

November 2021

# Spence Type D50A Pressure Regulator



Figure 1. Type D50A Pressure Regulator

## Introduction

Type D50A pressure reducing regulator and regulator includes models suitable for air, water, steam, oil and other liquids.

## Water and Air Service

Type D50A regulators are available in NPS 1/4 to 2 / DN 8 to 50 sizes with iron bodies and feature a variety of optional internal trim (diaphragm, piston and cylinder) that enable them to be used in a wide range of applications.

Each regulator is equipped with a pressure spring selected to provide the desired outlet or reduced delivery pressure setting. Depending on the adjusting spring installed, delivery pressures may be adjusted

from a minimum of 2 psig / 0.14 barg to a maximum of 150 psig / 10.3 barg. The range of adjustment or satisfactory working range of the individual springs that may be fitted to each regulator size is listed in the spring range table. See Table 2.

The regulator is designed for systems with a maximum operating temperature of 400°F / 204°C. In addition to the standard specifications indicated in Table 1, any combination of body material, piston cylinder and diaphragm is available to special order.

Type D50A water and air regulators are suitable for a variety of applications including paint spray equipment, dishwashers, air tanks and equipment, food, chemical and industrial process gases and many other applications.

# Type D50A

## Specifications

The specifications section on this page provides the ratings and other specifications for the Type D50A.

|  |  |
|--|--|
| <p><b>Body Sizes</b><br/>NPS 1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2 and 2 in. /<br/>DN 8, 10, 15, 20, 25, 32, 40 and 50</p> <p><b>Connections</b><br/>Threaded NPTF</p> <p><b>Maximum Operating Temperature<sup>(1)</sup></b><br/>See Table 1</p> <p><b>Maximum Inlet Pressure<sup>(1)</sup></b><br/><b>Air or water:</b> 720 psig / 49.6 barg<br/><b>Steam:</b> 400 psig / 27.6 barg</p> | <p><b>Maximum Reduced Pressure<sup>(1)</sup></b><br/>150 psig / 10.3 barg<br/>See Table 1</p> <p><b>Outlet Pressure Range<sup>(1)</sup></b><br/>See Table 2</p> <p><b>Materials of Construction</b><br/><b>Body:</b> Iron<br/><b>Piston and Cylinder:</b> Bronze<br/><b>Seat Disk:</b> Nitrile (NBR) and PTFE<br/><b>Diaphragm:</b> Nitrile (NBR) and Bronze</p> |
|--|--|

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.

**Table 1. Type D50A Pressure and Temperature Specifications**

| SERVICE         | BODY MATERIAL | MAXIMUM INITIAL PRESSURE |      | MAXIMUM REDUCED PRESSURE |      | MAXIMUM OPERATING TEMPERATURE |     |
|-----------------|---------------|--------------------------|------|--------------------------|------|-------------------------------|-----|
|                 |               | psig                     | bar  | psig                     | bar  | °F                            | °C  |
| Water or Air    | Iron          | 200                      | 13.8 | 150                      | 10.3 | 180                           | 82  |
| Saturated Steam |               | 250                      | 17.2 | 150                      | 10.3 | 400                           | 204 |

**Table 2. Standard Spring Ranges (Steel Material)**

| BODY SIZE       |           | SPRING RANGES |              |          |              |           |              |           |              |            |              |
|-----------------|-----------|---------------|--------------|----------|--------------|-----------|--------------|-----------|--------------|------------|--------------|
| NPS             | DN        | psig          | bar          | psig     | bar          | psig      | bar          | psig      | bar          | psig       | bar          |
| 1/4             | 8         | 2 to 25       | 0.14 to 1.72 | 20 to 60 | 1.38 to 4.14 | 30 to 100 | 2.07 to 6.90 | 50 to 150 | 3.45 to 10.3 | ----       | ----         |
| 3/8             | 10        | 2 to 30       | 0.14 to 2.07 | 20 to 70 | 1.38 to 4.83 | 40 to 110 | 2.76 to 7.58 | 90 to 150 | 6.21 to 10.3 | ----       | ----         |
| 1/2             | 15        | 2 to 30       | 0.14 to 2.07 | 10 to 50 | 0.69 to 3.45 | 30 to 125 | 2.07 to 8.62 | 50 to 150 | 3.45 to 10.3 | ----       | ----         |
| 3/4             | 20        | 2 to 20       | 0.14 to 1.38 | 10 to 35 | 0.69 to 2.41 | 30 to 75  | 2.07 to 5.17 | 50 to 110 | 3.45 to 7.58 | 105 to 150 | 7.24 to 10.3 |
| 1               | 25        | 2 to 20       | 0.14 to 1.38 | 10 to 45 | 0.69 to 3.10 | 20 to 60  | 1.38 to 4.14 | 55 to 100 | 3.79 to 6.90 | 90 to 150  | 6.21 to 10.3 |
| 1-1/4 and 1-1/2 | 32 and 40 | 2 to 15       | 0.14 to 1.03 | 10 to 30 | 0.69 to 2.07 | 20 to 50  | 1.38 to 3.45 | 45 to 100 | 3.10 to 6.90 | 90 to 150  | 6.21 to 10.3 |
| 2               | 50        | 2 to 20       | 0.14 to 1.38 | 10 to 60 | 0.69 to 4.14 | 20 to 100 | 1.38 to 6.90 | 90 to 150 | 6.21 to 10.3 | ----       | ----         |

## Steam Service

These regulators are designed for steam operating temperatures up to 400°F / 204°C and are available in NPS 1/4 to 2 / DN 8 to 50 sizes with iron bodies. Iron body regulators have a PTFE seat and are for systems with initial pressures up to 250 psig / 17.2 barg.

