

Line Pressure Regulators

and over-pressure protection devices (OPD)



CSA Design Certified
Z21.80 / CAN 6.22

For piping systems
up to 5-psi

Attention: To comply with the ANSI Z21.80 Standard for Line Pressure Regulators, installations exceeding 2-psi nominal require a tested and approved over-pressure protection device (OPD) for use with the regulator.

Maximum Inlet Pressure:

CSA Certified5 psi (345 mbar)

Emergency Exposure Limits:

(inlet side only)65 psi (4.5 bar)

Outlet Pressure Range:

Certified spring7 - 11 inches w.c.

Maximum Individual Load:

Largest single appliance served (regulator with OPD)
 325-3L47 (3/8", 1/2") (w/OPD 47 attached) 125,000 Btu/hr
 325-3L48 (1/2") (w/OPD 48 attached)200,000 Btu/hr
 325-5AL48 (1/2") (w/OPD 48 attached)235,000 Btu/hr
 325-5AL48 (3/4") (w/OPD 48 attached)320,000 Btu/hr
 325-5AL600 (3/4") (w/OPD 600 attached)425,000 Btu/hr
 325-5AL600 (1") (w/OPD 600 attached)465,000 Btu/hr

Capacity:

Total load of all appliances combined (regulator with OPD)
 325-3L47 (3/8", 1/2") (w/OPD 47 attached) 125,000 Btu/hr
 325-3L48 (1/2") (w/OPD 48 attached)200,000 Btu/hr
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Venting:

OPD 47integral vent limiting orifice w/dust cap
 OPD 48 (optional 12A09 vent limiter) 1/8" NPT
 OPD 600 (optional 12A09 vent limiter)..... 1/8" NPT

Gases:

Intended for application in natural gas piping systems up to 5 psi.

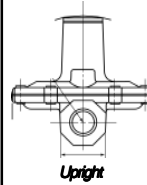
Ambient Temperature Limits:

-40° to 205°F (0° to 96°C)

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



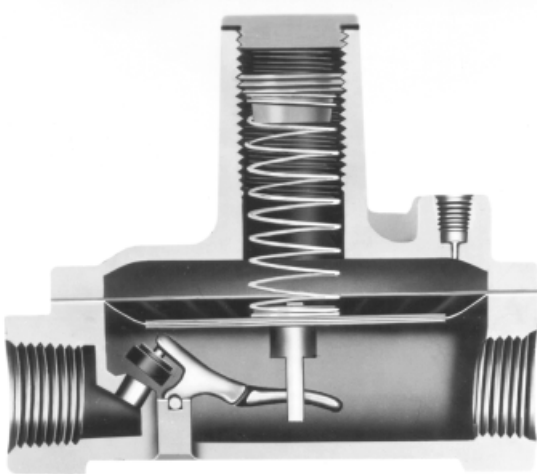
The 325 Series is suitable for limited horizontal mounting (less than or equal to 90° from upright). But when using the vent limiting device, the regulator must be mounted in a horizontal upright position. Install the regulator properly with gas flowing as indicated by the arrow on the casting (also see the Safety Warning Instructions bulletin).





Line Regulators with OPDs

325 Series



FEATURES:

- CSA certified for up to 5-psi inlet pressure...
- Over-pressure protection device (OPD) to limit downstream pressure in case of regulator failure...
- Maxitrol OPD approved and tested with the regulator...
- Self-aligning valve with lever action for dead end regulator lockup...
- Optional vent limiter eliminates the need to run vent piping to an outside area...

BENEFITS:

- Meets new ANSI standard Z21.80 for line pressure regulators – for use on piping systems such as CSST or semi-rigid copper tubing up to 5-psi...
- OPD provides required downstream over-pressure protection for supply pressures in excess of 2-psi...
- Pounds to inches regulator provides precise control 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. As of May 1, 2002, CSA requires that all line pressure regulators above 2-psi must leave the factory pre-assembled and leak tested. At supply pressures in excess of 2-psi, the new line regulator standard requires a means (an over-pressure protection device / OPD) – approved and tested with the regulator – to limit the downstream pressure to 2-psi maximum, in the event of regulator failure. ***In other words, to comply with the standard, installations exceeding 2-psi nominal require a tested and approved over-pressure protection device for use with the regulator.*** Maxitrol-built OPDs provide the required downstream over-pressure protection.

