



**TYPE D50 DIRECT ACTING
PRESSURE REDUCING VALVE**

TYPE D50 PRESSURE REDUCING VALVE

PRESSURES to 300 PSIG at 420°F

- Direct Acting
- Steam, Water or Gas
- Spherical Seating Surface on Floating Stainless Steel Disc for Tight Shutoff
- Four Spring Ranges
- Integral Stainless Steel Strainer
- ANSI/FCI 70-2 Class IV Shutoff

OPTIONS

- Teflon® Disc for Dead-end Service for Liquid and Gas

Installation Tip: Add Uniflex Pipe Coupling for ease of maintenance
SEE PAGE 374

APPLICATION DATA

- Steam Irons
- Autoclaves
- Laundry Mangles
- Single Radiators
- Steam Tables
- Vulcanizers

VALVE RATINGS

Body Material	Pressure PSIG (bar)	Temperature °F (°C)
WITH ST. STL. DISC		
Cast Iron	200 (13.8)	@ 400 (204.4)
Bronze	300 (21.0)	@ 430 (215.6)
Stainless Steel	300 (21.0)	@ 420 (215.6)
WITH TEFLON® DISC		
All	300 (21.0)	@ 300 (148.9)
	200 (13.8)	@ 400 (204.4)

SPRING RANGES

3-15	All Sizes	75-140	1/2-1 1/4"
10-50	1/2-1 1/4"	30-100	1 1/2-2"
25-80	1/2-1 1/4"	10-40	1 1/2-2"

Canadian Registration # OC 0591.9C

SIZING INFO
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RATED FLOW COEFFICIENTS (Cv)

VALVE SIZE					
1/2	3/4	1	1 1/4	1 1/2	2
2.2	3.3	4.9	5.0	10.1	10.8

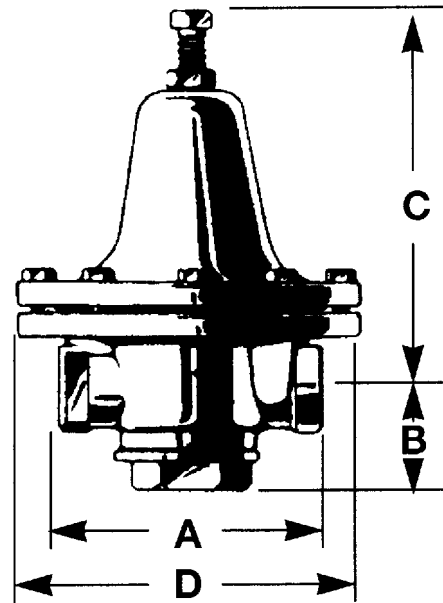
TYPE D50 PRESSURE REDUCING VALVE

SPECIFICATION

The valve shall be self operated, requiring no external energy source. The valve shall operate quickly and provide dead end shut-off. The body materials and rating shall be cast iron for 200 psig and 400°F, Bronze or Stainless Steel for 300 psi and 420°F. Valve trim material is to be stainless steel. Valve to have a standard aspirator to allow for adjustment of operation.

MATERIALS OF CONSTRUCTION

Body, Cast IronASTM 126 Cl. B
Body, BronzeASTM B61-80 UNS C92200
Body, St. Stl.ASTM 743 CF-8M
Stem304 St. Stl ASTM 276 Cond. A
Disc316 St. Stl. ASTM 276 Cond. A
Seat304 St. Stl ASTM 276 Cond. A
GasketTeflon
Diaphragm304 St. Stl ASTM 276 Cond. A
Spring302 St. Stl.



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DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Body Mat'l.	Size	Dimensions, Inches				Weight (lbs.)
		A	B	C	D	
C.I. & Brz	1/2, 3/4 (13, 19)	4 5/8 (143)	1 3/4 (44)	6 7/8 (175)	6 (152)	12 (5.5)
C.I.	1, 1 1/4 (25, 32)	5 5/8 (143)	2 (51)	7 1/4 (184)	7 1/2 (191)	19 (8.6)
C.I.	1 1/2, 2 (38, 51)	6 5/8 (168)	2 3/4 (70)	11 1/2 (292)	9 (229)	30 (13.6)
St. Stl.	1/2 (13)	5 (127)	1 5/8 (41)	5 1/2 (140)	4 7/8 (124)	8 (3.6)
St. Stl.	3/4, 1 (19, 25)	5 5/8 (143)	2 1/4 (57)	6 1/2 (165)	7 7/16 (191)	22 (10)

SIZING D50 DIRECT ACTING PRESSURE REGULATOR

EXAMPLE 1 FOR CONDITIONS WITHIN CAPACITY TABLE

Given an initial steam pressure of 100 PSIG and a required flow of 500 #/hr. at a reduced pressure of 30 PSIG, determine droop, minimum controllable flow pressure and valve size.