Regulators will normally be equipped as indicated in the table but other combinations of body material, piston-cylinder and diaphragm are available to special order.

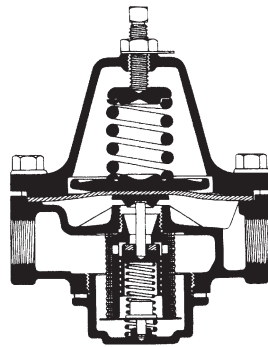
The Type D50A steam pressure reducing and regulating regulator is ideally suited for installation in pressing irons, steam cookers, degreasers, sterilizers, vulcanizers and hundreds of other applications. Type D50A steam regulators can also be furnished

with a differential pressure control feature which may be desirable in steam/oil atomizing service.

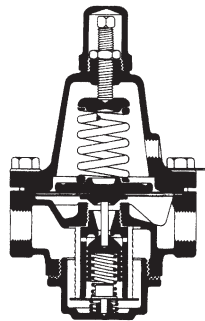
## Optional Differential Pressure Control

The Type D50A Steam regulator can be factory modified to serve as a constant differential pressure control regulator by incorporating a NPS 1/4 / DN 8 side tap in the spring housing.

In a typical steam-oil atomizing installation, fluid loading pressure is introduced above the diaphragm of the regulator and steam is delivered through the regulator at a regulated pressure higher than the loading pressure, with the difference in pressure being determined by the diaphragm spring setting. The outlet steam pressure is maintained automatically to provide a constant, fixed pressure differential between the

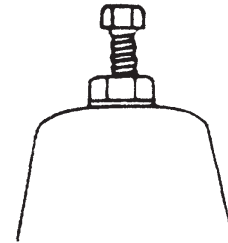


WATER AND AIR SERVICE

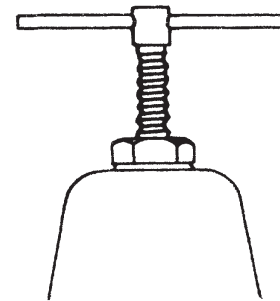


STEAM SERVICE

*Figure 2. Type D50A Schematic*



STANDARD ADJUSTING  
SCREW



T-HANDLE

*Figure 3. Type D50A Adjusting Screw Options*

steam pressure and the oil pressure. Variations in the loading pressure are reflected in a pound-for-pound change in the discharge pressure.

Regulators equipped with the optional differential pressure control are fitted with a pressure-tight closing cap and gasket over the pressure adjusting screw and a gasket above the diaphragm to ensure a good seal between the spring housing and the regulator body.

## Principle of Operation

When the fluid supply is cut in, the regulator is in wide open position. Fluid flowing to the system creates a rising delivery pressure which feeds back through the control ports to the underside of diaphragm. As the pressure on diaphragm approaches a balance with the force exerted by adjusting spring, disk is throttled to a position where just enough water flows to maintain the set delivery pressure.

## Installation

1. Install a strainer upstream of the Type D50A. The built-in strainer screen is secondary protection only.
2. Install Type D50A regulator in a horizontal position with the spring chamber upright. For other installation requirements, consult the factory.
3. Before installing the regulator, thoroughly flush out the piping and the regulator to remove any foreign material.
4. Install the regulator with the inlet pipe fitted to the inlet connection identified on the regulator body. Use a good pipe joint compound on the male pipe threads and do not over tighten the regulator connections.

# Type D50A

## Capacity Information

The capacity of any regulator is governed by two factors:

- Pressure differential, or the difference between the inlet and outlet pressure.

- A characteristic known as fall-off or droop, by which the outlet pressure drops slightly as flow starts through the regulator and drops off even more as increased demand requires increased flow.

The rates of flow stated on the following charts are based on assumed conditions, which may be considered average for a given installation.

