



# Lever Acting Design

# Line Pressure Regulators

CSA Design Certified  
Z21.80 / CAN 6.22

For 2-psi piping systems  
*For applications from 2-psi to 5-psi, please see bulletin MS2076.*



- Maximum Inlet Pressure:**  
CSA Certified ..... 2 psi (140 mbar)
- Emergency Exposure Limits:**  
(inlet side only) ..... 65 psi (4.5 bar)
- Outlet Pressure Range:**  
Certified spring ..... 7 - 11 inches w.c.

- Maximum Individual Load:**  
Largest single appliance served by the regulator
- 325-3L ..... 140,000 Btu/hr
- 325-5AL ..... 300,000 Btu/hr
- 325-7L ..... 900,000 Btu/hr

- Capacity:**  
Total load of all appliances combined
- 325-3L (3/8", 1/2") ..... 250,000 Btu/hr
- 325-5AL (1/2") ..... 425,000 Btu/hr
- 325-5AL (3/4", 1") ..... 550,000 Btu/hr
- 325-7L (1 1/4", 1 1/2") ..... 1,000,000 Btu/hr

- Venting:**
- 325-3L (optional 12A09 vent limiter) ..... 1/8" NPT
- 325-5AL (optional 12A39 vent limiter) ..... 3/8" NPT
- 325-7L ..... 1/2" NPT

**Gases:**  
Intended for application in natural gas piping systems

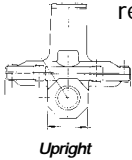
**Ambient Temperature Limits:**  
-40° to 205°F (-40° to 96°C)

**Note:** All Maxitrol gas appliance regulators must be installed and operated in accordance with Maxitrol's 'Safety Warning' bulletin.



325-3L, 325-5AL, 325-7L  
Pipe sizes from 3/8" to 1 1/2"

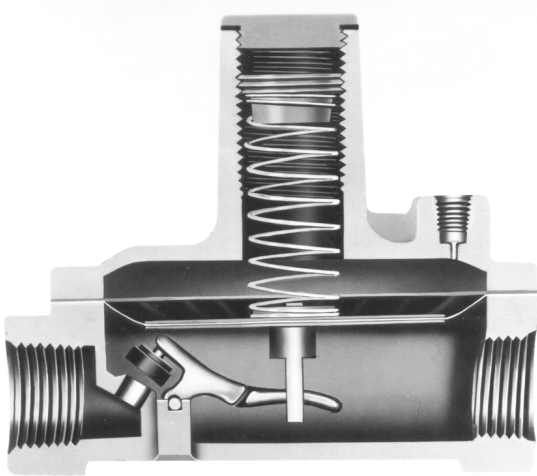
The 325 Series is suitable for multi-poise mounting. But when using the vent limiting device, the regulator (325-3L, 325-5AL) must be mounted in a horizontal upright position. Install the regulator properly with gas flowing as indicated by the arrow on the casting (also see the Safety Warning Instructions bulletin).





## Lever Acting Design

# 325 Series



## L-Model Line Pressure Regulators

### FEATURES:

- Designed for multi-poise mounting...
- Self-aligning valve with lever action for dead end lockup...
- Durable, corrosion-resistant construction...
- High performance type for pounds to inches reduction...
- Available in 3/8" to 1½" pipe sizes...

### BENEFITS:

- Ease of installation...
- Longer life, less maintenance...
- For use on 2-psi piping systems such as CSST (corrugated stainless steel) or semi-rigid copper tubing...
- Precise regulation from pilot flows to full regulator capacity...
- Meets many utility specifications.

## The new line pressure regulator standard - ANSI Z21.80

Although Maxitrol's 325 Series are certified (ANSI Z21.18) as *appliance* regulators (see bulletin MS2055), in the past they have often been used as *line* pressure regulators. Until very recently, there was no standard for line pressure regulators.