In the Capacity Table opposite, the droop has been fixed at 25% of the maximum range of the adjusting spring. Therefore, for a 30 PSIG delivery pressure, a 25-80 adjusting spring would be selected. Thus, the droop is (25% x 80 = 20) 20 PSI.

Minimum controllable flow pressure = Reduced Pressure + Droop = 30 + 20 = 50 PSIG

Entering the Capacity Table at a minimum controllable flow pressure (OUT) of 50 PSIG, an initial pressure (IN) of 100 PSIG, the smallest valve size capable of delivering 500 #/hr. is the 1" size.

EXAMPLE 2 FOR CONDITIONS OUTSIDE CAPACITY TABLE

Given an initial steam pressure of 150 psig and a required flow of 900 #/hr. at a reduced pressure of 25 PSIG, determine the valve size, droop and minimum controllable flow pressure.

$$\frac{P_2}{P_1} = \frac{(25 + 14.7)}{(150 + 14.7)} = \frac{39.7}{164.7} = .24 \quad \text{thus } P_2 = .24P_1 < .58P_1$$

Therefore, use Critical Flow Cv formula:

$$C_v = \frac{W}{1.71P_1} = \frac{900}{1.71(150 + 14.7)} = \frac{900}{1.71(164.7)} = 3.2$$

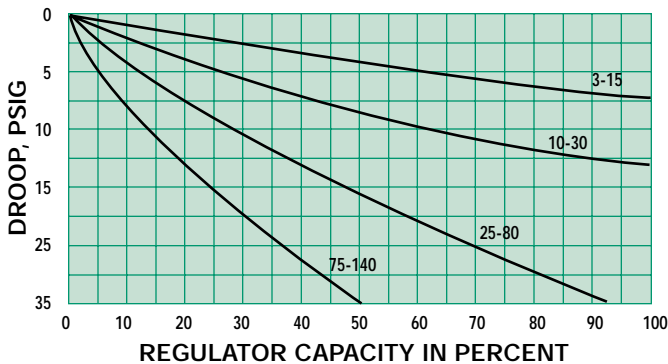
Referring to the C_v line of the Capacity Table opposite, the 3/4" valve size ($C_v = 3.3$) is the smallest valve with the required capacity.

Droop is a function of valve size (3/4"), regulator capacity in percent [(3.2 ÷ 3.3) x 100 = 97%] and adjusting spring range (10-30). Enter the 3/4" Valve Droop Chart (below) at 97% and draw a line upward until you intersect the 10-30 curve. From there, draw a line left to the vertical axis. Droop in this case is 11 PSIG.

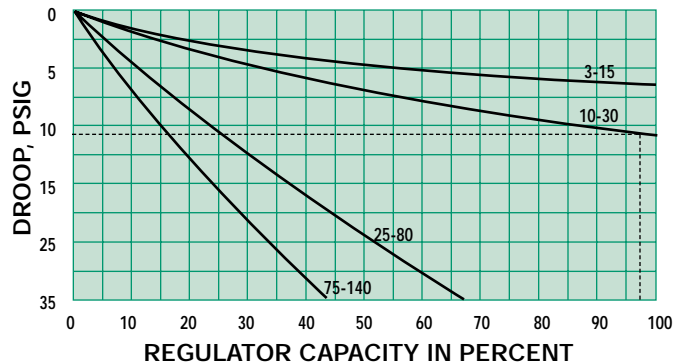
Minimum Controllable Flow Pressure = Reduced Pressure + Droop = 25 + 11 = 36 PSIG

Repeating the above procedure substituting a 1" valve size with a maximum C_v of 4.9, droop would be 8 PSIG and minimum controllable flow pressure would be 33 PSIG.