**Table 3. Type D50A Water Capacity Information (based on 20% droop)**

| INLET PRESSURE |               | OUTLET PRESSURE |      | WATER INLET (Gal/min / L/min) |      |                 |      |                 |      |                 |      |               |      |                   |      |                   |      |               |      |
|----------------|---------------|-----------------|------|-------------------------------|------|-----------------|------|-----------------|------|-----------------|------|---------------|------|-------------------|------|-------------------|------|---------------|------|
| psig           | bar           | psig            | bar  | NPS 1/4 / DN 8                |      | NPS 3/8 / DN 10 |      | NPS 1/2 / DN 15 |      | NPS 3/4 / DN 20 |      | NPS 1 / DN 25 |      | NPS 1-1/4 / DN 32 |      | NPS 1-1/2 / DN 40 |      | NPS 2 / DN 50 |      |
| 25             | 1.72          | 15              | 1.03 | 0.6                           | 2.27 | 1.0             | 3.79 | 2.6             | 9.84 | 4.0             | 15.1 | 5.7           | 21.6 | 9.2               | 34.8 | 10.4              | 39.4 | 16.0          | 60.6 |
|                |               | 10              | 0.69 | 0.6                           | 2.27 | 1.2             | 4.54 | 2.9             | 11.0 | 4.5             | 17.0 | 6.4           | 24.2 | 10.4              | 39.4 | 11.7              | 44.3 | 18.0          | 68.1 |
| 50             | 3.45          | 40              | 2.76 | 0.8                           | 3.03 | 1.4             | 5.30 | 3.5             | 13.2 | 5.5             | 20.8 | 7.9           | 29.9 | 12.7              | 48.1 | 14.3              | 54.1 | 22.0          | 83.3 |
|                |               | 25              | 1.72 | 0.8                           | 3.03 | 1.6             | 6.06 | 3.8             | 14.4 | 6.0             | 22.7 | 8.6           | 32.6 | 13.8              | 52.2 | 15.6              | 59.1 | 24.0          | 90.8 |
|                |               | 10              | 0.69 | 0.8                           | 3.03 | 1.6             | 6.06 | 3.8             | 14.4 | 6.0             | 22.7 | 8.6           | 32.6 | 13.8              | 52.2 | 15.6              | 59.1 | 24.0          | 90.8 |
| 75             | 5.17          | 65              | 4.48 | 1.0                           | 3.79 | 2.0             | 7.57 | 4.8             | 18.2 | 7.5             | 28.4 | 10.7          | 40.5 | 17.3              | 65.5 | 19.5              | 73.8 | 30.0          | 114  |
|                |               | 50              | 3.45 | 1.1                           | 4.16 | 2.1             | 7.95 | 5.1             | 19.3 | 8.0             | 30.3 | 11.4          | 43.2 | 18.4              | 69.7 | 20.4              | 77.2 | 32.0          | 121  |
|                |               | 25              | 1.72 | 1.3                           | 4.92 | 2.3             | 8.71 | 5.8             | 22.0 | 9.0             | 34.1 | 12.9          | 48.8 | 20.7              | 78.4 | 23.4              | 88.6 | 36.0          | 136  |
|                |               | 10              | 0.69 | 1.3                           | 4.92 | 2.3             | 8.71 | 5.8             | 22.0 | 9.0             | 34.1 | 12.9          | 48.8 | 20.7              | 78.4 | 23.4              | 88.6 | 36.0          | 136  |
| 100            | 6.90          | 90              | 6.21 | 1.5                           | 5.68 | 2.7             | 10.2 | 6.7             | 25.4 | 10.5            | 39.7 | 15.0          | 56.8 | 24.2              | 91.6 | 27.3              | 103  | 42.0          | 159  |
|                |               | 75              | 5.17 | 1.6                           | 6.06 | 3.0             | 11.4 | 7.4             | 28.0 | 11.5            | 43.5 | 16.4          | 62.1 | 26.5              | 100  | 29.9              | 113  | 46.0          | 174  |
|                |               | 50              | 3.45 | 1.7                           | 6.44 | 3.2             | 12.1 | 8.0             | 30.3 | 12.5            | 47.3 | 17.9          | 67.8 | 28.8              | 109  | 32.5              | 123  | 50.0          | 189  |
|                |               | 25              | 1.72 | 1.8                           | 6.81 | 3.4             | 12.9 | 8.3             | 31.4 | 13.0            | 49.2 | 18.6          | 70.4 | 29.9              | 113  | 33.8              | 128  | 52.0          | 197  |
| 125            | 8.62          | 100             | 6.90 | 1.5                           | 5.68 | 2.9             | 11.0 | 7.0             | 26.5 | 11.0            | 41.6 | 15.7          | 59.4 | 25.3              | 95.8 | 28.6              | 108  | 44.0          | 167  |
|                |               | 75              | 5.17 | 1.7                           | 6.44 | 3.3             | 12.5 | 8.0             | 30.3 | 12.5            | 47.3 | 17.9          | 67.8 | 28.8              | 109  | 32.5              | 123  | 50.0          | 189  |
|                |               | 50              | 3.45 | 2.0                           | 7.57 | 3.6             | 13.6 | 9.0             | 34.1 | 14.0            | 53.0 | 20.0          | 75.7 | 32.2              | 122  | 36.4              | 138  | 56.0          | 212  |