Z21.80 is the new ANSI standard for line pressure regulators, intended for application in natural gas piping systems. Maxitrol's new 325 Series L-models are CSA certified (Z21.80) for 2-psi inlet pressure, with the 7 to 11 (inches w.c. outlet) spring.

The L-models are Class 1, pounds to inches regulators, meeting utility specifications, for use on 2-psi piping systems such as CSST (corrugated stainless steel) or semi-rigid copper tubing. The regulators are a high performance type - reducing pounds pressure to a level within the appliance's operating supply range. The line regulator is located upstream of equipment already fitted with an appliance regulator.

The entire 2-psi system concept would not have been possible without the development of the compact 325 Series regulator.

As optional accessories, the 325-3L and 325-5AL offer an automatic vent limiting device. The 12A09 or 12A39 vent limiter eliminates the need to run vent piping to an outside area - in the event of a diaphragm rupture, gas escapement is limited to within the ANSI standards level. The 325 Series are suitable for multi-poise mounting - but when using a vent limiting device, the regulator must be mounted

in a horizontal upright position for best performance. Install the regulator properly with gas flowing as indicated by the arrow on the casting.

To deliver positive dead-end lock up, the 325 Series feature a high leverage valve linkage assembly. Lockup pressure can vary with the speed of the solenoid valve and its location. The regulators are capable of precise regulating control from full flow down to pilot flows.

The self-aligning valve is made of nitrile rubber. Housings are durable aluminum die castings and all internal parts are carefully selected and corrosion resistant. The diaphragms are of high quality supported synthetic rubber compounds.

The regulator is certified for inlet pressures up to 2 psi, and can withstand emergency exposure inlet pressure up to 65 psi. Over-pressure protection is not required for supply pressures up to 2-psi. These regulators provide no downstream over-pressure protection in the event of failure. At supply pressures in excess of 2 psi, the new ANSI Z21.80 line regulator standard requires means approved and tested with the regulator to limit the downstream pressure to 2-psi maximum, in the event of regulator failure. Consult Maxitrol Company for assistance.

Other 325 Series regulators will continue to be available as CSA certified *appliance* regulators, as well as non-certified models for up to 10-psi inlet pressure (see bulletin MS2055).

# Capacities and Pressure Drop

CAPACITIES - 0.64 sp gr gas expressed in CFH (m<sup>3</sup>/h).

Model Number (pipe size)	Outlet Pressure Set Point	Operating Inlet Pressure				
		1/2 psi (34 mbar)	3/4 psi (52 mbar)	1 psi (69 mbar)	1½ psi (103 mbar)	2 psi (138 mbar)
325-3L (3/8", 1/2")	7.0" w.c.	145 (4.1)	200 (5.7)	250 (7.1)	250 (7.1)	250 (7.1)
	10.0" w.c.	110 (3.1)	180 (5.1)	230 (6.5)	250 (7.1)	250 (7.1)
325-5AL (1/2")	7.0" w.c.	335 (9.5)	425 (12.0)	425 (12.0)	425 (12.0)	425 (12.0)
	10.0" w.c.	250 (7.0)	420 (11.9)	425 (12.0)	425 (12.0)	425 (12.0)
325-5AL (3/4", 1")	7.0" w.c.	335 (9.5)	475 (13.5)	550 (15.6)	550 (15.6)	550 (15.6)
	10.0" w.c.	250 (7.0)	420 (11.9)	535 (15.1)	550 (15.6)	550 (15.6)
325-7L (1¼", 1½")	7.0" w.c.	690 (19.5)	970 (27.5)	1000 (28.3)	1000 (28.3)	1000 (28.3)
	10.0" w.c.	520 (14.7)	860 (24.4)	1000 (28.3)	1000 (28.3)	1000 (28.3)

## Maximum Individual Load:

Largest single appliance served by the regulator

325-3L .....	140,000 Btu/hr
325-5AL .....	300,000 Btu/hr
325-7L .....	900,000 Btu/hr

