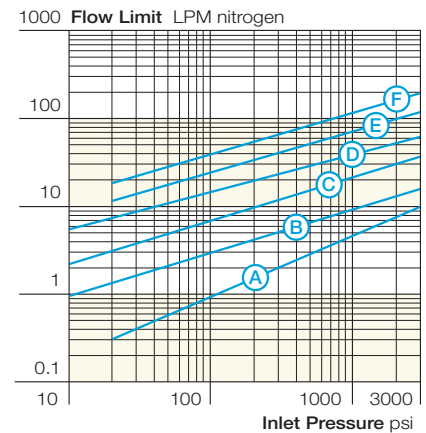
Model 1

Model 1 Series flow limit safety shutoff valves automatically shutoff all flow from the cylinder when flow exceeds a factory preset level. The Model 1 is normally installed between the cylinder outlet and the inlet of the pressure regulator. It senses flow as a pressure drop across the preset internal orifice; when the preset differential pressure limit is reached, the valve closes with a snap action for a leak-tight seal.

The quarter turn actuating knob is used to reset this device. Reset is required at startup, opening of the cylinder valve, during purging, and after correction of any process flow problem or excess flow demand causing the Model 1 to shut off. The reset knob is designed to indicate clearly the operating position: Open (Reset) or Auto Shutoff.

Six flow ranges are available. The actual flow shutoff value for each range is dependent upon the operating pressure. The graph to the right shows the relationship between operating pressure and actual flow shutoff for each range. It is suggested that the range selected provides shutoff at six to ten times the anticipated actual process flowrate to allow for short term flow surges not connected with catastrophic line failure.

Model 1 Series flow limit valves range A through D have a 4 psi (0.3 bar) nominal operating differential pressure. Ranges E and F have a 12 psi (0.8 bar) nominal operating differential pressure. The operating differential pressure is created by a small spring. This device is not affected by the mounting altitude. It works in any mounting position independent of gravity.



Specifications

Inlet Pressure: 10 to 3500 psi (0.7 to 241 bar)

Operating Differential Pressure:

Q1-01-A to D: 4 psi (0.3 bar) nominal

Q1-01-E and F: 12 psi (0.8 bar) nominal

Flow Limit Value: See ordering information

Stability/Repeatability: ±10%

Operating Temperature:

-10°F to 150°F (-23°C to 65°C)

Materials of Construction

Body: 316L Stainless Steel

Diaphragm: Elgiloy® or equivalent

Seat: PCTFE

Poppet: 316L Stainless Steel

Cap: 316L Stainless Steel

Knob: Anodized aluminum

Model Number	Nominal Flow Limit Value at 30 psig (2 bar) Inlet	Nominal Flow Limit Value at 1000 psig (69 bar) Inlet
Q1-01-A-(*)	0.4 LPM	5 LPM
Q1-01-B-(*)	2 LPM	9 LPM
Q1-01-C-(*)	4 LPM	22 LPM
Q1-01-D-(*)	9 LPM	40 LPM
Q1-01-E-(*)	14 LPM	72 LPM
Q1-01-F-(*)	23 LPM	121 LPM

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

Lecture Bottle Control Valves

Model 30

Scott™ brand Model 30 control valves are specially designed for use with lecture bottles to provide flow control but not pressure regulation. Brass body models are designed for noncorrosive gas service and are available with either CGA 110, 170 or 180 inlet connections. Type 316 Stainless Steel bodies are designed for corrosive gas service and are available with either CGA 110 or 180 connections.

Note: Although designed for direct connection to lecture bottles, these valves do not control pressure. They only control flow. If pressure control is required, USE A PRESSURE REGULATOR.