|                |               | 25              | 1.72 | 2.0                           | 7.57 | 3.6             | 13.6 | 9.0             | 34.1 | 14.0            | 53.0 | 20.0          | 75.7 | 32.2              | 122  | 36.4              | 138  | 56.0          | 212  |
| 150            | 10.3          | 140             | 9.65 | 1.5                           | 5.68 | 2.9             | 11.0 | 7.0             | 26.5 | 11.0            | 41.6 | 15.7          | 59.4 | 25.3              | 95.8 | 28.6              | 108  | 44.0          | 167  |
|                |               | 100             | 6.90 | 1.9                           | 7.19 | 3.5             | 13.2 | 8.6             | 32.6 | 13.5            | 51.1 | 19.3          | 73.1 | 27.0              | 102  | 35.1              | 133  | 54.0          | 204  |
|                |               | 75              | 5.17 | 2.0                           | 7.57 | 3.8             | 14.4 | 9.3             | 35.2 | 14.5            | 54.9 | 20.7          | 78.4 | 33.4              | 126  | 37.7              | 143  | 58.0          | 220  |
|                |               | 50              | 3.45 | 2.2                           | 8.33 | 4.0             | 15.1 | 9.9             | 37.5 | 15.5            | 58.7 | 22.2          | 84.0 | 35.7              | 135  | 40.3              | 153  | 62.0          | 235  |
|                |               | 25              | 1.72 | 2.2                           | 8.33 | 4.0             | 15.1 | 9.9             | 37.5 | 15.5            | 58.7 | 22.2          | 84.0 | 35.7              | 135  | 40.3              | 153  | 62.0          | 235  |
| 200            | 13.8          | 150             | 10.3 | 1.9                           | 7.19 | 3.5             | 13.2 | 8.6             | 32.6 | 13.5            | 51.1 | 19.3          | 73.1 | 31.1              | 118  | 35.1              | 133  | 54.0          | 204  |
|                |               | 100             | 6.90 | 2.2                           | 8.33 | 4.0             | 15.1 | 9.9             | 37.5 | 15.5            | 58.7 | 22.2          | 84.0 | 35.7              | 135  | 40.3              | 153  | 62.0          | 235  |
|                |               | 75              | 5.17 | 2.5                           | 9.46 | 4.6             | 17.4 | 11.2            | 42.4 | 17.5            | 66.2 | 25.0          | 94.6 | 40.3              | 153  | 45.5              | 172  | 70.0          | 265  |
|                |               | 50              | 3.45 | 2.7                           | 10.2 | 4.9             | 18.5 | 12.2            | 46.2 | 19.0            | 71.9 | 27.2          | 103  | 43.7              | 165  | 49.4              | 187  | 76.0          | 288  |
|                |               | 25              | 1.72 | 2.7                           | 10.2 | 4.9             | 18.5 | 12.2            | 46.2 | 19.0            | 71.9 | 27.2          | 103  | 43.7              | 165  | 49.4              | 187  | 76.0          | 288  |
| 250            | 17.2          | 150             | 10.3 | 2.1                           | 7.95 | 3.9             | 14.8 | 9.6             | 36.3 | 15.0            | 56.8 | 21.5          | 81.4 | 34.5              | 131  | 39.0              | 148  | 60.0          | 227  |
|                |               | 100             | 6.90 | 2.5                           | 9.46 | 4.6             | 17.4 | 11.2            | 42.4 | 17.5            | 66.2 | 25.0          | 95   | 40.3              | 153  | 45.5              | 172  | 70.0          | 265  |
|                |               | 75              | 5.17 | 2.8                           | 10.6 | 5.2             | 19.7 | 12.8            | 48.5 | 20.0            | 75.7 | 28.6          | 108  | 46.0              | 174  | 52.0              | 197  | 80.0          | 303  |
|                |               | 50              | 3.4  | 2.9                           | 11.0 | 5.5             | 20.8 | 13.4            | 50.7 | 21.0            | 79.5 | 30.0          | 114  | 48.3              | 183  | 54.6              | 207  | 84.0          | 318  |
|                |               | 25              | 1.72 | 2.9                           | 11.0 | 5.5             | 20.8 | 13.4            | 50.7 | 21.0            | 79.5 | 30.0          | 114  | 48.3              | 183  | 54.6              | 207  | 84.0          | 318  |
| 300 and 400    | 20.7 and 27.6 | 150             | 10.3 | 2.5                           | 9.46 | 4.6             | 17.4 | 11.2            | 42.4 | 17.5            | 66.2 | 25.0          | 94.6 | 40.3              | 153  | 45.5              | 172  | 70.0          | 265  |
|                |               | 100             | 6.90 | 3.5                           | 13.2 | 6.5             | 24.6 | 16.0            | 60.6 | 25.0            | 94.6 | 35.8          | 136  | 57.5              | 218  | 65.0              | 246  | 100.0         | 379  |
|                |               | 75              | 5.17 | 4.2                           | 15.9 | 7.8             | 29.5 | 19.2            | 72.7 | 30.0            | 114  | 42.9          | 162  | 69.0              | 261  | 78.0              | 295  | 120.0         | 454  |
|                |               | 50              | 3.45 | 4.2                           | 15.9 | 7.8             | 29.5 | 19.2            | 72.7 | 30.0            | 114  | 42.9          | 162  | 69.0              | 261  | 78.0              | 295  | 120.0         | 454  |