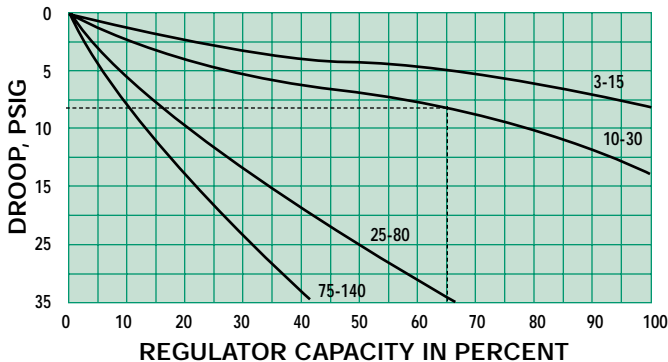
1/2" VALVE DROOP CHART



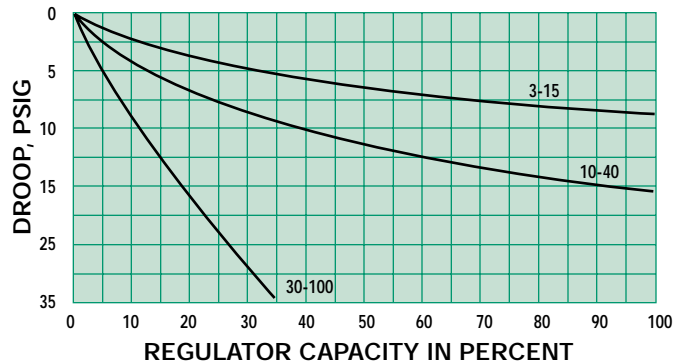
3/4" VALVE DROOP CHART



1" & 1 1/4" VALVE DROOP CHART



1 1/2" & 2" VALVE DROOP CHART





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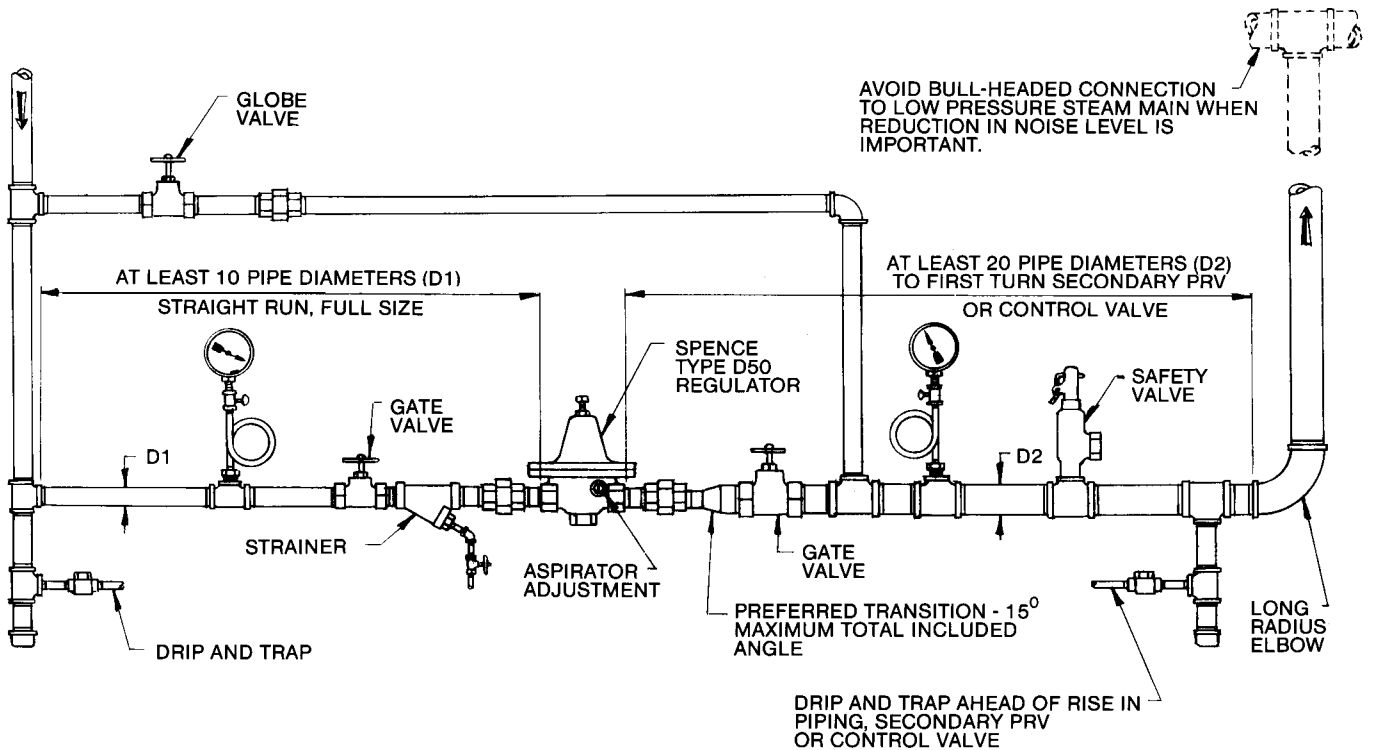
TYPE D50 DIRECT OPERATED PRESSURE REDUCING VALVE

APPLICATION:

To reduce a steady or varying inlet pressure to a constant adjustable delivery pressure. Ideal for small flows such as unit heaters and sterilizers.

OPERATION:

Valve is operated by incoming pressure. As delivery pressure nears spring setting on pilot, valve starts to modulate and maintain set pressure.



ADVANTAGES:

- Accurate control.
- Available in Cast Iron, Bronze and Stainless Steel.
- Aspirator adjustment for greater sensitivity.