As optional accessories, the regulators and OPDs offer an automatic vent limiting device. The 12A09 or 12A39 vent limiters eliminate 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 limited horizontal mounting (less than or equal to 90° from upright) - 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 with OPD is certified for inlet pressures up to 5-psi, and can withstand emergency exposure inlet pressure up to 65-psi. The regulator alone provides no downstream over-pressure protection in the event of failure.

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 - applications above 2-psi, regulator and OPD

CAPACITIES - 0.64 sp gr gas expressed in CFH (m³/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)	5 psi (345 mbar)
325-3L47 (3/8")	7.0" w.c.	125 (3.5)	125 (3.5)	125 (3.5)	125 (3.5)
	10.0" w.c.	100 (2.8)	125 (3.5)	125 (3.5)	125 (3.5)
325-3L47 (1/2")	7.0" w.c.	125 (3.5)	125 (3.5)	125 (3.5)	125 (3.5)
	10.0" w.c.	105 (2.9)	125 (3.5)	125 (3.5)	125 (3.5)
325-3L48 (1/2")	7.0" w.c.	160 (4.5)	200 (5.6)	200 (5.6)	200 (5.6)
	10.0" w.c.	120 (3.4)	200 (5.6)	200 (5.6)	200 (5.6)
325-5AL48 (1/2")	7.0" w.c.	235 (6.6)	235 (6.6)	235 (6.6)	235 (6.6)
	10.0" w.c.	235 (6.6)	235 (6.6)	235 (6.6)	235 (6.6)
325-5AL48 (3/4")	7.0" w.c.	320 (9.0)	320 (9.0)	320 (9.0)	320 (9.0)
	10.0" w.c.	245 (6.9)	320 (9.0)	320 (9.0)	320 (9.0)
325-5AL600 (3/4")	7.0" w.c.	345 (9.6)	425 (11.9)	425 (11.9)	425 (11.9)
	10.0" w.c.	260 (7.3)	425 (11.9)	425 (11.9)	425 (11.9)
325-5AL600 (1")	7.0" w.c.	375 (10.5)	465 (13)	465 (13)	465 (13)
	10.0" w.c.	285 (8.0)	465 (13)	465 (13)	465 (13)

PRESSURE DROP -

0.64 sp gr gas expressed in CFH (m³/h)

Model Number (pipe size)	7.0" w.c. (17 mbar)	1/2 psi (34 mbar)
325-3L47 (3/8")	130 (3.6)	185 (5.2)
325-3L47 (1/2")	135 (3.8)	195 (5.4)
325-3L48 (1/2")	160 (4.5)	225 (6.3)
325-5AL48 (1/2")	315 (8.8)	450 (12.6)
325-5AL48 (3/4")	325 (9.1)	465 (13)
325-5AL600 (3/4")	345 (9.6)	490 (13.7)
325-5AL600 (1")	375 (10.5)	535 (15)

Capacity:

Total load of all appliances combined (regulator & OPD)