**Table 4. Type D50A Air Capacity Information (based on 20% droop)**

| INLET PRESSURE |               | OUTLET PRESSURE |      | AIR CAPACITY INLET (SCFM / Nm <sup>3</sup> /hr) |      |                 |      |                 |       |                 |      |               |      |                   |      |                   |     |               |      |
|----------------|---------------|-----------------|------|---|------|-----------------|------|-----------------|-------|-----------------|------|---------------|------|-------------------|------|-------------------|-----|---------------|------|
| psig           | bar           | psig            | bar  | NPS 1/4 / DN 8                                  |      | NPS 3/8 / DN 10 |      | NPS 1/2 / DN 15 |       | NPS 3/4 / DN 20 |      | NPS 1 / DN 25 |      | NPS 1-1/4 / DN 32 |      | NPS 1-1/2 / DN 40 |     | NPS 2 / DN 50 |      |
| 25             | 1.72          | 15              | 1.03 | 4.7   | 7.57 | 7.0             | 11.3 | 16.5            | 26.6  | 23.5            | 37.8 | 37.6          | 60.5 | 56.4              | 90.8 | 65.8              | 106 | 106           | 170  |
|                |               | 10              | 0.69 | 5.0   | 8.05 | 7.5             | 12.1 | 17.5            | 28.2  | 25.0            | 40.3 | 40.0          | 64.4 | 60.0              | 96.6 | 70.0              | 113 | 113           | 181  |
| 50             | 3.45          | 40              | 2.76 | 7.0   | 11.3 | 10.5            | 16.9 | 24.5            | 39.4  | 35.0            | 56.4 | 56.0          | 90.2 | 84.0              | 135  | 98.0              | 158 | 158           | 254  |
|                |               | 25              | 1.72 | 8.2   | 13.2 | 12.3            | 19.8 | 28.7            | 46.2  | 41.0            | 66.0 | 65.6          | 106  | 98.4              | 158  | 115               | 185 | 185           | 297  |
|                |               | 10              | 0.69 | 8.2   | 13.2 | 12.3            | 19.8 | 28.7            | 46.2  | 41.0            | 66.0 | 65.6          | 106  | 98.4              | 158  | 115               | 185 | 185           | 297  |
| 75             | 5.17          | 65              | 4.48 | 7.5   | 12.1 | 11.3            | 18.2 | 26.3            | 42.3  | 37.5            | 60.4 | 60.0          | 96.6 | 90.0              | 145  | 105               | 169 | 169           | 272  |
|                |               | 50              | 3.45 | 8.5   | 13.7 | 12.8            | 20.6 | 29.8            | 48.0  | 42.5            | 68.4 | 68.0          | 109  | 102               | 164  | 115               | 185 | 191           | 308  |
|                |               | 25              | 1.72 | 11.0  | 17.7 | 16.5            | 26.6 | 38.5            | 62.0  | 55.0            | 88.6 | 88.0          | 142  | 132               | 213  | 154               | 248 | 248           | 398  |
|                |               | 10              | 0.69 | 11.0  | 17.7 | 16.5            | 26.6 | 38.5            | 62.0  | 55.0            | 88.6 | 88.0          | 142  | 132               | 213  | 154               | 248 | 248           | 398  |
| 100            | 6.90          | 90              | 6.21 | 9.0   | 14.5 | 13.5            | 21.7 | 31.5            | 50.7  | 45.0            | 72.5 | 72.0          | 116  | 108               | 174  | 126               | 203 | 203           | 327  |
|                |               | 75              | 5.17 | 12.0  | 19.3 | 18.0            | 29.0 | 42.0            | 67.6  | 60.0            | 96.6 | 96.0          | 155  | 144               | 232  | 168               | 270 | 270           | 435  |
|                |               | 50              | 3.45 | 15.0  | 24.2 | 22.5            | 36.2 | 52.5            | 84.5  | 75.0            | 121  | 120           | 193  | 180               | 290  | 210               | 338 | 338           | 543  |
|                |               | 25              | 1.72 | 15.0  | 24.2 | 22.5            | 36.2 | 52.5            | 84.5  | 75.0            | 121  | 120           | 193  | 180               | 290  | 210               | 338 | 338           | 543  |
| 125            | 8.62          | 100             | 6.90 | 13.0  | 20.9 | 19.5            | 31.4 | 45.5            | 73.3  | 65.0            | 105  | 104           | 167  | 156               | 251  | 182               | 293 | 293           | 472  |
|                |               | 75              | 5.17 | 15.0  | 24.2 | 22.5            | 36.2 | 52.5            | 84.5  | 75.0            | 121  | 120           | 193  | 180               | 290  | 236               | 380 | 338           | 544  |
|                |               | 50              | 3.45 | 18.0  | 29.0 | 27.0            | 43.5 | 63.0            | 101.4 | 90.0            | 145  | 144           | 232  | 216               | 348  | 252               | 406 | 405           | 652  |