## Capacity:

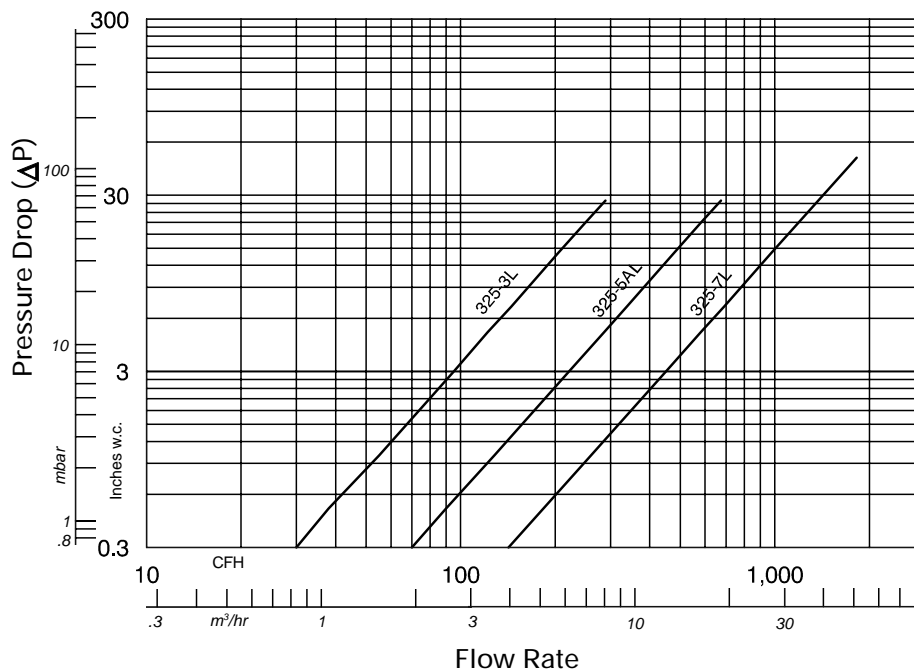
Total load of all appliances combined

325-3L (3/8", 1/2") .....	250,000 Btu/hr
325-5AL (1/2") .....	425,000 Btu/hr
325-5AL (3/4", 1") .....	550,000 Btu/hr
325-7L (1¼", 1½") .....	1,000,000 Btu/hr

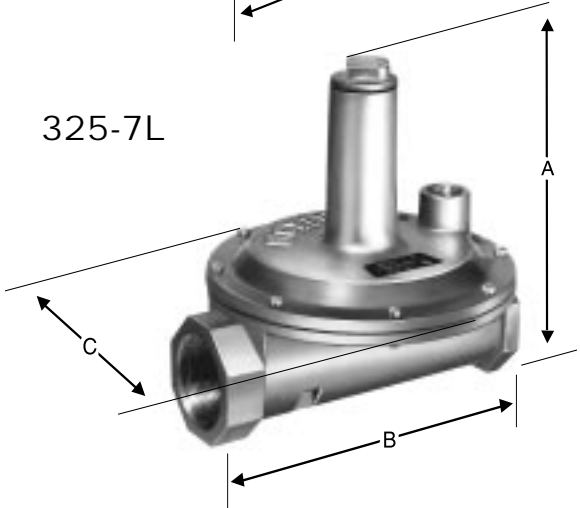
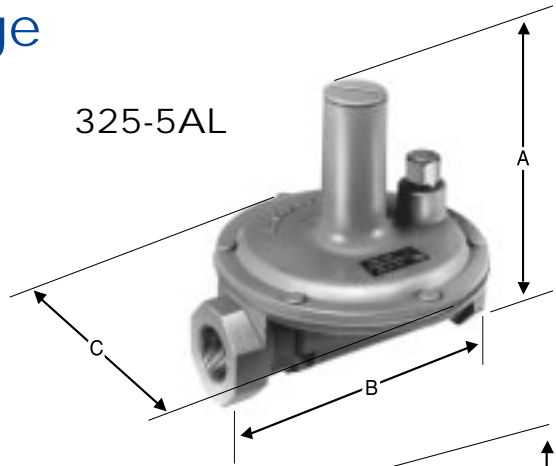
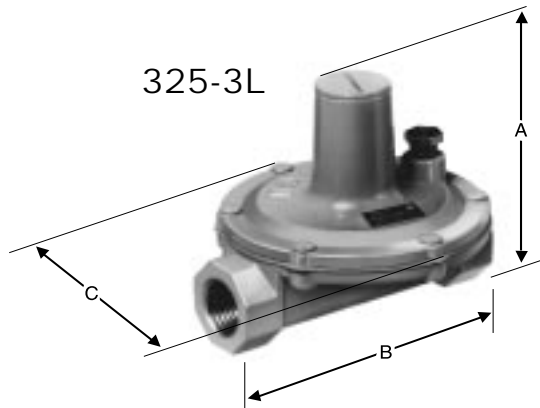
PRESSURE DROP - 0.64 sp gr gas expressed in CFH (m<sup>3</sup>/h)