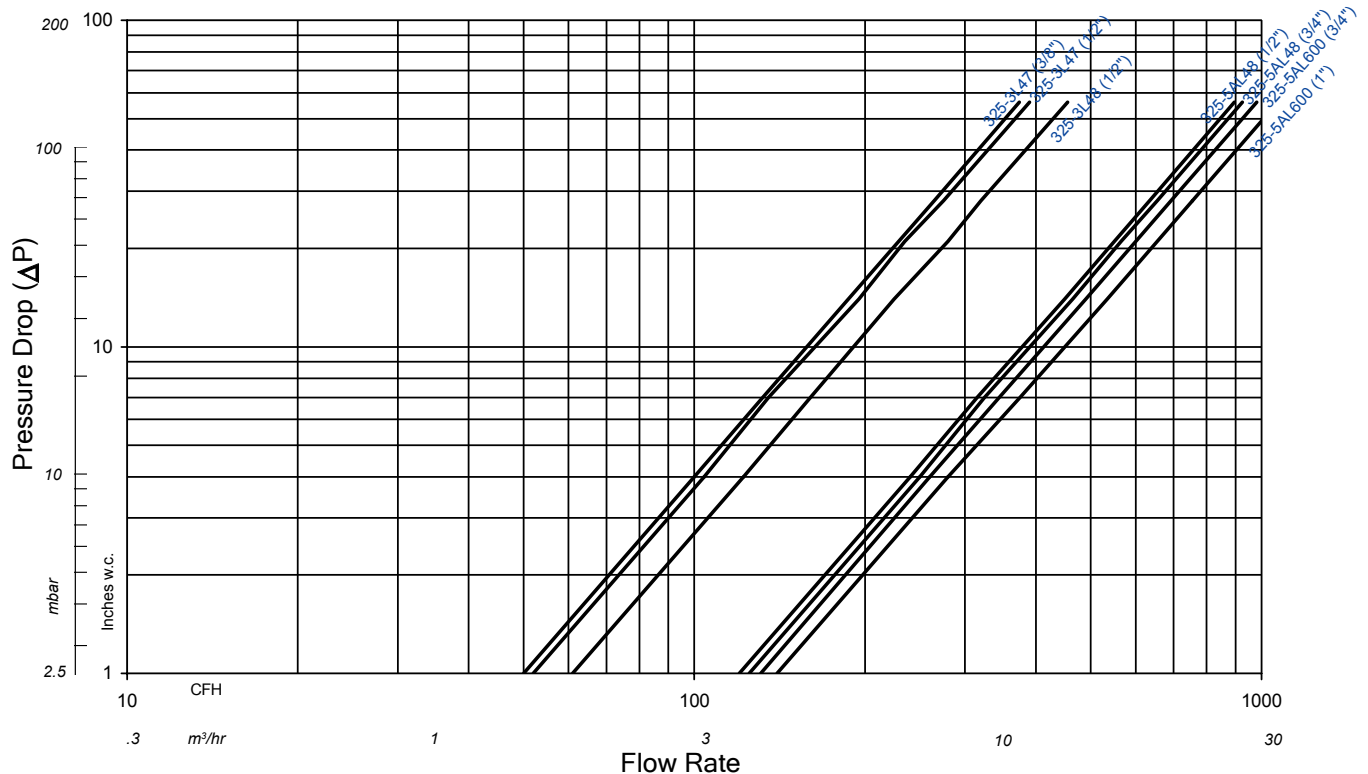
325-3L47 (3/8", 1/2") (w/OPD 47)	125,000 Btu/hr
325-3L48 (1/2") (w/OPD 48)	200,000 Btu/hr
325-5AL48 (1/2") (w/OPD 48)	235,000 Btu/hr
325-5AL48 (3/4") (w/OPD 48)	320,000 Btu/hr
325-5AL600 (3/4") (w/OPD 600)	425,000 Btu/hr
325-5AL600 (1") (w/OPD 600)	465,000 Btu/hr

Maximum Individual Load:

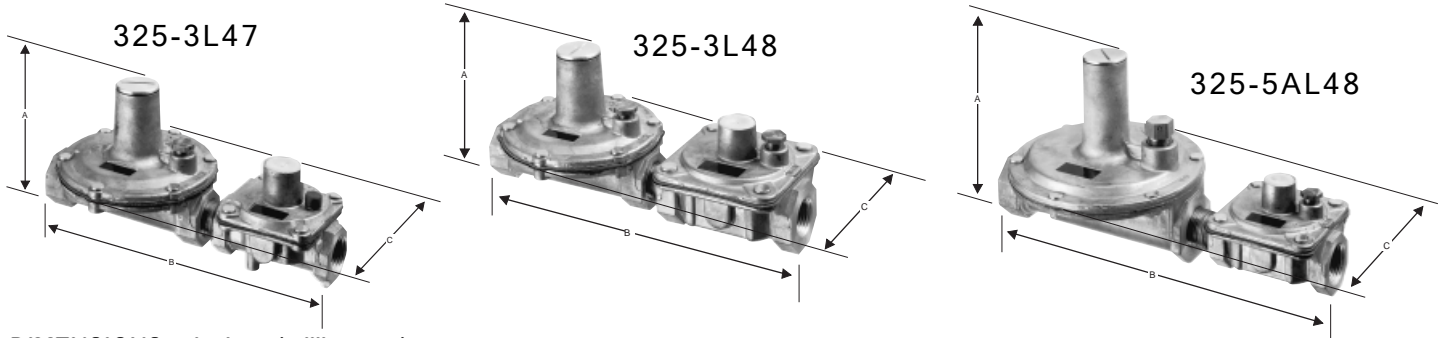
Largest single appliance served (regulator & OPD)

325-3L47 (3/8", 1/2") (w/OPD 47)	125,000 Btu/hr
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Pressure Drop Chart

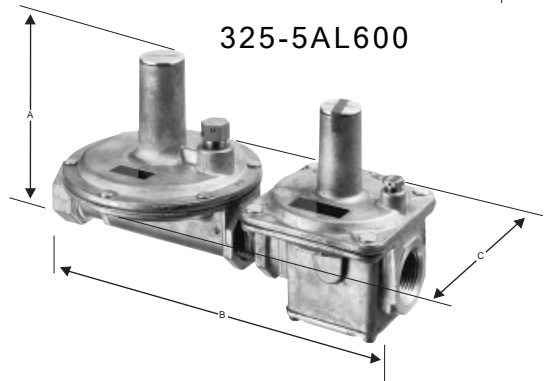


Dimensions and Spring Range - applications above 2-psi, regulator and OPD



DIMENSIONS - inches (millimeters)

Model Number	Pipe Size	Swing Radius	Call-Outs		
			A.	B.	C.
325-3L47	3/8x3/8	3	3.5	8	3.9
	1/2x1/2	(76)	(90)	(203)	(100)
325-3L48	1/2x1/2	3	3.5	8.5	3.9
		(76)	(90)	(216)	(100)
325-5AL48	1/2x1/2	4.4	5.3	10	5.4
	3/4x3/4	(112)	(135)	(254)	(140)
325-5AL600	3/4x3/4	4.4	5.5	11	5.4
	1 x 1	(112)	(140)	(279)	(140)



Attention: To comply with the ANSI Z21.80 Standard for Line Pressure Regulators, installations exceeding 2-psi nominal require a tested and approved over-pressure protection device (OPD) for use with the regulator.

* standard models NPT threads.

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

Note: Dimensions are to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

Outlet Pressure Range (all models):
 Certified spring 7 - 11 inches w.c.

Sizing Instructions

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 with OPD of ample capacity to handle flow. . .

KNOWN:

- A. Required: 1/2" NPT line regulator with OPD, outlet pressure of 7" w.c., with a static pressure of 5-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 4), locate rows where 1/2" (pipe size) models with 7" w.c. outlet pressure - intersect with - 3/4 psi operating inlet pressure column.
 [325-3L47 (1/2") = 125 CFH, 325-3L48 (1/2") = 200 CFH, 325-5AL48 (1/2") = 235 CFH].
- B. The total Btu load requirement cannot exceed the equivalent CFH result from step-A. The combined 145,000 Btu/hr requirement exceeds the 325-3L47 (1/2") capacity, but is less than that of the 325-3L48 (1/2") and 325-5AL48 (1/2").
- C. The 90,000 Btu/hr single largest appliance rating is below the 325-3L48 maximum individual load capacity of 200,000 Btu/hr.
- D. The 325-3L48 is the smallest acceptable (1/2") line regulator with OPD for this application.

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