Specifications

Operating Pressure:

3000 psig (207 bar) maximum

Operating Temperature Range:

Brass: -65°F to 400°F (-54°C to 204°C)

Stainless Steel: -20°F to 350°F (-29°C to 177°C)

Inlet Connection: See table

Outlet Connection: 1/4" compression

Flow Coefficient: Cv= 0.43

Weight: 0.5 lbs. (0.2 kg)

Materials of Construction

Body: Brass or 316 Stainless Steel

Valve Needle and Stem: 316 Stainless Steel

Packing: PTFE

Model Number	Inlet Connection
Brass	
Q1-30B-110	CGA 110
Q1-30B-170	CGA 170
Q1-30B-180	CGA 180
Stainless Steel	
Q1-30S-110	CGA 110
Q1-30S-180	CGA 180

Manual Control Valves

Series 40

Manual control valves offer an economical method of controlling gas flow directly from high-pressure cylinders when pressure regulation is not required. These valves do not provide automatic pressure control of regulators and closed systems can reach full cylinder pressure.



Specifications

Inlet Pressure: 2500 psi (172 bar)

Outlet Connection: See table

Materials of Construction

Body: Brass, chrome-plated brass, stainless steel or Monel®

Packing: PTFE

Model Number	Outlet Connection
Model 40B Brass, Chrome-Plated	
Q1-40B-H-(*)	1/4" Hose Connection
Q1-40B-T-(*)	1/4" Tube Fitting
Q1-40B-M-(*)	1/4" NPT Male
Q1-40B-F-(*)	1/4" NPT Female
Model 40S 303 Stainless Steel	
Q1-40S-T(**)	1/4" Tube Fitting
Q1-40S-M(**)	1/4" NPT Male
Q1-40S-F(**)	1/4" NPT Female
Model 40M Monel®	
Q1-40M-M-****)	1/4" NPT Male
Q1-40M-F-****)	1/4" NPT Female
Model 40G Brass†	
Q1-40G-H-****)	1/4" Hose Connection
Q1-40G-T-****)	1/4" Tube Fitting
Q1-40G-M-****)	1/4" NPT Male
Q1-40G-F-****)	1/4" NPT Female

* Specify CGA connection 320, 350, 510, 540, 580 or 590.

** Specify CGA connection 240, 330 or 660.

*** Specify CGA connection 330 or 660.

**** Specify CGA connection 320, 350, 540, 580 or 590.

† With 0 – 3000 psig (207 bar) cylinder pressure gauge.

Miniature Needle Valves

Model 61

Miniature needle valves are used in a wide variety of applications such as shutoff valves for gases, noncritical vacuum to high-pressure service, instrument air lines, sampling lines for service with gas chromatography apparatus, and other laboratory or industry applications wherever good flow control is required.

Specifications

Operating Pressure: 3000 psig (207 bar) max

Operating Temperature:
-60°F to 400°F (-52°C to 206°C)

Orifice: 0.14" (3.6 mm)

Flow Coefficient: $C_v = 0.35$

Materials of Construction

Body Forging: Brass, Monel®
or 316 Stainless Steel

Stem: Monel® or 303 Stainless Steel

Packing: PTFE, TFE



Model Number	Material	Style	Inlet Connection	Outlet Connection
Q4-61B-2M	Brass	Straight	1/8" NPT Male	1/8" NPT Male
Q4-61B-4M	Brass	Straight	1/4" NPT Male	1/4" NPT Male
Q4-61B-2MA	Brass	Angle	1/8" NPT Male	1/8" NPT Male
Q4-61B-4F	Brass	Straight	1/4" NPT Female	1/4" NPT Female
Q4-61B-4A	Brass	Straight	1/4" NPT Male	1/4" Tube Fitting
Q4-61B-4T	Brass	Straight	1/4" Tube Fitting	1/4" Tube Fitting
Q4-61C-2H	Chrome-Plated Brass	Straight	1/8" NPT Male	1/8" Diameter Hose
Q4-61C-2M	Chrome-Plated Brass	Straight	1/8" NPT Male	1/8" NPT Male
Q4-61C-4H	Chrome-Plated Brass	Straight	1/8" NPT Male	1/4" Diameter Hose
Q4-61C-4M	Chrome-Plated Brass	Straight	1/4" NPT Male	1/4" NPT Male
Q4-61S-4M	Stainless Steel	Straight	1/4" NPT Male	1/4" NPT Male
Q4-61S-4MA	Stainless Steel	Angle	1/4" NPT Male	1/4" NPT Male
Q4-61M-4M	Monel®	Straight	1/4" NPT Male	1/4" NPT Male