Model Number	7.0" w.c. (17 mbar)	1/2 psi (34 mbar)	3/4 psi (52 mbar)	1 psi (69 mbar)	2 psi (138 mbar)
325-3L	145 (4.0)	204 (5.8)	250 (7.0)	289 (8.2)	-
325-5AL	338 (9.6)	476 (13.5)	583 (16.5)	673 (19.1)	-
325-7L	690 (19.5)	972 (27.6)	1191 (33.8)	1375 (39.0)	1975 (55.9)

## Pressure Drop Chart



# Dimensions and Spring Range



## DIMENSIONS - inches (millimeters)

Model Number	Pipe Size*	Swing Radius	Call-Outs		
			A	B	C
325-3L	3/8 x 3/8 1/2 x 1/2	3 (76)	3 1/2 (89)	4 1/4 (108)	3 7/8 (98)
325-5AL	1/2 x 1/2 3/4 x 3/4 1 x 1	4 7/8 (124)	5 1/4 (133)	5 7/8 (149)	5 7/16 (138)
325-7L	1 1/4 x 1 1/4 1 1/2 x 1 1/2	6 1/8 (156)	7 1/4 (184)	8 (203)	7 (178)

\* standard models NPT threads.

'M' models available with ISO7 PL, 'MK' models ISO7 TR.

## Outlet Pressure Range (all models):

Certified spring ..... 7 - 11 inches w.c.

# Sizing Instructions

Frequently 2-psi piping systems are sized with a 1-1/2 psi pressure drop through the copper or stainless steel tubing. This means there will be 2 psi at the inlet of the regulator under no flow conditions, and 1/2 psi at the regulator inlet under maximum flow conditions.

To select a line regulator of ample flow - one must know:

1. Available inlet pressure (maximum static/minimum operating).
2. Desired outlet pressure.
3. Required maximum capacity (total load, all appliances combined), and maximum individual load.
4. Pipe size.

Example: To select a line regulator of ample capacity to handle flow. . .

### KNOWN:

- A. Required: 1/2" NPT line regulator, outlet pressure of 7" w.c., with a static pressure of 2-psi, and a minimum operating inlet pressure of 3/4 psi.
- B. Combined Btu rating of all appliances to be served by the regulator: 145,000 Btu/hr.

- C. Largest single appliance's Btu rating: 90,000 Btu/hr.

### SOLUTION:

- A. In the Capacities chart (page 3), locate rows where 1/2" (pipe size) models with 7" w.c. outlet pressure - intersect with - 3/4 psi operating inlet pressure column. (325-3L = 200 CFH, 325-5AL = 425 CFH).
- B. The total Btu load requirement cannot exceed the equivalent CFH result from step-A. The combined 145,000 Btu/hr requirement does not exceed either model's capacity.
- C. The 90,000 Btu/hr single largest appliance rating is below the 325-3L maximum individual load capacity of 140,000 Btu/hr.
- D. The 325-3L is the smallest acceptable line regulator for this application.

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