|                |               | 25              | 1.72 | 18.0  | 29.0 | 27.0            | 43.5 | 63.0            | 101.4 | 90.0            | 145  | 144           | 232  | 216               | 348  | 252               | 406 | 405           | 652  |
| 150            | 10.3          | 140             | 9.65 | 15.0  | 24.2 | 22.5            | 36.2 | 52.5            | 84.5  | 75.0            | 121  | 120           | 193  | 180               | 290  | 210               | 338 | 338           | 544  |
|                |               | 100             | 6.90 | 18.0  | 29.0 | 27.0            | 43.5 | 63.0            | 101   | 90.0            | 145  | 144           | 232  | 216               | 348  | 252               | 406 | 405           | 652  |
|                |               | 75              | 5.17 | 23.0  | 37.0 | 34.5            | 55.5 | 80.5            | 130   | 115             | 185  | 184           | 296  | 276               | 444  | 322               | 518 | 518           | 834  |
|                |               | 50              | 3.45 | 25.0  | 40.3 | 37.5            | 60.4 | 87.5            | 141   | 125             | 201  | 200           | 322  | 300               | 483  | 350               | 564 | 563           | 906  |
|                |               | 25              | 1.72 | 25.0  | 40.3 | 37.5            | 60.4 | 87.5            | 141   | 125             | 201  | 200           | 322  | 300               | 483  | 350               | 564 | 563           | 906  |
| 200            | 13.8          | 150             | 10.3 | 19.0  | 30.6 | 28.5            | 45.9 | 66.5            | 107   | 95.0            | 153  | 152           | 245  | 228               | 367  | 266               | 428 | 428           | 689  |
|                |               | 100             | 6.90 | 23.0  | 37.0 | 34.5            | 55.5 | 80.5            | 130   | 115             | 185  | 184           | 296  | 276               | 444  | 322               | 518 | 518           | 834  |
|                |               | 75              | 5.17 | 27.0  | 43.5 | 40.5            | 65.2 | 94.5            | 152   | 135             | 217  | 216           | 348  | 324               | 522  | 378               | 609 | 608           | 979  |
|                |               | 50              | 3.45 | 29.0  | 46.7 | 43.5            | 70.0 | 102             | 163   | 145             | 233  | 232           | 374  | 348               | 560  | 406               | 654 | 653           | 1051 |
|                |               | 25              | 1.72 | 29.0  | 46.7 | 43.5            | 70.0 | 102             | 163   | 145             | 233  | 232           | 374  | 348               | 560  | 406               | 654 | 653           | 1051 |
| 250            | 17.2          | 150             | 10.3 | 25.0  | 40.3 | 37.5            | 60.4 | 87.5            | 141   | 125             | 201  | 200           | 322  | 300               | 483  | 350               | 564 | 563           | 906  |
|                |               | 100             | 6.90 | 33.0  | 53.1 | 49.5            | 79.7 | 116             | 186   | 165             | 266  | 264           | 425  | 396               | 638  | 462               | 744 | 743           | 1196 |
|                |               | 75              | 5.17 | 37.0  | 59.6 | 55.5            | 89.4 | 130             | 208   | 185             | 298  | 296           | 477  | 444               | 715  | 518               | 834 | 833           | 1341 |
|                |               | 50              | 3.4  | 37.0  | 59.6 | 55.5            | 89.4 | 130             | 208   | 185             | 298  | 296           | 477  | 444               | 715  | 518               | 834 | 833           | 1341 |
|                |               | 25              | 1.72 | 37.0  | 59.6 | 55.5            | 89.4 | 130             | 208   | 185             | 298  | 296           | 477  | 444               | 715  | 518               | 834 | 833           | 1341 |
| 300 and 400    | 20.7 and 27.6 | 150             | 10.3 | 34.0  | 54.7 | 51.0            | 82.1 | 115             | 185   | 170             | 274  | 272           | 438  | 408               | 657  | 476               | 766 | 765           | 1232 |
|                |               | 100             | 6.90 | 37.0  | 59.6 | 55.5            | 89.4 | 130             | 208   | 185             | 298  | 296           | 477  | 444               | 715  | 518               | 834 | 833           | 1341 |
|                |               | 75              | 5.17 | 43.0  | 69.2 | 64.5            | 104  | 151             | 242   | 215             | 346  | 344           | 554  | 516               | 831  | 602               | 969 | 968           | 1558 |
|                |               | 50              | 3.45 | 43.0  | 69.2 | 64.5            | 104  | 151             | 242   | 215             | 346  | 344           | 554  | 516               | 831  | 602               | 969 | 968           | 1558 |