NRS High-Accuracy Valves

Model 61NRA

Scott™ brand NRS high-accuracy valves are designed for very fine control of gas or liquid flow rates. The bar stock valve includes a non-rising stem design and a non-rotating needle that provides easy and smooth flow adjustments at very low flow rates. The needle moves in a rectilinear fashion which accounts for its desirable sixteen-turn high resolution attribute. The valve body is precision machined chrome-plated brass or type 316 Stainless Steel. The stem/orifice assembly can be interchanged as to provide different flow capacities. See the chart below for the proper assembly for required flow rate.



Benefits/Features

- Bubble-tight shutoff
- Virtually free of hysteresis (see-sawing)
- 16 revolutions of the adjusting handle (fully opened to fully closed) provide excellent resolution

Specifications

- Inlet Pressure:** 500 psig (34 bar) maximum
- Operating Temperature Range:** Brass body: 180°F (82°C) maximum
Stainless steel body: 250°F (121°C) maximum
- Inlet/Outlet Ports:** 1/8" NPT Female
- Weight:** 0.5 lbs. (0.2 kg)

Materials of Construction

- Body:** Chrome-plated brass or 316 Stainless Steel
- Valve Needle:** 316 Stainless Steel
- Orifice:** 316 Stainless Steel with PTFE liner
- O-Rings:** Brass valves: Buna-N
Stainless steel valves: Viton®

Model Number	Material	Connections	
		Inlet	Outlet
Q4-61NRA1-B(*)	Brass	1/8" NPT Female	1/8" NPT Female
Q4-61NRA2-S(*)	316 Stainless Steel	1/8" NPT Female	1/8" NPT Female

* Specify orifice number.

Please note: Adapters are available to convert to 1/8" tube fittings, 1/4" tube fittings or hose fittings— contact your Air Liquide representative.

Orifice Number	Capacity (ml/min)		Orifice inches	Flow Coefficient Cv
	Air*	Water		
1	200	6	0.042	0.0005
2	400	12	0.042	0.001
3	1,000	30	0.042	0.0025
4	2,500	70	0.093	0.0061
5	6,200	200	0.093	0.016
6	21,500	650	0.093	0.054

* Air capacity is based on 10 psig (0.7 bar) exhausted to atmospheric pressure.

Diaphragm Packless Valves

Model 62

Diaphragm packless line valves are small, compact valves which utilize metal diaphragms rather than stem packing to provide a positive seal. Designed for high-purity gas service and high-pressure applications, they are ideal for use in instrumentation process lines or pressure regulator outlet ports where positive shutoff and leak-free packing are required.

Specifications

Inlet Pressure: 3000 psi (207 bar) maximum

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

Flow Coefficient: Cv = 0.17

Materials of Construction

Body: Brass or 316L Stainless Steel

Diaphragm: Elgiloy® or equivalent

Seat: PCTFE

Seal: Metal-to-metal with Viton®
O-Ring backup

Bonnet: Nickel-plated brass

Model Number	Material	Connections	
		Inlet	Outlet
Q4-62B-4M	Brass	1/4" NPT Male	1/4" NPT Male
Q4-62B-4F	Brass	1/4" NPT Female	1/4" NPT Female
Q4-62B-4MFL	Brass	1/4" NPT Male	1/4" NPT Female
Q4-62S-4M	Stainless Steel	1/4" NPT Male	1/4" NPT Male
Q4-62S-4F	Stainless Steel	1/4" NPT Female	1/4" NPT Female
Q4-62S-4MFL	Stainless Steel	1/4" NPT Male	1/4" NPT Female

Two-Way Ball Valves

Model 63

Ball valves are to be used in a fully open or fully closed position. They provide exceptional reliability in a quick acting, full flow design. The top-loaded design allows adjustment with the valve in-line. The capsule seat packing constructed of PTFE does not require system pressure to make a seal, has virtually no dead space, allows bidirectional flow and is easily cleaned and purged. The directional handle indicates position of orifice.