# Type D50A

**Table 5. Type D50A Steam Capacity Information (based on 20% droop)**

| INLET PRESSURE |      | OUTLET PRESSURE |      | STEAM (lbs/hr / kg/hr) |      |                 |      |                 |      |                 |      |               |      |                   |      |                   |      |               |      |
|----------------|------|-----------------|------|------------------------|------|-----------------|------|-----------------|------|-----------------|------|---------------|------|-------------------|------|-------------------|------|---------------|------|
| psig           | bar  | psig            | bar  | NPS 1/4 / DN 8         |      | NPS 3/8 / DN 10 |      | NPS 1/2 / DN 15 |      | NPS 3/4 / DN 20 |      | NPS 1 / DN 25 |      | NPS 1-1/4 / DN 32 |      | NPS 1-1/2 / DN 40 |      | NPS 2 / DN 50 |      |
| 25             | 1.72 | 15              | 1.03 | 25.0                   | 11.3 | 38.0            | 17.2 | 88.0            | 39.9 | 126             | 57.2 | 202           | 91.6 | 302               | 137  | 353               | 160  | 567           | 257  |
|                |      | 10              | 0.69 | 25.0                   | 11.3 | 38.0            | 17.2 | 88.0            | 39.9 | 126             | 57.2 | 202           | 91.6 | 302               | 137  | 353               | 160  | 567           | 257  |
| 50             | 3.45 | 40              | 2.76 | 36.0                   | 16.3 | 55.0            | 24.9 | 129             | 58.5 | 183             | 83.0 | 294           | 133  | 440               | 200  | 514               | 233  | 826           | 375  |
|                |      | 25              | 1.72 | 42.0                   | 19.1 | 63.0            | 28.6 | 137             | 62.1 | 210             | 95.3 | 336           | 152  | 504               | 229  | 588               | 267  | 945           | 429  |
|                |      | 10              | 0.69 | 42.0                   | 19.1 | 63.0            | 28.6 | 137             | 62.1 | 210             | 95.3 | 336           | 152  | 504               | 229  | 588               | 267  | 945           | 429  |
| 75             | 5.17 | 65              | 4.48 | 39.0                   | 17.7 | 59.0            | 26.8 | 139             | 63.0 | 197             | 89.4 | 316           | 143  | 473               | 215  | 553               | 251  | 889           | 403  |
|                |      | 50              | 3.45 | 53.0                   | 24.0 | 78.0            | 35.4 | 185             | 83.9 | 263             | 119  | 421           | 191  | 631               | 286  | 736               | 334  | 1184          | 537  |
|                |      | 25              | 1.72 | 68.0                   | 30.8 | 102             | 46.3 | 239             | 108  | 342             | 155  | 546           | 248  | 820               | 372  | 956               | 434  | 1537          | 697  |
|                |      | 10              | 0.69 | 69.0                   | 31.3 | 102             | 46.3 | 239             | 108  | 342             | 155  | 546           | 248  | 820               | 372  | 956               | 434  | 1537          | 697  |
| 100            | 6.90 | 90              | 6.21 | 49.0                   | 22.2 | 91.0            | 41.3 | 154             | 69.9 | 231             | 105  | 371           | 168  | 560               | 254  | 654               | 297  | 1050          | 476  |
|                |      | 75              | 5.17 | 84.0                   | 38.1 | 126             | 57.2 | 294             | 133  | 420             | 191  | 672           | 305  | 1008              | 457  | 1176              | 533  | 1890          | 857  |
|                |      | 50              | 3.45 | 85.0                   | 38.6 | 129             | 58.5 | 300             | 136  | 427             | 194  | 683           | 310  | 1025              | 465  | 1196              | 542  | 1922          | 872  |
|                |      | 25              | 1.72 | 85.0                   | 38.6 | 129             | 58.5 | 300             | 136  | 427             | 194  | 683           | 310  | 1025              | 465  | 1196              | 542  | 1922          | 872  |
| 125            | 8.62 | 100             | 6.90 | 88.0                   | 39.9 | 133             | 60.3 | 266             | 121  | 441             | 200  | 706           | 320  | 1008              | 457  | 1165              | 528  | 1985          | 900  |
|                |      | 75              | 5.17 | 111                    | 50.3 | 165             | 74.8 | 385             | 175  | 550             | 249  | 881           | 400  | 1320              | 599  | 1540              | 699  | 2477          | 1124 |
|                |      | 50              | 3.45 | 115                    | 52.2 | 172             | 78.0 | 400             | 181  | 573             | 260  | 916           | 415  | 1375              | 624  | 1603              | 727  | 2577          | 1169 |
|                |      | 25              | 1.72 | 115                    | 52.2 | 172             | 78.0 | 400             | 181  | 573             | 260  | 916           | 415  | 1375              | 624  | 1603              | 727  | 2577          | 1169 |
| 150            | 10.3 | 140             | 9.65 | 63                     | 28.6 | 95.0            | 43.1 | 126             | 57.2 | 210             | 95.3 | 350           | 159  | 525               | 238  | 616               | 279  | 994           | 451  |
|                |      | 100             | 6.90 | 112                    | 50.8 | 168             | 76.2 | 392             | 178  | 560             | 254  | 896           | 406  | 1344              | 610  | 1568              | 711  | 2520          | 1143 |
|                |      | 75              | 5.17 | 116                    | 52.6 | 174             | 78.9 | 405             | 184  | 578             | 262  | 924           | 419  | 1387              | 629  | 1618              | 734  | 2603          | 1181 |
|                |      | 50              | 3.45 | 137                    | 62.1 | 204             | 92.5 | 479             | 217  | 683             | 310  | 1093          | 496  | 1639              | 743  | 1912              | 867  | 3074          | 1394 |
|                |      | 25              | 1.72 | 137                    | 62.1 | 204             | 92.5 | 479             | 217  | 683             | 310  | 1093          | 496  | 1639              | 743  | 1912              | 867  | 3074          | 1394 |
| 200            | 13.8 | 150             | 10.3 | 130                    | 59.0 | 195             | 88.5 | 454             | 206  | 648             | 294  | 1037          | 470  | 1555              | 705  | 1814              | 823  | 2916          | 1323 |
|                |      | 100             | 6.90 | 153                    | 69.4 | 230             | 104  | 535             | 243  | 763             | 346  | 1221          | 554  | 1831              | 831  | 2136              | 969  | 3434          | 1558 |
|                |      | 75              | 5.17 | 179                    | 81.2 | 267             | 121  | 626             | 284  | 893             | 405  | 1429          | 648  | 2143              | 972  | 2500              | 1134 | 4019          | 1823 |
|                |      | 50              | 3.45 | 179                    | 81.2 | 267             | 121  | 626             | 284  | 893             | 405  | 1429          | 648  | 2143              | 972  | 2500              | 1134 | 4019          | 1823 |
| 225            | 15.5 | 150             | 10.3 | 190                    | 86.2 | 287             | 130  | 671             | 304  | 956             | 434  | 1532          | 695  | 2297              | 1042 | 2681              | 1216 | 4308          | 1954 |
|                |      | 100             | 6.90 | 214                    | 97.1 | 322             | 146  | 750             | 340  | 1072            | 486  | 1715          | 778  | 2572              | 1167 | 3002              | 1362 | 4823          | 2188 |
|                |      | 75              | 5.17 | 230                    | 104  | 344             | 156  | 804             | 365  | 1147            | 520  | 1835          | 832  | 2752              | 1248 | 3212              | 1457 | 5162          | 2341 |
|                |      | 50              | 3.4  | 230                    | 104  | 344             | 156  | 804             | 365  | 1147            | 520  | 1835          | 832  | 2752              | 1248 | 3212              | 1457 | 5162          | 2341 |
| 250            | 17.2 | 100             | 6.90 | 196                    | 89   | 294             | 133  | 686             | 311  | 980             | 445  | 1568          | 711  | 2352              | 1067 | 2744              | 1245 | 4410          | 2000 |
|                |      | 75              | 5.17 | 253                    | 115  | 379             | 172  | 888             | 403  | 1267            | 575  | 2027          | 919  | 3039              | 1378 | 3546              | 1608 | 5699          | 2585 |
|                |      | 50              | 3.45 | 253                    | 115  | 379             | 172  | 888             | 403  | 1267            | 575  | 2027          | 919  | 3039              | 1378 | 3546              | 1608 | 5699          | 2585 |

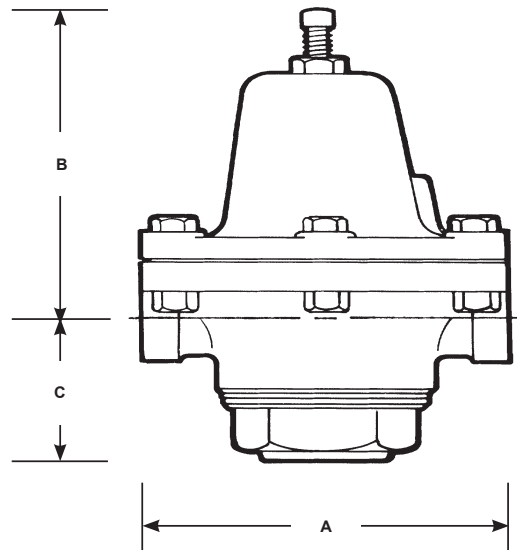


Figure 5. Type D50A Dimension

Table 6. Type D50A Dimension

| REGULATOR SIZE |    | DIMENSION |      |       |      |       |      | SHIPPING WEIGHT |    |
|----------------|----|-----------|------|-------|------|-------|------|-----------------|----|
|                |    | A         |      | B     |      | C     |      | Iron            |    |
| NPS            | DN | In.       | mm   | In.   | mm   | In.   | mm   | lbs             | kg |
| 1/4            | 8  | 3         | 76.2 | 2 7/8 | 73.0 | 1 3/4 | 44.5 | 2 3/4           | 1  |
| 3/8            | 10 | 3 7/8     | 98.4 | 4 1/2 | 114  | 1 3/4 | 44.5 | 5               | 2  |
| 1/2            | 15 | 4 1/2     | 114  | 4 1/2 | 114  | 2 1/8 | 54.0 | 7 1/2           | 3  |
| 3/4            | 20 | 5 1/8     | 130  | 4 5/8 | 117  | 2 1/8 | 54.0 | 9               | 4  |
| 1              | 25 | 5 7/8     | 149  | 5 3/8 | 137  | 2 1/8 | 54.0 | 12              | 5  |
| 1-1/4          | 32 | 6 3/4     | 171  | 6 1/8 | 156  | 2 5/8 | 66.7 | 18              | 8  |
| 1-1/2          | 40 | 6 3/4     | 171  | 6 1/8 | 156  | 2 5/8 | 66.7 | 18              | 8  |
| 2              | 50 | 9 1/4     | 235  | 8 1/2 | 216  | 3 1/2 | 88.9 | 32              | 15 |

## Ordering Information

When ordering, complete the ordering guide on this page. Refer to the Specifications section. Review the description to the right of each specification and the information in each referenced table or figure. Specify your choice whenever a selection is offered.

## Ordering Guide

### Application (Select One)

- Water
- Air
- Steam

### Body Size (Select One)

- NPS 1/4 / DN 8
- NPS 3/8 / DN 10
- NPS 1/2 / DN 15
- NPS 3/4 / DN 20
- NPS 1 / DN 25
- NPS 1-1/4 / DN 32
- NPS 1-1/2 / DN 40
- NPS 2 / DN 50

- continued -

# Type D50A

---

## Ordering Guide (continued)

### Spring Ranges (Select One)

#### *NPS 1/4 / DN 8 Body Size*

- 2 to 25 psig / 0.14 to 1.72 bar
- 20 to 60 psig / 1.38 to 4.14 bar
- 30 to 100 psig / 2.07 to 6.90 bar
- 50 to 150 psig / 3.45 to 10.3 bar

#### *NPS 3/8 / DN 10 Body Size*

- 2 to 30 psig / 0.14 to 2.07 bar
- 20 to 70 psig / 1.38 to 4.83 bar
- 40 to 110 psig / 2.76 to 7.58 bar
- 90 to 150 psig / 6.21 to 10.3 bar

#### *NPS 1/2 / DN 15 Body Size*

- 2 to 30 psig / 0.14 to 2.07 bar
- 10 to 50 psig / 0.69 to 3.45 bar
- 30 to 125 psig / 2.07 to 8.62 bar
- 50 to 150 psig / 3.45 to 10.3 bar

#### *NPS 3/4 / DN 20 Body Size*

- 2 to 20 psig / 0.14 to 1.38 bar
- 10 to 35 psig / 0.69 to 2.41 bar
- 30 to 75 psig / 2.07 to 5.17 bar
- 50 to 110 psig / 3.45 to 7.58 bar
- 105 to 150 psig / 7.24 to 10.3 bar

#### *NPS 1 / DN 25 Body Size*

- 2 to 20 psig / 0.14 to 1.38 bar
- 10 to 45 psig / 0.69 to 3.10 bar
- 20 to 60 psig / 1.38 to 4.14 bar
- 55 to 100 psig / 3.79 to 6.90 bar
- 90 to 150 psig / 6.21 to 10.3 bar

#### *NPS 1-1/4 and 1-1/2 / DN 32 and 40 Body Sizes*

- 2 to 15 psig / 0.14 to 1.03 bar
- 10 to 30 psig / 0.69 to 2.07 bar
- 20 to 50 psig / 1.38 to 3.45 bar
- 45 to 100 psig / 3.10 to 6.90 bar
- 90 to 150 psig / 6.21 to 10.3 bar

#### *NPS 2 / DN 50 Body Size*

- 2 to 20 psig / 0.14 to 1.38 bar
- 10 to 60 psig / 0.69 to 4.14 bar
- 20 to 100 psig / 1.38 to 6.90 bar
- 90 to 150 psig / 6.21 to 10.3 bar

 [SpenceValve.com](http://SpenceValve.com)

### Emerson Automation Solutions

#### **Americas**

McKinney, Texas 75070 USA  
T +1 800 558 5853  
+1 972 548 3574

#### **Europe**

Bologna 40013, Italy  
T +39 051 419 0611

#### **Asia Pacific**

Singapore 128461, Singapore  
T +65 6777 8211

#### **Middle East and Africa**

Dubai, United Arab Emirates  
T +971 4 811 8100

VCBUL-15800 © 2021 Emerson Electric Co. All rights reserved 11/21.

Spence is a mark owned by one of the companies in the Emerson Automation Solutions business unit of Emerson Electric Co. The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are property of their prospective owners.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

Emerson Electric Co. does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Emerson Electric Co. product remains solely with the purchaser.