Specifications

Operating Pressure:

3000 psig (207 bar) maximum

Operating Temperature Range:

Brass: 50°F to 150°F (10°C to 65°C)

Stainless Steel: -65°F to 300°F (-53°C to 148°C)

End Connections: 1/4" NPT Female

Orifice: 0.187" (4.75mm)

Flow Coefficient: Cv = 0.90

Leak Rate: 0.1 scc/min maximum

Weight: 0.5 lbs. (0.2 kg)

Materials of Construction

Body: Brass or 316 Stainless Steel

Packing: PTFE

Model Number	Material
Q4-63B-4F	Brass
Q4-63S-4F	Stainless Steel

Check Valves

Model 64

Check valves are designed to permit gas flow in one direction only. Commonly used at the regulator outlet to prevent return flow of gas into the regulator, they are quick-opening and bubble tight against back-pressure. A resilient O-Ring at the valve seat insures quick and efficient sealing.

Specifications

Pressure Rating: 3000 psig (207 bar)

Opening Pressure: 1 psig (0.1 bar)

Flow Coefficient: Cv = 0.35

Dimensions:

Brass: 7/8" diameter x 2.7" length
(22 mm x 69 mm)

Stainless steel or Monel®:
3/4" diameter x 2.7" length (19 mm x 69 mm)

Materials of Construction

Bodies: Brass, Monel® or 316 Stainless Steel

O-Ring: Viton®

Model Number	Material	Connections	
		Inlet	Outlet
Q4-64B-4F	Brass	1/4" NPT Female	1/4" NPT Female
Q4-64M-4F	Monel®	1/4" NPT Female	1/4" NPT Female
Q4-64S-4F	316 Stainless Steel	1/4" NPT Female	1/4" NPT Female

Pressure Relief Valves

Model 65-44MM

Model 65-44MM Series adjustable relief valves protect your instrument and system by releasing excessive pressure. Typical applications are in laboratories, research facilities and process gas streams. The desired cracking pressure can be adjusted to meet the desired operating pressure within its adjustment range. The flow coefficient provided is to insure that the valve is properly sized for your application. Threaded ends allow for easy vent connections.

Specifications

Inlet Pressure: 3000 psig (207 bar) maximum

Operating Temperature Range:
-20°F to 120°F (-29°C to 49°C)

Flow Coefficient: $C_v = 0.37$

Inlet/Outlet Connection: 1/4" NPT Male

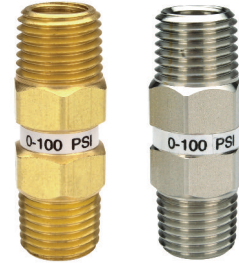
Materials of Construction

Body: Brass, chrome-plated brass or 316 Stainless Steel

Poppet: Nickel-plated die cast

Seals: PTFE

Spring: Stainless steel



Brass	Chrome-Plated Brass	Stainless Steel	Adjustment Range	
			psig	bar
Q4-6544MM1BR	Q4-6544MM1CP	Q4-6544MM1ST	10 – 50	0.7 – 3
Q4-6544MM2BR	Q4-6544MM2CP	Q4-6544MM2ST	15 – 100	1 – 7
Q4-6544MM3BR	Q4-6544MM3CP	Q4-6544MM3ST	25 – 250	2 – 17
Q4-6544MM4BR	Q4-6544MM4CP	Q4-6544MM4ST	50 – 500	3 – 35
Q4-6544MM5BR	Q4-6544MM5CP	Q4-6544MM5ST	80 – 800	6 – 55